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About Advantech



Your ePlatform Partner

Advantech, the leading ePlatform service provider, has been an innovator in the development and manufacturing of high-quality, high-performance ePlatform services in the industrial computing and automation markets since 1983. For over twenty years, Advantech has been refining what is possible in the ePlatform services market, offering comprehensive system integration hardware, software, customer-driven service, global logistics support, and an industry leading front as well as back office e-business infrastructure. Advantech is helping system integrator partners add value to their solutions and services.

Mission & Focus

Empower Innovations in the Connected eWorld

Solution integrators all over the world are constantly developing new applications and innovative products. Advantech's mission is to empower this innovation by providing "ePlatform Services", creating a broad spectrum of quality products and services that are suitable for a wide range of applications.

The Global Leading ePlatform Service Provider for eWorld Integrators

By positioning itself as an "ePlatform Service Provider", Advantech has and will continue to make a name for itself as the world's leading brand in Embedded & Applied Computing, Network Appliances, eAutomation & Certified Peripherals. Advantech is a name that is recognized in a multitude of existing and emerging business segments, such as environment and facility monitoring, network communications, computer telephony, POS/POI, e-factory/automation, medical and home automation.



Product & Market Coverage

Advantech's product range covers thousands of products:

- Embedded Computing
- RISC Embedded Computing
- Applied Panel Computing
- Certified Peripherals
- Industrial Computers
- Network Appliances
- CompactPCI
- Digital Video Platforms
- eAutomation
- Human Machine Interfaces
- Industrial I/O
- Industrial Communications

Our solutions cover a variety of industries:

- eHome/Smart Home Networking
- Medical/eHealthcare
- Mobile Computing
- System on Chip (SoC)
- System on Module (SOM)
- Telecommunications
- Factory Automation
- Facility Management Systems
- Machine Automation
- Environment Monitoring Systems
- Intelligent Transportation Systems

Strength and Service

A Global Service Network

Advantech has more than 2,000 employees worldwide and a wide global reach with teams in seven geographic regions: North America, Europe, China, Taiwan, Japan, South Asia-Pacific (including Korea) and numerous emerging markets such as Eastern Europe and Latin America. Our products are distributed and serviced by an extensive global network of offices and an industry leading ebusiness infrastructure designed to provide fast and responsive service that benefits customers, no matter their location. Advantech is well positioned to be the partner of choice in the connected eWorld.

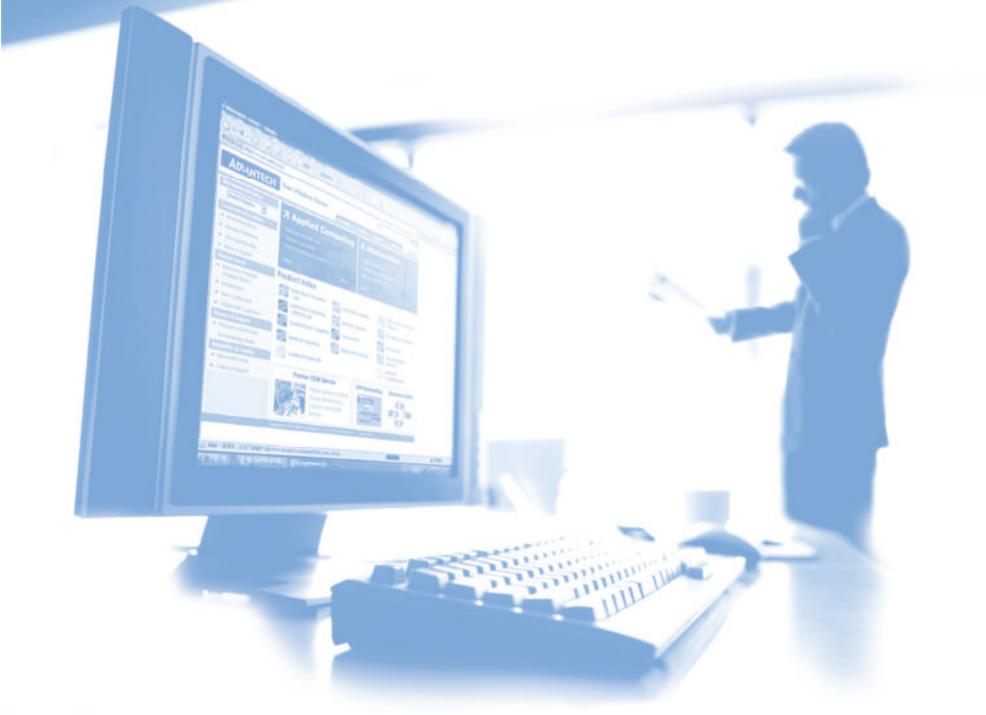
Customization Services

With increasing customer demand for flexible designs and tailor-made manufacturing services, Advantech's Design-to-Order Service (DTOS) and Build-to-Order Service (BTOS) are putting Advantech ahead of the competition. Our customization services reduce customer engineering effort, speed product development and shorten time-to-market response. With localized support provided by regional service centers in Europe, the US, Asia and China, combined with fast online support, Advantech delivers seamless and cost-saving services that meet stringent customization requirements.

Advantech in Brief

Advantech Co., Ltd. (Taidex: 2395) is the global leading ePlatform service provider integrating web-based technology, computing platforms and customization services that empower the connected eWorld. Advantech cooperates closely with system integrators to help them add value to their solutions to meet demanding requirements in a wide array of industries. Advantech delivers more than a thousand products and solutions under several categories: Embedded & Applied Computing, Network Appliance, Industrial Computing, and eAutomation. With the combined talent of more than 2,000 people, Advantech operates an extensive support, sales and marketing network in 16 countries and 28 major cities to deliver fast time-to-market services to our worldwide customers.

Reach Advantech Online



Advantech Home page



➤ www. advantech.com

Advantech's corporate website is designed to provide you with rich, valuable, interactive information. From our corporate portal, you can choose from a wide variety of resources that are integrated with contents from different sites, covering categories such as:

- Products
- Worldwide Contacts
- Solutions eStore
- Services & Support
- Business Units & Product Divisions

Partner Zone

➤ partner. advantech.com.tw

Advantech Partner Zone, a partner portal, enables worldwide partners to access real-time business information.

Major functions:

- Partner Program & Management
- Product, Sales & Marketing Resources
- Partner Training
- Partner Tech Support & Online Service
- B2B Online Procurement



Events & News

🔗 www.advantech.com.tw/userclub/newsletter_index.asp

Find out the latest worldwide Advantech news, events, and seminars.

In 2005, Advantech has a series of global solution seminars and product showcases designed for local customers. This year, “eAutomation Solutions” and “Embedded & Applied Computing Solutions” will be our business focuses. Together with our local solution partners, we will share successful project experiences, solutions, and applications for vertical market development.



Support

🔗 www.advantech.com/support

To provide customers with easy-to-use and 24/7 technical support, Advantech delivers services via the Internet. The dedicated website offers easy-to-access FAQ knowledge databases, user-friendly advanced search capabilities, and an efficient interface to submit questions and problem reports to Advantech's support staff worldwide.

Driver and Knowledge Download Area

- BIOS
- Drivers
- FAQ
- Manuals
- Specifications
- Utilities

Support Area

- RMA Service
- Troubleshoot
- Certificates & Testing Report

Personalization Service

🔗 MyAdvantech.com

Personalization is the ability of the Web site to match retrieved information content to a user's profile. Advantech has designed an amiable system whereby content can be set explicitly by the user. It will provide you the following benefits:

- Personalize your Advantech.com content
- Subscribe to Advantech eNewsletters
- Request Advantech product catalogs online
- Find your local support and contact for Advantech services
- View new product releases relevant to you
- Get access to your local Advantech eStore
- Receive eMail notices for Advantech seminars and events

Online Shopping

🔗 eStore

Advantech has developed an online shopping platform called eStore. Here customers can place online orders 24 hours a day, 7 days a week. Through the Internet, we are able to lower operation costs while still giving our customers the same high-quality products and services as traditional channels. With secure payment guaranteed, customers are able to enjoy online purchasing with complete confidence. The eStore provides customers with an easier, friendlier interface, and our product pages now more closely resemble those of the main corporate website, thus reducing any potential confusion on the part of the customer. Personalization and support links will bring added benefits and value to our customers as well.



About The Industrial Automation Group



About IAG

Advantech's Industrial Automation Group is focused on creating innovative products and solutions for a wide range of applications and market needs. Our team offers several key advantages to our customers:

Focus on eAutomation Technologies

IAG is a pioneer in eAutomation technology, and many of our customers are already being served with innovative products and solutions that combine connectivity, flexibility, and ruggedness with PC-like versatility. We were one of the first to offer products like WebOIT and WebLink, our compact and rugged "Application Ready Platforms" that include fully featured web-enabled SCADA software for the Microsoft Windows CE operating system. Our never-ending focus on product improvements continues now as we move into the next phase of eAutomation, offering products and technologies such as embedded soft logic control, high-speed distributed motion control, high-performance industrial computing platforms, wireless technology products, and more!

Wide Product Range

IAG products cover a full range from Operator Terminals (HMI) and Rugged IPC computing platforms to versatile distributed and plug-in I/O systems and software. Customers can take advantage of a high degree of scalability within and between product lines, with capabilities and performance ranging from cost effective embedded automation controllers to full featured, high performance Operator Workstation computing platforms. Our broad product coverage allows the customer to select the best combination of components to solve each unique application, providing great flexibility while maintaining the convenience of "one stop automation shopping".

Global Network of Solution and Distribution Partners

Our customers do business in a global economy, and IAG is positioned to provide support extending well beyond local borders. IAG teams are located in offices throughout the world, with major logistics and service centers in Asia, Europe, and North America. No matter where you are doing business, the IAG team is not far away.

Customization and Build to Order Services

Our off-the-shelf solutions are capable of fulfilling a wide range of needs, but IAG recognizes that many customers have special requirements that demand more. To meet this challenge, IAG offers hardware and software customization services to adapt our technology to the customer's specific needs. Our experienced engineering team is ready to work with our customers to solve most customization challenges.

Customer focused web sites and sales team

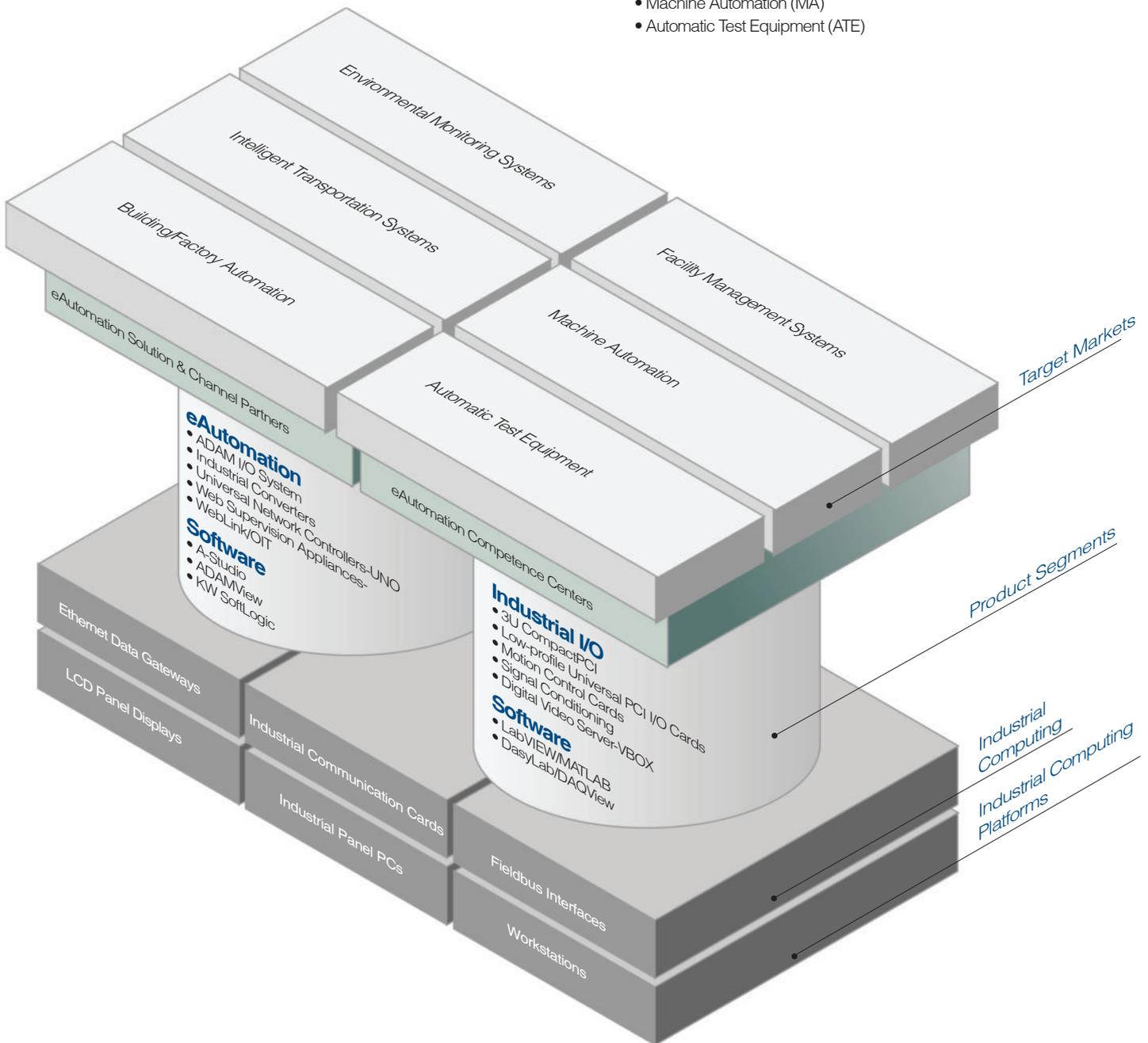
IAG is entering a new phase in our focus on the customer by launching two key initiatives: eAutomationPro.com, our new user friendly web site franchise system with special features and localized content dedicated to enhancing our customer's online experience, and deployment of Product Sales Specialists to enhance our partner and customer relationships with improved "first touch" technical product knowledge. In addition, our growing network of global Solution and Distribution Partners offer products and services that complement IAG's wide product range, making even more solution possibilities available.



Market Segmentation

Advantech Industrial Automation Group gears towards a segmented market. These target markets are:

- Facility Management Systems (FMS)
- Environmental Monitoring Systems (EMS)
- Factory Automation (FA)
- Building Automation (BA)
- Intelligent Transportation Systems (ITS)
- Industrial Video Surveillance (IVS)
- Machine Automation (MA)
- Automatic Test Equipment (ATE)



eAutomation Franchise



Connecting Automation Professionals

To better serve our partners and customers, the eAutomation franchise business model will be launched in 2005. Composed of a unified eStore, call center and unified marketing programs, the eAutomation franchise business model is designed for regional system component sales. Regional Advantech offices and premium channel partners ensure that support is never far away.

Powered by Advantech, the new website is an online portal offering guidance for automation professionals, extensive Advantech product information, and the ability to purchase Advantech products directly from the manufacturer. Our staff of Pros are available by e-mail or phone to help with questions. The main advantages of the new eStore are:

- One-stop Shopping
- Fast Order Fulfillment & Delivery
- Product Selection Wizards
- Online Consulting Service & Support
- Guaranteed Quality

Advantech takes pride in our partnerships. With our acclaimed and certified platforms, the partnerships we have formed with eAutomation Premier Partners and Solution Partners provide our customers with complete, reliable and faster time-to-market solutions for a wide variety of industries.

eAutomation Premier Partner



Partnering with eAutomation

To emphasize our commitment to partner relationships, Advantech has created the eAutomation Premier Partner Program to deliver valuable resources to help partner organizations and their customers to succeed. This program is designed to recognize the investments and contributions made by customers to promote Advantech's eAutomation-based solutions and products. Surf our eAutomation premier website www.advantech.com.tw/solutions/eAPD_overview.asp to find detailed information.

Program Benefits

The eAutomation Premier Partner Program builds relevance and value into all the tools and resources we provide, to help partners and their customers thrive. At the same time, Advantech eAutomation is committed to provide targeted benefits that fit the needs of solutions partners. You have access to our marketing, sales and technical benefits by joining us.

Join the Program

The eAutomation Premier Program is committed to building a stronger and closer relationship between you and Advantech eAutomation, as well as helping you drive business that supports your growth and success. (Visit www.advantech.com.tw/solutions/eAPD_program.asp for detailed information)

Worldwide eAutomation Premier Partner

PROSOFT[®]

www.advantech.ru
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Email: info@prosoft.ru

- Prosoft is a leading Russian partner for industrial process automation and embedded systems
- Links with 30 partners in Russia, Kazakhstan, Ukraine, Belorussia, Armenia, Latvia, and other Eastern-European countries.
- Prosoft provides free pre-sales consulting, long-term technical support, and training in system integration.

eAutomation Solution Partner

Accelerating eAutomation with Solution Partners

Advantech's eASP Program offers our customers the benefits of value-added products from our partner companies that complement the Advantech Industrial Automation core business products. Through the eASP Program, our partner solutions can be validated with selected Advantech products for compatibility and promoted through Advantech's worldwide real-time e-Business network. As a result, customers will benefit from a field-proven solution for their automation applications and partners will develop incremental business through lead referrals.

Level 3:

R&D Co-Development



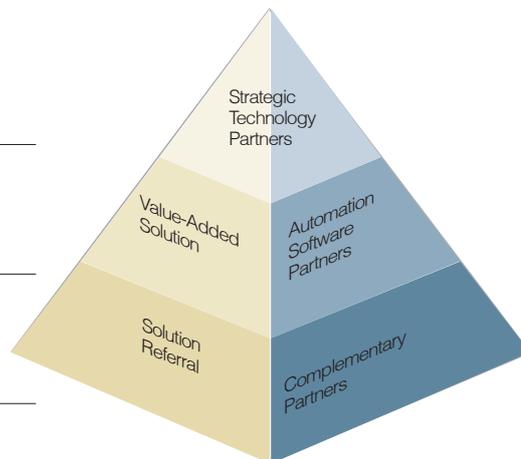
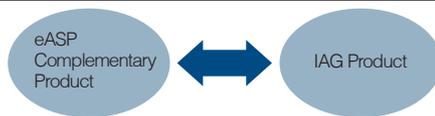
Level 2:

Product Value-Add



Level 1:

Product Recommendation



Worldwide Solution Partners

Enjoy quick access to automation solutions that cover a range of referenced products and industry segments by viewing some of Advantech's eAutomation Solution Partner Program members listed in our eASP website. Surf our eASP website www.advantech.com.tw/solutions/eASP_intro.asp to find real-time worldwide resources and easy-to-search partner information.

America/Europe



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Email: unibase@unibase.com.tw



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Email: mfc@sevenstar.com.cn



www.sunware.com.tw
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Email: ted7@ms2.hinet.net



www.sac-china.com
Tel: +86-025-83429900
Email: xiaoming@sac-china.com

Automation Software



www.kw-software.com
Email: bwaldeck@kw-software.com



www.mathworks.com
Tel: +1-508-647-7000
Email: info@mathworks.com



www.kingview.com
Tel: +86-10-82665206
Email: sales@kingview.com

Facility Management Systems (FMS)

Simplify Your Automation System with Ethernet-based FMS Solutions

An airport terminal is a typical application for a facility management system. Advantech's Ethernet-based facility management system integrates control and communication to manage the airport display boards, gateway access, lighting, temperature control, and many other functions that make airports run smoothly.



Facility Manager (UNO-3062)

- On-board Celeron 400/650 MHz, 256/512 MB SDRAM
- Provides 512 KB battery-backup RAM
- Two free PCI-bus expansion slots for versatile applications
- Industrial proven design; anti-shock up to 50G, vibration resistant up to 2G



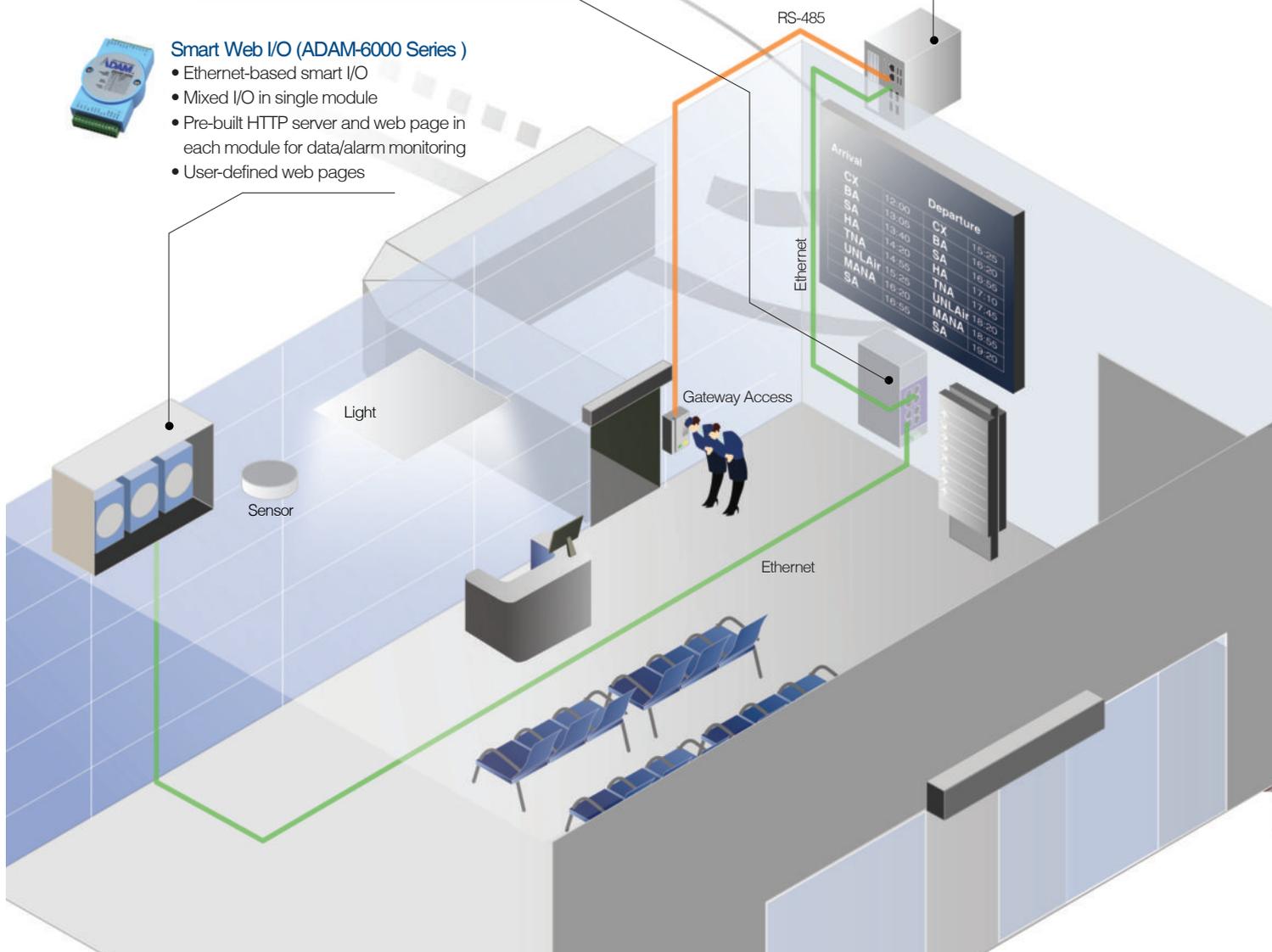
Ethernet Data Gateway (EDG-6528)

- Provides 8 x 10/100 Mbps Ethernet ports with RJ-45 connector
- Supports full/half duplex flow control
- Supports MDI/MDIX auto crossover
- Provides broadcast storm protection



Smart Web I/O (ADAM-6000 Series)

- Ethernet-based smart I/O
- Mixed I/O in single module
- Pre-built HTTP server and web page in each module for data/alarm monitoring
- User-defined web pages



Environmental Monitoring Systems (EMS)

Build Up Your SCADA System with ADAM Solutions

Advantech has gained a great reputation in Supervisory Control and Data Acquisition (SCADA) by continuously improving its advanced ADAM series. Advantech's ADAM series distinguishes itself by featuring a wide variety of I/O and communication modules to meet high-volume SCADA requirements in environmental monitoring applications such as air/water quality measurement & control services, warning systems for landscapes, dams, bridges, traffic monitoring and unmanned station monitoring. In energy management, we also have field-proven solutions for pipeline management, power distribution and supply.



Ethernet-enabled PC-based Controller (ADAM-5510/TCP)

- 10/100Base-T Ethernet Interface
- Four Serial Communication Ports
- Supports HTTP server, FTP server, and e-mail alarm functions
- Supports Modbus/TCP server/client functions



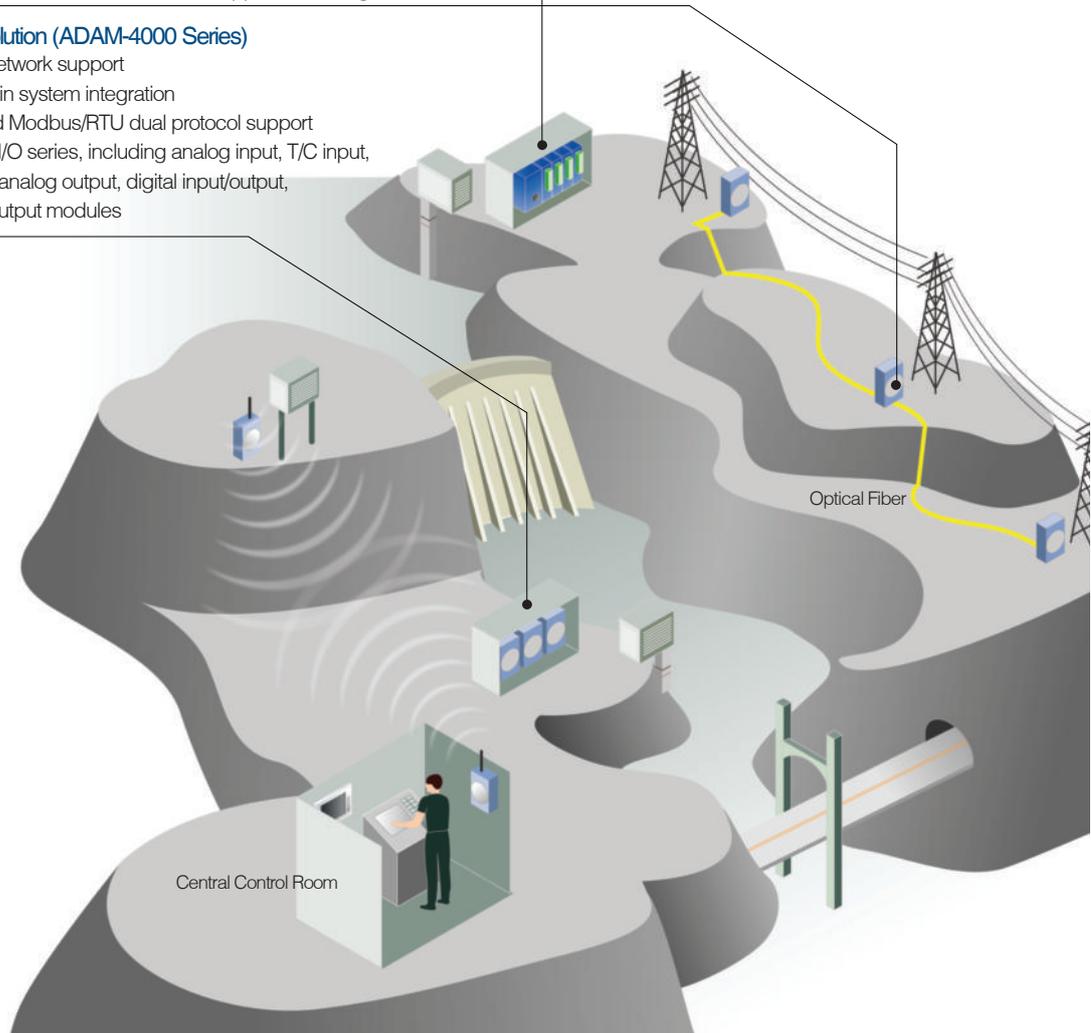
Fiber Optic Converter (ADAM-6541/ADAM-6542)

- Supports 1-port 100 Mbps multimode and single mode fiber optics
- Supports 10 ~30 V_{DC} power input
- Supports MDI/MDIX auto crossover
- Embedded with a switch controller, supports auto-negotiation



Modbus Solution (ADAM-4000 Series)

- Modbus network support
- Easy plug-in system integration
- ADAM and Modbus/RTU dual protocol support
- Complete I/O series, including analog input, T/C input, RTD input, analog output, digital input/output, and relay output modules



Intelligent Transportation Systems (ITS)

Smooth Traffic Flow with PC-based Vehicle Detection Systems

Advantech offers advanced product solutions for the ITS market segment, especially for Vehicle Detection (VD) systems and Changeable Message Sign (CMS) systems for Advanced Traffic Management System (ATMS). Along with the benefits of an open architecture, Advantech's PC-based product solutions emphasizes a robust design for outdoor installations.



Vehicle Information System (UNO-2000)

- Built-in real-time operating system
- Efficient application development environment
- Standard communication interfaces integrate with remote I/O solutions
- Flexible networking options



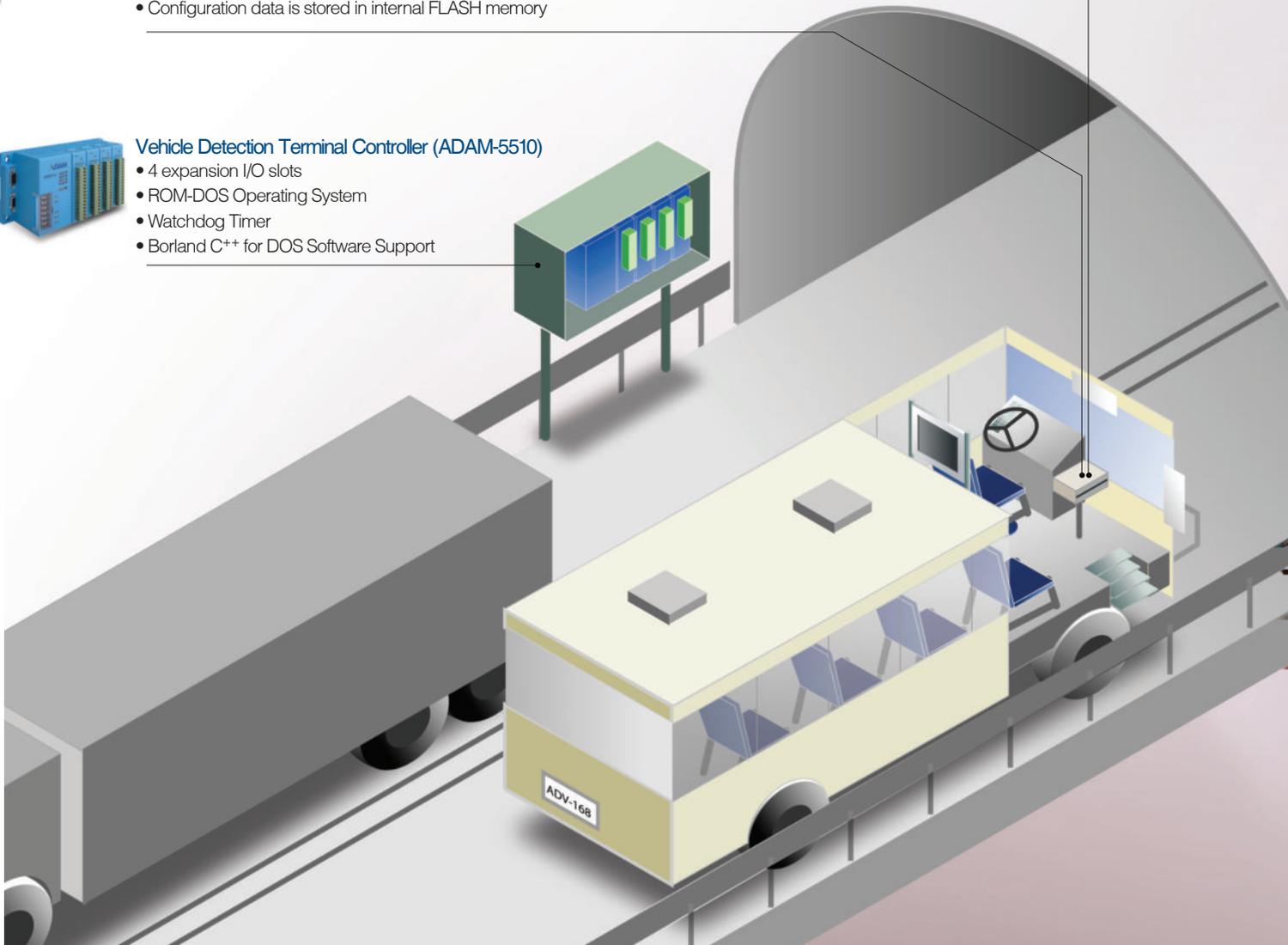
Fieldbus Card (AD-CIF 50-COM)

- Built-in CANopen protocol stack to reduce CPU loading
- Direct access the process data in the dual-port memory
- Easy diagnostic via LED status display
- Configuration data is stored in internal FLASH memory



Vehicle Detection Terminal Controller (ADAM-5510)

- 4 expansion I/O slots
- ROM-DOS Operating System
- Watchdog Timer
- Borland C++ for DOS Software Support



Industrial Video Surveillance (IVS)

Expand Your Automation Scope with Digital Video Solutions

From unmanned telecommunication stations to factory buildings, today's automation systems are more powerful and highly integrated. Advantech brings real-time video surveillance to automation by introducing a digital video solution. The digital video solution series is an Ethernet-based system integrated with Advantech's distributed DA&C. In addition to conventional trend charts, and historical information for analysis, users are now able to see live video in their HMI/SCADA.



Stand-alone Digital Video Recorder

- Linux-based stand-alone digital video recorder with high reliability and robustness
- Simultaneous video capture, record and playback
- Distributed video server for cabling reduction and system performance improvement
- Powerful alarm management for increased security



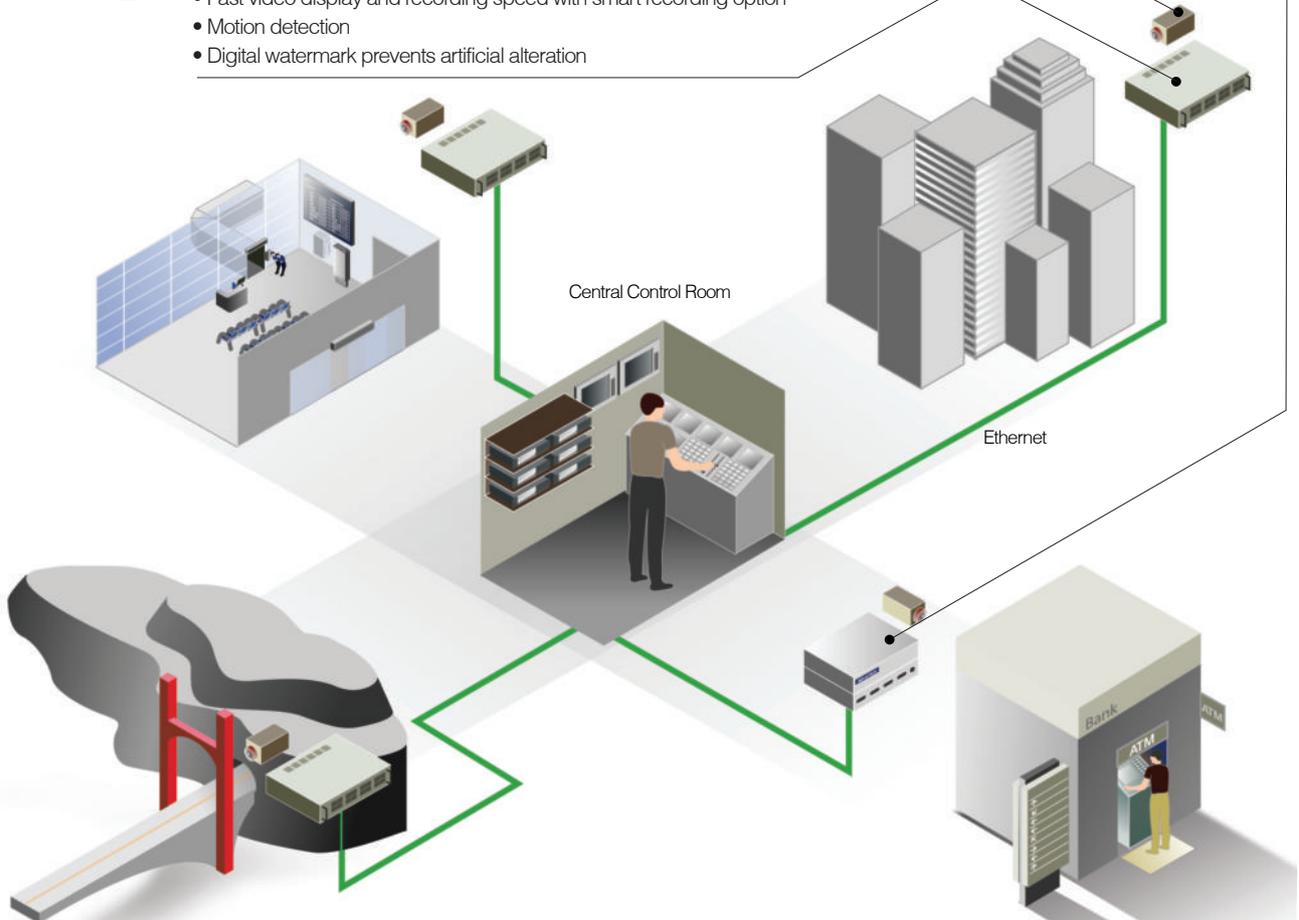
CCD Camera

- Leading performance with excellent S/N ratio
- Zero color rolling
- Complete line of cameras, including Ex-View CCD Cameras, Star Light CCD Cameras, Varifocal Lens Dome Cameras, and Zoom Cameras



MPEG-4 8/16-ch Digital Video Recorder

- The latest MPEG-4 compression algorithm
- Fast video display and recording speed with smart recording option
- Motion detection
- Digital watermark prevents artificial alteration



Factory Automation (FA)

Bring eAutomation Solutions to Factory Floors

Companies are under pressure to meet the demands of customers to stay competitive in the Internet age. eManufacturing, a key element of the e-business concept, integrates factory floors with enterprise applications by leveraging Ethernet-enabled technologies. As a leader in eAutomation, Advantech now brings eAutomation to factory floors and helps businesses realize the eManufacturing concept by offering various Ethernet-enabled product solutions that fulfill the different requirements for implementing eManufacturing.



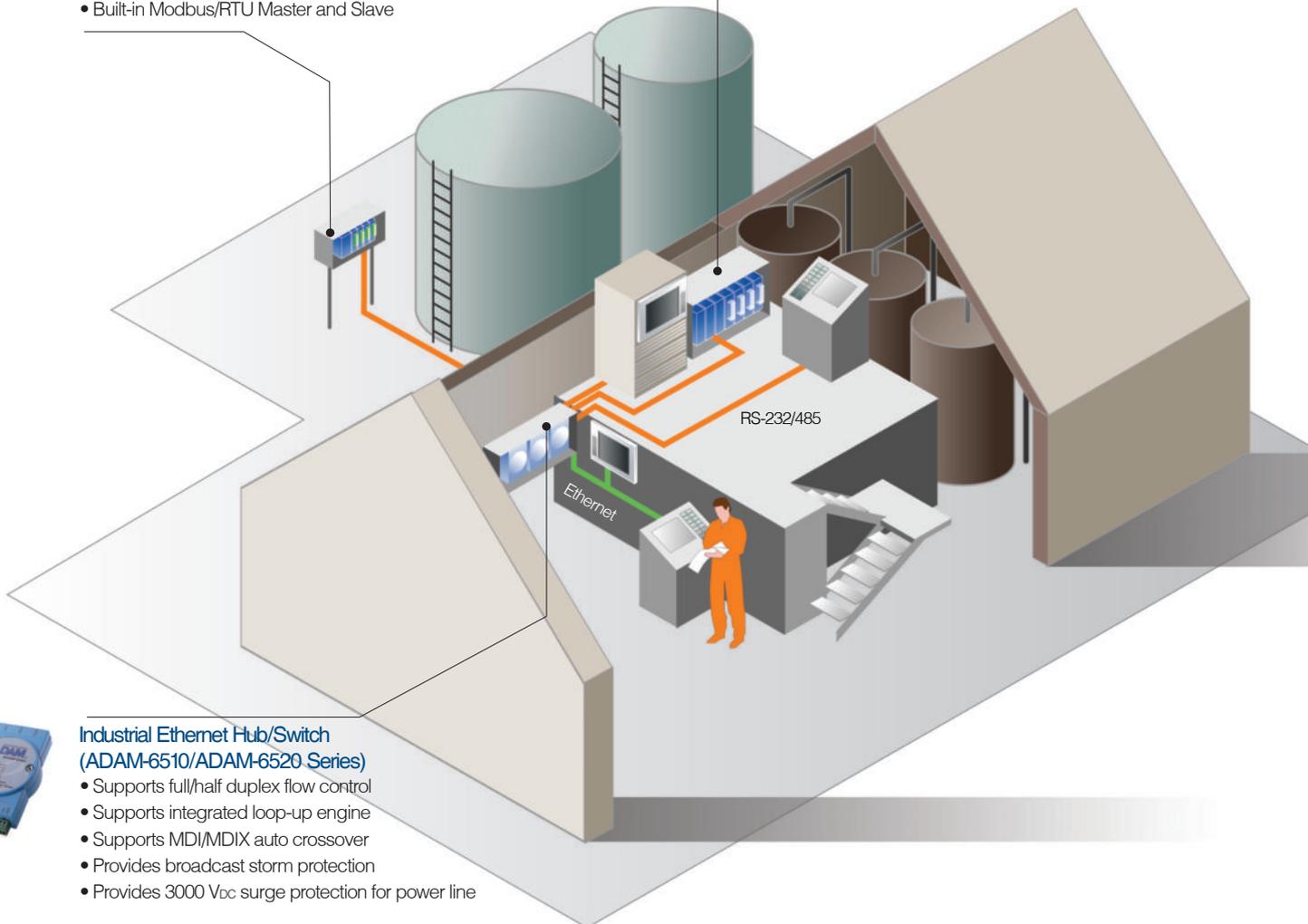
Distributed Control I/O System (ADAM-8000)

- Full-range Fieldbus for various industrial applications
- Configurable modular design for easy expansion
- High performance CPUs
- Web-based technology integrated with automation



PC-based SoftLogic Controller (ADAM-5510KW)

- Complies to the IEC-61131-3 standard, includes LD/FB/SFC/IL/ST languages and a graphical programming interface
- Cross programming language compiling capability
- Supports floating point calculation
- Built-in Modbus/RTU Master and Slave



Industrial Ethernet Hub/Switch (ADAM-6510/ADAM-6520 Series)

- Supports full/half duplex flow control
- Supports integrated loop-up engine
- Supports MDI/MDIX auto crossover
- Provides broadcast storm protection
- Provides 3000 V_{DC} surge protection for power line

Building Automation (BA)

Enhance Building Automation Management with Web-enabled Technology

Advantech has successfully implemented the eAutomation concept in diverse building automation (BA) applications to help users achieve advanced building management systems with simple Ethernet-enabled solutions. Through Ethernet-enabled technology, Security Systems, Utility Monitoring Systems, DDC Systems and CCTV Systems all integrate into one system. Moreover, web-based HMI software (Advantech Studio) provides remote monitoring capability anytime, anywhere.



Building Automation Controller (BAS-2000)

- Functional Blocks for BA facility control
- A combination of Universal I/O
- Supports IEC61131-3 control languages
- Supports Modbus/RTU and BACnet protocols



Web-enabled Operator Interface Terminal (WebOIT)

- Integrated web server technology
- A complete solution for all your control needs
- Powerful, flexible, state-of-the-art graphic screens

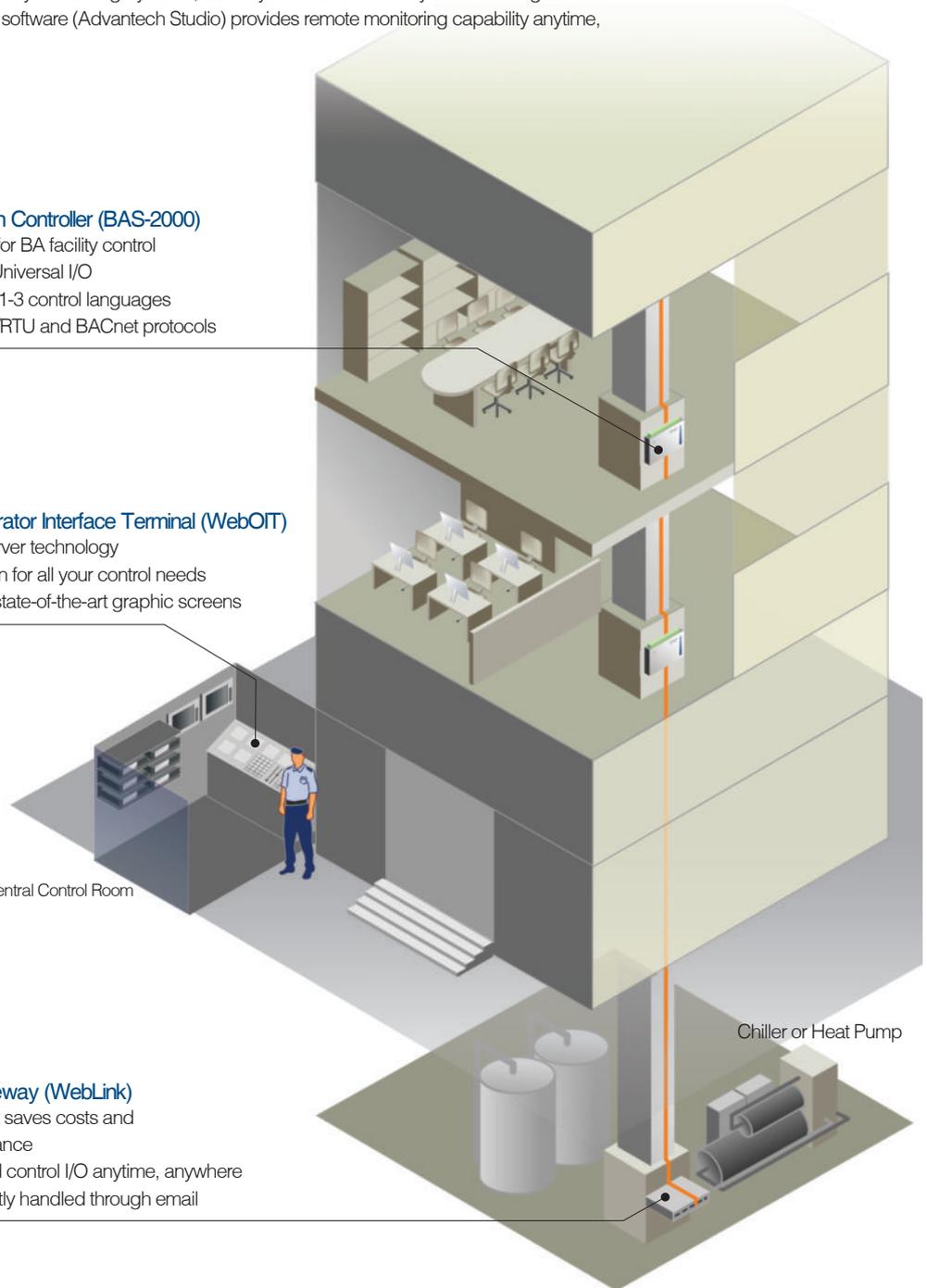
Central Control Room



Web-enabled Gateway (WebLink)

- Browser-only client saves costs and facilitates maintenance
- Remotely view and control I/O anytime, anywhere
- Alarm/event instantly handled through email

Chiller or Heat Pump



Machine Automation (MA)

Complete Application Ready Platforms for the GMC Market

Advantech offers application ready platforms that range from industrial workstations and industrial-grade CPUs, to motion control, encoder input and isolated I/O cards for general motion control (GMC) applications such as SMT/PCB, semiconductor and LCD manufacturing machinery. As machine automation develops, high density, high speed, effective distance transmissions, and convenient wiring become increasingly important for system integrators. Advantech Distributed Motion Control Solution (AMONet) is a series of products with innovative architecture that is designed for versatile industrial automation applications, and are especially suitable for motion control requirements.



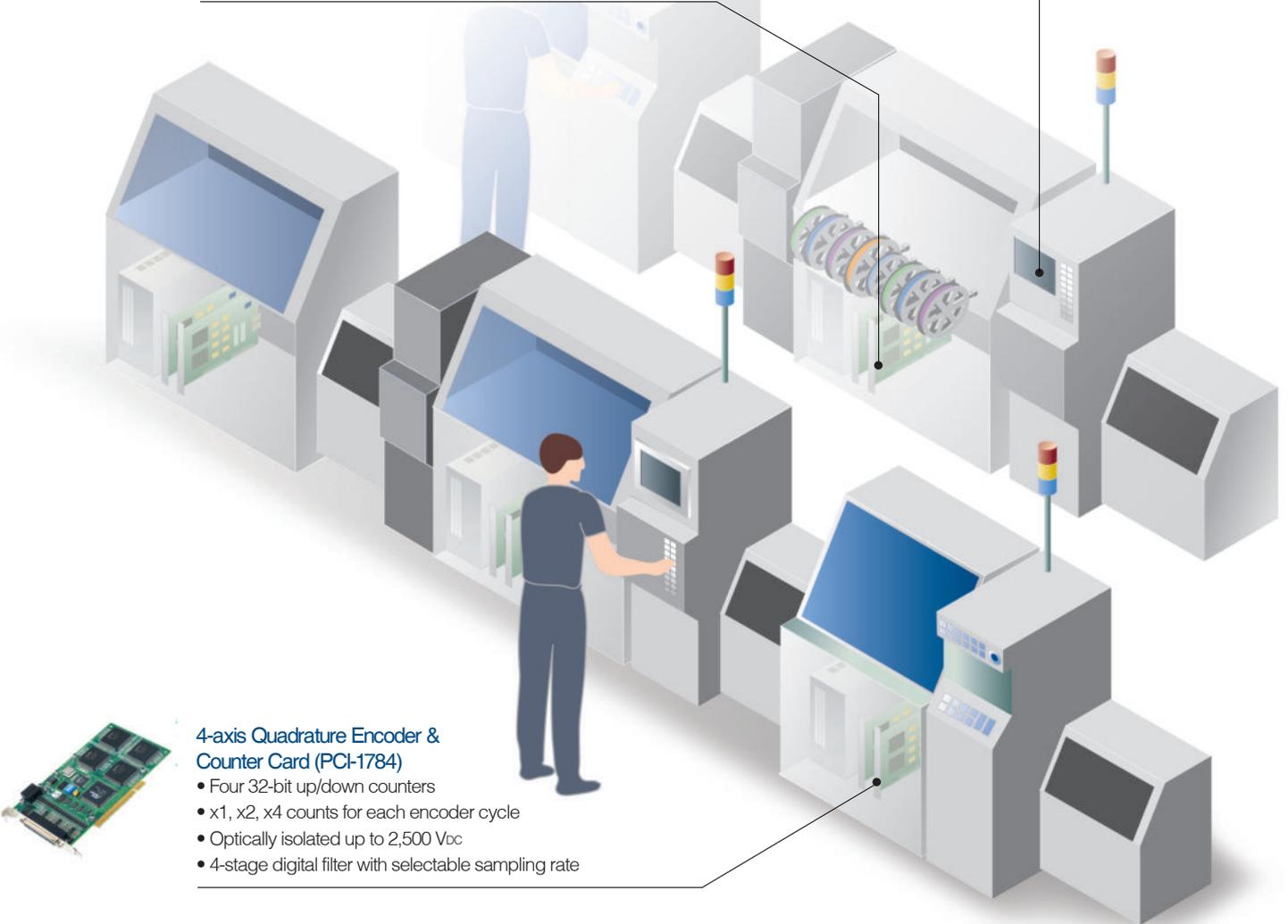
Industrial Computing Platform (AWS-8430)

- 12.1" SVGA LCD display
- 8 ISA or 4 ISA / 2 PCI / 1 CPU backplanes available
- Front accessible FDD, Power switch and CD-ROM
- Only 220 mm in depth, easy to install in constrained environments



PCI-based Motion Control Card (PCI-1247)

- 4-axis Motion Control Card with AMONet RS-485 Master
- Linear, circular and continuous interpolation
- High-speed position latch function
- Max. 64 AMONet RS-485 digital slave modules support



4-axis Quadrature Encoder & Counter Card (PCI-1784)

- Four 32-bit up/down counters
- x1, x2, x4 counts for each encoder cycle
- Optically isolated up to 2,500 V_{cc}
- 4-stage digital filter with selectable sampling rate

Automatic Test Equipment (ATE)

Complete Solution for your ATE Requirements

Prior to shipment, every manufacturer needs to verify its products to guarantee the quality. Test stations need to integrate multiple test instruments through a GPIB card to automate the tasks. The complexity of electronic-device testing varies widely, ranging from the simplest manual testing to the most complex large-scale automatic test equipment (ATE). Under the control of a PC, these test systems are usually dedicated to testing a specific component or circuit. Whether it is for higher performance and/or integration, reduced time-to-market or best cost/performance ratio, we have the solution. Advantech offers solutions that include: Industrial computers, GPIB cards, data acquisition cards, motion control cards and communication cards.



Front access/wiring Industrial PC chassis with 6.4" LCD (ATM-4023)

- 4U height 19" rackmount chassis with 6.4" TFT LCD display
- 8-slot expansion passive backplane for half-sized card (8 PCI or 8 ISA)
- Front accessible USB, PS/2 keyboard and mouse I/O interface for easy plug-in
- OSD Menu Control for brightness adjustment



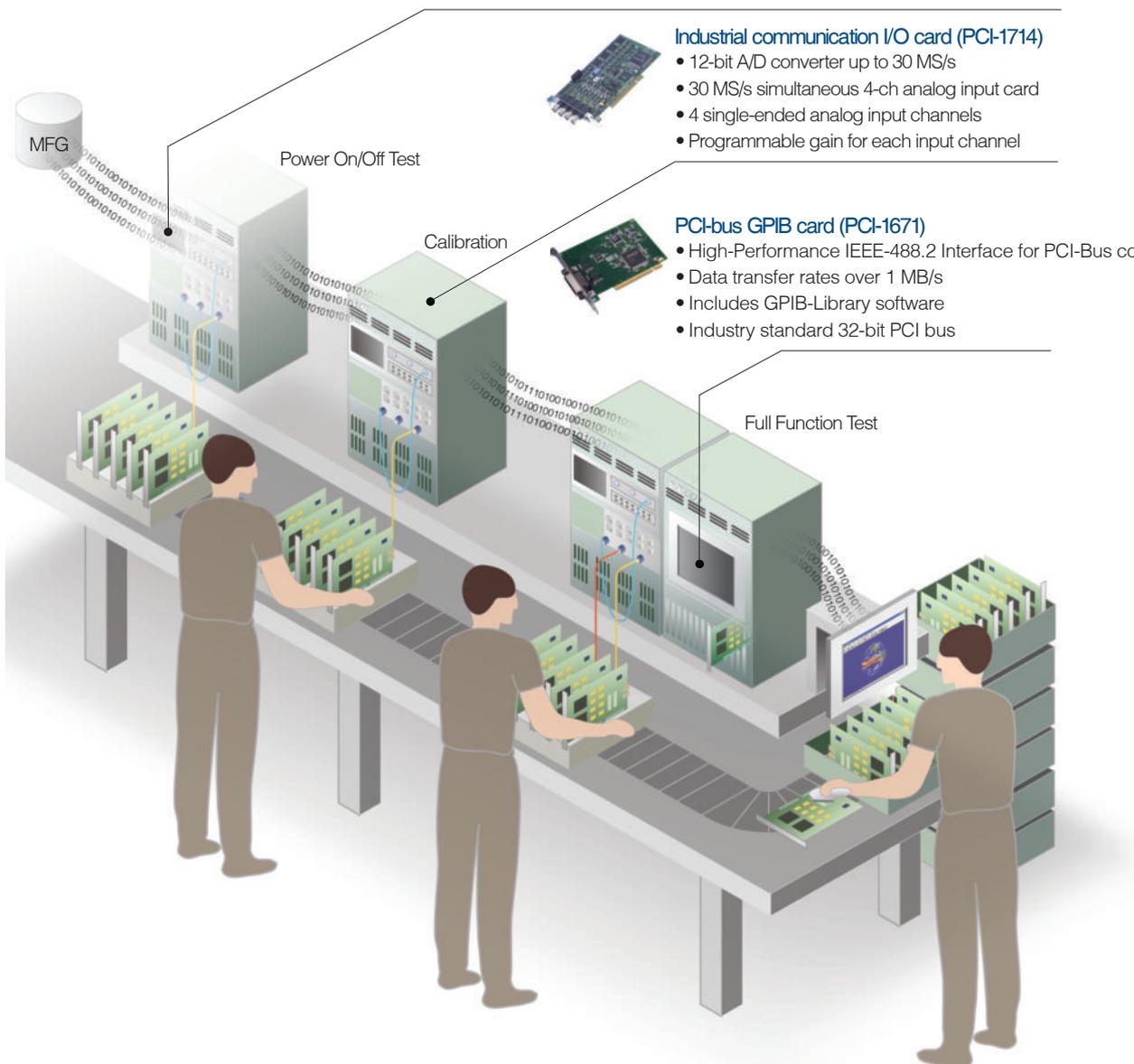
Industrial communication I/O card (PCI-1714)

- 12-bit A/D converter up to 30 MS/s
- 30 MS/s simultaneous 4-ch analog input card
- 4 single-ended analog input channels
- Programmable gain for each input channel



PCI-bus GPIB card (PCI-1671)

- High-Performance IEEE-488.2 Interface for PCI-Bus computers
- Data transfer rates over 1 MB/s
- Includes GPIB-Library software
- Industry standard 32-bit PCI bus



MIC-3000 CompactPCI Systems

The Most Reliable System to Build Up Your Mission-Critical Applications

As mission critical industrial processes become further integrated, industrial automation customers have come to demand a higher degree of system reliability. Advantech's CompactPCI system is your best choice for building any mission-critical applications. CompactPCI has been proven as a robust system for the rapid development and deployment of mission-critical applications requiring high-speed computing, modular and robust packaging design and long-term manufacturer support. Openness and Robustness from a combination of PCI bus architecture and Eurocard form factor design have made Advantech CompactPCI systems an ideal solution for tough and vibrating environments, such as transportation, military installations, avionics, industrial automation and automatic testing fields.



Industrial Chassis (MIC-3002AD/6)

- 6-slot 3U CompactPCI backplane
- Compact size, 4U high enclosure for 3U cPCI modules
- Side handle design and optional 6.4" LCD display for portable applications
- Stand feet for desktop applications



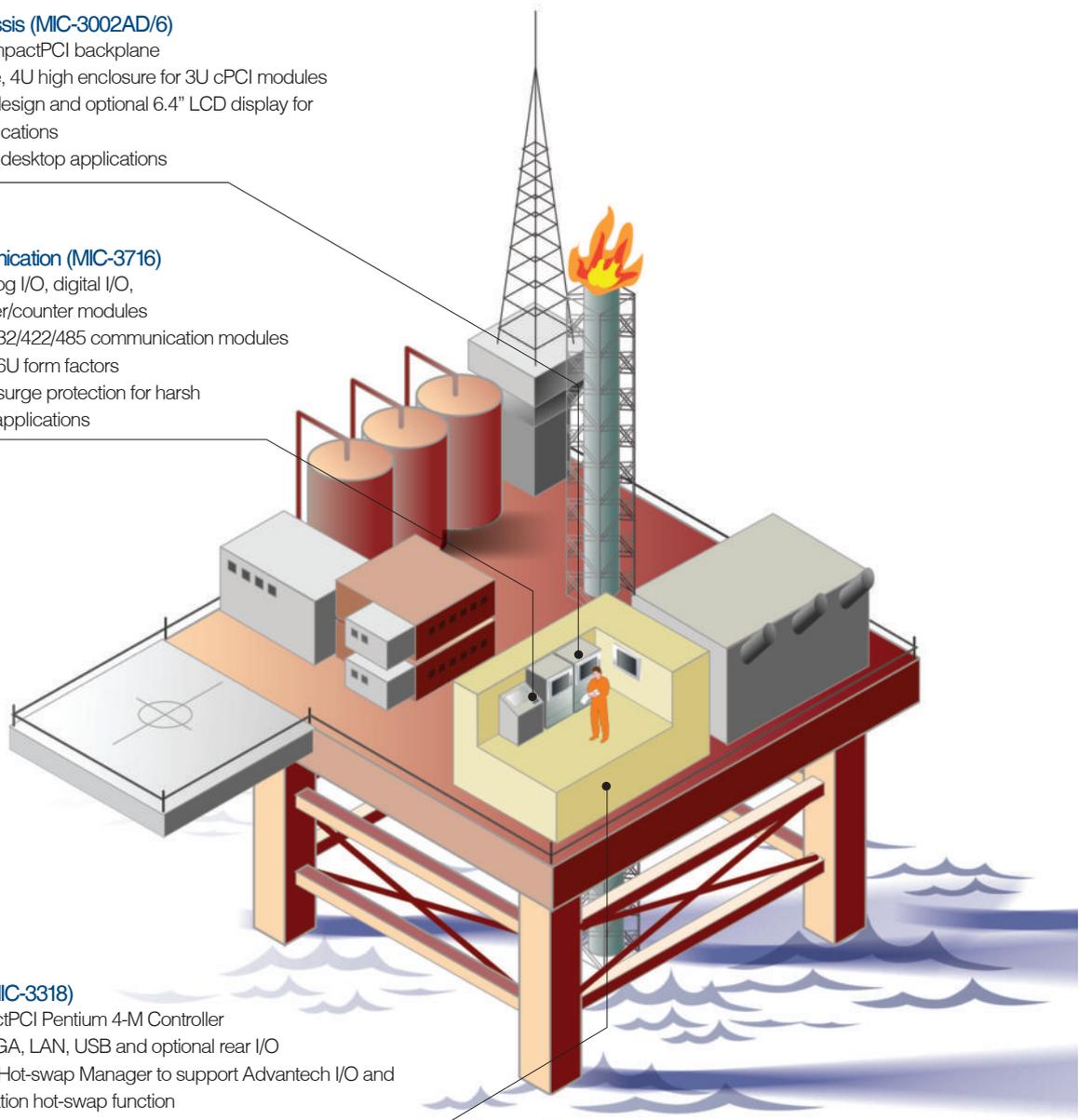
I/O & Communication (MIC-3716)

- Versatile analog I/O, digital I/O, relay and timer/counter modules
- 4/8-port RS-232/422/485 communication modules
- Supports 3U/6U form factors
- Isolation and surge protection for harsh environment applications



Controller (MIC-3318)

- 3U CompactPCI Pentium 4-M Controller
- Onboard VGA, LAN, USB and optional rear I/O
- Advantech Hot-swap Manager to support Advantech I/O and communication hot-swap function



HMI Customization Service

Deliver Your Customized HMI through Advantech's HMI Customization Service

Advantech's HMI Customization Service is a unique process that brings unlimited flexibility in developing Human Machine Interface products, and gives you unlimited business opportunities by meeting time-to-market customer requirements. With us, you can customize your projects and products by leveraging Advantech's leading technology as well as design and production flexibility. Having designed hundreds of Human Machine Interface products, we have the capability and know-how to deliver custom designs to meet your demanding project specifications.

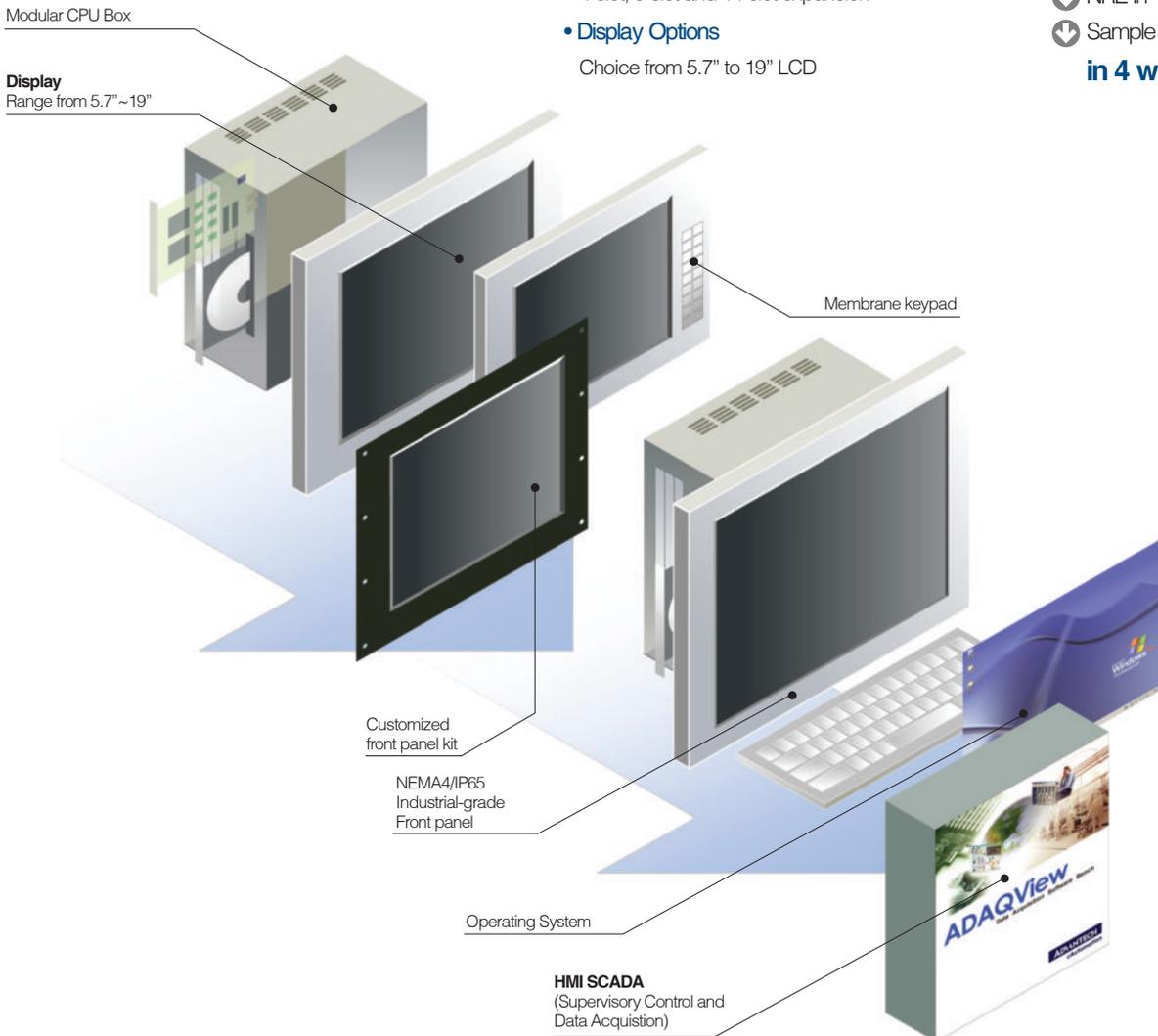
Solution Components

- **Solution Components Kernel**
Wide Range CPU Kernel options
- **Windows CE Integration Service**
- **Solution Component-Modular CPU Box**
Modular CPU Box (MCB Series)
Celeron, Pentium III and Pentium 4, 2-slot, 4-slot, 8-slot and 14-slot expansion
- **Display Options**
Choice from 5.7" to 19" LCD

How We Make It

- ↓ Project Request
- ↓ Preliminary Spec. & Layout Confirmation
- ↓ Sales Quotation
- ↓ Confirm Price
- ↓ Contract Signing
- ↓ NRE in
- ↓ Sample Available

in 4 weeks



Human Machine Interfaces

Seamless Integration Between Humans and Machines

Advantech offers a wide range of HMI products for automation needs. We offer not only hardware platforms such as the industrial panel PC (IPPC), the industrial workstation (AWS), the flat panel monitor (FPM) and the touch panel computer (TPC), but also very powerful NT/CE and Linux-based HMI solutions to easily migrate applications up or down as the scope changes.

Touch Panel Computers



TPC-1260G/1260H

Crusoe 5800 Touch Panel Computer with 12.1" SVGA TFT LCD Display

- 12.1" SVGA TFT LCD with touch screen
- Fanless design with 1 GHz Transmeta CPU
- NEMA4/IP65 compliant AH-Mg front panel
- 1000Base-T Ethernet supports PC/104-Plus expansion slot



TPC-60S

ARM9 Touch Panel Computer with 5.7" QVGA STN LCD Display

- 5.7" QVGA STN LCD with touch screen
- Fanless design with ARM9 266 MHz
- NEMA4/IP65 compliant front panel
- Windows CE .NET OS support
- External CompactFlash slot for storage and communication



TPC-1560H

Crusoe 5800 Touch Panel Computer with 15" XGA TFT LCD Display

- 15" XGA TFT LCD with touch screen
- Fanless design with 1 GHz Transmeta CPU
- NEMA4/IP65 compliant AH-Mg front panel
- 1000Base-T Ethernet support PC/104-Plus expansion slot

Flat Panel Monitors



FPM-3191GA

Industrial 19" Flat Panel Monitor with Direct-VGA Port

- 19" SXGA TFT LCD with resolution up to 1280 x 1024
- Stainless steel chassis with NEMA4/IP65 compliant aluminum front panel (stainless steel optional)
- Multi-scan function supports SXGA, XGA, SVGA, VGA, text mode
- Supports panel, rack mount or VESA arm mounting
- Capacitive touch screen support (option)
- Hard anodic coating to prevent panel abrasion and acid corrosion
- Stainless steel stand for freestanding applications

Industrial Workstation and Platforms



AWS-8100G

Industrial Workstation with 10.4" LCD

- 10.4" TFT LCD Display
- SVGA Resolution : 800 x 600
- High Brightness LCD: 230 nits
- LCD backlight can be turned on/off by OSD key
- 9 Expansion Passive Backplane: 4 PCI/4 ISA/1 CPU or 6 PCI/2 ISA/1 CPU
- Supports up to P4-grade CPU card with Video A/D Board
- Easy installation of add-on cards



ATM-4233

4U 14-slot Industrial Automation Chassis with 6" LCD

- 4U height 19" rackmount chassis with 6" TFT LCD display.
- Integrated Video A/D Board ensures CPU card compatibility up to Pentium 4
- 14-slot expansion passive backplane
- Front accessible, easy installation disk drive bays to hold 3 vibration damped, 5.25" drives
- OSD control for Brightness adjustment
- Applicable for industrial automation control and monitoring
- Suitable for Automatic Testing Equipment and Production Line Tester

Industrial Panel PCs



IPPC-9150G

Rugged Intel Pentium III/ Celeron Industrial Panel PC with 15" LCD

- Socket 370 CPU structure supports Intel Pentium III processor up to 1.26 GHz and Celeron processor up to 1.3 GHz
- 15" XGA TFT LCD provides vivid, sharp and large images
- Offers two expansion slots for PCI/ISA add-on cards
- Heavy duty stainless steel chassis with aluminum front panel
- Strengthened glass protects the front panel from shock damage and is NEMA4/IP65 compliant
- Supports panel, rack mount and swing arm



IPPC-9120G

Rugged Intel Pentium III/ Celeron Industrial Panel PC with 12.1" LCD

- Socket 370 CPU structure supports Intel Pentium III processor up to 1.26 GHz and Celeron processor up to 1.3 GHz
- 12.1" SVGA TFT LCD provides vivid, sharp and large images
- Offers two expansion slots for PCI/ISA add-on cards
- Heavy duty stainless steel chassis with aluminum front panel
- Strengthened glass protects the front panel from shock damage and is NEMA4/IP65 compliant
- Supports panel, rack mount and swing arm

Industrial I/O

Excellence in PC-based Measurement and Automation

With over 22 years of plug-in I/O card design and manufacturing experience, Advantech has become a global leader, providing a full range of industrial data acquisition and control products. There are five major categories - CompactPCI, PCI-bus, ISA-bus, PC/104 modules and motion control products. With rich wiring terminal modules and software support, Advantech provides high-speed, high-quality, yet cost-saving products for industrial requirements. Moreover, bundled with versatile industrial PC chassis, backplanes, CPU modules, flat panel monitors and embedded controllers, Advantech offers a one-stop shopping solution to serve all your needs.

PCI-bus Data Acquisition & Control Cards



PCI-1718H DU

12-bit Multifunction Card with PCI Bus

PCI-1718H GU

12-bit High-gain Multifunction Card with PCI Bus

- 16 single-ended or 8 differential analog inputs
- 12-bit A/D converter
- Programmable gain for each input channel
- Automatic channel/gain/SD scanning
- On-board FIFO for AI
- One 12-bit analog output channel
- 16 digital inputs and 16 digital outputs
- PCI-bus mastering for data transfer
- Universal PCI bus (supports 3.3 V or 5 V PCI bus signal)
- BoardID™ switch support



PCI-1758U DO

128-ch Isolated Digital Output Card

- 128 isolated digital output channels
- High-voltage isolation on output channels (2,500 V_{DC})
- Wide output range (5 ~ 40 V_{DC})
- High-sink current for isolated output channels (90 mA max./Channel)
- Current protection for each port
- Universal PCI and BoardID™ switch support
- Output status read-back
- Digital output value retained after hot system reset
- Programmable power-up states
- Watchdog timer



PCI-1741U

16-bit, 200 kS/s Low Cost Multifunction Card

- 16-bit high resolution
- 200 kS/s sampling rate
- Auto calibration function
- 16 S.E. or 8 Diff. AI, or a combination
- One 16-bit analog output channel
- 1 K samples FIFO for AI
- Universal PCI bus (supports 3.3 V or 5 V PCI bus signal)
- BoardID™ switch support



PCI-1758U DI

128-ch Isolated Digital Input Card

- 128 isolated digital input channels
- Wide input range (5 ~ 25 V_{DC})
- High ESD protection (2,000 V_{DC})
- Digital filter function
- Universal PCI and BoardID™ switch support
- Interrupt handling capability for each channel (128-ch)



PCI-1751U

48-bit Digital I/O and Counter Card

- 48 TTL digital I/O lines
- Emulates mode 0 of 8255 PPI
- Buffered circuits for higher driving capacity than 8255
- Interrupt handling
- Timer/Counter interrupt capability
- Supports both dry and wet contact
- Keeps the I/O port setting and DO state after system reset
- Universal PCI and BoardID™ switch support



PCI-1714U L

10 MS/s Simultaneous 4-ch Analog Input Card

- 12-bit A/D converter up to 10 MS/s
- 4 single-ended analog input channels
- Programmable gain for each input channel
- 8k samples on-board FIFO memory
- 4 A/D converters simultaneously sampling
- Multiple A/D triggering modes
- Programmable pacer/counter
- Universal PCI and BoardID™ switch support



PCI-1747U

250 kS/s 16-bit, 64-ch Analog Input Card

- 16-bit A/D converter up to 30 MS/s
- 4 single-ended analog input channels
- Programmable gain for each input channel
- 32 K samples on board FIFO memory
- Multiple A/D triggering modes
- Programmable pacer/counter
- Universal PCI and BoardID™ switch support



PCI-1763U P

8-ch Relay and 8-ch Isolated D/I Card

- 8 relay output channels and 8 isolated digital input channels
- LED indicators to show activated relays
- 4 Form C and 4 Form A type relay output channels
- Output status read-back
- Retain relay output values at hot system reset
- High-voltage isolation on input channels (3,750 V_{DC})
- High ESD protection (2,000 V_{DC})
- High over-voltage protection (70 V_{DC})
- Wide input range (10 ~ 50 V_{DC})
- Interrupt handling capability
- Universal PCI and BoardID switch support
- Low Profile

New Product Highlights

Industrial I/O

PCI-bus Data Acquisition & Control Cards



PCI-1760U

8-ch Relay Actuator and Isolated DI Card

- 8 opto-isolated digital input channels
- 8 relay actuator output channels
- 2 opto-isolated PWM outputs
- LED indicators to show activated relays
- Jumper selectable dry contact/wet contact input signals
- Up event counters for DI
- Programmable digital filter function for DI
- Pattern match interrupt function for DI
- "Change of State" interrupt function for DI
- Universal PCI and BoardID switch support



PCI-1720U

4-channel Isolated Analog Output Card

- Four 12-bit D/A output channels
- Multiple output ranges
- 2500 V_{oc} isolation between the outputs and the PCI bus
- Keeps the output settings and values after system reset
- One DB37 connector for easy wiring
- Fully compatible with PCI-1720



PCI-1727U

12-channel D/A Output Card

- 12 independent analog output channels
- Multiple output range, including 4~20 mA current loop
- 16 DI and 16 DO channels
- Fuse on each channel
- Universal PCI and BoardID switch support

GPIB Card



PCI-1671

High-Performance IEEE-488.2 Interface for PCI-Bus Computers

- IEEE 488.2 Standard interface
- Complete Talker/Listener/Controller
- Industry-standard 32-bit PCI bus
- Data transfer rates over 1 MB/s
- REP-INSW block transfer
- 1024-word FIFO buffer
- High-Speed State Machine Bus Manager
- 7 Interrupt lines, shared interrupt capability
- Transparent interrupt enabling/disabling
- Includes GPIB-Library software

Portable Data Acquisition Modules



USB-4711

100 kS/s, 12-bit USB Multifunction Module

- Supports USB 2.0
- Portable
- No need for external power
- 16 analog input channels
- 12-bit resolution AI
- Sampling rate up to 100 kS/s
- 16 DI/O, 2 AO and 1 32-bit counter (USB-4711L w/o AO)
- Wiring terminal on Modules



USB-4716

100 kS/s, 16-bit USB Multifunction Module

- Supports USB 2.0
- Portable
- No need for external power
- 16 analog input channels
- 16-bit resolution AI
- Sampling rate up to 100 kS/s
- 16 DI/O, 2 AO and 1 32-bit counter (USB-4716L w/o AO)
- Wiring terminal on Modules



USB-4718

8-channel Thermocouple Input Module

- Supports USB 2.0
- Portable
- No need for external power
- 8 thermocouple input channels
- 3000 V_{oc} isolation
- Supports 4~20mA
- Wiring terminal on Modules

Motion Control Series



PCI-1243

4-axis Low Cost Stepping Motor Control Card

- Up to 400 kpps pulse output rate
- T-curve acc/dec
- Pulse/Dir and CW/CCW pulse output mode
- Up 24-bit step count
- Opto-Isolated Digital input and output
- Up to 1500 V_{rms} system isolation



PCI-1247

4-axis Motion Control Card with AMONet RS-485 Master

- Max. 6.5 MHz, 4-axis pulse output
- Linear, circular and continuous interpolation
- High speed position latch function
- Manual pulse generator input interface
- Simultaneous start/stop on multiple axes
- Programmable acceleration and deceleration time
- Programmable pulse output and interrupt
- Position compare and trigger output
- 1 ring of AMONet RS-485 master
- Programmable baud-rate up to 20 Mbps transfer rate
- Max. 64 AMONet RS-485 digital slave modules support
- Easy installation with RJ45 phone jack and LED diagnostic



PCI-1241

4-axis Voltage-type Servo Motor Control Card

- PCI Bus interface
- 4-axis servo positioning control
- 5-channel encoder input
- 4 channel 16-bit D/A converters
- 13 dedicated inputs and 5 dedicated outputs
- 6 channel 12-bit A/D converter (Optional)
- 256 remote serial input/ output interfaces



PCM-3202

PC/104 AMONet RS-485 Master Card

- Max. 20 Mbps transfer rate
- Supports 2 independent AMONet RS-485 rings
- Supports up to 128 AMONet RS-485 slave modules
- Easy installation with RJ45 phone jack and LED diagnostics
- Max. 100 m (20 Mbps / 64 slave modules) communication distance



PCM-3240

4-axis Stepping/Pulse-type Servo Motor Control Card

- Independent 4-axis motion control
- Hand wheel and jog function
- 2/3-axis linear interpolation function
- 2-axis circular interpolation function
- Continuous interpolation function
- Programmable T/S-curve acceleration/deceleration rate
- Up to 4 MPS pulse output for each axis
- Two pulse output types: up/down or pulse/direction
- Up to 1 MHz encoder input for each axis
- Two encoder pulse input types: A/B phase or up/down or pulse/direction
- Constant speed control
- Position management and software limit switch function
- Universal PCI and BoardID switch support



ADAM-3210

1-Axis AMONet RS-485 Motion Slave Module Series

- 1-Axis motion slave module series
- DIN rail mounting (L-124 x W-72 x H-53 mm)
- Max. 20 Mbps transfer rate
- Max. 6.5 MHz, 1-axis pulse output
- 28-bit counter for incremental encoder
- Programmable acceleration and deceleration time
- T-curve and S-curve velocity profiles support
- Change speed/position on-the-fly
- Simultaneous start/stop on multiple motion control modules
- Easy installation with RJ45 phone jack and LED diagnostic
- Easy installation for servo or stepping motor driver

CompactPCI



MIC-3316

3U CompactPCI Ultra Low Voltage Intel Celeron 650 MHz Controller

- Built-in Ultra Low Voltage Intel Celeron 650 MHz
- Supports up to 384 MB SDRAM
- One on-board CompactFlash socket
- Four RS-232/422/485 ports
- Four USB ports
- One 10/100 Mbps Ethernet port
- Watchdog timer



MIC-3723

16-bit, 8-ch Non-isolated Analog Output Card

- 16-bit high resolution
- 8 Analog output channels
- Supports hot swap function
- Auto-calibration
- BoardID switch

Industrial Communication

Full-range Industrial Communication Solutions

Advantech Industrial Communication series include industrial communication cards and Fieldbus communication cards that offer cost-effective ways to add communication ports to your PC workstation, and industrial converters that connect control field devices to plant level systems. Industrial communication cards and Fieldbus communication cards support PCI-bus, ISA-bus, PC/104 and PC/104-Plus to fit into versatile industrial automation platforms. The industrial Ethernet series provides cost-effective Ethernet hub / switch / fiber optic connectivity for industrial environments. The Ethernet Data Gateway series provides off-the-shelf solutions linking traditional serial devices to Ethernet networks.

Universal PCI-bus Communication Card



PCI-1622CU

8-port RS-422/485 Universal PCI Comm. Card w/ Surge & Isolation Protection

- PCI Specification 2.2 compliant
- Speeds up to 921.6 kbps
- 16PCI954 UARTs with 128-byte FIFOs standard
- I/O address automatically assigned by PCI Plug & Play
- OS supported: Windows98/ME/2K/XP, Linux
- Interrupt status register for increased performance
- Powerful and easy to use Utility(COM Tools)
- 2,500 V_{dc} Surge & Isolation Protection

Wireless Gateway and Application Module



ADAM-4570W

2-port RS-232/422/485 to WLAN Ethernet Data Gateway

ADAM-4571W

1-port RS-232/422/485 to WLAN Ethernet Data Gateway

- Supports 802.11b standard
- Supports Wireless LAN Ad-Hoc and Infrastructure modes
- Supports high transmission speeds up to 230 kbps
- Supports advanced security mechanism to avoid unauthorized access
- Auto-reconnection
- Auto-detection
- Easily managed Port Mapping Utility
- Supports Windows98/NT/2000/XP driver
- Surge protection for RS-485 line and power supply

Network Hubs/Switches/Fiber Optic Converters



EDG-6528I

8-port Industrial-grade 10/100 Mbps Ethernet Switch w/Wide Operating Temperature

- Provides 8 x 10/100 Mbps Ethernet ports with RJ-45 connector
- Supports full/half duplex flow control
- Supports MDI/MDIX auto crossover
- Provides broadcast storm protection
- Embedded with a switch controller, supports auto-negotiation
- Embedded with the memory buffer, supports store-and-forward transmission
- Supports +10 ~ 48 V_{dc} voltage
- Provides 3000 V_{dc} surge protection for power line
- Supports 4000 V_{dc} Ethernet ESD protection
- Provides flexible mounting: DIN rail and panel-mounting
- Supports wide-range operating temperature: -40 ~ 85° C (EDG-6528I)
- Supports two power sources



EDG-4100W

1-port RS-232 to WLAN Data Gateway Module

EDG-4110W

1-port RS-422/485 to WLAN Data Gateway Module

- Supports 802.11b standard
- Supports high transmission speed up to 230 kbps
- Supports LED indicators for easy diagnosis
- Provides RS-232 (EDG-4100W), 422/485 (EDG-4110W) interfaces
- Supports TCP/IP protocol
- Provides 8 universal digital inputs/outputs for emergent ON/OFF control
- Easy configuration via utility
- Supports Windows 98/NT/2000/XP driver
- Automatic RS-485 data flow control (EDG-4110W)
- Easy to mount through backside PIN connectors



EDG-6528M

Industrial Switch with 6 10/100 Mbps Ethernet Ports & 2 Multi-mode Fiber Ports

EDG-6528S

Industrial Switch with 6 10/100 Mbps Ethernet Ports & 2 Single-mode Fiber Ports

- Provides 6 x 10/100 Mbps Ethernet ports with RJ-45 connector
- Provides 2 x 100 Mbps multi-mode (EDG-6528M) / single-mode (EDG-6528S) fiber ports
- Supports full/half duplex flow control
- Supports MDI/MDIX auto crossover
- Provides broadcast storm protection
- Embedded with a switch controller, supports auto-negotiation
- Embedded with the memory buffer, supports store-and-forward transmission
- Supports +10~48 V_{dc} voltage
- Provides 3000 V_{dc} surge protection for power line
- Supports 4000 V_{dc} Ethernet ESD protection
- Provides flexible mounting: DIN rail and panel-mounting
- Supports wide-range operating temperature (0 ~ 70° C)

eAutomation

Advantech Provides Complete eAutomation Solutions

Advantech offers complete eAutomation Solutions like the UNO-2000 and UNO-3000 industrial-grade fanless PCs, the ADAM-4000 remote DA&C modules, the ADAM-6000 Smart Web I/O modules, the ADAM-5000 Ethernet SoftLogic Controllers, and the new BAS-2000 Building Automation System.

The Industrial-grade Fanless PC: UNO-2000 & UNO-3000 Series



UNO-3062

Front Access Fanless PC with Two PCI Extensions

- On-board Celeron 400/650 MHz, 256/512 MB SDRAM
- Provides 512 KB battery-backup RAM
- Two RS-232 and two RS-232/422/485 ports with RS-485 automatic flow control
- Two 10/100Base-T RJ-45 ports and four USB ports
- Two free PCI-bus slots extension for versatile applications
- Industrial proven design; anti-shock up to 50 G, anti-vibration up to 2 G
- 4-ch isolated DI, 4-ch isolated DO with timer, counter and interrupt handling
- Windows XP embedded
- Windows 2000/XP driver ready
- All connectors are on the front side of the housing
- Flexible mounting plates on three sides (optional)
- Supports dual power inputs



UNO-2051

GX1-300 UNO with 64 MB SDRAM, 2 x RS-232, 2 x RS-232/422/485, LAN, USB, 8-ch isolated DI/O and 4-ch isolated AI

- On-board GX1-300 MHz, 64/128 MB SDRAM
- Two RS-232 and two isolated RS-232/422/485 with automatic data flow control
- One 10/100Base-T RJ-45 port and USB 1.0 port
- 4-ch isolated DI and 4-ch isolated DO with counter and timer
- 4-ch isolated AI
- One programmable diagnostic LED and buzzer
- Supports Modbus/RTU and Modbus/TCP devices
- Supports ADAM series for remote data acquisition and control
- Windows CE .NET ready solution



UNO-2058

GX1-300 Universal Network Controller with GPS/GPRS Communication

- On-board GX1-300MHz, 64/128MB SDRAM
- Two RS-232/485 ports and one RS-232/422/485 port.
- RS-485 automatic flow control
- One 10/100Base-T RJ-45 port
- Supports GPS positioning
- Supports GSM/GPRS communication
- Isolated 4-channel DI and 4-channel DO
- One programmable diagnostic LED and buzzer
- Supports Modbus/RTU and Modbus/TCP devices
- Supports the ADAM series for remote data acquisition and control
- Windows CE .NET ready solution

eAutomation

Remote DA&C Modules ADAM-4000



ADAM-4501

Ethernet-enabled Communication Controller

- 10/100Base-T Ethernet interface
- Supports sending email for alarm function
- Built-in web server function
- Built-in FTP server and client function
- Supports modularized expansion I/O modules
- Full functions of standard TCP and UDP sockets
- Optional 4 digit 7-segment LED display
- Supports Modbus/RTU and Modbus/TCP function libraries
- 1.5 MB Flash ROM/640 KB SRAM
- Four serial ports available
- Integrates all operations in Windows utility



ADAM-4069

8-channel Power Relay Output Module

- 8 form A channels
- AC: 250V@5A, DC: 30V@5A contact rating
- 1,000 V_{AC} (50/60 Hz) breakdown voltage
- 1,000Ω minimum at 500 V_{DC} insulation resistance



ADAM-4019+

8-channel Universal Analog Input Module

- 16-bit effective resolution
- 8 differential channels for individual input type
- Thermocouple, mV, V, mA input types
- +/-1V, +/-2.5V, +/-5V, +/-10V, +/- 100mV, +/-500mV, +/-20mA, +4~20mA input ranges
- Thermocouple Type J, K, T, E, R, S, B
- Burn-out Detection +4~20mA & All T/C
- Isolation voltage 3000 V_{DC}
- Fault and over-voltage protection
resists over-voltage up to 35 V

Smart Web I/O Modules ADAM-6000



ADAM-6501

Web-Enabled Universal Communication Controller

- Powerful Ethernet-enabled communication controller in a small package
- Built-in Windows CE .NET to run embedded Ethernet applications
- Built-in web server
- Microsoft embedded VC++ development environment supported
- Built-in CompactFlash slot
- 32 MB Flash disk for Windows CE and user's AP
- Built-in real-time clock and watchdog timer
- Offers 1xRS-232 and 1xRS-485 serial communication port
- Automatic data flow control in RS-485 mode
- Communication speed up to 115.2 kbps
- Easy to mount on a DIN-rail or panel



ADAM-6050W

Wireless Web-enabled 18-channel D/I/O Module

ADAM-6060W

Wireless Web-enabled 6-channel Relay Output Module

- Supports IEEE802.11b Wireless LAN
- Built-in web page
- Supports Modbus/TCP & UDP protocol
- Supports event trigger function



ADAM-6066

6 DI/6 Power Relay Module

- 6 relay & 6 DI I/O type
- AC: 250 V @ 5 A, DC: 30 V @ 5 A contact rating
- Breakdown voltage: 500 V_{AC} (50/60 Hz)
- 1,000Ω minimum at 500 V_{DC} insulation resistance

Ethernet SoftLogic Controllers ADAM-5000



ADAM-5510EKW/TP

8-slot Ethernet-enabled SoftLogic Controller

- IEC-61131-3 standard package
- 10/100Base-T Ethernet interface
- Built-in Modbus/TCP server
- Supports Modbus/TCP client
- Support Modbus/RTU Master
- Supports Modbus/RTU Slave
- Supports MULTIPROG via Ethernet
- LD/FB/SFC/L/ST Languages
- Cross-language compiling program
- 8 I/O slots base and handles up to 128 Local I/O Points
- Supports AI/AO/DI/DO/Counter Function Blocks

Building Automation System BAS-2000

**ADAM-5510KW**

PC-based SoftLogic Controller

ADAM-5510EKW

8-slot PC-based SoftLogic Controller

- LD/FB/SFC/IL/ST language
- Graphical programming interface
- Cross programming language compiling capability
- Supports floating point calculation
- Supports AI/AO/DI/DO/Counter Function Blocks
- Powerful debug tool
- Built-in Modbus/RTU Master and Slave
- Supports up to 128 Local I/O Points
- Handles typical 32 Modbus/RTU remote I/O modules
- Supports more than 9000 coils in LD language
- Supports 3 serial ports including 1 RS-485 and 2 RS-232/485 ports

**BAS-2514**

14-channel Softlogic Digital Controller

BAS-2520

20-channel Softlogic Digital Controller

- Stand-alone programmable controller
- Pre-built BA control function blocks
- Support IEC61131-3 control languages
- Support Modbus/RTU and BACnet protocols
- Up to 115.2 kbps communication speed
- Max. I/O expansion up to 80 points for unique controller
- Built-in watchdog timer
- Wall mounting panel case

**ADAM-5510/TCP**

Ethernet-enabled Programmable Controller

ADAM-5510E/TCP

8-slot Ethernet-enabled Programmable Controller

- 10/100Base-T Ethernet interface
- Support Web Server function
- Support Email Alarm function
- Support FTP Server and Client functions
- Support Modbus/TCP Server and Client function libraries
- Support Modbus/RTU Master and Slave function libraries
- 1.5 MB Flash ROM (960 KB for user applications)
- 640 KB SRAM (384 KB for battery backup)
- ROM-DOS operating system
- Watchdog timer and real-time clock
- 4 serial communication ports
- 4 or 8 I/O slot extension

**BAS-2014**

14-channel I/O Expansion

BAS-2020

20-channel I/O Expansion

- I/O expansion module for BAS-2514 and BAS-2520
- Local bus connection with BAS-2514 and BAS-2520
- Up to 2 meters expansion
- Power supplied by BAS-2514 and BAS-2520 through local bus cable, no external power supply required
- Wall mounting panel case

**ADAM-5017UH**

8-channel Ultra High Speed Analog Input Module

- 8 differential channels
- 12-bit resolution
- mV, V, mA input types
- +/- 10V, +0~10V, 0~20mV, +4~20mA input ranges
- 3000 V_{DC} isolation voltage
- 200K (single channel), 35K (8 channel) sampling rate
- Bandwidth 200 kHz
- Accuracy $\pm 0.1\%$ or better
- Signal input bandwidth 200 kHz for both voltage and current inputs
- Power consumption 1.75 W (typical); 2.2 W (max)
- CMR @ 50/60 Hz 92 dB min

**BAS-4022T**

Dual Loop PID Controller

- 2 loop PID control algorithms built into one package
- 2 analog inputs / 1 analog output / 1 digital input / 1 digital alarm output for 1 PID loop
- Analog input signal : 4~20 mA, 0~10 V_{DC}, 3K & 10K thermistor
- Analog output signal : 0~10 V_{DC}, 0~20 mA, 4~20 mA
- Heating/Cooling (Direct/Reverse) Action Mode
- Loop open/close (PID disable/enable) and analog output manual control modes Prog. memory 512 KB
- First order filter
- System emergency shutdown
- Modbus/RTU protocol support

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The Basics of Web-enabled Automation

Maintenance

Technicians can monitor equipment and respond to problems more quickly



Operators

SCADA/HMI software provides local operator control connection through a browser, allowing users to interact with the process from anywhere

Support & Service

With better information available from anywhere at any time, your support & service staff can be more efficient



Sales

Better information about manufacturing schedules and inventory levels enable new pricing and selling models



Decision Makers

Real-time information through the internet can help manage inventory and reveal process bottlenecks.

Web-Enabled Automation- What is it?

The word "automation" needs no definition, but what about "web enabled"? Web enabled means real time access to data and control virtually anytime and from anywhere it's required. This is a very broad claim, and statements like this have been and are being made all the time. So what's different now? To oversimplify a bit, we can now think in terms of merging the world of the "consumer Internet" (cheap, fast, readily available access to almost everything from anywhere at anytime) with the traditional automation world (expensive, proprietary, limited accessibility, islands of knowledge). Most importantly, this merging goes well beyond the "horizontal" integration of standard B2B and B2C implementations. Web enabled automation drives this real time accessibility "vertically" down to the level where things are actually being produced, ordered, shipped, tested, stocked, etc. Web enabled automation can also be thought of as "visible automation".

What will web enabled automation do for me? Why do I need it?

So what can we do with this accessibility? We can now check production data on a critical process, machine, or orders in real time, without waiting on batch reports. Or, have a system notify a technician that it needs "help" via e-mail to a PC, PDA, or phone. Or, have a system linked in real-time to suppliers and customers to handle restocking or shipping. Or, collect data from many distributed machines or processes in real-time, analyze it, and send new optimized parameters back, all using the existing Internet/Intranet infrastructure. We now have a distributed, adaptive, closed loop factory.

OK, so some good, interesting, and useful things are possible. But why would anyone need this kind of access? Because all customers are coming to expect "real-time" deliveries

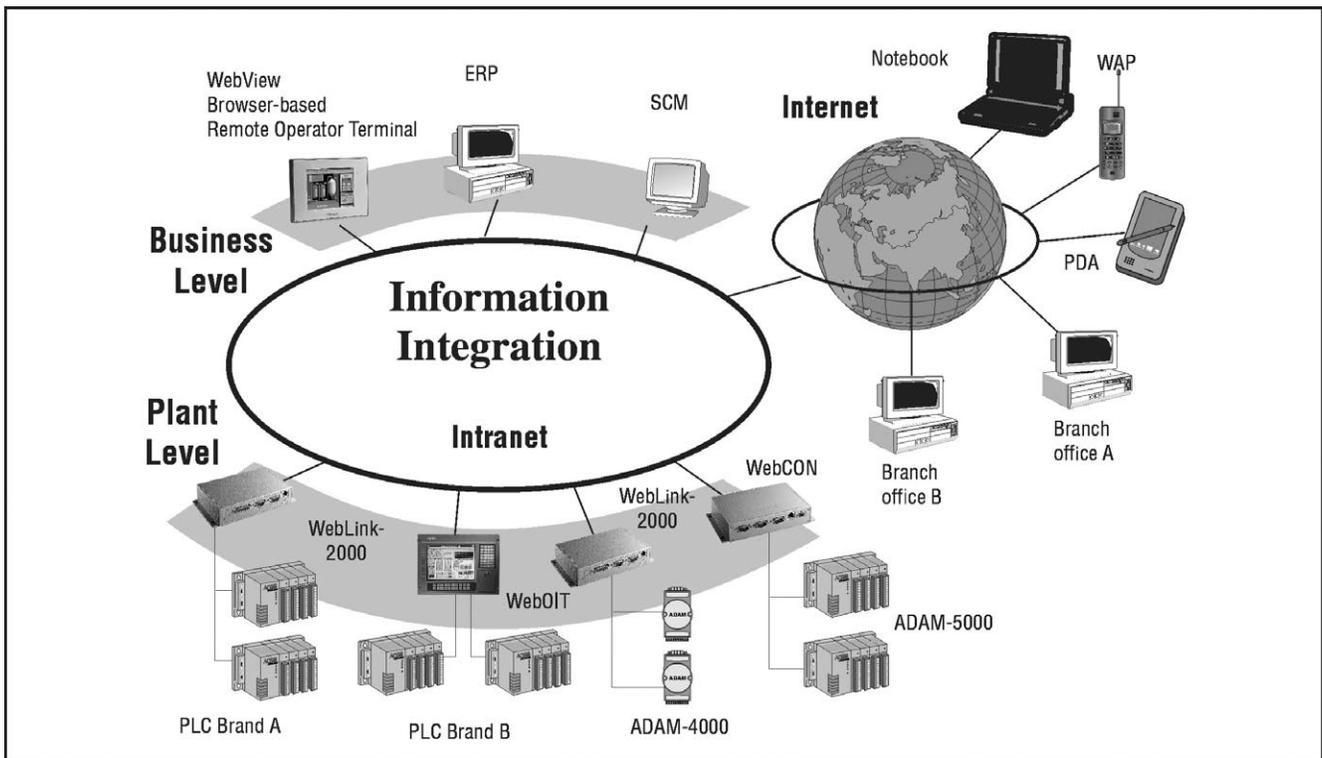
of product and information. As individual consumers we're being conditioned to expect this through our experiences with on-line ordering, status checking, and next day or same day deliveries of merchandise. Even more importantly, the competition will do it. And, once they have implemented web enabled automation successfully they'll be able to satisfy the customer more quickly and at a lower cost than non-web enabled companies. That's the real bottom line.

How Web-enabled Automation Works

Now that we're convinced of the benefits of web enabled automation, what pieces and parts are required to put this technology to work? The basic parts required for web based data acquisition and control are :

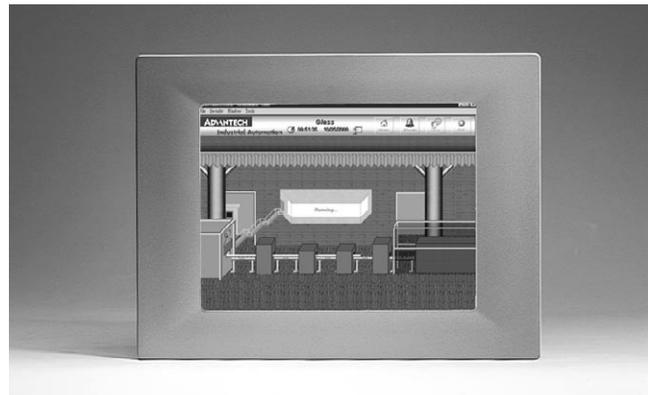
- 1) An interface to the machine/process/building/"thing" to be monitored or controlled via the web (network) connection.
- 2) A web server to make the desired display and/or control pages available to the remote browser, and
- 3) A data service or interface to handle exchanging data between the local "thing" (server) and the remote system (client).

For remote viewing of the data and/or web pages, the only requirement is a standard browser interface. For applications requiring SPC, optimization, or enterprise level software to exchange real time data with the "thing", a remote server PC and a compatible data exchange service are required.



WebLink series

Embedded web-connectivity server: Advantech's new WebLink was designed for this task. WebLink is a complete "intelligent embedded server" solution including all hardware and runtime software required to web enable a system. It can connect to a device (machine/process controller, I/O, sensor, etc.) using a standard RS-232/485 serial port or an optional Fieldbus adapter. A network connection is then made through WebLink's standard Ethernet 10/100BaseT port or via optional modem or wireless network/Internet connections. Development software enables web pages and data connections to remote application software to be easily created and maintained from anywhere via a network connection. Security is provided by WebLink through password protected user login and optional restricted access by user IP.



WebOIT series

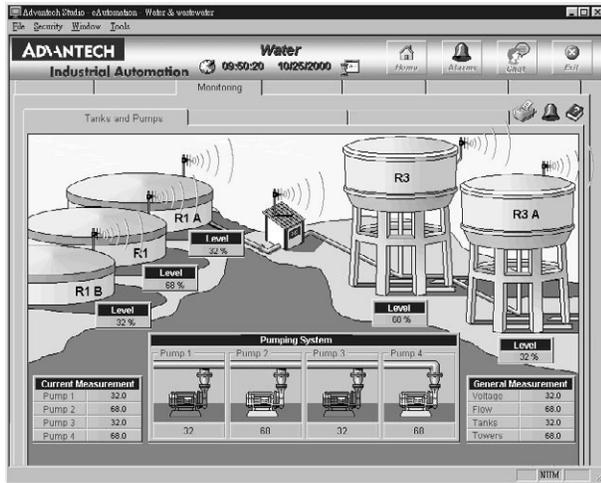
Embedded web-SCADA server: For applications where a local HMI is required at the system to be web enabled, Advantech offers the WebOIT operator interface terminal. This product series combines the features of WebLink with an integrated LCD and HMI software functionality.

Advantech's WebOIT solution comes with everything needed to make a connection from your PLC to the Internet with Web-enabled automation technology. Utilizing its eAutomation features, WebOIT allows you to connect back to a shop floor from anywhere in the world via a simple Internet connection. To receive machine and process data in real-time enables managers to monitor production, troubleshoot processes and diagnose equipment problems regardless of their location.

1	Software
2	IPPC
3	TPC
4	FPM
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11	eConnectivity
12	UNO
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16	ADAM-8000
17	BAS

Advantech Studio

Web-enabled HMI/
SCADA Software



Features

- Publish real-time dynamic and animated graphic screens, trends, alarms, reports, and recipes to standard browsers
- Import and export recipes, reports and real-time data using the XML format
- Use the same development environment as applications running on Windows® NT/2000/XP and CE or on the Web
- Integrates seamlessly with your Windows® desktop applications (such as Microsoft® Word and Excel)
- View multiple clients from one Web browser
- Multi-level security for applications, including use over Intranets and Internet.
- Conforms to industry standards such as Microsoft® DNA, OPC, DDE, ODBC, XML, and ActiveX

Introduction

Advantech Studio is a powerful, integrated collection of automation tools that includes all the building blocks required to develop modern Human Machine Interfaces (HMIs), and Supervisory Control and Data Acquisition System (SCADA) applications that run on Windows® NT/2000/XP and CE, or in an Internet / Intranet environment. A simple drag and drop, point and click development environment simplifies the most complex behavior of your live processes, but a flexible and easy-to-use scripting language is also available for special requirements. Advantech Studio is currently being used in nearly 2,000 installations worldwide.

Advantech Studio for Windows® CE is based on Advantech Studio's full scale supervisory control and monitoring system, and has almost all of the same features, including an object-oriented database, math functions, report generation, archiving, alarms, batch recipes, and interfaces for PLCs, remote I/O and TCP/IP networking. In other words, Advantech Studio for Windows CE is a full-function supervisory control and monitoring system that fits in the palm of your hand or can be embedded in the chipset of a low-cost operator interface. Advantech Studio for Windows® CE is software for complete supervisory control and process monitoring with an operator interface that is available for the Microsoft Windows® CE operating system platform.

System Requirements

	Product Series or Part Number	WebLink, WebOIT	AS1500-WS60	AS1500-WR60	AS1500-WD60	AS4000-WS60	AS64K-WS60	AS512K-WS60	AS1500-CD60	AS4000-CD60
Type	S/W scope	CE Runtime	Local Interface Server	Local Interface Runtime	Local Interface Development	Operator Workstation Server	Control Room Server	Advanced Server	Local Interface Development for CE Runtime	Operator Workstation Development for CE Runtime
Overview	Web Server	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Development Tool OS	-	WinNT/2000/XP	-	WinNT/2000/XP	WinNT/2000/XP	WinNT/2000/XP	WinNT/2000/XP	WinNT/2000/XP	WinNT/2000/XP
	Runtime OS	WinCE	NT/2000/XP	NT/2000/XP	-	NT/2000/XP	NT/2000/XP	NT/2000/XP	-	-
	Local Viewer on Runtime	WebOIT only	✓	✓	-	✓	✓	✓	-	-
	Email Support	✓	✓	✓	✓	✓	✓	✓	✓	✓
Database	Modem Dial-up Support	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Application Tags	up to 1,500	up to 1,500	up to 4,000	up to 1,500	up to 4,000	up to 64,000	up to 512,000	up to 1,500	up to 4,000
Communication	Security System	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Drivers	up to 3	up to 3	up to 3	up to 3	up to 5	up to 8	up to 8	up to 3	up to 3
	OPC Client	✓	✓	✓	✓	✓	✓	✓	✓	✓
	OPC Server	✓	✓	✓	✓	✓	✓	✓	✓	✓
	TCP/IP Client	✓	✓	✓	✓	✓	✓	✓	✓	✓
	TCP/IP Server	✓	✓	✓	✓	✓	✓	✓	✓	✓
Legend										
Supported	✓									
D	Determined by development version									
Server	Includes Development and Runtime license									

Specifications

- Pre-built Servers** Web Server, FTP Server, Telnet Server, Remote Access Server (RAS)
- HMI Functions** 100+ built-in PLC drivers (up to 3 running simultaneously)
 8 simultaneous web clients
 OPC Client and Server
 Email (SMTP) Integration
 Fully featured dynamic graphics with object library
 Alarming, Trending, Reporting features
 Scripting Language with 100+ standard functions
 Recipes (ASCII and XML formats)
 Remote project management including online editing
 Multi-level security for use over Intranet and Internet

Development Environment

- Microsoft® Windows® XP, 2000, NT 4.0 service pak 4 and higher
- Min. 256 MB of RAM. (Recommended 512 MB of RAM)
- 100 MB of free hard-disk space for installation
- CD-ROM driver (for installation only)

Runtime Environment

- Windows® CE 4.2
 - Min. 32 MB of memory
- or
- Microsoft® Windows® 2000, Windows® XP, Windows® NT 4.0 Service Pack 4 and higher, Service Pack 2
 - Min. 32 MB of RAM. (Recommended 64 MB of RAM)
 - Web Browser that supports ActiveX objects

Hardware Platforms Supported

- WebOIT-60** 5.7" QVGA STN Web-enabled Operator Interface Terminal
- WebOIT-1260** 12.1" SVGA TFT PII-grade Web-enabled Operator Interface Terminal
- WebOIT-1560** 15" XGA TFT P-II grade Web-enabled Operator Interface Terminal
- WebLink-2050** Pentium-grade Web-enabled Data Connection with Isolated DI/DO
- WebLink-2053** Pentium-grade Web-enabled Data Connection with Dual LAN
- WebLink-2059** Pentium-grade Web-enabled Data Connection with PC Card and 4 x RS-232/422/485
- WebLink-2160** Pentium II-grade Web-enabled Data Connection with PC/104 extension

Applications

- Remote Utility Management
- Building Automation
- Water and Wastewater Management
- Factory Automation
- Machine Builder

Ordering Information

- AS1500-WS60** AStudio Development Kit Professional Edition for Windows® XP/2000/NT (Include DEV and RT Edition)
- AS1500-WR60** AStudio Runtime Edition for Windows® XP/2000/NT
- AS1500-WD60** AStudio Development Kit for Windows® XP/2000/NT
- AS4000-WS60** AStudio Workstation Professional Edition for Windows® XP/2000/NT
- AS64K-WS60** AStudio Control Room Professional Edition for Windows® XP/2000/NT
- AS512K-WS60** AStudio Advanced Server Professional Edition for Windows® XP/2000/NT
- AS1500-CD60** AStudio Development Kit for Windows® CE
- AS4000-CD60** AStudio Workstation Development Kit for Windows® CE

Communication Drivers

Advantech	ADAM-4000, ADAM-5000/485
AEG Schneider (Modicon Square D Telemecanique)	AEG Compact PLC*, ModCon 984E*, Quantum Family
	ModCon 984E* Ethernet Quantum Ethernet Family
	MODBUS Plus compatible equipment
	Symax
Allen-Bradley	Family PLC2
	Family PLC5
	Family SLC500
	Family 5000
Cutler-Hammer	D50*, D300
GE-Fanuc	Series 90, 90/30 CPU 341*
Mitsubishi	FX-232AW
Omron	C-series Rack PCs
	Sysmac way
	Host link units
	Sysmac C200H*
	E5CK / E5AF
Phoenix	Interbus Compatible
Siemens	S5 (PG port)
	S5/S7 3964R, S7 (MPI)
	Profibus DP Slave Compatible
	Profibus DP Master Compatible
	Profibus FMS Compatible
	S5-945 PG Port
Yokogawa	MXT521
	UT35
	HR2500E
	DA100
	UT37/UT38
	UT750, UP750, UT550, UT520, UP550, UT350, UT320, UM350, UM330, UP350
	YS100
InterBus	-
Modbus Ethernet	-
Modbus	RTU/ASCII
OPC	-



WebOIT-60

Web-enabled Operator Interface Terminal with 5.7" QVGA STN Display



Features

- 5.7" QVGA color STN LCD
- Super slim and compact design with plastic housing
- Fanless cooling system
- NEMA4/IP65 compliant front panel
- Remote manageability
- Built-in flash memory and Windows® CE .NET OS
- One CompactFlash® slot
- Automatic data flow control RS-485
- Advantech Studio Runtime Software pre-built

Introduction

The WebOIT-60 models are compact platforms without redundant functions, which have been designed for small-sized operator interface applications. They have a 5.7" STN LCD display which is a cost effective choice for a limited budget. Its RISC kernel, the Samsung® ARM9 processor, consumes minimum power without sacrificing performance. The WebOIT-60 has a 10/100Base-T Ethernet port offering solid communication ability and comes bundled with a Windows® CE .NET OS that supports Thin-Client solutions. The built-in Windows® CE .NET OS platform lets WebOIT-60 become an open HMI solution for system integration.

Specifications

- **Construction** Plastic molding housing
- **Display** 5.7" QVGA STN LCD
- **CPU / Core logic** Samsung® ARM9 266 MHz
- **VGA** Controlled by CPU
- **Memory** 64 MB SDRAM on board
- **Storage** 64 MB flash memory on board, 1 CompactFlash® card (option)
- **I/O** 3 serial ports (one full RS-232, one 4-pin RS-232, one RS-485, 1 Ethernet port (10/100Base-T), 2 USB ports (one Host, one Client)
- **Watchdog Timer** Programmable as 250 ms, 500 ms, 1 second
- **Power Input** 24 V_{DC}, 0.5A maximum
- **Dimensions (W x H x D)** 195 x 148 x 44.4 mm (7.68" x 5.83" x 1.75")
- **Weight** 0.8 kg (1.76lbs)

LCD Display

- **Display Type** STN color LCD (TPC-60S)
- **Display Size (diagonal)** 5.7"
- **Max. Colors** 256
- **Resolution** 320 x 240
- **Pixel Pitch (HxV)** 0.36 x 0.36 mm
- **Viewing Angle** 110°
- **Luminance (cd/m²)** 201 cd/m²
- **Backlight** 1 CCFL
- **Contrast ratio** 35

Touchscreen

- **Type** 4-wire, analog resistive
- **Resolution** Continuous
- **Light Transmission** Above 75%
- **Life** 1 million activation minimum at single point

Environmental Specifications

- **Storage Temperature** -20 ~ 70° C (-4 ~ 158 °F)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122 °F)
- **Relative Humidity** 10 ~ 95% @ 40° C, non-condensing
- **EMI** FCC class B certification
- **Vibration** 1 G
- **Front panel meets** NEMA4 / IP65

Software Specifications

- **Operating System** Windows® CE .NET
- **Pre-built Servers** Web Server, FTP Server, Telnet Server, Remote Access Server (RAS)
- **HMI Functions** Advantech Studio Runtime with:
 - 1500 application tags (default)
 - 100+ built-in PLC drivers (up to 3 running simultaneously)
 - 8 simultaneous web clients
 - OPC Client and Server
 - Email (SMTP) Integration
 - Fully featured dynamic graphics with object library
 - Alarming, Trending, Reporting features
 - Scripting Language with 100+ standard functions
 - Recipes (ASCII and XML formats)
 - Remote project management including online editing
 - Multi-level security for use over Intranet and Internet

Ordering Information

- **WebOIT-60** Web-enabled Operator Interface Terminal with 5.7" QVGA STN Display
- **PS-DC24-50** 50 Watts 24 V_{DC} output, 110 V/220 V_{DC} 50/60 Hz input power adapter
- **AS1500-CD60** AStudio Development Kit for Windows® CE

WebOIT-1260

Web-enabled Operator Interface Terminal with 12" SVGA TFT Display



CE FCC UL

Features

- Bright or Economical 12.1" SVGA TFT LCD with Touchscreen
- 500 MHz Transmeta Crusoe Processor
- NEMA4/IP65 compliant front panel
- Fanless and Diskless for high reliability
- Windows® CE .NET Operating System
- Advantech Studio Runtime Included
- 100+ PLC Drivers Included
- Integrated Web, Telnet, RAS, and FTP Servers
- Email SMTP support
- Alarms, Trends, Reports, Graphics, and Recipes are easily created and displayed to LCD display and through web server to Internet Explorer web browsers

Introduction

Packed full with features, the WebOIT-1260/TE is not a typical Operator Panel. Taking advantage of the Windows® CE .NET operating system and the Advantech Studio Runtime software, the connectivity and flexibility options are unmatched by other simple operator panels. Take advantage of the WebOIT-1260/TE's open PC-Based architecture to create a robust and reliable operator interface with unsurpassed connectivity.

Specifications

Hardware

- **Construction** Al-Mg front bezel and plastic back housing
- **Display** 12.1" SVGA TFT LCD
- **Max. Colors** 256 K or above
- **Resolution** 800 x 600
- **Luminance** 300 cd/m² (1260T), 100 cd/m² (1260TE)
- **Backlight** 2 CCFL (1260T), 1 (1260TE)
- **CPU** Transmeta™ Crusoe™ 5400 (500 MHz)
- **RAM** 128 MB on board, with 112 MB allocated for users
- **Storage** Industrial grade CompactFlash® (64 MB standard)
- **I/O** 3x RS-232 serial ports, 1x RS-232/422/485 serial port, 1x parallel port, 1x 10BaseT Ethernet port, 1x USB port, 2x PS/2 ports
- **Touchscreen** Type 4-wire, analog resistive
- **Touchscreen Life** 1 million activation minimum
- **Power Input** 24 V_{DC}, 0.8 A maximum
- **Dimensions (W x H x D)** 311 x 237 x 50 mm (approx 12 x 9 x 2 in)
- **Weight** 2.2 kg (4.85 lbs)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Relative Humidity** 10 ~ 95% @ 40° C, non-condensing
- **EMI** FCC class A certificated
- **CE, UL Certified**
- **Front panel meets NEMA4/IP65**

Software

- **Operating System** Windows® CE .NET
- **Pre-built Servers** Web Server, FTP Server, Telnet Server, Remote Access Server (RAS)
- **HMI Functions** Advantech Studio CE Runtime with:
 - 1500 application tags (default)
 - 100+ built-in PLC drivers (up to 3 running simultaneously)
 - 8 simultaneous web clients
 - OPC Client and Server
 - Email (SMTP) Integration
 - Fully featured dynamic graphics with object library
 - Alarming, Trending, Reporting features
 - Scripting Language with 100+ standard functions
 - Recipes (ASCII and XML formats)
 - Remote project management including online editing
 - Multi-level security for use over Intranet and Internet

Ordering Information

- **WOIT-1260** Web-enabled Operator Interface Terminal with 12" SVGA TFT Display
- **PS-DC24-50** 50 watt 24 V_{DC} Power Supply
- **AS1500-CD60** Advantech Studio Development Software (1500 tags)
- **AS4000-CD60** Advantech Studio Development Software (4000 tags)

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

WebOIT-1560

Web-enabled Operator Interface Terminal with 15" XGA TFT Display



Features

- Bright 15" XGA TFT LCD with Touchscreen
- 500 MHz Transmeta™ Crusoe™ Processor
- NEMA4/IP65 compliant front panel
- Fanless and Diskless for high reliability
- Windows® CE .NET Operating System
- Advantech Studio Runtime Included
- 100+ PLC Drivers Included
- Integrated Web, Telnet, RAS, and FTP Servers
- Email SMTP support
- Alarms, Trends, Reports, Graphics, and Recipes are easily created and displayed to LCD display and through web server to Internet Explorer web browsers

Introduction

Packed full with features, the WebOIT-1560T is not a typical Operator Panel. Taking advantage of the Windows® CE .NET operating system and the Advantech Studio Runtime software, the connectivity and flexibility options are unmatched by other simple operator panels. Take advantage of the WebOIT-1560T's open PC-based architecture to create a robust and reliable operator interface with unsurpassed connectivity.

Specifications

Hardware

- **Construction** Al-Mg front bezel and plastic back housing
- **Display** 15" XGA TFT LCD
- **Max. Colors** 256 K or above
- **Resolution** 1024 x 768
- **Luminance** 350 cd/m²
- **Backlight** 4 CCFL
- **CPU** Transmeta™ Crusoe™ 5400 (500 MHz)
- **RAM** 128 MB on board, with 112 MB allocated for users
- **Storage** Industrial grade CompactFlash® (64 MB standard)
- **I/O** 2x RS-232 serial ports, 1x RS-232/422/485 serial port, 1x parallel port, 1x 10BaseT Ethernet port, 2x USB ports, 1x PS/2 port, 2x PCMCIA slots, 1x VGA port, 1x MIC/ line out
- **Touchscreen** Type 4-wire, analog resistive
- **Touchscreen Life** 1 million activation minimum
- **Power Input 2** 4 V_{DC}, 1 A maximum
- **Dimensions (W x H x D)** 383 x 307 x 55 mm (approx 15 x 12 x 2 in)
- **Weight** 3.8 kg (8.37 lbs)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Relative Humidity** 10 ~ 95% @ 40° C, non-condensing
- **EMI** FCC class A certificated, BSMI certificated
- **CCC, CE, UL Certified**
- **Front panel meets NEMA4/IP65**

Software

- **Operating System** Windows® CE .NET
- **Pre-built Servers** Web Server, FTP Server, Telnet Server, Remote Access Server (RAS)
- **HMI Functions** Advantech Studio CE Runtime with:
 - 1500 application tags (default)
 - 100+ built-in PLC drivers (up to 3 running simultaneously)
 - 8 simultaneous web clients
 - OPC Client and Server
 - Email (SMTP) Integration
 - Fully featured dynamic graphics with object library
 - Alarming, Trending, Reporting features
 - Scripting Language with 100+ standard functions
 - Recipes (ASCII and XML formats)
 - Remote project management including online editing
 - Multi-level security for use over Intranet and Internet

Ordering Information

- **WOIT-1560** Web-enabled Operator Interface Terminal with 15" XGA TFT Display
- **PS-DC24-50** 50 watt 24 V_{DC} Power Supply
- **AS1500-CD60** Advantech Studio Development Software (1500 tags)
- **AS4000-CD60** Advantech Studio Development Software (4000 tags)

WebLink-2050 WebLink-2053

**Pentium-grade Web-enabled Gateway
with 16-ch Isolated DI/O**

**Pentium-grade Web-enabled Gateway
with Dual LAN**



WebLink-2050

Specifications

- **CPU** NS Geode™ GX1-300MHz, with 64MB SDRAM on-board
- **VGA/Keyboard/Mouse** DB-15 VGA connector, PS/2 keyboard & mouse
- **Serial Port** 2 x standard RS-232 ports
2 x isolated RS-232/422/485 ports
- **8-ch Isolated Digital Input** 2000 V_{DC} isolation, 2000 V_{DC} ESD protection
- 0 ~ 50 V_{DC} input range and 10 kHz speed, Interrupt handling
- **8-ch Isolated Digital Output** 2000 V_{DC} isolation and 200 mA max/channel sink current
- Keep output status after system hot reset
- 5 ~ 40 V_{DC} output range and 10 kHz speed.
- **LAN** 2 x 10/100 Base-T RJ-45 ports
- **SSD** One internal Type I/Type II CompactFlash® card slot
- **HDD** Offer HDD extension kit for installation of one standard 2.5" HDD
- **LED** Power LED, IDE LED, and one programmable LED, buzzer
- **Power Supply** 9 ~ 36 V_{DC}
- **Anti-Shock** 20 G @ DIN IEC 68 section 2-27, half sine, 11 ms
50 G @ Wall/Panel IEC 68 section 2-27, half sine, 11 ms
- **Anti-Vibration** 2 G w/ CF @ IEC 68 section 2-6, sine, 5 ~ 500 Hz, 10ct./min, 1hr/axis
1G w/ HDD @ IEC 68 section 2-6, sine, 12 ~ 300 Hz, 10ct./min, 1 hr/axis
- **Operating Temperature** -10 ~ 55°C (14 ~ 131°F) @ 5 ~ 85% relative humidity
- **Relative Humidity** 95% @ 40°C
- **Power Consumption** 0.6 A max @ +24 V_{DC} input or 1.2 A max @ +12 V_{DC} input
- **Power Requirement** 1 A typical @ +24 V_{DC} input or 1.5 A typical @ +12 V_{DC} input
- **Chassis size (WxDxH)** 188.8 x 106.5 x 35.5 mm (7.5" x 4.2" x 1.4")
- **Weight** 0.8 kg

Ordering Information

- **WLINK-2050** Pentium-grade Web-enabled Gateway with 16-ch Isolated DI/O
- **PS-DC24-50** 50 watt 24 V_{DC} Power Supply
- **AS1500-CD60** Advantech Studio Development Software (1500 tags)
- **AS4000-CD60** Advantech Studio Development Software (4000 tags)



WebLink-2053

Specifications

- **CPU** NS Geode™ GX1-300 MHz, with 64 MB SDRAM on-board
- **VGA/Keyboard/Mouse** DB-15 VGA connector, PS/2 keyboard & mouse
- **Serial Port** 2 x standard RS-232 ports
- **USB Interface** Two USB ports, USB OpenHCI, Rev. 1.0 compliant
- **LAN** 2 x 10/100 Base-T RJ-45 ports
- **PC Card** One PC Card slot
- Support CardBus (Card-32) Card and 16-bit (PCMCIA 2.1/JEIDA4.2) card
- Support +5 V, +3.3 V and +12 V @ 120 mA working power
- **SSD** One internal Type I/Type II CompactFlash® card slot
- **HDD** Offer HDD extension kit for installation of one standard 2.5" HDD
- **LED** Power LED, IDE LED
- **Power Supply** 10 ~ 30 V_{DC}
- **Anti-Shock** 20 G @ DIN IEC 68 section 2-27, half sine, 11ms
50 G @ Wall/Panel IEC 68 section 2-27, half sine, 11 ms
2 G w/ CF @ IEC 68 section 2-6, sine, 5 ~ 500 Hz, 10ct./min, 1 hr/axis
1 G w/ HDD @ IEC 68 section 2-6, sine, 12 ~ 300 Hz, 10ct./min, 1 hr/axis
- **Anti-Vibration** -10 ~ 55°C (14 ~ 131°F) @ 5 ~ 85% relative humidity
- **Operating Temperature** 95% @ 40°C
- **Relative Humidity** 0.6 A max @ +24 V_{DC} input or 1.2 A max @ +12 V_{DC} input
- **Power Consumption** 1A @ +24 V_{DC} power input
1.5 A @ +12 V_{DC} power input
- **Power Requirement** 188.8 x 106.5 x 35.5 mm (7.5" x 4.2" x 1.4")
- **Chassis size (WxDxH)** 0.8 kg
- **Weight**

Ordering Information

- **WLINK-2053** Pentium-grade Web-enabled Gateway with Dual LAN
- **PS-DC24-50** 50 watt 24 V_{DC} Power Supply
- **AS1500-CD60** Advantech Studio Development Software (1500 tags)
- **AS4000-CD60** Advantech Studio Development Software (4000 tags)

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

WebLink-2059

WebLink-2160

**Pentium-grade Web-enabled Gateway
with 4 x RS-232/422/485 ports**

**Pentium III-grade Web-enabled Gateway
with PC/104 Extension**



WebLink-2059

Specifications

- **CPU** NS Geode™ GX1-300 MHz, with 64 MB SDRAM on-board
- **VGA/Keyboard/Mouse** DB-15 VGA connector, PS/2 keyboard & mouse
- **Serial Port** 2 x standard RS-232 ports
2 x RS-232/422/485 ports
- **USB Interface** Two USB ports, USB OpenHCI, Rev. 1.0 compliant
- **LAN** One 10/100 Base-T RJ-45 ports
- **PC Card** One PC Card slot
- Support CardBus (Card-32) Card and 16-bit (PCMCIA 2.1/JEIDA4.2) card
- Support +5 V, +3.3 V and +12 V @ 120 mA working power
- **SSD** One internal Type I/Type II CompactFlash® card slot
- **HDD** Offer HDD extension kit for installation of one standard 2.5" HDD
- **LED** Power LED, IDE LED, and one programmable LED, buzzer
- **Power Supply** 9 ~ 36 V_{DC}
- **Anti-Shock** 20 G @ DIN IEC 68 section 2-27, half sine, 11 ms
50 G @ Wall/Panel IEC 68 section 2-27, half sine, 11 ms
- **Anti-Vibration** 2 G w/ CF @ IEC 68 section 2-6, sine, 5 ~ 500 Hz, 10Oct./min, 1hr/axis- 1G w/ HDD @ IEC 68 section 2-6, sine, 12 ~ 300 Hz, 10Oct./min, 1hr/axis
- **Operating Temperature** -10 ~ 55°C (14~131°F) @ 5 ~ 85% relative humidity
- **Relative Humidity** 95% @ 40°C
- **Power Consumption** 0.6 A max @ +24 V_{DC} input or 1.2 A max @ +12 V_{DC} input
- **Power Requirement** 1 A typical @ +24 V_{DC} input or 1.5 A typical @ +12 V_{DC} input
- **Chassis Size (WxDxH)** 188.8 x 106.5 x 35.5 mm (7.5" x 4.2" x 1.4")
- **Weight** 0.8 kg

Ordering Information

- **WLINK-2059** Pentium-grade Web-enabled Gateway with 4 x RS-232/422/485 ports
- **PS-DC24-50** 50 watt 24 V_{DC} Power Supply
- **AS1500-CD60** Advantech Studio Development Software (1500 tags)
- **AS4000-CD60** Advantech Studio Development Software (4000 tags)



WebLink-2160

Specifications

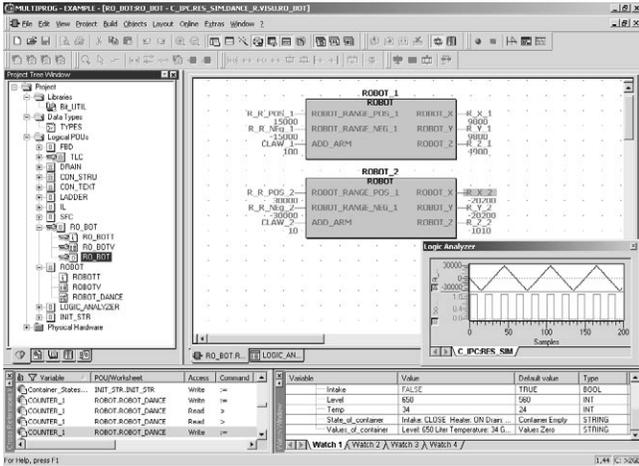
- **CPU** Celeron® 400 MHz Ultra low-voltage version, 256 MB SDRAM
- **VGA/Keyboard/Mouse** DB-15 VGA connector, PS/2 keyboard & mouse
- **Serial Port** 2 x standard RS-232 ports
2 x RS-232/422/485 ports
- **USB Interface** Two USB ports, USB UHCI, Rev. 1.1 compliant
- **LAN** 2 x 10/100 Base-T RJ-45 ports
- **Printer Port** One printer port
- **PC Card** One PC Card slot
- Support CardBus (Card-32) Card and 16-bit (PCMCIA 2.1/JEIDA4.2) card
- Support +5V, +3.3V and +12 V @ 120 mA working power
- **SSD** One internal Type I/Type II CompactFlash® card slot
- **HDD** Offer HDD extension kit for installation of one standard 2.5" HDD
- **LED** Power LED, IDE LED, Alarm for RAM backup battery
- **Power Supply** 9 ~ 36 V_{DC}
- **Anti-Shock** 20 G @ DIN IEC 68 section 2-27, half sine, 11ms
50 G @ Wall/Panel IEC 68 section 2-27, half sine, 11ms
- **Anti-Vibration** 2 Grms w/ CF @ IEC 68 section 2-64, random, 5 ~ 500 Hz, 10Oct./min, 1hr/axis- 1 G w/ HDD @ IEC 68 section 2-64, random, 5 ~ 500 Hz, 10Oct./min, 1hr/axis
- **Operating Temperature** -10 ~ 50°C (14~122°F) @ 5 ~ 85% relative humidity
- **Relative Humidity** 95% @ 40°C
- **Power Consumption** Max. 35 W
- **Chassis Size (WxDxH)** 255 x 152 x 50 mm (10.0" x 6.0" x 2.0")
- **Weight** 1.6 kg

Ordering Information

- **WLINK-2160** Pentium III-grade Web-enabled Gateway with PC/104 Extension
- **PS-DC24-50** 50 watt 24 V_{DC} Power Supply
- **AS1500-CD60** Advantech Studio Development Software (1500 tags)
- **AS4000-CD60** Advantech Studio Development Software (4000 tags)

KW MULTIPROG®

IEC 61131 SoftLogic Control Software



Features

- IEC 61131-3 Programming languages
- Intuitive programming with a clear project structure
- Cross-compiling: FBD, LD and IL can be cross-compiled to each other
- Multi user functionality shortens programming time
- Management of distributed controls
- Network variables: Easy and powerful configuration of distributed communication
- Powerful debugging tools: Online changes, PLC simulation, Overwriting & forcing, breakpoints, watch windows & recipes, Logic analyzer, and cross reference.

Introduction

MULTIPROG® supports all IEC 61131-3 programming languages. Depending on the task to be handled, your experience and company standards, you may choose one of the five standardized programming languages. The use of MULTIPROG offers you many advantages. Our long-term experience in the automation industry guarantees you a sophisticated software product.

The open architecture of MULTIPROG provides a new direction in the creation of automation software. MULTIPROG Automation Interface guarantees consistent data. Via the automation interface, MULTIPROG opens its data for other tools. MULTIPROG allows external creation and modification of its project data. Furthermore, specific attributes can be added. As all essential data can be displayed in MULTIPROG, frequent switching between different tools during PLC programming and commissioning is no longer necessary. Observers guarantee data consistency with other tools, thus the engineering effort for the programming of PLCs is reduced.

Reliability by Experience

KW MULTIPROG is based on an embedded softlogic controller that has been applied in the automation industry since 1991. With over 250,000 runtime installations worldwide, a sophisticated and reliable product is available which is continuously adapted to new technologies.

Specifications

Hardware Requirements

Device	Minimum	Recommended
IBM compatible PC with Pentium Processor	200 MHz	350 MHz
System RAM	64 MB	128 MB
Hard Disk	60 MB free memory space	
CD ROM drive		
VGA Monitor Color Settings	256 colors	True color
Resolution	800 x 600	1024 x 768
RS-232 interface	Optional	
Mouse	Recommended	

Advantech Hardware Supported

- UNO-2000 Series
- ADAM-5510 Series
- WebOIT Series

Software Requirements

- Microsoft® Windows® NT 4.0 SP5 or Windows® 2000/XP
- Microsoft® Internet Explorer 5.02 or above

IEC 61131-3 Programming Languages (all supported)

- Instruction List (IL)
- Structured Text (ST)
- Function Block Diagram (FBD)
- Ladder Diagram (LD)
- Sequential Function Chart (SFC)

All programming languages can be mixed within one project.

Ordering information

- **MPROG-BAS33** KW Multiprog Softlogic Development Kit Basic Edition v3.3 for Windows® NT/2000/XP (128 byte I/O)
- **MPROG-ADV33** KW Multiprog Softlogic Development Kit Advanced Edition v3.3 for Windows® NT/2000/XP
- **PROCON-NT32** KW ProConOS Runtime License v3.2 for Windows® NT/2000/XP
- **PROCON-NTOPC20** KW ProConOS OPC Server Runtime License V 1.12 for Windows® NT/2000/XP
- **PROCON-CEOPC20** KW ProConOS OPC Server Runtime License v2.0 for Windows® CE



KW for Web-enabled Controllers

Advantech's new Web-enabled Controller series brings together the power of WebLink & WebOIT web-enabled automation products with next generation embedded softlogic technology. The Web-enabled Controller product series adds real-time programming languages based on the globally recognized IEC 61131-3 standard to Advantech Studio, our embedded, web-enabled HMI software system. And, of course our Web-enabled Controller series brings this functionality together in a cost-effective and reliable embedded hardware package. Web-enabled control means local control with global connectivity!

Industry standard IEC 61131-3 programming

For faster time-to-market and reduced support costs, take advantage of programming support for the five globally recognized PLC languages: Ladder Diagram, Function Block, Sequential Function Chart, Structured Text, and Instruction List. Develop your application in any one of the five languages, or use any combination that fits your development needs.

Real-time logic execution

Web-enabled Controllers offers real-time, deterministic execution of your application code down to 1 milli-second resolution. Take advantage of Web-enabled Controller's optimized logic runtime engine that automatically compiles your IEC-61131 application code for maximum performance. Web-enabled Controller brings the benefits of real-time control to a cost effective, web-enabled platform, so you can take advantage of local real-time control with a wide range of remote monitoring and management features. All this integrated into one package!

Integrated development environment

Web-enabled Controllers brings integrated programming of logic and HMI to simplify programming and maintenance tasks. Integrated and synchronized database management eliminates the need to create and track multiple database items for HMI and logic programs, with the benefits of reduced programming time and fewer startup errors for your project. And, take advantage of Web-enabled Controller's powerful on-line debugging tools to quickly track down and correct programming errors.

Broad range of I/O support

The Web-enabled Controller product series offers flexible I/O support to meet a wide range of application requirements. Take advantage of Web-enabled Controller's powerful integrated HMI and logic functions in combination with an array of distributed serial and Ethernet I/O products, or choose a platform with fully integrated I/O for maximum performance and cost effectiveness.

Automatic remote handling of events, alarms via e-mail

Web-enabled Controller offers all the benefits of Advantech's web-enabled eAutomation product line, including full support for automated alarm and event handling. Track local conditions and generate reports based on time, event, or exception conditions, then automatically issue reports or alarms via pager or e-mail worldwide! By monitoring conditions and trends in real time, Web-enabled Controllers offers the possibility to predict failures before they cause service interruptions or lost production. Protect and optimize the investment in your machine, process, or facility with Web-enabled Controllers.

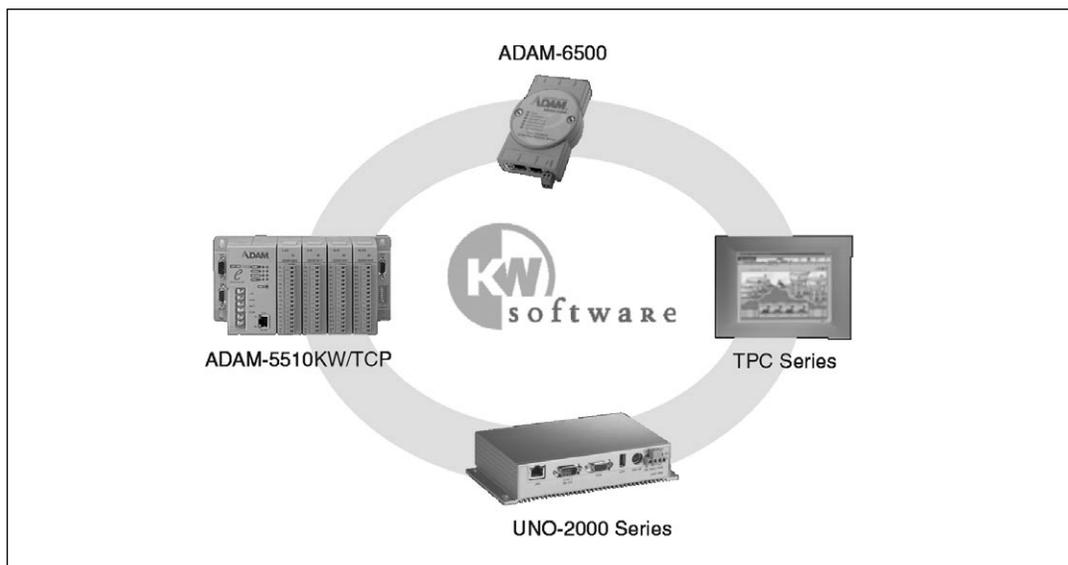
Browser-only client for remote monitoring

With Web-enabled Controllers, use Internet Explorer or Netscape browser software to remotely (via Intranet or Internet) monitor or control your machine, process, or facility. This offers true "zero cost" remote access with full security capability, so you can efficiently monitor and troubleshoot from anywhere in the world. Take advantage of this feature to lower your service costs and reduce or eliminate downtime.

Open interfaces for maximum flexibility

WebControl brings the power of PC-based automation to the embedded world. Take advantage of the open architecture of the eAutomation family, with support for standard connectivity interfaces like OPC, XML, and SNMP. Easily integrate WebControl into your existing factory or building network structure and take advantage of the benefits of local control with global connectivity!

Web-enabled Controllers



Industrial Panel PCs

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IPPC-9150 Modular Pentium® III/Celeron® Industrial Panel PC with 15" LCD	2-6
IPPC-9120 Rugged Pentium® III/Celeron® Industrial Panel PC with 12.1" LCD	2-8
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Industrial Panel PC Selection Guide

Specifications		Model	IPPC-9170G	IPPC-9150G/IPPC-9150G-R
LCD Display	Type		SXGA TFT LCD	XGA TFT LCD
	Size		17"	15"
	Max. Resolution		1280 x 1024	1024 x 768
	Max. Colors		262 K or above	262 K
	Viewing Angle(H, V°)		140,130	120, 100
	Luminance(cd/m ²)		300	250
	Backlight life		40,000	30,000
	Contract Ratio		500:1	400:1
CPU			Socket 478 Pentium® 4 (up to 3.06G)	Socket 370 Pentium® III (up to 1.26 GHz) Socket 370 Celeron® (up to 1.3 GHz)
Memory			Up to 2 GB DDR RAM (DDR-DIMM 184 pin)	Up to 1 GB SDRAM (SO-DIMM 168 pin)
I/O Ports			RS-232 Port x 3, RS-232/422/485 port x 1	RS-232 x 2 ports, RS-232/422/485 x 1 port (IPPC-9150G-R) RS-232 x 3 ports, RS-232/422/485 x 1 port (IPPC-9150G) Parallel Port x 1, USB port x 2
Network (LAN)			10/100/1000Base-T	10/100Base-T
Floppy Disk Drive			N/A	N/A
CD-ROM Drive			One 24X	One 24X
Hard Disk Drive (optional)			One 2.5" HDD	One 2.5" HDD
PCMCIA Slot			Type II x 2	Type II x 2
Bus Expansion			2 PCI	2 PCI or 1 PCI + 1 ISA
Touch Screen (optional)			Resistive	Resistive
Power Supply (AC)			250 W	100 W
Front Panel Compliance			NEMA4/IP65	NEMA4/IP65
Operating Temperature			0 ~ 50° C (32 ~ 122° F)	0 ~ 50° C (32 ~ 122° F)
Storage Temperature			-20 ~ 60° C (-4 ~ 140° F)	-20 ~ 60° C (-4 ~ 140° F)
Certifications			CE, FCC, BSMI, CCC	CE, FCC, BSMI, CCC, UL
Dimension (W x H x D)(mm)			482 x 355 x 144 mm (19" x 14" x 5.7")	402 x 302 x 127 mm (15.9" x 11.9" x 5")
Page			2-4	2-6

IPPC-9120G/IPPC-9120G-R	IPPC-9120T
SVGA TFT LCD	SVGA TFT LCD
12.1"	12.1"
800 x 600	800 x 600
262 K	262 K
130,100	60, 30
320	250
50,000 hrs	50,000 hrs
300:1	300:1
Socket 370 Pentium® III (up to 1.26 GHz) Socket 370 Celeron® (up to 1.3 GHz)	Socket 370 Pentium® III & Celeron® (up to 850 MHz)
Up to 1 GB SDRAM (SO-DIMM 168 pin)	Up to 256 MB SDRAM (SO-DIMM 168 pin)
RS-232 x 2 ports, RS-232/422/485 x 1 port (IPPC-9120G-R) RS-232 x 3 ports, RS-232/422/485 x 1 port (IPPC-9120G) Parallel Port x 1, USB port x 2	RS-232 x 3 ports, RS-232/422/485 x 1 port Parallel Port x 1, USB port x 2
10/100Base-T	10/100Base-T
N/A	One
One 24X	One 24X (optional)
One 2.5" HDD	1 internal 2.5" (optional)
Type II x 2	Type II x 2
2 PCI or 1 PCI + 1 ISA	2 PCI or 1 PCI + 1 ISA
Resistive	Resistive
100 W	80 W
NEMA4 / IP65	NEMA4 / IP65
0 ~ 50° C (32 ~ 122° F)	0 ~ 50° C (32 ~ 122° F)
-20 ~ 60° C (-4 ~ 140° F)	-20 ~ 60° C (-4 ~ 140° F)
CE, FCC, BSMI, CCC	CE, FCC, BSMI, CCC, UL
402 x 302 x 127 mm (15.9" x 11.9" x 5")	402 x 302 x 127 mm (15.9" x 11.9" x 5")
2-8	2-8

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

IPPC-9170

Rugged Intel® Pentium® 4 / Celeron® Industrial Panel PC with 17" LCD



Features

- Socket 478 CPU structure supports Intel® Pentium® 4 processor
- 17" SXGA TFT LCD provides vivid, sharp and large images
- Offers two expansion slots for PCI add-on cards
- Heavy-duty stainless steel chassis with aluminum front panel
- Strengthened glass protects the front panel from shock damage and is NEMA4/IP65 compliant
- Back door with lock allows easy maintenance and optimal security
- Support for optional PCMCIA wireless LAN adapter accessory
- Supports front USB, Power ON/OFF, KB/PS2 port access
- Hard anodic coating to prevent panel abrasion and acid corrosion
- Supports industrial mounting-Rack and panel mounting

Introduction

The IPPC-9170G is an Industrial Panel PC with support for Pentium® 4 processors to meet the demands of today's applications. The IPPC-9170G is a rugged unit with an aluminum panel, tempered glass, 17" TFT LCD, a stainless steel structure and two expansion slots. The IPPC-9170G is rugged enough to handle the toughest industrial operating environments.

With optional mounting accessories, from swing arms to panels and racks, it can be mounted almost anywhere.

Specifications

- **Main Structure** Stainless steel back case, 10 mm thick aluminum front panel meets NEMA4/IP65 protection standard
- **Disk Drive Housing** Supports one 3.5" HDD, one stand 5.25 CD-ROM
- **Cooling Fans** Flow rate: 15.5 CFM x 2
MTBF: 50,000 hrs
- **Power Supply** 250 W
Input voltage: 100 V_{AC} ~ 240 V_{AC} @ 47 ~ 63 Hz
Output voltage: 3.3 V @ 20 A, 5 V @ 26 A, 12 V @ 14 A, 5 V_{SB} @ 2 A
MTBF: 120K hrs @ 25° C
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Relative Humidity** 5 ~ 85% @ 40° C (non-condensing)
- **Vibration (operation)** 5 ~ 500 Hz 1 G_{RMS} Random Vibration
- **Certifications** CE, FCC, BSMI, CCC
- **Dimensions (W x H x D)** 482 x 355 x 144 mm (19" x 14" x 5.7")
- **Gross Weight** 14 kg

Standard PC Functions

- **CPU Support** Socket 478 Intel® Pentium® 4 (Up to 3.06 GHz)
- **System Chipset** Intel® 82845G
- **BIOS** Award® 256KB Flash BIOS
- **RAM** Two 184 pin DDR DIMM sockets supports up to 2 GB
- **LAN** Supports 10/100MBase-T Ethernet networking
- **Enhanced Parallel Port** One parallel port, supports SPP/EPP/ECP parallel mode. BIOS configurable to LPT1, LPT2, LPT3 or disabled
- **Serial Ports** Two serial ports with three RS-232 ports. All ports are compatible with 16C550 UARTs
- **Universal Serial Bus (USB) Port** Supports up to four USB 2.0 ports
- **PCMCIA Port** Type II x 2
- **Watchdog Timer** 62-level, interval 1 ~ 62 seconds
- **Bus Expansion** With 2 expansion slots, IPPC-9170 can support up to two PCI add-on cards

Touchscreen (Optional)

- **Type** Analog resistive, continuous resolution
- **Light Transmission** 75%
- **Controller** USB (interface through internal USB port)
- **OS Support** Windows 2000/XP
- **Durability** 100 million touch lifetime at the single point

LCD Specifications

- **Size** 17"
- **Display Type** SXGA TFT
- **Color** 262 K or above
- **Resolution** 1280 x 1024
- **Viewing Angle** 130° (V), 140° (H)
- **Luminance** 300 cd/m²
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Backlight Life** 40,000 hrs

Ordering Information

- **IPPC-9170G** Rugged Pentium 4 Industrial Panel PC with 17" LCD, 200 W AC power supply, slim FDD. Stainless steel chassis and aluminum front panel
- **IPPC-9170G-R** IPPC-9170G with resistive touchscreen

Notes:

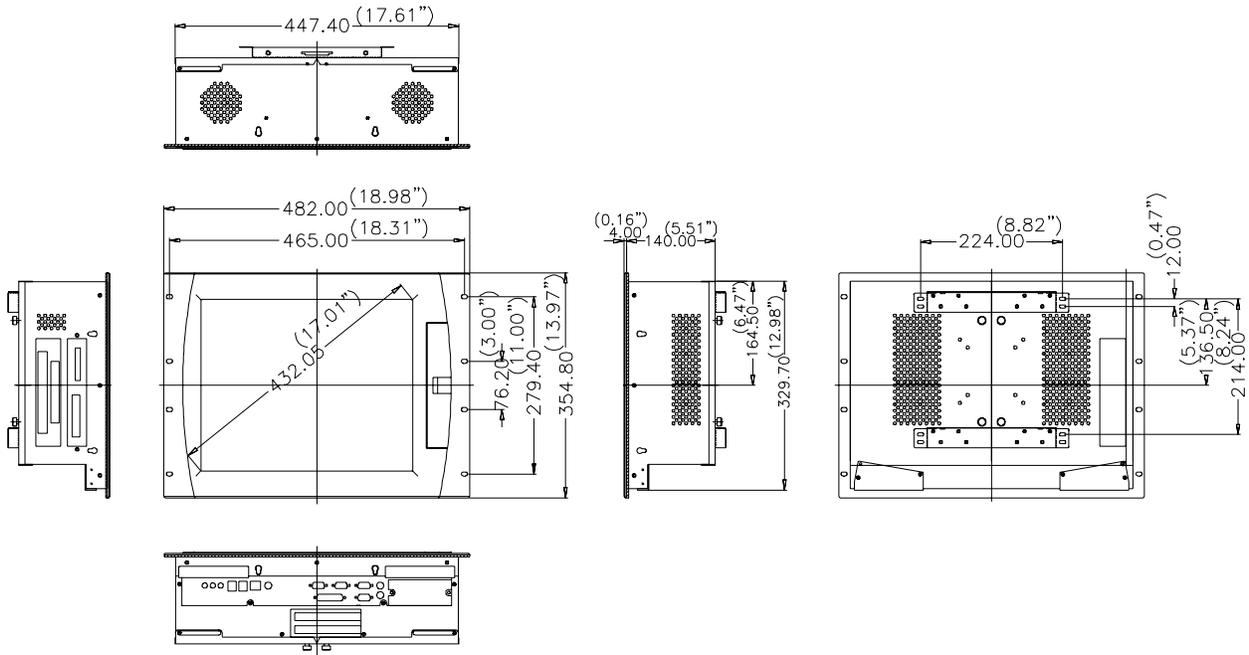
1. When used in a panel mounted environment, the panel's thickness can not be over 10 mm
2. An IDE Flash drive is suggested when installed in vibrating applications
3. 4 mm stainless front panel supported by request

IPPC-9170G

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

Dimensions

Unit: mm



IPPC-9150

Rugged Pentium® III/Celeron® Industrial Panel PC with 15" LCD



Features

- Socket 370 CPU structure supports Pentium® III processors up to 1.26 GHz and Celeron® processors up to 1.3 GHz
- 15" XGA TFT LCD provides vivid, sharp and large images
- Offers two expansion slots for PCI/ISA add-on cards
- Heavy-duty stainless steel chassis with aluminum front panel
- Strengthened glass protects the front panel from shock damage and is NEMA4/IP65 compliant
- Back door with lock allows easy maintenance and optimal security
- Support for optional PCMCIA wireless LAN adapter accessory
- Hard anodic coating to prevent panel abrasion and acid corrosion
- Supports industrial mounting-Rack and panel mounting

Introduction

The IPPC-9150 is a fully functional computer system with support for CPUs of different classes (Pentium® III up to 1.26 GHz & Celeron® up to 1.3 GHz) to meet the demands of today's industrial software. The IPPC-9150 is a rugged unit with an aluminum panel, tempered glass 15" TFT LCD, a stainless steel structure and two expansion slots. The IPPC-9150 is rugged enough to handle the toughest industrial operating environments. With optional mounting accessories, from swing arm to panels to racks, it can be mounted anywhere.

Specifications

- **Main Structure** Stainless steel back case, 10 mm thick aluminum front panel meets NEMA4/IP65 protection standard
- **Disk Drive Housing** Supports one 2.5" HDD, one slim size CD-ROM
- **Cooling Fans** Flow rate: 15.6 CFM x 2
MTBF: 50,000 hrs
- **Power Supply** 100 W
Input voltage: 100 V_{AC} ~240 V_{AC} @ 47 ~ 63 Hz
Output voltage: + 5 V @ 15 A, +12 V @ 5 A, -12 V @ 0.5 A
MTBF: 200,000 hrs
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Relative Humidity** 5 ~ 85% @ 40° C (non-condensing)
- **Vibration (operation)** 5 ~ 500 Hz 1 G_{RMS} Random Vibration
- **Certifications** CCC, CE, FCC, BSMI, UL
- **Dimensions (W x H x D)** 402 x 302 x 127 mm (15.8" x 11.9" x 5")
- **Gross Weight** 10 kgs (22 lbs)

Standard PC Functions

- **CPU Support** Socket 370 Intel® Pentium® III up to 1.26 GHz, Socket 370 Intel® Celeron® up to 1.3 GHz
- **Chipset** VT82C686B
- **BIOS** Award® 256 KB Flash BIOS
- **RAM** Two DIMM socket supports up to 1GB SDRAM
- **LAN** Supports 10/100Base-T Ethernet networking
- **Enhanced Parallel Port** One parallel port, supports SPP/EPP/ECP parallel mode. BIOS configurable to LPT1, LPT2, LPT3 or disabled
- **Serial Ports** Four serial ports with three RS-232 ports (COM1, 3, and 4), one RS-232/422/485 port (COM2). All ports are compatible with 16C550 UARTs
- **Universal Serial Bus (USB) Ports** Supports up to two USB 2.0 ports
- **PCMCIA port** Type II x 2
- **Watchdog Timer** 62-level, interval 1 ~ 62 seconds

- **Bus Expansion** With 2 expansion slots can support up to two PCI or one PCI and one ISA add-on half-size cards.

Touchscreen (Optional)

- **Type** Analog resistive, continuous resolution
- **Light Transmission** 75%
- **Controller** RS-232 (interface through COM4)
- **OS support** MS DOS, Windows® 95/98/NT/2000/XP
- **Durability** 1 Million touch lifetime at the single point

LCD Specifications

- **Size** 15"
- **Display Type** XGA TFT
- **Color** 262K or above
- **Resolution** 1024 x 768
- **Viewing Angle** 100° (V), 120° (H)
- **Luminance (cd/m²)** 250
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Backlight Life** 30,000 hrs

Ordering Information

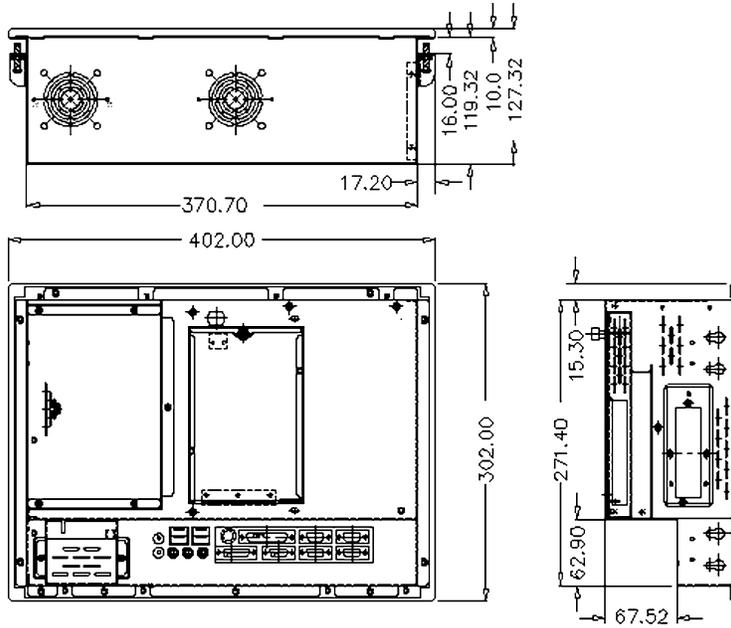
- **IPPC-9150G** Rugged Pentium® III/Celeron® Industrial Panel PC with 15" LCD, PCM-9672 B1 CPU board, 100 W AC power supply, CD ROM Drive. Stainless steel chassis and aluminum front panel
- **IPPC-9150G-R** IPPC-9150G with resistive touchscreen

IPPC-9150

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

Dimensions

Unit: mm



Cut-out dimensions: 374 x 275 mm

Accessories

- **IPPC-9150 Stand** Stand kit for IPPC-9150/9120 series product
- **IPPC-9150 S-ARM** Swing arm for IPPC-9150/9120
- **IPPC-9150 Rack-MT** Mounting kit for standard 19" industrial rack

Notes:

1. When used in a panel mounted environment, the panel's thickness can not be over 10 mm.

Optional PCI Fieldbus Card

- Supports CANopen, DeviceNet™ or Profibus™ by request
- 4 mm stainless front panel supported by request

IPPC-9120

Rugged Pentium® III/Celeron® Industrial Panel PC with 12.1" LCD



Features

- Socket 370 CPU structure supports Pentium® III processors up to 1.26 GHz and Celeron® processors up to 1.3 GHz
- 12.1" SVGA TFT LCD provides vivid, sharp and large images
- Offers two expansion slots for PCI/ISA add-on cards
- Heavy-duty stainless steel chassis with aluminum front panel
- Strengthened glass protects the front panel from shock damage and is NEMA4/IP65 compliant
- Back door with lock allows easy maintenance and optimal security
- Support for optional PCMCIA wireless LAN adapter accessory
- Hard anodic coating to prevent panel abrasion and acid corrosion
- Supports industrial mounting-Rack and panel mounting

Introduction

The IPPC-9120 is a fully functional computer system with support for CPUs of different classes (Pentium® III up to 1.26 GHz & Celeron® up to 1.3 GHz) to meet the demands of today's industrial software. The IPPC-9120 is a rugged unit with an aluminum panel, tempered glass 12.1" TFT LCD, a stainless steel structure and two expansion slots. The IPPC-9120 is rugged enough to handle the toughest industrial operating environments. With optional mounting accessories, from swing arm to panels to racks, it can be mounted anywhere.

Specifications

- **Main Structure** Stainless steel back case, 10 mm thick aluminum front panel meets NEMA4/IP65 protection standard
- **Disk Drive Housing** Supports one 2.5" HDD, one slim size CD-ROM and one slim size FDD (9120T Only)
- **Cooling Fans** Flow rate: 15.6 CFM x 2
MTBF: 50,000 hrs
- **Power Supply** 100 W (9120G), 80W (9120T)
Input voltage: 100 ~ 240 V_{AC} @ 47 ~ 63 Hz
Output voltage: + 5 V @ 15 A, + 12 V @ 5 A, -12 V @ 0.5 A
MTBF: 200,000 hrs
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Relative Humidity** 5 ~ 85% @ 40° C (non-condensing)
- **Vibration (operation)** 5 ~ 500 Hz 1 G_{RMS} Random Vibration
- **Certifications** CE, CCC, FCC, BSMI, UL compliant
- **Dimensions (W x H x D)** 402 x 302 x 127 mm (15.8" x 11.9" x 5")
- **Gross Weight** 10 kg (22 lb)

Standard PC Functions

- **CPU Support** Socket 370 Intel® Pentium® III up to 850 MHz (9120T), 1.26 GHz (9120G)/ Celeron® up to 700 MHz (9120T), 1.3 GHz (9120G)
- **Chipset** Intel® 82443BX/ 82371EB
- **BIOS** Award® 256 KB Flash BIOS
- **RAM** Two DIMM Socket supports up to 1 GB SDRAM (9120G)
One DIMM Socket supports up to 256MB SDRAM (9120T)
- **LAN** Supports 10/100Base-T Ethernet networking
- **Enhanced Parallel Port** One parallel port, supports SPP/EPP/ECP parallel mode. BIOS configurable to LPT1, LPT2, LPT3 or disabled
- **Serial Ports** Four serial ports with three RS-232 ports (COM1, 3, and 4), one RS-232/422/485 port (COM2). All ports are compatible with 16C550 UARTs
- **Universal Serial Bus (USB) port** Supports up to two USB 2.0 ports

- **PCMCIA Port** Type II x 2
- **Watchdog Timer** 62-level, interval 1 ~ 62 seconds
- **Bus Expansion** With 2 expansion slots, IPPC-9120 can support up to two PCI, or one PCI and one ISA add-on half-size cards.

Touchscreen (Optional)

- **Type** Analog resistive, continuous resolution
- **Light Transmission** 75%
- **Controller** RS-232 (interface through COM4)
- **OS Support** MS DOS, Windows® 95/98/NT/2000/XP
- **Durability** 1 Million touch lifetime at the single point

LCD Specifications

- **Size** 12.1"
- **Display Type** SVGA TFT
- **Color** 262 K
- **Resolution** 800 x 600
- **Viewing Angle** 100° (V), 130° (H) (9120G), 30° (V), 60° (H) (9120T)
- **Luminance (cd/m²)** 320 (9120G), 250 (9120T)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Backlight Life (hrs)** 50,000

Ordering Information

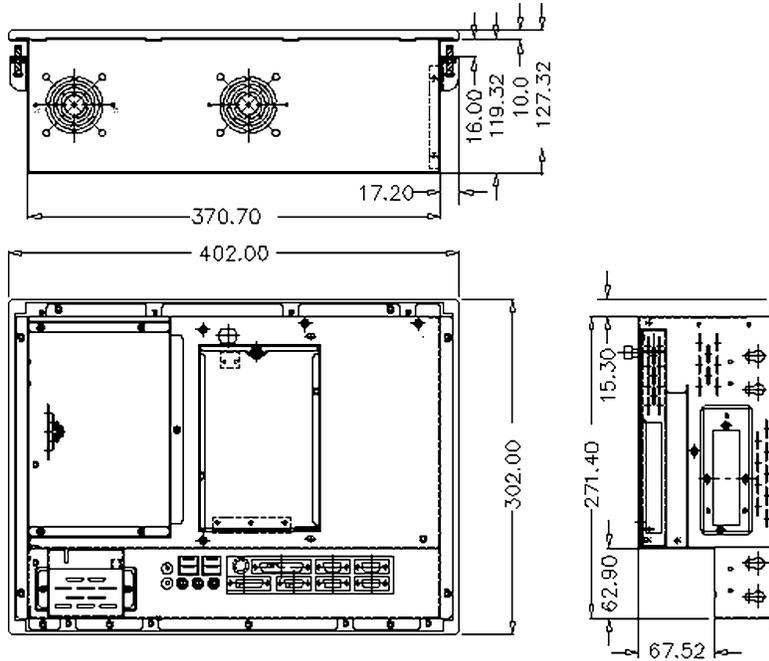
- **IPPC-9120G** Rugged Pentium® III/Celeron® Industrial Panel PC with 12.1" LCD, PCM-9672 B1 CPU board, 100 W AC power supply, slim-type CD-ROM. Stainless steel chassis and aluminum front panel
- **IPPC-9120G-R** IPPC-9120G with resistive touchscreen
- **IPPC-9120T** Rugged Pentium® III/Celeron® Industrial Panel PC with 12.1" LCD, PCM-9571 B1 CPU board, 80 W AC power supply, slim FDD. Stainless steel chassis and aluminum front panel
- **IPPC-9120T-T** IPPC-9120T with touchscreen

IPPC-9120

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

Dimensions

Unit: mm



Cut-out dimensions: 374 x 275 mm

Accessories

- **IPPC-9150 Stand** Stand kit for IPPC-9150/9120 series product
- **IPPC-9150 S-ARM** Swing arm for IPPC-9150/9120
- **IPPC-9150 Rack-MT** Mounting kit for standard 19" industrial rack

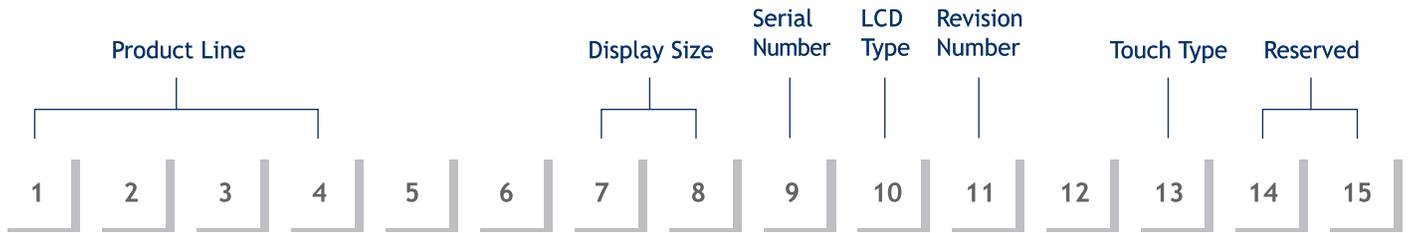
Note:

1. When used in a panel mounted environment, the panel's thickness can not be over 10 mm.

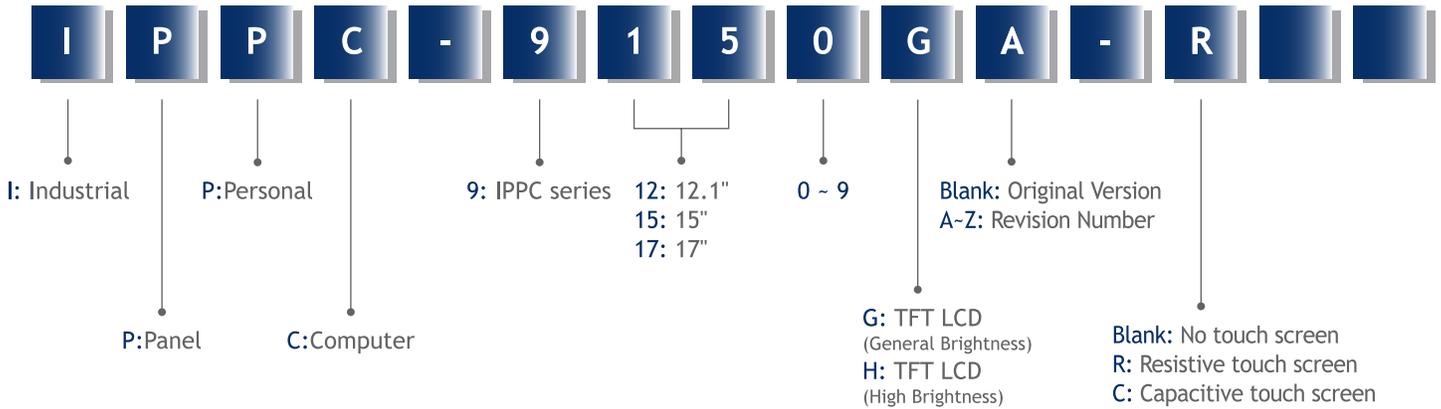
Optional PCI Fieldbus Card

- Supports CANopen, DeviceNet™ or Profibus™ by request
- 4 mm stainless front panel supported by request

IPPC Series Naming Rule



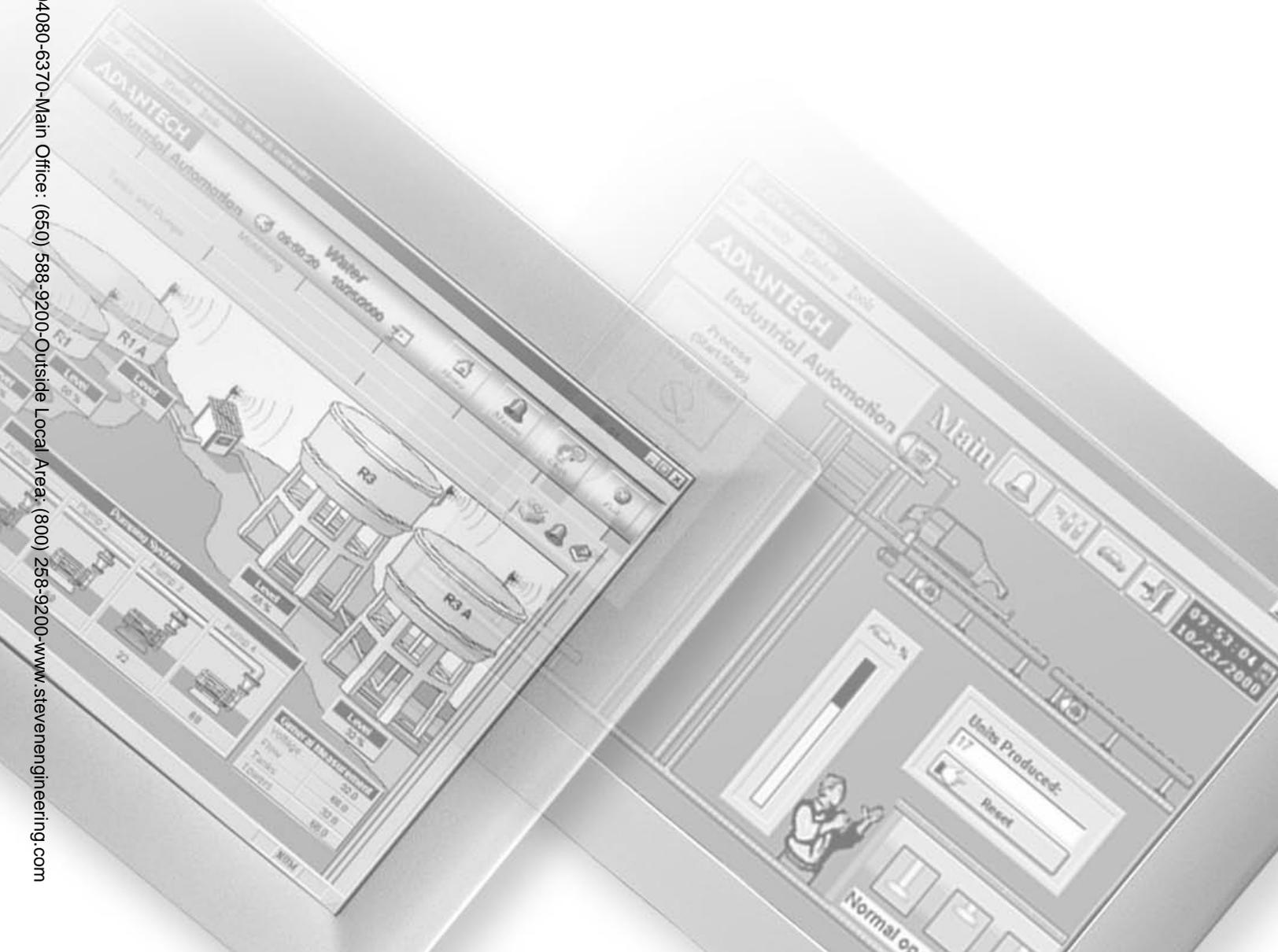
Ex:



Example Description: 15" Industrial panel PC with resistive touch screen

Touch Panel Computers

Selection Guides	Touch Panel Computers Selection Guide	3-2
The Leading Fanless HMI Platform Solution	Thin Client Solution Introduction from Touch Panel Computing Platform to Thin Client Solution	3-4
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TPC-1560T	Crusoe™ 5400 Touch Panel Computer with 15" XGA TFT LCD Display	3-6
TPC-1560H (NEW)	Crusoe™ 5800 Touch Panel Computer with 15" XGA TFT LCD Display	3-8
TPC-1260T/TE	Crusoe™ 5400 Touch Panel Computer with 12.1" SVGA TFT LCD Display	3-10
TPC-1260G (NEW)	Crusoe™ 5800 Touch Panel Computer with 12.1" SVGA TFT Display	3-12
TPC-1260H (NEW)	Crusoe™ 5800 Touch Panel Computer with High-Luminance 12.1" SVGA TFT LCD Display	3-14
TPC-60S (NEW)	Low Cost Arm9 Touch Panel Computer with 5.7" QVGA STN LCD Display	3-16
Touch Panel Computers Naming rule		3-18



Touch Panel Computers

Specifications		Model	TPC-1560T	TPC-1560H
CPU			Transmeta™ Crusoe™ 5400 500 MHz	Transmeta™ Crusoe™ 5800 1 GHz
Memory			128 MB SDRAM on board	256 MB DDR SDRAM (up to 512 MB DDR SDRAM)
Display	Type		TFT color LCD	
	Size		15"	15"
	Max. Resolution		1024 x 768	1024 x 768
	Max. Colors		256 K or above	256 K or above
	Pixel Pitch (mm)		0.297 (H) x 0.297 (V)	0.297 (H) x 0.297 (V)
	Luminance (cd/m ²)		350	300
	Viewing Angle (°) (H/V)		140/120	140/120
	Backlight Life Time (Min.)		50,000 hrs	50,000 hrs
Touch Screen			Resistive	Resistive
Flash Memory			N/A	N/A
HDD			1 internal 2.5" (option)	1 internal 2.5" (option)
FDD			External from USB interface	External from USB interface
CD-ROM			External from CompactFlash® slot	External from CompactFlash® slot
Network (LAN)			10/100Base-T	10/100/1000Base-T
I/O Port			Serial Port x 3, Parallel Port x 1, VGA x 1, USB x 2, Audio x 2, PS2 x 1	Serial Port x 4, Parallel Port x 1, VGA x 1, USB x 2, Audio x 3, PS2 x 1
CompactFlash® Slot			Type II x 1	Type II x 1
PCMCIA			Type II x 2	Type II x 2
Expansion Slot			PCI-104	PC/104-Plus x 1
Power	Input Voltage		DC IN +24V	DC IN +24V
	Power Consumption		25 W	30 W
Dimensions		W x D x H (mm)	383 x 307 x 55 (15.08" x 12.09" x 2.17")	383 x 307 x 55 (15.08" x 12.09" x 2.17")
Weight			3.8 kg (8.38 lbs)	3.8Kg (8.38 lbs)
Front Cover			Al-Mg	Al-Mg
Operating Temperature			0 ~ 50° C (32 ~ 122° F)	0 ~ 50° C (32 ~ 122° F)
Front Panel Protection			NEMA4 / IP65	NEMA4 / IP65
Certifications			CE, FCC, BSMI, UL, CSA, CCC	CE, FCC, BSMI, UL, CCC
Operating Systems			Windows® 2000, Windows® XP, Windows® CE, DOS	Windows® 2000, Windows® XP, Windows® CE, XP embedded
Page			3-6	3-8

TPC-1260T	TPC-1260TE	TPC-1260H	TPC-1260G	TPC-60S
Transmeta™ Crusoe™ 5400 500 MHz		Transmeta™ Crusoe™ 5800 1 GHz		ARM9 S3C2410A 266 MHz
128 MB SDRAM on board		256 MB DDR SDRAM (up to 512 MB DDR SDRAM)		64 MB SDRAM on board
TFT color LCD		TFT color LCD		STN color LCD
12.1"		12.1"		5.7"
800 x 600		800 x 600		320 x 240
256 K		256 K		256 K
0.3075 (H) x 0.3075 (V)		0.3075 (H) x 0.3075 (V)		0.36 (H) x 0.36 (V)
300	100	350	100	201
90		120/90	90	90
50,000 hrs		50,000 hrs		40,000 hrs
Resistive		Resistive		Resistive
N/A		N/A		64 MB on board
1 internal 2.5" (option)		1 internal 2.5" (option)	--	N/A
External from USB interface		External from USB interface		N/A
External from CompactFlash® slot		External from CompactFlash® slot		N/A
10/100Base-T		10/100/1000Base-T		10/100Base-T
Serial Port x 4, Parallel Port x 1, USB x 1, PS2 x 2		Serial Port x 4, Parallel Port x 1, VGA x 1, USB x 2, Audio x 3, PS2 x 1		Serial Port x 3, USB x 2 (Host x 1, Client x 1)
Type II x 1		Type II x 1		Type II x 1
N/A		Type II x 2		N/A
PCI-104		PC/104-Plus x 1		N/A
DC IN +24V		DC IN +24V		DC IN +24 V
20 W		30 W		15 W
311 x 237 x 50 (12.24" x 9.33" x 1.97")		311 x 237 x 58 (12.24" x 9.33" x 2.28")	311 x 237 x 75.85 (12.24" x 9.33" x 2.99)	195 x 148 x 45 (7.68" x 5.83" x 1.77")
2.2 kg (4.85 lbs)		2.5 kg (5.51 lbs)	2.4 kg (5.29 lbs)	0.8 kg (1.76 lb)
Al-Mg		Al-Mg		Plastic
0 ~ 50° C (32 ~ 122° F)		0 ~ 50° C (32 ~ 122° F)		0 ~ 50° C (32 ~ 122° F)
NEMA4 / IP65		NEMA4 / IP65		NEMA4 / IP65
CE, FCC, BSMI, UL, CCC		CE, FCC, BSMI, UL, CCC		CE, FCC, BSMI, UL, CCC
Windows® 2000, Windows® XP, Windows® CE, DOS		Windows® 2000, Windows® XP, Windows® CE, XP embedded		Windows® CE.NET 4.2
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- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
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- 12 UNO
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- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

The leading Fanless HMI Platform Solutions

Multi-user Client/Server architecture

Thin client architecture allows system operators local process monitoring and controlling facilities through local LAN Network, Intranet or Internet. Engineers can now easily manage the project or system in field, office, home without any constraints

Lower Total Cost of Ownership

Leading commercial thin client computing solution vendors indicate that thin client computing solution can effectively save 15%-20% of IT expenditure in the first year and accumulate up to 50%-60% in the proceeding 5 years. Simplified software deployment radically reduces total rollout costs, and longer lifespan client terminals efficiently reduce capital expenditure.

Centralized Data Management

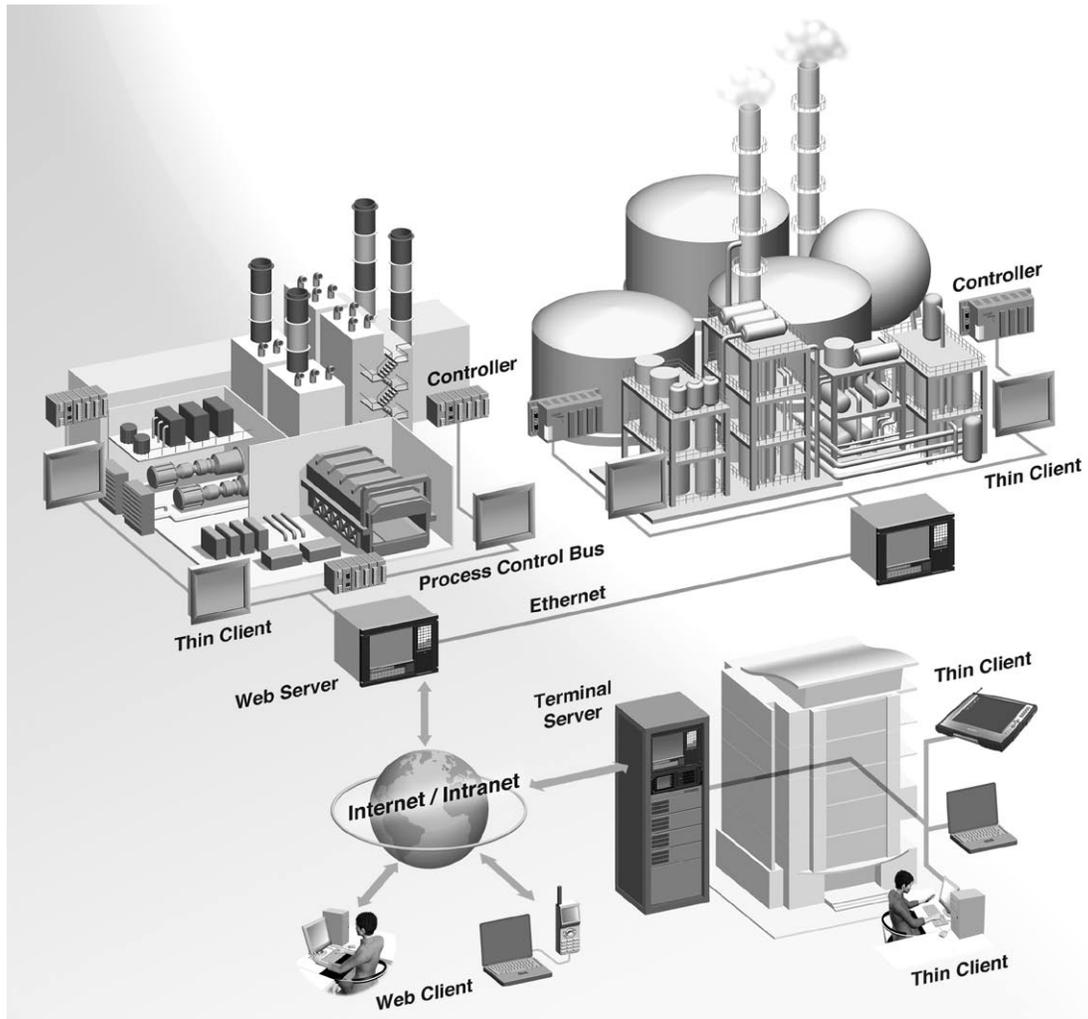
The TPC thin client terminal communicates with thin server via thin client software. All critical data or applications are run and maintained centrally. This centralized system infrastructure provides our customers better system security and data integrity.

Thin Client Software Support

Advantech's TPC thin client series support thin client software such as "Microsoft® RDP", which makes it possible for system integrators to cut hardware costs by providing a local desktop interface to remotely stored software applications. A smart solution for environmental monitoring systems and transportation systems.

Fanless, No Spindle & Low Power Consumption

Combined with a mobile Transmeta™ Crusoe™ CPU and a streamlined Windows® CE.NET with CompactFlash® configuration, Advantech's TPC Series does not need a cooling fan.



Installation Options



Introduction

Advantech's Touch Panel Computers are the most powerful all-in-one LCD computers available on the market. They have been designed to be slim and compact, to enable them to be installed into all kinds of work environments and applications. The Touch Panel Computers can be wall mounted, panel mounted or simply placed on a desktop with an elegant stand. Integrated mounting holes and features make any kind of mounting option a breeze. With the expansion kit, standard PCI cards can be easily inserted.



Stand Kit



Swing ARM



Expansion Kit

Ordering Information

- **TPC-1260 STAND** TPC-1260T/TE desktop stand
- **TPC-1260 WALLMT** TPC-1260T/TE wall mounting kit
- **TPC-1260H WMK** TPC-1260H wall mount kit
- **TPC-1260H STK** TPC-1260H stand kit
- **TPC-1260H SAK** TPC-1260H swing arm kit
- **TPC-EXP-1560** TPC-1560T/1260T/TE two-slot PCI expansion kit
- **TPC-1560 STAND** TPC-1560T desktop stand
- **TPC-1560 WALLMT** TPC-1560T wall mounting kit
- **TPC-1560H WMK** TPC-1560H wall mount kit
- **TPC-1560H STK** TPC-1560H stand kit
- **TPC-1560H SAK** TPC-1560H swing arm kit

1	Software
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3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

TPC-1560T

Crusoe™ 5400 Touch Panel Computer with 15" XGA TFT LCD Display



Features

- 15" XGA TFT LCD with high luminance
- Slim and compact design with Al-Mg housings
- Fanless cooling system
- NEMA4/IP65 compliant front panel
- Supports Windows® 2000/XP/CE
- Supports a PC/104-Plus expansion slot
- Fast docking design of 2.5" HDD module
- Downward I/O cabling
- Automatic data flow control RS-485

Introduction

With a high quality TFT LCD display, the TPC-1560T adopts the Transmeta™ Crusoe™ 5400 processor as its core. The Crusoe™ 5400 is a low power consuming, x86 compliant processor with 500 MHz operating frequency. This system can therefore be fanless although the kernel is powerful. In addition, spindle-free storage makes the TPC-1560T a durable and reliable platform. For those applications where spindle-free storage is not critical, a fast-access HDD module can be used. A PCI-104 expansion slot is provided for PCI expansion capability in harsh environments.

Specifications

- **Construction** Al-Mg and plastic molding
- **Display** 15" XGA TFT LCD
- **CPU and Core Logic** Transmeta™ Crusoe™ 5400 (500 MHz)
- **BIOS** Award® 256KB
- **VGA** SMI® 721 VGA controller
- **DRAM** 128 MB on board, with 112 MB allocated for users
- **Storage** CompactFlash® memory card or 2.5" HDD
- **I/O** 3 serial ports (one configurable to RS-232/422/485) and RS-485 is auto flow controlled, 1 parallel port, 1 Ethernet port (10/100Base-T), 2 USB ports, 1 PS/2 port, 2 PCMCIA slots, 1 VGA port, MIC/ line out
- **Expansion** One 32-bit PCI 104 expansion slot
- **Watchdog Timer** 1.6 seconds interval
- **Power Input** 24 V_{DC}, 1 A maximum
- **Dimensions (W x H x D)** 383 x 307 x 55 mm (15.08" x 12.09" x 2.17")
- **Gross Weight** 3.8 kg (8.37 lbs)

LCD Display

- **Display Size (diagonal)** 15"
- **Max. Colors** 256 K or above
- **Resolution** 1024 x 768
- **Pixel Pitch (H x V)** 0.297 x 0.297 mm
- **Viewing Angle** 140°
- **Luminance** 350 cd/m²
- **Backlight** 4 CCFL
- **Contrast Ratio** 500
- **Boot-on-LAN support**
- **Windows® CE utility for LCD backlight control on touchscreen**

Touchscreen

- **Type** 4-wire, analog resistive
- **Resolution** Continuous
- **Light Transmission** Above 75%
- **Life** 1 million activation minimum at single point
- **Controller embedded on board, PS/2 interface**

Environmental Specifications

- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Relative Humidity** 10 ~ 95% @ 40° C, non-condensing
- **EMI** FCC class A certified, BSMI certified
- **CE Certified**
- **Front panel meets NEMA4/IP65**

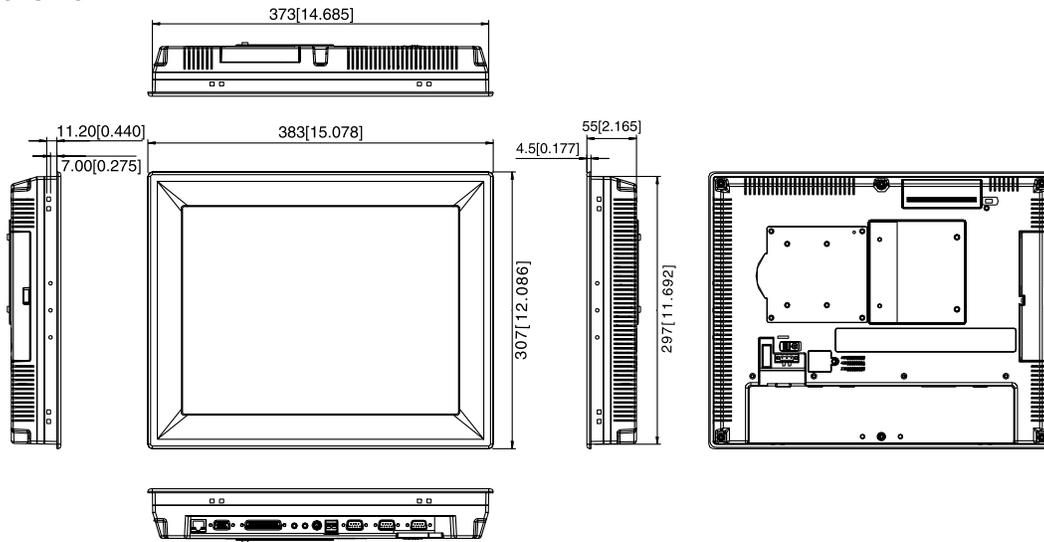
Ordering Information

- **TPC-1560T** 15" TFT LCD display touch panel computer with Crusoe™ 5400 CPU, 128 MB DRAM on board and resistive touchscreen
- **PS-DC24-50** 50 watts 24 V_{DC} output, 110/220 V_{AC} 50/60 Hz input power adapter
- **TPC-1560 STAND** TPC-1560T desktop stand
- **TPC-1560 WALLMT** TPC-1560T wall mounting kit
- **TPC-EXP-1560** TPC-1560T/1260T/TE two-slot PCI expansion kit

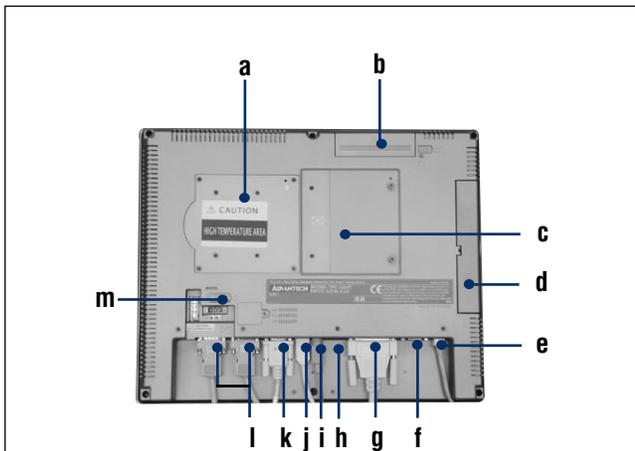
1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

Dimensions

Unit: mm



Rear View



- | | |
|---------------------------|--|
| a. CPU card cover | h. Audio jacks |
| b. HDD module | i. PS/2 ports |
| c. PCI-104 slot | j. USB port |
| d. CompactFlash® & PCMCIA | k. Auto flow control
RS-232/422/485 |
| e. Ethernet port | l. Serial ports |
| f. VGA port | m. Power switch |
| g. Parallel port | |

Optional Fieldbus PCI-104 Expansion Card

- Supports CANopen, DeviceNet™ or PROFIBUS™ by request

TPC-1560H

Crusoe™ 5800 Touch Panel Computer with 15" XGA TFT LCD Display



Features

- 15" XGA TFT LCD with high luminance
- Super slim and compact design with Al-Mg housing
- Fanless cooling system
- NEMA4/IP65 compliant front panel
- Supports Windows® 2000/XP, XP embedded and CE.NET
- Downward I/O cabling
- Automatic data flow control RS-485

Introduction

With a high quality TFT LCD display, the TPC-1560H adopts the Transmeta™ Crusoe™ 5800 processor as its core. The Crusoe™ 5800 is a low power consuming x86 compliant processor with 1 GHz operating rate. This system can therefore be fanless although the kernel is powerful. In addition, spindle-free storage makes the TPC-1560H a durable and reliable platform. For those applications where spindle-free storage is not critical, a fast-access HDD module can be used. Two PCMCIA slots are provided for expansion capability in harsh environments and a rich I/O portfolio can meet diverse demands.

Specifications

- **Construction** Al-Mg and plastic molding
- **Display** 15" XGA TFT LCD
- **CPU / Core Logic** Transmeta™ Crusoe™ 5800 1 GHz
- **BIOS** Award® 256 KB
- **VGA** SMI® 721 VGA controller
- **Memory** 256 MB DDR SDRAM (up to 512 MB), with 240 MB (up to 496 MB) allocated for users
- **Storage** CompactFlash® memory card or 2.5" HDD
- **I/O** 4 serial ports (one configurable to RS-232/422/485) and RS-485 is auto flow controlled
 - 1 parallel port
 - 1 Ethernet port (10/100/1000Base-T)
 - 2 USB ports (USB2.0)
 - 1 PS/2 port (KB/MS combined)
 - 2 PCMCIA slots
 - 1 VGA port
 - 3 Audio ports (MIC in X 1, Line in X 1, Line out X 1)
- **Expansion** 1 PC/104-Plus slot
- **Watchdog Timer** 1.6 seconds interval
- **Power Input** 24 V_{DC}, 1.4 A maximum
- **Dimensions (W x H x D)** 383 x 307 x 55 mm (15.08" x 12.09" x 2.17")
- **Gross Weight** 3.8 kg (8.38 lbs)

Touchscreen

- **Type** 8-wire, analog resistive
- **Resolution** Continuous
- **Light Transmission** Above 75%
- **Life** 1 million activation minimum at single point

Environmental Specifications

- **Operating Temperature** 0 ~ 50° C (32 ~ 122°F)
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Relative Humidity** 10 ~ 95% @ 40° C, non-condensing
- **EMI** FCC class A certification
- **Operating Vibration** 1 grms (5 ~ 500 Hz)
- **Front Panel meets NEMA4 /IP65**

LCD Display

- **Display Type** TFT color LCD
- **Display Size (diagonal)** 15"
- **Max. Colors** 256 K or above
- **Resolution** 1024 x 768
- **Pixel Pitch (H x V)** 0.297 x 0.297 mm
- **Viewing Angle** 140°
- **Luminance (cd/m²)** 300
- **Backlight** 4 CCFL
- **Contrast Ratio** 500

Ordering Information

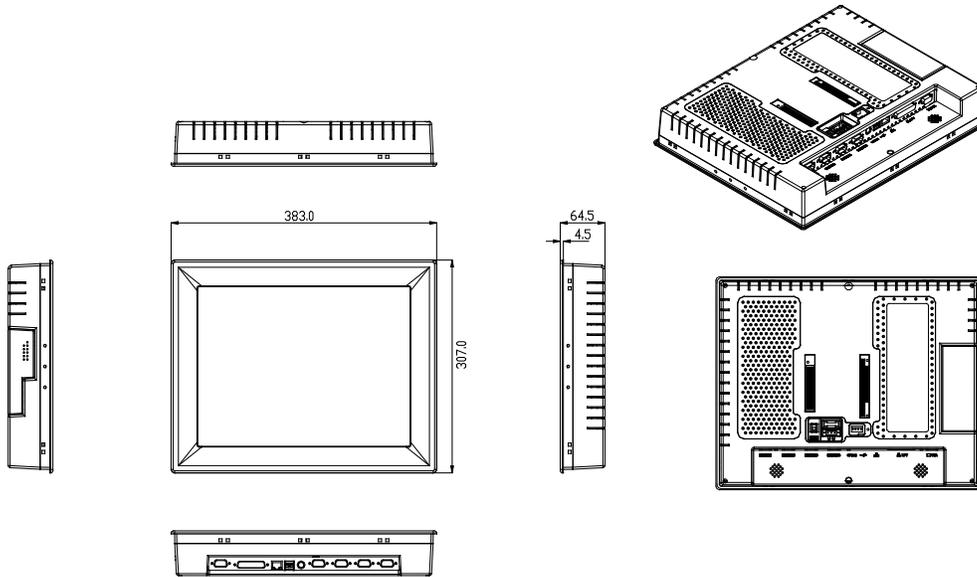
- **TPC-1560H-A1** 15" high luminance TFT LCD display touch panel computer with Crusoe™ 5800 1 GHz CPU and 256 MB DDR SDRAM
- **TPC-1560H-A5** 15" high luminance TFT LCD display touch panel computer with Crusoe™ 5800 1 GHz CPU and 512 MB DDR SDRAM
- **TPC-1560HN-A1** TPC-1560H-A1 with Windows® CE.NET OS / 64 MB CF card
- **TPC-1560H-D1** TPC-1560H-A1 without touch screen

TPC-1560H

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

Dimensions

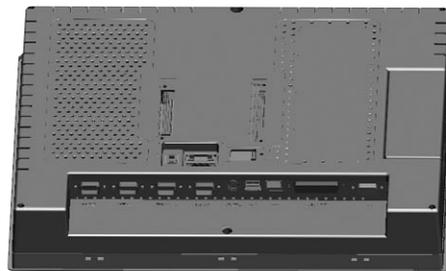
Unit: mm



Accessories

- **PS-DC24-50** 50 Watts 24 V_{DC} output, 110 V / 220 V_{AC} 50/60 Hz input power adapter
- **TPC-1560H WMK** TPC-1560H wall mount kit
- **TPC-1560H STK** TPC-1560H stand kit
- **TPC-1560H SAK** TPC-1560H swing arm kit
- **TPC-1560H CDK** TPC-1560H CD-ROM kit

Rear View



TPC-1260T/TE

Crusoe™ 5400 Touch Panel Computer with 12.1" SVGA TFT LCD Display



Features

- 12.1" SVGA TFT LCD with high luminance
- Slim and compact design with Al-Mg housing
- Fanless cooling system
- NEMA4/IP65 compliant front panel
- HDD kits for environments with extraordinary vibration
- Automatic data flow control RS-485
- Supports Windows® 2000/CE .NET/XP
- Supports a PCI 104 expansion slot
- Supports 2.5" HDD (optional)

Introduction

With a high quality TFT LCD display, the TPC-1260T adopts the Transmeta™ Crusoe™ 5400 processor as its core. It is a low power consumption x86 compliant processor with 500 MHz operating rate. This system is therefore designed to be fanless though the kernel is powerful. In addition, spindle-free storage makes the TPC-1260T a durable and reliable platform. For those applications where spindle-free storage is not critical, an optional 2.5" slim type HDD can be used. It also provides a PC/104-Plus expansion slot for applications in harsh environments.

Specifications

- **Construction** Al-Mg and plastic molding
- **Display** 12.1" SVGA TFT LCD
- **CPU and Core Logic** Transmeta™ Crusoe™ 5400 (500 MHz)
- **BIOS** Award® 256 KB
- **VGA** SMI® 712 VGA controller
- **DRAM** 128 MB on board, among which 112 MB for users
- **Storage** CompactFlash® memory card or 2.5" HDD (freely bundled HDD kit for environments with extraordinary vibration)
- **I/O** 4 serial ports (one configurable to RS-422/485) and RS-485 is auto flow controlled, 1 parallel port, 1 Ethernet port (10/100Base-T), 1 USB port, 2 PS/2 ports
- **Expansion** One 32-bit PCI-104 expansion slot
- **Watchdog Timer** 1.6 seconds interval
- **Power Input** 24 V_{DC}, 0.8 A maximum
- **Dimensions (W x H x D)** 311 x 237 x 50 mm (12.24" x 9.33" x 1.97")
- **Gross Weight** 2.2 kg (4.85 lbs)

LCD Display

	TPC-1260T	TPC-1260TE
▪ Display Size (diagonal)	12.1"	12.1"
▪ Max. Colors	256K	256K
▪ Resolution	800 x 600	800 x 600
▪ Pixel Pitch (H x V)	0.31 x 0.31 mm	0.31 x 0.31 mm
▪ Viewing Angle	90°	90°
▪ Luminance	300 cd/m ²	100 cd/m ²
▪ Storage Temperature	-20~60° C (-4~ 140° F)	-20~60° C (-4~ 140° F)
▪ Operating Temperature	0~50° C (32 ~ 122° F)	0~50° C (32 ~ 122° F)
▪ Backlight	2 CCFL	1 CCFL
▪ Contrast Ratio	150	150

Touchscreen

- **Type** 4-wire, analog resistive
- **Resolution** Continuous
- **Light Transmission** Above 75%
- **Life** 1 million activation minimum at single point

Environmental Specifications

- **Operating Temperature** 0~50° C (32~122° F)
- **Relative Humidity** 10 ~95% @ 40° C, non-condensing
- **EMI** FCC class A certificated
- **CE certificated**
- **Front panel meets NEMA4/IP65**

Ordering Information

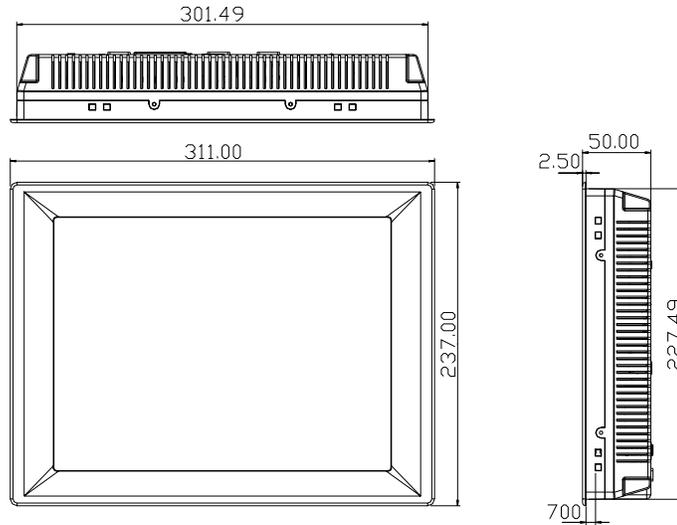
- **TPC-1260T** 12.1" TFT LCD display touch panel computer with Crusoe™ 5400 CPU, and 128 MB DRAM on board
- **TPC-1260TE** 12.1" commercial grade TFT LCD display touch panel computer with Crusoe™ 5400 CPU, and 128 MB DRAM on board
- **TPC-1260TE-X** TPC-1260TE without touchscreen
- **TPC-1260T-CE** TPC-1260T with Windows® CE 3.0 OS on 32 MB CompactFlash® memory card
- **PS-DC24-50** 50 watts 24 V_{DC} output, 110/220 V_{AC} 50/60 Hz input power adapter
- **TPC-1260 STAND** TPC-1260T/TE desktop stand
- **TPC-1260 WALLMT** TPC-1260T/TE wall mounting kit
- **TPC-EXP-1560** TPC-1560T/1260T/TE two-slot PCI expansion kit

TPC-1260T

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

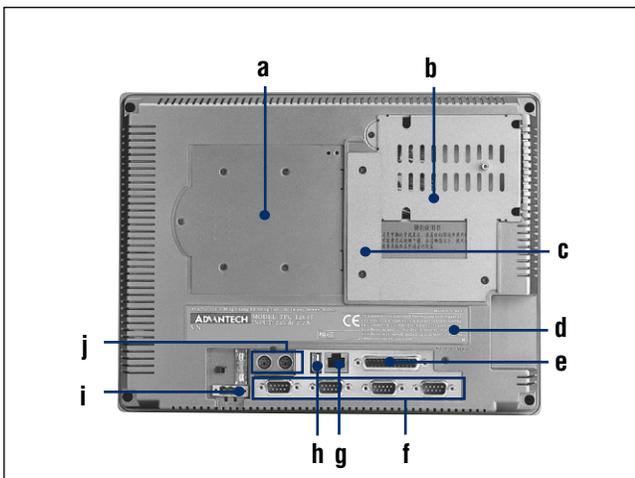
Dimensions

Unit: mm



Cut-out Dimension: 302 x 228 mm

Rear View



- | | |
|-----------------------|------------------|
| a. CPU card cover | f. Serial ports |
| b. 2.5" HDD | g. Ethernet port |
| c. PCI-104 slot | h. USB port |
| d. CompactFlash® slot | i. Power switch |
| e. Parallel port | j. PS/2 ports |

Optional Fieldbus PCI-104 Expansion Card

- Supports CANopen, DeviceNet™ or PROFIBUS™ by request

TPC-1260G

Crusoe™ 5800 Touch Panel Computer with 12.1" SVGA TFT LCD Display



Features

- 12.1" SVGA TFT LCD
- Super slim and compact design with Al-Mg housing
- Fanless cooling system
- NEMA4/IP65 compliant front panel
- Supports Windows® XP/2000/CE.NET/XP embedded
- Downward I/O cabling
- Automatic data flow control RS-485

Introduction

With a high quality TFT LCD display, the TPC-1260G/H adopts the Transmeta™ Crusoe™ 5800 processor as its core. The Crusoe™ 5800 is a low power consuming x86 compliant processor with 1 GHz operating frequency. This system is fanless although the kernel is powerful. In addition, spindle-free storage makes the TPC-1260G a durable and reliable platform. Two PCMCIA slots are provided for expansion capability in harsh environments. A rich I/O portfolio meets diverse requests.

Specifications

- **Construction** Al-Mg and plastic molding
- **Display** 12.1" SVGA TFT LCD
- **CPU / Core Logic** Transmeta™ Crusoe™ 5800 1 GHz
- **BIOS** Award® 256 KB
- **VGA** SMI® 721 VGA controller
- **Memory** 256 MB DDR SDRAM (up to 512 MB), with 240 MB (up to 496 MB) allocated for users
- **Storage** CompactFlash® memory card
- **I/O** 4 serial ports (one configurable to RS-232/422/485) and RS-485 is auto flow controlled, 1 parallel port, 1 Ethernet port (10/100/1000Base-T), 2 USB ports (USB2.0), 1 PS/2 port (KB/MS combined), 2 PCMCIA slots, 1 VGA port, 3 Audio ports (MIC in X 1, Line in X 1, Line out X 1)
- **Expansion** PC/104-Plus expansion slot
- **Watchdog Timer** 1.6 seconds interval
- **Power Input** 24 V_{DC}, 1A maximum
- **Dimensions (WxHxD)** 311 x 237 x 75.85 mm (12.24" x 9.33" x 2.99")
- **Gross Weight** 3.7 kg (8.15 lb)

Environmental Specifications

- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Relative Humidity** 10 ~ 95% @ 40° C, non-condensing
- **EMI** FCC class A certification
- **Operating Vibration** 2 grms (5 ~ 500 Hz)
- **Operating Vibration with external HDD** 1 grms (5 ~ 500 Hz)
- **Front panel meets NEMA4 / IP65**

Touchscreen

- **Type** 8-wire, analog resistive
- **Resolution** Continuous

- **Light Transmission** Above 75%
- **Life** 1 million activation minimum at single point

LCD Display

- **Display Size (diagonal)** 12.1"
- **Max. Colors** 256K
- **Resolution** 800 x 600
- **Pixel Pitch (H x V)** 0.3075 x 0.3075 mm
- **Viewing Angle** 90°
- **Luminance cd/m²** 100
- **Storage Temperature** -20~60° C (-4~140° F)
- **Operating Temperature** 0~50° C (32 ~ 122° F)
- **Backlight** 1 CCFL
- **Contrast Ratio** 150

Ordering Information

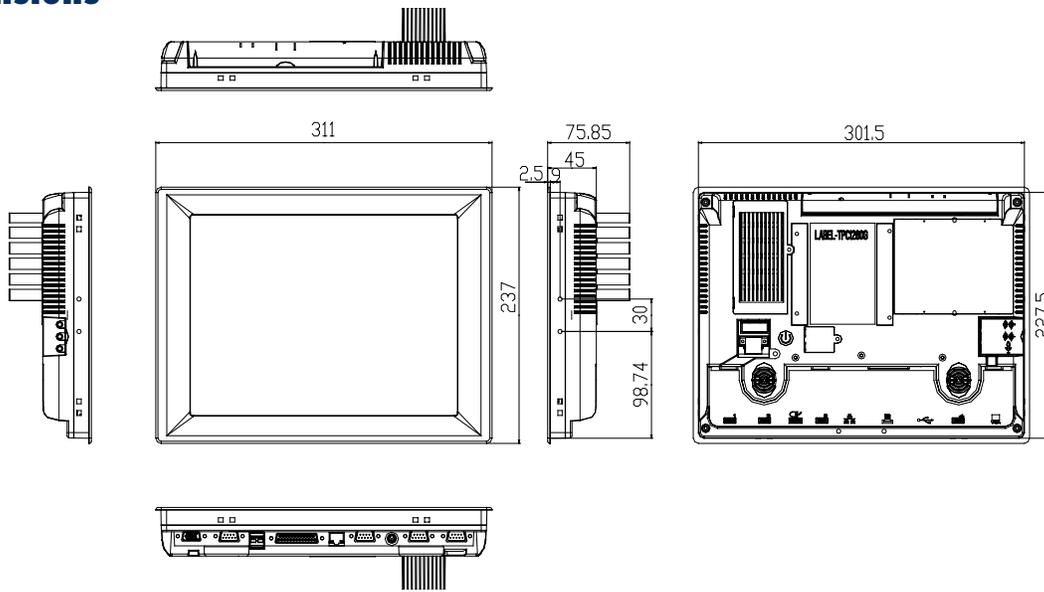
- **TPC-1260G-A1** 12.1" TFT LCD display touch panel computer with Crusoe™ 5800 1 GHz CPU and 256 MB DDR SDRAM
- **TPC-1260G-A5** 12.1" TFT LCD display touch panel computer with Crusoe™ 5800 1 GHz CPU and 512 MB DDR SDRAM
- **TPC-1260GN-A1** TPC-1260G-A1 with Windows® CE .NET OS/64 MB CF card
- **TPC-1260G-D1** TPC-1260G-A1 without touch screen
- **PS-DC24-50** 50 Watts 24 V_{DC} output, 110 V/220 V_{AC} 50/60 Hz input power adapter
- **TPC-1260G HDD** TPC-1260G external HDD kit

TPC-1260G

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

Dimensions

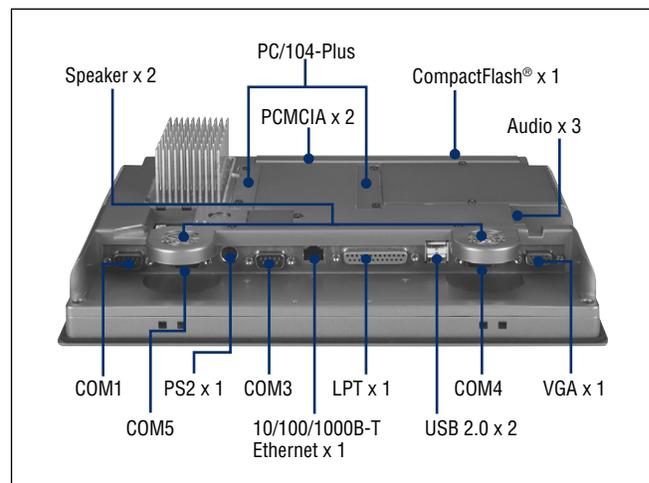
Unit: mm



Accessories

- **TPC-1260G WMK** TPC-1260G wall mount kit
- **TPC-1260G CDK** TPC-1260G/H CD-ROM kit
- **TPC-1260G HDD** TPC-1260G external HDD kit

Rear View



TPC-1260H

Crusoe™ 5800 Touch Panel Computer with High-Luminance 12.1" SVGA TFT LCD Display



Features

- 12.1" SVGA TFT LCD
- Super slim and compact design with Al-Mg housing
- Fanless cooling system
- NEMA4/IP65 compliant front panel
- Supports Windows® XP/2000/CE.NET/ XP Embedded
- Downward I/O cabling
- Automatic data flow control RS-485

Introduction

With a high quality TFT LCD display, the TPC-1260G/H adopts the Transmeta™ Crusoe™ 5800 processor as its core. The Crusoe™ 5800 is a low power consuming x86 compliant processor with 1 GHz operating frequency. This system is fanless although the kernel is powerful. In addition, spindle-free storage makes the TPC-1260G/H a durable and reliable platform. For applications where spindle-free storage is not critical, a fast-access HDD module can be used. Two PCMCIA slots are provided for expansion capability in harsh environments, while the embedded UPS function can avoid abnormal system shutdowns caused by power interruptions. A rich I/O portfolio meets diverse requests.

Specifications

- **Construction** Al-Mg and plastic molding
- **Display** 12.1" SVGA TFT LCD
- **CPU / Core Logic** Transmeta™ Crusoe™ 5800 1 GHz
- **BIOS** Award® 256 KB
- **VGA** SMI® 721 VGA controller
- **Memory** 256 MB DDR SDRAM (up to 512 MB), with 240 MB (up to 496 MB) allocated for users
- **Storage** CompactFlash® memory card or 2.5" HDD
- **I/O** 4 serial ports (one configurable to RS-232/422/485) and RS-485 is auto flow controlled, 1 parallel port, 1 Ethernet port (10/100/1000Base-T), 2 USB ports (USB2.0), 1 PS/2 port (KB/MS combined), 2 PCMCIA slots, 1 VGA port, 3 Audio ports (MIC in X 1, Line in X 1, Line out X 1)
- **Expansion** PC/104-Plus expansion slot
- **Watchdog Timer** 1.6 seconds interval
- **Power Input** 24 V_{DC}, 1A maximum
- **Dimensions (WxHxD)** 311 x 237 x 58 mm (12.24" x 9.33" x 2.29")
- **Gross Weight** 4.1 kg (9.04 lb)

Environmental Specifications

- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Relative Humidity** 10 ~ 95% @ 40° C, non-condensing
- **EMI** FCC class A certification
- **Operating Vibration** 2 grms (5 ~ 500 Hz)
- **Operating Vibration with HDD** 0.5 grms (5 ~ 500 Hz) (X - Axis)
1 grms (5 ~ 500 Hz) (Y,Z - Axis)
- **Front panel meets NEMA4 / IP65**

Touchscreen

- **Type** 8-wire, analog resistive
- **Resolution** Continuous

- **Light Transmission** Above 75%
- **Life** 1 million activation minimum at single point

LCD Display

- **Display Size (diagonal)** 12.1"
- **Max. Colors** 256K
- **Resolution** 800 x 600
- **Pixel Pitch (H x V)** 0.3075 x 0.3075 mm
- **Viewing Angle** 120°
- **Luminance cd/m²** 350
- **Storage Temperature** -20~70° C (-4~158° F)
- **Operating Temperature** 0~60° C (32 ~ 140° F)
- **Backlight** 2 CCFL
- **Contrast Ratio** 500

Ordering Information

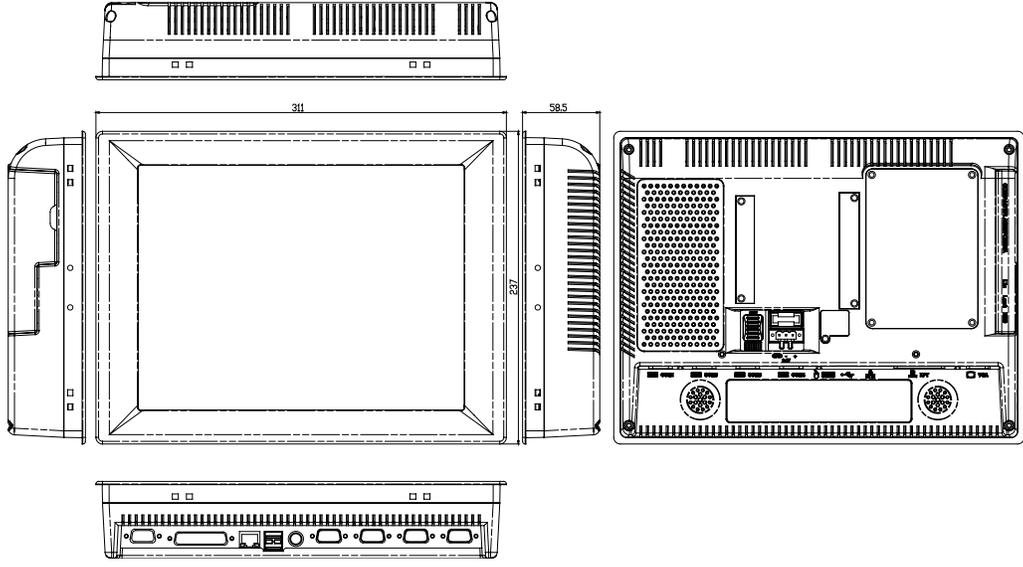
- **TPC-1260H-A1** 12.1" high luminance TFT LCD display touch panel computer with Crusoe™ 5800 1 GHz CPU and 256 MB DDR SDRAM
- **TPC-1260HN-A1** TPC-1260H-A1 with Windows® CE .NET OS/64 MB CF card
- **TPC-1260H-D1** TPC-1260H-A1 without touch screen
- **TPC-1260H-A5** 12.1" high luminance TFT LCD display touch panel

TPC-1260H

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

Dimensions

Unit: mm

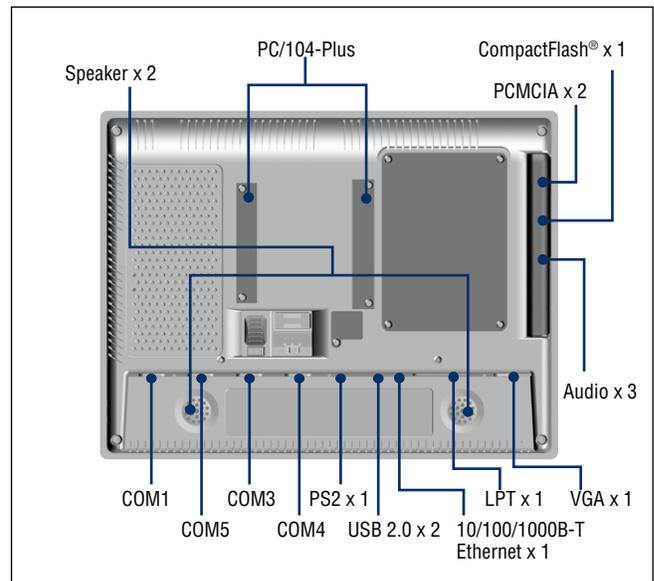


computer with Crusoe™ 5800 1 GHz CPU and 512 MB DDR SDRAM

Accessories

- **PS-DC24-50** 50 Watts 24 V_{DC} output, 110 V/220 V_{AC} 50/60 Hz input power adapter
- **TPC-1260H WMK** TPC-1260H wall mount kit
- **TPC-1260H STK** TPC-1260H stand kit
- **TPC-1260H SAK** TPC-1260H swing arm kit
- **TPC-1260H CDK** TPC-1260H CD-ROM kit

Rear View



TPC-60S

ARM9 Touch Panel Computer with 5.7" QVGA STN LCD Display



Features

- 5.7" QVGA color STN LCD
- Super slim and compact design with plastic housing
- Fanless cooling system
- NEMA4/IP65 compliant front panel
- Built-in flash memory and Windows® CE .NET OS
- One CompactFlash® slot
- Automatic data flow control RS-485

Introduction

The TPC-60S models are compact platforms without redundant functions, which have been designed for small-sized operator interface applications. They have 5.7" STN LCD display which is a cost effective choice for a limited budget. Its RISC kernel, the ARM9 processor, consumes minimum power without sacrificing performance. The TPC-60S has 10/100Base-T Ethernet port offering solid communication ability and comes bundled with a Windows® CE .NET OS that supports Thin-Client solutions. The built-in Windows® CE .NET OS platform lets TPC-60S become an open HMI solution for system integration.

Specifications

- **Construction** Plastic molding housing
- **Display** 5.7" QVGA STN LCD
- **CPU / Core logic** ARM9 S3C2410A 266 MHz
- **VGA** Controlled by CPU
- **Memory** 64 MB SDRAM on board
- **Storage** 64 MB flash memory on board, 1 CompactFlash® card (option)
- **I/O** 3 serial ports (one full RS-232, one 4-pin RS-232, one RS-485), 1 Ethernet port (10/100Base-T), 2 USB ports (one Host, one Client)
- **Watchdog Timer** Programmable as 250 ms, 500 ms, 1 second
- **Power Input** 24 V_{DC}, 0.5A maximum
- **Dimensions (W x H x D)** 195 x 148 x 44.4 mm (7.68" x 5.83" x 1.75")
- **Gross Weight** 0.8 kg (1.76lbs)

LCD Display

- **Display Type** STN color LCD
- **Display Size (diagonal)** 5.7"
- **Max. Colors** 256
- **Resolution** 320 x 240
- **Pixel Pitch (HxV)** 0.36 x 0.36 mm
- **Viewing Angle** 110°
- **Luminance (cd/m²)** 201
- **Backlight** 1 CCFL
- **Contrast ratio** 35

Touchscreen

- **Type** 4-wire, analog resistive
- **Resolution** Continuous
- **Light Transmission** Above 75%
- **Life** 1 million activation minimum at single point

Environmental Specifications

- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Relative Humidity** 10 ~ 95% @ 40° C, non-condensing
- **EMI** FCC class A certification
- **Vibration** 1 G
- **Front panel meets NEMA4 / IP65**

Ordering Information

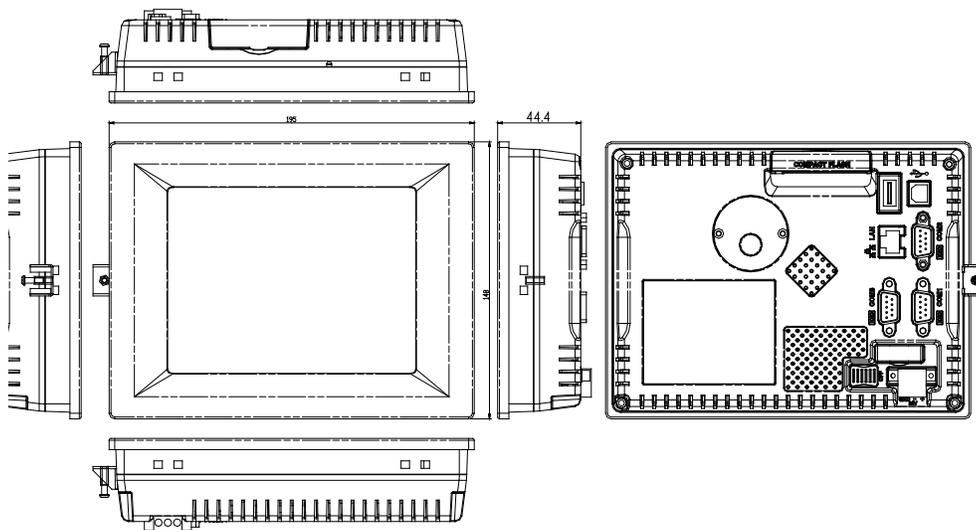
- **TPC-60SN-E1** 5.7" color STN LCD display touch panel computer with ARM9 266 MHz CPU, 64 MB DRAM/64 MB flash memory on board and Windows® CE .NET OS
- **TPC-60SN-F1** TPC-60SN-E1 without touch screen
- **PS-DC24-50** 50 Watts 24 V_{DC} output, 110 V/220 V_{DC} 50/60 Hz input power adapter
- **Java® Virtual Machine embedded by request**

TPC-60S

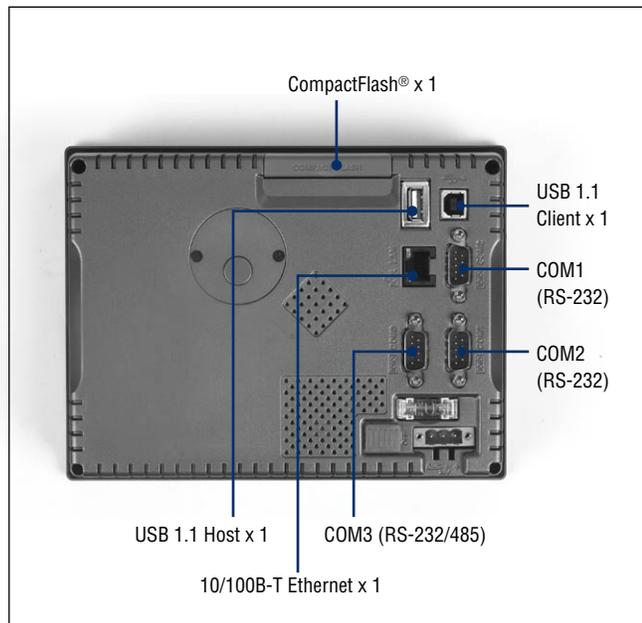
1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

Dimensions

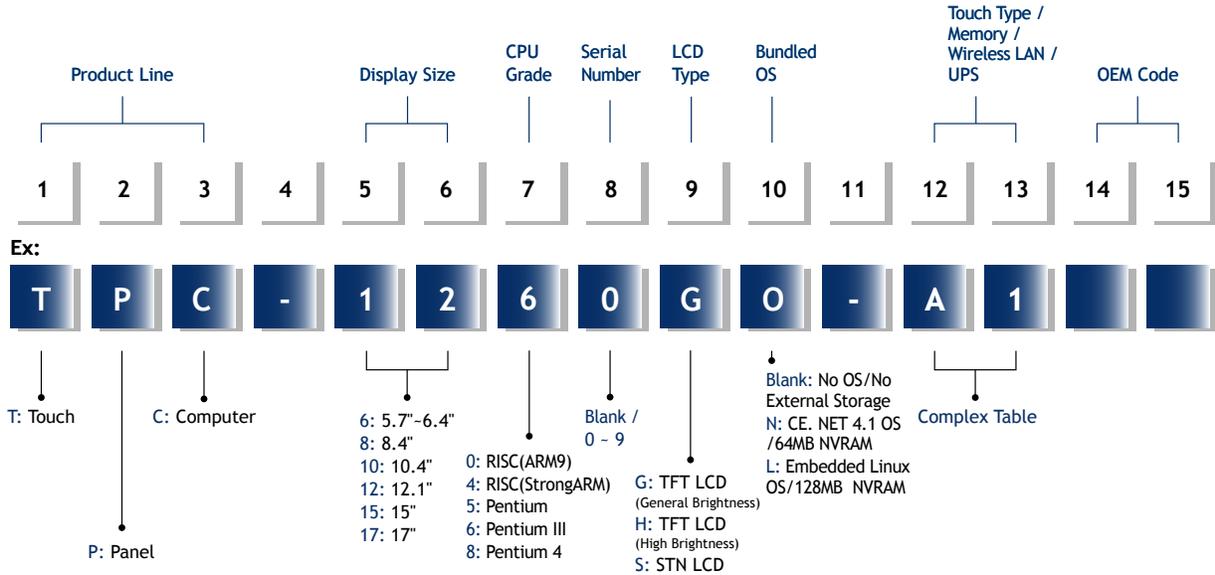
Unit: mm



Rear View



TPC Series Naming Rule



❖ Example Description: 12.1" Touch Panel Computer with General brightness TFT LCD / TM5800 CPU / Resistive 8 wire touch screen / 256MB DDR SDRAM

Complex Table					
12	13	Touch Type	System Memory	UPS	Wireless LAN
A	1	Resistive - 8 wire	256MB DDR SDRAM	No	No
A	2	Resistive - 8 wire	256MB DDR SDRAM	No	Yes
A	3	Resistive - 8 wire	256MB DDR SDRAM	Yes	No
A	4	Resistive - 8 wire	256MB DDR SDRAM	Yes	Yes
A	5	Resistive - 8 wire	512MB DDR SDRAM	No	No
A	6	Resistive - 8 wire	512MB DDR SDRAM	No	Yes
A	7	Resistive - 8 wire	512MB DDR SDRAM	Yes	No
A	8	Resistive - 8 wire	512MB DDR SDRAM	Yes	Yes
B	1	Resistive - 5 wire	256MB DDR SDRAM	No	No
B	2	Resistive - 5 wire	256MB DDR SDRAM	No	Yes
B	3	Resistive - 5 wire	256MB DDR SDRAM	Yes	No
B	4	Resistive - 5 wire	256MB DDR SDRAM	Yes	Yes
B	5	Resistive - 5 wire	512MB DDR SDRAM	No	No
B	6	Resistive - 5 wire	512MB DDR SDRAM	No	Yes
B	7	Resistive - 5 wire	512MB DDR SDRAM	Yes	No
B	8	Resistive - 5 wire	512MB DDR SDRAM	Yes	Yes
C	1	Capacitive	256MB DDR SDRAM	No	No
C	2	Capacitive	256MB DDR SDRAM	No	Yes
C	3	Capacitive	256MB DDR SDRAM	Yes	No
C	4	Capacitive	256MB DDR SDRAM	Yes	Yes
C	5	Capacitive	512MB DDR SDRAM	No	No
C	6	Capacitive	512MB DDR SDRAM	No	Yes
C	7	Capacitive	512MB DDR SDRAM	Yes	No
C	8	Capacitive	512MB DDR SDRAM	Yes	Yes
D	1	No Touch	256MB DDR SDRAM	No	No
D	2	No Touch	256MB DDR SDRAM	No	Yes
D	3	No Touch	256MB DDR SDRAM	Yes	No
D	4	No Touch	256MB DDR SDRAM	Yes	Yes
D	5	No Touch	512MB DDR SDRAM	No	No
D	6	No Touch	512MB DDR SDRAM	No	Yes
D	7	No Touch	512MB DDR SDRAM	Yes	No
D	8	No Touch	512MB DDR SDRAM	Yes	Yes
E	1	Resistive - 4 wire	64MB SDRAM	X	No
E	2	Resistive - 4 wire	64MB SDRAM	X	Yes
F	1	No Touch	64MB SDRAM	X	No
F	2	No Touch	64MB SDRAM	X	Yes

❖ Example:

1. TPC-1260GN-A3: 12.1" Touch Panel Computer with General brightness TFT LCD / TM5800 CPU / Windows CE .NET OS + 64MB NVRAM / Resistive 8 wire touch screen / 256MB DDR SDRAM / UPS function
2. TPC-1560H-B1: 15" Touch Panel Computer with High brightness TFT LCD / TM5800 CPU / Resistive 5 wire touch screen / 256MB DDR SDRAM
3. TPC-60SN-E1: 5.7" Touch Panel Computer with STN LCD / RISC ARM9 CPU / Windows CE .NET OS + 64MB NVRAM / Resistive 4 wire touch screen / 64MB SDRAM

Industrial Flat Panel Monitors

Selection Guide	Industrial Flat Panel Monitors Selection Guide	4-2
Rugged Industrial LCD Monitors		
FPM-3191G (NEW)	Industrial 19" Flat Panel Monitor with Direct-VGA Port	4-4
FPM-3170G	Industrial 17" Flat Panel Monitor with VGA/DVI/Video/S-Video	4-6
FPM-3150G (NEW)	Industrial 15" Flat Panel Monitor with Direct-VGA Port	4-8
FPM-2150G	15" Flat Panel Monitor with Direct-VGA Port	4-10
FPM-3120	Industrial 12.1" Flat Panel Monitor with Direct-VGA Port	4-12
FPM-3220	Industrial 12.1" Flat Panel Monitor with function membrane key and Direct-VGA Port	4-14
Industrial Flat Panel Monitor Naming Rule		4-16



Industrial Flat Panel Monitors



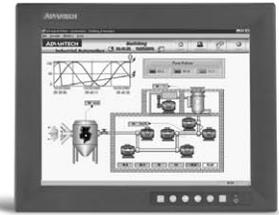
FPM-3191



FPM-3170



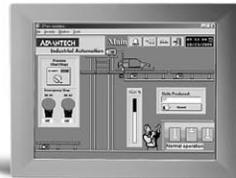
FPM-3150



FPM-2150

Specifications		Model	FPM-3191G	FPM-3170G
LCD Display	Type		SXGA TFT LCD	SXGA TFT LCD
	Size		19"	17"
	Max. Resolution		1280 x 1024	1280 x 1024
	Max. Colors		262 K or above	16.7 M
	Viewing Angle(H, V o)		170, 170	170, 170
	Luminance(cd/m2)		300	250
	LCD MTBF (hrs)		50,000	30,000
	Contrast Ratio		700:1	500:1
Direct-VGA			Yes	Yes
DVI Input			-	Yes
Video Input			-	Yes
Key Pad	Data Entry Keys		-	-
	Function Keys		-	-
	Macro Function Keys		-	-
Control Board			-	-
Touch Screen (optional)			Resistive, Capacitive	Resistive
Power Supply (VAC)			100 ~ 220	100 ~ 230
Front Panel Compliance			NEMA4/IP65	NEMA4/IP65
Operating Temperature			0 ~ 50° C (32 ~ 122° F)	0 ~ 50° C (32 ~ 122° F)
Storage Temperature			-20 ~ 60° C (-4 ~ 140° F)	-20 ~ 60° C (-4 ~ 140° F)
Certifications			CE, FCC, BSMI, CCC	CE, FCC, BSMI, CCC
Dimensions (W x H x D)			482 x 399 x 66 mm (19" x 15.7" x 2.6")	482 x 354 x 68 mm (19" x 13.9" x 2.7")
Page			4-4	4-6

Selection Guide



FPM-3120



FPM-3220

FPM-3150G	FPM-2150G	FPM-3120	FPM-3220
XGA TFT LCD	XGA TFT LCD	SVGA TFT LCD	SVGA TFT LCD
15"	15"	12.1"	12.1"
1024 X 768	1024 X 768	800 X 600	800 X 600
16.2 M	262 K or above	262 K	262 K
140, 125	120, 100	90, 40	90, 40
400	250	100 (TV), 300 (TH)	100
50,000	30,000	20,000	20,000
500:1	400:1	150:1	150:1
Yes	Yes	Yes	Yes
-	-	-	-
-	-	-	-
-	-	-	60
-	-	-	10
-	-	-	10
-	-	-	-
Resistive	Resistive	Resistive, Capacitive	Resistive
100 ~ 230	100 ~ 230	100 ~ 230	100 ~ 230
NEMA4/IP65	NEMA4/IP65	NEMA4/IP65	NEMA4/IP65
0 ~ 50° C (32 ~ 122° F)	0 ~ 50° C (32 ~ 122° F)	0 ~ 50° C (32 ~ 122° F)	0 ~ 50° C (32 ~ 122° F)
-20 ~ 60° C (-4 ~ 140° F)	-20 ~ 60° C (-4 ~ 140° F)	-20 ~ 60° C (-4 ~ 140° F)	-20 ~ 60° C (-4 ~ 140° F)
CE, FCC, BSMI, CCC	CE, FCC, BSMI, CCC	CE, FCC, BSMI, CCC	CE, FCC, BSMI, CCC
422 x 310 x 86 mm (16.6" x 12.2" x 3.4")	383 x 307 x 48 mm (15" x 12" x 1.9")	311 x 237 x 40 mm (12" x 9" x 1.6")	482 x 266 x 63 mm (19" x 10.5" x 2.5")
4-8	4-10	4-12	4-14

- 1 Software
- 2 IPPC
- 3 TPC
- 4 **FPM**
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

FPM-3191G

Industrial 19" Flat Panel Monitor with Direct-VGA Port



Features

- 19" SXGA TFT LCD with resolution up to 1280 X 1024
- Stainless steel chassis with NEMA4/IP65-compliant aluminum front panel (optional stainless steel front panel available)
- Multi-scan function supports SXGA, XGA, SVGA, VGA, text mode
- High luminance up to 300 cd/m²
- Auto-recognition of input signal
- Supports panel, wall, rack mount or VESA arm mounting
- Anti-reflective screen with tempered glass
- Hard anodic coating to prevent panel abrasion and acid corrosion
- Stainless steel stand for freestanding applications

Introduction

FPM-3191G is a 19" color TFT LCD flat panel monitor specifically designed for industrial applications. With a viewing size as large as 19", it presents an ample display area as well as vivid and sharp images for your HMI. It features Direct-VGA signal transmission and the on-screen display function makes it easy to adjust the images on the screen. The stainless steel chassis and the NEMA4/IP65 compliant aluminum front panel enable installation in applications with water and dust. An optional stainless steel front panel is available by request.

Specifications

- **Front Panel** Stainless, NEMA4/IP65 compliant. (aluminum optional)
- **Mounting** Panel, wall, rack mount or VESA arm
- **Dimensions (WxHxD)** 482 x 399 x 66 mm (19" x 15.7" x 2.6")
- **Net Weight** 9.2 kg (20.3 lbs)
- **I/O Port** VGA, DC power input, power switch, and RS-232 port (Touchscreen version only)
- **Control** OSD (On Screen Display) Control Pads on the front panel
- **Power** External 60 W power adapter, with AC 100 V ~ 220 V input and DC +12 V @ 5 A output
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Storage Humidity** 5 ~ 90% non-condensing
- **Vibration (operating)** 5 ~ 17 Hz, double-amplitude displacement 17 ~ 500 Hz, 1.0 G peak to peak
- **BSMI, CE, CCC and FCC compliant**

LCD Display

- **Display Type** SXGA TFT LCD
- **Display Size** 19"
- **Max. Colors** Full color (16.7 million)
- **Max. Resolution** 1280 x 1024
- **Viewing Angle** 170° (H), 170° (V)
- **Luminance** 300 cd/m²
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Backlight Lifetime** 50,000 hrs
- **Contrast Ratio** 700: 1 (typ.)

Touchscreen (Optional)

- **Type** 8 Wire, analog resistive or capacitive sensor
- **Resolution** 1024 x 1024
- **Light Transmission** 79 % (resistive), 88% (capacitive)
- **Controller** RS-232 interface
- **Power Consumption** +5 V @ 200 mA
- **OS Support** Windows® 2000/XP
- **Lifespan** 1 million touches at a single point (resistive)
225 million touches (capacitive)

Ordering Information

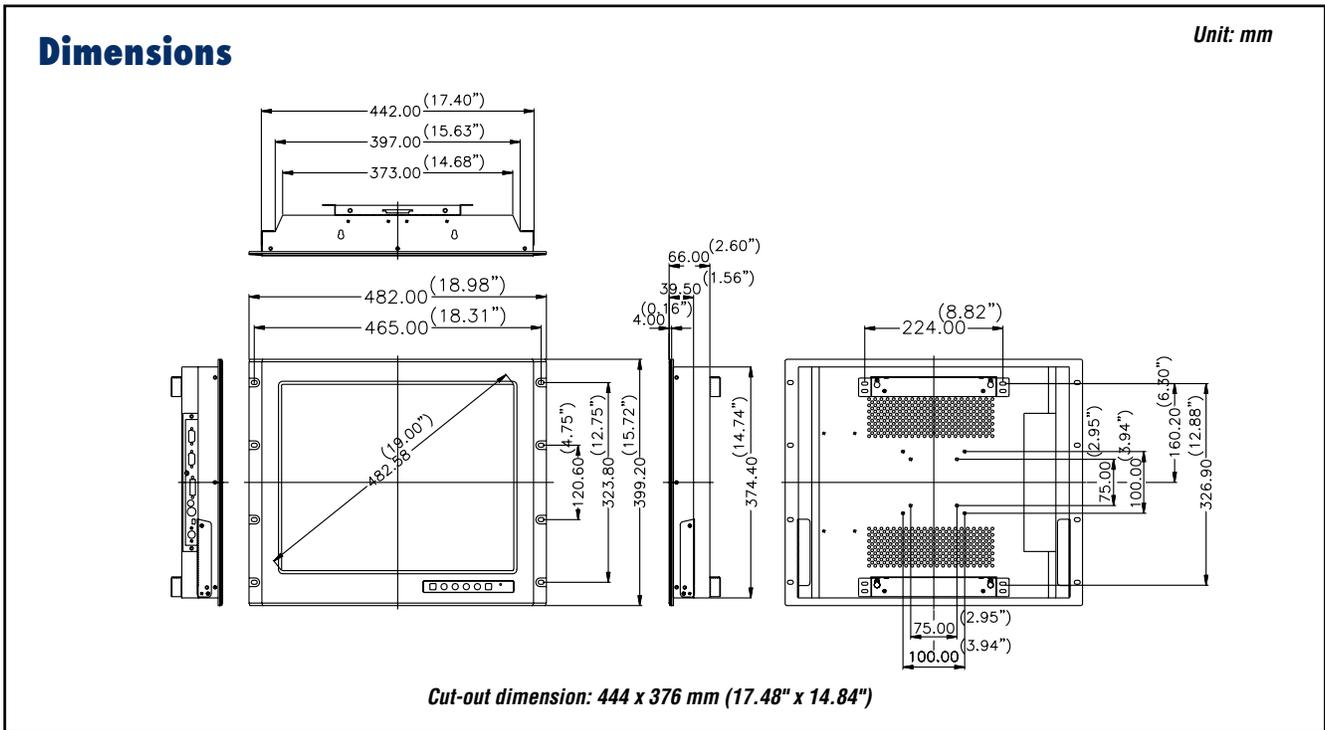
- **FPM-3191GA** Industrial 19" TFT LCD display with 19" Rack-Mount Bezel, VGA/DVI/Video interface and AC 100 ~ 220 V input 48 W power adapter
- **FPM-3191GA-R** FPM-3191GA with resistive touchscreen (RS-232 interface)
- **FPM-3191GA-C** FPM-3191GA with capacitive touchscreen (RS-232 interface)

Option

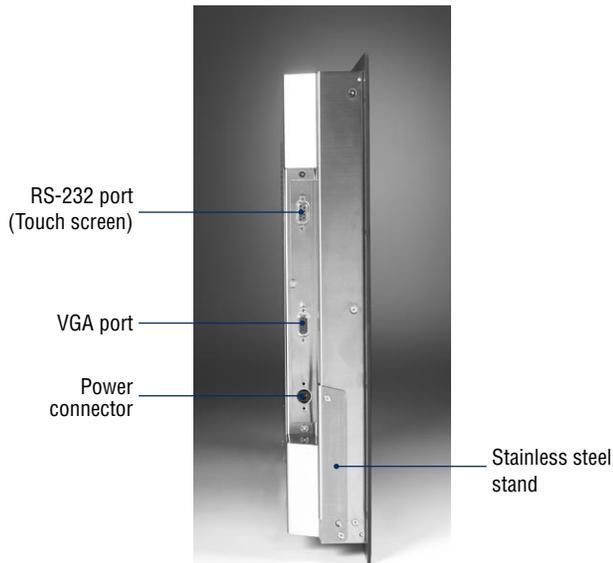
- **1962319130** Stainless steel front panel by request

FPM-3191G

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS



Side View



FPM-3170G

Industrial 17" Flat Panel Monitor with VGA/DVI-D/Video/S-Video Port



Features

- 17" SXGA TFT LCD with resolution up to 1280 x 1024
- Stainless steel chassis
- NEMA4/IP65-compliant aluminum front panel
- Multi-scan function supports SXGA, XGA, SVGA, VGA, text mode
- High luminance up to 250 cd/m²
- Auto-recognition of input signal
- Supports panel, wall, rack mount or VESA arm
- Multi-signal input supports VGA
- Anti-reflective screen with tempered glass
- Hard anodic coating to prevent panel abrasion and acid corrosion

Introduction

The FPM-3170G is a 17-inch color TFT LCD flat panel monitor specifically designed for industrial applications. With a viewing size as large as 17", it presents an ample display area as well as vivid and sharp images for your HMI. The FPM-3170G features multi-signal input to support VGA, DVI-D, Video and S-Video interfaces. You can thus upgrade the display without making changes to the existing system. Its on-screen display function also makes it easy to adjust the images on the screen. The whole chassis is designed in stainless steel and the front panel is made of aluminum with NEMA4/IP65 compliance.

Specifications

- **Front Panel** Aluminum, NEMA4/IP65 compliant
- **Mounting** Panel, Wall, rack mount or VESA arm
- **Dimensions (W x H x D)** 482 x 354 x 68 mm (19" x 13.9" x 2.7")
- **Net Weight** 12.7 kg (27.9 lb)
- **I/O Port** VGA, DVI, Video, S-Video, DC power input, power switch, and RS-232 port (Touchscreen version only)
- **Control** OSD (on screen display) control pads on the front panel
- **Power** External 48 W power adapter, with AC 100 V ~ 230 V input and DC +12 V @ 4 A output
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Storage Humidity** 5 ~ 95% non-condensing
- **Vibration (operating)** 5 ~ 17 Hz, double-amplitude displacement 17 ~ 500 Hz, 1.0 G peak to peak
- **CE, FCC, BSMI, and CCC compliant**

LCD Display

- **Display Type** SXGA TFT LCD
- **Display Size** 17"
- **Max. Colors** Full color (16.7 million)
- **Max. Resolution** 1280 x 1024
- **Viewing Angle** 170° (H), 170° (V)
- **Luminance** 250 cd/m²
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Backlight Lifetime** 50,000 hrs
- **Contrast Ratio** 500:1 (typ.)

Touchscreen (Optional)

- **Type** 8 wire, analog resistive sensor
- **Resolution** Continuous
- **Light Transmission** 72%
- **Controller** RS-232 interface
- **Power Consumption** +5 V @ 200 mA
- **OS Support** Windows® 2000/XP
- **Lifespan** 1 million touches at a single point

Ordering Information

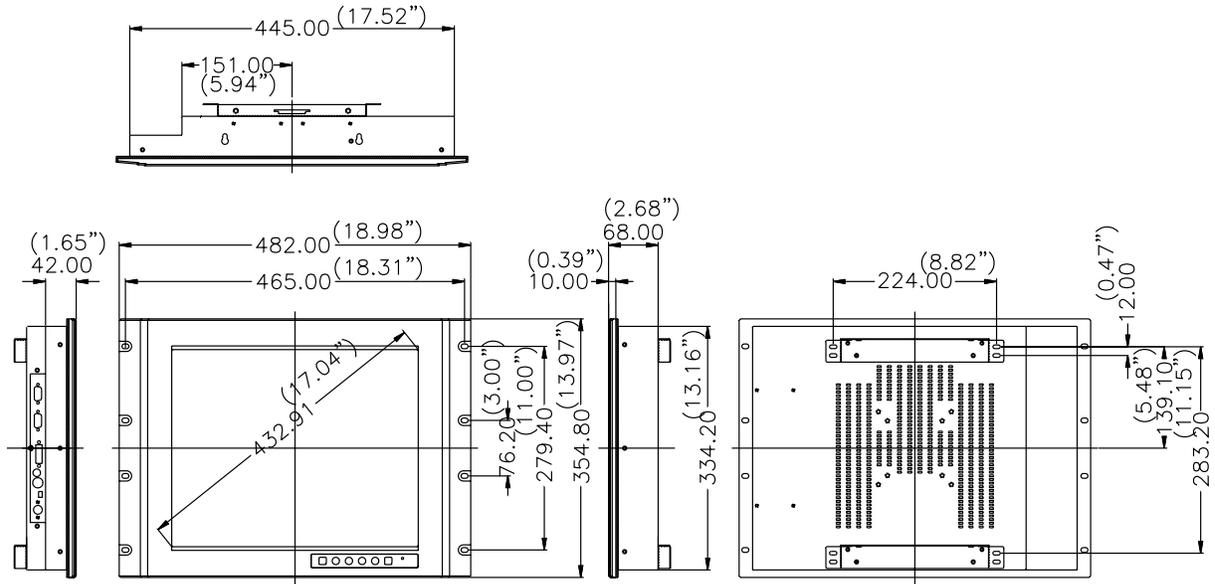
- **FPM-3170G** Industrial 17" TFT LCD display with 19" Rack-Mount Bezel, VGA/ DVI/ Video interface and AC 100-230 V input 48W power adapter
- **FPM-3170G-R** FPM-3170G with analog resistive touchscreen (RS-232 interface)

FPM-3170G

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

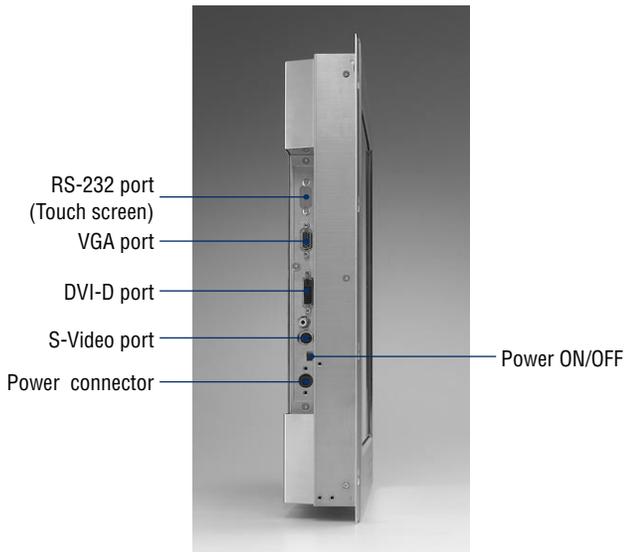
Dimensions

Unit: mm



Cut-out dimension: 451 x 340 mm (17.8" x 13.4")

Side View



FPM-3150G

Industrial 15" Flat Panel Monitor with Direct-VGA Port



Features

- 15" XGA TFT LCD with resolution up to 1024 X 768
- Stainless steel chassis
- NEMA4/IP65-compliant aluminum front panel
- High luminance up to 400 cd/m²
- Auto-recognition of input signal
- Rack, panel or wallmount
- Supports VESA arm, desktop stand
- Anti-reflective screen with tempered glass
- Hard anodic coating to prevent panel abrasion and acid corrosion

Introduction

The FPM-3150G is a 15-inch color TFT LCD flat panel monitor specifically designed for industrial applications. With a viewing size as large as 15", it presents an ample display area as well as vivid and sharp images for your HMI. The FPM-3150G features Direct-VGA signal transmission, which allows a regular VGA control card to be used in your system. Users can thus upgrade the display without making changes to the existing system. Its on screen display function also allows users to adjust the images on the screen with ease. The whole chassis is stainless steel and the front panel is made of aluminum with NEMA4/IP65 compliance.

Specifications

- **Front Panel** Aluminum, NEMA4/IP65 compliant
- **Mounting** Panel mount, wallmount, desktop, VESA arm, or 19" rackmount with optional mounting kit
- **Dimensions (W x H x D)** 422 x 310 x 86 mm (16.6" x 12.2" x 3.4")
- **Net Weight** 6.2 kg (13.6 lb)
- **I/O Port** VGA, DC power input, power switch, and RS-232 port (Touchscreen version only)
- **Control** OSD (on screen display) Control Pads on the front panel
- **Power** External 48 W power adapter, with AC 100 V ~ 230 V input and DC +12 V @ 4 A output
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Storage Humidity** 5 ~ 95% non-condensing
- **Vibration (operating)** 5 ~ 17 Hz, double-amplitude displacement
17 ~ 500 Hz, 1.0 G peak to peak
- **CE, FCC, BSMI, and CCC compliant**

LCD Display

- **Display Type** XGA TFT LCD
- **Display Size** 15"
- **Max. Colors** Full color (16.2 (6 bit + FRC) million)
- **Max. Resolution** 1024 X 768
- **View Angle** 140° (H), 125° (V)
- **Luminance** 400 cd/m²
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Backlight Lifetime** 50,000 hrs
- **Contrast Ratio** 350 : 1

Touchscreen (Optional)

- **Type** 8 wire, analog resistive sensor
- **Resolution** Continuous
- **Light Transmission** 75%
- **Operating Pressure** 30 ~ 45 grams for stylus pen, contact bounce < 10 ms
- **Controller** RS-232 interface
- **Power Consumption** +5 V @ 200 mA
- **OS Support** Windows® 2000/XP
- **Lifespan** 1 million touches at a single point

Ordering Information

- **FPM-3150G** Industrial flat panel monitor with 15" LCD display, VGA interface, and AC 100~230 V input 48W power adapter
- **FPM-3150G-R** FPM-3150G with analog resistive touchscreen (RS-232 interface)
- **FPM-3150 Rack-MT** Mounting kit for 19" industrial rack

Option

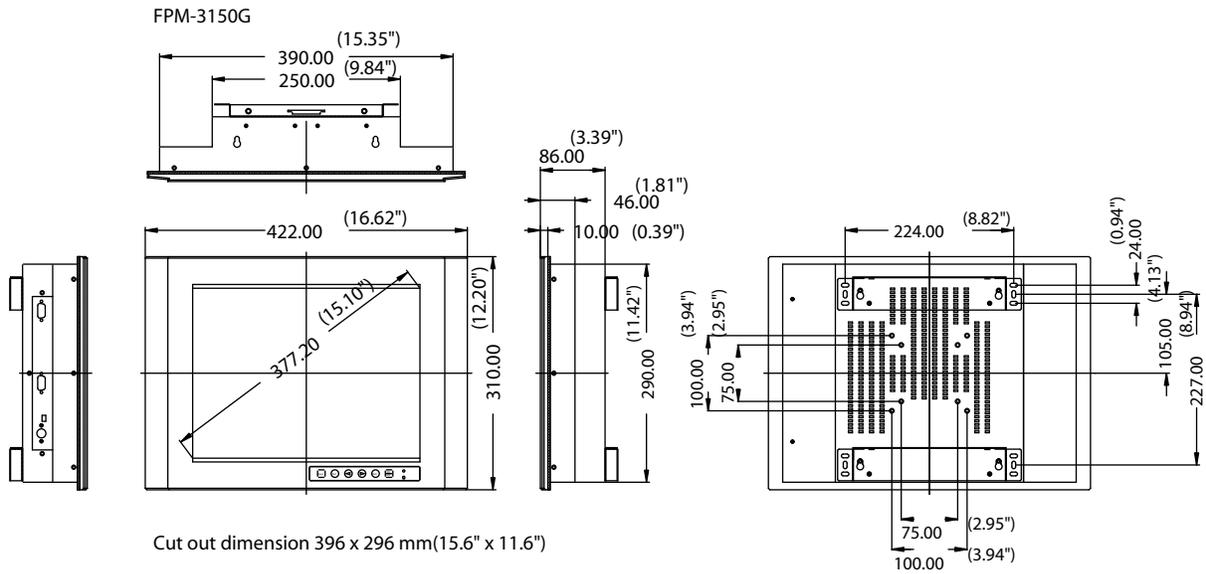
- **1962315270** Stainless steel front panel by request

FPM-3150G

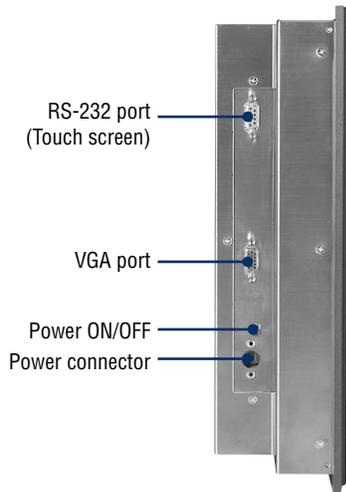
1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

Dimensions

Unit: mm



Side View



Rack Mount



FPM-2150G

15" Flat Panel Monitor with Direct-VGA Port



Features

- 15" XGA TFT LCD with resolution up to 1024 x 768
- Multi-scan function supports XGA, SVGA, VGA
- Front accessible display on/off switch
- Auto-recognition of input signal
- Supports panel, rack, wall mount, desktop and VESA arm
- NEMA4/IP65 compliant Al-Mg front panel
- Anti-reflective screen with tempered glass
- Hard anodic coating to prevent panel abrasion and acid corrosion

Introduction

FPM-2150G is an industrial-grade 15" TFT LCD flat panel monitor with an Al-Mg front panel, a modern appearance, and one of the most competitive prices for 15" LCD monitors on the market. The FPM-2150G is also extremely light and thin, and provides many industrial-grade features such as a NEMA4/IP65 certified front panel, stainless steel chassis, VESA mounting flexibility, and more. The FPM-2150G is especially suitable for industrial PCs such as IPC-610 or IPC-6806. This combination leads to an extremely reliable and tough system, ready to operate in a wide variety of industrial applications.

Specifications

- **Display Interface** RGB (VGA)
- **Control** OSD (on screen display) control pads on the front panel
- **Front Panel** Al-Mg, NEMA4/IP65 compliant
- **Mounting** Panel, rack, wall mount, desktop and VESA arm
- **Dimensions (W x H x D)** 383 x 307 x 48 mm (15" x 12" x 1.9")
- **Net Weight** 3.7 kg (8.2 lb)
- **Power** External 48 W power adapter, AC 100 V ~ 240 V input, +12 V @ 4 A output
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Storage Humidity** 5 ~ 95 % non-condensing
- **Vibration (operating)** 5 ~ 17 Hz, double-amplitude displacement
17 ~ 500 Hz, 1.0 G peak to peak
- **CE, FCC, BSMI, CCC compliant**

Touchscreen (Optional)

- **Type** 8 wire, analog resistive
- **Resolution** Continuous
- **Light Transmission** 75%
- **Controller** RS-232 interface
- **Power Consumption** +5 V @ 200 mA
- **OS support** Windows® 2000/XP
- **Lifespan** 1 million touches at a single point

LCD Display

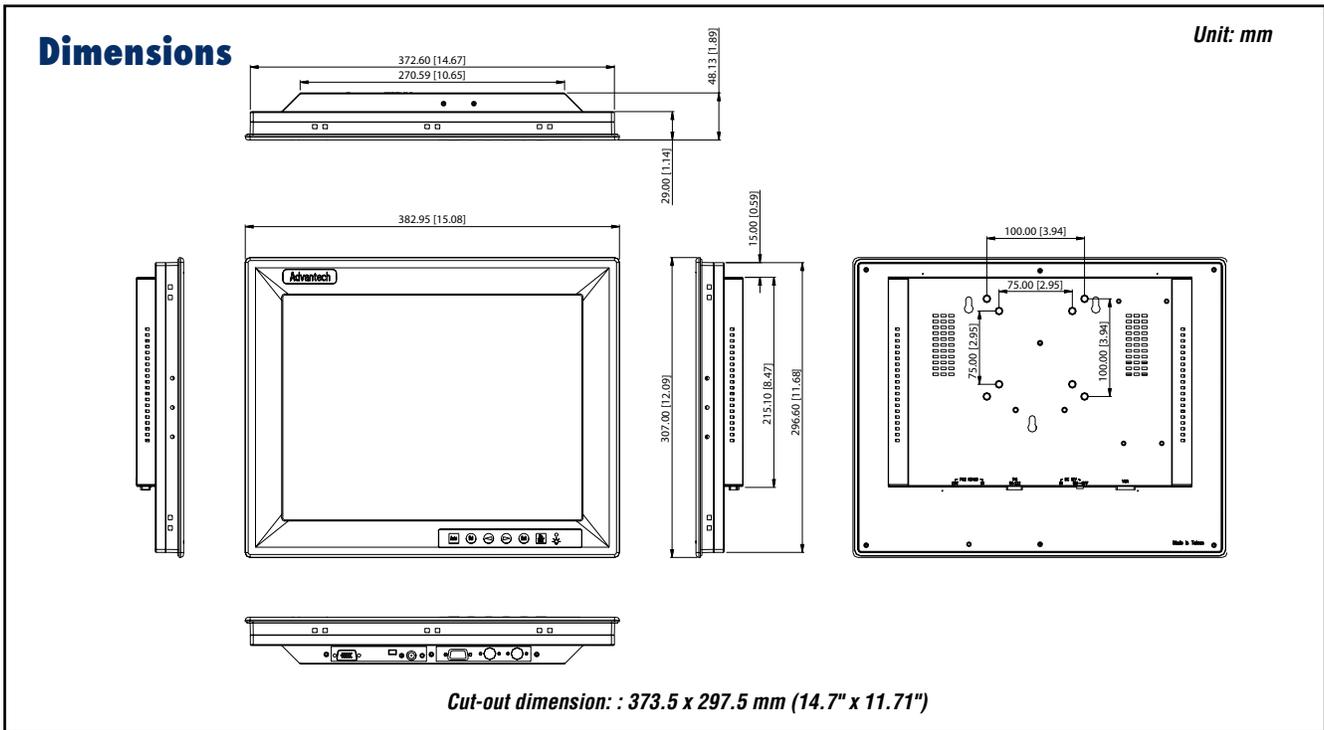
- **Display Type** XGA TFT LCD
- **Display Size** 15"
- **Max. Colors** 262 K
- **Max. Resolution** 1024 x 768
- **View Angle** 120° (H), 100° (V)
- **Luminance** 350 cd/m²
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Backlight Lifetime** 50,000 hrs
- **Contrast Ratio** 400 : 1

Ordering Information

- **FPM-2150GA** Industrial slim type 15" TFT LCD with direct VGA port, black
- **FPM-2150GA-R** Industrial slim type 15" TFT LCD with direct VGA port, resistive touch screen, black

FPM-2150G

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS



Rear View



- KB/MS PS2 connector
- RS-232 port (Touch screen)
- Power ON/OFF
- VGA Port

Feature Details

Commercial Price but Industrial-Grade

When users want a stable system, they always search for industrial grade PCs to guarantee reliability. Many times they also want to buy an industrial-grade monitor to make the system more stable. However, the traditional high cost of these monitors has always been a concern. The FPM-2150G is specially designed to answer these needs. Although attractively priced, the FPM-2150G still provides many industrial-grade features expected by this market.

Thin and Light Design

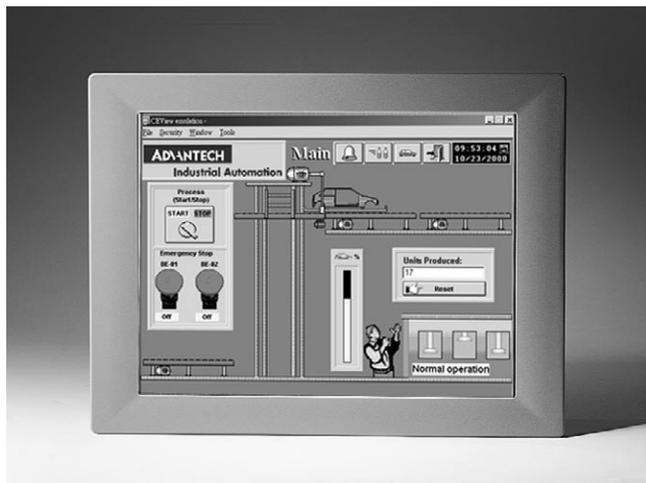
Compared to other industrial LCD monitors, the FPM-2150G focuses on reducing overall size, thickness and weight. This gives the FPM-2150G a more attractive and functional appearance while increasing ease of integration and installation. The thickness of FPM-2150G is only 48 mm and the weight is 3.7 kg.

Industrial-Grade Functions

The chassis of the FPM-2150G is made of steel, and the front panel is of Al-Mg that is NEMA4/IP65 compliant and offers an attractive silver finish by request. The FPM-2150G offers an optional resistive touchscreen and features Direct-VGA signal transmission to allow data viewing up to 5 m away. In addition, the FPM-2150G also provides a PS/2 port to let customers operate a keyboard/mouse from the front panel. The convenient front On-Screen-Display function let users adjust the image easily.

FPM-3120

Industrial 12.1" Flat Panel Monitor with Direct-VGA Port



Features

- 12.1" SVGA TFT LCD with resolution up to 800 x 600
- Multi-scan function supports SVGA, VGA, text mode
- Auto-recognition of input signal
- Panel or wallmount
- Supports VESA arm, desktop stand
- NEMA4/IP65 compliant Al-Mg front panel

Introduction

The FPM-3120G is a 12-inch color TFT LCD flat panel monitor specially designed for industrial or public applications with limited installation space. The backside cut-out dimensions are the same as a traditional 10" display. With a new magnesium panel, mounting is extremely easy and fits most environments perfectly. The FPM-3120G features Direct-VGA signal transmission to allow data viewing up to 5 meters away. Its on-screen-display function let users adjust the image easily. The whole chassis is in stainless steel and the front offers NEMA4/IP65 compliant protection.

Specifications

- **Display Interface** RGB (VGA)
- **Control** OSD (on screen display) control pads on the rear cover
- **Front Panel** Al-Mg, NEMA4/IP65 compliant
- **Mounting** Panel, wallmount, desktop or VESA arm
- **Dimensions (WxHxD)** 311 x 237 x 40 mm (12.24" x 9.33" x 1.57")
- **Net Weight** 3.7 kgs (8.2 lbs)
- **Power** External 48 W power adapter, AC 100 V ~ 230 V input, +12 V @ 4 A output
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Storage Humidity** 5 ~ 95 % non-condensing
- **Vibration (operating)** 5 ~ 17 Hz, double-amplitude displacement
17 ~ 500 Hz, 1.0 G peak to peak
- **CE, FCC, BSMI, CCC compliant**

Touchscreen (Optional)

- **Type** 8 wire, analog resistive or capacitive sensor
- **Resolution** Continuous
- **Light Transmission** 75% (resistive)
88% (capacitive)
- **Controller** RS-232 interface
- **Power Consumption** +5 V @ 200 mA
- **OS Support** Windows® 2000/XP
- **Lifespan** 1 million touches at a single point (resistive)
220 million touches (capacitive)

LCD Display

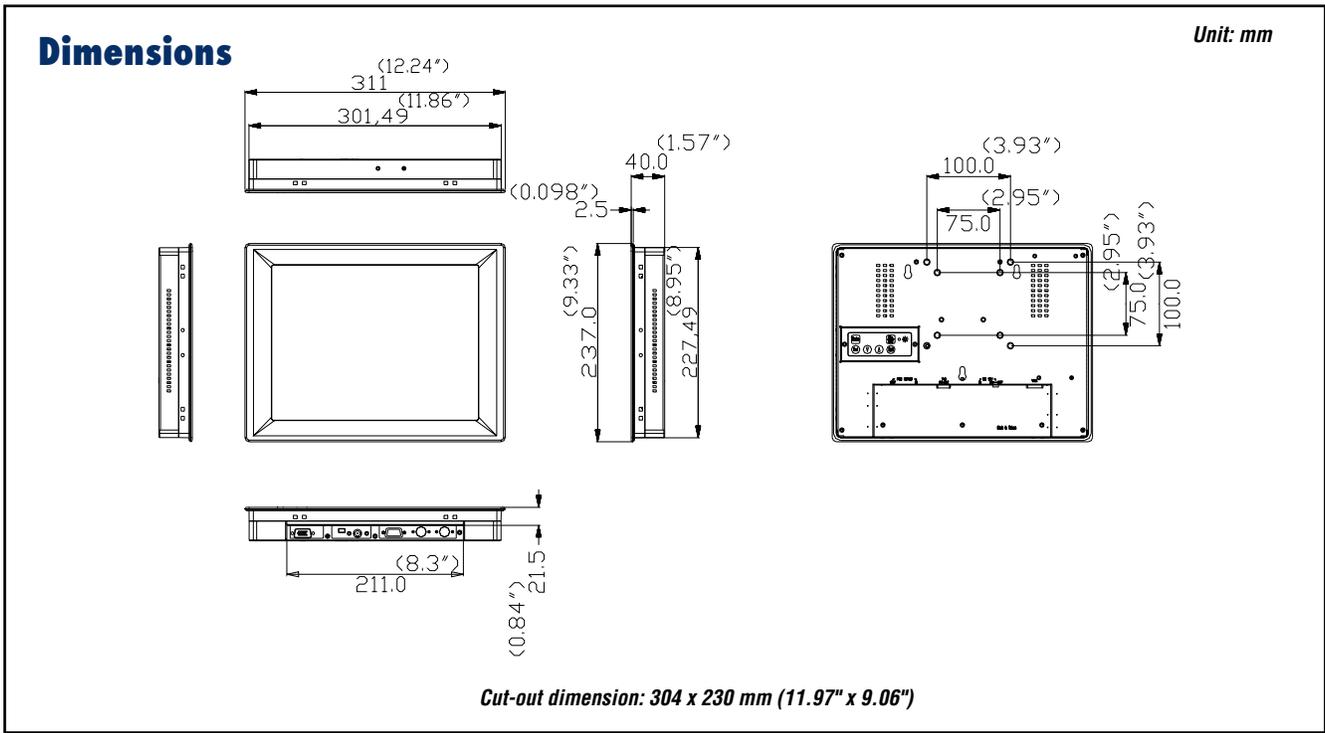
- **Display Type** SVGA TFT LCD
- **Display Size** 12.1"
- **Max. Colors** 262 K
- **Max. Resolution** 800 x 600
- **View Angle** 90° (H), 40° (V)
- **Luminance** 100 cd/m² (TV) or 300 cd/m² (TH)
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Backlight Lifetime** 10000 (TV) or 50000 (TH) hrs
- **Contrast Ratio** 150 :1

Ordering Information

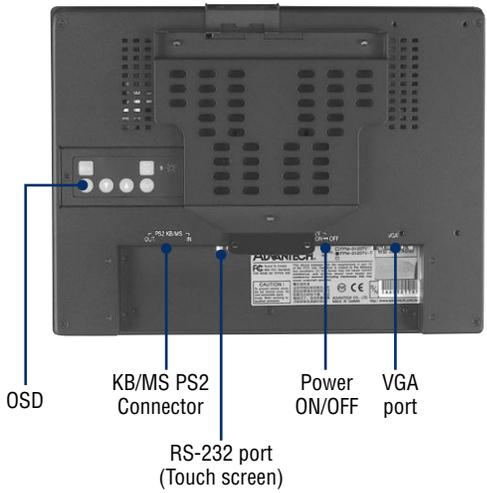
- **FPM-3120TV** 12.1" SVGA 100 nits TFT LCD with VGA interface, AC 100 ~ 230 V 48 W power adapter
- **FPM-3120TV-T** FPM-3120TV with resistive touchscreen (RS-232 interface)
- **FPM-3120TH** 12.1" SVGA 300 nits TFT LCD with VGA interface, AC 100 ~ 230 V 48 W power adapter
- **FPM-3120TH-T** FPM-3120TH with resistive touchscreen (RS-232 interface)
- **FPM-3120TH-TC** FPM-3120TH with capacitive touchscreen (RS-232 interface)

FPM-3120

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS



Rear View



FPM-3220

Industrial 12.1" Flat Panel Monitor with Function Membrane Key and Direct-VGA Port



Features

- 12.1" SVGA TFT LCD with resolution up to 800 X 600
- Standard RGB (VGA) interface for the display
- Display with multi-scan function supports SVGA, VGA, VGA-Text
- Front accessible display on/off switch
- OSD key on back cover
- 60 data-entry keys, one with 10 function keys and 10 programmable macro function keys
- Optional FDD and CD-ROM installation housing
- Stainless steel chassis
- NEMA4/IP65-compliant aluminum front panel
- Rack, panel or wall mount
- Supports VESA arm

Introduction

The FPM-3220 control panel series from Advantech incorporates a LCD control panel with 64 data-entry keys, 10 function keys, 10 unique programmable macro keys and a 12.1" SVGA 800 x 600 TFT LCD screen. The strong membrane key function gives the FPM-3220 powerful panel programming benefits like standard workstations, but no deep space problems. Equipped with a direct VGA interface, the FPM-3220 can connect to any PC Box over long distances without the wiring and cabling limits faced by traditional bulky workstations. Optional front FDD access design gives users the ability to easily retrieve and install data. The FPM-3220 is a perfect and cost effective control panel selection with PCs for machine builders like packaging, cutting, CNC, and production line control.

Specifications

- **Display Type** 12.1" color TFT LCD
- **Display Resolution** SVGA (800 x 600)
- **Display Control** Front accessible display on/off switch and OSD (on screen display) key on back cover
- **Display Interface** Standard analog RGB (VGA) 15 pin connector
- **Membrane Keypads** One with 60 data-entry keys, one with 10 function keys and 10 programmable macro function keys
- **Keyboard/mouse Connector** Two 6-pin PS/2 keyboard/mouse connectors available, One on front panel and the other on back chassis
- **Front Panel** Aluminum, NEMA4/IP65 compliant
- **Mounting** Rack, panel, wall mount, VESA arm
- **Power** External 48 W power adapter, with AC 100 V ~ 230 V input and DC +12 V @ 4 A output
- **Disk Drive Housing Kit (Optional)** Supports one slim 3.5" FDD and one slim CD-ROM
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Relative Humidity** 5 ~ 85 % @ 40° C, non-condensing
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Storage Humidity** 5 ~ 95 % non-condensing
- **Dimensions (WxHxD)** 482 x 266 x 63 mm (19.0" x 10.5" x 2.5")
- **Net Weight** 4.2 kg (9.3 lbs)
- **CE, CCC, FCC, and BSMI compliant**

Touchscreen (Optional)

- **Type** 8 wire, analog resistive
- **Resolution** Continuous
- **Light Transmission** 75%
- **Controller** RS-232 interface
- **Power Consumption** +5 V @ 200 mA
- **OS Support** MS-DOS, Windows® 3.1/95/98/NT/2000
- **Lifespan** 1 million touches at a single point

LCD Display

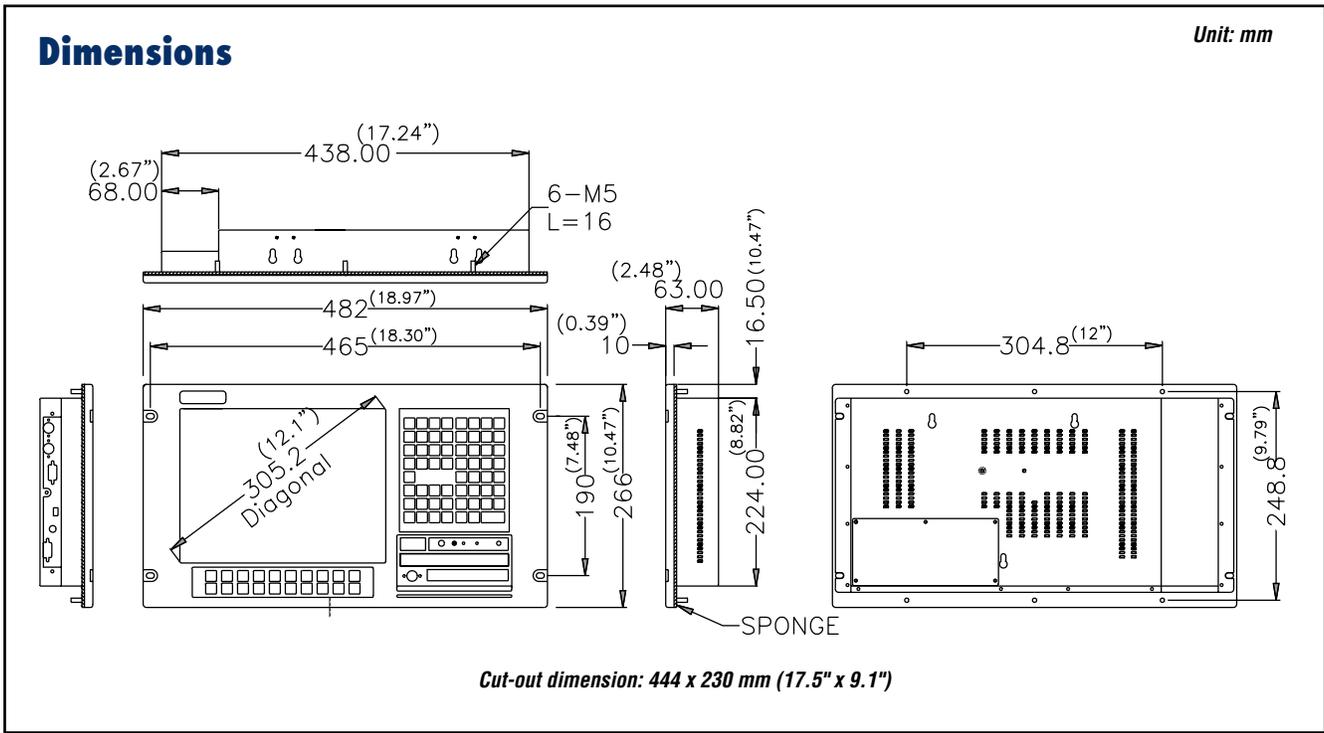
- **Display Type** SVGA TFT LCD
- **Display Size** 12.1"
- **Max. Colors** 262 K
- **Max. Resolution** 800 x 600
- **Viewing Angle** 90° (H), 40° (V)
- **Luminance** 100 cd/m²
- **Storage Temperature** -20 ~ 60° C (-4 ~ 140° F)
- **Storage Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Backlight Lifetime** 20,000 hrs
- **Contrast Ratio** 150 : 1 (typ)

Ordering Information

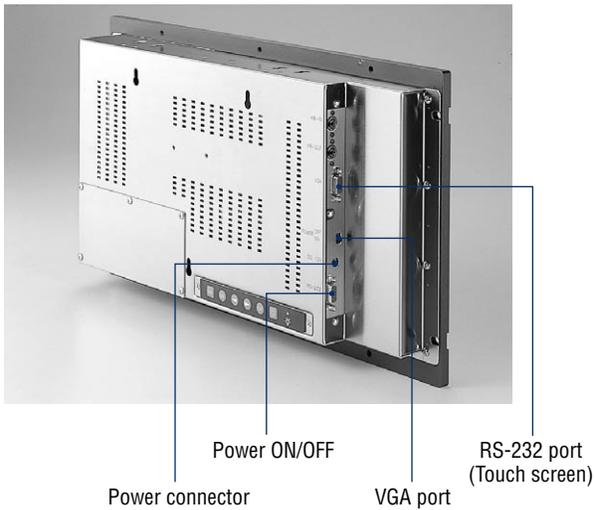
- **FPM-3220T** Industrial control panel with keypad, VGA interface 12.1" LCD display and AC 100-230 V input 48W power adapter
- **FPM-3220T-T** FPM-3220T with analog resistive touchscreen (RS-232 interface)
- **FPM-3220 Storage** FDD and CD-ROM housing kit for FPM-3220 (max. extended length 60 cm.)

FPM-3220

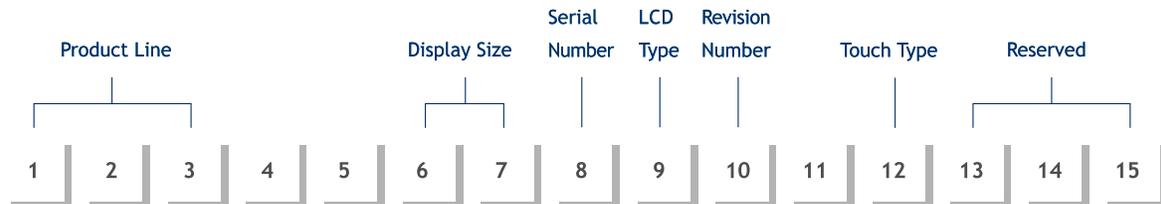
- 1 Software
- 2 IPPC
- 3 TPC
- 4 **FPM**
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS



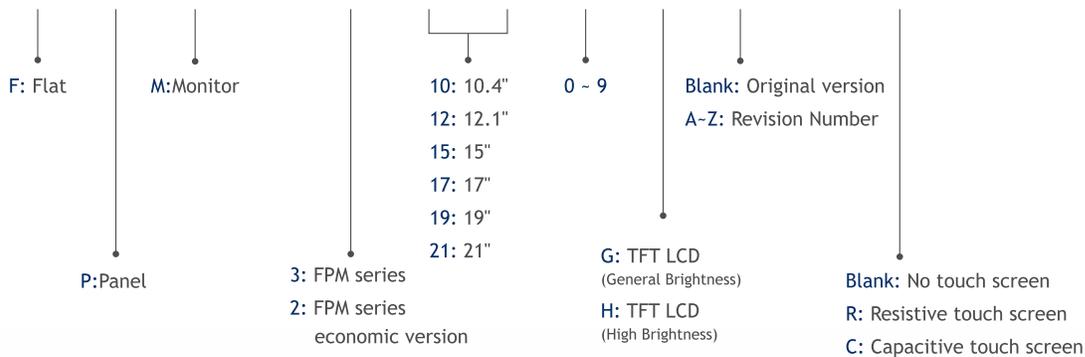
Side View



FPM Series Naming Rule



Ex:



Example Description: 12.1" Flat Panel Monitor with resistive touch screen

Industrial Automation Platform

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Industrial Automation Platform		
ATM-4023	8-slot Industrial Automation Chassis with 6.4" LCD / 4U, front-Access & Wiring	5-4
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Industrial Automation Platform Selection Guide

Product Series		AWS-8259	AWS-8248V	AWS-8430	AWS-8420
Brief Description		Modular Workstation (2-Piece Design)	Cost-Effective Modular Workstation	Compact Workstation with 8-slot Backplane	Workstation with 8 expansion slots
LCD Display	Diagonal	15"	15"	12.1"	12.1"
	Type	TFT Color LCD	TFT Color LCD	TFT Color LCD	TFT Color LCD
	Resolution	1024 x 768	1024 x 768	800 x 600	800 x 600
	Colors	262 K	262 K	262 K	262K
	Viewing Angle (H°, V°)	140, 120	140, 120	90, 40	90, 40
	Luminance(cd/m²)	300	300	100	100
	Backlight Lifetime	50,000 hours	50,000 hours	20,000 hours	20,000 hours
	Interface	VGA	VGA	3.3 V TTL	3.3 V TTL
	Other	Detachable display module	-	Default VGA Card; Brightness & On/Off VR Control	Default VGA Card; Brightness & On/Off VR Control
OSD (on screen display)		On Front Panel	On Front Panel	-	-
BackPlane	Slot Number	9	14	8	8
	CPU, PCI, ISA, PCI/ISA	1, 0, 8, 0 (AWS-8259T) 1, 4, 4, 0 (AWS-8259TP)	0, 0, 14, 0 (AWS-8248VT) 1, 4, 9, 0 (AWS-8248VTP)	0, 0, 8, 0 (AWS-8430T) 1, 2, 4, 0 (AWS-8430TP)	0, 0, 8, 0 (AWS-8420T) 1, 3, 4, 0 (AWS-8420TP)
Storage Device	FDD (standard)	1	1	1	1
	HDD Housing	3.5" x 2	3.5" x 2	3.5" x 1	3.5" x 1
	CD-ROM (optional)	Slim Type (24X) x 1	Standard (24X) x 1	Slim Type (24X) x 1	Slim Type (24X) x 1
Key Pad	Data Entry Keys	39	39	60	60
	Function Keys	10	10	10	10
	Macro Function Keys	10	10	10	10
Touch Screen (Optional)		Analog Resistive	Analog Resistive	Analog Resistive	Analog Resistive
Power Supply (AC)		300 W	250 W	300 W	250 W
Front Panel Compliance		NEMA 4/IP65	NEMA 4/IP65	NEMA 4/IP65	NEMA 4/IP65
Operating Temperature		0 ~ 50° C (32 ~ 122° F)	0 ~ 50° C (32 ~ 122° F)	0 ~ 50° C (32 ~ 122° F)	0 ~ 50° C (32 ~ 122° F)
Storage Temperature		-20 ~ 60° C (-4 ~ 140° F)	-20 ~ 60° C (-4 ~ 140° F)	-20 ~ 60° C (-4 ~ 140° F)	-20 ~ 60° C (-4 ~ 140° F)
Certifications		CE,FCC, BSMI, CCC	CE,FCC, BSMI, CCC	CE,FCC, BSMI, CCC	CE,FCC, BSMI, CCC
Dimensions (W x H x D) (mm)		482 x 356 x 229 mm (19" x 14" x 9")	482 x 356 x 450 mm (19" x 14" x 17.7")	482 x 266 x 220 mm (19" x 10.5" x 8.7")	482 x 266 x 317 mm (19" x 10.5" x 12.5")
Weight		22 kg	25.5 kg	15.6 kg	17 kg
Model Number		AWS-8259TP	AWS-8248VTP	AWS-8430TP	AWS-8420TP
		AWS-8259T	AWS-8248VT	AWS-8430T	AWS-8420T
		AWS-8259TP-T	AWS-8248VTP-T	AWS-8430TP-T	AWS-8420TP-T
		AWS-8259T-T	AWS-8248VT-T	AWS-8430T-T	AWS-8420T-T
		Any model above can bundle with a CPU card	Any model above can bundle with a CPU card	Any model above can bundle with a CPU card	Any model above can bundle with a CPU card
CPU Card Suggestion		PCA-6187VE-001A, PCA-6184VE-00A1, PCA-6003H-00A1, PCA-6180E	PCA-6180E, PCA-6003H	PCA-6359V/6770F/6179L/ 6359VE/6179VE	PCA-6359V/6770F/6179L
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Industrial Automation Platform Selection Guide

AWS-8100G	AWS-8124	PWS-1419	PWS-1409	ATM-4023	ATM-4233
Industrial Workstation	Mini Workstation	Ruggedized Portable Workstation	Portable Workstation	Industrial Automation Chassis	Industrial Automation Chassis
10.4"	12.1"	14.1"	14.1"	6.4"	6"
TFT Color LCD	TFT Color LCD	TFT Color LCD	TFT Color LCD	TFT Color LCD	TFT Color LCD
800 x 600	800 x 600	1024 x 768	1024 x 768	640 x 480	640 x 480
262K	262K	262K	262K	262K	262K
120, 100	90, 40	100, 55	80, 45	55, 15/35	120, 100
230	100	220	220	300	400
20,000 hours	20,000 hours	15,000 hours	15,000 hours	20,000 hours	50,000 hours
3.3V TTL	3.3V TTL	-	-	VGA	VGA
LCD backlight can be turned on/off	-	-	-	-	OSD control for Brightness adjustment & backlight
On Front Panel	-	-	-	Yes	on front panel
9	4	9	9	8	14
1, 4, 4, 0	0, 0, 4, 0 (AWS-8124T)	1, 0, 8, 0 (PWS-1419T)	1, 0, 8, 0 (PWS-1409T)	0, 8, 0 (front wire) (ATM-4023H8)	1, 10, 2 (ATM-4233N10)
1, 2, 6, 0	0, 4, 0, 0 (AWS-8124TP)	1, 4, 4, 0 (PWS-1419TP)	1, 4, 4, 0 (PWS-1409TP)	0, 0, 8 (front wire) (ATM-4023H0)	1, 4, 8 (ATM-4233N4)
1	1	1	1		
3.5" x 1	3.5" x 1	3.5" x 1	3.5" x 1	3.5" x 2	3.5" x 3
-	-	Slim Type (24X) x 1	Slim Type (24X) x 1	(optional)	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
Analog Resistive	Analog Resistive	N/A	N/A	N/A	N/A
250 W	80 W	200 W	200 W	250 W	250 W
NEMA 4/IP65	NEMA 4/IP65	N/A	N/A	N/A	N/A
-10 ~ 50° C (14 ~ 122° F)	0 ~ 50° C (32 ~ 122° F)	-8 ~ 60° C (18 ~ 140° F)	-8 ~ 60° C (18 ~ 140° F)	0 ~ 50° C (32 ~ 122° F)	0 ~ 40° C (32 ~ 104° F)
-20 ~ 70° C (-4 ~ 158° F)	-20 ~ 60° C (-4 ~ 140° F)	-20 ~ 60° C (-4 ~ 140° F)	-20 ~ 60° C (-4 ~ 140° F)	-20 ~ 70° C (-4 ~ 158° F)	-20 ~ 70° C (-4 ~ 158° F)
CE,FCC, BSMI, CCC, UL	CE,FCC, BSMI, CCC	CE,FCC, BSMI, CCC	CE,FCC, BSMI, CCC	CE,FCC, BSMI, CCC	CE, FCC, BSMI, CCC
482 x 266 x 310 mm (18.9" x 10.5" x 12.2")	344 x 260 x 152 mm (13.5" x 10.2" x 6")	421 x 282 x 230 mm (16.6" x 11.1" x 9.1")	400 x 320 x 200 mm (15.8" x 12.6" x 7.9")	482 x 173 x 265 mm (19" x 6.8" x 10.4")	482 x 173 x 450 mm (19" x 6.8" x 17.7")
11 kg	9.5 kg	12 kg	9 kg	12 kg	18 kg
AWS-8100GP4	AWS-8124TP	PWS-1419TP	PWS-1409TP	ATM-4023H0-25Z	ATM-4233N10-25Z
AWS-8100GP4-R	AWS-8124T	PWS-1419T	PWS-1409T	ATM-4023H8-25Z	ATM-4233N4-25Z
AWS-8100GP6	AWS-8124TP-T				
AWS-8100GP6-R	AWS-8124T-T				
Any model above can bundle with a CPU card	Any model above can bundle with a CPU card			Any model above can bundle with a CPU card	Any model above can bundle with a CPU card
PCA-6187VE/VE-00A1, PCA-6186VE-00A1, PCA-6184VE-00A2, PCA-6180E-00B1	PCA-6751/6770/6771			PCI-6872F-00A1, PCI-6870F-00A1, PCA-6774-02A1	PCA-6187VE-00A1, PCA-6003VE-00A1, PCA-6004VE-00A1
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- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

ATM-4023

8-slot Industrial Automation Chassis with 6.4" LCD/4U, Front-access & Wiring



Features

- 4U height 19" rackmount chassis with 6.4" TFT LCD display
- High-brightness color TFT LCD panel: 300 nits
- VGA resolution: 640 x 480
- Integrated with Video A/D Board with VGA input
- 8-slot expansion passive backplane for half-sized card (8 PCI or 8 ISA)
- Front accessible, easy maintenance CD-ROM Drawer (Option)
- Front accessible USB, PS/2 Keyboard and Mouse I/O interface for easy plug-in
- OSD Menu Control for Brightness adjustment
- Automation testing platform suitable for test & measurement equipment, transportation control stations, and industrial control

Introduction

ATM-4023 features a revolutionary design that fits versatile application integration. This 4U height 8-slot IPC chassis includes an 8 expansion slots passive backplane, 6.4" high-brightness TFT color LCD display, 5 function keys, 5 cursor keys, and an optional slim type CD-ROM drawer. The front-accessible wiring design also ensures easy maintenance. Various mounting kits, including a rackmounting and desktop kit are designed to fit different applications.

ATM-4023 is targeted as an automation testing platform, for test and measurement equipment, transportation control stations, and industrial control.

Specifications

- **Drive Bay** Front-accessible 3.5" CD-ROM x 2, slim type CD-ROM Drawer (Option) x 1
- **Cooling** 61.8 CFM/each cooling fan, easy maintenance

Environment Specifications

- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -40~75° C (-40~167° F)
- **Humidity** 10 ~ 95 % @ 40° C, non-condensing
- **Operating Vibration** 1 grms (5~500 Hz) (random)
- **Non-Operating Vibration** 2 g (5~500 Hz) (sine)
- **Package Vibration** 2.16 grms (5~500 Hz)
- **Acoustic Noise** Less than 52 dB sound pressure at 5 ~ 28° C (41 ~ 82° F)
- **Altitude** 0 ~ 3048 m (0 ~ 10,000 ft)
- **Dimensions (W x H x D)** 482 x 173 x 265 mm (19" x 6.8" x 10.4")
- **Weight** 12 kg (26.4 lb)
- **Compliance** CE, FCC, CCC, BSMI

Power Supply

Model Name	Specifications				
	Watt	Input	Output	Mini-load	Safety
P1A-6250P	250 W	100/240 V _{AC} 6-3A 50/60 Hz	+5 V @ 24 A +3.3 V @ 20 A +12 V @ 12 A -12 V @ 1 A -5 V @ 0.5 A +5 Vsb @1.5 A	+5 V @ 3 A +12 V @ 2 A +3.3 V @ 1 A	UL 1950, CSA 22.2 NO/ 950, TUV IEC 950FCC CLASS B, CISPR22 CLASS B

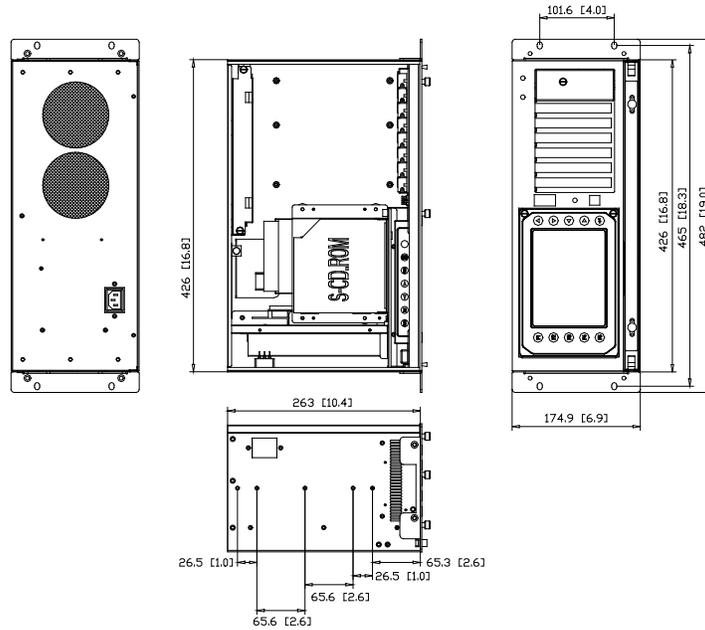
Ordering Information

- **ATM-4023H0-2Z** 8 ISA slot Industrial Automation platform with 6.4" LCD /4U /Half Size/Front Wiring/ PCA-6108E (rev.C1) / 250 W
- **ATM-4023H8-2Z** 8 PCI slot Industrial Automation platform with 6.4" LCD /4U /Half Size/Front Wiring/PCA-6108P8 (rev.A1) / 250 W
- **ATM-4023H8-A1** 8 PCI slot Industrial Automation platform with 6.4" LCD /4U /Half Size/Front Wiring/PCA-6108P8 (rev.A1) / PCI-6872F-00A1 (P1111)/250 W
- **ATM-4023H8-A2** 8 PCI slot Industrial Automation platform with 6.4" LCD /4U /Half Size/Front Wiring/PCA-6108P8 (rev.A1) / PCI-6870F-00A1 (P1111)/250 W
- **ATM-4023H0-B1** 8 ISA slot Industrial Automation platform with 6.4" LCD /4U /Half Size/Front Wiring/ PCA-6108E (rev.C1) / PCA-6774F-02A1 (P1111)/250 W
- **ATM-4023H0-B2** 8 ISA slot Industrial Automation platform with 6.4" LCD /4U /Half Size/Front Wiring/ PCA-6108E (rev.C1) / PCA-6751-F0B2 (P266) /250 W
- **PCA-6872F-00A1** PCI Socket 370 Slot PC, VGA/LCD/LVDS/LAN/CFC
- **PCA-6870F-00A1** PCI Socket370 815E Slot PC VGA/82562/AUDIO/CFC/C
- **PCA-6774-02A1** ISA Socket 370 Slot PC with VGA/LCD/LAN/CFC

ATM-4023

Dimensions

Unit: mm



- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 **ATM & AWS**
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

ATM-4233

4U 14-slot Industrial Automation Chassis with 6" LCD

NEW



Features

- 4U height 19" rackmount chassis with 6" TFT LCD display.
- Integrated Video A/D Board ensures CPU card compatibility up to Intel® Pentium® 4
- 14-slot expansion passive backplane
- Front accessible disk drive bays for easy installation of up to 3 vibration damped 5.25" drives
- OSD control for brightness adjustment
- Applicable for industrial automation control and monitoring
- Suitable for Automatic Testing Equipment and Production Line Testing
- High brightness color TFT LCD panel: 400 nits
- VGA resolution: 640 x 480
- Front accessible USB ports x 2, Power On/Off and reset bottom
- Telecom/Power station portal and platform for test & measurement equipment

Introduction

In response to customer requests, and to increase overall product performance and competitiveness in the current IPC market, ATM-4233 is a new product based on the popular ACP-4001. ATM-4233 has been equipped with the following features and functions.

- New high brightness 6.4" color TFT LCD panel.
- Integrated Video A/D Board with VGA input.
- Compatible with CPU cards up to Intel Pentium 4
- New passive backplane: (2 options)

Specifications

- **Disk Drive Bay** 3 x vibration damped, front-accessed 5.25" bays.
- **Cooling Fan** Dual 90mm easy-to-replace high CFM cooling fans
- **Controls** Power On/Off Button in front panel (behind the lockable door)
Reset Button in front panel (behind the lockable door)
OSD: (On/Off, Menu, Select, Auto, Right, Left)
- **Display** 6" TFT LCD display and membrane control interface on both sides
- **Connectors** Front access USB x 2; 1 x 6-pin PS/2 keyboard port and 1 x 6-pin PS/2 mouse port (front Panel), 6-pin PS/2 keyboard port for external connection (rear panel).
- **Front Panel & Lockable Door** Aluminum ionized anti-scratch protection.
An accessible air filter is located behind the door.
- **External LED Indicator** 1 x system power, 1 x HDD data access
- **Dimension (W x H x D)** 482 x 173 x 450 mm (19" x 6.8" x 17.7")
- **Weight** 18 kg (35.2 ~ 39.6 lb)
- **Paint Color** Pantone 4C 2X black, textured
- **Operating Temperature** 0 ~ 40° C (32 ~ 104° F),
- **Storage Temperature** -40 ~ 75° C (-40 ~ 167° F)
- **Relative Humidity** 10 ~ 95% @ 40° C, non-condensing
- **Vibration (Operating)** 5 ~ 500 Hz, 1 grms (Random)
- **Vibration (Storage)** 5 ~ 500 Hz, 2.16 grms (Random)
- **Altitude** 0 ~ 3048 m (0 ~ 10,000 ft)
- **Safety** CE, FCC,CCC and BSMI

LCD Display

- **Display Type** 6" TFT color LCD
- **Max. Resolution** 640 x 480
- **Max. Colors** 262 K
- **Luminance** 400 cd/m²
- **Viewing Angle** 120° (H), 100° (V)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **OSD control for Brightness adjustment**
- **Backlight MTBF** 50,000 hours

Backplane Options

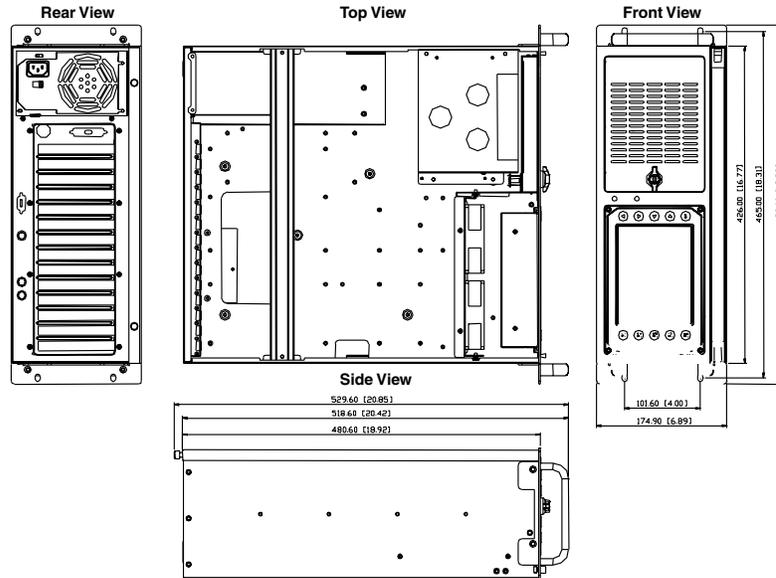
- **PCA-6114P4-C** 8 ISA/4 PCI/2 PCIMG
- **PCA-6114P10-B** 2 ISA/10 PCI/2 PCIMG

ATM-4233

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

Dimensions

Unit: mm



Ordering Information

- **ATM-4233N10-25Z** 14-slot(2 ISA/10 PCI/2 PCIMG) Industrial Automation platform with 6" LCD / 4U /Standard Size/Rear Wiring/ PCA-6114P10-B / 250W Power Supply
- **ATM-4233N10-C2** 14-slot (2 ISA/10 PCI/2 PCIMG) Industrial Automation platform with 6" LCD / 4U /Standard Size/Rear Wiring/ PCA-61114P10-B/ PCA-6004VE-00A1(C3 800MHz)/ 250W Power Supply
- **ATM-4233N10-C3** 14-slot (2 ISA/10 PCI/2 PCIMG) Industrial Automation platform with 6" LCD / 4U /Standard Size/Rear Wiring/ PCA-61114P10-B/ PCA-6003VE-00A1(PIII)/250W Power Supply
- **ATM-4233N10-C4** 14-slot (2 ISA/10 PCI/2 PCIMG) Industrial Automation platform with 6" LCD / 4U /Standard Size/Rear Wiring/ PCA-61114P10-B/ PCA-6187VE-00A1(P4 800 MHz FSB)/250W Power Supply
- **ATM-4233N4-25Z** 14-slot(8 ISA/4 PCI/2 PCIMG) Industrial Automation platform with 6" LCD /4U /Standard Size/Rear Wiring/ PCA-6114P4-C / 250W Power Supply
- **ATM-4233N4-C2** 14-slot (8 ISA/4 PCI/2 PCIMG) Industrial Automation platform with 6" LCD /4U/Standard Size/Rear Wiring/ PCA-61114P4-C/ PCA-6004VE-00A1(C3 800MHz)/ 250W Power Supply
- **ATM-4233N4-C3** 14-slot (8 ISA/4 PCI/2 PCIMG) Industrial Automation platform with 6" LCD /4U/Standard Size/Rear Wiring/ PCA-61114P4-C/ PCA-6003VE-00A1(PIII)/250W Power Supply
- **ATM-4233N4-C4** 14-slot (8 ISA/4 PCI/2 PCIMG) Industrial Automation platform with 6" LCD /4U/Standard Size/Rear Wiring/ PCA-61114P4-C/ PCA-6187VE-00A1(P4 800 MHz FSB)/250W Power Supply

AWS-8259

Modular Workstation with 15" LCD and 9 Expansion Slots



Features

- 15", 9-slot TFT LCD workstation
- Resolution: 1024 x 768
- Two-piece design: integrated or separated LCD panel & control chassis
- Built-in touch pad, USB port and floppy drive on front panel
- Designed for simple maintenance with hinged rear door for easy access
- Vibration protection up to 1 G
- IP65/NEMA 4, Aluminum front panel and stainless steel chassis

Introduction

The AWS-8259 is an industrial workstation with 8 slots expansion capability. Featuring a 15" detachable display module, the AWS-8259 has a rugged yet flexible design for factory floor applications. Its 15" high-brightness 1024 x 768 LCD fulfills the needs for large information viewing. In addition, the display module can be easily separated for maintenance.

With water-proof character keypads & touch pad features, an additional keyboard or mouse is not needed for operation. The standard 8U size can easily be installed in either racks or mounted in panels.

Specifications

- **Front Panel** Aluminum, meets NEMA4/IP65
- **LCD Display Interface** VGA
- **Display Setting** OSD on front panel with back light On/Off switch
- **Disk Drive Housing** Supports one 3.5" FDD, one 3.5" HDD & one slim CD-ROM (HDD and CD-ROM optional)
- **Cooling System** One 86 CFM fan
- **Membrane Keypads** One with 39 operating keys, one with 10 function keys and 10 programmable macro function keys
- **Keyboard** 6-pin PS/2 keyboard connector with dust-protection door on front panel
- **Touch Pad Interface** PS/2 mouse
- **Indicators** LEDs for power on/off and HDD activity
- **Touchscreen (optional)** Analog resistive type with RS-232 controller
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Relative Humidity** 5 ~ 85% @ 40° C, non-condensing
- **Storage Temperature** -20 ~ 60° C
- **Storage Humidity** 5 ~ 95% non-condensing
- **Dimensions (W x H x D)** 482 x 356 x 229 mm (19.0" x 14.0" x 9")
- **Gross Weight** 22 kg (48 lb)
- **Certifications** CE, CCC, FCC, BSMI

Passive Backplane

- **PCA-6109P4** 4 PCI, 4 ISA, 1 CPU slot backplane
- **PCA-6109** 9 ISA slot backplane

Power Supply

AC input 300 W (standard offer)

- **Input** 90 ~ 135 V_{AC} or 180 ~ 265 V_{AC}, switchable
- **Output** +5 V @ 30 A; +12 V @ 15 A; +3.3 V @ 24 A
-5 V @ 0.3 A; -12 V @ 0.8 A; +5 V_{SB} @ 2 A
- **MTBF** 100,000 hours
- **Safety** UL/CSA/TUV

LCD Display

- **Display Type** 15" XGA TFT LCD
- **Max. Resolution** 1024 x 768
- **Max. Colors** 262 K
- **Luminance** 300 cd/m²
- **Viewing Angle** 140° (H), 120° (V)
- **Operating Temperature** 0 ~ 50° C
- **Backlight Lifetime** 50,000 hours

Ordering Information

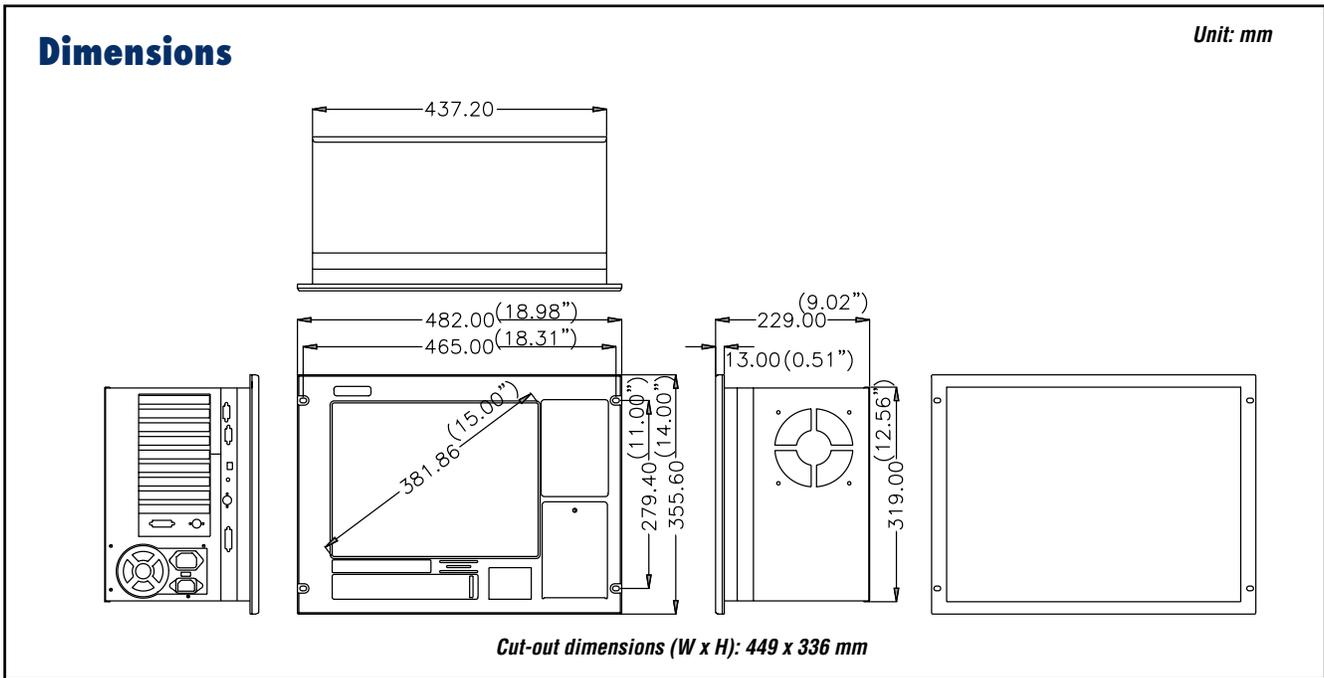
- **AWS-8259TP** 15" TFT, 4 ISA & 4 PCI & 1 CPU slots, 300 W 110/220 V AC power supply, 3.5" slim FDD
- **AWS-8259T** 15" TFT, 9 ISA slots, 300 W 110/220 V AC power supply, 3.5" slim FDD
- **AWS-8259TP-T** AWS-8259TP with resistive touchscreen (RS-232 interface)
- **AWS-8259T-T** AWS-8259T with resistive touchscreen (RS-232 interface)
- **CDR-8259-24x** Compact 24X CD-ROM

Optional PCI Fieldbus Card

- Supports CANopen, DeviceNet™ or PROFIBUS™ by request

AWS-8259

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS



Back View



Side View



AWS-8430

Compact Workstation with 12.1" LCD & 8 Expansion Slots



Features

- 12.1" SVGA LCD display
- 8 ISA or 4 ISA / 2 PCI / 1 CPU backplanes available
- Front accessible FDD, Power switch and CD-ROM
- Only 220 mm in depth, easy to install in constrained environments
- Three cooling fans provide reliable working environment

Introduction

The AWS-8430 is a compact, high standard industrial workstation designed to meet the tough needs of PC-based industrial automation. With a depth of only 220 mm, it can be easily installed on a machinery platform. Three fans are equipped to keep the working environment cool and stable. Featuring a stainless steel back case, the system is tough and environmentally friendly. Two HDD bays make the system flexible for expansion, while the high resolution (800x600) SVGA TFT LCD provides all you need for high quality display needs.

Specifications

- **Front Panel** Aluminum (meets NEM4/IP65)
- **Construction** Heavy-duty stainless steel chassis
- **Disk Drive Housing** Supports one slim FDD, one 3.5" HDD & one slim CD-ROM (CD-ROM and HDD optional)
- **LCD Interface** 3.3 V TTL
- **VGA Card** PCA-6654LB, PCI-bus, 2 MB VRAM onboard (AWS-8430TP & AWS-8430TP-T only)
- **Cooling System** Two 49 CFM fans on rear panel, one in power supply
- **Membrane Keypads** One with 60 data-entry keys, one with 10 function keys and 10 programmable macro function keys
- **Keyboard/mouse Connector** 6 pin PS/2 connector with dust-protection door on front panel
- **Indicators** LEDs for power on/off and HDD activity
- **Touchscreen (optional)** Analog resistive type with RS-232 controller
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Relative Humidity** 5 ~ 85% @ 40° C, non-condensing
- **Storage Temperature** -20 ~ 60° C
- **Storage Humidity** 5 ~ 95% non-condensing
- **Dimensions (W x H x D)** 482 x 266 x 220 mm (19.0" x 10.5" x 8.7")
- **Certifications** CE, CCC, FCC, BSMI compliant
- **Gross Weight** 15.6 kg (34.4 lb)
- **Vibration (operation)** 5 ~ 500 Hz 1 grms Random Vibration

Passive Backplane

- **PCA-6107P2** 4 ISA, 2 PCI, 1 CPU slots
- **PCA-6108C** 8 ISA slots

Power Supply Options

AC input 300 W (standard offer)

- **Input** 90 ~ 135 V_{AC} or 180 ~ 265 V_{AC}, switchable
- **Output** +5 V @ 30 A; +12 V @ 15 A; +3.3 V @ 24 A
-5 V @ 0.3 A; -12 V @ 0.8 A; +5 VSB @ 2 A
- **MTBF** 100,000 hours
- **Safety** UL/CSA/TÜV

48 V_{DC} input 310 W (ODM offer)

- **Input** -38 ~ -58 V_{DC}
- **Output** +5 V @ 25 A; +12 V @ 10 A; -5 V @ 1 A; -12 V @ 5 A
- **MTBF** 100,000 hours
- **Safety** UL/CSA/TÜV

24 V_{DC} input 250 W (ODM offer)

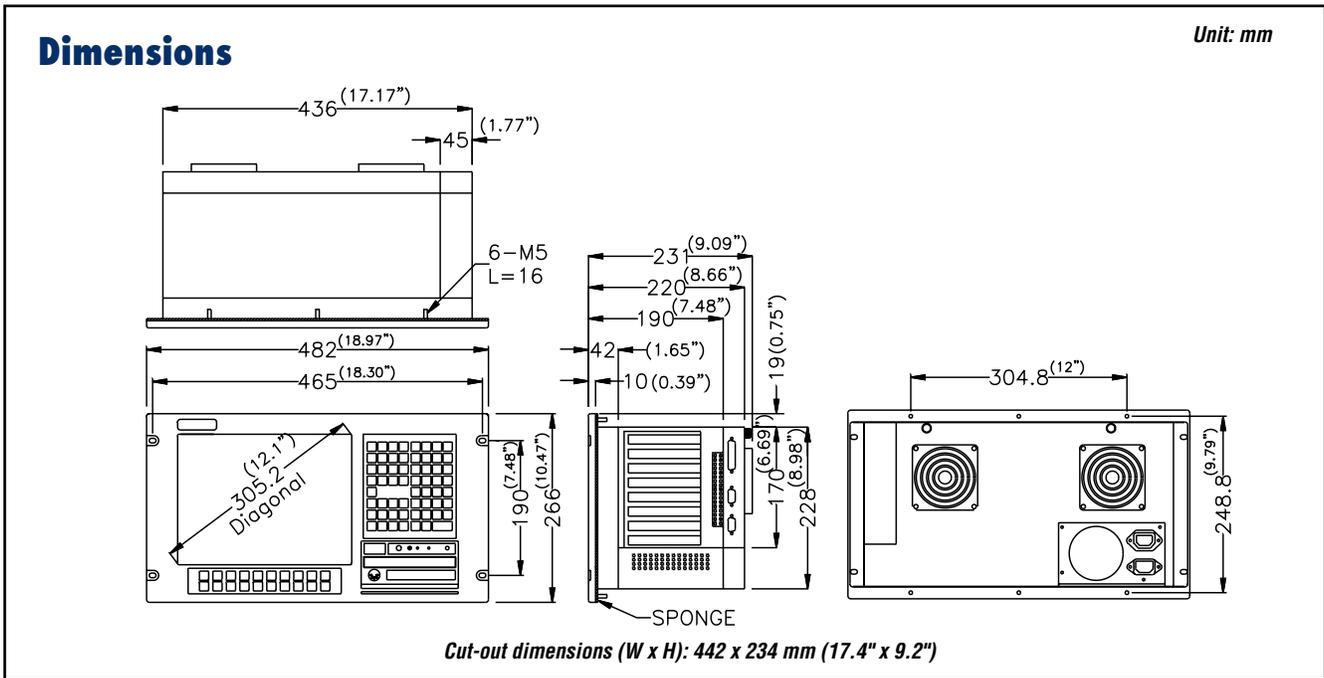
- **Input** 19 ~ 32 V_{DC}
- **Output** +5 V @ 25 A; +12 V @ 10 A; -5 V @ 1 A; -12 V @ 1 A
- **MTBF** 100,000 hours
- **Safety** UL/CSA/TÜV

LCD Display

- **Display Type** 12.1" TFT color LCD
- **Max. Resolution** 800 x 600
- **Max. Colors** 262 K
- **Luminance** 100 cd/m²
- **Viewing Angle** 90° (H), 40° (V)
- **Operating Temperature** 0 ~ 50° C
- **VR Control** Brightness & ON/OFF
- **Backlight MTBF** 20,000 hours
- **Default VGA card** PCA-6654LB (TP only)

AWS-8430

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS



Ordering Information

- **AWS-8430TP** 12.1" SVGA TFT LCD, 4 ISA & 2 PCI slots, 300 W 110/220 V_{AC} power supply, 3.5" Slim FDD, PCA-6654LB PCI VGA card
- **AWS-8430T** 12.1" SVGA TFT LCD, 8 ISA slots, 300 W 110/220 V_{AC} power supply, 3.5" Slim FDD, without VGA card
- **AWS-8430TP-T** AWS-8430TP with resistive touchscreen (RS-232 interface)
- **AWS-8430T-T** AWS-8430T with resistive touchscreen (RS-232 interface)
- **AWS-8430T-C1** AWS-8430T bundle PCA-6359V CPU card
- **AWS-8430TP-C1** AWS-8430TP bundle PCA-6359V CPU card
- **AWS-8430T-C2** AWS-8430T bundle PCA-6770F CPU card
- **AWS-8430TP-C2** AWS-8430TP bundle PCA-6179L CPU card
- **AWS-8430T-C3** AWS-8430T bundle PCA-6359VE CPU card
- **AWS-8430TP-C3** AWS-8430TP bundle PCA-6359VE CPU card
- **AWS-8430TP-C4** AWS-8430TP bundle PCA-6179VE CPU card
- **AWS-8430T-TC1** AWS-8430T-T bundle PCA-6359V CPU card
- **AWS-8430TP-TC1** AWS-8430TP-T bundle PCA-6359V CPU card
- **AWS-8430T-TC2** AWS-8430T-T bundle PCA-6770F CPU card
- **AWS-8430TP-TC2** AWS-8430TP-T bundle PCA-6179L CPU card
- **CDR-842-0024** Slim 24X CD-ROM kit with support bracket

Back View



Optional PCI Fieldbus Card

- Supports CANopen, DeviceNet™ or PROFIBUS™ by request

AWS-8420

Workstation with 12.1" LCD & 8 Expansion Slots



Features

- 8 ISA or 4 ISA, 3 PCI, 1 CPU slot combined backplanes
- Case dimensions (W x L x H): 77.5 x 179.5 x 41.5 mm (3.1" x 7.1" x 1.6")
- Front accessible FDD, Power switch and CD-ROM
- NEMA4/IP65 compliant front panel
- Optional analog resistive touchscreen

Introduction

The AWS-8420 is a PC-based industrial workstation with an industrial grade 12.1" color TFT LCD display. The AWS-8420 is specifically designed for use within factories and other harsh industrial environments. This 19" frame can be rack mounted or panel mounted. The AWS-8420 provides 8 PCI/ISA slots, which offers great flexibility for application-specific requirements.

Specifications

- **Front Panel** Aluminum, meets NEMA4/IP65
- **Disk Drive Housing** Supports one slim FDD, one 3.5" HDD & one slim CD-ROM (HDD and CD-ROM optional)
- **LCD Interface** 3.3 V TTL
- **VGA Card** PCA-6654LB, PCI-bus, 2 MB VRAM onboard (AWS-8420TP & AWS-8420TP-T only)
- **Compatible CPU Cards** PCA-6751 and PCA-6770 (for 8420T)
- **Cooling System** One 49 CFM fan on rear panel
- **Membrane Keypads** One with 60 data-entry keys, one with 10 function keys and 10 programmable macro function keys
- **Keyboard/mouse Connector** 6-pin PS/2 connector with dust-protection door on front panel
- **Indicators** LEDs for power on/off and HDD activity
- **Touchscreen (optional)** Analog resistive type with RS-232 controller
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Relative Humidity** 5 ~ 85% @ 50° C, non-condensing
- **Storage Temperature** -20 ~ 60° C
- **Storage Humidity** 5 ~ 95% non-condensing
- **Dimensions (W x H x D)** 482 x 266 x 317 mm (19.0" x 10.5" x 12.5")
- **Gross Weight** 17 kg (37.5 lb)
- **Certifications** CE, FCC, BSMI, CCC compliant

Passive Backplane

- **PCA-6108P3** 4 ISA, 3 PCI, 1 CPU slot
- **PCA-6108** 8 ISA slot

Power Supply Options

AC input 250 W (standard offer)

- **Input** 90 ~ 135 V_{AC} or 180 ~ 265 V_{AC} switchable
- **Output** +5 V @ 25 A; +12 V @ 8 A; +5 VSB @ 1 A
-5 V @ 0.5 A; -12 V @ 0.8 A; +3.3 V @ 14 A
- **MTBF** 100,000 hours
- **Safety** UL/CSA/TÜV/CCIB

48 V_{DC} input 310 W (option offer)

- **Input** -38 ~ -58 V_{DC}
- **Output** +5 V @ 25 A; +12 V @ 10 A; -5 V @ 1 A; -12 V @ 5 A
- **MTBF** 100,000 hours
- **Safety** UL/CSA/TÜV

24 V_{DC} input 250 W (option offer)

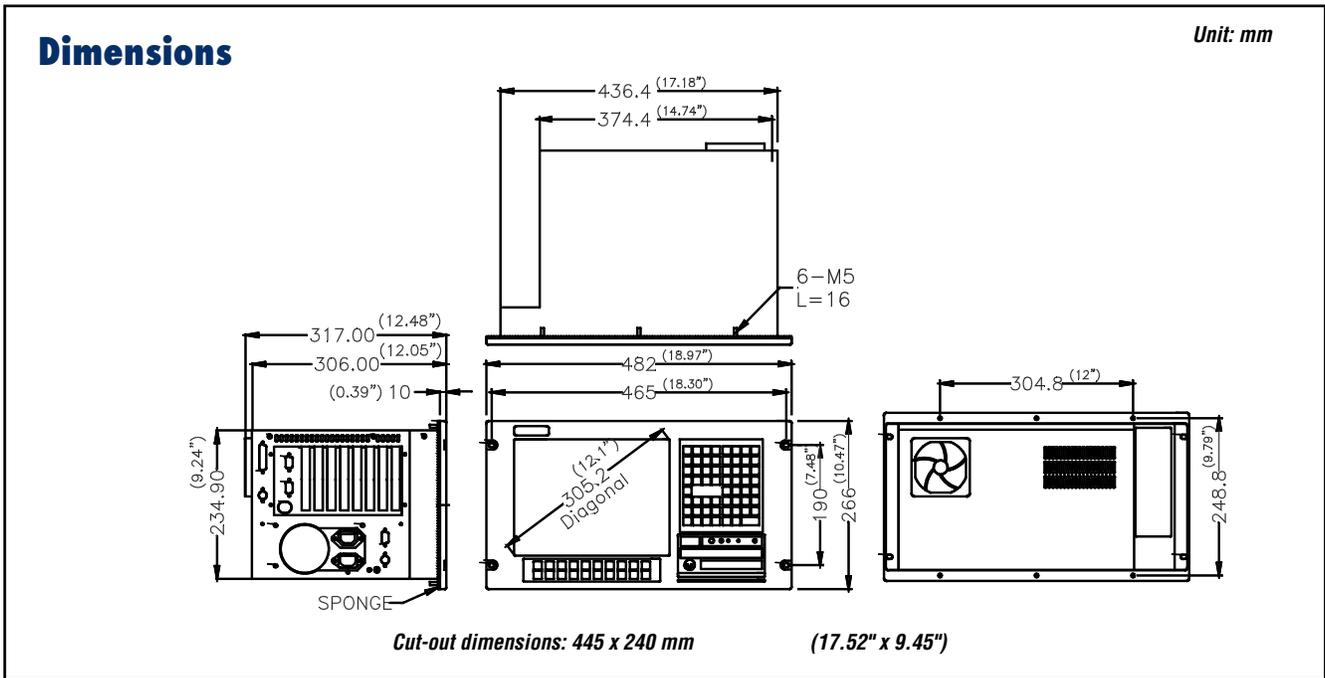
- **Input** 19 ~ 32 V_{DC}
- **Output** +5 V @ 25 A; +12 V @ 10 A; -5 V @ 1 A; -12 V @ 1 A
- **MTBF** 100,000 hours
- **Safety** UL/CSA/TÜV

LCD Display

- **Display Type** 12.1" TFT color LCD
- **Max. Resolution** 800 x 600
- **Max. Colors** 262 K
- **Luminance** 100 cd/m²
- **Viewing Angle** 90° (H), 40° (V)
- **Operating Temperature** 0 ~ 50° C
- **VR Control** Brightness & ON/OFF
- **Backlight MTBF** 20,000 hrs
- **Default VGA card** PCA-6654LB (TP & TP-T only)

AWS-8420

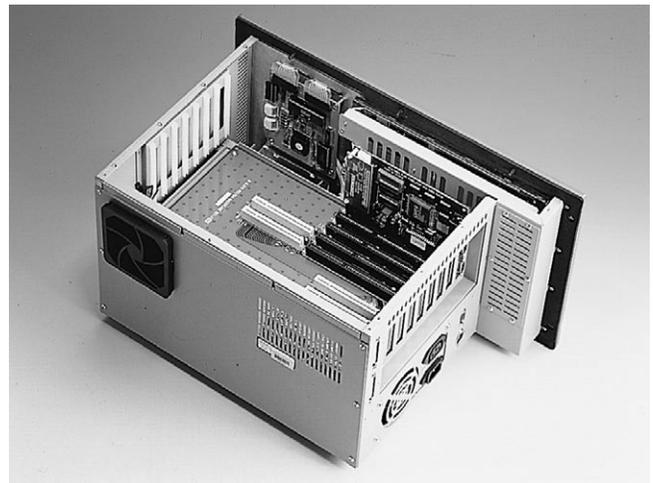
1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS



Ordering Information

- **AWS-8420TP** 12.1" TFT, 4 ISA & 3 PCI slots, 250 W 110/220 VAC power supply, 3.5" slim FDD, PCA-6654LB PCI VGA card
- **AWS-8420T** 12.1" TFT, 8 ISA slots, 250 W 110/220 VAC power supply, 3.5" slim FDD, without VGA card
- **AWS-8420TP-T** AWS-8420TP with resistive touchscreen (RS-232 interface)
- **AWS-8420T-T** AWS-8420T with resistive touchscreen (RS-232 interface)
- **AWS-8420T-C1** AWS-8420T bundle PCA-6359V CPU card
- **AWS-8420TP-C1** AWS-8420TP bundle PCA-6359V CPU card
- **AWS-8420T-C2** AWS-8420T bundle PCA-6770F CPU card
- **AWS-8420TP-C2** AWS-8420TP bundle PCA-6179L CPU card
- **AWS-8420T-TC1** AWS-8420T-T bundle PCA-6359V CPU card
- **AWS-8420TP-TC1** AWS-8420TP-T bundle PCA-6359V CPU card
- **AWS-8420T-TC2** AWS-8420T-T bundle PCA-6770F CPU card
- **AWS-8420TP-TC2** AWS-8420TP-T bundle PCA-6179L CPU card
- **CDR-842-0024** Slim 24X CD-ROM kit

Top View



Optional PCI Fieldbus Card

- Supports CANopen, DeviceNet™ or PROFIBUS™ by request

AWS-8248V

Cost-effective Modular 15" TFT LCD Workstation with 14 Expansion Slots



Features

- Cost-effective 14-slot, 15" TFT LCD workstation, and resolution of 1024 x 768
- Three card-cage design: easy to maintain add-on cards, CPU card and power supply.
- Two 3.5" HDDs with mobile rack drive & CD-ROM drive in back of chassis
- Equipped with on-screen display (OSD) operation keypad on the front panel
- NEMA4/IP65, aluminum panel

Introduction

The AWS-8248V is a 14-slot, 15" TFT LCD workstation. It improves on earlier models by offering more expansion capability, a larger LCD screen, and increased usability, all at an even more competitive price. The AWS-8248V also provides an additional major feature for users: easy maintenance. Using three card-cages and thumbscrew fasteners, the AWS-8248V makes maintenance quick and easy. The AWS-8248V combines multiple slots and 15" LCD in a more cost effective and easier to maintain design.

Specifications

- **Front Panel** Aluminum, meets NEMA4/IP65 standard
- **Disk Drive Housing** Supports one 3.5" FDD, two 3.5" HDD and one 3.5" CD-ROM (HDD and CD-ROM optional)
- **Two Cooling Fans** 32 CFM fan for power supply, 36 CFM fan for plug-in cards
- **Membrane Keypads** One with 39 operating keys, one with 10 function keys and 10 programmable macro function keys, on screen display (OSD) operation keys
- **Keyboard Connector** 5-pin DIN connector on both front panel and rear panel
- **Controls** Reset and power on/off
- **Indicators** LEDs for power on/off and HDD activity
- **Touchscreen (optional)** Analog resistive type with RS-232 interface
- **Dimensions (W x H x D)** 482 x 356 x 450 mm (19.0" x 14.0" x 17.7")
- **Gross Weight** 25.5 kg (56.2 lb)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -40 ~ 60° C
- **Storage Humidity** 5 ~ 95% non-condensing
- **Vibration (operation)** 5 ~ 17 Hz, double-amplitude displacement
17 ~ 500 Hz, 1.0 G peak to peak
- **Certifications** CE, FCC, CCC, BSMI compliant

LCD Display

- **Display Type** 15" TFT LCD
- **Max. Resolution** 1024 x 768
- **Max. Colors** 262 K
- **Luminance** 300 cd/m²
- **Viewing Angle** 140° (H), 120° (V)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Backlight MTBF** 50,000 hrs
- **Interface** Direct VGA
- **Display Setting** OSD

Power Supply

AC input 250 W (standard offer)

- **Input** 90 ~ 135 V AC or 180 ~ 265 V AC, switchable
- **Output** +5 V @ 25 A; +12 V @ 8 A; +5 VSB @ 1 A
-5 V @ 0.5 A; -12 V @ 0.8 A; +3.3 V @ 14 A
- **MTBF** 100,000 hours
- **Safety** UL/CSA/TÜV

Ordering Information

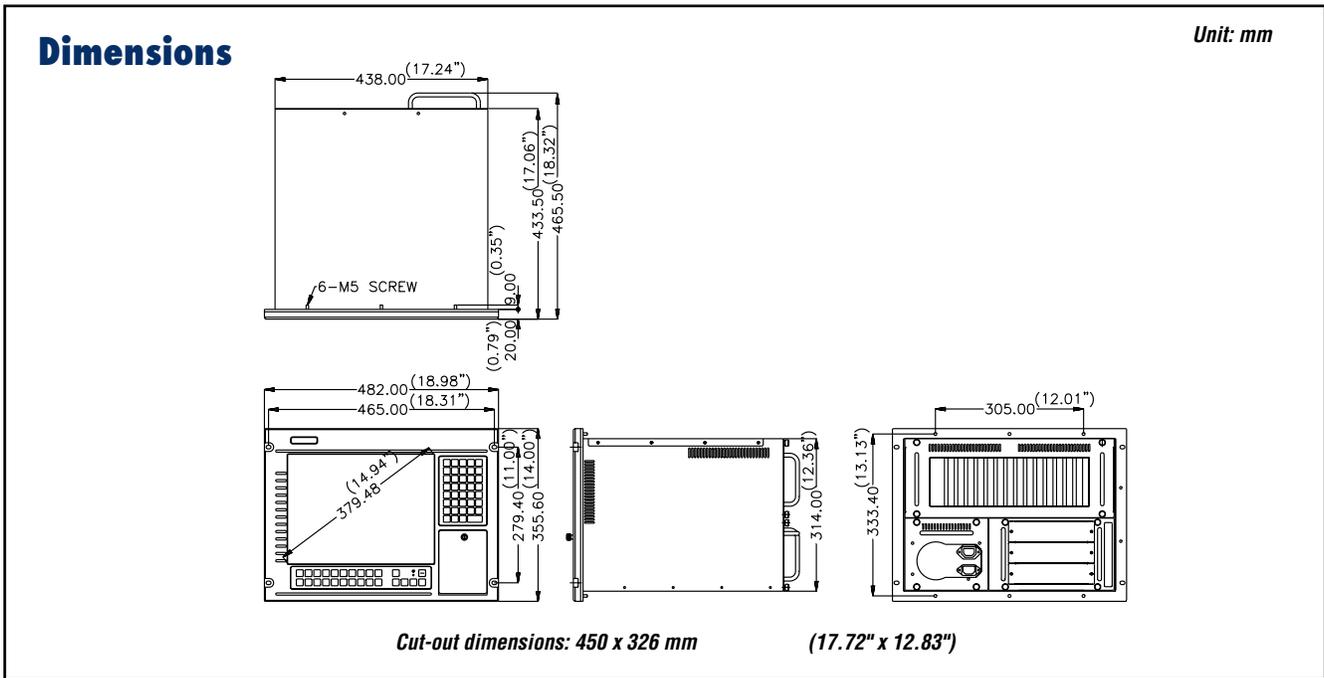
- **AWS-8248VTP** 15" TFT LCD, 4 PCI, 9 ISA, 1 CPU slot, 250 W 110/220 V_{AC} power supply, 3.5" FDD
- **AWS-8248VT** 15" TFT LCD, 14 ISA slots, 250 W 110/220 V_{AC} power supply, 3.5" FDD
- **AWS-8248VTP-T** AWS-8248VTP with resistive touchscreen (RS-232 interface)
- **AWS-8248VT-T** AWS-8248VT with resistive touchscreen (RS-232 interface)
- **AWS-8248VT-C1** AWS-8248VT bundle PCA-6003H CPU card
- **AWS-8248VTP-C1** AWS-8248VTP bundle PCA-6003H CPU card
- **AWS-8248VT-C2** AWS-8248VT bundle PCA-6180E CPU card
- **AWS-8248VTP-C2** AWS-8248VTP bundle PCA-6180E CPU card
- **AWS-8248VT-TC1** AWS-8248VT-T bundle PCA-6003H CPU card
- **AWS-8248VTP-TC1** AWS-8248VTP-T bundle PCA-6003H CPU card
- **AWS-8248VT-TC2** AWS-8248VT-T bundle PCA-6180E CPU card

Optional PCI Fieldbus Card

- Supports CANopen, DeviceNet™ or PROFIBUS™ by request

AWS-8248V

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS



Feature Details

Easy-to-maintain: three card-cage and thumbscrew fasteners

The AWS-8248V's "work drawer" designed card cage conveniently slides out for easy access. These three card-cages allow add-on cards, HDD/CD-ROMs and power supplies to be easily changed or added. It only takes a few minutes to service the unit, saving time and money while reducing downtime. The thumbscrew fasteners make access fast and easy, speeding maintenance procedures.

Easy Access Control Panel

Users can easily access the AWS-8248V's controls from the front of the unit via a sturdy protective door. Controls include LEDs and switches for power and system reset, as well as an OSD in front. The front panel also holds a 3.5" 1.44 MB FDD. The aluminum door protects controls from the environment. The door has a waterproof foam-rubber seal and retaining hand screw to securely hold it closed. In addition, the door offers protection against accidental operation of the unit's controls.

Ruggedized Design Meets Harsh Environment Needs

In addition, the AWS-8248V also features many powerful functions that meet or exceed industrial-grade requirements. The front panel is made of aluminum, which prevents the panel from being damaged by acid, salt and other elements. The unit is also waterproof and NEMA4/IP65 compliant. The AWS-8248V provides three mounting configurations to fit various applications: 19" rack mount, panel mounting and desktop.

Back View



AWS-8100G

Industrial Workstation with 10.4" TFT LCD



Features

- 10.4" TFT Color LCD Display
- SVGA Resolution: 800 x 600
- High Brightness LCD: 230 nits
- LCD backlight can be turned on/off by OSD key
- 9 Expansion Passive Backplane: 4 PCI/ 4 ISA/ 1 CPU or 6 PCI/ 2 ISA/ 1 CPU
- Supports up to Intel® Pentium® 4 CPU card with video A/D board
- Up Cover easy installation add-on card

Introduction

The AWS-8100G is a PC-based industrial workstation with an industrial-grade 10.4" TFT LCD display. The AWS-8100G is specifically designed for use within factories and other harsh industrial environments. The 19" frame can be rack mounted or panel mounted. The AWS-8100G provides 9 PCI/ISA slots, which offers great flexibility for application-specific requirements.

Specifications

LCD Panel

- **Display Type** 10.4" SVGA TFT LCD
- **Front Panel** Aluminum, meets NEMA4/IP65
- **Resolution** 800 x 600
- **Maximum Colors** 262 K
- **Luminance (cd/m²)** 230 nits
- **Viewing Angle** 120°(H), 100°(V)
- **Contrast Ratio** 500:1
- **LCD backlight can be turned on/off by OSD key**

Control Chassis

- **Housing**
 - Front panel: Aluminum
 - Other panel: Steel
- **High Frequency Anti-Vibration Mechanism for HDD**
- **Inverter** INV-00630
- **Video A/D Board** BIEN_ZAN3
- **Membrane Keypad**
 - 60 numerical keys
 - 10 function keys
 - 10 programmable keys
- **I/O Interface**
 - 1 x PS/2 Keyboard (inside the open-able door on front panel) or side panel
 - 1 x PS/2 Mouse (inside the open-able door on front panel)
 - 2 x Front accessible USB ports
- **Cooling System** One 86 CFM fan
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 60° C
- **Dimensions (W x H x D)** 482 x 266 x 310 mm (include Fan Cover)
- **Gross Weight** 11 kg

Passive Backplane

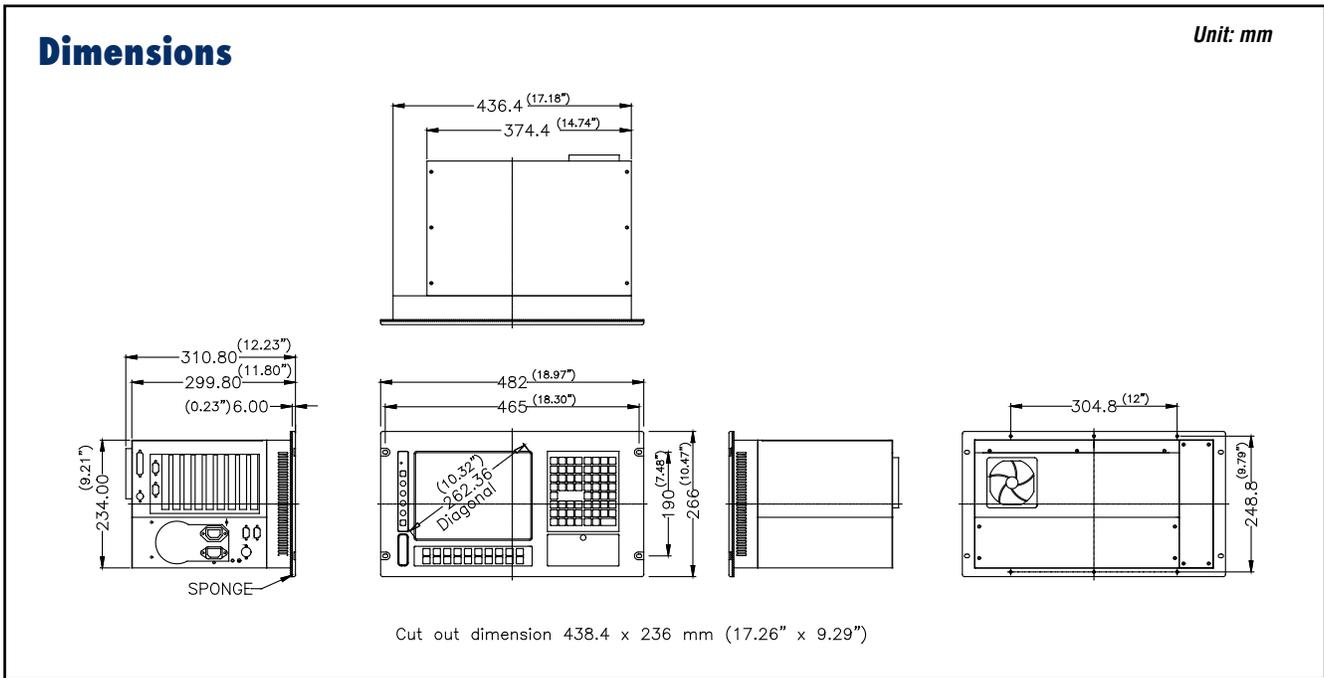
- **Backplane** 9 Extension Slots
PCA-6109P4: 1 CPU, 4 ISA, 4 PCI
PCA-6108P6: 1 CPU, 2 ISA, 6 PCI
- **CPU Compatibility** P4 Grade: 3.06 G
P3 Grade: 1.26 G
- **Power Supply** FSP250-60ATV
- **Certifications** CE, FCC, BSMI, CCC, UL

Ordering Information

- **AWS-8100GP4** 10.4" Workstation General Brightness TFT LCD /4 PCI Slots
- **AWS-8100GP6** 10.4" Workstation General Brightness TFT LCD /6 PCI Slots
- **AWS-8100GP4-R** 10.4" Workstation General Brightness TFT LCD/ Resistive Touch Screen/4 PCI Slots
- **AWS-8100GP6-R** 10.4" Workstation General Brightness TFT LCD/ Resistive Touch Screen/6 PCI Slots
- **AWS-8100GP4-CX** AWS-8100GP4 bundle with suggested CPU card (refer to No. 6 Table)
- **AWS-8100GP4-RCX** AWS-8100GP4-R bundle with suggested CPU card (refer to No. 6 Table)
- **AWS-8100GP6-CX** AWS-8100GP6 bundle with suggested CPU card (refer to No. 6 Table)
- **AWS-8100GP6-RCX** AWS-8100GP6-R bundle with suggested CPU card (refer to No. 6 Table)

AWS-8100G

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 **ATM & AWS**
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS



CPU Card Bundling Suggestion

Code	CPU Grade	Part No.	Description
C1	P4 (400/533/800 MHz FSB)	PCA-6187VE-00A1	Socket 478 Pentium® 4/Celeron® Processor card with VGA/Dual Gigabit LAN/HISA/SCSI (400/533/800 MHz FSB)
C2	P4 (400/533 MHz FSB)	PCA-6186VE-00A1	Socket 478 Pentium® 4/Celeron® Processor card with VGA/Dual Gigabit LAN/HISA (400/533 MHz FSB)
C3	P4 (400/533 MHz FSB)	PCA-6184VE-00A2	Socket 478 Pentium® 4/Celeron® Processor card with VGA/Dual Gigabit LAN/HISA (400/533 MHz FSB)
C4	P3 (133 MHz FSB)	PCA-6180E-00B1	Socket 370 Pentium® III/Celeron® Processor card with VGA/Dual LAN/SCSI/HISA (133 MHz FSB)

The extension model no. for above AWS-8100G products bundling with various CPU card, refer to the CPU card suggestion Table above.

Note: Other CPU cards not listed in this table will be treated as OEM/ODM case with T-P/N for easy-control and maintenance of product number.

AWS-8124

Mini Workstation with 12.1" LCD & 4 Expansion Slots



Features

- 12.1" Color TFT LCD
- 4 Slot Backplane
- Compact Size
- NEMA4 / IP65 compliant front panel
- Optional Resistive Touchscreen

Introduction

The AWS-8124 PC-based mini workstation is a compact unit that meets the requirements of human-machine interfaces. Its half-sized, four slot backplane provides a space-saving and economical solution for industrial control. At only 6" in depth, this system can be used in the tight spaces around machinery. Equipped with an optional touchscreen, it can even be used as a controlling interface. Mounted in an airplane, vehicle or machine platform, this mini workstation is designed to fit where others can't.

Specifications

- **Front Panel** Aluminum, meets NEMA4/IP65
- **Disk Drive Housing** Holds one 3.5" FDD and one 3.5" HDD (HDD optional)
- **Cooling System** One 32.8 CFM fan on side
- **Slots** 4 ISA slots (8124T), 4 PCI slots (8124TP)
- **LCD Interface** 3.3 V TTL
- **Compatible CPU Card** PCA-6751/6752/6770 (for 8124T)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Relative Humidity** 5 ~ 95% @ 40° C (non-condensing)
- **Vibration (Operating)** 5 ~ 500 Hz 0.5G RMS Random Vibration
- **Dimension (W x H x D)** 344 x 260 x 152 mm (13.5" x 10.2" x 6.0")
- **Gross Weight** 9.5 kg (21 lb)
- **Certifications** CE, CCC, FCC, BSMI

Power Supply Options

AC input 80 W (Standard offer)

- **Input** 100 V_{AC}/3 A ~ 240 V_{AC}/1.2 A @ 47 ~ 63 Hz
- **Output** +5 V @ 12 A, +12 V @ 1.0 A
- **MTBF** 200,000 hours
- **Safety** UL/CSA/CE
- **EMI** FCC Class B

DC input 80 W (Option offer)

- **Input** 24 V_{DC}/7 A ~ 48 V_{DC}/4 A or 12 V_{DC}/12 A
- **Output** +5 V @ 10 A, +12 V @ 1.5 A, -12 V @ 0.5 A
- **MTBF** 200,000 hours
- **Safety** UL/CSA
- **EMI** FCC Class B

Touchscreen (Optional)

- **Type** Analog resistive, continuous resolution
- **Light Transmission** 72%

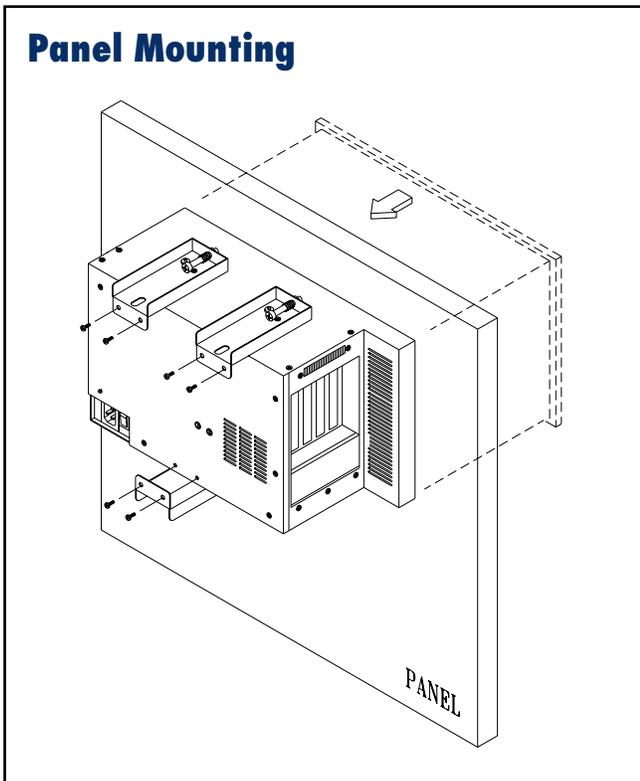
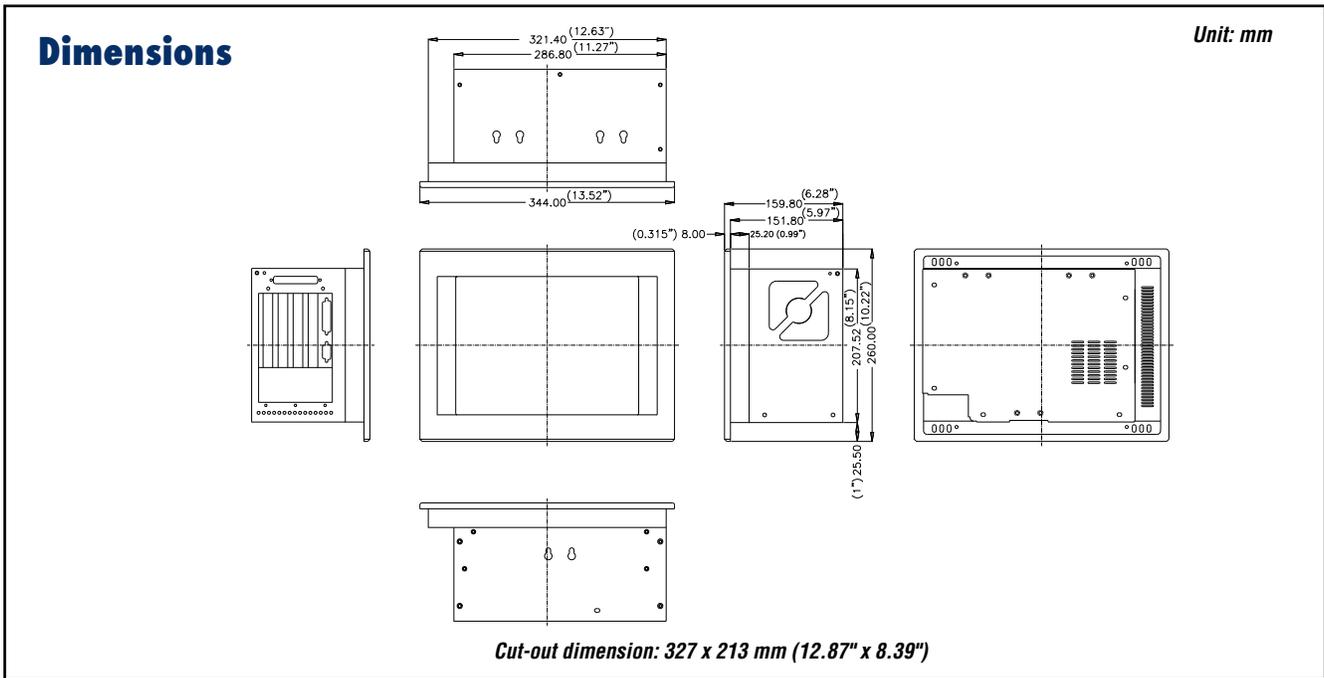
- **Controller** RS-232 interface
- **Power Consumption** +5 V @ 200 mA
- **Durability** 100 million touch lifetime
- **Software Driver** Supports DOS, Windows® 3.1/95/98/NT/2000, Linux
- **Display Type** 12.1" SVGA TFT LCD*
- **Resolution** 800 x 600
- **Max. Colors** 262 K
- **Viewing Angle** 90° (H), 40° (V)
- **Luminance** 100 cd/m²
- **Backlight MTBF** 20,000 hrs
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 60° C

Ordering Information

- **AWS-8124T** 12.1" TFT LCD, 4 ISA slot backplane, 3.5" FDD, 80 W AC power supply
- **AWS-8124T-T** AWS-8124T with resistive touchscreen (RS-232 interface)
- **AWS-8124TP** 12.1" TFT LCD, 4 PCI slot backplane, 3.5" FDD, 80 W AC power supply
- **AWS-8124TP-T** AWS-8124TP with resistive touchscreen (RS-232 interface)
- **AWS-8124T-C1** AWS-8124T bundle PCA-6751 CPU card
- **AWS-8124T-C2** AWS-8124T bundle PCA-6770F CPU card
- **AWS-8124T-TC1** AWS-8124T-T bundle PCA-6751 CPU card
- **AWS-8124T-TC2** AWS-8124T-T bundle PCA-6770F CPU card

AWS-8124

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS



Optional PCI Fieldbus Card

- Supports CANopen, DeviceNet™ or PROFIBUS™ by request

Back View



PWS-1409

PWS-1419

9-slot 14.1" TFT LCD Portable Workstation

9-slot 14.1" TFT LCD Ruggedized Portable Workstation



Features

- 9-slot ISA/PCI backplane platform
- Full size mechanical key-switch keyboard with touch-pad
- Built-in amplified stereo speakers
- 14.1" TFT LCD w/ 1024x768 resolution
- Add-on Card Retention bar
- Built-in Standard PC I/O Ports
- CE, FCC, CCC, BSMI compliant
- Carrying case for easy travel

For PWS-1419T/TP only

- Impact-resistance protective glass for LCD
- Complete Aluminum Enclosure

Introduction

PWS-1419T/TP Ruggedized Portable Workstation

The PWS-1419 complies with stringent industrial standards. Built with an all aluminum enclosure with hard anodized surface, the PWS-1419T/TP has been thoroughly tested and certified to withstand the most demanding environments. The PWS-1419 is dustproof, moisture resistant, shock/drop proof, and heat/cold resistant. Built-in sound and standard PC I/O ports are provided along with a 14.1" TFT LCD with 1024 x 768 resolution.

Its compact size makes it an ideal solution for field operations and it is extremely mobile with the ability to be carried on to a plane or easily fitted into a vehicle. It is ruggedly built and expandable while meeting MIL-STD-810E military standards and industrial requirements.

PWS-1409T/TP Portable Workstation

The PWS-1409T/TP is a light version of PWS-1419 Portable Workstation, making it also ideal for rugged field and mobile applications. The product is built on an aluminum chassis surrounded by a highly durable ABS plastic shell. It offers a cost effective solution for applications such as portable servers, network/communications testing, field data acquisition, remote field service, factory monitoring automation, etc.

Specifications

- **Chassis** PWS-1419 - complete aluminum
PWS-1409 - aluminum chassis w/ABS plastic shell
- **Backplane** TP version-1 CPU, 4 ISA, 4 PCI; T version-1 CPU, 8 ISA
- **Keyboard** Full size mechanical key-switch, detachable
- **Power Supply** AC 110/220 V auto switch
- **Storage Device** FDD built-in, plus 1 hard disk bay and 1 slim type CD-ROM bay
- **Operating Temperature** -8 ~ 60° C
- **Storage Temperature** -20 ~ 60° C
- **Humidity** PWS-1419 5 ~ 95 % RH, non-condensing
PWS-1409 10 ~ 90 % RH, non-condensing
- **Dimensions (W x H x D)** PWS-1419: 421 x 282 x 230 mm (16.6" x 11.1" x 9.1")
PWS-1409: 400 x 320 x 200 mm (15.7" x 13.2" x 10.4")
- **Weight** PWS-1419: 12 kg (26.4 lb)
PWS-1409: 9 kg (19.8 lb)

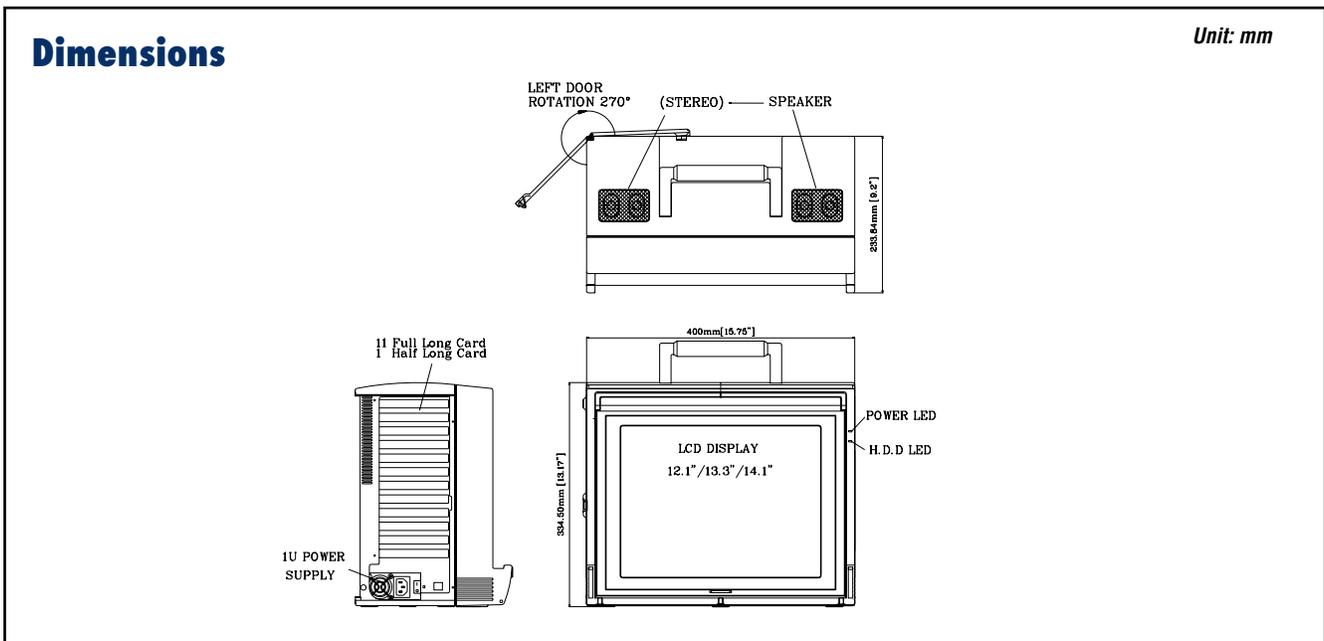
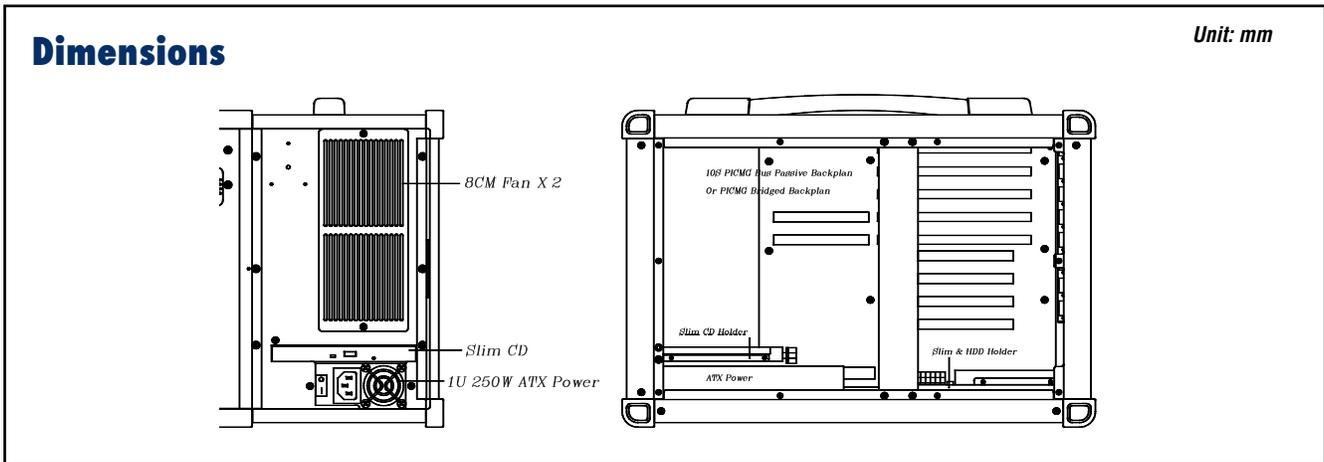
LCD Display

	PWS-1409	PWS-1419
Display Type	14"1 Active Matrix TFT	14"1 Active Matrix TFT
Max. Resolution	1024 x 768	1024 x 768
Max. Colors	262 K	262 K
Viewing Angle	H: left side 40°, right side 40° V: up side 15°, down side 30°	H: left side 50°, right side 50° V: up side 20°, down side 35°
Luminance	130 cd/m ²	220 cd/m ²
Backlight Lifetime	25,000 hrs	25,000 hrs

Ordering Information

- **PWS-1419T** 14.1" LCD, Aluminum Chassis, 8ISA/1CPU, Slim Type FDD
- **PWS-1419TP** 14.1" LCD, Aluminum Chassis, 4ISA/4PCI/1CPU, Slim Type FDD
- **PWS-1409T** 14.1" LCD, Aluminum Chassis w/ ABS Plastic Shell, 8ISA/1CPU, standard type FDD
- **PWS-1409TP** 14.1" LCD Aluminum Chassis w/ ABS Plastic Shell, 4 ISA/4 PCI/1 CPU, standard type FDD

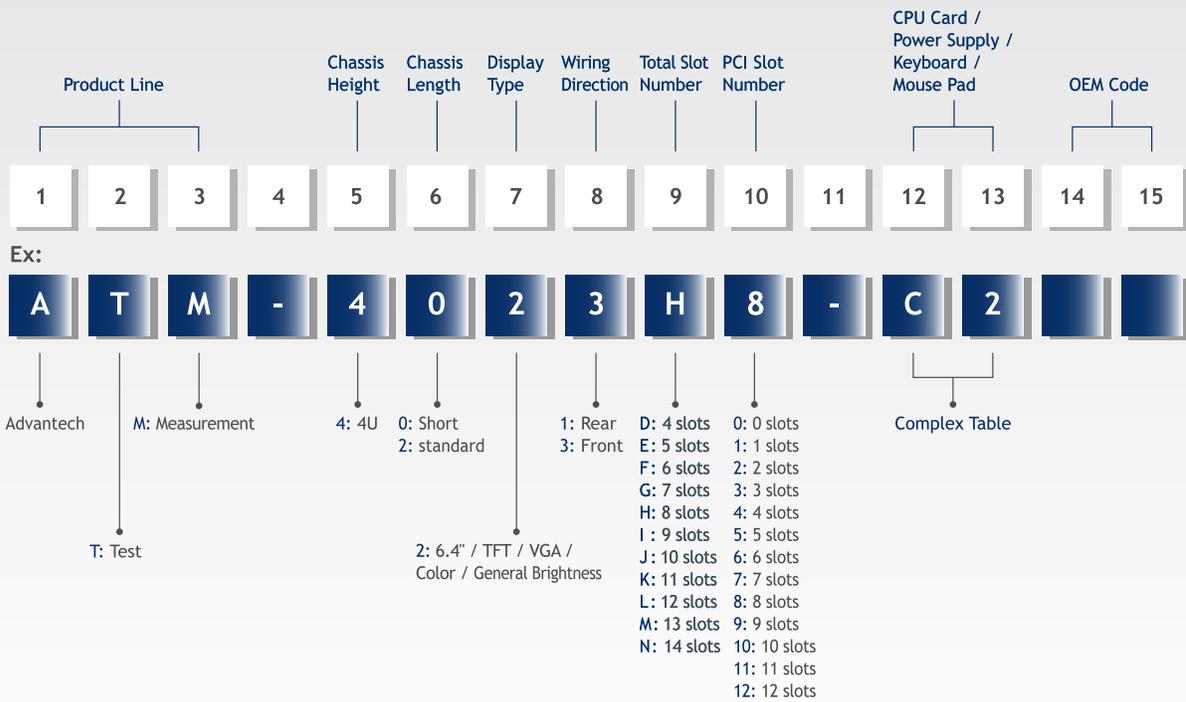
1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AHS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS



Front View

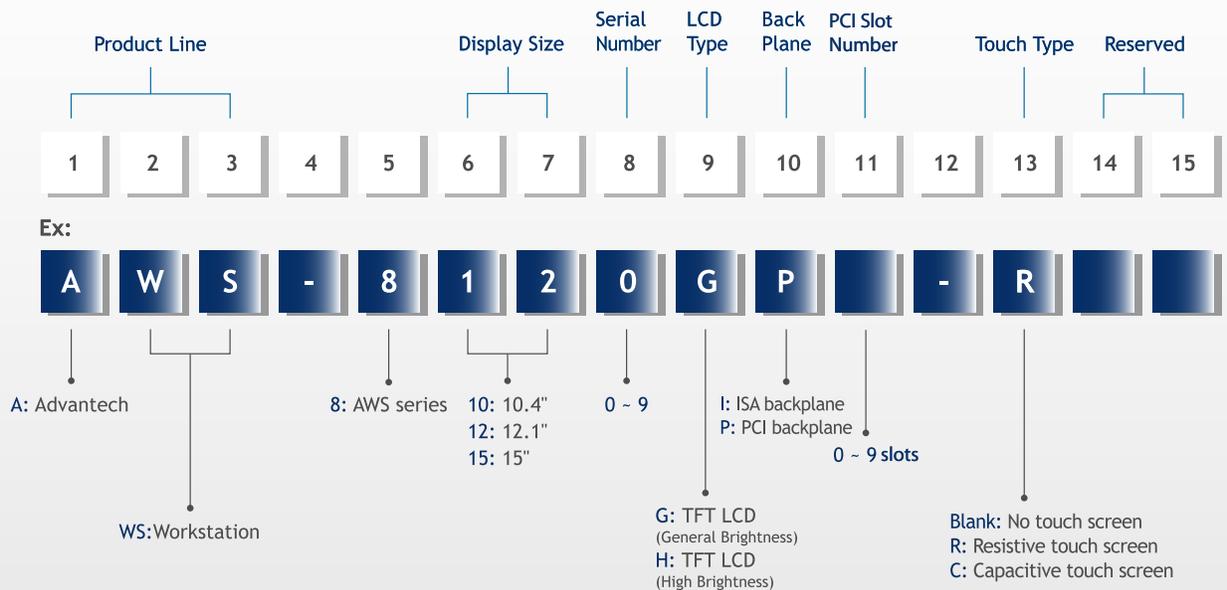


Industrial Automation Platform Naming Rule



❖ Example Description: 8 PCI slots Industrial Automation Platform with 6.4" LCD / 4U / Half size / Front-access / Front Wiring / PIII CPU card / 250W power supply

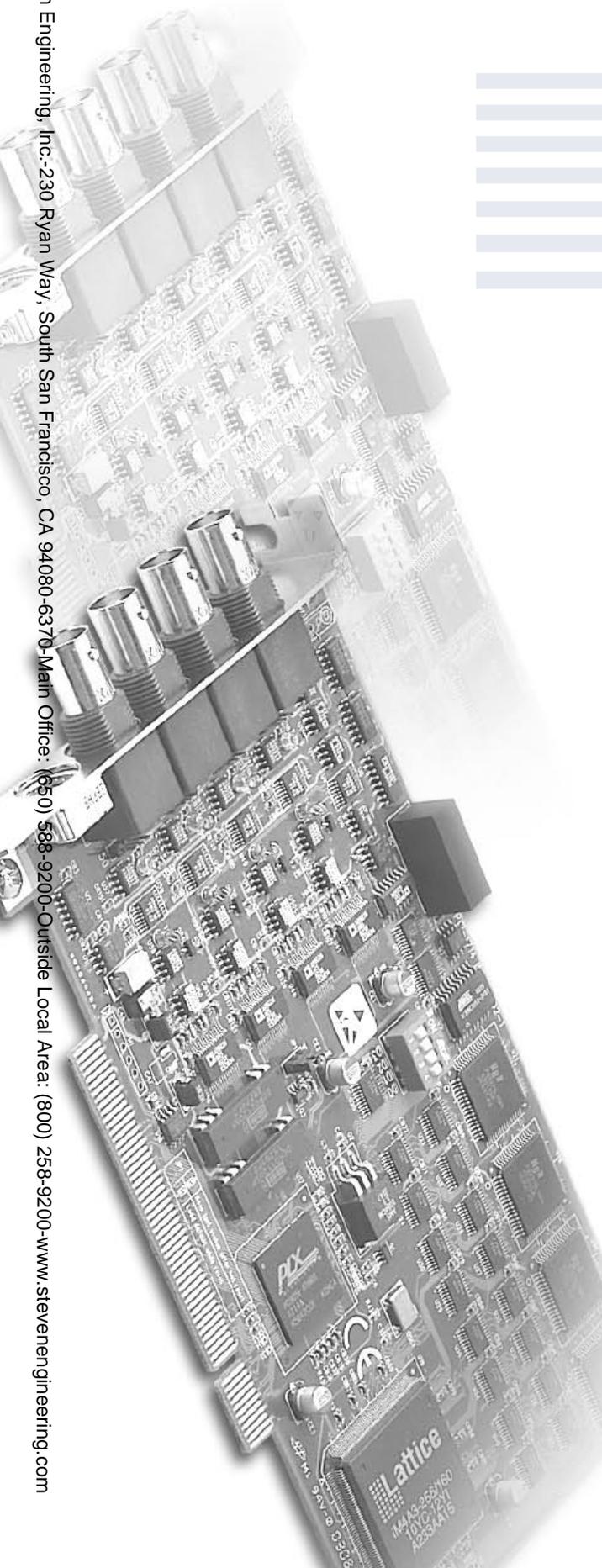
AWS Series Naming Rule



❖ Example Description: 12.1" WorkStation General brightness TFT LCD / Resistive touch screen / PCI slot

Plug-In DA&C Cards

Data Acquisition and Control Tutorial & Software	6-2	
Data Acquisition and Control Card Selection Guide	6-4	
PCI-bus Data Acquisition and Control Cards		
PCI / Universal PCI Multifunction Cards		
PCI-1710/1710L/ 1710HG/1710HGL	100 kS/s, 12-bit, (High-gain), PCI-bus Multifunction Card	6-10
PCI-1711/1711L	100 kS/s, 12-bit, 16-ch S.E. Inputs Low-cost Multifunction Card	6-12
PCI-1712/1712L	1 MS/s, 12-bit, 16-ch High-speed Multifunction Card	6-14
PCI-1716/1716L	250 kS/s, 16-bit, 16-ch High-resolution Multifunction Card	6-16
PCI-1718HDU/PCI-1718HGU (New)	12-bit Multifunction DAS Card for PCI Bus	6-18
PCI-1741U (New)	16-bit, 200kS/s High-Resolution Multifunction Card	6-20
PCI-1747U (New)	250 kS/s 16-bit, 64-ch Analog Inputs Card	6-22
PCI / Universal PCI Analog Input Cards		
PCI-1713	100 kS/s, 12-bit, 32-channel Isolated Analog Input Card	6-24
PCI-1714/1714UL (New)	30 MS/s Simultaneous 4-ch Analog Input Card	6-25
PCI / Universal PCI Analog Output Cards		
PCI-1720/1720U (New)	4-ch Isolated Analog Output Card	6-26
PCI-1721	12-bit, 4-ch Advanced Analog Output Card	6-27
PCI-1723	12-bit, 8-ch Isolated Analog Output Card	6-28
PCI-1724U	14-bit, 32-ch Analog Output Card	6-29
PCI-1727U (New)	12-ch D/A Output Card	6-30
PCI / Universal PCI Non-Isolated Digital I/O Cards		
PCI-1751/1751U (New)	48-bit Digital I/O and Counter Card	6-31
PCI-1753/1753E	96/192-bit Digital I/O Card	6-32
PCI-1755	80 MB/s Ultra high-speed 32-ch Digital I/O Card	6-33
PCI / Universal PCI Isolated Digital I/O Cards		
PCI-1730	32-ch Isolated Digital I/O Card	6-34
PCI-1733	32-ch Isolated Digital Input Card	6-34
PCI-1734	32-ch Isolated Digital Output Card	6-34
PCI-1752	64-ch Isolated Digital Output Card	6-36
PCI-1754	64-ch Isolated Digital Input Card	6-36
PCI-1756	64-ch Isolated Digital I/O Card	6-36
PCI-1758UDI/ PCI-1758UDO (New)	128-ch Isolated Digital I/O Card	6-38
PCI-1757UP	12-bit Multifunction DAS Card for PCI Bus	6-40
PCI-1736UP (New)	32-ch Isolated Digital IO Low-profile PCI Card	6-41
PCI-1763UP	8-ch Relay and 8-ch IDI Low-profile PCI Card	6-42
PCI-1750	32-ch Isolated Digital I/O and Counter Card	6-43
PCI-1761	8-ch Relay Actuator and 8-ch Isolated D/I Card	6-44
PCI-1760/1760U (New)	8-ch Relay Actuator and Isolated D/I Card	6-45
PCI-1762	16-ch Relay Actuator and 16-ch Isolated D/I Card	6-46
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ISA-Bus Data Acquisition and Control Cards		
Multifunction Cards		
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PCL-812PG	MultiLab Analog and Digital I/O Card	6-49
PCL-818 Series	High-performance Multifunction Card	6-50
PCL-818L/LS/H	40 kS/s Multifunction Card	6-51
PCL-818HD/HG	High-performance Multifunction Card	6-52
Analog Input Cards		
PCL-813B	32-ch S.E. Isolated A/D Card	6-53
Analog Output Cards		
PCL-726	6-ch D/A Output Card	6-54
PCL-727	12-ch D/A Output Card	6-54
PCL-728	Isolated 2-ch D/A Output Card	6-54
Non-Isolated Digital I/O Cards		
PCL-720+	Digital I/O and Counter Card	6-55
PCL-722	144-bit Digital I/O Card	6-56
PCL-724	24-bit Digital I/O Card	6-56
PCL-731	48-bit Digital I/O Card	6-56
Isolated Digital I/O Cards		
PCL-725	Relay Actuator and Isolated D/I Card	6-57
PCL-735	12-ch Relay Actuator Card Counter Card	6-57
PCL-730	32-ch Isolated Digital I/O Card	6-58
PCL-733	32-ch Isolated Digital Input Card	6-58
PCL-734	32-ch Isolated Digital Output Card	6-58
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PC/104 I/O Modules		
PCM-3712	12-bit, 2-ch Analog Output Module	6-61
PCM-3718H/HG/PCM-3718HO (New)	100 kS/s, 12-bit, 16-ch Multi-function Module	6-61
PCM-3724	48-ch Digital I/O Module	6-61
PCM-3725	8-ch Isolated Digital Input and 8-ch Relay Output Module	6-62
PCM-3730	16-ch Isolated Digital I/O Module	6-62
PCM-3780 (New)	2-ch Counter/Timer with 24 ch TTL DIO Module	6-62
GPiB interface series		
PCI-1670	GPiB interface PCI card	6-63
PCI-1671 (New)	High-Performance IEEE-488.2 Interface for PCI-Bus Computers	6-64
Portable Data Acquisition Modules		
USB-4711 (New)	100 kS/s, 12-bit USB Multifunction Module	6-65
USB-4716 (New)	100 kS/s, 16-bit USB Multifunction module	6-66
USB-4718 (New)	8-ch Thermocouple Input Module	6-67
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Data Acquisition and Control Tutorial

PC-based Data Acquisition System Overview

In the last few years, industrial PC I/O interface products have become increasingly reliable, accurate and affordable. Because of this, PC-based data acquisition and control systems are now widely used in industrial and laboratory applications such as: monitoring, control, data acquisition and automated testing.

Selecting and building a DA&C (Data Acquisition and Control) system that actually does what you want it to do requires some knowledge of electrical and computer engineering. This tutorial gives a brief introduction to what DA&C systems do and how to configure them. It covers:

- Transducers and actuators
- Signal conditioning
- Data acquisition and control hardware
- Getting Started
- Computer systems software

Transducers and Actuators

A transducer converts temperature, pressure, level, length, position, etc. into voltage, current, frequency, pulses or other signals.

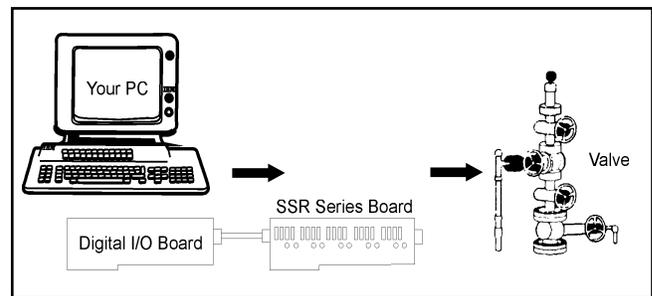
Thermocouples, thermistors and resistance temperature detectors (RTDs) are common transducers for temperature measurements. Other types of transducers include flow sensors, pressure sensors, strain gauges, load cells and LVDTs, which measure flow rate, pressure variances, force or displacement.

An actuator is a device that activates process control equipment by using pneumatic, hydraulic or electrical power. For example, a valve actuator can open and close a valve to control fluid rates.

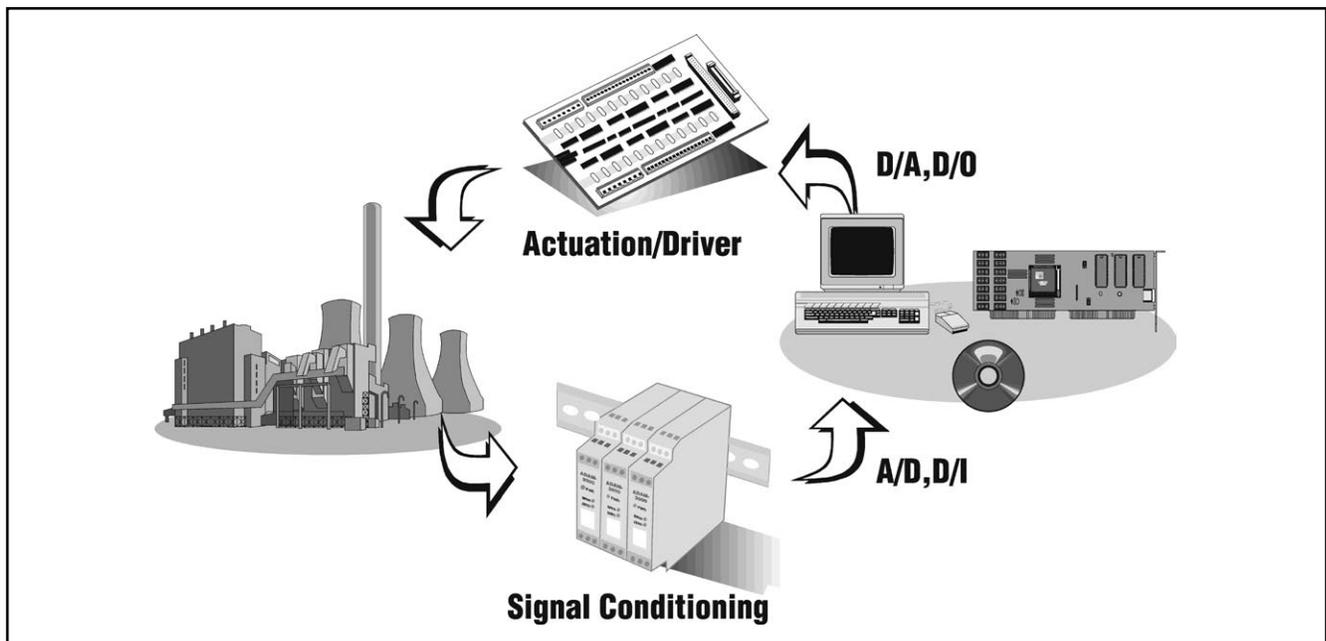
Signal Conditioning

Signal conditioning circuits improve the quality of signals generated by transducers before they are converted into digital signals by the PC's data-acquisition hardware. Examples of signal conditioning are signal scaling, amplification, linearization, cold-junction compensation, filtering, attenuation, excitation, common-mode rejection, and so on.

One of the most common signal conditioning functions is amplification. For maximum resolution, the voltage range of the input signals should be approximately equal to the maximum input range of the A/D converter. Amplification expands the range of the transducer signals so that they match the input range of the A/D converter. For example, a x10 amplifier maps transducer signals that range from 0 to 1 V into the range 0 to 10 V before they go into the A/D converter.



Using digital I/O and SSRs to open and close a valve



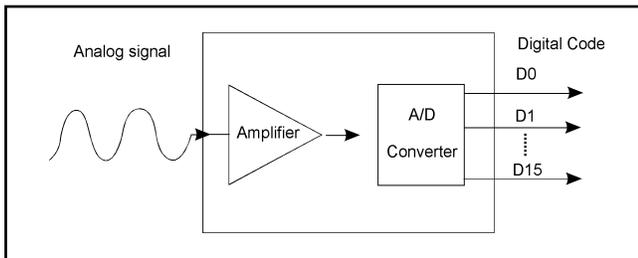
The layout of a typical PC-based data acquisition system

Data Acquisition & Control Hardware

Data acquisition and control hardware generally performs one or more of the following functions: analog input, analog output, digital input, digital output and counter/timer functions. This section will discuss each function and list some considerations that are important when you select a data acquisition and control system.

Analog Inputs (A/D)

Analog to digital (A/D) conversion changes analog voltage or current levels into digital information. The conversion is necessary to enable a computer to process or store the signals.

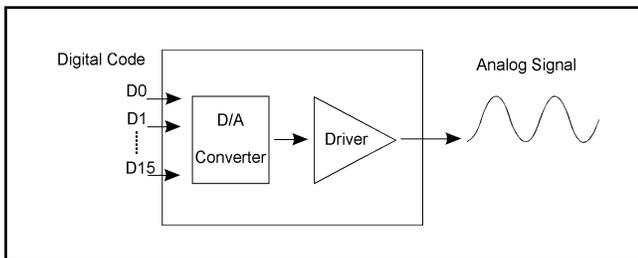


The most significant criteria when selecting A/D hardware are:

1. Number of input channels
2. Single-ended or differential input signals
3. Sampling rate (in samples per second)
4. Resolution (usually measured in bits of resolution)
5. Input range (specified in full-scale volts)
6. Noise and nonlinearity

Analog Outputs (D/A)

The opposite of analog to digital conversion is digital to analog (D/A) conversion. This operation converts digital information into analog voltage or current. D/A devices allow a computer to control real-world events.



Analog output signals may directly control process equipment. The process can give feedback in the form of analog input signals. This is referred to as a closed loop control system with PID control. Analog outputs can also be used to generate waveforms. In this case, the device behaves as a function generator.

Digital Inputs and Outputs

Digital input/output functions are useful in applications such as contact closure and switch status monitoring, industrial On/Off control and digital communications.

Counter/timer

A counter/timer can be used for event counting, flowmeter monitoring, frequency counting, pulse width measurement, time period measurement, and so on.

Getting Started

Advantech: The source for what you need

Advantech manufactures data acquisition hardware and software for measurement, monitoring and applications control. The following guide is provided to help you choose components for your data acquisition system.

Step 1: Know your fundamental goal

Decide whether your DA&C system will be used primarily for measurement, monitoring, control, or analysis. Know the data requirements of your process, and know the number of data collection points in your system. Know the required data collection speed, the sampling rate, the type of measurement, the voltage or current being produced, the desired accuracy and the output resolution at each data collection point. Finally, know the timing of events in your system, and any special environmental conditions that exist.

Step 2: Hardware selection

Select the hardware required to achieve your fundamental goal. Advantech provides plug-in boards for Analog-to-Digital, Digital-to-Analog, Digital I/O, RS-232 or RS-485 needs. Both ISA and PCI bus products are available. Your hardware selection should be based on five major criteria:

1. Number and types of channels
2. Differential or single-ended inputs
3. Resolution
4. Speed
5. Software compatibility with hardware

Step 3: Accessory selection

Most applications require additional accessories which are available as separate items. These include:

1. Expansion peripherals to add channels to your system
2. Cables, signal conditioners and external boxes such as screw terminals or BNC accessories

Step 4: Software selection

More than any other single factor, software will determine your system start-up time, as well as its effectiveness, suitability for your application, and ease of modification.

Three major criteria should determine the choice of software:

1. Operating system used
2. User programming expertise
3. Software compatibility with hardware

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

Data Acquisition and Control Cards

Bus Category		PCI Multifunction							
Model		PCI-1710/1710L	PCI-1710HG/HGL	PCI-1711/1711L	PCI1712/1712L	PCI-1716/1716L	PCI-1718HDU/HGU	PCI-1741U	
Analog Input	General Spec.	Resolution	12 bits	12 bits	12 bits	12 bits	16 bits	12 bits	16 bits
		Channels	16 SE/8 Diff.	16 SE/8 Diff.	16 SE	16 SE/8 Diff.	16 SE/8 Diff.	16 SE/8 Diff.	16 SE/8 Diff.
		Onboard FIFO	4K samples	4K samples	1K samples	1K samples	1K samples	4K samples	1K samples
		Sampling Rate	100 kS/s	100 kS/s	100 kS/s	1 MS/s	250 kS/s	100 kS/s	200 kS/s
		Auto Channel Scanning	✓	✓	✓	✓	✓	✓	✓
	Input Ranges	Unipolar Inputs (V)	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25	0 ~ 10, 0 ~ 1, 0 ~ 0.1, 0 ~ 0.01	-	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 (PCI-1718HDU) 0 ~ 10, 0 ~ 1, 0 ~ 0.1, 0 ~ 0.01 (PCI-1718HGU)	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25
		Bipolar Inputs (V)	±10, 5, 2.5, 1.25, 0.625	±10, 5, 1, 0.5, 0.1, 0.05, 0.01, 0.005	±10, 5, 2.5, 1.25, 0.625	±10, 5, 2.5, 1.25, 0.625	±10, 5, 2.5, 1.25, 0.625	±10, 5, 2.5, 1.25, 0.625 (PCI-1718HDU) ±10, 5, 1, 0.5, 0.1, 0.05, 0.01, 0.005 (PCI-1718HGU)	±10, 5, 2.5, 1.25, 0.625
		Configurable Per-Channel	✓	✓	✓	✓	✓	✓	-
	Trigger Mode	Pacer/Software/External Pulse	✓	✓	✓	✓	✓	✓	✓
		Analog Slope	-	-	-	✓	-	-	-
		Pretrigger	-	-	-	✓	-	-	-
		Post-trigger	-	-	-	✓	-	-	-
	Data Transfer Mode	Software	✓	✓	✓	✓	✓	✓	✓
		DMA	-	-	-	Bus-mastering	Bus-mastering	-	-
		Resolution	12 bits	12 bits	12 bits	12 bits	16 bits	12 bits	16 bits
Analog Output	Number of Channels	2 (PCI-1710 only)	2 (PCI-1710HG only)	2 (PCI-1711 only)	2 (PCI-1712 only)	2 (PCI-1716 only)	1	-	
	On-board FIFO	-	-	-	32K samples	-	-	-	
	Output Range (V)	0 ~ 5, 0 ~ 10	0 ~ 5, 0 ~ 10	0 ~ 5, 0 ~ 10	0 ~ 5, 0 ~ 10, ±5, ±10	0 ~ 5, 0 ~ 10, ±5, ±10	0 ~ 5, 0 ~ 10	-5V, -10-10V	
	Throughput	38 kS/s Typical**	38 kS/s Typical**	38 kS/s Typical**	1 MS/s	200 kS/s Typical**	100 kS/s Typical**	200 kS/s Typical**	
	DMA Transfer	-	-	-	✓	-	-	-	
	Resolution	12 bits	12 bits	12 bits	12 bits	16 bits	12 bits	16 bits	
Digital I/O	Input Channels	16	16	16	16 (mixed)	16	16	16	
	Output Channels	16	16	16		-	16	16	
Timer/Counter	Channels	1	1	1	3	1	1	1	
	Resolution	16-bit	16-bit	16-bit	16-bit	16-bit	16-bit	16-bit	
	Time Base	10 MHz	10 MHz	10 MHz	10 MHz	10 MHz	10 MHz	10 MHz	
Isolation Voltage		-	-	-	-	-	-	-	
Auto Calibration		-	-	-	✓	✓	-	✓	
BoardID™ Switch		✓	✓	-	-	✓	✓	✓	
Dimensions (mm)		175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	
Connector		68-pin SCSI-II	68-pin SCSI-II	68-pin SCSI-II	68-pin SCSI-II	68-pin SCSI-II	DB-37	68-pin SCSI-II	
Windows® 98/2000/XP DLL Driver		✓	✓	✓	✓	✓	✓	✓	
Windows® 98/2000/XP Test Utility		✓	✓	✓	✓	✓	✓	✓	
VC++, VB & Delphi Examples		✓	✓	✓	✓	✓	✓	✓	
Advantech ActiveDAQ		✓	✓	✓	✓	✓	✓	✓	
LabView® I/O Drivers (Ver.6i and 7.0)		✓	✓	✓	✓	✓	✓	✓	
MathWorks MATLAB & Simulink Data Acquisition Tool Box 2.5.1		✓	✓	✓	✓	-	-	-	
Page		6-10	6-10	6-12	6-14	6-16	6-18	6-20	

* Note: SS = Single DMA channel, Single A/D channel scan SM = Single DMA channel, Multiple A/D channel scan DM = Dual DMA channel, Multiple A/D channel scan

Selection Guide

PCI								ISA		
AI			AO					Multifunction		
PCI-1713	PCI-1714	PCI-1747U	PCI-1720/ 1720U	PCI-1721	PCI-1723	PCI-1724	PCI-1727U	PCL-711B/S	PCL-812PG	PCL-818L/LS
12 bits	12 bits	16 bits	-	-	-	-	-	12 bits	12 bits	12 bits
32 SE/16 Diff. (Isolation)	4 SE	64 SE/32 Diff.	-	-	-	-	-	8 SE	16 SE	16 SE/8 Diff
4K samples	32 K samples	1K samples	-	-	-	-	-	-	-	-
100 kS/s	30 MS/s	250 kS/s	-	-	-	-	-	25 kS/s	30 kS/s	40 kS/s
✓	✓	✓	-	-	-	-	-	-	-	✓
0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25	-	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25	-	-	-	-	-	-	-	-
±10, 5, 2.5, 1.25, 0.625	±5, 2.5, 1, 0.5	±10, 5, 2.5, 1.25, 0.625	-	-	-	-	-	±5, 2.5, 1.25, 0.625, 0.3125	±10, 5, 2.5, 1.25, 0.625, 0.3125	±10, 5, 2.5, 1.25, 0.625
✓	✓	✓	-	-	-	-	-	✓	✓	✓
✓	✓	✓	-	-	-	-	-	✓	✓	✓
-	✓	-	-	-	-	-	-	-	-	-
-	✓	-	-	-	-	-	-	-	-	-
-	✓	-	-	-	-	-	-	-	-	-
✓	✓	✓	-	-	-	-	-	✓	✓	✓
-	Bus-mastering	Bus-mastering	-	-	-	-	-	-	SS*	SM*
-	-	-	12 bits	12 bits	16 bits	14 bits	14 bits	12 bits	12 bits	12 bits
-	-	-	4 (Isolation)	4 (Waveform Output)	8	32	12	1	2	1
-	-	-	-	1K samples	-	-	-	-	-	-
-	-	-	0 ~ 5, 0 ~ 10, ±5, ±10, 0 ~ 20 mA, 4 ~ 20 mA	0 ~ 5, 0 ~ 10, ±5, ±10, 0 ~ 20 mA, 4 ~ 20 mA	-10 ~ 10, 0 ~ 20 mA, 4 ~ 20 mA	±10, 0 ~ 20 mA	0-5, 0-10 ±5, 4-20 mA	0 ~ 5, 0 ~ 10	0 ~ 5, 0 ~ 10	0 ~ 5, 0 ~ 10
-	-	-	15 kS/s Typical**	10 MHz max. update rate	15 kS/s Typical**	15 kS/s Typical**	-	30 kS/s Typical**	30 kS/s Typical**	30 kS/s Typical**
-	-	-	-	Bus-mastering	-	-	-	-	-	-
-	-	-	-	16	16	-	16	16	16	16
-	-	-	-	-	-	-	16	16	16	16
-	1	-	-	1	-	-	-	-	1	1
-	8-bit	16-bit	-	16-bit	-	-	-	-	16-bit	16-bit
10 MHz	60 MHz	10 MHz	10 MHz	10 MHz	-	-	-	2 MHz	2 MHz	10 MHz
2,500 V _{DC}	-	-	2,500 V _{DC}	-	-	-	-	-	-	-
-	✓	✓	-	✓	✓	-	-	-	-	-
-	✓	✓	-	✓	✓	✓	✓	-	-	-
175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	185 x 100	155 x 100
DB-37	4 BNC	68-pin SCSI-II	DB-37	68-pin SCSI-II	68-pin SCSI-II	DB-62	2 x 20-pin, DB-37	2 x 20-pin	2 x 20-pin	DB-37
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	-	-	✓	-	-	-	-	✓	✓	✓
6-24	6-25	6-22	6-26	6-27	6-28	6-29	6-30	6-48	6-49	6-51

- 1 Software
- 2 IPCC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

** Note: System-dependent

Data Acquisition and Control Cards

Bus		ISA					
		Multifunction		AI	AO		
Category							
Model		PCL-818HD	PCL-818HG	PCL-813B	PCL-726	PCL-727	PCL-728
Analog Input	General Spec.	Resolution	12 bits	12 bits	12 bits	-	-
		Number of Channels	16 SE/8 Diff	16 SE/8 Diff	32 SE	-	-
		Onboard FIFO	1K samples	1K samples	-	-	-
		Sampling Rate	100 kS/s	100 kS/s	25 kS/s	-	-
		Auto Channel Scanning	✓	✓	-	-	-
	Input Ranges	Unipolar Inputs (V)	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25	0 ~ 10, 0 ~ 1, 0 ~ 0.1, 0 ~ 0.01	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25	-	-
		Bipolar Inputs (V)	±10, 5, 2.5, 1.25, 0.625	±10, 5, 1, 0.5, 0.1, 0.05, 0.01, 0.005	±10, 5, 2.5, 1.25, 0.625	-	-
		Configurable Per-Channel	✓	✓	✓	-	-
	Trigger Mode	Pacer/Software/External Pulse	✓	✓	Software only	-	-
		Analog Slope	-	-	-	-	-
		Pretrigger	-	-	-	-	-
		Post-trigger	-	-	-	-	-
	Data Transfer Mode	Software	✓	✓	Software only	-	-
		DMA	SM*	SM*	-	-	-
	Analog Output	Resolution	12 bits	12 bits	-	12 bits	12 bits
Number of Channels		1	1	-	6	12	
On-board FIFO		-	-	-	-	-	
Output Range (V)		0 ~ 5, 0 ~ 10	0 ~ 5, 0 ~ 10	-	0 ~ 5, 0 ~ 10, ±5, ±10, 4 ~ 20 mA	-0 ~ 5, 0 ~ 10, ±5, 4 ~ 20 mA	0 ~ 5, 0 ~ 10, ±5, ±10, 0 ~ 20 mA, 4 ~ 20 mA
Throughput		30 kS/s Typical**	30 kS/s Typical**	-	15 kS/s Typical**	15 kS/s Typical**	
DMA Transfer		-	-	-	-	-	
Digital I/O	Input Channels	16	16	-	16	16	
	Output Channels	16	16	-	16	16	
Timer/Counter	Number of Channels	1	1	-	-	-	
	Resolution	16-bit	16-bit	-	-	-	
	Time Base	10 MHz	10 MHz	-	-	-	
Isolation Voltage		-	-	500 V _{DC} min	-	-	
Auto Calibration		-	-	-	-	-	
BoardID™ Switch		-	-	-	-	-	
Dimensions (mm)		185 x 100	185 x 100	219 x 100	337 x 112	337 x 112	
Connector		DB37	DB37	DB37	4 x 20-pin	2 x 20-pin, DB37	
Windows® 95/98/ME/2000/XP DLL Driver		✓	✓	✓	✓	✓	
Windows® 95/98/ME/2000/XP Test Utility		✓	✓	✓	✓	✓	
VC++, VB & Delphi Examples		✓	✓	✓	✓	✓	
Advantech ActiveDAQ		✓	✓	✓	✓	✓	
LabView® I/O Drivers (Ver.6i and 7.0)		✓	✓	✓	✓	✓	
MathWorks MATLAB & Simulink Data Acquisition Tool Box 2.5.1		✓	✓	✓	✓	✓	
Page		6-52	6-52	6-53	6-54	6-54	

* Note: SS = Single DMA channel, Single A/D channel scan SM = Single DMA channel, Multiple A/D channel scan DM = Dual DMA channel, Multiple A/D channel scan

Selection Guide

Bus			PCI						
Category			Non-Isolated DI/O			Isolated DI/O			
Model			PCI-1751/1751U	PCI-1753/1753E	PCI-1755	PCI-1730	PCI-1733	PCI-1734	PCI-1752
TTL DI/O	Input Channels		48	96	32	16	-	-	-
	Output Channels					16	-	-	-
	Output Channel	Sink Current	24 mA @ 0.4 V	24 mA @ 0.44 V	48 mA @ 0.5 V	8 mA @ 0.5 V	-	-	-
		Source Current	15 mA @ 2.4 V	24 mA @ 3.76 V	15 mA @ 2.4 V	0.4 mA @ 2.4 V	-	-	-
Isolated DI/O	Input Channels	Number of Channels (Input type)	-	-	-	16 (Sink)	32 (Sink)	-	-
		Isolation Voltage	-	-	-	2,500 V _{DC}	2,500 V _{DC}	-	-
		Input Range	-	-	-	5 ~ 30 V _{DC}	5 ~ 30 V _{DC}	-	-
	Output Channels	Number of Channels (Output Type)	-	-	-	16 (Sink)	-	32 (Sink)	64 (Sink)
		Isolation Voltage	-	-	-	2,500 V _{DC}	-	2,500 V _{DC}	2,500 V _{DC}
		Output Range	-	-	-	5 ~ 40 V _{DC}	-	5 ~ 40 V _{DC}	5 ~ 40 V _{DC}
		Max. Sink Current	-	-	-	200 mA	-	200 mA	200 mA
Timer/Counter	Number of Channels		3	-	3	-	-	-	-
	Resolution		16-bit	-	16-bit	-	-	-	-
	Time Base		5 MHz	-	10 MHz	-	-	-	-
Advanced Functions	Pattern Match		-	✓	✓	-	-	-	-
	Change of State		-	✓	✓	-	-	-	-
	BoardID™ Switch		-	-	✓	✓	-	✓	✓
	Channel-Freeze Function		-	-	✓	✓	-	✓	✓
	Output Status Read Back		✓	✓	-	✓	-	✓	✓
	Dry/Wet Contact		✓	✓	-	✓*	✓*	-	-
Dimensions (mm)			175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	175 x 100
Connectors			68-pin SCSI-II	100-pin SCSI-II	100-pin SCSI-II	1 x DB37 4 x 20-pin	1 x DB37	1 x DB37	100-pin SCSI-II
Windows® 95/98/ME/2000/XP DLL Driver			✓	✓	✓	✓	✓	✓	✓
Windows® 95/98/ME/2000/XP Test Utility			✓	✓	✓	✓	✓	✓	✓
VC++, VB & Delphi Examples			✓	✓	✓	✓	✓	✓	✓
Advantech ActiveDAQ			✓	✓	-	✓	✓	✓	✓
LabView® I/O Drivers (Ver.6i and 7.0)			✓	✓	✓	✓	✓	✓	✓
MathWorks MATLAB & Simulink Data Acquisition Tool Box 2.5.1			✓	✓	-	✓	✓	✓	✓
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* Dry/wet contact can be mixed at the same time within one group.

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

Data Acquisition and Control Cards

Bus		PCI								
Category		Isolated DI/O								
Model		PCI-1754	PCI-1756	PCI-1758UDI	PCI-1758UDU	PCI-1760U	PCI-1761	PCI-1762	PCI-1750	
TTL DI/O	Input Channels	-	-	-	-	-	-	-	-	
	Output Channels	-	-	-	-	-	-	-	-	
	Output Channels	Sink Current	-	-	-	-	-	-	-	-
		Source Current	-	-	-	-	-	-	-	-
Isolated DI/O	Input Channels	Number of Channels (Input type)	64 (Sink)	32 (Sink)	128	-	8 (Sink)	8 (Sink)	16 (Sink)	16 (Sink)
		Isolation Voltage	2,500 V _{DC}	2,500 V _{DC}	2500 V _{RMS}	-	2,500 V _{DC}	2,500 V _{DC}	2,500 V _{DC}	2,500 V _{DC}
		Input Range	10 ~ 50 V _{DC}	10 ~ 50 V _{DC}	5 ~ 25 V _{DC}	-	5 ~ 12 V _{DC}	10 ~ 50 V _{DC}	10 ~ 50 V _{DC}	5 ~ 50 V _{DC}
	Output Channels	Number of Channels (Output Type)	-	32 (Sink)	-	128	8 X Form C	4 X Form A 4 X Form C	16 X Form C	16 (Sink)
		Isolation Voltage	-	2,500 V _{DC}	-	2500 V _{RMS}	2,500 V _{DC}	2,500 V _{DC}	2,500 V _{DC}	2,500 V _{DC}
		Output Range	-	5 ~ 40 V _{DC}	-	5 ~ 40 V _{DC}	120 V _{AC} @ 0.5 A 30 V _{DC} @ 1 A	250 V _{AC} @ 3 A 24 V _{DC} @ 3 A	120 V _{AC} @ 0.5 A 30 V _{DC} @ 1 A	5 ~ 40 V _{DC}
		Max. Sink Current	-	200 mA	-	90 mA	-	-	-	200 mA
Timer/Counter	Number of Channels	-	-	-	-	Up CTR for DI 2 X PWM	-	-	1	
	Resolution	-	-	-	-	16-bit (2,500 Isolation)	-	-	16-bit	
	Time Base	-	-	-	-	500 Hz for Up CTR	-	-	1 MHz	
Advanced Functions	Pattern Match	-	-	-	-	✓	-	-	-	
	Change of State	-	-	-	-	✓	-	-	-	
	BoardID™ Switch	✓	✓	✓	✓	✓	✓	✓	-	
	Channel-Freeze Function	✓	✓	-	-	-	✓	✓	-	
	Output Status Read Back	-	✓	-	✓	✓	✓	✓	-	
	Dry/Wet Contact	-	-	✓	✓	✓	-	-	-	
Dimensions (mm)		175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	
Connectors		100-pin SCSI-II	100-pin SCSI-II	dual 100-pin mini-SCSI	dual 100-pin mini-SCSI	1 X DB37	1 X DB37	1 X DB62	1 X DB37	
Windows® 95/98/ME/2000/XP DLL Driver		✓	✓	✓	✓	✓	✓	✓	✓	
Windows® 95/98/ME/2000/XP Test Utility		✓	✓	✓	✓	✓	✓	✓	✓	
VC++, VB & Delphi Examples		✓	✓	✓	✓	✓	✓	✓	✓	
Advantech ActiveDAQ		✓	✓	✓	✓	✓	✓	✓	✓	
LabView® I/O Drivers (Ver.6i and 7.0)		✓	✓	✓	✓	✓	✓	✓	✓	
MathWorks MATLAB & Simulink Data Acquisition Tool Box 2.5.1		✓	✓	-	✓	✓	✓	✓	✓	
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* Dry/wet contact can be mixed at the same time within one group.

Selection Guide

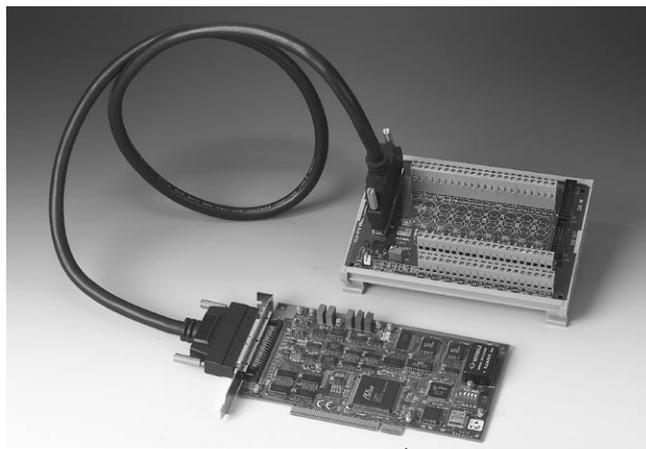
Non-Isolated DI/O				ISA					PCI	ISA
Non-Isolated DI/O				Isolated DI/O					Counter	
PCL-720+	PCL-722	PCL-724	PCL-731	PCL-725	PCL-730	PCL-733	PCL-734	PCL-735	PCI-1780	PCL-836
32	144	24	48	-	16	-	-	-	8	16
32				-	16	-	-	-	8	16
24 mA @ 0.5 V	24 mA @ 0.5 V	24 mA @ 0.4 V	24 mA @ 0.4 V	-	8 mA @ 0.5 V	-	-	-	24 mA @ 0.5 V	8 mA @ 0.5 V
3 mA @ 2.4 V	15 mA @ 2.4 V	15 mA @ 2.4 V	15 mA @ 2.4 V	-	0.4 mA @ 2.4 V	-	-	-	15 mA @ 2.4 V	0.4 mA @ 2.4 V
-	-	-	-	8 (Sink)	16 (Sink)	32 (Sink)	-	-	-	-
-	-	-	-	1,500 V _{DC}	2,500 V _{DC}	2,500 V _{DC}	-	-	-	-
-	-	-	-	5 ~ 24 V _{DC}	5 ~ 24 V _{DC}	5 ~ 24 V _{DC}	-	-	-	-
-	-	-	-	4 X Form A 4 X Form C	16 (Sink)	-	32 (Sink)	12 X Form C	-	-
-	-	-	-	1,000 V _{DC}	1,000 V _{DC}	-	1,000 V _{DC}	1,000 V _{DC}	-	-
-	-	-	-	120 V _{AC} @ 0.5 A 30 V _{DC} @ 1 A	5 ~ 40 V _{DC}	-	5 ~ 40 V _{DC}	0.6 A @ 100 V _{DC} 0.6 A @ 125 V _{DC}	-	-
-	-	-	-		200 mA	-	200 mA		-	
3	-	-	-	-	-	-	-	-	8 X CTR	6 X CTR 3 X PWM
16-bit	-	-	-	-	-	-	-	-	16-bit	16-bit
1 MHz	-	-	-	-	-	-	-	-	20 MHz	10 MHz
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	✓	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
185 x 100	334 x 100	125 x 100	185 x 100	147 x 95	185 x 100	185 x 100	185 x 100	155 x 100	175 x 100	185 x 100
5 X 20-pin	6 x 50-pin	1 x 50-pin 2 x 20-pin	2 x 50-pin	1 x DB37	1 x DB37 4 x 20-pin	1 x DB37	1 x DB37	1 x DB37	68-pin SCSI-II	1 x DB37 2 x 20-pin
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
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1	Software
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PCI-1710 PCI-1710HG

**100 kS/s, 12-bit, PCI-bus
Multifunction Card**

**100 kS/s, 12-bit, (High-gain),
PCI-bus Multifunction Card**



PCI-1710/1710L/1710HG/1710HGL

PCLD-8710



Features

- 16 single-ended, 8 differential or a combination of analog inputs
- 12-bit A/D converter, with up to 100 kHz sampling rate
- Programmable gain for each input channel
- Free combination of single-ended and differential inputs
- On-board 4 K samples FIFO buffer
- Two 12-bit analog output channels
- 16 digital inputs and 16 digital outputs
- Programmable pacer/counter
- BoardID™ Switch
- Short circuit protection

Introduction

The PCI-1710 Series are multifunction cards for the PCI bus. Their advanced circuit design provides higher quality and more functions, including the five most desired measurement and control functions: 12-bit A/D conversion, D/A conversion, digital input, digital output, and counter/timer.

Specifications

Analog Input

- **Channels** 16 single-ended or 8 differential (software programmable)
- **Resolution** 12-bit
- **On-board FIFO** 4 K samples
- **Maximum Input Overvoltage** ± 30 V
- **Input Range** (V, software programmable)

Model	PCL-1710/1710L	PCI-1710HG/1710HGL
Bipolar	$\pm 10, \pm 5, \pm 2.5, \pm 1.25, \pm 0.625$	$\pm 10, \pm 5, \pm 1, \pm 0.5, \pm 0.1 \pm 0.05, \pm 0.01, \pm 0.005$
Unipolar	$0 \sim 10, 0 \sim 5, 0 \sim 2.5, 0 \sim 1.25$	$0 \sim 10, 0 \sim 1, 0 \sim 0.1, 0 \sim 0.01$

Common Mode Rejection Ratio (CMRR)

PCI-1710/1710L		PCI-1710HG/1710HGL	
Gain	CMRR	Gain	CMRR
0.5, 1	75 dB	0.5, 1	75 dB
2	80 dB	10	90 dB
4	84 dB	100	106 dB
8	84 dB	1000	106 dB

Maximum Sampling Rate (S/s, depending on PGIA settling time)

Model	Gain	Max. Sampling Rate
PCI-1710/1710L	0.5, 1, 2, 4, 8	100 kS/s
	0.5, 1	100 kS/s
PCI-1710HG/1710HGL	5, 10	35 kS/s
	20, 100	7 kS/s
	500, 1000	770 S/s

Note: The sampling rate depends on the computer hardware architecture and software environment. The rates may vary due to programming language, code efficiency, CPU utilization and so on.

- **Accuracy** (depends on gain)

* **S.E.:** Single-ended **D:** Differential

PCI-1710/1710L		PCI-1710HG/1710HGL		Remar.k
Gain	Accuracy	Gain	Accuracy	
0.5, 1	0.01% of FSR ± 1 LSB	0.5, 1	0.01% of FSR ± 1 LSB	S.E./D
2	0.02% of FSR ± 1 LSB	5, 10	0.02% of FSR ± 1 LSB	S.E./D
4	0.02% of FSR ± 1 LSB	50, 100	0.04% of FSR ± 1 LSB	D
8	0.04% of FSR ± 1 LSB	500, 1000	0.08% of FSR ± 1 LSB	D

- **Linearity Error** ± 1 LSB
- **Input Impedance** 1 G Ω
- **Trigger Mode** Software, onboard programmable pacer or external

Analog Output (PCI-1710/1710HG only)

- **Channels** 2
- **Resolution** 12-bit
- **Relative Accuracy** $\pm 1/2$ LSB
- **Gain Error** ± 1 LSB
- **Throughput** PC dependent, Software update (direct AO)
- **Slow Rate** 10 V/ms
- **Output Range** Internal reference: $0 \sim +5$ V @ -5 V, (software programmable) $0 \sim +10$ V @ -10 V
External reference: $0 \sim +x$ V @ $-x$ V ($-10 \leq x \leq 10$)
- **Driving Capability** 10 mA

Digital Input

- **Channels** 16
- **Input Voltage** Low: 0.4 V max.
High: 2.4 V min.
- **Input Load** Low: -0.2 mA @ 0.4 V
High: 20 mA @ 2.7 V

Specifications Cont.

Digital Output

- **Channels** 16
- **Output Voltage** Low: 0.4 V max. @ 8.0 mA (sink)
High: 2.4 V min. @ -0.4 mA (source)

Programmable Timer/Counter

- **Counter Chip** 82C54 or equivalent
- **Counters** 3 channels, 16 bits, 2 channels are permanently configured as a 32-bit programmable pacer; 1 channel is free for user applications
- **Input, gate** TTL/CMOS compatible
- **Time Base** Channel 1: 10 MHz
Channel 2: Takes input from output of channel 1
Channel 0: Internal 1 MHz or external clock (10 MHz max.) selected by software.

General

- **CE Certified to CISPR 22 class B**
- **I/O Connector** 68-pin SCSI-II female connector
- **Power Consumption** +5 V @ 850 mA (Typical),
+5 V @ 1.0 A (Max.)
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- **Dimensions (L x H)** 175 x 100 mm (6.9" x 3.9")
- **MTBF** Over 64,770 hrs @ 25° C, grounded-fix environment

Ordering Information

- **PCI-1710** 100 kS/s, 12-bit Multifunction Card, user's manual and driver CD-ROM. (cable not included)
- **PCI-1710L** 100 kS/s, 12-bit Multifunction Card w/o AO, user's manual and driver CD-ROM. (cable not included)
- **PCI-1710HG** 100 kS/s, 12-bit High-Gain Multifunction Card, user's manual and driver CD-ROM. (cable not included)
- **PCI-1710HGL** 100 kS/s, 12-bit High-Gain Multifunction Card w/o AO, user's manual and driver CD-ROM. (cable not included)
- **PCLD-8710** Industrial Wiring Terminal Board with CJC circuit for DIN-rail mounting (cable not included)
- **PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 m.
- **PCL-10168-2** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 2 m.
- **ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail Mounting

Feature Details

PCI-1710 series provide specific functions for different user requirements:

PCI-1710	100 kS/s, 12-bit Multifunction Card
PCI-1710L	100 kS/s, 12-bit Multifunction Card w/o AO
PCI-1710HG	100 kS/s, 12-bit High-Gain Multifunction Card
PCI-1710HGL	100 kS/s, 12-bit High-Gain Multifunction Card w/o AO

Mixed Single-ended or Differential Analog Inputs

PCI-1710 and PCI-1710HG feature an automatic channel/gain scanning circuit. The circuit, rather than your software, controls multiplexer switching during sampling. The on-board SRAM stores different gain values and configurations for each channel. This design lets you perform multi-channel high-speed sampling (up to 100 KHz) with different gains for each channel and allows free combination of single-ended and differential inputs.

On-board FIFO (First In First Out) Memory

PCI-1710, PCI-1710L, PCI-1710HG and PCI-1710HGL have an on-board FIFO buffer that can store up to 4 K A/D samples. PCI-1710 and PCI-1710HG generate an interrupt when the FIFO is half full. This feature provides continuous high-speed data transfer and more predictable performance on Windows systems.

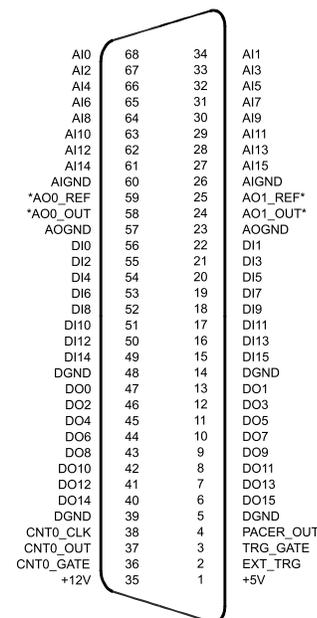
On-board Programmable Counter

The PCI-1710/1710/1710HG/1710HGL provides a programmable counter to generate a pacer trigger for the A/D conversion. The counter chip is an 82C54 or equivalent, which includes three 16-bit counters on a 10 MHz clock. One counter is used as an event counter for counting events coming from the input channels. The other two are cascaded together to make a 32-bit timer for a pacer trigger.

Special Shielded Cable for Noise Reduction

The PCL-10168 shielded cable is specially designed for the PCI-1710/1710HG to reduce noise in the analog signal lines. Its wires are all twisted pairs, and the analog lines and digital lines are separately shielded, providing minimal cross talk between signals and great protection against EMI/EMC problems.

Pin Assignments



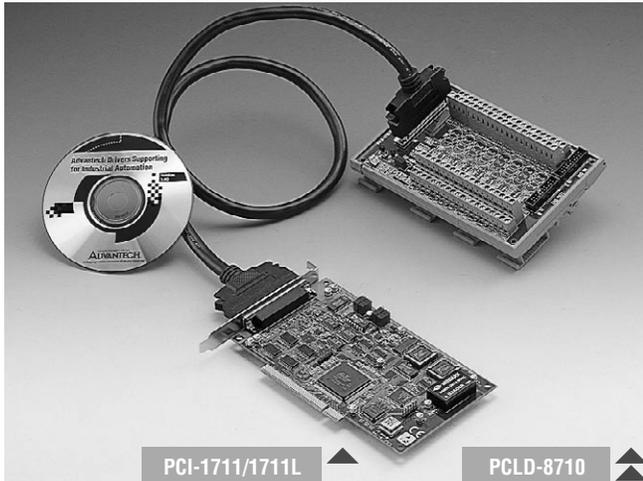
*: Pins 23-25 and pins 57-59 are not defined for PCI-1710L/1710HGL



PCI-1711 PCI-1711L

100 kS/s, 12-bit, 16-ch S.E. Inputs Low-cost Multifunction Card

100 kS/s, 12-bit, 16-ch S.E. Inputs Low-cost Multifunction Card w/o AO



PCI-1711/1711L

PCLD-8710



Features

- 16 single-ended analog inputs
- 12-bit A/D converter, with up to 100 kHz sampling rate
- Programmable gain for each input channel
- Automatic channel/gain scanning
- On-board 1K samples FIFO buffer
- Two 12-bit analog output channels (Only for PCI-1711)
- 16 digital inputs and 16 digital outputs
- Programmable pacer/counter

Introduction

PCI-1711 and PCI-1711L are powerful, but low-cost multifunction cards for the PCI bus. PCI-1711 comes with 2 analog output channels, while the PCI-1711L doesn't. Thus, PCI-1711L represents a cost saver for those that do not need analog output.

Specifications

Analog Input

- **Channels** 16 Single-Ended
- **Resolution** 12-bit
- **FIFO Size** 1K samples
- **Sampling Rate*** 100 kS/s max.

Input range and Gain List	Gain	1	2	4	8	16
		Input	± 10 V	± 5 V	± 2.5 V	± 1.25 V
Drift (ppm/°C)	Gain	1	2	4	8	16
	Zero	15	15	15	15	15
Small Signal Bandwidth for PGA	Gain	25	25	25	30	40
	Bandwidth	4.0 MHz	2.0 MHz	1.5 MHz	0.65 MHz	0.35 MHz

- **Max. Input Overvoltage** 20 V
- **Input Protect** 30 Vp-p
- **Input Impedance** 2 MΩ/5 pF
- **Trigger Mode** Software, On-board Programmable Pacer or external

Accuracy	DC	INLE: ±0.5 LSB
		Monotonicity: 12 bits
		Offset error: Adjustable to zero
		Gain error: 0.005% FSR (Gain=1)
Accuracy	AC	SNR: 68 dB
		ENOB: 11 bits

Programmable Counter / Timer

- **Channels** 1
- **Resolution** 16-bit
- **Compatibility** TTL level
- **Base Clock** 10 MHz
- **Max. Input Frequency** 10 MHz

Note:

The sampling rate and throughput depends on the computer hardware architecture and software environment. The rates may vary due to programming language, code efficiency, CPU utilization and so on.

Analog Output (only for PCI-1711)

- **Channels** 2
- **Resolution** 12-bit

Output Range (Internal & External Reference)	Internal Reference	0 ~ +5 V, 0 ~ +10 V
	External Reference	0 ~ +x V @ -x V (-10 ≤ x ≤ 10)
Accuracy	Relative	±1/2 LSB
	Differential Non-linearity	±1/2 LSB

- **Gain Error** Adjustable to zero
- **Slew Rate** 11 V/μs
- **Drift** 40 ppm/°C
- **Driving Capability** 3 mA
- **Throughput** PC dependent, Software update (direct AO)
- **Output Impedance** 0.81 Ω
- **Settling Time** 26 μs (to ±1/2 LSB of FSR)
- **Reference Voltage** Internal -5 or -10 V
External -10 or +10 V

Digital Input / Output

Input Channels	16	
Input Voltage	Low	0.8 V max.
	High	2.0 V max.
Output Channels	16	
Output Voltage	Low	0.8 V max. @ 8.0 mA (sink)
	High	2.0 V min. @ -0.4 mA (source)

General

I/O Connector Type	68-pin SCSI-II female		
Dimensions	175 x 100 mm (6.9" x 3.9")		
Power Consumption	Typical	PCI-1711	+5 V @ 850 mA
		PCI-1711L	+5 V @ 700 mA
	Max.	+5 V @ 1.0 A	
Temperature	Operation	0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)	
	Storage	-20 ~ 70° C (-4 ~ 158° F)	
Relative Humidity	5% ~ 95% RH non-condensing (refer to IEC 68-2-3)		

Ordering Information

- **PCI-1711** 100 kS/s, 12-bit, 16-ch S.E. inputs Low-cost Multifunction Card, user's manual and driver CD-ROM. (cable not included)
- **PCI-1711L** 100 kS/s, 12-bit, 16-ch S.E. inputs Low-cost Multifunction Card w/o analog output, user's manual and driver CD-ROM. (cable not included)
- **PCLD-8710** Industrial Wiring Terminal Board with CJC circuit for DIN-rail mounting (cable not included)
- **PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 and 2 m
- **ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail Mounting

Pin Assignments

AI0	68	34	AI1
AI2	67	33	AI3
AI4	66	32	AI5
AI6	65	31	AI7
AI8	64	30	AI9
AI10	63	29	AI11
AI12	62	28	AI13
AI14	61	27	AI15
AIGND	60	26	AIGND
AO0_REF	59	25	AOI_REF
AO0_OUT	58	24	AOI_OUT
AOGND	57	23	AOGND
DI0	56	22	DI1
DI2	55	21	DI3
DI4	54	20	DI5
DI6	53	19	DI7
DI8	52	18	DI9
DI10	51	17	DI11
DI12	50	16	DI13
DI14	49	15	DI15
DGND	48	14	DGND
DO0	47	13	DO1
DO2	46	12	DO3
DO4	45	11	DO5
DO6	44	10	DO7
DO8	43	9	DO9
DO10	42	8	DO11
DO12	41	7	DO13
DO14	40	6	DO15
DGND	39	5	DGND
CNT0_CLK	38	4	PACER_OUT
CNT0_OUT	37	3	TRG_GATE
CNT0_GATE	36	2	EXT_TRG
+12V	35	1	+5V

*: Pins 23~25 and pins 57~59 are not defined for PCI-1711L

Feature Details

Plug & Play Function

PCI-1711 and PCI-1711L fully comply with the PCI Specification Rev 2.1. and thus are Plug & Play devices. During card installation, it is virtually unnecessary to set any jumpers or DIP switches. Instead, all bus-related configurations such as base I/O address and interrupts are conveniently taken care of by the Plug & Play function.

Flexible Input Types and Range Settings

PCI-1711 and PCI-1711L feature an automatic channel/gain scanning circuit. This circuit design controls multiplexer switching during sampling. You can set different gain values for each channel according to your needs for the corresponding range of input voltages. The gain values thus selected are stored in the SRAM. This flexible design enables multi-channel and high-speed sampling for high-performance data acquisition (up to 100 kS/s).

On-board FIFO Memory

PCI-1711 and PCI-1711L provide an onboard FIFO (First In First Out) memory buffer, storing up to 1 K A/D samplings. You can either enable or disable the interrupt request feature of the FIFO buffer. While the interrupt request for FIFO is enabled, you can further specify whether the interrupt request will be sent whenever one sampling takes place or when the FIFO buffer is half saturated. This feature enables a continuous high-speed data transfer with more predictable performance on Windows systems.

Onboard Programmable Counter

PCI-1711 and PCI-1711L are equipped with a programmable counter, which can serve as a pacer trigger for A/D conversions. The counter chip is an 82C54 or equivalent, which incorporates three 16-bit counters on a 10 MHz clock. One of the three counters is used as an event counter for input channels. The other two are cascaded into a 32-bit timer for pacer triggering.

Applications

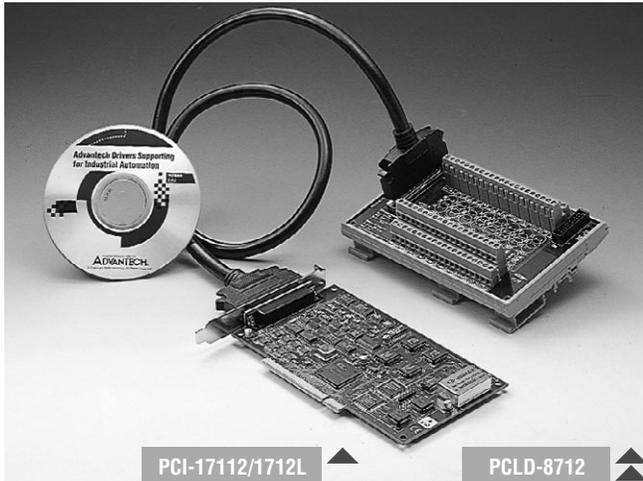
- Process monitoring and control
- Transducer and sensor measurement
- Multi-channel DC voltage measurement



PCI-1712 PCI-1712L

1MS/s, 12-bit High-speed Multifunction Card

1MS/s, 12-bit High-speed Multifunction Card w/o AO function



Features

- PCI-bus mastering for data transfer
- 16 single-ended, 8 differential or a combination of analog inputs
- 12-bit A/D converter, with up to 1 MHz sampling rate
- Pre-, post-, about- and delay-trigger data acquisition modes for analog input channels
- Programmable gain for each analog input channel
- Automatic channel/SD*/BU* scanning
- On-board FIFO buffer storing up to 1K samples for A/D and 32K samples for D/A
- Two 12-bit analog output channels with continuous waveform output function
- Auto calibration of analog input and output channels
- 16 digital input and output channels
- Three 16-bit programmable multifunction counter/timers on 10 MHz

Introduction

The PCI-1712/1712L is a powerful high-speed multifunction card for the PCI bus. It features a 1 MHz 12-bit A/D converter, an onboard FIFO buffer (storing up to 1 K samples for A/D, and up to 32 K samples for D/A conversion). The PCI-1712 provides a total of up to 16 single-ended or 8 differential A/D input channels or a mixed combination, two 12-bit D/A output channels, 16 digital input/output channels, and three 10MHz 16-bit multifunction counter channels. PCI-1712/1712L provides specific functions for different user requirements:

Specifications

Analog Input

Channels	16 Single-Ended or 8 Differential or Combination					
Resolution	12-bit	FIFO Size	1 K samples			
Max. Sampling Rate	Multi-channel, single gain: 1 MS/s Multi-channel, multi gain: 600 kS/s Multi-channel, multi gain, unipolar/bipolar: 400 kS/s					
Common Mode voltage	±11 V max. (operational)					
Input Range and Gain List	Gain	0.5	1	2	4	8
	Unipolar	N/A	0 ~ 10	0 ~ 5	0 ~ 2.5	0 ~ 1.25
	Bipolar	±10	±5	±2.5	±1.25	±0.625
Drift	Gain	0.5	1	2	4	8
	Zero (µV/° C)	±80	±30	±30	±30	±30
	Gain (ppm/° C)	±30	±30	±30	±30	±30
Small Signal Bandwidth for PGA	Gain	0.5	1	2	4	8
	Bandwidth	4.0 MHz	4.0 MHz	2.0 MHz	1.5 MHz	0.65 MHz
Max. Input Voltage	±20 V					
Input Impedance	100Ω 10pF (Off); 100Ω 100pF (On)					
Trigger Mode	Software, On-board Programmable Pacer or External, Pre-trigger, Post-trigger, Delay-trigger, About-trigger					
Accuracy	DC	DNLE: ±1LSB; INLE: ±1LSB; Offset error < 1LSB				
		Gain	0.5	1	2	4
	Gain Error: (% FSR)	0.15	0.03	0.03	0.05	0.1
	AC	SNR: 68 dB; ENOB: 11 bits; THD: -75 dB typical				

Digital Input /Output

Input Channels	16		Number of ports	2 (8-ch/port)
Input Voltage	Low	0.8 V max.	High	2.0V min.
	Low	0.5 V max. @ +24 mA (sink)	High	2.4 V min. @ -15 mA (source)

Note: The sampling rate depends on the computer hardware architecture and software environment. The rates may vary due to programming language, code efficiency, CPU utilization and more.

Analog Output

Channels	2		
Resolution	12-bit	FIFO Size	32 K samples
Operation Mode	Single output, continuous output, waveform output		
Output Range (Internal & External Reference)	Using Internal Reference	0 ~ +5 V, 0 ~ +10 V, -5 ~ +5 V, -10 ~ +10 V	
	Using External Reference	0 ~ +x V @ +x V (-10 ≤ x ≤ 10) -x ~ +x V @ +x V (-10 ≤ x ≤ 10)	
Accuracy	Relative	±1 LSB	
	Differential Non-linearity	±1 LSB (monotonic)	
Offset	<1 LSB	Slew Rate	20 V/µs
Drift	10 ppm/° C	Driving Capability	±10 mA
Max. Transfer Rate	Single Channel: 1 MS/s max. for FSR Dual Channel: 500 kS/s max. for FSR		
Output Impedance	0.1 Ω max.	Max. Digital Update Rate	5 MHz
Settling Time	2 µs (to ±1/2 LSB of FSB)		

Counter/Timer

Channels	3	Resolution	16-bit
Compatibility	TTL level	Max. Input Frequency	10 MHz
BASE Clock	10 MHz, 1 MHz, 100 KHz, 10 KHz		
Clock Input	Low	0.8 V max.	High 2.0 V min.
Gate Input	Low	0.8 V max.	High 2.0 V min.
Counter	Low	0.5 V max. @ +24 mA	High 2.0 V min. @ -15 mA

General

I/O Connector Type	68-pin SCSI-II female		
Dimensions	175 x 100 mm (6.9" x 3.9")		
Power Consumption	Typical	+5 V @ 850 mA; +12 V @ 600 mA	
	Max.	+5 V @ 1 A; +12 V @ 700 mA	
Temperature	Operating	0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)	
	Storage	-20 ~ 85° C (-4 ~ 185° F)	
Relative Humidity	5 ~ 95 % RH non-condensing (refer to IEC 68-2-3)		
Certification	CE certified		

Ordering Information

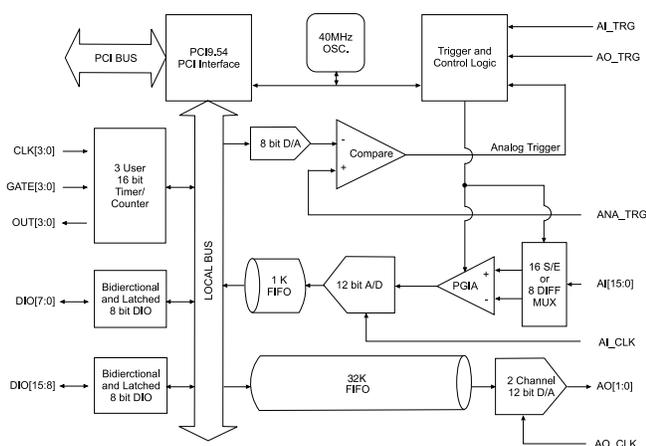
- **PCI-1712** 1MS/s, 12-bit High-speed Multifunction Card, user's manual and driver CD-ROM. (cable not included)
- **PCI-1712L** 1MS/s, 12-bit High-speed Multifunction Card w/o AO, user's manual and driver CD-ROM. (cable not included)
- **PCLD-8712** Industrial Wiring Terminal Board for DIN-rail mounting. (cable not included)
- **PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 and 2 m
- **ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail Mounting

Pin Assignments

AI0	68	34	AI1
AI2	67	33	AI3
AI4	66	32	AI5
AI6	65	31	AI7
AI8	64	30	AI9
AI10	63	29	AI11
AI12	62	28	AI13
AI14	61	27	AI15
AIGND	60	26	ANA_TRG
AO0_REF*	59	25	AO1_REF*
AO0_OUT*	58	24	AO1_OUT*
AOGND*	57	23	AOGND*
AL_CLK*	56	22	AL_TRG*
DGND	55	21	DGND
AO_CLK*	54	20	AO_TRG*
CNT0_CLK	53	19	CNT0_GA TE
CNT0_OUT	52	18	DGND
CNT1_CLK	51	17	CNT1_GA TE
CNT1_OUT	50	16	DGND
CNT2_CLK	49	15	CNT2_GA TE
CNT2_OUT	48	14	DGND
DIO0	47	13	DIO1
DIO2	46	12	DIO3
DIO4	45	11	DIO5
DIO6	44	10	DIO7
DGND	43	9	DGND
DIO8	42	8	DIO9
DIO10	41	7	DIO11
DIO12	40	6	DIO13
DIO14	39	5	DIO15
DGND	38	4	DGND
AL_TRG_OUT	37	3	AL_CLK_OUT
NC	36	2	NC
+12V	35	1	+5V

*: Pin 20, 22~25, 54, 56~59 are not defined on PCI-1712L

Block Diagram



Feature Details

PCI-bus Mastering Data Transfer

PCI-1712 and PCI-1712L support PCI-Bus mastering DMA for high-speed data transfer and gap-free analog input and analog output. By setting aside a block of memory in the PC, PCI-1712 and PCI-1712L perform bus-mastering data transfers without CPU intervention, setting the CPU free to perform other more urgent tasks such as data analysis and graphic manipulation. The function allows users to run all I/O functions simultaneously at full speed without losing data.

Plug & Play Function

PCI-1712 and PCI-1712L are Plug & Play devices, which fully complies with the PCI Specification Rev 2.2. During card installation, there is no need to set any jumpers or DIP switches. Instead, all bus-related configurations such as base I/O address and interrupt are automatically done by the Plug & Play function.

On-board FIFO Memory

PCI-1712 provides an on-board FIFO (First In First Out) memory buffer, storing up to 1K samples for A/D and 32K for D/A conversion.

Automatic Channel/Gain/SD*/BU* Scanning

PCI-1712 and PCI-1712L feature an automatic channel/Gain/SD/BU scanning circuit. This circuit controls multiplexer switching during sampling in a way that is much more efficient than software implementation. Onboard SRAM stores different gain, SD and BU values for each channel. This combination lets users perform multi-channel high-speed sampling with different gain, SD and BU values for each channel.

SD: Single-Ended/Differential; BU: Bipolar/Unipolar

Flexible Triggering and Clocking Capabilities

PCI-1712 and PCI-1712L provide flexibility in triggering action, both in the available trigger modes and trigger events for analog input. You can acquire data using post-trigger, pre-trigger, delay-trigger and about-trigger modes. The trigger source could be either an analog or digital signal. The analog trigger could originate from a dedicated input pin. In fact, you can designate any of the analog input channels as the analog trigger input. You can set the analog trigger level within a voltage range from zero to A/D FSR. With the trigger signal being digital, you can pace A/D and D/A conversion using software interrupt, internal or external clock.

Continuous Analog Output (PCI-1712 only)

PCI-1712 provides two analog output channels. Both can perform continuous waveform output. The analog output can be up to 500 kS/s for each analog output channel. Or you can load a cyclic waveform into an on-board FIFO, which will continuously output the cyclic waveform. The on-board FIFO of the PCI-1712 can store 2 to 32K samples of the waveform.

On-board Programmable Multifunction Counter/Timer

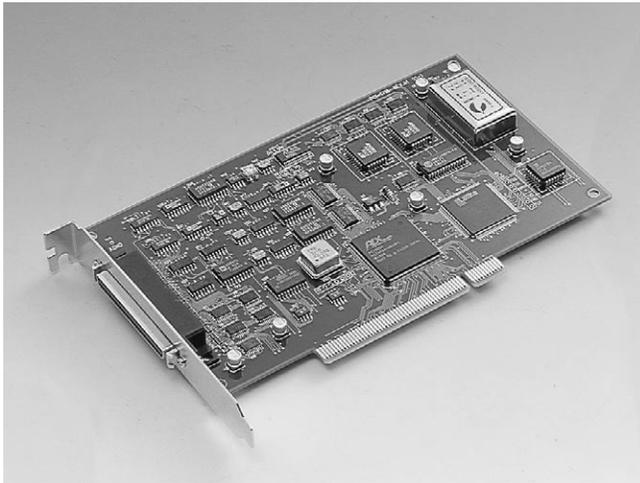
PCI-1712 and PCI-1712L are equipped with 3 programmable multifunction counter/timers, which can serve as a pacer trigger for A/D conversion. The counter chip is an 82C54 or equivalent, which incorporates three 16-bit channels on a 10 MHz clock. And then we enhance the gate and clock input function for more applications, of event counting, pulse generation, duty cycle frequency generation, one shot, frequency measurement and pulse width measurement.



PCI-1716 PCI-1716L

16-bit High-resolution Multifunction Card

16-bit High-resolution Multifunction Card w/o AO function



Features

- 16-bit high resolution
- 250 kS/s sampling rate
- Auto calibration function
- PCI-bus mastering for data transfer
- 16 analog input channels with 1K FIFO
- 16 S.E. or 8 Diff. AI, or a combination
- Unipolar/Bipolar input range
- 2 analog output channels (PCI-1716 only)
- 16 digital input channels
- 16 digital output channels
- One 10 MHz 16-bit resolution counter
- BoardID™ Switch

Introduction

PCI-1716 and PCI-1716L are powerful high-resolution multifunction cards for the PCI bus. They feature a 250 kS/s 16-bit A/D converter, and an on-board 1K sample FIFO buffer for A/D. The cards can also have up to sixteen single-ended or eight differential A/D input channels or a combination of these; two 16-bit D/A output channels, 16 digital input/output channels, and one 10 MHz 16-bit counter channel. PCI-1716 and PCI-1716L provide specific functions for different user requirements.

Specifications

Analog Input

- Channels** 16 Single-Ended, 8 differential or combination
- Resolution** 16-bit
- FIFO Size** 1K samples
- Sampling Rate*** 250 kS/s max.

Input range and Gain List	Gain	0.5	1	2	4	8
	Unipolar	N/A	0 ~10	0 ~5	0 ~2.5	0 ~1.25
Bipolar		±10	±5	±2.5	±1.25	±0.625
Small Signal Bandwidth for PGA Gain	Gain	0.5	1	2	4	8
	Bandwidth	4.0 MHz	4.0 MHz	2.0 MHz	1.5 MHz	0.65 MHz

- Common Mode Voltage** ±11 V max. (operational)
- Max. Input Overvoltage** ±20 V
- Input Protection** 30 Vp-p
- Input Impedance** 100 M Ω /10 pF (Off); 100 M Ω /100pF (On)
- Trigger Mode** Software, Onboard Programmable Pacer or external

Accuracy	DC	DNLE: ±1 LSB					
		INLE: ±1 LSB					
		Zero (Offset) error: Adjustable ±1 LSB					
	Gain	0.5	1	2	4	8	
	Gain error (%FSR)	0.15	0.03	0.03	0.05	0.1	
AC	SNR: 82 dB						
	ENOB: 13.5 bits						
	THD: -84 dB typical						
Clocking and Trigger Inputs	Trigger Mode	Software, on-board programmable pacer or external					
	A/D pacer clock	250 k Hz (max.); 58 μ Hz (min.)					
	External A/D trigger clock	Min. Pulse width: 2 μ s (high); 2 μ s (low)					
		Max. frequency: 250 KHz					

Note:

The sampling rate and throughput depends on the computer hardware architecture and software environment. The rates may vary due to programming language, code efficiency, CPU utilization and other factors.

Digital Input /Output

Input Channels	16	
Input Voltage	Low	0.4 V max.
	High	2.4 V max.
Input Load	Low	0.4 V max.@ -0.2 mA
	High	2.7 V max.@ 2.0 μ A
Output Channels	16	
Output Voltage	Low	0.4 V max.@ 0.8 mA (sink)
	High	2.4 V min.@ -0.4 mA (source)

Counter/Timer

- Channels** 3 channels, 2 channels are permanently configured as programmable pacers; 1 channel is free for user application
- Resolution** 16-bit
- Compatibility** TTL level
- Base Clock** Channel 2: Takes input from output of channel 1
Channel 1: 10 MHz
Channel 0: Internal 1 MHz or external clock (10 MHz) max Selected by software
- Max. Input Frequency** 1 MHz

Clock Input	Low	0.8 V max.
	High	2.0 V min.
Gate Input	Low	0.8 V max.
	High	2.0 V min.
Counter Output	Low	0.5 V max. @ +24 mA
	High	2.4 V min. @ -15 mA

General

- I/O Connector Type** 68-pin SCSI-II female
- Dimensions** 175 x 100 mm (6.9" x 3.9")
- Power Consumption** Typical +5 V @ 850 mA, +12 V @ 600 mA
Max. +5 V @ 1 A, +12 V @ 700 mA
- Operating Temperature** 0 ~ 60° C (32 ~ 158° F) (refer to IEC 68-2-1, 2)
- Storage Temperature** -20 ~ 85° C (-4 ~ 158° F)
- Operating Humidity** 5 ~ 85% RH non-condensing (refer to IEC 68-1, -2, -3)
- Storage Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-1, -2, -3)
- Certifications** CE

PCI-1716 PCI-1716L

Analog Output (PCI-1716 only)

- Channels 2
- Resolution 16-bit
- Operation Mode Single output
- Throughput* PC dependent, Software update (direct AO)

Output Range (Internal & External Reference)	Using Internal Reference	0 ~ +5 V, 0 ~ +10 V, -5 ~ +5 V, -10 ~ +10 V
	Using External Reference	0 ~ +x V @ +x V (-10 ≤ x ≤ 10) -x ~ +x V @ +x V (-10 ≤ x ≤ 10)
Accuracy	DC	DNLE: ±1 LSB (monotonic)
		INLE: ±1 LSB
		Zero (Offset) error: Adjustable ±1 LSB
		Gain (Full-scale) error: Adjustable ±1 LSB
Dynamic Performance	Settling Time	5 μs (to 4 LSB of FSB)
	Slew Rate	20 V/μs
Drift	10 ppm/°C	
Driving Capability	±20 mA	
Output Impedance	0.1 Ω max.	

- Drift 10 ppm/°C
- Driving Capability ±20 mA
- Output Impedance 0.1 Ω max.

Ordering Information

- PCI-1716** 250 kS/s, 16-bit, 16-ch High-resolution Multifunction Card, user's manual and driver CD-ROM. (cable not included)
- PCI-1716L** 250 kS/s, 16-bit, 16-ch High-resolution Multifunction Card w/o analog output, user's manual and driver CD-ROM. (cable not included)
- PCLD-8710** Industrial Wiring Terminal Board with CJC circuit for DIN-rail Mounting. (cable not included)
- PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 and 2 m
- ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail Mounting

Feature Details

PCI-Bus Mastering Data Transfer

PCI-1716 and PCI-1716L support PCI-Bus mastering DMA for high-speed data transfer and gap-free analog input and analog output. By setting aside a block of memory in the PC, PCI-1716 and PCI-1716L performs bus-mastering data transfers without CPU intervention, setting the CPU free to perform other more urgent tasks such as data analysis and graphic manipulation. The function allows users to run all I/O functions simultaneously at full speed without losing data.

Auto-calibration Function

PCI-1716 and PCI-1716L provide an auto-calibration function by using a calibration utility. The built-in calibration circuitry of the PCI-1716 and PCI-1716L corrects gain and offset errors in analog input and analog output channels thereby eliminating the need for external equipment and user adjustments.

BoardID™ Switch

PCI-1716 and PCI-1716L have a built-in BoardID™ DIP switch that helps define each card's unique identity when multiple identical PCI cards have been installed in the same computer. The BoardID switch is very useful when you build your system with multiple identical PCI cards. With the correct BoardID switch settings, you can easily identify and access each card during hardware configuration and software programming.

Plug & Play Function

PCI-1716 and PCI-1716L are Plug & Play devices, which fully complies with PCI Specification Rev 2.2. During card installation, there is no need to set jumpers or DIP switches (Unless you are using several identical cards (See BoardID switch)). Instead, all bus-related configurations such as base I/O address and interrupt are automatically done by the Plug & Play function.

Automatic Channel/Gain/SD*/BU* Scanning

PCI-1716 and PCI-1716L feature an automatic channel/gain/SD/BU scanning circuit. This circuit controls multiplexer switching during sampling in a way that is more efficient than software implementation. On-board SRAM stores different gain, SD and BU values for each channel. This combination lets users perform multi-channel high-speed sampling with different gain, SD and BU values for each channel.

SD: Single-Ended/Differential; BU: Bipolar/Unipolar

On-board FIFO Memory

PCI-1716 and PCI-1716L provide 1K sample on-board FIFO (First In First Out) memory buffer for AD. This is an important feature for faster data transfer and more predictable performance under the Windows system.

On-board Programmable Timer/Counter

PCI-1716 and PCI-1716L provide a programmable timer counter for generating a pacer trigger for the A/D conversion. The timer/counter chip is 82C54, which includes three 16-bit counter 10 MHz clocks. One counter is used as an event counter for counting events coming from the input channel. The other two are cascaded together to make a 32-bit timer for a pacer trigger time base.

Pin Assignments

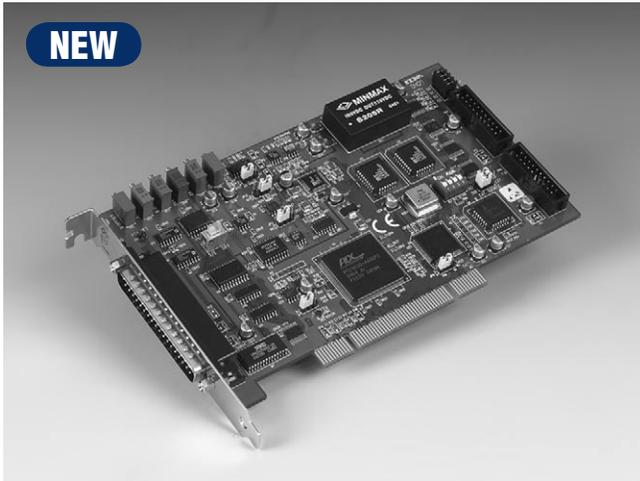
A10	68	34	A11
A12	67	33	A13
A14	66	32	A15
A16	65	31	A17
A18	64	30	A19
A110	63	29	A111
A112	62	28	A113
A114	61	27	A115
AIGND	60	26	AIGND
AO_REF	59	25	AO1_REF
AO_OUT	58	24	AO1_OUT
AOGND	57	23	AOGND
D10	56	22	D11
D12	55	21	D13
D14	54	20	D15
D16	53	19	D17
D18	52	18	D19
D110	51	17	D111
D112	50	16	D113
D114	49	15	D115
DGND	48	14	DGND
DO0	47	13	DO1
DO2	46	12	DO3
DO4	45	11	DO5
DO6	44	10	DO7
DO8	43	9	DO9
DO10	42	8	DO11
DO12	41	7	DO13
DO14	40	6	DO15
DGND	39	5	DGND
CNT0_CLK	38	4	PACER_OUT
CNT0_OUT	37	3	TRG_GATE
CNT0_GATE	36	2	EXT_TRG
+12V	35	1	+5V

*: Pins 23~25 and pins 57~59 are not defined for the PCI-1716L



PCI-1718HDU PCI-1718HGU

12-bit Multi-function Card with PCI BUS 12-bit High-gain Multi-function card with PCI BUS (ISA Compatible)



Features

- 16 single-ended or 8 differential analog inputs
- 12-bit A/D converter
- Programmable gain for each input channel
- Automatic channel/gain/SD scanning
- On-board FIFO for AI
- One 12-bit analog output channel
- 16 digital inputs and 16 digital outputs
- PCI-bus mastering for data transfer
- Universal PCI bus (support 3.3 V or 5 V PCI bus signal)
- BoardID™ switch

Introduction

PCI-1718HDU/HGU is a multifunction data acquisition card based on the PCI bus. It offers the five most desired measurement and control functions: 12-bit A/D conversion, 12-bit D/A conversion, digital input, digital output, and counter/timer.

PCI-Bus Plug & Play

The PCI-1718HDU/HGU uses a PCI controller to interface the card to the PCI bus. The controller fully implements the PCI bus specification Rev 2.2. All bus relative configurations, such as base address and interrupt assignment, are automatically controlled by software. No jumper or DIP switch is required for user configuration.

Automatic Channel/Gain/ SD Scanning

PCI-1718HDU/HGU features an automatic channel/Gain/SD scanning circuit. This circuit, instead of your software, controls multiplexer switching during sampling. On-board SRAM stores different gain and SD values for each channel. This combination lets user perform multi-channel high-speed sampling (up to 100kHz) with different gains and SD for each channel.

On-board FIFO

There are 4k samples FIFO for A/D (AI) on PCI-1718HDU/1718HGU. This is an important feature for faster data transfer and more predictable performance under Windows system.

On Board Programmable Timer/Counter

PCI-1718HDU/1718HGU provides a programmable timer counter for generating pacer trigger for the A/D conversion. The timer/counter chip is 82C54, which includes three 16-bit counters of 10 MHz clock. One counter is used as an event counter for counting events coming from the input channel. The other two are cascaded together to make a 32-bit timer for pacer trigger time base.

Specifications

Analog Input

- **Channels** 16 single-ended or 8 differential or combination
- **Resolution** 12-bit
- **FIFO Size** 4 K samples
- **Max. Sampling Rate** 100 kS/s

Input range and Gain List for PCI-1718HDU/HGU	Gain	0.5	1	2	4	8			
	Unipolar	N/A	0-10	0-5	0-2.5	0-1.25			
Bipolar	±10	±5	±2.5	±1.25	±0.625				
Input range and Gain List for PCI-1718HDU/HGU	Gain	0.5	1	5	10	50	100	500	1000
	Unipolar	N/A	0-10	N/A	0-1	N/A	0-0.1	N/A	0-0.01
Bipolar	±10	±5	±1	±0.5	±0.1	±0.05	±0.01	±0.005	
PCI-1718HDU/HGU PGA Bandwidth	Gain	0.5, 1		2	4	8			
	Bandwidth	5.0 MHz		4.0 MHz	1.3 MHz	0.6 MHz			

PCI-1718HDU/HGU PGA Bandwidth	Gain	0.5, 1	5, 10	50, 100	500, 1000
	Bandwidth	1.0 MHz	80 kHz	10 kHz	1 kHz
Drift	Zero (µV/.)	15			
	Gain (ppm/.)	40			

- **Common Mode Voltage** ±11 V max. (operational)
- **Max. Input voltage** ±15 V
- **Input Protection** 30 Vp-p
- **Input Impedance** 100 MΩ/10pF(Off); 100 MΩ/100pF(On)
- **Trigger Mode** Software, on-board or external programmable pacer

PCI-1718HDU/HGU Accuracy	DC	DNLE: ±1LSB					
		INLE: ±1LSB					
		Offset error: Adjustable to 0					
		Gain	0.5	1	2	4	8
Gain error(% FSR)	0.01	0.01	0.02	0.02	0.04	0.04	
AC	THD: -80 dB						
	ENOB: 11 bits						

PCI-1718HDU PCI-1718HGU



PCI-1718HDU/HGU Accuracy	DC	DNLE: ±1LSB					
		INLE: ±1LSB					
		Offset error: Adjustable to 0					
	Gain	0.5,1	5,10	50,100	500	1000	
	Gain error(% FSR)	0.01	0.02	0.02	0.04	0.08	
	AC	THD: -80 dB					
ENOB: 11 bits							
0.8 V max.							
External TTL Trigger Input	Low	0.8 V max.					
	High	2.0 V min.					

Analog Output

- Channels 1
- Resolution 12-bit
- Max. Transfer Rate 100 kS/s

Output Range (Internal & External Reference)	Using Internal Reference	0 ~ +5 V, 0 ~ +10 V
	Using External Reference	0 ~ x V @ x V (-10 ≤ x ≤ 10)
Accuracy	INLE	±1 LSB
	DNLE	±1 LSB (monotonic)
	Offset error	Adjustable to ±1 LSB
	Gain error	Adjustable to ±1 LSB
Dynamic Performance	Slew Rate	10 V/µs
	Settling Time	2µs to 0.01% of FSR

- Drift 10 ppm/°C
- Driving Capability ±10mA
- Output Impedance 0.1 Ω max.

Digital Input

Input Channels	16	
Input Voltage	Low	0.4 V max.
	High	2.4 V min.
Input Load	Low	0.4 V max.@ -0.2 mA
	High	2.7 V min.@ 20 µA

Digital Output

Output Channels	16	
Output Voltage	Low	0.4 V max.@ +8.0 mA (sink)
	High	2.4 V min.@ -0.4 mA(source)

Counter/Timer

- Counter Chip 82C54 or equivalent
- Channels 3 channels, 2 channels are permanently configured as programmable pacers; 1 channel is free for user application
- Resolution 16 bit
- Compatibility TTL level
- Base Clock Channel 1: 10 MHz
Channel 2: Takes input from output of channel 1
Channel 0: Internal 100 kHz or external clock (10 MHz max.) selected by software
- Max. Input Frequency 10 MHz

Clock Input	Low	0.8 V max.
	High	2.0 V min.
Gate Input	Low	0.8 V max.
	High	2.0 V min.
Counter Output	Low	0.5 V max.@ +24 mA
	High	2.4 V min.@ -15 mA

General

- I/O Connector Type 37-pin DSUB female for Analog One 20-pin Box Header for DI One 20-pin Box Header for DO
- Dimensions 175 x 100 mm (6.9" x 3.9")

Power Consumption	Typical	+5 V @ 850 mA
	Max.	+5 V @ 1 A

Temperature	Operating	0 ~ 60 °C (32 ~ 158 °F)
	Storage	-20 ~ 70 °C (-4 ~ 158 °F)
Relative Humidity	Operating	5-85%RH non-condensing (refer to IEC 68-1,-2,-3)
	Storage	5-95%RH non-condensing (refer to IEC 68-1,-2,-3)
Certification	CE certified	

Ordering Information

- PCI-1718HDU 12-bit multi-function card with PCI bus
- PCI-1718HGU 12-bit high-gain multi-function card with PCI bus
- PCL-10120-1 20-pin flat cable, 1m
- PCL-10120-2 20-pin flat cable, 2m
- PCL-10137-1 DB37 cable assembly, 1m
- PCL-10137-2 DB37 cable assembly, 2m
- PCL-10137-3 DB37 cable assembly, 3m
- PCLD-8115 Wiring terminal board CE

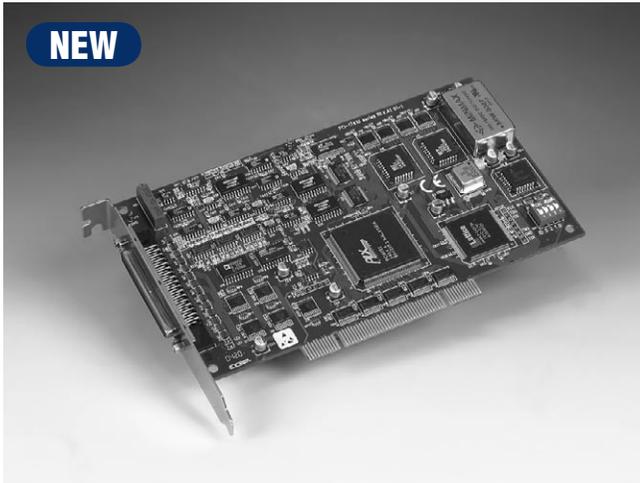
Pin Assignments

A/D S0	1	20	A/D S8
A/D S1	2	21	A/D S9
A/D S2	3	22	A/D S10
A/D S3	4	23	A/D S11
A/D S4	5	24	A/D S12
A/D S5	6	25	A/D S13
A/D S6	7	26	A/D S14
A/D S7	8	27	A/D S15
A.GND	9	28	A.GND
A.GND	10	29	A.GND
V.REF	11	30	DA0.OUT
S0*	12	31	DA0.VREF
+12 V	13	32	S1*
S2*	14	33	S3*
D.GND	15	34	D.GND
NC	16	35	EXT.TRIG
Counter 0 CLK	17	36	Counter 0 GATE
Counter 0 OUT	18	37	PACER
+5V	19		

A/D S0	1	20	A/D S8	A/D H0	1	20	A/D L0
A/D S1	2	21	A/D S9	A/D H1	2	21	A/D L1
A/D S2	3	22	A/D S10	A/D H2	3	22	A/D L2
A/D S3	4	23	A/D S11	A/D H3	4	23	A/D L3
A/D S4	5	24	A/D S12	A/D H4	5	24	A/D L4
A/D S5	6	25	A/D S13	A/D H5	6	25	A/D L5
A/D S6	7	26	A/D S14	A/D H6	7	26	A/D L6
A/D S7	8	27	A/D S15	A/D H7	8	27	A/D L7
A.GND	9	28	A.GND	A.GND	9	28	A.GND
A.GND	10	29	A.GND	A.GND	10	29	A.GND
V.REF	11	30	DA0.OUT	V.REF	11	30	DA0.OUT
S0*	12	31	DA0.VREF	S0*	12	31	DA0.VREF
+12 V	13	32	S1*	+12 V	13	32	S1*
S2*	14	33	S3*	S2*	14	33	S3*
D.GND	15	34	D.GND	D.GND	15	34	D.GND
NC	16	35	EXT.TRIG	NC	16	35	EXT.TRIG
Counter 0 CLK	17	36	Counter 0 GATE	Counter 0 CLK	17	36	Counter 0 GATE
Counter 0 OUT	18	37	PACER	Counter 0 OUT	18	37	PACER
+5V	19			+5V	19		

PCI-1741U

16-bit, 200 kS/s Low cost Multifunction card w/AO



Features

- 16-bit high resolution
- 200 kS/s sampling rate
- Auto calibration function
- 16 S.E. or 8 Diff. AI
- Unipolar/Bipolar input range
- 1 K samples FIFO for AI
- Universal PCI bus (support 3.3 V or 5 V PCI bus signal)
- BoardID™ switch

Introduction

PCI-1741U is a powerful high-resolution multifunction DAS card for the PCI bus. Its sampling rate is up to 200 kS/s and the 16-bit resolution makes it suitable for most data acquisition applications. PCI-1741U provides 16 single-ended or 8 differential analog input channels, one 16-bit D/A output channel, 16 digital input/output channels, and one 10 MHz 16-bit counter channel.

Auto-calibration Function

PCI-1741U provides an auto-calibration function by using a calibration utility. The built-in calibration circuitry of the PCI-1741U corrects gain and offset errors in analog input and analog output channels thereby eliminating the need for external equipment and user adjustments.

BoardID™ Switch

PCI-1741U has a built-in BoardID™ DIP switch that helps define each card's unique identity when multiple identical PCI cards have been installed in the same computer. The BoardID switch is very useful when you build your system with multiple identical PCI cards. With the correct BoardID switch settings, you can easily identify and access each card during hardware configuration and software programming.

Plug & Play Function

The PCI-1741U is a Plug & Play device, which fully complies with PCI Specification Rev 2.2. During card installation, there is no need to set jumpers or DIP switches. Instead, all bus-related configurations such as base I/O address and interrupt are automatically done by the Plug & Play function.

On-board FIFO Memory

The PCI-1741U provides 1K samples on-board FIFO (First In First Out) memory buffer for AD. This is an important feature for faster data transfer and more predictable performance under the Windows system.

On Board Programmable Timer/Counter

The PCI-1741U provides a programmable timer counter for generating a pacer trigger for the A/D conversion. The timer/counter chip is 82C54, which includes three 16-bit counter 10 MHz clocks. One counter is used as an event counter for counting events coming from the input channel. The other two are cascaded together to make a 32-bit timer for pacer trigger time base.

Specifications

Analog Input

- **Channels** 16 single-ended or 8 differential or combination
- **Resolution** 16-bit
- **FIFO Size** 1 K samples
- **Max. Sampling Rate** 200 kS/s

Input range and Gain List	Gain	0.5	1	2	4	8
	Unipolar	N/A	0~10	0~5	0~2.5	0~1.25
Bipolar	±10	±5	±2.5	±1.25	±0.625	
Bandwidth for PGA	Gain	0.5	1	2	4	8
	Bandwidth	4.0 MHz	4.0 MHz	2.0 MHz	1.5 MHz	0.65 MHz

- **Common mode voltage** ±11 V max. (operational)
- **Max. Input voltage** ±20 V (protection)
- **Input Protect** 30Vp-p
- **Input Impedance** 100 MΩ/10pF(Off); 100 MΩ/100pF(On)

Accuracy	DC	DNLE: ±1LSB					
		INLE: ±1LSB					
		Zero (Offset) error: Adjustable to ±1 LSB					
		Gain	0.5	1	2	4	8
		Gain error (% FSR)	0.03	0.02	0.02	0.03	0.04
Clocking and Trigger Inputs	Trigger Mode	THD: -90 dB					
		ENOB: 13.5 bits					
		Software, on-board programmable pacer or external					
	A/D pacer clock	200 kHz (max.); 2.328MHz (min.)					

Analog Output

- **Channels** 1
- **Resolution** 16-bit
- **Operation mode** Single output
- **Throughput** PC dependent, Software update (Direct AO)

Output Range (Internal & External Reference)	Using Internal Reference	0 ~ +5 V, 0 ~ +10 V, -5 ~ +5 V, -10 ~ +10 V
	Using External Reference	0 ~ +x V @ +x V (-10.x.10) -x ~ +x V @ +x V (-10.x.10)
Accuracy	DC	DNLE: ±1LSB (monotonic)
		INLE: ±1LSB
		Zero (Offset) error: Adjustable to ±1 LSB Gain (Full-scale) error: Adjustable to ±1 LSB
Dynamic Performance	Settling Time	5µs (to 4 LSB of FSR)
	Slew Rate	20 V/µs

- **Drift** 10 ppm/.
- **Driving Capability** ±20 mA
- **Output Impedance** 0.1 Ω max.

Digital Input /Output

- **Input Channels** 16
- **Output Channels** 16
- **Number of Ports** 2

Input Voltage	Low	0.8 V max.
	High	2.0 V min.
Output Voltage	Low	0.5 V max. @ +24 mA (sink)
	High	2.4 V min. @ -15 mA (source)
	High	2.0 V min.

Counter/Timer

- **Counter Chip** 82C54 or equivalent
- **Channels** 3 channels, 2 channels are permanently configured as programmable pacers; 1 channel is free for user application
- **Counter 0** 16-bit counter
- **Counter 1, 2** Cascade as a 32-bit clock divider for pacer clock for A/D conversion
- **Resolution** 16-bit
- **Base Clock** Channel 1: 10 MHz
Channel 2: Takes input from output of channel 1
Channel 0: Internal 100 kHz or external
- **Compatibility** TTL level

Clock Input	Low	0.8 V max.
	High	2.0 V min.
Gate Input	Low	0.8 V max.
	High	2.0 V min.
Counter Output	Low	0.5 V max. @ +24 mA (sink)
	High	2.4 V min. @ -15 mA (source)

General

- **I/O Connector Type** 68-pin SCSI-II female
- **Dimensions** 175 x 100 mm (6.9" x 3.9")

Power Consumption	Typical	+5 V @ 850 mA +12 V @ 600 mA
	Max.	+5 V @ 1 A +12 V @ 700 mA
Temperature	Operation	0 ~ 60 °C (32 ~ 158 °F) (refer to IEC 68-2-1, 2)
	Storage	-20 ~ 70 °C (-4 ~ 185 °F)

- **Relative Humidity** 5 ~ 95%RH non-condensing (refer to IEC 68-2-3)
- **Certifications** CE certified

Pin Assignments

AI0	68	34	AI1
AI2	67	33	AI3
AI4	66	32	AI5
AI6	65	31	AI7
AI8	64	30	AI9
AI10	63	29	AI11
AI12	62	28	AI13
AI14	61	27	AI15
AIGND	60	26	AIGND
AO0_REF	59	25	AO1_REF
AO0_OUT	58	24	AO1_OUT
AOGND	57	23	AOGND
DI0	56	22	DI1
DI2	55	21	DI3
DI4	54	20	DI5
DI6	53	19	DI7
DI8	52	18	DI9
DI10	51	17	DI11
DI12	50	16	DI13
DI14	49	15	DI15
DGND	48	14	DGND
DO0	47	13	DO1
DO2	46	12	DO3
DO4	45	11	DO5
DO6	44	10	DO7
DO8	43	9	DO9
DO10	42	8	DO11
DO12	41	7	DO13
DO14	40	6	DO15
DGND	39	5	DGND
CNT0_CLK	38	4	PACER_OUT
CNT0_OUT	37	3	TRG_GATE
CNT0_GATE	36	2	EXT_TRG
+12V	35	1	+5V

Ordering Information

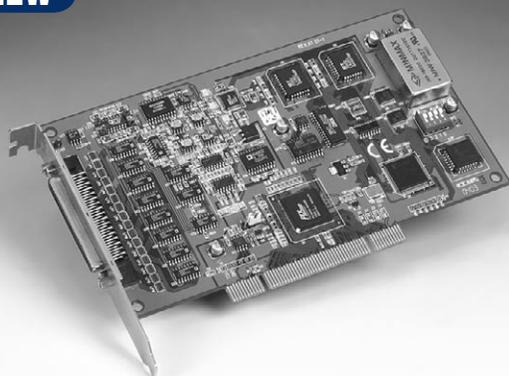
- **PCI-1741U** 200 kS/s, 16-bit, 16-ch High-Resolution Multifunction Card, user's manual and driver CD-ROM. (cable not included)
- **PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1m.
- **PCL-10168-2** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 2m.
- **ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail Mounting
- **PCLD-8710** Industrial Wiring Terminal Board with CJC circuit for DIN-rail Mounting. (cable not included)
- **PCI-1741S** PCI-1741U with PCLD-8710 and PCL-10168 cable



PCI-1747U

250 kS/s, 16-bit, 64-ch Analog Input Card

NEW



Features

- 16-bit high resolution
- 250 kS/s sampling rate
- 64 S.E. or 32 Diff. AI, or a combination
- Auto calibration function
- Unipolar/Bipolar input range
- 1k samples FIFO for AI
- Bus master DMA data transfer
- Universal PCI Bus
- BoardID™ switch

Introduction

PCI-1747U is a high-resolution high channel count analog input card for the PCI bus. Its sampling rate is up to 250 kS/s and 16-bit resolution provides the power needed for most data acquisition applications. PCI-1747U provides 64 single-ended, 32 differential analog input channels or a combination of these. It also has built in a 1k-sample FIFO buffer for analog input data.

Specifications

Analog Input

- **Channels** 64 single-ended or 32 differential or combination
- **Resolution** 16-bit
- **FIFO Size** 1 K samples
- **Max. Sampling Rate** 250 kS/s

Input range and Gain List	Gain	0.5	1	2	4	8
	Unipolar	N/A	0~10	0~5	0~2.5	0~1.25
Bipolar		±10	±5	±2.5	±1.25	±0.625
Bandwidth for PGA	Gain	0.5	1	2	4	8
	Bandwidth	4.0 MHz	4.0 MHz	2.0 MHz	1.5 MHz	0.65 MHz

- **Common mode voltage** ±11 V max. (operational)
- **Max. Input voltage** ±20 V
- **Input Protect** 30 Vp-p
- **Input Impedance** 100 MΩ/10pF(Off); 100 MΩ/100pF(On)

Accuracy	DC	DNLE: ±1LSB					
		INLE: ±1LSB					
		Zero (Offset) error: Adjustable to ±1 LSB					
		Gain	0.5	1	2	4	8
		0.03	0.02	0.02	0.03	0.04	
Gain error (% FSR)	AC	THD: -90 dB					
		ENOB: 13.5 bits					
		Software, on-board programmable pacer or external					
Clocking and Trigger Inputs	Trigger Mode	Software, on-board programmable pacer or external					
	A/D pacer clock	250 kHz (max.); 2.328MHz (min.)					

Counter/Timer

- **Counter chip** 82C54 or equivalent
- **Channels** 3 channels, 2 channels are permanently configured as programmable pacers; 1 channel is for internal use only

- **Resolution** 16-bit
- **Base Clock** Channel 1: 10 MHz
Channel 2: Takes input from output of channel 1
Channel 0: Internal 100 kHz
- **Counter 0** 16-bit timer
- **Counter 1, 2** Cascade as a 32-bit clock divider for pacer clock for A/D conversion

General

- **I/O Connector Type** 68-pin SCSI-II female
- **Dimensions** 175 x 100 mm (6.9" x 3.9")

Power Consumption	Typical	+5 V @ 850 mA +12 V @ 600 mA
	Max.	+5 V @ 1 A +12 V @ 700 mA
Temperature	Operating	0 ~ 60 °C (32 ~ 158 °F) (refer to IEC 68-2-1,2)
	Storage	-20 ~ 70°C (-4 ~ 185°F)

- **Relative Humidity** 5 ~ 95%RH non-condensing (refer to IEC 68-2-3)
- **Certifications** CE certified

Ordering Information:

- **PCI-1747U** 250 kS/s, 16-bit, 64-ch, analog input universal PCI bus card
- **ADAM-3968** 68-pin SCSI cable wiring terminal for DIN-rail mounting
- **PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1m.
- **PCL-10168-2** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 2m.

Feature Details

Auto-Calibration Function

The PCI-1747U provides an auto-calibration function with an calibration utility. The built-in calibration circuitry of the PCI-1747U corrects gain and offset errors in analog input, thereby eliminating the need for external equipment and user adjustments.

On-Board Programmable Timer/Counter

PCI-1747U provides a programmable timer counter for generating a pacer trigger for the A/D conversion. The timer/counter chip is 82C54, which includes three 16-bit counter 10 MHz clocks. One counter is used as an event counter for counting events coming from the input channel. The other two are cascaded together to make a 32-bit timer for pacer trigger time base.

Plug & Play Function

The PCI-1747U is a Plug & Play device, which fully complies with PCI Specification Rev 2.2. During card installation, there is no need to set jumpers or DIP switches. Instead, all bus-related configurations such as base I/O address and interrupt are automatically done by the Plug & Play function.

Automatic Channel/Gain/SD/BU Scanning

The PCI-1747U features an automatic channel/gain/SD/BU scanning circuit. This circuit controls multiplexer switching during sampling in a way that is more efficient than software implementation. An on-board SRAM stores different gain, SD (Single-Ended/Differential) and BU (Bipolar/Unipolar) values for each channel. This combination lets users perform multi-channel high-speed sampling with different gain, SD and BU values for each channel.

PCI-Bus Mastering Data Transfer

PCI-1747U supports PCI-Bus mastering DMA for high-speed data transfer and gap-free analog input and analog output. By setting aside a block of memory in the PC, the PCI-1747U performs bus-mastering data transfers without CPU intervention, setting the CPU free to perform more urgent tasks such as data analysis and graphics manipulation. The function makes it possible to run all I/O functions simultaneously at full speed without losing data.

On-board FIFO Memory

PCI-1747U provides 1K samples on-board FIFO (First In First Out) memory buffer for AD. This is an important feature for faster data transfer and more predictable performance under the Windows system.

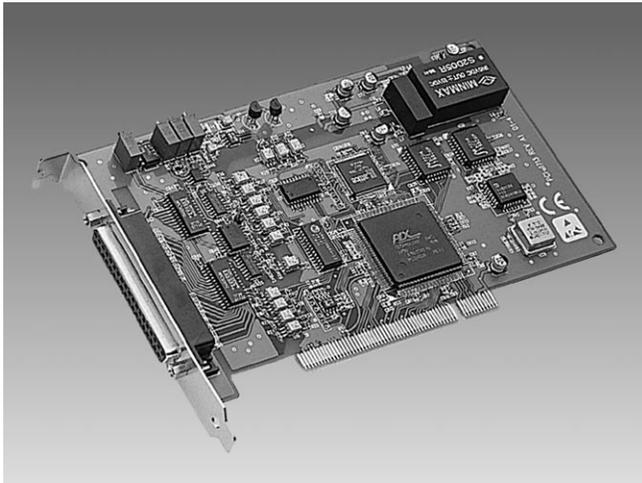
Pin Assignments

AI0	68	34	AI1
AI2	67	33	AI3
AI4	66	32	AI5
AI6	65	31	AI7
AI8	64	30	AI9
AI10	63	29	AI11
AI12	62	28	AI13
AI14	61	27	AI15
AGND	60	26	AGND
AI16	59	25	AI17
AI18	58	24	AI19
AI20	57	23	AI21
AI22	56	22	AI23
AI24	55	21	AI25
AI26	54	20	AI27
AI28	53	19	AI29
AI30	52	18	AI31
AI32	51	17	AI33
AI34	50	16	AI35
AI36	49	15	AI37
AI38	48	14	AI39
AI40	47	13	AI41
AI42	46	12	AI43
AI44	45	11	AI45
AI46	44	10	AI47
AGND	43	9	AGND
AI48	42	8	AI49
AI50	41	7	AI51
AI52	40	6	AI53
AI54	39	5	AI55
AI56	38	4	AI57
AI58	37	3	AI59
AI60	36	2	AI61
AI62	35	1	AI63



PCI-1713

100 kS/s, 12-bit, 32-ch,
Isolated Analog Input Card



Features

- 2500 V_{DC} isolation protection
- 32 single-ended or 16 differential analog inputs, or a combination
- 12-bit resolution for A/D conversion
- Up to 100 kS/s sampling rate for A/D conversion
- Programmable gain for each input channel
- On-board 4 K samples FIFO buffer
- S/W, internal or external pacer triggering supported

Introduction

The PCI-1713 is an isolated high-speed analog input card for the PCI bus. It provides 32 analog input channels with a sampling rate up to 100 kS/s, 12-bit resolution and isolation protection of 2500 V_{DC}.

Specifications

Analog Input

- **Channels** 32 single-ended or 16 differential (software programmable)
- **Resolution** 12-bit
- **Onboard FIFO** 4K samples
- **Input Range** Bipolar: ± 10 V, ± 5 V, ± 2.5 V, ± 1.25 V, ± 0.625 V (software programmable)
Unipolar: 0 ~ 10 V, 0 ~ 5 V, 0 ~ 2.5 V, 0 ~ 1.25 V
- **Maximum Input Overvoltage** ± 30 V
- **Common Mode Rejection Ratio(CMRR)**

Gain	CMRR
0.5, 1	75dB
2	80dB
4	84dB
8	84dB
- **Maximum Sampling Rate** 100 kS/s
- **Accuracy** (depends on gain)

Gain	Accuracy
0.5, 1	0.01% of FSR \pm 1LSB
2	0.02% of FSR \pm 1LSB
4	0.02% of FSR \pm 1LSB
8	0.04% of FSR \pm 1LSB
- **Linearity Error** ± 1 LSB
- **Input Impedance** 1 G Ω
- **Trigger Mode** Software, on-board programmable pacer or external (TTL level)

Programmable Pacer

- **Timer** 32-bit programmable timer
- **Time Base** 10 MHz

General

- **I/O Connector** 37-pin D-type female connector
- **Dimensions (L x H)** 175 x 100 mm (6.9" x 3.9")
- **Power Consumption** +5 V @ 850 mA (Typical), +5 V @ 1.0 A (Max.)
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)

Ordering Information

- **PCI-1713** 100 kS/s, 12-bit, 32-channel Isolated Analog Input Card, user's manual and driver CD-ROM. (cable not included)
- **PCLD-881B** Industrial Wiring Terminal Board (cable not included)
- **ADAM-3937** Wiring Terminal Board
- **PCL-10137-1** DB37 cable assembly, 1m
- **PCL-10137-2** DB37 cable assembly, 2m
- **PCL-10137-3** DB37 cable assembly, 3m

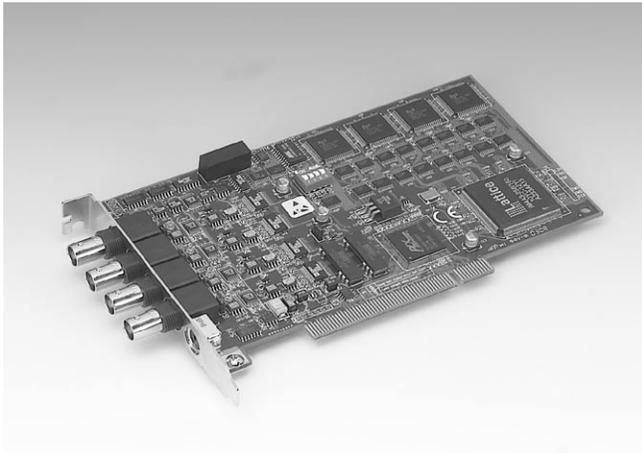
Applications

- Signal isolation
- Process monitoring and control
- Transducer/sensor interfacing
- Multi-channel DC voltage measurement

PCI-1714 PCI-1714UL

30 MS/s Simultaneous 4-ch Analog Input Card

10 MS/s Simultaneous 4-ch Analog Input Card



Introduction

The PCI-1714 is an advanced-performance data acquisition card based on 32-bit PCI bus architecture. The maximum sampling rate of PCI-1714 is up to 30 MS/s, with an emphasis on continuous, non-stop, high-speed, streaming data of A/D samples to host memory.

Specifications

Analog Input

- **Channels** 4 single-ended analog input channels
- **Resolution** 12 bits
- **FIFO Size** 32 K samples/ch for PCI-1714
8 K samples/ch for PCI-1714UL
- **Max. Sampling Rate** 30 MS/s for PCI-1714
10 MS/s for PCI-1714UL

General

- **I/O Connector Type** 4 BNC connector (for AI)
1 PS2 connector (for Ext. clock and trig)
- **Dimensions** 137 x 107 mm (5.4" x 4.2")
- **Power Consumption** Typical +5 V @ 850 mA ; +12 V @ 600 mA
Max. +5 V @ 1 A ; +12 V @ 700m A
- **Operating Temperature** 0 ~ 70° C (32~158° F)
- **Storage Temperature** -20 ~ 85° C (-4~185° F)
- **Relative Humidity** 5 ~ 95%RH non-condensing (refer to IEC 68-2-3)
- **Certifications** CE

Analog Input:

Channels	4 single-ended analog input channels				
Resolution	12-bit				
FIFO Size	32K locations (8K for PCI-1714UL)				
Max. Sampling Rate ¹	30MHz 10MHz for PCI-1714UL				
Input range and Gain List	Gain	1	2	5	10
	Range	±5V	±2.5V	±1V	±0.5V
Drift	Gain	1	2	5	10
	Zero (µV/° C)	±30	±30	±30	±30
	Gain (ppm/° C)	±30	±30	±30	±30
Small Signal Bandwidth for PGA	Gain	1	2	5	10
	Bandwidth (-3dB)	7 MHz	7 MHz	7 MHz	7 MHz
Max. Input voltage	±15 V	Input Surge Protect		30 Vp-p	
Input Impedance	50Ω/1MΩ/Hi Z jumper selectable /100pF				
Trigger Mode	Software, pacer, post-trigger, pre-trigger, delay-trigger, about-trigger				
Accuracy	DC	DNLE	±1LSB (No Missing Codes:12 Bits Guaranteed)		
		INLE	±2LSB		
		Offset error	Adjustable to ±1LSB		
		Gain error	Adjustable to ±1LSB		

Features

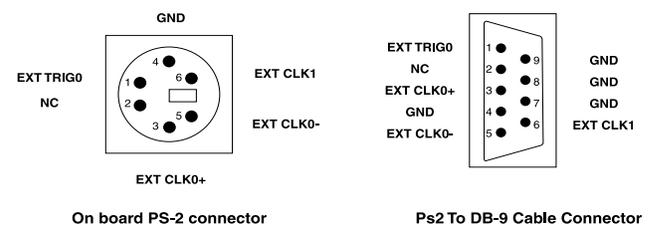
- 12-bit A/D converter up to 30 MS/s
- 4 single-ended analog input channels
- Programmable gain for each input channel
- 32 K samples on board FIFO memory
- 4 A/D converters simultaneously sampling
- Multiple A/D triggering modes
- Programmable pacer/counter
- BoardID™ switch

Accuracy	AC	SINAD S/(N+D)	68 dB
		ENOB	11bits
		THD	-75 dB
External Clock 1	Logic level	TTL (Low: 0.8 V max. High: 2.0 V min.)	
	Input impedance	50 Ω	
	Input coupled	DC	
External Clock 0	Frequency	Up to 30 MHzUp to 10 MHz for PCI-1714UL	
	Logic level	5.0V peak to peak sin wave	
	Input impedance	Hi Z	
	Input coupled	AC	
External Trigger 0	Frequency	Up to 30 MHzUp to 10 MHz for PCI-1714UL	
	Logic level	TTL (Low: 0.8 V max. High: 2.0V min.)	
	Input impedance	Hi Z	
	Input coupled	DC	
External Analog Trigger Input	Range	By analog input range	
	Resolution	8-bit	
	Frequency	Up to 1MHz	

Ordering Information

- **PCI-1714** 30 MHz Simultaneous 4-ch Analog Input Card, user's manual and driver CD-ROM (PCL-10901-1 cable included)
- **PCI-1714UL** 10MHz Simultaneous 4-ch Analog Input card
- **ADAM-3909** DB-9 Wiring Terminal for DIN-rail Mounting
- **PCL-10901-1** PS2 to DB9 Wiring Cable, 1m
- **PCL-10901-3** PS2 to DB9 Wiring Cable, 3m
- **PCL-1010B-1** BNC to BNC Wiring Cable, 1m

Pin Assignments



1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AWS

6
DA&C

7
cPCI

8
ADAM-3000

9
Motion Control

10
ICOM

11
eConnectivity

12
UNO

13
ADAM-4000

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ADAM-5000

15
ADAM-6000

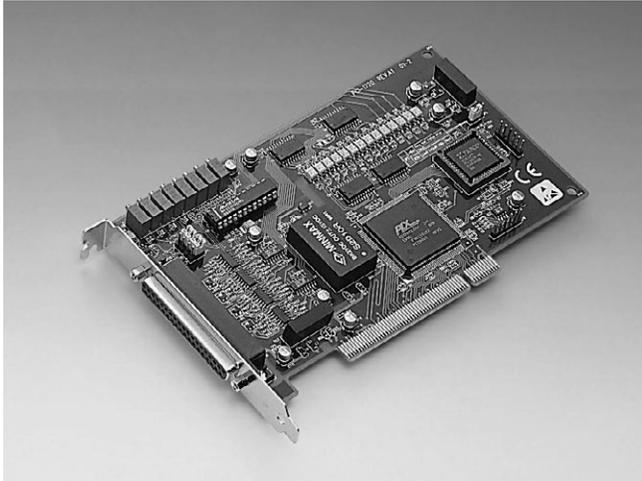
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ADAM-8000

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BAS

PCI-1720 PCI-1720U

4-ch Isolated Analog Output Card

4-ch Universal Isolated Analog Output Card



Features

- Four 12-bit D/A output channels
- Multiple output ranges
- 2,500 V_{DC} isolation between the outputs and the PCI bus
- Keeps the output settings and values after system reset
- One DB37 connector for easy wiring
- Universal PCI and BoardID switch (PCI-1720U only)

Introduction

The PCI-1720 provides four 12-bit isolated digital-to-analog outputs for the PCI bus. With isolation protection of 2500 V_{DC} between the outputs and the PCI bus, the PCI-1720 is ideal for industrial applications where high-voltage protection is required.

Keeping the Output Settings and Values after System Reset

Users can independently set the four outputs to different ranges: 0 to +5 V, 0 to +10 V, ±5 V, ±10 V, 0 to 20 mA (sink) or 4 to 20 mA (sink). When the system is hot reset, (power is not shut off), the PCI-1720 can either retain the last analog output settings and values, or return to its default configuration, depending on jumper setting. This practical function eliminates danger caused by misoperation during an unexpected system reset.

PCI-Bus Plug & Play

The PCI-1720 uses a PCI controller to interface the card to the PCI bus. The controller fully implements the PCI bus specification Rev 2.1. All bus relative configurations, such as base address and interrupt assignment, are automatically controlled by software.

Specifications

- Channels** 4 isolated D/A channels
- Resolution** 12 bits
- Output Range** Unipolar: 0 ~ +5 V, 0 ~ +10 V
Bipolar: ±5 V, ±10 V
Current loop (sink): 0~ 20 mA, 4 ~ 20 mA
- Throughput** 15 kHz min. @ full-scale output range
- Accuracy** ±0.024%
- Isolation Voltage** 2,500 V_{DC} between the outputs and the PCI bus
- Temperature Drift** Typical: 10 PPM/°C (0 ~ 60° C) (32 ~ 140° F)
Maximum: 20 PPM/°C (0 ~ 60° C) (32 ~ 140° F)
- Output Drive** ±5 mA max.
- Current Loop Excitation Voltage** 50 V (max.)
- On-board 12 VDC Excitation Voltage** 80 mA (max.)
- Power Consumption** +5 V @ 350 mA (typical), 500 mA (max.)
+12 V @ 200 mA (typical), 350 mA (max.)
- Operating Temperature** 0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
- Storage Temperature** -20 ~ +70° C (-4 ~ 158° F)
- Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- Connector** DB-37 connector
- Dimensions (L x H)** 175 x 100 mm (6.9" x 3.9")

- PCI-1720U** 4-channel Isolated Output Card, user's manual and driver CD-ROM. (cable not included)
- ADAM-3937** DB37 Wiring terminal for DIN-rail mounting
- PCLD-880** Screw terminal board

Applications

- Process control
- Programmable voltage source
- Programmable current sink
- Servo control

Pin Assignments

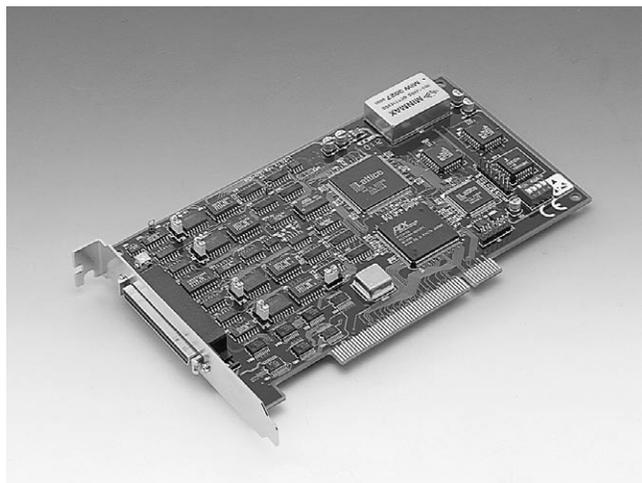
NC	1	20	NC
+12 Vout	2	21	NC
AGND	3	22	NC
AGND	4	23	NC
Vout 0	5	24	NC
AGND	6	25	NC
Isink 0	7	26	NC
AGND	8	27	NC
AGND	9	28	NC
Isink 1	10	29	NC
Vout 2	11	30	NC
AGND	12	31	NC
Isink 2	13	32	NC
Vout 3	14	33	NC
AGND	15	34	NC
Isink 3	16	35	NC
NC	17	36	NC
NC	18	37	NC
NC	19		

Ordering Information

- PCI-1720** 4-channel Isolated Output Card, user's manual and driver CD-ROM. (cable not included)
- PCL-10137-1** DB37 cable assembly, 1m
- PCL-10137-2** DB37 cable assembly, 2m
- PCL-10137-3** DB37 cable assembly, 3m

PCI-1721

12-bit, 4-ch Advanced Analog Output Card



FCC CE

Features

- 10 MHz maximum digital update rate
- PCI-bus mastering for data transfer
- Auto calibration function
- Four analog output channels with 1 K FIFO
- A 12-bit DAC is equipped for each of analog output channels
- Real-time waveform output function with internal/external pacer
- Synchronized output function
- Flexible output types and range settings
- Keeps the output settings and values after system reset
- 16-ch DI/O and one 10 MHz 16-bit resolution counter
- BoardID™ switch

Introduction

The PCI-1721 is an advanced high-speed analog output card for PCI bus, and each of analog output channels are equipped with a 12-bit, double-buffered DAC. It features many powerful and unique functions, like a waveform output function with 10 MHz maximum update rate, auto-calibration and a BoardID switch. The PCI-1721 is an ideal solution for industrial applications where high-speed continuous analog output or real-time waveform output functions are required.

Specifications

Analog Output

- **Channels** 4
- **Resolution** 12-bit
- **FIFO Size** 1 K Samples
- **Operation Mode** Single/ Continuous/ Waveform /Synchronized output

Output Range (Internal & External Reference)	Using Internal Reference	0 ~ +5 V, 0 ~ +10 V, -5 ~ +5 V, -10 ~ +10 V, 0 ~ 20 mA, 4 ~ 20 mA
	Using External Reference	0 ~ +x V @ +x V (-10 ≤ x ≤ 10) -x ~ +x V @ +x V (-10 ≤ x ≤ 10)
Accuracy	Relative	±1 LSB
	Differential Non-linearity	±1 LSB (monotonic)

- **Offset** <1 LSB
- **Slew Rate** 10 V/μs
- **Driving Capability** ±10 mA
- **Output Impedance** 0.1Ω max.
- **Max. Update Rate** 10 MHz (max. for one channel)
- **Settling Time** 5 μs (to ±1/1 LSB of FSR)

External Clock Input (Max. 10 MHz)	Low	0.8 V max.
	High	2.0 V min.
External TTL Trigger Input	Low	0.8 V max.
	High	2.0 V min.

Counter/Timer

- **Channels** 1
- **Resolution** 16-bit
- **Compatibility** TTL level
- **Base Clock** 10 MHz
- **Max. Input Frequency** 10 MHz

Clock Input	Low	0.8 V max.
	High	2.0 V min.
Gate Input	Low	0.8 V max.
	High	2.0 V min.
Counter Output	Low	0.4 V max. @ +2.5 mA
	High	3.0 V min. @ -2.5 mA

General

I/O Connector Type	68-pin SCSI-II female	
Dimensions	175 x 100 mm (6.9" x 3.9")	
Power Consumption	Typical	+5 V @ 850 mA, +12 V @ 600 mA
	Max.	+5 V @ 1 A, +12 V @ 700 mA
Temperature	Operation	0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
	Storage	-20 ~ 85° C (-4 ~ 185° F)
Relative Humidity	5 ~ 95% RH non-condensing (refer to IEC 68-2-3)	
Certifications	CE certified	

Digital Input /Output

Input Channels	16 (bi-directional)	
Number of Ports	2	
Input Voltage	Low	0.8 V max.
	High	2.0 V min.
Input Load	Low	0.5 V max. @ +24 mA (sink)
	High	2.0 V min. @ -15 mA (source)

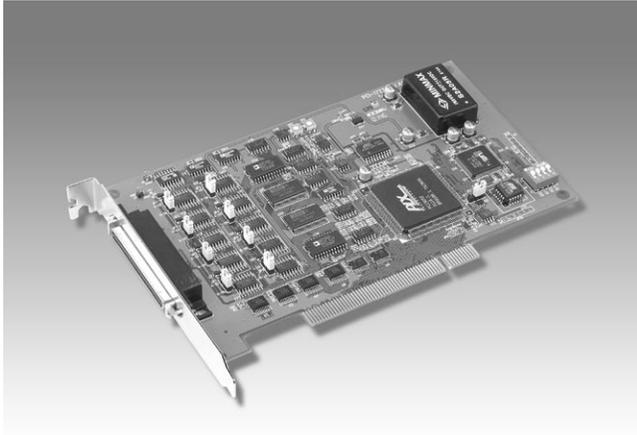
Ordering Information

- **PCI-1721** 12-bit, 4-ch Advanced Analog Output Card, user's manual and driver CD-ROM. (cable not included)
- **PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 and 2 m
- **ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail Mounting

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCI-1723

16-bit, 8-ch Non-isolated Analog Output Card



Features

- Auto calibration function
- A 16-bit DAC is equipped for each analog output channel
- Synchronized output function
- Output values retained after system hot reset
- 2-port (16-channel) user-defined digital input/output
- BoardID™ switch

Introduction

The PCI-1723 is a non-isolated multiple channel analog output card for the PCI bus, and each analog output channel is equipped with a 16-bit, double-buffered DAC. It also features an auto-calibration function and a BoardID™ switch.. The PCI-1723 is an ideal solution for industrial applications where multiple analog output channels are required.

Specifications

Analog Output

- **Output Channels** 8
- **Resolution** 16-bit
- **Operation Mode** Single output, Synchronized output
- **Output Range** -10 ~ +10 V, 0 ~ 20 mA, 4 ~ 20 mA (Internal Reference only)
- **Accuracy** Relative ±6 LSB
Differential Non-linearity ±6 LSB (monotonic)
- **Offset** < 6 LSB
- **Output Impedance** 0.1 Ω max.
- **Throughput** PC dependent, Software update (direct AO)
- **Settling time** 50 μs (to ±6 LSB of FSR)

Digital Input/Output

- **Channels** 16 (bi-directional)
- **Number of Ports** 2
- **Input Voltage** Low 0.8 V max.
High 2.0 V min.
- **Output Voltage** Low 0.5 V max. @ 24 mA (sink)
High 2.4 V min. @ -15 mA (source)

General

- **I/O Connector Type** 68-pin SCSI-II female
- **Dimensions** 175 x 100 mm (6.9" x 3.9")
- **Power Consumption** Typical +5 V @ 850 mA, +12 V @ 600 mA
Max. +5 V @ 1 A, +12 V @ 700 mA
- **Operating Temperature** 0 ~ 60° C (32 ~ 158° F) (IEC 68-2-1,2)
- **Storage Temperature** -20 ~ 85° C (-4 ~ 185° F)
- **Relative Humidity** 5 ~ 95 % RH non-condensing (IEC 68-2-3)
- **Certifications** CE

Ordering Information

- **PCI-1723** 16-bit, 8-ch Non-isolated Analog Output Card
- **PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 and 2m
- **ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail mounting

Applications

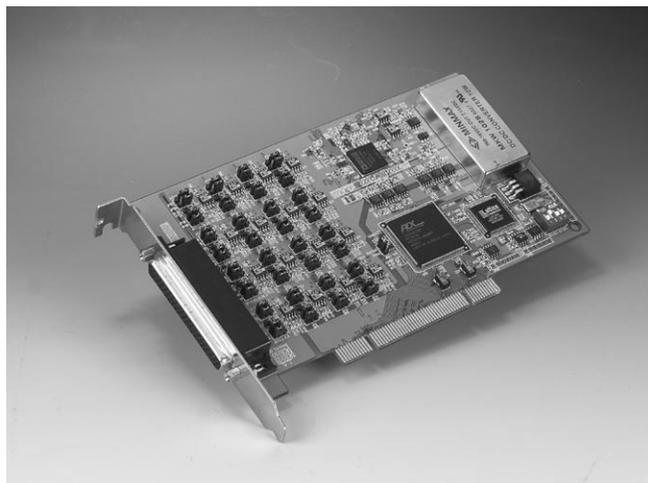
- Process control, Programmable voltage source, Programmable current sink, Servo control, Multiple loop PID control, V-command motion control

Pin Assignments

NC	68	34	NC
Vout0	67	33	Vout1
AGND	66	32	AGND
Iout0	65	31	Iout1
NC	64	30	NC
AGND	63	29	AGND
Vout2	62	28	Vout3
AGND	61	27	AGND
Iout2	60	26	Iout3
NC	59	25	NC
AGND	58	24	AGND
Vout4	57	23	Vout5
AGND	56	22	AGND
Iout4	55	21	Iout5
NC	54	20	NC
AGND	53	19	AGND
Vout6	52	18	Vout7
AGND	51	17	AGND
Iout6	50	16	Iout7
NC	49	15	NC
AGND	48	14	AGND
DIO0	47	13	DIO1
DIO2	46	12	DIO3
DIO4	45	11	DIO5
DIO6	44	10	DIO7
DIO8	43	9	DIO9
DIO10	42	8	DIO11
DIO12	41	7	DIO13
DIO14	40	6	DIO15
DGND	39	5	DGND
NC	38	4	NC
NC	37	3	NC
NC	36	2	NC
+12V	35	1	+5V

PCI-1724U

14-bit, 32-ch Isolated Analog Output Card



FCC CE

Features

- High-density 32-channel analog output channels
- Flexible Output Range: +/-10 V, 0 ~ 20 mA and 4 ~ 20 mA
- Synchronized output function
- Keeps output values after system hot reset
- BoardID™ switch

Introduction

The PCI-1724U is an isolated high-density multiple channel analog output card for the PCI bus, where each analog output channel is equipped with a 14-bit DAC. It features optional voltages, current output and a BoardID™ switch. The PCI-1724U is an ideal solution for industrial applications where multiple analog output channels are required.

Specifications

Analog Output

- Channels** 32 ch isolation
- Resolution** 14-bit
- Operation Mode** Single output, synchronized output
- Output Range** -10 ~ +10 V, 0 ~ 20 mA, 4 ~ 20 mA (Internal Reference only)
- Accuracy**
 - Relative +/- 4 LSB
 - Differential Non-linearity +/- 2 LSB (monotonic)
- Offset** < 2 LSB
- Output Impedance** 0.1 Ω max.
- Throughput** PC dependent, Software update (Direct AO)
- Settling Time** 60 μs
- Isolation** 1,500 V_{DC} system isolation

General

- I/O Connector Type** One 62-pin D-type connector
- Dimensions (L x H)** 175 x 100 mm (6.9" x 3.9")
- Operating Temperature** 0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
- Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- Operating Humidity** 5 ~ 95 % RH non-condensing (refer to IEC 68-2-3)

Ordering Information

- PCI-1724U** 14-bit, 32-ch Isolated Analog Output Card
- PCI-10162** DB62 Cable Assembly (1m, 3m)
- ADAM-3962** DB62 Cable Wiring Terminal for Din-Rail Mounting

Applications

- Process control
- Programmable voltage source
- Programmable current sink
- Servo control
- Multiple loop PID control
- V-command motion control

Pin Assignments

AGND	AGND	1	22	43	AGND
AO8	AGND	2	23	44	AO16
AGND	AO0	3	24	45	AGND
AO9	AGND	4	25	46	AO17
AGND	AO1	5	26	47	AGND
AO10	AGND	6	27	48	AO18
AGND	AO2	7	28	49	AGND
AO11	AGND	8	29	50	AO19
AGND	AO3	9	30	51	AGND
AO12	AGND	10	31	52	AO20
AGND	AO4	11	32	53	AGND
AO13	AGND	12	33	54	AO21
AGND	AO5	13	34	55	AGND
AO14	AGND	14	35	56	AO22
AGND	AO6	15	36	57	AGND
AO15	AGND	16	37	58	AO23
AGND	AO7	17	38	59	AO28
AGND	AO24	18	39	60	AO29
AGND	AO25	19	40	61	AO30
AGND	AO26	20	41	62	AO31
NC	AO27	21	42		
	NC				

1
Software

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IPPC

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TPC

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FPM

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ATM & AWS

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DA&C

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cPCI

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ADAM-3000

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Motion Control

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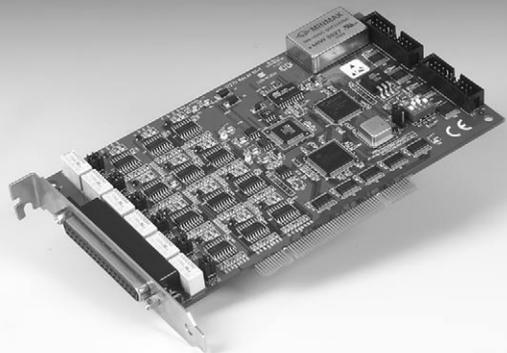
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ADAM-8000

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BAS

PCI-1727U

12-channel D/A output Card (ISA Compatible)

NEW



CE

Features

- Compatible with PCL-727
- 12 independent analog output channels
- Multiple output range, including 4~20mA current loop
- 16 DI and 16 DO channels
- Fuse on each channel
- Universal PCI and BoardID™ switch

Introduction

The PCI-1727U provides twelve 14-bit analog output channels, and is pin-compatible with the ISA PCL-727 card. It supports both +/-10V and 0~20mA current loop (sink). The card's on board DC-to-DC converter ensures the full 10V D/A output is always available.

Each analog output channel has a built-in fuse to protect the circuit, PC and the external devices. The PCI-1727U is an ideal, economical solution for the applications which require multiple PID control loops.

In addition to its analog outputs, the PCI-1727U provides 16 TTL DI and 16 TTL DO channels that are easily applied with industrial on/off control applications.

Specifications

Analog Output

- **Chipset** ADI AD5390
- **Channels** 12
- **Resolution** 14 bits
- **Output Range** ±10 V, 0 ~ 20 mA.
- **Current Loop Excitation Voltage** 8 V ~ 36 V
- **Output Current in Voltage Output** 15 mA max.
- **Throughput** Software Static Update
- **Setting Time** ≤ 70 μs
- **Power on Default Value** All output ranges will output 0V or 0mA in power on
- **Fuse on Each Channel** 0.1A
- **Calibration Function**

Digital Input

- **Channels** 16
- **Level** TTL compatible
- **Logic0** 0.8 V max
- **Logic1** 2.0 V min
- **Input loading** 0.5 V @ 0.4 mA max. (low)
2.7 V @ 50 μA max (high)

Digital Output

- **Channels** 16
- **Level** TTL compatible
- **Logic0** 0.5 V @ 8 mA (sink)
- **Logic1** 2.4 V @ 0.4 mA (source)

Power Supply

- **+5V** 250 mA typical, 500 mA max
- **+12V** 150 mA typical, 300 mA max
- **-12V** 100 mA typical, 130 mA max

General

- **Connector** 37-pin D-type female
- **Dimensions** 175 × 100 mm (6.9" × 3.9")
- **Operating Temperature** 0 ~ 50 °C
- **Storage temperature** -20 ~ 65 °C
- **Relative Humidity** 5 ~ 95%, non-condensing

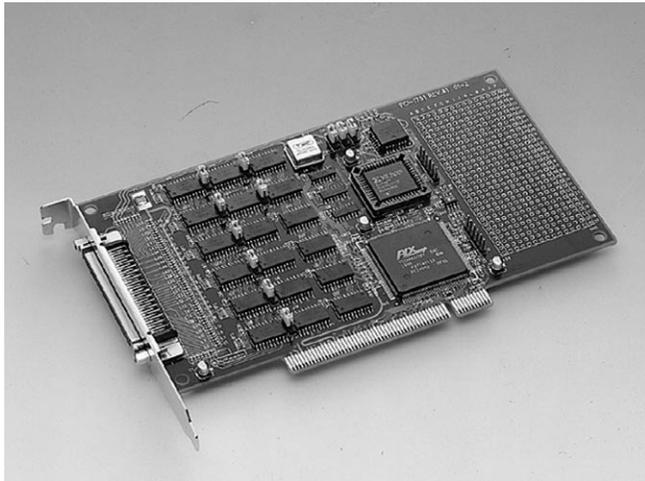
Ordering Information

- **PCI-1727U** 12-channel D/A output Card
- **PCL-10120-1** 20-pin flat cable, 1m
- **PCL-10137-1** DB37 cable assembly, 1m
- **ADAM-3937** DB37 wiring terminal for DIN-rail mounting
- **PCLD-780** Two 20-pin screw terminal board
- **PCLD-782** Opto-isolated D/I board
- **PCLD-785** Relay output board

PCI-1751 PCI-1751U

48-bit Digital I/O Card and Counter Card

48-bit Universal Digital I/O and Counter Card



CE

Features

- 48 TTL digital I/O lines
- Emulates mode 0 of 8255 PPI
- Buffered circuits for higher driving capacity than 8255
- Interrupt handling
- Timer/Counter interrupt capability
- Supports both dry and wet contact
- Keeps the I/O port setting and DO state after system reset
- Universal PCI & BoardID switch (PCI-1751U only)

Introduction

PCI-1751 is a 48-bit digital I/O card for the PCI bus. Its 48 bits are divided into six 8-bit I/O ports and users can configure each port as input or output via software. The PCI-1751 also provides one event counter and two 16-bit timers, which can be cascaded to become a 32-bit timer.

Fulfilling the True Requirements of Industrial Applications

With two practical functions, the PCI-1751 fulfills the true requirements of industrial applications. When the system is hot reset, (power is not shut off), the PCI-1751 can either retain the last I/O port setting and output value, or reset to its default configuration, depending on jumper settings. This function protects the system from wrong operations during unexpected system resets. Additionally, the PCI-1751 supports both dry and wet contacts so that it can easily interface with other devices.

Interrupt Handling Capability

Two lines in each I/O port (C0 and C4) and two of the three counter outputs (Timer 1 and Counter 2) are connected to the interrupt circuitry. Two interrupt request signals can be generated at the same time and the software can service the two request signals by ISR. Moreover, a pin in the connector can output a digital signal simultaneously with the card generating an interrupt, and users can utilize this function to trigger external devices with the interrupt.

Specifications

- **I/O Channels** 48 digital I/O lines
- **Programming Mode** 8255 PPI mode 0
- **Digital Output**
 - **Logic Level 0** 0.4 V max. @ 24 mA (sink)
 - **Logic Level 1** 2.4 V min. @ 15 mA (source)
- **Digital Input**
 - **Logic Level 0** 0 ~ 0.8 V
 - **Logic Level 1** 2 ~ 5.25 V
- **Programmable timer/counter**
 - **Frequency Range** 0 ~ 10 MHz
 - **Counters** Two 16-bit counters or one 32-bit counter
One 16-bit event counter
- **General**
 - **Power Consumption** 5 V @ 850 mA (typical)
5 V @ 1.0 A (max.)
 - **Operating Temperature** 0 ~ 70° C (32 ~ 158° F)
 - **Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
 - **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
 - **Connectors** 68-pin SCSI-II female connector (Centronics type)
 - **Dimensions (L x H)** 175 x 100 mm (6.9" x 3.9")

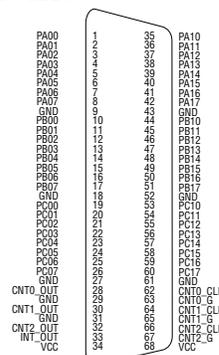
Applications

- Industrial AC/DC I/O monitoring and controlling
- Relay and switch monitoring and controlling
- Parallel data transfer
- TTL, DTL and CMOS logic signal sensing
- Indicator LED driving

Ordering Information

- **PCI-1751** 48-bit digital I/O card and Counter Card, user's manual and driver CD-ROM. (cable not included)
- **PCI-1751U** 48-bit universal digital I/O card and Counter Card, user's manual and driver CD-ROM. (cable not included)
- **PCL-10168** 68-pin SCSI cable, 1 and 2m
- **ADAM-3968** 68-pin SCSI cable wiring terminal for DIN-rail mounting
- **ADAM-3968/20** 68-pin SCSI-II to three 20-pin Wiring Terminal Module for DIN-Rail Mounting
- **ADAM-3968/50** 68-pin SCSI to 2 x 50-pin box headers converter module
- **PCLD-8751** 48-ch Isolated DI Board
- **PCLD-8761** 24-ch Replay and 24-IDI Board

Pin Assignments

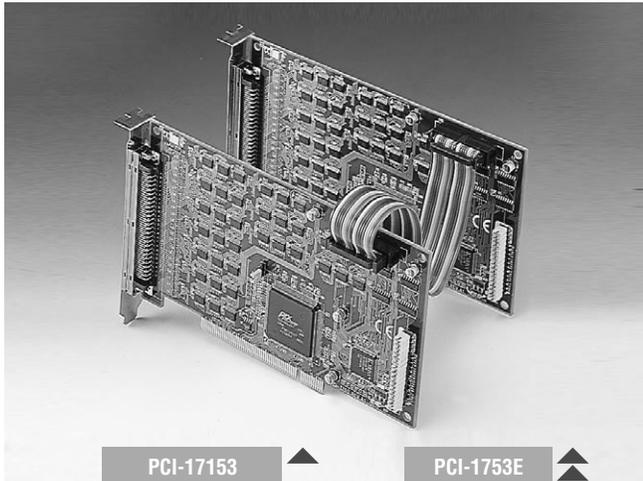


- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7
- 8 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

PCI-1753 PCI-1753E

96-ch Digital I/O Card

96-ch Digital I/O Extension Card for PCI-1753



Features

- Up to 192 (96+96) TTL digital I/O lines
- Emulates mode 0 of 8255 PPI
- Buffered circuits for higher driving capacity than 8255
- Multiple-source interrupt handling
- Interrupt output pin for simultaneously triggering external devices with the interrupt
- Output status read-back
- "Pattern match" and "Change of state" interrupt functions for critical I/O monitoring
- Keeps I/O setting and digital output values when hot system reset
- Supports dry contact and wet contact
- High-density 100-pin SCSI connector

Introduction

PCI-1753 is a 96-bit digital I/O card for the PCI bus, which can be extended to 192 digital I/O channels by connecting with its extension board, PCI-1753E. The card emulates mode 0 of the 8255 PPI chip, but the buffered circuits offer a higher driving capability than the 8255. The 96 I/O lines are divided into twelve 8-bit I/O ports: A0, B0, C0, A1, B1, C1, A2, B2, C2, A3, B3 and C3. You can configure each port as input or output via software.

Specifications

- I/O Channels** 96 digital I/O lines for PCI-1753
192 digital I/O lines if extending with PCI-1753E
- Programming Mode** 8255 PPI mode 0
- Input Signal** logic level 0: 0.8 V max.
logic level 1: 2.0 V min.
- Output Signal** logic level 0: 0.44 V max. @ 24 mA (sink)
logic level 1: 3.76 V min. @ 24 mA (source)
- Power Consumption** +5 V @ 400 mA (typical)
+5 V @ 2.7 A (max.)
- Operating Temperature** 0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
- Storage Temperature** -20 ~ 70° C (-4 ~ 158° F) (refer to IEC 68-2-3)
- Operating Humidity** 5 ~ 95% RH non-condensing
- Connector** One 100-pin SCSI female connector (Centronics™ type)
- Dimensions (L x H)** 175 x 100 mm (6.9" x 3.9")

Ordering Information

- PCI-1753** 96 ch. Digital I/O Card, user's manual and driver CD-ROM. (cable not included)
- PCI-1753E** Extension Board for PCI-1753
- PCL-10268** 100-pin to 2x68-pin SCSI cable, 1 and 2m (PCL-10268 100-pin SCSI-II male connector P/N: 16549A0000)
- ADAM-3968** 68-pin SCSI wiring terminal for DIN-rail mounting
- ADAM-3968/20** 68-pin SCSI-II to Three 20-pin Wiring Terminal Module for DIN-Rail Mounting
- ADAM-3968/50** 68-pin SCSI wiring terminal for DIN-rail mounting
- PCLD-8751** 48-ch Isolated DI Board
- PCLD-8761** 24-ch Replay and 24-IDI Board

Applications

- Industrial AC/DC I/O devices for monitoring and controlling
- Relay and switch monitoring and controlling
- Parallel data transfer
- TTL, DTL and CMOS logic signal sensing
- Indicator LED driving

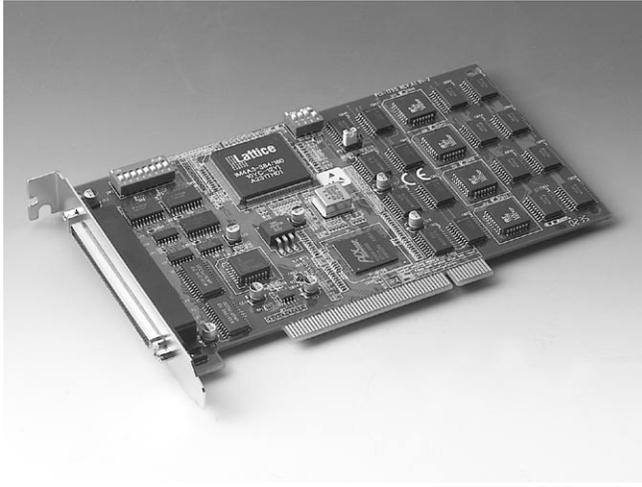
Pin Assignments

PA00	1	51	PA20
PA01	2	52	PA21
PA02	3	53	PA22
PA03	4	54	PA23
PA04	5	55	PA24
PA05	6	56	PA25
PA06	7	57	PA26
PA07	8	58	PA27
PB00	9	59	PB30
PB01	10	60	PB21
PB02	11	61	PB22
PB03	12	62	PB23
PB04	13	63	PB24
PB05	14	64	PB25
PB06	15	65	PB26
PB07	16	66	PB27
PC00	17	67	PC20
PC01	18	68	PC21
PC02	19	69	PC22
PC03	20	70	PC23
PC04	21	71	PC24
PC05	22	72	PC25
PC06	23	73	PC26
PC07	24	74	PC27
GND	25	75	GND
PA10	26	76	PA30
PA11	27	77	PA31
PA12	28	78	PA32
PA13	29	79	PA33
PA14	30	80	PA34
PA15	31	81	PA35
PA16	32	82	PA36
PA17	33	83	PA37
PB10	34	84	PB30
PB11	35	85	PB31
PB12	36	86	PB32
PB13	37	87	PB33
PB14	38	88	PB34
PB15	39	89	PB35
PB16	40	90	PB36
PB17	41	91	PB37
PC10	42	92	PC30
PC11	43	93	PC31
PC12	44	94	PC32
PC13	45	95	PC33
PC14	46	96	PC34
PC15	47	97	PC35
PC16	48	98	PC36
PC17	49	99	PC37
VCC	50	100	VCC

PA00 ~PA07: I/O pins of Port A0
PA10 ~PA17: I/O pins of Port A1
PA20 ~PA27: I/O pins of Port A2
PA30 ~PA37: I/O pins of Port A3
PB00 ~PB07: I/O pins of Port B0
PB10 ~PB17: I/O pins of Port B1
PB20 ~PB27: I/O pins of Port B2
PB30 ~PB37: I/O pins of Port B3
PC00 ~PC07: I/O pins of Port C0
PC10 ~PC17: I/O pins of Port C1
PC20 ~PC27: I/O pins of Port C2
PC30 ~PC37: I/O pins of Port C3
GND: Ground
VCC: +5V voltage output

PCI-1755

Ultra-Speed 32-ch Digital I/O Card



FCC CE

Features

- Bus-mastering DMA data transfer with scatter gather technology
- 32/16/8-bit Pattern I/O with start and stop trigger function, 2 modes Handshaking I/O Interrupt handling capability
- On-board active terminators for high speed and long distance transfer
- Pattern match and Change state detection interrupt function
- General-purpose 8-ch DI/O

Introduction

The PCI-1755 supports PCI-bus mastering DMA for high-speed data transfer. By setting aside a block of memory in the PC, the PCI-1755 performs bus-mastering data transfers without CPU intervention, setting the CPU free to perform other more urgent tasks such as data analysis and graphic manipulation. The function allows users to run all I/O functions simultaneously at full speed without losing data.

Specifications

Channels	32 TTL compatible		
Number of Ports	Port A, Port B, Port C and Port D (8 bits/port)		
I/O Configuration	32DI (PA-PD) (default); 32DO (PA-PD); 16DI (PA-PB) & 16DO (PC-PD); 8DI (PA) & 8DO (PC) (Programmable)		
On-board FIFO	16 KB for DI & 16 KB DO channels		
Transfer Characteristics	Data Transfer Mode	Bus Mastering DMA with Scatter-Gather	
	Data Transfer Bus Width	8/16/32 bits (programmable)	
	Max. Transfer Rate	DI: 80 M bytes/sec, 32-bit @ 20 MHz 120 M bytes/sec, 32-bit @ 40 MHz external pacer when data length is less than FIFO size DO: 80 MBytes/sec, 32-bit @ 20 MHz	
	Operation Mode	Handshaking	
Handshaking Mode	Direction	I/O	Samples No. Finite transfer, Continuous I/O
	Asynchronous	8255 Emulation Synchronous Burst Handshaking	
	Clock source for Burst Handshaking	Internal: 30 MHz, 20 MHz, 15 MHz, 12 MHz, 10 MHz, Timer#0 for DI & Timer#1 for DO External: EXT_CLKIN for DI & EXT_CLKOUT for DO	
Normal Mode	Input	Data Acquisition at a predetermined rate by internal/external clock	
	Output	Waveform Generation at a predetermined rate by internal/external clock	
	Clock Source for DI	Internal: 30 MHz, 20 MHz, 15 MHz, 12 MHz, 10 MHz, Timer#0 External: EXT_CLKIN	
	Clock Source for DO	Internal: 30 MHz, 20 MHz, 15 MHz, 12 MHz, 10 MHz, Timer#1 External: EXT_CLKOUT	
	Start Mode	Software command/Trigger signal occurred from DI_STR or DO_STR/Pattern DI	
Stop Mode	Software command/Trigger signal occurred from DI_STP (for DI) or DO_STR (for DO)/Pattern DI/Finite transfers*		
Chang Detection (DI only)	Monitor the selected input channel and capture data whenever there is a transition on one of the channels, and then issue a IRQ		
	Clock Source for DI	Internal: 30 MHz, 20 MHz, 15 MHz, 12 MHz, 10 MHz, Timer#0 External: EXT_CLKIN	
	Start Mode	Software command/Trigger signal occurred from DI_STP/Pattern DI	
	Stop Mode	Software command/Trigger signal occurred from DI_STP/Pattern DI/Finite transfers*	
Trigger Capability	DI trigger signal	DI_STR, DI_STP	DO trigger signal DO_STR, DO_STP
	Low	0.8 V max.	High 2.0 V min.
	Trigger Type	Rising or falling edge, or digital pattern (for DI only)	
	Pulse width for edge triggers	10 ns min.	
	Pattern trigger detection capabilities	Detect pattern match or mismatch on user-selected data lines	
Terminator	On-board Schottky diode termination		

Messaging	The messages can be generated when 1. A specified number of bytes have been transferred, 2. When a specified input pattern is matched, 3. When a measurement operation completes.		
Input Voltage	Low	0 V min.; 0.8 V max.	High 2.0 V min.; 5 V max.
	Terminator OFF: TTL compatible	Low +0.5 V @ ±20 mA	High +2.7 V @ ±1 mA max.
Input Load	Terminator ON		
	Terminator Resistor	110 Ω	Termination Voltage 2.9 V
	Low	+0.5 V @ ±22.4 mA	High +2.7 V @ ±1 mA max.
Output Voltage	Low 0.5 V max.	High 2.7 V min.	
Driving Capacity	Low 0.5 V max @ +48 mA (sink)	High 2.4 V min. @ -15 mA (source)	
Hysteresis	500 mV	Power Available at I/O connector +4.65 ~ +5.25 V _{DC} @ 1A	
General-purpose DI/O	DI Channels	DI0 - DI7 (TTL compatible)	
	DO Channels	DO0 - DO7 (TTL compatible)	
Interrupt Source	DI0-7 and Timer#2, Pattern match and Change detection, DI FIFO overflow and DO FIFO underflow, DI_STP and DO_STP		

Pacer

- Channels Timer#0, Timer#1 and Timer#2
- Timer#0 Timer pacer for digital input
- Timer#1 Timer pacer for digital output
- Timer#2 Interrupt source
- Resolution 16-bit
- Base Clock 10 MHz

General

I/O Connector Type	100-pin SCSI-II female		
Dimensions (L x H)	175 x 100 mm (6.9" x 3.9")		
Power Consumption	Typical	Terminator OFF: +5 V @ 1 A Terminator ON: +5 V @ 1 A	Max. Terminator OFF: +5 V @ 1 A Terminator ON: +5 V @ 1 A
	Operating	0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1,2)	
Temperature	Storage	-20 ~ 85° C (-4 ~ 185° F)	
Relative Humidity	5 ~ 95% RH non-condensing (refer to IEC 68-2-3)		Cert. FCC, CE certified

Ordering Information

- PCI-1755 Ultra-speed 32-ch Digital I/O Card
- ADAM-39100 PCI-1755 Wiring Terminal for DIN-rail Mounting
- PCL-101100-1 100-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 m

1 Software

2 IPPC

3 TPC

4 FPM

5 ATM & AWS

6 DA&C

7 cPCI

8 ADAM-3000

9 Motion Control

10 ICOM

11 eConnectivity

12 UNO

13 ADAM-4000

14 ADAM-5000

15 ADAM-6000

16 ADAM-8000

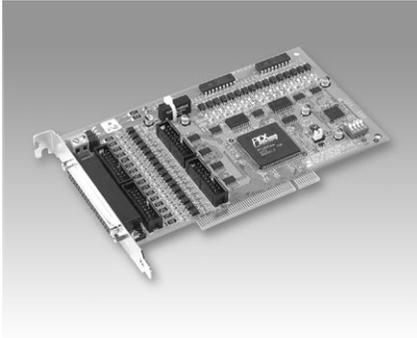
17 BAS

PCI-1730 PCI-1733 PCI-1734

32-ch Isolated Digital I/O Card (ISA Compatible)

32-ch Isolated Digital Input Card (ISA Compatible)

32-ch Isolated Digital Output Card (ISA Compatible)



PCI-1730



Features

- 32 isolated DIO ch. (16 inputs and 16 outputs)
- 32 TTL-level DIO ch. (16 inputs and 16 outputs)
- High output driving capacity
- Interrupt capability
- Two 20-pin connectors for isolated digital I/O channels and two for TTL digital I/O channels
- D-type connector for isolated input and output ch.

Specifications

Isolated Digital Input

- **Input Channels** 16 (16-ch/group)
- **Interrupt Inputs** 4 (IDIO, IDI1, DIO, DI1)
- **Interrupt Levels** 2 - 7
- **Input Voltage** 5 ~ 30 V_{DC}
- **Input Resistance** 2.7 kΩ @ 1 W
- **Optical Isolation** 2,500 V_{DC}
- **Throughput** 10 kHz max.

Isolated Digital Output

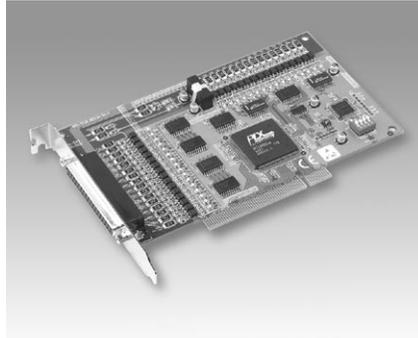
- **Output Channels** 16 (16-ch/group)
- **Optical Isolation** 2,500 V_{DC}
- **Throughput** 10 kHz
- **Supply Voltage** 5 ~ 40 V_{DC}
- **Sink Current** 200 mA max./channel

General

- **I/O Connector Type** 37-pin D-type female
- **Dimensions (L x H)** 185 x 100 mm (7.3"x3.9")
- **Power Consumption** Typical: +5 V @ 330 mA
Max: +5 V @ 500 mA
- **Operating Temperature** 0 ~ 60°C (32 ~ 140°F)
- **Storage Temperature** -20~70°C (-4~158°F)
- **Relative Humidity** 5 ~ 95% (IEC 68-2-3) non-condensing

Ordering Information

- **PCI-1730** Card, manual and driver CD-ROM (cable not included.)



PCI-1733



Features

- 32 isolated, bidirectional digital input channels
- High-voltage isolation (2,500 V_{DC})
- Interrupt capacity
- D-type connectors for isolated input channels
- Reverse voltage protection for isolated input channels (up to 24 V_{DC})

Specifications

Isolated Digital Input

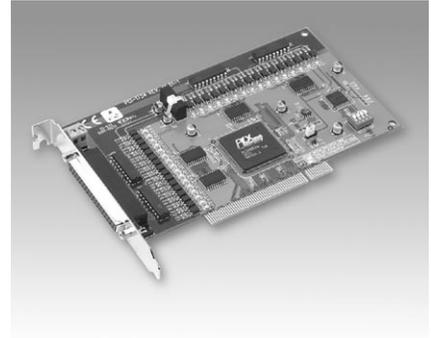
- **Input Channels** 32 (16-ch/group)
- **Interrupt Inputs** 4 (IDIO, IDI1, IDI16, IDI17)
- **Interrupt Levels** 2, 3, 5, 7, 10, 11, 12, 15
- **Input Voltage** 5 ~ 30 V_{DC}
- **Input Resistance** 5 ~ 30 V_{DC}
- **Input Resistance** 2.7 kΩ @ 1 W
- **Optical Isolation** 2,500 V_{DC}
- **Throughput** 10 kHz max.

General

- **I/O Connector Type** 37-pin D-type female
- **Dimensions (L x H)** 185 x 100 mm (7.3" x 3.9")
- **Power Consumption** Typical: +5 V @ 320 mA
Max: +5 V @ 500 mA
- **Operating Temperature** 0 ~ 60°C (32 ~ 140°F)
- **Storage Temperature** -20~70°C (-4~158°F)
- **Relative Humidity** 5 ~ 95% (IEC 68-2-3) non-condensing

Ordering Information

- **PCI-1733** 32-channel isolated digital input card, manual and driver CD-ROM (cable not included)



PCI-1734



Features

- 32 isolated digital output channels
- High output driving capacity
- High-voltage isolation on output channels (2,500 V_{DC})
- High sink current on isolated output channels (200 mA/channel)
- Integral suppression diodes for inductive loads
- Wide output range (5 ~ 40 V_{DC})
- D-type connectors for isolated output channels

Specifications

Isolated Digital Output

- **Output Channels** 32 (16-ch/group)
- **Optical Isolation** 2,500 V_{DC}
- **Throughput** 10 kHz
- **Supply Voltage** 5 ~ 40 V_{DC}
- **Sink Current** 200 mA max./channel

General

- **I/O Connector Type** 37-pin D-type female
- **Dimensions (L x H)** 185 x 100 mm (7.3" x 3.9")
- **Power Consumption** Typical: +5 V @ 330 mA
Max: +5 V @ 500 mA
- **Operating Temperature** 0 ~ 60°C (32 ~ 140°F)
- **Storage Temperature** -20~70°C (-4~158°F)
- **Relative Humidity** 5 ~ 95% (IEC 68-2-3) non-condensing

Ordering Information

- **PCI-1734** 32-channel Isolated digital output card, user's manual and driver CD-ROM (cable not included)

PCI-1730 Accessories

- **PCL-10120-1** 20-pin flat cable, 1m
- **PCL-10120-2** 20-pin flat cable, 2m
- **PCLD-782** 16-channel opto-isolated D/I board
- **ADAM-3920** 20-pin flat cable wiring terminal for DIN-rail mounting
- **PCLD-885** 16-channel power relay (form A) output board
- **PCLD-785** 16-channel relay output board
- **PCLD-786** 8-channel SSR I/O module carrier board

General Accessories

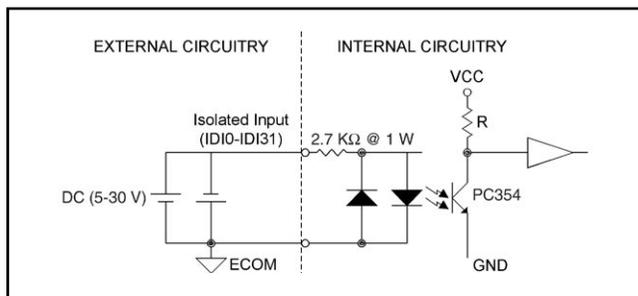
- **PCLD-780** Universal screw terminal board
- **PCLD-880** Universal screw terminal board
- **ADAM-3937** DB37 wiring terminal for DIN-rail mounting
- **PCL-10137-1** DB37 cable, 1m
- **PCL-10137-2** DB37 cable, 2m
- **PCL-10137-3** DB37 cable, 3m

Introduction

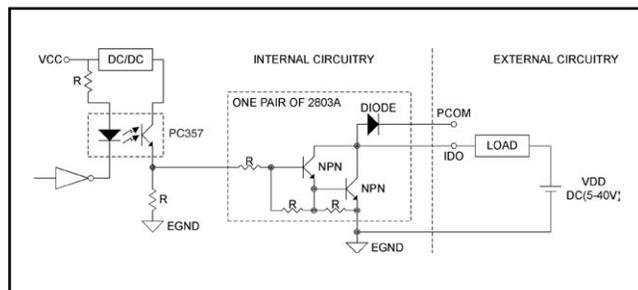
The PCI-1730/1733/1734 cards offer isolated digital input channels as well as isolated digital output channels with isolation protection up to 2,500 V_{DC}, which makes them ideal for industrial applications where high-voltage isolation is required. In addition, all output channels are provided with high-voltage protection.

Applications

- Industrial on/off control
- Contact closure monitoring
- Switch status sensing
- BCD interfacing
- Digital input control
- Industrial and lab automation



Isolated Input Circuit Diagram



Isolated Output Circuit Diagram

Pin Assignments

CN1 of PCI-1730				CN2 of PCI-1730			
IDO 0	1	2	IDO 1	IDI 0	1	2	IDI 1
IDO 2	3	4	IDO 3	IDI 2	3	4	IDI 3
IDO 4	5	6	IDO 5	IDI 4	5	6	IDI 5
IDO 6	7	8	IDO 7	IDI 6	7	8	IDI 7
IDO 8	9	10	IDO 9	IDI 8	9	10	IDI 9
IDO 10	11	12	IDO 11	IDI 10	11	12	IDI 11
IDO 12	13	14	IDO 13	IDI 12	13	14	IDI 13
IDO 14	15	16	IDO 15	IDI 14	15	16	IDI 15
EGND	17	18	EGND	ECOM0	17	18	ECOM1
PCOM0/EGND	19	20	PCOM1	ECOM0	19	20	ECOM1

CN3 of PCI-1730				CN4 of PCI-1730			
DO 0	1	2	DO 1	DI 0	1	2	DI 1
DO 2	3	4	DO 3	DI 2	3	4	DI 3
DO 4	5	6	DO 5	DI 4	5	6	DI 5
DO 6	7	8	DO 7	DI 6	7	8	DI 7
DO 8	9	10	DO 9	DI 8	9	10	DI 9
DO 10	11	12	DO 11	DI 10	11	12	DI 11
DO 12	13	14	DO 13	DI 12	13	14	DI 13
DO 14	15	16	DO 15	DI 14	15	16	DI 15
GND	17	18	GND	GND	17	18	GND
+5V	19	20	+12V	+5V	19	20	+12V

CN6 of PCI-1730

IDIO	1	IDI1
IDI2	20	IDI3
IDI4	21	IDI5
IDI6	22	IDI7
IDI8	23	IDI9
IDI10	24	IDI11
IDI12	25	IDI13
IDI14	26	IDI15
IDI16	27	IDI15
ECOM0	28	ECOM1/EGND
PCOM0/EGND	29	EGND
IDO 0	30	IDO 1
IDO 2	31	IDO 3
IDO 4	32	IDO 5
IDO 6	33	IDO 7
IDO 8	34	IDO 9
IDO 10	35	IDO 11
IDO 12	36	IDO 13
IDO 14	37	IDO 15
PCOM1		

- DO** Digital output
- DI** Digital input
- IDO** Isolated digital output
- IDI** Isolated digital input
- EGND** External ground for isolated output
- ECOM** External common for isolated input
- GND** Digital ground
- PCOM** Free wheeling common diode

CN1 of PCI-1733

IDIO	1	IDI1
IDI2	20	IDI3
IDI4	21	IDI5
IDI6	22	IDI7
IDI8	23	IDI9
IDI10	24	IDI11
IDI12	25	IDI13
IDI14	26	IDI14
IDI15	27	IDI15
ECOM1	28	ECOM1
IDI16	29	IDI17
IDI18	30	IDI19
IDI20	31	IDI21
IDI22	32	IDI23
IDI24	33	IDI24
IDI25	34	IDI26
IDI27	35	IDI28
IDI29	36	IDI30
IDI31	37	IDI30
EGND		ECOM3

CN1 of PCI-1734

IDO0	1	IDO1
IDO2	20	IDO3
IDO4	21	IDO5
IDO6	22	IDO7
IDO8	23	IDO8
IDO9	24	IDO10
IDO11	25	IDO12
IDO13	26	IDO14
IDO15	27	PCOM1
IDO16	28	IDO17
IDO18	29	IDO19
IDO20	30	IDO21
IDO22	31	IDO23
IDO24	32	IDO24
IDO25	33	IDO26
IDO27	34	IDO28
IDO29	35	IDO30
IDO31	36	IDO30
EGND	37	PCOM3

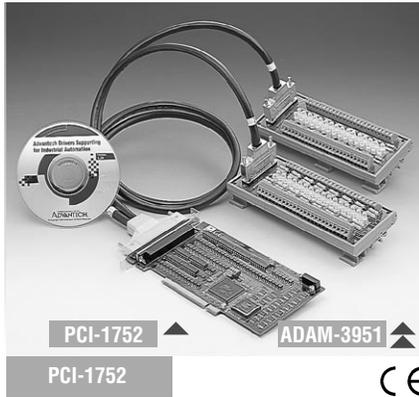


PCI-1752 PCI-1754 PCI-1756

64-ch Isolated Digital Output Card

64-ch Isolated Digital Input Card

64-ch Isolated Digital I/O Card



Features

- 64 isolated digital output channels
- High-voltage isolation on output channels (2500 V_{DC})
- 2000 V_{DC} ESD protection
- Wide output range (5 ~ 40 V_{DC})
- High-sink current on isolated output channels (200 mA max./channel)
- Output status read-back
- Keeps digital output values when hot system reset
- Channel-freeze function
- High-density 100-pin SCSI connector

Specifications

General

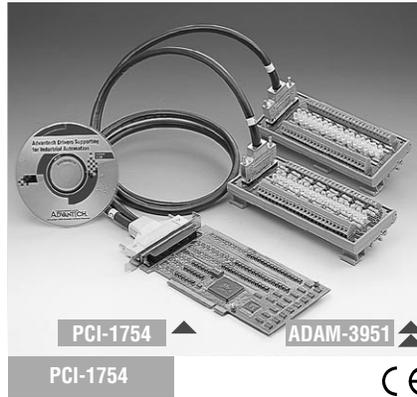
- I/O Connector Type** 100-pin SCSI-II female
- Dimensions (L x H)** 175x100mm (6.9"x3.9")
- Power Consumption** Typical: +5 V @ 230 mA
Max.: +5 V @ 500 mA
- Operating Temperature** 0~60° C (32 ~ 140° F)
(IEC 68-2-1, 2)
- Storage Temperature** -20~70° C (-4 ~ 158° F)
- Relative Humidity** 5~95 % (IEC 68-2-3)
non-condensing

Isolated Digital Output

- Output Channels** 64 (16-ch/group)
- Optical Isolation** 2,500 V_{DC}
- Opto-isolator resp. time** 25 μs
- Supply Voltage** 5 ~ 40 V_{DC}
- Sink Current** 200 mA max./channel

Ordering Information

- PCI-1752** 64-channel Isolated Digital Output Card, user's manual and driver CD-ROM (cable not included)



Features

- 64 isolated digital input channels
- Either +/- voltage input for DI by group
- High-voltage isolation on input channels (2500 V_{DC})
- High over-voltage protection (70 V_{DC})
- Wide input range (10 ~ 50 V_{DC})
- Interrupt handling capability
- High-density 100-pin SCSI connector

Specifications

General

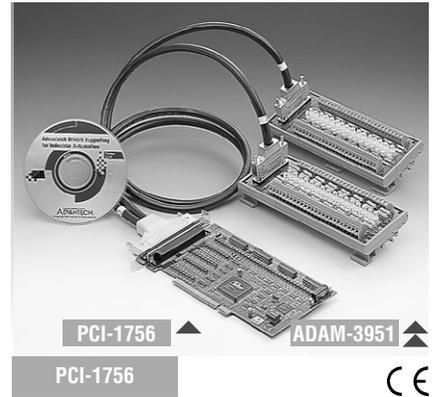
- I/O Connector Type** 100-pin SCSI-II female
- Dimensions (L x H)** 175x100mm (6.9"x3.9")
- Power Consumption** Typical: +5 V @ 340 mA
Max.: +5 V @ 450 mA
- Operating Temperature** 0~60° C (32 ~ 140° F)
(IEC 68-2-1, 2)
- Storage Temperature** -20~70° C (-4 ~ 158° F)
- Relative Humidity** 5~95 % (IEC 68-2-3)
non-condensing

Isolated Digital Input

- Input Channels** 64 (16-ch/group)
- Interrupt Inputs** 4
- Optical Isolation** 2,500 V_{DC}
- Opto-Isolator Resp. Time** 25 μs
- Over-Voltage Protection** 70 V_{DC}
- ESD** 2,000 V_{DC}
- Input Voltage**
 - V_{IH} (max.) 50 V_{DC}
 - V_{IH} (min.) 10 V_{DC}
 - V_{IL} (max.) 3 V_{DC}
- Input Current**
 - 10 V_{DC} 1.7 mA (typical)
 - 12 V_{DC} 2.1 mA (typical)
 - 24 V_{DC} 4.4 mA (typical)
 - 48 V_{DC} 9.0 mA (typical)
 - 50 V_{DC} 9.4 mA (typical)

Ordering Information

- PCI-1754** 64-channel Isolated Digital Input Card



Features

- Either +/- voltage input for DI by group
- Output status read-back for output channels
- Keeps digital output values after hot system reset

Specifications

General

- I/O Connector Type** 100-pin SCSI-II female
- Dimensions (L x H)** 175x100mm (6.9"x3.9")
- Power Consumption** Typical: +5 V @ 285 mA
Max.: +5 V @ 475 mA
- Operating Temperature** 0~60° C (32 ~ 140° F)
(IEC 68-2-1, 2)
- Storage Temperature** -20~70° C (-4 ~ 158° F)
- Relative Humidity** 5~95 % (IEC 68-2-3)
non-condensing

Isolated Digital Output

- Output Channels** 32 (16-ch/group)
- Optical Isolation** 2,500 V_{DC}
- Opto-Isolator Resp. Time** 25 μs
- Supply Voltage** 5 ~ 40 V_{DC}
- Sink Current** 200 mA max./channel

Isolated Digital Input

- Input Channels** 32 (16-ch/group)
- Interrupt Inputs** 2 (IDIO, IDI16)
- Optical Isolation** 2,500 V_{DC}
- Opto-Isolator Resp. Time** 25 μs
- Over-Voltage Protection** 70 V_{DC}
- ESD** 2,000 V_{DC}
- Input Voltage**
 - V_{IH} (max.) 50 V_{DC}
 - V_{IH} (min.) 10 V_{DC}
 - V_{IL} (max.) 3 V_{DC}
- Input Current**
 - 10 V_{DC} 1.7 mA (typical)
 - 12 V_{DC} 2.1 mA (typical)
 - 24 V_{DC} 4.4 mA (typical)
 - 48 V_{DC} 9.0 mA (typical)
 - 50 V_{DC} 9.4 mA (typical)

Ordering Information

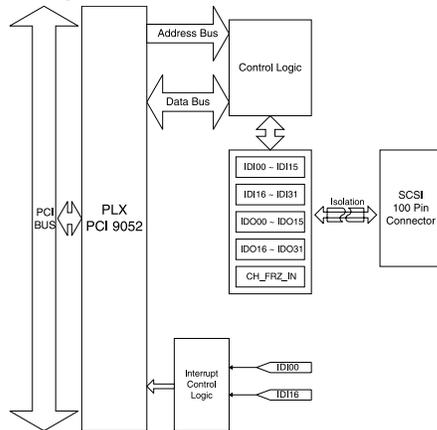
- PCI-1756** 64-channel Isolated Digital I/O Card

PCI-1752 PCI-1754 PCI-1756

Accessories

- **PCL-10250** 100-pin SCSI to two 50-pin SCSI cable, 1m
- **PCL-10250-2** 100-pin SCSI to two 50-pin SCSI cable, 2m
- **ADAM-3951** Wiring terminal module with LED indicators for DIN-rail mounting
- **ADAM-3950S** 50-pin SCSI-II Wiring Terminal
- **ADAM-3950D** Dual 50-pin SCSI-II Wiring Terminal

Block Diagram (PCI-1756)



Pin Assignments

PCI-1752			PCI-1754			PCI-1756		
IDO00	1	51	IDR00	1	51	IDR00	1	51
IDO02	2	52	IDR02	2	52	IDR02	2	52
IDO04	3	53	IDR04	3	53	IDR04	3	53
IDO06	4	54	IDR06	4	54	IDR06	4	54
IDO08	5	55	IDR08	5	55	IDR08	5	55
IDO10	6	56	IDR10	6	56	IDR10	6	56
IDO12	7	57	IDR12	7	57	IDR12	7	57
IDO14	8	58	IDR14	8	58	IDR14	8	58
PCOM0	9	59	ECOM0	9	59	ECOM0	9	59
PCOM1	10	60	ECOM1	10	60	ECOM1	10	60
IGND	11	61	NC	11	61	NC	11	61
IDO20	12	62	IDR20	12	62	IDR20	12	62
IDO22	13	63	IDR22	13	63	IDR22	13	63
IDO24	14	64	IDR24	14	64	IDR24	14	64
IDO26	15	65	IDR26	15	65	IDR26	15	65
IDO28	16	66	IDR28	16	66	IDR28	16	66
IDO30	17	67	IDR30	17	67	IDR30	17	67
PCOM1	18	68	ECOM1	18	68	ECOM1	18	68
PCOM2	19	69	ECOM2	19	69	ECOM2	19	69
PCOM3	20	70	ECOM3	20	70	ECOM3	20	70
IGND	21	71	NC	21	71	NC	21	71
CH_FRZ_IN	22	72	CH_FRZ_IN	22	72	CH_FRZ_IN	22	72
IDO32	23	73	IDR32	23	73	IDR32	23	73
IDO34	24	74	IDR34	24	74	IDR34	24	74
IDO36	25	75	IDR36	25	75	IDR36	25	75
IDO38	26	76	IDR38	26	76	IDR38	26	76
IDO40	27	77	IDR40	27	77	IDR40	27	77
IDO42	28	78	IDR42	28	78	IDR42	28	78
IDO44	29	79	IDR44	29	79	IDR44	29	79
IDO46	30	80	IDR46	30	80	IDR46	30	80
IDO48	31	81	IDR48	31	81	IDR48	31	81
IDO50	32	82	IDR50	32	82	IDR50	32	82
PCOM2	33	83	ECOM2	33	83	ECOM2	33	83
PCOM3	34	84	ECOM3	34	84	ECOM3	34	84
IGND	35	85	NC	35	85	NC	35	85
IDO48	36	86	IDR48	36	86	IDR48	36	86
IDO50	37	87	IDR50	37	87	IDR50	37	87
IDO52	38	88	IDR52	38	88	IDR52	38	88
IDO54	39	89	IDR54	39	89	IDR54	39	89
IDO56	40	90	IDR56	40	90	IDR56	40	90
IDO58	41	91	IDR58	41	91	IDR58	41	91
IDO60	42	92	IDR60	42	92	IDR60	42	92
IDO62	43	93	IDR62	43	93	IDR62	43	93
IDO64	44	94	IDR64	44	94	IDR64	44	94
IDO66	45	95	IDR66	45	95	IDR66	45	95
IDO68	46	96	IDR68	46	96	IDR68	46	96
IDO70	47	97	IDR70	47	97	IDR70	47	97
IDO72	48	98	IDR72	48	98	IDR72	48	98
IDO74	49	99	IDR74	49	99	IDR74	49	99
IDO76	50	100	IDR76	50	100	IDR76	50	100
CH_FRZ_IN			CH_FRZ_IN			CH_FRZ_IN		
CH_FRZ_COM			CH_FRZ_COM			CH_FRZ_COM		

- IDO00 - IDO15 : Isolated digital output of Group 0
- IDO16 - IDO31 : Isolated digital output of Group 1
- IDO32 - IDO47 : Isolated digital output of Group 2
- IDO48 - IDO63 : Isolated digital output of Group 3
- PCOM0 : External common input of Group 0
- PCOM1 : External common input of Group 1
- PCOM2 : External common input of Group 2
- PCOM3 : External common input of Group 3
- IGND : Isolated ground
- CH_FRZ_IN : Channel-Freeze input pin
- CH_FRZ_COM : Common pin for Channel-Freeze input
- IDI00 - IDI15 : Isolated digital input of Group 0
- IDI16 - IDI31 : Isolated digital input of Group 1
- IDI32 - IDI47 : Isolated digital input of Group 2
- IDI48 - IDI63 : Isolated digital input of Group 3
- ECOM0 : External common input of Group 0
- ECOM1 : External common input of Group 1
- ECOM2 : External common input of Group 2
- ECOM3 : External common input of Group 3
- NC : No connection

Applications

- Industrial On/Off control
- Switch status sensing
- BCD interfacing
- Digital I/O control
- Industrial and lab automation
- SMT/PCB machinery
- Semi-conductor machinery
- PC-based Industrial Machinery
- Testing & Measurement
- Laboratory & Education

Feature Details

PCI-1752, PCI-1754 and PCI-1756 offer isolated digital input channels and isolated digital output channels with isolation protection up to 2,500 VDC. This makes them ideal for industrial applications where high-voltage isolation is required. In addition, all output channels are able to keep their last values after a hot system reset. Furthermore, the PCI-1752 and PCI-1756 provide a channel-freeze function that keeps the current output status unchanged for each channel during operation.

Robust Protection

PCI-1752, PCI-1754 and PCI-1756 feature robust isolation protection for applications in industrial, lab and machinery automation. It can durably withstand voltage up to 2,500 VDC, preventing your host system from any incidental harm. If connected to an external input source with surge-protection, PCI-1754 and 1756 can offer up to 2,000 V DC ESD (Electrostatic Discharge) protection for input channels. If the input voltage rises up to 70 V DC, the input channels of PCI-1754 and PCI-1756 can still manage to work properly for a short period of time.

Wide Input/Output Range

PCI-1754 and PCI-1756 have a wide range of input voltages from 10 to 50 V DC, and is therefore suitable for most industrial applications with 12 V DC, 24 V DC and 48 V DC input voltage. PCI-1752 and PCI-1756 feature a wide output voltage range from 5 to 40 V DC, suitable for most industrial applications with 12 V DC/24 V DC output voltages. In the meantime, you can also request specific input/output voltage ranges as products can be tailored to specifications.

BoardID™ Switch

PCI-1752, PCI-1754 and PCI-1756 have a built-in BoardID™ DIP switch that helps define each card's unique identity when multiple identical PCI cards have been installed in the same computer. The BoardID switch is very useful when you build your system with multiple identical PCI cards. With the correct BoardID switch settings, you can easily identify and access each card during hardware configuration and software programming.

Channel-Freeze Function

PCI-1752 and PCI-1756 provide a Channel-Freeze function, which can be enabled either in dry contact or wet contact mode (selected by the on-board jumper). When the Channel-Freeze function is enabled, the last status of each digital output channel will be safely kept for emergency use. Moreover, you can enable this function through software as it is useful in software simulation and testing program.

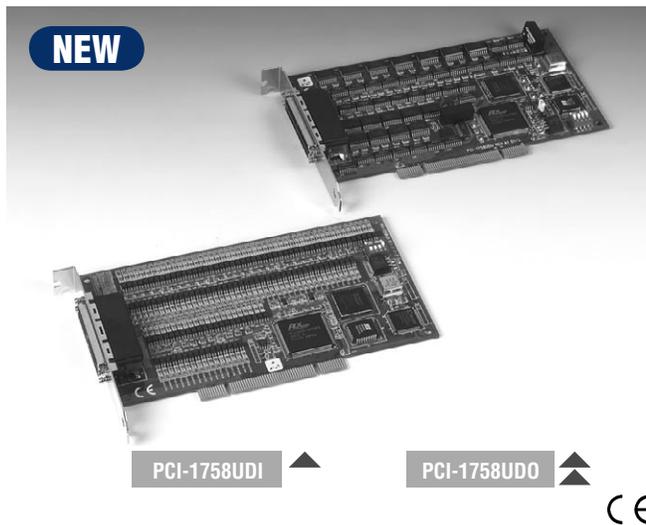
Reset Protection Fulfills Requirement for Industrial Applications

If the system has undergone a hot reset (i.e. without turning off the system power), PCI-1752 and PCI-1756 can either retain the output values of each channel or return to its default configuration as open status, depending on its on-board jumper setting. This function protects the system from performing wrong operations during unexpected system resets.

- 1 Software
- 2 IPCC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

PCI-1758U

128-ch Isolated Digital I/O Card



Specifications

Isolated Digital Input

Model Name	PCI-1758UDI	
Input Channels	128	
Interrupt Input	128	
Optical Isolation	2,500 V _{DC}	
Opto-Isolator Response Time	50 μs	
Input Voltage	V _{IH} (max)	25V
	V _{IH} (min)	5V
	V _{IL} (max)	2.5V
Input Resistance	3 kΩ	

Isolated Digital Output

Model Name	PCI-1758UDO	
Output Channels	128	
Optical Isolation	2,500 V _{DC}	
Opto-Isolator Response Time	50 μs	
Supply Voltage	5-40 V	
Sink Current	90 mA max./Channel	

General

Model Name	PCI-1758UDI	PCI-1758UDO
I/O Connector Type	MINI-SCSI HDRA-E100 Female	
Dimensions	175 x 100 mm (6.9" x 3.9")	
Power Consumption	Typical	+5 V @ 0.3 A +5 V @ 1.1 A
	Max.	+5 V @ 0.6 A +5 V @ 2.2 A
Temperature	Operating	0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1,2)
	Storage	-20 ~ 70° C (-4 ~ 158° F)
Relative Humidity	5 ~ 95% RH non-condensing (refer to IEC 68-2-3)	

Ordering Information

- **PCI-1758UDI** 128-channel Isolated Digital Input Card
- **PCI-1758UDO** 128-channel Isolated Digital Output Card
- **PCL-101100S-1** 100-pin SCSI Cable, 1m
- **ADAM-39100** 100-pin SCSI wiring terminal, DIN-rail mounting

Features

PCI-1758UDO card

- 128 isolated digital output channels
- High-voltage isolation on output channels (2,500 V_{DC})
- Wide output range (5 ~ 40 V_{DC})
- High-sink current for isolated output channels (90 mA max./Channel)
- Current protection for each port
- BoardID™ switch
- Output status read-back
- Digital output value retained after hot system reset
- Programmable Power-Up States
- Watchdog timer

PCI-1758UDI card

- 128 isolated digital input channels
- Wide input range (5 ~ 25 V_{DC})
- High ESD protection (2,000 V_{DC})
- Digital Filter function
- BoardID™ switch
- Interrupt handling capability for each channel (128-ch)

Feature Details

Interrupt Function (PCI-1758UDI)

PCI-1758UDI provides an interrupt function for every digital input channel. All the isolated digital input channels are connected to the interrupt circuitry. You can disable/enable the interrupt functions, select trigger type by setting the Rising Edge Interrupt Registers and Falling Edge Interrupt Registers of PCI-1758UDI. When the interrupt request signals occur, software will service these interrupt requests by ISR. The multiple interrupt sources provide the card with more capability and flexibility.

Digital Filter Function (PCI-1758UDI)

The digital filter function is used to eliminate glitches on input data and reduce the number of changes to examine and process. The filter blocks pulses that are shorter than the specified timing interval and passes pulses that are twice as long as the specified interval. Intermediate-length pulses that are longer than half of the interval, but less than the interval, may or may not pass the filter.

Watchdog Timer Function (PCI-1758UDO)

This feature is used to set critical outputs to safe states in the event of a software failure. When the watch-dog timer is enabled, the PCI-1758UDO has to receive a "watchdog clear" software command within the interval time specified for the watchdog timer. If it doesn't, this is considered a loss of communication between the application and PCI-1758UDO, and the outputs go to a user-defined safe state and remain in that state until the watchdog timer is disabled and new values are written by the software. After the watchdog timer expires, the PCI-1758UDO will ignore any writes until the watchdog timer is disabled. You can set the watchdog timer timeout period through the WDT register to specify the amount of time that must elapse before the watchdog timer expires. The counter on the watchdog timer is configurable up to (2³²-1) x 100 ns (approximately seven minutes) before it expires.

Programmable Power-up Status Function (PCI-1758UDO)

User-configurable power-up states are useful for ensuring that the PCI-1758UDO powers up in a known state. When the system is power-up, all output lines of PCI-1758UDO are user-configurable for logic high output or logic low output. So the output can be predefined by users. This function ensures the card's output state can be defined at any time.

Applications

1. Industrial On/Off control
2. Relay and switch monitoring and controlling
3. Industrial and lab automation

Pin Assignments

CNB		CNA	
PEF_COMM	100	PAB_COMM	NC
PEF_COMM	99	PB_IDI07	NC
PF_IDI07	98	PB_IDI06	NC
PF_IDI06	97	PB_IDI05	NC
PF_IDI05	96	PB_IDI04	NC
PF_IDI04	95	PB_IDI03	PO_IDI00
PF_IDI03	94	PB_IDI02	PO_IDI01
PF_IDI02	93	PB_IDI01	PO_IDI02
PF_IDI01	92	PB_IDI00	PO_IDI03
PF_IDI00	91	PA_IDI07	PO_IDI04
PE_IDI07	90	PA_IDI06	PO_IDI05
PE_IDI06	89	PA_IDI05	PO_IDI06
PE_IDI05	88	PA_IDI04	PO_IDI07
PE_IDI04	87	PA_IDI03	P1_IDI00
PE_IDI03	86	PA_IDI02	P1_IDI01
PE_IDI02	85	PA_IDI01	P1_IDI02
PE_IDI01	84	PA_IDI00	P1_IDI03
PE_IDI00	83	NC	P1_IDI04
NC	82	NC	P1_IDI05
NC	81	NC	P1_IDI06
NC	80	NC	P1_IDI07
NC	79	NC	P11_COMM
NC	78	NC	P01_COMM
NC	77	NC	NC
NC	76	NC	NC
NC	75	NC	NC
PCD_COMM	74	P89_COMM	NC
PCD_COMM	73	P89_COMM	NC
PD_IDI07	72	P9_IDI07	NC
PD_IDI06	71	P9_IDI06	NC
PD_IDI05	70	P9_IDI05	NC
PD_IDI04	69	P9_IDI04	NC
PD_IDI03	68	P9_IDI03	P2_IDI00
PD_IDI02	67	P9_IDI02	P2_IDI01
PD_IDI01	66	P9_IDI01	P2_IDI02
PD_IDI00	65	P9_IDI00	P2_IDI03
PC_IDI07	64	P8_IDI07	P2_IDI04
PC_IDI06	63	P8_IDI06	P2_IDI05
PC_IDI05	62	P8_IDI05	P2_IDI06
PC_IDI04	61	P8_IDI04	P2_IDI07
PC_IDI03	60	P8_IDI03	P3_IDI00
PC_IDI02	59	P8_IDI02	P3_IDI01
PC_IDI01	58	P8_IDI01	P3_IDI02
PC_IDI00	57	P8_IDI00	P3_IDI03
NC	56	NC	P3_IDI04
NC	55	NC	P3_IDI05
NC	54	NC	P3_IDI06
NC	53	NC	P3_IDI07
NC	52	NC	P23_COMM
NC	51	NC	P23_COMM

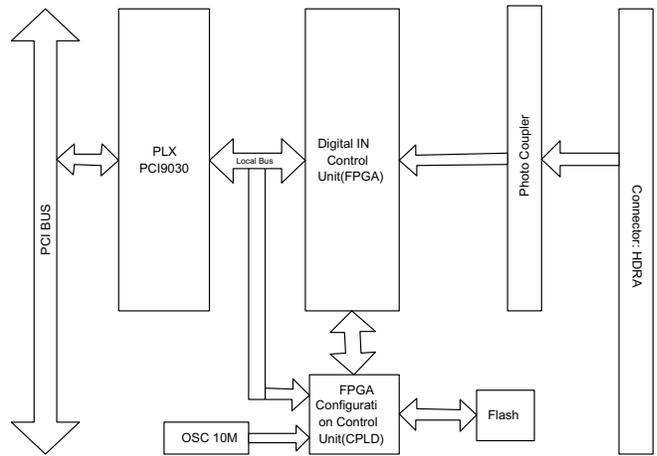
I/O Connector Pin Assignment for PCI-1758UDI

CNB		CNA	
PEF_COMP	100	PAB_COMP	P01_COMM
PEF_COMP	99	PAB_COMP	P01_COMM
PF_IDI07	98	PB_IDI07	P01_COMM
PF_IDI06	97	PB_IDI06	P01_COMM
PF_IDI05	96	PB_IDI05	P01_COMM
PF_IDI04	95	PB_IDI04	P01_COMM
PF_IDI03	94	PB_IDI03	PO_IDI00
PF_IDI02	93	PB_IDI02	PO_IDI01
PF_IDI01	92	PB_IDI01	PO_IDI02
PF_IDI00	91	PB_IDI00	PO_IDI03
PE_IDI07	90	PA_IDI07	PO_IDI04
PE_IDI06	89	PA_IDI06	PO_IDI05
PE_IDI05	88	PA_IDI05	PO_IDI06
PE_IDI04	87	PA_IDI04	PO_IDI07
PE_IDI03	86	PA_IDI03	P1_IDI00
PE_IDI02	85	PA_IDI02	P1_IDI01
PE_IDI01	84	PA_IDI01	P1_IDI02
PE_IDI00	83	PA_IDI00	P1_IDI03
PEF_COMM	82	PAB_COMM	P1_IDI04
PEF_COMM	81	PAB_COMM	P1_IDI05
PEF_COMM	80	PAB_COMM	P1_IDI06
PEF_COMM	79	PAB_COMM	P1_IDI07
PEF_COMM	78	PAB_COMM	P11_COMM
PEF_COMM	77	PAB_COMM	P01_COMM
NC	76	NC	NC
NC	75	NC	NC
PCD_COMP	74	P89_COMP	P23_COMM
PCD_COMP	73	P89_COMP	P23_COMM
PD_IDI07	72	P9_IDI07	P23_COMM
PD_IDI06	71	P9_IDI06	P23_COMM
PD_IDI05	70	P9_IDI05	P23_COMM
PD_IDI04	69	P9_IDI04	P23_COMM
PD_IDI03	68	P9_IDI03	P2_IDI00
PD_IDI02	67	P9_IDI02	P2_IDI01
PD_IDI01	66	P9_IDI01	P2_IDI02
PD_IDI00	65	P9_IDI00	P2_IDI03
PC_IDI07	64	P8_IDI07	P2_IDI04
PC_IDI06	63	P8_IDI06	P2_IDI05
PC_IDI05	62	P8_IDI05	P2_IDI06
PC_IDI04	61	P8_IDI04	P2_IDI07
PC_IDI03	60	P8_IDI03	P3_IDI00
PC_IDI02	59	P8_IDI02	P3_IDI01
PC_IDI01	58	P8_IDI01	P3_IDI02
PC_IDI00	57	P8_IDI00	P3_IDI03
PCD_COMM	56	P89_COMM	P3_IDI04
PCD_COMM	55	P89_COMM	P3_IDI05
PCD_COMM	54	P89_COMM	P3_IDI06
PCD_COMM	53	P89_COMM	P3_IDI07
PCD_COMM	52	P89_COMM	P23_COMM
PCD_COMM	51	P89_COMM	P23_COMM

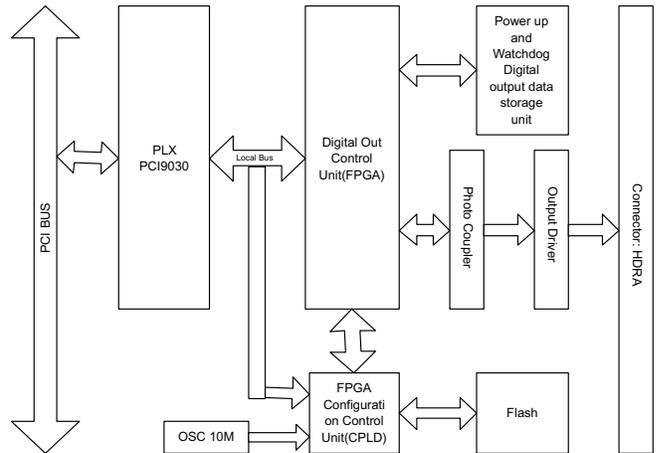
I/O Connector Pin Assignment for PCI-1758UDO

Block Diagram

PCI-1758UDI Block Diagram



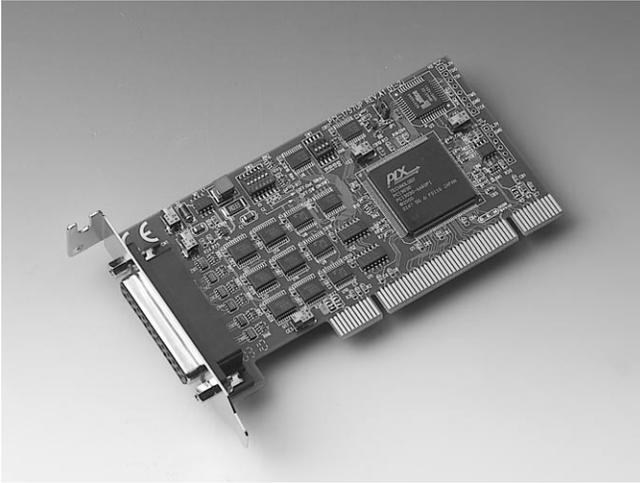
PCI-1758UDO Block Diagram



- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

PCI-1757UP

24-channel Digital Input/Output Low Profile Universal PCI Card



Features

- Low profile PCI card
- Universal PCI card, fits 3.3 V and 5 V PCI slot
- 24 TTL level digital I/O lines
- Emulates mode 0 of 8255 PPI
- Buffered circuits provide higher driving capability
- Output status read-back
- I/O configurable by software or on board DIP switch
- Keeps port I/O settings and digital output states after hot reset
- BoardID™ switch
- High density D-SUB 25-pin connector

Introduction

The PCI-1757UP is a 24-bit DI/O low profile PCI card that meets the PCI standard REV.2.2 (universal PCI expansion card). The card also works with 3.3 V and 5 V PCI slots, and provides you with 24 bits of parallel digital input/output, that emulates mode 0 of the 8255 PPI chip. However, the buffered circuits offer a higher driving capability than the 8255.

Specifications

Digital Input

- **Logic High Voltage** 2.0 to 5.25 V
- **Logic Low Voltage** 0.0 to 0.80 V
- **High Level Input Current** 20 mA
- **Low Level Input Current** -0.2 mA

Digital Output

- **Logic High Voltage** 2.4 V minimum
- **Logic Low Voltage** 0.4 V maximum
- **High Level Input Current** 15 mA maximum (source)
- **Low Level Input Current** 24 mA maximum (sink)
- **Driving Capability** 15 LS TTL

Interrupt Source

- PC0, PC4

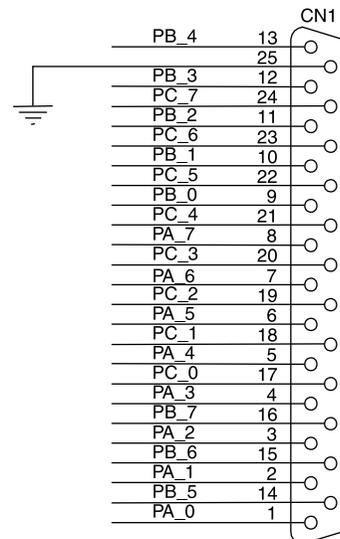
General

- **Connector** One D-SUB 25-pin female connector
- **Power Consumption** 5 V @ 140 mA (Typical)
- **Operating Temperature** 0 ~ 70° C (32 ~ 158° F)
- **Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- **Humidity** 5 ~ 95% non-condensing
- **Dimensions** 119.91 x 64.41 mm (4.721" x 2.536") Low profile PCI MD1 card size

Ordering Information

- **PCI-1757UP** 24-channel Digital Input/Output Card
- **ADAM-3925** DB-25 wiring terminal for DIN-rail mounting

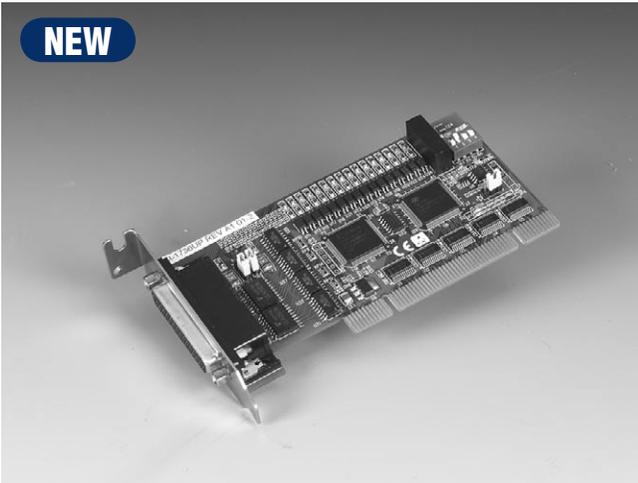
Pin Assignments



PCI-1736UP

32-channel Isolated Digital Input/Output Card

NEW



Features

- 32 isolated DI/O channels (16 inputs and 16 outputs)
- High output driving capacity
- High-voltage isolation on I/O channels (2500 VDC)
- Interrupt handling capability
- D-type connector for isolated input and output channels
- Keep digital output values when hot system reset
- Wide input range (5 ~ 50 V_{DC})
- Surge protection
- Universal PCI Bus
- Low profile card
- BoardID™ switch

Introduction

PCI-1736UP offer isolated digital input channels as well as isolated digital output channels with isolation protection up to 2,500 V_{DC}, which makes it ideal for industrial applications where high-voltage isolation is required.

In addition, all output channels provide high-voltage protection. The low profile PCI form factor and universal PCI connector (V2.2 compliant) meet requirements for size and power consumption.

Specifications

- **Bus interface** PCI bus spec. 2.2 compliant
PCI universal card (both 3.3V and 5V signaling)
- **IRQ** All ports use the same IRQ assigned by PCI Plug-and-Play
- **I/O Channels** 16 Isolated DI and 16 Isolated DO
- **Isolation Protection** 2500 V_{DC}
- **Input Voltage Range** 5-50 V_{DC}
- **Output Voltage Range** Open collector 5-40 V_{DC}
- **Connector** DB-44 female connector
- **Dimensions** Low profile PCI MD1 (119.91 x 64.41 mm)
- **Operating Temperature** 0 ~ 60 °C (32 ~ 140° F)
- **Storage Temperature** -25 ~ 85 °C (-4 ~ 185° F)
- **Operating Humidity** 5 ~ 95% Relative Humidity, non-condensing

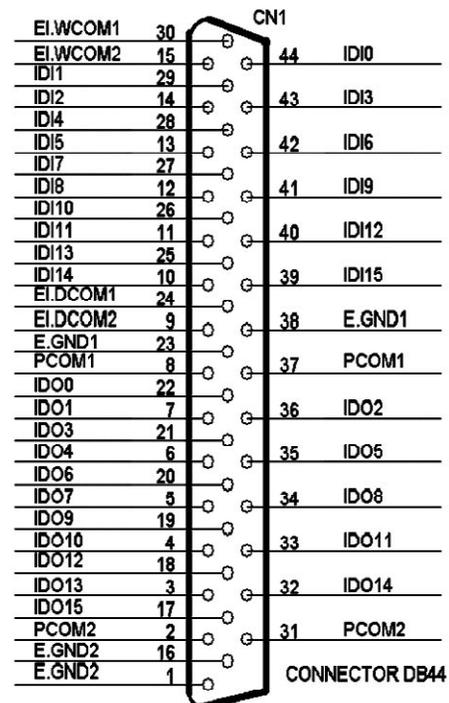
Ordering Information

- **PCI-1736UP** 32-channel isolated digital input/output card
- **PCL-10144-1** DB 44-pin cable, 1m
- **ADAM-3944** DB-44 Wiring Terminal for DIN-rail mounting

Applications

- Industrial on/off control
- Contact closure monitoring
- Switch status sensing
- BCD interfacing
- Digital input control
- Industrial and lab automation

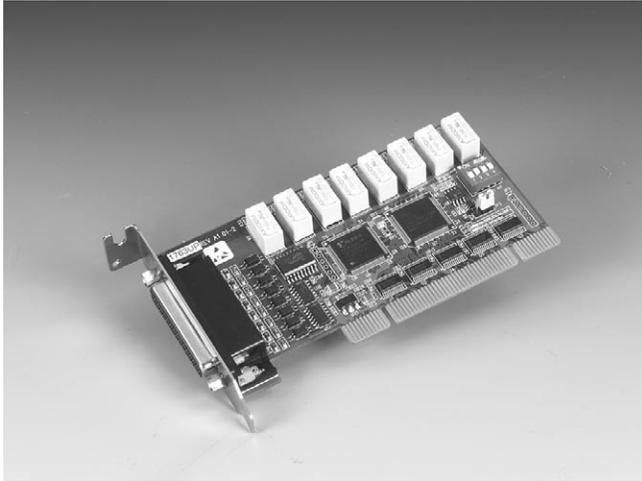
Pin Assignments



- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7
- 8 cPCI
- 9 ADAM-3000
- 10 Motion Control
- 11 ICOM
- 12 eConnectivity
- 13 UNO
- 14 ADAM-4000
- 15 ADAM-5000
- 16 ADAM-6000
- 17 ADAM-8000
- BAS

PCI-1763UP

8-ch Relay and 8-ch Isolated DI card



Features

- 8 relay output channels and 8 isolated digital input channels
- LED indicators to show activated relays
- 8 Form C type relay output channels
- Output status read-back
- Retained relay output values when hot system reset
- High-voltage isolation on input channels (3,750 V_{DC})
- High ESD protection (2,000 V_{DC})
- High over-voltage protection (70 V_{DC})
- Wide input range (10 ~ 50 V_{DC})
- Interrupt handling capability
- Support Universal PCI Bus
- Low Profile PCI card
- BoardID™ switch

Introduction

PCI-1763UP relay actuator and isolated DI card is an add-on card for the PCI bus. It provides 8 optically-isolated digital inputs with isolation protection of 2500 VDC for collecting digital inputs in noisy environments, and 8 relay actuators for serving as on/off control devices or small power switches. For easy monitoring, each relay is equipped with one red LED to show its on/off status. The PCI-1761's eight optically-isolated digital input channels are ideal for digital input in noisy environments or with floating potentials. The low profile PCI form factor and universal PCI connector (V2.2 compliant), meet requirements for size and reduced power consumption.

Specifications

Isolated Digital Input

- Channels 8
- Optical Isolation 3,750 V_{DC}
- Opto-isolator Response Time 25 μs
- Over-Voltage Protection 70 V_{DC}
- Input Voltage 5 ~ 50 V_{DC}
- Input Current 3.16 mA @ 10 V_{DC}
17.3 mA @ 50 V_{DC}

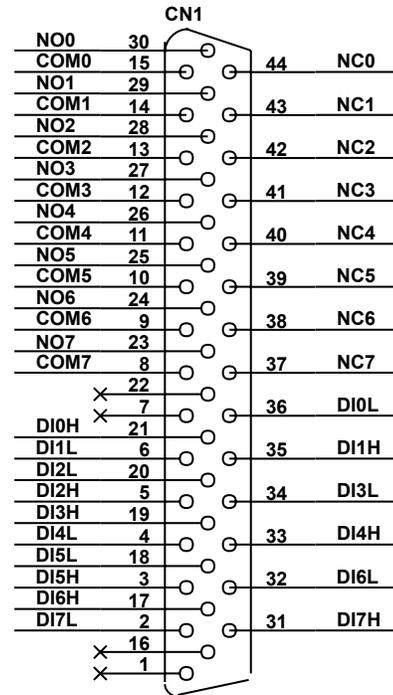
Relay Output

- Channels 8
- Relay Type DPDT (8 Form C)
- Rating (resistive) 0.25 A @ 240 V_{AC} or 1 A @ 30 V_{DC}
- Max. Switching Power 62.5 AV, 60 W
- Insulation Resistance 1,000 MΩ min. (at 500 V_{DC})
- Operate Time 5 ms max.
- Release Time 4 ms max.
- I/O Connector Type DB44 female
- Dimensions 119.91 x 64.41 mm
- Power Consumption +5V @ 107.5 mA (typical)
+5V @ 301.3 mA (max.)

Environment

- Operating Temperature 0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1,2)
- Storage Temperature -20 ~ 70° C (-4 ~ 158° F)
- Relative Humidity 5 ~ 95 % RH non-condensing (refer to IEC 68-2-3)

Pin Assignments

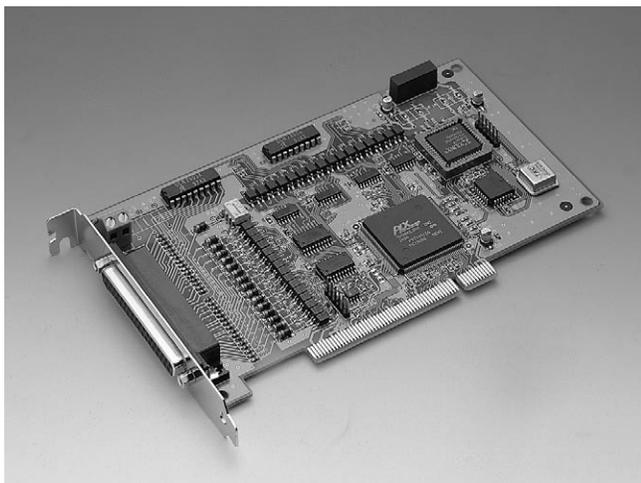


Ordering Information

- PCI-1763UP 8-ch Relay and 8-ch Isolated DI card
- PCL-10144-1 DB 44-pin cable, 1m
- ADAM-3944 DB-44 Wiring Terminal for DIN-rail mounting

PCI-1750

32-ch Isolated Digital I/O and Counter Card



Features

- 16 isolated DI and 16 isolated DO channels
- High voltage isolation on all isolated channels (2,500 V_{DC})
- High sink current on isolated output channels (200 mA/channel)
- Supports dry contact or 5 ~ 50 V_{DC} isolated inputs
- Interrupt handling
- Timer/counter interrupt capability

Introduction

PCI-1750 offers 16 isolated digital input channels, 16 isolated digital output channels, and one isolated counter/timer for the PCI bus. With isolation protection of 2,500 V_{DC}, and dry contact support, PCI-1750 is ideal for industrial applications where high-voltage protection is required. Each I/O channel of the PCI-1750 corresponds to a bit in a PC I/O port. This makes PCI-1750 very easy to program. This card also offers a counter or timer interrupt and two digital input interrupt lines to a PC. So you can then easily do configurations by software.

Plug & Play

PCI-1750 uses a PCI controller to interface the card to the PCI bus. The controller fully implements PCI bus specification Rev 2.1. All bus relative configurations, such as base address and interrupt assignment, are automatically controlled by the software. No jumper or DIP switch is required for user configuration.

On-board Programmable Counter/Timer

PCI-1750 provides a programmable counter/timer for generating periodic interrupts to the host computer. The counter/timer chip is an 82C54, which includes three 16-bit counters based on a 10 MHz clock. One counter is used to count events coming from the isolated input channel. The other two are cascaded together to make a 32-bit timer.

Specifications

Digital Input

- **16 Optically-isolated Inputs**
- **Input Range** 5 ~ 50 V_{DC} or dry contact
- **Isolation Voltage** 2,500 V_{DC}
- **Throughput** 10 kHz

Digital Output

- **16 Optically-isolated Outputs**
- **Output Range** Open collector 5 ~ 40 V_{DC}
- **Sink Current** 200 mA max. per channel
- **Isolation Voltage** 2,500 V_{DC}
- **Throughput** 10 kHz

Programmable Counter/Timer

- **One 32-bit timer**
- **One 16-bit optically-isolated Counter**
 - Shares pin with isolated input 15
 - Throughput: 1 MHz max.
 - Isolation voltage: 2,500 V_{DC}

General

- **Interrupt Source** Isolated input 0, 8, counter and timer
- **Power Consumption** 5 V @ 850 mA (typical), 5 V @ 1.0 A (max.)
- **Operating Temperature** 0 ~ 70° C (32 ~ 158° F)
- **Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- **Connectors** One 37-pin D-type female connector
One 2-pin terminal block for extended ground
- **Dimensions (L x H)** 175 x 100 mm (6.9" x 3.9")

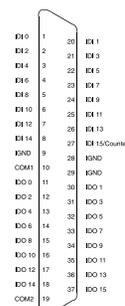
Ordering Information

- **PCI-1750** 32-channel Isolated DIO and Counter Card, user's manual and driver CD-ROM. (cable not included)
- **PCL-10137-1** DB37 cable assembly, 1m
- **PCL-10137-2** DB37 cable assembly, 2m
- **PCL-10137-3** DB37 cable assembly, 3m
- **ADAM-3937** 37-pin D-type cable wiring terminal for DIN-rail mounting

Applications

- Industrial on/off control
- Contact closure monitoring
- Switch status sensing
- BCD interfacing
- Digital I/O control
- Industrial and lab automation

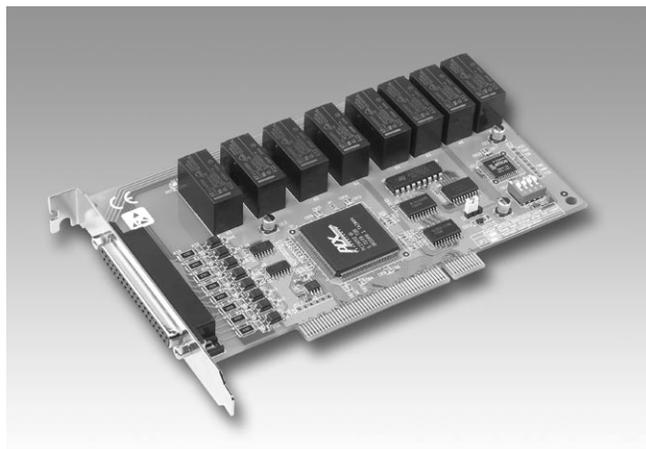
Pin Assignments



1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCI-1761

8-ch Relay Actuator and 8-ch Isolated Digital Input Card



Features

- 8 relay output channels and 8 isolated digital input channels
- LED indicators to show activated relays
- 4 Form C and 4 Form A type relay output channels
- Output status read-back
- Retained relay output values when hot system reset
- High-voltage isolation on input channels (3,750 V_{DC})
- High ESD protection (2,000 V_{DC})
- High over-voltage protection (70 V_{DC})
- Wide input range (10 ~ 50 V_{DC})
- Interrupt handling capability
- BoardID™ switch

Introduction

The PCI-1761 relay actuator and isolated D/I card is an add-on card for the PCI bus. It provides 8 optically-isolated digital inputs with isolation protection of 3,750 V_{DC} for collecting digital inputs in noisy environments and 8 relay actuators for serving as on/off control devices or small power switches. For easy monitoring, each relay is equipped with one red LED to show its on/off status. The PCI-1761's eight optically-isolated digital input channels are ideal for digital input in noisy environments or with floating potentials.

Rugged Protection

The PCI-1761 digital input channels feature a rugged isolation protection for industrial, lab and machinery automation applications. It durably withstands voltage up to 3,750 V_{DC}, protecting your host system from any incidental harms. If connected to an external input source with surge-protection, the PCI-1761 can offer up to a maximum of 2,000 V_{DC} ESD (Electrostatic Discharge) protection. Even with an input voltage rising up to 70 V_{DC}, the PCI-1761 can still manage to work properly, albeit for only a short period of time.

Reset Protection Fulfills Requirement for Industrial Applications

When the system has undergone a hot reset (i.e. without turning off the system power), the PCI-1761 can either retain output values of each channel, or return to its default configuration as open status, depending on its onboard jumper setting. This function protects the system from unwanted operations during unexpected system resets.

Specifications

Isolated Digital Input

- **Channels** 8
- **Optical Isolation** 3,750 V_{DC}
- **Opto-isolator Response Time** 25 μs
- **Over-Voltage Protection** 70 V_{DC}
- **Input Voltage** 10 ~ 50 V_{DC}
- **Input Current** 1.6 mA @ 10 V_{DC}
8.9 mA @ 50 V_{DC}

Relay Output

- **Channels** 8
- **Relay Type** SPDT (4 Form C and 4 Form A)
- **Rating (resistive)** 3 A @ 250 V_{AC} or 3 A @ 24 V_{DC}
- **Max. Switching Power** 750 AV, 72 W
- **Max. Switching Load** 10 mA @ 5 V_{DC}
- **Insulation Resistance** 1,000 MΩ min. (at 500 V_{DC})
- **Operate Time** 15 ms max.
- **Release Time** 5 ms max.

General

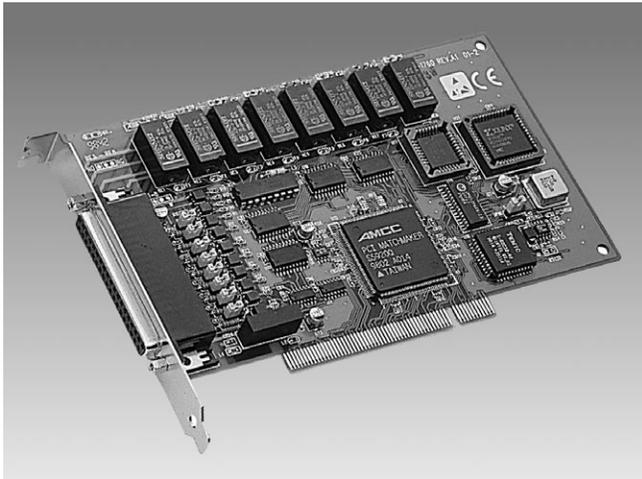
- **Connector** One 37-pin D-type connector
- **Dimensions (L x H)** 175 x 100 mm (6.9" x 3.9")
- **Power Consumption** +5 V @ 220 mA (typical)
+5 V @ 750 mA (max.)
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Operating Humidity** 5 ~ 95 % RH non-condensing (refer to IEC 68-2-3)

Ordering Information

- **PCI-1761** 8-ch Relay Actuator and 8-ch Isolated D/I Card
- **PCL-10137-1** DB37 cable assembly, 1m
- **PCL-10137-2** DB37 cable assembly, 2m
- **PCL-10137-3** DB37 cable assembly, 3m
- **ADAM-3937** DB37 Wiring Terminal for Din-rail Mounting
- **PCLD-880** Universal screw terminal board

PCI-1760 PCI-1760U

8-ch Relay Actuator and Isolated D/I Card



FCC CE

Features

- Universal PCI card, for 3.3 V and 5 V PCI slot
- 8 opto-isolated digital input channels
- 8 relay actuator output channels
- 2 opto-isolated PWM outputs
- LED indicators to show activated relays
- Jumper selectable dry contact/wet contact input signals
- Up event counters for DI
- Programmable digital filter function for DI
- Pattern match interrupt function for DI
- "Change of State" interrupt function for DI
- Universal PCI and BoardID switch (PCI-1760U only)

Introduction

The PCI-1760U relay actuator and isolated D/I card is a PC add-on card for the PCI bus. It meets the PCI standard Rev. 2.2 (Universal PCI expansion card), and works with both 3.3 V and 5 V PCI slots. It provides 8 opto-isolated digital inputs with isolation protection of 2,500 V_{DC} for collecting digital inputs in noisy environments, 8 relay actuators that can be used as a on/off control devices or small power switches, and 2 isolated PWM (Pulse Width Modulation) outputs for custom applications.

For easy monitoring, each relay is equipped with one red LED to show its on/off status. Each isolated input supports both dry contact and wet contact so that it can easily interface with other devices when no voltage is present in the external circuit.

Specifications

Isolated Digital Input

- **Channels** 8 (Sink)
- **Opto-isolator** PC354
- **Input Voltage** 5 ~ 12 V_{DC}
High: > 4.5 V
Low: < 1.0 V
Uncertain: 1.0 V ≥ V_{in} ≥ 4.5 V
- **Input Resistance** 1 kΩ 1/4 W
- **Isolation Voltage** 2,500 V_{DC}
- **Digital Filter** Minimum effective high input period ≥ [(2 ~ 65535) x 5 ms] + 5 ms
Minimum effective low input period ≥ [(2 ~ 65535) x 5 ms] + 5 ms
- **16-bit UP Counter** Maximum effective input frequency: 500 Hz
Minimum High period ≥ 1 ms
Minimum Low period ≥ 1 ms

Relay Output

- **Channels** 8
- **Relay Type** Single-pole double-throw (SPDT, Form C)
- **Output Type** CH0 and CH1: NC and NO outputs
CH2 ~ CH7: NC or NO outputs (selected by jumper)
- **Rating Contact Load** 120 V_{DC} @ 0.5 A or 30 V_{DC} @ 1 A
- **Contact Resistance** Less than 100 mΩ initially
- **Dielectric Strength** Coil to contacts (deenergized): 1,500 V_{RMS} (1 minute)
Between open contacts (deenergized & energized): 1,000 V_{RMS} (1 minute)
- **Life Expectancy** 200,000 operations @ 0.5 A 120 V_{AC}
500,000 operations @ 1.0 A 30 V_{DC}
- **Operating Time** 5 ms max.
- **Releasing Time** 5 ms max.

Isolated PWM output

- **Channels** 2
- **Isolation Voltage** 2,500 V_{DC}
- **Scaling Resolution** 16 bits (100 ms for each step)
High period = [(1 ~ 65535) x 100 ms] + 50 ms (max.)
Low period = [(1 ~ 65535) x 100 ms] + 50 ms (max.)
- **Output Level** High: (5 ± 0.5) V
Low: < 0.8 V

General

- **Power Consumption** +5 V @ 450 mA (typical), 850 mA (max.)
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F) (IEC 68 - 2 - 1, 2)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Operating Humidity** 5 ~ 95 % RH non-condensing (IEC 68-2-3)

Physical

- **Connector** One 37-pin D-type connector
- **Dimensions (L x H)** 175 x 100 mm (6.9" x 3.9")

Ordering Information

- **PCI-1760U** Relay Actuator and Isolated D/I Card, user's manual and driver CD-ROM (cable not included)
- **PCI-1760** 8-ch Relay Actuator and Isolated D/I card
- **PCL-10137-1** DB37 cable assembly, 1m
- **PCL-10137-2** DB37 cable assembly, 2m
- **PCL-10137-3** DB37 cable assembly, 3m
- **ADAM-3937** DB37 wiring terminal for DIN-rail mounting

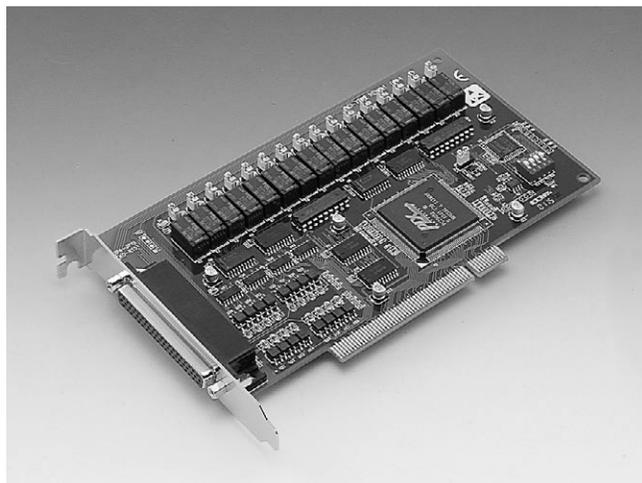
Applications

- Digital signal and contact status monitoring
- Industrial On/Off control
- Signal switching
- External relay driving

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCI-1762

16-ch Isolated Digital Input and 16-ch Relay Output Card



CE

Features

- 16 relay output channels and 16 isolated digital input channels
- LED indicators to show activated relays
- Jumper selectable Form A/Form B-type relay output channel
- Output status read-back
- Retain relay output values when hot system reset
- High-voltage isolation on input channels (2,500 V_{DC})
- High ESD protection (2,000 V_{DC})
- High over-voltage protection (70 V_{DC})
- Wide input range (10 ~ 50 V_{DC})
- Interrupt handling capability
- High-density DB-62 connector
- BoardID™ switch

Introduction

The PCI-1762 relay actuator and isolated D/I card is a PC add-on card for the PCI bus. It provides 16 opto-isolated digital inputs with isolation protection of 2,500 V_{DC} for collecting digital inputs in noisy environments, 16 relay actuators for serving as on/off control devices or small power switches. For easy monitoring, each relay is equipped with one red LED to show its on/off status. The PCI-1762's sixteen optically-isolated digital input channels are ideal for digital input in noisy environments or with floating potentials.

Specifications

Isolated Digital Input

- **Input Channels** 16
- **Optical Isolation** 2,500 V_{DC}
- **Opto-Isolator Response Time** 25 μs
- **Over-Voltage Protection** 70 V_{DC}
- **Input Voltage**
 - VIH (max.) 50 V_{DC}
 - VIH (min.) 10 V_{DC}
 - VIL (max.) 3 V_{DC}
- **VIL (max.)**
 - 10 V_{DC} 1.6 mA (typical)
 - 12 V_{DC} 1.9 mA (typical)
 - 24 V_{DC} 4.1 mA (typical)
 - 48 V_{DC} 8.5 mA (typical)
 - 50 V_{DC} 8.9 mA (typical)

Relay Output

- **Output Channels** 16
- **Relay Type** SPDT (Form A or Form B, Jumper selectable)
- **Rating (resistive)** 0.5 A @ 125 V_{AC} or 1 A @ 30 V_{DC}
- **Max. Switching Power** 62.5 AV, 30 W
- **Max. Switching Voltage** 250 V_{AC}, 220 V_{DC}
- **Max. Switching Current** 2 A
- **Minimum Switching Load** 10 μA @ 10 m V_{DC}
- **Breakdown Voltage** 1,500 V_{DC} for 1 min. (between coil and contacts)
- **Operate Time** 6 ms max.
- **Release Time** 4 ms max.
- **Insulation Resistance** 1,000 MΩ min. (at 500 V_{DC})
- **Life Expectancy** 2 x 10⁵ ops. min. (0.5 A @ 125 V_{AC}) , 5 x 10⁵ ops. min. (1 A @ 30 V_{DC})

General

- **I/O Connector Type** DB62 D-type female connector
- **Dimensions** 175 x 100 mm (6.9" x 3.9")
- **Power Consumption**
 - +5V @ 250 mA (typical)
 - +5V @ 620 mA (max.)
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F) (IEC 68-2-1,2)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Relative Humidity** 5 - 95 % non-condensing (IEC 68-2-3)
- **Certification** CE Class A

Ordering Information

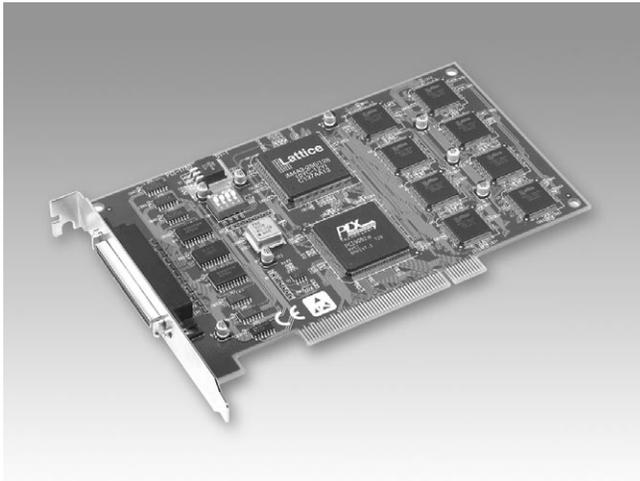
- **PCI-1762** 16-ch Isolated Digital Input and 16-ch Relay Output Card
- **PCL-10162-1** PCL-10162-1 DB-62 cable assembly, 1m
- **PCL-10162-3** PCL-10162-3 DB-62 cable assembly, 3m
- **PCL-10162-5** PCL-10162-5 DB-62 cable assembly, 5m
- **ADAM-3962** DB62 Wiring Terminal for Din-rail Mounting

Applications

- Industrial On/Off control
- Switch status sensing
- Digital I/O control
- Industrial and lab automation
- SMT/PCB machinery
- Semi-conductor machinery
- PC-based Industrial Machinery
- Testing & Measurement
- Laboratory & Education
- External relay driving

PCI-1780

8-ch Counter/Timer Card



Features

- 8 independent 16-bit counters
- 8 programmable clock source
- 8 digital TTL outputs and 8 digital TTL inputs
- Up to 20 MHz input frequency
- Multiple counter clock source selectable
- Counter output programmable
- Counter gate function
- Flexible interrupt source select
- BoardID™ switch

Introduction

PCI-1780 is a general purpose multiple channel counter/timer card for the PCI bus. It targets the AM9513 to implement the counter/timer function by CPLD. Plus, it provides eight 16-bit counter channels and 8 digital outputs and 8 digital inputs. Advantech has designed powerful counter functions to for a broad range of industrial and laboratory applications.

Flexible Counter Modes

The PCI-1780 features up to 12 programmable counter modes, to provide one shot output, PWM output, periodic interrupt output, time-delay output, and to measure the frequency and the pulse width. The PCI-1780 is an ideal solution for various counter/timer applications.

Special Shielded Cable for Noise Reduction

The PCL-10168 shielded cable is specially designed for the PCI-1780 for reducing noise. Its wires are all twisted pairs, and the input signals and output signals are separately shielded, providing minimal cross talk between signals and the best protection against EMI/EMC problems.

BoardID™ Switch

PCI-1780 has a built-in BoardID™ DIP switch that helps define each card's unique identity when multiple identical PCI cards have been installed in the same computer. The BoardID switch is very useful when you build your system with multiple identical PCI cards. With the correct BoardID switch settings, you can easily identify and access each card during hardware configuration and software programming.

Plug & Play Function

PCI-1780 is a Plug & Play device which fully complies with PCI Specification Rev 2.2. During card installation, there is no need to set jumpers or DIP switches. Instead, all

Specifications

Programmable Counter

- **Channels** 8 (independent)
- **Resolution** 16-bit
- **Programmable Clock Source** 8 independent
- **Programmable Counter Modes** 12
- **Max. Frequency** 20 MHz
- **Interrupt Source** 8 counter outputs

Digital Input/Output

- **Input Channels** 8
- **Input Voltage** Low: 0.8 V max.
High: 2.4 V min.
- **Interrupt Source** Channel 0
- **Output Channels** 8
- **Output Voltage** Low 0.5 V max. @ 24 mA (sink)
High 2.4 V min. @ -15 mA (source)

General

- **I/O Connector Type** 68-pin SCSI-II female
- **Dimensions** 175 x 100 mm (6.9" x 3.9")
- **Power Consumption** Typical: +5 V @ 900 mA
Max.: +5 V @ 1.2 A
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F) (IEC 68-2-1, 2)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Relative Humidity** 5 ~ 95 % RH non-condensing (IEC 68-2-3)
- **Certifications** CE certified
- **PWM Range** 0.0005 ~ 60 Sec.

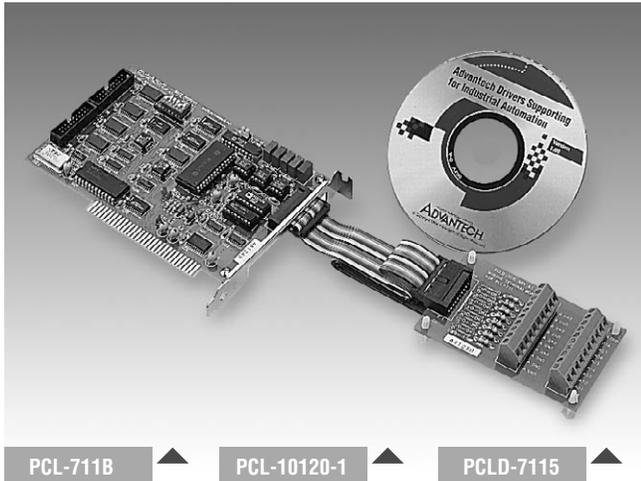
Ordering Information

- **PCI-1780** 8-channel Counter/Timer Card
- **PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 and 2 m
- **ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail mounting

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCL-711

Analog and Digital I/O Card



Features

- Eight single-ended analog inputs
- Programmable A/D input range
- A/D, D/A with pacer
- One analog output
- 12-bit A/D and D/A resolution
- 16 digital inputs
- 16 digital outputs
- Includes versatile drivers in popular programming languages plus calibration, demo and example programs
- Screw-terminal board and cable included

Introduction

PCL-711 is a fully-integrated package that offers four of the most popular I/O functions for PC/AT and compatible systems: A/D conversion, D/A conversion, digital input and digital output.

The inexpensive PCL-711 is ideal for entry level applications. The features of this half-sized card include: eight 12-bit analog inputs, one 12-bit analog output, 16 digital inputs and 16 digital outputs. In addition, it comes with a 20-point screw-terminal board and a flat cable connector.

PCL-711 performs a variety of I/O jobs, and features solid software support and a large selection of available daughterboards and accessories. It is an ideal and affordable performer for OEMs, schools and hobbyists who require a combination of analog and digital I/O.

Specifications

Analog Input

- **Channels** 8 single-ended
- **A/D Converter** 12 bit, 25 μ s conversion time
- **Input Range (V)** ± 5 , ± 2.5 , ± 1.25 , ± 0.625 , ± 0.3125
- **Trigger Mode** Software, pacer or external trigger
- **Data Transfer** Program control, interrupt (IRQs 2 ~ 7)
- **Accuracy** ± 2 LSB
- **Common Mode Rejection** 60 dB typical
- **Input Impedance** >10 M Ω
- **Input Overvoltage** ± 30 V_{DC} max.

Analog Output

- **Channels** One 12-bit double-buffered channel
- **D/A Range** 0 ~ 5 V or 0 ~ 10 V
- **Settling Time** 30 μ s

Digital Input

- **Channels** 16, TTL level

Digital Output

- **Channels** 16
- **Logic level 0** 0.5 V max. @ 8 mA (sink)
- **Logic level 1** 2.4 V min. @ 0.4 mA (source)

General

- **Power Consumption** +5 V @ 500 mA typical, 1.0 A max.
+12 V @ 50 mA typical, 100 mA max.

- **Operating Temperature** -12 V @ 14 mA typical, 20 mA max.
0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 65° C (-4 ~ 149° F)
- **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- **I/O Ports** 16 consecutive I/O ports per card
- **Connectors** One 20-pin flat cable connector for A/D and D/A
One 20-pin flat cable connector for digital input
One 20-pin flat cable connector for digital output
- **Dimensions (L x H)** 155 x 100 mm (6.1" x 3.9")

Ordering Information

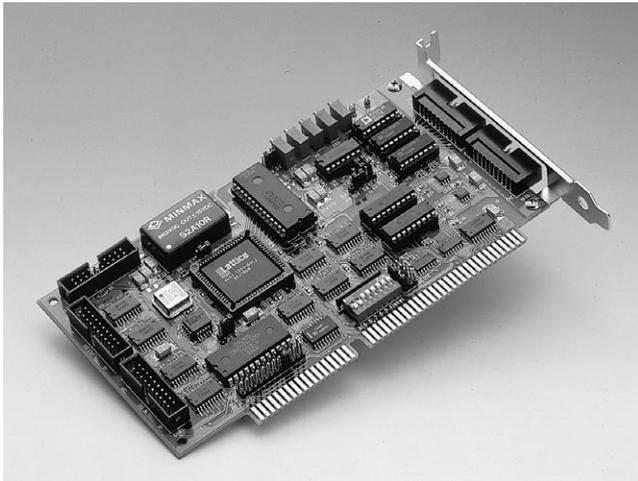
- **PCL-711S** PCL-711B card, user's manual, driver CD-ROM, PCLD-7115 and 1 m 20-pin flat cable (PCL-10120-1)
- **PCL-711B** PCL-711B card only (PCLD-7115, 1 m 20-pin cable, user manual and driver CD-ROM NOT included).
- **PCL-10120-1** 20-pin flat cable, 1m
- **PCL-10120-2** 20-pin flat cable, 2m

Applications

- DC voltage measurement
- Transducer/sensor interfacing
- Process control
- Contact closure monitoring
- Digital signal and BCD interfacing
- Industrial On/Off control
- Multiplexer and relay control

PCL-812PG

MultiLab Analog and Digital I/O Card



Features

- 16 single-ended 12-bit analog input channels
- Two 12-bit analog output channels
- Programmable sampling rate of up to 30 kHz
- A/D with DMA or interrupt
- 16 digital input channels
- 16 digital output channels
- Programmable counter/timer
- Programmable A/D ranges (gains)
- Includes C/C++, Pascal and BASIC drivers as well as calibration, demo and example programs
- Comprehensive application software support

Introduction

PCL-812PG is a multifunction analog and digital I/O card that features the five most desired measurement and control functions for PC/AT and compatible systems: A/D conversion, D/A conversion, digital input, digital output and counter/timer. This half-size card neatly packages 16 12-bit analog input channels, two 12-bit analog output channels, 16 digital input channels, 16 digital output channels and a programmable counter/timer.

In addition to all the features listed above, PCL-812PG offers the convenience of programmable analog input ranges, where the analog input range can be switched by software commands instead of DIP switches. PCL-812PG also delivers convenience and maximum resolution for applications that need different gains for different channels or different gains for different stages of a process.

Comprehensive software support, numerous I/O options and a wide range of available daughterboards make the PCL-812PG ideal for industrial applications that require a combination of analog and digital I/O.

Specifications

Analog Input

- **Channels** 16 single-ended
- **A/D Converter** 12-bit, 25 μ s conversion time
- **Input Range (V, software programmable)** ± 10 , ± 5 , ± 2.5 , ± 1.25 , ± 0.625 , ± 0.3125
- **Trigger Mode** Software, pacer or external trigger
- **Data Transfer** Program controlled, interrupt 2 ~ 7, 9 ~ 12, 14, 15 or DMA (Channel 1 or 3) for single channel scan
- **Accuracy** 0.01% of reading ± 1 LSB
- **Common Mode Rejection** 60 dB typical
- **Input Impedance** > 10 M Ω
- **Overvoltage** Continuous ± 30 V_{DC} max.

Analog Output

- **Channels** Two double-buffered 12-bit channels
- **D/A Range (in V)** 0 ~ 5, 0 ~ 10 w/internal reference; ± 10 V max. with external AC or DC reference (accuracy for output above ± 9 V may vary depending on power supply used)
- **Settling Time** 30 μ s
- **Throughput** 30 kS/s max.
- **Output Current** ± 5 mA max.
- **Linearity** $\pm 1/2$ bit

Digital Input

- **Channels** 16, TTL level

Digital Output

- **Channels** 16, TTL compatible
- **Driving Capacity** 8.0 mA @ 0.5 V (sink); 0.4 mA @ 2.4 V (source)

A/D pacer and counter (8254 compatible)

- **A/D Pacer** 32-bit timer with a 20 MHz time base
- **Max. and Min. Rates** 500 kHz ~ 0.00046 Hz (one sample every 36 minutes)
- **Counter** One 16-bit counter with a 2 MHz time base

General

- **Power Consumption** +5 V @ 500 mA typical, 1.0 A max. +12 V @ 50 mA typical, 100 mA max.
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 65° C (-4 ~ 149° F)
- **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- **I/O Ports** 16 consecutive bytes
- **Connectors** Two 20-pin flat cable connectors
- **Dimensions (L x H)** 185 x 100 mm (7.3" x 3.9")

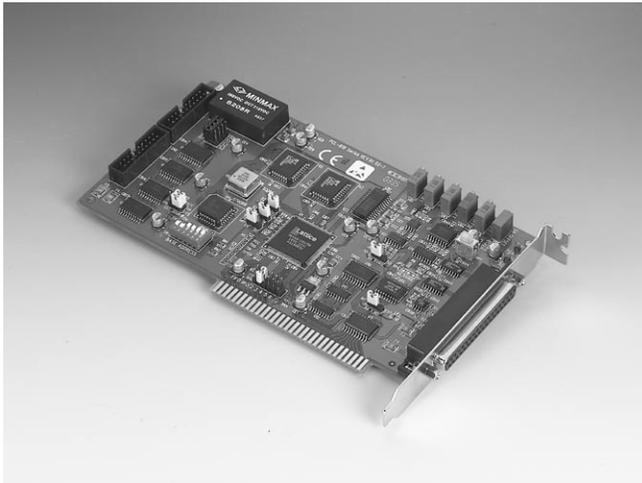
Ordering Information

- **PCL-812PG** MultiLab Analog and Digital I/O Card, user's manual and driver CD-ROM. (cable not included)
- **PCL-10120-1** 20-pin flat cable, 1m
- **PCL-10120-2** 20-pin flat cable, 2m
- **PCLD-780** Screw terminal board
- **PCLD-8115** Industrial wiring terminal board with CJC circuit

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCL-818 Series

High-Performance
Multifunction Cards



CE

Features

- 16 single-ended or 8 differential analog inputs
- 12-bit A/D converter
- Programmable gain for each input channel
- Automatic channel/gain scanning with DMA
- 16 digital inputs and 16 digital outputs
- One 12-bit analog output channel
- Programmable pacer/counter

Introduction

The PCL-818 series is a family of high-performance, multifunction cards that offer the five most desired measurement and control functions: 12-bit A/D conversion, D/A conversion, digital input, digital output and counter/timer.

Automatic Channel/Gain Scanning

All PCL-818 cards feature an automatic channel/gain scanning circuit. This circuit, instead of your software, controls multiplexer switching during sampling. On-board SRAM stores different gain values for each channel. This combination lets you perform multi-channel high-speed sampling (up to 100 kHz) with different gains for each channel and DMA data transfer.

Unique Technology

PCL-818 cards share a custom-designed 160-pin ASIC chip that has a gate count of over 7,000 and utilizes 1.0 mm CMOS technology. This custom integration gives higher performance and reliability with lower power consumption on a smaller board.

Wide Selection with Migration Path

The PCL-818 series lets you choose the card that exactly matches your application and price range. The PCL-818L is designed for lower budgets, with the best price/performance ratio in the market. If you need more power, you can easily upgrade to any other card in the series.

Specifications

Analog Input

- **Channels** 16 single-ended or 8 differential
- **Resolution** 12 bits
- **Input Range Selection** Software controlled
- **Auto Channel/Gain Scanning**
- **Triggering** Software, pacer or external
- **Data Transfer** Program control, interrupt (IRQ 2 - 7) or DMA (Ch. 1 or 3)
- **Input Impedance** 10 M Ω
- **Input Overvoltage** $\pm 30 V_{DC}$ max.

Analog Output (D/A Converter)

- **Channels** One 12-bit (double-buffered)
- **Output Range** 0 ~ +5 V or 0 ~ +10 V with internal reference
0 ~ +10 V or 0 ~ -10 V with external reference

Digital Input/Output

- **Channels** 16 inputs, 16 outputs (all TTL compatible)
- **Input Voltage** Low (0 ~ +0.8 V)
High (min. +2.0 V)
- **Input Load** Low: +0.5 V @ 0.4 mA max.
High: +2.7 V @ 0.05 mA max.
- **Output Voltage** Low: 0 ~ +0.4 V
High: min. +2.4 V
- **Driving Capacity** Low: (sink) 8 mA @ 0.5 V max.
High: (source) -0.4 mA @ 2.4 V min.

A/D Pacer and Counter (8254)

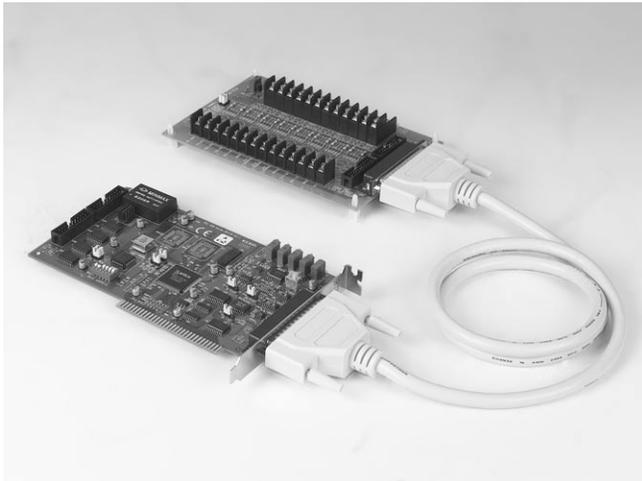
- **A/D Pacer** 32-bit with 10 MHz or 1 MHz time base
- **Max. and Min. Rates** 2.5 MHz to 0.00023 Hz
- **Counter** One 16-bit counter with 100 KHz time base

General

- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 65° C (-4 ~ 149° F)
- **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)

PCL-818L

40 kHz Multifunction Card



CE

Features

PCL-818L

- 16 single-ended or 8 differential analog inputs
- 40 kHz 12-bit A/D converter
- Programmable gain for each input channel (up to 8)
- Automatic channel/gain scanning with DMA
- 16 digital inputs and 16 digital outputs

PCL-818LS

- Low cost package of PCL-818L with PCLD-8115 and PCL-10137

Introduction

The PCL-818L is the entry-level model in the PCL-818 series. We designed it with the cost-sensitive customer in mind. It offers the same functions as the rest of the series, except that it has a 40 kHz sampling rate and only accepts bipolar inputs. It is fully software and connector compatible with the PCL-818HD and PCL-818HG. This lets you upgrade your applications to these higher performance cards without hardware or software changes.

The PCL-818LS Bundle

The PCL-818LS bundle consists of the PCL-818L card, the PCLD-8115 wiring terminal board and a DB37 cable assembly. The PCLD-8115 accommodates on-board passive signal conditioning components (resistors and capacitors), allowing you to easily implement a low-pass filter, a voltage attenuator or a 4 – 20 mA voltage converter.

Specifications

Analog Input

- **Input Range (V)** Bipolar: ± 10 , ± 5 , ± 2.5 , ± 1.25 , ± 0.625
- **Maximum Sampling Rate** 40 kS/s for all input ranges
- **Accuracy**

Gain = 0.5, 1	0.01% of FSR ± 1 LSB
Gain = 2, 4	0.02% of FSR ± 1 LSB
Gain = 8	0.04% of FSR ± 1 LSB

General

- **Power Consumption**

+5 V @ 210 mA typical, 500 mA max.
+12 V @ 20 mA typical, 100 mA max.
-12 V @ 20 mA typical, 40 mA max.
- **I/O Ports** 16 consecutive bytes
- **A/D, D/A Connector** DB37
- **Dimensions (L x H)** 155 x 100 mm (6.1" x 3.9")

Ordering Information

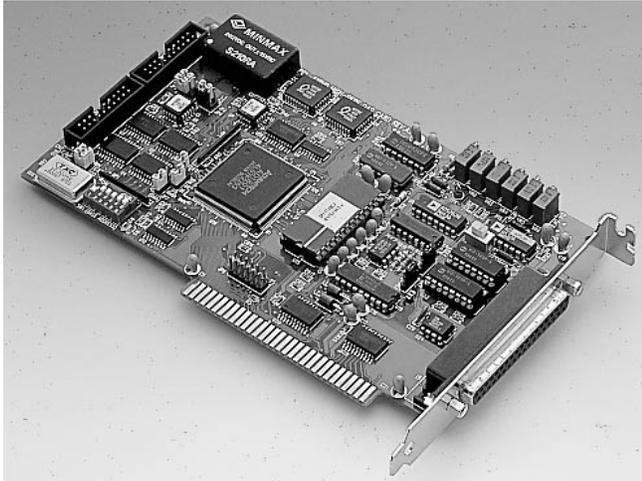
- **PCL-818L** Low-cost high-performance half-size multi-function card, user's manual and driver CD-ROM.(cable not included)
- **PCL-818LS** PCL-818L with PCLD-8115 and DB-37 cable assembly (PCL-10137-1)
- **PCL-10137-1** DB37 cable assembly, 1m
- **PCL-10137-2** DB37 cable assembly, 2m
- **PCL-10137-3** DB37 cable assembly, 3m
- **PCLD-8115** Industrial Wiring Terminal with CJC circuit and DB37 connector
- **PCLD-880** Industrial Wiring Terminal with DB37 connector

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

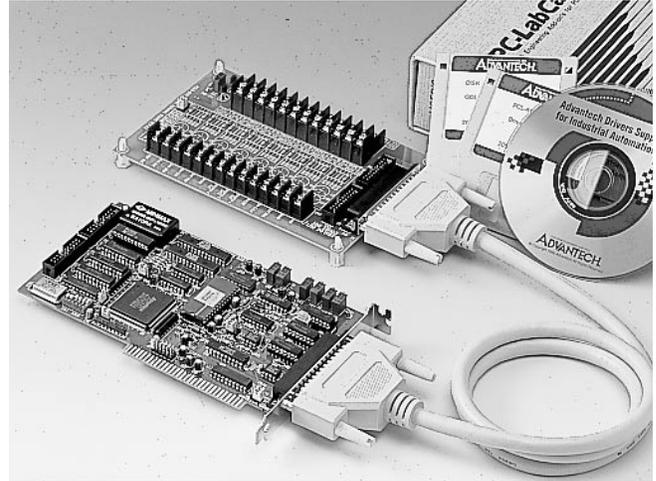
PCL-818HD PCL-818HG

High-Performance Half-Size Multifunction Card

High-Performance Multifunction Card



PCL-818HD



PCL-818HG



Introduction

The PCL-818HD has guaranteed 100 kHz sampling and transfer speeds at all gains (x 1, 2, 4 or 8, programmable) and input ranges. It features an onboard 1 K sample FIFO (First In First Out) buffer for faster data transfer and more predictable performance under Windows.

Specifications

Analog Input

- **Input Range (V)** Bipolar: $\pm 10, \pm 5, \pm 2.5, \pm 1.25, \pm 0.625$
Unipolar: 0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25
- **Maximum Sampling Rate** 100 kHz for all input ranges
- **Accuracy** Gain = 0.5, 1 0.01% of FSR ± 1 LSB
Gain = 2, 4 0.02% of FSR ± 1 LSB
Gain = 8 0.04% of FSR ± 1 LSB

General

- **On-board Memory** 1K samples FIFO for A/D. Can generate an interrupt when full or half full
- **Power Consumption** +5 V @ 500 mA max., +12 V @ 200 mA max
- **I/O Ports** 32 bytes with FIFO active or 16 bytes with FIFO disabled
- **A/D, D/A Connector** DB37
- **Dimensions (L x H)** 185 x 100 mm (7.3" x 3.9")

Ordering Information

- **PCL-818HD** High-performance half-size multifunction card with DB-37 connector, user's manual and driver CD-ROM (cable not included)
- **PCL-10137-1** DB37 cable assembly, 1m
- **PCL-10137-2** DB37 cable assembly, 2m
- **PCL-10137-3** DB37 cable assembly, 3m
- **PCLD-8115** Industrial Wiring Terminal with CJC circuit and DB37 connector
- **PCLD-880** Industrial Wiring Terminal with DB37 connector

Introduction

The PCL-818HG offers the same functions as the PCL-818HD, but it features a special high-gain programmable instrument amplifier for reading very low level input signals (x 0.5, 1, 5, 10, 50, 100, 500 or 1000).

The PCL-818HG package includes a special wiring board (PCLD-8115) with a DB-37 connector and CJC. This combination lets you measure low-level thermocouple signals without an external signal-conditioning board.

Specifications

Analog Input

- **Conversion Time** 8 μ sec.
- **Input Range (V)** Bipolar: $\pm 10, \pm 5, \pm 1, \pm 0.5, \pm 0.1, \pm 0.05, \pm 0.01, \pm 0.005$
Unipolar: 0 ~ 10, 0 ~ 1, 0 ~ 0.1, 0 ~ 0.01
- **Maximum Sampling Rate** (depends on input amplifier settling time and slew rate)

Gain	Speed	Channels
0.5, 1	100 kHz	Single (input signal ≤ 3 V p-p)
0.5, 1, 5, 10	35 kHz	Multiple
50, 100	7 kHz	Multiple
500, 1000	1 kHz	Multiple

- **Accuracy** Gain = 0.5, 1 0.01% of FSR ± 1 LSB
Gain = 5, 10 0.02% of FSR ± 1 LSB
Gain = 50, 100 0.04% of FSR ± 1 LSB
Gain = 500, 1000 0.08% of FSR ± 1 LSB

General

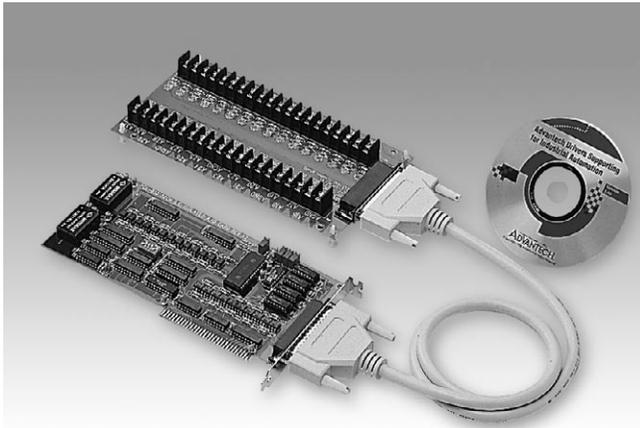
See PCL-818HD

Ordering Information

- **PCL-818HG** High-performance and High-gain multifunction card
- **PCL-10137-1** DB37 cable assembly, 1m
- **PCL-10137-2** DB37 cable assembly, 2m
- **PCL-10137-3** DB37 cable assembly, 3m
- **PCLD-8115** Industrial Wiring Terminal with CJC circuit and DB37 connector
- **PCLD-880** Industrial Wiring Terminal with DB37 connector

PCL-813B

32-ch S.E. Isolated Analog Input Card



PCL-813B ▲

PCLD-881 ▲▲

PCL-10137 ▲▲



Features

- 32 single-ended analog input channels
- Over 500 V_{DC} isolation
- 12-bit successive approximation A/D converter
- Analog input ranges (V): ±5, ±2.5, ±1.25, ±0.625, 0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25
- Program-controlled A/D trigger and data transfer

Introduction

The PCL-813B is a 12-bit 32-channel A/D card which offers high-voltage isolation on each analog input. The PCL-813B is an extremely cost effective solution for applications in industrial measurement and monitoring. The card offers 32 A/D channels with software programmable gain on each channel and two DC-to-DC converters on a 4-layer PCB with an integral ground plane. Optically-isolated inputs provide over 500 V_{DC} of isolation between the analog inputs and the PC, protecting the PC and peripherals from damage due to high voltages on the input lines. The PCL-813B is ideal for situations where the budget-conscious user requires flexibility, stability and a high level of isolation protection. The PCL-813B comes with the PCLD-881 wiring terminal board and a DB-37 cable assembly.

Specifications

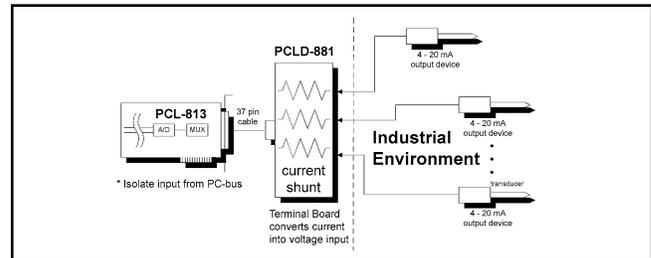
Input

- **Channels** 32 single-ended with isolation
- **Resolution** 12 bits, SAR
- **Input Ranges** Bipolar: ±5 V, ±2.5 V, ±1.25 V, ±0.625 V (software programmable)
Unipolar: 0 ~ 10 V, 0 ~ 5 V, 0 ~ 2.5 V, 0 ~ 1.25 V (jumper selectable)
- **Over Voltage** Continuous ±30 V (max.)
- **Converter** AD574 (or equivalent) w/25 µsec. conversion time
- **Data Transfer Rate** 25 kHz maximum, software control only
- **Offset Error** 0 ~ 5 V: ±1 LSB
+5 V, 0 ~ 10 V: ±2 LSB
- **Accuracy** 0.01% of reading ±1 LSB
- **Isolation Voltage** > 500 V_{DC} from analog input to PC
- **Trigger Mode** software trigger
- **Input Impedance** > 10 MΩ
- **Temperature Coefficient** ±25 PPM/°C

General

- **Power Consumption** +5 V @ 660 mA max.
+12 V @ 140 mA max.
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature** -20 ~ 65° C (-4 ~ 149° F)
- **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- **I/O Connector** DB37 female connector for input port
- **Dimensions (L x H)** 219 x 100 mm (8.6" x 3.9")

Typical application for PCL-813B:



Industrial 4 ~ 20 mA Output Device Monitoring

Ordering Information

- **PCL-813B** 32-ch. isolated analog input card, PCLD-881B wiring terminal board, DB-37 cable assembly, manual and driver CD-ROM.
- **PCLD-881B** Industrial terminal board for PCI-1713 & PCL-813B
- **PCL-10137-1** DB37 cable assembly, 1m
- **PCL-10137-2** DB37 cable assembly, 2m
- **PCL-10137-3** DB37 cable assembly, 3m
- **ADAM-3937** DB37 wiring terminal for DIN-rail mounting

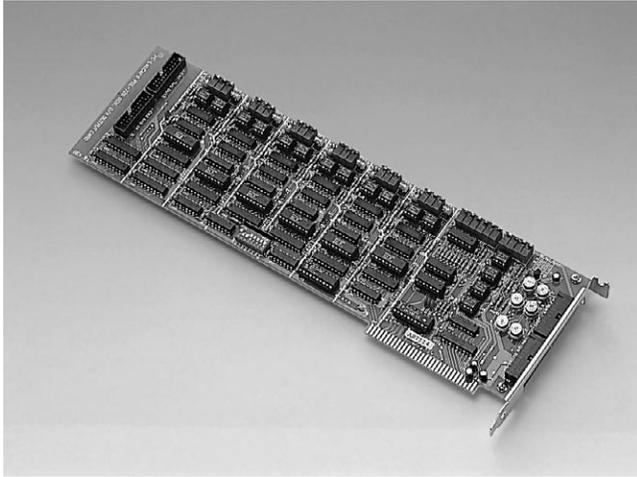
- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7
- 8 cPCI
- 9 ADAM-3000
- 10 Motion Control
- 11 ICOM
- 12 eConnectivity
- 13 UNO
- 14 ADAM-4000
- 15 ADAM-5000
- 16 ADAM-6000
- 17 ADAM-8000
- BAS

PCL-726 PCL-727 PCL-728

6-ch Digital Analog Output Card

12-ch Digital Analog Output Card

6-ch Analog Output Card



CE

Features

- 6 independent analog output channels
- 12-bit resolution double-buffered D/A converter
- Multiple voltage ranges: ± 10 V, ± 5 V, $0 \sim +5$ V, $0 \sim +10$ V and $4 \sim 20$ mA current loop (sink)
- 16 digital input channels and 16 digital output channels

Introduction

The PCL-726 provides six 12-bit D/A channels on a full-size add-on card. You can individually configure each channel to any of the following ranges: 0 to $+5$ V, 0 to $+10$ V, ± 5 V, ± 10 V and 4 to 20 mA current loop (sink). Designed for use in industrial environments, the PCL-726 is an ideal, economical solution for applications that require multiple analog outputs or current loops.

In addition to its analog outputs, the PCL-726 also provides 16 digital output channels plus 16 digital input channels. Its TTL-compatible D/I and D/O ports easily interface with our line of daughterboards for industrial On/Off control and sensing applications.

Specifications

Analog Output (D/A Converter)

- **Channels** 6
- **Resolution** 12 bits, double buffered
- **Output Ranges** Unipolar: $0 \sim +5$ V, $0 \sim +10$ V
Bipolar: ± 5 V, ± 10 V
Current loop (sink): $4 \sim 20$ mA, ± 10 V with external DC or AC reference
- **Throughput** 15 kHz
- **Settling Time** ≤ 70 μ s
- **Accuracy** $\pm 0.012\%$ full scale range
- **Temperature Drift:** 5 PPM/ $^{\circ}$ C ($0^{\circ} \sim 50^{\circ}$ C)
- **Linearity** $\pm 1/2$ bit
- **Voltage Output Current** ± 5 mA max.
- **Current Loop Excitation Voltage** Minimum $+8$ V, maximum $+36$ V for $4 \sim 20$ Voltage mA current loop
- **Reset (Power-on) Status** all D/A channels will be at 0 V output after reset or power-on (both bipolar and unipolar modes)

Digital Input

- **Channels** 16-ch TTL compatible DI
- **Logic Level 0** 0.8 V max.
- **Logic Level 1** 2.0 V min.
- **Input Loading** 0.5 V @ 0.4 mA max. (low)
 2.7 V @ 50 mA max. (high)

Digital Output

- **Channel** 16-ch TTL compatible DO
- **Logic Level 0** 0.5 V @ 8.0 mA (sink)
- **Logic Level 1** 2.4 V @ 0.05 mA (source)

General

- **Power Consumption** $+5$ V @ 500 mA typical, 1 A max.
 $+12$ V @ 80 mA typical, 110 mA max.
 -12 V @ 60 mA typical, 90 mA max.
- **Operating Temperature** $0 \sim 50^{\circ}$ C ($32 \sim 122^{\circ}$ F)
- **Storage Temperature** $0 \sim 65^{\circ}$ C ($32 \sim 149^{\circ}$ F)
- **Operating Humidity** $5\% \sim 95\%$ RH non-condensing (refer to IEC 68-2-3)
- **Connectors** One 37-pin D type female connector
Two 20-pin male ribbon cable connectors
- **Dimensions (LxH)** 340×100 mm ($13.4" \times 3.9"$)

Ordering Information

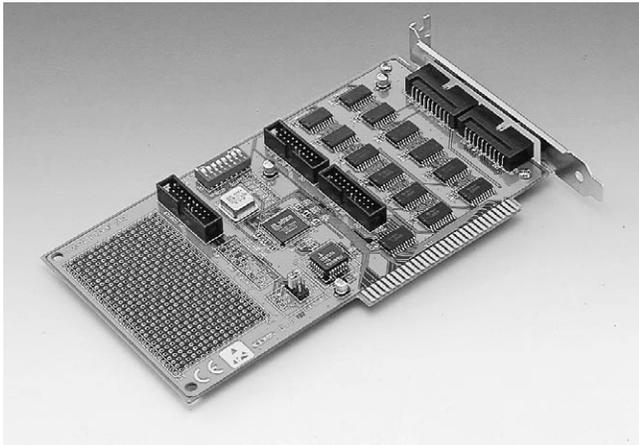
- **PCL-726** 6-channel D/A output and DIO card, user's manual and driver CD-ROM (cable not included)
- **PCL-727** 6-ch Digital Analog Output Card
- **PCL-728** 12-ch Digital Analog Output Card
- **PCL-10120-1** 20-pin flat cable, 1 m
- **PCL-10120-2** 20-pin flat cable, 2 m
- **PCLD-780** Screw terminal board
- **PCLD-782** Opto-Isolated D/I board (16-ch)
- **PCLD-785** Relay output board (16-ch)
- **ADAM-3920** 20-pin wiring terminal for DIN-rail mounting

Applications

- PID loop control
- Programmable voltage source
- Servo control
- Programmable current sink
- Function generator

PCL-720+

Digital I/O and Counter Card



Features

- 32 TTL-level digital input channels
- 32 TTL-level digital output channels
- High-output driving capacity
- Low-input loading
- 3 programmable counter/timer channels
- User configurable clock source
- Breadboard area for custom circuits

Introduction

The PCL-720+ digital I/O and counter card is a PC-compatible add-on card with 32 digital input channels, 32 digital output channels and three programmable counter/timer channels. Its digital I/O channels are TTL-compatible and use 74LS244 driver/buffer circuits to provide high output driving capacity. These buffered circuits also require lower input loading current than regular TTL circuits. The PCL-720+'s 8254 programmable counter/timer provides three flexible 16-bit counter/timer channels. You can generate waves and pulses by programming the 8254. Jumper settings determine the clock crystal frequency. The PCL-720+ also includes a breadboard area perfect for customized circuits.

Specifications

Digital Input

- **Input Lines** 32
- **Logic Level 0** 0.8 V max.
- **Logic Level 1** 2.0 V min.

Digital Output

- **Output Lines** 32
- **Logic Level 0** 0.5 V max. @ 24 mA (sink)
- **Logic Level 1** 2.0 V min. @ 15 mA (source)

Programmable Counter/Timer

- **Frequency Range** 0 ~ 2.6 MHz
- **Counters** 3 independent 16-bit counters
- **Modes** 6 programmable modes
- **Usable Pins** CLOCK and GATE for each channel

Clock Source

- **Clock Frequency** 2 MHz, 1 MHz, 500 kHz or 250 kHz; jumper selectable
- **Frequency Divider** Divided by 1, 10, 100 or user adjustable

General

- **I/O Port Address** Eight consecutive bytes from hex 200 ~ 3F8
- **Breadboard Area** 540 (30 x 18) plated-through "donuts", each with a .036" hole on 0.10" centers. Further, provide +5 V on the left side, and provide GND on the right side
- **Power Consumption** +5 V @ 500 mA typical
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- **Connectors** Five 20-pin male ribbon-cable connectors
- **Dimensions (L x H)** 185 x 100 mm (7.3" x 4")

Ordering Information

- **PCL-720** Digital I/O and counter card, user's manual, user's manual and driver CD-ROM (cable not included)
- **PCL-10120-1** 20-pin flat cable, 1 m
- **PCL-10120-2** 20-pin flat cable, 2 m
- **PCLD-780** Screw terminal board
- **PCLD-782** 24/16 Channel opto-isolated D/I board
- **PCLD-785** 24/16 Channel relay output board
- **PCLD-786** SSR and relay driver board
- **PCLD-885** 16-Channel power relay (form A) output board
- **ADAM-3920** 20-pin flat cable wiring terminal for DIN-rail mounting

Applications

Digital Input

- Contact-closure monitoring
- Switch-panel status sensor
- BCD interface receiver
- Digital signal interface

Digital Output

- Industrial on/off controller
- Digital signal interface
- BCD interface driver

Counter/Timer

- Period and pulse-width measurement
- Event and frequency counting
- Waveform and pulse generation

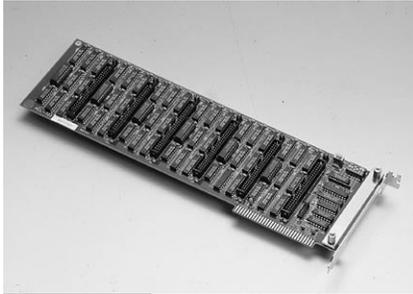
- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7
- 8 cPCI
- 9 ADAM-3000
- 10 Motion Control
- 11 ICOM
- 12 eConnectivity
- 13 UNO
- 14 ADAM-4000
- 15 ADAM-5000
- 16 ADAM-6000
- 17 ADAM-8000
- BAS

PCL-722 PCL-724 PCL-731

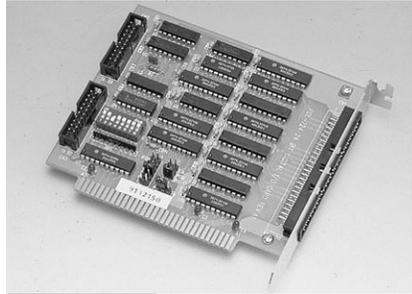
144-bit Digital I/O Card

24-bit Digital I/O Card

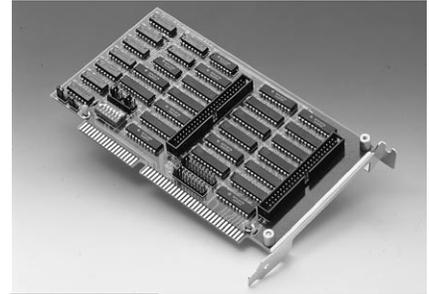
48-bit Digital I/O Card



PCL-722



PCL-724



PCL-731



Features

- Emulates 8255 PPI mode 0
- Buffered circuits for higher driving capacity than the 8255
- Interrupt handling
- Output status readback
- Pin compatible with Opto-22 I/O module racks

Specifications

- I/O Lines** 144 (24 bits x 6 ports)
- Programming Mode** 8255 PPI mode 0
- Interrupts** bits 0 and 3 of Port C can generate an interrupt to IRQ 2, 3, 4, 5, 6 or 7

Digital output

- Port A and Port B** Logic 0: 0.4 V max. @ 12 mA (sink)
Logic 1: 2.4 V min. @ 8.0 mA (source)
- Port C** Logic 0: 0.5 V max. @ 24 mA (sink)
Logic 1: 2.0 V min. @ 15 mA (source)

Digital input

- Port A and Port B** Logic Level 0: 0.8 V max.
Logic Level 1: 2.0 V min.
- Port C** Logic Level 0: 0.8 V max.
Logic Level 1: 2.0 V min.

General

- Power Consumption** +5 V @ 1.3 A typical
+5 V @ 1.8 A max.
- Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- Storage Temperature** -20 ~ 70° C
(-4 ~ 158° F)
- Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- Connectors** Six 50-pin male ribbon-cable connectors. Pin assignments are fully compatible with Opto-22 I/O module racks
- Dimensions (L x H)** 334 x 100 mm
(13.2" x 3.9")

Specifications

- I/O Lines** 24
- Programming Mode** 8255 PPI mode 0
- Interrupt** Bit 0 of one port can generate an interrupt to IRQ 2 ~ 7
- Interrupt Triggering** Rising or falling edge triggering, jumper-selectable
- Digital Output** Logic 0: 0.4 V max. @ 24 mA (sink)
Logic 1: 2.4 V min. @ 15 mA (source)
- Digital Input** Logic 0: 0.4 V max.
Logic 1: 2.4 V min.

General

- Power Consumption** +5 V @ 0.5 A (typical)
+5 V @ 0.8 A (max.)
- Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- Storage Temperature** -20 ~ 70° C
(-4 ~ 158° F)
- Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- Connectors** 50-pin male ribbon-cable connector
- Dimensions (L x H)** 125 x 100 mm
(4.9" x 3.9")

Pin Assignments

PC 7	1	2	GND
PC 6	3	4	GND
PC 5	5	6	GND
PC 4	7	8	GND
PC 3	9	10	GND
PC 2	11	12	GND
PC 1	13	14	GND
PC 0	15	16	GND
PB 7	17	18	GND
PB 6	19	20	GND
PB 5	21	22	GND
PB 4	23	24	GND
PB 3	25	26	GND
PB 2	27	28	GND
PB 1	29	30	GND
PB 0	31	32	GND
PA 7	33	34	GND
PA 6	35	36	GND
PA 5	37	38	GND
PA 4	39	40	GND
PA 3	41	42	GND
PA 2	43	44	GND
PA 1	45	46	GND
PA 0	47	48	GND
+5 V	49	50	GND

Specifications

- I/O Lines** 48
- Programming Mode** 8255 PPI mode 0
- Interrupt** Bit 0 of one port can generate an interrupt to IRQ 2-15
- Interrupt Triggering** Rising or falling edge triggering, jumper-selectable
- Digital Output** Logic 0: 0.4 V max. @ 24 mA (sink)
Logic 1: 2.4 V min. @ 15 mA (source)
- Digital Input** Logic 0: 0.4 V max.
Logic 1: 2.4 V min.

General

- Power Consumption** +5 V @ 0.5 A typical
+5 V @ 0.8 A max.
- Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- Storage Temperature** -20 ~ 70° C
(-4 ~ 158° F)
- Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- Connectors** Two 50-pin male ribbon-cable connectors
- Dimensions (L x H)** 185 x 100 mm
(7.3" x 3.9")

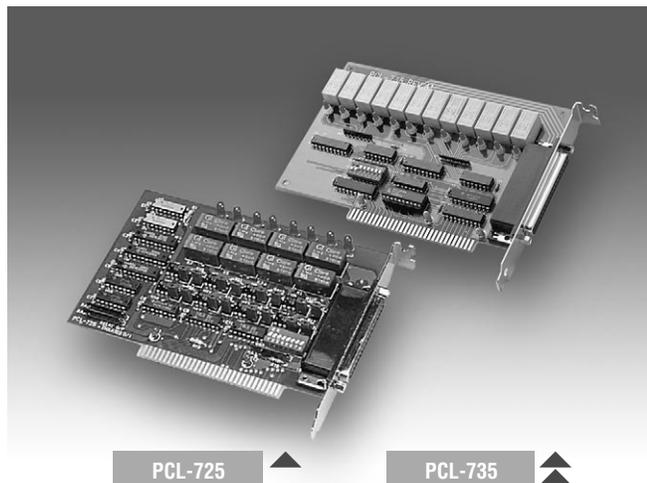
Ordering Information

- PCL-722** 144-bit digital I/O card, user's manual and driver CD-ROM (cable not included)
- PCL-724** 24-bit digital I/O card, user's manual and driver CD-ROM (cable not included)
- PCL-731** 48-bit digital I/O card, user's manual and driver CD-ROM (cable not included)
- PCL-10150-1.2** 50-pin flat cable, 1.2 m
- PCLD-782B** 24/16-ch. opto-isolated digital input board
- PCLD-785B** 24/16-ch. relay output board
- PCLD-7216** 16-ch. carrier board for SSR I/O modules
- PCLD-885** 16-ch. power relay (Form A) output board
- ADAM-3950** 50-pin flat cable wiring terminal for DIN-rail mounting

PCL-725 PCL-735

Relay Actuator and Isolated Digital Input Card

12-ch Relay Actuator Card



PCL-725

PCL-735



Introduction

PCL-735 is a relay actuator card, while PCL-725 is combination of a relay actuator and isolated digital input card. Both half-size cards provide electromechanical SPDT relays. An on-board DB-37 connector provides access to all input and output channels.

Specifications

PCL-725

Isolated Digital Input

- **Input Channels** 8
- **Opto-Isolator** 4N25
- **Input Voltage** 5 ~ 24 V
- **Input Resistance** 560 Ω (1 W @ 24 V input)
- **Input Buffers** Voltage comparators
- **Threshold Voltage** 1.5 V_{DC}, adjustable
- **Breakdown Voltage** 300 V_{DC}
- **Throughput** 10 kHz (max)

Relay Output

- **Output Channels** 8
- **Relay Type** Single-pole double-throw (SPDT, Form C)
- **Output Type** CH0 ~ CH3 with Normally Open and Normally Closed, CH4 ~ CH7 with Normally Open only
- **Contact Rating** 120 V_{AC} @ 0.5 A or 30 V_{DC} @ 1 A
- **Breakdown Voltage** 300 V AC/DC min.
- **Relay on Time** 5 ms. typical
- **Relay off Time** 5 ms. typical
- **Total Switching Time** 10 ms. typical
- **Insulation Resistance** 100 MΩ min.
- **Life Expectancy** > 5 x 10⁶ operations at AC: 110 V/0.3 A, DC: 24 V/1.25 A
- **Relay Driver** +12 V @ 33 mA for each relay

General

- **Power Consumption** +5 V @ < 0.2 A; +12 V @ 33 mA for each relay, < 0.27 A if all eight relays are energized
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- **I/O Port Address** Two consecutive bytes from hex 200 ~ 3F8
- **Connector** 37-pin D-type female connector
- **Dimensions (L x H)** 147 x 100 mm (5.75" x 3.9")

Features

PCL-725

- 8 relay outputs
- 8 optically-isolated digital inputs
- LED relay status indicators
- Isolated or non-isolated digital inputs
- Male DB37 matching connector included

PCL-735

- 12 relay outputs
- LED relay status indicators
- Male DB37 matching connector included
- Relay status readback function

PCL-735

Relay Output

- **Relay Type** Single-pole double-throw (SPDT, Form C)
- **Output Type** Ch0 to Ch11, normally open/normally closed
- **Contact Rating** 2 A @ 30 V_{DC}, 1 A @ 125 V_{AC}
- **Breakdown Voltage** 1,000 V_{AC/DC} min.
- **Relay on Time** 5 ms. typical
- **Relay off Time** 5 ms. typical
- **Total Switching Time** 10 ms. typical
- **Insulation Resistance** 1,000 MΩ @ 500 V_{DC} min.
- **Life Expectancy** > 5 x 10⁶ operations @ 30 V_{DC} and 2 A
> 2 x 10⁶ operations @ 30 V_{DC} and 1 A

General

- **Power Consumption** +5 V @ 280 mA (typical)
+12 V @ 200 mA (max.)
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Connector** One 37-pin D-type female connector
- **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- **I/O Port Address** Two consecutive bytes from hex 200 ~ 3F8
- **Dimensions (L x H)** 155 x 100 mm (6.1" x 3.9")

Ordering Information

- **PCL-725** Relay actuator and isolated D/I Card, user's manual, driver CD-ROM and one DB-37 male connector (P/N: PCL-10437-0)
- **PCL-735** 12-channel relay actuator card, user's manual, driver CD-ROM and one DB-37 male connector (P/N: PCL-10437-0)
- **PCL-10137-1** DB37 cable assembly, 1m
- **PCL-10137-2** DB37 cable assembly, 2m
- **PCL-10137-3** DB37 cable assembly, 3m
- **PCLD-880** Screw terminal board
- **ADAM-3937** DB37 wiring terminal for DIN-rail mounting

1

Software

2

IPPC

3

TPC

4

FPM

5

ATM & AWS

6

DA&C

7

cPCI

8

ADAM-3000

9

Motion Control

10

ICOM

11

eConnectivity

12

UNO

13

ADAM-4000

14

ADAM-5000

15

ADAM-6000

16

ADAM-8000

17

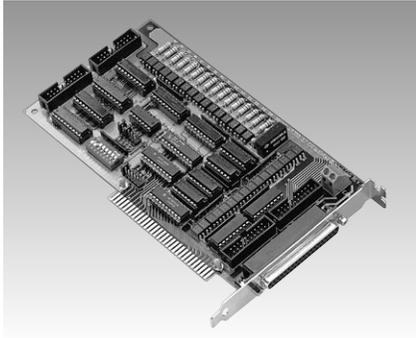
BAS

PCL-730 PCL-733 PCL-734

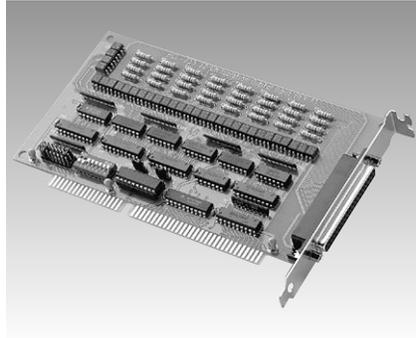
32-ch. Isolated Digital I/O Card

32-ch. Isolated Digital Input Card

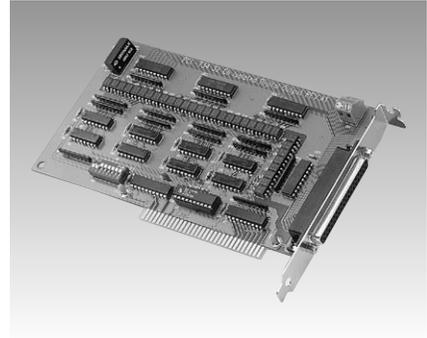
32-ch. Isolated Digital Output Card



PCL-730



PCL-733



PCL-734



Features

- 32 isolated DIO channels (16 inputs and 16 outputs)
- 32 TTL-level DIO channels (16 inputs and 16 outputs)
- High output driving capacity
- High-voltage isolation on isolated I/O channels (2,500 V_{DC})
- Interrupt capability
- Two 20-pin connectors for isolated digital I/O channels and two for TTL digital I/O channels
- D-type connector for isolated input and output channels

Introduction

The PCL-730/733/734 cards offer isolated digital input channels as well as isolated digital output channels with isolation protection up to 2,500 V_{DC}, which makes it ideal for industrial applications where high-voltage isolation is required. In addition, all output channels are provide high-voltage protection.

Specifications

Isolated Digital Input

	PCL-730	PCL-733
Input Channels	16 (16-ch/group)	32 (16-ch/group)
Interrupt Inputs	2 (IDIO, IDI1)	2 (IDIO, IDI16)
Interrupt Level	2 ~ 7	2, 3, 5, 7, 10, 11, 12, 15
Input Voltage	5 ~ 24 V _{DC}	
Input Resistance	1.2 kΩ @ 0.5 W	
Optical Isolation	2,500 V _{DC}	

Isolated Digital Output

	PCL-730	PCL-734
Output Channels	16 (16-ch/group)	32 (16-ch/group)
Optical Isolation	2,500 V _{DC}	1,000 V _{DC}
Throughput	10 kHz	
Supply Voltage	5 ~ 40 V _{DC}	
Sink Current	200 mA max./channel	

Features

- 32 isolated, bidirectional digital input channels
- High-voltage isolation (2,500 V_{DC})
- Interrupt capacity
- D-type connectors for isolated input channels
- Reverse voltage protection for isolated input channels (up to 24 V_{DC})

Features

- 32 isolated digital output channels
- High output driving capacity
- High-voltage isolation on output channels (1,000 V_{DC})
- High sink current on isolated output channels (200 mA/channel)
- Integral suppression diodes for inductive loads
- Wide output range (5 ~ 40 V_{DC})
- D-type connectors for isolated output channels

General

	PCL-730	PCL-733	PCL-734	
I/O Connector Type	37-pin D-type female			
Dimensions (L x H)	185 x 100 mm (7.3" x 3.9")			
Power Consumption	Typical	+5 V @ 330 mA	+5 V @ 320 mA	+5 V @ 330 mA
	Max.	+5 V @ 500 mA	+5 V @ 500 mA	+5 V @ 500 mA
Temperature	Operating	0 ~ 60° C (32 ~ 140° F)		
	Storage	-20 ~ 70° C (-4 ~ 158° F)		
Relative Humidity	5 ~ 95% RH non-condensing (refer to IEC 68-2-3)			

Note: The PCL-730 also provides 16-ch TTL Digital Input and 16-ch TTL Digital Output. Please refer to the PCL-730 User's Manual for the detail information.

Ordering Information

- PCL-730** 32-channel isolated digital I/O card, user's manual and driver CD-ROM (cable not included)
- PCL-733** 32-channel isolated digital input card, user's manual and driver CD-ROM (cable not included)
- PCL-734** 32-channel isolated digital output card, user's manual and driver CD-ROM (cable not included)
- PCL-10120-1** 20-pin flat cable, 1 m (for PCL-730 only)
- PCL-10120-2** 20-pin flat cable, 2 m (for PCL-730 only)

PCL-730 PCL-733 PCL-734

- **PCL-10137-1** DB37 cable assembly, 1m
- **PCL-10137-2** DB37 cable assembly, 2m
- **PCL-10137-3** DB37 cable assembly, 3m
- **PCLD-782** 16-channel opto-isolated D/I board (for PCL-730 only)
- **PCLD-785** 16-channel relay output board (for PCL-730 only)
- **PCLD-786** 8-channel SSR I/O module carrier board (for PCL-730 only)
- **PCLD-885** 16-channel power relay (form A) output board (for PCL-730 only)
- **PCLD-780** Universal screw terminal board
- **PCLD-880** Universal screw terminal board
- **ADAM-3920** 20-pin flat cable wiring terminal for DIN-rail mounting (for PCL-730 only)
- **ADAM-3937** DB37 wiring terminal for DIN-rail mounting

Applications

- Industrial On/Off control
- Contact closure monitoring
- Switch status sensing
- BCD interfacing
- Digital input control
- Industrial and lab automation

Pin Assignments

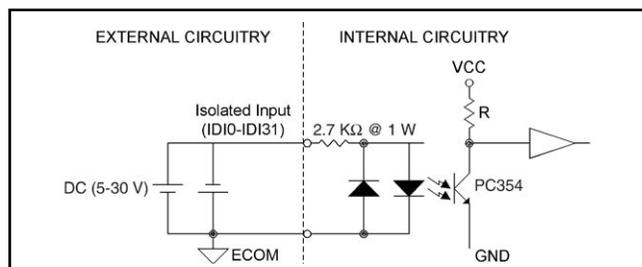
CN1 of PCL-730				CN2 of PCL-730			
IDO 0	1	2	IDO 1	IDI 0	1	2	IDI 1
IDO 2	3	4	IDO 3	IDI 2	3	4	IDI 3
IDO 4	5	6	IDO 5	IDI 4	5	6	IDI 5
IDO 6	7	8	IDO 7	IDI 6	7	8	IDI 7
IDO 8	9	10	IDO 9	IDI 8	9	10	IDI 9
IDO 10	11	12	IDO 11	IDI 10	11	12	IDI 11
IDO 12	13	14	IDO 13	IDI 12	13	14	IDI 13
IDO 14	15	16	IDO 15	IDI 14	15	16	IDI 15
E.GND	17	18	E.GND	EI.GND 1	17	18	EI.GND 2
PCOM1/E.GND	19	20	PCOM2	EI.GND 1	19	20	EI.GND 2

CN3 of PCL-730				CN4 of PCL-730			
DO 0	1	2	DO 1	DI 0	1	2	DI 1
DO 2	3	4	DO 3	DI 2	3	4	DI 3
DO 4	5	6	DO 5	DI 4	5	6	DI 5
DO 6	7	8	DO 7	DI 6	7	8	DI 7
DO 8	9	10	DO 9	DI 8	9	10	DI 9
DO 10	11	12	DO 11	DI 10	11	12	DI 11
DO 12	13	14	DO 13	DI 12	13	14	DI 13
DO 14	15	16	DO 15	DI 14	15	16	DI 15
D.GND	17	18	D.GND 2	D.GND	17	18	D.GND 2
+5V	19	20	+12V	+5V	19	20	+12V

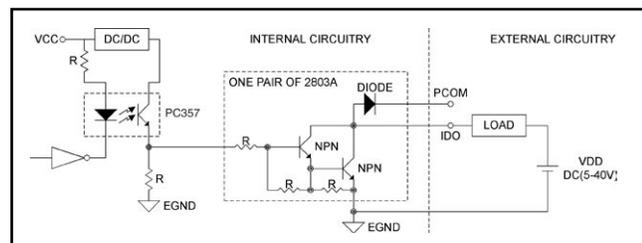
CN6 of PCL-730

IDIO	1	20	IDI1
IDI2	2	21	IDI3
IDI4	3	22	IDI5
IDI6	4	23	IDI7
IDI8	5	24	IDI9
IDI10	6	25	IDI11
IDI12	7	26	IDI13
IDI14	8	27	IDI15
EI.GND1	9	28	EI.GND2
PCOM1/E.GND	10	29	E.GND
IDO0	11	30	IDO1
IDO2	12	31	IDO3
IDO4	13	32	IDO5
IDO6	14	33	IDO7
IDO8	15	34	IDO9
IDO10	16	35	IDO11
IDO12	17	36	IDO13
IDO14	18	37	IDO15
PCOM2	19		

- DO** Digital output
- DI** Digital input
- IDO** Isolated digital output
- IDI** Isolated digital input
- E.GND** External ground for isolated output
- EI.GND** External common for isolated input
- D.GND** Digital ground
- PCOM** Free wheeling common diode



Isolated Input Circuit Diagram



Isolated Output Circuit Diagram

CN1 of PCL-733

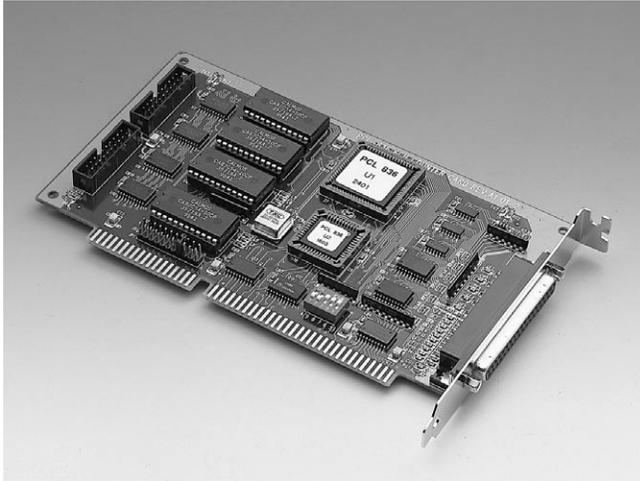
IDIO	1	20	IDI1
IDI2	2	21	IDI3
IDI4	3	22	IDI5
IDI6	4	23	IDI7
EI.GND1	5	24	IDI8
IDI9	6	25	IDI10
IDI11	7	26	IDI12
IDI13	8	27	IDI14
IDI15	9	28	EI.GND2
IDI16	10	29	IDI17
IDI18	11	30	IDI19
IDI20	12	31	IDI21
IDI22	13	32	IDI23
EI.GND3	14	33	IDI24
IDI25	15	34	IDI26
IDI27	16	35	IDI28
IDI29	17	36	IDI30
IDI31	18	37	EI.GND4
NC	19		

CN1 of PCL-734

IDO0	1	20	IDO1
IDO2	2	21	IDO3
IDO4	3	22	IDO5
IDO6	4	23	IDO7
PCOM1	5	24	IDO8
IDO9	6	25	IDO10
IDO11	7	26	IDO12
IDO13	8	27	IDO14
IDO15	9	28	PCOM2
IDO16	10	29	IDO17
IDO18	11	30	IDO19
IDO20	12	31	IDO21
IDO22	13	32	IDO23
PCOM3	14	33	IDO24
IDO25	15	34	IDO26
IDO27	16	35	IDO28
IDO29	17	36	IDO30
IDO31	18	37	PCOM4
E.GND	19		

PCL-836

6-ch Counter/Timer Card



CE

Features

- Periodic interrupt generation
- 6 independent 16-bit counters
- Digital filter for noise reduction
- Binary or BCD counting
- Programmable frequency output
- Complex duty-cycle output
- Single-shot output
- 16-bit TTL input and 16-bit TTL output ports
- Selectable interrupt input channel
- Up to 10 MHz input frequency
- Pulsewidth and period measurement
- Time-delay generation
- F/V conversion and accumulation

Introduction

PCL-836 is a general purpose counter/timer and digital I/O card for PC/AT compatible computers. It provides six 16-bit counter channels. It also includes 16 digital outputs and 16 digital inputs. Two 8254 chips provide a variety of powerful counter/timer function modes to match your industrial and/or laboratory applications.

Unique Digital Filter

PCL-836 includes a unique digital filter to eliminate noise on the input signal. The frequency can be adjusted to provide more stable output readings.

Specifications

Programmable Counter

- **Counter** Six independent 16-bit counter channels
- **Modes** Six programmable counter modes
- **Programmable Digital Noise Filter** 1.6 ms to 52 ms
- **3 PWM Output**
- **TTL Compatible Input/Output**
- **Interrupt** IRQ 2, 4, 5, 7, 10, 11, 12, 15 (jumper selectable)

Digital Input/Output

- **16 TTL Input Channels** Logic level 0: 0.8 V max.
Logic level 1: 2.4 V min.
- **16 TTL Output Channels** Logic level 0: 0.5 V max. @ 8 mA
Logic level 1: 2.4 V min. @ 0.4 mA

General

- **Power Consumption** +5 V @ 360 mA (typical)
+5 V @ 400 mA (max.)
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- **Connector** One 37-pin D-type female connector for counter I/O
Two 20-pin male flat-cable connector for digital I/O
- **Dimensions (L x H)** 185 x 100 mm (7.3" x 3.9")

- **PCLD-880** Screw terminal board
- **ADAM-3937** DB-37 wiring terminal for DIN-rail mounting

Pin Assignments

CLK1	1	20	OUT1
GATE1	2	21	GND
CLK2	3	22	OUT2
GATE2	4	23	GND
CLK3	5	24	OUT3
GATE3	6	25	GND
CLK4	7	26	OUT4
GATE4	8	27	GND
CLK5	9	28	OUT5
GATE5	10	29	GND
CLK6	11	30	OUT6
GATE6	12	31	GND
Interrupt Input	13	32	Interrupt Enable
PWM1	14	33	PWM2
PWM3	15	34	GND
Fout1	16	35	Fout2
Fout3	17	36	Fout4
Fout5	18	37	Fout6
+5V	19		

Ordering Information

- **PCL-836** 6-channel counter/timer card, user's manual and driver CD-ROM (cable not included)
- **PCL-10137-1** DB37 cable assembly, 1m
- **PCL-10137-2** DB37 cable assembly, 2m
- **PCL-10137-3** DB37 cable assembly, 3m

Applications

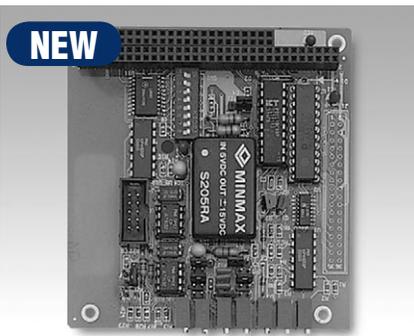
- Event counting
- Industrial automation (flowmeter/wattmeter monitoring)
- Programmable frequency synthesis
- Frequency counter

PCM-3712 PCM-3718H/HG/HO PCM-3724

2-ch. Analog Output Module
12-bit Multifunction Module
with Programmable Gain

48-ch Digital I/O Module

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS



PCM-3712

Features

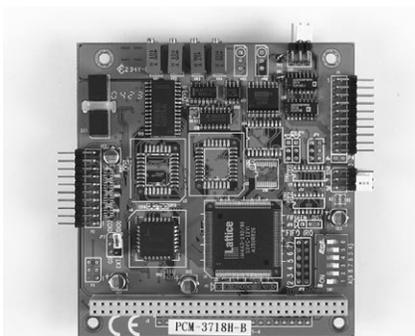
- 2 channels analog output module
- 0 to 5 V, 0 to 10 V, -2.5 V to +2.5 V, -5 V to +5 V, -10 V to +10 V, or 4 to 20 mA output range
- 12-bit resolution

Specifications

- Analog Output Channels** 2
- Voltage Range Unipolar** 0 to 5 V, 0 to 10 V
- Bipolar** ± 2.5 V, ± 5 V, ± 10 V
- Current Range** 4 ~ 20 mA
- Output Current Range** ± 5 mA
- Impedance** 0.1 max./0.02 typ.
- Resolution** 12-bit
- Nonlinearity** ± 1 LSB
- Differential Nonlinearity** ± 1/2 LSB
- System Accuracy** ± 0.025% FSR (Voltage)
± 0.05% FSR (Current)
- Dynamic Performance** 5 V step: 16 μs
0.3V/μs typ. (Voltage)
1.2mA/μs (Current)
- Settling Time to 1/2 LSB** 10 V step: 33 μs
- Slew Rate** 0.3 V/μs typ. (Voltage)
1.2 mA/μs (Current)
- D/A Converter Single Channel** 33 kHz bit resolution

Ordering Information

- PCM-3712** 2-channel analog output module (18 cm Flat Cable 10-pin to DB9 (F) included)
- ADAM-3909** DB9 cable wiring for DIN-rail mounting



PCM-3718H/HG

Features

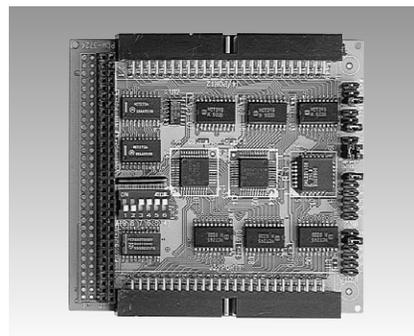
- 16 single-ended or 8 differential analog inputs
- 12-bit A/D converter, up to 100 KHz sampling rate with DMA transfer
- Two 8-bit digital input/output TTL level channels
- One 12-bit Analog output channel (PCM-3718HO only)

Specifications

- Analog Input**
- Channels** 16 single-ended or 8 differential inputs
12 bits
- Resolution** 12 bits
- Analog Output**
- Channel** One 12-bit
- Output Range** 0 ~ +5V or 0 ~ +10V with int. reference
0 ~ +10V or 0 ~ -10V with ext. reference
Bipolar: ±10, ±5, ±1, ±0.5, ±0.1, ±0.05, ±0.01, ±0.005
Unipolar (PCM-3718HG): 0 ~ 10, 0 ~ 1, 0 ~, 0 ~ 0.01
- Input Range**
- Digital Input/Output**
- Channels** Two 8-bit TTL-level Digital I/O channels
- Input Voltage** Logic 0: 0.8 V max.
Logic 1: 2.0 V min.
- Output Voltage** Logic 0: 0.33 V max. @ 6 mA (sink)
Logic 1: 3.84 V min. @ 6 mA (source)
- Power Requirements** +5 V, ± 5 % tolerance on power supply
- Temperature** Operating: 0 ~ 60° C (32 ~ 140° F)
Storage: -40 ~ 85° C (-40 ~ 185° F)

Ordering Information

- PCM-3718H** 12-bit multifunction module with programmable gain (cable not included)
- PCM-3718HG** PCM-3718H w/high gain
- PCM-3718HO** PCM-3718H w/AO
- ADAM-3920** 20-pin flat cable wiring terminal for DIN-Rail mounting
- PCLD-780** Screw-terminal board for 20-pin flat cable
- PCL-10120-1** 20-pin flat cable, 1 m
- PCL-10120-2** 20-pin flat cable, 2 m



PCM-3724

Features

- Output status read back
- Channels simulate 8255 PPI mode 0
- Interrupt triggering, rising/falling edge

Specifications

- Digital I/O**
- Channels** 48 digital I/O channels
- Throughput** 300 kbps typical
400 kbps max.
- Input Voltage** Logic 0: 0.8 V max.
Logic 1: 2.0 V min.
- Output Voltage** Logic 0: 0.5 V max. @ 24 mA (sink)
Logic 1: 2.0 V min. @ 15 mA (source)
- Power Requirements** +5 V, ± 5 % tolerance on power supply
- Size/Weight** 96 x 90 mm (3.8"x 3.5"), 0.084 kg (0.185 lb)
- Temperature** Operating: 0 ~ 60° C (32 ~ 140° F)
Storage: -40 ~ 85° C (-40 ~ 185° F)
- Operating Humidity** 0 ~ 90% relative humidity, non-condensing

Ordering Information

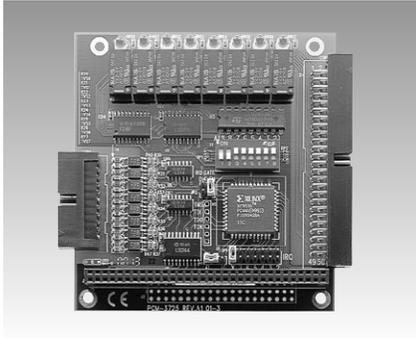
- PCM-3724** 48-channel digital I/O module (cable not included)
- ADAM-3950** 50-pin flat cable wiring terminal for DIN-Rail mounting
- PCLD-785B** 24-channel relay output board
- PCLD-782B** 24-channel opto-isolated digital input board
- PCL-10150-1.2** 50-pin flat cable, 1.2 m

PCM-3725 PCM-3730 PCM-3780

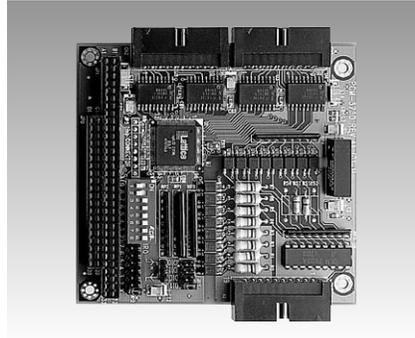
8-ch Isolated DI and 8-ch Relay Output Module

16-ch Isolated Digital I/O Module

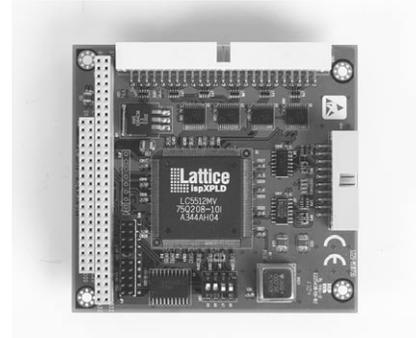
3-ch Counter/Timer with 24-ch TTL DI/O Module



PCM-3725



PCM-3730



PCM-3780



Features

- LED indicators to show activated relays
- Interrupt handling capability

Specifications

Isolated Digital Input

- Channels** Opto-Isolated 8 DI channels
- Over-Voltage Protection** 70 V_{DC}
- Isolation Voltage** 2500 V_{DC}
- Isolator Response Time** 25 μs

Relay Output

- Channels** 8-ch SPDT (Form C) relays
- Nominal Switch** 1.5 A @ 30 V_{DC}

Capacity

- Switching Power** 45 W max.
- Switching Voltage** 220 V_{DC} max.
- Switching Current** 1.5 A max.
- Breakdown Voltage** 2000 V_{RMS} for 1 min.

General

- Power Consumption** 100 mA @ +5 V (typical); 280 mA @ +5 V (max)
- Isolated DI Connector** 20-pin post header
- Relay Output Connector** 50-pin post header

Ordering Information

- PCM-3725** 8-ch Isolated Digital Input and 8-ch Relay Output Module, user's manual and driver CD-ROM. (cable not included)
- PCL-10120-1** 20-pin Flat Cable 1m
- PCL-10120-2** 20-pin Flat Cable 2m
- PCL-10150-1.2** 50-pin Flat Cable 1.2m
- ADAM-3920** 20-pin Flat Cable Wiring Terminal for DIN-Rail
- ADAM-3950** 50-pin Flat Cable Wiring Terminal for DIN-Rail
- PCLD-780** Screw-Terminal Board for 20-pin Flat Cable

Features

- High output driving capacity and high-voltage isolation
- Interrupt capability
- High sink current on isolated output channels

Specifications

- Power Consumption** 330 mA @ +5 V (typical); 500 mA @ +5 V (max)

Isolated Digital I/O

- Channels** Opto-Isolated 8DI and 8DO
- Input Resistance** 2 kΩ @ 0.5 V
- Output Voltage** Open collector 5 to 40 V_{DC}
- Output Sink Current** 200 mA max.
- Isolation Voltage** 2,500 V_{DC}
- Throughput** 10 kHz max.

TTL-level Digital I/O

- Channels** TTL-level 16DI and 16DO
- Input Voltage** Low: 0.8 V max. High: 2.0 V min.
- Output Voltage** Low: Sink 8 mA @ 0.5 V max. High: Source -0.4 mA @ 2.4 V min.
- Input Load** Low: 0.4 mA @ 0.5 V max. High: 0.05 mA @ 2.7 V max.
- Throughput** 30 kHz typical

Ordering Information

- PCM-3730** 16-ch isolated digital I/O module, user's manual and driver CD-ROM. (cable included)
- PCL-10120-1** 20-pin flat cable, 1m
- PCL-10120-2** 20-pin flat cable, 2m
- ADAM-3920** 20-pin flat cable wiring terminal for DIN-Rail mt.
- PCLD-780** Screw-terminal board for 20-pin flat cable
- PCLD-785/885** 16-ch relay/power relay output board

Specifications

Programmable counter

- 3 independent 16-bit counters
- 4 independent programmable clock sources (10 M, 1 M, 100 K, 10 K)
- 12 programmable counter modes
- TTL compatible logical level
- Maximum frequency 20 MHz

Digital input/output

- 24 TTL input/output channels (8255 mode 0)**
 - Input: Logic 0: 0.8V max. Logic 1: 2.4V min.
 - Output TTL output channels: Logic 0: 0.5 V max. @ 24 mA (sink) Logic 1: 2.4 V min. @ 15 mA (source)

Counter/Timer

- Channels** 3
- Resolution** 16-bit
- Compatibility** TTL level
- Max. Input Frequency** 20 MHz

General

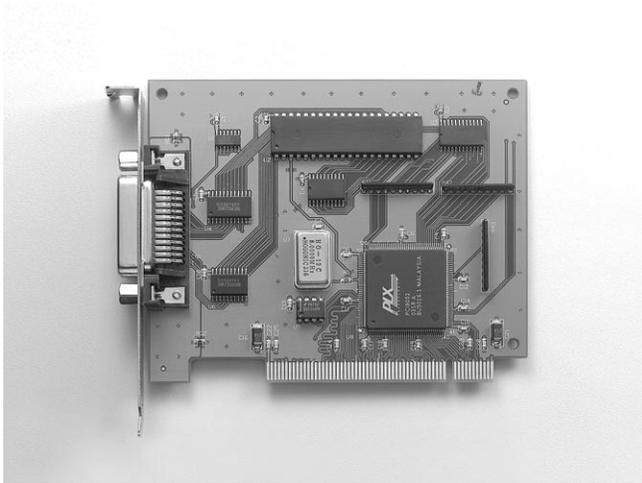
- I/O Connector Type** One 50 pin and one 20 pin box header
- Dimensions** 175 x 99 mm (6.9" x 3.9")
- Power Consumption** Typical: +5 V @ ? mA Max.: +5 V @ ? A
- Temperature** Operating: 0 ~ 60° C (32 ~ 158° F) (refer to IEC 68-2-1, 2) Storage: -20 ~ 70° C (-4 ~ 158° F)
- Relative Humidity** Operating: 5 ~ 85%RH non-condensing (refer to IEC 68-1,-2,-3) Storage: 5 ~ 95%RH non-condensing (refer to IEC 68-1,-2,-3)

Ordering Information

- PCM-3780** 3-ch Counter/Timer with 24ch TTL DIO Module
- PCL-10120-1** 20-pin Flat Cable 1m
- PCL-10150-1.2** 50-pin Flat Cable 1.2m
- ADAM-3920/50** 20/50-pin Flat Cable Wiring Terminal for DIN-Rail

PCI-1670

GPIB Interface PCI-bus Card



FCC CE

Features

- Complete IEEE 488.2 compatibility
- Supports Windows® 95/98/NT/ME/2000/XP and DOS.
- Full driver, library, and example support, including Visual C++®, C++ Builder®, LabWindows/CVI, Visual Basic®, Delphi® and LabView® drivers.
- Provides NI-like driver & function libraries.
- PCI bus specification 2.1 compliant
- I/O address automatically assigned by PCI Plug & Play
- Provides powerful and easy-to-use configuration utility

Introduction

PCI-1670 is a high-performance PCI-bus card with a GPIB interface. The card is fully compatible with IEEE 488.1 and 488.2 standards with its PCI 2.1 bus specification. With two driver control modes: controller mode and slave mode; PCI-1670 can perform basic the IEEE 488 talker, listener and controller functions required by IEEE 488.2. You can also connect up to 15 GPIB instruments. Therefore, PCI-1670 is especially suitable for instrument measurements and control.

PCI-1670 is available for Windows® 95/98/NT/ME/2000/XP and DOS, and it supports complete drivers and libraries. To make driver development easier, PCI-1670 comes with example drivers programmed in: Visual C++®, C++ Builder®, Labwindows/CVI®, Visual Basic®, Delphi® and LabVIEW®.

Furthermore, PCI-1670 also offers powerful testing features and a configuration utility that allows users to easily access and control instruments.

PCI-1670 offers a comprehensive supplementary controller driver database and provides NI-like commands to help users develop applications. Users can use an interactive GPIB window interface to control devices directly without any need of programming.

Specifications

- **Bus interface** PCI specification 2.1 compliant
- **IRQ and I/O memory automatically assigned by PCI plug-and-play**
- **IEEE 488, IEEE 488.1 and IEEE 488.2 standard compatible**
- **A maximum of 15 GPIB-instruments can be connected.**
- **Connector** IEEE 488 standard 24-pin
- **Speed** GPIB-bus transfer rate up to 1M bytes/sec
- **OS** Windows® 95/98/NT/2000/XP, DOS
- **Libraries** Visual C++, Borland C++ Builder, LabWindows/CVI, Visual Basic, Delphi, Labview
- **Dimensions** 131 x 106 mm (5.15" x 4.17")
- **Operating Temperature** 0 ~ 55° C
- **Operating Humidity** 10 ~ 90% Relative Humidity, non-condensing.

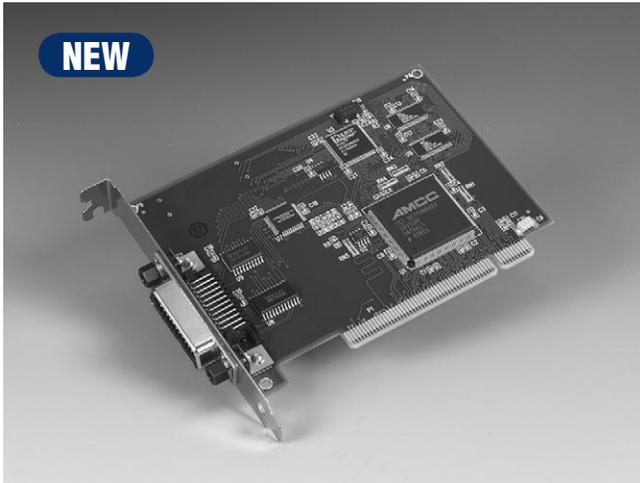
Ordering Information

- **PCI-1670** GPIB Interface PCI-bus Card, IEEE-488 Cable, 2M
- **PCL-10488-1** IEEE-488 Cable, 1M
- **PCL-10488-2** IEEE-488 Cable, 2M
- **PCL-10488-4** IEEE-488 Cable, 4M

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCI-1671

High-Performance IEEE-488.2 Interface for PCI-Bus Computers



CE

Features

- IEEE 488.2 Standard interface
- Complete Talker/Listener/Controller
- Industry standard 32-bit PCI bus
- Data transfer rates over 1 Megabytes/sec
- REP-INSW block transfer
- 1024-word FIFO buffer
- High-Speed State Machine Bus Manager
- 7 Interrupt lines, shared interrupt capability
- Transparent interrupt enabling/disabling
- Includes GPIB-Library software

Introduction

The PCI-1671 IEEE-488 interface converts any PCI bus personal computer into an instrumentation control and data acquisition system. Connect up to 14 instruments using standard IEEE-488 cables such as the PCL-10488-2, 2 meter IEEE-488 interface cable.

Greater than 1MB/s Transfer Rates

The PCI-GPIB transfers data over the GPIB at rates in excess of 1 million bytes per second using the maximum IEEE-488 specification cable length (2 meters times the # of devices). A 1024-word FIFO buffer and the advanced REP-INSW ISR data transfer method provide the horsepower required to then transfer the data between the GPIB board and the host computer. The high-speed state machine also provides byte-to-word packing and unpacking, and because words carry twice the information that bytes do, packed data requires fewer bus cycles to transfer the same GPIB information.

IEEE-488.2 (GPIB) Compatibility

The PCI-GPIB adheres to ANSI/IEEE Standard 488-1978. Often referred to as the IEEE-488.2 bus, GPIB bus or HP-IB bus, the GPIB (General Purpose Interface Bus) is a standard for instrumentation communication and control for instruments from manufacturers the world over. The GPIB provides handshaking and interface communications over an 8-bit data bus employing 5 control and 3 handshake signals. Equipped with a PCI-1671, a personal computer can:

Control GPIB instruments, gather data from GPIB test equipment, or become a data acquisition station in a GPIB system.

Software

The PCI-1671 includes powerful GPIB-Library. The library greatly simplifies your programming effort. The PCI-1671 is also supported by a wide variety of application software packages including SoftWIRE®, LabVIEW® and many others.

Windows® 95/98/2000/XP and DOS Compatibility

The PCI-GPIB hardware supports all popular operating systems and languages regardless of the operating systems support for Plug & Play. The installation software will manage resources for you on systems without Plug & Play.

Specifications

- **IEEE Compatibility** IEEE-488.1 and IEEE-488.2
- **Maximum Transfer Rate** >1 Mbyte/s
- **Power** 5 V_{DC} @ 375 mA Typical
- **I/O Connector** IEEE-488 Standard 24 pin
- **Operating Temperature and Humidity** 0 ~ 60° C @ 0-90% RH
- **Storage Temperature & Humidity** -40 ~ 100° C @ 5-90% RH

Ordering Information

- **PCI-1671** High-Performance IEEE-488.2 Interface for PCI-Bus Computers
- **PCL-10488-1** IEEE-488 Cable, 1M
- **PCL-10488-2** IEEE-488 Cable, 2M
- **PCL-10488-4** IEEE-488 Cable, 4M

USB-4711

100 kS/s, 12-bit USB Multifunction Module

NEW



Features

- Supports USB 2.0
- Portable
- No need for external power
- 16 analog input channels
- 12-bit resolution AI
- Sampling rate up to 100 kS/s
- 8DI/8DO, 2 AO and 1 16-bit counter (USB-4711L w/o AO)
- Wiring terminal on Modules

Introduction

The USB-4700 series consists of true Plug & Play data acquisition modules. No more opening up your computer chassis to install boards. Just plug in the module, then get the data. It's easy and efficient.

USB-4711 offers 16SE / 8DI inputs with 12-bit resolution, up to 100 kS/s throughput, 16 digital I/O lines and 1 user counter/timers, and optional 12-bit analog outputs.

Reliable and rugged enough for industrial applications, yet inexpensive enough for home projects, USB-4711 is perfect for adding measurement and control capability to any computer with a USB port. USB-4711 is fully USB Plug & Play compatible and easy to use. It obtains all required power from the USB port, so no external power supply is required.

Specifications

Analog Input

- **Channels** 16 Single-Ended
- **Resolution** 12-bit
- **FIFO Size** 1K samples
- **Sampling Rate** 100 kS/s max.
- **Conversion Time** 10 μ s
- **Input Range** $\pm 10\text{ V} \pm 5\text{ V} \pm 2.5\text{ V} \pm 1.25\text{ V} \pm 0.625\text{ V}$
- **Input Protection** 30 Vp-p
- **Input Impedance** 2 Ω /5 pF
- **Trigger Mode Software** On-board or external programmable pacer

Digital Input / Output

- **Input Channels** 8
- **Input Voltage** Low 0.8 V max.
High 2.0 V max.
- **Output Channels** 8
- **Output Voltage** Low 0.8 V max.@ 0.8 mA (sink)
High 2.0 V min.@ -0.4 mA (source)

Analog Output

- **Channels** 2
- **Resolution** 12-bit
- **Throughput** 100 kS/s

Ordering Information

- **USB-4711** 100 kS/s, 12-bit USB multifunction module

1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AWS

6
DA&C

7
cPCI

8
ADAM-3000

9
Motion Control

10
ICOM

11
eConnectivity

12
UNO

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ADAM-4000

14
ADAM-5000

15
ADAM-6000

16
ADAM-8000

17
BAS

USB-4716

100 kS/s, 16-bit USB Multifunction Module

NEW



Features

- Supports USB 2.0
- Portable
- No need for the external power
- 16 analog input channels
- 16-bit resolution AI
- Sampling rate up to 100 kS/s
- 16 DIO, 2 AO and 1 32-bit counter (USB-4716L w/o AO)
- Wiring terminal on Modules

Introduction

The USB-4700 series consists of true Plug & Play data acquisition devices. No more opening up your computer chassis to install boards—just plug in the module, then get the data. It's easy and efficient. USB4716 offers 16SE inputs with 16-bit resolution, up to 100 kS/s throughput, 16 digital I/O lines and 2 user counter/timers, and optional 12-bit analog outputs.

Reliable and rugged enough for industrial applications, yet inexpensive enough for home projects, the USB-4716 is the perfect way to add measurement and control capability to any USB capable computer. The USB-4716 is fully USB Plug & Play and easy to use. It obtains all required power from the USB port, so no external power connection is ever required.

Specifications

Analog Input

- **Channels** 16 Single-Ended
- **Resolution** 16-Bit
- **Max. SPS** 100 kS/s
- **Conversion Time** 10 μ s
- **Input Range/Gain** /Bi-polar By Gain Gain = 1, 2, 4, 8
- **Max Input Overvoltage** +/- 15V
- **Trigger Mode** Software / Internal Or External Pacer
- **DC/INL/DNL/..** +/-1LSB / Gain Error
- **AC/SNR/ENOB** 68dB / 11-Bit

Analog Output

- **Channels** 2
- **Resolution** 16-Bit
- **Ranges** 0 ~ 5V, 0 ~ 10V
- **Accuracy** DNL/INL = +/-1LSB

Digital Input / Output

- **Input Channels** 6
- **Input Voltage** Low 0.8 V max.
High 2.0 V max.
- **Output Channels** 16
- **Output Voltage** Low 0.8 V max. @ 0.8 mA (sink)
High 2.0 V min. @ -0.4 mA (source)

Programmable Counter / Timer

- **Channels** 1
- **Resolution** 16-bit
- **Compatibility** TTL Level
- **Base Clock** 10 MHz
- **Max. Input Frequency** 10 MHz

Ordering Information

- **USB-4716** 100 kS/s, 16-bit USB multifunction module

USB-4718

8-channel Thermocouple Input Module

NEW



Features

- Supports USB 2.0
- Portable
- No need for the external power
- 8 thermocouple input channels
- 3000 V_{DC} isolation
- Supports 4-20mA
- Wiring terminal on Modules

Introduction

The USB-4700 series consists of true Plug & Play data acquisition devices. No more opening up your computer chassis to install boards—just plug in the module, then get the data. It's easy and efficient. USB4718 offers 8 thermocouple inputs with 16-bit resolution, up to 0.1% input range accuracy, or 4-20mA inputs.

Reliable and rugged enough for industrial applications, yet inexpensive enough for home projects, the USB-4718 is the perfect way to add measurement and control capability to any USB capable computer. The USB-4718 is fully USB plug and play and easy to use. It obtains all required power from the USB port, so no external power connection is ever required.

Specifications

Analog Input

- **Effective Resolution** 16-bit
- **Channels** 8 differential
- **Ch. Independent Conf.** Yes
- **Input Type** T/C & 4-20 mA
- **T/C Type and Temperature Ranges**
 - J 0 ~ 760° C
 - R 500 ~ 1750° C
 - K 0 ~ 1370° C
 - S 500 ~ 1750° C
 - T -100 ~ 400° C
 - B 500 ~ 1800° C
 - E 0 ~ 1000° C
- **Isolation Voltage** 3000 V_{DC}
- **Fault and Over-voltage Protection** Resists over-voltage up to 35 V
- **Sampling Rate** 10 samples/sec
- **Accuracy** 0.1% for voltage input
- **CMR @ 50/60 Hz** 92 dB min

Ordering Information

- **USB-4718** 8-channel Thermocouple Input Module

1

Software

2

IPPC

3

TPC

4

FPM

5

ATM & AWS

6

DA&C

7

cPCI

8

ADAM-3000

9

Motion Control

10

ICOM

11

eConnectivity

12

UNO

13

ADAM-4000

14

ADAM-5000

15

ADAM-6000

16

ADAM-8000

17

BAS

ISA-Compatible PCI Cards

Advantech ISA-Compatible Series

To support current ISA I/O card users and help the migration to PCI, Advantech has released several PCI I/O cards that are compatible with existing ISA cards.

The new PCI cards are compatible with the ISA cards' functions, connectors, and software APIs.

With functionally compatible PCI cards, ISA users can upgrade design-ready objects from their ISA platform to the PCI platform, and enjoy the improved performance of a new computer. With connector compatibility, ISA users can keep using all accessories, including the connected wiring boards and circuits. Lastly, the ISA-compatible cards use the same software API as the ISA cards, so there is no need to re-write the program when upgrading the system.

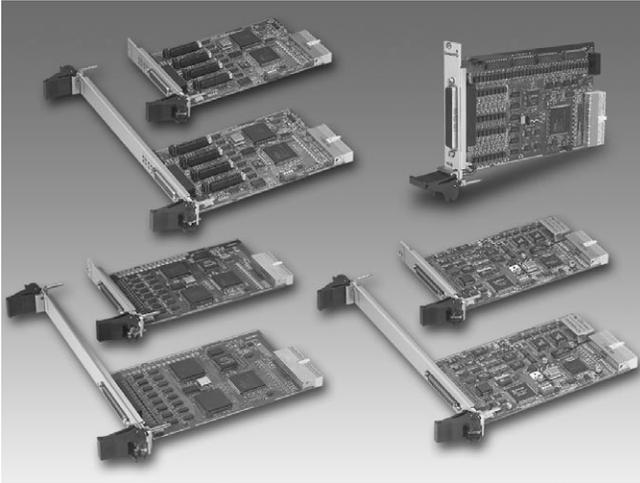
The ISA-compatible PCI cards are designed to assist users who would like to transfer their current application to a new platform in the shortest time possible. This not only saves time and money, but also raises the efficiency of the design. Following is a list of ISA-compatible products.

PCI	ISA	Product Features	Page
Multifunction Cards			
PCI-1718HDU	PCL-818HD	12-bit 16-ch Multifunction	6-18
PCI-1718HGU	PCL-818HG	12-bit 16-ch High-Gain Card	6-18
Analog Output			
PCI-1727U	PCL-727	12-ch Analog Output Card	6-30
Isolated Digital IO Cards			
PCI-1730	PCL-730	16/16 Isolated Digital IO Card	6-34
PCI-1733	PCL-733	32-ch Isolated Digital Input Card	6-34
PCI-1734	PCL-734	32-ch Isolated Digital Output Card	6-34
Relay Cards			
PCI-1761	PCL-725	8-Relay, 8 Isolated DI Card	6-44

CompactPCI Systems

Advantech CompactPCI Introduction		7-2
3U Backplane Enclosures		
MIC-3001/8	4U 8-slot CompactPCI® Enclosure	7-4
MIC-3002AD/6 (new)	4U 6-slot CompactPCI® Enclosure	7-6
3U CPU Boards		
MIC-3316 (new)	3U Compact Ultra Low Voltage Intel® Celeron® 650 MHz Controller	7-8
MIC-3318/3318R	3U CompactPCI® Pentium®-4 M 1.2 G MHz Controller	7-10
Data Acquisition and Control Boards		
MIC-3714 (new)	25 MS/s, 4-ch Simultaneous AI Card	7-12
MIC-3716	250 kS/s, 16-bit, 16-ch High-resolution Multifunction Card	7-14
MIC-3723 (new)	16-bit, 8-ch Non-isolated Analog Output Card	7-16
MIC-3753	72-bit Digital I/O Card	7-18
MIC-3756	64-ch Isolated Digital I/O Card	7-20
MIC-3761	8-ch Relay Actuator and 8-ch Isolated Digital Input Card	7-22
MIC-3780 (new)	8-ch Counter/ Timer Card	7-24
Communication Boards		
MIC-3612	4-port RS-232/422/485 Communication Card, w/Surge Protection	7-26
MIC-3620	8-port RS-232 Communication Card	7-27
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Advantech CompactPCI



Features

- Commercial standard PCI chips provide high performance at a low price
- Up to eight slots in one bus segment. Expandable using PCI-to-PCI bridge chips
- Eurocard form factor
- Airtight, high density, 2 mm pin-and-socket connectors
- Front loading and removal
- Vertical card orientation for better cooling
- Staged power pins for hot-swap capability
- Excellent shock and vibration characteristics

Introduction

Engineers have been trying to apply high-performance, low-cost PC technologies to critical applications such as telecommunications and industrial automation for quite some time. Unfortunately, the characteristics of desktop PC technologies do not readily lend themselves to critical applications where high serviceability, vibration & shock resistance, and good ventilation are required. CompactPCI® may be the answer.

What is CompactPCI ?

CompactPCI is a small, rugged, high-performance industrial computer architecture based on the standard PCI bus specification. It was developed by the PCI Industrial Computers Manufacturers Group (PICMG) in late 1994, and is ideal for embedded applications.

Three important technologies form the core of CompactPCI: PCI local bus, Eurocard mechanics, and airtight pin-and-socket connectors.

PCI Local Bus

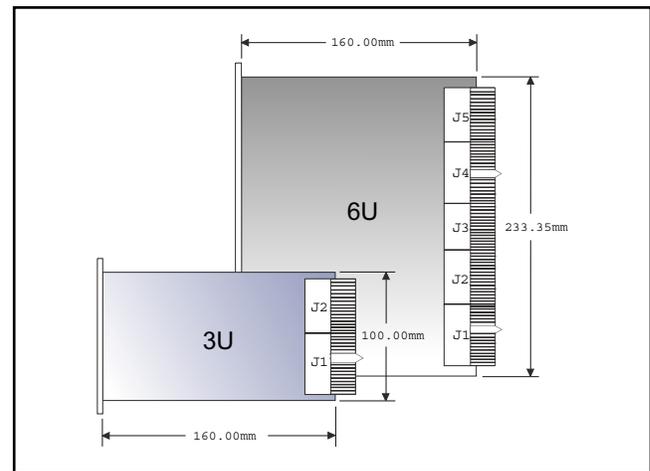
PCI stands for Peripheral Component Interconnect. It was published by Intel® in 1992, and soon became popular in commercial PC designs. It is a high-performance, processor-independent data bus, and most importantly, it is very inexpensive. The PCI local bus specification defines two data widths: 32-bit and 64-bit operating at a speeds up to 66 MHz. This provides theoretical throughput up to 264 MB/s at 32-bit or 528 MB/s at 64-bit. Most computer systems and operating systems support the PCI bus. For example, Pentium®, Alpha, PowerPC®, Windows®, Unix, and MacOS®. Because PCI components are manufactured in large quantities, they are inexpensive and readily available. With these advantages, the PCI bus is very suitable for high speed computing and high speed data communication applications.

Eurocard Mechanics

Eurocard is an industrial-grade packaging standard popularized by VMEbus. CompactPCI allows the use of 3U and 6U Eurocards. The dimensions of a 3U CompactPCI board are 160 mm deep x 100 mm high, while the dimensions of a 6U CompactPCI board are 160 mm deep x 233.35 mm high. The front panels of CompactPCI boards are IEEE 1101.1 and IEEE 1101.10 compliant, and may include optional EMC gaskets to minimize electromagnetic interference. Typically, the front panel contains I/O connectors, LED indicators, and switches. CompactPCI also supports rear panel I/O, which is compliant with IEEE 1101.11. Rear panel I/O is popular for telecommunication equipment because of its easy-to-maintain characteristics. If all the wiring is done on rear transition boards (passive boards), the front CompactPCI boards (active boards), which may require maintenance, are "clean" without any connected wiring. The front CompactPCI boards can then simply be replaced without the need for rewiring.

Airtight Pin-and-Socket Connectors

CompactPCI uses airtight, high-density pin-and-socket connectors as specified in the IEC-1076 international standard. These 2 mm "hard metric" connectors have low inductance and controlled impedance, which reduce signal reflections caused by the high speed PCI bus. They enable CompactPCI systems to have up to eight slots in one bus segment.



Eurocard Form Factor

The CompactPCI specification defines five connectors, designated as J1 through J5. The 3U CompactPCI board has two connectors labeled J1 and J2, while the 6U CompactPCI board has five connectors labeled J1 through J5. J1 and J2 are defined identically on both 3U and 6U CompactPCI boards, so 3U and 6U CompactPCI boards are electrically interchangeable.

Introduction



Pin-and-Socket Connector

CompactPCI versus Conventional Industrial PCs

Serviceability

Replacement of a card from a conventional industrial PC system is always time-consuming. Users need to unfasten the chassis cover, disconnect all wiring from the card, replace the card, reconnect the wiring, and refasten the chassis cover. It is a process prone to error because there can be internal cabling between cards and peripheral devices, and it is necessary to remove all cabling before a card can be replaced. The serviceability of conventional industrial PC systems is not as simple and fast as CompactPCI systems.

CompactPCI is designed to be a front loading and removable system. The replacement of a CompactPCI board is very simple, with no need to remove the chassis cover. In addition, if the I/O is cabled through the back of the system, the front CompactPCI boards are "clean" without any connected wiring, and the replacement of a CompactPCI board is quick and easy. The maintenance time can be reduced from a matter of hours (conventional industrial PCs) to a matter of minutes, yielding a lower Mean Time To Repair (MTTR).



3U 8-Slot CompactPCI Enclosure

Vibration and Shock Resistance

Conventional industrial PCs do not provide reliable and secure support for peripheral cards in the system. Cards inside conventional industrial PCs are screwed down at one point only, and the top and bottom card edges are not supported by guide rails. Therefore, the connecting edge of a card is prone to shift under shock and vibration.

CompactPCI boards are firmly mounted in the system. Guide rails support the top and bottom edges of the boards. Front panel retaining mechanisms securely lock the front panel to the surrounding mechanical frame. The connecting edge of the board is held tightly in place by the pin-and-socket connectors. With all four sides of the board firmly held in place, it is much less prone to suffer loss of electrical contact in high vibration and shock environments.

Ventilation

Conventional industrial PC systems cannot provide regular airflow paths, resulting in uneven cooling within the chassis. Airflow is blocked by backplanes, card brackets, and disk drives. Cooling air cannot circulate over all the cards, and hot air is not immediately forced out of the chassis. Electronic devices and circuit boards deteriorate because of these cooling related problems: warped circuit boards, bad connections, broken traces, and shortened component lives.

CompactPCI systems provide clear paths for airflow over all active, heat-producing boards in the system. Cooling air easily flows through the spaces between cards, and carries heat out of the spaces. A fan system can be integrated at the bottom of the boards to provide forced air to each slot. CompactPCI systems are therefore much less susceptible to cooling problems because of the even cooling pattern inherent in their mechanical design.

The Complete Offering for Mission-Critical Applications

The MIC-3000 series is an industrial CompactPCI solution which features front-end access, high shock and vibration tolerance characteristics, automatic cooling system, fault resilient and hot swappable capabilities. These features make MIC-3000 the most reliable PC-based computing platform, for mission-critical applications. Advantech leverages 3U CompactPCI as the industrial high-end computing platform, providing Pentium 4-grade CPU modules, 8-slot chassis, high-speed I/O and serial communication modules, to become a total solution provider for industrial CompactPCI solutions. Target applications include military defense, transportation, traffic control, test and measurement (T&M) and critical data acquisition & control markets.

- 1 Software
- 2 IPCC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

MIC-3001/8 MIC-3001R/8

3U 8-slot CompactPCI® Enclosure

3U 8-slot CompactPCI® Enclosure with Rear I/O Slots



Features

- Eight 3U CompactPCI® slots
- Easy installation: rackmount or panelmount
- Hot-swap compliant backplane
- Hot-swap fan tray module
- Optional fault detection and alarm notification
- Logic Ground and Chassis Ground can be isolated or common

Introduction

The MIC-3001/8 is a 4U-size enclosure with eight CompactPCI® slots for rack or panel mounting. Its flexible modular design allows users to configure for a variety of applications. Reserved space in Device Bay can be used to install peripherals such as an alarm module, a power supply or a CD-ROM drive.

Hot-swap Passive Backplane

The 3U-size 8-slot backplane of the MIC-3001/8 supports 32-bit or 64-bit (optional) operation. The backplane complies with the PICMG 2.1 Hot-Swap Specification, and you can build easy-to-maintain systems with hot-swappable CompactPCI® boards and software.

Hot-swap Fan Tray Module

A 1U-high fan module provides forced cooling air into the system. Two 133-CFM high-speed fans are mounted in a hot-swap tray directly underneath the card slots. The fan's tachometer output enables the alarm module to monitor the speed of the fans, and a protective circuit has been designed into the fan backplane to reduce spikes and noise during hot-swapping. This design allows replacement of fans without turning the system off.

Specifications

- **Construction** Aluminum frame and galvanized sheet steel
- **Slots** 21-slot space (84 TE), 8 CompactPCI® slots, including one system slot and seven peripheral slots.
- **32-bit CompactPCI bus**
- **Hot Swap Compliance** PICMG 2.1 R 1.0 Hot Swap Specification
- **Dimensions (W x H x D)** 440 x 178 x 240 mm (17.3" x 7" x 10")
Mnt. flanges not inc.
- **Weight** 7 kg (15 lb)
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Relative Humidity** 10 ~ 90% @ 40° C, non-condensing (operating and storage)

ATX Power Supply

- **Input** 90 ~ 135 or 180 ~ 265 V_{AC} @ 47 ~ 63 Hz, switchable
- **Max. Output** 400W total, 210 W for +3.3 V and 5 V
- **MTBF** 100 kHrs at 75% load for 25° C, Ambient Temperature
- **Safety** UL/CUL/CE

Backplane

- **Slots** 8 CompactPCI® slots (one system slot and 7 peripheral slots)
- **Bus Width** 32-bit (64-bit upon request)
- **PCB** 8-layer PCB, 3.0 mm thick
- **Separation** Separate power and ground planes

- **Power Connector** One ATX power connector for connecting standard ATX power supply
- **Alarm Connector** 20-pin connector for MIC-3920/MIC-3921 alarm board signals
- **Compliance** Complies with PICMG 2.0, Ver. 2.1 CompactPCI® Specification and PICMG 2.1, Ver. 1.0 Hot Swap Specification
- **I/O Voltage** 3.3 V or 5 V, jumper selectable
- **Logic Ground and Chassis Ground can be isolated or common**
- **Dimensions (W x H)** 262.8 x 128.6 mm
- **Operating Temperature** -40 ~ 80° C (-40 ~ 176° F)

Fan Tray Module

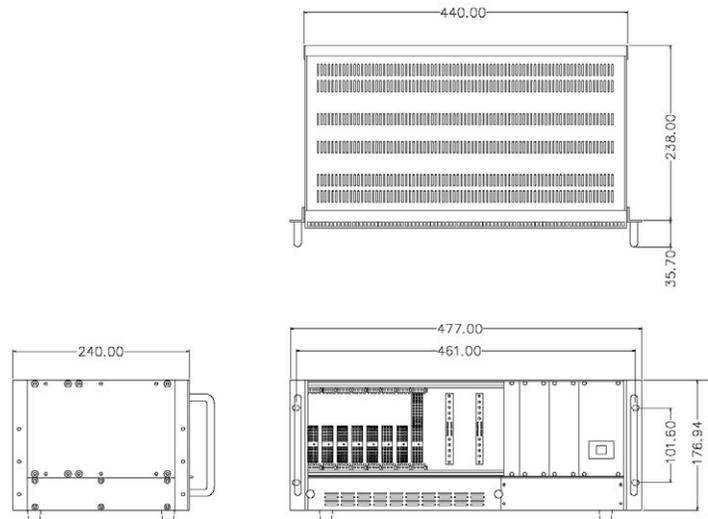
- **Air Flow** Two fans, providing a total of 266 CFM (or above)
- **Power Consumption** 0.53 A @ 12 V per fan, 1.06 A total
- **Rated Fan Speed** 3400 rpm
- **Life Span** 70,000 hours continuous operation @ 40° C with 15~65% relative humidity

Ordering Information

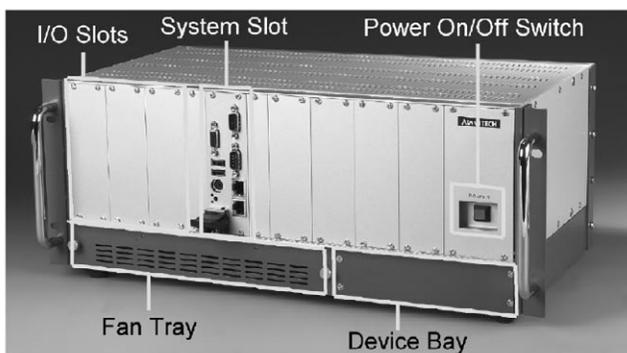
- **MIC-3001/8-4B** 3U CompactPCI® chassis with 8-slot backplane, fan tray module, and AC ATX power supply
- **MIC-3001R/8-4B** 3U CompactPCI® chassis with 8-slot backplane, for fan tray module and AC ATX power supply

MIC-3001/8 MIC-3001R/8

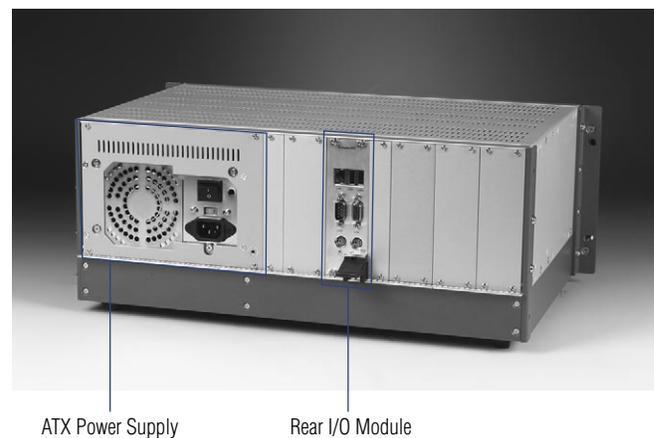
Dimensions



Front View of MIC-3001/8 and MIC-3001R/8



Rear View of MIC-3001R/8



1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

MIC-3002AD/6

3U 6-slot CompactPCI® Enclosure



Features

- 6-slot 3U CompactPCI® backplane
- Compact size, 4U high enclosure for 3U cPCI modules
- Side handle design and optional 6.4" LCD display for portable applications
- Stand feet on the bottom side for desktop applications
- Hot-swap compliant backplane
- Logic ground and chassis ground can be isolated or common

Introduction

The MIC-3002AD/6 is a compact 3U CompactPCI® chassis designed specially for portable applications. With a side handle design it can be carried conveniently, and it also has an onboard 6.4" LCD display on the rear panel. The MIC-3002AD/6 is therefore suitable as a rugged all-in-one mobile controller for applications in battle fields, production lines, transportation systems and traffic control systems.

Hot-swap Passive Backplane

The 3U-size, 6-slot backplane of MIC-3002AD/6 supports 32-bit operation. The backplane complies with the PICMG 2.1 Hot-Swap Specification, and you can build easy-to-maintain systems with hot-swappable CompactPCI boards and software.

Specifications

Backplane

- **3U Slots** 3 slots for system module
5 slots for peripheral cards
- **No rear I/O support**
- **Bus** 32-bit / 33 MHz
- **I/O Voltage** 3.3V / 5V (jumper selectable)

Cooling

- **Two 46 CFM fans, 12 V_{dc} brush-less, dual ball bearing**
- **Bottom-access removable filter for easy maintenance**
- **MTBF** 80,048 hours @ 25° C

6.4" LCD option

- **Dimensions** 3U height x 10-slot (40HP) width
- **Screen Size** 6.4 inches (diagonal)
- **Resolution** 640 x 480 x 18-bit colors (262,144 colors)
- **Pixel pitch** 0.203 x 0.203 mm
- **Brightness** High Brightness 300 cd/m²
- **Lamp Life Time** 15,000 hours @ 25° C (77° F)
- **Integrated with back light inverter**

Mounting

- **Wall/Panel mounting on the front side or rear side**
- **Side (Upper) handle design for portable applications**
- **Stand feet on the bottom side for desktop applications**

Physical

- **Dimensions (W x H x D)** 220 x 190 x 245 mm (8.7" x 7.5" x 9.7")

Power Supply

- **Safety Approvals** CE, UL, cUL, TUV
- **Input** 100-240 V_{AC} @ 47-63Hz, full range
- **Output** 250 (or 300) W ATX power supply
- **MTBF** 105,405 hours @ 25° C

Environment

- **Operating Temperature** 0 ~ 60° C (32-140° F)
0 ~ 50° C (32 ~ 122° F) for LCD model
- **Storage Temperature** -40 ~ 80° C (-40-112° F)
0 ~ 70° C (32 ~ 158° F) for LCD model
- **Humidity** 95% @ 60° C (140° F), non-condensing
- **Storage Vibration** 2.0 Grms
- **Shock** 20 G peak-to-peak, 11ms duration
- **MTBF** 87,191 hours @ 25° C

Compliance

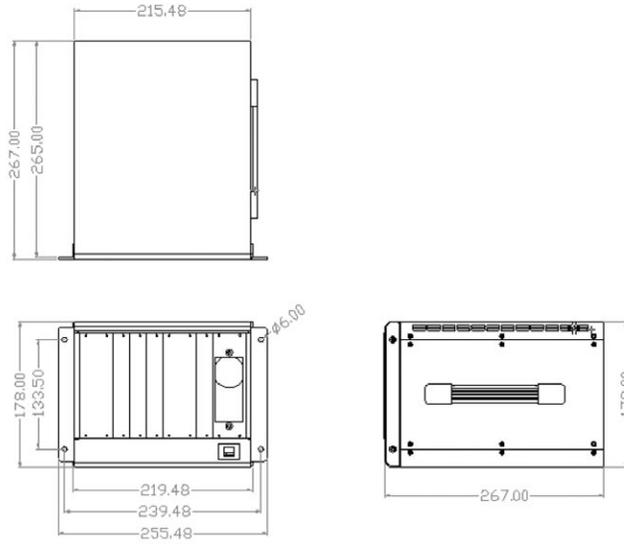
- **PICMG 2.0, R3.0 CompactPCI Specification**
- **PICMG 2.1, R2.0 Hot-Swap Specification**

Ordering Information

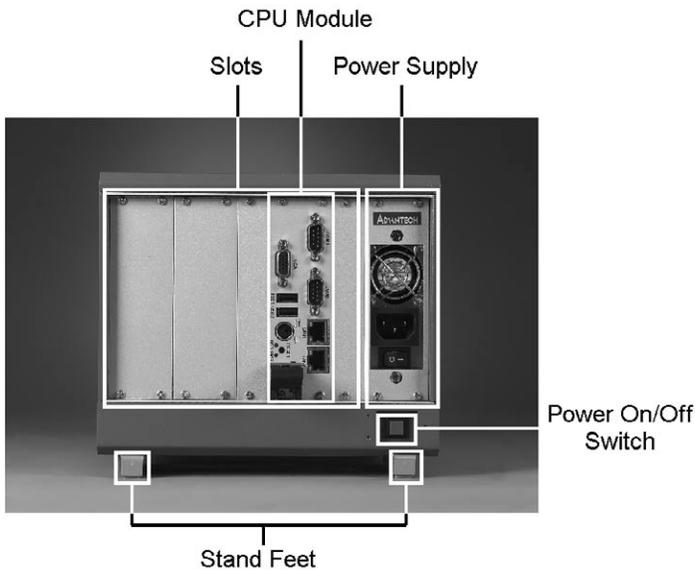
- **MIC-3002AD/6** 3U CompactPCI® chassis with 6-slot backplane and 6.4" LCD
- **MIC-3002A/6** 3U CompactPCI® chassis with 6-slot backplane

MIC-3002AD/6

Dimensions



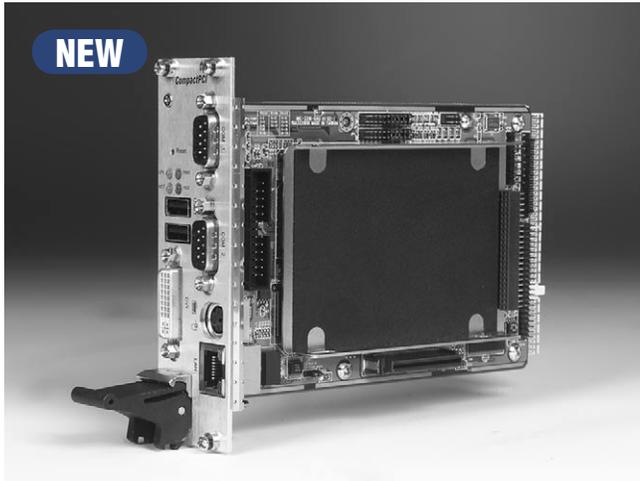
Front View



1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

MIC-3316

3U CompactPCI® Ultra Low Voltage Intel® Celeron® 650 MHz CPU board 2-slot with MIC-3316 basic function



Features

- Build-in Ultra Low Voltage Intel® Celeron® 650 MHz
- Support up to 384 MB SDRAM
- Two on-board CompactFlash® Socket
- Two RS-232/422/485 ports
- Two USB ports
- One 10/100 Mbps Ethernet port
- Watchdog timer
- One DVI-I interface
- One PCI-to-PCI bridge drives up to 7 Masters
- Battery-backup 512K RAM
- Timer IRQ
- Support AC97-audio, Line in, Line out, MIC in
- Rear I/O support (MIC-3316R only)

Introduction

MIC-3316 is a 3U-sized CompactPCI® all-in-one single board computer that is optimized for its Ultra Low Voltage Intel® Celeron® 650 MHz processor. On-chip 256 KB L2 cache provides high performance, while the fanless design increases reliability. The CPU is also designed for a wide operating temperature range.

MIC-3316 has compliance with the PICMG 2.0 R2.1 CompactPCI specifications and provides very powerful functions on a 3U-sized board for demanding applications like real-time machine control and industrial automation.

Compact Mechanical Design

MIC-3316 offers many functions on 2 or 3-slot width. Advantech provides a CPU heat sink specially designed for the Ultra Low Voltage Intel® Celeron® 400/650 MHz and Low Voltage Intel® Pentium® III 800/933 MHz processors, enabling the MIC-3316 to operate without a cooling fan on the heat sink. It only needs external cooling air from the chassis fans for ventilation. This enables the MIC-3316 to use the Ultra Low Voltage Intel® Celeron® 400/650 MHz and Low Voltage Intel® Pentium® III 800/933 MHz processors within a mere 2-slot wide space.

Specifications

Standard SBC functions

- **CPU** MIC-3316 supports Ultra Low Voltage Intel® Celeron® 650 MHz
Options: Celeron® 400 MHz ULV or Pentium® 800/933 MHz LV
- **BIOS** Award 4Mb flash memory
- **Chipset** Intel® 82815E Graphics and Memory Controller Hub (GMCH)
Intel® 82801BA I/O Controller Hub (ICH2)
- **Front Side Bus** 100 MHz (Ultra Low Voltage Intel® Celeron® 400/650 MHz)
133 MHz (Low Voltage Intel® Pentium® III Processor 800/933)
- **2nd level cache** Built-in 256 KB on Ultra Low Voltage Intel® Celeron®
Built-in 512KB on Low Voltage Intel® Pentium® III Processor 800/933
- **RAM** Up to 384 MB in one 144-pin DIMM socket and soldered SDRAM
128MB (On-board) soldered SDRAM (no ECC)
And one 144-pin SODIMM Socket supports up to 256 MB (Optional)
Supports PC100/ PC133-compliant SDRAMs
ECC (parity) DRAM not supports

- **Enhanced IDE interface** In second slot, One IDE channel have two connectors (One IDE connector and space reserved for embedded 2.5" HDD and one external 44-pin (2 mm) connector for external IDE Device). Supports PIO mode 4 (16.67 MB/s data transfer rate) and Ultra ATA 100/66/33 (100/66/33 MB/s data transfer rate). BIOS enabled/disabled
- **CompactFlash Socket** Two sockets, One IDE CompactFlash® socket on board. 3-slot model has one USB Hot-swappable CompactFlash® Reader
- **Enhanced Parallel Port** In 3-slot Configurable to LPT1, LPT2, LPT3, or disabled. Standard DB-25 female connector provided. Supports EPP/SPP/ECP
- **Serial Ports** Four RS-232/422/485 (jumper selectable) ports with 16C550 UARTs (or compatible) with 16-byte FIFO buffer.
Two port are autoflow support in 2-slot, and Two port in rear I/O are not autoflow support in Rear I/O. Supports speeds up to 115.2 Kbps. Ports can be individually configured to COM1, COM2, COM3, COM4 or disabled
- **Keyboard and PS/2 Mouse Connector** One 6-pin mini-DIN connector is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse. An on-board keyboard pin header connector is also available

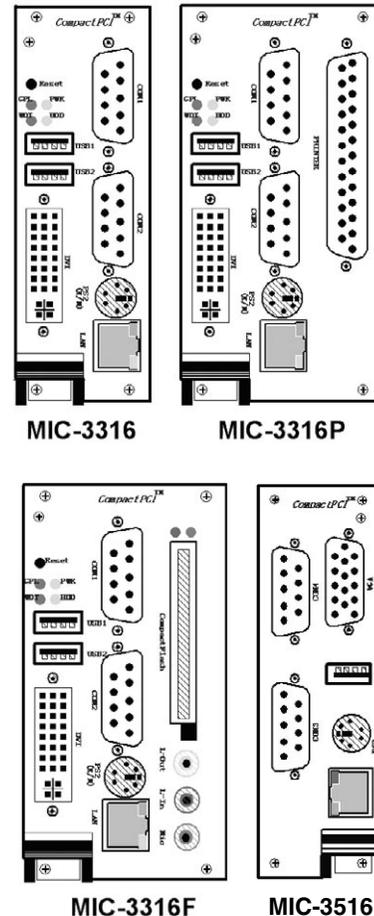
MIC-3316

- **USB Ports** Four USB ports with fuse protection comply with USB specification 1.1
One for 3-slot CompactFlash® reader, and one for rear I/O USB connector, two for front panel
- **PCI-to-PCI Bridge** One PERICOM PI7C8150 controller chip, drives up to seven bus master peripherals.
- **Watchdog Timer** Provides system reset and software control. Time interval is programmable from 1 to 255 seconds/minutes.
- **Ethernet LAN** 10/100Base-TX Ethernet Interface
- **Controller Chips** One Intel® 82551QM Ethernet controller chips provides one ports, one front RJ-45 LAN port 10 Mbps, 100 Mbps auto-switching
One RTC8100 Ethernet on Rear I/O, supports 10/100 Mbps
- **VGA Interface** Intel 815E chipset integrated
- **Controller** Shared from system memory up to 11 MB SDRAM
- **Display Memory** 2D Graphics- Up to 1600 X 1200 in 8-bit color at 85 Hz refresh
3D Graphics- Up to 1024 X 768 in 16-bit color at 85 Hz refresh
VGA-RGB CRT, One CRT on Rear I/O
Digital Video Output-DVI
SiI 164 Scaleable Bandwidth: 25 - 165 MHz
Flexible Graphics Controller Interface: 12-bit
- **Audio** AC'97 Compliant Audio IN 3-slot -Line IN, Line OUT, MIC IN
- **Battery-backup RAM** 512 KB
- **Timer IRQ**
- **Input /Output Bus Interface** PCI 2.2 compliant, 32 bit/33 MHz
- **PICMG 2.1 CompactPCI Hot Swap Specification R1.0 Compliant**
- **Board Size** 160 x 100 mm (3U size), 2 or 3-slot (8TE) wide.
- **Max. Power Requirements** CPU ULV C650 MHz
+5 V (4.75 ~ 5.25 V) @ 2.3 A
+3.3 V (4.75 ~ 5.25 V) @ 1.9 A
+12 V (4.75 ~ 5.25 V) @ 44 mA
CPU LV P3 933 MHz
+5 V (4.75 ~ 5.25 V) @ 2.5 A
+3.3 V (3.1 ~ 3.5 V) @ 2.7 A
+12 V (11.0 ~ 13.0 V) @ 44mA
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- **Humidity (operating and storage)** 5 ~ 95% (non-condensing)
- **Operating System** Windows® 2000/XP
- **Rear I/O** Transition Board for MIC-3316R Series
COM COM3, COM4
LAN 10/100 Mbps Lan
USB 1 (USB 1.1)
VGA RGB-CRT (shared)
KB/MS Yes (shared)

Ordering Information

- **MIC-3316** 3U CompactPCI® Ultra Low Voltage Intel® Celeron® 650 MHz CPU board 2-slot with MIC-3316 basic function and 128 MB on-board SDRAM
- **MIC-3316P** 3U CompactPCI® Ultra Low Voltage Intel® Celeron® 650 MHz CPU board 3-slot with a parallelport and 128 MB on-board SDRAM
- **MIC-3316F** 3U CompactPCI® Ultra Low Voltage Intel® Celeron® 650 MHz CPU board 3-slot with AC97 Audio and CF Card Reader and 128 MB on-board SDRAM
- **MIC-3316R** 3U CompactPCI® Ultra Low Voltage Intel® Celeron® 650 MHz CPU board 2-slot with MIC-3316 basic function and 128 MB on-board SDRAM and Rear I/O support
- **MIC-3316PR** 3U CompactPCI® Ultra Low Voltage Intel® Celeron® 650 MHz CPU board 3-slot with a parallelport and 128 MB on-board SDRAM and Rear I/O support
- **MIC-3316FR** 3U CompactPCI® Ultra Low Voltage Intel® Celeron® 650 MHz CPU board 3-slot with AC97 Audio and CF Card Reader and 128 MB on-board SDRAM and Rear I/O support
- **MIC-3516** Rear I/O Module for MIC-3316R

Front View of MIC-3316



- 1 Software
- 2 IPCC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
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- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

MIC-3318

3U CompactPCI® Pentium® 4-M Controller



Features

- Built-in Intel® Pentium® 4-M CPU processor up to 1.7 GHz
- Supports up to 512 MB DDR-266 memory on board
- On-board high-performance VGA display
- Dual Gigabit Ethernet with RJ-45 connector on board
- Supports 2 Ultra ATA 33/66/100 high-speed IDE devices
- Onboard CompactFlash® disk socket
- One PCI-to-PCI bridge drives up to 7 bus master peripherals
- Advantech Hot-swap Manager to support Advantech I/O and Communication Hot-swap function
- Rear I/O signal support for easy wiring (MIC-3318R only)
- Supports on-board 2.5" HDD

Introduction

The MIC-3318 is a 3U CompactPCI® controller that has been optimized for its on-board Intel® Pentium® 4 Processor-M, and Intel® 845GV Chipset. Designed to be a high performance CompactPCI® platform, MIC-3318 delivers compelling system bus speed performance at 400 MHz with its Intel NetBurst™ microarchitecture. Innovative wide data paths and flexible memory refresh technology optimize the DDR SDRAM's performance in the MIC-3318. 512 KB of On-die L2 Cache, and dual Gigabit Ethernet ports are also provided.

MIC-3318 is a powerful 3U CompactPCI® Controller that fulfills your requirements in mission-critical applications, such as military defense, transportation, traffic control, test and measurement (T&M) as well as critical data acquisition & control applications.

Specifications

Processor System

- **CPU** Intel® Pentium® 4 Processor-M (fanless)
- **Speed** 1.2 or 1.7 GHz (400MHz FSB), BIOS selection
- **L2 Cache** 512 KB on die
- **Chipset** Intel® 845GV
- **BIOS** Award 4 MB Flash

Bus

- **Front Side Bus** 400 MHz
- **PCI-to-PCI Bridge Controller Pericom** PI7C8150
- **PCI** 32-bit/33 MHz

Memory

- **Technology** PC-2100 DDR266 SO-DIMM, 200-pin socket x 1
- **Capacity** 512 MB

Graphics

- **Controller** Integrated in Intel® 845GV chipset
- **VRAM** DVMT 64 MB
- **Resolution** 2048 x 1536 High Color @ 75 Hz for Flat panel
1920 x 1080 True Color @ 85 Hz for CRT

Ethernet

- **Interface** 10/100/1000Base-TX Gigabit Ethernet
- **Controller** Intel® 82540 x 2
- **Connector** RJ-45 x 2
- LAN1 supports both front and rear I/O access on MIC-3318R (jumper selectable)

Serial

- **Interface** RS-232/422/485, jumper selectable
- **Controller** Winbond™ 83627HF Super IO chip
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even, odd
- **Speed (bps)** 50 ~ 115.2 k
- **Data signals** RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND, RI
- **RS-422/485** TxD, RxD, RTS, CTS
- **Connectors** DB-9 x 2
- COM1 supports both front and rear I/O access on MIC-3318R

EIDE

- **Mode** ATA 33/66/100 mode
- **Channels** 2 (One 44-pin 2.5" HDD connector and ext-connector; another for CF socket)
- **Storage Site** One IDE connector and space reserved for embedded 2.5" HDD

Front I/O Interface

- **LAN** 2 x Gigabit Ethernet, RJ-45 connector
- **Serial** 2 x RS-232/422/485, DB-9 connector

Rear I/O Signal Interface (MIC-3318R series)

- VGA, KB/MS, USB3, USB4, LAN1, COM1

Operating Systems

- **Compatibility** Windows® 2000/XP

Hardware Monitor

- **Controller** Winbond™ 83627HF Super IO chip
- **Monitor** CPU temperature, 3.3 V/5 V/12 V

MIC-3318

Watchdog Timer

- **Output** System reset
- **Interval** Programmable, 0 ~ 255 sec.

Miscellaneous

- **Solid State Disk** One on-board CompactFlash socket
- **2.5" HDD** One 2.5" HDD bay for easy installation
- **LEDs** Power, IDE
- **USB (v2.0)** 2 channels
- **Real Time Clock** Built into the South Bridge

Power Requirements

With P4-M 1.2 GHz				
	+3.3 V	+5 V	+12 V	-12 V
Typical	1.7 A	3.4 A	16 mA	16 mA
Max	1.7 A	4.7 A	16 mA	16 mA

With P4-M 1.7 GHz				
	+3.3 V	+5 V	+12 V	-12 V
Typical	1.7 A	4.1 A	16 mA	16 mA
Max	1.7 A	5.7 A	16 mA	16 mA

Environment

- **Operating Temperature** -10 ~ 60° C @1.2 GHz CPU
-10 ~ 50° C @1.7 GHz CPU
- **Storage Temperature** -40 ~ 80° C (-40~140° F)
- **Humidity** 95% @ 60° C, non-condensing

Physical

- **Dimensions** 100 x 160 mm (3U), 2-slot (8 TE) width
- **Weight** 0.6 kg

Compliance

- **Standard** PICMG 2.0, R3.0 CompactPCI® Specification
PICMG 2.1, R2.0 Hot-Swap Specification

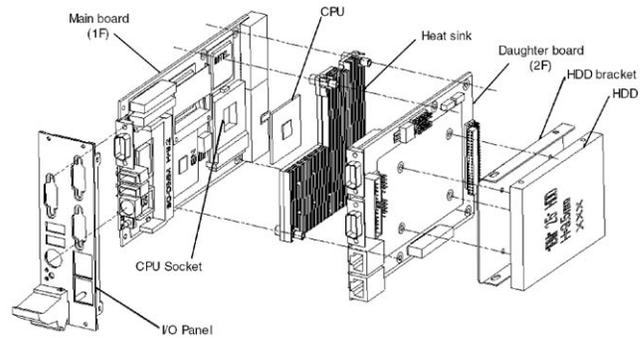
Rear Transition Board for MIC-3318R series

- **P/N** MIC-3518
- **KB/MS** Yes
- **COM** COM1
- **LAN** LAN1
- **VGA** Yes
- **USB** USB3, USB4

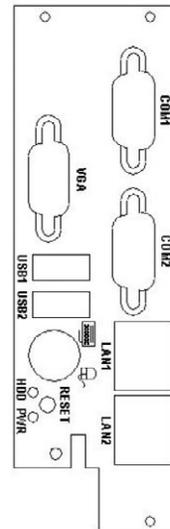
Ordering Information

- **MIC-3318-AC00** MIC-3318 w/ on-board P4-M 1.7 GHz CPU, 256 MB RAM without Rear I/O support
- **MIC-3318-AD00** MIC-3318 w/ on-board P4-M 1.7 GHz CPU, 512 MB RAM without Rear I/O support
- **MIC-3318R-AC00** MIC-3318 w/ on-board P4-M 1.7 GHz CPU, 256 MB RAM and Rear I/O support
- **MIC-3318R-AD00** MIC-3318 w/ on-board P4-M 1.7 GHz CPU, 512 MB RAM and Rear I/O support
- **MIC-3518** Rear I/O module for MIC-3318R

Assembling/ Disassembling MIC-3318



Front View of MIC-3318



1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

MIC-3714

30 MS/s Simultaneous 4-ch Analog Input Card



Features

- 12-bit A/D converter up to 30 MS/s
- 4 single-ended analog input channels
- Programmable gain for each input channel
- 32 K samples on board FIFO memory per channel
- 4 A/D converters simultaneously sampling
- Multiple A/D triggering modes
- Programmable pacer/counter

Introduction

The MIC-3714 is an advanced performance data acquisition card based on 32-bit PCI bus architecture. The maximum sampling rate of the MIC-3714 is 30 M samples per second, with an emphasis on continuous, non-stop, high-speed, streaming data of A/D samples to host memory.

Specifications

Analog Input

- **Channels** 4 single-ended analog input channels
- **Resolution** 12-bit
- **FIFO Size** 32K Samples/ch
- **Max. Sampling Rate** Up to 30 MS/s
- **Common Mode Voltage** ± 11 V max. (operational)

Input range and Gain List	Gain	1	2	5	10
	Range	± 5 V	± 2.5 V	± 1 V	± 0.5 V
Drift	Gain	1	2	5	10
	Zero(μ V/ $^{\circ}$ C)	± 30	± 30	± 30	± 30
	Gain(ppm/ $^{\circ}$ C)	± 30	± 30	± 30	± 30
Small Signal Bandwidth for PGA	Gain	1	2	5	10
	Bandwidth	7 MHz	7 MHz	7 MHz	7 MHz

- **Max. Input Voltage** ± 15 V
- **Input Surge Protection** 30
- **Input Impedance** 50 Ω /1 M Ω / jumper selectable 100 pF
- **Trigger Modes** Software, pacer, post-trigger, pre-trigger, delay-trigger, about-trigger

Accuracy	DC	DNLE: ± 1 LSB (No Missing Codes:12 Bits Guaranteed)	
		INLE: ± 2 LSB	
		Offset error	Adjustable to ± 1 LSB
		Gain error	Adjustable to ± 1 LSB
AC	SINAD: S/(N+D): 68 dB		
	ENOB: 11bitsTHD: -75 dB		
External TTL Trigger Input	Logic level	Low: 0.8 V max. High: 2.0V min.	
	Input impedance	50 Ω	
	Input coupled	DC	

External Sin Wave Trigger Input	Logic level	2.0 V peak to peak
	Input impedance	50 Ω
	Input coupled	AC
External Analog Trigger Input	Range	By analog input range
	Resolution	8-bit

General

- **I/O Connector Types** 4 BNC connector (for AI)
1 PS2 connector (for ext. colock and trigger)
- **Dimensions** 160 x 100 mm (6.3" x 3.9") with 3U/6U bracket
- **Power Consumption** Typical: +3.3 V @ 550 mA, +5 V @ 150 mA, +12 V @ 600 mA
Max.: +3.3 V @ 850 mA, +5 V @ 200 mA, +12 V @ 700 mA
- **Operating Temperature** 0 ~ 70 $^{\circ}$ C (32~158 $^{\circ}$ F)
- **Storage Temperature** -20 ~ 85 $^{\circ}$ C (-4~185 $^{\circ}$ F)
- **Relative Humidity** 5-95%RH non-condensing (refer to IEC 68-2-3)
- **Certifications** CE and FCC certified

Ordering Information

- **MIC-3714/3** 3U, 30 MS/s Simultaneous 4-ch Analog Input Card, user's manual and driver CD-ROM (PCL-10901-1 cable included)
- **MIC-3714/6** 6U, 30 MS/s Simultaneous 4-ch Analog Input Card, user's manual and driver CD-ROM (PCL-10901-1 cable included)
- **ADAM-3909** DB-9 Wiring Terminal for DIN-rail Mounting
- **PCL-10901-1** PS2 to DB-9 wiring cable, 1 m
- **PCL-10901-3** PS2 to DB-9 wiring cable, 3 m
- **PCL-1010B-1** BNC to BNC wiring cable, 1 m

Feature Details

Simultaneous Sampling

The MIC-3714 is capable of simultaneous sampling as it uses 4 identical circuitries and ADC for each analog input channel. Where the time relationship between inputs is important, this feature let you sample simultaneously.

Supports S/W, Internal and External Pacer Triggering

The MIC-3714 supports three kinds of trigger modes for A/D conversion: software triggering, internal pacer triggering and external pacer triggering. The software trigger allows users to acquire a sample when it is needed. The internal pacer triggers continuous high-speed data acquisition. The MIC-3714 also accepts external trigger sources, allowing synchronous sampling with external devices.

PCI-bus Mastering Data Transfer

The MIC-3714 supports PCI-bus mastering DMA data transfer for high speed and gap-free data acquisition. By setting aside a block of memory in the PC, the MIC-3714 performs bus-mastering data transfers without CPU intervention, allowing the CPU to perform other tasks such as data analysis and graphics.

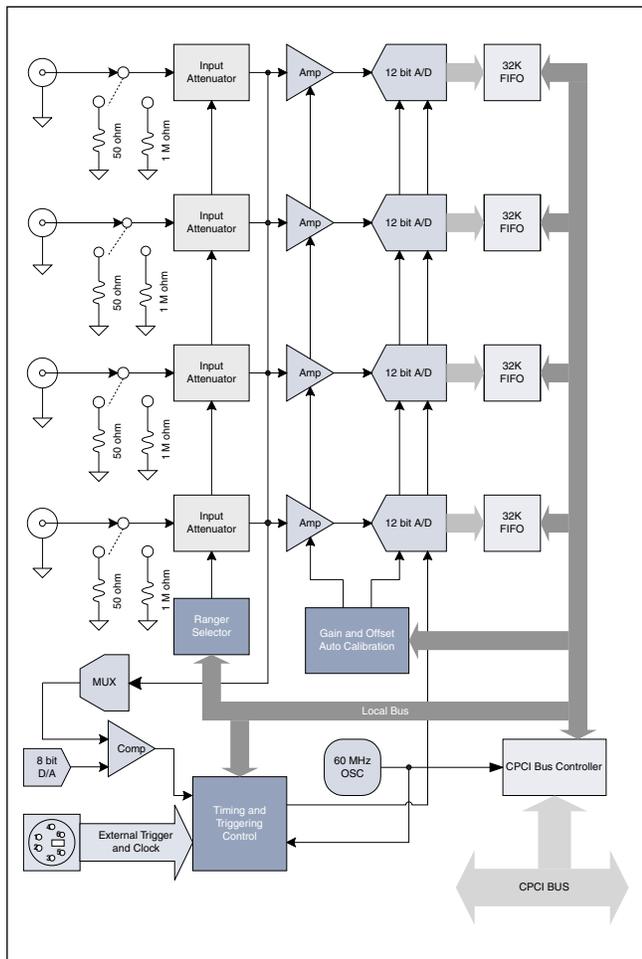
On-board FIFO Memory

There is 32K sample FIFO memory on the MIC-3714. This is an important feature for faster data transfer and more predictable performance under Windows®.

Auto Calibration

The MIC-3714 features convenient software auto calibration with no variable resistor trimming required.

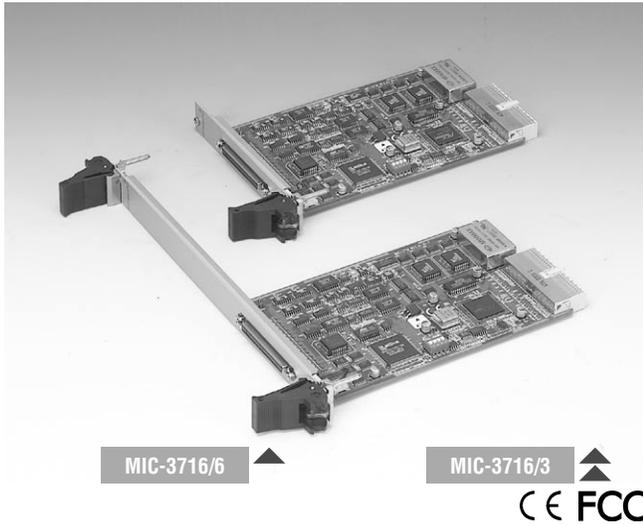
Function Block Diagram



1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

MIC-3716

250 kS/s, 16-bit, 16-ch High-resolution Multifunction Card



Features

- 16-bit high resolution
- 250 kS/s sampling rate
- Auto calibration function
- PCI-bus mastering for data transfer
- 16 analog input channels with 1K FIFO
- 16 S.E. or 8 Diff. AI, or a combination
- Unipolar/Bipolar input range
- 2 analog output channels
- 16 digital input channels
- 16 digital output channels
- One 10 MHz 16-bit resolution counter
- BoardID™ switch

Introduction

The MIC-3716 is a powerful high-resolution multifunction card for the PCI bus. It features a 250 kS/s 16-bit A/D converter, and an on-board 1K sample FIFO buffer for A/D. The MIC-3716 provides a total of 16 single-ended or eight differential A/D input channels or a mixed combination of these. There are also two 16-bit D/A output channels, 16 digital input/output channels, and one 10 MHz 16-bit counter channel. MIC-3716 provides specific functions for different user requirements.

Specifications

Analog Input

Channels	16 single-ended or 8 differential or combination						
Resolution	16-bit						
FIFO Size	1 K Samples/ch						
Sampling Rate*	250 kS/s max.						
Input range and Gain List	Gain	0.5	1	2	4	8	
	Unipolar	N/A	0 ~ 10	0 ~ 5	0 ~ 0.25	0 ~ 1.25	
	Bipolar	±10	±5	±2.5	±1.25	±0.625	
Small Signal Bandwidth for PGA	Gain	0.5	1	2	4	8	
	Bandwidth	4.0 MHz	4.0 MHz	2.0 MHz	1.5 MHz	0.65 MHz	
Common Mode Voltage	±11 V max. (operational)						
Max. Input Voltage	±20 V						
Input Protection	30 Vp-p						
Input Impedance	100 MΩ/10pF(Off); 100 MΩ/10pF(On)						
Trigger Mode	Software, on-board programmable pacer or external						
Accuracy	DC	DNLE: ±1LSB					
		INLE: ±1LSB					
		Zero (Offset) error: Adjustable to ±1LSB					
	AC	Gain	0.5	1	2	4	8
		Gain error (% FSR)	0.15	0.03	0.03	0.05	0.1
		SNR: 82 dB					
ENOB: 13.5 bits							
THD: -84 dB typical							
Clocking and Trigger Inputs	Trigger Mode	Software, onboard programmable pacer or external					
	A/D pacer clock	250 kHz (max.); 58 μHz (min.)					
	External A/D trigger clock	MIN. pulse width: 2 μs (high); 2 μs (low) Max. frequency: 250 kHz					

Digital Input /Output

Input Channels	16	
Input Voltage	Low	0.4 V max.
	High	2.4 V min.
Input Load	Low	0.4 V max. @ -0.2 mA
	High	2.7 V min. @ 20 μA
Output Channels	16	
Output Voltage	Low	0.4 V max. @ +8.0 mA (sink)
	High	2.4 V min. @ -0.4 mA (source)

Analog Output

Channels	2	
Resolution	16-bit	
Operation mode	Single output	
Throughput*	200 kS/s max. per channel (FSR)	
Output Range (Internal & External Reference)	Using Internal Reference	0 ~ +5 V, 0 ~ +10 V, -5 ~ +5 V, -10 ~ +10 V
	Using External Reference	0 ~ +x V @ +x v (-10 ≤ x ≤ 10) -x ~ +x V @ +x v (-10 ≤ x ≤ 10)
Accuracy	DC	DNLE: ±1LSB (monotonic)
		INLE: ±1LSB
		Zero (Offset) error: Adjustable to ±1LSB Gain (Full-scale) error: Adjustable to ±1LSB
Dynamic Performance	Setting Time	5 μs (to 4 LSB of FSR)
	Slew Rate	20 V/μs
Drift	10 ppm/°C	
Driving Capability	±20 mA	
Output Impedance	0.1 Ω max.	

Ordering Information

- **MIC-3716/3** 3U, 250 kS/s, 16-bit, 16-ch High-Resolution Multifunction Card, user's manual and driver CD-ROM. (cable not included)
- **MIC-3716/6** 6U, 250 kS/s, 16-bit, 16-ch High-Resolution Multifunction Card, user's manual and driver CD-ROM. (cable not included)
- **PCLD-8710** Industrial Wiring Terminal Board with CJC circuit for DIN-rail Mounting. (cable not included)
- **PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 and 2 m
- **ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail Mounting

Feature Details

PCI-Bus Mastering Data Transfer

The MIC-3716 supports PCI-Bus mastering DMA for high-speed data transfer and gap-free analog input as well as analog output. By setting aside a block of memory in the PC, the MIC-3716 performs bus-mastering data transfers without CPU intervention, setting the CPU free to perform more urgent tasks such as data analysis and graphic manipulation. This function allows users to run all I/O functions simultaneously at full speed without losing data.

Auto-Calibration Function

The MIC-3716 provides an auto-calibration function by using a calibration utility. The built-in calibration circuitry of the MIC-3716 corrects gain and offset errors in analog input and analog output channels, thereby eliminating the need for external equipment and user adjustments.

BoardID™ Switch

The MIC-3716 has a built-in DIP switch that helps define each card's ID when multiple MIC-3716 cards have been installed on the same PC chassis. The BoardID™ switch is very useful when users build their system with multiple MIC-3716 cards. With the correct BoardID™ switch, the user can easily identify and access each card during hardware configuration and software programming.

Plug & Play Function

The MIC-3716 is a Plug & Play device that fully complies with the PCI Specification Rev 2.2. During card installation, there is no need to set jumpers or DIP switches. Instead, all bus-related configurations such as base I/O address and interrupt are automatically done by the Plug & Play function.

Counter/Timer

Channels	3 channels, 2 channels are permanently configured as programmable pacers; 1 channel is free for user application	
Resolution	16-bit	
Compatibility	TTL level	
Base Clock	Channel 2: Takes input from output of channel 1 Channel 1: 10 MHz Channel 0: Internal 1 MHz or external clock (10 MHz) max Selected by software	
Max. Input Frequency	1 MHz	
Clock Input	Low	0.8 V max.
	High	2.0 V min.
Gate Input	Low	0.8 V max.
	High	2.0 V min.
Counter Output	Low	0.5 V max. @ +24 mA
	High	2.4 V min. @ -15 mA

General

I/O Connector Type	68-pin SCSI-II female	
Dimensions (L x H)	160 x 100 mm (6.9" x 3.9") with 3U/6U Bracket	
Power Consumption	Typical	+5 V @ 850 mA, +12 V @ 600 mA
	Max.	+5 V @ 1 A, +12 V @ 700 mA
Temperature	Operating	0 ~ 60° C (32 ~ 158° F) (refer to IEC 68-2-1, 2)
	Storage	-20 ~ 85° C (-4 ~ 158° F)
Relative Humidity	Operating	5 ~ 85% RH non-condensing (refer to IEC 68-1, -2, -3)
	Storage	5 ~ 95% RH non-condensing (refer to IEC 68-1, -2, -3)
Certification	CE certified	

Note:

The sampling rate and throughput depends on the computer hardware architecture and software environment. The rates may vary due to programming language, code efficiency, CPU utilization and other factors.

Automatic Channel/Gain/SD*/BU* Scanning

The MIC-3716 features an automatic channel/gain/SD/BU scanning circuit. This circuit controls the multiplexer switching during sampling in a way that is more efficient than what can be achieved by software implementation. On-board SRAM stores different gain, SD and BU values for each channel. This combination lets users perform multi-channel high speed sampling with different gain, SD and BU values for each channel.

SD: Single-Ended/Differential; BU: Bipolar/Unipolar

On-Board FIFO Memory

The MIC-3716 provides a 1K samples onboard FIFO (First In First Out) memory buffer for AD. This is an important feature for faster data transfer and more predictable performance under the Windows® system.

On-Board Programmable Timer/Counter

The MIC-3716 provides a programmable timer/counter for generating a pacer trigger for the A/D conversion. The timer/counter chip is 82C54, which includes three 16-bit counter 10 MHz clocks. One counter is used as an event counter for counting events coming from the input channel. The other two are cascaded together to make a 32-bit timer for pacer trigger time base.

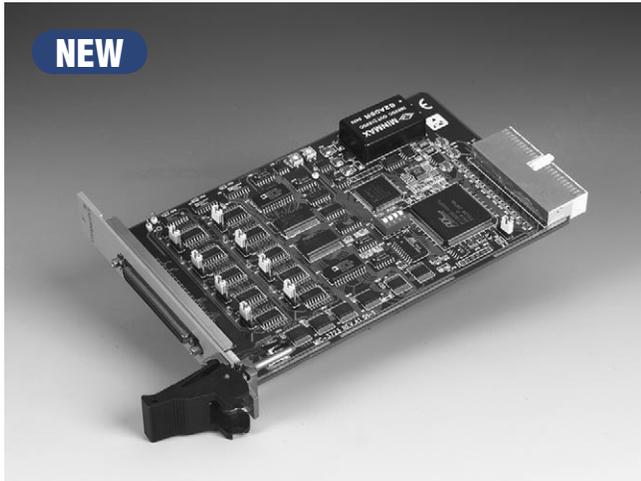
Pin Assignments

A0	68	34	A1
A2	67	33	A3
A4	66	32	A5
A6	65	31	A7
A8	64	30	A9
A10	63	29	A11
A12	62	28	A13
A14	61	27	A15
AIGND	60	26	AIGND
AO0_REF	59	25	AO1_REF
AO0_OUT	58	24	AO1_OUT
AOGND	57	23	AOGND
DI0	56	22	DI1
DI2	55	21	DI3
DI4	54	20	DI5
DI6	53	19	DI7
DI8	52	18	DI9
DI10	51	17	DI11
DI12	50	16	DI13
DI14	49	15	DI15
DGND	48	14	DGND
DO0	47	13	DO1
DO2	46	12	DO3
DO4	45	11	DO5
DO6	44	10	DO7
DO8	43	9	DO9
DO10	42	8	DO11
DO12	41	7	DO13
DO14	40	6	DO15
DGND	39	5	DGND
CNT0_CLK	38	4	PACER_OUT
CNT0_OUT	37	3	TRG_GATE
CNT0_GATE	36	2	EXT_TRG
+12V	35	1	+5V



MIC-3723

16-bit,8-ch Non-isolated Analog Output Card



CE

Features

- 16-bit high resolution
- 8 Analog output channels
- Support hot swap function
- Auto-calibration
- BoardID™ switch

Introduction

MIC-3723 is a non-isolated multiple channel analog output card for the PCI bus, and each analog output channel is equipped with a 16-bit, double-buffered DAC. It also features an auto-calibration function and BoardID™ switch. MIC-3723 is an ideal solution for industrial applications where multiple analog output channels are required.

Plug & Play Function

MIC-3723 is a Plug & Play device that fully complies with the PCI Specification Rev 2.2. During card installation, there is no need to set jumpers or DIP switches. Instead, all bus-related configurations such as base I/O address and interrupt are automatically done by the Plug & Play function.

Specification

Analog Output

- **Channels** 8
- **Resolution** 16-bit
- **Operation Mode** Single output, synchronized output
- **Output Range** -10 ~ +10 V, 0 ~ 20 mA, 4 ~ 20 mA (Internal Reference only)
- **Accuracy**

Relative	±6 LSB
Differential Non-linearity	±6 LSB (monotonic)
- **Offset** < 6 LSB
- **Output Impedance** 0.1 Ω max.
- **Throughput** PC dependent, Software update (Direct AO)
- **Setting Time** 30 μs
- **Auto-Calibration Function**

Digital Input/Output

- **Channels** 16 (bi-directional)
- **Number of Ports** 2
- **Input Voltage**

Low	0.8 V max
High	2.0 V min
- **Output Voltage**

Low	0.5 V max. @ 24 mA (sink)
High	2.4 V min. @ -15 mA (source)

General

- **I/O Connector Type** 68-pin SCSI-II female
- **Dimensions (L x H)** 160 x 100 mm (6.9" x 3.9")
- **Operating Temperature** 0 ~ 60°C (32 ~ 140°F) (refer to IEC 68-2-1,2)
- **Storage Temperature** -20 ~ 70°C (-4 ~ 158°F)
- **Operating Humidity** 5~95% RH non-condensing (refer to IEC 68-2-3)
- **Hot-Swap Support**
- **BoardID™ Switch**

Ordering Information

- **MIC-3723** 16-bit, 8-ch Non-isolated Analog Output Card
- **PL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 and 2 m
- **ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail mounting

Auto-Calibration Function

MIC-3723 provides an auto-calibration function by using a calibration utility. The built-in calibration circuitry of MIC-3723 corrects gain and offset errors in analog output channels, thereby eliminating the need for external equipment and user adjustments.

Flexible Voltage Output Range

MIC-3723 provides a fixed voltage output range of ± 10 V for applications that need a flexible range. You can define the specific voltage output range and output data format via the enclosed software utility and driver.

Keeps Output Values after System Reset

You can independently set the eight outputs to different ranges: ± 10 V, 0 ~ 20 mA or 4 ~ 20 mA, and all ranges are software selectable. When the system is hot reset (power not shut down), MIC-3723 can either retain the last analog output values, or return to its default configuration, depending on the jumper setting. This practical function eliminates danger caused by improper operation during unexpected system resets.

BoardID™ Switch

MIC-3723 has a built-in DIP Switch that helps define each card's ID when multiple MIC-3723 cards have been installed on the same PC chassis. The BoardID switch function is very useful when users build their system with multiple MIC-3723 cards. With correct BoardID switch settings, you can easily identify and access each card during hardware configuration and software programming.

Pin Assignments

NC	68	34	NC
Vout0	67	33	Vout1
AGND	66	32	AGND
Iout0	65	31	Iout1
NC	64	30	NC
AGND	63	29	AGND
Vout2	62	28	Vout3
AGND	61	27	AGND
Iout2	60	26	Iout3
NC	59	25	NC
AGND	58	24	AGND
Vout4	57	23	Vout5
AGND	56	22	AGND
Iout4	55	21	Iout5
NC	54	20	NC
AGND	53	19	AGND
Vout6	52	18	Vout7
AGND	51	17	AGND
Iout6	50	16	Iout7
NC	49	15	NC
AGND	48	14	AGND
DIO0	47	13	DIO1
DIO2	46	12	DIO3
DIO4	45	11	DIO5
DIO6	44	10	DIO7
DIO8	43	9	DIO9
DIO10	42	8	DIO11
DIO12	41	7	DIO13
DIO14	40	6	DIO15
DGND	39	5	DGND
NC	38	4	NC
NC	37	3	NC
NC	36	2	NC
+12V	35	1	-5V

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

MIC-3753

72-ch Digital I/O Card



Features

- 72 TTL digital I/O lines
- Emulates mode 0 of 8255 PPI
- Buffered circuits for higher driving capacity than 8255
- Multiple-source interrupt handling
- Interrupt output pin for simultaneously triggering external devices with the interrupt
- Output status read-back
- "Pattern match" and "Change of state" interrupt functions for critical I/O monitoring
- Keeps I/O setting and digital output values when hot system reset
- Supports dry contact and wet contact

Introduction

The MIC-3753 is a 72-channel digital I/O card for the PCI bus. The card emulates mode 0 of the 8255 PPI chip, but the buffered circuits offer a higher driving capability than the 8255. The 72 I/O lines are divided into nine 8-bit I/O ports: A0, B0, C0, A1, B1, C1, A2, B2, C2. Users can configure each port as input or output via software.

Easy to Install: Plug & Play

The MIC-3753 uses a PCI controller to interface the card to the PCI bus. The controller fully implements the PCI bus specification Rev 2.1. All bus relative configurations, such as the base address and interrupt assignments, are automatically controlled by software.

Dry Contact Support for Digital Input

Each digital input channel of the MIC-3753 accepts either 0 ~ 5 V_{DC} wet contact or dry contact inputs. This dry contact capability allows the channels to respond to changes in external circuitry (e.g., the closing of a switch in the external circuitry) when no voltage is present in the external circuit.

Reset Protection Fulfills the True Requirement of Industrial Applications

When the system is hot reset (the power is not turned off), the MIC-3753 can either retain the value of the last I/O port settings and outputs, or return to its default configuration, depending on the jumper setting. This function protects the system from wrong operations during unexpected system resets.

Interrupt Functions Ensure Faster System Response

Two lines of each port C (i.e., ports C0, C1 and C2) are connected to an interrupt circuit. The "Interrupt Control Register" of the MIC-3753 controls how these signals generate an interrupt. Two interrupt request signals can be generated at the same time, and the software can process these two request signals by ISR. The dual interrupt sources provide the card with more capability and flexibility.

The MIC-3753 also provides a "Pattern Match" interrupt function for port A0. The card monitors the states of port A0 and compares them with a pre-set pattern. When the received state matches the pre-set pattern, the MIC-3753 generates an interrupt signal to the system.

A "Change of State" interrupt function is provided at port B0. When any signal line of port B0 changes its state, the card generates an interrupt to the system to handle this event.

These interrupt functions release the CPU from the burden of pulling all I/O points, enabling a PC to handle more I/O points with higher performance.

Specifications

▪ I/O Channels	72 digital I/O lines
▪ Programming Mode	8255 PPI mode 0
▪ Input Signal	Logic level 0: 0.8 V max. Logic level 1: 2.0 V min.
▪ Output Signal	Logic level 0: 0.44 V max. @ 24 mA (sink) Logic level 1: 3.76 V min. @ 24 mA (source)
▪ Transfer Rate	1.6 MB/s (tested under DOS, K6 300 MHz CPU)
▪ Power Consumption	+5 V @ 400 mA (typical), +5 V @ 0.7 A (max.)
▪ Operating Temperature	0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
▪ Storage Temperature	-20 ~ 70° C (-4 ~ 158° F) (refer to IEC 68-2-3)
▪ Operating Humidity	5 ~ 95% RH non-condensing
▪ Connector	One 78-pin D-type female connector
▪ Dimensions (LxH)	160 x 100 mm (6.3" x 3.9"), 3U/6U Bracket

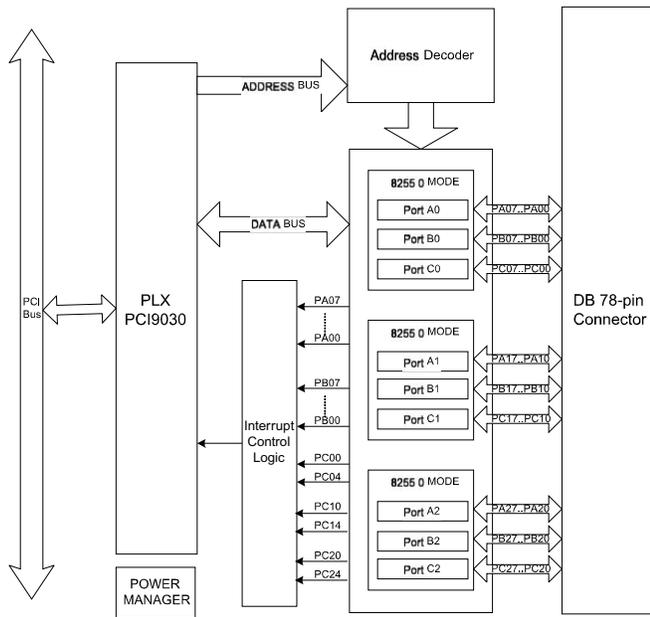
Ordering Information

▪ MIC-3753/3	3U 72-channel Digital I/O Card, user's manual and driver CD-ROM. (cable not included)
▪ MIC-3753/6	6U 72-channel Digital I/O Card, user's manual and driver CD-ROM. (cable not included)
▪ PCL-10178-1	DB-78 cable assembly, 1 m
▪ ADAM-3978	DB-78 wiring terminal for DIN-rail mounting

Applications

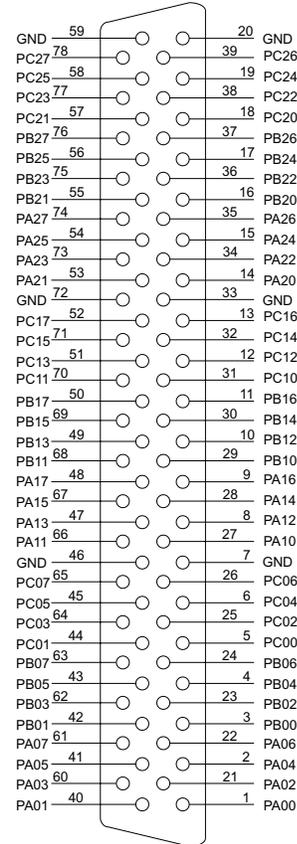
- Industrial AC/DC I/O devices for monitoring and controlling
- Relay and switch monitoring and controlling
- Parallel data transfer
- TTL, DTL and CMOS logic signal sensing
- Indicator LED driving

Block Diagram



MIC-3753 Block Diagram

Pin Assignments

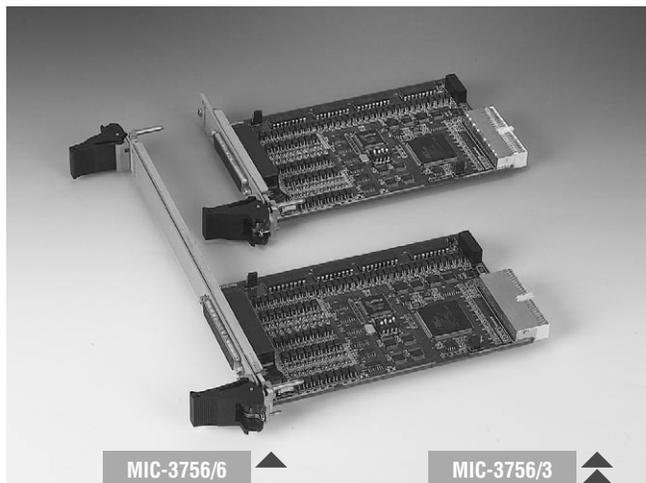


- | | |
|--------------|---------------------|
| PA00 ~ PA07 | I/O pins of Port A0 |
| PA10 ~ PA17 | I/O pins of Port A1 |
| PA20 ~ PA27 | I/O pins of Port A2 |
| PB00 ~ PB07 | I/O pins of Port B0 |
| PB10 ~ PB17 | I/O pins of Port B1 |
| PB20 ~ PB27 | I/O pins of Port B2 |
| PC00 ~ PC07 | I/O pins of Port C0 |
| PC10 ~ PC17 | I/O pins of Port C1 |
| PC20 ~ PC27 | I/O pins of Port C2 |
| GND : Ground | |

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

MIC-3756

64-ch Isolated Digital I/O Card



CE FCC

Features

- 32 isolated digital output channels
- 32 isolated digital input channels
- Either +/- voltage input for DI by group
- High-voltage isolation on I/O channels (2,500 V_{DC})
- Wide input range (10 ~ 50 V_{DC})
- Wide output range (5 ~ 40 V_{DC})
- High-sink current on isolated output channels (200 mA max./channel)
- High over-voltage protection (70 V_{DC}) for input channels
- BoardID™ switch
- Output status read-back for output channels
- Keeps digital output values after hot system reset
- Channel-Freeze function for output channels
- Interrupt handling capability
- Provides convenient wiring terminal module with LED indicators for DIN-rail mounting

Introduction

The MIC-3756 card offers 32 isolated digital input channels as well as 32 isolated digital output channels with isolation protection up to 2,500 V_{DC}, which makes it ideal for industrial applications where high-voltage isolation is required. In addition, all output channels are able to keep their last values after a hot system reset. Furthermore, the MIC-3756 provides a channel-freeze function that keeps the current output status unchanged for each channel during operation.

The MIC-3756 features robust isolation protection for applications in industrial, lab and machinery automation. It can durably withstand voltage up to 2,500 V_{DC}, preventing your host system from any incidental harm. If connected to an external input source with surge-protection, the MIC-3756 can offer up to a maximum of 2,000 V_{DC} ESD (Electrostatic Discharge) protection for input channels. Even if the input voltage rises up to 70 V_{DC}, the input channels of MIC-3756 can still manage to work properly for a short period of time.

Specifications

General

- **I/O Connector Type** One female 78-pin D-type connector
- **Dimensions** 160 x 100 mm (6.3" x 3.9") with 3U/6U Bracket
- **Power Consumption** Typical: +5 V @ 285 mA
Max: +5V @ 475 mA
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F) IEC 68-2-1,2
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Relative Humidity** 5 ~ 95% RH non-condensing (IEC-68-2-3)

Isolated Digital Input

- **Channels** 32
- **Interrupt Inputs** 2 (DI00, DI16)
- **Optical Isolation** 2500 V_{DC}
- **Over-voltage Protection** 70 V_{DC}
- **Input Resistance** 1 kΩ (50 V), 4 kΩ (5 V)
- **Input Voltage**
VIH (max.) 50 V_{DC}
VIH (min.) 5 V_{DC}
VIL (max.) 2 V_{DC}

Isolated Digital Output

- **Channels** 32
- **Optical Isolation** 2500 V_{DC}
- **DO Response Time**
OFF delay (±20%) 5 μs
ON delay (±20%) 120 μs
- **Supplied Voltage** 5~40 V_{DC}
- **Sink Current** 200 mA max/channel

Photo-Couple Response Time

Input Voltage	*OFF delay (±20%)	*ON delay (±20%)
5 V	100 μs	60 μs
12 V	120 μs	10 μs
24 V	140 μs	5 μs
30 V	150 μs	4 μs
50 V	200 μs	4 μs

*OFF delay means the photo-couple turn OFF delay time when DI input is removed

*ON delay means the photo-couple turn ON delay time when DI input voltage is connected.

Ordering Information

- **MIC-3756/3** 3U 64-channel isolated digital I/O Card, user's manual and driver CD-ROM. (cable not included)
- **MIC-3756/6** 6U 64-channel isolated digital I/O Card, user's manual and driver CD-ROM. (cable not included)
- **PCL-10178-1** DB-78 cable assembly 1 m
- **ADAM-3978** DB-78 wiring terminal for DIN-rail mounting

Feature Details

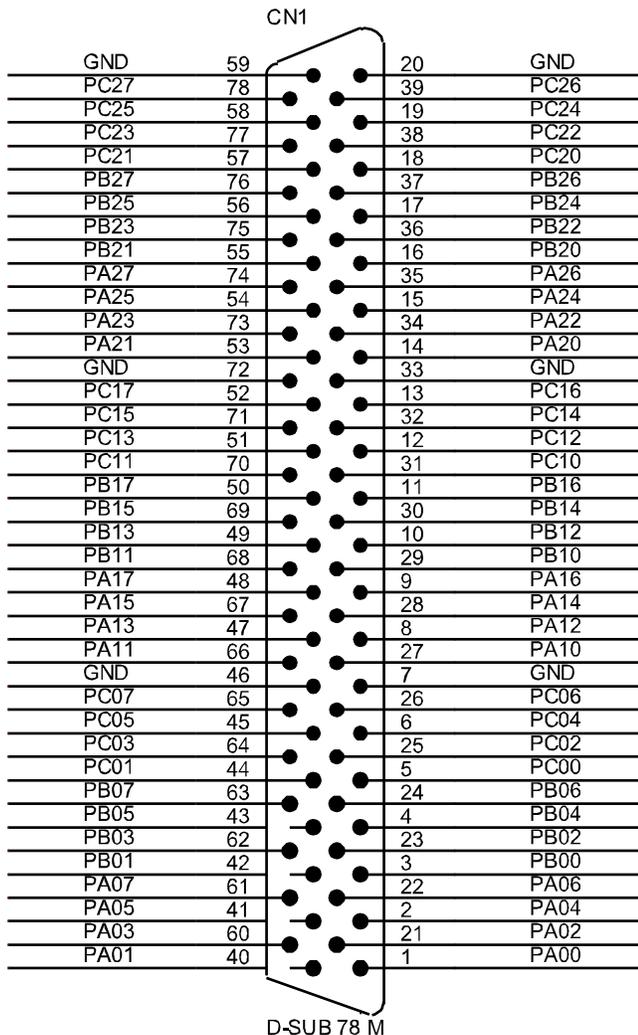
Wide Input/Output Range

The MIC-3756 has a wide range of input voltage from 10 to 50 V_{DC}, and it is suitable for most industrial applications with 12 V_{DC}, 24 V_{DC} and 48 V_{DC} input voltage. It also features a wide output voltage range from 5 to 40 V_{DC}, suitable for most industrial applications with 12 V_{DC}/24 V_{DC} output voltage. You can also request tailored solutions for specific input/out voltage ranges.

BoardID™ Switch

The MIC-3756 has a built-in DIP switch that helps define each card's unique ID when multiple MIC-3756 cards have been installed on the same PC chassis. The BoardID switch setting is very useful when users build their system with multiple MIC-3756 cards. With correct Board ID settings, you can easily identify and access each card during hardware configuration and software programming.

Pin Assignments



Channel-Freeze Function

The MIC-3756 provides a Channel-Freeze function, which can be enabled either in dry contact or wet contact mode (selected by the on-board jumper). When the Channel-Freeze function is enabled, the last status of each digital output channel will be safely kept for emergency use. Moreover, you can enable this function through software since it is useful in software simulations and testing programs.

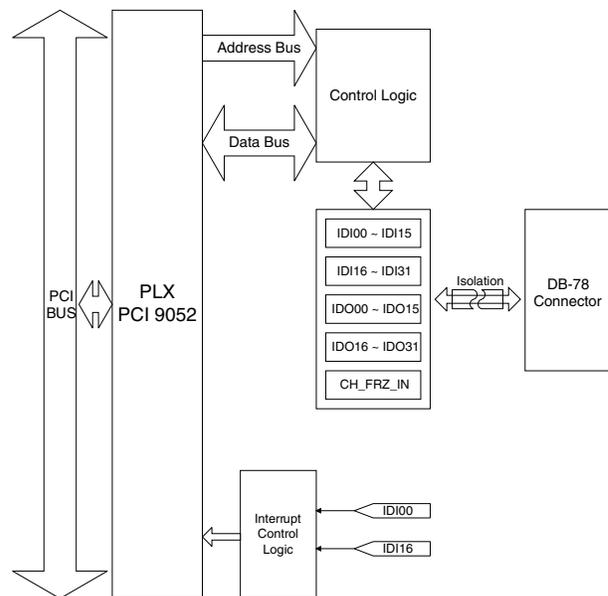
Reset Protection Fulfills Requirement for Industrial Applications

If the system has undergone a hot reset (i.e. without turning off the system power), the MIC-3756 can either retain the output values of each channel or return to its default configuration as open status, depending on its on-board jumper setting. This function protects the system from wrong operations during unexpected system resets.

Applications

- Industrial ON/OFF control
- Switch status sensing
- BCD interfacing
- Digital I/O control
- Industrial and lab automation
- SMT/PCB machinery
- Semi-conductor machinery
- PC-based Industrial Machinery
- Testing & Measurement
- Laboratory & Education

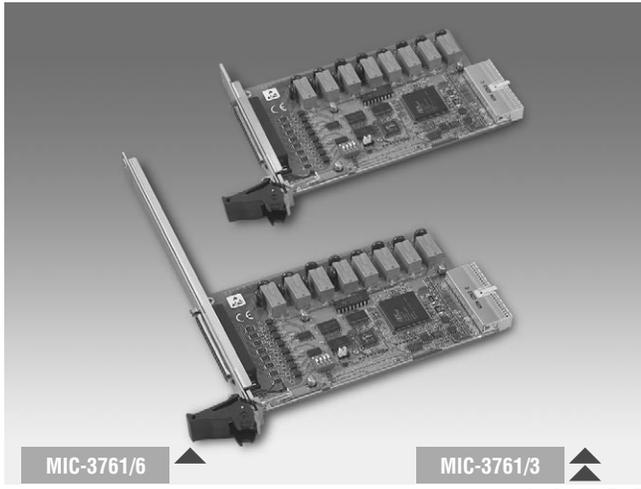
Block Diagram



1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

MIC-3761

8-ch Relay Actuator and 8-ch Isolated Digital Input Card



MIC-3761/6

MIC-3761/3



Features

- 8 relay output channels and 8 isolated digital input channels
- LED indicators to show activated relays
- 4 Form C and 4 Form A type relay output channels
- Output status read-back
- Retained relay output values when hot system reset
- High-voltage isolation on input channels (3,750 V_{DC})
- High ESD protection (2,000 V_{DC})
- High over-voltage protection (70 V_{DC})
- Wide input range (10 ~ 50 V_{DC})
- Interrupt handling capability
- BoardID™ switch

Introduction

The MIC-3761 relay actuator and isolated D/I card is an add-on card for the PCI bus. It provides 8 opto-isolated digital inputs with isolation protection of 3,750 V_{DC} for collecting digital inputs in noisy environments, and 8 relay actuators for serving as ON/OFF control devices or small power switches. For easy monitoring, each relay is equipped with one red LED to show its ON/OFF status. The MIC-3761's eight optically-isolated digital input channels are ideal for digital input in noisy environments or with floating potentials.

Rugged Protection

The MIC-3761 digital input channels feature rugged protection for industrial, lab and machinery automation applications. It durably withstands voltage up to 3,750 V_{DC}, protecting your host system from any incidental harms. If connected to an external input source with surge-protection, the MIC-3761 can offer up to a maximum of 2,000 V_{DC} ESD (Electrostatic Discharge) protection. Even with an input voltage rising up to 70 V_{DC}, the MIC-3761 can still manage to work properly for a short period of time.

Reset Protection Fulfills Requirement for Industrial Applications

When the system has undergone a hot reset (i.e. without turning off the system power), the MIC-3761 can either retain output values of each channel, or return to its default configuration as open status, depending on its on-board jumper setting. This function protects the system from unwanted operations during unexpected system resets.

Specifications

Isolated Digital Input

- Channels 8
- Optical Isolation 3,750 V_{DC}
- Opto-Isolator 25 μs
- Response Time
- Over-Voltage Protection 70 V_{DC}
- Input Voltage 10 ~ 50 V_{DC}
- Input Current 1.6 mA @ 10 V_{DC}
8.9 mA @ 50 V_{DC}

Relay Output

- Channels 8
- Relay Type SPDT (4 Form C and 4 Form A)
- Rating (resistive) 3 A @ 250 V_{AC} or 3 A @ 24 V_{DC}
- Max. Switching Power 750 AV, 72 W
- Max. Switching Load 10 mA @ 5 V_{DC}
- Insulation Resistance 1,000 MΩ min. (at 500 V_{DC})
- Operate Time 15 ms max.
- Release Time 5 ms max.

General

- Connector One 37-pin D-type female connector
- Dimensions (L x H) 175 x 100 mm (6.9" x 3.9")
- Power Consumption +5 V @ 220 mA (typical)
+5 V @ 750 mA (max.)
- Operating Temperature 0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
- Storage Temperature -20 ~ 70° C (-4 ~ 158° F)
- Operating Humidity 5 ~ 95 % RH non-condensing (refer to IEC 68-2-3)
- Certifications CE Class A certified

Isolated Digital Input

- Input Channels 8
- Optical Isolation 3750 V_{DC}
- Opto-isolator 25 μs
- Response Time
- Over-voltage Protection 70 V_{DC}
- Input Voltage VIH (max.) 50 V_{DC}
VIH (min.) 10 V_{DC}
VIL (max.) 3 V_{DC}
- Input Current 10 V_{DC} 1.6 mA (typical)
12 V_{DC} 1.9 mA (typical)
24 V_{DC} 4.1 mA (typical)
48 V_{DC} 8.5 mA (typical)
50 V_{DC} 8.9 mA (typical)

Relay Output

- **Output Channels** 8
- **Relay Type** SPDT (4 Form C and 4 Form A)
- **Rating (resistive)** 3 A @ 250 V_{AC} or 3 A @ 24 V_{DC}
- **Max. Switching Power** 750 AV, 72 W
- **Max. Switching Voltage** 250 V_{AC}, 24 V_{DC}
- **Max. Switching Current** 3 A
- **Min. Switching Load** 10 mA @ 5 V_{DC}
- **Breakdown Voltage** 5,000 V_{AC} for 1 min. (Between coil and contacts)
- **Operate time** 15 ms max.
- **Release time** 5 ms max.
- **Insulation Resistance** 1,000 MΩ min. (at 500 V_{DC})
- **Life Expectancy** Mechanical 2 x 10⁷ ops. min.
Electrical 2x10⁵ ops. min. (contact rating)

Note:

The current specifications are limited by the cable and wiring terminal board.

Ordering Information

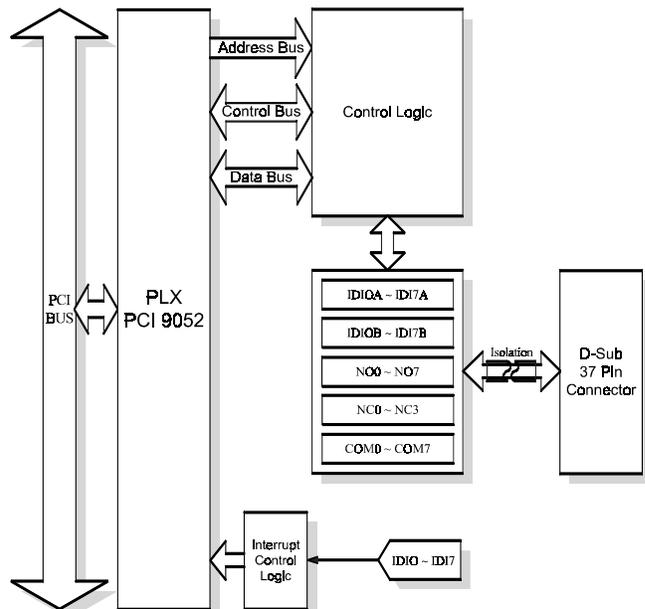
- **MIC-3761/3** 3U 8-ch Relay Actuator and 8-ch Isolated D/I Card, user's manual and driver CD-ROM. (cable not included)
- **MIC-3761/6** 6U 8-ch Relay Actuator and 8-ch Isolated D/I Card, user's manual and driver CD-ROM. (cable not included)
- **PCL-10137-1/2/3** DB-37 cable assembly, 1 ,2 and 3 m
- **ADAM-3937** DB-37 Wiring Terminal for Din-rail Mounting
- **PCLD-780** Universal Screw Terminal Board

Pin Assignments

Description of pin use:

IDInA* (n=0 ~ 7): Isolated digital input A	R0_NO R0_COM R0_NC	1 2 3	20 21 22	R3_NO R3_COM R3_NC
IDInB* (n=0 ~ 7): Isolated digital input B	R1_NO R1_COM R1_NC	4 5 6	23 24 25	R4_NO R4_COM R5_NO
Rn_NO(n=0 ~ 7): Normally Open pin of relay output	R2_NO R2_COM R2_NC	7 8 9	26 27 28	R5_COM R6_NO R6_COM
Rn_NC(n=0 ~ 7): Normally Close pin of relay output	R7_NO R7_COM	10 11	29 30	N/A IDI 0B
Rn_COM(n=0 ~ 7): Common pin of relay output	IDI 0A IDI 1A IDI 2A IDI 3A IDI 4A IDI 5A IDI 6A IDI 7A	12 13 14 15 16 17 18 19	31 32 33 34 35 36 37	IDI 1B IDI 2B IDI 3B IDI 4B IDI 5B IDI 6B IDI 7B

Block Diagram



1 Software

2 IPPC

3 TPC

4 FPM

5 ATM & AWS

6 DA&C

7 cPCI

8 ADAM-3000

9 Motion Control

10 ICOM

11 eConnectivity

12 UNO

13 ADAM-4000

14 ADAM-5000

15 ADAM-6000

16 ADAM-8000

17 BAS

MIC-3780

8-ch Counter/Timer Card



Features

- 8 independent 16-bit counters
- 8 programmable clock source
- 8 digital TTL outputs and 8 digital TTL inputs
- Up to 20 MHz input frequency
- Multiple counter clock source selectable
- Counter output programmable
- Counter gate function
- Flexible interrupt source select
- BoardID™ switch

Introduction

The MIC-3780 is a general purpose multiple channel counter/timer card for the 3U/6U CompactPCI® system. It targets the AM9513 to implement the counter/timer function by CPLD. Plus, it provides eight 16-bit counter channels and 8 digital outputs and 8 digital inputs. Advantech has designed in powerful counter functions to fulfill your industrial or laboratory applications.

Flexible Counter Modes

The MIC-3780 features up to 12 programmable counter modes, to provide one shot output, PWM output, periodic interrupt output, time-delay output, and to measure the frequency and the pulse width. The MIC-3780 is an ideal solution for variant counter/timer applications.

Special Shielded Cable for Noise Reduction

The PCL-10168 shielded cable is specially designed for the MIC-3780 to reduce noise. Its wires are all twisted pairs, and the input signals and output signals are separately shielded, providing minimal cross talk between signals and solid protection against EMI/EMC problems.

BoardID™ switch

The MIC-3780 has a built-in DIP switch that helps define each card's ID when multiple cards have been installed on the same PC chassis. The board ID setting function is very useful when users build their system with multiple MIC-3780 cards. With correct Board ID settings, you can easily identify and access each card during hardware configuration and software programming.

Plug & Play Function

The MIC-3780 is a Plug & Play device, which fully complies with PICMG 2.0, Ver 2.1 CompactPCI specifications. During card installation, there is no need to set jumpers or DIP switches. Instead, all bus-related configurations such as base I/O address and interrupt are automatically done by the Plug & Play function.

Specifications

Programmable Counter

- Channels 8 (independent)
- Resolution 16-bit
- Programmable Clock Source 8 (independent)
- Programmable Counter Modes 12
- Max. Frequency 20 MHz
- Interrupt Source 8 counter outputs

Digital Input/Output

- Input Channels 8
- Input Voltage Low: 0.8 V max. High: 2.4 V min.
- Interrupt Source Channel 0
- Output Channels 8
- Output Voltage Low: 0.5 V max. @ 24 mA (sink)
High: 2.4 V min. @ -15 mA (source)

General

- I/O Connector Type 68-pin SCSI-II female
- Dimensions (L x H) 160 x 100 mm (6.3" x 3.9") with 3U/6U Bracket
- Power Consumption Typical: +5 V @ 900 mA
Max: +5 V @ 1.2 A
- Operating Temperature 0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
- Storage Temperature -20 ~ 70° C (-4 ~ 158° F)
- Relative Humidity 5 ~ 95 % RH non-condensing (refer to IEC 68-2-3)
- Certifications CE, FCC Class A

Ordering Information

- MIC-3780/3 3U, 8-ch. Counter/Timer Card, user's manual and driver CD-ROM. (cable not included)
- MIC-3780/6 6U, 8-ch. Counter/Timer Card, user's manual and driver CD-ROM. (cable not included)
- PCL-10168 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 and 2 m
- ADAM-3968 68-pin SCSI-II Wiring Terminal Board for DIN-rail mounting

Applications

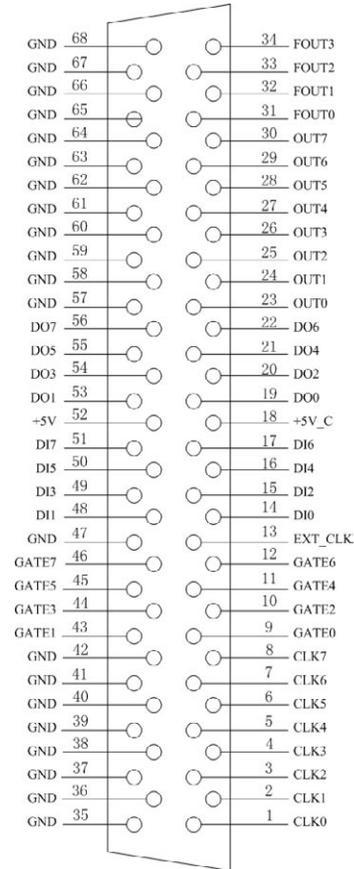
- Event counting
- One shot output
- Programmable frequency output
- Frequency measurement
- Pulse width measurement
- PWM output
- Periodic interrupt generation
- Time-delay generation

Counter Mode Table

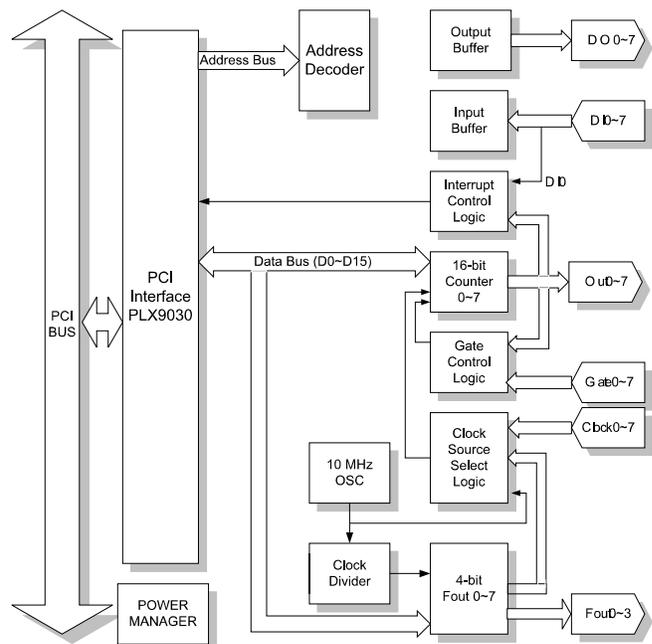
Counter Mode	A	B	C	D	E	F	G	H	I	J	K	L
Reload Source (CM5)	0	0	0	0	0	0	1	1	1	1	1	1
Repetition (CM4)	0	0	0	1	1	1	0	0	0	1	1	1
Gate Control (CM15 ~ CM12)	N	L	E	N	L	E	N	L	E	N	L	E
Count to T/C once, then disarm	√	√	√									
Count to T/C twice, then disarm							√	√	√			
Count to T/C repeatedly without disarming				√	√	√				√	√	√
Gate input dose not gate counter input	√			√			√			√		
Count only during active gate level		√			√			√			√	
Start count on active gate edge and stop count on next T/C			√			√						
Start count on active gate edge and stop count on second T/C									√			√
No hardware re-triggering	√	√	√	√	√	√	√	√	√	√	√	√
Reload counter from Load Register on T/C	√	√	√	√	√							
Reload counter on each T/C, alternating reload source between Load and Hold Registers							√	√	√	√	√	√

Note: Gate Control: N: No gate control
L: Level gate control
E: Edge gate control

Pin Assignments

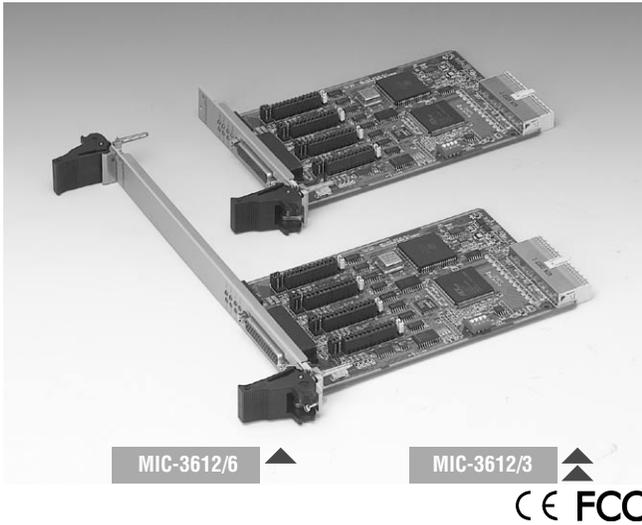


Block Diagram



MIC-3612

4-port RS-232/422/485 Communication Card, w/Surge Protection



Features

- PCI Specification 2.1 compliant
- Speeds up to 921.6 kbps
- 4-port RS-232/422/485
- 16C954 UARTs with 128-byte standard
- Standard Industrial CompactPCI® 3U Board size
- I/O address automatically assigned by PCI Plug & Play
- OS supported: Windows® 98/NT/2000/XP
- Interrupt status register for increased performance
- Automatic RS-485 data flow control
- Tx/Rx LED indicator

Introduction

The MIC-3612 is a 4 port RS-232/422/485 PCI communication card. It is compatible with the PCI 2.1 bus specification and has four surge protected, RS-232/422/485 ports. It features functions such as high transmission speed at 921.6 kbps, four independent RS-232/422/485 ports, optional surge protection etc. The MIC-3612 also comes with high-performance 16PCI954 UARTs with 128-byte FIFO to reduce CPU load. These components make it more stable and reliable. Thus, the MIC-3612 is especially suitable for multitasking environments.

To improve the performance of the system, the MIC-3612 allows transmission rates up to 921.6 kbps. To further increase reliability, the MIC-3612 offers surge protection technology, protecting your system from abrupt high voltage of 2500 V_{DC}. Besides, Advantech also provides a convenient utility program, ICOM Tools, to help users test the CompactPCI® card performance by analyzing the port status. It's easy to use the menu commands and toolbar buttons. ICOM tools acts as a PC-based data scope that lets you set a trigger condition, capture the communication data and monitor the signal status. ICOM Tools is applicable to all series of Advantech ICOM cards.

Specifications

- **Bus Interface** CompactPCI® bus specification 2.1 compliant
- **Communication Controller** BUS controller: PLX9030
UART: 16C954
- **IRQ** All ports use the same IRQ assigned by PCI Plug & Play
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even, odd
- **Speed (bps)** 50 ~ 921.6 k
- **Data Signals** TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND (for RS-232)
TxD, RxD, RTS, CTS (for RS-422)
DATA+, DATA- (for RS-485)
- **Surge Protection** 2500 V_{DC}
- **Power Consumption**

	Typical	Max.
+5 V	220 mA	285 mA
+3.3 V	100 mA	200 mA
+12 V	60 mA	80 mA

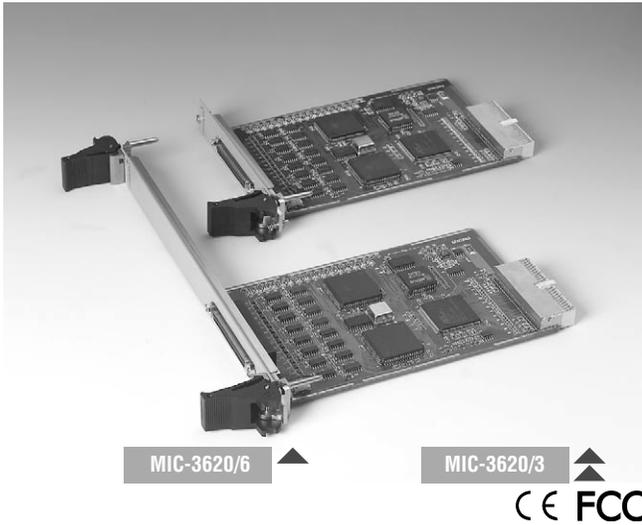
- **Dimensions (L x H)** 160 x 100 mm (6.3" x 3.9"), 3U/6U bracket
- **Operating Temperature** 0 ~ 70° C (IEC68-2-1, 2)
- **Operating Humidity** 5 ~ 95% relative humidity, non-condensing (IEC 68-2-1, 2)
- **Operating Humidity** 5 ~ 95% relative humidity, non-condensing (IEC 68-2-3)
- **Storage Temperature** -20 ~ 80° C

Ordering Information

- **MIC-3612/3** 3U CompactPCI® 4-port RS-232/422/485 Card, user's manual and driver CD-ROM. (30 cm DB-44 to DB-9 cable included)
- **MIC-3612/6** 6U CompactPCI® 4-port RS-232/422/485 Card, user's manual and driver CD-ROM. (30 cm DB-44 to DB-9 cable included)

MIC-3620

8-port RS-232 Communication Card



Features

- PCI Specification 2.1 compliant
- Speeds up to 921.6 kbps
- 16C954 UARTs with 128-byte standard
- 8-port RS-232
- Standard Industrial CompactPCI® 3U Board size
- I/O address automatically assigned by PCI Plug & Play
- OS support: Windows® 98/NT/2000/XP
- Interrupt status register for increased performance
- Optional surge protection
- Space reserved for termination resistors

Introduction

The MIC-3620 is a 8 port RS-232 communication card that is compatible with the PCI 2.1 bus specification. The MIC-3620 provides eight optional surge protected RS-232 ports, and functions such as high transmission speed of 921.6 kbps, eight independent RS-232 ports, optional surge protection etc. The MIC-3620 also comes with high-performance 16PC1954 UARTs with 128-byte FIFO and 16C954 UARTs to reduce CPU load. These components increases stability and reliability. Thus, the MIC-3620 is especially suitable for multitasking environments.

To further increase reliability, The MIC-3620 offers surge protection technology, protecting your system from abrupt high voltage of 2500 V_{DC}. Besides, Advantech also provides a convenient utility program, ICOM Tools, to help users test the CompactPCI card performance by analyzing the port status through easy-to-use menu commands and toolbar buttons. ICOM Tools acts as a PC-based data scope that lets you set a trigger condition, capture the communication data and monitor the signal status. In addition, ICOM Tools is applicable to all series of Advantech ICOM cards.

Specifications

- **Bus Interface** CompactPCI® bus specification 2.1 compliant
- **IRQ** All ports use the same IRQ assigned by PCI Plug & Play
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even, odd
- **Communication Controller** PCI9030 + 16C954
- **Speed (bps)** 50 ~ 921.6 k
- **Data Signals** TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
- **Surge Protection** 2500 V_{DC}
- **Power Consumption** +5V, +3.3V, +12V
- **Dimensions (LxH)** 160 x 100 mm (6.3" x 3.9"), 3U/6U Bracket
- **Operating Temperature** 0~ 70° C (refer to IEC68-2-1, 2)
- **Operating Humidity** 5 ~ 95% Relative Humidity, non-condensing (IEC 68-2-1, 2)
- **Operating Humidity** 5 ~ 95% Relative Humidity, non-condensing (IEC 68-2-3)
- **Storage Temperature** -20 ~ 80° C

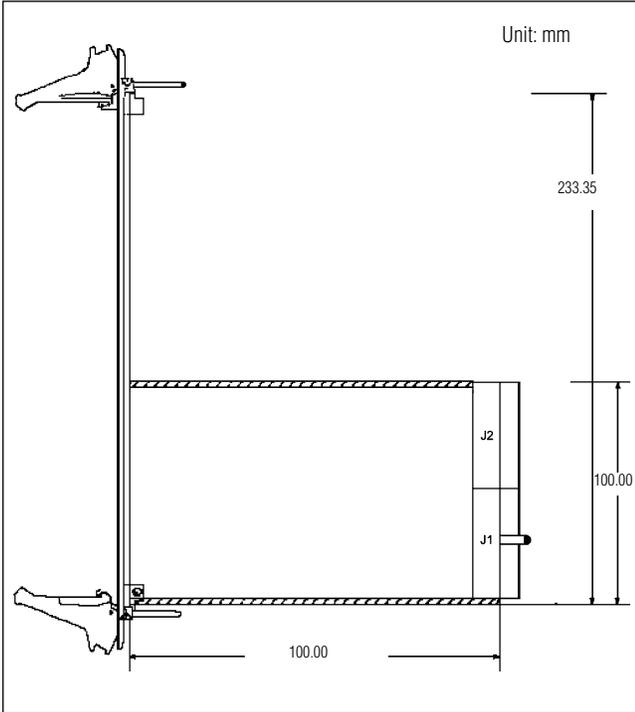
Ordering Information

- **MIC-3620/3** 3U CompactPCI® 8-port RS-232 Card, User's manual and CD-ROM. (50 cm SCSI-68 to DB-9 cable included)
- **MIC-3620/6** 6U CompactPCI® 8-port RS-232 Card, User's manual and CD-ROM. (50 cm SCSI-68 to DB-9 cable included)

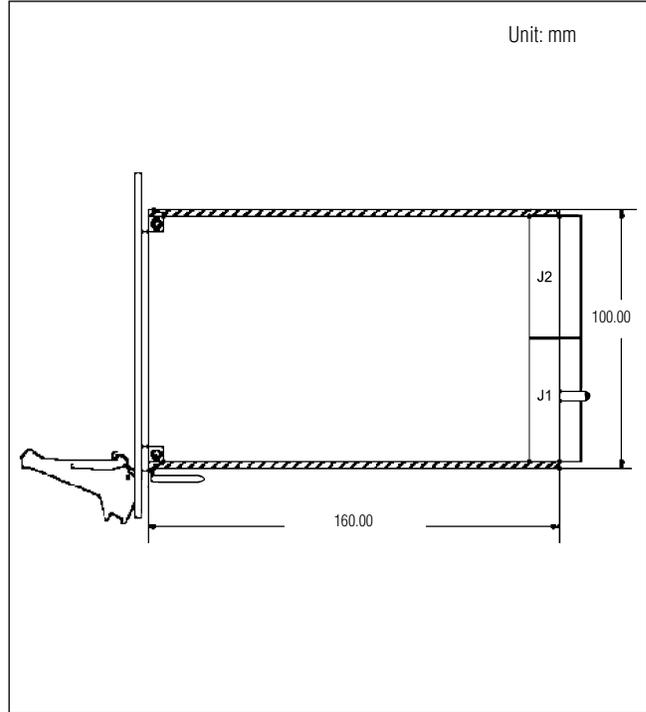
1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

MIC-3000 Series

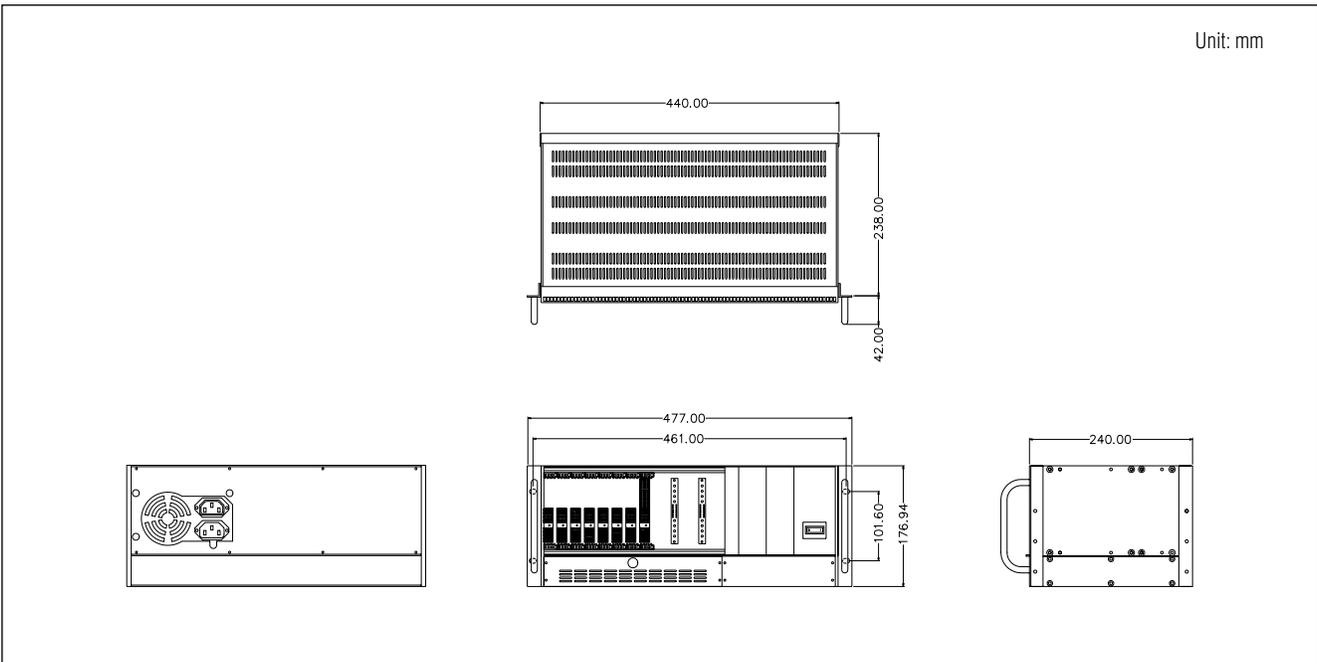
Dimensions



3U-size Card with 6U Bracket



3U-size Card with 3U Bracket



4U-size Enclosure

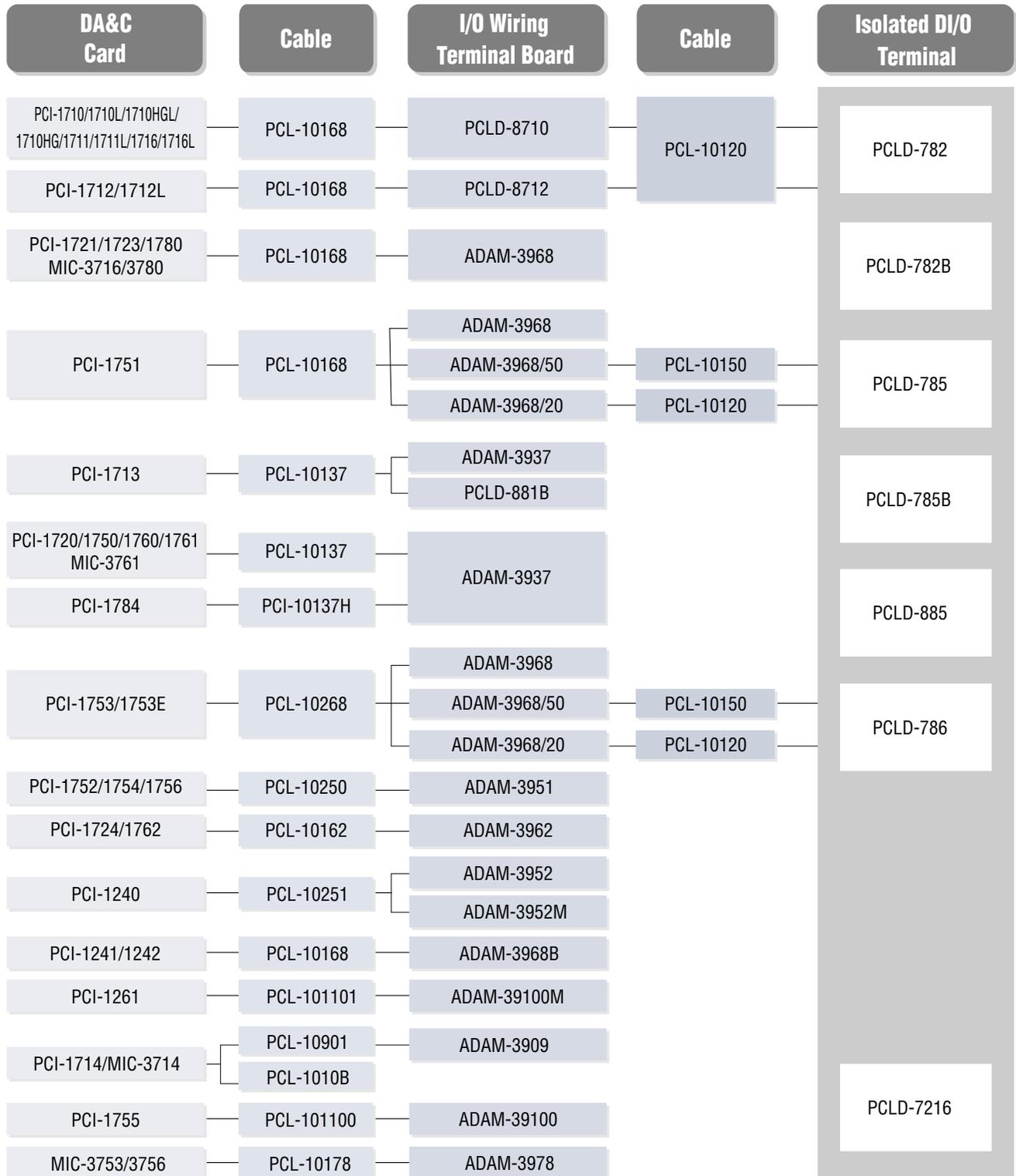
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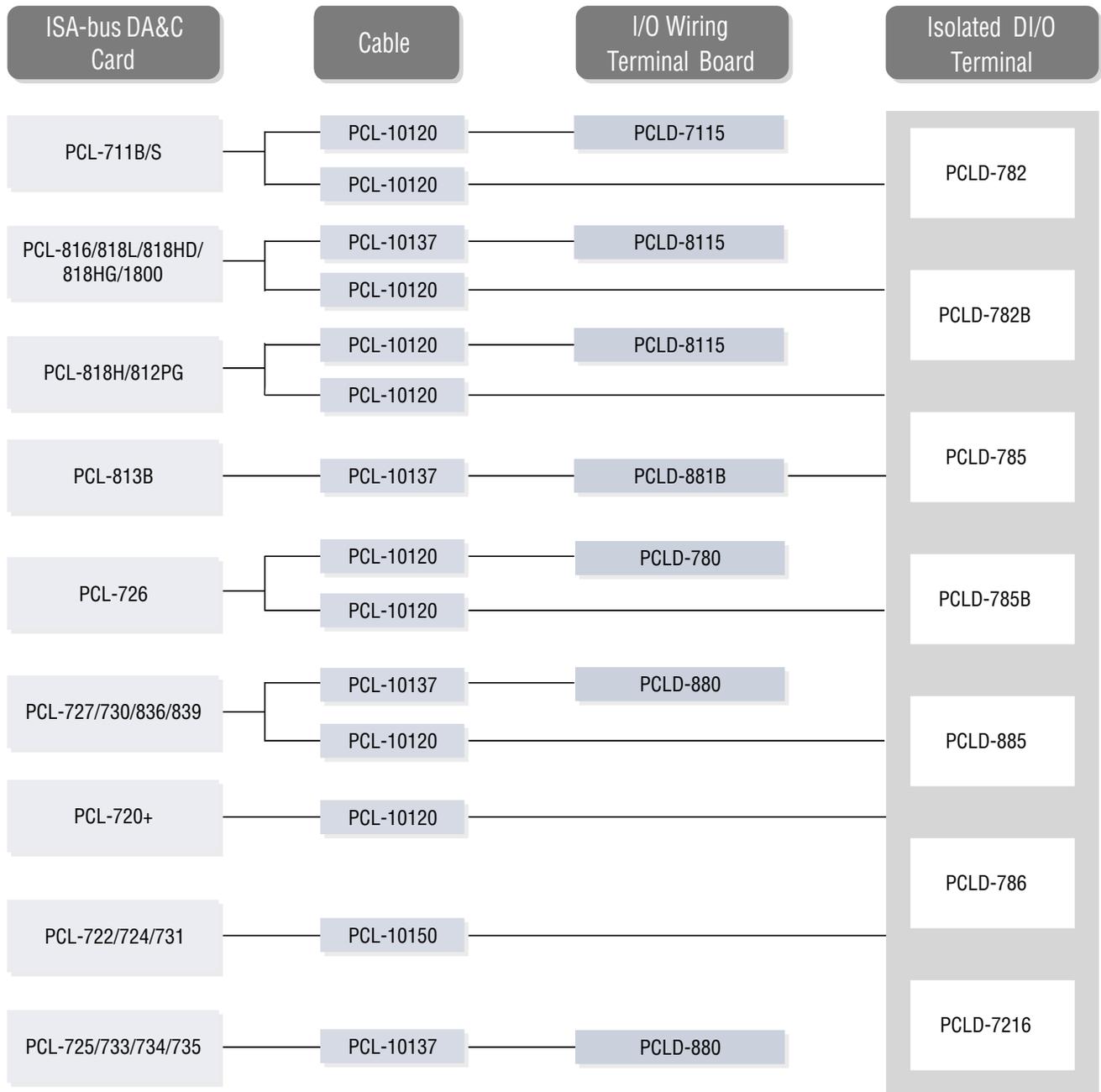
Terminal Boards

Recommended cables, I/O wiring terminal boards and isolated DI/O terminals for connecting PCI-buses with CompactPCI DA&C cards



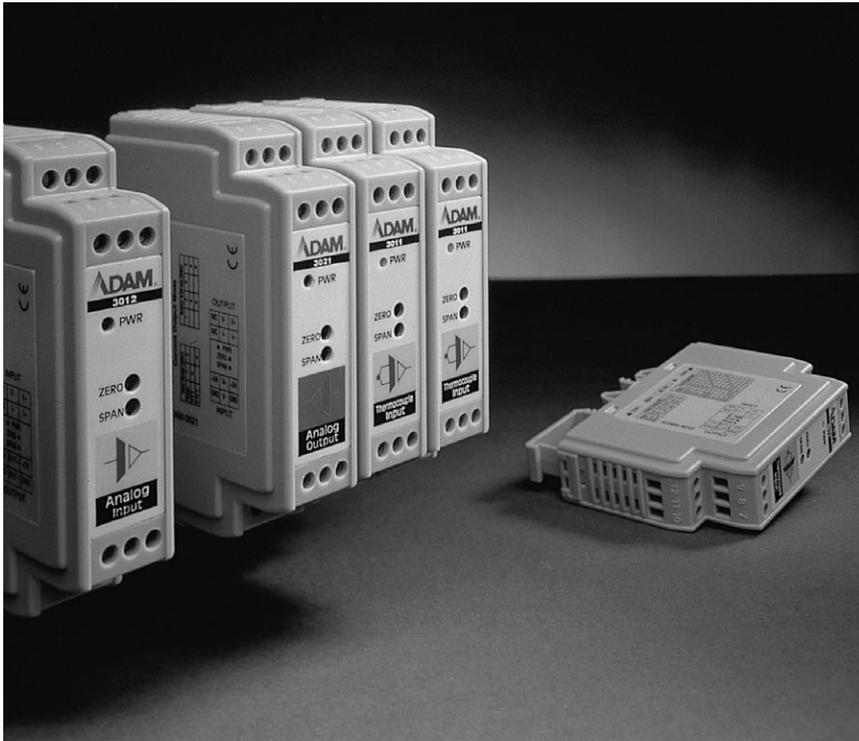
Selection Guide

Recommended cables, I/O wiring terminal boards and isolated DI/O terminals for connecting ISA-buses with DA&C cards



- 1 Software
- 2 IPCC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 **ADAM-3000**
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

The ADAM-3000 Series



Features

- 1,000 V_{DC} three-way isolation
- Easy input/output range configuration
- Flexible DIN-rail mounting
- Linearized thermocouple/RTD measurement
- Low power consumption
- Wide input bandwidth

Introduction

The ADAM-3000 Series consist of the most cost-efficient, field configurable, isolation-based, signal conditioners on the market today. The modules are easily installed to protect your instruments and process signals from the harmful effects of ground loops, motor noise, and other electrical interferences.

Affordable Signal Isolation Solution

Featuring optical isolation technology, the ADAM-3000 modules provide three-way (input/output/power) 1,000 V_{DC} isolation. Optical isolation provides pin-point accuracy and stability over a wide range of operations at minimal power consumption.

Flexible Analog Data Conversion

The input/output range for the ADAM-3000 modules can be configured through switches located inside the module. The modules accept voltage, current, thermocouple or RTD as input, and pass voltage or current as output.

Thermocouple input is handled by the built-in input thermocouple linearization circuitry and a cold junction compensation function. These ensure accurate temperature measurement and accurate conversion of this information to the voltage or current output.

Configuration

The ADAM-3000 modules use +24 V_{DC} power. This electrical power wiring can be acquired from adjacent modules, which greatly simplifies wiring and maintenance. The I/O configuration switches are located inside the modules. To reach the switches, simply remove the modules from the DIN-rail bracket by sliding the modules downward.

Modular Industrial Design

The ADAM-3000 modules can be easily mounted on a DIN-rail, and signal wires can be connected through screw terminals. The screw terminals and input/output configuration switches are built inside the industrial grade plastic casing. With simple two-wire input/output cables, wiring is easy and reliable in harsh industrial environments.

Applications

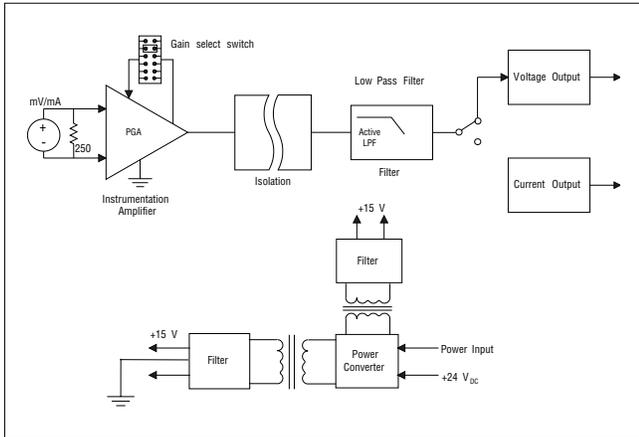
- Signal isolation
- Signal transmitters
- Thermocouple/RTD/strain gauge measurements
- Signal amplifiers
- Noise filter

Common Specifications

- **Isolation** 1,000 V_{DC}
- **Indicator** Power LED indicator
- **Power Requirement** +24 V_{DC} ± 10%
- **Case** ABS
- **Screw Terminal** Accepts 0.5 mm² ~ 2.5 mm²
1- #12 or 2- #14 ~ #22 AWG
- **Operating Temperature** 0 ~ 70° C (32 ~ 158° F)
(except ADAM-3011)
- **Storage Temperature** -25 ~ 85° C (-13~185° F)

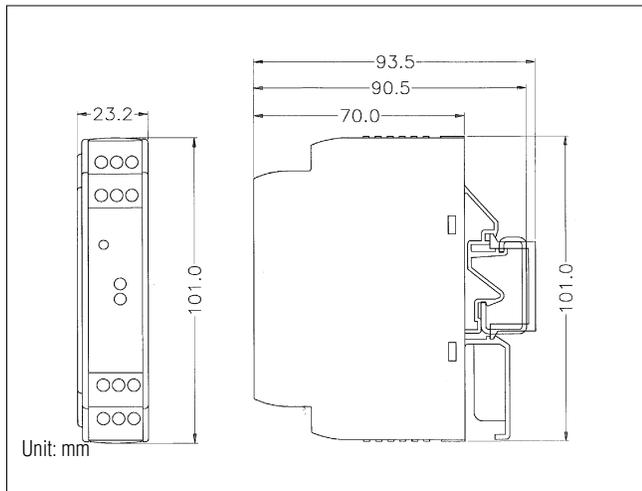
Isolated Signal Conditioning Modules

Block Diagram



Block Diagram of ADAM-3014

Dimensions

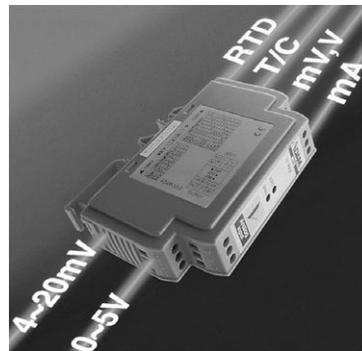


The ADAM-3000 Series Modules



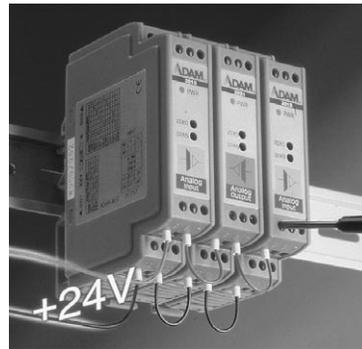
3-Way Signal Isolation

3-way (input/output/power)
1,000 V_{DC} isolation.



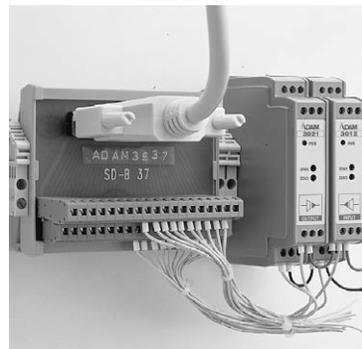
Field Configurable I/O Range

The I/O range can be configured on site with switches inside the module.



Easy Daisy Chain Power Wiring

Power can be connected conveniently from adjacent modules.



Interfacing to DA&C Card

A wiring adapter can connect modules to a data acquisition card.

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-3011 ADAM-3013

Isolated Thermocouple Input Module

Isolated RTD Input Module



Specifications

- **Input Type**
T/C type, temperature range and accuracy at 25° C:

J	-40° ~ 760° C	(±2° C)
K	0° ~ 1000° C	(±2° C)
T	-100° ~ 400° C	(±2° C)
E	0° ~ 1000° C	(±2° C)
S	500° ~ 1750° C	(±4° C)
R	500° ~ 1750° C	(±4° C)
B	500° ~ 1800° C	(±4° C)
- **Voltage Output** 0 ~ 10 V
- **Output Impedance** 0.5 Ω
- **Isolation (three way)** 1,000 V_{DC}
- **Stability (temperature drift)** ±2° C
- **Common Mode Rejection** 115 dB min
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- **Power Consumption** 1.4 W

Ordering Information

- **ADAM-3011** Isolated Thermocouple Input Module



Specifications

- **Input Type** Pt or Ni RTD
- **RTD Types and Temperature Ranges**

Pt	-100° ~ 100° C	a=0.00385
Pt	0° ~ 100° C	a=0.00385
Pt	0° ~ 200° C	a=0.00385
Pt	0° ~ 600° C	a=0.00385
Pt	-100° ~ 0° C	a=0.00385
Pt	-100° ~ 200° C	a=0.00385
Pt	-50° ~ 50° C	a=0.00385
Pt	-50° ~ 150° C	a=0.00385
Pt	-100° ~ 100° C	a=0.00392
Pt	0° ~ 100° C	a=0.00392
Pt	0° ~ 200° C	a=0.00392
Pt	0° ~ 600° C	a=0.00392
Ni	0° ~ 100° C	
Ni	-80° ~ 100° C	
- **Input Connections** 2, 3 or 4 wires
- **Output Range** 0 ~ 5 V, 0 ~ 10 V, 0 ~ 20 mA
- **Output Resistance** < 5 Ω
- **Accuracy** +/- 0.1% of full range (voltage) or +/- 0.15° C (voltage)
+/- 0.2% of full range (current)
- **Temperature Drift** +/- 30 ppm of full range
- **Input CMR at DC** 92 dB minimum
- **Isolation** 1,000 V_{DC}
- **Supply Voltage** 24 V_{DC} +/- 10%
- **Operating Temperature** 0 ~ 70° C (32 ~ 158° F)
- **Bandwidth** 4 Hz
- **Power Consumption** < 0.95 W

Ordering Information

- **ADAM-3013** Isolated RTD Input Module

ADAM-3014 ADAM-3016

Isolated DC Input/Output Module

Isolated Strain Gauge Input Module



Specifications

- **Voltage Input** Bipolar input:
±10 mV, ±50 mV, ±100 mV, ±0.5 V, ±1.0 V, ±5 V, ±10 V
Unipolar input:
0 ~ 10 mV, 0 ~ 50 mV, 0 ~ 100 mV, 0 ~ 0.5 V, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V
Input impedance: 2 MΩ
Input bandwidth: 2.4 kHz (typical)
- **Current Input** Bipolar: ±20 mA
Unipolar: 0 ~ 20 mA
Input impedance: 250 Ω
- **Voltage Output** Bipolar: ±5 V, ±10 V
Unipolar: 0 ~ 10 V
Impedance: < 50 Ω
Drive: 10 mA max.
- **Current Output** 0 ~ 20 mA
- **Isolation (three way)** 1,000 V_{DC}
- **Accuracy** ±0.1% of full range (typical)
- **Stability (temperature drift)** 150 ppm (typical)
- **Common Mode Rejection** > 100 dB @ 50 Hz/60 Hz
- **Power Consumption** 0.85 W (voltage output)
1.2 W (current output)

Ordering Information

- **ADAM-3014** Isolated DC Input/Output Module



Specifications

- **Voltage Specifications** Electrical input:
±10 mV, ±20 mV, ±30 mV, ±100 mV
Excitation voltage:
1 ~ 10 V_{DC} (60 mA max)
- **Voltage Output** Bipolar: ±5 V, ±10 V
Unipolar: 0 ~ 10 V
Impedance: < 50 Ω
- **Current Output** Current: 0 ~ 20 mA
Current load resistor:
0 ~ 500 Ω (Source)
- **Isolation (three way)** 1,000 V_{DC}
- **Accuracy** ±0.1% of full range
- **Bandwidth** 2.4 kHz (typical)
- **Stability (temperature drift)** 150 ppm (typical)
- **Isolation Mode Rejection** >100 dB @ 50 Hz/60 Hz
- **Operating Temperature** -10~ 70° C (14~158° F)
- **Power** Range: 24 V_{DC} ±10%
Consumption:
≤ 1.85 W (voltage output)
≤ 2.15 W (current output)

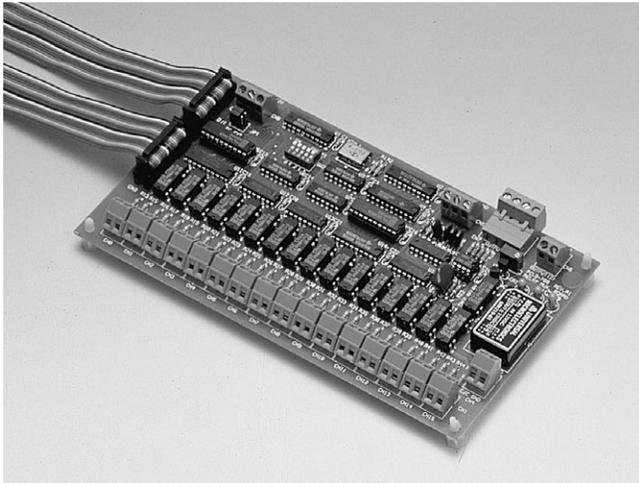
Ordering Information

- **ADAM-3016** Isolated Strain Gauge Input Module

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCLD-788

16-channel Relay Multiplexer Board



Features

- 16 to 1 channel expansion
- Differential and fully isolated multiplexing
- Break-before-make relay control
- "Channel closed" signal for precise A/D triggering
- Up to 16 PCLD-788s can be cascaded for 256 channels
- Easy wiring for large channel count configuration
- On-board cold-junction circuitry for thermocouple measurement

Introduction

The PCLD-788 multiplexes 16 channels into a single I/O channel of an A/D converter, voltmeter or IEEE-488-based instrument. Up to 16 PCLD-788s can be cascaded for a total of 256 fully-isolated differential channels. The PCLD-788 can be controlled by any PC-LabCard™ product via a 16-bit 20-pin digital output port, found on cards such as the PCL-711B, PCL-812PG or the PCL-818 series.

Channel selection (0-15) and board selection (0-15) are done by programming the high-order four bits and low order four bits of a digital output byte from the main I/O card in use.

Specifications

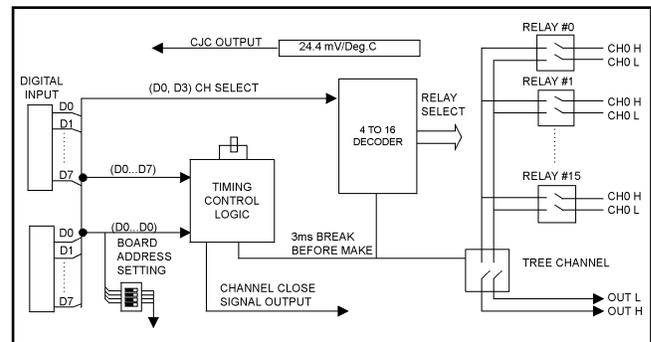
- **Input Channels** 16 isolated differential inputs
- **Programming** D/O bit 0, 1, 2 and 3 for channel selection, D/O bit 4, 5, 6 and 7 for board selection. On-board DIP switches for board-address setting
- **Contact Rating** Break-before-make with 3 msec. minimum break time
- **Max. Input Voltage** 100 V_{DC} or 100 V peak AC
- **Max. Switching Current** 0.5 A
- **Max. Switching Power** 10 Ω
- **Relay Life Expectancy** 100 million cycles min. at 10 V_{DC} and 1 mA
- **Operating Time** 1 msec. max.
- **Release Time** 1 msec. max.
- **Contact Resistance** 200 Ω max.
- **Channel Closed Signal** TTL-level pulse
- **Cold-junction Sensor** +24.4 mV/° C, 0 V at 0° C
- **Output**
- **Power Consumption** +5 V @ 380 mA max.
- **Connectors for Digital Ports** Two 20-pin flat-cable connectors, second connector in parallel for daisy chaining
- **Dimensions (L x W)** 205 x 114 mm (8" x 4.5")

Ordering Information

- **PCLD-788** 16-channel Relay Multiplexer Board, user's manual and two 1 meter 20-pin flat cables (P/N: PCL-10120-1)

Applications

- Channel multiplexing for analog input channels of PCL-711B, PCL-812PG or PCL-818 series cards



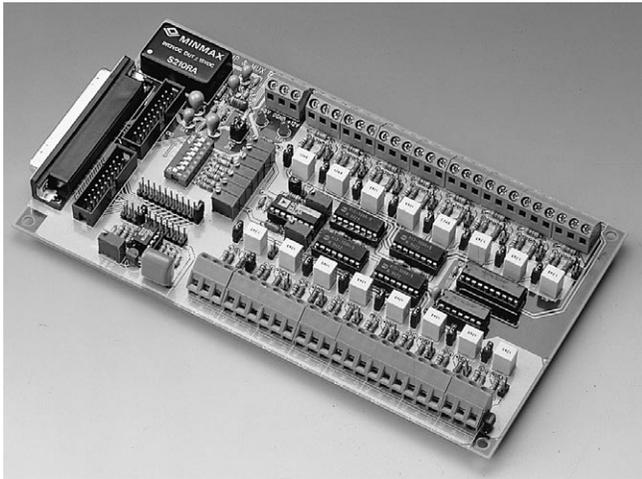
PCLD-788 Block Diagram

Pin Assignments

CN2 & CN3			
C0	1	2	C1
C2	3	4	C3
C4	5	6	C5
C6	7	8	C7
	9	10	
	11	12	
	13	14	
	15	16	
GND	17	18	GND
+5V	19	20	+12V

PCLD-789D

Amplifier and Multiplexer Board



CE

Features

- Multiplexes 16 differential inputs to one A/D input
- Expands a PC-LabCard™ product's analog inputs to 128 channels
- High-grade instrumentation amplifier provides switch selectable gains of 1, 2, 10, 50, 100, 200, 1000
- On-board cold-junction compensation circuits for direct thermocouple measurement
- Built-in signal conditioning functions include filter, attenuator and current shunt
- Second connectors on-board allow daisy chaining
- Screw-clamp terminal blocks permit easy and reliable connections

Introduction

The PCLD-789D is a front-end signal conditioning and channel multiplexing daughterboard for use with PC-LabCard™ product's analog input ports. It multiplexes 16 differential input channels into a single A/D converter input channel. You can cascade up to ten PCLD-789Ds, allowing a single data acquisition card to access 160 analog input channels.

The PCLD-789D has DB37 and 20-pin flat cable connectors and lets your PCL-818L or PCL-818HD access up to 128 channels without using an additional digital output cable to select channels.

The PCLD-789D uses a high-grade instrumentation amplifier that provides switch-selectable gains of 1, 2, 10, 50, 100, 200 and 1000. This amplifier lets you accurately measure low-level signals with your PC-LabCard™ product.

The board also contains a cold-junction sensing circuit that allows direct temperature measurement from thermocouple transducers. A wide variety of thermocouples are supported with software compensation and linearization.

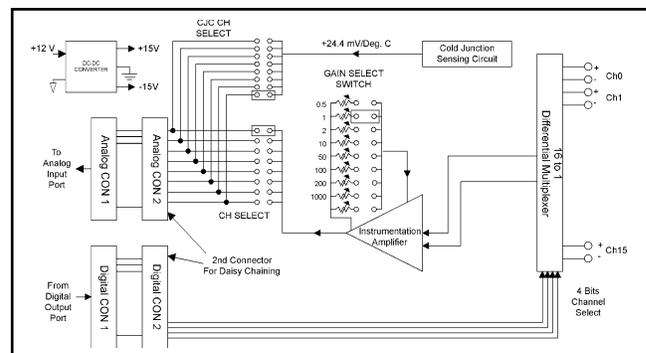
Specifications

- **Input Channels** 16 differential
- **Input Range** ±10 V maximum, depending on the selected gain
- **Output Range** ±10 V maximum
- **Input Conditions**

Gains	CMRR	Nonlinearity	Setting Time
1000	125 dB	0.005% FSR	75 µsec.
100	115 dB	0.005% FSR	15 µsec.
10	105 dB	0.007% FSR	15 µsec.
1	85 dB	0.015% FSR	15 µsec.
- **Overvoltage Protection** ±30 V continuous
- **Cold-junction Compensation** +24.4 mV/°C, 0 V at 0° C
- **Power Consumption** +5 V @ 30 mA maximum
+12 V @ 80 mA maximum
- **Connectors for Digital and Analog Buses** One DB37 connector, two 20-pin flat cable connectors for daisy chaining
- **Dimensions (L x W)** 205 x 114 mm (8.1" x 4.5")

Pin Assignments

CN1			CN2			CN3		
ANA out 0	1	2	D.I 0	1	2	D.I 1	1	20
ANA out 1	3	4	D.I 2	3	4	D.I 3	2	21
ANA out 2	5	6		5	6		3	22
ANA out 3	7	8		7	8		4	23
ANA out 4	9	10		9	10		5	24
ANA out 5	11	12		11	12		6	25
ANA out 6	13	14		13	14		7	26
ANA out 7	15	16		15	16		8	27
ANA out 8	17	18	D.GND	17	18	D.GND	9	28
ANA out 9	19	20	+5V	19	20	+12V	10	29
							11	30
							12	31
							13	32
							14	33
							15	34
							16	35
							17	36
							18	37
							19	



Block Diagram

Ordering Information

- **PCLD-789D** Amplifier and Multiplexer Board with DB37 connector and 20-pin flat-cable connectors. (Includes DB37 and 20-pin flat cable assemblies.)

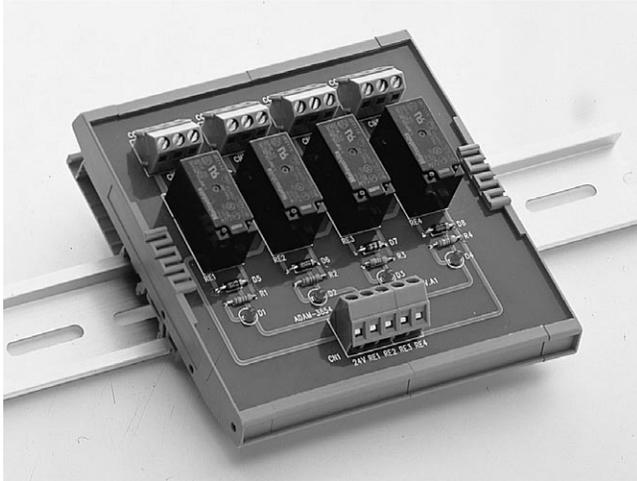
Applications

- Channel expansion
- Low level signal measurement
- Thermocouple measurement
- Signal amplification and conditioning

- 1 Software
- 2 IPCC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

ADAM-3854

4-channel DIN-rail Mounting Power Relay Module



Features

- High power relays can handle up to 5 A @ 250 V_{AC} and 5 A @ 30 V_{DC}
- 4 single-pole double-throw (SPDT) relays
- Industrial screw terminals for easy output wiring
- LED status indicators
- On-board varistor protects relay contact points
- DIN-rail mounting

Introduction

The ADAM-3854 features four industrial SPDT (Form C) electromechanical power relays and a DIN-rail mount. Each of the relays is controlled by a +24 V_{DC} digital signal and is equipped with an adjacent LED to display its status. Each output is equipped with a varistor that shunts the surge voltage of an inductive load or electromagnetic brake to protect the relay contact points.

All the relay outputs and relay controls are accessible through wiring terminals, allowing the ADAM-3854 to be easily connected to any item of equipment or device such as programmable logic controllers (PLCs).

Specifications

- **Channels** 4
- **Relay Type** SPDT (Form C)
- **Contact Rating** AC: 250 V @ 5 A
DC: 30 V @ 5 A
- **Contact Resistance** 100 mΩ
- **Operation Time** 15 ms max.
- **Release Time** 5 ms max.
- **Life Expectancy** 1.7 x 10⁶ at rated load
- **Power Requirements** +24 V_{DC}
- **Power Consumption** 2.2 W
- **Dimensions (L x W x H)** 112.5 x 118.4 x 46 mm (4.43" x 4.66" x 1.81")

Varistor

- **Maximum Applied Voltage** 300 V_{RMS}
- **Varistor Voltage** 470 V (current = 1 mA)
- **Clamping Voltage** 760 V (10 A)
- **Max. Peak Current** 1,200 A for 8 ms

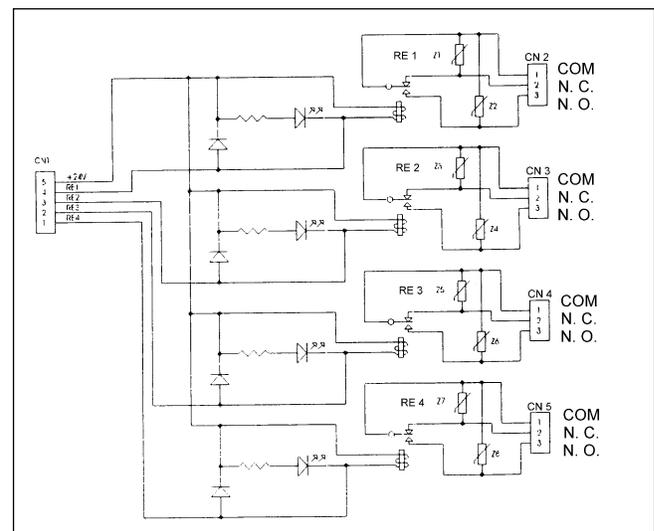
Ordering Information

- **ADAM-3854** 4-channel DIN-rail Mounting Power Relay Module

Applications

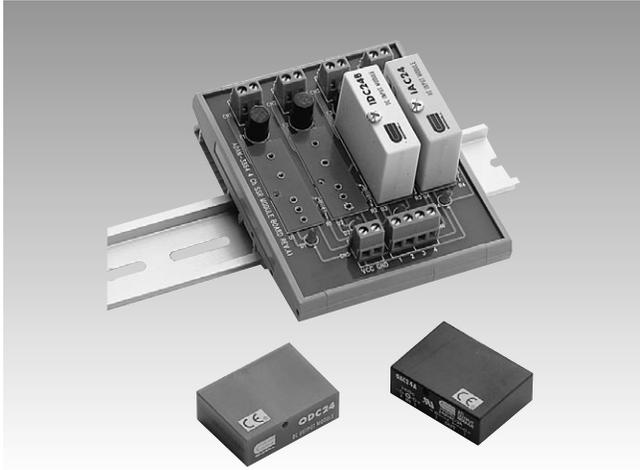
- Signal switching
- On/off control
- Valve/solenoid control
- Annunciation control
- Alarm activation

Basic Function Diagram



ADAM-3864

4-channel Solid State Digital I/O Module Carrier Backplane



Features

- 4-channel carrier backplane for any combination of AC or DC I/O modules
- 2,500 V_{RMS} optical isolation
- LED channel status indicator for easy monitoring
- On-board fuse protection
- DIN-rail mounting

Introduction

The ADAM-3864 is a solid state digital I/O module carrier backplane that accommodates any combination of up to four high-performance, low-cost, photocoupler-isolated solid state, digital I/O modules. This backplane can accept either 24 V_{DC} or 5 V_{DC} I/O modules, depending on the type of power supply.

Specifications

Input Modules

Field Side:

- **Turn on/off Time** IAC24 series: 20 msec. max.
IAC24A series: 20 msec. max.
IDC24B series: 100 msec. max.
- **Input on/off Voltage Range** IAC24 series: 90 ~ 140 V/45 V_{RMS}
IAC24A series: 180 ~ 280 V/80 V_{RMS}
IDC24B series: 3 ~ 32 V/1 V_{DC}
- **Input Resistance** IAC24 series: 14 k Ω
IAC24A series: 44 k Ω
IDC24B series: 1.5 k Ω

Logic Side:

- **Supply Voltage** 24 V_{DC}
- **Supply Current** 12 mA max.
- **Output Current** 100 mA max.
- **Output Voltage Drop** 0.4 V max.
- **Breakdown Voltage** 30 V_{DC}

Output Modules

Field Side:

- **Turn on/ Turn off Time** OAC series: 1/2 AC cycle max.
ODC series: 100 msec./750 msec. max.
- **Current Rating** 3 A max. (@ 25° C)
- **Contact Voltage Drop** 1.6 V max.

Logic Side:

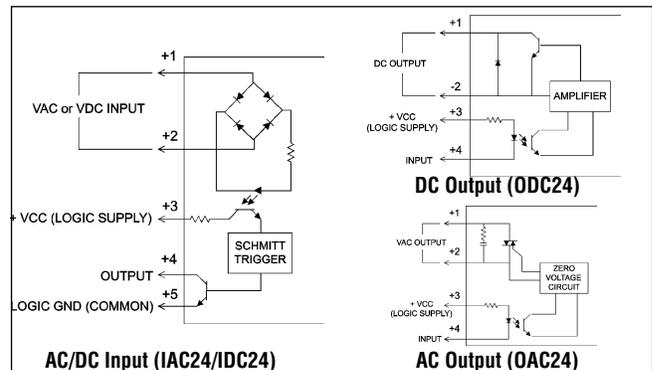
- **Supply Voltage** 24 V
- **Supply Current** 12 mA max.
- **Input Resistance** 220 Ω
- **Dimensions (L x H x W)** 118.4 x 90 x 59 mm (4.66" x 3.54" x 2.32")

Module type		Field side		Logic side
Output module		Output voltage rating	Output current rating	Output logic and SSR status
AC output	OAC24A	24 ~ 280 V _{AC}	3.0 A _{AC}	0 V (On)
DC output	ODC24	5 ~ 60 V _{DC}	3.0 A _{DC}	24 V (Off)
Input module		Input on voltage	Input off voltage	Input logic and On/Off status
AC input	IAC24	90 ~ 140 V _{AC}	< 45 V _{AC}	0 V (On)
	IAC24A	180 ~ 280 V _{AC}	< 80 V _{AC}	
DC input	IDC24B	3 ~ 32 V _{DC}	< 1 V _{DC}	24 V (Off)

Ordering Information

- **ADAM-3864** 4-channel Solid State Digital I/O Module Carrier Backplane
- **OAC24A** AC Output Module (24-280 V_{AC}, 3 A)
- **ODC24** DC Output Module (5-60 V_{DC}, 3 A)
- **IAC24** AC Input Module (90-140 V_{AC})
- **IAC24A** AC Input Module (180-280 V_{AC})
- **IDC24B** DC Input Module (3-32 V_{DC})

Block Diagrams

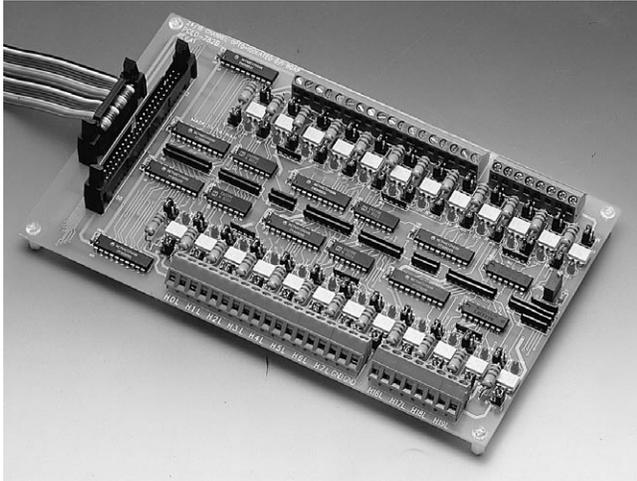


- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

PCLD-782 PCLD-782B

16-channel Opto-Isolated D/I Board

16/24-channel Opto-Isolated D/I Board



Features

- Compatible with all PC-LabCard™ products with D/I channels on either 20-pin flat cable or 50-pin Opto-22 compatible connectors.
- 16 or 24 optically-isolated digital input channels
- Built-in screw terminals for easy input wiring
- LEDs indicate input logic status
- Inputs buffered with voltage comparators

Introduction

The PCLD-782 and PCLD-782B digital input daughterboards feature high-voltage (> 1500 V_{DC}) optical isolation on all inputs. The PCLD-782 provides 16 input channels accessible through one 20-pin flat cable connector, which is standard on most PC-LabCard™ products. The PCLD-782B provides either 16 or 24 channels, depending on what connector you use. The PCLD-782B's 20-pin connector lets you access 16 channels, similar to the PCLD-782, but also provides a 50-pin Opto-22 connector with access to 24 channels.

Both cards have onboard screw terminals for easy input wiring. Optically isolated signal conditioning provides isolation between separate channels, as well as between each input channel and the PC. This isolation prevents floating potential and ground loop problems while protecting the input lines from potentially damaging fault conditions.

A red LED on each input channel indicates its status. If the input signal is high, the LED is lit. You can configure each channel to work in either isolated or non-isolated mode. A variable resistor adjusts the threshold level for all 24 isolated input channels simultaneously.

Specifications

- Input Channels** 24 (PCLD-782B), 16 (PCLD-782)
- Input Range** 0 ~ 24 V_{DC}
- Input Resistance** 560 Ω
- Isolation Voltages** 1,500 V_{DC} min.
- Threshold Voltage** 1.5 V_{DC} (VR adjustable)
- Screw Terminals** Screw-clamp terminal blocks, accept #22 to #12 AWG wires
- Connectors for Digital Bus** PCLD-782: one 20-pin flat cable connector (CN1)
PCLD-782B: one 20-pin flat cable connector (CN1) and one 50-pin Opto-22 connector (CN2)
- Dimensions (L x W)** PCLD-782: 3U– 205 x 114 mm (8.1" x 4.5")
PCLD-782B: 4U– 220 x 132 mm (8.7" x 5.2")

Pin Assignments

CN1			CN2				
DI0	1	2	DI1	DI23	1	2	GND
DI2	3	4	DI3	DI22	3	4	GND
DI4	5	6	DI5	DI21	5	6	GND
DI6	7	8	DI7	DI20	7	8	GND
DI8	9	10	DI9	DI19	9	10	GND
DI10	11	12	DI11	DI18	11	12	GND
DI12	13	14	DI13	DI17	13	14	GND
DI14	15	16	DI15	DI16	15	16	GND
GND	17	18	GND	DI15	17	18	GND
+5 V	19	20	+12 V	DI14	19	20	GND
				DI13	21	22	GND
				DI12	23	24	GND
				DI11	25	26	GND
				DI10	27	28	GND
				DI9	29	30	GND
				DI8	31	32	GND
				DI7	33	34	GND
				DI6	35	36	GND
				DI5	37	38	GND
				DI4	39	40	GND
				DI3	41	42	GND
				DI2	43	44	GND
				DI1	45	46	GND
				DI0	47	48	GND
				+5 V	49	50	GND

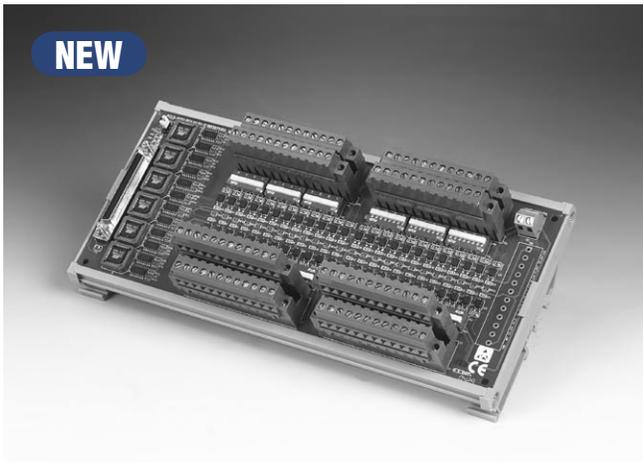
Ordering Information

- PCLD-782B** 16/24-channel Opto-isolated D/I Board, user's manual, one 1m 20-pin flat cable assembly (P/N: PCL-10120-1) and one 1.2m 50-pin flat cable (P/N: PCL-10150-1.2)
- PCLD-782** 16-channel Opto-isolated D/I Board, user's manual and one 1m 20-pin flat cable assembly (P/N: PCL-10120-1)
- PCL-10120-1** 20-pin flat cable assembly, 1m
- PCL-10120-2** 20-pin flat cable assembly, 2m
- PCL-10150-1.2** 50-pin flat cable, 1.2m (for connecting the PCL-722 or 724 to the PCLD-885, 782B or 785B)

PCLD-8751 PCLD-8761

48-Channel Opto-Isolated Digital Input Boards 24-Channel Opto-Isolated D/I and 24-Channel Relay Output Board

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS



NEW

PCLD-8751



Features

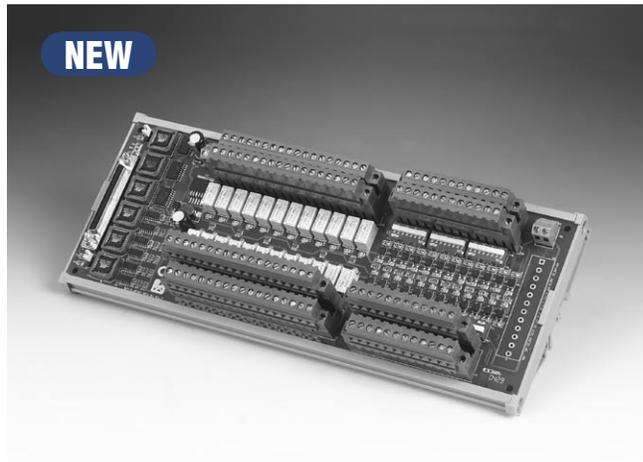
- 48 optically-isolated digital input channels
- Built-in pluggable screw terminals for easy input wiring
- LEDs indicate input logic status
- Input buffered with voltage comparators
- Wet/Dry contact set by DIP switches
- Input logic set by jumper
- Wide input range from 5 to 30 V

Specifications

- **Isolation Voltage** 3500 V
- **Channels** 48 IDI with LED
- **Contact Mode** Wet contact
Dry contact (set by switch)
- **Logic Mode** Positive Logic
Negative Logic (set by jumper)
- **Digital Input** 0 ~ 30 V
VIH (MIN) : 4 V, VIL (MAX) : 1 V
- **Connector** SCSI-68
- **Case Dimensions** 255 x 121 mm
- **Screw Terminals** Accepts 14 to 24 AWG wires

Ordering Information

- **PCLD-8751** 48-Channel Opto-isolated Digital Input Board



NEW

PCLD-8761



Features

- 24 optically-isolated digital input channels
- 24 relay outputs (SPDT)
- Built-in detachable screw terminals for easy input wiring
- LED status indicators for D/I and relay output
- Digital inputs buffered with voltage comparators
- Wet/Dry contact set by DIP switches for D/I
- Wide input range from 5 to 30 V
- INT/EXT Power selection by jumper

Specifications

- **Isolation Voltage** 3500 V (Isolated DI), 1500V (RELAY)
- **Channels** 24 IDI with LED and 24 Relay (SPDT) Form C with LED
- **Contact Mode** Wet contact and dry contact for each IDI (set by switch)
- **Logic Mode (IDI and Relay are independent)** Positive Logic
Negative Logic (set by jumper)
- **Digital Input** 0~30V
VIH(MIN):4V, VIL(MAX): 1V
- **Connector** SCSI-68
- **Screw Terminal** Accept 14 to 24 AGP wires
- **Contact Resistance** < 100 ohm
- **Operation Time** 5 ms Max
- **Release Time** 6 ms Max
- **Contact Rating** 30 V_{DC} @ 1 A, 120 V_{AC} @ 0.5 A
- **Power Selection** PCI Bus or External power(7~30V) by jumper
- **Mechanical Endurance** 10⁸ times
- **Electrical Endurance** 5*10⁷ times at 12V/10mA
- **Dimensions** 285 x 121 mm
- **Power Consumption** +5 V @ <380 mA
+50*n (mA) (*n indicate the number of relays)
+12 V @ <240 mA
+70*n (mA) (*n indicate the number of relays)

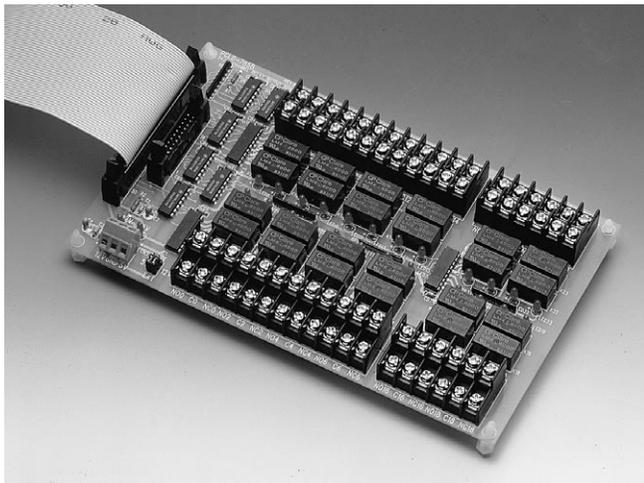
Ordering Information

- **PCLD-8761** 24-Channel Opto-isolated D/I and 24-Channel Relay (SPDT) output Board

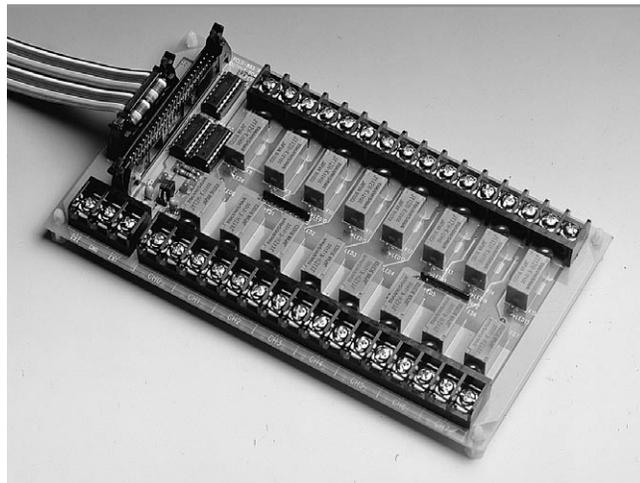
PCLD-785/785B PCLD-885

16/24-channel Relay Output Board

16-channel Power Relay Output Board



PCLD-785/785B



PCLD-885



Features

- Compatible with PC-LabCard™ products with 20-pin digital output connector and 50-pin Opto-22 digital output connector (PCLD-785B only)
- Automatic selection of control logic (PCLD-785B only): Negative logic for the Opto-22 connector Positive logic for the 20-pin flat cable connector
- Relays: PCLD-785: 16 SPDT, PCLD-785B: 16 or 24 SPDT
- On-board relay driver circuits
- Screw terminals for easy output wiring
- LED status indicators
- Cable and mounting accessories

Specifications

- PCLD-785** Input connector: 20-pin flat cable
Channels: 16 (CN1, 20-pin conn.)
- PCLD-785B** Input connectors: 50-pin Opto-22, 20-pin flat cable
Channels: 24 (CN2, 50-pin conn.), 16 (CN1, 20-pin conn.)
- Relay Type** SPDT (Single-Pole Double-Throw) Form C
- Contact Ratings** 120 V_{AC} @ 0.5 A, 30 V_{DC} @ 1 A
- Contact Resistance** < 100 mΩ
- Operation Time** 5 ms max.
- Release Time** 5 ms max.
- Insulation Resistance** 100 MΩ
- Life Expectancy** AC: 5 x 10⁵ @ 110 V/0.3 A
DC: 5 x 10⁵ @ 24 V/1.25 A
- Output Connector** Screw clamp terminal block (PCLD-785)
Barrier strip terminal block (PCLD-785B)
- Power Requirements** Using the 20-pin connector:
+5 V_{DC}: Jumper select either PC bus or external supply
+12 V_{DC}: Jumper select either PC bus or external supply
You must use an external 12 V supply when you use the 50-pin connector.
20-pin flat cable conn.: Input TTL high (+5 V) = Relay on
50-pin Opto-22 conn.: Input TTL low (0 V) = Relay on
+5 V @ < 100 mA; +12 V @ 33 mA for each relay
- Control Logic** PCLD-785: 114 x 220 mm (4.5" x 8.7")
PCLD-785B: 132 x 220 mm (5.2" x 8.7")
- Power Consumption**
- Dimensions (L x W)**

Ordering Information

- PCLD-785B** 24-channel Relay Output Board, user's manual, 1m 20-pin flat cable assembly (P/N: PCL-10120-1) and 1.2m 50-pin flat cable assembly (P/N: PCL-10150-1.2)
- PCLD-785** 16-channel Relay Output Board, user's manual, 1m 20-pin flat cable assembly (P/N: PCL-10120-1)
- PCL-10120-1** 20-pin flat cable assembly, 1m
- PCL-10120-2** 20-pin flat cable assembly, 2m
- PCL-10150-1.2** 50-pin flat cable, 1.2m (connects the PCL-722 or 724 to the PCLD-885, 782B or 785B)

Features

- Accepts 20-pin or 50-pin (Opto-22 compatible) connectors
- 16 single-pole single-throw (SPST) relays
- High-power relay handles up to 5 A @ 250 V_{AC}
- Onboard varistors protect all relay contact points
- Industrial screw terminals for ease of wiring
- LED On/Off status indication for each relay
- +5 V/+12 V power/status LED indicator

Specifications

Relay

- Relay Type** SPST (Form A), normally open
- Contact Rating** AC: 250 V @ 5 A
DC: 30 V @ 5 A
- Contact Resistance** 30 mΩ max.
- Relay on Time** 6 ms max.
- Relay off Time** 3 ms max.
- Breakdown Voltage** 750 V_{AC} for 1 minute, between open contacts
2500 V_{AC} for 1 minute, between coil and contacts
- Insulation Resistance** 1000 mΩ @ 500 V_{DC}
- Life Expectancy** >100,000 cycles at rated load

Varistor

- Varistor Voltage** 470 V (current = 1 mA)
- Clamping Voltage** 760 V (10 A)
- Max. Peak Current** 1200 A for 8 msec.
- Max. Applied Voltage** 300 V_{RMS} AC continuous

General

- Power Consumption** 12 V @ 22 mA for each relay, 352 mA if all relays energized; 5 V @ 200 mA max.
- Input Connectors** 20-pin flat cable or 50-pin Opto-22 compatible connector
- Output Connectors** Barrier strip terminal blocks
- Dimensions (L x W)** 205 x 114 mm (8" x 4.5")

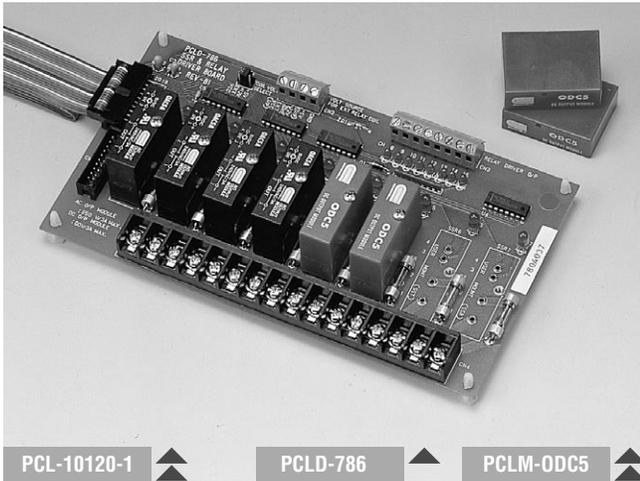
Ordering Information

- PCLD-885** 16-channel Power Relay Output Board, one 1m 20-pin flat cable assembly (P/N: PCL-10120-1) and a 1.2m 50-pin flat cable assembly (P/N: PCL-10150-1.2)

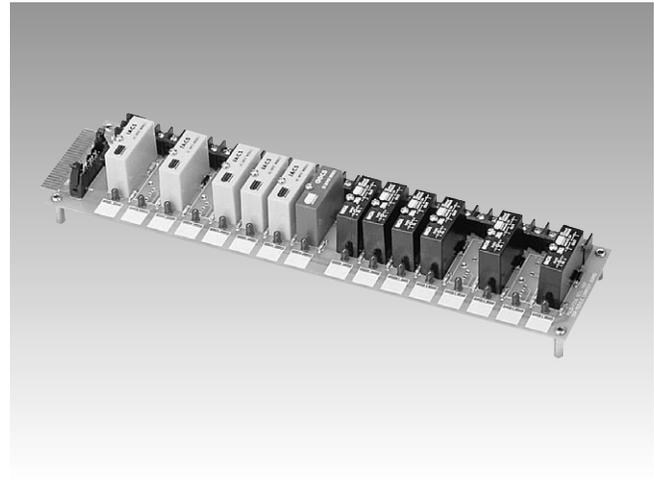
PCLD-786 PCLD-7216

8-channel SSR I/O Module Carrier Board

16-channel SSR I/O Module Carrier Board



PCL-10120-1 ▲▲ PCLD-786 ▲ PCLM-ODC5 ▲▲



PCLD-7216

Features

- Up to eight AC or DC solid state relay modules
- Photo-coupler isolated operation
- Eight external relay drivers
- Built-in screw terminals for easy wiring
- LED status indicators

Specifications

AC Solid State Relays

- Type** PCLM-OAC5A
- Output Rating** 24 ~ 280 V_{AC} @ 3.0 A
- Blocking Voltage** ±600 V min.
- OFF Leakage Current** 8 mA max.
- ON-state Voltage** 1.6 V max.
- Turn On** zero volts
- Turn On/Turn Off Time** < 1/2 cycle
- 1 Cycle Surge** 40 A

DC Solid State Relays

- Type** PCLM-ODC5
- Output Rating** 5 ~ 60 V_{DC} @ 3.0 A
- OFF Leakage Current** 1 mA max.
- ON-state Voltage** 1.4 V max.
- Turn On/Turn Off Time** 750 ms max.
- 1 Second Surge** 5 A

External Relay Drivers

- Channels** 8 channels
- Driver Type** ULN2003, open collector type
- Max. Driving Current** 125 mA each channel
- Coil Driving Voltage** +5 V, +12 V from PC or external source
- Dimensions (L x W)** 205 x 114 mm (8.1" x 4.5")

Ordering Information

- PCLD-786** 8-channel SSR I/O Module Carrier Board, user's manual and one 1m 20-pin flat cable assembly (P/N: PCL-10120-1)

Note:

The PCLD-786 does not include SSRs. They must be ordered by selecting single piece SSR modules according to your requirements.

- PCLM-OAC5A** Single piece AC SSR module (280 V_{AC}, 3 A)
- PCLM-ODC5** Single piece DC SSR module (60 V_{DC}, 3 A)

Features

- Optically isolated inputs and outputs between computer and field devices
- Channel status reflected by on-board LED for easy monitoring
- On-board fuse protection

Specifications

Board

- Logic side connectors: 50-pin edge connector, Opto-22 compatible
- Dimensions (L x W x H): 367 x 111 x 56 mm (14.4" x 4.4" x 2.2")

Module type		Field side		Logic side
Output modules	Part No.	Output voltage rating	Output current rating	Input logic and SSR status
AC output	PCLM-OAC5A	24 ~ 280 V _{AC}	3.0 AAC	TTL low (On)
		T2 ~ 280 V _{AC}		TTL high (Off)
DC output	PCLM-ODC5	5 ~ 60 V _{AC}	3.0 AC	TTL low (On)
				TTL high (Off)
Input modules	Part No.	Input On voltage	Input Off voltage	Output logic & On/Off status
AC input	PCLM-IAC5	90 ~ 140 V _{AC}	< 45 V _{AC}	TTL low (On)
				TTL high (Off)
DC input	PCLM-IAC5A	180 ~ 280 V _{AC}	< 80 V _{AC}	TTL low (On)
				TTL high (Off)
DC input	PCLM-IDC5B	3 ~ 32 V _{AC}	< 1 V _{AC}	TTL low (On)
				TTL high (Off)

Input Modules

Field Side

- Turn on/off Time** IAC5 series: 20 msec. max., IAC5A series: 20 msec. max. IDC5B series: 100 msec. max.
- Input on/off Voltage Range** IAC5 series: 90 ~ 140 V/45 V_{RMS} IAC5A series: 180 ~ 280 V/80 V_{RMS} IDC5B series: 3 ~ 32 V/1 V_{DC}
- Input Resistance** IAC5 series: 14 kΩ, IAC5A series: 44 kΩ, IDC5B series: 1.5 kΩ

Logic Side

- Supply Voltage** 4 ~ 6 V
- Supply Current** 12 mA max.
- Output Current** 100 mA max.
- Output Voltage Drop** 0.4 V max.
- Breakdown Voltage** 30 V_{DC}

Output Modules

Field Side

- Turn on/off Time** OAC series: 1/2 AC cycle max. ODC series: 100 μsec/750 μsec. max. 3 A max. (@ 25° C)
- Current Rating** 3 A max.
- Contact Voltage Drop** 1.6 V max.

Logic Side

- Supply Voltage** 4 ~ 6 V
- Supply Current** 12 mA max.
- Input Resistance** 220 Ω

Ordering Information

- PCLD-7216** 16-channel SSR I/O Module Carrier Board, one 1.2m, 50-pin flat cable (PCL-10151-1.2), one 1m 20-pin flat cable (PCL-10120-1) and user's manual

- 1 Software
- 2 IPCC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

ADAM-3900 Series

Wiring Terminal for DIN-rail Mounting



ADAM-3909

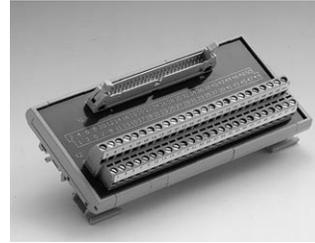
DB9 Wiring Terminal for DIN-rail Mounting

Features

- Low cost universal DIN-rail mounting screw terminal module for PC-LabCard™ products with DB9 connector.
- Case dimensions (W x L x H): 77.5 x 45 x 51 mm (3.1" x 1.8" x 2.0")

To Be Used With

PCL-728, PCL-740, PCL-741, PCL-743B, PCL-745B, PCL-832



ADAM-3950

50-pin Flat Cable Wiring Terminal for DIN-rail Mounting

Features

- Low cost universal DIN-rail mounting screw terminal module for PC-LabCard™ products with 50-pin flat cable connector.
- Case dimensions (W x L x H): 77.5 x 146.3 x 51 mm (3.1" x 5.8" x 2.0")

To Be Used With

PCL-722, PCL-724, PCL-731



ADAM-3920

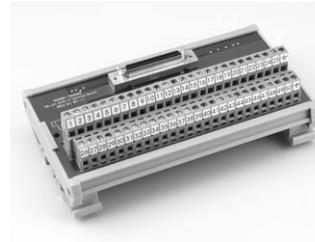
20-pin Flat Cable Wiring Terminal for DIN-rail Mounting

Features

- Low cost universal DIN-rail mounting screw terminal module for PC-LabCard products with 20-pin connector
- Case dimensions (W x L x H): 77.5 x 67.5 x 51 mm (3.1" x 2.7" x 2.0")

To Be Used With

PCL-711B/S, PCL-720+, PCL-726, PCL-727, PCL-730, PCL-812PG, PCL-816, PCL-818 Series, PCL-836, PCL-1800



ADAM-3950S

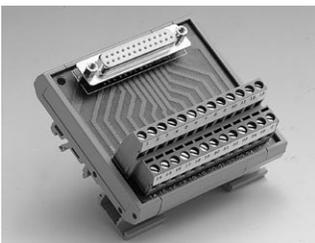
50-pin SCSI-II Wiring Terminal for DIN-rail Mounting

Features

- Low cost universal DIN-rail mounting screw terminal module for industrial applications with 50-pin SCSI-II female connector
- Case dimensions (W x L x H): 77.5 x 146.3 x 51 mm (3.1" x 5.8" x 2.0")

To Be Used With

PCI-1752, PCI-1754, PCI-1756



ADAM-3925

DB25 Wiring Terminal for DIN-rail Mounting

Features

- Low cost universal DIN-rail mounting screw terminal module for PC-LabCard products with DB25 connector
- Screw-clamp terminal blocks allow easy and reliable connections
- Case dimensions (W x L x H): 77.5 x 56.3 x 51 mm (3.1" x 2.2" x 2.0")

To Be Used With

PCL-725, PCL-740, PCL-746+, PCL-833



ADAM-3950D

Dual 50-pin SCSI-II Wiring Terminal for DIN-rail Mounting

Features

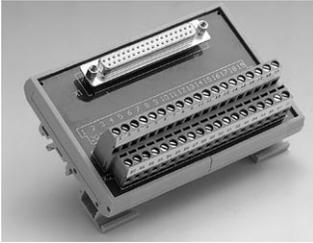
- Low cost universal DIN-rail mounting screw terminal module for industrial applications with dual 50-pin SCSI-II female connectors
- Case dimensions (W x L x H): 77.5 x 179.5 x 51 mm (3.1" x 7.1" x 2.0")

To Be Used With

PCI-1240, PCI-1752, PCI-1754, PCI-1756

ADAM-3900 Series

Wiring Terminals for DIN-rail Mounting



ADAM-3937

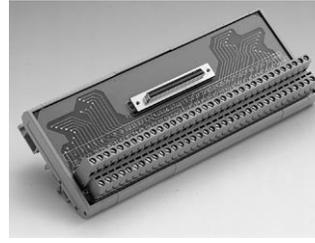
DB37 Wiring Terminal for DIN-rail Mounting

Features

- Low cost universal DIN-rail mounting screw terminal module for DA&C cards with DB37 female connector
- Case dimensions (W x L x H): 77.5 x 146.3 x 51 mm (3.1" x 5.8" x 2.0")

To Be Used With

PCI-1730, PCI-1733, PCI-1734, PCI-1750, PCI-1761



ADAM-3968

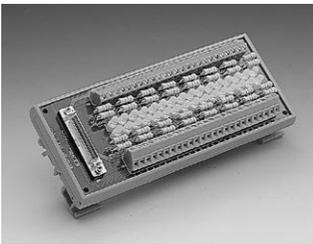
68-pin SCSI-II Wiring Terminal for DIN-rail Mounting

Features

- Low cost universal DIN-rail mounting screw terminal module for industrial applications with 68-pin SCSI-II female connector
- Case dimensions (W x L x H): 77.5 x 191.2 x 51 mm (3.1" x 8.4" x 2.0")

To Be Used With

PCI-1710/1710L, PCI-1710HG/1710HGL, PCI-1711/1711L, PCI-1712/1712L, PCI-1716/1716L, PCI-1721, PCI-1751, PCI-1753/1753E, PCI-1723, PCI-1780



ADAM-3951

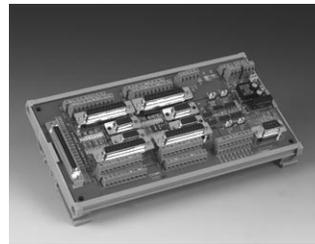
Wiring Terminal Module with LED indicators for DIN-rail Mounting

Features

- Low-cost DIN-rail mounting wiring terminal module for PCI-1752/1754/1756 with 50-pin SCSI-II female connector.
- Screw-clamp terminal blocks allow easy and reliable connections.
- Each LED indicates its current bi-directional I/O logic status with either green or red light.
- Case dimensions (W x L x H): 77.5 x 179.5 x 41.5 mm (3.1" x 7.1" x 1.6")

To Be Used With

PCI-1752, PCI-1754, PCI-1756



ADAM-3968M

PCI-1241/1242 Wiring Terminal with LED

Features

- DIN-rail mounting screw terminal module for PCI-1241/1242 applications with 68-pin SCSI-II female connector.
- Status indicating LED for limit/home/server-on/in-position/pulse-output/EMS.
- Over-current protection for external power up to 1.1A.
- Case dimensions (W x L x H): 77.5 x 191.2 x 51 mm (3.1" x 8.4" x 2.0")

To Be Used With

PCI-1241, PCI-1242

1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AWS

6
DA&C

7
cPCI

8
ADAM-3000

9
Motion Control

10
ICOM

11
eConnectivity

12
UNO

13
ADAM-4000

14
ADAM-5000

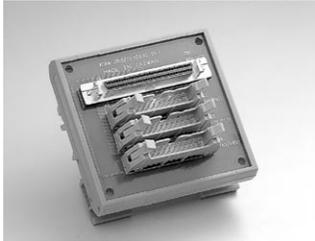
15
ADAM-6000

16
ADAM-8000

17
BAS

ADAM-3900 Series

Wiring Terminals for DIN-rail Mounting



ADAM-3968/20

68-pin SCSI-II to Three 20-pin Wiring Terminal Module for DIN-rail Mounting

Features

- Low cost universal DIN-rail mounting screw terminal module for PC-LabCard™ products with 68-pin SCSI-II connectors
- Converts one 68-pin SCSI-II connector to three 20-pin connectors
- Case dimensions (W x L x H): 77.5 x 80 x 54.3 mm (3.1" X 3.2" X 2.1")

To Be Used With

PCI-1751, PCI-1753, PCI-1753E



ADAM-3968/50

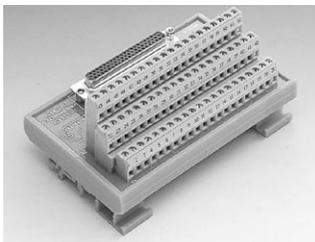
68-pin SCSI-II to Two 50-pin Box Header for DIN-rail Mounting

Features

- Low cost universal DIN-rail mounting screw terminal module for PC-LabCard™ products with 68-pin SCSI-II connectors
- Converts one 68-pin SCSI-II connector to two 50-pin Opto-22 compatible box headers
- Case dimensions (W x L x H): 77.0 x 101.0 x 54.3 mm (3.0" x 4.0" x 2.1")

To Be Used With

PCI-1751, PCI-1753, PCI-1753E



ADAM-3962

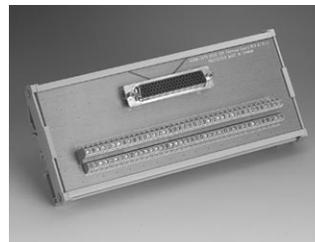
DB62 Wiring Terminal for DIN-rail Mounting

Features

- Low cost universal DIN-rail mounting screw terminal module for DA&C cards with DB62 female connector
- Screw-clamp terminal blocks allow easy and reliable connections
- Case dimensions (W x L x H): 77.5 x 124.5 x 63.5 mm (3.1" x 4.9" x 2.5")

To Be Used With

PCI-1762



ADAM-3978

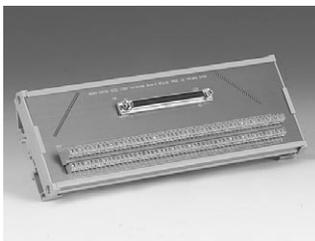
DB78 Wiring Terminal for DIN-rail Mounting

Features

- Mounting Low cost universal DIN-rail mounting screw terminal module for industrial applications with DB78 female connector
- Case dimensions (W x L x H): 86 x 191 x 42 mm (3.39" x 7.51" x 1.65")

To Be Used With

MIC-3753, PCI-3756



ADAM-39100

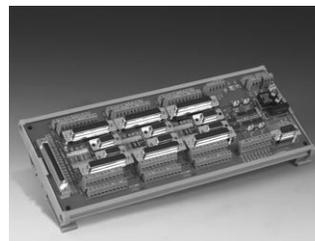
100-pin SCSI-II Wiring Terminal for DIN-rail Mounting

Features

- Low cost universal DIN-rail mounting screw terminal module for industrial applications with 100 pin SCSI-II female connector
- Case dimensions (W x L x H): 80 x 230 x 42 mm (3.14" x 9.05" x 1.65")

To Be Used With

PCI-1755



ADAM-39100M

PCI-1261 Wiring Terminal with LED

Features

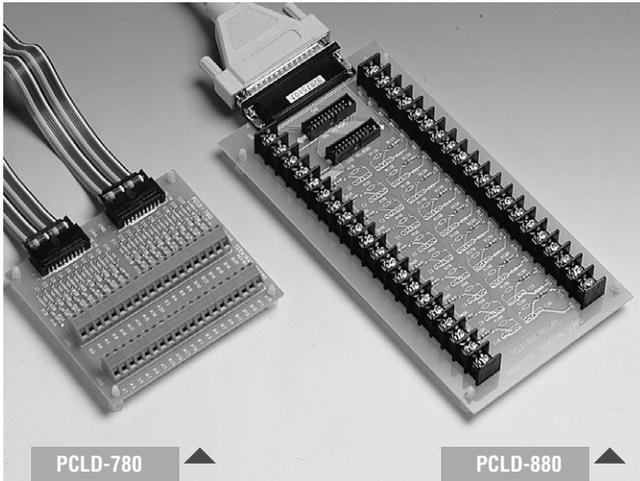
- DIN-rail mounting screw terminal module for PCI-1261 applications with 100 pin SCSI-II female connector.
- Status indicating LED for limit/home/server-on/in-position/pulse-output/EMS.
- Over-current protection for external power up to 1.1A.
- Case dimensions (W x L x H): 80 x 230 x 42 mm (H) (3.14" x 9.05" x 1.65")

To Be Used With

PCI-1261

PCLD-780 PCLD-880

Screw Terminal Board Industrial Wiring Terminal Board w/Adapter



Features

- Pin to Pin design
- Low-cost universal screw-terminal boards for industrial applications
- 40 terminal points for two 20-pin flat cable connector ports
- Reserved space for signal-conditioning circuits such as low-pass filter, voltage attenuator and current-to-voltage conversion
- Table-top mounting using nylon standoffs. Screws and washers provided for panel or wall mounting

PCLD-780 only

- Screw-clamp terminal-blocks allow easy and reliable connections
- Dimensions: 102 x 114 mm (4.0" x 4.5")

PCLD-880 only

- Supports PC-LabCard™ products with DB-37 connectors
- Industrial-grade terminal blocks (barrier-strip) permit heavy-duty and reliable connections
- Dimensions: 221 x 115 mm (8.7" x 4.5")

Introduction

The PCLD-780 and PCLD-880 universal screw-terminal boards provide convenient and reliable signal wiring for PC-LabCard™ products with 20-pin flat-cable connectors. The PCLD-880 is also equipped with a DB-37 connector to support PC-LabCard™ products with DB-37 connectors.

The PCLD-780 and PCLD-880 let you install passive components on the special PCB layout to construct your own signal-conditioning circuits.

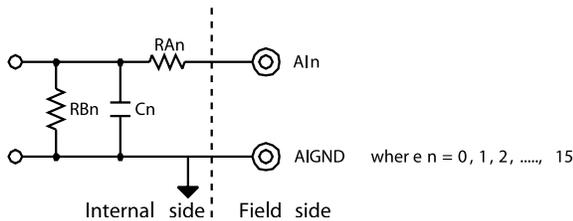
You can easily construct a low-pass filter, attenuator or current-to-voltage converter by adding resistors and capacitors onto the board's circuit pads.

Applications

- Field wiring for analog and digital I/O channels of PC-LabCard™ products which employ the standard 20-pin flat cable connectors or DB37 connectors (only PCLD-880)
- Signal conditioning circuits can be implemented as illustrated in the following examples:

a) Straight-through connection (factory setting)

$R_{An} = 0\Omega$ jumper



$R_{Bn} = \text{none}$

$C_n = \text{none}$

b) 1.6 KHz (3dB) low pass filter

$R_{An} = 10\text{ K}\Omega$

$R_{Bn} = \text{none}$

$C_n = 0.01\mu\text{F}$

$$f_{3dB} = \frac{1}{2\pi R_{An} C_n}$$

c) 10 : 1 voltage attenuator:

$R_{An} = 9\text{ K}\Omega$

$R_{Bn} = 1\text{ K}\Omega$

$C_n = \text{none}$

$$\text{Attenuation} = \frac{R_{Bn}}{R_{An} + R_{Bn}}$$

(Assume source impedance $\ll 10\text{ K}\Omega$)

d) 4 ~ 20 mA to 1 ~ 5 VDC signal converter:

$R_{An} = 0\Omega$ (short)

$R_{Bn} = 250\Omega$ (0.1% precision resistor)

$C_n = \text{none}$

Pin Assignments

CN1			
A1	1	2	A2
A3	3	4	A4
A5	5	6	A6
A7	7	8	A8
A9	9	10	A10
A11	11	12	A12
A13	13	14	A14
A15	15	16	A16
A17	17	18	A18
A19	19	20	A20

CN2			
B1	1	2	B2
B3	3	4	B4
B5	5	6	B6
B7	7	8	B8
B9	9	10	B10
B11	11	12	B12
B13	13	14	B14
B15	15	16	B16
B17	17	18	B18
B19	19	20	B20

CN5 (PCLD-880 only)

A1	1	20	A2
A3	2	21	A4
A5	3	22	A6
A7	4	23	A8
A9	5	24	A10
A11	6	25	A12
A13	7	26	A14
A15	8	27	A16
A17	9	28	A18
A19	10	29	A20
B1	11	30	B2
B3	12	31	B4
B5	13	32	B6
B7	14	33	B8
B9	15	34	B10
B11	16	35	B12
B13	17	36	B14
B15	18	37	B16
B17	19		

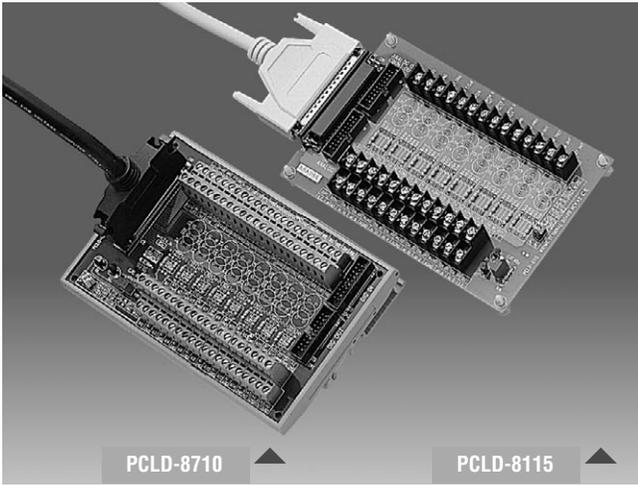
Ordering Information

- PCLD-780** Screw terminal Board, two 1m 20-pin flat cables (PCL-10120-1)
- PCLD-880** Industrial Wiring Terminal Board, two 1m 20-pin flat cables (PCL-10120-1), and one PCL-10501 adapter (20-pin analog flat connector to DB37 connector)
- PCL-10137-1** DB37 cable assembly, 1m
- PCL-10137-2** DB37 cable assembly, 2m
- PCL-10137-3** DB37 cable assembly, 3m

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	
8	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCLD-8115 PCLD-8710

Industrial Wiring Terminal With CJC Circuit



Features

- Low-cost screw-terminal boards
- On-board CJC (Cold Junction Compensation) circuits for direct thermocouple measurement.
- Reserved space for signal-conditioning circuits such as low-pass filter, voltage attenuator and current shunt.
- Industrial-grade screw-clamp terminal blocks for heavy-duty and reliable connections.

PCLD-8115 only

- Supports PCL-818 series multifunction cards
- Nylon standoffs, screws and washers included for easy mounting
- Dimensions (W x L): 169 x 112 mm (6.7" x 4.4")

PCLD-8710 only

- Supports PCI-1710/1710L/1710HG/1710HGL/1711/1711L/1716/1716L cards
- DIN-rail mounting case for easy mounting
- Dimensions (W x L x H): 169 x 112 x 51 mm (6.7" x 4.4" x 2.0")

Introduction

The PCLD-8115 screw-terminal board offers convenient and reliable signal wiring for multifunction cards with 20-pin flat cable connectors or DB37 connectors, such as the PCL-818 series cards. PCLD-8710 is designed to match multifunction cards with 68-pin SCSI-II connectors, such as the PCI-1710/1710L/1710HG/1710HGL/1711/1711L/1716/1716L cards.

This screw-terminal board also includes cold junction sensing circuitry that allows direct measurements from thermocouple transducers. Together with software compensation and linearization, every thermocouple type can be accommodated.

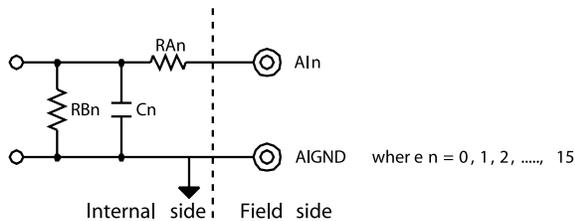
Due to its special PCB layout, you can install passive components to construct your own signal-conditioning circuits. So you can easily construct a low-pass filter, attenuator or current shunt converter by adding resistors and capacitors onto the board circuit pads.

Applications

- Field wiring for analog and digital I/O channels of PC-LabCard™ products.
- Signal conditioning circuits can be implemented as illustrated in the following examples:

a) Straight-through connection (factory setting)

$R_{An} = 0 \Omega$ (short)
 $R_{Bn} = \text{none}$
 $C_n = \text{none}$



b) 1.6 kHz (3dB) low pass filter

$R_{An} = 10 \text{ K}\Omega$
 $R_{Bn} = \text{none}$
 $C_n = 0.01 \mu\text{F}$

$$f_{3dB} = \frac{R_{Bn}}{R_{An} + R_{Bn}}$$

c) 10 : 1 voltage attenuator:

$R_{An} = 9 \text{ K}\Omega$
 $R_{Bn} = 1 \text{ K}\Omega$
 $C_n = \text{none}$
 $\text{Attenuation} = \frac{R_{Bn}}{R_{An} + R_{Bn}}$

(Assume source impedance $\ll 10 \text{ K}\Omega$)

d) 4 ~ 20 mA to 1 ~ 5 V_{DC} signal converter:

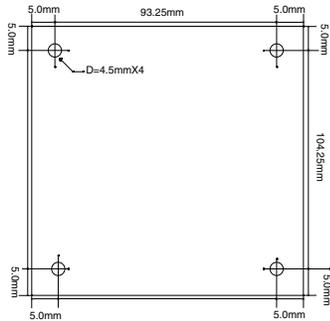
$R_{An} = 0 \Omega$ (short)
 $R_{Bn} = 250 \Omega$ (0.1% precision resistor)
 $C_n = \text{none}$

Ordering Information

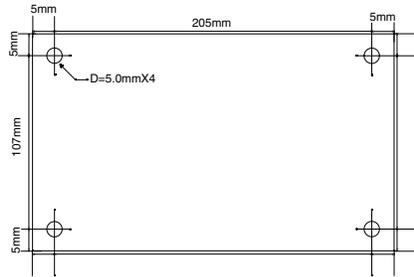
- **PCLD-8115** Industrial Wiring Terminal Board with CJC circuit and DB37 cable assembly
- **PCLD-8710** Industrial Wiring Terminal Board with CJC circuit for DIN-rail mounting (cable not included)
- **PCL-10137-1** DB37 cable assembly, 1m
- **PCL-10137-2** DB37 cable assembly, 2m
- **PCL-10137-3** DB37 cable assembly, 3m
- **PCL-10168-1** 68-pin SCSI-II cable with special shielding for noise reduction, 1m
- **PCL-10168-2** 68-pin SCSI-II cable with special shielding for noise reduction, 2m

Terminal Boards Dimensions

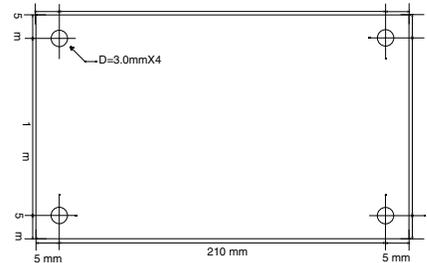
PCLD-780



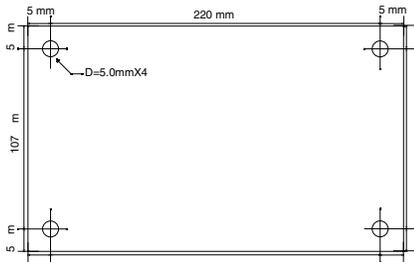
PCLD-782



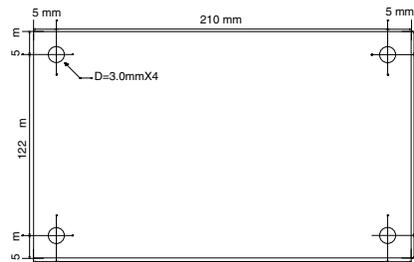
PCLD-782B



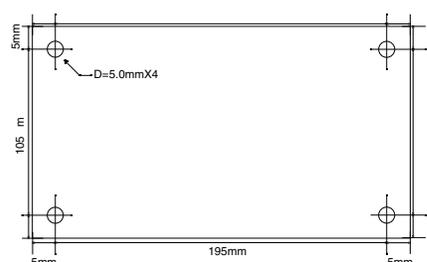
PCLD-785



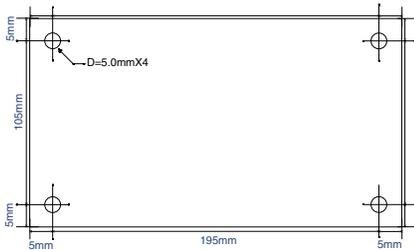
PCLD-785B



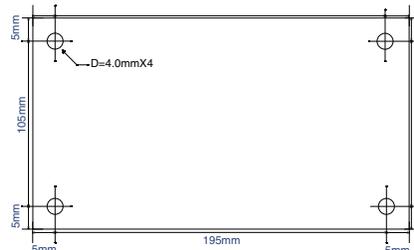
PCLD-786



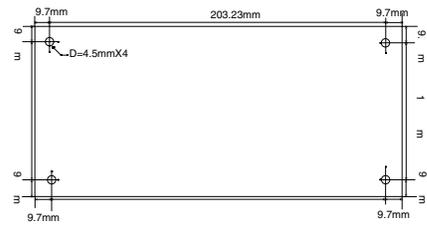
PCLD-788



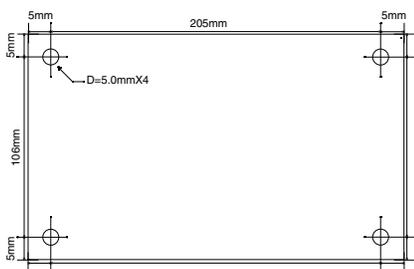
PCLD-789D



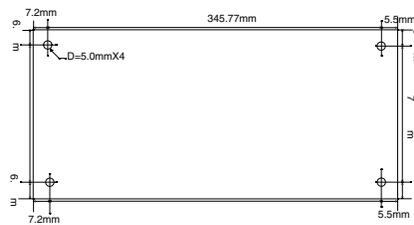
PCLD-880



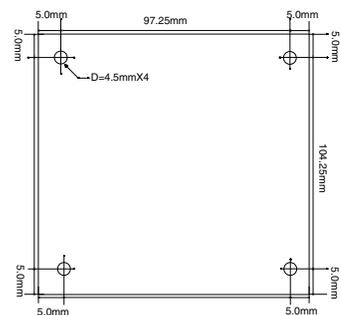
PCLD-885



PCLD-7216



PCLD-8115



- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

Cable Accessories



PCL-1010B-1
BNC to BNC Cable, Male, 1m



PCL-101100-1
SCSI Cable 100P Male 1m w/ Bolt Screw



PCL-10120-1
20-Pin Flat Cable, 1m



PCL-10121-1
20-Pin Shielded Cable, 1m



PCL-10125-1
DB25 Cable Assembly, 1m



PCL-10137-1
DB37 Cable Assembly, 1m



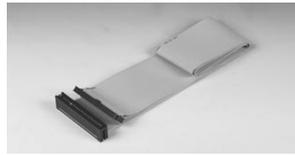
PCL-10137H-1
High-speed DB37 Cable Assembly, 1m



PCL-10137H-3
High-speed DB37 Cable Assembly, 3m



PCL-10150-1.2
50-Pin Flat Cable, 1.2m



PCL-10151-1.2
50-Pin Flat Cable Assembly with Edge



PCL-10162-1
DB62 Cable Assembly, 1m



PCL-10162-3
DB62 Cable Assembly, 3m



PCL-10168
68-Pin SCSI Cable, 1m



PCL-10168-2
68-Pin SCSI Cable, 2m



PCL-10250
100-Pin SCSI to Two 50-Pin SCSI Cable, 1m



PCL-10250-2
100-Pin SCSI to Two 50-Pin SCSI Cable, 2m



PCL-10251-1
100-Pin to Two 50-Pin SCSI Cable for PCI-1240, 1m



PCL-12250-1
100-Pin to Two 50-Pin Flat Cable for PCM-3240, 1m



PCL-10268
100-Pin to Two 68-Pin SCSI Cable, 1m



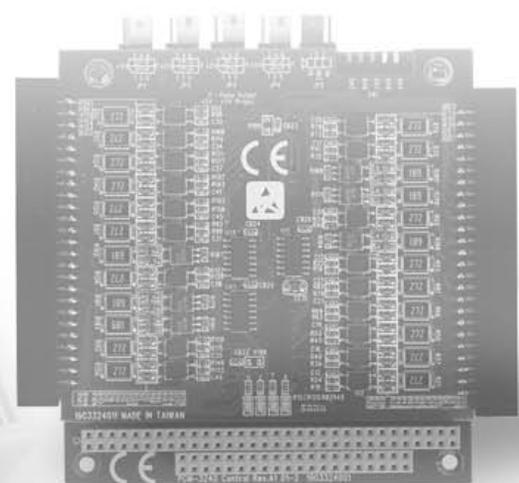
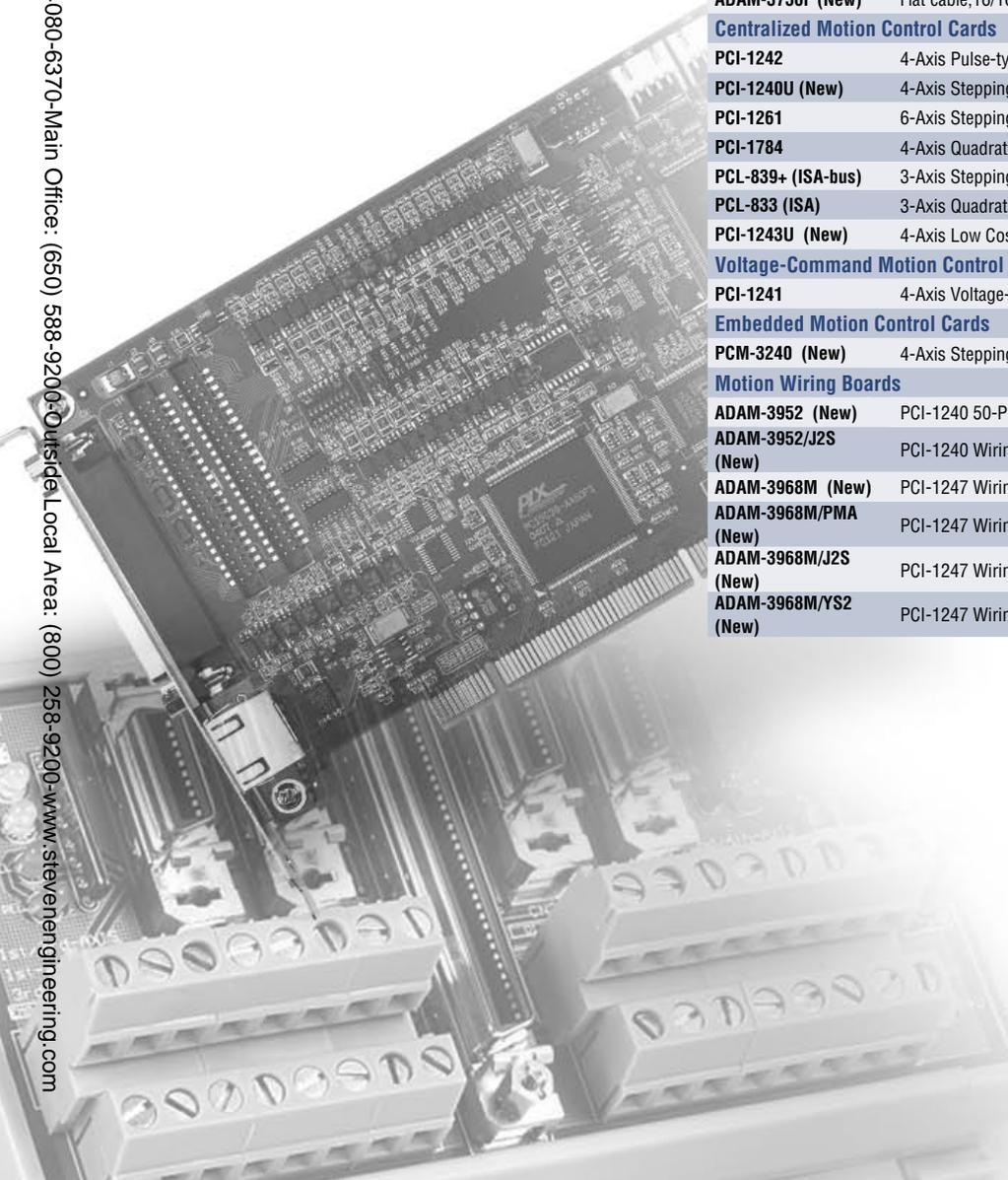
PCL-10268-2
100-Pin to Two 68-Pin SCSI Cable, 2m



PCL-10901-1
DB9 to PS/2 Cable Assembly with Shielding, 1m

Motion Control Solutions

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Distributed Motion Control Cards		
PCI-1247 (New)	4-axis Motion Control Card with AMONet RS-485 Master	9-6
PCM-3202 (New)	PC/104 AMONet RS-485 Master Card	9-8
PCI-1202 (New)	2 port AMONet RS-485 master card	9-9
ADAM-3240 (New)	4-axis AMONet RS-485 Motion Slave Module	9-10
ADAM-3210 (New)	1-Axis Motion Slave Module	9-11
ADAM-3211/PMA (New)	1-Axis Motion Slave Module for Panasonic Minas A	9-11
ADAM-3212/J2S (New)	1-Axis Motion Slave Module for Mitsubishi MR-J2S	9-11
ADAM-3213/YS2 (New)	1-Axis Motion Slave Module for Yaskawa Sigma-II	9-11
ADAM-3752F (New)	Flat-cable type 32-CH Digital NPN Input Module	9-12
ADAM-3754F (New)	Flat cable type 32-CH Digital NPN Output Module	9-12
ADAM-3756F (New)	Flat cable, 16/16CH Digital NPN In/Output Module	9-12
Centralized Motion Control Cards		
PCI-1242	4-Axis Pulse-type Servo Motor Control Card	9-13
PCI-1240U (New)	4-Axis Stepping/Pulse-type Servo Motor Control Card	9-14
PCI-1261	6-Axis Stepping/Servo Motor Control Card	9-16
PCI-1784	4-Axis Quadrature Encoder and Counter Card	9-18
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Voltage-Command Motion Control Cards		
PCI-1241	4-Axis Voltage-type Servo Motor Control Card	9-23
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PCM-3240 (New)	4-Axis Stepping/Pulse-type Servo Motor Control Card	9-24
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ADAM-3952/J2S (New)	PCI-1240 Wiring terminal for Mitsubishi	9-26
ADAM-3968M (New)	PCI-1247 Wiring terminal	9-26
ADAM-3968M/PMA (New)	PCI-1247 Wiring terminal for Panasonic Minas A Series	9-26
ADAM-3968M/J2S (New)	PCI-1247 Wiring terminal for Mitsubishi	9-26
ADAM-3968M/YS2 (New)	PCI-1247 Wiring terminal for Yaskawa	9-26



Overview

Complete Application-Ready Platforms for General Motion Control Applications

Since the release of motion control cards in the 1990's, Advantech has kept developing various types of motion control cards for users world-wide. Today, Advantech is still focused on providing the most robust, cost-effective and application-ready platform for General Motion Control (GMC).

Advantech offers application-ready platforms that range from industrial workstations and industrial-grade CPUs, to motion control, encoder input and isolated I/O cards for general motion control (GMC) applications such as SMT/PCB, semiconductor and LCD manufacturing machinery. Advantech provides a full-range of industrial computing platforms that include high-brightness LCD displays, keypads, up to 20-slot backplanes and redundant power supplies for machine builders.

Advantech motion control solutions have 3-axis, 4-axis and 6-axis inputs with pulse-type and voltage-pulse models and the AMONet series of distributed motion modules. Furthermore, these cards are supported by complete motion control libraries under DOS and Windows OS, which are widely applied in GMC applications.

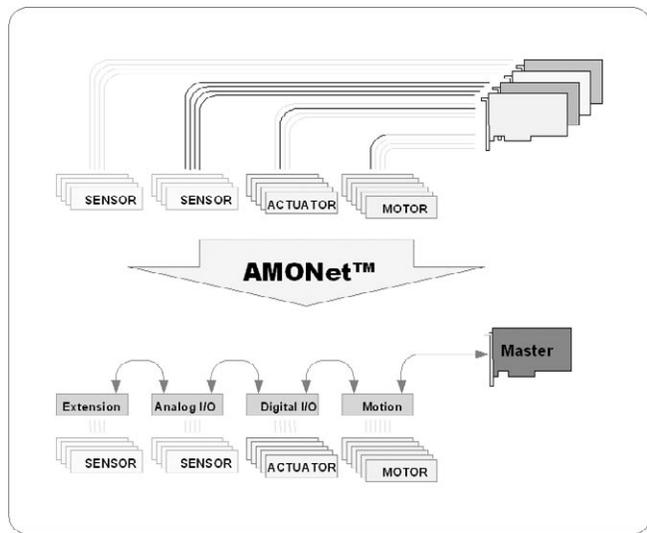


Figure 1 : Wire-Saving/Long-Distance

AMONet™ - Advantech Distributed Motion Control Solutions

Motion control is growing in complexity as the number of axes in newly developed machines with motion control increases each year. Distance is also becoming an issue, as motors are located further and further away from the host computer. AMONet™ (Advantech Motion Network) was engineered to tackle the problems of increasing spending on wiring and maintenance of these complex motion control systems, and it also gets rid of distance limitations.

The first series of distributed motion control products from Advantech are called the AMONet RS-485 Series. AMONet RS-485 products are categorized as Master cards or Slave modules. While the Master card is kept in the host PC, the slave modules can be distributed so that they are next to motor drivers on the factory floor. The communication speed between the AMONet RS-485 slave modules can be up to 20 Mbps. This makes it possible to scan 2048 I/O points within 1.04 ms (or 1024 I/O points in 0.56 ms). Furthermore, an AMONet RS-485 master will update the I/O status automatically, and map data into local memory. Software running on the host PC can then read the status by simply reading the onboard memory, so no polling of slave modules is necessary.

Each port of a master card can control up to 2048 I/O connections or 64 motion axes, so future extensions are easily implemented. The distance between a master card and its slave modules can be up to 100 meters, and this distance is covered with a low-cost Cat 5 network cable. In addition to saving wiring costs - debugging and maintenance is also simplified.

Another advantage of AMONet RS-485 is its compatibility with motor drivers from different vendors. Advantech provides specially designed wiring boards for popular motion drivers from vendors such as Panasonic®, Mitsubishi® and Yaskawa®. This makes configuration easier, as pin-to-pin cables can be used. Having a selection of motor vendors can also be an advantage when sourcing of a certain motor is difficult.

Motion control and I/O functions with AMONet RS-485 use the same library. This unique feature saves time, as programmers do not need to study both a motion library and an I/O library. You can also connect to a manual pulse generator directly to adjust and calibrate the system without having to write programs first.

AMONet™ makes machine building with motion control easier. The savings made on wiring and programming effort, as well as the compatibility with a wide range of popular motors have already led to many requests for AMONet products. Advantech is not content with the current selection though. There are already plans to release more AMONet products based on PCI, PC/104, and 1-axis motion slave modules as well as DI/O slave modules.

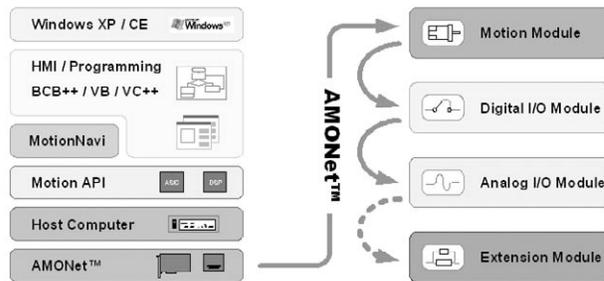


Figure 2: System Architecture

A Broad Array of Products for Centralized Motion Control

Advantech's full product offering can accommodate all your motion control needs. You can choose from 3-axis, 4-axis or 6-axis controllers, pulse-output or voltage-output, ISA-bus-based or PCI-bus-based, and standard PC-based or embedded in a system. The functions of the motion cards also vary, from high-end 3-axis circular interpolation cards to low-cost point-to-point motion devices. And if you cannot find a controller to meet your exact requirements for an embedded motion controller, then Advantech can design one to your specifications. We are ready to build cost-effective controllers to meet your criteria, whether it be adding digital I/O channels or changing connector styles, or perhaps changing CPU grade. With all the inherent costs, time and risks involved, there's no reason why you should design your own controller when you can instead rely on the expertise, cost-efficiency, experience and proven reliability of Advantech.

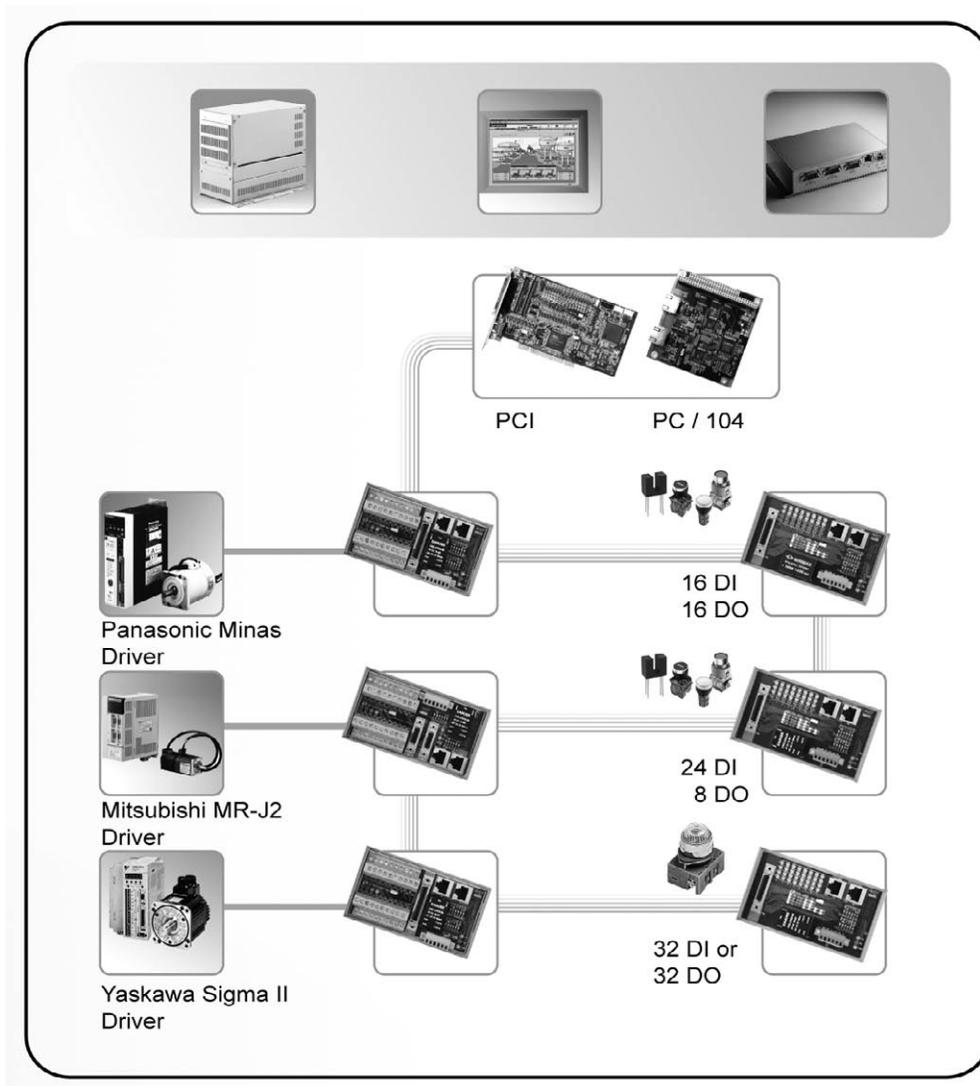


Figure 3 : Development Architecture

- 1 Software
- 2 IPCC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

Selection Guide

Motion Cards Series

Bus		PCI							ISA		
Category		Pulse type					Voltage type	Encoder card	Pulse type		Encoder card
Model		PCI-1240	PCI-1240U	PCI-1242	PCI-1243U	PCI-1261	PCI-1241	PCI-1784	PCL-839+	PCM-3240	PCL-833
Axes	Number of Axes	4	4	4	4	6	4	-	3	4	-
	Linear Interpolation	✓	✓	✓	-	✓	✓	-	-	✓	-
	2-axis Circle Interpolation	✓	✓	✓	-	✓	✓	-	-	✓	-
	3-axis Circle Interpolation	-	-	✓	-	✓	✓	-	-	-	-
Advanced Functions	Encoder Channels	4	4	5	-	6	5	4	-	4	3
	Limit Switch Input Channels	8	8	8	8	12	8	-	6	8	-
	Home Input Channel	4	4	4	4	6	4	-	3	4	-
	Emergency Stop Input Channels	1	1	1	1	1	1	-	-	1	-
	Slow Down Limit Switches	8	8	-	8	-	-	-	6	8	-
	General Purpose DI Channels	-	-	-	8	-	-	4	16	4	4
	Servo On Output Channels	4	4	4	-	6	4	-	-	4	-
	General Purpose DO Channels	4	4	-	8	-	-	4	16	4	-
	BoardID Switch	✓	✓	✓	✓	✓	✓	✓	-	-	-
	Position Compare Event	-	✓	✓	-	✓	✓	-	-	-	-
Remote IO	-	-	✓	-	✓	✓	-	-	-	-	
Dimensions (mm)		175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	175 x 100	185 x 100	96 x 90	185 x 100
Connectors		100-pin SCSI-II	100-pin SCSI-II	68-pin SCSI-II	DB-62	100-pin SCSI-II	68-pin SCSI-II	DB-37	1xDB-37 2x20-pin	PCL-10150-1	1xDB-25
Wiring Board		ADAM-3952, ADAM-3952-J2S	ADAM-3952, ADAM-3952-J2S	ADAM-3968 ADAM-3941	ADAM-3962	ADAM-39100 ADAM-3961	ADAM-3968 ADAM-3941	ADAM-3937	ADAM-3937 ADAM-3920	ADAM-3950 ADAM-3952-J2S	ADAM-3925
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AMONet series

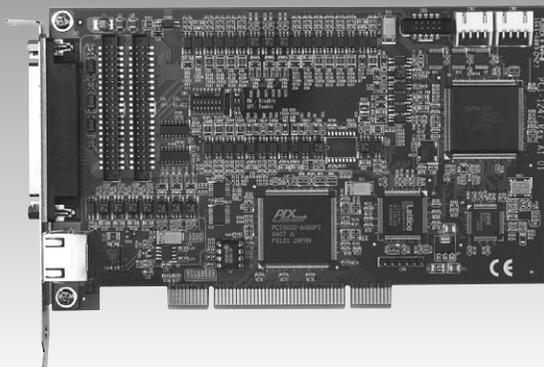
Bus		PCI		PC/104
Category		Pulse type	Remote Card	Remote Card
Model		PCI-1247	PCI-1202	PCM-3202
Axes	Number of Axes	4	-	-
	Linear Interpolation	✓	-	-
	2-Axis Circle Interpolation	✓	-	-
	3-Axis Circle Interpolation	-	-	-
Advanced Functions	Encoder Channels	4	-	-
	Limit Switch Input Channel	8	-	-
	Home Input Channel	4	-	-
	Emergency Stop Input Channel	1	-	-
	Slow Down Limit Switch	4	-	-
	General Purpose DI Channel	3	-	-
	Servo On Output Channel	4	-	-
	General Purpose DO Channels	4	4	-
	Position Compare Event	✓	-	-
	Remote Motion	✓	✓	✓
	Remote IO	✓	✓	✓
Dimensions (mm)		176x100	175x100	185x100
Connectors		2x68 pin-SCSI 1xDB15I 1xRJ45	1xDB15 2xRJ45	2xRJ45
Digital I/O Wiring Board		ADAM-3752F ADAM-3756F ADAM-3754F	ADAM-3752F ADAM-3756F ADAM-3754F	ADAM-3752F ADAM-3756F ADAM-3754F
Remote Motion Wiring Board		ADAM-3210 ADAM-3211/PMA ADAM-3212/J2S ADAM-3213/YS2	ADAM-3210 ADAM-3211/PMA ADAM-3212/J2S ADAM-3213/YS2	ADAM-3210 ADAM-3211/PMA ADAM-3212/J2S ADAM-3213/YS2
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1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCI-1247

4-axis Motion Control Card with AMONet™ RS-485 Master

NEW



CE

Features

- Max. 6.5 MHz, 4-axis pulse output
- Linear, circular and continuous interpolation
- High speed position latch function
- Manual pulse generator input interface
- Simultaneously start/stop on multiple axes
- Programmable acceleration and deceleration time
- Programmable pulse output and interrupt
- Position compare and trigger output
- 1 Ring of AMONet™ RS-485 master
- Programmable baud-rate up to 20 Mbps transfer rate
- Max. 64 AMONet digital slave modules support
- Easy installation with RJ45 phone jack and LED diagnostic

Introduction

PCI-1247 is an advanced motion controller with two major functions: 4-axis motion control (ASIC), and high-speed distributed motion control with AMONet™ RS-485.

With its 4-axis motion control functions, PCI-1247 provides 4 axes of linear interpolation, 2 axes of circular interpolation and also continuous interpolation with velocity continuity. There are 13 homing modes for different machine designs, and position compare and trigger output functions are supported to interface with applications such as on-the-fly image acquisition. For applications like tool length measurement, it provides position latch and interrupt functions. PCI-1247 provides digital I/O interfaces that are dedicated to servo drivers/motors, (e.g. ALM, INP, ERC) and also digital I/O interfaces that are dedicated to machines (e.g. ORG, PEL, EMG). These dedicated I/O signals guarantees functionality via hardware and therefore reduces software loading.

AMONet™ RS-485 is a new series of products designed for versatile and distributed automation applications with special motion control requirements. PCI-1247 is equipped with 1 master, that can connect with up to 64 slave modules. There are 2 categories of slave modules, one for motion control, and one for digital I/O. For motion control slave modules, there are 4 types of 1-axis motion modules in the ADAM-3210 Series. For digital I/O slave modules, there are 4 types, 32-IN, 32-OUT, 16-IN & 16-OUT and 24-IN & 8-OUT.

Specifications

Motion Control

- **Pulse Output Modes** ±OUT/DIR, ±CW/CCW
- **Pulse Output Rates** Max. 6.5 Mpps / Min. 0.05 pps
- **Position Range** 28 bits(±134,217,728 pulses)
- **Home Return Modes** 13 types
- **Velocity Profiles** T-curve, S-curve
- **Interpolation Modes** linear, circular and continuous
- **Counter for Encoder Feedback Signals** 28 bits up/down x 4
- **Position Latch Inputs** LTC x 4
- **Position Compare Outputs** CMP x4
- **Incremental Encoder Inputs** ±EA x 4, ±EB x 4
- **Encoder Index Signal Inputs** ±EZ x 4
- **Machine Interfaces** PEL x 4, MEL x 4, ORG x 4, SLD x 4
- **Servo Driver Interface** ALM x 4, RDY x 4, SVON x 4, INP x 4, ERC x 4
- **Simultaneous Start/Stop Motion Inputs** STA, STP
- **General Inputs** IN x 3
- **General Outputs** OUT x 4
- **I/O Pin Type** Optically isolated with 2.5 kVrms on all 68 SCSI pins

General

- **PCI Spec. 2.2** Supports 32-bit, 3.3/5 V_{DC} operation
- **Power Consumption** +5 V_{DC} @ 0.5 A typical
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)

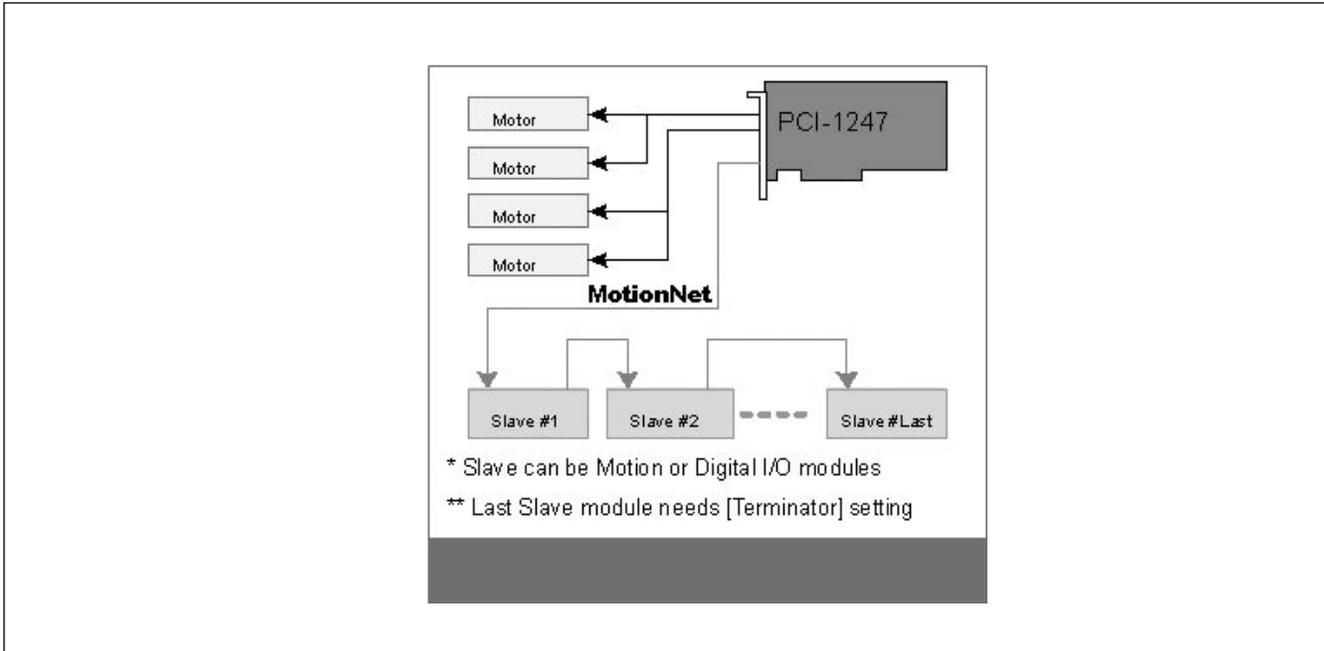
AMONet™ RS-485

- **Number of Rings** 1
- **Serial Interface** Half duplex RS-485 with transformer isolation
- **Cable Type** CAT5 UTP/STP Ethernet cable
- **Surge Protection** 10 kV
- **Transmission Speeds** 2.5, 5, 10 and 20 Mbps
- **Data Flow Control** Automatic
- **Communication Distance** Max. 100 m (20 Mbps / 64 slave modules)
- **Slave Module Function** Digital I/O slave module
Motion slave module

Ordering Information

- **PCI-1247** 4-axis Motion Control Card with AMONet Master
- **ADAM-3210** 1-Axis Motion Slave Module
- **ADAM-3211/PMA** 1-Axis Motion Slave for Panasonic® Minas A
- **ADAM-3212/J2S** 1-Axis Motion Slave for Mitsubishi® MR-J2S
- **ADAM-3213/YS2** 1-Axis Motion Slave for Yaskawa® Sigma-II
- **ADAM-3968M** 68-pin Motor Wiring Board
- **ADAM-3968M/PMA** Terminal Board for Panasonic® Minas A
- **ADAM-3968M/J2S** Terminal Board for Mitsubishi® MR-J2S
- **ADAM-3968M/YS2** Terminal Board for Yaskawa® Sigma-II
- **ADAM-3752** 32-CH Digital Input Module
- **ADAM-3754** 32-CH Digital Output Module
- **ADAM-3756** 16-CH/16-CH Digital Input/Output Module
- **ADAM-3758** 24-CH/8-CH Digital Input/Output Module
- **PCL-10168M-2** 68-pin SCSI cable, 2m (One PCI-1247 works with two

System Architecture



Software

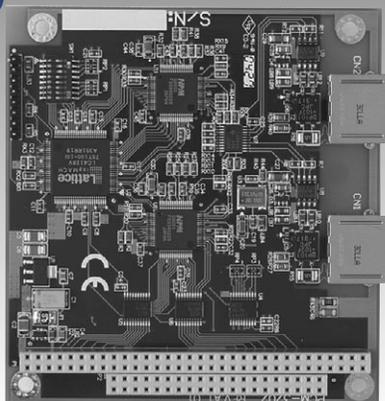
- **Windows® 2000/XP WDM Driver**
 Supports BCB/VB/VC++ programming on Windows® 2000/XP platforms with DLL
- **MotionNAVI**
 MotionNAVI is a Windows® utility for testing motion control functions
- **AMONet EzLink**
 AMONet EzLink is a Windows® utility for testing AMONet RS-485 configurations

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCM-3202

PC/104 AMONet™ RS-485 Master Card

NEW



Features

- Max. 20 Mbps transfer rate
- Supports 2 independent AMONet™ RS-485 rings
- Supports up to 128 AMONet™ RS-485 slave modules
- Easy installation with RJ45 phone jack and LED diagnostics
- Max. 100 m (20 Mbps / 32 slave modules) communication distance

Introduction

PCM-3202 is a PC/104 interface card which supports two AMONet™ RS-485 master ports, and transfers data between host and slaves directly without any operations in between. Each port of the master can control up to 2048 I/O points, 64 axes, or a combination of I/O points and axes for motion control. The master ports support up to 20 Mbps transfer rate and a maximum communication distance of up to 100 meters.

The communication between master and slave is based on a customized RS-485 solution that saves wires, covers a long distance, supports high-speed communication and has time-deterministic features. The communication interface between master and host PC is accomplished by memory mapping. Various functions can be chosen on the slave modules, and standard industrial DIN rail mounting design makes it easy to distribute them in the field. The master collects information from slave modules and publishes the information to its host PC.

Specifications

- **16-bit PC/104**
- **Number of Rings** 2
- **IRQ Selection** 9, 10, 11 or 12
- **Transmission Speed** 2.5, 5, 10 or 20 Mbps with automatic data flow control
- **Serial Interface** Half duplex RS-485 with transformer isolation
- **Cable Type** CAT5 UTP/STP Ethernet cable
- **Surge Protection** 10 kV
- **Communication Distance** Max. 100 m (20 Mbps/64 slave modules)
- **Communication Slave Module Number** 2 Rings with Max. 128 (1 Ring with 64 slaves)
- **Power Consumption** +5 V_{DC} at 0.5 A typical
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)

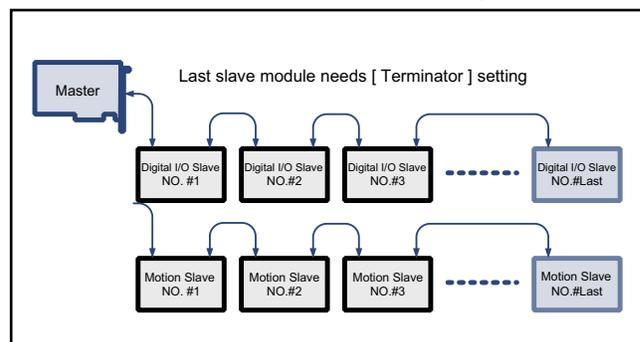
Ordering Information

- **PCM-3202** PC/104 AMONet™ RS-485 Master Card
- **ADAM-3210** 1-Axis Motion Slave Module
- **ADAM-3211/PMA** 1-Axis Motion Slave for Panasonic® Minus A
- **ADAM-3212/J2S** 1-Axis Motion Slave for Mitsubishi® MR-J2S
- **ADAM-3213/YS2** 1-Axis Motion Slave for Yaskawa® Sigma-II
- **ADAM-3752** 32-CH Digital Input Module
- **ADAM-3754** 32-CH Digital Output Module
- **ADAM-3756** 16-CH/16-CH Digital Input/Output Module
- **ADAM-3758** 24-CH/8-CH Digital Input/Output Module

Software

- **Windows® 2000/XP WDM driver**
Supports BCB/VB/VC++ programming on Windows® 2000/XP platform with DLL
- **AMONet EzLink**
AMONet EzLink is a Windows® diagnosis utility

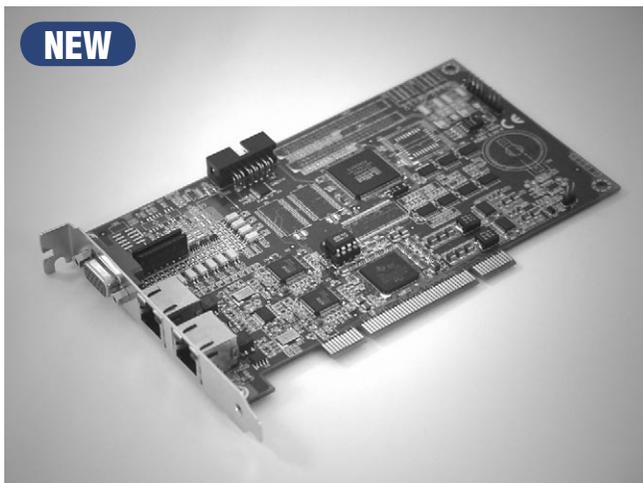
AMONet™ Slave Module Address Number Setting



PCI-1202

2-Port AMONet™ RS-485 Master Card

NEW



CE

Features

- Max. 20 Mbps transfer rate
- 2 independent AMONet™ RS-485 Master Rings
- Max. 128 AMONet™ RS-485 slave modules support
- Programmable digital input to notify events
- Easy installation with RJ45 phone jack and LED diagnostic

Introduction

PCI-1202 is a PCI interface card which supports two AMONet™ RS-485 master ports, and transfers data between host and slaves directly without any operations in between. Each port of the master can control up to 2048 I/O points, 64 axes, or a combination of I/O points and axes for motion control. The master ports support up to 20 Mbps transfer rate and a maximum communication distance of up to 100 meters.

The communication between master and slave is based on a customized RS-485 solution that saves wires, covers a long distance, supports high-speed communication and has time-deterministic features. The communication interface between master and host PC is accomplished by memory mapping. Various functions can be chosen on the slave modules, and standard industrial DIN rail mounting design makes it easy to distribute them in the field. The master collects information from slave modules and publishes the information to its host PC.

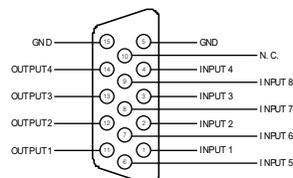
Specifications

- **AMONet RS-485 Rings** 2
- **Transmission Speed** 2.5, 5, 10 and 20 Mbps with automatic data flow control
- **Serial Interface** Half duplex RS-485 with transformer isolation
- **Cable Type** CAT5 UTP/STP Ethernet cable
- **Surge Protection** 10 kV
- **Communication Distance** Max. 100 m (20 Mbps/64 slave modules)
- **Communication Slave Module number** 128 (2 rings with 64 slaves each)
- **Digital Input** 8-Ch isolated, sink type, 0-24 V_{DC}, Max. 50 mA current, 10 mA sink current
- **Digital Output** 4-Ch isolated, open collector type, 5-30 V_{DC} voltage PCI Spec. 2.2; supports 32-bit, 3.3 V/5 V_{DC} operation
- **Power Consumption** +5V_{DC} at 0.5 A typical
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)

Ordering Information

- **PCI-1202** 2 port AMONet™ RS-485 master card
- **ADAM-3210** 1-axis AMONet™ RS-485 Motion Slave Module
- **ADAM-3211/PMA** 1-axis AMONet™ RS-485 Motion Slave for Panasonic® Minas A
- **ADAM-3212/J2S** 1 axis AMONet™ RS-485 slave for Mitsubishi® MR-J2S
- **ADAM-3213/YS2** 1-axis AMONet™ RS-485 Slave for Yaskawa® Sigma-II
- **ADAM-3752** 32-CH AMONet™ RS-485 Digital Input Module
- **ADAM-3754** 32-CH AMONet™ RS-485 Digital Output Module
- **ADAM-3756** 16-CH/16 CH AMONet™ RS-485 Digital Input/Output Module

Pin Assignments



DIO Dsub-15 pins Definition

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7
- 8 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

ADAM-3240 Series

4-Axis AMONet™ RS-485 Motion Slave Modules

NEW



CE

Features

- Max. 20 Mbps transfer rate
- Max. 6.5 MHz, 4-Axes pulse output
- 28 bits counter for incremental encoder
- Programmable acceleration and deceleration time
- T-curve and S-curve velocity profiles support
- Change speed/position on-the-fly
- Simultaneously start/stop on multiple motion control modules
- Easy installation with RJ45 phone jack and LED diagnostic
- Easy installation for servo or stepping motor driver

Introduction

Products in the ADAM-3240 Series are used to increase the number of axes with interpolation for an AMONet™ RS-485 distributed motion control network. These extension slave modules connect serially by a simple and affordable Cat.5 LAN cable, reducing the wiring between driver and controller. This is very suitable to highly integrated machine automation applications. AMONet™ RS-485 has driver specific motion slave modules to support a range of common motor vendors such as: Mitsubishi® J2-Super series, Panasonic® Minas A type, and Yaskawa® Sigma-II. Please select the respective cable SCSI-20P or SCSI-50P and plug this cable into the motor driver and motion slave module. AMONet™ RS-485 also supports a general purpose motion slave module for general motor drivers, including step motor drivers. This general purpose motion slave module is designed with many screw terminals to support easy wiring. Please refer to the related installation guides.

Specifications

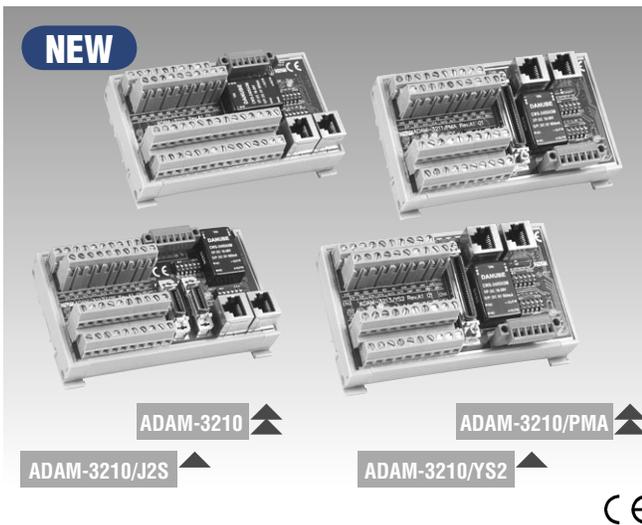
- **Communication Controller** AMONet™ slave motion controller ASIC
- **Scheme Type** Half duplex RS-485 with transformer isolation
- **Cable Type** CAT5 UTP/STP Ethernet cable
- **Surge Protection** 10 kV
- **Transmission Speed** 2.5, 5, 10 and 20 Mbps
- **Programmable Pulse Output Mode** \pm OUT/DIR, \pm CW/CCW, \pm A/B phase
- **Programmable Pulse Command Speed** Max 6.5 Mpps / Min 0.05 pps
- **Position Range** 28 bits (\pm 134, 217, 728 pulses)
- **Home Return Mode** 13 types
- **Velocity Profiles** T-curve, S-curve
- **Counter for Encoder Feedback Signals** 28 bits up/down
- **Position Latch Input** LTC x 4
- **Position Compares Output** CMP x 4
- **Incremental Encoder Input** \pm EA x 4, \pm EB x 4
- **Encoder Index Signal Input** \pm EZ x 4
- **Machine Interface** PEL x 4, MEL x 4, ORG x 4, SLD x 4
- **Servo Driver Interface** ALM x 4, RDY x 4, SVON x 4, INP x 4, ERC x 4
- **Simultaneous Start/Stop Motion Input** STA, STP
- **LED Indicator** PWR, RUN, ERR, PEL, MEL, ORG, SLD
- **Power Supply** +18 V_{DC} to +30 V_{DC}, consumption: 3 W typical
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)

Ordering Information

- **ADAM-3240** 4-Axis General Purpose AMONet™ RS-485 Slave Module
- **ADAM-3241/PMA** 4-Axis AMONet™ RS-485 Slave Module for Panasonic® Minas A Servo driver
- **ADAM-3242/J2S** 4-Axis AMONet™ RS-485 Slave Module for Mitsubishi® MR-J2S Servo driver
- **ADAM-3243/YS2** 4-Axis AMONet™ RS-485 Slave Module for Yaskawa® Sigma-II Servo driver
- **PCL-10120M-2** SCSI 20-pin cable, 2m (Optional for ADAM-3242/J2S)
- **PCL-10150M-2** SCSI 50-pin cable, 2m (Optional for ADAM-3241/PMA and ADAM-3243/YS2)

ADAM-3210 Series

1-Axis AMONet™ RS-485 Motion Slave Modules



Features

- DIN rail mounting (L-124 x W-72 x H-53 mm)
- Max. 20 Mbps transfer rate
- Max. 6.5 Mhz, 1-Axis pulse output
- 28 bits counter for incremental encoder
- Programmable acceleration and deceleration time
- T-curve and S-curve velocity profiles support
- Change speed on-the-fly
- Simultaneous start/stop on multiple motion control modules
- Easy installation with RJ45 phone jack and LED diagnostic
- Easy installation for servo or stepping motor driver

Introduction

Products in the ADAM-3210 Series are used to increase the number of axes for an AMONet™ RS-485 distributed motion control network. These extension slave modules connect serially by a simple and affordable Cat.5 LAN cable, reducing the wiring between driver and controller. This is very suitable for highly integrated machine automation applications.

AMONet™ RS-485 has driver specific motion slave modules to support a range of common motor vendors such as: Mitsubishi® J2-Super series, Panasonic® Minus A type, and Yaskawa® Sigma-II. Please select the respective cable SCSI-20P or SCSI-50P and plug this cable into the motor driver and motion slave module.

AMONet™ RS-485 also supports a general purpose motion slave module for general motor drivers, including step motor drivers. This general purpose motion slave module is designed with many screw terminals to support easy wiring. Please refer to the related installation guides.

Specifications

- **Series Interface** Half duplex RS-485 with transformer isolation
- **Cable Type** CAT5 UTP/STP Ethernet cable
- **Surge Protection** 10 kV
- **Transmission Speeds** 2.5, 5, 10 and 20 Mbps
- **Programmable Pulse Output Mode** ±OUT/DIR, ±CW/CCW, ±A/B phase
- **Programmable Pulse Command Speed** Max 6.5 Mpps / Min 0.05 pps
- **Position Range** 28 bits (±134,217,728 pulses)
- **Home Return Mode** 13 types
- **Velocity Profiles** T-curve, S-curve
- **Counter for Encoder Feedback Signals** 28 bits up/down
- **Position Latch Input** LTC
- **Position Compare Output** CMP
- **Incremental Encoder Input** ±EA, ±EB
- **Encoder Index Signal Input** ±EZ
- **Machine Interface** PEL, MEL, ORG, SLD
- **Servo Driver Interface** ALM, RDY, SVON, INP, ERC
- **Simultaneous Start/Stop Motion Input** STA, STP
- **LED Indicator** PWR, RUN, ERR, PEL, MEL, ORG, SLD
- **Power Supply** +18 V_{DC} to +30 V_{DC}; consumption: 3 W typical
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)

Ordering Information

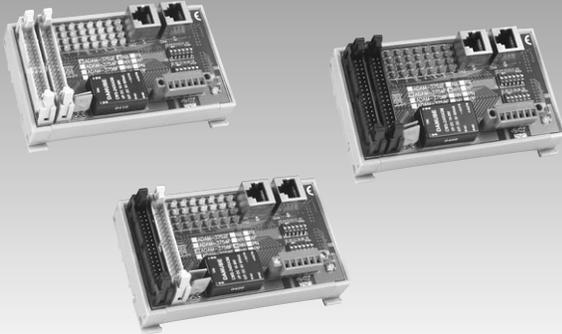
- **ADAM-3210** 1-Axis General Purpose AMONet™ RS-485 Slave Module
- **ADAM-3211/PMA** 1-Axis AMONet™ RS-485 Slave Module for Panasonic® Minus A Servo driver
- **ADAM-3212/J2S** 1-Axis AMONet™ RS-485 Slave Module for Mitsubishi® MR-J2S Servo driver
- **ADAM-3213/YS2** 1-Axis AMONet™ RS-485 Slave Module for Yaskawa® Sigma-II Servo driver
- **PCL-10120M-2** SCSI 20-pin cable, 2m (Optional for ADAM-3212/J2S)
- **PCL-10150M-2** SCSI 50-pin cable, 2m (Optional for ADAM-3211/PMA and ADAM-3213/YS2)

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-3750F Series

Flat-Cable Type
Digital NPN I/O
Modules

NEW



ADAM-3752F

ADAM-3756F

ADAM-3754F



Features

- DIN rail mounting (L-124 x W-72 x H-53 mm)
- Max. 20 Mbps transfer rate
- Flat-Cable Connection
- Easy installation with RJ45 phone jack and LED diagnostic
- 3-wire terminal board for sensor
- LED indicator for each IO channel
- Selection of I/O-channel configuration (32 DI, 32 DO or 16/16 DI/O)
- 2500 Vrms Isolation voltage

Introduction

The ADAM-3750F Series consists of digital slave modules for AMONet™ RS-485 that extend the digital I/O capacity. All the DIO slave extension modules are connected serially with a simple Cat.5 cable. This reduces wiring between driver and controller and is very suitable for highly integrated machine automation applications. High speed, scalability and cost-effectiveness ensures a solid solution for machine builders.

There are 3 main types of DI/O slave modules, 32In, 32Out, and 16In/16Out. With these slave modules, you can connect actuators/sensors directly with minimum hassle. You can access I/O points nearby or 100 meters away using simple and low-cost wiring, and the high speed of AMONet™ RS-485 makes it possible to scan 2048 IO channels in 1.04 ms.

Specifications

- **Cable Type** CAT5 UTP/STP Ethernet cable
- **Surge Protection** 10 kV
- **Transmission Speed** 2.5, 5, 10 and 20 Mbps
- **Online Module** Insertion and Removal
- **I/O Isolation Voltage** 2.5 kVrms
- **Input Impedance** 2.4 k Ω /0.5 Ω , Input current: \pm 10 mA (Max)
- **Output Types** NPN/PNP open collector Darlington transistors
- **Switch Capacity** Each output channel is 60 mA at 24 V_{DC}
- **Response Time** On to Off, about 180 μ s; Off to On, about 1.2 μ s
- **Power Supply** +18 V_{DC} to +30 V_{DC}; consumption: 3 W typical
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)

Ordering Information

- **ADAM-3752FN** Flat-cable type 32-CH Digital NPN Input Module
- **ADAM-3754FN** Flat cable type 32-CH Digital NPN Output Module
- **ADAM-3756FNN** Flat cable, 16/16CH Digital NPN In/Output Module
- **ADAM-3934D** Dual 34-pin wiring terminal with DIN-rail
- **PCL-10134-1** 34-pin IDC flat cable, 1M

Pin Assignments

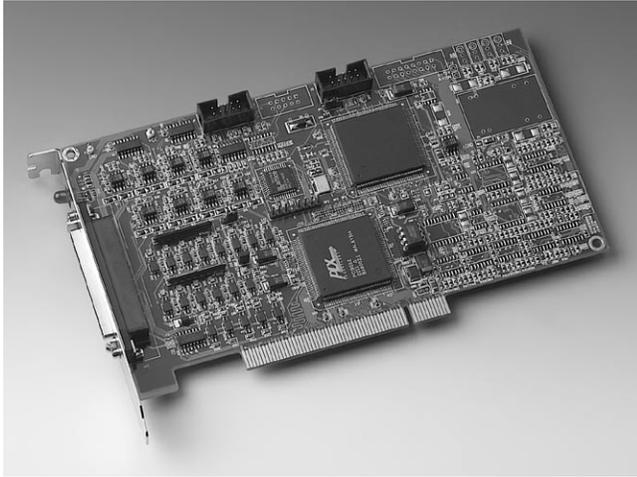
ADAM-3754F							
CN1				CN2			
Pin	Label	Pin	Label	Pin	Label	Pin	Label
1	OUT_00	2	+24V	1	OUT_20	2	+24V
3	OUT_01	4	GND	3	OUT_21	4	GND
5	OUT_02	6	+24V	5	OUT_22	6	+24V
7	OUT_03	8	GND	7	OUT_23	8	GND
9	OUT_04	10	+24V	9	OUT_24	10	+24V
11	OUT_05	12	GND	11	OUT_25	12	GND
13	OUT_06	14	+24V	13	OUT_26	14	+24V
15	OUT_07	16	GND	15	OUT_27	16	GND
17	OUT_08	18	+24V	17	OUT_30	18	+24V
19	OUT_11	20	GND	19	OUT_31	20	GND
21	OUT_12	22	+24V	21	OUT_32	22	+24V
23	OUT_13	24	GND	23	OUT_33	24	GND
25	OUT_14	26	+24V	25	OUT_34	26	+24V
27	OUT_15	28	GND	27	OUT_35	28	GND
29	OUT_16	30	+24V	29	OUT_36	30	+24V
31	OUT_17	32	GND	31	OUT_37	32	GND
33	FG	34	FG	33	FG	34	FG

ADAM-3752F							
CN1				CN2			
Pin	Label	Pin	Label	Pin	Label	Pin	Label
1	IN_00	2	+24V	1	IN_20	2	+24V
3	IN_01	4	GND	3	IN_21	4	GND
5	IN_02	6	+24V	5	IN_22	6	+24V
7	IN_03	8	GND	7	IN_23	8	GND
9	IN_04	10	+24V	9	IN_24	10	+24V
11	IN_05	12	GND	11	IN_25	12	GND
13	IN_06	14	+24V	13	IN_26	14	+24V
15	IN_07	16	GND	15	IN_27	16	GND
17	IN_10	18	+24V	17	IN_30	18	+24V
19	IN_11	20	GND	19	IN_31	20	GND
21	IN_12	22	+24V	21	IN_32	22	+24V
23	IN_13	24	GND	23	IN_33	24	GND
25	IN_14	26	+24V	25	IN_34	26	+24V
27	IN_15	28	GND	27	IN_35	28	GND
29	IN_16	30	+24V	29	IN_36	30	+24V
31	IN_17	32	GND	31	IN_37	32	GND
33	FG	34	FG	33	FG	34	FG

ADAM-3756F							
CN1				CN2			
Pin	Label	Pin	Label	Pin	Label	Pin	Label
1	IN_00	2	+24V	1	OUT_00	2	+24V
3	IN_01	4	GND	3	OUT_01	4	GND
5	IN_02	6	+24V	5	OUT_02	6	+24V
7	IN_03	8	GND	7	OUT_03	8	GND
9	IN_04	10	+24V	9	OUT_04	10	+24V
11	IN_05	12	GND	11	OUT_05	12	GND
13	IN_06	14	+24V	13	OUT_06	14	+24V
15	IN_07	16	GND	15	OUT_07	16	GND
17	IN_10	18	+24V	17	OUT_10	18	+24V
19	IN_11	20	GND	19	OUT_11	20	GND
21	IN_12	22	+24V	21	OUT_12	22	+24V
23	IN_13	24	GND	23	OUT_13	24	GND
25	IN_14	26	+24V	25	OUT_14	26	+24V
27	IN_15	28	GND	27	OUT_15	28	GND
29	IN_16	30	+24V	29	OUT_16	30	+24V
31	IN_17	32	GND	31	OUT_17	32	GND
33	FG	34	FG	33	FG	34	FG

PCI-1242

4-Axis Pulse-Type Motor Control Card Servo Motor Control Card



FCC CE

Features

- PCI Bus interface
- 4-axis servo or stepping motor pulse command control
- 5 -channel encoder input
- 13 dedicated input and 5 dedicated output
- 128 remote serial input / output interfaces

Introduction

PCI-1242 applied motion ASIC sends the pulse of each axis with DDA (Digital Differential Analyzer) algorithm to realize 4 axis servo positioning and synchronized control. Under the pulse output control, the encoder value can be read back from the encoder input port. So, it will be easier to carry out the software close loop control in stepping motor application. At the control of each axis, there is one set of sensor input point, including home point, plus limit point and minus limit point. In addition, there are inhibit signal output points, position ready output point, and emergency stop input point. For other input / output points, this board uses wire-saving I/O design, which can be expanded to 64 points input and 64 point output maximum.

Specifications

Hardware

- **Size** 185 x 109 mm
- **System Clock** 40 MHz
- **Bus Interface** PCI

Motion

- **Positioning Axes** 4
- **DDA Pulses** 1024 ~ 32767 Pulse/DDA Cycle
- **DDA Cycle** 25 μ s ~ 3350 ms Programmable
- **Pulse Output Format** Pulse/DirectionCW/CCW A/B Phase
- **Error Counter (For Output Pulse)** 16 Bits
- **Remote IO** 64 IN/64 OUT Maximum
- **Encoder Input** 5 Axes
- **Interface** Differential Input with Photo-Isolation
- **Input Format** A/B/Z Phase Pulse /DirectionCW/CCW
- **Decoder** x0, x1, x2, x4, Software programmable in A/B/Z phase input
- **Encoder Counter** 32 bits
- **Latch** 15 trigger signal for each axis

Local IO

- **Home Sensor Signal Inputs** 4
- **Positive Over Travel Signal Inputs** 4
- **Negative Over Travel Signal Inputs** 4
- **Inhibit Signal Outputs** 4
- **Emergency Stop Input** 1
- **Position Ready Output** 1

Software Support

- **Device driver for DOS, Windows® 95/98/2000/NT/XP**
- **Motion control library MCCL for DOS, Windows® 95/98/2000/NT/XP**

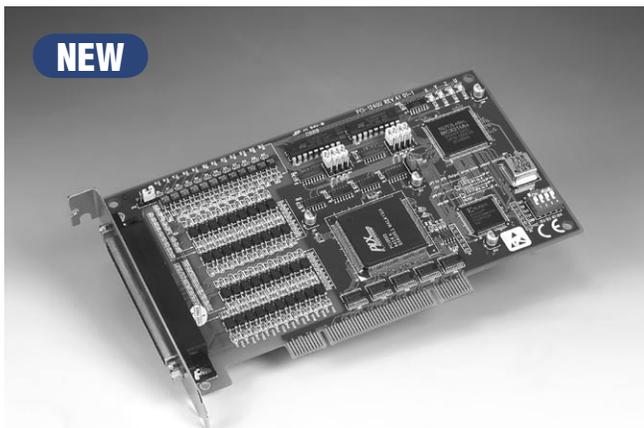
Ordering Information

- **PCI-1242** 4-axis Pulse-type Servo Motor Control Card
- **PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 and 2 m
- **ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail mounting
- **ADAM-3941** Wiring terminal for PCI-1241/1242 with LEDs
- **PCLD-8241** 64 DI / 64 DO Remote IO Board

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7
- 8 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

PCI-1240U

4-Axis Universal PCI Stepping/Pulse-type Servo Motor Control Card



Introduction

Advantech introduces the PCI-1240U 4-axis Universal PCI (supports both 3.3V and 5V signal slot) stepping/pulse-type servo motor control card designed for general-purpose extreme motion applications. The PCI-1240U is a high-speed 4-axis motion control card for the PCI bus that simplifies stepping and pulse-type servo motor control, giving you added performance from your motors. The card's intelligent NOVA[®] MCX314-motion ASIC builds in a variety of motion control functions, such as 2/3-axis linear interpolation, 2-axis circular interpolation, T/S-curve acceleration/deceleration rate and more. In addition, the PCI-1240U performs these motion control functions without processor loading during driving. For advanced applications, Advantech supplies Windows[®] DLL drivers and user-friendly examples to decrease your programming load. Moreover, through a free bundled PCI-1240U motion utility, you can complete configuration and diagnosis easily.

Specifications

Motion Axis

Number of Axes	4 Axes	
2/3-axis Linear Interpolation	Range	+/- 2,147,483,646 for each axis
	Speed	1 PPS ~ 4 MPPS
	Precision	± 0.5 LSB
2-axis Circular Interpolation	Range	+/- 2,147,483,646 for each axis
	Speed	1 PPS ~ 4 MPPS
	Precision	± 1 LSB
Continuous Interpolation	Speed	1 PPS ~ 2 MPPS
Drive Output Pulses	Range	1 PPS ~ 4 MPPS
	Precision	1 LSB
	Change of Acceleration for S Curve	954 ~ 31.25 x 10 ⁹ PPS/sec ²
	Acceleration/Deceleration	125 ~ 500 x 10 ⁹ PPS/sec ²
	Initial Velocity	1 PPS ~ 4 MPPS
	Drive Speed	1 PPS ~ 4 MPPS (Can be changed during driving)
	Number of Output Pulses	0 ~ 4,294,967,295 (fixed pulse driving)
Input Pulse for Encoder Interface	Pulse Output Type	Pulse/Direction (1-pulse, 1-direction type) or Up/Down (2-pulse type)
	Output Signal Modes	Differential Line driving output/Single-ended output
	Speed Curve	T/S-curve Acceleration/Deceleration
	Encoder Pulse Input Type	Quadrature (A/B phase or Up/Down)
Position Counter (read/write at any time)	Counts per Encoder Cycle	x1, x2, x4 (A/B phase only)
	Protection	2,500 V _{DC} isolation
	Input Range	+5V ~ +30V
Comparison Register	COMP+ Register Range	-2,147,438,648 ~ +2,147,483,647
	COMP- Register Range	-2,147,438,648 ~ +2,147,483,647
Can be used for software over traveling limit		

Features

- Independent 4-axis motion control
- Hand wheel and jog function
- 2/3-axis linear interpolation function
- 2-axis circular interpolation function
- Continuous interpolation function
- Programmable T/S-curve acceleration/deceleration rate
- Up to 4 MPPS pulse output for each axis
- Two pulse output types: Up/Down or Pulse/Direction
- Up to 1 MHz encoder input for each axis
- Two encoder pulse input types: A/B phase or Up/Down
- Constant speed control
- Position management and software limit switch function
- BoardID™ switch

Interrupt Functions (excluding Interpolation)	Interrupt CONDITION (All conditions could be enable individually)	Position Counter ≥ COMP-	
		Position Counter < COMP-	
		Position Counter ≥ COMP+	
		Position Counter < COMP+	
External Signals Driving	Input Signal*	Constant speed begin or end during acceleration/deceleration driving pulse finished	
		nEXOP+ and nEXOP	
		Max. Input Frequency	100 Hz
		Driving Mode	Fixed pulse driving or continuous driving Supports Hand wheel/Jog
External Deceleration/Instantaneous Stop Signal	Protection	2,500 V _{DC} Photo coupler isolation; accept mechanical connection point.	
		Input Signal*	nINI ~ 3
		Max. Input Frequency	4 KHz
Input Signal for Servo Motor Drivers	Input Signal*	2,500 V _{DC} Photo coupler isolation and RC filtering	
General Purpose Output Signal	Output Signal*	nALArm (servo alarm) nINPOS (position command completed)	
Over Traveling Limit Switch Input	Protection	nOUT4 ~ 7	
		Input Signal*	nLMT+ and nLMT-
Emergency Stop	Protection	2,500 V _{DC} Photo coupler isolation and RC filtering; accept mechanical connection point.	
		Input Signal*	EMG- one emergency stop input for PCI-1240
		2,500 V _{DC} Photo coupler isolation and RC filtering; accept mechanical connection point.	

General

I/O Connector Type	100-pin SCSI-II female	
Dimensions	175 x 100 mm (6.9" x 3.9")	
	Typical	+5 V @ 850 mA
Power Consumption	Max.	+5 V @ 1 A
	External Power Voltage	
DC +12 ~ 24 V		
Temperature	Operating	0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
	Storage	-20 ~ 85° C (-4 ~ 185° F)
Relative Humidity	5 ~ 95% RH non-condensing (refer to IEC 68-2-3)	
Certification	CE certified	

Note: *: "n" represents the axis (X, Y, Z or U) that is concerned.

Ordering Information

- **PCI-1240U** 4-axis universal PCI stepping/pulse-type servo motor control card
- **ADAM-3952** 50-pin SCSI-II wiring terminal for DIN-rail mounting
- **PCL-10251-1** 100-pin SCSI to two 50-pin SCSI cable for PCI-1240U, 1m
- **PCL-10251-3** 100-pin SCSI to two 50-pin SCSI cable for PCI-1240U, 3m

Feature Details

Programmable T/S-curve Acceleration and Deceleration

Each of four axes can be preset individually with S-curve or trapezoidal acceleration/deceleration rates. When using S-curve acceleration to control driving speed, output pulse is generated in parabolic-shaped acceleration or deceleration curves, and the triangular curve phenomenon will not occur through the NOVA[®] MCX314-motion ASIC design concept.

Linear and Circular Interpolation

Any two or three axes can be selected to execute linear interpolation driving and any two axes can be selected to execute circular arc interpolation control. The interpolation speed range is from 1 PPS to 4 MPPS.

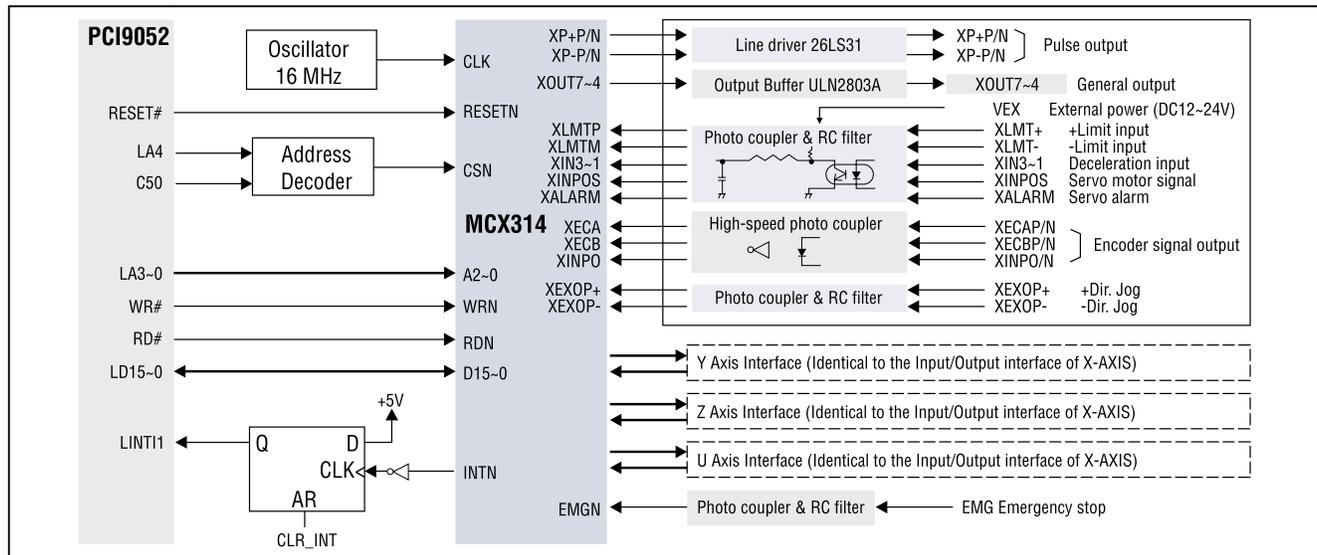
Powerful Position Management Function

Each axis is equipped with a 32-bit logical position counter and a 32-bit real position counter. The logical position counter counts the axis' pulse output number and the real position counter is recorded with the feedback pulse from the outside encoder or linear scale.

Applications

- General motion control (GMC)
- Packaging and assembly machinery
- Robotics and semiconductor manufacturing and measurement
- Precise X-Y-Z position and rotation control

Block Diagram



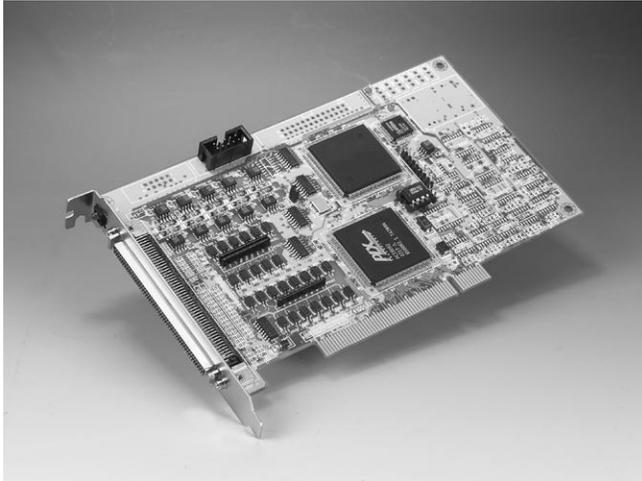
Pin Assignments

VEX	1	51	VEX
EMG	2	52	NC
XLMT+	3	53	ZLMT+
XLMT-	4	54	ZLMT-
X_IN1	5	55	Z_IN1
X_IN2	6	56	Z_IN2
X_IN3	7	57	Z_IN3
YLMT+	8	58	ULMT+
YLMT-	9	59	ULMT-
Y_IN1	10	60	U_IN1
Y_IN2	11	61	U_IN2
Y_IN3	12	62	U_IN3
X_INPOS	13	63	Z_INPOS
X_ALARM	14	64	Z_ALARM
XEGAP	15	65	ZEGAP
XEGAN	16	66	ZEGAN
XECBP	17	67	ZECBP
XECBN	18	68	ZECBN
XINOP	19	69	ZINOP
XINON	20	70	ZINON
Y_INPOS	21	71	U_INPOS
Y_ALARM	22	72	U_ALARM
YEGAP	23	73	UEGAP
YEGAN	24	74	UEGAN
YECBP	25	75	UECBP
YECBN	26	76	UECBN
YINOP	27	77	UINOP
YINON	28	78	UINON
XEXOP+	29	79	ZEXOP+
XEXOP-	30	80	ZEXOP-
YEXOP+	31	81	UEXOP+
YEXOP-	32	82	UEXOP-
GND	33	83	GND
XOUT4	34	84	ZOUT4
XOUT5	35	85	ZOUT5
XOUT6	36	86	ZOUT6
XOUT7	37	87	ZOUT7
XP+P	38	88	ZP+P
XP-N	39	89	ZP-N
XP-P	40	90	ZP-P
XP-N	41	91	ZP-N
GND	42	92	GND
YOUT4	43	93	UOUT4
YOUT5	44	94	UOUT5
YOUT6	45	95	UOUT6
YOUT7	46	96	UOUT7
YP+P	47	97	UP+P
YP-N	48	98	UP-N
YP-P	49	99	UP-P
YP-N	50	100	UP-N

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
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- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

PCI-1261

6-Axis Pulse-Type Stepping Motion Control Card



FCC CE

Features

- PCI bus interface
- Asynchronous/synchronous 6-axis motion control
- Linear, helical interpolation functions
- 2/3-axis arc, circle interpolation functions
- Jog functions
- Continuous interpolation functions
- T/S-curve acceleration/decelerations
- Constant speed and over speed control
- In position and compensation functions
- Go home functions
- Position management and software limit switch functions
- Event trigger functions
- 19 dedicated inputs and 7 dedicated outputs
- Up to 4 MPPS pulse output for each axis

Introduction

The PCI-1261 realizes 6-axis asynchronous/synchronous control with a DDA (Digital Differential Analyzer) that ensures even movement of each axis. At pulse output control, it can also read back motor encoder values via its encoder input port. In the control of each axis, there is a set of sensor input points, including home points, plus limit points and minus limit points. Further, there are servo-on signal output points, position ready output point and an emergency stop input point. For advanced applications, we supply Windows® DLL drivers and user-friendly examples to decrease your programming load. Moreover, through a free bundled PCI-1261 motion utility, you can complete configuration and diagnosis easily.

Specifications

Motion Axis

Number of Axes	6 Axes	
Interpolation	Range	-2, 147, 483, 648 ~ 2, 147, 483, 647 for each axis
	Time Interval	1 ms ~ 10 ms
	Speed	1 PPS ~ 4 MPPS
Motion Functions	Command Type	Jog, Point to Point, Line, Arc, Circle, Helical
	Speed Curve	T/S-Curve Acceleration/Deceleration
	Command Mode	Position Command
	Pulse Output Format	Pulse/Direction, CW/CCW, A/B Phase
	Position Accuracy	In Position Check
	Continuous Moving	Blending Mode
	Compensation	256 Divisions
	Over Traveling Limit	Software and Hardware OT Check
	Go Home	3 Modes (Normal, Encoder Index, Home Sensor)
	Motion Operation	Hold, Continuous, Abort
	Changing Speed in Moving	Over Speed Control
Encoder Interface	Encoder Pulse Input Type	A/B/Z Phase, Pulse/Direction, CW/CCW
	Counts per Encoder Cycle	X0, X1, X2, X4 (A/B phase only)
	Latch	15 Trigger Signals for each axis
	Interface	Differential with Photo Coupler
	Max. Input Frequency	2 MHz
Position Counter	Input	6 Channels
	Range of Command Position Counter	-2, 147, 483, 648 ~ 2, 147, 483, 647 for each axis

	Range of Actual Position Counter	-2, 147, 483, 648 ~ 2, 147, 483, 647 for each axis
Comparison Register	Register Range	-2, 147, 483, 648 ~ 2, 147, 483, 647
Interrupt Functions (Trigger User-Defined Functions)	Interrupt Signal (All signals could be enabled/disabled individually)	Local IO Input
		Encoder Index
		Encoder Comparison
Local IO (on board)	Home Sensor Signal	6 Inputs
	Plus Over Traveling Signal Input	6 Inputs
	Minus Over Traveling Signal Input	6 Inputs
	Inhibit Signal	6 Outputs
	Emergency Stop	1 Input
	Position Ready	1 Output

General

I/O Connector Type	Motion connector 100-pin SCSI-II Female	
Dimensions	175 x 107 mm	
Power Consumption	Typical	+5 V @ 850 mA; +12 V @ 400 mA
	Max.	+5 V @ 1 A; +12 V @ 600 m
External Power Voltage	+12 V ~ +24 V	
Temperature	Operating	-10 ~ 60° C
	Storage	-20 ~ 85° C

Ordering Information

- **PCI-1261** 6-axis Pulse-type Stepping Motion Control Card
- **ADAM-39100** 100-pin SCSI-II Wiring Terminal for DIN-rail Mounting
- **PCL-101100M-1** 100-pin SCSI cable, 1m
- **PCL-101100M-3** 100-pin SCSI cable, 3m
- **ADAM-3961** Wiring terminal for PCI-1261 with LED

Applications

- General Motion Control (GMC)
- Packing and assembly machinery
- Robotics and semiconductor manufacturing and measurement
- Precise X-Y-Z-U-V-W position and rotation control

Feature Details

Programmable T/S-curve Acceleration and Deceleration

Each axis can be individually configured with S-curve or trapezoidal acceleration/ deceleration rates. When using S-curve acceleration to control motion speed, output pulse is generated in parabolic-shaped acceleration or deceleration curves.

Linear and Circular Interpolation

Any two or three axes can be selected to execute linear or circular arc interpolation control. The interpolation speed range is from 1PPS to 4 MPPS.

Powerful Position Management Function

Each axis is equipped with a 32-bit logical position counter and a 32-bit real position counter. The logical position counter counts the axis pulse output number and the real position counter is recorded with the feedback pulse from the outside encoder or linear scale.

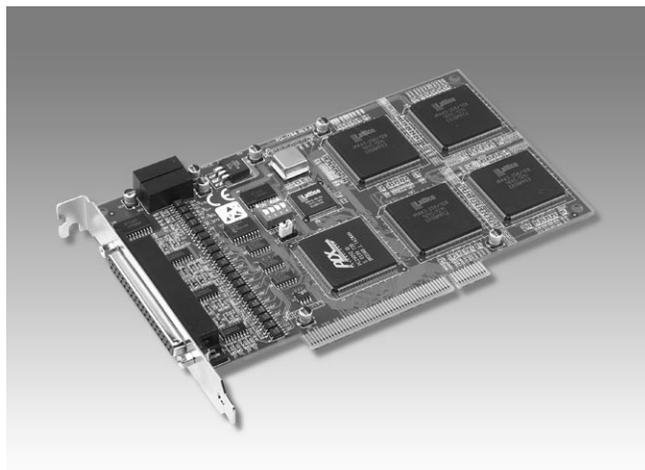
SCSI II 100 PIN

AGND	1	51	AGND
NC	2	52	NC
NC	3	53	NC
NC	4	54	NC
VCC_OUT(+5V)	5	55	LDI_COM -
LDO_COM+	6	56	LDI_COM -
LDI_COM	7	57	E_STOP
LDI_COM	8	58	P_RDY
HOME_I1	9	59	HOME_I2
OT+_I1	10	60	OP+_I2
OT-_I1	11	61	OT-_I2
INH_O1	12	62	INH_O2
HOME_I3	13	63	HOME_I4
OT+_I3	14	64	OT+_I4
OT-_I3	15	65	OT-_I4
INH_O3	16	66	INH_O4
HOME_I5	17	67	HOME_I6
OT+_I5	18	68	OT+_I6
OT-_I5	19	69	OT-_I6
INH_O5	20	70	INH_O6
XENC_INA1	21	71	XENC_INA2
-XENC_INA1	22	72	-XENC_INA2
XENC_INB1	23	73	XENC_INB2
-XENC_INB1	24	74	-XENC_INB2
XENC_INC1	25	75	XENC_INC2
-XENC_INC1	26	76	-XENC_INC2
XENC_INA3	27	77	XENC_INA4
-XENC_INA3	28	78	-XENC_INA4
XENC_INB3	29	79	XENC_INB4
-XENC_INB3	30	80	-XENC_INB4
XENC_INC3	31	81	XENC_INC4
-XENC_INC3	32	82	-XENC_INC4
XENC_INA5	33	83	XENC_INA6
XENC_INA5	34	84	-XENC_INA6
XENC_INB5	35	85	XENC_INB6
-XENC_INB5	36	86	-XENC_INB6
XENC_INC5	37	87	XENC_INC6
-XENC_INC5	38	88	-XENC_INC6
XDDA_OUTA1	39	89	XDDA_OUTA2
-XDDA_OUTA1	40	90	-XDDA_OUTA2
XDDA_OUTB1	41	91	XDDA_OUTB2
-XDDA_OUTB1	42	92	-XDDA_OUTB2
XDDA_OUTA3	43	93	XDDA_OUTA4
-XDDA_OUTA3	44	94	-XDDA_OUTA4
XDDA_OUTB3	45	95	XDDA_OUTB4
-XDDA_OUTB3	46	96	-XDDA_OUTB4
XDDA_OUTA5	47	97	XDDA_OUTA6
-XDDA_OUTA5	48	98	-XDDA_OUTA6
XDDA_OUTB5	49	99	XDDA_OUTB6
-XDDA_OUTB5	50	100	-XDDA_OUTB6



PCI-1784

4-axis Quadrature Encoder and Counter Card



Features

- Four 32-bit up/down counters
- Single ended or differential inputs
- Pulse/direction and up/down counter
- x1, x2, x4 counts for each encoder cycle
- Optically isolated up to 2,500 V_{DC}
- 4-stage digital filter with selectable sampling rate
- On-board 8-bit timer with wide range time-base selector
- Multiple interrupt sources for precision application
- 4 isolated digital input
- 4 isolated digital output
- BoardID™ switch

Introduction

The PCI-1784 is a 4-axis quadrature encoder and counter add-on card for PCI bus. The card includes four 32-bit quadruple AB phase encoder counters, 8-bit timer with multi range time-base selector and 4 isolated digital inputs as well as 4 isolated digital outputs. Its flexible interrupt sources are suitable for motor control and position monitoring.

Specifications

Encoder Input

- **Number of Axes** 4 (independent)
- **Resolution** 32-bit
- **Max. Quadrature Input** 1.0 MHz with Digital Filter
2.0 MHz without Digital Filter
- **Digital Filter** 4 stage
- **Drive Type** Single-ended or differential
- **Counter Mode** Quadrature, Up/Down, Count/Direction
- **Optical Isolation** 2,500 V_{DC}
- **Max. Input Pulse Freq.** x 1, x 2, x 4
- **Sample Clock Freq.** 8, 4, 2, or 1 MHz

Input Range

- **Single Ended Configuration:**

Input	Logic
CH- = 0V (GND) CH+ > 2.8V	High
CH- = 0V (GND) CH+ < 0.8V	Low

CH+ max. input voltage: +12V

- **Differential Configuration:**

Input	Logic
CH+ - CH- > 0.2V	High
-0.2V < CH+ - CH- < 0.2V	Unknown
CH+ - CH- < -0.2V	Low

CH+/CH- max. input voltage: ±12V

Timer

- **Resolution** 8-bit
- **Time Base** 50, 5 k, 500, 50, 5 Hz

Isolated Digital Input

- **Channels** 4
- **Optical Isolation** 2,500 V_{DC}
- **Opto-Isolator Rsp.Time** 25 ms
- **Over-Voltage Protection** 70 V_{DC}
- **Input Voltage**

V _{IH} (max.)	30 V _{DC}
V _{IH} (min.)	10 V _{DC}
V _{IL} (max.)	3 V _{DC}

Isolated Digital Output

- **Channels** 4
- **Optical Isolation** 2,500 V_{DC}
- **Response Time** 20 ms (max.)
- **Supply Voltage** TTL level
- **Sink/Source Current** 50 mA max./channel

Interrupt

- **Source** Counter overflow, Counter underflow, Index input, Timer, Digital input

Counter Latch

- **Source** Software, Timer, Index input, Digital input

General

- **I/O Connector Type** 37-pin D-sub female
- **Dimensions (L x H)** 175 x 100 mm (6.9" x 3.9")
- **Power Consumption**

Typical +5 V @ 200 mA	
Max.	+5 V @ 450 mA
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Relative Humidity** 5~95% RH non-condensing (refer to IEC 68-2-3)
- **Certifications** CE certified

Ordering Information

- **PCI-1784** 4-axis Quadrature Encoder and Counter Card
- **PCL-10137H-1** High-speed DB37 cable assembly, 1m
- **PCL-10137H-3** High-speed DB37 cable assembly, 3m
- **ADAM-3937** DB37 Wiring Terminal Board for DIN-rail mounting

Feature Details

Encoder Interface

Each channel includes a decoding circuit for incremental quadrature encoding. Inputs accept either single-ended or differential signals. Quadrature input works with or without an index, allowing linear or rotary encoder feedback.

Counters

The PCI-1784 has four independent 32-bit counters. The maximum quadrature input rate is 2 MHz, and the maximum input rate in counter mode is 8 MHz. You can individually configure each counter for quadrature decoding, pulse/direction counting or up/down counting.

Digital Input and Interrupts

The PCI-1784 provides four digital input channels. Each channel accepts digital input as an index input for a rotary encoder or as a home sensor input for a linear encoder. The card can generate an interrupt to the system based on a signal from its digital inputs, overflow/underflow and overcompare/undercompare of its counters, or on a programmed time interval. It can repeatedly generate interrupts at any time interval you specify, from 20 microseconds to 51 seconds. These interrupts let you precisely monitor the speed of a control system.

Flexible Digital Output function

The PCI-1784 provides four digital output channels. Each channel accepts digital output as a normal TTL output for a rotary encoder, or as an indicated output with pulse/level mode for a linear encoder. The PCI-1784 can generate an indicated output based on a signal from overcompare/undercompare of its counters. The pulse width of an indicated output depends on the counter clock or clear interrupt.

Special Shielded Cable for Noise Reduction

The PCL-10137H shielded cable is specially designed for the PCI-1784 for reducing noise. Its wires are all twisted pairs, and the input signals and output signals are separately shielded, providing minimal cross talk between signals and the best protection against EMI/EMC problems.

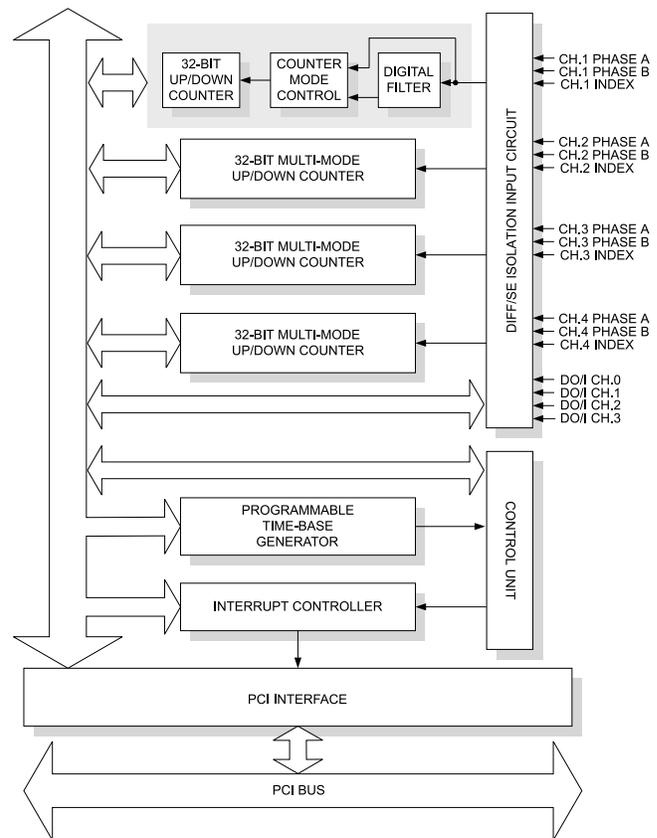
BoardID™ Switch

The PCI-1784 has a built-in DIP switch that helps define each card's unique ID when multiple PCI-1784 cards have been installed on the same PC chassis. The BoardID switch setting function is very useful when users build their system with multiple PCI-1784 cards. With correct BoardID switch settings, you can easily identify and access each card during hardware configuration and software programming.

Pin Assignments

EGND	1	20	CH0A-
CH0A+	2	21	CH0B-
CH0B+	3	22	CH0Z-
CH0Z+	4	23	CH1A-
CH1A+	5	24	CH1B-
CH1B+	6	25	CH1Z-
CH1Z+	7	26	CH2A-
CH2A+	8	27	CH2B-
CH2B+	9	28	CH2Z-
CH2Z+	10	29	CH3A-
CH3A+	11	30	CH3B-
CH3B+	12	30	CH3Z-
CH3Z+	13	32	EGND
ID1 COM	14	33	IDI1
ID10	15	34	IDI3
ID12	16	34	EGND
EGND	17	35	IDO1
IDO0	18	36	IDO3
IDO2	19	37	

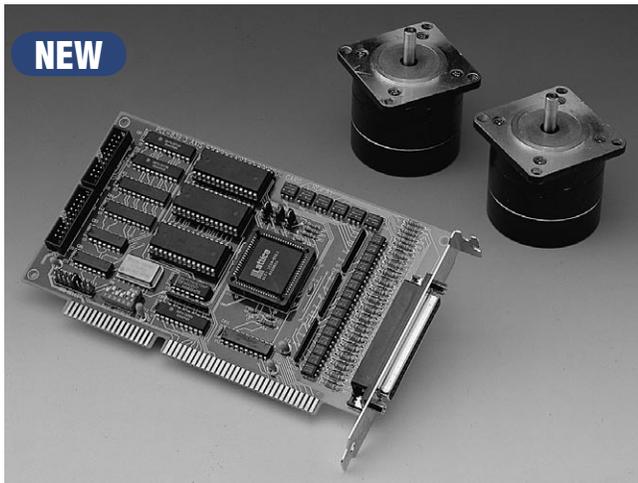
Block Diagram



1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
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PCL-839+

3-axis Stepping Motor Control Card



CE

Features

- Independent, simultaneous control of three stepping motors
- Optically-isolated outputs
- Five isolated digital inputs per axis for limit switches
- Half-size PC add-on card
- Up to 250 kpps step rate
- 16 DI and 16 DO

Introduction

The PCL-839+ three axis intelligent stepping motor control card turns your IBM-compatible PC into a 3-axis motion-control station. The card's one PCD-4541 intelligent controller chips can execute a variety of motion-control commands. For advanced applications, we supply function libraries which you can link to your C program.

Programming the PCL-839+

You can control each axis directly through the card's I/O registers, but use of the card's high-level interpreter is recommended. This interpreter reads high-level commands from a text file to perform specific tasks. We also supply function libraries which you can call from your C program. The libraries come with 'Turbo C' source code which you can recompile if you want to access the libraries from other C compilers.

Specifications

- **Axes** 3, independent
 - **Max. Step Count** 0-16,777,215
 - **Max. Step Rate** 200 kpps
 - **Acceleration/Deceleration** Automatic trapezoidal, ramping, programmable start run and sampling rate
 - **Output Pulse Signal** Two pulse (CW/CCW) mode or one pulse (pulse, direction) mode. Optically coupled with 10 K pull-up resistor
 - **Output Driving Capability** 20 mA @ 0.4 V (sink)
 - **Output Polarity** Positive/negative, programmable
 - **Limit Switches** Five per channel (home, forward/reverse end limit, forward/reverse high speed limit)
- DI/O and Interrupt**
- **DI/O** 16 digital inputs and 16 digital outputs, TTL compatible
 - **Interrupt** IRQ 2, 4, 5, 7, 11, 12 or 15 for limit switches, jumper selectable

General

- **I/O Addresses** 16
- **Power Consumption** 5 V @ 390 mA max.
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- **Connectors** DB37 for limit switches and pulse output; 20-pin flat cable for general DIO
- **Dimensions (L x H)** 185 x 100 mm (7.3" x 3.9")

Ordering Information

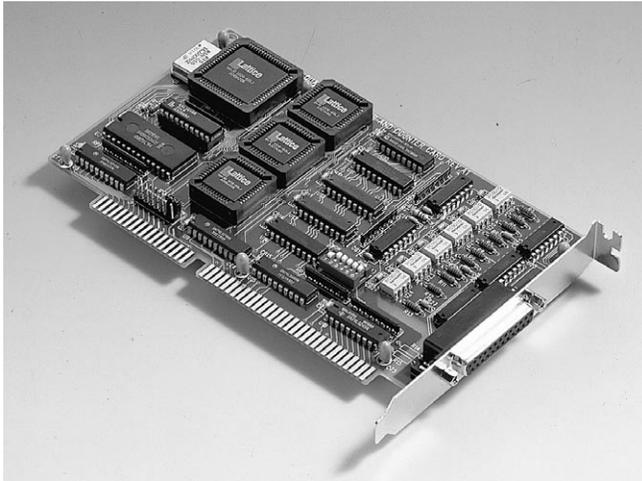
- **PCL-839+** Intelligent 3-axis stepping motor control card, user's manual and driver CD-ROM (cable not included)
- **PCL-10137-1** DB37 cable assembly, 1 m
- **PCL-10137-2** DB37 cable assembly, 2 m
- **PCL-10137-3** DB37 cable assembly, 3 m
- **ADAM-3937** DB37 wiring terminal for DIN-rail mounting

Applications

- X-Y table control
- Rotary machine control
- Robotics control
- Precision position control using stepping motors

PCL-833

3-axis Quadrature Encoder and Counter Card



CE

Features

- 1.0 MHz max. quadrature input rate
- 3 24-bit counters (can cascade up to 48 bits)
- Optically isolated up to 2,500 V_{RMS}
- 4-stage digital filter
- 2.4 MHz max. input pulse rate
- Pulse/direction and up/down counting
- Digital input with interrupt for each axis
- Programmable time-interval interrupt
- Half-size AT bus card

Introduction

The PCL-833 is a 3-axis quadrature encoder and counter add-on card for the IBM PC/AT and compatibles (ISA bus). This card lets your PC perform position monitoring for motion control systems.

Encoder Interface

Each input includes a decoding circuit for incremental quadrature encoding. Inputs accept either single-ended or differential signals. Quadrature input works with or without an index, allowing linear or rotary encoder feedback.

Counters

The PCL-833 has three independent 24-bit counters. The maximum quadrature input rate is 1.0 MHz, and the maximum input rate in counter mode is 2.4 MHz. You can individually configure each counter for quadrature decoding, pulse/direction counting or up/down counting.

Digital Input and Interrupts

The PCL-833 provides five digital input channels. Each channel accepts digital input as an index input for a rotary encoder or as a home sensor input for a linear encoder.

The card can generate an interrupt to the system based on a signal from its digital inputs, overflow/underflow of its counters, or on a programmed time interval. It can repeatedly generate interrupts at any time interval you specify, from 0.1 msec. to 255 sec. These interrupts let you precisely monitor the speed of a control system.

Specifications

Encoder Input

- **Axes** 3, independent
- **Max. Quadrature Input Frequency** 1.0 MHz
- **Max. Input Pulse Frequency** 2.4 MHz
- **Counts per Encoder Cycle** x1, x2, x4 (S/W selectable)
- **Encoder Type** Single-ended or differential
- **Counter Size** 24 bits, easily daisychains for up to 48 bits
- **Counter Modes** quadrature, up/down, pulse/direction (S/W selectable)
- **Digital Filter** 4 stage
- **Sample Clock Frequency** 8, 4 or 2 MHz (S/W selectable)
- **Input Isolation** 2,500 V_{RMS} using optical isolators

Digital Input

- **Number of Channels** Five digital, with interrupt
- **Input Isolation** 2,500 V_{RMS} using optical isolators

Programmable Interrupt Controller

1 Hz, 10 Hz, 1 KHz or 10 KHz time base (S/W selected) with a programmable multiplier of 1, 2, 3, 4, ..., 255

General

- **Power Consumption** +5 V @ 700 mA (typical)
+12 V @ 15 mA (typical)
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Operating Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- **Connector** DB25 female connector
- **Dimensions (L x H)** 185 x 100 mm (7.3" x 3.9")

Ordering Information

- **PCL-833** 3-axis quadrature encoder and counter card, user's manual and driver CD-ROM (cable not included)
- **ADAM-3925** DB25 wiring terminal for DIN-rail mounting
- **PCL-10125-1** DB25 cable assembly, 1m
- **PCL-10125-3** DB25 cable assembly, 3m

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Software

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IPPC

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TPC

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FPM

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ADAM-3000

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Motion Control

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ICOM

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ADAM-6000

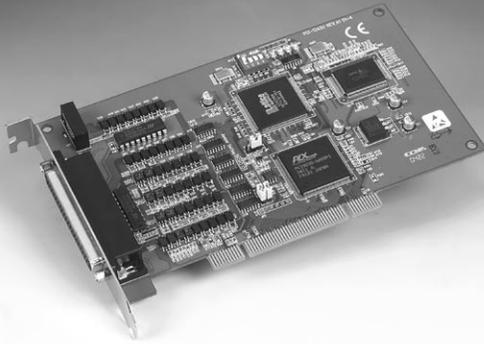
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ADAM-8000

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BAS

PCI-1243U

4-Axis Low Cost Stepping Motor Control Card

NEW



Features

- 4 axis stepping motor control
- PCI universal bus
- Up to 400 k pulse output rate
- T-curve acc/dec
- Pulse/Dir and CW/CCW pulse output mode
- Up 24-bit step count
- Opto-Isolated Digital input and output
- Up to 1500 Vrms system isolation

Introduction

PCI-1243U is a 4-axis intelligent stepping motor control card with PCI interface. The card's PCD-4541 motion controller can execute a variety of motion-control commands. For advanced applications, we supply a DLL so that programs can be created for the Microsoft® Windows® environment.

PCI-1243U is a cost-effective solution for PCI based motion control. Each axis can be controlled directly through the card's I/O registers. However, use of the card's high-level DLL driver is recommended. With the DLL driver, you can easily link to VC++®, Visual Basic® or BCB.

Specifications

- **Axes** 4, independent
- **Max. Step Count** 16,777,215
- **Max. Step Rate** 400 kpps
- **Acceleration Mode** T or S-curve acceleration/deceleration
- **Pulse Output Mode** Pulse/direct and CW/CCW
- **I/O for each Axis** ORG, +SD, -SD, +Lmt, -Lmt
- **General I/O** 8 ch Opto-isolated digital output and input
- **Input Range** 5 V ~ 30 V
- **Isolated Voltage** 1500 V_{DC}
- **Max. Sink Current** 200 mA

General

- **Power Consumption** +5 V @ 340 mA; +5 V @ 500 mA (max)
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Operating Humidity** 5 ~ 95% non-condensing
- **Storage Temperature** -20 ~ 80° C

Ordering Information

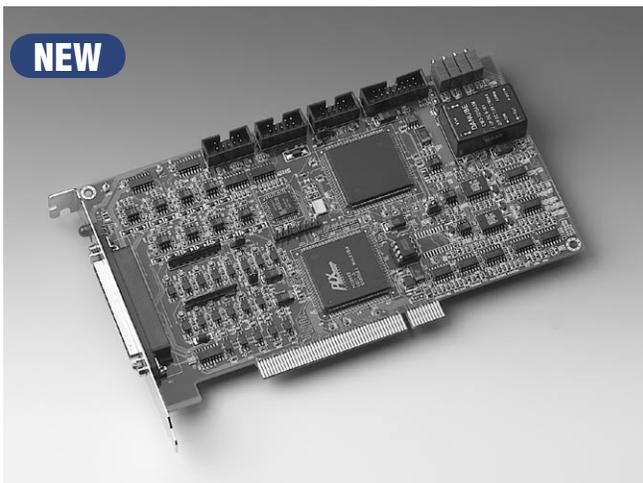
- **PCI-1243** 4-Axis Stepping Motor Control card
- **PCL-10162-1** DB62 Cable Assembly, 1M
- **PCL-10162-3** DB62 Cable Assembly, 3M
- **ADAM-3962** DB62 wiring terminal with DIN-rail mounting

Pin Assignments

EXT_COM	EMG	1	22		
NC	ADIR	2	23	43	Tri_STA
EXT_GND	AORG	3	24	44	AOUT
AORG	ALIM-	4	25	45	ALIM+
ALCOM	ASD-	5	26	46	ASD+
EXT_GND	BDIR	6	27	47	BOUT
BORG	BLIM-	7	28	48	BLIM+
BLCOM	BSD-	8	29	49	BSD+
EXT_GND	CDIR	9	30	50	COUT
CORG	CLIM-	10	31	51	CLIM+
CLCOM	CSD-	11	32	52	CSD+
EXT_GND	DDIR	12	33	53	DOUT
DORG	DLIM-	13	34	54	DLIM+
DLCOM	DSD-	14	35	55	DSD+
IDO2	IDO0	15	36	56	IDO1
IDO5	IDO3	16	37	57	IDO4
IDO_COM	IDO6	17	38	58	IDO7
NC	EXT_GND	18	39	59	EXT_GND
IDI2	IDI0	19	40	60	IDI1
IDI5	IDI3	20	41	61	IDI4
IDI_COM	IDI6	21	42	62	IDI7
	NC				

PCI-1241

4-Axis Voltage-type Servo Motor Control Card



NEW

FCC CE

Features

- PCI Bus interface
- 4-axis servo positioning control
- 5-channel encoder input
- 4 channel 16-bit D/A Converters
- 13 dedicated input and 5 dedicated output
- 6 channel 12-bit A/D converter (Optional)
- 256 remote serial input/ output interfaces

Introduction

PCI-1241 uses an ASIC for 4-axis servo positioning and synchronized control with a DDA (Digital Differential Analyzer) to evenly move each axis. Closed-Loop control is implemented with P control, and -10 to +10 V signals are used for outputs to the speed type servo motor driver. It can be applied to multi-axis precision servo control, and it can also read back motor encoder values via its encoder input port to allow stepping motor control. In the control of each axis, there is a set of sensor input points, including: home points, plus limit points and minus limit points. Furthermore, there are inhibit signal output points, position ready output points and an emergency stop input point. It can be expanded up to 128 points input and 128 points output. Additionally, the board reserves a set of 6-channel A/D conversion.

Specifications

Hardware

- **Size** 185 x 109 mm
- **System Clock** 40 MHz
- **Bus Interface** PCI

Motion

- **Positioning Axes** 4
- **Max. DDA Commands** 210-15 pulses
- **DDA Cycle** 25 μ s ~3350ms Programmable
- **Velocity Command Range** +/- 10V
- **Pulse Output Format** Pulse/DirectionCW/CC WA/B Phase
- **Error Counter (For Output Pulse)** 16 bits
- **Remote IO** 128 IN/128 OUT Maximum
- **D/A Converter** 4 channels, 16-bit resolution
- **A/D Converter** 6 channels, 12-bit resolution with differential inputs (Optional)
- **Encoder Input** 5 axes
- **Interface** Differential Input with Photo-Isolation
- **Input Format** A/B/Z Phase Pulse /DirectionCW/CCW
- **Decoder** x0, x1, x2, x4, Software programmable in A/B/Z phase input
- **Encoder Counter** 32 bits
- **Latch** 15 trigger signals for each axis

Local IO

- **Home Sensor Signal Input** 4
- **Positive Over Travel** 4

Signal Input

- **Negative Over Travel Signal Inputs** 4
- **Inhibit Signal Outputs** 4
- **Emergency Stop Inputs** 1
- **Position Ready Outputs** 1

Software Support

- **Device driver for DOS, Windows® 95/98/2000/NT/XP**
- **Motion control library MCCL for DOS, Windows® 95/98/2000/NT/XP**

Ordering Information

- **PCI-1241** 4-axis Voltage-type Servo Motor Control Card
- **PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 and 2m
- **ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail mounting
- **ADAM-3941** Wiring terminal for PCI-1241/1242 with LEDs
- **PCLD-8241** 64 DI / 64 DO Remote IO Board

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Software

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IPPC

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TPC

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FPM

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ATM & AWS

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DA&C

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cPCI

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ADAM-3000

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Motion Control

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ICOM

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eConnectivity

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ADAM-4000

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ADAM-5000

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ADAM-6000

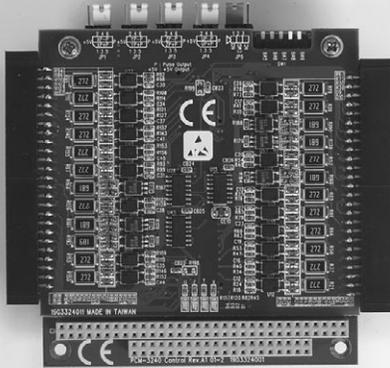
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ADAM-8000

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BAS

PCM-3240

4-Axis Stepping/Pulse-type Servo Motor Control Card

NEW



Features

- PC/104 interface
- Independent 4-axis motion control
- Hand wheel and jog function
- 2/3-axis linear interpolation function
- 2-axis circular interpolation function
- Continuous interpolation function
- Programmable T/S-curve acceleration/deceleration rate
- Up to 4 MPPS pulse output for each axis
- Two pulse output types: Up/Down or Pulse/Direction
- Up to 1 MHz encoder input for each axis
- Two encoder pulse input types: A/B phase or Up/Down
- Constant speed control
- Position management and software limit switch function
- BoardID™ switch

Introduction

PCM-3240 is a 4-axis stepping/pulse-type servo motor control card designed for general-purpose motion applications. PCM-3240 is a high-speed 4-axis motion control card for the PC/104 bus that simplifies stepping and pulse-type servo motor control, giving you added performance from your motors. The card's intelligent NOVA® MCX314-motion ASIC builds in a variety of motion control functions, such as 2/3-axis linear interpolation, 2-axis circular interpolation, T/S-curve acceleration/deceleration rate and more. In addition, the PCM-3240 performs these motion control functions without processor loading during driving. For advanced applications, we supply Windows® DLL drivers and user-friendly examples to decrease your programming load. Moreover, with a free bundled PCM-3240 motion utility, you can easily complete configuration and diagnosis.

Specifications

Motion Axes

Number of Axes	4 Axes	
2/3-axis Linear Interpolation	Range	+/- 2,147,483,646 for each axis
	Speed	1 PPS ~ 4 MPPS
	Precision	± 0.5 LSB
2-axis Circular Interpolation	Range	+/- 2,147,483,646 for each axis
	Speed	1 PPS ~ 4 MPPS
	Precision	± 1 LSB
Continuous Interpolation	Speed	1 PPS ~ 2 MPPS
Drive Output Pulses	Range	1 PPS ~ 4 MPPS
	Precision	1 LSB
	Change of Acceleration for S Curve	954 ~ 31.25 x 10 ⁹ PPS/sec ²
	Acceleration/Deceleration	125 ~ 500 x 10 ⁹ PPS/sec ²
	Initial Velocity	1 PPS ~ 4 MPPS
	Drive Speed	1 PPS ~ 4 MPPS (Can be changed during driving)
	Number of Output Pulses	0 ~ 4294967295 (fixed pulse driving)
	Pulse Output Type	Pulse/Direction (1-pulse, 1-direction type) or Up/Down (2-pulse type)
	Output Signal Modes	Differential Line driving output/Single-ended output
	Speed Curve	T/S-curve Acceleration/Deceleration
Input Pulse for Encoder Interface	Encoder Pulse Input Type	Quadrature (A/B phase or Up/Down)
	Counts per Encoder Cycle	x1, x2, x4 (A/B phase only)
	Protection	2,500 V _{DC} isolation
Position Counter (read/write at any time)	Range of Command Position Counter (for output pulse)	-2,147,438,648 ~ +2,147,483,647
	Range of Actual Position Counter (for output pulse)	-2,147,438,648 ~ +2,147,483,647
Comparison Register	COMP+ Register Range	-2,147,438,648 ~ +2,147,483,647
	COMP- Register Range	-2,147,438,648 ~ +2,147,483,647
Can be used for software over traveling limit		

Interrupt Functions (excluding Interpolation)	Interrupt CONDITION (All conditions could be enable individually)	Position Counter ≥ COMP-
		Position Counter < COMP-
		Position Counter ≥ COMP+ Position Counter < COMP+
External Signals Driving	Input Signal*	nEXOP+ and nEXOP
	Max. Input Frequency	100 Hz
	Driving Mode	Fixed pulse driving or continuous driving Supports Hand wheel/Jog
External Deceleration/Instantaneous Stop Signal	Protection	2,500 V _{DC} Photo coupler isolation; accept mechanical connection point.
	Input Signal*	nINI ~ 3
Input Signal for Servo Motor Drives	Max. Input Frequency	4 kHz
	Protection	2,500 V _{DC} Photo coupler isolation and RC filtering
General Purpose Output Signal	Input Signal*	nALArm (servo alarm) nINPOS (position command completed)
Over Traveling Limit Switch Input	Output Signal*	nOUT4 ~ 7
	Input Signal*	nLMT+ and nLMT-
Emergency Stop	Protection	2,500 V _{DC} Photo coupler isolation and RC filtering; accept mechanical connection point.
	Input Signal*	EMG- one emergency stop input for PCI-1240
Emergency Stop	Protection	2,500 V _{DC} Photo coupler isolation and RC filtering; accept mechanical connection point.

General

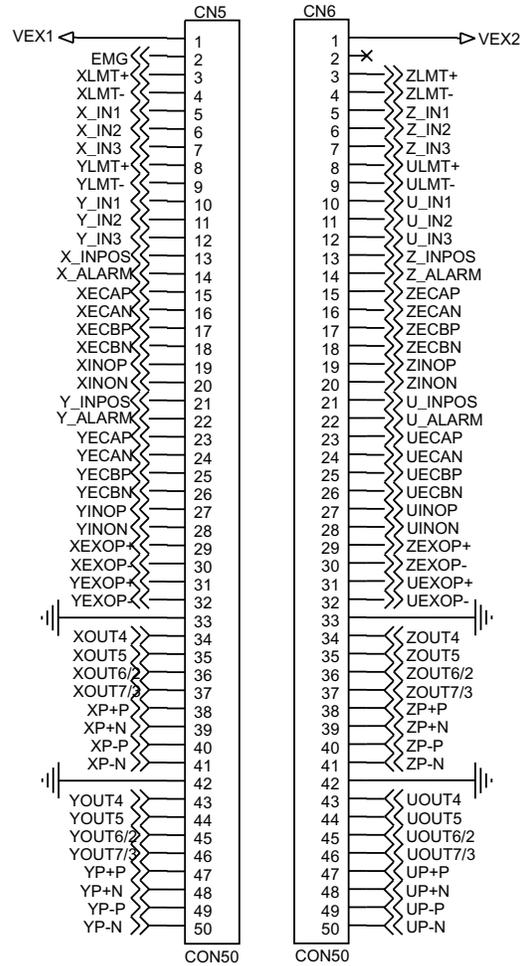
I/O Connector Type	Dual IDC 50-pin male	
Dimensions	96 x 91 mm	
Power Consumption	Typical	+5 V @ 850 mA
	Max.	+5 V @ 1 A
External Power Voltage	DC +12 ~ 24 V	
Temperature	Operating	0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
	Storage	-20 ~ 85° C (-4 ~ 185° F)
Relative Humidity	5 ~ 95% RH non-condensing (refer to IEC 68-2-3)	
Certifications	CE certified	

Note: *: "n" represents the axis (X, Y, Z or U) that is concerned.

Ordering Information

- **PCM-3240** 4-axis stepping/pulse-type servo motor control card
- **PCL-10150-1.2** 50-pin flat cable , 1.2 m
- **ADAM-3950** 50-pin flat cable wiring terminal for DIN-rail mounting
- **PCL-12250-1** Two 50-pin flat cable to 100-pin SCSI connector, 1 m
- **ADAM-3952-J2S** 4-axis wiring terminal for Mitsubishi® J2S series driver
- **ADAM-39100** SCSI-100 wiring terminal for DIN-rail mounting

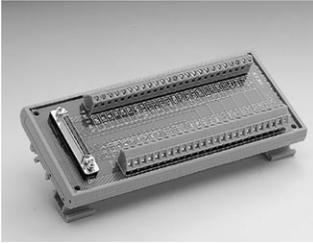
Pin Assignments



1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-3900 Series

Wiring Terminals for
DIN-Rail Mounting



ADAM-3952

PCI-1240 50-Pin SCSI-II Wiring
Terminal for DIN-rail Mounting

Features

- DIN-rail mounting wiring terminal for PCI-1240 applications
- Case dimensions (W x L x H): 77.5 x 179.5 x 41.5mm (3.1" x 7.1" x 1.6")
- SCSI 50-pin connector
To be used with PCI-1240U



NEW

ADAM-3952/J2S

PCI-1240 Wiring terminal for
Mitsubishi® MR-J2S

Features

- DIN-rail mounting wiring terminal for PCI-1240 connecting with Mitsubishi® MR-J2S servo motor driver
- Case dimensions (W x L x H): 121 x 202 x 45mm (4.76" x 7.95" x 1.77")
- One SCSI-100-pin connector to connect with PCI-1240/PCI-1240UU
- Eight SCSI 20-pin connector to connect with Mitsubishi motor driver
- Optional cable PCL-101100M-1 and PCL-10120M-2
To be used with PCI-1240U/PCM-3240



NEW

ADAM-3968M

PCI-1247 Wiring terminal

Features

- General purpose wiring terminal for PCI-1247 applications with DIN-rail mounting
- Case dimensions (W x L x H): 72 x 124 x 53 mm (2.83" x 4.88" x 2.09")
- One SCSI-68-pin connector to connect with PCI-1247
- Optional cable PCL-10168M-2



NEW

ADAM-3968M-PMA

PCI-1247 Wiring terminal for
Panasonic® Minas A Series

Features

- PCI-1247 wiring terminal for Panasonic® Minas A series driver with DIN-rail mounting
- Case dimensions (W x L x H): 72 x 124 x 53 mm (2.83" x 4.88" x 2.09")
- One SCSI-68-pin connector to connect with PCI-1247
- Two SCSI 50-pin connector to connect with Panasonic motor driver
- Optional cable PCL-10168M-2 and PCL-10150M-2



NEW

ADAM-3968M-J2S

PCI-1247 wiring terminal for
Mitsubishi MR-J2S series
driver

Features

- PCI-1247 wiring terminal for Mitsubishi® MR-J2S series driver with DIN-rail mounting
- Case dimensions (W x L x H): 72 x 124 x 53 mm (2.83" x 4.88" x 2.09")
- One SCSI-68-pin connector to connect with PCI-1247
- Four SCSI 20-pin connector to connect with Mitsubishi motor driver
- Optional cable PCL-10168M-2 and PCL-10120M-2



NEW

ADAM-3968M-YS2

PCI-1247 wiring terminal for
Yaskawa Sigma-II series
driver

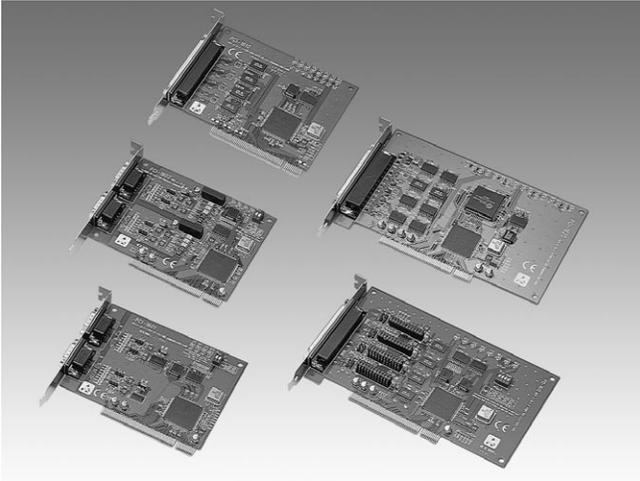
Features

- PCI-1247 wiring terminal for Yaskawa® Sigma-II series driver with DIN-rail mounting
- Case dimensions (W x L x H): 72 x 124 x 53 mm (2.83" x 4.88" x 2.09")
- One SCSI-68-pin connector to connect with PCI-1247
- Two SCSI 50-pin connector to connect with Yaskawa motor driver
- Optional cable PCL-10168M-2 and PCL-10150M-2

Industrial Communication

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AD-CIF50-COM	CANopen Master PCI Card	10-29
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AD-CIF104-COS	CANopen Slave PC/104 Module	10-29
AD-CIF104P-COM	CANopen Master PC/104+ Module	10-29
SyCon	Fieldbus System Configurator	10-30

Universal PCI/PCI COMM Card Series



Features

- PCI bus specification 2.1/2.2 compliant
- Speeds up to 921.6 kbps
- UARTs with 128-byte standard
- I/O address automatically assigned by PCI Plug & Play
- OS supported: Windows® 98/ME/2000/XP, Linux® (by product)
- Optional surge protection up to 3,000 V_{DC}
- Optional isolation protection for RS-422/485 up to 3,000 V_{DC}
- Interrupt status register for increased performance
- Space reserved for termination resistors
- Automatic RS-485 data flow control
- Communication performance analysis tools

Introduction

The PCI Local Bus is a high-performance bus that provides a processor-independent data path between the CPU and high-speed peripherals. PCI is a robust interconnection mechanism designed specifically to accommodate multiple high performance peripherals for serial communication, SCSI, LAN, etc.

Advantech serial communication cards leverages the "Plug & Play" capability defined in the PCI 2.1/2.2 bus specification, and are available with up to 8 ports. The board requires only one PCI slot within the personal computer and provides independent serial channels. All channels are addressed in a continuous 32 byte I/O block for simplified software access. And, all channels may also share one PCI interrupt. An interrupt status register is available for determining the interrupt source.

The Advantech PCI communication cards come with standard 16PCI954/16PCI952 UARTs containing 128 byte FIFOs which are available as an option. These upgraded FIFOs greatly reduce CPU overhead and are an ideal choice for demanding multi-tasking environments.

The Advantech PCI communication cards are available with optical isolation up to 3000 V_{DC}. This protects your PC and equipment against damages from ground loops, which increases system reliability in harsh environments. To further increase reliability, the boards offers surge protection; protecting your system from abrupt high voltage surges (up to 3000 V_{DC}), such as those caused by lightning during thunderstorms.

16PCI954/16PCI952 UART

The 16PCI954/16PCI952 is a high performance Quad UART with an on-chip PCI interface. Targeted at PCI-based serial and parallel expansion cards, PCI-architecture computer systems and embedded applications, the 16PCI954/16PCI952 integrates a PCI bus interface together with four 16C950 high performance UARTs, a bi-directional parallel port and a local bus bridge function. This single-chip solution replaces five or more integrated circuits used in today's products, giving performance, cost and size advantages to new designs.

Quick Troubleshooting

Advantech provides easy-to-use analysis tools and utilities that allows you to monitor or log data between two communicating devices, and help you acquire the data within a friendly user interface. Diagnostic functions make the installation process trouble free.

An RS-485 Network with Automatic Data Flow Control Using RS-232 Software

The RS-485 mode automatically senses the direction of incoming data and switches its transmission direction accordingly. The feature makes your network look and act just like an RS-232 network. Application software written for half duplex RS-232 can be used without modification. Moreover, you can simply and quickly build an RS-485 network with just two wires.

Industrial Communication Cards Selection Guide

Quick Appendix of Advantech Industrial Communication Cards

Bus	Model Name	Port	Communication Interface				Protection		Cable Connector Type	Page	
Universal Low Profile PCI	PCI-1602UP	2			V	V		2500 V _{DC}	2500 V _{DC}	DB9 Male	10-11
	PCI-1604UP	2			V			2500 V _{DC}		DB9 Male	10-11
	PCI-1610UP	4			V			2500 V _{DC}		DB9 Male	10-12
PCI & Universal PCI	PCI-1601A	2			V	V				-	10-4
	PCI-1601B	2			V	V		2500 V _{DC}		-	10-4
	PCI-1602A	2			V	V			3000 V _{DC}	-	10-4
	PCI-1602B	2			V	V		2500 V _{DC}	3000 V _{DC}	-	10-4
	PCI-1603	2	V	V					3000 V _{DC}	-	10-5
	PCI-1680U	2					V		2500 V _{DC}	-	10-26
	PCI-1610A	4			V					DB25 Male	10-6
	PCI-1610A/9	4			V					DB9 Male	10-6
	PCI-1610B	4			V			3000 V _{DC}		DB25 Male	10-6
	PCI-1610B/9	4			V			3000 V _{DC}		DB9 Male	10-6
	PCI-1610CU	4			V			2500 V _{DC}	2500 V _{DC}	D25 Male	10-6
	PCI-1610CU/9	4			V			2500 V _{DC}	2500 V _{DC}	DB9 Male	10-6
	PCI-1611U	4			V	V		2500 V _{DC}	2000 V _{DC}	DB25 Male	10-7
	PCI-1611U/9	4			V	V		2500 V _{DC}	2000 V _{DC}	DB9 Male	10-7
	PCI-1612A	4			V	V				DB25 Male	10-8
	PCI-1612A/9	4			V	V				DB9 Male	10-8
	PCI-1612B	4			V	V		2500 V _{DC}		DB25 Male	10-8
	PCI-1612B/9	4			V	V		2500 V _{DC}		DB9 Male	10-8
	PCI-1612U	4			V	V		2500 V _{DC}		DB25 Male	10-8
	PCI-1612U/9	4			V	V		2500 V _{DC}		DB9 Male	10-8
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	PCI-1620A	8			V					Optional	10-9
	PCI-1620B	8			V			3000 V _{DC}		Optional	10-9
	PCI-1620U	8			V			2500 V _{DC}		Optional	10-9
	PCI-1622CU	8			V	V		2500 V _{DC}	2500 V _{DC}	DB9 Male	10-10
PCI-1625U *	8			V	V				Optional	10-22	
ISA	PCL-740	1	V	V	V	V				-	10-13
	PCL-741	2	V	V				2500 V _{DC}		-	10-13
	PCL-743B	2			V	V				-	10-14
	PCL-743S	2			V	V		2500 V _{DC}		-	10-14
	PCL-745B	2			V	V			3000 V _{DC}	-	10-14
	PCL-745S	2			V	V		2500 V _{DC}	3000 V _{DC}	-	10-14
	PCL-841	2					V		1000 V _{DC}	-	10-27
	PCL-746+	4			V	V				DB25 Male	10-15
	PCL-746+/9	4			V	V				DB9 Male	10-15
	PCL-846A	4			V	V			1000 V _{DC}	DB9 Male	10-16
	PCL-846B	4			V	V		2000 V _{DC}	1000 V _{DC}	DB9 Male	10-16
	PCL-849A	4			V					DB25 Male	10-17
	PCL-849A/9	4			V					DB9 Male	10-17
	PCL-849B	4			V			3000 V _{DC}		DB25 Male	10-17
	PCL-849B/9	4			V			3000 V _{DC}		DB9 Male	10-17
	PCL-849+	4			V			3000 V _{DC}		DB25 Male	10-17
	PCL-849+/9	4			V			3000 V _{DC}		DB9 Male	10-17
	PCL-849L	4			V					DB25 Male	10-17
	PCL-849L/9	4			V					DB9 Male	10-17
	PCL-844+*	8			V	V				Optional	10-23
	PCL-858A	8			V					Optional	10-18
	PCL-858B	8			V			3000 V _{DC}		Optional	10-18
PC/104	PCM-3610	2			V	V			1000 V _{DC}	-	10-19
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	PCM-3680	2					V		1000 V _{DC}	-	10-27
	PCM-3614	4			V	V		1000 V _{DC}		-	10-19
	PCM-3640/3641	4			V					-	10-20
	PCM-3618	8			V	V		1000 V _{DC}		-	10-20

Form Factor	Fieldbus Communication Interface Support				Type		Model Name	Page
PCI	Yes	Yes			Yes		AD-CIF50-PB	10-29
			Yes		Yes		AD-CIF50-DNM	10-30
				Yes	Yes		AD-CIF50-COM	10-31
PC/104	Yes	Yes			Yes		AD-CIF104-PB	10-29
	Yes				Yes		AD-CIF104-DPS	10-29
			Yes		Yes		AD-CIF104-DNM	10-30
			Yes		Yes		AD-CIF104-DNS	10-30
				Yes	Yes		AD-CIF104-COM	10-31
				Yes	Yes	Yes	AD-CIF104-COS	10-31
PC/104 Plus	Yes	Yes			Yes		AD-CIF104P-PB	10-29
			Yes		Yes		AD-CIF104P-DNM	10-30
				Yes	Yes		AD-CIF104P-COM	10-31

Accessories (Optional)

Cable Connectors	Cable Connector Type		Model Name
	DB25 Female		
	DB25 Male		OPT8B
	DB25 Male		OPT8C
	DB9 Male		OPT8H
	DB25 Female		OPT8E+

* Intelligent Communication Card

1

Software

2

IPPC

3

TPC

4

FPM

5

ATM & AWS

6

DA&C

7

cPCI

8

ADAM-3000

9

Motion Control

10

ICOM

11

eConnectivity

12

UNO

13

ADAM-4000

14

ADAM-5000

15

ADAM-6000

16

ADAM-8000

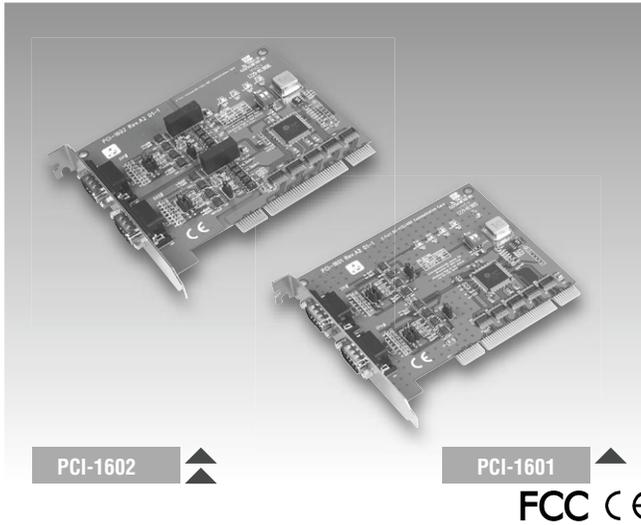
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BAS

PCI-1601 PCI-1602

2-port RS-422/485 PCI Communication Card

2-port RS-422/485 PCI Communication Card, w/Isolation Protection



Features

- PCI bus specification 2.1 compliant
- Speeds up to 921.6 kbps
- 2-port RS-422/485 interface
- I/O address automatically assigned by PCI Plug & Play
- OS support: Windows® 98/ME/2000/XP
- Optional surge protection
- Optional isolation protection for RS-422/485
- Interrupt status register for increased performance
- Space reserved for termination resistors
- Automatic RS-485 data flow control
- Powerful and easy-to use utility (ICOM Tools)

Introduction

PCI-1601 and PCI-1602 are 2 port RS-422/485 PCI communication cards that are compatible with the PCI 2.1 bus specification. Both cards provide two optional isolated and surge protected RS-422/485 ports, and comes with features such as: high transmission speed of 921.6 kbps, optional surge & isolation protection, windows utility software and more. The cards also come with high-performance 16PC1952 UART with a 128-byte FIFO to reduce CPU load. This makes the PCI-1601 and PCI-1602 especially suitable for multitasking environments.

PCI-1602 is available with 3000 V_{DC} optical isolation to protect your PC and equipment against damages from ground loops in harsh environments. To further increase reliability, both boards has surge protection technology, protecting your system from abrupt high voltages up to 2500 V_{DC} (PCI-1601B and PCI-1602B). Besides, Advantech also provides a convenient utility program called ICOM Tools, to help test the PCI card performance by analyzing the port status. Controlled by easy-to-use menu commands and toolbar buttons, ICOM Tools acts as a PC-based data scope that lets you set a trigger condition, capture the communications data and monitors the signal status. In addition, ICOM Tools is applicable to all series of Advantech ICOM cards.

Specifications

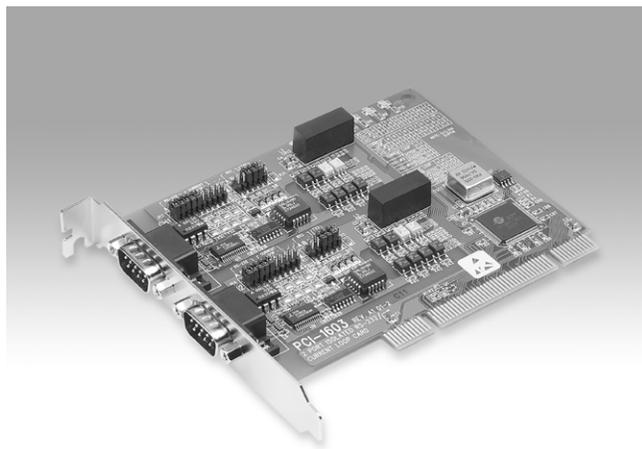
- **Bus Interface** PCI bus spec. 2.1 compliant
 - **All ports use the same IRQ assigned by PCI Plug & Play**
 - **Data Bits** 5, 6, 7, 8
 - **Stop Bits** 1, 1.5, 2
 - **Parity** None, even, odd
 - **Communication Controller** 16PC1952
 - **Speed** 50 bps ~ 921.6 kbps
 - **Data Signals** TxD, RxD, RTS, CTS (RS-422/485)
 - **Surge Protection** 2500 V_{DC} (PCI-1601B/PCI-1602B only)
 - **ESD Protection** 16 kV
 - **Isolation Protection** 3000 V_{DC} (PCI-1602A/B only)
 - **Power Consumption**
- | | Typical | Max |
|----------|---------------|---------------|
| PCI-1601 | 220 mA (+5 V) | 270 mA (+5 V) |
| PCI-1602 | 250 mA (+5 V) | 300 mA (+5 V) |
- **Dimensions** 123 x 92 mm (4.8" x 3.6")
 - **Operating Temperature** 0 ~ 65° C (refer to IEC 68-2-1, 2) (32 ~ 149° F)
 - **Operating Humidity** 5 ~ 95 % Relative Humidity, non-condensing (refer to IEC 68-2-3)
 - **Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)

Ordering Information

- **PCI-1601A** 2-port RS-422/485 PCI COMM Card
- **PCI-1601B** 2-port RS-422/485 PCI COMM Card, w/surge protection
- **PCI-1602A** 2-port RS-422/485 PCI COMM Card, w/isolation protection
- **PCI-1602B** 2-port RS-422/485 PCI COMM Card, w/isolation and surge protection

PCI-1603

2-port Isolated RS-232/Current-loop PCI Communication Card



FCC CE

Features

- Two independent RS-232 or Current-loop serial ports
- Each port can be individually configured to RS-232 or current-loop
- 16PCI952 FIFO UART (128-byte FIFO)
- PCI bus specification 2.2 compliant
- Speeds:
RS-232: 50 bps ~ 230.4 kbps
Current-loop: 57.6 kbps
- I/O address automatically assigned by PCI Plug & Play
- OS supported: Windows® 98/ME/2000/XP, Linux®
- Interrupt status register for increased performance
- Powerful and easy-to use utility (ICOM Tools)

Introduction

The PCI-1603 offers a versatile range of high speed interfacing options. You can switch its ports between the popular RS-232 or noise-resistant current-loop. The card utilizes 16PCI952 UARTs with 128-byte FIFO buffer for faster and more reliable communication, especially under multi-tasking environments such as Windows operating systems.

The PCI-1603 provides two isolated RS-232 or current-loop serial ports. You can configure each port individually to RS-232 or current-loop using on-board jumpers.

The card utilizes 16PCI952 UART that buffers data into packets before sending it to the bus. This drastically reduces CPU load and avoids data loss when the system is busy and cannot process an interrupt quickly. These FIFO buffers make the PCI-1603 especially suitable for high speed serial I/O under Windows.

Onboard optical isolators protect your PC and equipment against damage from ground loops, increasing system reliability in harsh environments.

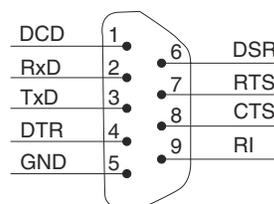
Specifications

- Bus Interface** PCI bus spec. 2.2 compliant
- PCI Interface** PCI Universal card
- All ports use the same IRQ assigned by PCI Plug & Play**
- Data Bits** 5, 6, 7, 8
- Stop Bits** 1, 1.5, 2
- Parity** None, even, odd
- Communication Controller** 16PCI952
- Speed** RS-232: 50 bps ~ 230.4 kbps
Current Loop: 50 bps ~57.6 kbps
- Data Signals** RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI
Current Loop: Tx+, Tx-, Rx+, Rx-
- Power Requirement** +5 V (250 ~ 300 mA)
- ESD Protection** 16 kV
- Isolation Protection** 3,000 V_{DC} for RS-232 and current-loop
- Dimensions** 123 x 92 mm (4.8" x 3.6")
- Operating Temperature** 0 ~ 65° C (refer to IEC 68-2-1, 2) (32 ~ 149° F)
- Operating Humidity** 5 ~ 95% Relative Humidity, non-condensing (refer to IEC 68-2-3)
- Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)

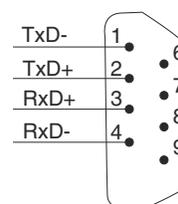
Current-loop Interface

- Signal Driver/receiver** 6N136
- Signals** TxD+, TxD-, RxD+, RxD-
- Current Value** 20 mA (Standard)
- Mode** Asynchronous, full duplex
- Baud-rate** 50 ~ 57600 bps
- Transmission Distance** 1000 m

Pin Assignments



RS-232



Current-loop

Ordering Information

- PCI-1603** 2-port Isolated RS-232/current-loop PCI Comm. Card

1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AWS

6
DA&C

7
cPCI

8
ADAM-3000

9
Motion Control

10
ICOM

11
eConnectivity

12
UNO

13
ADAM-4000

14
ADAM-5000

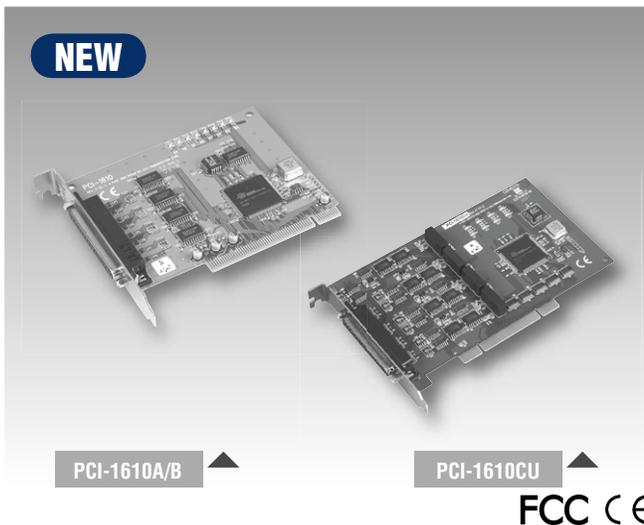
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ADAM-6000

16
ADAM-8000

17
BAS

PCI-1610A PCI-1610B PCI-1610CU

4-port RS-232 PCI Communication Card 4-port RS-232 PCI Communication Card, w/Surge Protection 4-port RS-232 Universal PCI Communication Card, w/Isolation & Surge Protection



Features

- PCI bus specification 2.1 (PCI-1610A/1610B), 2.2 (PCI-1610CU) compliant
- Speeds up to 921.6 kbps
- 4-port RS-232
- 16PCI954 UARTs with 128-byte FIFOs standard
- I/O address automatically assigned by PCI Plug & Play
- OS supported: Windows® 98/ME/2000/XP, Linux®
- Interrupt status register for increased performance
- Space reserved for termination resistors
- Powerful and easy to use Utility (ICOM Tools)
- Universal PCI (PCI-1610CU only)
- 2,500 V_{dc} Surge Protection (PCI-1610B/1610CU)
- 2,500 V_{dc} Isolation Protection (PCI-1610CU only)

Introduction

The PCI-1610 is a 4-port RS-232 PCI communication card that is compatible with the PCI 2.1 bus specification. (PCI-1610CU is also compliant with 2.2) and offer transmission speeds up to 921.6 kbps.

PCI-1610B and PCI-1610CU provides four optional surge protected RS232/422/485 ports and four independent RS-232 ports.

PCI-1610 also comes with high-performance 16PCI954 UART with a 128-byte FIFO to reduce CPU load. These components make your system more stable and reliable. Thus, the PCI-1610 is especially suitable for multitasking environments.

PCI-1610CU has a universal PCI connector that is compatible with both newer 3.3 V signaling systems and the traditional 5V signaling system. This gives high compatibility and allows usage in diverse systems.

To further increase reliability, the PCI-1610B and PCI-1610CU offers surge protection technology, protecting your system from abrupt high voltages up to 2,500 V_{dc}. PCI-1610CU also provides 2,500 V_{dc} isolation to protect your PC and equipment against damages from ground loops in harsh environments.

Advantech also provides a convenient utility program, ICOM Tools, to help test the PCI card performance by analyzing the port status. With menu commands and toolbar buttons, ICOM Tools acts as a PC-based data scope that lets you set a trigger condition, capture the communications data and monitor the signal status. ICOM Tools is applicable to all series of Advantech ICOM cards.

Specifications

- **Bus Interface** PCI bus specification 2.1 (PCI-1610A/1610B), 2.2 (PCI-1610CU) compliant
- **IRQ** All ports use the same IRQ assigned by PCI Plug & Play
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even, odd
- **Communication Controller** 16PCI954
- **Speed** 50 bps ~ 921.6 kbps
- **Data Signals** TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND, RI
- **Surge Protection** 2,500 V_{dc} (PCI-1610B/1610CU only)
- **ESD Protection** 16 kV
- **Isolation Protection** 2,500 V_{dc} (PCI-1610CU only)
- **Power Consumption**

Typical	+12 V: 60 mA
	+5 V: 150 mA
Max	+12 V: 80 mA
	+5 V: 180 mA
- **Power Requirement** ±12 V
- **Dimensions (L x W)** 123 x 92 mm (4.8" x 3.6") (for 1610A and PCI-1610B)
185 x 100 mm (7.3" x 3.9") (for PCI-1610CU)
- **Operating Temperature** 0~ 65° C (refer to IEC 68-2-1, 2), (32 ~ 149° F)

- **Operating Humidity** 5 ~ 95% Relative Humidity, non-condensing (refer to IEC 68-2-3)
- **Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)

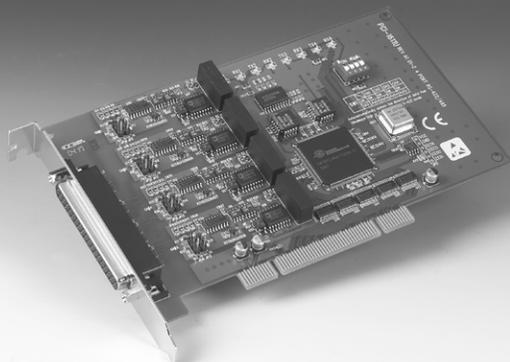
Ordering Information

- **PCI-1610A** 4-port RS-232 PCI COMM Card (30cm DB37 to 4 DB25 cable included)
- **PCI-1610A/9** 4-port RS-232 PCI COMM Card (30cm DB37 to 4 DB9 cable included)
- **PCI-1610B** 4-port RS-232 PCI COMM Card w/Surge Protection (30cm DB37 to 4 DB25 cable included)
- **PCI-1610B/9** 4-port RS-232 PCI COMM Card w/Surge Protection (30cm DB37 to 4 DB9 cable included)
- **PCI-1610CU** 4-port RS-232 Universal PCI COMM Card w/Isolation & Surge Protection (30cm DB37 to 4 DB25 cable included)
- **PCI-1610CU/9** 4-port RS-232 Universal PCI COMM Card w/Isolation & Surge Protection (30cm DB37 to 4 DB9 cable included)

PCI-1611U

4-port RS-422/485 Universal PCI Communication Card, w/ Isolation & Surge Protection

NEW



FCC CE

Features

- PCI bus Specification 2.2 compliant
- Speeds up to 921.6 kbps
- 4-port RS-422/485
- 16PCI954 UARTs with 128-byte FIFOs standard
- I/O address automatically assigned by PCI Plug & Play
- OS supported: Windows® 98/ME/2000/XP, Linux®
- Interrupt status register for increased performance
- Space reserved for termination resistors
- Automatic RS-485 data flow control
- Powerful and easy to use utility (ICOM Tools)
- Universal PCI
- 2,500 V_{DC} Surge Protection
- 2,000 V_{DC} Isolation Protection

Introduction

PCI-1611U is a 4-port RS-422/485 PCI communication card that is compatible with the PCI 2.2 bus specification. The PCI-1611U provides many functions such as four independent RS-422/485 ports with isolation protection, high transmission speed of 921.6 kbps, and surge protection. PCI-1611U also comes with high-performance 16PCI954 UARTs with a 128-byte FIFO to reduce CPU loading. These components make your system more stable and reliable. Thus, the PCI-1611U is especially suitable for multitasking environments.

PCI-1611U has a universal PCI connector that is compatible with both newer 3.3 V signaling systems and the traditional 5 V signaling systems. This gives high compatibility and allows usage in diverse systems.

To improve the performance of the system, the PCI-1611U allows transmission rates up to 921.6 kbps, and to further increase reliability, the PCI-1611U offers surge protection technology, protecting your system from abrupt high voltages up to 2,500 V_{DC}. Besides, Advantech also provides a convenient utility program, ICOM Tools, to help you test the PCI card's performance by analyzing the port status. The easy-to-use graphical user interface of ICOM Tools works like a PC-based data scope that lets you set trigger conditions to capture communication data and monitor a signal's status. ICOM Tools is applicable to all series of Advantech ICOM cards.

Specifications

- | | |
|-----------------------------------|--|
| ▪ Bus Interface | PCI bus specification 2.2 compliant |
| ▪ IRQ | All ports use the same IRQ assigned by PCI Plug & Play |
| ▪ Data Bits | 5, 6, 7, 8 |
| ▪ Stop Bits | 1, 1.5, 2 |
| ▪ Parity | None, even, odd |
| ▪ Communication Controller | 16PCI954 |
| ▪ Speed | 50 bps ~ 921.6 kbps |
| ▪ Data Signals | TxD, RxD, RTS, CTS (for RS-422/485) |
| ▪ Surge Protection | 2,500 V _{DC} |
| ▪ ESD Protection | 16 kV |
| ▪ Isolation Protection | 2,000 V _{DC} |
| ▪ Power Consumption | 600 mA @ 5 V |
| ▪ Dimensions | 185 x 100 mm (7.3" x 3.9") |
| ▪ Operating Temperature | 0 ~ 65° C (refer to IEC 68-2-1, 2), (32 ~ 149° F) |
| ▪ Operating Humidity | 5 ~ 95 % Relative Humidity, non-condensing (refer to IEC 68-2-3) |
| ▪ Storage Temperature | -25 ~ 85° C (-13 ~ 185° F) |

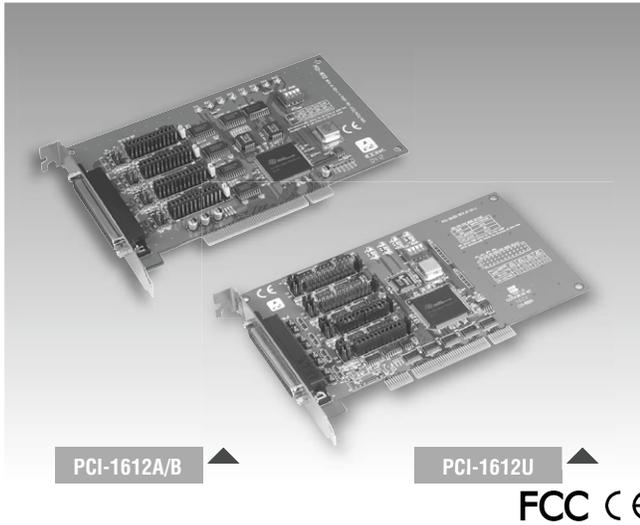
Ordering Information

- | | |
|----------------------|---|
| ▪ PCI-1611U | 4-port RS-422/485 Universal PCI Communication Card, w/Isolation & Surge Protection (30cm DB37 to 4 DB25 cable included) |
| ▪ PCI-1611U/9 | 4-port RS-422/485 Universal PCI Communication Card, w/Isolation & Surge Protection (30cm DB37 to 4 DB9 cable included) |

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCI-1612

4-port RS-232/422/485 PCI Communication Card



Features

- PCI bus specification 2.1(PCI-1612A/1612B), 2.2 (PCI-1612U/1612CU) compliant
- Speeds up to 921.6 kbps
- 4-port RS-232/422/485
- 16PCI954 UARTs with 128-byte FIFOs standard
- I/O address automatically assigned by PCI Plug & Play
- OS supported: Windows® 98/ME/2000/XP, Linux®
- Interrupt status register for increased performance
- Space reserved for termination resistors
- Automatic RS-485 data flow control
- Powerful and easy to use utility (ICOM Tools)
- Universal PCI (PCI-1612U/1612CU)
- 2,500 V_{DC} Surge Protection (PCI-1612B/1612U/1612CU)
- 2,500 V_{DC} Isolation Protection (PCI-1612CU only)

Introduction

PCI-1612 is a 4-port RS-232/422/485 PCI communication card that is compatible with the PCI 2.1/2.2 bus specification and offer transmission rates up to 921.6 kbps. PCI-1612 comes with high-performance 16PCI954 UARTs with a 128-byte FIFO to reduce CPU load. These components make your system more stable and reliable. Thus, the PCI-1612 is especially suitable for multitasking environments.

PCI-1612B, PCI-1612U and PCI-1612CU provide four optional surge protected RS232/422/485 ports and also offer four independent RS-232/422/485 ports. PCI-1612U and PCI-1612CU have universal PCI connectors that are compatible with both newer 3.3 V signaling systems and the traditional 5 V signaling system. This gives highly-compatibility and allows usage in diverse systems. To further increase reliability, PCI-1612B, PCI-1612U and PCI-1612CU offers surge protection for high voltages up to 2,500 V_{DC}. Meanwhile, PCI-1612CU provides 2,500 V_{DC} isolation to protect your PC and equipment against damages from ground loops in harsh environments. Advantech also provides a convenient utility program called ICOM Tools to help test the PCI card performance by analyzing the port status. The menu commands and toolbar buttons of ICOM Tools acts as a PC-based data scope that lets you set a trigger condition, capture the communications data and monitor the signal status. ICOM Tools is applicable to all series of Advantech ICOM cards.

Specifications

- **Bus Interface** PCI bus specification 2.1 (PCI-1612A/1612B), 2.2 (PCI-1612U/1612CU) compliant
- **IRQ** All ports use the same IRQ assigned by PCI Plug & Play
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even, odd
- **Communication Controller** 16PCI954
- **Speed** 50 bps ~ 921.6 kbps
- **Data Signals** TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND (for RS-232)
TxD, RxD, RTS, CTS (for RS-422/485)
- **Surge Protection** 2,500 V_{DC} (PCI-1612B/1612U/1612CU only)
- **ESD Protection** 16 kV
- **Isolation Protection** 2,500 V_{DC} (PCI-1612CU only)
- **Power Consumption**

Typical	+12 V: 60 mA
	+5 V: 270 mA
Max	+12 V: 80 mA
	+5 V: 338 mA
- **Power Requirement** ±12 V
- **Dimensions** 185 x 100 mm (7.3" x 3.9")
- **Operating Temperature** 0~ 65° C (refer to IEC 68-2-1, 2), (32 ~ 149° F)

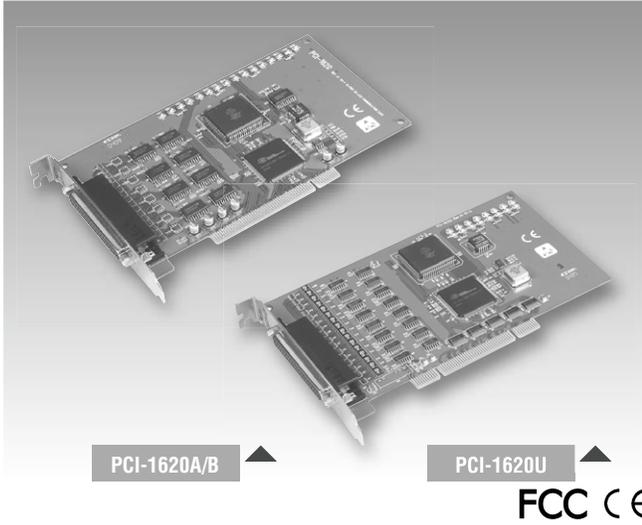
- **Operating Humidity** 5 ~ 95% Relative Humidity, non-condensing (refer to IEC 68-2-3)
- **Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)

Ordering Information

- **PCI-1612A** 4-port RS-232/422/485 PCI COMM Card (30cm DB37 to 4 DB25 cable included)
- **PCI-1612A/9** 4-port RS-232/422/485 PCI COMM Card (30cm DB37 to 4 DB9 cable included)
- **PCI-1612B** 4-port RS-232/422/485 PCI COMM Card w/Surge Protection (30cm DB37 to 4 DB25 cable included)
- **PCI-1612B/9** 4-port RS-232/422/485 PCI COMM Card w/Surge Protection (30cm DB37 to 4 DB9 cable included)
- **PCI-1612U** 4-port RS-232/422/485 Universal PCI COMM Card w/Surge Protection (30cm DB37 to 4 DB25 cable included)
- **PCI-1612U/9** 4-port RS-232/422/485 Universal PCI COMM Card w/ Surge Protection (30cm DB37 to 4 DB9 cable included)
- **PCI-1612CU** 4-port RS-232/422/485 Universal PCI COMM Card w/Isolation & Surge Protection (30cm DB37 to 4 DB25 cable included)
- **PCI-1612CU/9** 4-port RS-232/422/485 Universal PCI COMM Card w/Isolation & Surge Protection (30cm DB37 to 4 DB9 cable included)

PCI-1620A PCI-1620B PCI-1620U

8-port RS-232 PCI Communication Card 8-port RS-232 PCI Communication Card, with Surge Protection 8-port RS-232 Universal PCI Communication Card, with Surge Protection



Features

- PCI bus specification 2.1, 2.2 (1620U only) compliant
- Speeds up to 921.6 kbps
- 8-port RS-232
- I/O address automatically assigned by PCI Plug & Play
- OS supported: Windows® 98/ME/2000/XP, Linux®
- Interrupt status register for increased performance
- Space reserved for termination resistors
- Powerful and easy-to-use utility (ICOM Tools)
- Universal PCI (PCI-1620U)

Introduction

PCI-1620 is an 8-port RS-232 PCI communication card that is compatible with the PCI 2.1 bus specification. The card provides eight optional surge protected RS-232 ports, and has many functions such as high transmission speed of 921.6 kbps, eight independent RS-232 ports and also comes with high-performance 16PC1954 UARTs with 128-byte FIFO and a 16C954 UART to reduce CPU load. Thus, the PCI-1620 is especially suitable for making your system reliable in multitasking environments.

PCI-1620U has an universal PCI connector that is compatible with both 3.3 V signaling and 5 V signaling. This means that PCI-1610U can not only be used in traditional systems with 5 V signaling but also newer systems with 3.3 V signaling.

To further increase reliability, PCI-1620B and PCI-1620U offer surge protection technology, protecting your system from abrupt high voltages of up to 3,000 V_{DC}. Advantech also provides a convenient utility program called ICOM Tools, to help you test the PCI card's performance by analyzing the port status. ICOM Tools is easy to use with its menu commands and toolbar buttons, and acts as a PC-based data scope that lets you set a trigger condition, capture the communications data and monitor the signal status. ICOM Tools is applicable to all series of Advantech ICOM cards.

Specifications

- **Bus Interface** PCI bus spec. 2.1, 2.2 (1620U only) compliant
- **All ports use the same IRQ assigned by PCI Plug & Play**
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even, odd
- **Communication Controller** 16PC1954+16C954
- **Speed** 50 bps ~ 921.6 kbps
- **Data Signals** TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND (for RS-232)
- **Surge Protection** 3000 V_{DC} (PCI-1620B)
2500 V_{DC} (PCI-1620U)
- **ESD Protection** 16 kV
- **Power Consumption**
 - Typical** +12 V: 120 mA +5 V: 180 mA
 - Max** +12 V: 150 mA +5 V: 220 mA
- **Power Requirement** ±12 V
- **Dimensions** 185 x 100 mm (7.3" x 3.9")
- **Operating Temperature** 0 ~ 65° C (refer to IEC 68-2-1,2) (32 ~ 149° F)
- **Operation Humidity** 5 ~ 95 % Relative Humidity, non-condensing (refer to IEC 68-2-3)
- **Storage Temperature** -25 ~85° C (-13 ~ 185° F)

Ordering Information

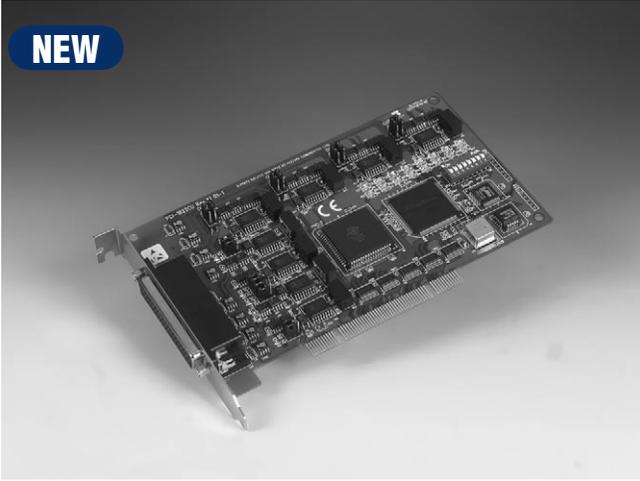
- **PCI-1620A** 8-port RS-232 PCI COMM Card
- **PCI-1620B** 8-port RS-232 PCI COMM Card, w/surge protection
- **PCI-1620U** 8-port RS-232 universal PCI COMM card w/surq protection
- **Opt8C** 8-port RS-232 cable with male DB62 to DB25 connector (1m)
- **Opt8H** 8-port RS-232 cable with male DB62 to DB9 connector (1m)

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCI-1622CU

8-port RS-422/485 Universal PCI Communication Card, w/Isolation & Surge Protection

NEW



FCC CE

Features

- PCI Specification 2.2 compliant
- Speeds up to 921.6 kbps
- 8-port RS-422/485
- 16PCI954 UARTs with 128-byte FIFOs standard
- I/O address automatically assigned by PCI Plug & Play
- OS supported: Windows® 98/ME/2000/XP
- Interrupt status register for increased performance
- Space reserved for termination resistors
- Automatic RS-485 data flow control
- Powerful and easy to use utility (ICOM Tools)
- Universal PCI
- 2,500 V_{DC} Surge Protection
- 2,500 V_{DC} Isolation Protection

Introduction

PCI-1622CU is an 8-port RS-422/485 PCI communication card that is compatible with the PCI 2.2 bus specification. PCI-1622CU provides many functions such as four independent RS-422/485 ports with isolation protection, high transmission speed of 921.6 kbps, surge protection and comes with high-performance 16PCI954 UARTs with a 128-byte FIFO to reduce CPU load. These components make your system more stable and reliable. Thus, the PCI-1622CU is especially suitable for multitasking environments.

PCI-1622CU has a universal PCI connector that is compatible with both newer 3.3 V signaling systems and the traditional 5 V signaling system. This gives high-compatibility and allows usage in diverse systems.

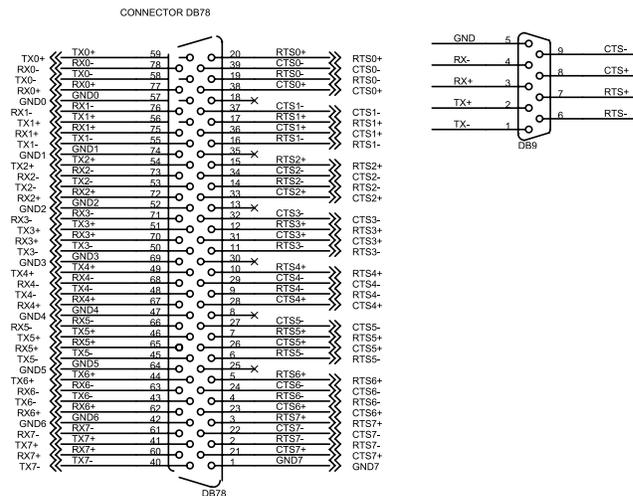
To further increase reliability, the PCI-1622CU offers surge protection from high voltages up to 2,500 V_{DC} and 2,500 V_{DC} isolation to protect your PC and equipment against damages from ground loops in harsh environments.

Advantech provides a convenient utility program called ICOM Tools to help test the PCI card's performance by analyzing the port status. The menu commands and toolbar buttons of ICOM Tools acts as a PC-based data scope that lets you set a trigger condition captures the communication data and monitors the signal status. ICOM Tools is applicable to all series of Advantech ICOM cards.

Specifications

- **Bus Interface** PCI bus specification 2.2 compliant
- **IRQ** All ports use the same IRQ assigned by PCI Plug & Play
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even, odd
- **Communication Controller** 16PCI954
- **Speed** 50 bps ~ 921.6 kbps
- **Data Signals** TxD, RxD, RTS, CTS (for RS-422/485)
- **Surge Protection** 2,500 V_{DC}
- **ESD Protection** 16 kV
- **Isolation Protection** 2,500 V_{DC}
- **Power Consumption** 600 mA @ 5 V
- **Dimensions** 185 x 100 mm (7.3" x 3.9")
- **Operating Temperature** 0~ 65° C (refer to IEC 68-2-1, 2), (32~149° F)
- **Operating Humidity** 5 ~ 95% Relative Humidity, non-condensing (refer to IEC 68-2-3)
- **Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)

Pin Assignments



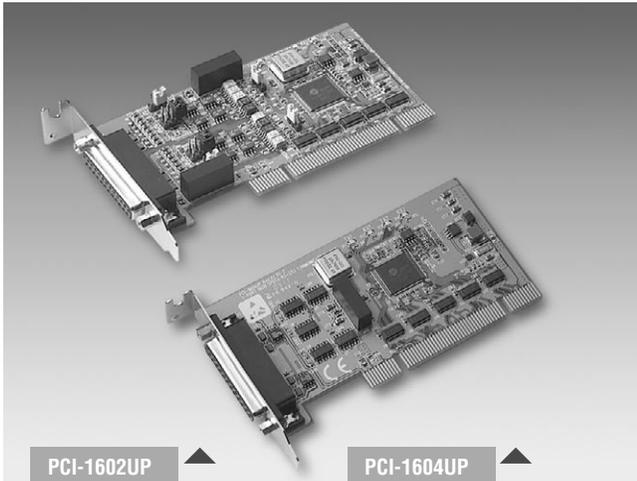
Ordering Information

- **PCI-1622CU** 8-port RS-422/485 Universal PCI COMM card w/Isolation and Surge Protection (1m DB78 to 8 DB9 cable included)

PCI-1602UP PCI-1604UP

2-port RS-422/485 Low-Profile PCI Communication Card, w/Isolation and Surge Protection

2-port RS-232 Low-Profile PCI Communication Card, w/Surge Protection



FCC CE

Features

- PCI bus specification 2.2 compliant
- Speeds up to 921.6 kbps
- 2-port RS-232(PCI-1604UP); 2-port RS-422/485 (PCI-1602UP)
- I/O address automatically assigned by PCI Plug & Play
- OS support: Windows® 98/ME/2000/XP, Linux® (1602UP only)
- 2,500V_{DC} Surge protection
- 2,500V_{DC} Isolation protection for RS-422/485 (PCI1602UP)
- Interrupt status register for increased performance
- Space reserved for termination resistors
- Automatic RS-485 data flow control
- Powerful and easy-to-use utility (ICOM Tools)
- Universal PCI
- Low-profile PCI

Introduction

PCI-1602UP and PCI-1604UP are 2 port RS-232/422/485 PCI communication cards that are compatible with the PCI 2.2 bus specification for universal connectivity and low profile PCI cards. PCI-1604UP provides two independent RS-232 ports, while PCI-1602UP has two RS-422/485 ports. To improve system performance, both cards allow transmission rates up to 921.6 kbps. To increase reliability, the cards offer surge protection, protecting your system from abrupt high voltages up to 2,500 V_{DC}. High-performance 16PCI952 UARTs with 128-byte FIFO, reduces the CPU load, making the cards especially suitable for multitasking environments.

PCI-1602UP and PCI-1604UP follows the Low Profile PCI MD1 standard. This standard has the same protocol and electronic definition as standard PCI, but the Low Profile PCI standard is smaller. Thus, PCI-1602UP and PCI-1604UP are suitable for embedded systems, and size-constrained environments. Moreover, both cards are equipped with an universal PCI connector, which allows support for traditional systems with 5 V signaling or newer systems with 3.3 V signaling.

Advantech also provides a convenient utility called ICOM Tools, to help test the PCI card's performance by analyzing the port status. The menu commands and toolbar buttons of ICOM Tools acts as a PC-based data scope that lets you set a trigger condition, capture the communication data and monitor the signal status. ICOM Tools can be used with all series of Advantech ICOM cards.

Specifications

- **Bus Interface** PCI bus spec. 2.2 compliant
- **All ports use the same IRQ assigned by PCI Plug & Play**
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even, odd
- **Communication Controller** 16PCI952 (PCI-1602UP)
16PCI952 (PCI-1604UP)
- **Speed** 50 bps ~ 921.6 kbps
- **Data Signals** TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND, RI (for RS-232)
Tx+, Tx-, Rx+, Rx-, RTS+, RTS-, CTS+, CTS-, GND (for RS-422)
Data+, Data-, GND (for RS-485)
- **Surge Protection** 2,500 V_{DC}
- **ESD Protection** 16 kV
- **Isolation Protection** 2,500 V_{DC} (PCI-1602UP)
- **Power Consumption** 5 V @ 300 mA (MAX)
- **Power Requirement** 5 V
- **Dimensions** Low profile PCI MD11 (19.91 x 64.41 mm (4.7" x 2.5"))
- **Operating Temperature** 0 ~ 65° C (refer to IEC 68-2-1, 2) (32 ~ 149° F)
- **Operating Humidity** 5 ~ 95 % Relative Humidity, non-condensing (refer to IEC 68-2-3)
- **Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)

Ordering Information

- **PCI-1602UP** 2-port RS-422/485 Low-Profile Universal PCI COMM Card, w/Isolation and Surge Protection
- **PCI-1604UP** 2-port RS-232 Low-Profile Universal PCI COMM Card, w/Surge Protection

1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AWS

6
DA&C

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cPCI

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ADAM-3000

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Motion Control

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ICOM

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eConnectivity

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UNO

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ADAM-4000

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ADAM-5000

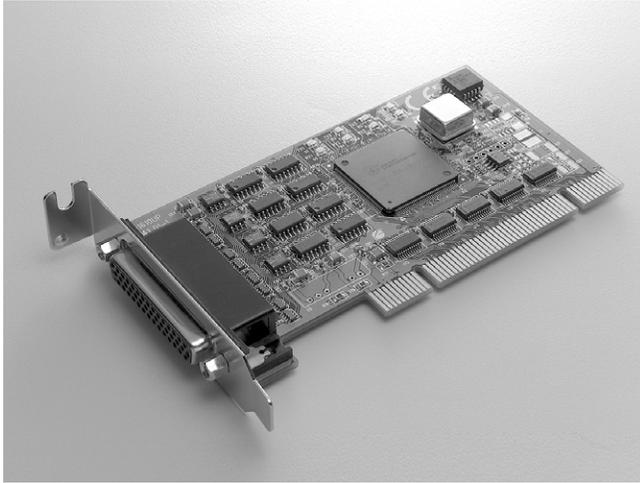
15
ADAM-6000

16
ADAM-8000

17
BAS

PCI-1610UP

4-Port RS-232 Low-Profile Universal PCI Communication Card, w/Surge Protection



FCC CE

Features

- PCI bus specification 2.2 compliant
- Speeds up to 921.6 kbps
- Four independent RS-232 serial ports
- I/O address automatically assigned by PCI Plug & Play
- OS supported: Windows® 98/ME/2000/XP, Linux®
- 2500 V_{DC} Surge protection
- Interrupt status register for increased performance
- Powerful and easy-to-use utility (ICOM Tools)
- Universal PCI
- Low Profile PCI

Introduction

The PCI-1610UP is a 4-port RS-232 PCI communication card, that is compatible with the PCI 2.2 bus specification for universal connectivity and low profile PCI cards. PCI-1610UP provides four independent RS-232 ports. To improve the performance of the system, the PCI-1610UP provides transmission rates up to 921.6 kbps. To increase reliability, The PCI-1610UP offers surge protection technology, protecting your system from abrupt high voltage up to 2500 V_{DC}. The PCI-1610UP also comes with high-performance 16PCI954 UARTs with 128-byte FIFO to reduce CPU load. These components allow more stability and reliability. Therefore, PCI-1610UP is especially suitable for multitasking environments.

PCI-1610UP follows the Low Profile PCI MD1 standard. It has the same protocol and electronic definition as standard PCI, but the Low profile PCI card is smaller. Thus, PCI-1610UP is suitable for embedded systems, or any size-constrained environment. Moreover, PCI-1610UP has an universal PCI connector, which allows support in traditional systems with 5 V signaling or newer systems with 3.3 V signaling.

Advantech also provides a convenient utility program called ICOM Tools, to help you test the PCI card's performance by analyzing the port status. The menu commands and toolbar buttons are easy to use. ICOM Tools acts as a PC-based data scope that lets you set a trigger condition, capture the communication data and monitor the signal status. ICOM Tools can be used with all series of Advantech ICOM cards.

Specifications

- **Bus Interface** PCI bus spec. 2.2 compliant
- **All ports use the same IRQ assigned by PCI Plug & Play**
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even, odd
- **Communication Controller** 16PCI954
- **Speed** 50 bps ~ 921.6 kbps
- **Data Signals** TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND, RI
- **Surge Protection** 2500 V_{DC}
- **ESD Protection** 16 kV
- **Power Consumption** 5 V @ 400 mA (Max.)
- **Dimensions** Low profile PCI MD1 (119.91 x 64.41 mm (4.7" x 2.5"))
- **Operating Temperature** 0 ~ 65° C (refer to IEC 68-2-1,2) (32 ~ 149° F)
- **Operating Humidity** 5 ~ 95% Relative Humidity, non-condensing (refer to IEC 68-2-3)
- **Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)

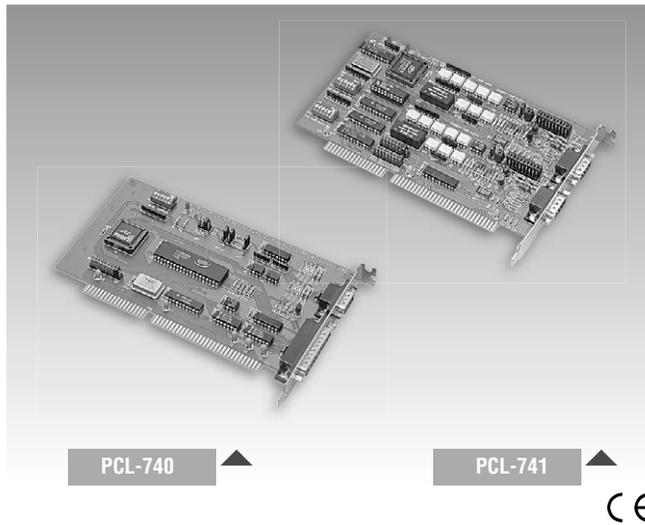
Ordering Information

- **PCI-1610UP** 4-Port RS-232 Low-Profile Universal PCI COMM Card, w/surge protection

PCL-740 PCL-741

RS-232/RS-422/RS-485/Current-loop COMM Cards

Isolated Dual-port RS-232/Current-loop COMM Cards



Features

- RS-232, RS-422, RS-485 or current-loop interface
- 16C550 UART with 16-byte FIFO
- Transmission speeds up to 115 kbps
- Flexible I/O address and IRQ selection
- IRQ: 3, 4, 5, 6, 7, 9, 10, 11, 12 or 15
- Complete RS-232 modem control signals
- Supports 4-wire or 2-wire operation for RS-422/485
- Automatic RS-485 data flow control
- Space reserved for termination resistors
- Supports COM1, COM2, COM3, or COM4
- Supports Windows® 98/2000/XP, Linux®
- Powerful and easy-to-use utility (ICOM Tools)

Introduction

The PCL-740 offers a versatile range of high speed interfacing options. You can switch its single port between the popular RS-232, long distance RS-422, multi-drop RS-485, or noise-resistant current-loop. The card's 16C550 UART has an on-chip 16-byte FIFO buffer for faster and more reliable communication, especially under Windows.

The PCL-741 provides two isolated RS-232 or current-loop serial ports. You can configure each port individually to RS-232 or current-loop using on-board jumpers.

The card has two 16C550 UARTs with on-chip 16-byte FIFO buffers. The UARTs buffer data into 16-byte packets before sending it to the bus. This drastically reduces CPU load and avoids data loss when the system is busy and cannot process the interrupt quickly. These FIFO buffers make the PCL-741 especially suitable for high speed serial I/O under Windows.

Onboard optical isolators protect your PC and equipment against damage from ground loops, increasing system reliability in harsh environments.

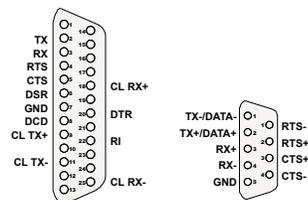
Specifications

Board

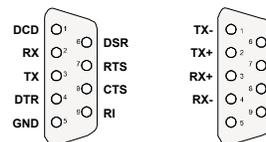
- **Ports** 1
- **Protocol** RS-232, RS-422/RS-485 or current-loop (PCL-740)
RS-232 or current-loop (20 mA) (PCL-741)
- **I/O Address** From 200H to 3F8H
- **IRQ** 3, 4, 5, 6, 7, 9, 10, 11, 12 or 15
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even and odd
- **Power Isolation** 500 V_{DC} (PCL-741)
- **Signal Isolation** 2500 V_{DC} (PCL-741)
- **Power Consumption** PCL-740: +5 V @ 180 mA max., ±12 V @ 20 mA max.
PCL-741: +5 V @ 300 mA (typical), +5 V @ 1.1 A max.
- **Connectors** DB9 male and DB25 male (PCL-740 only) connectors
- **Operating Temperature** 0 ~ 50°C (32 ~ 122°F)
- **Dimensions** 185 x 100 mm (7.3" x 3.9")
- **Shipping Weight** 0.6 kg (1.3 lb)

Pin Assignments

PCL-740



PCL-741



Ordering Information

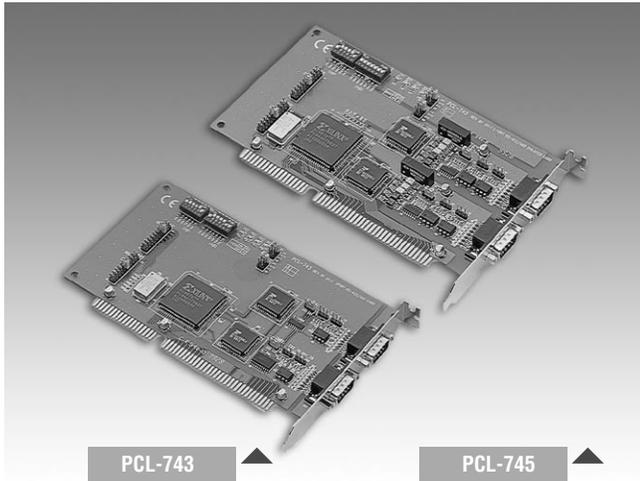
- **PCL-740** RS-232/RS-422/RS-485/current-loop serial interface card
- **PCL-741** Isolated dual-port RS-232/current-loop interface card.

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7
- 8 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

PCL-743 PCL-745

2-port High-speed RS-422/485 COMM Cards

2-port High-speed RS-422/485 COMM Cards w/ Isolation



Features

- Two independent RS-422/485 serial ports
- Provides 3000 V_{DC} isolation (PCL-745B/745S)
- Provides 2500 V_{DC} surge protection (PCL-743S/745S)
- 16C550 UARTs with on-chip 16-byte FIFO
- Transmission speeds up to 921.6 kbps
- I/O address and interrupt selectable
- Wide IRQ selection: 3, 4, 5, 6, 7, 9, 10, 11, 12 or 15
- Supports 2 wire or 4 wire operation
- Supports Tx, Rx, RTS, and CTS signals
- Automatic RS-485 data flow control or RTS control
- Termination resistors jumper enable/disable
- Space reserved for optional surge protection on data lines (PCL-743B/745B)
- Supports standard DOS COM1, COM2, COM3, and COM4
- Supports Windows® 98/2000/XP, Linux®
- Powerful and easy-to-use utility (ICOM Tools)

Introduction

PCL-743 and PCL-745 provide two RS-422/485 serial ports. Each port utilizes a 16C550 UART with an on-chip 16-byte FIFO buffer for reliable, high-speed serial I/O.

The UART buffer divides data into 16-byte packets before sending them onto the bus. This drastically reduces CPU load and avoids data loss due to failure to respond to the interrupt request in time. The UART is especially useful for high speed serial I/O under Windows.

The PCL-745B/745S card differs from the PCL-743B/743S card in that the former uses on-board optical isolators to protect your PC and equipment against damages from ground loops, increasing system reliability in harsh environments. To further increase reliability, PCL-743S and PCL-745S offers surge protection, protecting your system from abrupt high voltage surges (up to 2500 V_{DC}) such as those caused by lightning.

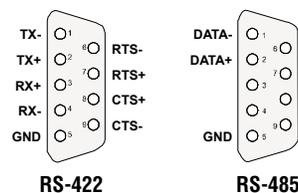
Specifications

- Ports** 2
- UART** 2 x 16C550 with 16-byte FIFO
- Signal Support** TxD+, TxD-, RxD+, RxD-, CTS+, CTS-, RTS+ and RTS-
- I/O Address** From 200H to 3F8H
- IRQ** 3, 4, 5, 6, 7, 9, 10, 11, 12 or 15
- Isolation Voltage** 3000 V_{DC} (PCL-745B/745S)
- Surge Protection** 2500 V_{DC} (PCL-743S/745S)
- Power Consumption** +5 V @ 400 mA typical, 950 mA max.
- Connectors** Dual DB9 male connectors
- Operating Temperature** 0 ~ 65° C (32 ~ 149° F)
- Dimensions** 185 x 100 mm (7.3" x 3.9")
- Shipping Weight** 0.6 kg (1.3 lb)

Ordering Information

- PCL-745B** 2-port RS-422/485 communication card with isolation protection
- PCL-745S** 2-port RS-422/485 communication card with isolation and surge protection
- PCL-743B** 2-port RS-422/485 communication card
- PCL-743S** 2-port RS-422/485 communication card with surge protection

Pin Assignments

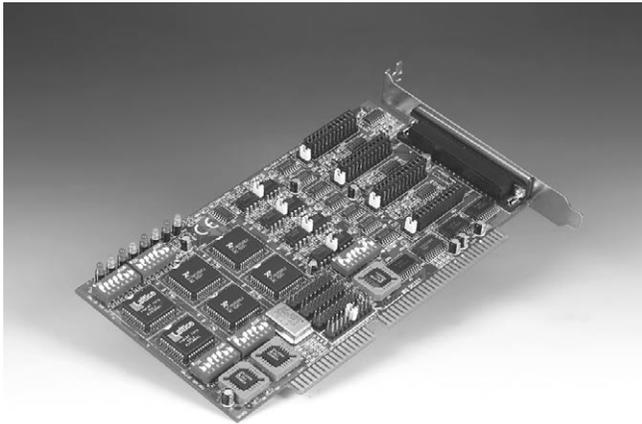


Applications

- PLC monitoring and control
- Serial communication interface for harsh environments
- Data entry terminals
- Remote data acquisition and control systems
- Instrument controller and distributed control systems

PCL-746+

4-port RS-232/422/485 COMM Card



Features

- Four independent RS-232/422/485 serial ports
- Speeds up to 115.2 kbps
- Interrupts (jumper selectable): 3, 4, 5, 6, 7, 9, 10, 11, 12 or 15
- Onboard interrupt status register for greater throughput
- Automatic data flow control in RS-485 mode
- RS-422 or RS-485 modes jumper selectable
- Space reserved for optional surge protection on all port lines (in RS-422/485 modes)
- Space reserved for termination resistors
- Compatible with ARCNET® 4-port cards supporting SCO UNIX/XENIX
- Supports Windows® 98/2000/XP, Linux®
- Powerful and easy-to-use utility (ICOM Tools)

Introduction

PCL-746+ is a four-port serial communication interface card. The main feature of this card is that each port can be configured individually to RS-232, RS-422 or RS-485 using on-board jumpers. The card has 16C550 UARTs and improved interrupt handling for reliable operation at transmission speeds of up to 115.2 kbps.

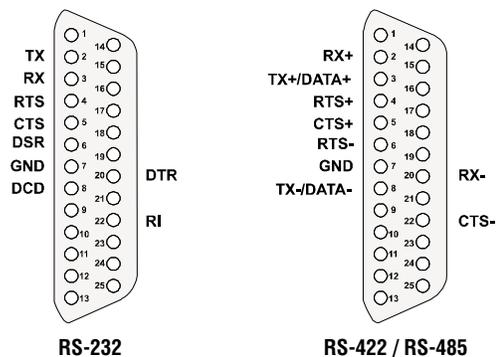
PCL-746+ supports two operating modes: standard mode and enhanced mode. In standard mode each of the four ports can be set up as either the address or the IRQ channel individually. In enhanced mode all four ports can be set to share the same IRQ. When an on-board interrupt occurs, the interrupt status register indicates which port has generated it. The shared interrupt can be set to the most common (extended) AT interrupts. This simplifies programming, speeds up interrupt processing, and frees up interrupts for other devices.

The RS-485 mode automatically senses the direction of incoming data and switches its transmission direction accordingly. This feature makes your network look and act just like an RS-232 network. Application software written for half duplex RS-232 can be used without modification. Moreover, you can simply and quickly build an RS-485 network with just two wires.

Specifications

- Ports** 4 serial ports
- Protocol Selection** RS-232/422/485 (jumper selectable)
- UART** 4 x 16C550 16-byte FIFO
- Speed** 50 bps ~ 115.2 kbps
- Base I/O Address Selection** From 000H to 3F8H
- Interrupt Status Address Selection** From 000H to 3F0H
- IRQ Selection** 3, 4, 5, 6, 7, 9, 10, 11, 12 or 15
- Data Bits** 5, 6, 7, 8
- Stop Bits** 1, 1.5, 2
- Parity** None, even and odd
- Power Consumption** +5 V @ 800 mA typical, 1.5 A max.
±12 V @ 60 mA typical, 120 mA max.
- Operating Temperature** 0 ~ 50° C (32 ~ 122° F)
- Cables** 30cm male DB37 to four male DB25 cables
- Dimensions** 185 x 100 mm (7.3" x 3.9")
- Weight** 1.1 kg (2.4 lbs) (including cable)

Pin Assignments



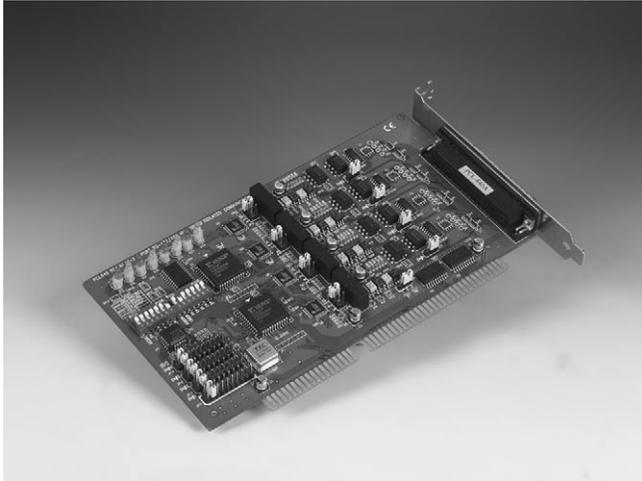
Ordering Information

- PCL-746+** 4-port serial interface card.(30cm DB37 to 4 DB25 cable included)
- PCL-746+/9** 4-port serial interface card. (30cm DB37 to 4 DB9 cable included)
- Opt4A** 4-port RS-232/422/485 connector cable with male DB9 connector (30cm length)

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7
- 8 cPCI
- 9 ADAM-3000
- 10 Motion Control
- 11 ICOM
- 12 eConnectivity
- 13 UNO
- 14 ADAM-4000
- 15 ADAM-5000
- 16 ADAM-6000
- 17 BAS

PCL-846

4-port High-speed RS-422/485 Communication Card



Features

- Four independent RS-422/485 serial ports
- Transmission speeds up to 921.6 kbps
- Independent/shared IRQ settings between each of the 4 serial ports
- Wide IRQ selection: 3, 4, 5, 6, 7, 9, 10, 11, 12 or 15
- Supports standard DOS COM1, COM2, COM3, and COM4
- Provides 1000 V_{DC} isolation
- Provides 2000 V_{DC} surge protection (PCL-846B only)
- Space reserved for termination resistors
- Supports 2 wire or 4 wire operation
- Supports Tx, Rx, RTS, and CTS signals
- Automatic RS-485 data flow control or RTS control
- Supports Windows® 98/2000/XP, Linux®
- Powerful and easy-to-use utility (ICOM Tools)

Introduction

PCL-846 provides four independent RS-422/485 serial ports on a card. Each port has a 16C550 UART with an on-chip 16-byte FIFO buffer for reliable, high-speed serial I/O. The UART buffers data into 16-byte packets before sending it to the bus. This drastically reduces the CPU load and avoids data loss when the system is busy and cannot process the interrupt quickly. The UART is especially useful for high speed serial I/O under Windows.

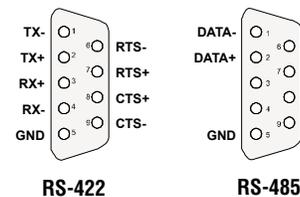
PCL-846 utilize on-board optical isolators to protect your PC and equipment against damage from ground loops, increasing system reliability in harsh environments. To further increase reliability, PCL-846B include surge protection technology, protecting your system from abrupt high voltage surges (up to 2000 V_{DC}) such as those caused by lightning during thunderstorms.

The RS-485 mode automatically senses the direction of incoming data and switches its transmission direction accordingly. This feature makes your network look and act just like an RS-232 network. Application software written for half duplex RS-232 can be used without modification. Moreover, you can simply and quickly build an RS-485 network with just two wires.

Specifications

- Ports** 4
- UART** 4 x 16C550 with 16-byte FIFO
- Speed** 50 bps ~ 921.6 kbps
- Parity** None, even and odd
- Signal Support** TxD+, TxD-, RxD+, RxD-, CTS+, CTS-, RTS+ and RTS-
- I/O Address** From 200H to 3F8H
- IRQ** 3, 4, 5, 6, 7, 9, 10, 11, 12 or 15
- Isolation Voltage** 1000 V_{DC}
- Surge Protection** 2000 V_{DC} (PCL-846B only)
- Power Consumption** +5 V @ 970 mA typical, 1.2 A max.
- Cables** 30cm male DB37 to four male DB9 (DTE)
- Operating Temperature** 0 ~ 60°C (32 ~ 140°F)
- Storage Temperature** -25 ~ 80°C (-13 ~ 176°F)
- Dimensions** 185 x 100 mm (7.3" x 3.9")

Pin Assignments

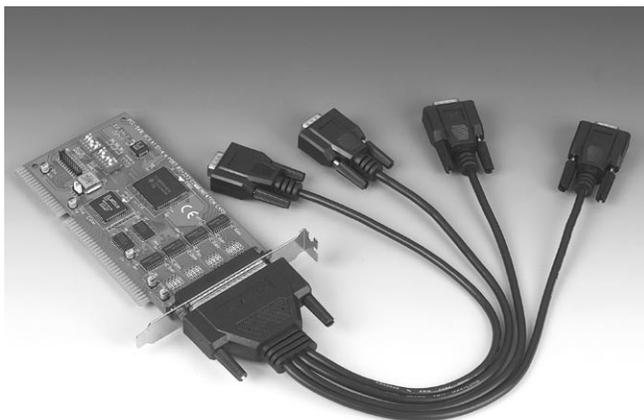


Ordering Information

- PCL-846A** 4-port RS-422/485 interface card w/isolation protection (30cm DB37 to 4 DB9 cable included)
- PCL-846B** 4-port RS-422/485 interface card w/isolation and surge protection (30cm DB37 to 4 DB9 cable included)

PCL-849

4-port RS-232 Communication Card



Features

- Four independent RS-232 serial ports
- Transmission speeds up to 921.6 kbps (PCL-849A)
- Independent I/O addresses, independent/shared IRQ settings for each of 4 serial ports
- Wide IRQ selection: 3, 4, 5, 6, 7, 9, 10, 11, 12 or 15
- Supports standard DOS COM1, COM2, COM3, COM4 (PCL-849A/849B/849+)
- Supports surge protection: 3000 V_{DC} (PCL-849B/849+)
- LED indicators on each port indicate data flow
- Onboard interrupt status register for greater throughput
- Complete RS-232 modem-control signals
- Supports Windows® 98/2000/XP, Linux®
- Powerful and easy-to-use utility (ICOM Tools)

Introduction

The PCL-849 cards provide four individually configurable RS-232 serial communication ports. PCL-849A, PCL-849B and PCL-849L have a 16C554 UART which makes serial I/O more reliable, while the higher performance PCL-849+ has a 16C654 UART. By buffering data into 64-byte packets before putting it on the bus, UARTs drastically reduce the CPU load. This makes the PCL-849+ especially suitable for high speed serial I/O applications under multitasking environments.

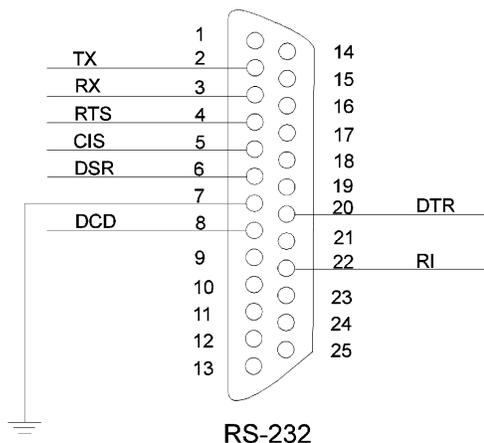
PCL-849 cards support two operating modes: standard mode and enhanced mode. In enhanced mode, the address for all four ports can be set automatically. PCL-849 cards also support either shared IRQ or independent IRQ functions. When an on-board interrupt occurs, the interrupt status register (vector address) indicates which port generated it. The shared interrupt can be set to most common (extended) AT interrupts. This simplifies programming, speeds up interrupt processing and frees up interrupts for other devices.

Specifications

- Ports** 4 serial ports
- I/O Address Range** From 200H to 3F8H
- IRQ** 3, 4, 5, 6, 7, 9, 10, 11, 12, 15
- Data Bits** 5, 6, 7, 8
- Stop Bits** 1, 1.5, 2
- Parity** None, even and odd
- UARTs** 1 x 16C554 (PCL-849A/849B/849L)
1 x 16C654 (PCL-849+)
- Speed** 50 ~ 921.6 kbps (PCL-849A)
50 ~ 307.2 kbps (PCL-849B/849+)
50 ~ 115.2 kbps (PCL-849L)
- Data Signals** TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
- Surge Protection** 3000 V_{DC} (PCL-849B/849+)
- Power Requirements** +5 V @ 250 mA typical, 500 mA max.
±12 V @ 70 mA typical, 120 mA max.
- Dimensions** 185 x 100 mm (7.3" x 3.9")
- Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- Storage Temperature** -25 ~ 80° C (-13 ~ 176° F)

- PCL-849+** 4-port high-speed RS-232 interface card w/ surge protection and 16C654 UART (30cm DB37 to 4 DB25 cable included)
- PCL-849+/9** 4-port high-speed RS-232 interface card with surge protection and 16C654 UART (30cm DB37 to 4 DB9 cable included)
- PCL-849L** 4-port RS-232 interface card (30cm DB37 to 4 DB25 cable included)
- PCL-849L/9** 4-port RS-232 interface card (30cm DB37 to 4 DB9 cable included)
- Opt4A** 4-port RS-232/422/485 cable with male DB37 to DB9 connector (30 cm length)

Pin Assignments



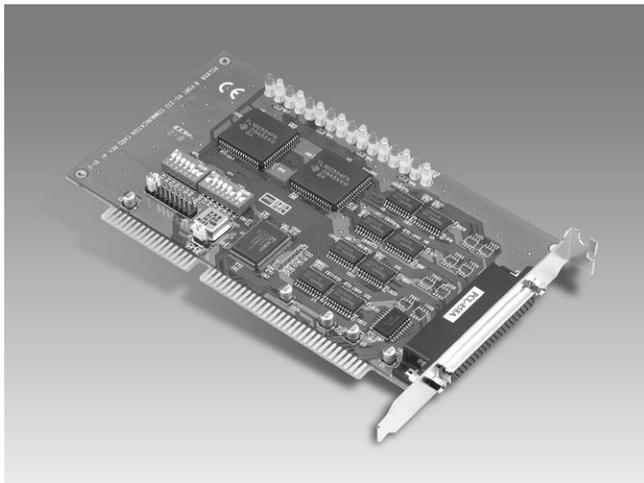
Ordering Information

- PCL-849A** 4-port high-speed RS-232 interface card (30cm DB37 to 4 DB25 cable included)
- PCL-849A/9** 4-port high-speed RS-232 interface card (30cm DB37 to 4 DB9 cable included)
- PCL-849B** 4-port high-speed RS-232 interface card w/ surge protection (30cm DB37 to 4 DB25 cable included)
- PCL-849B/9** 4-port high-speed RS-232 interface card w/ surge protection (30cm DB37 to 4 DB9 cable included)

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7
- 8 cPCI
- 9 ADAM-3000
- 10 Motion Control
- 11 ICOM
- 12 eConnectivity
- 13 UNO
- 14 ADAM-4000
- 15 ADAM-5000
- 16 ADAM-6000
- 17 ADAM-8000
- 18 BAS

PCL-858

8-port High-speed RS-232 Communication Cards



CE

Features

- Eight independent RS-232 serial ports
- Transmission speed up to 921.6 kbps
- Independent I/O addresses, shared IRQ settings for each of 8 serial ports
- Wide IRQ selection: 3, 4, 5, 6, 7, 9, 10, 11, 12, 15
- Supports surge protection: 3000 V_{DC} (PCL-858B only)
- Supports Windows® 98/2000/XP, Linux®
- Powerful and easy-to-use utility (ICOM Tools)

Introduction

PCL-858 interface cards provide eight RS-232 serial communication ports, where each port can be configured individually using onboard jumpers. PCL-858A and PCL-858B each have two 16C554 UARTs, which make serial I/O more reliable. The PCL-858 cards support automatic addressing for all eight ports. All channels share the same interrupt (IRQ), and an interrupt status register can be used to determine the interrupt source. When an onboard interrupt occurs, the interrupt status register (vector address) indicates which port generated it. The shared interrupt can be set to most common (extended) AT interrupts. This simplifies programming, speeds up interrupt processing and frees up interrupts for other devices.

Specifications

- **Ports** 8
- **I/O Address Range** From 000H to 3FFH
- **IRQ** 3, 4, 5, 6, 7, 9, 10, 11, 12, 15
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even, odd
- **UARTs** 2 × 16C554 (PCL-858A/858B)
- **Speed** 50 bps ~ 921.6 kbps
- **Data Signals** TXD, RxD, RTS, CTS, DTR, DSR, DCD, GND
- **Surge Protection** 3000 V_{DC} (PCL-858B only)
- **Power Consumption** +5 V @ 450 mA typical, 950 mA max.
±12 V @ 140 mA typical, 240 mA max.
- **Dimensions** 185 × 100 mm (7.3" × 3.9")
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -25 ~ 80° C (-13 ~ 176° F)

Ordering Information

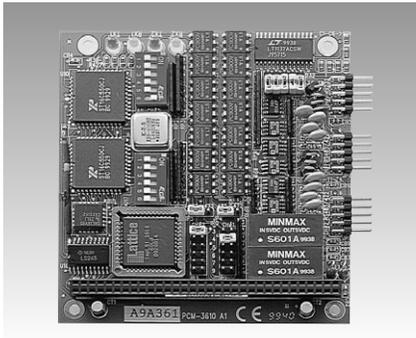
- **PCL-858A** 8-port high-speed RS-232 interface card (must choose Opt-8X)
- **PCL-858B** 8-port high-speed RS-232 interface card w/surge protection (must choose Opt-8X)
- **OPT8A** 8-port RS-232 (DCE) connection box with female DB25 connector
- **OPT8B** 8-port RS-232 (DTE) connection box with male DB25 connector
- **Opt8C** 8-port RS-232 cable with male DB-62 to DB25 connector (1m)
- **Opt8H** 8-port RS-232 cable with male DB-62 to DB9 connector (1m)

PCM-3610 PCM-3612 PCM-3614

Isolated RS-232/422/485 Module

2-port RS-422/485 Module

4-port RS-422/485 High-Speed Module



PCM-3610



Features

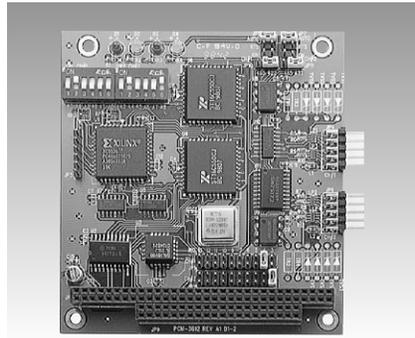
- High speed transmission rate
- Automatic RS-485 data flow control
- Jumper selectable interrupt level
- Supports Windows® 98/2000/XP
- Supports WinCE 3.0
- Powerful and easy-to-use utility (ICOM Tools)

Specifications

- Channel 1** RS-232,422,or 485
- Channel 2** RS-422, or RS-485
- Baud Rate** 50 ~ 115,200 bps
- Character Length** 5, 6, 7, or 8 bits
- Parity** Even, odd, or none
- Stop Bit** 1, 1.5, or 2
- Interrupt Level** IRQ 3, 4, 5, 6, 7, 9
- I/O Connectors** Dual male DB9
- Power Consumption** +5 V @ 400 mA typical
±12 V @ 950 mA max
- Isolation** 1,000 V_{DC}
- Operating Temperature** 0 ~ 65° C (32 ~ 149° F)
- Storage Temperature** -40~85° C (-40~185° F)
- Operating Humidity** 0 ~ 90 % relative humidity, non-condensing

Ordering Information

- PCM-3610-B** Isolated RS-232/422/485 module



PCM-3612



Features

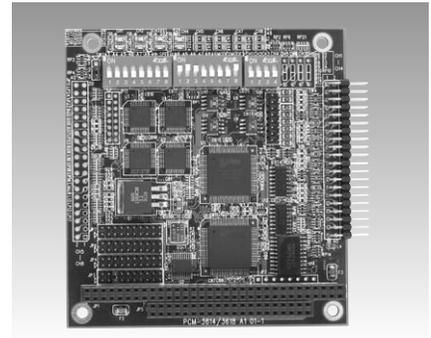
- Long distance communication
- Automatic RS-485 data flow control
- Jumper selectable interrupt level
- Supports Windows® 98/2000/XP
- Supports WinCE 3.0
- Powerful and easy-to-use utility (ICOM Tools)

Specifications

- Channel 1 and 2** RS-422, or RS-485
- Baud Rate** 50 ~ 115,200 bps
- Character Length** 5,6,7,or 8 bits
- Parity** Even, odd, or none
- Stop Bit** 1, 1.5, or 2
- Interrupt Level** IRQ 3, 4, 5, 6, 7, 9, 10, 11, 12 or 15
- I/O Connectors** Dual male DB9
- Power Consumption** +5 V @ 400 mA typical
±12 V @ 950 mA max
- LED** Red LED for TX
Green LED for RX
- Operating Temperature** 0 ~ 65° C (32 ~ 149° F)
- Storage Temperature** -40~85° C (-40~185° F)
- Operating Humidity** 0 ~ 90 % relative humidity, non-condensing

Ordering Information

- PCM-3612-A** Dual port RS-422/485 module



PCM-3614



Features

- Automatic RS-485 data flow control
- Shared IRQ settings for each ports
- LED indicators: TX, RX
- Standard PC ports: COM1, COM2, COM3, COM4 compatible
- Supports Windows® 98/2000/XP
- Powerful and easy-to-use utility (ICOM Tools)

Specifications

- Number of Ports** 4
- I/O Address** 0 x 000 ~ 0 x 3F8
- IRQ** 3, 4, 5, 6, 7, 9, 10, 11, 12, 15
- Data Bits** 5, 6, 7, 8
- Stop Bits** 1, 1.5, 2
- Parity** None, even, odd
- Speed** 50 bps ~ 921.6 kbps
- Connectors** 4 male DB9
- RS-422 Signal Support** TxD+, TxD-, RxD+, RxD-, CTS+, CTS-, RTS+ and RTS-
- RS-485 Signal Support** DATA+, DATA-, CTS+, CTS-
- Surge Protection** 1000 V_{DC}
- Built-in Termination Resistor** 120 Ω
- Power Consumption** +5 V @ 450 mA
- Operating Temperature** 0 ~ 65° C (32 ~ 149° F)
- Storage Temperature** -40~85° C (-40~185° F)
- Operation Humidity** 0 ~ 90 % relative humidity, non-condensing

Ordering Information

- PCM-3614-A** 4-port RS-422/485 High-Speed module

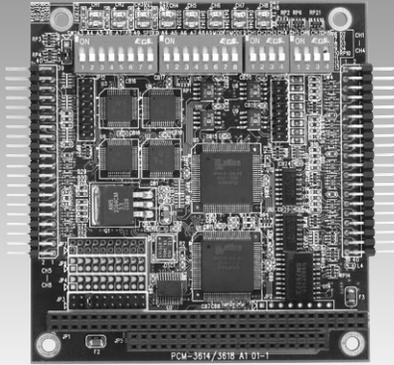
1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCM-3618

PCM-3640/3641

8-port RS-422/485 High-Speed Module

4-port RS-232 High-Speed Module



PCM-3618



Features

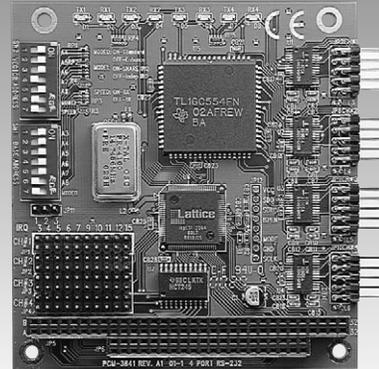
- Automatic RS-485 data flow control
- Shared IRQ settings for each ports
- LED indicators: TX, RX
- Supports Windows® 98/2000/XP
- Powerful and easy-to-use utility (ICOM Tools)

Specifications

- **Number of Ports** 8
- **I/O Address** 0 x 000 ~ 0 x 3F8
- **IRQ** 3, 4, 5, 6, 7, 9, 10, 11, 12, 15
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even and odd
- **Speed** 50 bps ~ 921.6 kbps
- **Connectors** Eight male DB9
- **RS-422 Signal Support** TxD+, TxD-, RxD+, RxD-, CTS+, CTS-, RTS+ and RTS-
- **RS-485 Signal Support** DATA+, DATA-, CTS+, CTS-
- **Surge Protection** 1000 V_{DC}
- **Built-in Termination Resistor** 120 Ω
- **Power Consumption** +5 V @ 650 mA
- **Operating Temperature** 0 ~ 65° C (IEC-68-1-1, 2) (32 ~ 149° F)
- **Storage Temperature** -25 ~ 80° C (-13 ~ 176° F)
- **Operating Humidity** 0 ~ 90% relative humidity, non-condensing

Ordering Information

- **PCM-3618-A** 8-port RS-422/485 High-Speed module



PCM-3640/3641



Features

- Transmission speeds up to 460 kbps (PCM-3641)
- Shared IRQ settings for each of 4 RS-232 ports (PCM-3641)
- Standard PC ports: COM1, COM2, COM3, COM4 compatible
- Supports Windows® 98/2000/XP
- Supports WinCE 3.0
- Powerful and easy-to-use utility (ICOM Tools)

Specifications

- **Number of Ports** 4
- **I/O Address** 0 x 0200 ~ 0 x 03F8
- **IRQ** 3, 4, 5, 6, 7, 9, 10, 11, 12, 15
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even and odd
- **Speed** 50 bps ~ 460.3 kbps (PCM-3641)
50 bps ~ 115.2 kbps (PCM-3640)
- **Connectors** Four DB9 male
- **Data Signals** TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
- **Power Consumption** +5 V @ 200 mA (Typical);
+5 V @ 250 mA (Max.)
- **Operating Temperature** 0 ~ 65° C (IEC-68-1-1, 2) (32 ~ 149° F)
- **Storage Temperature** -25 ~ 80° C (-13 ~ 176° F)
- **Operating Humidity** 0 ~ 90 % relative humidity, non-condensing

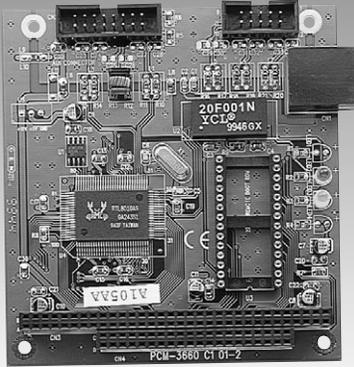
Ordering Information

- **PCM-3640-A** 4-port RS-232 module
- **PCM-3641-A** 4-port RS-232 High-Speed module

PCM-3660 PCM-3662

Jumperless Ethernet Module

PC/104-Plus Ethernet Module



PCM-3660



Features

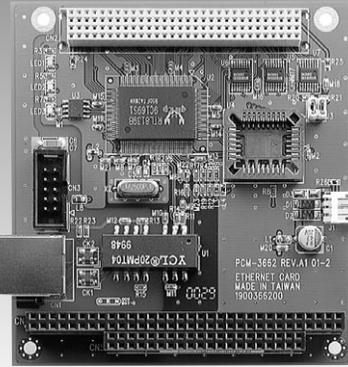
- Automatically detects 8-bit or 16-bit
- AUI connector supports external MAUs
- On-board 32 Kbyte buffer for multi-packages

Specifications

- I/O Address** 200, 220, 240, 260, 280, 2A0, 2C0, 300, 320, 340, 380, 3A0
- Interrupt Level** IRQ 3, 4, 5, 9, 10, 11, 12 or 15
- Boot ROM Address** C0000, C8000, D0000, or D8000H
- Data Bus** 8-bit, 16-bit, or auto-sending
- Connector** 16-bit PC/104 stackthrough connector RJ-45 connector for 10Base-T, 16-pin insulation displacement connector for AU1
- Standard** IEEE 802.3 10 Mbps CSMA/CD 10Base-T Transceiver
- Power Consumption** +5 V @ 400 mA max

Ordering Information

- PCM-3660-C1** Jumperless Ethernet module
- PCM-3661-A** 10Base-2 transceiver module



PCM-3662



Features

- Supports IEEE 802.3u Ethernet standard
- Supports IEEE 802.3x Full Duplex Flow Control
- Supports 10/100Base-T Ethernet
- Supports Wake-On-LAN function
- Provides 4 modes of LED definitions

Specifications

Software Driver Support

- Windows® 95/98/NT/2000 driver
- Novell® server driver
- Windows for workgroups driver
- Novell ODI client driver
- Novell ODI driver for client32
- Linux® driver

General

- Power** +5 V @ 250 mA
- Operating Temperature** 0 ~ 70° C
- Storage Temperature** -15 ~ 80° C
- Humidity** 10 ~ 90% (operating)

Ordering Information

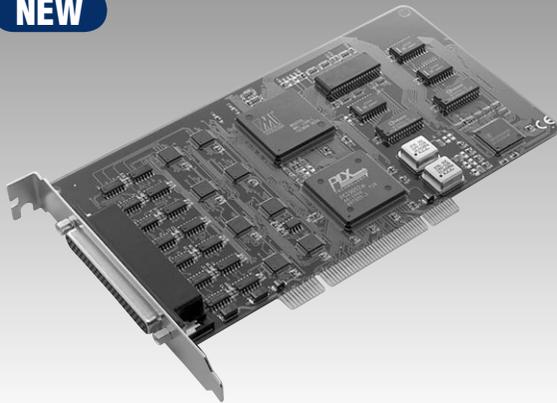
- PCM-3662-A** PC/104-Plus Ethernet Module

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AHS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCI-1625U

8-port Intelligent RS-232/422 Universal PCI Communication Card

NEW



FCC CE

Features

- RISC Processor (TMS 320)
- 512 KB dual-port RAM
- Transmission speed up to 921.6 kbps with eight ports on-line
- Complete RS-232 modem control signals
- Maps to just 16 KB of system memory. Choose one of six addresses from C8000 to DC000.
- Many IRQ options: 2, 3, 4, 5, 7, 10, 11, 12 or 15
- Easy-to-use menu driven installation program
- LEDs on connection box let you monitor the TxD/RxD status of any port
- Links to peripherals up to 1200 m (4000 ft) from controller (RS-422)
- Surge protection: 2500 V_{ESD}, 2000 V_{EFT} (Optional)
- Universal PCI

Introduction

The intelligent PCI-1625U 8-port RS-232 or RS-422 interface card was designed for lab and industrial applications where a PC needs to communicate with terminals, modems, or other instruments. RS-422 applications use the optional Opt-8F/8Z 8-port RS-232 to RS-422 converter, shown on the following page. You can install up to four PCI-1625U cards for a total of 32 ports in any PCI bus-based PC.

The PCI-1625U card has an onboard RISC processor that takes over the processing load from the host PC. When you are transferring large amounts of data from multiple ports, servicing the interrupts alone consumes a large percentage of the capacity of your computer's CPU. The PCI-1625U serves as a high speed, dedicated interrupt processor. Its CPU directly controls the board's CD180 RISC-based UART, guaranteeing 921.6 kbps performance of over eight high speed data ports.

The PCI-1625U is virtually a self contained computer. It contains 512 KB of dual-port RAM which you can use to store and run programs. The dual-port RAM maps into the host system's address space to give you the fastest possible data transfers between the PCI-1625U and PC memory.

When the PCI-1625U initializes, it downloads the driver software (which functions like a PC's BIOS) into its on-board SRAM. This improves performance and makes version upgrading easy. No hardware redundancy!

Specifications

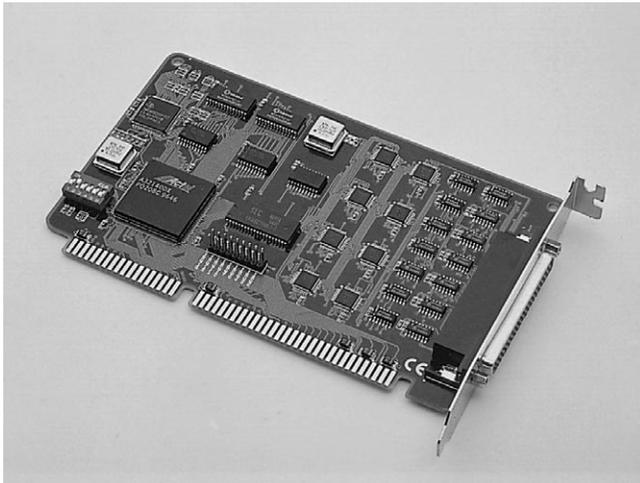
- **Number of Ports** 8
- **Processor** RISC, TI TMS320C203-57
- **Dual-ported RAM** 512 KB
- **SRAM** 16 KB
- **UART** RISC-based CD180
- **Interrupt** 2, 3, 4, 5, 7, 10, 11, 12 or 15
- **Maximum Ports in One System** 32
- **Operating Temperature** 0 ~ 55° C (32 ~ 131° F)
- **Power Consumption** +5 V @ 155 mA, +12 V @ 110 mA, -12 V @ 160 mA
- **Weight** 0.8 kg (1.8 lb)

Ordering Information

- **PCI-1625U** 8-port Intelligent RS-232/422 Universal PCI Communication Card
- **OPT8A** 8-port RS-232 (DCE) connection box with female DB25 connectors
- **OPT8B** 8-port RS-232 (DTE) connection box with male DB25 connectors
- **OPT8C** 8-port RS-232 connection cable with male DB25 connectors
- **OPT8H** 8-port RS-232 cable with male DB62 to DB9 connector (1m)

PCL-844+

8-port Intelligent RS-232/422 ISA Communication Card



CE

Features

- RISC Processor (TMS 320)
- 512 KB dual-port RAM
- Transmission speed up to 921.6 kbps with eight ports on-line
- Complete RS-232 modem control signals
- Maps to just 16 KB of system memory. Choose one of six addresses from C8000 to DC000.
- Many IRQ options: 2, 3, 4, 5, 7, 10, 11, 12 or 15
- Easy-to-use menu driven installation program
- LEDs on connection box let you monitor the TxD/RxD status of any port
- Links to peripherals up to 1200 m (4000 ft) from controller (RS-422)
- Surge protection: 2500 V_{ESD}, 2000 V_{EFT} (Optional)

Introduction

The intelligent PCL-844+ was designed as a 8-port RS-232 or RS-422 interface card for lab and industrial applications where a PC needs to communicate with terminals, modems, or other instruments. RS-422 applications use the optional Opt-8F/8Z 8-port RS-232 to RS-422 converter, shown on the following page. You can install up to four PCL-844+ cards for a total of 32 ports in any AT/ISA bus-based PC.

The PCL-844+ card has an on-board RISC processor that takes over the communications load from the host PC. When you are processing large amounts of data from multiple ports, servicing the interrupts alone consumes a large percentage of the capacity of your computer's CPU. The PCL-844+ serves as a high speed, dedicated interrupt processor. Its CPU directly controls the board's CD180 RISC-based UART, guaranteeing 921.6 kbps performance of over eight high-speed data ports.

PCL-844+ is virtually a self contained computer in its own right. It contains 512 KB of dual-port RAM which you can use to store and run programs. The dual-port RAM maps into the host system's address space to give you the fastest possible data transfers between PCL-844+ and the PC memory.

When the PCL-844+ initializes, it downloads the driver software (which functions like a PC's BIOS) into on-board SRAM. This improves performance and makes version upgrading easy, with no hardware redundancy.

Specifications

Board

- **Number of Ports** 8
- **Processor** RISC, TI TMS320C203-57
- **Dual-ported RAM** 512 KB
- **SRAM** 16 KB
- **UART** RISC-based CD180
- **Interrupt** 2, 3, 4, 5, 7, 10, 11, 12 or 15
- **Maximum Ports in One System** 32
- **Operating Temperature** 0 ~ 55° C (32 ~ 131° F)
- **Power Consumption** +5 V @ 155 mA, +12 V @ 110 mA, -12 V @ 160 mA
- **Weight** 0.8 kg (1.8 lb)

RS-232 Interface

- **Signals** TxD, RxD, RTS, CTS, DTR, DSR, DCD and GND
- **Mode** Asynchronous full duplex
- **Communication Speed** 50 bps ~ 921.6 kbps
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** Even, odd or none

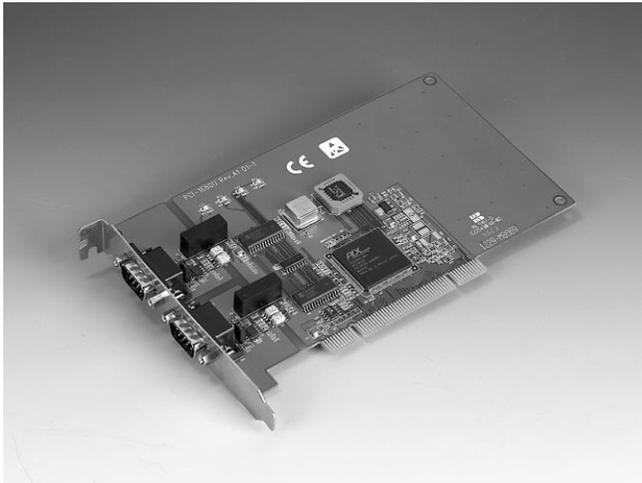
Ordering Information

- **PCL-844+** 8-port Intelligent RS-232/422 Card, with ISA bus
- **Opt8A** 8-port RS-232 (DCE) connection box with female DB25 connectors
- **Opt8B** 8-port RS-232 (DTE) connection box with male DB25 connectors
- **Opt8C** 8-port RS-232 connection cable with male DB25 connectors
- **Opt8H** 8-port RS-232 connector cable with male DB9 connector (1m length)

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

PCI-1680U

2-Port CAN Interface Universal PCI Communication Card w/ Isolation



FCC CE

Features

- PCI bus specification 2.2 compliant
- Operates two separate CAN networks at the same time
- High speed transmission up to 1 Mbps
- 16 MHz CAN controller frequency
- Optical isolation protection of 1000 V_{DC} ensures system reliability
- I/O address automatically assigned by PCI PnP
- LED indicated transmit/receive status on each port
- Windows® DLL library and examples included
- Universal PCI
- Supports Windows® 95/98/2000/XP driver and utility

Introduction

PCI-1680U is a special purpose communication card that offers the connectivity of the Controller Area Network (CAN) to your PC. With its built-in CAN controllers, the PCI-1680U provides bus arbitration and error detection with an automatic transmission repeat function. This drastically reduces the chance of data loss and ensures system reliability. The on-board CAN controllers are located at different positions in the memory, and you can run both CAN controllers independently at the same time. Besides, PCI-1680U has a universal PCI connector, which is compatible with both new 3.3 V signaling systems and traditional 5 V signaling systems. With high-compatibility, the PCI-1680U can be used in diverse systems.

Controller Area Network (CAN)

The CAN is a serial bus system especially suitable for networking “intelligent” I/O devices as well as sensors and actuators within a machine or plant. Characterized by its multi-master protocol, real-time capability, error correction, high noise immunity, and the existence of many different silicon components, the CAN serial bus system, originally developed by Bosch™ for use in automobiles, is increasingly being used in industrial automation.

Direct Memory Mapping Enables Direct Access to the CAN Controller

The PCI-1680U is assigned a memory address. This is the simplest method of integrating a board in a PC and provides the quickest access since the board is treated by the PC as being standard RAM.

Optical Isolation Protection

On-board optical isolators protect your PC and equipment against damage from ground loops, which increases system reliability in harsh environments.

Specifications

- **Bus Interface** PCI bus spec. 2.2 compliant
- **Port** 2
- **Protocol** CAN 2.0 A/B
- **CAN Controller** SJA-1000
- **CAN Transceiver** 82C250
- **Signal Support** CAN_H, CAN_L
- **Speed** 1 Mbps
- **Isolation** 1000 V_{DC}
- **Power Consumption** 5 V @ 400 mA (Typical)
- **Connectors** Two standard DB9(M) connectors
- **Board Dimension** 185 x 100 mm (7.3" x 3.9")
- **Operating Temperature** 0 ~ 65° C (refer to IEC 68-2-1, 2) (32 ~ 149° F)
- **Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)
- **Operating Humidity** 5 ~ 95% Relative humidity, non-condensing (refer to IEC 68-2-3)

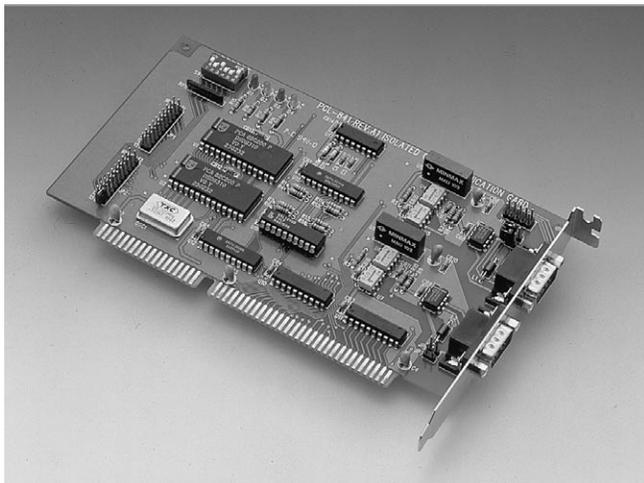
Ordering Information

- **PCI-1680U-A** 2-Port CAN Interface Universal PCI Communication Card w/ Isolation

PCL-841 PCM-3680

Dual-port Isolated CAN-bus Interface Card

Dual-port Isolated CAN Interface Module



PCL-841



Features

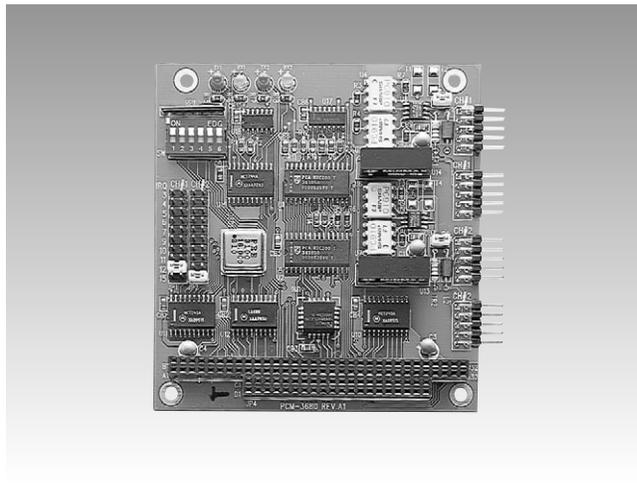
- Operates two separate CAN networks at the same time
- High speed transmission up to 500 kbps
- 16 MHz CAN controller frequency
- Takes 4 KB of address space, 40 base address adjustable in steps from C800H to EF00H
- Optical isolation protection of 1000 V_{DC} ensures system reliability
- Wide IRQ selection for each port: IRQ 3, 4, 5, 6, 7, 9, 10, 11, 12, 15
- LEDs indicate Transmit/Receive status on each port
- Direct memory mapping enables very fast access to the CAN controllers
- Windows® DLL library and examples included
- Supports Windows® 95/98/2000/XP driver and utility

Specifications

Ports	2
CAN Controller	SJA-1000
CAN Transceiver	82C250
Signal Support	CAN_H, CAN_L
Memory Segment Base Address	From C800H to EF00H
IRQ	3, 4, 5, 6, 7, 9, 10, 11, 12 or 15
Isolation Voltage	1000 V _{DC}
Power Consumption	+5 V @ 400 mA typical, 950 mA max.
Connectors	Dual DB-9 male connectors
Operating Temperature	0 ~ 50° C (32 ~ 122° F)
Dimensions	185 x 100 mm (7.3" x 3.9") (PCL-841)
Shipping Weight	0.6 kg (1.3 lb)

Ordering Information

- PCL-841-A Dual-port Isolated CAN-bus Interface Card



PCM-3680



Features

- Operates two separate CAN networks at the same time
- High speed transmission up to 500 kbps
- Direct memory mapping enables very fast access to the CAN controllers
- Windows® DLL library and examples included
- Supports Windows® 95/98/2000/XP driver and utility

Specifications

Ports	2
CAN Controller	SJA-1000
CAN Transceiver	82C250
Signal Support	CAN_H, CAN_L
Memory Segment Base Address	From C800H to EF00H
IRQ	3, 4, 5, 6, 7, 9, 10, 11, 12 or 15
Isolation Voltage	1000 V _{DC}
Power Consumption	+5 V @ 400 mA
Connectors	Two DB-9 male connectors (cable included)
Operating Temperature	0 ~ 65° C (32 ~ 122° F)
Dimensions	90 x 96 mm (3.6" x 3.8")

Ordering Information

- PCM-3680-A Dual-port Isolated CAN Interface Module

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

Fieldbus Communication Overview

Introduction

Today, the PC assumes a key position in automation technology. Together with a real-time operating system such as Windows® NT, it creates an ideal hardware platform for control and visualization of process data. Fieldbus systems with remote input and output modules are used for the data transfer between the PC and the automation equipment. Advantech has launched a series of Fieldbus communication interface cards from Hilscher™, a company with a field-proven record in industrial communication technology. We offer special interface PC cards, since PCs do not feature a direct link to the Fieldbus. These intelligent cards manage the entire data transfer so that only useful data are passed onto the user applications.

The idea behind the "Communication Interface - CIF", is to provide common access to the various Fieldbus systems available on the market. We provide a powerful, easy to handle and reliable solution at a low-cost. Thus, you can concentrate on your applications and do not need to "reinvent the wheel" when you're required to use a different Fieldbus system tomorrow.

We place special value on ease of operation. This includes loadable Firmware, configuration data that remain even after a power failure, an online RS-232C diagnostic interface and LED status indicators. Naturally, each card supplied carries the CE mark.

PC Cards in all Formats for the Fieldbus Standards

We supply PC cards with PCI-bus or in the PC/104 and PC/104-Plus format for all leading Fieldbus systems. Careful component selection and focus of the necessary functions has resulted in a single-side surface mounted card with a low cost.

Fieldbuses differ from each other in their physical interfaces and capacity spectrums. We don't use plug-in modules for adaptation. We provide a dedicated card for the Fieldbus system, sometimes different ones for Master or Slave functions. Only in this way can we guarantee you the best performance relationship with the highest degree of reliability.

Fieldbus	Universal PCI	PC/104	PC/104-Plus
CANopen-Slave CANopen-Master	-COM	-COS -COM	-COM
DeviceNet-Slave DeviceNet-Master	-DNM	-DNS -DNM	-DNM
PROFIBUS-DP-Slave PROFIBUS-DP/ FMS-Master	-PB	-DPS -PB	-PB

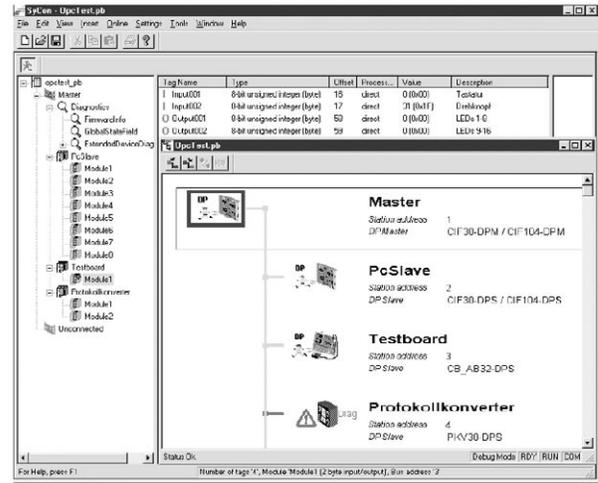
System Configurator with an Uniform "look and feel"

All cards are configured using the SyCon® System Configurator. This software has been coded in C++ and executes under the Windows® 95/98/ME and Windows® NT/2000/XP operating systems.

Graphical input of the individual bus participants, clearly structured menu guidance and automatic computations of the bus parameters make the configuration a very simple exercise.

By means of the function interface, other programs can exchange data with the configurator and access its database.

The configurator can also be included in your own product as an OEM version.



Uniform and Easy-to-use application Interface

The data exchange between the application and the communication interface takes place via a dual-port memory. This is a type of memory where read/write accesses are performed both from the application and from the interface side. A static data model is used for the dual-port memory. It is uniform for all cards and contains the process image. Commands and message-oriented data are exchanged using two mailboxes. The entire handshake is performed in either polling or interrupt mode using only two bytes.

Driver for all Windows® operating systems and Linux

We supply a 32-bit Device Driver, since you cannot access the hardware directly with modern operating systems. This driver has the same functional interface as our drivers for DOS. Thus you can access the communication interface using the same C interface for all operating system.

Support for Three Types of Popular Fieldbus Communication Interfaces

We support three types of popular fieldbus protocol: PROFIBUS, DeviceNet and CANopen with PCI-bus or in the PC/104 or PC/104-Plus format.

PROFIBUS™

PROFIBUS is a multi-master system that enables mutual operation of several automation, engineering or visualization systems on a bus. We supply two PROFIBUS protocol specifications: PROFIBUS-DP and PROFIBUS-FMS, simultaneously, to satisfy different requirements.

DeviceNet™

DeviceNet utilizes CAN technology for data transmission. The transmission rates of DeviceNet are 125, 250 and 500 kbaud. It is one of the most popular networks for factory automation as it can connect industrial devices to a network at a low cost without expensive wiring.

CANopen

Controller Area Network (CAN) is a serial network and features quick reaction and a high degree of reliability. The transmission rates in the CANopen range from 1 kbaud up to 1Mbaud. CANopen is usually used in an embedded network such as machine control within industries.

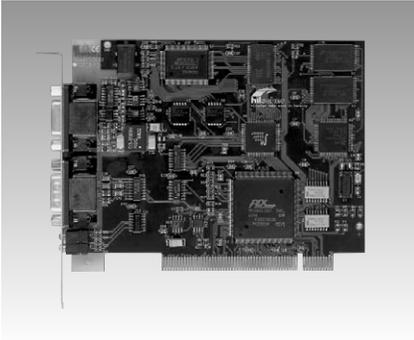
AD-CIF50-PB AD-CIF104-PB AD-CIF104-DPS AD-CIF104P-PB

PROFIBUS™ DP/FMS Master PCI Communication Card

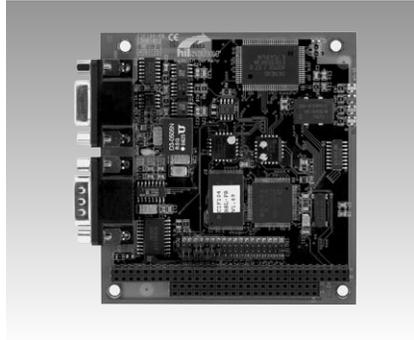
PROFIBUS™ DP/FMS Master PC/104 Module

PROFIBUS™ DP Slave PC/104 Module

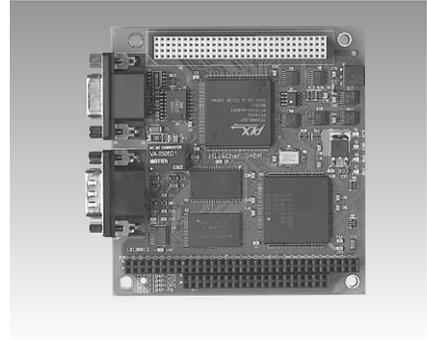
PROFIBUS™ DP/FMS Master PC/104-Plus Module



AD-CIF50-PB



AD-CIF104-PB, AD-CIF104-DPS



AD-CIF104P-PB



1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

Specifications

Bus Interface

- Interface: PCI
- Dual-port Memory: 8 KB
- Interrupt: 3-7, 9-12, 14, 15 via Plug & Play

PROFIBUS Interface

- Interface: EN 50170
- Transmission Rate: 9.6 kBaud to 12 MBaud
- Connector: ASPC2
- Interface: RS485, optically isolated
- Connector: DSub-female connector 9-pin

Diagnostic Interface

- Interface: RS232C, non-isolated
- Connector: DSub-male connector 9-pin

General

- Display: RDY, RUN, STA, ERR
- Operating Voltage: 5 V ±5% / 650 mA
- Operating Temperature: 0 ~ 55° C (32 ~ 131° F)
- Dimensions (L x W x H): 134 x 107 x 20 mm (5.3" x 4.2" x 0.8")
- Weight: 130 g
- Software: C functions library: DRV-TKIT
COM interface: DRV-COM
Device driver Windows: DRV-WIN
Device driver Linux: DRV-LNX
Documentation on CD: CD-SYS
Basic version System Configurator

Ordering Information

- AD-CIF50-PB: Communication Interface PCI PROFIBUS-DP/FMS-Master Card

Specifications

- Card Format: PC/104

Bus Interface

- Interface: ISA
- Dual-port Memory: 8 KB
- Interrupt: 3-7, 9-12, 14, 15

PROFIBUS interface

- Interface: EN 50170
- Transmission Rate: 9.6 kBaud to 12 MBaud
- Controller: ASPC2
- Interface: RS485, optically isolated
- Connector: DSub-female 9-pin

Diagnostic Interface

- Interface: RS232C, non-isolated
- Connector: DSub-male 9-pin

General

- Display: RDY, RUN, STA, ERR
- Operating Voltage: +5 V ±5% / 650 mA
- Operating Temperature: 0 ~ 55° C (32 ~ 131° F)
- Dimensions (L x W x H): 90 x 96 x 25 mm (3.5" x 3.7" x 1")
- Weight: 120 g
- Software: C functions library: DRV-TKIT
COM interface: DRV-COM
Device driver Windows: DRV-WIN
Device driver Linux: DRV-LNX
Documentation on CD: CD-SYS
Basic version System Configurator

Ordering Information

- AD-CIF104-PB: PROFIBUS-DP/FMS-Master PC/104 Module with left DSub 9-pin connector
- AD-CIF104-DPS: PROFIBUS-DP-Slave PC/104 Module with left DSub 9-pin connector

Specifications

- Card Format: PC/104-Plus

Bus Interface

- Interface: PCI
- Dual-port Memory: 8 KB
- Interrupt: Plug & Play

PROFIBUS interface

- Interface: EN 50170
- Transmission Rate: 9.6 kBaud to 12 MBaud
- Controller: EC1
- Interface: RS485, optically isolated
- Connector: DSub-female 9-pin

Diagnostic Interface

- Interface: RS232C, non-isolated
- Connector: DSub-male 9-pin

General

- Display: RDY, RUN, STA, ERR
- Operating Voltage: +5 V ±5% / 50 mA, +3.3 V ±5% < 400 mA
- Operating Temperature: 0 ~ 55° C (32 ~ 131° F)
- Dimensions (L x W x H): 90 x 96 x 25 mm (3.5" x 3.7" x 1")
- Weight: 120 g
- Software: C functions library: DRV-TKIT
COM interface: DRV-COM
Device driver Windows: DRV-WIN
Device driver Linux: DRV-LNX
Documentation on CD: CD-SYS
Basic version System Configurator

Ordering Information

- AD-CIF104P-PB: PROFIBUS-DP/FMS-Master PC/104-Plus Module with left DSub 9-pin connector

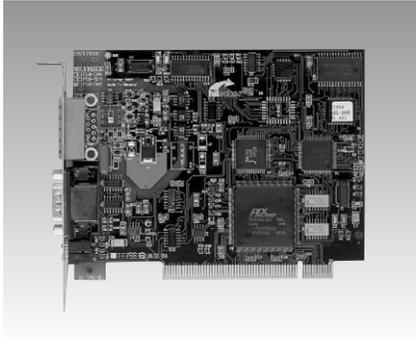
AD-CIF50-DNM AD-CIF104-DNM AD-CIF104-DNS AD-CIF104P-DNM

DeviceNet™ Master PCI Communication Card

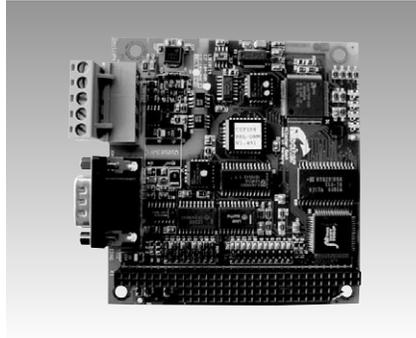
DeviceNet™ Master PC/104 Module

DeviceNet™ Slave PC/104 Module

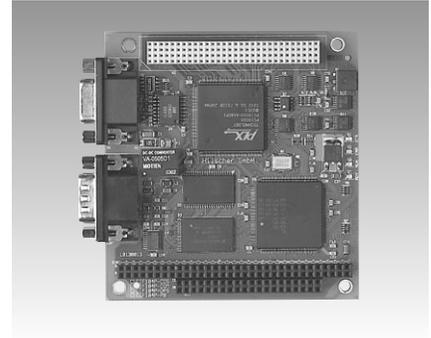
DeviceNet™ Master PC/104-Plus Module



AD-CIF50-DNM



AD-CIF104-DNM, AD-CIF104-DNS



AD-CIF104P-DNM



Specifications

Bus Interface

- **Interface** PCI
- **Dual-port Memory** 8 KB
- **Interrupt** 3-7,9-12,14,15 via Plug & Play

DeviceNet Interface

- **Transmission Rates** 125 kBaud, 250 kBaud, 500 kBaud
- **Controller** SJA 1000
- **Interface** ISO 11898, optically isolated
- **Connector** COMBICON 5-pin

Diagnostic Interface

- **Interface** RS-232C, non-isolated
- **Connector** DSub-male connector 9-pin

General

- **Display** RDY, RUN, NET, MOD
- **Operating Voltage** +5 V ±5% / 650 mA, ±12 V ±5% / 50 mA, +11~25 V / 55 mA
- **Operating Temperature** 0 ~ 55° C (32 ~ 131° F)
- **Dimensions (L x W x H)** 134 x 107 x 20 mm (5.3" x 4.2" x 0.8")
- **Weight** 130 g
- **Software**
C functions library: DRV-TKIT
COM interface: DRV-COM
Device driver Windows: DRV-WIN
Device driver Linux: DRV-LNX
Documentation on CD: CD-SYS
Basic version System Configurator

Ordering Information

- **AD-CIF50-DNM** Communication Interface PCI DeviceNet-Master Card

Specifications

- **Card Format** PC/104

Bus Interface

- **Interface** ISA
- **Dual-port memory** 8 KB
- **Interrupt** 3-7,9-12,14,15

DeviceNet Interface

- **Transmission Rates** 125 kBaud, 250 kBaud, 500 kBaud
- **Controller** SJA1000
- **Interface** ISO 11898, optically isolated
- **Connector** COMBICON 5-pin

Diagnostic Interface

- **Interface** RS-232C, non-isolated
- **Connector** RS-232C, non-isolated COMBICON 5-pin

General

- **Display** RDY, RUN, NET, MOD
- **Operating Voltage** +5 V ±5% / 650 mA, +11~25 V / 55 mA
- **Operating Temperature** 0 ~ 55° C (32 ~ 131° F)
- **Dimensions (L x W x H)** 90 x 96 x 25 mm (3.5" x 3.7" x 1")
- **Weight** 120 g
- **Software**
C functions library: DRV-TKIT
COM interface: DRV-COM
Device driver Windows: DRV-WIN
Device driver Linux: DRV-LNX
Documentation on CD: CD-SYS
Basic version System Configurator

Ordering Information

- **AD-CIF104-DNM** DeviceNet-Master PC/104 Module with left COMBICON 5-pin connector
- **AD-CIF104-DNS** DeviceNet-Slave PC/104 Module with left COMBICON 5-pin connector

Specifications

- **Card Format** PC/104-Plus

Bus Interface

- **Interface** PCI
- **Dual-port memory** 8 KB
- **Interrupt** Plug & Play

DeviceNet Interface

- **Transmission Rates** 125 kBaud, 250 kBaud, 500 kBaud
- **Controller** EC1
- **Interface** ISO 11898, optically isolated
- **Connector** COMBICON 5-pin

Diagnostic Interface

- **Interface** RS-232C, non-isolated
- **Connector** RS-232C, non-isolated COMBICON 5-pin

General

- **Display** RDY, RUN, NET, MOD
- **Operating Voltage** +5 V ±5% / 650 mA, 3.3 V ±5% / 400 mA, +11~25 V / 55 mA
- **Operating Temperature** 0 ~ 55° C (32 ~ 131° F)
- **Dimensions (L x W x H)** 90 x 96 x 25 mm (3.5" x 3.7" x 1")
- **Weight** 120 g
- **Software**
C functions library: DRV-TKIT
COM interface: DRV-COM
Device driver Windows: DRV-WIN
Device driver Linux: DRV-LNX
Documentation on CD: CD-SYS
Basic version System Configurator

Ordering Information

- **AD-CIF104P-DNM** DeviceNet-Master PC/104-Plus Module with left COMBICON 5-pin connector

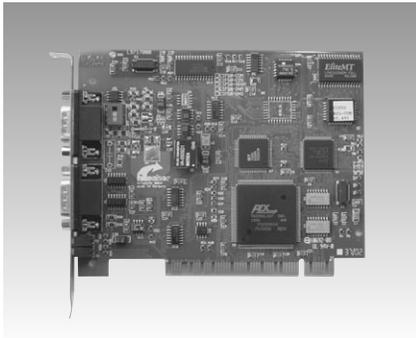
AD-CIF50-COM AD-CIF104-COM AD-CIF104-COS AD-CIF104P-COM

CANopen Master PCI Communication Card

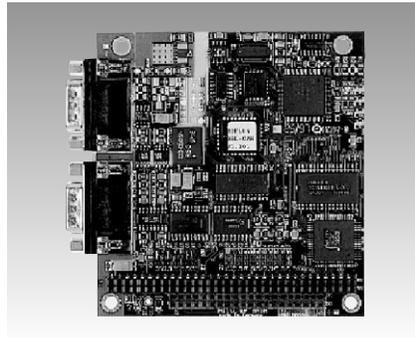
CANopen Master PC/104 Module

CANopen Slave PC/104 Module

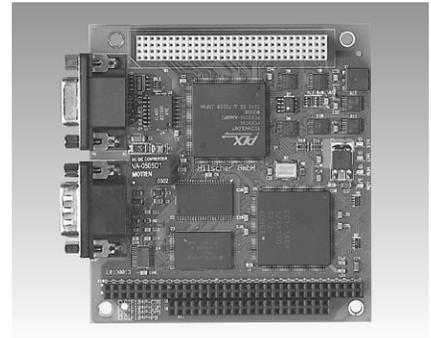
CANopen Master PC/104-Plus Module



AD-CIF50-COM



AD-CIF104-COM, AD-CIF104-COS



AD-CIF104P-COM



Specifications

Bus Interface

- **Bus Interface** PCI
- **Dual-port Memory** 8 KB
- **Interrupt** 3-7,9-12,14,15 via Plug & Play

CANopen Interface

- **Interface** CiA DS-102
- **Transmission Rate** 10 kBaud to 1MBAud
- **Controller** SJA 1000
- **Interface** ISO 11898, optically isolated
- **Connector** DSub-male connector 9-pin

Diagnostic Interface

- **Interface** RS-232C, non-isolated
- **Connector** DSub-male connector 9-pin

General

- **Display** RDY, RUN, STA, ERR
- **Operating Voltage** +5 V ±5% / 500 mA, ±12 V ±5% / 50 mA
- **Operating Temperature** 0 ~ 55° C (32 ~ 131° F)
- **Dimensions (L x W x H)** 134 x 107 x 20 mm (5.3" x 4.2" x 0.8")
- **Weight** 130 g
- **Software** C functions library: DRV-TKIT
COM interface: DRV-COM
Device driver Windows: DRV-WIN
Device driver Linux: DRV-LNX
Documentation on CD: CD-SYS
Basic version System Configurator

Ordering Information

- **AD-CIF50-COM** Communication Interface PCI CANopen-Master Card

Specifications

- **Card Format** PC/104

Bus Interface

- **Bus Interface** ISA
- **Dual-port memory** 8 KB
- **Interrupt** 3-7, 9-12, 14, 15

CANopen Interface

- **Interface** CiA DS - 102
- **Transmission Rate** 10 kBaud to 1 MBAud
- **Controller** SJA1000
- **Interface** ISO 11898, optically isolated
- **Connector** DSub-male 9-pin

Diagnostic Interface

- **Interface** RS-232C, non-isolated
- **Connector** DSub-male 9-pin

General

- **Display** RDY, RUN, STA, ERR
- **Operating Voltage** +5 V ±5% / 500 mA
- **Operating Temperature** 0 ~ 55° C (32 ~ 131° F)
- **Dimensions (L x W x H)** 90 x 96 x 25 mm (3.5" x 3.7" x 1")
- **Weight** 120 g
- **Software** C functions library: DRV-TKIT
COM interface: DRV-COM
Device driver Windows: DRV-WIN
Device driver Linux: DRV-LNX
Documentation on CD: CD-SYS
Basic version System Configurator

Ordering Information

- **AD-CIF104-COM** CANopen-Master PC/104 Module with left DSub 9-pin connector
- **AD-CIF104-COS** CANopen-Slave PC/104 Module with left DSub 9-pin connector

Specifications

- **Card Format** PC/104-Plus

Bus Interface

- **Bus Interface** PCI
- **Dual-port memory** 8 KB
- **Interrupt** Plug & Play

CANopen Interface

- **Interface** CiA DS - 102
- **Transmission Rate** 10 kBaud to 1 MBAud
- **Controller** EC1
- **Interface** ISO 11898, optically isolated
- **Connector** DSub-male 9-pin

Diagnostic Interface

- **Interface** RS-232C, non-isolated
- **Connector** DSub-male 9-pin

General

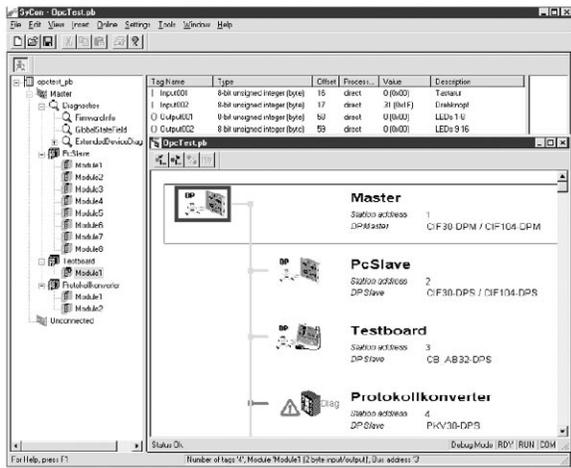
- **Display** RDY, RUN, STA, ERR
- **Operating Voltage** +5 V ±5% / 50 mA, 3.3 V ±5% < 400 mA
- **Operating Temperature** 0 ~ 55° C (32 ~ 131° F)
- **Dimensions (L x W x H)** 90 x 96 x 25 mm (3.5" x 3.7" x 1")
- **Weight** 120 g
- **Software** C functions library: DRV-TKIT
COM interface: DRV-COM
Device driver Windows: DRV-WIN
Device driver Linux: DRV-LNX
Documentation on CD: CD-SYS
Basic version System Configurator

Ordering Information

- **AD-CIF104P-COM** CANopen-Master PC/104-Plus Module with left DSub 9-pin connector

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

SyCon® - Fieldbus System Configurator



Features

- Unified operating desktop for all Fieldbus systems
- Supports all Slaves
- Graphical input of the Fieldbus system
- Configuration of the individual bus devices
- Plausibility testing of the bus parameters and the process image
- On-line diagnostic and statistic functions
- Writing and reading I/O data
- Export functions
- Uses GSD, EDS or other device description files

Introduction

SyCon® is a universal System Configurator with a unified user desktop for all Fieldbus PC cards. As a basis for the configuration, so-called device description files or electronic data sheets, in which the characteristics of the bus device are defined, are used. These are standardised for some Fieldbus systems and are supplied by the device manufacturer. For other cases, SyCon® offers this function for input. The bus structure is determined by a graphic editor where the individual devices are placed. A double click on the device opens the corresponding configuration window. A table displays all the possible modules or data that will be created with the current device configuration. The address of the data in the process image is issued manually or automatically by the configurator. The parameterization of the devices is carried out by means of the selection or entry of the values of the respective Fieldbus system.

The final step is defining the bus parameters. This is limited to the definition of the transmission rate, as all other parameters are independently calculated on the basis of the data in the device description files. All process variables can be provided with a symbolic name. These are made available as labels in the interface for a primary visualisation, SoftLogic or OPC server. In this way the entry and comparison of variable addresses becomes unnecessary. SyCon® offers comprehensive diagnostic aids. In diagnostic mode, the status of all devices are cyclically called up and presented in red or green depending on whether a data exchange is taking place with it at the time. By double clicking on 'red' bus devices, the cause of the error is shown in clear text as far as possible. SyCon® is provided as a basic version with every device. Without license code, the configuration is limited to two devices on a network, which is sufficient for slave modules.

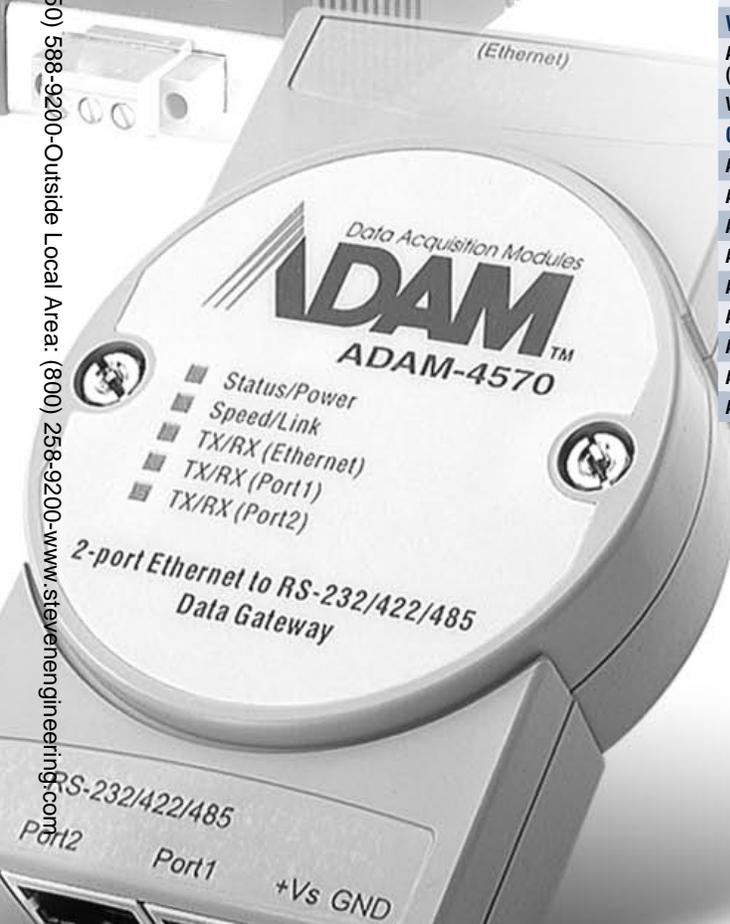
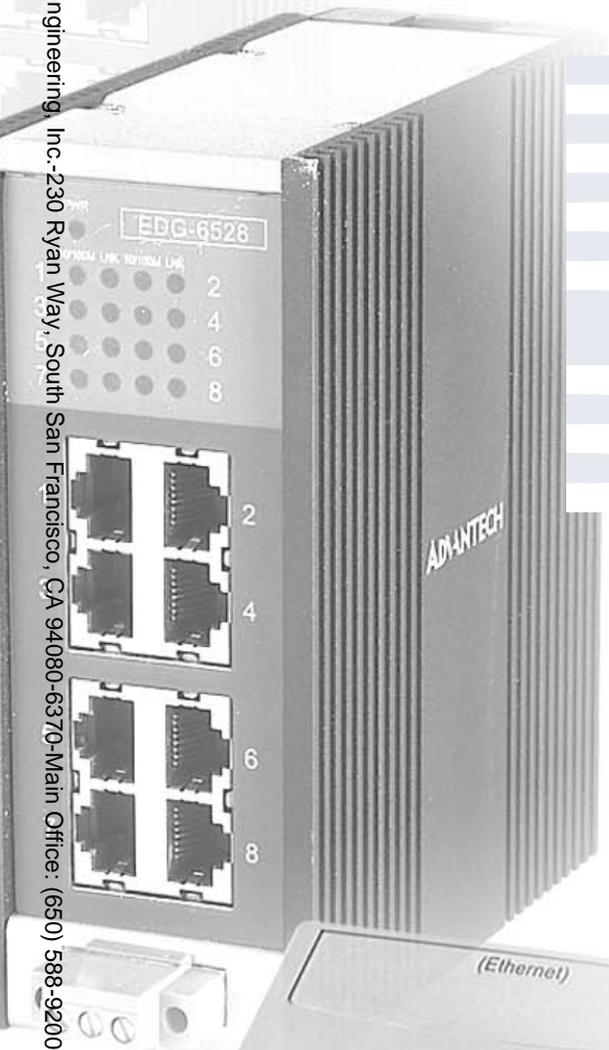
System Configurator with a Uniform "Look and Feel"

All cards are configured using the SyCon® System Configurator, which has been coded in C++ and executes under the Windows® 95/98/ME and Windows® NT/2000/XP operating systems. Graphical input of the individual bus participants, clearly structured menu guidance and automatic computations of the bus parameters make the configuration a very simple exercise.

Ordering Information

	Basic Sycon®	Basic Sycon® w/License code	Basic Sycon® + OPC server	Basic Sycon® w/License code + OPC server
PROFIBUS™	AD-CIF50-PB	AD-CIF50-PB-S	AD-CIF50-PB-O	AD-CIF50-PB-SO
	AD-CIF104-PB	AD-CIF104-PB-S	AD-CIF104-PB-O	AD-CIF104-PB-SO
	AD-CIF104-DPS	N/A	AD-CIF104-DPS-O	N/A
	AD-CIF104P-PB	AD-CIF104P-PB-S	AD-CIF104P-PB-O	AD-CIF104P-PB-SO
DeviceNET™	AD-CIF50-DNM	AD-CIF50-DNM-S	AD-CIF50-DNM-O	AD-CIF50-DNM-SO
	AD-CIF104-DNM	AD-CIF104-DNM-S	AD-CIF104-DNM-O	AD-CIF104-DNM-SO
	AD-CIF104-DNS	N/A	AD-CIF104-DNS-O	N/A
	AD-CIF104P-DNM	AD-CIF104P-DNM-S	AD-CIF104P-DNM-O	AD-CIF104P-DNM-SO
CANopen	AD-CIF50-COM	AD-CIF50-COM-S	AD-CIF50-COM-O	AD-CIF50-COM-SO
	AD-CIF104-COM	AD-CIF104-COM-S	AD-CIF104-COM-O	AD-CIF104-COM-SO
	AD-CIF104-COS	N/A	AD-CIF104-COS-O	N/A
	AD-CIF104P-COM	AD-CIF104P-COM-S	AD-CIF104P-COM-O	AD-CIF104P-COM-SO

eConnectivity Solutions



eConnectivity	Connect Your Devices to the eWorld	11-2
eConnectivity Solutions Selection Guide		
EDG-4504	4-port RS-232/422/485 to Ethernet Data Gateway	11-6
EDG-4508+ /4516+ EDG-4508R+/4516R+ (new)	8/16-port RS-232/422/485 to Ethernet Data Gateway with front wiring 8/16-port RS-232/422/485 to Ethernet Data Gateway with rear wiring	11-7
ADAM-4577/4579	1/2-port Universal Serial Device Gateway	11-8
ADAM-4570/4571	2/1-port RS-232/422/485 to Ethernet Data Gateway	11-9
ADAM-4570L/4571L	2/1-port RS-232 to Ethernet Data Gateway	11-10
ADAM-4572	1-port Modbus to Ethernet Data Gateway Module	11-11
Embedded Data Gateway Module		
EDG-4100/4110	1-port RS-232, 422/485 to Ethernet Data Gateway module	11-12
EDG-4100W/4110W (new)	1-port wireless RS-232, 422/485 to Ethernet Data Gateway module	11-13
Network Hub/Switch/Fiber Optical Converter		
ADAM-6510/6520	4/5-port Ethernet Hub/Switch	11-14
ADAM-6521	5-port Industrial 10/100 Mbps Ethernet Switch with Fiber Port	11-15
ADAM-6541	Ethernet to Multi-mode Fiber Optic Converter	11-16
ADAM-6542	Ethernet to Single Strand WPM Fiber Optic Converter	11-17
EDG-6528 (new)	8-port Industrial 10/100 Mbps Ethernet Switch	11-18
EDG-6528I (new)	8-port Industrial 10/100 Mbps Ethernet Switch w/Wide Operating Temperature	11-18
EDG-6528M (new)	Industrial Switch with 6 10/100 Mbps Ethernet Ports & 2 Multi-mode Fiber Ports	11-19
EDG-6528S (new)	Industrial Switch with 6 10/100 Mbps Ethernet Ports & 2 Single-mode Fiber Ports	11-19
Wireless Gateway and Application Module		
ADAM-4570W/4571W (new)	2/1 port RS-232/422/485 to WLAN Data Gateway	11-20
WiCOM-3910 (new)	Wireless Remote & Monitor Display Extender	11-21
Communication Controller/Converter/Repeater		
ADAM-6500/6501	Ethernet-based Communication Controller	11-22
ADAM-4500	PC-based Communication Controller	11-23
ADAM-4510/4510S	Isolated RS-422/485 Repeater	11-24
ADAM-4520	Isolated RS-232 to RS-422/485 Converter	11-24
ADAM-4521	Addressable RS-422/485 to RS-232 Converter	11-24
ADAM-4522	Isolated RS-232 to RS-422/485 Converter	11-25
ADAM-4541	Multi-mode Fiber Optic to RS-232/422/485 Converter	11-25
ADAM-4542+	Single-mode Fiber Optic to RS-232/422/485 Converter	11-25
ADAM-4561	1-port Isolated USB to RS-232/422/485 Converter	11-26



Evolve to eConnectivity



Ethernet Data Gateways

The Ethernet data gateways enable RS-232/422/485 serial devices to be connected to a host computer over an Ethernet network quickly and cost-effectively. No extra programming effort is required at the host computer, so software development costs can be saved. Ethernet data gateways are especially suitable for remotely controlling and monitoring your serial devices via Ethernet.

RS-232/422/485 to Ethernet Universal Data Gateway

Universal Serial Device Gateways allow RS-232/422/485 serial devices to connect to Ethernet networks and operate as Ethernet nodes. Through TCP, UDP, IP, Socket or Winsock, Universal Serial Device Gateways can be used for different operating systems ranging from Microsoft Windows to Linux. Moreover, serial devices can use peer-to-peer communication without any intermediate host PCs and software programming to save costs and effort.

Modbus to Ethernet Data Gateway

The ADAM-4572 Modbus gateway serves as an interface between Modbus serial devices and computer hosts running Modbus/TCP on Ethernet networks. Fully compliant with Modbus/TCP, the ADAM-4572 offers a convenient solution to connect existing devices or controllers running Modbus serial protocol (Modbus/ASCII or Modbus/RTU) to an Ethernet network.

The Transparent Ethernet Data Gateway Board

The EDG-4100 is a cost effective network-enabled board module. It enables nearly any device to communicate over the Internet and shared networks, and it allows those devices to be remotely monitored, managed, and controlled. Thus, it is especially suitable for remote management and data accessibility for devices that normally can't connect to a network. This includes: factory machinery, security systems, heating and ventilation systems, lighting control system and Point-of-Sale devices.

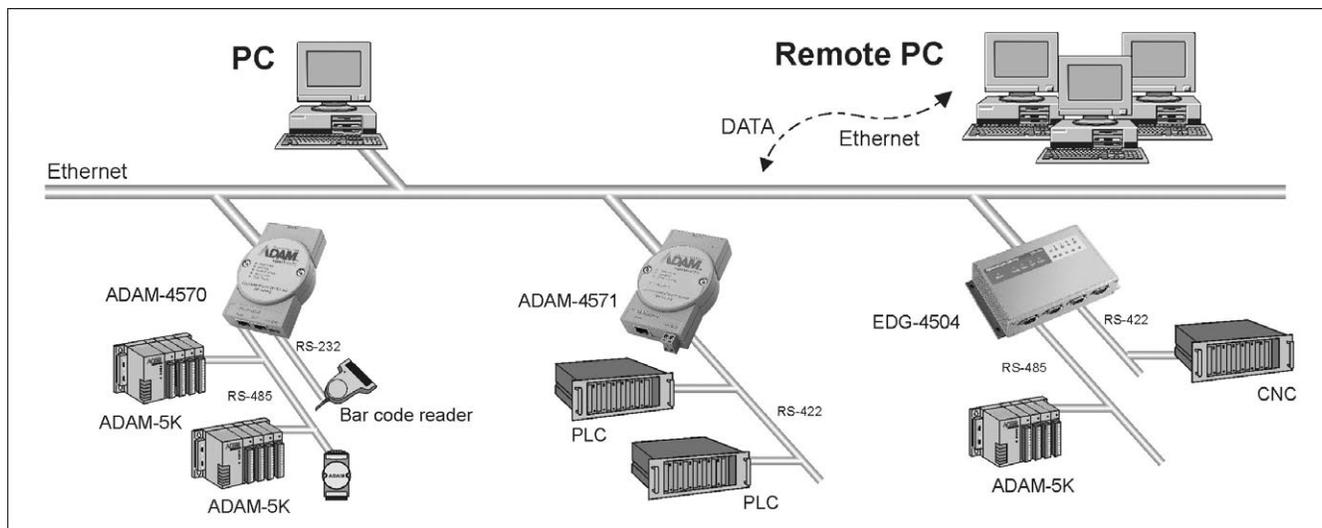
Introduction

As the world becomes more and more wired, it becomes critical to manage and connect devices. Advantech offers a comprehensive and cost-effective eConnectivity solution for easy installation and operation in critical industrial environments. This solution fulfills all requirements from worldwide enterprises that need supervisory control, operator interfaces, and logging of events and alarms via serial communication over Ethernet networks.

Advantech's eConnectivity solution is divided into five parts:

- Industrial-grade hubs and switches
- Ethernet media converters
- Ethernet data gateways
- Web-enabled communication controllers
- Serial media converters

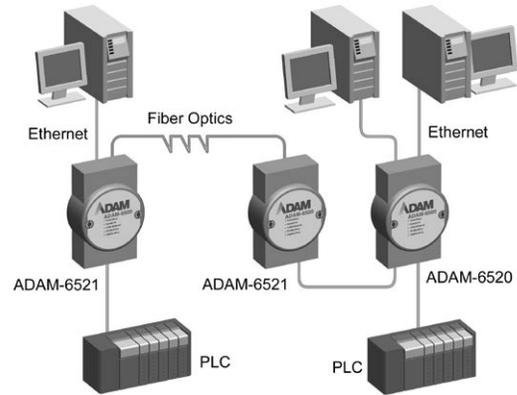
EDG System Architecture



Bring Your Devices to the eWorld

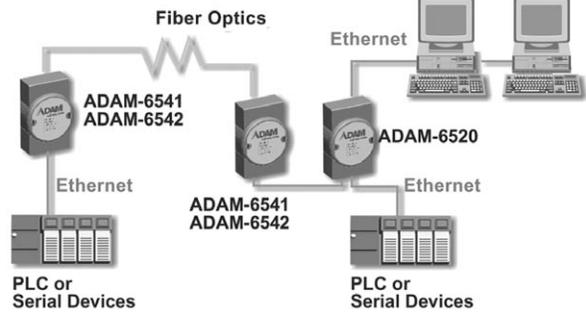
Industrial-Grade Hubs and Switches

The industrial-grade hubs and switches (ADAM-6510/6520/6521) are especially suitable for industrial environments with Ethernet networking needs, such as semiconductor factories, inventory control at warehouses, assembly lines and production. Use them to expand your industrial network fast and cost-effectively. The rugged industrial-grade design assures reliability and stability.



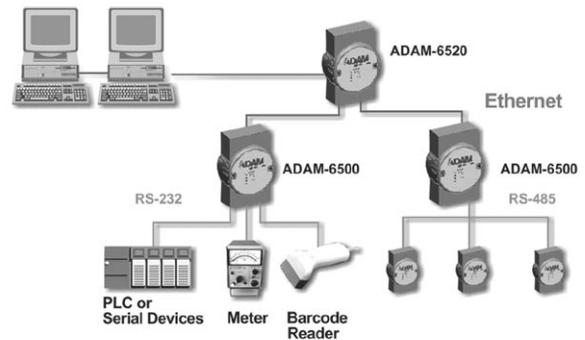
Ethernet Media Converters

The Ethernet media converters are designed to convert Ethernet network signals (10/100Base-TX) to fiber network signals (100Base-FX). They transparently convert Ethernet signals into optic signals. Fiber optic communication provides wide bandwidth and secure long-distance transmission without electromagnetic interference.



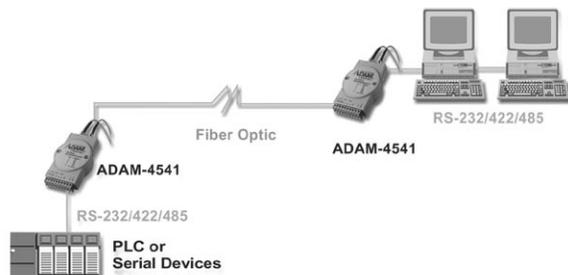
Web-enabled Communication Controllers

The Web-enabled communication controllers provide ideal environments to develop applications that handle RS-232/485 devices/equipment data for Ethernet/Internet. Advantech's web-enabled communication controllers: ADAM-6500 and ADAM-6501, with built-in Windows® CE .NET operating system, let you run new programs in Microsoft embedded VC++. The Windows environment also includes a web server to allow you to develop web-enabled applications. The result is a powerful solution for industrial automation and control.



Serial Media Converters

The Serial Media Converters provide conversion between serial networks and other media. They can transparently convert RS-232 signals to RS-422/485 signals, as well as wireless and fiber optic signals. The ADAM-4520 transparently converts RS-232 signals into RS-422 or RS-485 signals without changing a PC's hardware or software. The ADAM-4510S enables extension of serial network transmission. The ADAM-4541 can be used as a RS-232/422/485 point-to-point or point-to-multipoint connection for transmitting and converting full/half-duplex signals and their equivalents within a fiber optic environment.



- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

Selection Guide

Ethernet Data Gateway Series

	Model Name	Interface	Ports	Serial Type	Transmission Speed	Surge Protection	Parity Bit	Data Bit
Ethernet Data Gateway	EDG-4100	10/100 Mbps Ethernet	1	RS-232	50 ~ 230 kbps	-	odd, even, none, space, mark	5,6,7,8
	EDG-4110	10/100 Mbps Ethernet	1	RS-422/485	50 ~ 230 kbps	-	odd, even, none, space, mark	5,6,7,8
	ADAM-4571	10/100 Mbps Ethernet	1	RS-232/422/485	50 ~ 230 kbps	15 K V _{ESD}	odd, even, none, space, mark	5,6,7,8
	ADAM-4571L	10/100 Mbps Ethernet	1	RS-232	50 ~ 230 kbps	15 K V _{ESD}	odd, even, none, space, mark	5,6,7,8
	ADAM-4571S	10/100 Mbps Ethernet	1	RS-422/485	50 ~ 230 kbps	15 K V _{ESD}	odd, even, none, space, mark	5,6,7,8
	ADAM-4570	10/100 Mbps Ethernet	2	RS-232/422/485	50 ~ 230 kbps	15 K V _{ESD}	odd, even, none, space, mark	5,6,7,8
	ADAM-4570L	10/100 Mbps Ethernet	2	RS-232	50 ~ 230 kbps	15 K V _{ESD}	odd, even, none, space, mark	5,6,7,8
	ADAM-4570S	10/100 Mbps Ethernet	2	RS-422/485	50 ~ 230 kbps	15 K V _{ESD}	odd, even, none, space, mark	5,6,7,8
	EDG-4504	10/100 Mbps Ethernet	4	RS-232/422/485	50 ~ 230 kbps	15 K V _{ESD}	odd, even, none, space, mark	5,6,7,8
	EDG-4508+	10/100 Mbps Ethernet	8	RS-232/422/485	50 ~ 230 kbps	15 K V _{ESD}	odd, even, none, space, mark	5,6,7,8
	EDG-4508R+	10/100 Mbps Ethernet	8	RS-232/422/485	50 ~ 230 kbps	15 K V _{ESD}	odd, even, none, space, mark	5,6,7,8
	EDG-4516+	10/100 Mbps Ethernet	16	RS-232/422/485	50 ~ 230 kbps	15 K V _{ESD}	odd, even, none, space, mark	5,6,7,8
	EDG-4516R+	10/100 Mbps Ethernet	16	RS-232/422/485	50 ~ 230 kbps	15 K V _{ESD}	odd, even, none, space, mark	5,6,7,8
Universal Serial Device Gateway	ADAM-4572	10/100 Mbps Ethernet	1	RS-232/422/485	300 ~ 115.2 kbps	N/A	odd, even, none	7,8
	ADAM-4577	10 Mbps Ethernet	1	RS-232/422/485	30 ~ 230 kbps	N/A	odd, even, none, space, mark	5,6,7,8
	ADAM-4579	10/100 Mbps Ethernet	2	RS-232/422/485	30 ~ 230 kbps	N/A	odd, even, none, space, mark	5,6,7,8

Wireless Data Gateway

	Model Name	Interface	Ports	Serial Type	Speed	Surge Protection	Parity
Wireless Data Gateway	EDG-4100W	802.11b	1	RS-232	50 bps ~ 230 kbps	-	odd, even, none, space, mark
	EDG-4110W	802.11b	1	RS-422/485	50 bps ~ 230 kbps	-	odd, even, none, space, mark
	ADAM-4570W	802.11b	2	RS-232/422/485	50 bps ~ 230 kbps	15 K V _{ESD}	odd, even, none, space, mark
	ADAM-4571W	802.11b	1	RS-232/422/485	50 bps ~ 230 kbps	15 K V _{ESD}	odd, even, none, space, mark

Ethernet Media Converters & Ethernet Hub/Switches

	Model Name	Interface	Ports	Connectors	Surge Protection	ESD Protection	Power Requirement	Operating Temperature
Ethernet Media Converters	ADAM-6541	10/100 Mbps 100 Mbps	1	1 x RJ-45 1 x Fiber	3000 V _{DC}	1500 V _{RMS}	10 ~ 30 V _{DC}	0 ~ 70 °C (32 ~ 158 °F)
	ADAM-6542/W15 ADAM-6542/W13	10/100 Mbps 100 Mbps	1	1 x RJ-45 1 x Fiber WDM	3000 V _{DC}	1500 V _{RMS}	10 ~ 30 V _{DC}	0 ~ 70 °C (32 ~ 158 °F)
Ethernet Hub	ADAM-6510	10 Mbps	4	4 x RJ-45 1 x RJ-45 (uplink)	3000 V _{DC}	-	10 ~ 30 V _{DC}	0 ~ 70 °C (32 ~ 158 °F)
Ethernet Switches	ADAM-6520	10/100 Mbps	5	5 x RJ-45	3000 V _{DC}	-	10 ~ 30 V _{DC}	0 ~ 70 °C (32 ~ 158 °F)
	ADAM-6521	10/100 Mbps 100 Mbps	5	4 x RJ-45 1 x Fiber	3000 V _{DC}	-	10 ~ 30 V _{DC}	0 ~ 65 °C (32 ~ 149 °F)
	EDG-6528	10/100 Mbps	8	8 x RJ-45	3000 V _{DC}	4000 V _{DC}	12 ~ 48 V _{DC}	0 ~ 70 °C (32 ~ 158 °F)
	EDG-6528I	10/100 Mbps	8	8 x RJ-45	3000 V _{DC}	4000 V _{DC}	12 ~ 48 V _{DC}	-40 ~ 85 °C (-40 ~ 185 °F)
	EDG-6528M EDG-6528S	10/100 Mbps 100 Mbps	8	6 x RJ-45 2 x Fiber	3000 V _{DC}	4000 V _{DC}	12 ~ 48 V _{DC}	0 ~ 70 °C (32 ~ 158 °F)



Stop Bits	Software Utility Max @ 128 pcs serial-connection	Connectors		Drivers	Power Requirements	Operating Temperature
1,1,5,2	Configuration/ Port Mapping	Network: RJ-45 or 4 pin header	Serial: 8 pin header	Windows 98/NT/2000/XP	+ 5 V _{DC} ± 5%	0 ~ 60 °C (32 ~ 140 °F)
1,1,5,2	Configuration/ Port Mapping	Network: RJ-45 or 6 pin header	Serial: 8 pin header	Windows® 98/NT/2000/XP	+ 5 V _{DC} ± 5%	0 ~ 60 °C (32 ~ 140 °F)
1,1,5,2	Configuration/ Port Mapping	Network: RJ-45	Serial: RJ-48	Windows® 98/NT/2000/XP	+ 10 ~ + 30 V _{DC}	0 ~ 60 °C (32 ~ 140 °F)
1,1,5,2	Configuration/ Port Mapping	Network: RJ-45	Serial: DB9	Windows® 98/NT/2000/XP	+ 10 ~ + 30 V _{DC}	0 ~ 60 °C (32 ~ 140 °F)
1,1,5,2	Configuration/ Port Mapping	Network: RJ-45	Serial: RJ-48	Windows® NT/2000/XP	+ 10 ~ + 30 V _{DC}	0 ~ 60 °C (32 ~ 140 °F)
1,1,5,2	Configuration/ Port Mapping	Network: RJ-45	Serial: RJ-48	Windows® 98/NT/2000/XP	+ 10 ~ + 30 V _{DC}	0 ~ 60 °C (32 ~ 140 °F)
1,1,5,2	Configuration/ Port Mapping	Network: RJ-45	Serial: RJ-48	Windows® NT/2000/XP	+ 10 ~ + 30 V _{DC}	0 ~ 60 °C (32 ~ 140 °F)
1,1,5,2	Configuration/ Port Mapping	Network: RJ-45	Serial: DB-9	Windows® 98/NT/2000/XP	+ 10 ~ + 30 V _{DC}	0 ~ 55 °C (32 ~ 131 °F)
1,1,5,2	Configuration/ Port Mapping	Network: RJ-45	Serial: RJ-48	Windows® 98/NT/2000/XP	90 ~ 260 V _{AC}	0 ~ 55 °C (32 ~ 131 °F)
1,1,5,2	Configuration/ Port Mapping	Network: RJ-45	Serial: RJ-48	Windows® 98/NT/2000/XP	90 ~ 260 V _{AC}	0 ~ 55 °C (32 ~ 131 °F)
1,1,5,2	Configuration/ Port Mapping	Network: RJ-45	Serial: RJ-48	Windows® 98/NT/2000/XP	90 ~ 260 V _{AC}	0 ~ 55 °C (32 ~ 131 °F)
1,1,5,2	Configuration/ Port Mapping	Network: RJ-45	Serial: RJ-48	Windows® 98/NT/2000/XP	90 ~ 260 V _{AC}	0 ~ 55 °C (32 ~ 131 °F)
1,2	Configuration	Network: Modbus/TCP	Modbus/Serial: Modbus/ ASCII, Modbus/RTU	Socket or WinSocket	+ 10 ~ + 30 V _{DC}	0 ~ 60 °C (32 ~ 140 °F)
1,1,5,2	Configuration	Network:RJ-45	Serial: DB9	Socket or WinSocket	+ 10 ~ + 30 V _{DC}	0 ~ 60 °C (32 ~ 140 °F)
1,1,5,2	Configuration	Network: RJ-45	Serial: RJ-48	Socket or WinSocket	+ 10 ~ + 30 V _{DC}	0 ~ 60 °C (32 ~ 140 °F)

Data Bit	Stop Bit	Software Utility	Connector	Driver	Power Requirement	Operating Temperature
5,6,7,8	1,1,5,2	Configuration/ Port Mapping	Network: RJ-45 or 7 pin header Serial: 8 pin header	Windows® 98/NT/2000/XP	+ 5 V _{DC} ± 5%	0 ~ 60 °C (32 ~ 140 °F)
5,6,7,8	1,1,5,2	Configuration/ Port Mapping	Network: RJ-45 or 8 pin header	Windows® 98/NT/2000/XP	+ 5 V _{DC} ± 5%	0 ~ 60 °C (32 ~ 140 °F)
5,6,7,8	1,1,5,2	Configuration/ Port Mapping Max @ 128 pcs serial-connection	Network: RJ-45 Serial: RJ-48	Windows® 98/NT/2000/XP	+ 10 ~ + 30 V _{DC}	0 ~ 60 °C (32 ~ 140 °F)
5,6,7,8	1,1,5,2	Configuration/ Port Mapping Max @ 128 pcs serial-connection	Network: RJ-45 Serial: RJ-48	Windows® 98/NT/2000/XP	+ 10 ~ + 30 V _{DC}	0 ~ 60 °C (32 ~ 140 °F)

Serial Media Converters

	Model Name	Interface	Ports	Transmission Speeds	Connectors	Isolation	Surge	Power Requirement	Operating Temperature
Serial Media Converters	ADAM-4510	RS-422/485	1	1200 bps ~ 115.2 kbps	RS-422/485: Plug-in screw terminal	-	-	+ 10 ~ + 30 V _{DC}	0 ~ 70 °C (32 ~ 158 °F)
	ADAM-4510S	RS-422/485	1	1200 bps ~ 115.2 kbps	RS-422/485: Plug-in screw terminal	3000 V _{DC}	-	+ 10 ~ + 30 V _{DC}	0 ~ 70 °C (32 ~ 158 °F)
	ADAM-4520	RS232 to 422/485	1	1200 bps ~ 115.2 kbps	RS-232: Female DB9, RS-422/485: Plug-in screw terminal	3000 V _{DC}	-	+ 10 ~ + 30 V _{DC}	0 ~ 70 °C (32 ~ 158 °F)
	ADAM-4522	RS232 to 422/485	1	1200 bps ~ 115.2 kbps	RS-232: Female DB9, RS-422/485: Plug-in screw terminal	-	-	+ 10 ~ + 30 V _{DC}	0 ~ 70 °C (32 ~ 158 °F)
	ADAM-4521	RS-422/485 to RS-232	1	300 bps ~ 115.2 kbps	RS-232: Female DB9, RS-422/485: Plug-in screw terminal	1000 V _{DC}	-	+ 10 ~ + 30 V _{DC}	0 ~ 70 °C (32 ~ 158 °F)
	ADAM-4541/ 4542+	Fiber Optic RS-232/ 422/485	1	up to 115.2 kbps	Fiber: ST RS-232/422/485: Plug-in screw terminal	-	-	+ 10 ~ + 30 V _{DC}	0 ~ 70 °C (32 ~ 158 °F)
	ADAM-4561	USB RS-232/422/485	1	50 bps ~ 115.2 kbps	Network: USB type A connector (Type A to Type B cable provided) Serial: twist-wire	3000 V _{DC}	3000 V _{DC}	-	0 ~ 70 °C (32 ~ 158 °F)

EDG-4504

4-port RS-232/422/485 to Ethernet Data Gateway



FCC CE

Features

- Automatic network connection recovery
- Auto-detects 10/100 Mbps Ethernet interface
- Supports an advanced security mechanism to avoid unauthorized access
- Tx/Rx LEDs for all ports to monitor data transmission
- Convenient and simple installation wizard
- Simple setup and configuration

Introduction

The EDG-4504 is an industrial-grade, network-based, serial device server for connecting four RS-232/422/485 devices, such as CNCs, PLCs, scales, and scanners, directly to a TCP/IP network (Ethernet or Internet). Compared to similar devices on the market, it has a lower cost, great performance, and the most advanced features. Both 10 Mbps and 100 Mbps Ethernet connections are supported, providing higher bandwidth, lower traffic impact, and more layout flexibility.

Specifications

Hardware

- **I/O Controller** 16C954 or compatible (auto hardware flow control)
- **Memory** 4 MB (4 ports)
- **Connector Type** DB9

Interface

- **Network** 10/100Base-T (10/100 Mbps)
- **Serial** RS-232/422/485
- **Signals** TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND

Performance

- **Speed** 50 bps ~ 230.4 kbps
- **Max. No. of Ports** 256 (per Windows® NT)

Configuration

- **Parity** None, even, odd, space, mask
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2

OS supported

- **EDG-4504** Windows® 98/NT/2000/XP

Power and Environment

- **Power Requirements** 10 ~ 30 V_{DC}
- **Operating Temperature** 0 ~ 55° C (32 ~ 131° F)
- **Surge Protection** 15,000 V_{ESD}

Ordering Information

- **EDG-4504** 4-port RS-232/422/485 to Ethernet Data Gateway

Applications

- Industrial/Factory automation
- SCADA systems
- Telecommunications
- Automatic warehouse control
- Building automation
- Wafer fabrication systems
- Self-service banking systems
- Large scale retail systems

EDG-4508+/4508R+ EDG-4516+/4516R+

8-port RS-232/422/485 to Ethernet Data Gateway with Front/Rear Wiring 16-port RS-232/422/485 to Ethernet Data Gateway with Front/Rear Wiring



Features

- Support local console, utility and remote Web configuration
- Support 8 DI/O channels for alarm/event control
- Optional dual power supply mechanism (EDG-4508+/4516+ only)
- Support advanced security mechanism to avoid unauthorized access
- Automatic connection recovery
- Auto-detect 10/100 Mbps Ethernet interface
- Status LEDs for all ports Tx/Rx, mode and power
- Windows native COM port compatible drivers
- Rear Wiring (EDG-4508R+ and EDG-4516R+)

Introduction

EDG-4508+ and EDG-4516+ are industrial-grade network-based serial device servers for connecting up to 8 or 16 RS-232/422/485 devices, such as CNCs, PLCs, scales and scanners, directly to a TCP/IP network (Ethernet or Internet). Compared with similar products on the market, EDG-4508+ and EDG-4516+ has a low cost, but offer high performance with dual CPUs.

EDG-4508+ and EDG-4516+ provides many advanced features for both local and remote configuration through a software utility, V.24 console and the Web. To allow extra control, EDG-4508+ and EDG-4516+ have built-in 4 digital input and 4 digital output channels on their back side. To enhance their reliability as device servers, EDG-4508+ and EDG-4516+ supports a redundant power mechanism for future expansions.

Both EDG-4508+ and EDG-4516+ supports 10/100 Mbps Ethernet connections for higher bandwidth, lower traffic impact and more layout flexibility. With Tx/Rx LEDs for all ports and LEDs for mode and power on the front panel; operation, administration and maintenance are simplified.

*In default, only one power supply is included.

Specifications

Hardware

- I/O Controller** 16C954 or compatible (auto hardware flow control)
- Connector Type** Network: RJ-45
Serial: RJ-48

Interface

- Network** 10/100Base-T
- Serial** RS-232/422/485
- Signals** TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND

Performance

- Speed** 50 bps ~ 230.4 kbps
- Max. No. of Ports** 256

Configuration

- Data Bits** 5, 6, 7, 8
- Stop Bits** 1, 1.5, 2
- Parity** None, even, odd, space, mark

I/O Type: 4 DI & 4 DO

- Digital Input** Dry contact
Logic level 0: close to GND
Logic level 1: open
- Digital Output** Open collector to 30 V, 200 mA max. load
- OS** Windows® 98/NT/2000/XP

Power and Environment

- Power Requirements** 90 ~ 260 V_{AC}, 47 ~ 63 Hz (optional dual power supply)
- Operating Temperature** 0 ~ 55° C (32 ~ 131° F)
- Surge Protection** 15,000 V_{ESD}

Ordering Information

- EDG-4508+** 8-port RS-232/422/485 to Ethernet Data Gateway (1 pc of 30 cm RJ-48 to male DB9 RS-232/422/485 cable included)
- EDG-4516+** 16-port RS-232/422/485 to Ethernet Data Gateway (1 pc of 30 cm RJ-48 to male DB9 RS-232/422/485 cable included)
- EDG-4508R+** 8-port RS-232/422/485 to Ethernet Data Gateway with Rear Wiring (1 pc of 30 cm RJ-48 to male DB9 RS-232/422/485 cable included)
- EDG-4516R+** 16-port RS-232/422/485 to Ethernet Data Gateway with Rear Wiring (1 pc of 30 cm RJ-48 to male DB9 RS-232/422/485 cable included)
- OPT1A** 1m RJ-48 to male DB9 RS-232/422/485 cable
- OPT1D** 30cm RJ-48 to male DB9 RS-232/422/485 cable

Applications

- Industrial/Factory automation
- SCADA systems
- Telecommunications
- Automatic warehouse control
- Building automation
- Self-service banking systems
- Large scale retail systems

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-4577 ADAM-4579

1-port Universal Serial Device Gateway

2-port Universal Serial Device Gateway



FCC CE

Features

- Supports 10/100Base-T (ADAM-4579); 10Base-T (ADAM-4577)
- Supports standard networking API: WinSock, Socket
- Provides multiple networking architectures: polling, event handling, peer-to-peer
- Supports several AT-style commands to control (ADAM-4579)
- Allows a maximum of 8 host PCs to access with command response mode using UDP protocol
- Supports any operating system with TCP/IP protocol: Windows®, Linux® etc.
- Auto-searching Windows configuration utility
- Download and testing utility: Easy to download firmware and self-diagnostic
- Easy to locate specific EDG series
- Surge protection for RS-485 line and power supply
- Mounts on DIN rail, panel or piggyback easily

Introduction

ADAM-4577 and ADAM-4579 are universal serial device gateways that bring RS-232/422/485 to Ethernet. They allow nearly any device with serial ports to connect and share an Ethernet network. ADAM-4577 and ADAM-4579 provide a quick, simple and cost-effective way to bring the advantages of remote management and data accessibility to thousands of devices that cannot connect to a network.

With ADAM-4577 or ADAM-4579, your existing serial devices can be used with the most popular operating systems on the market. There is no need to write special drivers for specific operating systems. Moreover, you can make serial devices communicate with other devices peer-to-peer, without any intermediate host PCs and software programming. That saves a lot of cost and effort. In addition, you can actively request data or issue commands from the RS-232/422/485 side or Ethernet side. This data can be sent bilaterally. Thus, the ADAM-4577 and ADAM-4579 are especially suitable for remote monitoring environments such as security systems, factory automaton, SCADA, transportation and more.

For fulfilling the different applications that need network connectivity, ADAM-4577 provides 4 types of network architectures: polling, event-handling, peer-to-peer, and multi-host access (UDP protocol). ADAM-4579 also provides 4 types of network architectures: polling, event-handling, peer-to-peer, and controlling.

Specifications

- **Protocol** TCP/IP (ADAM-4579)
TCP/IP, UDP (ADAM-4577)
- **Standard Networking API** WinSock, Socket
- **Network Type** ADAM-4577: polling, event handling, peer-to-peer, multi-host access
ADAM-4579: polling, event handling, peer-to-peer, controlling
- **Network Port** IEEE 802.3, IEEE 802.3u
- **Interface** Network: 10Base-T (ADAM-4577); 10/100Base-T (ADAM-4579)
Serial: 3-wire RS-232, RS-422, RS-485
- **Port** ADAM-4577: 1 independent RS-232/422/485 port
ADAM-4579: 2 independent RS-232/422/485 ports
- **Connector** Network: RJ-45
Serial: ADAM-4577: DB-9
ADAM-4579: RJ-48 (RJ-48 to DB-9 cable provided)
- **Transmission Speed** 30 bps to 230 kbps
- **Parity Bit** Odd, even, none, space, mark
- **Data Bit** 5, 6, 7, and 8
- **Stop Bit** 1, 1.5, and 2
- **Diagnostic LEDs** Network: TX/RX, Link, Speed (10/100 Mbps), Power
Serial: TX/RX, Status
- **Utility Software** Auto-detecting configuration utility (up to 128 devices)
Easy-to-diagnose download & testing utility
UDP testing utility (ADAM-4577)

- **Power Requirements** Unregulated 10 ~ 30 V_{DC} with surge protection
- **Power Consumption** 2 W (ADAM-4577); 4 W (ADAM-4579)
- **Mounting** DIN-rail, panel mounting, piggyback stack

Environmental Specifications

- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)

Ordering Information

- **ADAM-4577** 1-port Universal Serial Device Gateway
- **ADAM-4579** 2-port Universal Serial Device Gateway (2 pcs of 1 m RJ-48 to male DB9 RS-232/422/485 cable included)
- **OPT1A** 1m RJ-48 to male DB9 RS-232/422/485 cable
- **OPT1D** 30cm RJ-48 to male DB9 RS-232/422/485 cable

ADAM-4570 ADAM-4571

2-port RS-232/422/485 to Ethernet Data Gateway

1-port RS-232/422/485 to Ethernet Data Gateway



FCC CE

Features

- Supports 10/100Base-T Ethernet port
- Supports high transmission speeds up to 230 kbps
- Supports an advanced security mechanism to avoid unauthorized access
- Auto-reconnection
- Remote download firmware
- Auto-detecting
- Easy-managing Port Mapping Utility
- Supports Windows® 98/NT/2000/XP driver
- Surge protection for RS-485 line and power supply
- Automatic RS-485 data flow control

Introduction

ADAM-4570 and ADAM-4571 are lightning fast and cost effective data gateways between RS-232/422/485 and Ethernet interfaces. These units immediately upgrade your existing device(s) to the Ethernet world. Functionally transparent and efficient, the ADAM-4570 and ADAM-4571 are specially designed for remotely controlling and monitoring devices via the Internet.

One or two RS-232/422/485 serial ports can each be easily configured for your needs. There is also support for transmission speeds up to 230 kbps, which meets the demand for today's high-speed data exchanges. You can use a Windows® utility to configure the units without need for further programming. ADAM-4570 and ADAM-4571 not only protect your current hardware investment but also ensure future network expandability. Since the protocol conversion is transparent, all existing devices can be seamlessly integrated into the Ethernet network. Therefore, ADAM-4570 and ADAM-4571 can be used in security systems, factory automation, SCADA, transportation and more.

The units integrate both your existing human-machine interface software (HMI) and RS-232/422/485 system architecture with an Ethernet network. The result helps save cabling space and software development costs. ADAM-4570/ and ADAM-4571 also provide a high-performance RISC CPU and real-time operating system to reduce CPU load. These components make the units more stable and reliable. Another benefit is the ability to remotely download programs to a designated device via Ethernet. This reduces the need for on-site maintenance and diagnosis.

A Windows configuration and port-mapping utility is also included. This configuration tool can auto-detect all Ethernet Data Gateway devices on a local network, and helps users to easily adjust all settings. The port mapping utility helps to set up COM ports for one Windows® 95/98/NT/2000/XP platform. This helps you configure all ports to meet your requirements.

Specifications

- **Protocol** TCP/IP
- **Network** 10/100Base-T Ethernet
- **Port** 1/2 Independent RS-232/422/485 ports
- **Connector** Network: RJ-45
Serial: RJ-48 (RJ-48 to DB9 cable provided)
- **Transmission Speed** 50 bps ~ 230 kbps
- **Parity Bits** Odd, even, none, space, mark
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Diagnostic LEDs** Network: Tx/Rx, Link, Speed (10/100 Mbps), Power
Serial: Tx/Rx, Status
- **Surge Protection** 15 K V_{ESD} (RS-232/422/485)
- **Utility Software** Auto-detecting configuration utility (up to 128 devices)
port mapping utility
- **Drivers Supported** Windows® 98/NT/2000/XP
- **Power Requirements** Unregulated 10 to 30 V_{DC}
- **Power Consumption** 4 watt
- **Mounting** DIN-rail, panel mounting, piggyback stack
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)

Ordering Information

- **ADAM-4571** 1-port RS-232/422/485 to Ethernet Data Gateway
(1 pc of 1 m RJ-48 to male DB9 RS-232/422/485 cable included)
- **ADAM-4570** 2-port RS-232/422/485 to Ethernet Data Gateway
(2 pcs of 1 m RJ-48 to male DB9 RS-232/422/485 cable included)
- **OPT1A** 1m RJ-48 to male DB9 RS-232/422/485 cable
- **OPT1D** 30cm RJ-48 to male DB9 RS-232/422/485 cable

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-4570L ADAM-4571L

**2-port RS-232 to Ethernet
Data Gateway**

**1-port RS-232 to Ethernet
Data Gateway**



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Features

- Supports 10/100Base-T Ethernet
- Supports high transmission speeds up to 230 kbps
- Supports an advanced security mechanism to avoid unauthorized access
- Auto-reconnect
- Remote download firmware
- Auto-detecting
- Easy-managing Port Mapping Utility
- Supports Windows® 98/NT/2000/XP driver

Introduction

ADAM-4570L and ADAM-4571L are cost-effective data gateways that connects RS-232 and Ethernet interfaces. It provides a quick and low-cost way to connect any RS-232 device with an Ethernet network. Through networking transparency features, ADAM-4570L and ADAM-4571L make it possible to cut costs by using existing hardware and software. The units also bring the advantages of remote management and data accessibility to RS-232 devices.

ADAM-4570L and ADAM-4571L provide one or two RS-232 serial ports. The transmission speed of the units is up to 230 kbps, meeting the demands for high-speed data exchanges. In addition, you can use Windows® utilities to configure the ADAM-4570L and ADAM-4571L without further programming. The units not only protects your current hardware investment but also ensures future network expandability. Since the protocol conversion is transparent, all your existing devices can be seamlessly integrated with an Ethernet network. Therefore, ADAM-4570L and ADAM-4571L can be used in security systems, factory automation, SCADA, transportation and more.

ADAM-4570L and ADAM-4571L link both your existing human-machine interface (HMI) PC and your RS-232 devices with Ethernet cables. The result extends your access from local RS-232 to global Ethernet/Internet. Another benefit is that the units allow users to remotely download programs to a designated device via Ethernet. This reduces the need for on-site maintenance and diagnosis.

Lastly, ADAM-4570L and ADAM-4571L come with a Windows® configuration and port-mapping utility. The configuration tool can auto-detect all Ethernet Data Gateway devices on the local network, and let you easily adjust all settings. The port mapping utility helps you to set up COM ports for one Windows® 95/98/NT/2000/XP platform. This helps you configure all ports to meet your needs.

Specifications

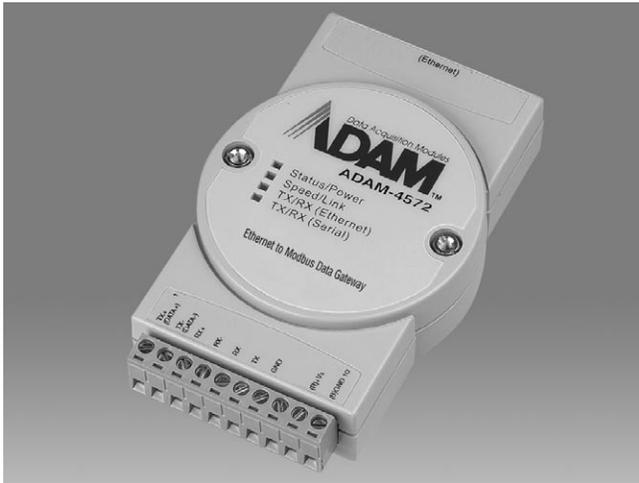
- **Protocol** TCP/IP
- **Network** 10/100Base-T Ethernet
- **Port** 1/2 Independent RS-232 ports
- **Connector** Network: RJ-45
Serial: RJ-48 (ADAM-4570L)
DB9 (ADAM-4571L)
- **Transmission speed** 50 bps to 230 kbps
- **Parity Bits** Odd, even, none, space, mark
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Diagnostic LEDs** Network: Tx/Rx, Link, Speed (10/100 Mbps),
Power Serial: Tx/Rx, Status
- **Utility Software** Auto-detecting Configuration Utility (up to 128 devices)
Port mapping utility
- **Drivers Supported** Windows® 98/NT/2000/XP
- **Power Requirements** Unregulated 10 to 30 V_{DC}
- **Power Consumption** 1.5 watt (ADAM-4570L)
1.5 watt (ADAM-4571L)
- **Mounting** DIN-rail, panel mounting, piggyback stack
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)

Ordering Information

- **ADAM-4571L** 1-port RS-232 to Ethernet Data Gateway
- **ADAM-4570L** 2-port RS-232 to Ethernet Data Gateway
(2 pcs of 1 m RJ-48 to male DB9 RS-232/422/
485cable included)
- **OPT1A** 1m RJ-48 to male DB9 RS-232/422/485 cable
- **OPT1D** 30cm RJ-48 to male DB9 RS-232/422/485 cable

ADAM-4572

1-port Modbus® to Ethernet Data Gateway



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Features

- Supports 10/100 Mbps communication speeds
- Allows up to 8 clients to access field data simultaneously
- Supports popular HMI software with Modbus/TCP driver or OPC server
- Up to 3 Independent serial ports capacity if configured to RS-485 serial mode
- Provides auto-searching device ID Windows utility
- Surge protection for RS-485 and power line
- Automatic RS-485 data flow control
- Easy mounting on DIN-rail, panel piggyback
- Supports Modbus/ASCII, RTU Protocol to control devices

Introduction

ADAM-4572 serves as an interface between Modbus® serial devices and computer hosts running Modbus/TCP on an Ethernet network. Fully compliant with Modbus/TCP, it is ideal for those who looking for an easy way to connect their existing devices or controllers running Modbus serial protocols (Modbus/ASCII or Modbus/RTU) to Ethernet networks. It works like a bridge between Modbus® serial devices and controllers over TCP/IP Ethernet networks. Benefits are also abundant for customers who want to expand their Ethernet-based Modbus® (Modbus/TCP) applications.

Networks have become increasingly vital for industrial automation applications, but many control devices today do not have a network port and can only communicate with a dedicated local PC or control panel. Advantech's revolutionary network-enabling technology is now allowing control devices with serial ports to connect to the Ethernet and share networks quickly and cost-effectively. The ADAM-4572 Modbus to Ethernet Data Gateway allows users to integrate new and existing Modbus/RTU and Modbus/ASCII serial devices to newer TCP/IP network-based devices. Manufacturers, system integrators, and end users can now use the ADAM-4572 to create networked applications to remotely manage and access data from control devices no matter where they are.

ADAM-4572 provides features such as: 10/100 Mbps data rate for Ethernet/Fast Ethernet connection, serial port speed up to 115.2 kbps, auto-searching device, Modbus® RTU, Modbus/ASCII, Modbus/TCP protocol, diagnostic LEDs, RJ-45 connectors and surge protection on network. This represents a true communication Data Gateway between Ethernet and Modbus, and an easy choice when your factory needs improved network integration and resource sharing.

Specifications

- **Protocols** Ethernet: Modbus/TCP
Serial: Modbus/RTU, Modbus/ASCII
- **Network Port** 10Base-T (IEEE 802.3) 100Base-TX (IEEE 802.3u)
RJ-45 connector
- **Serial Port** RS-232/422/485
plug-in screw terminal
Transmission speed: 300 bps to 115.2 kbps
Parity: odd, even, none
Data bit: 7, 8
Stop bit: 1, 2
- **Compatibility** Ethernet /IEEE 802.3, IEEE 802.3u
Modbus/Serial: Modbus/ASCII, Modbus/RTU
Network: Modbus/TCP
- **Diagnostic LEDs** Network: Tx/Rx, Link, Speed (10/100 Mbps), Power
Serial: Status, Tx/Rx
- **Utility Software** Windows-based, device auto-searching (up to 128 devices)
Device Setting: name, description, serial port
- **Compatible with application software running on Modbus/TCP standard**
- **Power Requirements** Unregulated 10 ~ 30 V_{DC}
- **Power Consumption** 3 W
- **Case** ABS with captive mounting hardware
- **Mounting** DIN-rail, Panel mounting, piggyback stack

Environmental Specifications

- **Operating Temperature** 0 ~ 60° C
- **Storage Temperature** -20 ~ 80° C
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)

Ordering Information

- **ADAM-4572** 1-port Modbus® to Ethernet Data Gateway

1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AWS

6
DA&C

7
cPCI

8
ADAM-3000

9
Motion Control

10
iCOM

11
eConnectivity

12
UNO

13
ADAM-4000

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ADAM-5000

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ADAM-6000

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ADAM-8000

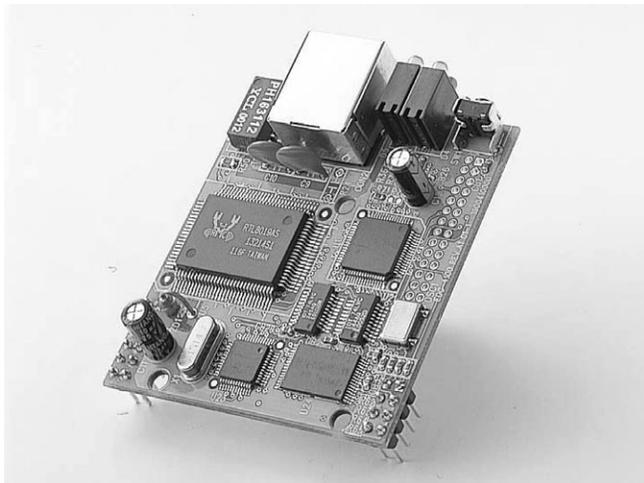
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BAS

EDG-4100

EDG-4110

1-port RS-232 to Ethernet Data Gateway Module

1-port RS-422/485 to Ethernet Data Gateway Module



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Features

- Supports 10/100Base-T Ethernet standard
- Supports high transmission speeds up to 230 kbps
- Supports LED indicators for easy diagnosis
- Provides RS-232 (EDG-4100), 422/485 (EDG-4110) interfaces
- Supports TCP/IP protocol
- Provides 8 universal digital inputs/outputs for emergent ON/OFF control
- Easy configuration via utility
- Supports Windows® 98/NT/2000/XP driver
- Automatic RS-485 data flow control (EDG-4110)
- Easy to mount through backside PIN connectors

Introduction

EDG-4100 and EDG-4110 are fast and cost-effective network-enabled board modules. EDG-4100 provides one RS-232 port, while EDG-4110 provides one RS-422/485 port. The modules enable nearly any device to communicate over the Internet and shared networks, and they allow network devices to be remotely monitored, managed, and controlled. Functionally transparent and efficient, EDG-4100 and EDG-4110 provide a complete software and hardware solutions. The modules effectively eliminate the need for OEMs and systems integrators to invest engineering resources to develop Ethernet networking solutions, and reduce the time it takes to bring intelligent devices to market. Thus, the modules are especially suitable for remote management and data accessibility to thousands of devices that cannot previously could not connect to the network such as: factory machinery, security systems, heating and ventilation systems, lighting control systems and Point-of-Sale devices.

EDG-4100 and EDG-4110 are 54 x 59 mm Ethernet-enabled boards, so they can easily fit into almost any device. Pin headers are provided to connect LAN, DI/O, power and RS-232/422/485 into your boards, for a quick and cost-effective method to connect the system to the Internet. There are also 8 DI/O, which provides additional flexibility.

EDG-4100 and EDG-4110 replace expensive dedicated PCs or lengthy serial cables with fast and reliable networking technology.

Specifications

- **Protocol** TCP/IP
- **Compatibility** IEEE 802.3, IEEE 802.3u
- **Interface** Network: 10/100 Base-T Ethernet
Serial: RS-232 (EDG-4100)
RS-422/485 (EDG-4110)
- **Port** 1 Independent RS-232 port (EDG-4100)
1 Independent RS-422/485 port (EDG-4110)
- **Connector** Network: RJ-45 or 4-pin header
Serial: 8-pin header
- **DI/DO** 4DI, 4DO
- **Transmission Speeds** 50 bps ~ 230 kbps
- **Parity Bits** Odd, even, none, space, mark
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Diagnostic LEDs** Network: Tx/Rx, Link, Speed
- **Utility Software** Configuration utility
Port mapping utility
- **Driver Support** Windows® 98/NT/2000/XP
- **Power Requirement** 5 V_{DC} ± 5%
- **Power Consumption** 0.6 W @ 10 M, 0.9 W @ 100 M
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)

Ordering Information

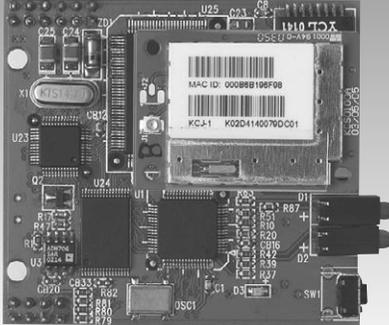
- **EDG-4100** 1-port RS-232 to Ethernet Data Gateway Module
- **EDG-4110** 1-port RS-422/485 to Ethernet Data Gateway Module

EDG-4100W EDG-4110W

1-port RS-232 to WLAN Data Gateway Module

1-port RS-422/485 to WLAN Data Gateway Module

NEW



Features

- Supports 802.11b standard
- Supports high transmission speeds up to 230 kbps
- Supports LED indicators for easy diagnosis
- Provides RS-232 (EDG-4100W), 422/485 (EDG-4110W) interfaces
- Supports TCP/IP protocol
- Provides 8 universal digital inputs/outputs for emergent ON/OFF control
- Easy configuration via utility
- Supports Windows® 98/NT/2000/XP driver
- Automatic RS-485 data flow control (EDG-4110W)
- Easy to mount through backside PIN connectors

Introduction

EDG-4100W and EDG-4110W are fast and cost-effective 802.11b wireless networking-enabled board modules. EDG-4100W provides one RS-232 port, while EDG-4110W provides one RS422/485 port. The modules enable nearly any device to communicate with 802.11b wireless LAN and shared networks, and they allow those devices to be remotely monitored, managed, and controlled. Functionally transparent and efficient, EDG-4100W and EDG-4110W provide a complete software and hardware solution. The modules effectively eliminates the need for OEMs and systems integrators to invest engineering resources to develop 802.11b wireless Ethernet networking solutions, and reduces the time it takes to bring intelligent devices to market. Thus, the modules are especially suitable to provide remote management and data accessibility to thousands of devices that cannot connect to the network such as factory machinery, security systems, heating and ventilation systems, lighting control systems and Point-of-Sale devices.

EDG-4100W and EDG-4110W are 54 x 59 mm wireless networking-enabled boards, so they can easily fit into almost any device. A wireless antenna is provided to connect to the 802.11b wireless LAN and pin headers are provided to connect DI/O, power and RS-232/422/485 into your boards. There are also 8 DI/O, which provides additional flexibility.

EDG-4100W and EDG-4110W replaces expensive dedicated PCs or lengthy serial cables with fast and reliable networking technology.

Specifications

- **Protocol** TCP/IP
- **Network** 802.11b
- **Port** 1 Independent RS-232 port (EDG-4100W)
1 Independent RS-422/485 port (EDG-4110W)
- **Connector** WLAN: 802.11b antenna
Serial: 8 pin header
- **DI/DO** 4DI, 4DO
- **Transmission Speeds** 50 bps ~ 230 kbps
- **Parity Bit** odd, even, none, space, mark
- **Data Bit** 5, 6, 7, 8
- **Stop Bit** 1, 1.5, 2
- **Diagnostic LEDs** W-LAN: Active, Link
- **Utility Software** Auto-detecting configuration utility
Port mapping utility
- **Driver Support** Windows® 98/NT/2000/XP
- **Power Requirement** 5 V_{DC} ± 5%
- **Power Consumption** Max @ 3 Watt
- **Operating Temperature** 0 ~ 60° (32 ~ 140°)
- **Storage Temperature** -20 ~ 80° (-4 ~ 176°)
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)

Ordering Information

- **EDG-4100W** 1-port RS-232 to WLAN Data Gateway Module
- **EDG-4110W** 1-port RS-422/485 to WLAN Data Gateway Module

1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AWS

6
DA&C

7
cPCI

8
ADAM-3000

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Motion Control

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ICOM

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eConnectivity

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UNO

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ADAM-4000

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ADAM-5000

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ADAM-6000

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ADAM-8000

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BAS

ADAM-6510 ADAM-6520

**4-port Industrial 10 Mbps
Ethernet Hub**

**5-port Industrial 10/100
Mbps Ethernet Switch**



Features

- Supports full/half duplex flow control (ADAM-6520)
- Supports Integrated Loop-up engine (ADAM-6520)
- Supports MDI/MDI-X auto crossover (ADAM-6520)
- Provides broadcast storm protection (ADAM-6520)
- Supports +10 ~ 30 V_{DC} voltage power input
- Provides surge protection 3000V_{DC} for power line
- Provides flexible mounting: DIN rail, panel, piggyback
- Supports operating temperatures from -10 ~ 70° C

Introduction

ADAM-6510 is a 4-port industrial-grade hub with Ethernet connectivity and 10 Mbps transfer rate. ADAM-6520 is a 5-port industrial-grade switch with Ethernet connectivity and from 10 to 100 Mbps transfer rates. (Auto-senses transfer rate).

Just like any other product in the ADAM® family, ADAM-6510 and ADAM-6520 can be mounted in three different ways: DIN rail, panel and piggyback. Solid industrial-grade design assures reliable operation in common application areas like: semi-conductor factories, inventory control environments, assembly lines, manufacturing and many more.

Both modules support a wide voltage range of +10 ~ 30 V DC over the terminal block, and 3,000 V DC surge protection ensures that over-voltage is no concern. The wide operating temperature of ADAM-6510 and ADAM-6520 goes from -10 to 70° C (14 to 158° F). This permits them to be functional in harsh operating environments.

The six inclusive LED indicators make troubleshooting of the modules easier. Each port has a pair of LEDs that indicate link status and port activities. This easily informs users of any collisions, the link status, power failure and data receipts for immediate on-site diagnosis.

Specifications

Common

- **Compatibility** IEEE 802.3, IEEE 802.3u
- **Surge Protection** 3000 V_{DC} (Power)
- **LED** Power, 10/100 Mbps
- **Power Requirements** Unregulated 10 ~ 30 V_{DC}
- **Power Consumption** 2 Watt (ADAM-6510)
2.4 Watt (ADAM-6520)
- **Case** ABS/PC with captive mounting hardware
- **Mounting** DIN-rail, panel mounting, piggyback stack
- **Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- **Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- **Operating Humidity** 20 ~ 95 % (non-condensing)
- **Storage Humidity** 0 ~ 95 % (non-condensing)

ADAM-6510

- **Interface** Network: 10Base-T Ethernet
- **Port** 4 x 10 Mbps , 1 x 10 Mbps uplink
- **Connector** RJ-45

ADAM-6520

- **Interface** Network: 10/100Base-T Ethernet
- **Port** 5 x 10/100 Mbps
- **Connector** RJ-45

Ordering Information

- **ADAM-6510** 4-port Industrial 10 Mbps Ethernet Hub
- **ADAM-6520** 5-port Industrial 10/100 Mbps Ethernet Switch

ADAM-6521

5-port Industrial 10/100 Mbps Ethernet Switch with Fiber Port



Features

- Supports 1 port 100 Mbps multimode Fiber duplex SC & 4-port 10/100 Mbps RJ-45 connectors
- Supports full/half duplex flow control
- Supports Integrated Loop-up engine
- Supports MDI/MDI-X auto crossover
- Provides broadcast storm protection
- Supports +10~ 30 V_{DC} voltage power input
- Provides surge protection 3000V_{DC} for power line
- Provides flexible mounting: DIN rail, panel, piggyback
- Supports operating temperatures from -10 ~ 65° C

Introduction

ADAM-6521 is an industrial-grade Ethernet switch with fiber optic ports that makes it possible to expand industrial networks fast and cost-effectively. ADAM-6521 consists of 1 fiber port and 4 RJ-45 ports. With fiber optics, you can prevent noise interfering with your system and implement transmission distances up to 2 km.

ADAM-6521 is especially suited for industrial environments with Ethernet networking needs such as: semi-conductor factories, inventory control environments, assembly line and production and more.

Like other products in the ADAM® family, ADAM-6521 can be mounted in three different ways: DIN rail, panel and piggyback, suitable for any industrial environment.

ADAM-6521 supports a wide voltage range of +10 ~ 30 V_{DC} over the terminal block, and 3,000 V_{DC} surge protection to protect it from being damaged by over-voltage. A wide operating temperature range from -10 to 65° C (14 ~ 149° F), makes it functional in harsh operating environments.

The six inclusive LED indicators make troubleshooting the ADAM-6521 easier. Each port has a pair of LEDs that indicate link status and port activities. This function conveniently informs users of any collisions, the link status, power failure and data receipts for immediate on-site diagnostics.

Specifications

- **Compatibility** IEEE 802.3, IEEE 802.3u
- **Surge Protection** 3000 V_{DC} (Power)
- **LEDs** Power, 10/100 Mbps
- **Transmission Distance** 2000 m (fiber)
- **Power Requirements** Unregulated 10 to 30 V_{DC}
- **Power Consumption** 3.5 W
- **Case** ABS/PC with captive mounting hardware
- **Mounting** DIN-rail, panel mounting, piggyback stack
- **Operating Temperature** -10 ~ 65° C (14 ~ 149° F)
- **Storage Temperature** -20 ~ 80° C (-4 ~ 176° F)
- **Operating Humidity** 20 ~ 95 % (non-condensing)
- **Storage Humidity** 0 ~ 95 % (non-condensing)
- **Interface** Network: 10/100Base-T & 100Base-FX Ethernet
- **Port** 4 x 10/100 Mbps (RJ-45), 1 x 100 Mbps (Fiber)
- **Connector** 4 x RJ-45 & 1 x Fiber (SC type)

Ordering Information

- **ADAM-6521** 5-port Industrial 10/100 Mbps Ethernet Switch with Fiber port

1
Software

2
IPPC

3
TPC

4
FPM

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ATM & AWS

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DA&C

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cPCI

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ADAM-3000

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Motion Control

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ICOM

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eConnectivity

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UNO

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ADAM-4000

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ADAM-5000

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ADAM-6000

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ADAM-8000

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BAS

ADAM-6541

Ethernet to Multi-Mode Fiber Optic Converter



Features

- Supports 1-port 100 Mbps multimode fiber optics
- Supports 10 ~30 V_{DC} power input
- Easily mounted on a DIN-rail, panel or piggyback
- Supports full/half-duplex flow control.
- Supports MDI/MDIX auto crossover.
- Embedded with a switch controller, supports auto-negotiation.
- Embedded with memory buffer, supports store and forward transmission.

Introduction

ADAM-6541 is an industrial-grade converter that is designed to convert Ethernet network signals (10/100Base-TX) to fiber networks (100Base-FX). It transparently converts Ethernet signals into optic signals. The advantages of fiber optics are wide bandwidth, EMI immunity and its suitability for long-distance transmissions. Therefore, ADAM-6541 is an ideal solution for "fiber to building" applications at central offices or local sites.

ADAM-6541 supports MDI/MDIX auto detection so no crossover wire is necessary. It also includes a switch controller that can sense transmission speed (10/100 Mbps) automatically. Both the Ethernet port and fiber port have memory buffers that support store-and-forward mechanism, this assures that data can be transmitted properly.

ADAM-6541 is extremely compact and it can be mounted in three different ways. DIN rail, panel and piggyback. It works normally at -10 to 70°C and accepts wide unregulated voltage range from +10 ~ 30 V_{DC}. Besides, it also has 3,000 V_{DC} surge protection against over-voltage so it is suitable for harsh operating environments.

The ADAM-6541 provides three LED indicators: Power, LNK/ACT, and 10/100Mbps, which let you troubleshoot easier.

Specifications

- **Interface** Network: 10/100Base-TX & 100Base-FX standard
- **Port** 1 x 10/100 Mbps (RJ-45), 1 x 100 Mbps (Fiber)
- **Connector** 1 x RJ-45 & 1 x Fiber (SC type)
- **Compatibility** IEEE 802.3, IEEE 802.3u
- **Surge Protection** 3,000 V_{DC} (Power)
- **Isolation** 1,500 Vrms (Ethernet port)
- **LEDs** Power, LNK/ACT, 10/100Mbps
- **Transmission Distance** Multi mode fiber: 50/125, 62.5/125 or 100/140 μm
Multi mode fiber, 412 m for half duplex, 2 km for full duplex.
- **Power Requirement** Unregulated 10 ~ 30 V_{DC}
- **Power Consumption** 3 W
- **Case** ABS/PC with captive mounting hardware.
- **Mounting** DIN-rail, panel mounting, piggyback stack
- **Operating Temperature** -10 ~ 70 °C
- **Storage Temperature** -20 ~ 80 °C
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)

Ordering Information

- **ADAM-6541** Ethernet to Multi-Mode Fiber Optic Converter

ADAM-6542

Ethernet to Single Strand WDM Fiber Optic Converter



Features

- Supports 1-port 100 Mbps single strand fiber optics
- Supports 10 ~30 V_{DC} power input
- Easily to mounted on a DIN-rail, panel or piggyback
- Provides 100Base-FX WDM single strand fiber
- Supports MDI/MDIX auto crossover.
- Embedded with a switch controller, supports auto-negotiation.
- Embedded with the memory buffer, supports store and forward transmission.

Introduction

ADAM-6542 is an industrial-grade converter that is designed to convert Ethernet networks to fiber networks. It does so by transparently converting Ethernet signals to optic signals. The advantages of fiber optics are wide bandwidth, EMI immunity and long-distance transmission capability. Therefore, ADAM-6542 is an ideal solution for "fiber to building" applications at central offices or local sites.

ADAM-6542 uses WDM (Wavelength Division Multiplexing) technology, which increases the information-carrying capacity of fiber by multiplex transmission and reception of signals at different wavelengths on a single strand cable. WDM technology is implemented in couples. One site uses an ADAM-6542/W15 where the transmission channel is 1550nm and the reception channel is 1310nm. The other site installs an ADAM-6542/W13 where the transmission channel is 1310nm and the reception channel is 1550nm. Both the transmission and reception channels of ADAM-6542/W15 and ADAM-6542/W13 are multiplexed to a single strand cable. This means that cabling costs are halved when you use ADAM-6542/W15 and ADAM-6542/W13 instead of a dual fiber converter.

ADAM-6542 supports MDI/MDIX auto detection, so you don't need to use crossover wires. It also includes a switch controller that can sense the transmission speed (10/100 Mbps) automatically. Both the Ethernet port and the fiber port have memory buffers that support store-and-forward mechanisms. This assures data can be transmitted properly.

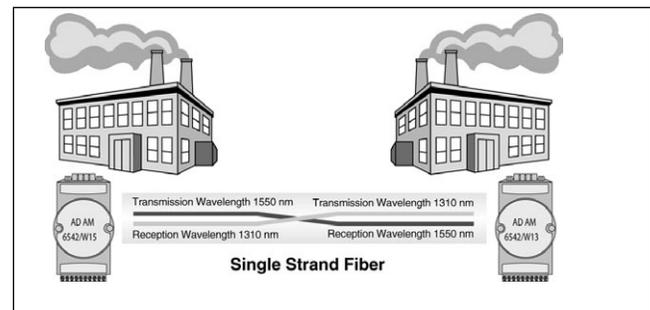
ADAM-6542 is extremely compact and can be mounted in three different ways. DIN rail, panel and piggyback. ADAM-6542 can work normally from -10 to 70°C and accepts a wide unregulated voltage range from +10 ~ 30 V_{DC}. Besides, it also provides 3,000 V_{DC} surge protection against over-voltage so it is suitable for harsh operating environments.

ADAM-6542 provides three LED indicators: Power, LNK/ACT, and 10/100Mbps, which let you trouble shoot easier.

Specifications

- **Interface: Network** 10/100Base-TX & 100Base-FX standard
- **Port** 1 x 10/100 Mbps (RJ-45), 1 x 100 Mbps (Fiber)
- **Connector** 1 x RJ-45 & 1 x Fiber (SC type)
- **Compatibility** IEEE 802.3, IEEE 802.3 u
- **Surge Protection** 3,000 V_{DC} (Power)
- **Isolation** 1,500 Vrms (Ethernet Port)
- **LED** Power, LNK/ACT, 10/100 Mbps
- **Transmission Distance** 8.3/125, 8.7/125, 9/125 or 10/125 μm single Mode fiber, 20 km for WDM (Wavelength Division Multiplexing)
- **Power Requirement** Unregulated 10 ~ 30 V_{DC}
- **Power Consumption** 3 W
- **Case** ABS/PC with captive mounting hardware.
- **Mounting** DIN-rail, panel mounting, piggyback stack
- **Operating Temperature** -10 ~ 70° C
- **Storage Temperature** -20 ~ 80° C
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)

System Architecture



Ordering Information

- **ADAM-6542/W15** 10/100Base-TX Ethernet to 100Base-FX WDM Single Strand Fiber Optic Converter (Tx: 1550nm; Rx: 1310 nm)
- **ADAM-6542/W13** 10/100Base-TX Ethernet to 100Base-FX WDM Single Strand Fiber Optic Converter (Tx: 1310 nm; Rx: 1550 nm)

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

EDG-6528

EDG-6528I

8-Port Industrial 10/100 Mbps Ethernet Switch

8-Port Industrial 10/100 Mbps Ethernet Switch w/Wide Operating Temperature



Features

- Provides 8 x 10/100 Mbps Ethernet ports with RJ-45 connector
- Supports full/half duplex flow control
- Supports MDI/MDIX auto crossover
- Provides broadcast storm protection
- Embedded with a switch controller, supports auto-negotiation
- Embedded with the memory buffer, supports store-and-forward transmission
- Supports +12 ~ 48 V_{DC} voltage
- Provides surge protection 3000 V_{DC} for power line
- Supports 4000 V_{DC} Ethernet ESD protection
- Provides flexible mounting: DIN rail and panel-mounting
- Supports wide-range operating temperature: -40 ~ 85° C (EDG-6528I)
- Supports two individual power sources

Introduction

EDG-6528 is an industrial-grade Ethernet switch that realizes fast and cost-effective expansion of industrial networks. EDG-6528 has eight 10/100 Mbps Ethernet ports for connection with up to eight Ethernet devices. Moreover, EDG-6528 has industrial-grade design that assures high reliability and stability. Therefore, EDG-6528 is an excellent solution for industrial environments with Ethernet networking, such as semi-conductor factories, inventory control environments, assembly lines and production.

EDG-6528 includes a switch controller that can automatically sense transmission speeds. (10/100 Mbps) The RJ-45 interface can also be auto-detected, so MDI or MDIX is automatically selected and a cross-over cable is not required. All Ethernet ports have memory buffers that support the store-and-forward mechanism. This assures that data can be transmitted properly.

The EDG-6528 is extremely compact and can be mounted on a DIN-rail or a panel, so it is suitable for any space-constrained environment. The power line of EDG-6528 supports up to 3,000 V_{DC} surge protection, which secure equipment against unregulated voltage and make systems safer and more reliable.

For extreme operating temperatures, the EDG-6528I covers a range between -40° and 85° C. With such a wide range you can use the EDG-6528I in some of the harshest industrial environments that exist.

The LED indicators make troubleshooting quick and easy. Each port has a couple of LEDs that display the link status, power failure, and port activity for immediate on-site diagnostics.

Specifications

- **Interfaces** Network 10/100Base-Tx standard
- **Ports** 8 x 10/100 Mbps (RJ-45)
- **Connectors** 8 x RJ-45
- **Compatibility** 1EEE 802.3, IEEE 802.3u
- **Surge Protection** 3000 V_{DC} (Power)
- **ESD Protection** 4000 V_{DC} (Ethernet)
- **LEDs** Power, LINK, 10/100Mbps
- **Transmission Distance** 100 m (Ethernet)
- **Power Requirement** Unregulated +12 ~ 48 V_{DC} (2 individual power sources)
- **Case** Aluminum with mounting hardware
- **Mounting** DIN-rail, panel
- **Operating Temperature** EDG-6528: 0 ~ 70° C
EDG-6528I: -40 ~ 85° C
- **Operating Humidity** 20-95% (non-condensing)

Ordering Information

- **EDG-6528** 8-Port Industrial 10/100 Mbps Ethernet Switch
- **EDG-6528I** 8-Port Industrial 10/100 Mbps Ethernet Switch w/wide-operating temperature

EDG-6528M

EDG-6528S

Industrial Switch with 6 10/100 Mbps Ethernet Ports & 2 Multi-Mode Fiber Ports

Industrial Switch with 6 10/100 Mbps Ethernet Ports & 2 Single-Mode Fiber Ports



Features

- Provides 6 x 10/100 Mbps Ethernet ports with RJ-45 connector
- Provides 2 x 100 Mbps multi-mode (EDG-6528M) / single-mode (EDG-6528S) fiber ports
- Supports full/half duplex flow control
- Supports MDI/MDI-X auto crossover
- Provides broadcast storm protection
- Embedded with a switch controller, supports auto-negotiation
- Embedded with the memory buffer, supports store-and-forward transmission
- Supports +12 ~ 48 V_{DC} voltage
- Provides 3000 V_{DC} surge protection for power line
- Supports 4000 V_{DC} Ethernet ESD protection
- Provides flexible mounting: DIN rail and panel-mounting
- Supports two individual power sources

Introduction

EDG-6528M and EDG-6528S are industrial-grade Ethernet switches that enable you to expand your industrial network fast and cost-effectively. The EDG-6528M/6528S have six 10/100 Mbps Ethernet ports to connect up to six Ethernet devices. EDG-6528M also provides two multi-mode fiber optic ports, while EDG-6528S provides two single-mode fiber optic ports with SC-type connectors. Using fiber optics, you can prevent noise from interfering with your system and support high-speed (100 Mbps) and high-distance (up to 2 km) transmissions. EDG-6528M and EDG-6528S have industrial-grade design that assures high reliability and stability in harsh industrial environments, which makes it a robust bridge between enterprise fiber backbones and Ethernet devices.

EDG-6528M and EDG-6528S include a switch controller that can automatically sense transmission speeds. (10/100 Mbps) The RJ-45 interface can also be auto-detected, so MDI or MDI-X is automatically selected and a cross-over cable is not required. All the Ethernet ports have memory buffers that support the store-and-forward mechanism. This assures that data can be transmitted properly.

EDG-6528M and EDG-6528S are extremely compact and can be mounted on a DIN-rail or a panel. They are suitable for any space-constrained environment.

The power lines of EDG-6528M and EDG-6528S support up to 3,000 V DC surge protection, which secure equipment against unregulated voltage and make systems safer and more reliable. The operating temperature of EDG-6528M and EDG-6528S is between 0 ~ 70° C. With such a wide range you can use the EDG-6528M and EDG-6528S in some of the harshest industrial environments that exist.

The LED indicators make troubleshooting quick and easy. Each port has a couple of LEDs that display the link status, power failure, and port activity for immediate on-site diagnostics.

Specifications

- **Interfaces** Network 10/100Base-Tx standard
100Base-Fx multi-mode standard (EDG-6528M)
100Base-Fx single-mode standard (EDG-6528S)
- **Ports** 6 x 10/100 Mbps (RJ-45)
2 x 100 Mbps (Fiber)
- **Connectors** 6 x RJ-45
2 x Fiber with SC type connector
- **Compatibility** IEEE 802.3, IEEE 802.3u
- **Surge Protection** 3000 V_{DC} (Power)
- **ESD Protection** 4000 V_{DC} (Ethernet)
- **LEDs** Power, LINK, 10/100Mbps
- **Transmission Distance** Ethernet 100 m
Multimode fiber 2 Km
Singlemode fiber 15 Km
- **Power Requirement** Unregulated +12 ~ 48 V_{DC} (2 individual power sources)
- **Case** Aluminum with mounting hardware
- **Mounting** DIN-rail, panel
- **Operating Temperature** 0 ~ 70° C (31 ~ 158° F)
- **Operating Humidity** 20 ~ 95% (non-condensing)

Ordering Information

- **EDG-6528M** Industrial Switch with 6 10/100 Mbps Ethernet Ports & 2 Multi-Mode Fiber Ports
- **EDG-6528S** Industrial Switch with 6 10/100 Mbps Ethernet Ports & 2 Single-Mode Fiber Ports

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-4570W ADAM-4571W

**2-port RS-232/422/485 to WLAN
Data Gateway**

**1-port RS-232/422/485 to WLAN
Data Gateway**



Features

- Supports 802.11b standard
- Supports Wireless LAN Ad-Hoc and Infrastructure modes
- Supports high transmission speeds up to 230 kbps
- Supports an advanced security mechanism to avoid unauthorized access
- Auto-reconnection
- Remote download firmware
- Auto-detecting
- Easy-managing Port Mapping Utility
- Supports Windows® 98/NT/2000/XP driver
- Surge protection for RS-485 line and power supply
- Automatic RS-485 data flow control

Introduction

ADAM-4570W/4571W is a cost-effective data gateway between RS-232/422/485 and 802.11b Wireless LAN interfaces. It provides a quick and low-cost method to connect any RS-232/422/485 device to 802.11b wireless LAN. Functionally transparent and efficient, ADAM-4570W and ADAM-4571W saves costs when existing H/W & S/W must continue to be used. ADAM-4570W and ADAM-4571W bring the advantages of remote management and data accessibility to thousands of RS-232/422/485 devices that cannot connect to the network.

ADAM-4570W and ADAM-4571W provide one or two RS-232/422/485 serial ports, and the transmission speed is up to 230 kbps, meeting the demand for high-speed data exchange. In addition, you can use a Windows® utility to configure ADAM-4570W and ADAM-4571W without further programming. This not only protects your current hardware investment but also ensures future network expandability. Since the protocol conversion is transparent, all your existing devices can be seamlessly integrated with the 802.11b wireless LAN network. Therefore, ADAM-4570W and ADAM-4571W can be used in security systems, factory automation, SCADA, transportation and more.

ADAM-4570W and ADAM-4571W integrate both your existing human-machine interface software (HMI) and the RS-232/422/485 system architecture with an 802.11b Wireless LAN network. The result helps you save cabling and software development costs. Another benefit is that ADAM-4570W and ADAM-4571W makes it possible to remotely download programs to a designated device via 802.11b wireless LAN. This reduces the need for on-site maintenance and diagnosis. In addition, ADAM-4570W and ADAM-4571W comes with a Windows configuration and port-mapping utility. The configuration tool can auto-detect all 802.11b wireless LAN Data Gateway products on the local network. It also lets you adjust all settings easily. The port mapping utility helps you to set up COM ports for one Windows® NT/2000/XP platform. This helps you configure all ports to meet your requirements.

Specifications

- **Protocol** TCP/IP
- **Network** 802.11b
- **Port** 1/2 Independent RS-232/422/485 ports
- **Connector** Serial: RJ-48 (RJ-48 to DB9 male cable provided)
- **Transmission Speeds** 50 bps ~ 230 kbps
- **Parity Bits** Odd, even, none, space, mark
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Diagnostic LEDs** WLAN: Active, Link
Serial: Tx/Rx
System: Status, Power
- **Surge Protection** 15 K V_{ESD}
- **Utility Software** Auto-detecting configuration utility
Port mapping utility
- **Driver Support** Windows® 98/NT/2000/XP
- **Power Requirement** Unregulated 10 to 30 V_{DC}
- **Power Consumption** Max @ 4 Watt
- **Mounting** DIN-rail, panel mounting, piggyback stack
- **Operating Temperature** 0 ~ 60° (32 ~ 140°)
- **Storage Temperature** -20 ~ 80° (-4 ~ 176°)
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)

Ordering Information

- **ADAM-4571W** 1-port RS-232/422/485 to WLAN Data Gateway
(1 pc of 1 m RJ-48 to male DB9 RS-232/422/485 cable included)
- **ADAM-4570W** 2-port RS-232/422/485 to WLAN Data Gateway
(2 pcs of 1 m RJ-48 to male DB9 RS-232/422/485 cable included)
- **OPT1A** 1m RJ-48 to male DB9 RS-232/422/485 cable
- **OPT1D** 30cm RJ-48 to male DB9 RS-232/422/485 cable

WiCOM-3910

Wireless Remote & Monitor Display Extender



Features

- Supports 802.11b, 802.11g standard
- Active alarm and record list
- Automatic/manual WLAN mode configuring
- High speed wireless presentation
- Supports up to 32-bit color resolution
- WEP encryption security up to 128 bits
- Robust network security protection

Introduction

WiCOM-3910 replaces long stretches of VGA cables and KVM switches with its innovative transmission of computer displays over wireless networks.

WiCOM-3910 comes with firmware and a HTTP server to access its settings. It also comes with software that is installed on the computer(s) it will connect with. This software turns VGA signals into compressed data packets that can be sent over a network, and then uncompressed to be displayed on the screen that is connected to WiCOM-3910. This means the refresh rate depends on what is showing on the screen, but in most cases WiCOM-3910 will be able to effectively reproduce a VGA signal at 1024x768.

With two USB V2.0 connectors, a mouse and keyboard can be connected to WiCOM-3910 and used to control remote computers. The USB ports also open up for remote control of various equipment.

The most appealing application for WiCOM-3910 is probably control of multiple remote computers. With Windows® 2000 or XP installed on the remote computers, WiCOM-3910 can become the interface for several computers over a wireless network. This could for example make inaccessible embedded computers that are distributed in a factory, available from a protected control room. VGA cables are expensive and cannot be stretched too far, and Cat5 network cables may not be convenient in hazardous environments. WiCOM-3910 has WEP 128 bits encryption for security concerns.

Specifications

- **Network** WLAN: 802.11b, 802.11g
LAN: 10/100M Ethernet
- **Processor System** SoC Processor
- **Memory** 64 MB SDRAM
- **Storage** Flash Memory 8 MB
- **I/O Interface** VGA DB15 x 1, 10/100Base-Tx x 1, USB2.0 x 2
- **Miscellaneous** Reset Button, Power Switch, Indicator LEDs
- **Indicator LEDs** WLAN, LAN, USB, Power
- **Power Requirement** AC/DC power adapter, DC 12V input
- **Dimensions** 180 x 34.5 x 119.3 mm
- **Support Resolution** VGA, SVGA, XGA, SXGA
- **Color Depth** 8/16/24/32 bits

PC Requirements (Recommended)

- **CPU** Intel® Pentium® 500 MHz or above
- **RAM** 128 MB recommended
- **Operating Systems** Windows® 2000/XP

Ordering Information

- **WiCOM-3910** Wireless Remote & Monitor Display Extender

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

ADAM-6500 ADAM-6501

Web-enabled Communication Controller Web-enabled Universal Communication Controller



CE FCC

Features

- Powerful Ethernet-enabled communication controller in a small package
- Built-in Windows CE .NET to run embedded Ethernet applications
- Built-in web server
- Microsoft embedded VC++ development environment supported
- Built-in CompactFlash® slot
- Flash disk for WinCE and user's AP (ADAM-6500: 16 MB, ADAM-6501: 32 MB)
- Built-in real-time clock and watchdog timer
- Offers RS-232 and RS-485 series communication port (ADAM-6500: 3 x RS-232, 2 x RS-485; ADAM-6501: 1 x RS-232, 1 x RS-485)
- Automatic data flow control in RS-485 mode
- Communication speed up to 115.2 kbps
- Easy to mount on a DIN-rail or panel

Introduction

ADAM-6500 and ADAM-6501 are fully functional Ethernet-enabled controllers for industrial automation and control. They provide an ideal environment to develop applications converting RS-232/485 devices/equipment data to the Ethernet/Internet world with minimum effort. Their built-in Windows CE .NET operating system lets users run new programs produced in Microsoft embedded VC++. The Windows environment also includes a web server to allow the designer to develop web-enabled applications.

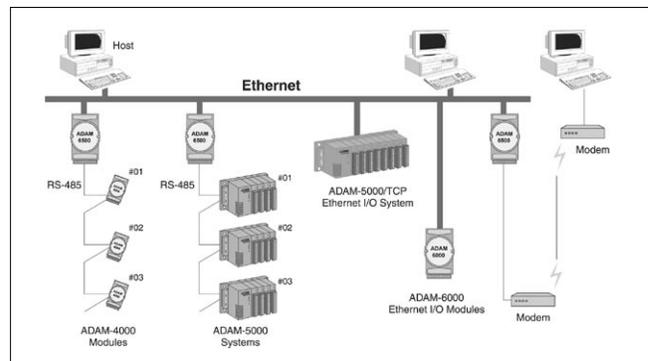
Specifications

- **CPU** ADAM-6500: 32 bit Intel® StrongArm® 206 MHz
ADAM-6501: 32 bit Intel® XScale® 400 MHz
- **Flash Memory** 16 MB flash memory for ADAM-6500
32MB flash memory for ADAM-6501
- **Memory** 64 MB SDRAM
- **Operating System** Windows CE .NET
- **Ethernet Port** ADAM-6500: One 10Base-T
ADAM-6501: One 10/100Base-T
- **Serial Ports (isolated)** ADAM-6500: 3 RS-232, 2 RS-485
ADAM-6501: 1 RS-232 (RJ-48), 1 RS-485
Speed: 115.2 kbps
- **Built-in Watchdog Timer** Yes
- **Real-time Clock** Yes
- **LED Indicators** Power, diagnostics, communication
- **Protocols Supported** TCP/IP, UDP
- **System Management** Web-based remote configuration via standard browser with Java® support.
Console mode command line configuration.
- **Mounting** DIN-rail, panel, wall, piggyback stack
- **Default Setting** Onboard
- **Recovery**
- **Power Supply Voltage** +24 V_{DC} (Range: 10 ~ 30 V_{DC})
- **Max. Power** +24 V_{DC} @ 0.25 A
- **Requirements**
- **Operating Temperature** 0 ~ 55° C
- **Storage Temperature** -20~ 80° C

Feature Details

Built-in Ethernet and RS-232/485 COM Ports

The ADAM-6500 has one Ethernet (10BASE-T), and four communication ports (3 x RS-232 and 2 x RS-485). The ADAM-6501 has one Ethernet (10/100BASE-T), one RS-232 and one RS-232/485 ports. These provide easy communication between the controller and devices in your applications, and has been designed for program downloading, debugging and linking serial devices with the Ethernet/Internet. Both ADAM-6500 and 6501 is equipped with a COM1 port (RS-232) supporting full RS-232 signals for applications such as modem connections, while the 3-pin RS-232 and RS-485 are designed as the interface for traditional RS-232/485 devices/equipment. This design allows the controller to be used in a variety of applications. For example, the user may download a data logging application into the ADAM-6500/6501's memory while the ADAM-6500/6501 is connected to a RS-485 network, and then collect the data over the network.



Built-in Real-time Clock and Watchdog Timer

The real-time clock in the controller ensures accurate time recording when the system operates. The watchdog timer is designed to automatically reset the CPU if the system fails.

Ordering Information

- **ADAM-6500** Web-enabled Communication Controller
- **ADAM-6501** Web-enabled Communication Controller

ADAM-4500

PC-based Communication Controller



Features

- Powerful communication controller in a small package
- Built-in Boot ROM DOS to run PC programs
- Free ROM/RAM memory for user's applications
- 2-wire, multi-drop RS-485 networking
- Communication speed up to 115.2 Kbps
- RS-232/RS-485 modes (jumper selectable)
- Automatic data flow control in RS-485 mode
- Built-in real-time clock and watchdog timer
- Easy mounting on a DIN-rail or panel
- Accepts unregulated power sources between 10 to 30 V_{DC}
- Program download cable and utility included

Introduction

The ADAM-4500 is a fully functional stand-alone controller for industrial automation and control. It provides an ideal environment for controlling PC hardware with a minimal amount of development effort. Its built-in ROM-DOS lets users run standard PC programs or new programs produced by PC language development tools. ROM-DOS is an MS-DOS equivalent operating system allowing you to run all standard PC software.

Built-in RS-232/485 COM Ports

The ADAM-4500 has two communication ports (COM1 and COM2). These provide easy communication between the controller and other devices in your applications. COM1 can be configured for RS-232 or RS-485 communication via a jumper setting, while COM 2 is dedicated as an RS-485 port. This design allows the controller to be used in a variety of applications. For example, a user can download an application into the ADAM-4500's on-board Flash memory while the ADAM-4500 is connected to an RS-485 network, then let it control all the modules in the network.

Built-in Real-time Clock and Watchdog Timer

The real-time clock in the controller ensures accurate time recording while the system operates. The watchdog timer is designed to automatically reset the CPU if the system fails.

Specifications

Board

- **CPU** 80188-40
- **Flash ROM** 256 KB (170 KB free memory for users)
- **Operating System** Boot ROM DOS
- **Timer BIOS** Yes
- **SRAM** 256 KB (234 KB free memory for users)
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **COM1** RS-232/485
- **COM2** RS-485
- **Program Download Port(RS-232)** Tx, Rx, GND
- **Power Requirement** Unregulated +10 to +30 V_{DC}
- **Power Consumption** 2.0 W
- **Operating Temperature** -10 ~ 70°C (14 ~ 158°F)
- **Case** ABS with captive mounting hardware
- **Plug-in Screw Terminal Block** Accepts 0.5 mm to 2.5 mm
- **Dimensions** 60 x 120 mm (2.36" x 4.72")

RS-232 Interface

- **Signals** Tx, Rx, RTS, CTS, DTR, DSR, DCD, RI, GND
- **Mode** asynchronous full duplex, point to point
- **Transmission Speed** Up to 115.2 kbps
- **Max Transmission Distance** 15.2 meters (50 feet)

RS-485 interface

- **Signals** DATA+, DATA-, GND
- **Mode** Half duplex, multi-drop
- **Transmission Speed** Up to 115.2 kbps
- **Max Transmission Distance** 1200 meters (4000 feet)

Software

The ADAM-4500 module provides 170 KB ROM for your downloaded applications and 234 KB RAM for application operation. Its built-in ROM-DOS is an MS-DOS equivalent operating system, which provides all of the basic functions of MS-DOS except BIOS. Application programs written in high level languages such as C or C++ can run under ROM-DOS. Application programs should be converted into 80188 compatible code before being downloaded into the ADAM-4500. The download utility is included with the ADAM-4500.

Ordering Information

- **ADAM-4500** PC-based communication controller

1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AWS

6
DA&C

7
cPCI

8
ADAM-3000

9
Motion Control

10
ICOM

11
eConnectivity

12
UNO

13
ADAM-4000

14
ADAM-5000

15
ADAM-6000

16
ADAM-8000

17
BAS

ADAM-4510/4510S ADAM-4520/4522 ADAM-4521

Isolated RS-422/485 Repeater

Isolated RS-232 to 422/485 Converter
Addressable RS-422/485 to RS-232 Converter



Features

- Automatic RS-485 data flow control
- 1000 V_{DC} (ADAM-4521)/3000 V_{DC} (ADAM-4510S/4520) isolation protection
- Surge protection RS-485 data line
- Transmission speed up to 115.2 Kbps
- Networking up to 1200 meters (4000 feet)
- Reserved space for termination resistors
- Power and data flow indicator for troubleshooting
- Power requirement: +10 to +30 V_{DC}
- Mounts easily on a DIN-rail, panel or piggyback

ADAM-4521 only

- RS-232 and RS-485 can be set to different baud rates
- Watchdog timer function
- Software configurable to either addressable or non-addressable mode
- All communication setups stored in EEPROM

Introduction

Most industrial computer systems come with standard RS-232 serial ports. Though widely accepted, RS-232 has limited transmission speed, range and networking capabilities. The RS-422 and RS-485 standards overcome these limitations by using differential voltage lines for data and control signals. The ADAM-4520/4522 converter lets you take advantage of RS-422 and RS-485 on systems originally equipped with RS-232. It transparently converts RS-232 signals into isolated RS-422 or RS-485 signals. You do not need to change your PC's hardware or your software. The ADAM-4520/4522 lets you easily build an industrial grade, long distance communication system with standard PC hardware.

The ADAM-4521 is an intelligent RS-422/485 to RS-232 converter specifically designed to connect RS-422/485 devices to an RS-232 network. RS-232 is the most common transmission standard. Although widely available on most computer systems, measurement equipment, PLCs, and industrial devices, its transmission speed, communication distance, and especially networking capability are limited due to unbalanced transmission. The ADAM-4521 addressable converter solves this problem and lets you easily build up an RS-485 network with your RS-232 devices by assigning each one an address for easier communication.

The ADAM-4510/4510S repeater simply amplifies, or boosts, existing RS-422/485 signals to enable them to cover longer distances. It extends the communication distance by 1200 m (4000 ft.) or increases the maximum number of connected nodes by 32.

Built-in Intelligence

The ADAM-4521 is equipped with a built-in microprocessor, which uses two UARTs and automatically processes data before transmitting it to the RS-232 device. This allows the ADAM-4521 to handle different baud rates between RS-232 devices and the RS-485 network. The microprocessor also verifies whether the data is transmitted with the appropriate address, which enables each RS-232 device on the RS-485 network to communicate with your PC over long distances.

An RS-485 Network with Automatic Data Flow Control Using RS-232 Software

The RS-485 standard supports half-duplex communication. This means that a single pair of wires is used to both transmit and receive data. Handshaking signals such as RTS (Request To Send) are normally used to control the direction of the data flow. A special I/O circuit in the ADAM-4510/4510S/4520/4521/4522 automatically senses the direction of the data flow and switches the transmission direction. No handshaking signals are necessary—you can build an RS-485 network with just two wires. This RS-485 control is completely transparent to the user. Software written for half-duplex RS-232 works without modification.

Specifications

Common

- Power Requirement** Uregulated +10 ~ +30 V_{DC}. Module protected from power reversals
- Case** ABS with captive mounting hardware
- Accessories (supplied)** ABS DIN-rail mounting adapter, Nylon DIN-rail mounting adapter (ADAM-4521 only) SECC panel mounting bracket
- Plug-in Screw Terminal Wiring** Accepts AWG 1- #12 or 2- #14 ~ #22 (0.5 to 2.5 mm²) wires
- Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- Dimensions** 60 x 120 mm (2.36" x 4.41")

ADAM-4510/4510S

- Transmission Speeds (bps)** 1200, 2400, 4800, 9600, 19.2 k, 38.4 k, 57.6 k, 115.2 k (switchable)
- Isolation Voltage** 3000 V_{DC} (ADAM-4510S only)
- RS-422/RS-485 Interface Connector** Plug-in screw terminal
- Power Consumption** 1.4 W @ 24 V_{DC}

ADAM-4520/4521/4522

- Transmission Speed (bps)** 300, 600 (ADAM-4521 only), 1200, 2400, 4800, 9600, 19.2 k, 38.4 k, 57.6 k 115.2 k, RTS control and RS-422 mode (switchable)
- Isolation Voltage** 3000 V_{DC} (ADAM-4520 only)
- RS-232 Interface Connector** Female DB9
- RS-422/RS-485 Interface Connector** Plug-in screw terminal
- Power Consumption** 1.2 W (ADAM-4520/4522) 1 W @ 24 V_{DC} (ADAM-4521)

Ordering Information

- ADAM-4510** RS-422/RS-485 repeater
- ADAM-4510S** Isolated RS-422/RS-485 repeater
- ADAM-4520** Isolated RS-232 to RS-422/485 converter
- ADAM-4522** RS-232 to RS-422/485 converter
- ADAM-4521** Addressable RS-422/485 to RS-232 Converter with 1000 V_{DC} Isolation

ADAM-4541 ADAM-4542+

Multi-Mode Fiber-Optic to RS-232/422/485 Converter

Single-Mode Fiber-Optic to RS-232/422/485 Converter



Features

- Easily mounted on a DIN-rail, panel or piggyback
- Transmission speeds of up to 115.2 kbps
- Optical fibers enable transmission of 2.5 km (measured with 62.5/125 mm) for ADAM-4541
- Half/Full-duplex, bidirectional transmission mode
- Avoids lightning strikes and EMI/RFI interference
- Prevents damage from electrostatic discharge
- Stable and error-free data transmission
- Automatic internal RS-485 bus supervision
- No external flow control signals required for RS-485
- Transient suppression and over-current protection on RS-422/485 data lines
- Reserved space for termination resistors
- LED for power and data flow indication
- Power requirement: +10 to +30 V_{DC}

Introduction

Fiber-optic transmission offers the benefits of wide bandwidth, immunity to EMI/RFI interference, and secure data transmission. ADAM-4541 and ADAM-4542+ can be used as an RS-232/422/485 point-to-point or point-to-multipoint connection for transmitting and converting full/half-duplex signals and their equivalents within a fiber optic environment. Fiber optics is the perfect solution for applications where the transmission medium must be protected from electrical exposure, lightning, atmospheric conditions or chemical corrosion.

ADAM-4541 and ADAM-4542+ is specifically designed to link various machinery equipped with an RS-232/422/485 communication ports (such as computer systems or manufacturing machines). Using standard ST connectors, the module's fiber-optic ports can accommodate a wide range of fiber-optic cable sizes, including 62.5/125, 250/125, and 100/140 mm.

Specifications

- **Casing** ABS with captive mounting hardware
- **Communication Mode** Asynchronous
- **Connector** Plug-in screw terminal
- **Transmission Mode** Full/half-duplex, bidirectional
- **Transmission Rate** Up to 115.2 kbps
- **Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- **Operating Humidity** 5 ~ 95% (non-condensing)
- **Accessories (included)** Nylon DIN-rail mounting adapter, SECC panel mounting bracket

ADAM-4541

- **Fiber Port** ST
- **Fiber-Optic Transfer Mode** Multi-mode
- **Wavelength** 820 nm
- **Transmission Distance** 2.5 km
- **Optical Power Budget (attenuation)** 12.5 dB
- **Power Consumption** 1 W (typical)
1 W (max.)

ADAM-4542+

- **Fiber Port** SC
- **Fiber-Optic Transfer Mode** Single mode
- **Wavelength** 1310 nm
- **Transmission Distance** 15 km
- **Optical Power Budget** 9 dB
- **Power Consumption** 1 W (typical), 1.5 W (max)

Ordering Information

- **ADAM-4541** Multi-Mode Fiber-Optic to RS-232/422/485 converter
- **ADAM-4542+** Single-mode Fiber-Optic to RS-232/422/485 Converter

Advantages of Fiber Optics

All Dielectric

- Low signal radiation
- Secure transmission
- Lightning immunity
- High-voltage insulation

Compact

- Less duct space
- Fewer additional ducts installed

Low Attenuation

- Greater distance / fewer repeaters
- Less installation and maintenance

Optical Signals

- No ground loops
- No spark hazard
- Operation in flammable areas

High Bandwidth

- Future signal capacity expansion

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-4561

1-port Isolated USB to RS-232/422/485 Converter



Features

- Full compliance with USB V1.1 specifications.
- RS-232/422/485 port supported
- Transmission speed up to 115.2 kbps
- Isolation protection 3000 V_{DC} provided
- Automatic RS-485 data flow control
- No external power supply necessary; the hub derives its power from the USB port.
- Plug & Play installation.
- No additional IRQs or I/O ports required.
- Hot attach & detach function supported

Introduction

ADAM-4561 allows PC users to connect a serial device to a system that use a USB interface. To attach the ADAM-4561 to a PC, you don't need to open the chassis or power down your PC. Instantly get one or two extra high-speed RS-232/422/485 ports. The power is derived from the USB port, so there are no power adapters to deal with. This makes the ADAM-4561 especially suitable for modems, printers, POS systems and industrial control devices.

Compliant with USB V1.1, ADAM-4561 features several powerful functions such as high-speed 115.2 kbps transmission, support for various operating systems, independent RS-232/422/485 ports and more. By simply plugging in a USB hub, ADAM-4561 eliminates the configuration issues associated with high-priced, older card solutions. You only have to install the drivers, no need to set cards slots, IRQ addresses, DMA channels, or device addresses. This reduces programming effort.

USB, now standard on virtually all new PCs, offers significant advantages over earlier bus types. A single USB interface can connect up to 127 devices at data rates up to 12 Mbps. That kind of easy and convenient connectivity means that your network can grow with your requirements.

Specifications

- **Compatibility** USB v1.1 standard
- **Interface** **Network:** USB
Serial: 3-wire RS-232, RS-422, RS-485
- **Ports** 1 x RS-232/422/485
- **Connector** **Network:** USB type A connector (Type A to Type B cable provided)
Serial: twist-wire
- **Transmission Speed** 50 bps to 115.2 kbps
- **Parity Bits** Odd, even, none
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **RS-232 Signals** Tx, Rx, GND
- **Surge Protection** 3000 V_{DC} (RS-485)
- **Isolation Protection** 3000 V_{DC} (RS-232/422/485)
- **Driver Supported** Windows® 98/2000/ME/XP, Linux®
- **Power Consumption** 270 mA @ 5 V (Typical)
300 mA @ 5 V (Max.)
- **Max. Distance** 15 ft (4.6m)
- **Case** ABS with captive mounting hardware
- **Mounting** DIN-rail, panel mounting, piggyback stack
- **Operating Temperature** 0 ~ 70° C (32 ~ 158° F)
- **Storage Temperature** -25 ~ 80° C (-13 ~ 176° F)
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)

Ordering Information

- **ADAM-4561** 1-port Isolated USB to RS-232/422/485 Converter

Universal Network Controller UNO-2000/3000

UNO-2000/3000 Series	UNO Introduction	12-2
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UNO-2000/3000 Selection Guide		12-5
UNO-3062 (New)	Celeron-400/650 Industrial Front-access Fanless PC with 2 x PCI Extension	12-6
UNO-2160	Celeron-400 Universal Network Controller with PC/104 Extension	12-8
UNO-2050	GX1-300 Universal Network Controller with 16 isolated DI/O	12-9
UNO-2051 (New)	GX1-300 Universal Network Controller with LAN, USB, 2xRS-232, 2xRS-232/422/485, 8xDI/O, 4xAI	12-10
UNO-2052	GX1-300 Universal Network Controller with 2 x CAN Bus, LAN, USB, RS-232, 16 x DI/O, 2xAI	12-11
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UNO-2059	GX1-300 Universal Network Controller with PC Card, 2 x RS-232/485, 2xRS-232/422/485	12-14



UNO-2000/3000 Series Universal Network Controllers



Introduction

If you are looking for a suitable embedded application ready platform (ARP) that can shorten your development time and offer rich networking interfaces to fulfill your extensive needs for different kinds of projects, Advantech UNO series is a great solution.

Leveraging field-approved and worldwide accepted real-time OS technology, Advantech UNO series provides a Windows CE .NET and Windows XP Embedded ready solution and supports several standard networking interfaces, such as Ethernet, Wireless Ethernet, RS-232/422/485, on-board I/O interfaces, PC cards, and so on. Because of its open architecture, great expansion capability and reliable fanless and diskless design, Advantech UNO series is an ideal platform to implement diverse custom industrial applications. Applications such as SoftLogic controllers, communication gateways, data logging, facility monitoring, device

management and Fieldbus network control.

The letters of UNO stands for the three key features of Advantech UNO products.

Universal

- Open hardware architecture: supports most popular operating systems, such as Windows and Linux.
- Standard communication interface: Support RS-232/422/485 serial ports, Ethernet ports, USB, PC card.
- Extension capability: Provides PCI and/or PC/104 slots.
- Computing capability: Pentium to Pentium III computing power.

Network

- Ethernet, Wireless LAN, modem, IrDA networking options.

Control

- Support complete ADAM I/O and controller series from the ADAM-4000, ADAM-5000, ADAM-6000 and Modbus devices over RS-485 and Ethernet.

Features

Industrial proven design for harsh environments

The UNO series is highly rugged and robust, and suitable for use in any critical and harsh environments. UNO-3062's special design eliminates the weakness of traditional PCs, by eliminating fans. UNO has a strong mechanical design, and also has excellent anti-shock and anti-vibration properties. It can endure high-operating temperatures and almost anything an industrial environment can demand.

Introduction

Open-system architecture designed for Automation

Advantech UNO has an open-system architecture, which provides the most popular interfaces such as RS-232/422/485 serial communication ports, Ethernet ports, USB ports, CompactFlash, PC Card extension slots and VGA for display panels. With rich interface support, the UNO can connect to diverse devices and equipment for automation control.

Ready Embedded OS for Rapid Application Development

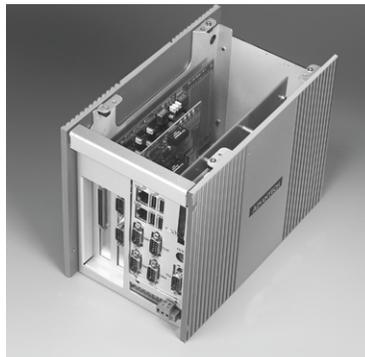
UNO provides an embedded operating system offering a pre-configured image with optimized on-board device drivers. UNO supports the three most popular embedded operating systems; Microsoft Windows® CE .NET, Microsoft Windows® XP Embedded and Embedded Linux. The embedded operating systems fulfill the toughest requirements of complete functionality and high reliability. UNO quickly proves itself to be an application ready platform that will save time and energy in launching your projects.

Flexible Networking Options

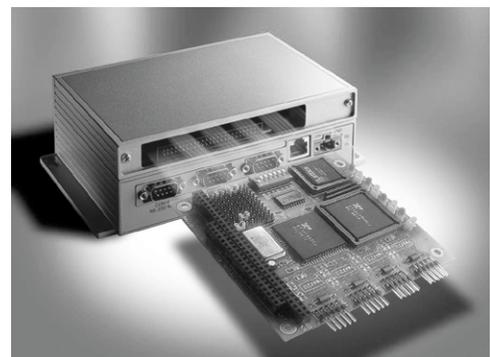
UNO supports diverse ways to connect to a network, including Ethernet, Wireless LAN and Modem. UNO's built-in Ethernet port provides high-speed networking capability up to 100 Mbps. The PCMCIA extension with PCMCIA wireless LAN module offers you a mobile and scalable network without incurring additional cabling costs. And through UNO serial ports, industrial modems offer the most popular and easiest networking way thru PSTN.

PCI & PC/104 for flexible expansion

To fulfill your diverse needs, UNO provides PCI or PC/104 interfaces for your flexible expansion, so that you can plug-in all PCI or PC/104 form-factor cards. Advantech is recognized for its PC-based solutions, and can provide you with complete data acquisition and I/O control, motion control, GPIB, industrial communication and Fieldbus cards.



UNO-3062 with PCI Card



UNO-2160 with PC/104 Module

Flexible Installation Options

Unlike traditional PCs, UNO is designed to be installed anywhere. Compact and with clever mounting brackets, you'll be able to place UNO closer to your application.

UNO provides three industrial mounting options:

- 1) DIN-rail mounting (UNO-20XX)
- 2) Panel mounting
- 3) Wall mounting

Moreover, since all connections of UNO-3062 are located on the front panel, wiring and connections are quick to configure and maintain.



DIN-rail Mounting by Industrial DIN-rails



Panel/Wall Mounting for Flat Surfaces



Wall Mount (I)



Wall Mount (II)



Cabinet

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

Win CE/XP Embedded Introduction

UNO Embedded OS Introduction

Advantech's UNO series provides an embedded operating system solution offering a pre-configured image with optimized onboard device drivers. UNO supports the three most popular operating systems: Windows® CE .NET, Windows XP Embedded and Embedded Linux. These operating system fulfill the toughest requirements of complete functionality, high reliability, minimized cost and low power consumption. UNO quickly proves itself to be a ready -or-application platform that saves you time and energy in launching your projects.

Hard Real-Time Windows CE .NET Meets Time-critical Demands

Windows CE .NET, published by Microsoft, is a robust, compact and highly efficient "hard" real-time operating system that quickly satisfies any customized high-performance embedded applications. It also provides enterprise-scale protection with demanding network security mechanisms, including Kerberos™ Security Protocol, Extensible Authentication Protocol, Secure Sockets Layer (SSL) and so on. Furthermore, Windows CE .NET supports the latest stack network standard, IPv6 that provides more IP addresses than the previous standard, IPv4. Windows CE .NET possesses robust core OS services and complete networking services to offer users an ideal embedded development platform.

UNO Windows CE .NET Software Support

Applications and Services Development	<p>The combined Web and application services of Windows CE .NET provide unsurpassed opportunities to build smart, mobile, and connected devices that have access to Windows operating systems, applications, databases, and the Internet.</p> <ul style="list-style-type: none"> ▪ Active Template Library (ATL) ▪ C Libraries and Runtimes ▪ Component Services: Component Object Model (COM) and Distributed Component Object Model (DCOM) ▪ Device Management ▪ Lightweight Directory Access Protocol (LDAP) Client ▪ Microsoft Message Queueing (MSMQ) ▪ Microsoft Foundation Classes (MFC) ▪ Object Exchange Protocol (OBEX) ▪ Simple Object Access Protocol (SOAP) Toolkit ▪ Standard SDK for Windows CE .NET ▪ Microsoft .NET Compact Framework ▪ XML
Applications: End User	<p>Ready-to-use applications perform common tasks based on underlying services, providing rapid application deployment within specific classes of devices, such as mobile handheld devices, data collection devices, and thin clients.</p> <ul style="list-style-type: none"> ▪ Microsoft ActiveSync® ▪ CAB File Installer/Uninstaller ▪ Help ▪ Remote Desktop Connection
Core Operating System Services	<p>Core operating system services contain data on the Windows CE kernel and other features common to all Windows CE platforms. The core operating system services enable low-level tasks from process threads to memory management, and provide some file system functionality.</p> <ul style="list-style-type: none"> ▪ USB Host Support ▪ Kernel Features ▪ Real-Time Support ▪ Fonts
Communication Services and Networking	<p>Windows CE .NET provides networking and communications capabilities that enable devices to connect and communicate securely with other devices and people over both wireless and wired networks.</p> <ul style="list-style-type: none"> ▪ Networking Features: Protected Extensible Authentication Protocol (PEAP), firewall, Network Driver Interface Specification (NDIS) 5.1, utilities, Universal Plug & Play (UPnP), TCP/IP, TCP/IPv6

Windows XP Embedded Provides Applications Compatible to Windows XP

Windows XP Embedded is a componentized version of Windows XP Professional, which is based on Windows XP Professional binaries and features the latest multimedia (Windows Media Player™ 8.0, DirectX® 8.0), browsing (Internet Explorer 6.0) technologies, security, and rich networking functionalities. You can seamlessly integrate specific applications into Windows XP Embedded with minimum effort.

Open Source Embedded Linux Offers A Cost-effective Alternative

Embedded Linux is a famous, UNIX compatible, open source embedded operating system which ports the Linux kernel to a specific CPU and board installed into the embedded device. Embedded Linux is a fully functional OS that features the flexibility of adding or removing modules in kernel at runtime. The other major advantage of Linux is its open source that allows users to save any license or royalty fees. Hence, Embedded Linux is a cost-effective alternative.

UNO not only provides an embedded OS platform but also has full driver support, including Windows® CE .NET, 2000/XP and Linux. Therefore, UNO is an application-ready platform that significantly shortens your research development cycle, expediting time to market.

	<ul style="list-style-type: none"> ▪ Local Area Network (LAN): 802.1x, 802.3, 802.5, Wireless Protected Access ▪ Wide Area Network (WAN): dial-up networking, point-to-point, telephony API ▪ Servers: File Transfer Protocol (FTP), telnet, Web server , Remote Access Service (RAS)
File Systems and Data Stores	<p>File systems and data stores enable devices to compress, store, or read data from RAM or ROM and have varying responsibilities from filtering to partitioning.</p> <ul style="list-style-type: none"> ▪ File System ▪ Registry Storage
Multimedia and Browsing Services	<p>The Internet connectivity modules enable you to build sophisticated Internet access devices. Off-the-shelf protocols are available at various levels to provide multiple Internet access options. Windows CE .NET includes the high performance Microsoft DirectX® API and Microsoft Windows Media® technologies found on desktop computers, enabling high-performance audio, video, and streaming media services on Windows CE .NET-based devices.</p> <ul style="list-style-type: none"> ▪ Internet Explorer 5.5 for Windows CE ▪ Scripting (Microsoft Jscript® 5.5, VBScript 5.5)
Security	<p>Security services supported in Windows CE .NET 4.2 help users to connect securely over networks and between specified devices, enabling better protection of personal content and data.</p> <p>Authentication Services</p> <ul style="list-style-type: none"> ▪ Kerberos ▪ Secure Socket Layer (SSL) <p>Cryptography Services</p> <ul style="list-style-type: none"> ▪ CryptoAPI 1.0 with High Encryption Provider
Shell and User Interface	<p>Ready-to-use, built-in user interfaces (UI) and UI services can save you considerable time when you want to create the sophisticated, easy-to-use, graphical devices that users demand.</p> <ul style="list-style-type: none"> ▪ Graphics, Windowing, and Events ▪ Shell ▪ User Interface (customizable UI, software input panel)

UNO-2000/3000 Series Selection Guide

Model Name	UNO-2050	UNO-2052	UNO-2053	UNO-2059	UNO-2160	UNO-3062	UNO-3062L
CPU	GX1-300 MHz				Celeron 400	Celeron 400/650	Celeron 400/650
On-Board RAM	64/128 MB SDRAM				256/512 MB SDRAM		
Battery-Backup RAM	-				512 KB		
VGA/Mouse/Keyboard	Yes						
Serial Ports	2 x RS-232 2 x Isolated RS-232/422/485	2 x CAN 1 x RS-232	2 x RS-232	2 x RS-232 2 x RS-232/422/ 485	2 x RS-232 2 x RS-232/422/485		
10/100Base-T Ethernet Ports	Two	One	Two	One	Two		
USB Ports	-	One	Two	Two	Two	Four	Four
PC Card Slots	-	-	One	One	One	One	--
Printer Ports	-	-	-	-	One	-	-
PC/104 Extensions	-	-	-	-	Two	-	-
PCI Extensions	-	-	-	-	-	Two	
On-Board I/O	8-ch isolated DI 8-ch isolated DO	4-ch isolated DI 4-ch isolated DO 2-ch isolated AI	-	-	-	4-ch isolated DI 4-ch isolated DO	4-ch isolated DI 4-ch isolated DO
Watchdog Timer	Yes						
CompactFlash™ Slots	One internal					One internal One external	One internal
2.5" HDD Extension	Yes						
Operating Systems	Windows® XP Embedded Windows® CE .NET Windows 2000/XP/Linux				Windows® XP Embedded Windows® CE .NET/2000/XP Linux	Windows® XP Embedded Windows® 2000/XP Linux	
Programming Runtime Library	Yes						
Software Development Kit	Yes						
Activesync	Yes						
Web server/ E-mail service	Yes						
Modem dial-in(RAS)/dial-up function	Yes						
Mounting	DIN-Rail/Panel/Wall				Wall		
Anti-Vibration	2G w/CF, 1G w/HDD @ IEC 68 section 2-6, sine, 12-300 Hz, 1 Oct./min, 1hr/axis.				2G w/CF, 0.5G w/HDD @ IEC 68 section 2-64, sine, 5-500 Hz, 1 Oct./min, 1hr/axis.		
Anti-Shock	20 G w/ CF @ DIN IEC 68 section 2-27, half sine, 11ms 50 G W/ CF @ Wall/Panel IEC 68 section 2-27, half sine, 11ms						
IP40 Certificate	Yes						
Power Input Range	9-36 V _{DC}	9-36 V _{DC}	10-30 V _{DC}	9-36 V _{DC}	9-36 V _{DC}	16-36 V _{DC}	
Operating Temperature	-10-55° C @ 5-85% relative humidity				-10-50° C @ 5-85% relative humidity		
Related Humidity	95% @ 40° C						
Power Consumption	0.6 A max under +24 V power input or 1.2 A max under +12 V power input				22W (Typical)	24 W (Typical)	
Power Requirement	1 A typical under +24 V power input or 1.5 A typical under +12 V power input				Min-48 W, +24 V @ 2 A power input		
Dimensions (W x L x H)	188.8 x 106.5 x 35.5 mm (7.5" x 4.2" x 1.4")				220 x 160 x 50 mm (8.6" x 6.2" x 1.9")	140 x 177 x 237 mm (5.5" x 7.0" x 9.3")	
Weight	0.8 kg				1.6 kg	3 kg	

Ps. Microsoft® eMbedded Visual C++ 4.0 SP1 and Visual Studio .NET Development Tool can be download from Microsoft website (for MSDN members)

*: Linux supports Kernel version 2.4 ported based on Red Hat development kit.

Available date, please check with Advantech.

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

UNO-3062

Front Access Fanless PC with Two PCI Extensions

NEW



CE FCC

Features

- On-board Celeron® 400/650 MHz, 256/512 MB SDRAM
- Provides 512 KB battery-backup RAM
- Two RS-232 and two RS-232/422/485 ports with RS-485 automatic flow control
- Two 10/100Base-T RJ-45 ports and four USB ports
- Two free PCI-bus slots extension for versatile applications
- Industrial proven design; anti-shock up to 50G, anti-vibration up to 2G
- 4-ch isolated DI, 4-ch isolated DO with timer, counter and interrupt handling
- Windows® XP embedded ready solution
- Windows® 2000/XP driver ready
- All connectors at front side of housing
- Flexible mounting plates on three sides (optional)
- Support dual power inputs

Introduction

Advantech's UNO-3062 is a Pentium® III grade, industrial fanless PC which comes with two PCI extensions. The UNO-3062 features a rugged and field-proven design offering dual power inputs and battery backup SRAM. Different from general industrial PCs, the UNO-3062 is more compact and reliable. The UNO-3062 is an open platform which can fulfill any demanding requirement from the industrial field, and it is an ideal solution for industrial automation and control.

Front Access Connections from Control Cabinet

Unlike traditional PC design, all connections of the UNO-3062 are located on the front panel. This makes wiring and maintenance significantly simpler. Moreover, the UNO-3062 is also very compact at only 140W x 177H x 237D mm, which means installation in a control cabinet is easy.

Embedded OS Ready for Rapid Application Development

UNO-3062 provides an embedded operating system with a pre-configured image that has optimized on-board device drivers. UNO-3062 supports Microsoft® Windows® XP Embedded. It fulfills the toughest requirements for complete functionality and high reliability.

Specifications

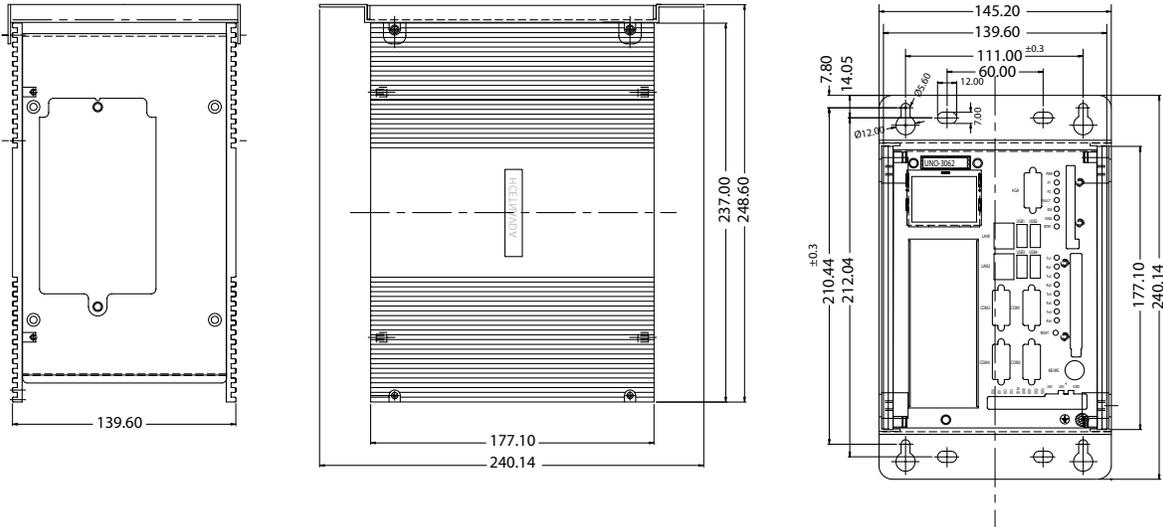
- CPU** Celeron®-400/650 MHz Ultra low-voltage version
- Memory** 256/512 MB SDRAM on board (Default: 256)
- Battery-backup RAM** 512 KB
- BIOS** Award 256 KB flash memory
- VGA/Keyboard/Mouse** DB-15 VGA Connector, PS/2 keyboard & mouse
- Clock** Battery-backup RTC for time and date
- Serial Port** 2 x RS-232 and 2 x RS-232/422/485 with DB-9 connector
- Automatic RS-485 data flow control**
- Speed** RS-232: 50 bps ~ 115.2 kbps
RS-422/485: 50 bps ~ 921.6 kbps
- LAN** Two 10/100Base-T RJ-45 Ports
- USB Interface** Four USB ports, USB UHCI, Rev. 1.1 compliant
- SSD** One internal type I/II CompactFlash® slot
One external type I/II CompactFlash® slot (UNO-3062 only)
- LEDs** Power, Power input 1, Power input 2, Power fault, IDE, Diagnosis, Alarm for battery backup
- PC Card** One PC Card Slot (UNO-3062 only)
Supports CardBus (Card-32) Card and 16-bit (PCMCIA 2.1/JEIDA4.2) Card
- PCI-bus Slots** Supports +5V, +3.3V and +12V@120mA working power
Two PCI-bus slots, a total of:
12 V @ 2.5 A
-12 V @ 0.8 A
+5 V @ 4 A
+3.3 V @ 3 A
- 4-ch Isolated Digital Input (DI0-DI3)**
 - 2,000 V_{DC} isolation
 - 2,000 V_{DC} ESD protection
 - 70 V_{DC} over-voltage protection
 - 0 ~ 50 V_{DC} input range and 10 kHz speed
 - Interrupt handling, speed: 10 kHz
- 4-ch Isolated Digital Output (DO0-DO3)**
 - 2,000 V_{DC} isolation and 200 mA max/channel sink current
 - Keep output status after system hot reset
 - 5 ~ 40 V_{DC} output range and 10 kHz speed
- Two 16-bit counters/timers**
 - Counter source: DI1 & DI3, Pulse output: DO2 & DO3
 - Can be cascaded as one 32-bit counter/timer
 - Down counting, preset counting value
 - Timer time base: 100 kHz, 10 kHz, 1 kHz, 100 Hz
- HDD** HDD extension kit is offered for installation of one standard 2.5" HDD (Option)
- Anti-Shock** 20 G @ Wall mounting, IEC 68 section 2-27, half sine, 11 ms w/HDD
50 G @ Wall mounting, IEC 68 section 2-27, half sine, 11 ms w/CF
- Anti-Vibration** 2 Grms w/ CF @ IEC 68 section 2-64, random, 5 ~ 500 Hz, 1 Oct./min, 1hr/axis.
0.5 Grms w/ HDD @ IEC 68 section 2-64, random, 5 ~ 500 Hz, 1 Oct./min, 1hr/axis
- Power Supply** 16 ~ 36 V_{DC}
- Operating Temperature** -10~50° C (14 ~ 122° F) @ 5~85% relative humidity
- Relative Humidity** 95% @ 40° C
- Power Consumption** UNO-3062 with Celeron® 650 MHz: 24 W (Typical)
UNO-3062 with Celeron® 400 MHz: 22 W (Typical)
- Power Requirement** Min-48 W, +24 V @ 2 A
- Chassis Size (WxHxD)** 140 x 177 x 237 mm (5.5" x 7.0" x 9.3")
- Mounting** Wall/panel mounting
- Weight** 3 kg

Software

- OS** Windows® XP Embedded, Windows® 2000/XP, Linux®

UNO-3062

Dimensions



Ordering Information

- **UNO-3062-JEA0** Celeron® 400 MHz, 256 MB SDRAM Front Access Fanless PC
- **UNO-3062-KEA0** Celeron® 400 MHz, 512 MB SDRAM Front Access Fanless PC
- **UNO-3062-LEA0** Celeron® 650 MHz, 256 MB SDRAM Front Access Fanless PC
- **UNO-3062-MEA0** Celeron® 650 MHz, 512 MB SDRAM Front Access Fanless PC
- **UNO-3062XP-JHA0** Celeron® 400MHz, 256MB SDRAM, Front Access Fanless PC, with 512MB industrial-grade CF and Windows® XP Embedded
- **UNO-3062XP-KHA0** Celeron® 400MHz, 512MB SDRAM, Front Access Fanless PC, with 512MB industrial-grade CF and Windows® XP Embedded
- **UNO-3062XP-LHA0** Celeron® 650MHz, 256MB SDRAM, Front Access Fanless PC, with 512MB industrial-grade CF and Windows® XP Embedded
- **UNO-3062XP-MHA0** Celeron® 650MHz, 512MB SDRAM, Front Access Fanless PC, with 512MB industrial-grade CF and Windows® XP Embedded



Front Access Connections from Control Cabinet

Unlike traditional PC design, all connections of the UNO-3062 are located on the front panel. This makes wiring and maintenance significantly simpler. Moreover, the UNO-3062 is also very compact at only 140Wx 177H x 237D mm, which means installation in a control cabinet is easy.

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

UNO-2160

Celeron® 400 Universal Network Controller with PC/104 Extension



CE FCC UL

Features

- Onboard Celeron® 400 MHz, 256/512 MB SDRAM
- Provides 512 KB of battery-backup RAM
- Supports Lm sensor which can retrieve CPU and board temperature for monitoring purposes
- Two RS-232 and two RS-232/422/485 ports with automatic flow control.
- Two 10/100Base-T RJ-45 ports.
- Two USB and one type I/II PC Card.
- Two optional PC/104 extensions.
- Supports Modbus/RTU and Modbus/TCP devices.
- Supports ADAM series for remote data acquisition and control
- Windows® CE .NET and Windows® XP Embedded ready solution

Introduction

UNO-2160 is a high-performance Pentium III grade controller that supports PC/104 extensions, serial communication ports and several other networking interfaces. UNO-2160 supports Windows® XP Embedded OS and Windows® CE.NET, which offers a pre-configured image with optimized onboard device drivers. Windows® XP Embedded delivers the power of the Windows® operating system in componentized form. You can seamlessly integrate your applications into Windows® XP Embedded. Speed up your system development with an application ready platform that can provide a rich networking interface to fulfill diverse requirements.

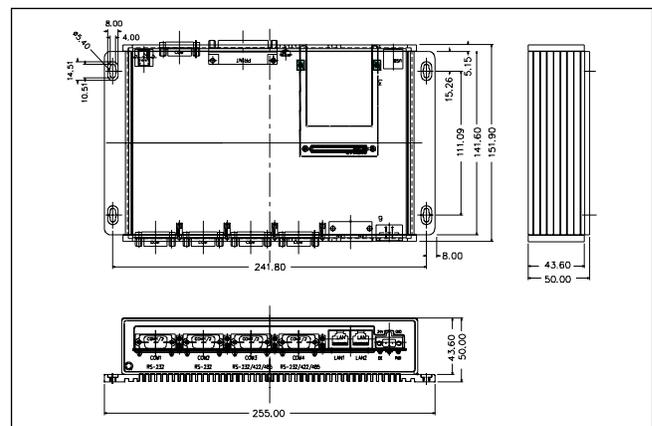
Specifications

- CPU** Celeron® 400 MHz Ultra low-voltage version, 256/512 MB SDRAM onboard (Default: 256 MB SDRAM).
- Battery-backup RAM** 512 KB Battery-backup RAM
- VGA/Keyboard/Mouse** DB-15 VGA Connector, PS/2 keyboard & mouse
- Serial Ports** 2 x RS-232 and 2 x RS-232/422/485 with DB-9 connectors
Automatic RS-485 data flow control
- Serial Port Speed** RS-232: 50 ~ 115.2 kbps
RS-422/485: 50 ~ 921.6 kbps
- LAN** Two 10/100 Base-T RJ-45 Ports
- USB Interface** Two USB ports, USB UHCI, Rev. 1.1 compliant
- Printer Port** One printer port
- PC Card** One PC Card slot
Supports CardBus (Card-32) Card and 16-bit (PCMCIA 2.1/JEIDA4.2) Card
Supports +5 V, +3.3 V and +12 V @ 120 mA working power
- SSD** One internal type I/II CompactFlash® slot
- LEDs** Power, IDE, Alarm for RAM Backup Battery
- PC/104** Two PC/104 Extensions. (Option). Support +5V working power
- HDD** Built in HDD bracket for installation of one standard 2.5" HDD
- Anti-Shock** 50 G @ Wall mounting, IEC 68 2-27, half sine, 11 ms w/CompactFlash® SSD
20 G @ Wall mounting, IEC 68 2-27, half sine, 11 ms w/HDD
- Anti-Vibration** 2 Grms w/CF @IEC 68 section 2-64, random, 5 ~ 500 Hz, 1 Oct./min, 1 hr/axis, Random vibration
1 Grms w/ HDD @ IEC 68 section 2-64, random, 5 ~ 500 Hz, 1 Oct./min, 1 hr/axis, Random vibration
- Power Supply** 9 ~ 36 V_{DC}
- Power Consumption** 22W (Typical)
- Power Requirement** Min 48W, +24V@2A
- Operating Temperature** -10~50° C (14~122° F) @ 5~85% related humidity.
- Relative Humidity** 95% @ 40° C
- Weight** 1.6 kg
- Chassis Size (WxDxH)** 255 x 152 x 50 mm (10" x 6.0" x 2.0")
- Software Options** Windows® XP Embedded, Windows® NT/2000/XP, Windows® CE .NET V4.2

Ordering Information

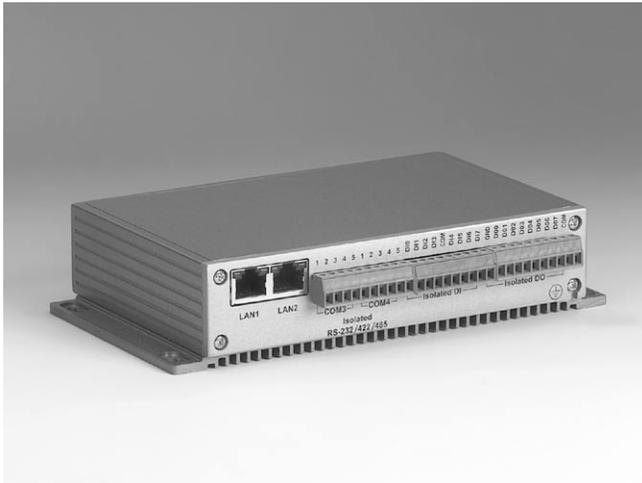
- UNO-2160-JDA0** Celeron® 400MHz, 256MB SDRAM Universal Network Controller with PC/104 extension
- UNO-2160-KDA0** Celeron® 400MHz, 512MB SDRAM Universal Network Controller with PC/104 extension
- UNO-PCM21-A** UNO-2100 series 2 x PC/104 extension kit
- UNO-2160CE-JEA1** Celeron® 400MHz, 256MB SDRAM Universal Network Controller with PC/104 extension, 64MB industrial-grade CF and Windows® CE.NET 4.2
- UNO-2160CE-KEA1** Celeron® 400MHz, 512MB SDRAM Universal Network Controller with PC/104 extension, 64MB industrial-grade CF and Windows® CE.NET 4.2
- UNO-2160XP-JHA1** Celeron® 400MHz, 256MB SDRAM Universal Network Controller with PC/104 extension, 512MB industrial-grade CF and Windows® XP Embedded
- UNO-2160XP-KHA1** Celeron® 400MHz, 512MB SDRAM Universal Network Controller with PC/104 extension, 512MB industrial-grade CF and Windows® XP Embedded

Dimensions



UNO-2050

GX1-300 UNO with 2xLAN, 2xRS-232 2xIsolated RS-232/422/485, 16xIsolated DI/O



CE FCC

Features

- On-board GX1-300 MHz, 64/128 MB SDRAM
- Two RS-232 and two-isolated RS-232/422/485 with automatic flow control
- Two 10/100 Base-T RJ-45 port.
- Isolated 8-channel DI and 8-channel DO with counter and timer.
- One programmable diagnostic LED and buzzer.
- Supports Modbus/RTU and Modbus/TCP devices.
- Supports ADAM series for remote data acquisition and control
- Windows® CE .NET ready solution.

Introduction

The Advantech UNO-2050 is a 586-grade platform with dual LAN and 16-channel isolated digital I/O and timer/counter. In addition, it also provides two RS-232 and two isolated RS-232/422/485 communication ports with RS-485 automatic flow control functionality. Therefore, the UNO-2050 is an ideal solution for embedded controllers.

UNO-2050 comes with a built-in Windows® CE solution offering a pre-configured image with optimized onboard device drivers. Microsoft® Windows® CE is a compact, highly efficient, real-time operating system designed for embedded systems without mechanical HDD limitations. To expand storage capability, the UNO-2050 allows the addition of an external 2.5" HDD using Advantech's UNO HDD extension kit. It can be used for large data backup requirements and popular OS installations such as Microsoft® Windows® and Linux® OS. Significant anti-vibration (1G w/ HDD) is maintained even with the mechanical HDD inside. UNO-2050 is the perfect embedded application ready platform that can shorten development time and offer a rich networking interface to fulfill diverse application requirements.

Specifications

- CPU** NS Geode™ GX1-300 MHz, 64/128 MB SDRAM on board
- VGA/Keyboard/Mouse** DB-15 VGA Connector, PS/2 keyboard & mouse
- Serial Ports** 2 × standard RS-232 (COM1/COM2)
2 × isolated RS-232/422/485 (COM3/COM4)
Automatic RS-485 data flow control
RS-232/422/485 (COM3/COM4) with 2000 V_{DC} surge protection & 2000 V_{DC} isolation
Speed: RS-232: 50 ~ 230.4 kbps
RS-422/485: 50 ~ 921.6 kbps
- 8-ch Isolated Digital Input** 2,000 V_{DC} isolation, 2,000 V_{DC} ESD protection, 70 V_{DC} over-voltage protection
0 ~ 50 V_{DC} input range and 10 kHz speed; Interrupt handling.
- 8-ch Isolated Digital Output** 2,000 V_{DC} isolation and 200 mA max / channel sink current
Keep output status after system hot reset
5 ~ 40 V_{DC} output range and 10 kHz speed
- Two 16-bit Counter Timer** Counter source: DI6 & DI7, Pulse output: DO6 & DO7
Can be cascaded as one 32-bit counter/timer
Down counting, preset counting value, interrupt handling
Timer time base: 100 kHz, 10 kHz, 1 kHz, 100 Hz
- LAN** Dual 10/100Base-T with RJ-45 Port
- SSD** One internal type I/II CompactFlash® slot
- HDD** Offer HDD ext.kit for inst. of one standard 2.5" HDD.
- Watchdog Timer** Programmable
- Anti-Shock** 20 G @ DIN IEC 68 section 2-27, half sine, 11 ms 50 G @ Wall/Panel IEC 68 section 2-27, half sine, 11 ms.
- Anti-Vibration** 2 G w/ CompactFlash® @ IEC 68 section 2-6, sine, 5 ~ 500 Hz, 1 Oct./min, 1hr/axis.
1 G w/ HDD @ IEC 68 section 2-6, sine, 12 ~ 300 Hz, 1 Oct./min, 1 hr/axis.

- LED** Power LED, IDE LED and one programmable diagnostic LED and buzzer.
- Power Supply** 9 ~ 36 V_{DC}
- Operating Temperature** -10 ~ 55° (14 ~ 131° F) @ 5 ~ 85% relative humidity.
- Related Humidity** 95% @ 40° C.
- Power Consumption** 0.6 A max @ +24 V input or 1.2 A max @ +12 V input
- Power Requirement** 1 A typical @ +24 V input or 1.5 A typical @ +12 V input
- Chassis Size (WxDxH)** 188.8 x 106.5 x 35.5 mm (7.5" × 4.2" × 1.4")
- Weight** 0.8 kg

Driver Support

- Windows® CE** UNO configuration utility. COM port Driver, Digital input / digital output driver. Programmable LED and buzzer Driver. Watchdog timer Driver.
- Linux®** Digital input / digital output driver. COM port driver. Programmable LED and buzzer Driver. Watchdog timer Driver.
- Windows® 2000/XP** COM port driver, Digital input / digital output driver. Programmable LED and buzzer Driver. Watchdog timer Driver.

Ordering Information

- UNO-2050-GDA0** GX1-300 UNO with 64 MB SDRAM, 2 x LAN, 2 x RS-232, 2 x isolated RS-232/422/485, 16 x isolated DI/O
- UNO-2050-HDA0** GX1-300 UNO with 128 MB SDRAM, 2 x LAN, 2 x RS-232, 2 x isolated RS-232/422/485, 16 x isolated DI/O
- UNO-2050CE-GDA2** GX1-300 UNO with 64MB SDRAM, 2xLAN, 2xRS-232, 2xIsolated RS-232/422/485, 16xIsolated DI/O and 32MB CF with Windows® CE.NET 4.2 OS
- UNO-HD20-A** UNO-2000 HDD extension kit



UNO-2051

GX1-300 UNO with 64 MB SDRAM, 2 x RS-232, 2 x RS-232/422/485, LAN, USB, 8-ch isolated DI/O and 4-ch isolated AI

NEW



Features

- On-board GX1-300 MHz, 64/128 MB SDRAM
- Two RS-232 and two isolated RS-232/422/485 with automatic data flow control
- One 10/100Base-T RJ-45 port and USB 1.0 port
- 4-ch isolated DI and 4-ch isolated DO with counter and timer.
- 4-ch isolated AI
- One programmable diagnostic LED and buzzer
- Supports Modbus/RTU and Modbus/TCP devices
- Supports ADAM series for remote data acquisition and control
- Windows® CE .NET ready solution

Introduction

The Advantech UNO-2051 is a 586-grade industrial fanless platform with dual RS-232, dual RS-232/422/485, 8-channel isolated DI and 4-channel isolated AI. Moreover, it also provides 10/100Base-T RJ-45 port and USB interface. With rich on-board I/O interfaces, UNO-2051 can connect to field sensors and devices easy and quickly. Therefore, UNO-2051 is an ideal solution for environmental monitoring applications.

UNO-2051 comes with a built-in Windows® CE .NET solution offering a pre-configured image with optimized on-board device drivers. Microsoft® Windows® CE is a compact, highly efficient, hard real-time operating system designed for embedded system without mechanical HDD limitations. To expand storage capability, UNO-2051 also allows the addition of an external 2.5" HDD using Advantech's UNO-HDD extension kit. It can be used for large data backup requirements and popular OS installations such as Microsoft® Windows® 2000/XP and Linux OS. Significant anti-vibration (1G w/HDD) is maintained even with the mechanical HDD inside. UNO-2051 is the perfect embedded application ready platform that can shorten development time and offer a rich I/O interface to fulfill your needs.

Specifications

- CPU** NS Geode™ GX1-300 MHz, 64/128 MB SDRAM on board
- VGA/Keyboard/Mouse** DB-15 VGA connector, PS/2 keyboard & mouse
- Serial Ports** 2 x standard RS-232 (COM1/COM2)
2 x RS-232/RS-422/485 (COM3/COM4)
Automatic RS-485 data flow control
RS-232/422/485 (COM3/COM4) 2000 V_{DC} surge protection & 2000 V_{DC} isolation
Speed: RS-232: 50 ~ 115.2 kbps
RS-422/485: 50 ~ 921.6 kbps
- 4-ch Isolated Digital Input** 24 V Wet Contact
- 4-ch Isolated Digital Output** 2000 V_{DC} isolation and 1 A max/channel sink current
Keep output status after system hot reset
5 ~ 40 V_{DC} output range and 10 kHz speed
- 4-ch Isolated Analog Input** Effective Resolution: 12-bit
Input Type: mV, V
Input Range: ±625 mV, ±1.25 V, ±2.5 V, ±5 V, ±10 V
Isolation Voltage: 3000 V_{DC}
Sampling Rate: 1 K samples/sec. (per channel)
Input Impedance: 20 MΩ
Accuracy: ±1% or better
- USB** One USB port, USB OHCI, Rev. 1.0 compliant
- LAN** One 10/100Base-T RJ-45 Port
- SSD** One internal Type I/Type II CompactFlash® card slot
- Watchdog Timer** Programmable
- Anti-Shock** 50 G @ Wall mounting, IEC 68 2-27, half sine, 11 ms w/CompactFlash®
20 G @ Wall mounting, IEC 68 2-27, half sine, 11 ms, w/HDD

- Anti-Vibration** 2 Grms w/CompactFlash® @ IEC 68 2-6,
5 ~ 500 Hz, 10 ct./min, 1hr/axis
1 Grms w/HDD @ IEC 68 2-6, 12~300 Hz, 10ct./min,
1 hr/axis.
- LED** Power LED, IDE LED and one programmable diagnostic LED and buzzer
- Power Supply** 9 ~ 36 V_{DC}
- Operating Temperature** -10 ~ 55° C (14 ~ 131° F) @ 5 ~ 85% related humidity
- Related Humidity** 95% @ 40° C
- H/W Dimension (W x D x H)** 188.8 x 106.5 x 35.5 mm
- Driver Support**
 - Windows® CE** UNO configuration utility, COM port driver, digital input/output driver, analog input driver, programmable LED and buzzer driver, watchdog timer driver
 - Linux®** Digital input/output driver, COM port driver, programmable LED and buzzer driver, watchdog timer driver.
 - Windows® 2000/XP** COM port driver, digital input/output driver, analog input driver, programmable LED and buzzer driver, watchdog timer driver

Ordering Information

- UNO-2051-GDA0** GX1-300 UNO with 64 MB SDRAM, 2 x RS-232, 2 x RS-232/422/485, LAN, USB, 8-ch DI/O and 4-ch AI
- UNO-2051-HDA0** GX1-300 UNO with 128 MB SDRAM, 2 x RS-232, 2 x RS-232/422/485, LAN, USB, 8-ch DI/O and 4-ch AI
- UNO-2051CE-GDA0** GX1-300 UNO with 64 MB SDRAM, 2 x RS-232, 2 x RS-232/422/485, LAN, USB, 8-ch DI/O and 4-ch AI and 32MB CompactFlash® with Windows® CE .NET 4.2 OS
- UNO-HD20-A** UNO-2000 HDD extension kit

UNO-2052

GX1-300 UNO with 2xCAN, LAN, USB, RS-232, 8xIsolated DI/O, 2xAI



CE FCC

Features

- On-board GX1-300 MHz, 64/128 MB SDRAM
- Provides two CAN interfaces
- Provides one 10/100Base-T RJ-45 port and one USB port
- Isolated 8-channel DI/O and 2-channel AI
- One programmable diagnostic LED and buzzer.
- Supports Modbus/RTU and Modbus/TCP devices.
- Supports ADAM series for remote data acquisition and control
- Windows® CE .NET ready solution.

Introduction

The Advantech UNO-2052 is a 586-grade platform that offers dual CAN 2.0B interfaces, digital I/O and thermocouple input functions. Combined with CAN 2.0B interfaces, the UNO-2052 is an ideal solution for automobile and logistics applications.

UNO-2052 comes with a built-in Microsoft® Windows® CE solution offering a pre-configured image with optimized on-board device drivers. Microsoft® Windows® CE is a compact, highly efficient, real-time operating system designed for embedded systems without mechanical HDD limitations.

To expand storage capability, the UNO-2052 allows the addition of an external 2.5" HDD using Advantech's UNO HDD extension kit. It can be used for large data backup requirements and popular OS installations such as Microsoft® Windows® and Linux® OS. Significant anti-vibration is maintained even with the mechanical HDD inside. (1 G)

UNO-2052 is the perfect embedded application-ready-platform to shorten development time and offer a rich networking interface to fulfill diverse application requirements.

Specifications

- CPU** NS Geode™ GX1-300 MHz, 64/128 MB SDRAM onboard
- VGA/Keyboard/Mouse** DB-15 VGA Connector, PS/2 keyboard & mouse
- Serial Port** 1 x standard RS-232
- Speed RS-232** 50 ~ 115.2 kbps
- USB Interface** One USB port, USB OpenHCI, Rev. 1.0 compliant
- LAN** One 10/100Base-T with RJ-45 Port
- CAN** Dual isolated CAN 2.0B interfaces.
CAN controller: SJA-1000
CAN transceiver: 82C250
- 4-ch Isolated Digital Input** 2,000 V_{DC} isolation, 2,000 V_{DC} ESD protection and 70 V_{DC} overvoltage protection
- 0 ~ 50 V_{DC} input range and 5 kHz speed
Digital input levels:
Dry contact: Logic level 0: Close to GND
Logic level 1: Open
Wet contact: Logic level 0: +2 V max
Logic level 1: +4 V ~ +50V
- 4-ch Isolated Digital Output** 2,000 V_{DC} isolation and 200 mA max / channel sink current
Keeps output status after system hot reset
5 ~ 30 V_{DC} output range and 5 kHz speed
Open collector to 30 V
30 mA max. load
Power dissipation: 300 mW
- 2-ch Thermocouple Input** Input type: Thermocouple: JKTE type
Input range: ±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V, ±20 mA
-T/C types and temperature ranges:
J 0 ~ 760° C, K 0 ~ 1370° C
T -100 ~ 400° C, E 0 ~ 1000° C
One internal type I/II CompactFlash® slot
Offer HDD ext. kit for inst. of one standard 2.5" HDD.
Programmable.
- SSD**
- HDD**
- Watchdog Timer**

- LED** Power LED, IDE LED, one programmable diagnostic LED and one buzzer.
- Power Supply** 9 ~ 36 V_{DC}
- Anti-Shock** 20 G @ DIN IEC 68 section 2-27, half sine, 11 ms 50 G @ Wall/Panel IEC 68 section 2-27, half sine, 11 ms. 2 G w/ CF @ IEC 68 section 2-6, sine, 5 ~ 500 Hz, 1 Oct./min, 1 hr/axis.
- Anti-Vibration** 1 G w/ HDD @ IEC 68 section 2-6, sine, 12 ~ 300 Hz, 1 Oct./min, 1 hr/axis.
- Operating Temperature** -10 ~ 55° (14 ~ 131° F) @ 5 ~ 85% relative humidity.
- Related Humidity** 95 % @ 40° C
- Power Consumption** 0.6 A max @ +24 V input or 1.2 A max @ +12 V input
- Power Requirement** 1 A typical @ +24 V input or 1.5 A typical @ +12 V input
- Chassis Size (WxDxH)** 188.8 x 106.5 x 35.5 mm (7.5" x 4.2" x 1.4")
- Weight** 0.8 kg

Driver Support

- Windows® CE** UNO configuration utility. DI/O & AI driver. CAN driver. Programmable LED and buzzer Driver. Watchdog timer Driver.
- Linux®** DI/O & AI driver. CAN driver. Programmable LED and buzzer Driver. Watchdog timer Driver.
- Windows® 2000/XP** DI/O & AI driver, CAN driver. Programmable LED and buzzer Driver. Watchdog timer Driver. Modbus/TCP, Modbus/RTU DLL Driver.

Ordering Information

- UNO-2052-GDA0** GX1-300 UNO with 64MB SDRAM, 2xCAN bus, LAN, USB, RS-232, 8xDI/O, 2xAI
- UNO-2052CE-GDA1** GX1-300 UNO with 64MB SDRAM, 2xCAN bus, LAN, USB, RS-232, 8xDI/O, 2xAI, and 32MB CompactFlash® with Windows® CE .NET 4.2
- UNO-2052-HDA0** GX1-300 UNO with 128MB SDRAM, 2xCAN bus, LAN, USB, RS-232, 8xDI/O, 2xAI
- UNO-HD20-A** UNO-2000 HDD extension kit

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

UNO-2053

**GX1-300 UNO with PC Card,
2xLAN, 2xUSB, 2xRS-232**



CE FCC

Features

- On-board GX1-300 MHz CPU, 64/128 MB SDRAM
- Two standard RS-232 and one DB-15 VGA connector.
- Two 10/100Base-T RJ-45 ports.
- Two USB and one type I/II PC Card slots.
- Supports Modbus/RTU and Modbus/TCP devices.
- Supports ADAM series for remote data acquisition and control
- Supports Wireless LAN PCMCIA modules.
- Windows® CE .NET ready solution.

Introduction

The Advantech UNO-2053 is a 586-grade platform that offers dual LAN, dual USB and PC card interfaces to fulfill user's diverse communication needs. In addition, it also offers two RS-232 communication ports on board. Therefore, the UNO-2053 is an ideal solution for data gateway applications.

UNO-2053 comes with a Windows® CE OS offering a pre-configured image with optimized onboard device drivers. Microsoft® Windows® CE is a compact, highly efficient, real-time operating system designed for embedded systems without mechanical HDD limitations.

To expand storage capability, the UNO-2053 allows the addition of an external 2.5" HDD using Advantech's UNO HDD extension kit. It can be used for large data backup requirements and popular OS installations such as Microsoft® Windows® and Linux® OS. Significant anti-vibration is maintained even with the mechanical HDD inside. (1 G)

UNO-2053 is a perfect embedded application-ready platform that can shorten your development time and offer a rich networking interface to fulfill diverse requirements.

Specifications

- **CPU** NS Geode™ GX1-300 MHz, 64/128 MB SDRAM on board
- **VGA/Keyboard/Mouse** DB-15 VGA Connector, PS/2 keyboard & mouse
- **Serial Port** 2 × standard RS-232
Speed: RS-232: 50 ~ 115.2 kbps
- **USB Interface** Two USB ports, USB OpenHCI, Rev. 1.0 compliant
- **LAN** Dual 10/100Base-T RJ-45 Ports
- **PC Card** One PC Card slot
- Support CardBus (Card-32) Card and 16-bit (PCMCIA 2.1/JEIDA4.2) Card
- Support +5 V, +3.3 V and +12 V @ 120 mA working power
- **SSD** One internal type I/II CompactFlash® card slot
- **HDD** HDD extension kit is offered for installation of one standard 2.5" HDD.
- **Watchdog Timer** Programmable.
- **LEDs** One Power LED and one IDE LED.
- **Power Supply** 10 ~ 30 V_{DC}
- **Anti-Shock** 20 G @ DIN IEC 68 section 2-27, half sine, 11 ms
50 G @ Wall/Panel IEC 68 section 2-27, half sine, 11 ms.
- **Anti-Vibration** 2 G w/ CF @ IEC 68 section 2-6, sine, 5 ~ 500 Hz, 1 Oct./min, 1 hr/axis.
1G w/ HDD @ IEC 68 section 2-6, sine, 12 ~ 300 Hz, 1 Oct./min, 1 hr/axis.
- **Operating Temperature** -10 ~ -55° C (14 ~ 131° F) @ 5 ~ 85% related humidity.
- **Related Humidity** 95 % @ 40°C.
- **Power Consumption** 0.6 A max under +24 V power input or 1.2 A max under +12 V power input

- **Power Requirement** 1 A @ +24 V power input
1.5 A @ +12 V power input
- **Chassis Size (WxDxH)** 188.8 x 106.5 x 35.5 mm (7.5" × 4.2" × 1.4")
- **Weight** 0.8 kg

Driver Support

- **Windows® CE** UNO configuration utility, Watchdog timer Driver.
- **Linux®** Watchdog timer Driver.
- **Windows® 2000/XP** Watchdog timer Driver.

Ordering Information

- **UNO-2053-GDA0** GX1-300 Universal Network Controller with 64 MB SDRAM, PC Card, 2 x LAN, 2 x USB, 2 x RS-232
- **UNO-2053CE-GDA2** GX1-300 Universal Network Controller with 64 MB SDRAM, PC Card, 2 x LAN, 2 x USB, 2 x RS-232 and 32MB CF with Windows® CE .NET 4.2 OS
- **UNO-2053-HDA0** GX1-300 Universal Network Controller with 128 MB SDRAM, PC Card, 2 x LAN, 2 x USB, 2 x RS-232
- **UNO-HD20-A** UNO-2000 HDD extension kit

UNO-2058

GX1-300 Universal Network Controller with GPS/GPRS Communication



Features

- On-board GX1-300MHz, 64/128MB SDRAM
- Two RS-232/485 ports and one RS-232/422/485 ports
- RS-485 automatic flow control
- One 10/100Base-T RJ-45 port
- Supports GPS positioning
- Supports GSM/GPRS communication
- Isolated 4-channel DI and 4-channel DO
- One programmable diagnostic LED and buzzer
- Supports Modbus/RTU and Modbus/TCP devices
- Supports ADAM series for remote data acquisition and control
- Windows® CE .NET ready solution

Introduction

UNO-2058 is a 586-grade industrial-grade fanless platform that provides two RS-232, one RS-232/422/485, one LAN, and two USB ports. Moreover, UNO-2058 provides GPS/GPRS two-way wireless communication for usage in mobile applications. The rugged industrial design has excellent anti-shock (50 G) and anti-vibration (2 G) properties, as well as a special aluminium heat sink design that makes it operate reliably in temperatures up to 55.°C without a fan. UNO-2058 is also IP30 certified.

UNO-2058 comes with a built-in Windows® CE .NET solution offering a pre-configured image with optimized on-board device drivers. Microsoft® Windows® CE .NET is a compact, highly efficient, real-time operating system designed for embedded systems without mechanical HDD limitations.

Specifications

- CPU** NS Geode™ GX1-300MHz with 64MB SDRAM on board
- VGA/Keyboard/Mouse** DB-15 VGA connector, PS2 keyboard & mouse
- Serial Port** 2 x RS-232/485 and 1 x RS-232/422/485
- Automatic RS-485 data flow control**
- Speed** RS-232: 50 bps ~ 230.4 kbps
RS-422/485: 50 bps ~ 921.6 kbps
- LAN** One 10/100Base-T RJ-45 port
- USB** Two USB ports, USB OHCI, Rev. 1.0 compliant
- SSD** One internal type/II CompactFlash slot
- LED** Power, GPS, GPRS, reserved for DO.
- GPS** Receiver: 16 channels, L1 civil frequency
1575.42 MHz, C/A code
Accuracy: 2.5m CEP
GPS 2m CEP (Depending on accuracy of correction data).
Signal reacquisition: < 1 sec.
Protocol: NMEA-0183 input/output
UBX binary input/output
RTCM in
- GPRS class** 10
PBCCH support
Coding Schemes: CS1 to CS4
- SMS (Short Message Service) point-to-point MT/MO and SMS CB**
- 4-ch isolated Digital Input (DI0~DI3)** Supports dry/wet contact
2000 V_{DC} isolation
70 V_{DC} over-voltage protection
- 4-ch isolated Digital Output (DO0~DO3)** Open collector to 40V (200 mA max load)
- Special power management design**

- Anti-Shock** 50 G @ Wall mounting, IEC 68 section 2-27, half sine, 11ms w/CF
- Anti-Vibration** 2 Grms @ Wall mounting, IEC 68-6, random, 5 ~ 500 Hz, 1 Oct./min, 1hr/axis
- Power Supply** 9 ~ 36 V_{DC}
- Operating Temperature** -10 ~ 55° C (14 ~ 140° F) @ 5~85% relative humidity
- Storage Temperature** -20 ~ 70° C (-4 ~ 158° F) @ 5~85% relative humidity
- Relative Humidity** 95% @ 40° C
- Chassis Size (WxDxH)** 188.8 x 106.5 x 51.0 mm (7.5" x 4.2" x 2.0")
- Weight** 1.2 kg

Ordering Information

- UNO-2058CE-GDA0** GX1-300 Universal Network Controller with 64MB SDRAM and GPS/GPRS communication, built-in 32MB CF and Windows® CE.NET 4.2 OS.

1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AWS

6
DA&C

7
cPCI

8
ADAM-3000

9
Motion Control

10
ICOM

11
eConnectivity

12
UNO

13
ADAM-4000

14
ADAM-5000

15
ADAM-6000

16
ADAM-8000

17
BAS

UNO-2059

GX1-300 UNO with PC Card, LAN, 2xUSB, 2xRS-232/485, 2xRS-232/422/485



CE FCC

Features

- On-board GX1-300 MHz, 64/128 MB SDRAM
- Two RS-232/485 and two RS-232/422/485 ports with automatic flow control.
- One 10/100Base-T RJ-45 port.
- Two USB ports and one type I/II PC Card.
- One programmable diagnostic LED and buzzer.
- Supports Modbus/RTU and Modbus/TCP devices.
- Supports ADAM series for remote data acquisition and control
- Supports Wireless LAN PCMCIA modules.
- Microsoft® Windows® CE .NET ready solution.

Introduction

Advantech's UNO-2059 is a 586-grade platform that offers USB and PC card interfaces to fulfill user's I/O device expansion needs. In addition, it also offers two RS-232/485 and two RS-232/422/485 communication ports on board with automatic flow control functionality. The UNO-2059 is an ideal and compact solution for large computing and communication requirements.

UNO-2059 comes with a Windows® CE OS offering a pre-configured image with optimized onboard device drivers. Microsoft® Windows® CE is a compact, highly efficient, real-time operating system designed for embedded systems without mechanical HDD limitations.

To expand storage capability, the UNO-2059 allows the addition of an external 2.5" HDD using Advantech's UNO HDD extension kit. It can be used for large data backup requirements and popular OS installations such as Microsoft® Windows® and Linux® OS. Significant anti-vibration (1G w/ HDD) is maintained even with the mechanical HDD inside.

UNO-2059 is a perfect embedded application ready platform that can shorten your development time and offer a rich networking interface to fulfill your diverse requirements.

Specifications

- CPU** NS Geode™ GX1-300 MHz with 64/128 MB SDRAM on board
- VGA/Keyboard/Mouse** DB-15 VGA Connector, PS/2 keyboard & mouse
- Serial Port** 2 × standard RS-232, 2 × RS-232/RS-422/485
 - Automatic RS-485 data flow control
 - RS-422/485 surge protection up to 2,000 V_{DC}
 - Speed: RS-232: 50 ~ 230.4 kbps;
 - RS-422/485: 50 ~ 921.6 kbps
- USB Interface** Two USB ports, USB OpenHCI, Rev. 1.0 compliant
- LAN** One 10/100Base-T RJ-45 Port
- PC Card** One PC Card slot
 - Supports CardBus (Card-32) Card and 16-bit (PCMCIA 2.1/JEIDA4.2) Card
 - Support +5 V, +3.3 V and +12 V @ 120 mA power
- SSD** One internal type I/II CompactFlash® slot
- HDD** HDD extension kit offered for installation of one standard 2.5" HDD.
- Watchdog Timer** Programmable.
- LED** Power LED, IDE LED, one programmable diagnostic LED and one buzzer.
- Power Supply** 9 ~ 36 V_{DC}
- Anti-Shock** 20 G @ DIN IEC 68 section 2-27, half sine, 11ms
50 G @ Wall/Panel IEC 68 section 2-27, half sine, 11 ms.
- Anti-Vibration** 2 G w/ CF @ IEC 68 section 2-6, sine, 5 ~ 500 Hz, 1 Oct./min, 1 hr/axis.
1 G w/ HDD @ IEC 68 section 2-6, sine, 12 ~ 300 Hz, 1 Oct./min, 1 hr/axis.
- Operating Temperature** -10 ~ 55° C (14 ~ 131° F) @ 5~85% related humidity.
- Related Humidity** 95 % @ 40° C.

- Power Consumption** 0.6 A max under +24 V power input or 1.2 A max under +12 V power input
- Power Requirement** 1 A typical under +24 V power input or 1.5 A typical under +12 V power input
- Chassis Size (WxDxH)** 188.8 x 106.5 x 35.5 mm (7.5" × 4.2" × 1.4")
- Weight** 0.8 kg

Driver Support

- Windows® CE** UNO configuration utility, Programmable LED and buzzer Driver. Watchdog timer Driver.
- Linux** Programmable LED and buzzer Driver. Watchdog timer Driver.
- Windows® 2000/XP** COM port driver
Programmable LED and buzzer Driver
Watchdog timer Driver.

Ordering Information

- UNO-2059-GDA1** GX1-300 Universal Network Controller with 64 MB SDRAM, PC Card, LAN, 2 x USB, 2 x RS-232/485, 2 x RS-232/422/485
- UNO-2059CE-GDA2** GX1-300 Universal Network Controller with 64 MB SDRAM PC Card, LAN, 2 x USB, 2 x RS-232/485, 2 x RS-232/422/485 and 32MB CF with Windows® CE .NET 4.2 OS.
- UNO-2059-HDA1** GX1-300 Universal Network Controller with 128 MB SDRAM, PC Card, LAN, 2 x USB, 2 x RS-232/485, 2 x RS-232/422/485
- UNO-HD20-A** UNO-2000 HDD extension kit

Remote DA&C Modules ADAM-4000 Series

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ADAM-4000 Series



Applications

- Remote data acquisition
- Process monitoring
- Industrial process control
- Energy management
- Supervisory control
- Security systems
- Laboratory automation
- Building automation
- Product testing
- Direct digital control
- Relay control

Introduction

The ADAM-4000 series modules are compact, versatile sensor-to-computer interface units designed specifically for reliable operation in harsh environments. Their built-in microprocessors, encased in rugged industrial grade plastic, independently provide intelligent signal conditioning, analog I/O, digital I/O, data display and RS-485 communication.



Remotely Programmable Input Ranges

The ADAM-4000 series modules stand out because of their ability to accommodate multiple types and ranges of analog input. The type and range can be remotely selected by issuing commands from a host computer. One type of module satisfies many different tasks, which greatly simplifies design and maintenance. A single kind of module can handle the measurement needs of a whole plant. Since all modules are remotely configured by the host computer, physical adjustments are unnecessary.

Watchdog Timer Inside

A watchdog timer supervisory function will automatically reset the ADAM-4000 series modules if required, which reduces the need for maintenance.

Flexible Networking

The ADAM-4000 series modules need just two wires to communicate with their controlling host computer over a multidrop RS-485 network. Their ASCII-based command/response protocol ensures compatibility with virtually any computer system.

Alternative Standalone Control Solution

A stand-alone control solution is made possible when the ADAM-4000 series modules are controlled by the ADAM-4500 or ADAM-4501 PC-based communication controller. The ADAM-4500 or ADAM-4501 allows users to download an application (written in a high-level programming language) into its Flash ROM. This allows customization for your applications.

Modular Industrial Design

You can easily mount modules on a DIN-rail, a panel or modules can piggyback on top of each other. You make signal connections through plug-in screw-terminal blocks, ensuring simple installation, modification and maintenance.

Ready for the Industrial Environment

The ADAM-4000 series modules accept any unregulated power source between +10 and +30 Vdc. They are protected from accidental power supply reversals and can be safely connected or disconnected without disturbing a running network.



Class I, Div. 2 Groups ABCD
(NI / I / 2 / ABCD / T*)

Remote Data Acquisition and Control Modules

ADAM-4000 Remote DA&C System

The ADAM-4000 remote DA&C system encompasses a full product line integrating HMI platforms and numerous I/O modules such as DI/O, AI/O, relay and counter modules. In addition, we offer many communication models for data transfer: Ethernet wireless, Modbus, RS-485, and fiber optics. Users can choose among specific modes according to their specific application purposes. Data transfer can be uploaded to HMI platforms via a safe Ethernet channel for monitoring and controlling. All this can be done using an existing data bus without investing in extra hardware.

Modbus Communication Protocol

Since Modbus® is one of the most popular communication standards in the world, Advantech has applied it as the major communication protocol for eAutomation product development. The new-generation ADAM-4000 modules now also support the Modbus/RTU protocol as the remote data transmission mechanism. These modules (ADAM-4015/4017+/4018+/4019+/4024/4051/4055/4056S/4056SO/4068/4069), include analog I/O and digital I/O, needed in a data acquisition system. Featuring the Modbus-support capacity, the new ADAM-4000 series becomes universal remote I/O modules, which work with any Modbus systems. The HMI server or controller can read/write data via standard Modbus command instead of complex ASCII code.

Ethernet

ADAM-4570 and ADAM-4571 are designed for the connection between serial devices (RS-232/485/422) and Ethernet. With ADAM-4570 or ADAM-4571, you can use graphical control software to monitor and control I/O modules. With existing devices, you can connect to an Ethernet network with the benefits of enhanced host performance and convenience.

RS-485

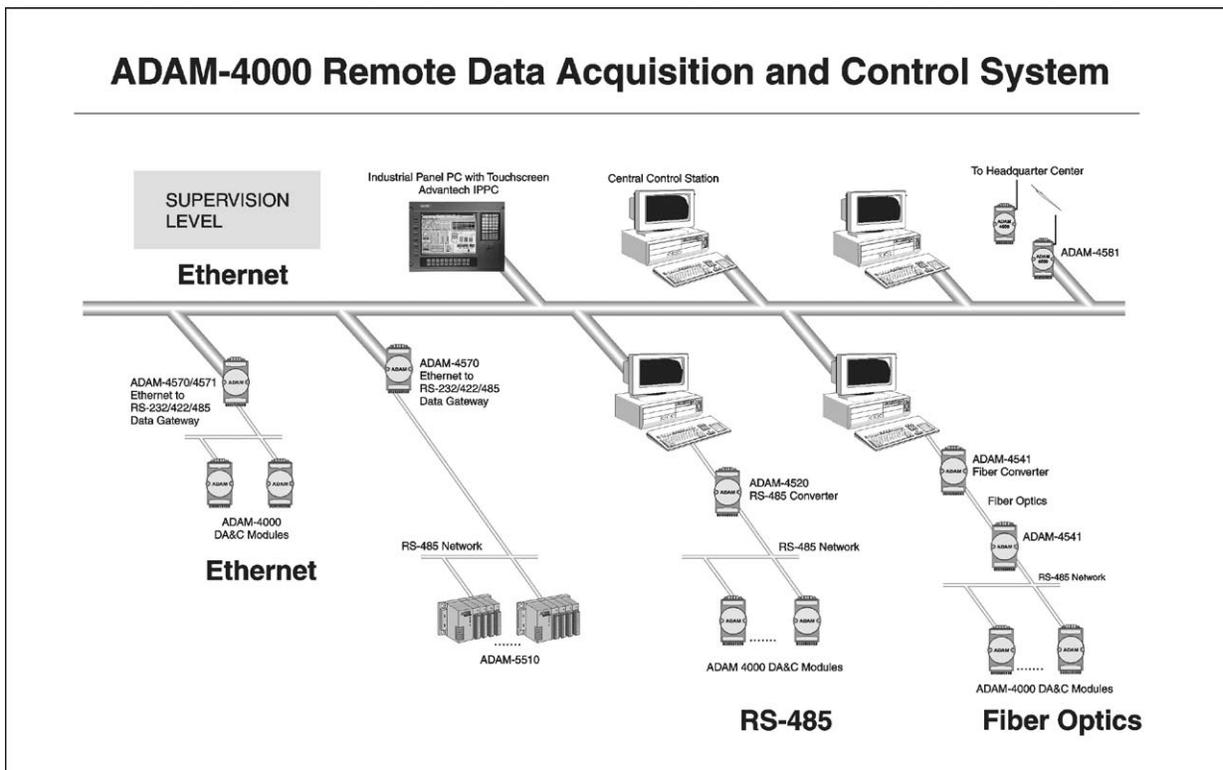
The ADAM-4000 series of modules use the EIA RS-485 communication protocol, the industry's most widely used bi-directional, balanced transmission line standard. The EIA RS-485 was specifically developed for industrial applications. It lets ADAM-4000 modules transmit and receive data at high rates over long distances. All modules use optical isolators to prevent ground loop problems and reduce damages caused by power surges.

Fiber Optics

If users need to transmit over long distances without noise interference, ADAM-4541 and ADAM-4542+ are designed for this task. The ADAM-4541 is a multi-mode converter, which carries signals from fiber optics to RS-232/485. It offers a transmission distance of up to 2500 m with a total immunity to electromagnetic noise.

GSM Communication Module

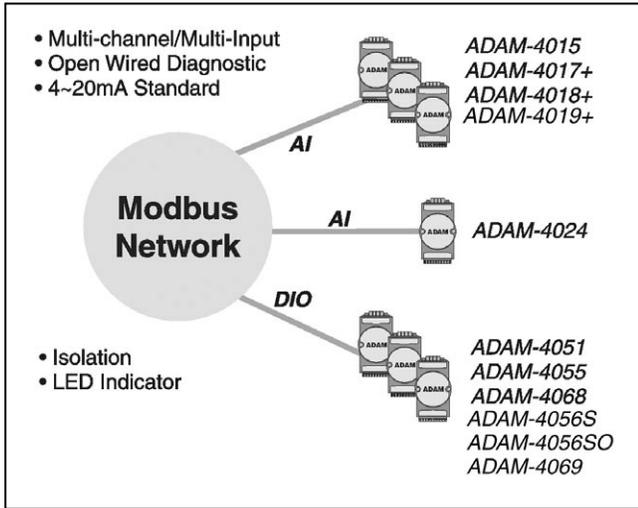
The ADAM-4581 1-port GSM to RS-232/485 Wireless Data Gateway product provides GSM CSD data communication as well as SMS service through the interface with the Dual-band GSM (900/1800) module for applications in facility management systems, water/wastewater monitoring, pipeline monitoring, unmanned telecommunication facility monitoring, surveillance, as well as others. The ADAM-4581's interface uses the industrial device standard RS-232/485 with auto-flow control.



- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
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- 12 UNO
- 13 ADAM-4000
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- 17 BAS

ADAM-4000 Series

Modbus I/O Solution



The Advanced I/O Solution for any Modbus System Integration

Introduction

The ADAM-4000 Series is a complete I/O solution, featuring Modbus Network Support, with a robust and intelligent design. It is the easiest to use, and a cost-effective choice for your system I/O needs.

Modbus Network Support

The Modbus® protocol has become a de facto standard for data exchange and information communication in industrial network applications. The Modbus® devices communicate over a serial network in a master/slave (request/response) type relationship using one of two transmission modes: ASCII (American Standard Code for Information Interchange) mode or RTU (Remote Terminal Unit) mode. The ADAM-4000 Modbus I/O modules are designed to operate as slave devices on a Modbus network, which communicates in Modbus/RTU transmission mode.

Easy Plug-in System Integration

With the ADAM-4000 Modbus I/O Built-in Modbus/RTU protocol, any controller bearing Modbus/RTU standard can be integrated as part of a control system. Any Modbus Ethernet data gateway can upgrade these I/O Modules up to the Modbus/TCP Ethernet layer. Most HMI software are bundled with a Modbus driver, and can access the ADAM-4000 I/O directly. Moreover, Advantech provides Modbus OPC Server & Modbus/TCP OPC Server as data exchange interfaces between the ADAM-4000 Modbus I/O and any Windows Applications.

Dual Protocol Support

To satisfy both current ADAM users and Modbus users, these ADAM-4000 Modules support both the ADAM protocol and Modbus/RTU protocol. You can select the communication mode you want through the Windows Utility Software. If users apply the ADAM protocol, the ASCII command/response will remain the same as usual. In RTU mode, data is sent as two four-bit, hexadecimal characters, providing for higher throughput than in ASCII mode for the same baud rate.

Complete I/O Series

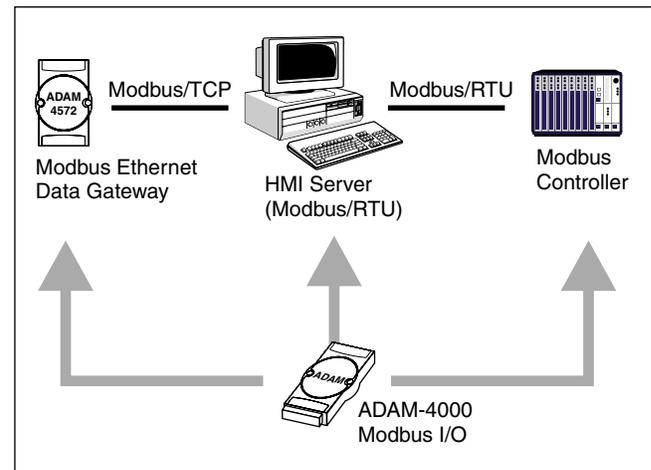
We are proud to offer a complete I/O series, which includes Analog Input (ADAM-4017+/ADAM-4019+), T/C Input (ADAM-4018+), RTD Input (ADAM-4015), Analog Output (ADAM-4024), Digital Input/Output (ADAM-4051/4055/4056S/4056SO), and Relay Output (ADAM-4068/4069) Modules.

Robust Design

The ADAM-ADAM/4015/4017+/ADAM-4018+/ADAM-4019+/4024 are designed with Channel differential, 3000V_{DC} system isolation. Moreover, ADAM-4017+/4018+/4019+ offer 4-20 mA input range without the use of an additional resistor. The ADAM-4051/4055/4056S/4056SO, built with 2500V_{DC} isolation, are a robust & high density D/I/O solutions.

Intelligent Function

Different from other ADAM AI/O modules, the ADAM-4015/4017+/4018+/4019+/4024+ can be set in different ranges, and in different channels. The ADAM-4015/4018+/4019+ are even designed with a burned-out diagnostic function to inform users of problems with wire openings. When the alarm triggers, the ADAM-4024 provides 4 alarm DI points to interlock with individual AO channels. The intelligent function consists of the built-in LED indicator. From the front panel of the ADAM-4051/4055/4056S/4056SO/4068, users



ADAMView

Data Acquisition Software



The Operation Interface Software designed for ADAM

We have noticed that many users apply the ADAM Data Acquisition modules in small base projects. Because the cost ran higher than system hardware, Human Machine Interface software were never suitable for these projects. ADAMView, the ADAM Data Acquisition software, is especially designed for low-volume ADAM projects. It provides a 150 physical points database, ADAM Drivers, and OPC Server for all monitoring and control functions. In brief, ADAMView is a cost-effective and simple SCADA software for the ADAM I/O series.

Complete Software Package

ADAMView takes advantage of Microsoft's Windows graphical interface, offering fast and intuitive configuration for human-machine interface and data acquisition applications. This application software combines easy-to-use graphical development and the flexibility of BasicScript, a powerful programming tool. With ADAMView, you can easily design both simple and complex applications, such as factory processes and utility monitoring, Lab testing, or environmental monitoring.

Graphical Panel Configuration

ADAMView provides a wide variety of graphical wizards, allowing users to quickly create an intuitive operator interface. Built-in display objects include bar graph, button, indicator, real time/historical trending, knob, gauge, slider, imported bitmap, numeric display and control.

Modularized and Prioritized Task Design

ADAMView development environment allows you to decompose your system into several smaller modules or tasks. The modular design is very useful to develop, and facilitate large and complicated system maintenance. Each module or task has its own properties, such as scan rate, start/stop method, and priority etc. With 32-bit Windows' multi-tasking capability, all tasks run simultaneously. Moreover, ADAMView software allows you to prioritize your tasks to increase overall performance.

Powerful BasicScript Scripting Language to Customize Your Needs

ADAMView is easy to use. It fully integrates BasicScript language in its kernel to meet your specific needs. Over 600 commands are available to perform almost any function you can imagine, including calculations, reading and writing files, DDE, and ODBC. It allows you to access and share data with other applications, such as Microsoft Access and Microsoft Excel. With BasicScript scripting language, you can reuse existing code and build your applications faster and easier.

Plug-and-Play Connect with ADAM I/O series

Once you install the ADAMView software, you can immediately connect with ADAM-4000/5000 I/O as a complete Data Acquisition System. Current ADAM users can apply direct driver to access all ADAM-4000 modules and ADAM-5000/485 I/O system. Modbus users can link ADAM-5511, ADAM-4000 Modbus I/O, and ADAM-6000 through the Modbus OPC server and Modbus/TCP OPC Server.

Hardware Supported

- **ADAM-4000/5000 Series Modules:** Link through DLL Driver (Device Manager)
- **ADAM-4000 Modbus Series Modules:** Link through Modbus® OPC Server
- **ADAM-5511 Modbus Controller:** Link through Modbus® OPC Server
- **ADAM-5000/TCP, ADAM-6000 I/O Modules:** Link through Modbus/TCP OPC Server
- **ADAM-4501 Controller:** Link through Modbus/TCP OPC Server
- **ADAM-5510 Series Controller:** Link through Modbus® OPC Server
- **ADAM-5510KW Series Controller:** Link through Modbus® OPC Server

Ordering Information

- **PCLS-ADAMVIEW32** ADAMView Data Acquisition Software
- **PCLS-OPC/ADM** OPC Server for ADAM-4000/5000 Series (RS-485)
- **PCLS-OPC/MOD** Modbus® OPC Server
- **PCLS-OPC/MTP** Modbus®/TCP OPC Server

- 1 Software
- 2 IPPC
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ADAM-4000 Series

Analog Input Modules

The ADAM-4000 series of analog input modules use microprocessor-controlled, high-resolution, 16-bit, sigma-delta A/D converters to acquire sensor signals such as voltage, current, thermocouple or RTD. They translate analog data into one of the following formats: engineering units, % of FSR, two's complement or ohms. After the modules receive a request from the host, the data is sent in the desired format over the RS-485 network.

The ADAM 4000 series analog input modules protect your equipment from ground loops by providing 3000 V_{DC} isolation.

The ADAM-4011/4011D/4012 modules feature digital inputs and outputs which may be used for alarms and event counting.

The analog input module's two digital output channels are open-collector transistor switches that you can control from the host computer. By switching solid state relays, the output channels can control heaters, pumps and other power equipment. The module can use its digital input channel to sense the state of a remote digital signal.

Programmable Alarm Output

Analog input modules include high and low alarm signals with remotely configurable limit values. After every A/D conversion, the digital value is compared with the high and low limit. The module can change the state of a digital output depending on the result of this comparison. This allows the on/off control of a device to perform independently of its host PC.

Event Counter

The onboard event counter can count up to 65,535 transitions occurring on the digital input. The counter can be read and cleared by the host computer. The counter can be used in production line applications to record repetitive operations.

Analog Input/Output Modules

The ADAM-4016 is an analog input/output module with 3000 V_{DC} isolation for load cell and stress measurement. It accepts voltage and current input signals. The module includes two digital outputs for programmable alarm output and another two digital outputs for individual use. This enables the ADAM-4016 to control a device's on/off control independently of a host PC.

Eight-channel Analog Input Modules

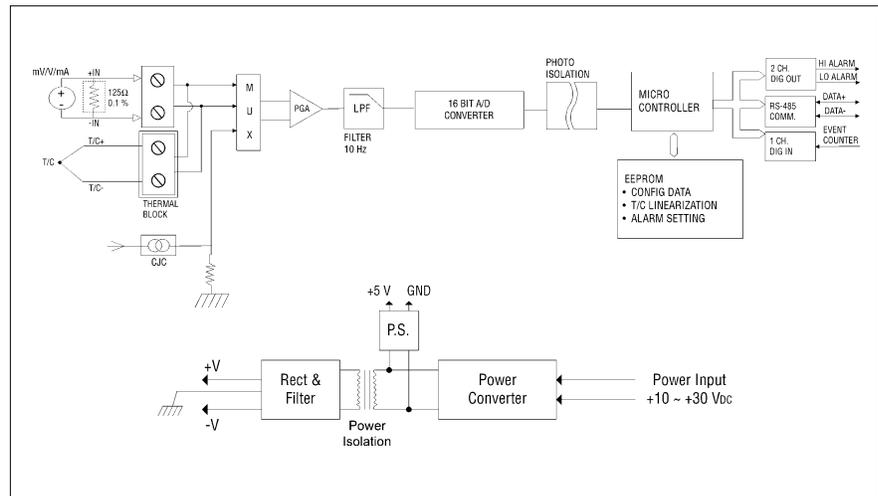
The ADAM-4017+/4018+/4019+ are 16-bit, 8-channel analog input modules that provide programmable input ranges on all channels. These modules are an extremely cost-effective solution for industrial measurement and monitoring applications. 3000 V_{DC} optical isolation between the analog input and the modules protects the modules and peripherals from damages caused by high input-line voltages.

Analog Input Module with LED Display

The 4½-digit LED display on the face of the ADAM-4011D lets you monitor process readings right at their source. The module displays readings in a wide variety of data formats as well as high-low alarm messages. The ADAM-4011D offers flexibility, ease of installation and direct availability of process data. This module is the ideal choice for critical process monitoring.

Eight-channel Analog Input Data Logger

The ADAM-4018M features six differential and two single-ended channels. Its 128 KB of Flash memory can accommodate up to about 38,000 data samples and will write until the memory is exhausted. Featuring a remotely configurable sampling interval of 2 seconds to 18 hours, the ADAM-4018M is the perfect link between industrial processes and your PC, enabling remote process monitoring from virtually any kind of computer.



Block Diagram of the ADAM-4011 Analog Input Module

Analog and Digital I/O Total Solution

RTD Input Modules

An RTD module is popular for temperature measurement. Unlike traditional designs, the ADAM-4015 provides six RTD input channels for different types of RTD signals as a cost-effective solution for industrial and building automation. Occasionally, broken external wiring can lead to inaccurate current values. The ADAM-4015 provides a broken wiring detection function so users can easily troubleshoot this.

Analog Output Modules

The ADAM-4021 analog output module supplies single-channel analog output in a range of voltages and currents. In order to fully fit multi-channel analog output modules, the ADAM-4024 provides 4 universal type output channels. Moreover, it is designed with 4 digital inputs for integrating applications, such as emergency latch outputs or users default triggers. It uses optical isolators to prevent ground loop effects and limit damage from power surges. You can specify slew rates and start-up currents.

Analog Readback (ADAM-4021 Only)

The analog output module's ADC (Analog to Digital Converter) is independent of the DAC, so it provides true readback of the analog output signal to the microprocessor. While the ADC is not intended to provide highly accurate measurement of the output data, it indicates that analog output is being produced as intended. It also lets you easily detect output fault conditions due to improper wiring or unexpected loads.

Digital Input and Output Modules

The ADAM-4050 features seven digital input channels and eight digital output channels. The outputs are open-collector transistor switches that you can control from the host computer. You can also use the switches to control solid-state relays, which in turn can control heaters, pumps or other power equipment. The host computer can use the module's digital inputs to determine the state of limit switches, safety switches or remote digital signals.

The ADAM-4051 is a 16-ch. digital input module, built with 3000 V_{DC} optical isolation, suitable for critical applications. Different from other modules, the ADAM-4051 accepts 10 ~ 50 V input voltage to fit various digital signals, such as 12 V_{DC}, 24 V_{DC}, 48 V_{DC}. Moreover, users can read the current status from the LED indicators on the front panel.

The ADAM-4052 provides eight digital input channels: six fully independent isolated channels and two isolated channels with a common ground. All have 5000 V_{RMS} isolation to prevent ground loop effects and prevent

damage from power surges on the input lines.

The ADAM-4053 provides 16 digital input channels for dry or wet contact signals. For dry contact, the effective distance from DI to contact point is up to 500 m.

The ADAM-4055 offers 8-ch. isolated digital inputs and 8-ch. isolated digital outputs for critical applications. The inputs accept 10 ~ 50 V voltage, and the outputs supply 5 ~ 40 V_{DC} open collector. Considered to be very user-friendly, the ADAM-4055 is also built with LED indicator for easy status reading.

Counter/Frequency Module

The ADAM-4080/4080D isolated counter/frequency modules have two 32-bit counter channels and a built-in programmable timer for frequency measurement.

Programmable Alarm Output

The ADAM-4080/4080D modules include digital alarm functions. You can set alarm values (32-bit) into the module from your host computer.

Programmable Digital Filter and Threshold

The ADAM-4080/4080D modules include a unique programmable digital filter to reject noise on the input signal. You can specify separate time constants to provide stable output readings.

Programmable Preset Value

The ADAM-4080 module includes a programmable preset mode. You can preset the value of a counter into the module from your host computer.

Front Panel Display

The ADAM-4080D module's 5-digit LED displays the data being sent over an RS-485 line to the host computer. The module can be programmed to show either channel 0 or channel 1.

Relay Output Modules

As with other ADAM modules, the ADAM-4060/4068 relay modules are controlled remotely and store configuration data in EEPROM. The ADAM-4060/4068 provide 4/8 channels, half being Form A and the rest being Form C. These modules are excellent for on/off control or low-power switching applications.



DIN-rail Mounting
Streamline your system with industry standard DIN-rails



Panel/Wall Mounting
Use this special bracket to mount modules on any flat surface



Piggybacking
Save space by stacking the modules, one on top of the other

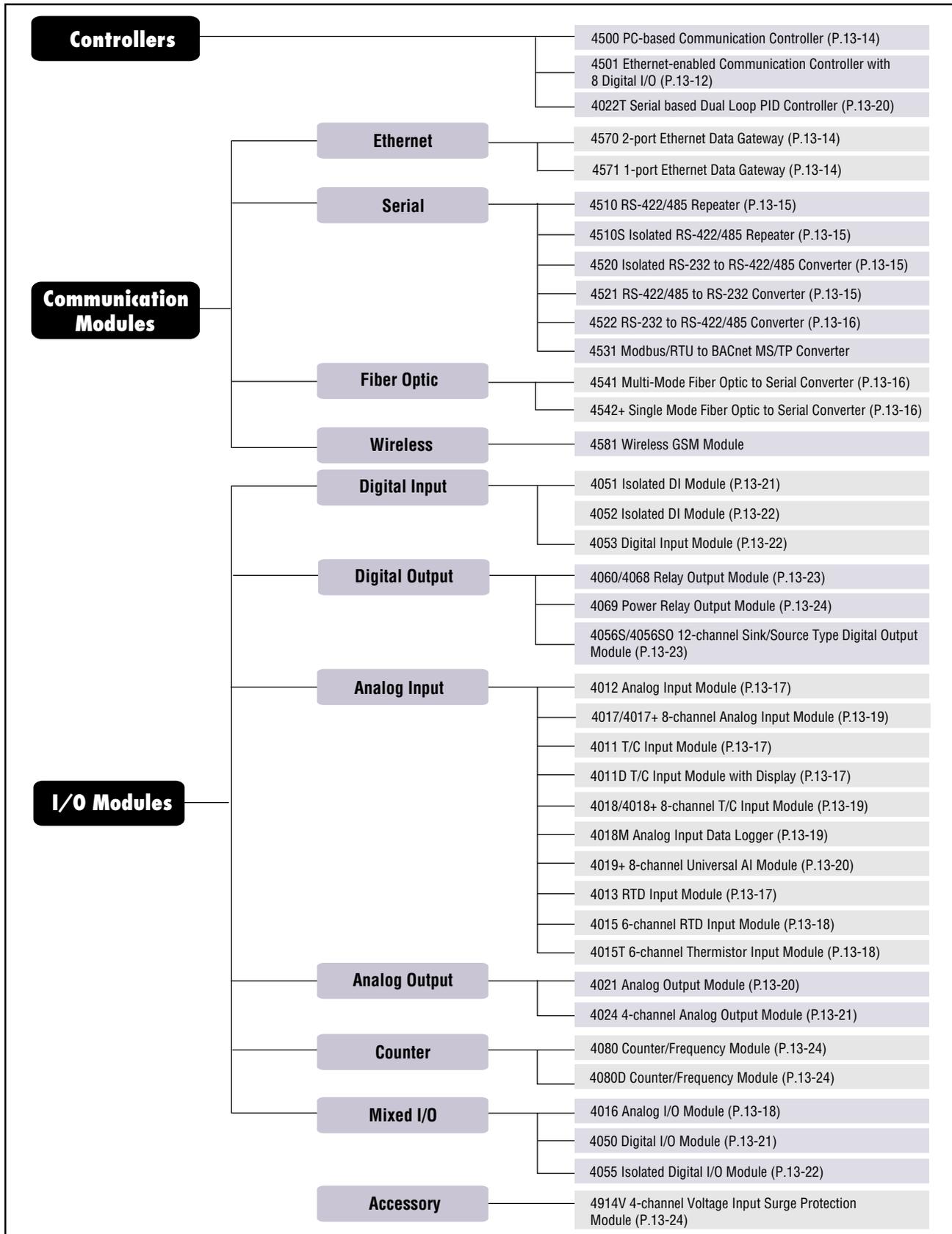


Plug-in Terminal Block
Save time by leaving wiring intact while connecting or disconnecting modules

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-4000 Series

Module Selection Chart



Communication Modules Selection Guide

	Controllers			Repeaters		Converters & Data Gateways			
Module	ADAM-4500	ADAM-4501	ADAM-4022T	ADAM-4510 ADAM-4510S	ADAM-4520 ADAM-4522	ADAM-4521	ADAM-4541/4542+	ADAM-4581	ADAM-4570 ADAM-4571
Network	RS-232 RS-485	Ethernet, RS-485	RS-485	RS-422 RS-485	RS-232 to RS-422 RS-485	RS-232 to RS-422 RS-485	Fiber Optic to RS-232/422/485	GSM to RS-232/485	Ethernet to RS-232/422/485
Comm. Protocol	ADAM	Modbus/RTU, Modbus/TCP	ADAM/Modbus						
Comm. Speed (bps)	From 1200 to 115.2 k	Ethernet: 10/100M Serial: From 1200 to 115.2 kbps	From 1200 to 115.2 k	From 1200 to 115.2 k	From 1200 to 115.2 k	From 1200 to 115.2 k	From 1200 to 115.2 k	900/1800 Band Serial: from 1200 to 9600 bps	Ethernet: 10/100 M Serial: up to 230.4 k
Comm. Distance	Serial: 1.2 km	Ethernet: 100 m Serial: 1.2 Km	Serial: 1.2 km	Serial: 1.2 km	Serial: 1.2 km	Serial: 1.2 km	ADAM-4541: 2.5 km ADAM-4542+: 15 km		LAN: 100 m Serial: 1.2 km
Interface Connectors	RS-232: female DB9 RS-485: plug-in screw terminal	Ethernet: RJ45 RS-485: plug-in screw terminal RS-232:RJ48	RS-485: plug-in screw terminal	RS-422/485: plug-in screw terminal	RS-232: female DB9 RS-422/485: plug-in screw terminal	RS-232: female DB9 RS-422/485: plug-in screw terminal	Fiber: ST RS-232/422/485: plug-in screw terminal	RS-232/485: plug-in screw terminal	Ethernet: RJ-45 RS-232/422/485: RJ-48
LED Indicators	Comm. & Power	Comm. & Power	Power	Comm. & Power	Comm. & Power	Comm. & Power	Comm. & Power	Comm. & Power	Network: Tx/Rx Link, Speed, Power
Data FlowControl	Yes	Yes	Yes			Yes		Yes	Yes
Watchdog Timer	Yes	Yes	Yes			Yes		Yes	Yes
Isolation Voltage			3000 V _{DC}	3000 V _{DC} (ADAM-4510S)	3000 V _{DC} (ADAM-4520)				
Power Requirement	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}
Operating Temperature	-10 ~ 70° C	-10 ~ 70° C	-10 ~ 70° C	-10 ~ 70° C	-10 ~ 70° C	-10 ~ 70° C	-10 ~ 70° C	-10 ~ 70° C	0 ~ 60° C
Humidity	5 ~ 95 %	5 ~ 95 %	5 ~ 95 %	5 ~ 95 %	5 ~ 95 %	5 ~ 95 %	5 ~ 95 %	5 ~ 95 %	20 ~ 95 %
Power Consumption	2.0 W	4 W	4 W	1.4 W	1.2 W	1 W	1 W (typical) 1.5 W (max.)	1 W	4 W
Page	13-14	13-12	13-20	13-15	13-15, 13-16	13-15	13-16		13-14

1	Software
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17	BAS

I/O Modules Selection Guide

Analog Input

Module	ADAM-4011/ ADAM-4011D	ADAM-4012	ADAM-4013	ADAM-4015	ADAM-4015T	ADAM-4016	ADAM-4017/ ADAM-4017+	ADAM-4018/ ADAM-4018+	ADAM-4018M	ADAM-4019+	
Resolution	16 bit	16 bit	16 bit	16 bit	16 bit	16 bit	16 bit	16 bit	16 bit	16 bit	
Analog Input	Input Channels	1 differential	1 differential	1 differential	6 differential	6 differential	1 differential	8 differential (ADAM-4017+)	8 differential (ADAM-4018+)	6 differential 2 S. E.*	8 differential
	Sampling Rate	10 Hz	10 Hz	10 Hz	10 Hz (total)	12 Hz (total)	10 Hz (total)	10 Hz (total)	10 Hz (total)	10 Hz (total)	10 Hz (total)
	Voltage Input	±15 mV ±50 mV ±100 mV ±500 mV ±1 V ±2.5 V	±150 mV ±500 mV ±1 V ±5 V ±10 V	-	-	-	-	±15 mV ±50 mV ±100 mV ±500 mV	±50 mV ±100 mV ±500 mV ±1 V ±2.5 V (4018)	±50 mV ±100 mV ±500 mV ±1 V ±2.5 V	±100 mV ±500 mV ±1 V ±2.5 V ±5 V ±10 V
	Current Input	±20 mA	±20 mA	-	-	-	±20 mA	4-20 mA (4017+)	4-20 mA ±20 mA	±20 mA	4 ~ 20 mA ±20 mA
	Direct Sensor Input	J, K, T, E, R, S, B Thermocouple	-	RTD Pt, Ni	RTD Pt, Ni, Balco	Thermistor 3K, 10 K	-	-	J, K, T, E, R, S, B Thermocouple	J, K, T, E, R, S, B Thermocouple	J, K, T, E, R, S, B Thermocouple
	Burn-out Detection	Yes	-	-	Yes	Yes	-	-	Yes (4018+)	-	Yes +4 ~ 20 mA & All T/C
	Channel Independent Configuration	-	-	-	Yes	Yes	-	Yes (4017+)	Yes (4018+)	-	Yes
	Storage Capacity	-	-	-	-	-	-	-	-	128 KB Flash Memory	-
Analog Output	Output Channels	-	-	-	-	1	-	-	-	-	
	Voltage Output	-	-	-	-	0 - 10 V	-	-	-	-	
	Current Output	-	-	-	-	30 mA	-	-	-	-	
Digital Input and Output	Digital Input Channels	1	1	-	-	-	-	-	-	-	
	Digital Output Channels	2	2	-	-	4	-	-	-	-	
	Alarm Settings										
Counter (32-bit)	Channels										
	Input Frequency										
Isolation	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	
Digital LED Indicator	Yes (4011D)	-	-	-	-	-	-	-	-	-	
Watchdog Timer	Yes (System)	Yes (System)	Yes (System)	Yes (System & Comm.)	Yes (System & Comm.)	Yes (System)	Yes (System & Comm.)	Yes (System & Comm.)	Yes (System)	Yes (System & Comm.)	
Safety Setting											
Modbus Support	-	-	-	Yes	Yes	-	Yes (4017+)	Yes (4018+)	-	Yes	
Page	13-17	13-17	13-17	13-18	13-18	13-18	13-19	13-19	13-19	13-20	

Analog Output		Digital Input/Output						Relay Output			Counter
ADAM-4021	ADAM-4024	ADAM-4050	ADAM-4051	ADAM-4052	ADAM-4053	ADAM-4056S/ ADAM-4056SO	ADAM-4055	ADAM-4060	ADAM-4068	ADAM-4069	ADAM-4080/ ADAM-4080D
12 bit	12 bit	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	Yes	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
1	4	-	-	-	-	-	-	-	-	-	-
0 - 10 V	0 - 10 V +/-10V	-	-	-	-	-	-	-	-	-	-
0 - 20 mA 4 - 20 mA	0 - 20 mA 4 - 20 mA	-	-	-	-	-	-	-	-	-	-
-	4	7	16	8	16	-	8	-	-	-	-
-	-	8	-	-	-	12 (Sink): ADAM-4056S 12 (Source): ADAM-4056SO	8	4-channel relay	8-channel relay	8-channel power relay	2
-	Yes	-	-	-	-	-	-	-	-	-	Yes
-	-	-	-	-	-	-	-	-	-	-	2
-	-	-	-	-	-	-	-	-	-	-	50 kHz
3,000 VDC	3,000 VDC	-	2,500 VDC	5,000 VRMS	-	2,500 VDC	2,500 VDC	-	-	-	2,500 VRMS
-	-	-	Yes	-	-	Yes	Yes	-	-	-	5-digit (4080D)
Yes (System)	Yes (System & Comm.)	(System & Comm.)	(System & Comm.)	Yes (System)	Yes (System)	(System & Comm.)	(System & Comm.)	(System & Comm.)	(System & Comm.)	(System & Comm.)	Yes (System)
-	Yes	Yes	-	-	-	Yes	Yes	Yes	Yes	Yes	-
-	Yes	-	Yes	-	-	Yes	Yes	-	Yes	Yes	-
13-20	13-21	13-21	13-21	13-22	13-22	13-23	13-22	13-23	13-23	13-24	13-24

1	Software
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17	BAS

ADAM-4501

Ethernet-enabled Communication Controller with 8 Digital I/O



Features

- 10/100Base-T Ethernet Interface
- Email alarm function
- Built-in Web Server
- Built-in FTP Server and Client
- Supports 4 Digital Input and 4 Digital Output
- Full Functions of Standard TCP and UDP Sockets
- Optional 4 digit 7-segment LED display
- Supports Modbus/RTU and Modbus/TCP function libraries
- 1.5 MB Flash ROM/640 KB SRAM
- Four Serial Ports Available
- Integrated All Operations in Windows Utility

Introduction

The ADAM-4501 is a compact-sized Ethernet-enabled communication controller under x-86 CPU architecture. It supports not only Ethernet interface but also 4 serial ports, which let ADAM-4501 be very suitable for industrial communication and control applications. The Ethernet-enabled features include built-in HTTP Server, FTP Server and Email Alarm functions. The modularized I/O design provides high flexibility for versatile application requirements. ADAM-4501 also supports rich Modbus function libraries including Modbus/RTU Master/Slave and Modbus/TCP Server/Client function libraries.

Specifications

System

- **CPU** 16-bit microprocessor
- **Memory** 1.5 MB flash memory:
 - 256 KB system flash
 - 256 KB flash memory
 - 1024 KB file system, 960 KB for user applications
 - 640 KB SRAM, up to 384 KB with battery backup
- **Operating System** ROM-DOS(MOS-DOS)
- **Timer BIOS** Yes
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **COM1** RS-232 (Full Modem Signals)
- **COM2** RS-485
- **COM3** RS-485
- **Programming Port/COM4** RS-232/485
RS-232 Interface (TX, RX, GND)
RS-485
- **Status Display** Power, CPU, communication and battery
- **CPU Power Consumption** 4 W

Digital Input

- **Channel** 4
Dry Contact:
Logic level : Open
Logic level 1 : Close to GND
Wet Contact:
Logic level : +2 V max.
Logic level : 4 V ~ 30 V

Digital Output

- **Channel** 4
Open Collector to +40 V, 200 mA max. Load

Network

- **Ethernet** Speed: 10/100 Mbps
- **RS-485** Speed: 1200 up to 115.2 kbps
Maximum Nodes: up to 256 multi-drop system per serial port

Software Support

- **C Library** Borland C++ 3.0 for DOS

Power

- Unregulated + 10 to + 30 V_{DC}
- Protected against Power Reversal

Mechanical

- **Case** KJW with captive mounting hardware
- **Plug-in Screw Terminal Block** Accepts 0.5 mm² to 2.5 mm², 1 - #12 or 2 - #14 to #22 AWG

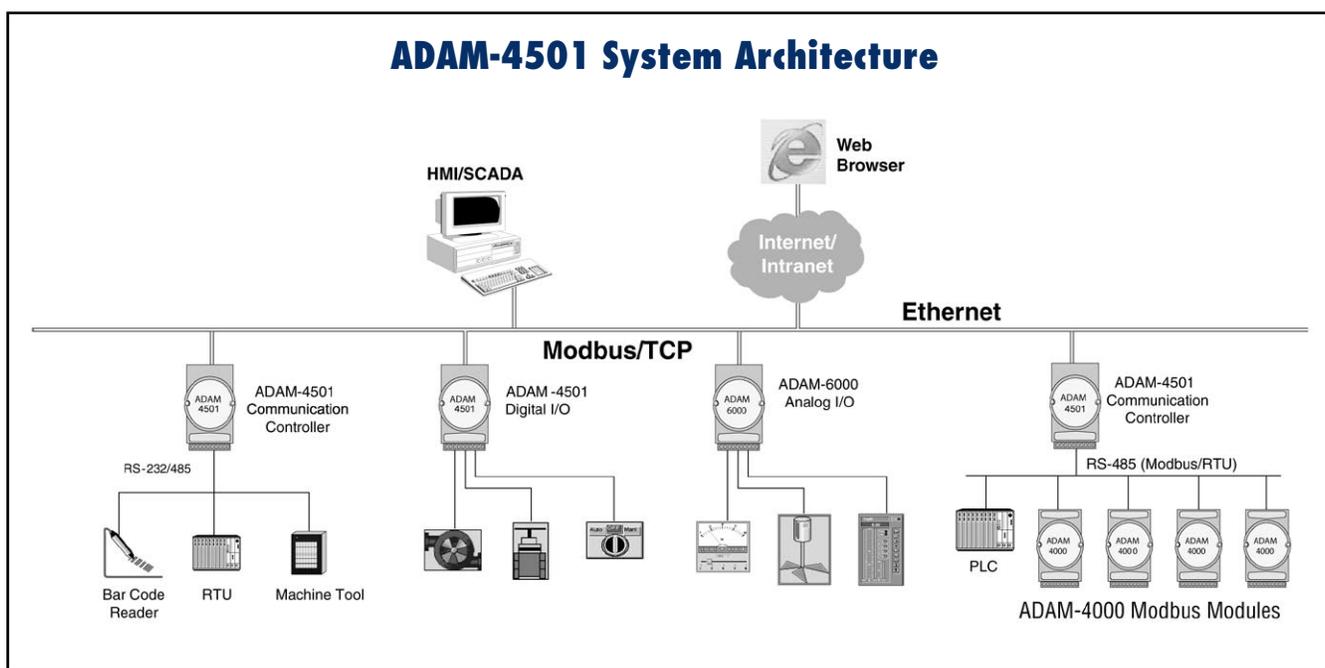
Environment

- **Operating Temperature** - 10 ~ 70° C (14 ~ 158° F)
- **Storage Temperature** - 25 ~ 85° C (-13 ~ 185° F)
- **Humidity** 5 ~ 95%, non-condensing

Ordering Information

- **ADAM-4501** Ethernet-enabled Communication Controller with 8 Digital I/O
- **ADAM-4501D** Ethernet-enabled Communication Controller with LED and 8 Digital I/O

ADAM-4501



Designed for Ethernet Connectivity

ADAM-4501 is designed with a 10/100 Mbps Ethernet port. The Ethernet-enabled features include built-in HTTP Server, FTP Server, FTP Client function, Email Alarm function and TCP/UDP connection functions. The HTTP Server will let authorized users to monitor ADAM-4501 I/O status by Internet Explorer via Internet. The FTP Server and Client can be used for remote maintenance. The Email Alarm function of ADAM-4501 can send email to pre-defined users for alarm message. All features are very easy to use and ready-to-use sample programs are available.

Versatile Protocols of Communication Function Libraries

The communication protocol of the ADAM-4501 is user-defined and there are library functions of Modbus/RTU protocol and Modbus/TCP protocol available for users. The function libraries include following protocols.

- Modbus/RTU Master Function for connecting to remote I/O modules via RS-485 port
- Modbus/RTU Slave Function for connecting to HMI/SCADA software via RS-485 port
- Modbus/TCP Server Function for connecting to HMI/SCADA software via Ethernet port
- Modbus/TCP Client Function for connecting to Ethernet-enabled remote I/O modules via Ethernet port

Compact Size and Modularized I/O Design

The ADAM-4501 modularized I/O expansion board provides high flexibility for versatile application requirements. The compact size and modularized design let ADAM4501 can fit to any places with limited space. Advantech will offer versatile I/O expansion modules in the future for different application needs.

More Data Memory to Support Versatile Applications

ADAM-4501 is designed with 640 KB SRAM, 512KB flash memory and 1MB flash disk. So it offers a good supply of memory for developing complex control program or data storage applications, such as data recording, which is difficult for traditional controllers.

Supports 4 Communication Ports

Not only equips with an Ethernet interface, ADAM-4501 also has 4 RS-485 communication ports for system networks. The COM1 features RS-232 port with full modem signals. Both COM2 and COM3 are RS-485 ports which can connect to remote I/O modules or control devices. The COM4 is RS-232/485 selectable which is used for downloading application program by default.

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-4500 ADAM-4570 ADAM-4571

PC-based Communication Controller

2-port Ethernet to Serial Data Gateway

1-port Ethernet to Serial Data Gateway



ADAM-4500



ADAM-4570



ADAM-4571



Specifications

- **CPU** 80188, 16-bit microprocessor
- **Flash ROM** 256 KB (170 KB free memory for the user)
- **Operating System** Boot ROM-DOS
- **Timer BIOS** Yes
- **SRAM** 256 KB (234 KB free memory for the user)
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **COM1** RS-232/485
- **COM2** RS-485
- **Program Download Port (RS-232)** Tx, Rx, GND

Communication

- **RS-232/485 Transmission Speed** Up to 115.2 kbps
- **RS-232 Interface Connector** Female DB-9
- **RS-485 Interface Connector** Plug-in screw terminal
- **RS-485 Auto Flow Control**

Power

- **Power Requirement** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 2.0 W @ 24 V_{DC}

Ordering Information

- **ADAM-4500** PC-based Communication Controller

Specifications

- **Protocol** TCP, UDP, IP, ARP
- **Network Ports** 10Base-T (IEEE 802.3)
100Base-TX (IEEE 802.3u)
RJ-45 connector
RS-232/485/422
- **Serial Port** Connector: DTE, DCE
Transmission speeds:
RS-232: 300 bps to 115.2 kbps
RS-485/422: 300 bps to 230.4 kbps
Format: parity bit: odd, even, none
Data bit: 5, 6, 7, 8
Stop bit: 1, 1.5, 2
Modem control: Full, RS-232
- **Compatibility** Ethernet: version 2.0/
IEEE 802.3, IEEE 802.3u
- **Diagnostic LEDs** Network: Tx/Rx, Link, Speed (10/100 Mbps), Power
Serial: Tx/Rx, Status
- **Utility Software** Windows-based, auto-search for device
Device Setting: name, description, serial port
- **Driver** Windows NT 4.0 driver to redirect the standard Win32 API
- **Power Requirement** Unregulated 10~30 V_{DC} with protection from power surge
- **Power Consumption** 4.0 W @ 24 V_{DC}
- **Case** ABS with captive mounting hardware
- **Accessories** nylon DIN-rail mounting adapter SECC panel mounting bracket
- **Operating Temperature** 0 ~ 60° C (32~140° F)
- **Storage Temperature** -20 ~ 80° C (-4~176° F)
- **Operating Humidity** 20~95% (non-condensing)
- **Storage Humidity** 0~95% (non-condensing)

Ordering Information

- **ADAM-4570** 2-port Ethernet to RS-232/422/485 Data Gateway

Specifications

- **Protocol** TCP, UDP, IP, ARP
- **Network Ports** 10Base-T (IEEE 802.3)
100Base-TX (IEEE 802.3u)
RJ-45 connector
RS-232/485/422
- **Serial Port** Connector: DTE, DCE
Transmission speeds:
RS-232: 300 bps to 115.2 kbps
RS-485/422: 300 bps to 230.4 kbps
Format: parity bit: odd, even, none
Data bit: 5, 6, 7, 8
Stop bit: 1, 1.5, 2
Modem control: Full, RS-232
- **Compatibility** Ethernet: version 2.0/
IEEE 802.3, IEEE 802.3u
- **Diagnostic LEDs** Network: Tx/Rx, Link, Speed (10/100 Mbps), Power
Serial: Tx/Rx, Status
- **Utility Software** Windows-based, auto-search for device
Device Setting: name, description, serial port
- **Driver** Windows NT 4.0 driver to redirect the standard Win32 API
- **Power Requirement** Unregulated 10 to 30 V_{DC} with protection from power surge
- **Power Consumption** 4.0 W @ 24 V_{DC}
- **Case** ABS with captive mounting hardware
- **Accessories** Nylon DIN-rail mounting adapter SECC panel mounting bracket
- **Operating Temperature** 0~60° C (32~140° F)
- **Storage Temperature** -20~80° C (-4~176° F)
- **Operating Humidity** 20~95% (non-condensing)
- **Storage Humidity** 0~95% (non-condensing)

Ordering Information

- **ADAM-4571** 1-port Ethernet to RS-232/422/485 Data Gateway

ADAM-4510 ADAM-4520 ADAM-4521

RS-422/485 Repeater

Isolated RS-232 to RS-422/485 Converter

Addressable RS-422/485 to RS-232 Converter



ADAM-4510/4510S



Specifications

- **Input** RS-485 (2-wire) or RS-422 (4-wire)
- **Output** RS-485 (2-wire) or RS-422 (4-wire). Speed (bps): 1200, 2400, 4800, 9600, 19.2 k, 38.4 k, 57.6 k, 115.2 k, RTS control and RS-422 mode (switchable)
- **RS-422/485 Interface Connector** Plug-in screw terminal
- **Isolation Voltage** 3000 V_{DC} (ADAM-4510S only)
- **Power Consumption** 1.4 W @ 24 V_{DC}

Ordering Information

- **ADAM-4510** RS-422/RS-485 Repeater
- **ADAM-4510S** Isolated RS-422/RS-485 Repeater



ADAM-4520

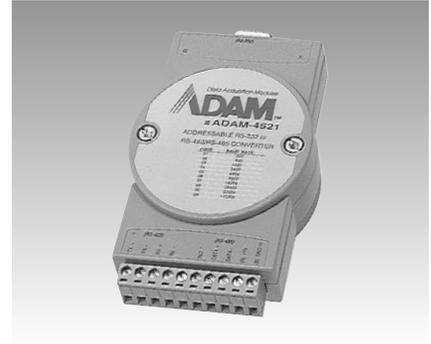


Specifications

- **Input** RS-232 (4-wire)
- **RS-232 Interface Connector** female DB-9
- **Output** RS-485 (2-wire) or RS-422 (4-wire). Speed (bps): 1200, 2400, 4800, 9600, 19.2 k, 38.4 k, 57.6 k, 115.2 k, RTS control and RS-422 mode (switchable)
- **RS-422/485 Interface Connector** Plug-in screw terminal
- **Isolation Voltage** 3000 V_{DC}
- **Power Consumption** 1.2 W @ 24 V_{DC}

Ordering Information

- **ADAM-4520** Isolated RS-232 to RS-422/RS-485 Converter



ADAM-4521



Specifications

- **Built-in microprocessor and watchdog timer**
- **RS-232 and 485 can be set to different baudrates**
- **RS-485 surge protection and automatic RS-485 data flow control**
- **Software configurable to either addressable or non-addressable mode**
- **Transmission Speed (bps)** 300, 600, 1200, 2400, 4800, 9600, 19.2 k, 38.4 k, 57.6 k, 115.2 k (software configurable)
- **RS-232 Interface Connector** Female DB9
- **RS-422/RS-485 Interface Connector** Plug-in screw terminal
- **Power Consumption** 1.0 W @ 24 V_{DC}

Ordering Information

- **ADAM-4521** Addressable RS-422/485 to RS-232 Converter

1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AWS

6
DA&C

7
cPCI

8
ADAM-3000

9
Motion Control

10
ICOM

11
eConnectivity

12
UNO

13
ADAM-4000

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ADAM-5000

15
ADAM-6000

16
ADAM-8000

17
BAS

ADAM-4522 ADAM-4541 ADAM-4542+

RS-232 to RS-422/485 Converter

Fiber Optic to RS-232/422/485 Converter

Fiber Optic to RS-232/422/485 Converter



ADAM-4522



Specifications

- **Input** RS-232 (4-wire)
- **RS-232 Interface Connector** Female DB-9
- **Output** RS-485 (2-wire) or RS-422 (4-wire).
Speed (bps): 1200, 2400, 4800, 9600, 19.2 k, 38.4 k, 57.6 k, 115.2 k, RTS control and RS-422 mode (switchable)
- **RS-422/485 Interface Connector** Plug-in screw terminal
- **Power Consumption** 1.2 W

Ordering Information

- **ADAM-4522** RS-232 to RS-422/485 Converter



ADAM-4541



Specifications

Communication

- **Fiber Optic Input or Output**
- **RS-232/422/485 Output Transmission Speed (bps)** 1200, 2400, 4800, 9600, 19.2 k, 38.4 k, 57.6 k, 115.2 k and RS-232/422 mode (switchable)
- **Communication Mode** Asynchronous
- **Transmission Mode** Full/half duplex, bidirectional
- **RS-232/422/485 Interface Connector** Plug-in screw terminal
- **Fiber Connector** ST

ADAM-4541

- **Transmission Distance** 2.5 km
- **Optical Power Budget (attenuation)** 12.5 db (measured with 62.5/125 mm)
- **Fiber Optical Type** Multimode
- **Wavelength** 820 nm

Power

- **Power Requirement** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 1 W (typical)
1.5 W (max)

Ordering Information

- **ADAM-4541** Fiber Optics to RS-232/422 Converter



ADAM-4542+



Specifications

Communication

- **Fiber Optic Input or Output**
- **RS-232/422/485 Output Transmission Speed (bps)** 1200, 2400, 4800, 9600, 19.2 k, 38.4 k, 57.6 k, 115.2 k
- **Communication Mode** Asynchronous
- **Transmission Mode** Full/half duplex, bidirectional
- **RS-232/422/485 Interface Connector** Plug-in screw terminal
- **Fiber Connector** SC

ADAM-4542+

- **Transmission Distance:** 15 km
- **Optical Power Budget (attenuation)** 9 dB
- **Fiber Optical Type** Singlemode
- **Wavelength** 1310 nm

Power

- **Power Requirement** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 1 W (typical)
1.5 W (max)

Ordering Information

- **ADAM-4542+** Single-mode Fiber Optics to Serial Converter

ADAM-4011 ADAM-4012 ADAM-4013

Thermocouple Input Module

Analog Input Module

RTD Input Module



ADAM-4011/4011D



Specifications

- LED Indicator 5-digit (ADAM-4011D)
- Built-in Watchdog Timer

Analog Input

- Effective Resolution 16-bit
- Input Types Th.couple., mV, V or mA
- Input Range ± 15 mV, ± 50 mV, ± 100 mV, ± 500 mV, ± 1 V, ± 2.5 V, ± 20 mA
- T/C Type and Temperature Range

J	0 ~ 760° C	R	500 ~ 1750° C
K	0 ~ 1370° C	S	500 ~ 1750° C
T	-100 ~ 400° C	B	500 ~ 1800° C
E	0 ~ 1000° C		

- Isolation Voltage 3000 V_{DC}
- Input Surge Protection Yes
- Sampling Rate 10 samples/sec.
- Input Impedance 2 M Ω
- Bandwidth 2.62 Hz
- Accuracy ± 0.05 % for V input
- Zero Drift ± 3 mV/° C
- Span Drift ± 25 ppm/° C
- CMR @ 50/60 Hz 150 dB
- NMR @ 50/60 Hz 100 dB

Digital Input

- Channels 1
Logic levels 0: 1 V max. 1: 3.5-30 V
Pull up current: 0.5 mA, 10 k Ω resistor to +5 V
- Event Counter Max. input freq.: 50 Hz
Min. input pulse width: 1 msec.

Digital Output

- Channels 2, open collector to 30 V, 30 mA max. load
- Power Dissipation 300 mW
- Power Consumption 1.2 W @ 24 V_{DC}

Ordering Information

- ADAM-4011 Thermocouple Input Module
- ADAM-4011D Thermocouple Input Module w/ LED Display



ADAM-4012



Specifications

Analog Input

- Effective Resolution 16-bit
- Input Type mV, V or mA
- Input Range ± 150 mV, ± 500 mV, ± 1 V, ± 5 V, ± 10 V and ± 20 mA
- Isolation Voltage 3000 V_{DC}
- Sampling Rate 10 samples/sec.
- Input Impedance 2 M Ω
- Bandwidth 2.62 Hz
- Accuracy ± 0.05 % or better
- Zero Drift ± 6 mV/° C
- Span Drift ± 25 ppm/° C
- CMR @ 50/60 Hz 150 dB
- NMR @ 50/60 Hz 100 dB

Digital Input

- Channels 1
logic level 0: +1 V max.
logic level 1: +3.5 V ~ +30 V
pull up current: 0.5 mA,
10 k Ω resistor to +5 V
- Event Counter Max. input frequency: 50 Hz
Min. input pulse width: 1 msec.

Digital Output

- Channels 2, open collector to 30 V, 30 mA max. load
- Power Dissipation 300 mW

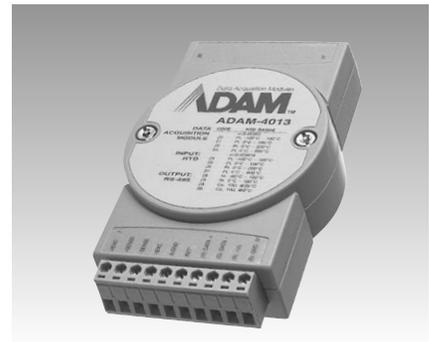
Built-in Watchdog Timer

Power

- Power Requirements Unregulated 10-30 V_{DC}
- Power Consumption 1.2 W @ 24 V_{DC}

Ordering Information

- ADAM-4012 Analog Input Module – mV, mA, or high voltage



ADAM-4013



Specifications

Analog Input

- Effective Resolution 16-bit
 - Input Type Pt or Ni RTD
 - RTD Types and Temperature Ranges
- | IEC RTD 100 ohms | | | | |
|------------------|---------|----|---------|--------------|
| Pt | -100° C | to | +100° C | a = 0.00385 |
| Pt | 0° C | to | +100° C | a = 0.00385 |
| Pt | 0° C | to | +200° C | a = 0.00385 |
| Pt | 0° C | to | +600° C | a = 0.00385 |
| JIS RTD 100 ohms | | | | |
| Pt | -100° C | to | +100° C | a = 0.003916 |
| Pt | 0° C | to | +100° C | a = 0.003916 |
| Pt | 0° C | to | +200° C | a = 0.003916 |
| Pt | 0° C | to | +600° C | a = 0.003916 |
| Ni RTD | | | | |
| Ni | -80° C | to | +100° C | |
| Ni | 0° C | to | +100° C | |
- Isolation Voltage 3000 V_{DC}
 - Sampling Rate 10 samples/sec.
 - Input Impedance 2 M Ω
 - Bandwidth 2.62 Hz
 - Input Connections 2, 3 or 4 wire
 - Accuracy ± 0.05 % or better
 - Zero Drift ± 3 mV/° C
 - Span Drift ± 25 ppm/° C
 - CMR @ 50/60 Hz 150 dB
 - NMR @ 50/60 Hz 100 dB

Built-in Watchdog Timer

Power

- Power Requirements Unregulated 10-30 V_{DC}
- Power Consumption 0.7 W @ 24 V_{DC}

Ordering Information

- ADAM-4013 RTD Input Module – RTD

1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AWS

6
DA&C

7
cPCI

8
ADAM-3000

9
Motion Control

10
ICOM

11
eConnectivity

12
UNO

13
ADAM-4000

14
ADAM-5000

15
ADAM-6000

16
ADAM-8000

17
BAS

ADAM-4015 ADAM-4015T ADAM-4016

6-channel RTD Module with Modbus®

6-channel Thermistor Module with Modbus®

Analog Input/Output Module



ADAM-4015



ADAM-4015T



ADAM-4016



Specifications

Analog Input

- **Effective Resolution** 16-bit
- **Channels** 6 differential
- **Input Type** Pt, Balco and Ni RTD
- **RTD Types and Temperature Ranges**
 - Pt100 RTD:**
 - Pt -50° C to 150° C
 - Pt 0° C to 100° C
 - Pt 0° C to 200° C
 - Pt 0° C to 400° C
 - Pt -200° C to 200° C
 - IEC RTD 100 ohms (a = 0.00385)
 - JIS RTD 100 ohms (a = 0.00392)
 - Pt 1000 RTD**
 - Pt -40° C to 160° C
 - Balco 500 RTD**
 - 30° C to 120° C
 - Ni 50 RTD**
 - Ni -80° C to 100° C
 - Ni 508 RTD**
 - Ni 0° C to 100° C
- **Isolation Voltage** 3000 V_{DC}
- **Sampling Rate** 10 samples / sec.
- **Input Impedance** 10 MΩ
- **Bandwidth** 2.62 Hz
- **Input Connections** 2 or 3 wire
- **Accuracy** ± 0.05 % or better
- **Zero Drift** ± 3 μV/° C
- **Span Drift** ± 25 ppm/° C
- **CMR @ 50/60 Hz** 150 dB
- **NMR @ 50/60 Hz** 100 dB

Built-in Watchdog Timer and Individual wire burned-out detection

Power

- **Power Requirements** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 1.2 W @ 24 V_{DC}

Ordering Information

- **ADAM-4015** 6-channel RTD Input Module w/Modbus®

Specifications

Analog Input

- **Effective Resolution** 16-bit
- **Channels** 6 differential
- **Input Type** Thermistor
- **Thermistor Types and Temperature Ranges**
 - Thermistor 3K 0 ~ 100° C
 - Thermistor 10K 0 ~ 100° C
- **Isolation Voltage** 3000 V_{DC}
- **Sampling Rate** 10 samples / sec.
- **Input Impedance** 10 MΩ
- **Bandwidth** 2.62 Hz
- **Input Connections** 2 or 3 wires
- **Accuracy** ± 0.05% or better
- **Zero Drift** ± 3 μV/° C
- **Span Drift** ± 25 ppm/° C
- **CMR @ 50/60 Hz** 150 dB
- **NMR @ 50/60 Hz** 100 dB

- **Built-in Watchdog Timer**
- **Individual Wire Burned-out Detection**

Power

- **Power Requirement** Unregulated 10~30 V_{DC}
- **Power Consumption** 1.2 W @ 24 V_{DC}

Ordering Information

- **ADAM-4015T** 6-channel Thermistor Input Module w/Modbus®

Specifications

Analog Input

- **Effective Resolution** 16-bit
- **Channels** 1 differential
- **Input Type** mV and mA
- **Input Range** ±15 mV, ±50 mV, ±100 mV, ±500 mV, ±20 mA
- **Isolation Voltage** 3000 V_{DC}
- **Sampling Rate** 10 samples/sec.
- **Input Impedance** 2 MΩ
- **Bandwidth** 2.62 Hz
- **Accuracy** ±0.05% or better
- **Zero Drift** ±6 μV/° C
- **Span Drift** ±25 ppm/° C
- **CMR @ 50/60 Hz** 150 dB
- **NMR @ 50/60 Hz** 100 dB

Analog Output

- **Channel** 1
- **Output Type** V
- **Output Range** 0 ~ 10 V
- **Drive Current** 30 mA
- **Isolation Voltage** 3000 V_{DC}
- **Accuracy** 0.05% of FSR
- **Drift** ±50 ppm/° C

Digital Output

- **Channels** 2, open collector to 30 V, 30 mA max. load
- **Built-in Watchdog Timer**
- **Built-in TVS/ESD Protection**

Power

- **Power Requirements** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 2.2 W @ 24 V_{DC}

Ordering Information

- **ADAM-4016-A2** Analog Input/Output Module

ADAM-4017+ ADAM-4018+ ADAM-4018M

8-channel Analog Input Module with Modbus® 8-channel Thermocouple Input Module with Modbus® 8-channel Analog Input Data Logger

- 1 Software
- 2 IPCC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS



ADAM-4017/4017+



Specifications

Analog Input

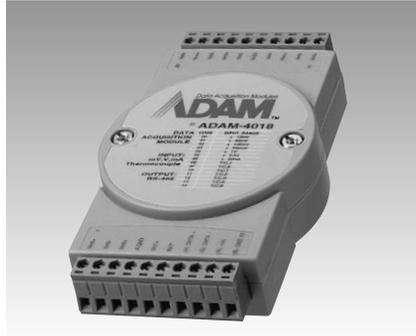
- **Effective Resolution** 16-bit
- **Channels** Six differential, two single-ended (4017) eight differential (4017+)
- **Channel Independent Configuration** ADAM-4017+ only
- **Modbus®** ADAM-4017+ only
- **Input Type** mV, V, mA
- **Input Range** ±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, ±20 mA, 4-20mA (4017+ only)
- **Isolation Voltage** 3000 V_{DC}
- **Fault and Overvoltage Protection** Withstands overvoltage up to ±35 V
- **Sampling Rate** 10 samples/sec. (total)
- **Input Impedance** 20 MΩ
- **Bandwidth** 13.1 Hz @ 50 Hz, 15.72 Hz @ 60 Hz
- **Accuracy** ±0.1% or better
- **Zero Drift** ±6 μV/°C
- **Span Drift** ±25 ppm/°C
- **CMR @ 50/60 Hz** 92 dB min.

Built-in Watchdog Timer

- **Power Requirements** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 1.2 W @ 24 V_{DC}
- **Built-in TVS/ESD Protection**

Ordering Information

- **ADAM-4017-D2** 8-channel Analog Input Module
- **ADAM-4017+** 8-channel Differential Analog Input Module w/Modbus®



ADAM-4018/4018+



Specifications

Analog Input

- **Effective Resolution** 16-bit
- **Channels** Six differential, two single-ended (4018) eight differential (4018+)
- **Ch. Independent Conf.** ADAM-4018+ only
- **Modbus®** ADAM-4018+ only
- **Input Type** Thermocouple, mV, V, mA (4018) (4018+ Supports T/C & 4-20 mA only)
- **Input Range** ±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V, ±20 mA (4018); 4-20 mA (4018+)
- **T/C Type and Temperature Ranges**

J	0 ~ 760° C	R	500 ~1750° C
K	0 ~ 1370° C	S	500 ~1750° C
T	-100 ~ 400° C	B	500 ~1800° C
E	0 ~ 1000° C		

- **Isolation Voltage** 3000 V_{DC}
- **Fault and Overvoltage Protection** Resists overvoltage up to ±35 V
- **Sampling Rate** 10 samples/sec. (total)
- **Input Impedance** 20 MΩ
- **Bandwidth** 13.1 Hz @ 50 Hz, 15.72 Hz @ 60 Hz
- **Accuracy** ±0.1% for voltage input
- **Zero Drift** ±3 μV/°C
- **Span Drift** ±25 ppm/°C
- **CMR @ 50/60 Hz** 92 dB min.

Built-in Watchdog Timer and Individual wire burned-out detection (4018+ only)

- **Power Requirements** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 0.8 W @ 24 V_{DC}
- **Built-in TVS/ESD Protection**

Ordering Information

- **ADAM-4018-D2** 8-ch. Th.couple Input Module
- **ADAM-4018+** 8-ch. Differential, mA and Thermocouple Input Module w/Modbus®



ADAM-4018M



Specifications

Analog Input

- **Effective Resolution** 16-bit
- **Channels** Six differential, two single-ended
- **Input Type** Thermocouple, mV, V, mA
- **Input Range** ±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V, ±20 mA
- **T/C Type and Temperature Range**

J	0 ~ 760° C	R	500 ~1750° C
K	0 ~ 1370° C	S	500 ~1750° C
T	-100 ~ 400° C	B	500 ~1800° C
E	0 ~ 1000° C		

- **Isolation Voltage** 3000 V_{DC}
- **Sampling Rate** 10 samples/sec. (total)
- **Input Impedance** 1.8 MΩ
- **Bandwidth** 13.1 Hz @ 50 Hz, 15.72 Hz @ 60 Hz
- **Accuracy** ±0.1% for voltage input
- **Zero Drift** ±3 μV/°C
- **Span Drift** ±25 ppm/°C
- **CMR @ 50/60 Hz** 92 dB min.

Storage

- **Capacity (128 KB flash memory)** 38,000 samples (total)
- **Storage Mode** Write to end of memory & cyclic
- **Logging Mode** Internal log or event log (high/low)
- **Sampling Interval** 2 secs. ~ 18 hours

Built-in Watchdog Timer

- **Power Requirements** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 1.8 W @ 24 V_{DC}

Ordering Information

- **ADAM-4018M** 8-channel Analog Input Data logger – mV, V, mA, or thermocouple

ADAM-4019+ ADAM-4021 ADAM-4022T

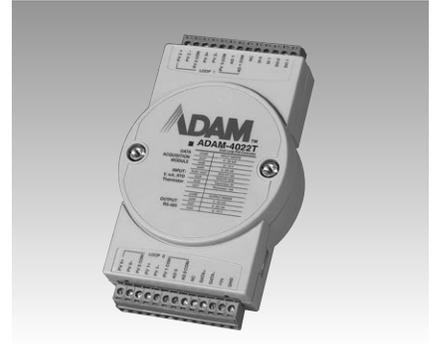
8-channel Universal Analog Input Module with Modbus®
Analog Output Module
Serial Based Dual Loop PID Controller



ADAM-4019+



ADAM-4021



ADAM-4022T



Specifications

Analog Input

- **Effective Resolution** 16-bit
- **Channels** 8 differential channels for individual input type
- **Input Type** Thermocouple, mV, V, mA
- **Input Range** +/-1V, +/-2.5V, +/-5V, +/-10V, +/-100mV, +/-500mV, +/-20mA, +4~20mA
- **T/C Type and Temperature Range**
 - J 0 ~ 760 °C
 - K 0 ~ 1370 °C
 - T -100 ~ 400 °C
 - E 0 ~ 1000 °C
 - R 500 ~ 1750 °C
 - S 500 ~ 1750 °C
 - B 500 ~ 1800 °C
- **Burn-out Detection** +4~20mA & All T/C
- **Isolation Voltage** 3000 V_{DC}
- **Fault and Over-voltage Protection** Resists over-voltage up to 35 V
- **Input Impedance** 20 M Ω
- **Bandwidth** 13.1 Hz @ 50 Hz, 15.72 Hz @ 60 Hz
- **Accuracy** ±0.1% of voltage input
- **Zero Drift** ±3 μV/°C
- **Span Drift** ±25 ppm/°C
- **CMR @ 50/60 Hz** 92 dB min.

Built-in Watchdog Timer

Power

- **Power Requirements** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 1.0 W @ 24 V_{DC}

Ordering Information

- **ADAM-4019+** 8-channel Universal Analog Input module with Modbus®

Specifications

Analog Output

- **Effective Resolution** 12-bit
- **Output Type** mA, V
- **Output Range** 0 to 20 mA, 4 to 20 mA, and 0 to 10 V
- **Isolation Voltage** 3000 V_{DC}
- **Output Impedance** 0.5 Ω
- **Accuracy** ±0.1% of FSR for current output
±0.2% of FSR for voltage output
- **Readback Accuracy** ±1% of FSR
- **Resolution** ±0.015% of FSR
- **Zero Drift** Voltage output: ±30 μV/°C
current output: ±0.2 μA/°C
- **Span Temperature Coefficient** ±25 ppm/°C
- **Programmable Output Slope** 0.125 ~ 128 mA/sec.
0.0625 ~ 64.0 V/sec.
- **Current Load Resistor** 0 to 500 Ω (source)

Built-in Watchdog Timer

Power

- **Power Requirement** Unregulated I+10 ~ +30 V_{DC}
- **Power Consumption** 1.4 W @ 24 V_{DC}

Ordering Information

- **ADAM-4021** Analog Output Module – V or mA

Specifications

Analog Input

- **Channels** 4
- **Input Type** mA, V, Thermistor, RTD
- **Input Range** 0 to 20 mA, 4 to 20 mA, 0 to 10 V
- **Thermistor Type and Temperature Ranges**
 - Thermistor 3K: 0 ~ 100° C
 - Thermistor 10K: 0 ~ 100° C
- **RTD Type and Temperature Ranges**
 - Pt 100 RTD Pt -100 ~ 100° C
 - Pt 0 ~ 100° C
 - Pt 0 ~ 200° C
 - Pt 0 ~ 600° C
 - IEC RTD 100 ohms (a = 0.00385)
 - JIS RTD 100 ohms (a = 0.00392)
 - Pt 1000 RTD Pt -40 ~ 160° C

Analog Output

- **Channels** 2
- **Output Type** mA, V
- **Output Range** 0 to 20 mA, 4 to 20 mA, 0 to 10 V

Digital Input

- **Channels** 2
- **Dry Contact** Logic level 0-close to GND
Logic level 1-open

Digital Output

- **Channels** 2
- Open Collector to 30 V, 100 mA max. load
3,000 V_{DC}

Surge Protection (Power)

Built-in Watchdog Timer

- **Power Requirements** Unregulated 10 ~ 30 V_{DC}
- **Power Consumption** 4 W @ 24 V_{DC}

Ordering Information

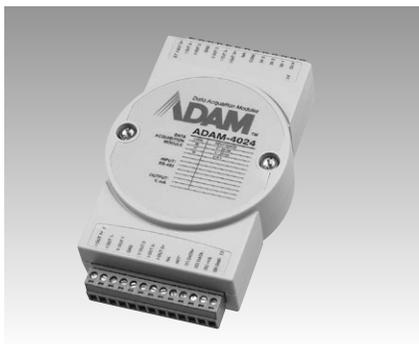
- **ADAM-4022T** Serial Based Dual Loop PID Controller

ADAM-4024 ADAM-4050 ADAM-4051

4-channel Analog Output Module with Modbus®

Digital I/O Module

16-channel Isolated Digital Input Module with LED & Modbus®



ADAM-4024

CE FCC

Specifications

Analog Output

- **Effective Resolution** 12-bit
- **Channels** 4
- **Output Type** mA, V
- **Output Range** 0 to 20 mA, 4 to 20 mA, ±10 V
- **Isolated Voltage** 3000 V_{DC}
- **Output Impedance** 0.5 Ω
- **Accuracy** ±0.1 % of FSR for current output
±0.1 % of FSR for voltage output
- **Resolution** ±0.015 % of FSR
- **Zero Drift** Voltage output: ±30 μV/° C
current output: ±0.2 μA/° C
- **Span Temperature Coefficient** ±25 ppm/° C
- **Programmable Output Slope** 0.125 ~ 128 mA/sec.
- **Current Load Resistor** 0 to 500 Ω (source)

Built-in Watchdog Timer

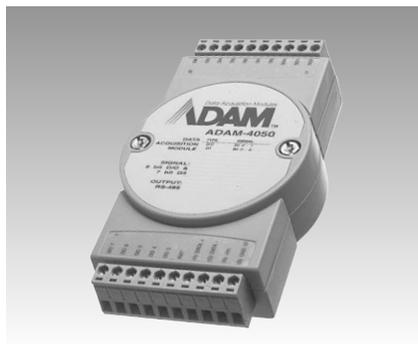
- **Isolated Digital Input** Channel: 4
level 0: +1 V max
level 1: 10 ~ 30 V_{DC}

Built-in Watchdog Timer

- **Power Requirement** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 3 W @ 24 V_{DC}

Ordering Information

- **ADAM-4024** 4-channel Analog Output Module w/Modbus® V or mA



ADAM-4050

CE FM APPROVED

Specifications

Digital Input

- **Channels** 7
logic level 0: +1 V max.
logic level 1: +3.5 V ~ +30 V
pull up current: 0.5 mA,
10 kΩ resistor to +5 V

Digital Output

- **Channels** 8
open collector to 30 V,
30 mA max. load
power dissipation: 300 mW

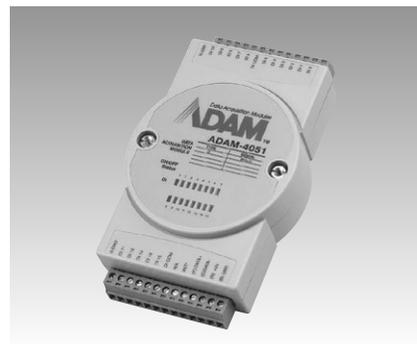
Built-in Watchdog Timer

Power

- **Power Requirements** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 0.4 W @ 24 V_{DC}

Ordering Information

- **ADAM-4050** Digital I/O Module



ADAM-4051

CE FCC

Specifications

Digital Input

- **Channels** 16
- **Input Voltage** 50 V max
- **Input Voltage level** (Configurable)
Dry contact:
logic level 0: close to GND
logic level 1: open wet contact:
logic level 0: +3 V max
logic level 1: +10 to 50 V
- **Optical Isolation** 2,500 V_{DC}
- **Over Voltage Protection** 70 V_{DC}

Built-in Watchdog Timer

- **Power Consumption** 1 W @ 24 V_{DC} (Typical)
- **LED Indicator** On: Active
Off: Non-active

Ordering Information

- **ADAM-4051** 16-channel Isolated Digital Input Module with LED and Modbus®

1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AWS

6
DA&C

7
cPCI

8
ADAM-3000

9
Motion Control

10
ICOM

11
eConnectivity

12
UNO

13
ADAM-4000

14
ADAM-5000

15
ADAM-6000

16
ADAM-8000

17
BAS

ADAM-4052 ADAM-4053 ADAM-4055

Isolated Digital Input Module

16-channel Digital Input Module

16-channel Isolated Digital I/O Module with LED & Modbus



ADAM-4052



Specifications

Digital Input

- **Channels** 8
six fully independent isolated channels. two isolated channels with common ground
- **Digital Input Level** Logic level 0: +1 V max.
Logic level 1: +3 ~ +30 V
- **Isolation Voltage** 5,000 V_{RMS}
- **Input Resistance** 3 k Ω /0.5 W

Built-in Watchdog Timer

Power

- **Power Requirements** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 0.4 W @ 24 V_{DC}

Ordering Information

- **ADAM-4052** Isolated Digital Input Module



ADAM-4053



Specifications

Digital Input

- **Channels** 16
- **Digital Input Level** **Dry contact**
Logic level 0: close to GND
Logic level 1: open
Wet contact
Logic level 0: +2 V max.
Logic level 1: +4 V ~ +30 V
- **Effective Distance (dry contact only)** 500 m max.

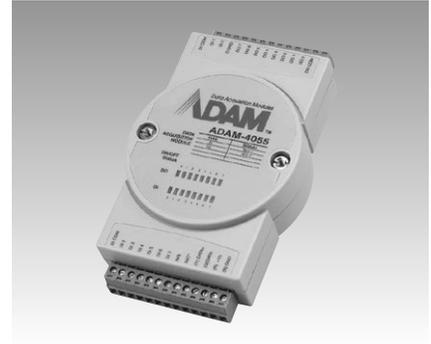
Built-in Watchdog Timer

Power

- **Power Requirements** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 1.0 W @ 24 V_{DC}

Ordering Information

- **ADAM-4053** 16-channel Digital Input Module



ADAM-4055



Specifications

Digital Input/Output

- **Channels** 16
 - **I/O Type** 8 DO & 8 DI
 - **Digital Output** Open collector to 40 V (200 mA max. load)
 - **Digital Input** (Configurable)
Dry Contact:
Logic level 0: open
Logic level 1: close to GND
Wet Contact:
Logic level 0: +3 Vmax
Logic level 1: +10 to 50 V
 - **Optical Isolation** 2500 V_{DC}
 - **Over Voltage Protection** 70 V_{DC}
- #### Built-in Watchdog Timer
- **Power Consumption** 1 W @ 24 V_{DC} (Typical)
 - **LED Indicator** On: Active
Off: Inactive

Ordering Information

- **ADAM-4055** 16-channel Digital I/O Module with LED and Modbus®

ADAM-4056S ADAM-4056SO ADAM-4060 ADAM-4068

12-channel Sink Type Isolated Digital Output Module 12-channel Source Type Isolated Digital Output Module 4-channel Relay Output Module 8-channel Relay Output Module with Modbus® and LED



ADAM-4056S/4056SO

FCC CE



ADAM-4060

CE FM APPROVED



ADAM-4068

CE FCC

Specifications

ADAM-4056S and ADAM-4056SO

- Channels 12
- Optical Isolation 5,000 V_{DC}
- Power Requirement Unregulated 10~30 V_{DC}
- Power Consumption 1 W @ 24 V_{DC}
- Built-in Watchdog Timer

ADAM-4056S

- Digital Output Type Sink
- I/O Type Sink Type Output
- Digital Output Open collector to 40V (200mA max. load)
- Certifications CE, FCC

ADAM-4056SO

- Digital Output Type Source
- I/O Type Source Type Output
- Digital Output VCC: 10 ~ 35 V_{DC}
Current: 1A (per ch.)
- Certifications CE, FCC
- Over Current Detection and Protection

Ordering Information

- ADAM-4056S 12-channel Sink Type Isolated Digital Output Module
- ADAM-4056SO 12-channel Source Type Isolated Digital Output Module

Specifications

Relay Output

- Channels 4-channels relay, two Form A and two Form C
- Contact Rating AC: 125 V @ 0.6 A
250 V @ 0.3 A
DC: 30 V @ 2 A
110 V @ 0.6 A
- Breakdown Voltage 500 V_{AC} (50/60 Hz)
- Relay on Time (typical) 3 ms
- Relay off Time (typical) 1 ms
- Total Switching Time 10 ms
- Insulation Resistance 1,000 MΩ minimum at 500 V_{DC}

Built-in Watchdog Timer

Power

- Power Requirements Unregulated 10~30 V_{DC}
- Power Consumption 0.8 W @ 24 V_{DC}

Ordering Information

- ADAM-4060 4-channel Relay Output Module

Specifications

Relay Output

- Channels Four form A and four form C
- Contact Rating AC: 125 V @ 0.6 A
250 V @ 0.3 A
DC: 30 V @ 2 A
110 V @ 0.6 A
- Breakdown Voltage 500 V_{AC} (50/60 Hz)
- Relay on Time (typical) 2 ms
- Relay off Time (typical) 4 ms
- Insulation Resistance 1,000 MΩ minimum at 500 V_{DC}

Built-in Watchdog Timer

- System and Comm. Watchdog

Power

- Power Requirements Unregulated 10 ~30 V_{DC}
- Power Consumption 0.6 W @ 24 V_{DC}

Ordering Information

- ADAM-4068 8-channel Relay Output Module with Modbus® and LED

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-4069 ADAM-4080 ADAM-4080D ADAM-4914V

8-channel Power Relay Output Module with Modbus® Counter/Frequency Module Counter/Frequency Module with LED Display 4-channel Voltage Input Surge Protection Module



Specifications

Relay Output

- **Channels** 8 form A
- **Contact Rating** AC: 250 V @ 5 A
DC: 30 V @ 5 A
- **Breakdown Voltage** 1000 V_{AC} (50/60 Hz)
- **Relay on Time (typical)** 5 ms
- **Relay off Time (typical)** 5.6 ms
- **Insulation Resistance** 1,000 MΩ minimum at 500 V_{DC}
- **Built-in Watchdog Timer** System and Comm. Watchdog
- **Power Requirements** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 0.6 W @ 24 V_{DC}

Ordering Information

- **ADAM-4069** 8-channel Power Relay Output Module with Modbus®



Specifications

Counter Input

- **Channels** Two independent 32-bit counters
- **Input Frequency** 50 kHz max.
- **Input Mode** Isolated or non-isolated
- **Isolation Input Level** Logic level 0: +1 V max.
Logic level 1: +3.5 V ~ +30 V
- **Isolation Voltage** 2500 V_{RMS}
- **Non-isolated** Programmable threshold:
- **Input Level** Logic level 0: 0 to +5 V (default = 0.8 V)
Logic level 1: 0 to +5 V (default = 2.4 V)
- **Input Pulse Width** >10 ms.
- **Maximum Count** 4,294,967,295 (32 bits)
- **Programmable Digital Noise Filter** 2 ~ 65 ms
- **Alarm** Alarm comparator on each counter
- **Preset Type** Absolute or relative

Frequency Measurement

- **Range** 5 Hz ~ 50 kHz
- **Programmable Built-in Gate Time** 1.0/0.1 sec.

Display (ADAM-4080D Only)

- **LED Indicator** 5-digit readout, CH 0 or CH 1 (programmable)

Digital Output

- **Channels** 2
Open collector to 30 V, 30 mA max. load power dissipation: 300 mW for each channel

Built-in Watchdog Timer

Power

- **Power Requirements** Unregulated 10~30 V_{DC}
- **Power Consumption** 2.0 W @ 24 V_{DC}



Specifications

Input

- **Channels** 4 differential voltage input and thermocouple

Performance

- **Discharge Voltage** BETWEEN LINES: 18 V min
LINE TO GND: 350 V max.
- **Max. Surge Voltage** BETWEEN LINES: 23 V min
LINE TO GND: +4,000 V max.
- **Leakage Current** BETWEEN LINES: ≤ 10μA @ 7.5 V_{DC}
LINE TO GND: ≤ 5μA @ +140 V_{DC}
- **Response Time** ≤ 0.1 μsec.
- **Discharge Current** 5,000 A (8/20 μsec.)
- **Internal Series Resistance** Approx. 20Ω including return
- **Maximum Line Voltage** 10 V

Ordering Information

- **ADAM-4914V** 4-channel Voltage Input Surge Protection Module
- **ADAM-4080** Counter/Frequency Module
- **ADAM-4080D** Counter/Frequency Module with LED Display

ADAM-4950-ENC

IP66 Industrial Enclosure

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS



Features

- Resists temperatures up to 115° C (239° F)
- Sidewall knockouts provide factory molded openings that are conveniently positioned for wire, cable or conduit feeders.
- Groove-and-lip type seal design provides the highest degree of protection
- Built-in DIN-rail for easy mounting of ADAM modules
- Cable glands included

Introduction

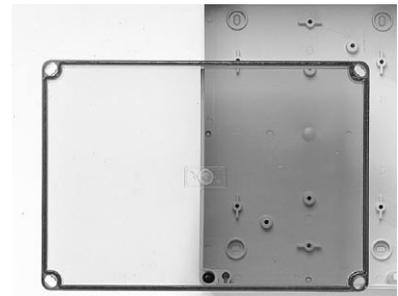
The ADAM-4950-ENC IP66 Industrial Enclosure is designed for use in harsh environments. It offers space for 1 to 3 ADAM modules. Its rugged protective housing guards modules from UV radiation, corrosive materials, moisture and extreme temperatures.



Mounts in any position
Several screw options let you fasten the box in almost any position.

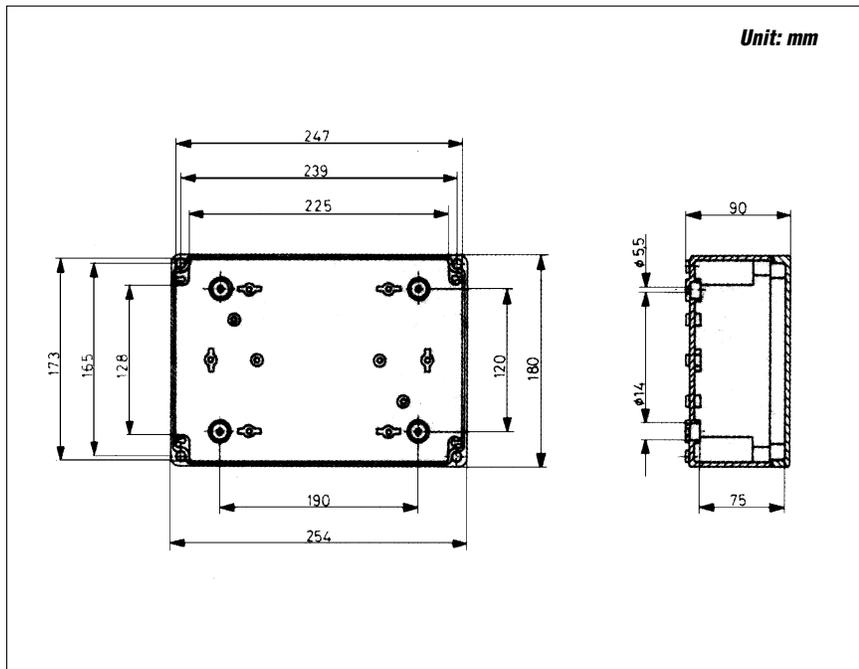


IP66 protection
Resists dust, water jets and even temporary flooding.



Lip-groove seal
Non-aging polyurethane seal. Cannot fall out or loosen.

Dimensions



DIN-rail installation
No screws; just snap the module in place. Offers space for three modules.

Enclosure Components

- **Case** Glass filled polycarbonate (PC), transparent cover
- **Accessories (included)** 1 x DIN-rail (21.5 cm)
2 x Polyamide cable glands (seal from 10 - 14 mm)
4 x Captive lid screws

Ordering Information

- **ADAM-4950-ENC** IP66 Industrial Enclosure

ADAM 4000 Series

Common Information

Common Specifications

Communication

- RS-485 (2-wire) to host
- Speeds: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps (ADAM-4080, ADAM-4080D only support up to 38400 bps)
- Max. communication distance: 4000 feet (1.2 km)
- Power and communication LED indicator
- ASCII command/response protocol
- Communication error checking with checksum
- Asynchronous data format: 1 start bit, 8 data bits, 1 stop bit, no parity
- Up to 256 multidrop modules per serial port
- Online module insertion and removal
- Transient suppression on RS-485 communication lines

Power Requirements

- Unregulated +10 ~ +30 V_{DC}
- Protected against power reversal

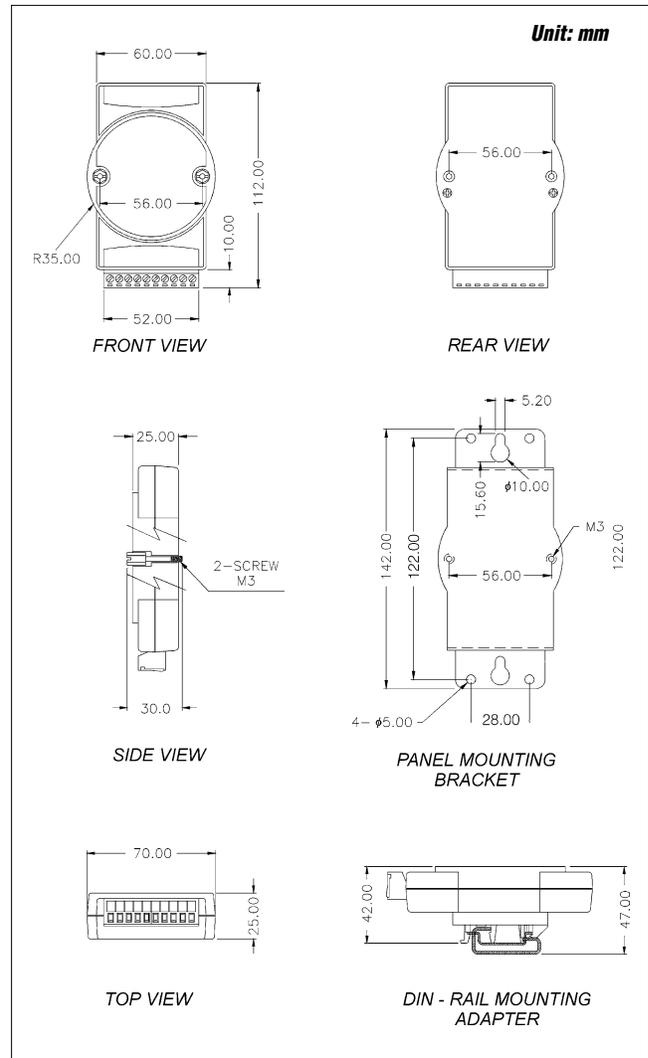
Mechanical

- **Case** ABS with captive mounting hardware
- **Plug-in screw terminal block** Accepts 0.5 mm² to 2.5 mm², 1 - #12 or 2 - #14 to #22 AWG

Environment

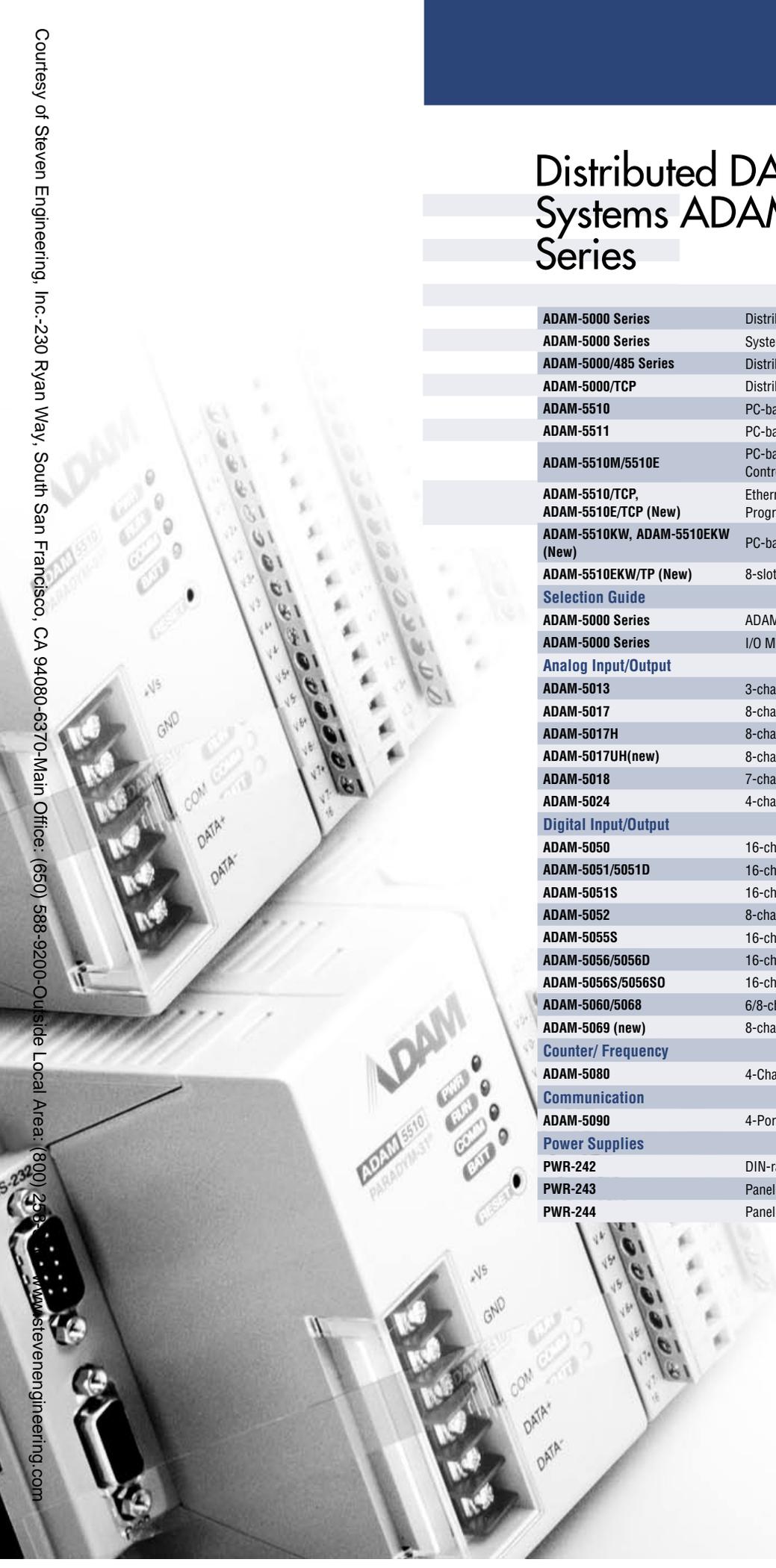
- **Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- **EMI** Meets FCC Class A
- **Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)
- **Humidity** 5 ~ 95%, non-condensing

Dimensions

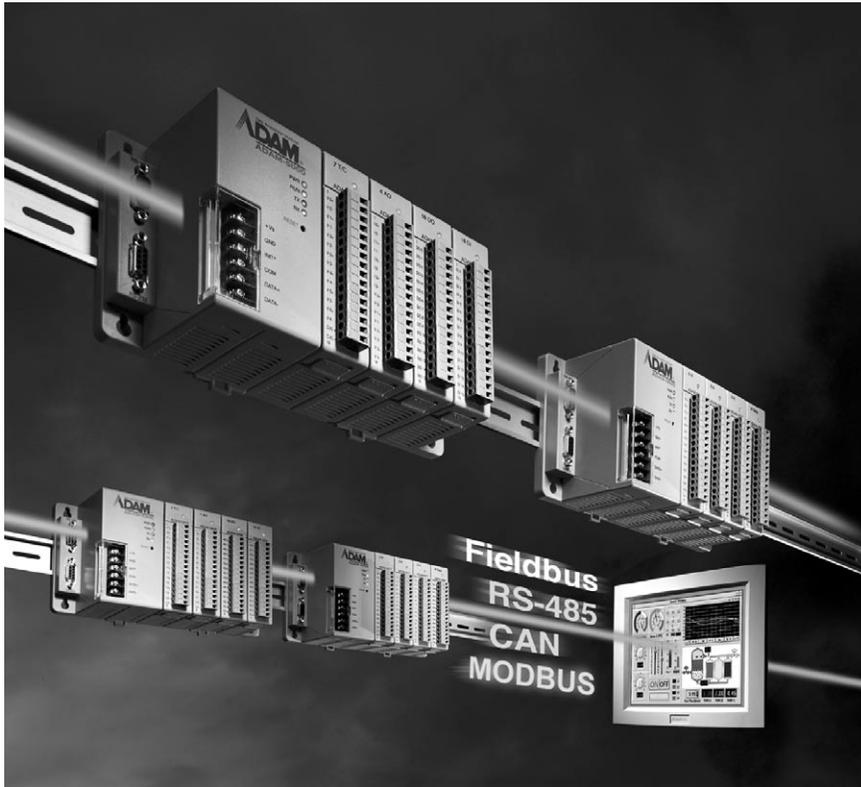


Distributed DA&C Systems ADAM-5000 Series

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ADAM-5000 Series



ADAM-5000 Series Distributed I/O System

Ethernet-based Data Acquisition and Control System

With the ADAM-5000/TCP as your Ethernet I/O data processing center, you can monitor and control field signals at a speed of 10/100 Mbps. The best field-proven communication performance that can be reached in industrial network environments.

RS-485 based Data Acquisition and Control System

The ADAM-5000/485 system is a data acquisition and control system that can acquire, monitor and control data through multi-channel I/O modules. It communicates with a network master over a twisted-pair, multi-drop RS-485 network.

ADAM-5510 Series PC-based Programmable Controller

Ethernet-enabled Programmable Controller

ADAM-5510 Series PC-based Programmable Controller includes ADAM-5510M, ADAM-5510E, ADAM-5510/TCP and ADAM-5510E/TCP. They feature Intel x86-based CPUs running Datalight ROM-DOS. Users can use Borland C 3.0 to develop the application program and then download it by Windows-based ADAM-5510 series utility. The Ethernet-enabled feature of ADAM-5510/TCP and ADAM-5510E/TCP enables the functions of FTP Server, Web Server, TCP/UDP Connections and Email Alarm. The ADAM-5510 Series Controller also has high expansibility by supporting Modbus/RTU Master/Slave and Modbus/TCP Client/Server functions.

ADAM-5510KW Series PC-based SoftLogic Controller includes ADAM-5510KW, ADAM-5510EKW and ADAM-5510EKW/TP. They feature the same hardware specifications as ADAM-5510 Series Controller and is designed for PLC users who are familiar with PLC programming languages such as the Ladder Diagram. The stable built-in runtime engine - KW ProConOS and powerful programming tool - KW MULTIPROG makes the ADAM-5510KW Series Controllers the best choice for PC-based SoftLogic Controllers. MULTIPROG makes it possible to develop applications by IEC-61131-3 programming languages, i.e., LD, FB, SFC, ST and IL. The powerful debug tool of Multiprog can effectively shorten the development time. The ADAM-5510KW Series Controller also has high expansibility by supporting Modbus/RTU Master/Slave and Modbus/TCP Client/Server functions.

Open Network And Fieldbus Solutions for Device Networking

Introduction

The Fieldbus concept will change the control environment and device characteristics of future control systems in both processing and manufacturing. Compared with traditional systems, the Fieldbus system reduces cost of cabling, commissioning, and installation. In addition, the Fieldbus system has greater reliability.

The new ADAM-5000 series, a compact distributed data acquisition and control system, supports the shift toward Fieldbus-Based systems. Based on popular Fieldbus data communication structures such as RS-485 and Modbus, the ADAM-5000 series now offers two different DA&C systems that allow field I/O devices to easily connect to PC network applications. The ADAM-5000 series is categorized into two parts: the ADAM-5000 DA&C systems and the ADAM-5510 series of PC-based programmable stand-alone controllers.



Class 1, Div. 2 Groups ABCD
(NI / I / 2 / ABCD / T*)

Distributed Data Acquisition and Control Systems

Maximum System Design Flexibility

The ADAM-5000's modular design allows users to tailor solutions based on their own requirements. Built-in programmable I/O ranges and alarm outputs enhance flexibility in system design. A variety of communication media such as twisted-pair wiring, radio modems and fiber optics are supported.

System Maintenance and Troubleshooting

The ADAM-5000 series uses hardware self-test and software diagnosis to monitor system problems. Also included is a watchdog timer that monitors the microprocessor. If the system crashes, the watchdog automatically resets the system. Node ID setting is easily accomplished by setting a DIP switch on the front of the system.

Easy Installation and Networking

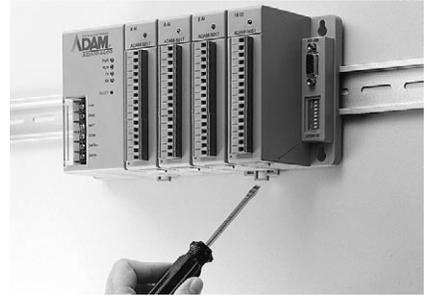
The ADAM-5000 series can be easily mounted on a DIN-rail or on a panel. Signal connections, network modifications and maintenance are simple and quick. Building a multi-drop network only requires a single twisted pair of wires.

Proven for Industrial Environments

The ADAM-5000 series can operate in industrial environments at temperatures between -10 and 70° C, and can use unregulated power sources between 10 and 30 V_{DC}. These units are protected against accidental power supply reversals. A 3-way isolation design (I/O, power & communication) prevents ground loops and reduces the effect of electrical noise in the system.

Extensive Software Support

The ADAM-5000 series is supported by most standard process controls and HMI software. DLL drivers are provided for use with Windows applications. OPC drivers provide links to a wide range of HMI/SCADA software packages such as InTouch®, FIX and ICONICS®. Advantech data acquisition software and Advantech Studio SCADA/HMI software are both tightly integrated with the ADAM-5000 systems.



DIN-rail Mounting
Installed with industrial standard DIN-rails



Panel/Wall Mounting
Flat surface system mounting

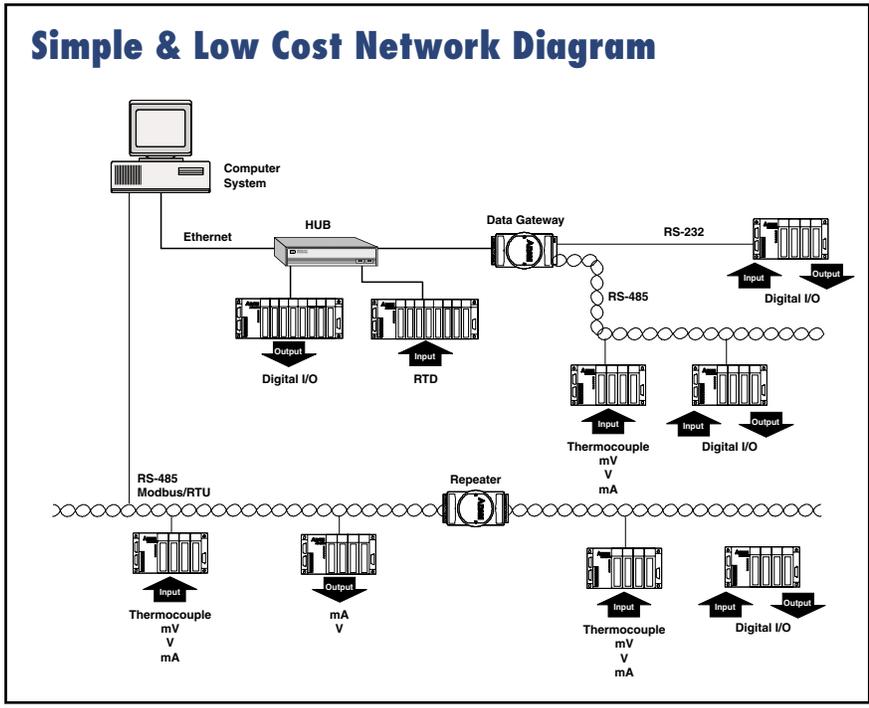


Node ID Setting
8-pin dip switch configuration



Connection
Pre-wired plug-in terminals with I/O modules

- 1 Software
- 2 IPCC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS



ADAM-5000 Series



Powerful System Kernel

The ADAM-5000 system kernel (or main unit) includes a CPU card, a power regulator, a 4 or 8-slot base and communication port. The system kernel with plug-in modules handles all software functions between the field devices and the host computer, including signal conditioning, data conversion, calibration, alarm monitoring, internal diagnosis, and communications. The ADAM-5000 is upgradable simply by changing the system kernel without changing existing modules.

3-way Isolation

Electric noise can enter your system through an I/O module, the power supply connection, or a communication connection. The ADAM-5000 series provides isolation from I/O modules ($3000 V_{DC}$), communication power ($3000 V_{DC}$) and connection ($2500 V_{DC}$). This 3-way isolation design prevents ground loops and reduces the effect of electric noise in the system. It also offers better surge protection to prevent dangerous voltage surges or spikes from harming your system.

Watchdog Timer Supervisor

A watchdog timer monitors the microprocessor and automatically resets the system. This feature is designed to reduce overall maintenance work.

Built-in Diagnosis

The ADAM-5000 system provides two kinds of diagnoses: a hardware self-test and a software diagnosis. These help users detect and identify various types of system or I/O module failures.

Data Acquisition and Control

The ADAM-5000 series is designed to acquire data, monitor and control processes through multi-channel I/O modules. Each system consists of two modular components: the system kernel (main unit) and the I/O modules. Each system is capable of handling up to 4 I/O modules (up to 64 I/O points). The ADAM-5000/TCP and the ADAM-5000E are capable of handling up to 8 I/O modules (up to 128 I/O points). Depending on the layout and the number of I/O points required, you can configure an optimum system to suit your applications.

Remote Configuration

The ADAM-5000 series analog input modules can be configured to accept several ranges of voltage input, current input, thermocouple input or RTD input. Counter/frequency modules can also be configured to up/down, bi-direction and frequency modes. With the exception of the system node address, all the parameters (including speed, HI/LO alarm and calibration) can be set remotely. ADAM's flexible design will free you from the burden of making physical adjustments and overseeing a multitude of fixed-range input modules. By storing the configuration in a nonvolatile EEPROM, the system is able to retain set parameters even in the event of a power failure.

Faster Communication Speeds

The system kernel in the ADAM-5000 series integrates a 16-bit microprocessor and FIFO circuitry to dramatically accelerate communication speeds. At 115.2 kbps, it is much faster than conventional RS-485 networks. The ADAM-5000 supports 10/100 Mbps, a communication standard on the Ethernet networks.

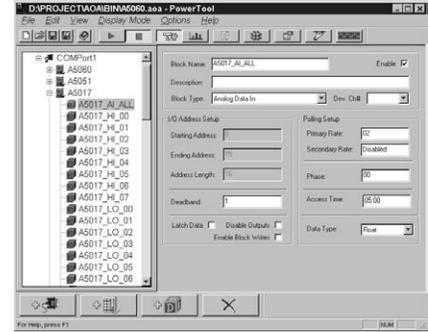
Configurable I/O Range

With the ADAM-5000 series, each analog input/output module can be easily configured for different types and ranges to support versatile applications using the same utility software. This great flexibility reduces the number of spare parts required for analog input/output modules and therefore saves costs.

General System Features and Software Support

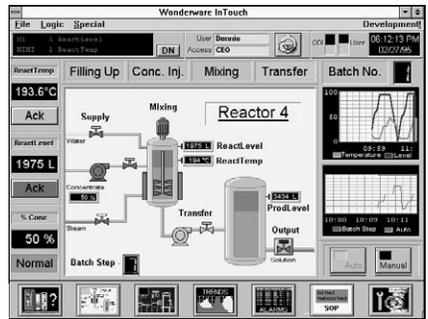
ADAM OPC Server

OPC is a standardized interface for industrial device servers. An OPC server enables devices, such as ADAM and other I/O devices, to communicate with a wide range of HMI/SCADA software packages residing on a server. Advantech offers ADAM, Modbus, and Modbus/TCP OPC Servers, conforming to OPC standards, and provides immediate compatibility between Advantech ADAM systems and a very wide range of application software systems. Any software system with OPC client capabilities can access the Advantech OPC server. Advantech OPC server is available for many Advantech devices, including the ADAM-4000 and ADAM-5000 series modules.



Modbus/RTU and Modbus/TCP Drivers

ADAM-5510/TCP and ADAM-5510E/TCP support Modbus/RTU and Modbus/TCP drivers to link with on-the-shelf, popular HMI/SCADA software, such as Wonderware InTouch®, Intellution® iFIX® and Citect. You also can easily find ADAM-5000 and ADAM-4000 drivers in these software's drivers listing.



ADAMView Data Acquisition Software

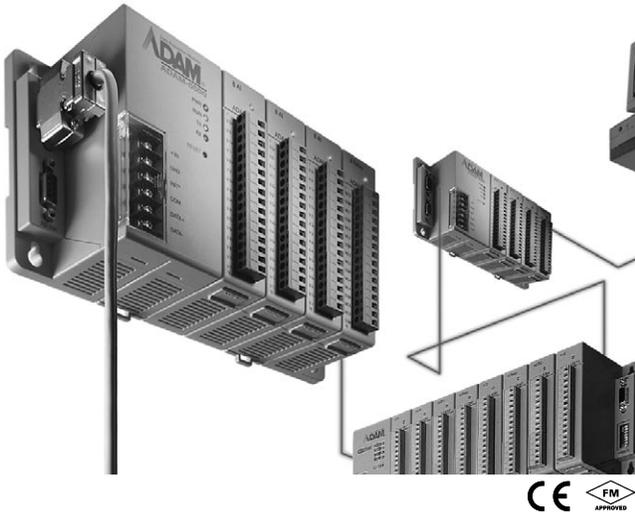
ADAMView is an easy-to-use, flexible human machine interface software package designed for the Microsoft Windows environment. ADAMView provides an intuitive, object-oriented graphical user interface (GUI) that simplifies control strategy and display setups. Simply select the icon blocks from the toolbox, connect them, and draw the dynamic display without any programming. A library of function block icons representing industry's standard data acquisition, control, mathematical, and display functions is at the user's fingertips. In addition, ADAMView features Script Designer (a BasicScript engine), Data Center, Task Designer, Display Designer and OPC server. These provide a flexible industrial monitoring and control development environment especially for ADAM I/O series.



- 1 Software
- 2 IPCC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 D&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

ADAM-5000/485 ADAM-5000E

**Distributed DA&C System
Based on RS-485**



Features

- RS-485 Communication for easy installation and networking
- 4 or 8 slots for up to 128 points data monitoring card control in one module
- Extensive Software support, includes windows DLL drivers, OCX drivers, OPC server and popular HMI/SCADA Software driver.
- Seamlessly integrated with easy-to-use ADAMView data acquisition Software.

Introduction

The ADAM-5000/485 and ADAM-5000E systems use the EIA RS-485 communication protocol. This is the industry's most widely used, balanced, bidirectional transmission line standard. The RS-485 was specifically developed for industrial applications to transmit and receive data at high rates over long distances.

Processor

- **CPU** 16-bit microprocessor
- **I/O module capacity** 4 or 8
- **Watchdog Timer** Yes
- **Power Consumption** 1.0 W (ADAM-5000/485)
4.0 W (ADAM-5000E)

Isolation

- **Communication Isolation** 2500 V_{DC} (ADAM-5000/485)
3000 V_{DC} (ADAM-5000E)
- **Communication Power Isolation** 3000 V_{DC}
- **I/O Module Isolation** 3000 V_{DC}

Diagnosis

- **Status Display** Power, CPU, communication
- **Self-test** Yes, while on
- **Software Diagnosis** Yes

Communication

- **Network** RS-232 or RS-485 (2-wire) to host
- **Speeds (bps)** 1200, 2400, 4800, 9600, 19.2 k, 38.4 k, 57.6 k, and 115.2 kbps
- **Max. Communication Distance** 4000 feet (1.2 km)
- **Command Format** ASCII command/response protocol
- **Reliability Check** Communication error checking with checksum
- **Asynchronous Data Format** 1 start bit, 8 data bits, 1 stop bit, no parity
- **Maximum Nodes** Up to 256 multi-drop systems per host serial port
- **Protection** Transient suppression on RS-485 communication lines

Power Requirements

- **Unregulated +10 to +30 V_{DC}**
- **Protected against Power Reversal**
- **Power Protection** Transient suppression on power input

Mechanical

- **Case** KJW with captive mounting hardware
- **Plug-in Screw Terminal Block** Accepts 0.5 mm² to 2.5 mm², 1 - #12 or 2 - #14 to #22 AWG

Environment

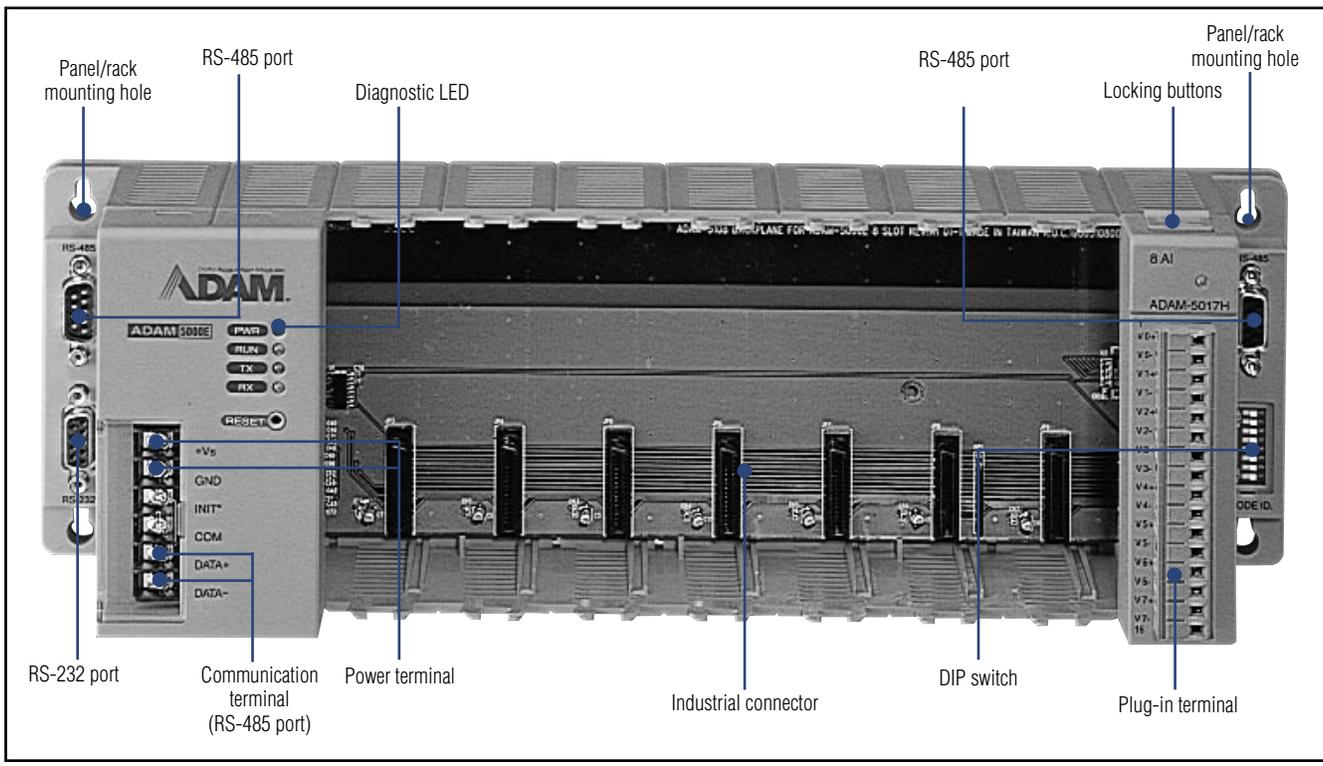
- **Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- **Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)
- **Humidity** 5 ~ 95%, non-condensing

Ordering Information

- **ADAM-5000/485** Distributed DA&C System Based on RS-485 (4 slot)
- **ADAM-5000E** Distributed DA&C System Based on RS-485 (8 slot)
- **PCLS-OPC/ADM** OPC Server for ADAM-4000/5000 Series (RS-485)
- **PCLS-OCX** ActiveX Control for Data Acquisition and Control
- **PCLS-ADAMVIEW32** ADAMView Data Acquisition Software

ADAM-5000/485 ADAM-5000E

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS



Feature Details

Two-wire Communication

The ADAM-5000/485 and ADAM-5000E systems use a single twisted pair of wires to transmit and receive data. Special circuitry ensures clean, reliable communication and suppresses communication line noise. This reduces overall network cost by simplifying installation and minimizing the number of cables, connectors, communication repeaters and filters required.

Surge Protection

High-speed transient suppressors protect the system from dangerous voltage surges or power spikes.

Network Expansion

The ADAM-4510 repeater simply amplifies or boosts existing signals, enabling them to travel over longer distances. Each repeater allows you to add up to 32 ADAM-5000 units to your network, extending the network by another 4000 feet (1.2 km). Up to 256 ADAM-5000/485, ADAM-5000E units can be connected to a single RS-485 network.

RS-232 to RS-485 Conversion

RS-232 serial ports are standard with most industrial computer systems. Though widely accepted, RS-232 has limited transmission speed, range and networking capabilities. The RS-485 standard overcomes these limitations by using differential voltage lines for data and control signals.

The ADAM-4520's isolated converter lets you take advantage of an RS-485 on an RS-232 system by converting RS-232 signals to RS-485 signals. Software written for half-duplex RS-232 may also be used without modification.

The ADAM-4520 helps you build an industrial grade, long distance communication system with standard PC hardware.

Intelligent RS-485 Data Flow Control

The RS-485 communication protocol will support half-duplex communication. Only two wires are needed for transmitting and receiving data. Handshaking signals such as RTS (Request to Send) normally control the direction of the data flow. A special I/O circuit in the ADAM-4510 and ADAM-4520 senses the data flow direction and automatically switches the transmission direction, making handshaking signals unnecessary. The RS-485 bus control is completely transparent to the user.

Built-in RS-232 Communication

ADAM-5000/485 and ADAM-5000E systems provide up to 64/128 I/O points and an RS-232 port. A host PC can be locally connected to the system to control and monitor simple applications, thereby facilitating local troubleshooting.

ASCII-based Protocol

ADAM-5000 commands are issued in printable ASCII-based format. ADAM applications can be written in any high-level language that supports ASCII string functions, such as C, Pascal or BASIC. ASCII support means you can use virtually any computer to manage your ADAM network.

ADAM-5000/TCP

Distributed DA&C System
Based on Ethernet



CE FCC

Features

- ARM 32-bit RISC CPU
- 10/100Base-T auto-negotiation high-speed communication port
- Supports Modbus/TCP for easy integration
- Supports UDP event handling function
- Up to 100 m communication distance w/o repeater
- Allows remote configuration via Ethernet
- Allows concurrent access for 8 host PCs
- 8 I/O slots for up to 128 points data monitoring and control.
- 1500 V_{DC} isolation for Ethernet communication
- Built-in watchdog timer for system auto-reset.
- Windows utility
 - I/O modules configuration and calibration
 - Network auto searching
 - Data stream setting
 - Current status monitoring and alarm trigger
- Provides ActiveX drivers to develop applications

Introduction

ADAM-5000/TCP is an Ethernet-based I/O system. Without a repeater, ADAM-5000/TCP can cover a communication distance up to 100 m. This allows remote configuration via Ethernet and 8 PCs can simultaneously access the data. The ADAM-5000/TCP is a solution for easy configuration and efficient management, an ideal and cost-effective solution for eAutomation architecture.

Specifications

- **CPU** 32-bit RISC CPU
- **Memory** 4 MB RAM
512 KB flash ROM
- **Operating System** Real-time OS
- **I/O Capacity** 8 slots
- **Status Indicator** Power (3.3 V, 5 V), CPU, communication (Link, Active, 10/100 Mbps, Tx, Rx)
- **CPU Power Consumption** 5.0 W
- **Reset Push Button** Yes

Isolation

- **Ethernet Comm.** 1500 V_{DC}
- **I/O Module** 3000 V_{DC}
- **Comm. Power** 3000 V_{DC}

Diagnostic

- **Power-up Self Test** Hardware and software

Ethernet Network

- **Interface** 10/100Base T
- **Wiring** UTP, category 5 or greater
- **Bus Connection** RJ45 modular jack
- **Comm. Protocol** Modbus/TCP, TCP, UDP, IP, ARP
- **Data Transfer Rate** Up to 100 Mbps
- **Max. Communication Distance** 100 meters w/o repeater
- **Even Response Time** < 5 ms

Mechanical

- **Case** KJW with captive mounting hardware
- **Plug-in Screw** Accepts 0.5 mm² to 2.5 mm², 1 - #12 or 2 - #14 to #22 AWG
- **Terminal Block** #22 AWG

Serial Network

- **Interface** RS-485
- **Comm. Protocol** Modbus/RTU
- **Max. Node** Up to 32 nodes
- **Baudrate** Up to 115.2 kbps

Power Requirements

- **Unregulated 10 to 30 V_{DC}**
- **Protection** Over-voltage and power reversal

Software Support

- **ActiveX Driver**
- **Windows Utility** Network setting, I/O configuration & calibration, data stream, alarm setting
- **Modbus/TCP OPC Server**

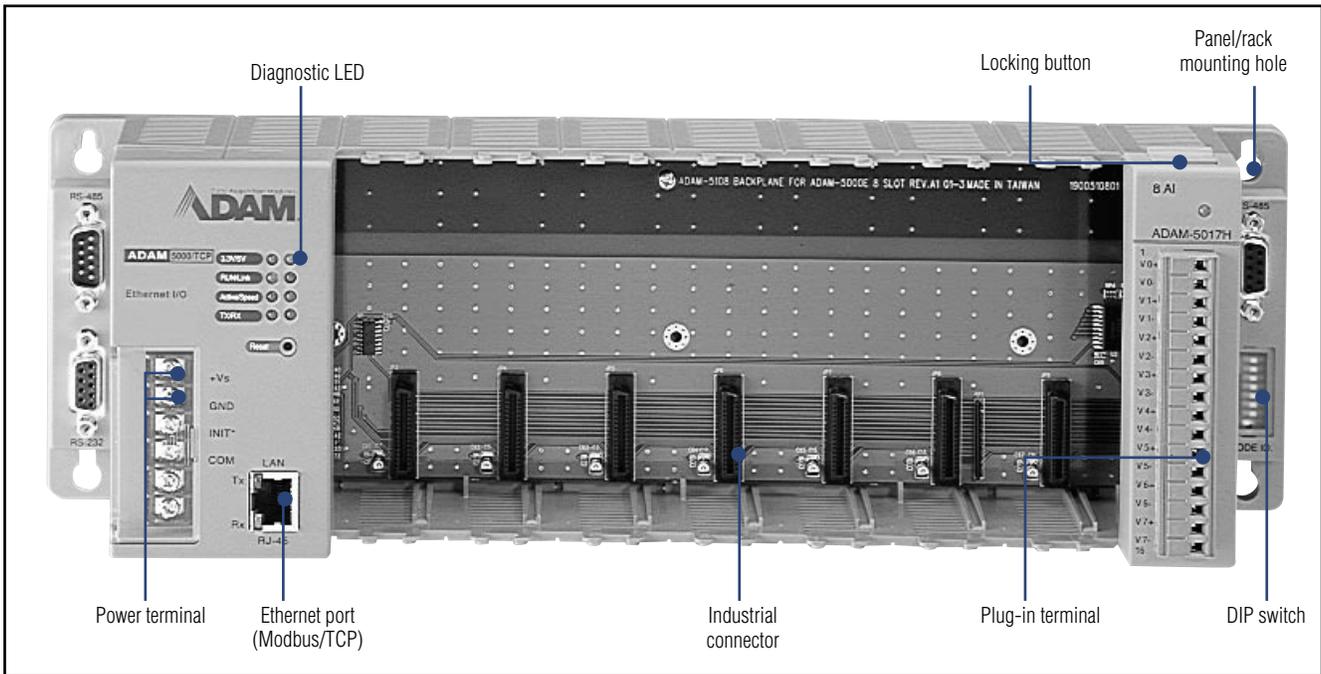
Environment

- **Operating Temperature** - 10 ~ 70° C (14 ~ 158° F)
- **Storage Temperature** - 25 ~ 85° C (-13 ~ 185° F)
- **Humidity** 5 ~ 95%, non-condensing

Ordering Information

- **ADAM-5000/TCP** Distributed DA&C System Based on Ethernet (8 slot)
- **PCLS-ADAMVIEW32** ADAMView Data Acquisition Software

ADAM-5000/TCP



Feature Details

Communication Network

With a 32-bit RISC CPU, ADAM-5000/TCP greatly enhances data processing performance and ability, especially in network communication. There is a standard RJ-45 modular jack Ethernet port on the ADAM-5000/TCP's CPU board, and the field I/O modules are able to link to an Ethernet network directly without any other converter or data gateway. The communication speed can be auto-switched between 10 Mbps and 100 Mbps data transfer rates, depending on the network environment. In addition, ADAM-5000/TCP can be used as an Ethernet data gateway. It provides an RS-485 interface to integrate serial devices supporting the Modbus/RTU protocol.

Modbus/TCP Protocol

Modbus/TCP is one of the most popular standards used for industrial Ethernet networks. Using this communication protocol, ADAM-5000/TCP is easy to integrate with any HMI software packages or user-developed applications which support Modbus. Users do not have to prepare a specific driver for the ADAM-5000/TCP when they install the DA&C system with their own operating application. It reduces required engineering efforts. Moreover, the ADAM-5000/TCP works as a Modbus data server as well. It allows eight PCs or tasks to access its current data simultaneously, no matter if they connect from LAN, an intranet, or the Internet.

Hardware Capacity & Diagnostics

ADAM-5000/TCP is designed with high I/O capacity and supports all types of ADAM-5000 I/O modules. Providing 8 slots for any mixed modules, this DA&C system handles up to 128 I/O points (only four ADAM-5024s allowed). Different from other main units, the ADAM-5000/TCP has not only higher I/O capacity, but also smarter diagnostics ability. There are eight indicators on the front case of the CPU module. Users can read the system status clearly, which includes power, CPU, Ethernet link, communication active, communication rate, etc. In addition, there are also Tx and Rx LEDs on the Ethernet port, indicating data sending and receiving.

Event Handling & Data Streaming

Though TCP/IP is the standard communication protocol for Ethernet, data transmission management is still a bottleneck when many clients are on the network at the same time. Therefore, the ADAM-5000/TCP also supports the UDP protocol to deal with regular data stream broadcasting and event/alarm triggering. These functions will upgrade your system with intelligence and performance.

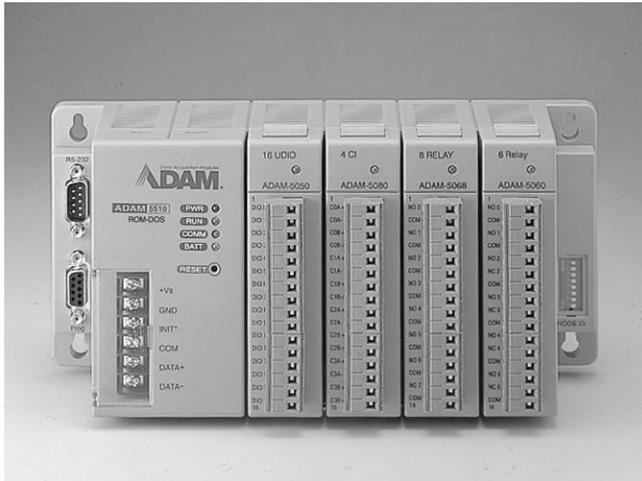
Isolated Communication

High speed transient suppressors isolate the ADAM-5000/TCP Ethernet port from dangerous voltage up to 1500 V_{DC} power spikes and avoid surge damage to the whole system.

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-5510

PC-Based Programmable Controller



Features

- Control Flexibility with C Programming
- Complete Set of I/O Modules
- Built-in 512KB Flash and 256KB SRAM
- Built-in Real-Time Clock and Watchdog Timer
- ROM-DOS operating system
- 4 I/O slot extension

Introduction

ADAM-5510 is ideal for PC-based data acquisition and control applications. It is a compact, standalone controller with an Intel® x86- based CPU running Datalight® ROM-DOS. Built-in battery backup SRAM is the best choice for complex logic or data storage applications.

For professional C/C++ programmers, ADAM-5510 series application programs may be written and compiled in (Borland) C, and downloaded to ADAM-5510. With the power of the ADAM-5510, users can easily accomplish specialized functions which are difficult with traditional controllers. Each ADAM-5510 system can handle up to 4 I/O slots (up to 64 I/O points).

Specifications

- **CPU** 16-bit microprocessor
- **Memory** 256 KB flash ROM: 170 KB of the 256 KB for user app.
256 KB flash memory
256 KB SRAM: 192 KB of the 256 KB for system use,
60 KB with battery backup
- **Operating System** ROM-DOS
- **Timer BIOS** Yes
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **COM1** RS-232
- **COM2** RS-485
- **Prog. Port/COM3** TX, RX, GND (RS-232 Interface)
- **I/O Capacity** 4 Slots
- **Status Display** Power, CPU, communication and Battery
- **CPU Power Consumption** 1.0 W

Isolation

- **Communication Power** 3000 V_{DC}
- **Input/Output** 3000 V_{DC}
- **Communication** 2500 V_{DC} (COM2 only)

Power

- **Unregulated + 10 to + 30 V_{DC}**
- **Protected against Power Reversal**

Network

- **Medium** RS-485 (2-wire)
- **Speeds (bps)** 9600, 38400, 57600 and 115.2 k
- **Maximum Nodes** Up to 256 multi-drop system per serial port

Software Support

- **C Library** Borland C++ 3.0 for DOS

Mechanical

- **Case** KJW with captive mounting hardware
- **Plug-in Screw Terminal Block** Accepts 0.5 mm² to 2.5 mm², 1 - #12 or 2 - #14 to #22 AWG

Environment

- **Operating Temperature** - 10 ~ 70° C (14 ~ 158° F)
- **Storage Temperature** - 25 ~ 85° C (-13 ~ 185° F)
- **Humidity** 5 ~ 95%, non-condensing

Ordering Information

- **ADAM-5510** PC-based Programmable Controller

ADAM-5511

PC-based Programmable Controller with Modbus®



FCC CE

Features

- Online diagnostic function
 - Monitor current I/O status with user's AP running
- Windows® utility
 - Network auto-detecting and I/O module configuration
 - File Management function for remote download, run, stop, terminate, and delete user's AP
 - Analog/digital latch output function
 - Analog input engineering unit scaling function
- Modbus/RTU industrial standard communication protocol
- Up to 115.2 kbps communication speed
- Remote I/O integration with the ADAM-4000 series
- Support modem function with communication library
- Watchdog timer function library
- Offline user's program debug tool (Simu_io.lib)

Introduction

The ADAM-5511 is a compact, stand-alone controller with an Intel® x86-based CPU running Datalight® ROM-DOS. C/C++ programmers can write and compile applications in Turbo C and download them to ADAM-5511. In addition to 256 KB of flash ROM, it offers 512 KB of flash disk space for user's programming files and data storage and 256 KB of SRAM for AP execution. It provides more capacity and reliability for your versatile application requirement.

Specifications

- **CPU** 16-bit microprocessor
- **Memory** 256 KB flash ROM: 170 KB of the 256 KB for user applications
256 KB SRAM: 240 KB of the 256 KB for system use, 60 KB for user with battery backup
512 KB flash disk: 400 KB of the 512 KB for user applications
- **Operating System** ROM-DOS
- **Timer BIOS** Yes
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **COM1** RS-232 (Modbus)
- **COM2** RS-485 (Modbus)
- **Programming Port (COM3)** Tx, Rx, GND (RS-232 Interface)
- **I/O Capacity** 4 slots
- **Status Display** Power, CPU, communication, battery
- **CPU Power Consumption** 1.0 W
- **Power Requirement** Unregulated 10 to 30 V_{DC}

Isolation

- **Communication Power** 3000 V_{DC}
- **Input/Output** 3000 V_{DC}
- **Communication** 2500 V_{DC} (COM2 only)

Network

- **Medium** RS-485 (2-wire)
- **Speeds (bps)** 9600, 38400, 57600 and 115.2 k
- **Maximum Nodes** Up to 32 multi-drop system per serial port
- **Remote I/O** Up to 32 nodes ADAM-4000 I/O modules
- **Communication Protocol** Modbus/RTU

Software Support

- **C Library** Turbo C++ 3.0 for DOS
- **Windows Utility**
- **Modbus OPC Server**

Power

- **Unregulated + 10 to + 30 V_{DC}**
- **Protected against power reversal**

Mechanical

- **Case** KJW with captive mounting hardware
- **Plug-in Screw Terminal Block** Accepts 0.5 mm² to 2.5 mm², 1 - #12 or 2 - #14 to #22 AWG

Environment

- **Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- **Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)
- **Humidity** 5 ~ 95%, non-condensing

Ordering Information

- **ADAM-5511** PC-based Programmable Controller with Modbus
- **PCLS-OPC/MOD** Modbus OPC Server
- **PCLS-ADAMVIEW32** ADAMView Data Acquisition Software

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-5510M ADAM-5510E

PC-based Programmable Controller

8-slot PC-based Programmable Controller



CE

Features

- Support Modbus/RTU Master and Slave function libraries
- Windows-based Utility
- Control Flexibility with C Programming
- Complete Set of I/O Modules
- Built-in 1.5 MB Flash and 640 KB SRAM
- Built-in Real-Time Clock and Watchdog Timer
- ROM-DOS operating system
- 4 serial communication ports
- 4 or 8 I/O slot extension

Introduction

The ADAM-5510M AND ADAM-5510E are ideal for PC-based data acquisition and control applications. They are compact, controllers with an Intel x86- based CPU running Datalight ROM-DOS. Built-in battery backup SRAM is the best choice for complex logic or data storage applications. For professional C/C++ programmers, the ADAM-5510M AND ADAM-5510E application programs may be written and compiled in Borland C++ 3.0, and downloaded to the ADAM-5510M AND ADAM-5510E. With the power of the ADAM-5510M AND ADAM-5510E, users can easily accomplish specialized functions, which are difficult with traditional controllers. Each ADAM-5510M AND ADAM-5510E system can handle up to 4 or 8 I/O slots (up to 64 or 128 I/O points).

Specifications

PC-based Programmable Controller System

- **CPU** 16-bit microprocessor
- **Memory** 1.5 MB flash memory:
 - 256 KB system Disk
 - 256 KB flash memory
 - 1024 KB file system, 960 KB for user applications
 - 640 KB SRAM, up to 384 KB with battery backup
- **Operating System** ROM-DOS (MS-DOS 6.22 Compatible)
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **COM1** RS-232/485 for ADAM-5510E
RS-232 for ADAM-5510M
- **COM2** RS-485
- **Programming Port/COM3** TX, RX, GND (RS-232 Interface)
- **COM4** RS-232/485
- **I/O Capacity** 8 Slots for ADAM-5510E
4 slots for ADAM-5510M
- **Status Display** Power, CPU, communication and battery
- **CPU Power Consumption** 1.0 W

Isolation

- **Power Input** 3000 V_{DC}
- **Communication** 2500 V_{DC} (COM2 only)

Network

- **Medium** RS-485 (2-wire)
- **Speeds (bps)** 1200 up to 115.2 k
- **Maximum Nodes** Up to 256 multi-drop system per serial port

Software Support

- **C Library** Borland C++ 3.0 for DOS

Power

- Unregulated + 10 to + 30 V_{DC}
- Protected against Power Reversal

Mechanical

- **Case** KJW with captive mounting hardware
- **Plug-in Screw Terminal Block** Accepts 0.5 mm² to 2.5 mm², 1 - #12 or 2 - #14 to #22 AWG

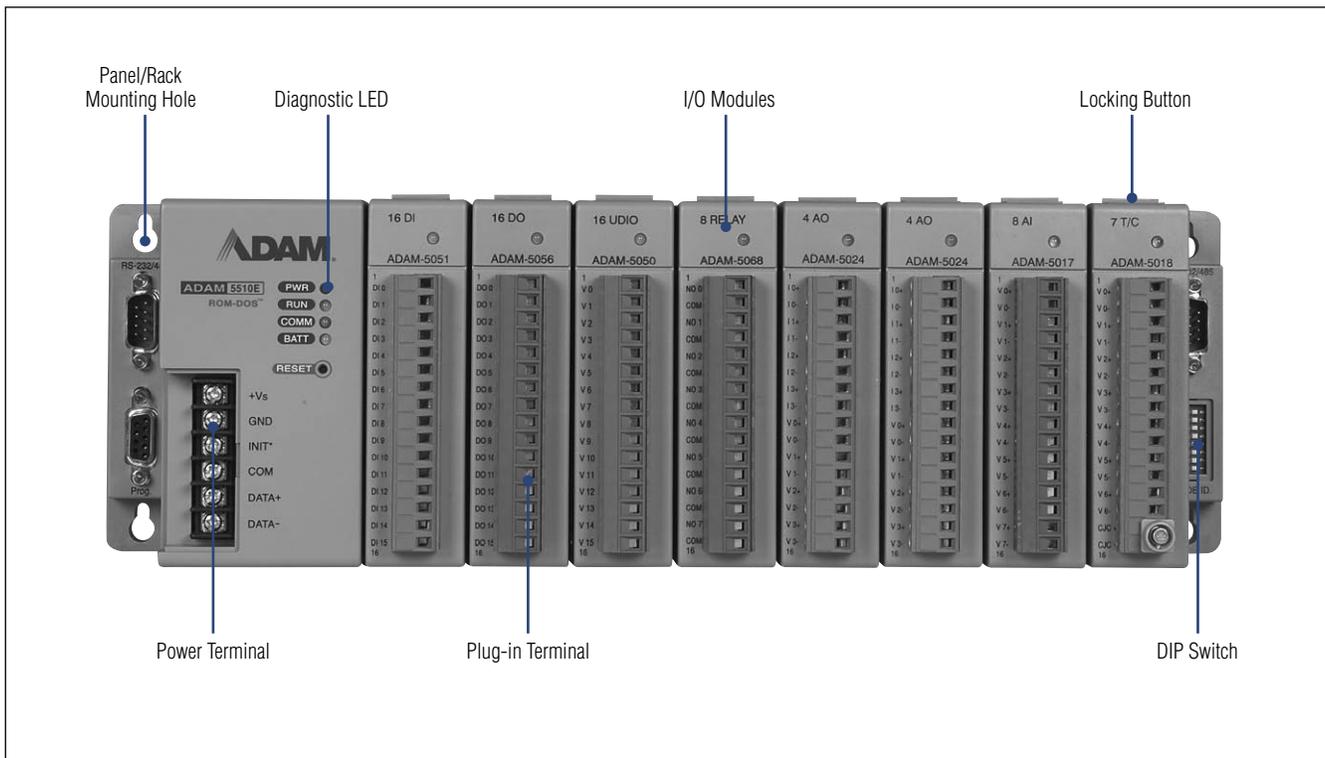
Environment

- **Operating Temperature** - 10 ~ 70° C (14 ~ 158° F)
- **Storage Temperature** - 25 ~ 85° C (-13 ~ 185° F)
- **Humidity** 5 ~ 95%, non-condensing

Ordering Information

- **ADAM-5510M** PC-based Programmable Controller (4-slot)
- **ADAM-5510E** 8-slot PC-based Programmable Controller
- **PCLS-OPC/MOD** Modbus OPC Server
- **PCLS-ADAMVIEW32** ADAMView Data Acquisition Software

ADAM-5510M ADAM-5510E



- 1 Software
- 2 IP/PC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

Why PC-based Control?

Today, more and more major manufacturers are gaining a competitive edge by replacing their factory floor PLC "black boxes" and utilizing the latest advances in automation control technology. One of the major drawbacks of the PLC is its proprietary nature. Not only is the PLC proprietary, but so is everything associated with it – the hardware, the operating system, the programming methods, the networks, the processors, the I/O, and more. Once you have selected a PLC supplier, you are essentially locked into their product line. This exclusivity limits how far you can expand your operations – and expand your business – since you can only grow as far as your supplier's technology will let you. On the other hand, PC-based controllers are designed as an open structure with advanced capabilities for computing, communication and controlling. There will be no more limitation to user's further integration and expansion.

ADAM-5510M AND ADAM-5510E PC-based "C" Programmable Controller

The design of the ADAM-5510M and ADAM-5510E are based on the experience of various needs in industrial control. The ADAM-5510M and ADAM-5510E adopt a popular RS-485 bus, which can work either as a standalone unit or within a distributed control system. The user only needs to write a program in C to run on the ADAM-5510M and ADAM-5510E for a general-purpose application.

Fully Windows-based Utility for Configuring I/O Modules and Downloading Control Program

The ADAM-5510M and ADAM-5510E utility is fully-Windows based so users can configure the I/O modules and download control program under Windows environment easily. In order to provide a convenience operation environment for former users, the Windows Utility keeps the DOS mode operation interface too.

More Data Memory and I/O Slots to Support Versatile Applications

The ADAM-5510M and ADAM-5510E offer plenty of spare memory for developing complex logic or data storage applications, such as data recording, which is difficult for traditional controllers. The ADAM-5510M and ADAM-5510E features 1.5 MB flash memory and 640 KB SRAM (up to 384 KB battery backup memory). ADAM-5510M and ADAM-5510E also support up to 4 or 8 I/O slots for I/O modules, which can provide more flexibility and I/O points for user's applications.

Support 4 Serial Ports with Modbus/RTU Master and Slave Function Libraries

The ADAM-5510M and ADAM-5510E has four independent communication ports. That means they can simultaneously communicate with one RS-232/485 device (COM1), one RS-485 device (COM2), one RS-232 3-wire device (COM3), and one RS-232/485 device (COM4). They also support Modbus/RTU master function library for connecting Modbus remote I/O modules and Modbus/RTU slave function library for connecting to HMI/SCADA software.

Complete I/O Module and C Library Support

The ADAM-5510M and ADAM-5510E support industrial I/O modules including digital I/O, analog I/O, counter and special purpose I/O modules such as Thermocouple and RTD. It also offers well-stocked Borland C libraries, including system resources function, I/O functions, communication functions and Modbus/RTU functions. All the functions have sample programs which can save the developing time and efforts.

Multiple RS-232 Port Support

The ADAM-5090 is a 4-port RS-232 module that is equipped with 4 RS-232 ports, which make it especially suitable for bi-direction communication. It can simultaneously read/write data from other third-party devices such as barcode readers or PLCs, as long as they have an RS-232 interface. Furthermore, commands can be issued through the ADAM-5090 to control other devices. It is fully integrated with the ADAM-5510M and ADAM-5510E, and transmits data through RS-232 ports. The whole integrated system supports Modbus/RTU master function, which can connect and issue commands to control Modbus remote I/O devices by Modbus/RTU protocol.

ADAM-5510/TCP ADAM-5510E/TCP

**Ethernet-enabled
Programmable Controller**
**8-Slot Ethernet-enabled
Programmable Controller**



FCC CE

Features

- 10/100Base-T Ethernet interface
- Support Web Server function
- Support Email Alarm function
- Support FTP Server and Client functions
- Support Modbus/TCP Server and Client function libraries
- Support Modbus/RTU Master and Slave function libraries
- 1.5 MB Flash ROM (960 KB for user applications)
- 640 KB SRAM (384 KB for battery backup)
- ROM-DOS operating system
- Watchdog timer and real-time clock
- 4 serial communication ports
- 4 or 8 I/O slot extension

Introduction

In the ADAM-5510 series of PC-based programmable controllers, Advantech has introduced Ethernet-enabled features. The new 4-slot ADAM-5510/TCP and 8-slot ADAM-5510E/TCP support HTTP server, FTP server, and e-mail alarm functions. These functions can be used to monitor a system via the Internet, acquire data through an FTP connection and send alarms to designated e-mail addresses if a critical situation emerges. Both products also support Modbus/TCP server/client functions. The ADAM-5510/TCP and ADAM-5510E/TCP can work as a Modbus/TCP client to retrieve data from remote I/Os, and Modbus/TCP server to connect with the HMI/SCADA software.

Specifications

PC-based Programmable Controller System

- **CPU** 16-bit processor
- **Memory** 1.5 MB flash ROM (960 KB for user applications)
640 KB SRAM (384 KB for battery backup RAM)
- **Operating System** ROM-DOS
- **Timer BIOS** Yes
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **Ethernet** 10/100 Mbps Base Base-T
- **COM1** RS-232/485 (5510E/TCP), RS-232 (5510/TCP)
- **COM2** RS-485
- **COM3/Prog. Port** TX, RX, GND (RS-232 Interface)
- **COM4** RS-232/485
- **IO Capacity** 4 or 8 slots
- **Status Display** Power, CPU, Communication and Battery
- **CPU Power Consumption** 2.5 W

Isolation

- **Communication Power** 3000 V_{DC}
- **Input/Output** 3000 V_{DC}
- **Communication** 2500 V_{DC} (COM2 Only)

Network

- **Ethernet** 10/100 Mbps
- **RS-485** 9600, 38400, 57600 and 115.2 k

Software Support

- **C Library** Borland C++ 3.0 for DOS

Power

- Unregulated +10 to +30 Vdc
- Protected against Power Reverse

Mechanical

- **Case** KJW with captive mounting hardware
- **Plug-in Screw**
- **Terminal Block** Accepts 0.5 mm² to 2.5 mm², 1-#12 or 2-#14 to #22 AWG

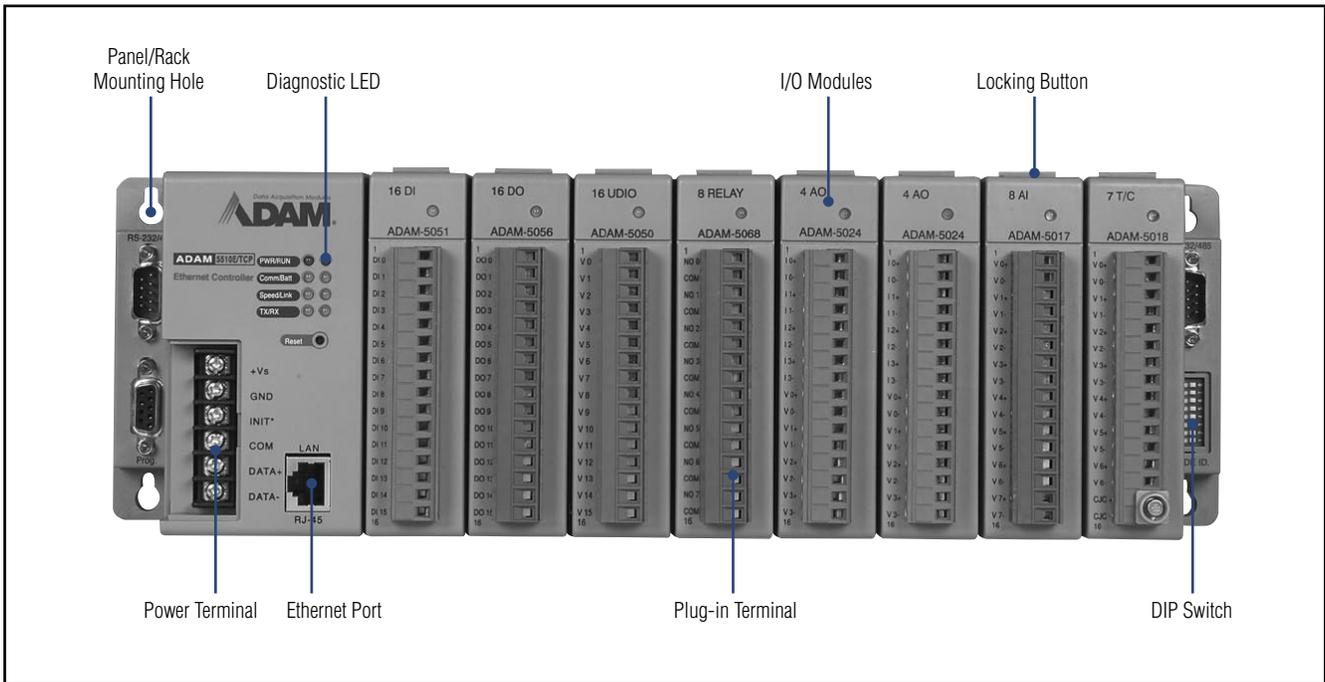
Environment

- **Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- **Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)
- **Humidity** 5 ~ 95%, noncondensing

Ordering Information

- **ADAM-5510/TCP** Ethernet-enabled Programmable Controller (4-slot)
- **ADAM-5510E/TCP** 8-Slot Ethernet-enabled Programmable Controller
- **PCLS-ADAMVIEW32** ADAMView Data Acquisition Software
- **PCLS-OPC/MOD** Modbus OPC Server
- **PCLS-OPC/MTP** Modbus/TCP OPC Server

ADAM-5510/TCP ADAM-5510E/TCP



Feature Details

Support Powerful Ethernet Features

ADAM-5510/TCP and ADAM-5510E/TCP are Ethernet-enabled Programmable Controllers. The new 4-slot ADAM-5510/TCP and 8-slot ADAM-5510E/TCP support HTTP server, FTP server, and e-mail alarm functions. These functions can be used to monitor a system via the Internet, acquire data through an FTP connection and send alarms to designated e-mail addresses if a critical situation emerges.

Enable Ethernet Connectivity with Other Devices

ADAM-5510/TCP and ADAM-5510E/TCP support both Modbus/TCP Server function library and Modbus/TCP Client function library. The ADAM-5510/TCP and ADAM-5510E/TCP can work as a Modbus/TCP client to retrieve data from remote I/O modules, and Modbus/TCP server to connect with the HMI/SCADA software.

More Data Memory and I/O Slots to Support Versatile Applications

The ADAM-5510/TCP and ADAM-5510E/TCP offer more than enough spare memory for developing complex logic or data storage applications, such as data recording, which is difficult for traditional controllers. The ADAM-5510/TCP and ADAM-5510E/TCP feature 1.5 MB flash memory and 640 KB SRAM (up to 384 KB battery backup memory). ADAM-5510/TCP and ADAM-5510E/TCP also support up to 4 or 8 I/O slots for I/O modules, which can provide more flexibility and I/O points for user's applications.

Complete I/O Module and C Library Support

The ADAM-5510/TCP and ADAM-5510E/TCP support industrial I/O modules including digital I/O, analog I/O, counter and special purpose I/O modules such as Thermocouple and RTD. It also offers well-stocked Borland C libraries, including system resources function, I/O functions, communication functions, socket functions, Modbus/TCP functions, Modbus/RTU functions and the functions of Ethernet features. All the functions have sample programs which can save development time and efforts.

Supports four Communication Ports

The ADAM-5510/TCP and ADAM-5510E/TCP has four independent communication ports. That means they can simultaneously communicate with one RS-232/485 device (COM1), one RS-485 device (COM2), one RS-232 3-wire device (COM3), and one RS-232/485 device (COM4). They also support Modbus/RTU master function library for connecting Modbus remote I/O modules and Modbus/RTU slave function library for connecting to HMI/SCADA software.

Multiple RS-232 Port Support

The ADAM-5090 is a 4-port RS-232 module that is equipped with 4 RS-232 ports, which make it especially suitable for bi-direction communication. It can simultaneously read/write data from other third-party devices such as barcode readers or PLCs, as long as they have an RS-232 interface. Furthermore, commands can be issued through the ADAM-5090 to control other devices. It is fully integrated with the ADAM-5510/TCP and ADAM-5510E/TCP, and transmits data through RS-232 ports. The whole integrated system supports Modbus/RTU master function, which can connect and issue commands to control Modbus remote I/O devices by Modbus/RTU protocol.

- 1 Software
- 2 IP/PC
- 3 TCP
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

ADAM-5510KW ADAM-5510EKW

PC-based SoftLogic Controller

8-slot PC-based SoftLogic Controller



CE

Features

- IEC-61131-3 standard package
- Supports LD/FB/SFC/IL/ST language
- Graphical programming interface
- Cross programming language compiling capability
- Supports floating point calculation
- Supports AI/AO/DI/DO/Counter Function Blocks
- Powerful debug tool
- Built-in Modbus/RTU Master and Slave
- Supports up to 128 Local I/O Points
- Handles typical 32 Modbus/RTU remote I/O modules
- Supports more than 9000 coils in LD language
- Supports 3 serial ports including 1 RS-485 and 2 RS-232/485 ports

Introduction

ADAM-5510EKW and ADAM-5510KW are PC-based Soft-Logic Controllers. They feature 5 standard IEC61131-3 programming languages so PLC users can develop control strategies in their familiar programming languages. The strong MULTIPROG software and stable ProConOS make ADAM-5510EKW and ADAM-5510KW the best choice for PC-based Soft-logic controllers in the market.

ProConOS, (Programmable Controller Operating System), has over 250,000+ installations, and is a pre-emptive, multi-tasking run-time software providing deterministic operation down to one millisecond and runs applications developed with MULTIPROG, a fully-featured IEC 61131-3 development environment. With this KW Software distribution agreement, Advantech has bundled the ProConOS run-time software on ADAM-5510EKW and ADAM-5510KW Controllers creating a SoftLogic Solution. It will greatly benefit PLC users to enjoy the PC-based advantage of ADAM-5510EKW and ADAM-5510KW

Different from the original ADAM-5510 hardware, the ADAM-5510EKW and ADAM-5510KW includes more memory capacity to raise system efficiency and users' programming flexibility. The main unit of ADAM-5510EKW and ADAM-5510KW include a 1.5 MB flash memory and 640 KB SRAM which includes battery backup RAM up to 32 KB. In addition, 4 COM ports enrich the communication capacity of ADAM-5510EKW and ADAM-5510KW to integrate with remote I/O or other 3rd party devices based on the Modbus/RTU protocol.

For advanced system integration, the ADAM-5510EKW and ADAM-5510KW are built with a Modbus/RTU Server. Therefore, it also supports Modbus/RTU protocol to communicate with any Modbus® devices as well as HMI Software/User's APs built with Modbus driver or Modbus/RTU OPC Server, both of which are included in the SCADA systems.

Specifications

System

- **CPU** 16-bit microprocessor
- **Memory** 1.5 MB flash memory: 640 KB SRAM, 32 KB with battery backup
- **Operating System** ROM-DOS
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **COM1** RS-232/485 (ADAM-5510EKW);
RS-232 (ADAM-5510KW)
- **COM2** RS-485
- **COM3** RS-232 (Reserved)
- **COM4** RS-232/485
- **Comm. Protocol** Modbus/RTU
- **I/O Capacity** 8 Slots
- **Status Display** Power, CPU, communication and battery
- **CPU Power Consumption** 1.0 W

Isolation

- **Power Input** 3000 V_{DC}
- **Communication** 2500 V_{DC} (COM2 only)

Network

- **Medium** RS-485 (2-wire)

- **Speeds (bps)** 9600, 19200 and 38400 bps
- **Maximum Nodes** up to 31 multi-drop system per serial port

Software Support

- **KW MULTIPROG®**

Power

- **Unregulated** + 10 to + 30 V_{DC}
- **Protected against Power Reversal**

Mechanical

- **Case** KJW with captive mounting hardware
- **Plug-in Screw Terminal Block** Accepts 0.5 mm² to 2.5 mm², 1 - #12 or 2 - #14 to #22 AWG

Environment

- **Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- **Storage Temperature** - 25 ~ 85° C (-13 ~ 185° F)
- **Humidity** 5 ~ 95%, non-condensing

Ordering Information

- **ADAM-5510KW** PC-based SoftLogic Controller
- **ADAM-5510EKW** 8-slot PC-based SoftLogic Controller
- **PCLS-OPC/MOD** Modbus OPC Server
- **PCLS-ADAMVIEW32** ADAMView Data Acquisition Software

ADAM-5510EKW/TP

8-slot Ethernet-enabled SoftLogic Controller

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

NEW



FCC CE

Features

- 10/100Base-T Ethernet interface
- Built-in Modbus/TCP server
- Supports Modbus/TCP client
- Supports Modbus/RTU Master
- Supports Modbus/RTU Slave
- Supports Multiprog via Ethernet
- IEC-61131-3 standard package
- Supports LD/FB/SFC/IL/ST Languages
- Cross-Language compiling program
- 8 I/O slots base and handles up to 128 Local I/O Points
- Supports AI/AO/DI/DO/Counter Function Blocks

Introduction

The ADAM-5510EKW/TP is an Ethernet-enabled SoftLogic Controller. In addition to the features of ADAM-5510KW and ADAM-5510EKW, the ADAM-5510EKW/TP has Ethernet features including Modbus/TCP Server, Modbus/TCP Client and Multiprog via Ethernet functions. Therefore, users can easily and quickly complete their programming based on Ethernet architecture.

Standard Modbus Interface

For advanced system integration, the ADAM-5510EKW/TP supports not only Modbus/RTU Master and Slave functions via serial ports, but also the Modbus/TCP Client to retrieve data from remote I/O, and Modbus/TCP Server to send data back to the HMI/SCADA Software via Ethernet port. Furthermore, the ADAM-5510EKW/TP allows users to remotely maintain multiple ADAM-5510EKW/TP controllers by running Multiprog programming software via Ethernet.

Specification

- **CPU** 16-bit microprocessor
- **Memory** 1.5 MB flash memory: 640 KB SRAM, 17 KB with battery backup
- **Operating System** ROM-DOS
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **COM1** RS-232/485
- **COM2** RS-485
- **COM3** RS-232 (Reserved)
- **COM4** RS-232/485
- **Comm. Protocol** Modbus/RTU and Modbus/TCP
- **I/O Capacity** 8 Slots
- **Status Display** Power, CPU, communication and battery
- **CPU Power Consumption** 1.0 W

Isolation

- **Power Input** 3000 V_{DC}
- **Communication** 2500 V_{DC} (COM2 only)

Network

- **Medium** RS-485 (2-wire)
- **Speeds (bps)** 9600, 19200 and 38400 bps
- **Maximum Nodes** Up to 31 multi-drop system per serial port
- **Medium** Ethernet (RJ-45)
- **Speeds (bps)** 10/100Base-T

Software Support

- **KW MULTIPROG®**

Power

- **Unregulated** + 10 to + 30 V_{DC}
- **Protected against Power Reversal**

Mechanical

- **Case** KJW with captive mounting hardware
- **Plug-in Screw Terminal Block** Accepts 0.5 mm² to 2.5 mm², 1 - #12 or 2 - #14 to #22 AWG

Environment

- **Operating Temperature** - 10 ~ 70° C (14 ~ 158° F)
- **Storage Temperature** - 25 ~ 85° C (-13 ~ 185° F)
- **Humidity** 5 - 95%, non-condensing

Ordering Information

- **ADAM-5510EKW/TP** 8-slot Ethernet-enabled SoftLogic Controller
- **PCLS-OPC/MOD** Modbus OPC Server
- **PCLS-OPC/MTP** Modbus/TCP OPC Server
- **PCLS-ADAMVIEW32** ADAMView Data Acquisition Software

ADAM-5000 Series

System	ADAM-5510	ADAM-5511	ADAM-5510M/ 5510E	ADAM-5510/TCP ADAM-5510E/TCP	ADAM-5510EKW/ TP	ADAM-5510KW/ 5510EKW	Remarks
CPU	80188	80188	80188	80188	80188	80188	
RAM	256 KB	256 KB	640 KB	640 KB	640 KB	640 KB	
Flash ROM	256 KB	256 KB	256 KB	256 KB	256 KB	256 KB	
Flash Memory	256 KB	-	256 KB	256 KB	768 KB	768 KB	
Flash Disk	-	512 KB	1 MB	1 MB	512 KB	512 KB	
OS	ROM-DOS	ROM-DOS	ROM-DOS	ROM-DOS	ROM-DOS	ROM-DOS	
Timer BIOS	Yes	Yes	Yes	Yes	Yes	Yes	
Real-time Clock	Yes	Yes	Yes	Yes	Yes	Yes	
Watchdog Timer	Yes	Yes	Yes	Yes	Yes	Yes	
COM1	RS-232	RS-232(Modbus)	RS-232 (ADAM-5510M) RS-232/485 (ADAM-5510E)	RS-232 (ADAM-5510/TCP) RS-232/RS-485 (ADAM-5510E/TCP)	RS-232/485	RS-232 (ADAM-5510KW) RS-232/485 (ADAM-5510EKW)	
COM2	RS-485	RS-485(Modbus)	RS-485	RS-485	RS-485	RS-485	
COM3 (Programming)	RS-232 (TX, RX, GND)	RS-232 (TX, RX, GND)	RS-232 (TX, RX, GND)	RS-232 (TX, RX, GND)	RS-232 (TX, RX, GND)	RS-232 (TX, RX, GND)	
COM4	-	-	RS-232/485	RS-232/485	RS-232/485	RS-232/485	
I/O Slots	4	4	4/8	4/8	8	4/8	
Power Consumption	1.0 W	1.0 W	1.2 W	2.5 W	2.5 W	1.2 W	
Isolation							
Communication	*2500 V _{DC}	*2500 V _{DC}	*2500 V _{DC}	*2500 V _{DC}	*2500 V _{DC}	*2500 V _{DC}	*COM2 only
Communication Power	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	
I/O Module	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	
Diagnosis							
Status Display	Power, CPU, Communication, Battery	Power, CPU, Communication, Battery	Power, CPU, Communication, Battery	Power, CPU, Communication, Battery	Power, CPU, Communication, Battery	Power, CPU, Communication, Battery	
Self Test	Yes, while ON	Yes, while ON	Yes, while ON	Yes, While ON	Yes, While ON	Yes, while ON	
Software Diagnosis	Yes	Yes	Yes	Yes	Yes	Yes	
Communication							
Network	RS-232/485	RS-232/485	RS-232/485	Ethernet (RJ-45)	Ethernet (RJ-45)	RS-232/485	
Speeds (bps)	9600, 38400, 57600 and 115.2 k	9600, 38400, 57600 and 115.2 k	9600, 38400, 57600 and 115.2 k	10/100 Mbps	10/100 Mbps	9600, 38400, 57600 and 115.2 k	
Max. Distance	4000 feet (1.2 km)	4000 feet (1.2 km)	4000 feet (1.2 km)	150 m	150 m	4000 feet (1.2 km)	
Data Format	N, 8, 1, 1	N, 8, 1, 1	N, 8, 1, 1	-	-	N, 8, 1, 1	
Max. Nodes	64	32	32	256 for Ethernet, 32 for RS-485	32	32	
Protocol	User defined	Modbus/RTU	User Defined Modbus/RTU	User Defined Modbus/RTU Modbus/TCP	Modbus/RTU, Modbus/TCP	Modbus/RTU	
Remote I/O		-	Modbus Device	Modbus Device	Modbus Device	Modbus Device	
Power Requirements							
Power Requirements	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}
Environment							
Operating Temperature	-10 ~ 70° C (14 ~ 158° F)	-10 ~ 70° C (14 ~ 158° F)	-10 ~ 70° C (14 ~ 158° F)	-10 ~ 70° C (14 ~ 158° F)	-10 ~ 70° C (14 ~ 158° F)	-10 ~ 70° C (14 ~ 158° F)	
Storage Temperature	-25 ~ 85° C (-13 ~ 185° F)	-25 ~ 85° C (-13 ~ 185° F)	-25 ~ 85° C (-13 ~ 185° F)	-25 ~ 85° C (-13 ~ 185° F)	-25 ~ 85° C (-13 ~ 185° F)	-25 ~ 85° C (-13 ~ 185° F)	
Humidity	5 ~ 95%	5 ~ 95%	5 ~ 95%	5 ~ 95%	5 ~ 95%	5 ~ 95%	
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ADAM-5000 Distributed Controller Selection Guide

System	ADAM-5000/TCP	ADAM-5000/485	ADAM-5000E	Remarks
CPU	RISC CPU	80188	80188	
RAM	4 MB	-	-	
Flash ROM (user's AP)	512 KB	-	-	
Flash Memory (data storage)	-	-	-	
Flash Disk	-	-	-	
OS	real-time OS	-	-	
Timer BIOS	-	-	-	
Real-time Clock	-	-	-	
Watch Dog Timer	Yes	Yes	Yes	
COM1	RS-485 (Modbus)	RS-485	RS-485	
COM2	-	RS-485	RS-485	
COM3 (Programming)		TX, RX, GND	TX, RX, GND	
I/O Slots	8	4	8	
Power Consumption	5.0 W	1.0 W	4.0 W	
Isolation				
Communication	*1500 V _{DC}	2500 V _{DC}	3000 V _{DC}	*Ethernet communication port
Communication Power	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	
I/O Module	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	
Diagnosis				
Status Display	Power, CPU, Error Diagnostic, Communication	Power, CPU, Communication	Power, CPU, Communication	
Self Test	Yes, while ON	Yes, while ON	Yes, while ON	
Software Diagnosis	Yes	Yes	Yes	
Communication				
Network	Ethernet	RS-232/485 (2-wire)	RS-232/485 (2-wire)	
Speeds (bps)	10 M, 100 M	1200, 2400, 4800, 9600, 192 K, 38.4 K, 57.6 K, 115.2 K	1200, 2400, 4800, 9600, 19.2 K, 38.4 K, 57.6 K, 115.2 K	
Max. Distance	100 m without repeater	4000 feet (1.2 km)	4000 feet (1.2 km)	
Data Format	TCP/IP	N, 8, 1, 1	N, 8, 1, 1	
Max. Nodes	Depend on IP address	256	256	
Protocol	Modbus/TCP, Modbus/RTU	ADAM ASCII	ADAM ASCII	
Remote I/O	32 nodes Modbus devices	-	-	
Power Requirements				
Power Requirements	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	+10 ~ +30 V _{DC}	"
Environment				
Operating Temperature	-10 ~ 70° C (14 ~ 158° F)	-10 ~ 70° C (14 ~ 158° F)	-10 ~ 70° C (14 ~ 158° F)	
Storage Temperature	-25 ~ 85° C (-13 ~ 185° F)	-25 ~ 85° C (-13 ~ 185° F)	-25 ~ 85° C (-13 ~ 185° F)	
Humidity	5 ~ 95%	5 ~ 95%	5 ~ 95%	
Page	14-8	14-6	14-4	

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-5000 Series

Module		ADAM-5013	ADAM-5017	ADAM-5017H	ADAM-5017UH	ADAM-5018	ADAM-5024	ADAM-5050	ADAM-5051	ADAM-5051D	ADAM-5051S
Analog Input	Resolution	16 bit	16 bit	12 bit	12 bit	16 bit	-	-	-	-	-
	Input Channel	3	8	8	8	7	-	-	-	-	-
	Sampling Rate	10	10	8K	200K	10	-	-	-	-	-
	Voltage Input	-	±150 mV ±500 mV ±1 V ±5 V ±10 V	±250 mV ±500 mV ±1 V ±5 V ±10 V	±10 V 0 ~ 10 V 0 ~ 20 mV	±15 mV ±50 mV ±100 mV ±500 mV ±1 V ±2.5 V	-	-	-	-	-
	Current Input	-	±20 mA*	±20 mA*	4 ~ 20 mA	±20 mA*	-	-	-	-	-
	Direct Sensor Input	Pt or Ni RTD	-	-	-	J, K, T, E, R, S, B	-	-	-	-	-
Analog Output	Resolution	-	-	-	-	-	12 bit	-	-	-	-
	Voltage Output	-	-	-	-	-	0-10 V	-	-	-	-
	Current Output	-	-	-	-	-	0-20 mA 4-20 mA	-	-	-	-
Digital Input and Digital Output	Digital Input Channels	-	-	-	-	-	-	16 DIO (bit-wise selectable)	16	16 W/LED	16 W/LED
	Digital Output Channels	-	-	-	-	-	-		-	-	-
Counter (32-bit)	Channels	-	-	-	-	-	-	-	-	-	-
	Input Frequency	-	-	-	-	-	-	-	-	-	-
	Mode	-	-	-	-	-	-	-	-	-	-
COMM	Channels	-	-	-	-	-	-	-	-	-	-
	Type	-	-	-	-	-	-	-	-	-	-
Isolation		3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	3000 V _{DC}	-	-	-	2500 V _{DC}
Page		14-22	14-22	14-22	14-23	14-23	14-23	14-24	14-24	14-24	14-24

*: Requires a 125 Ω shunt resistor

I/O Modules Selection Guide

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-5052	ADAM-5055S	ADAM-5056	ADAM-5056D	ADAM-5056S /5056SO	ADAM-5060	ADAM-5068	ADAM-5069	ADAM-5080	ADAM-5090
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	8 w/LED	-	-	-	-	-	-	-	-
8	8 w/LED	16	16 w/LED	16 w/LED	6 relay (2 form A / 4 form C)	8 relay (8 form A)	8 power relay (form A)	-	-
-	-	-	-	-	-	-	-	4	-
-	-	-	-	-	-	-	-	5000 Hz (max)	-
-	-	-	-	-	-	-	-	Frequency, Up/Down Counter, Bi-direction Counter	-
-	-	-	-	-	-	-	-	-	4
-	-	-	-	-	-	-	-	-	RS-232
5000 V _{RMS}	2500 V _{DC}	-	-	2500 V _{DC}	-	-	4000 V _{RMS}	1000 V _{RMS}	-
14-25	14-25	14-25	14-25	14-26	14-26	14-26	14-26	14-27	14-27

ADAM-5013 ADAM-5017 ADAM-5017H

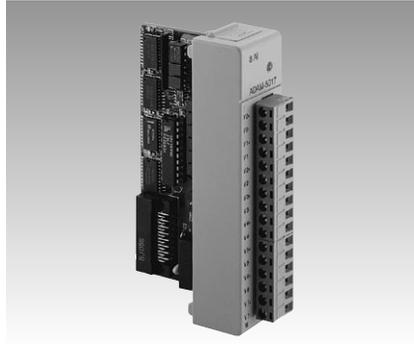
3-channel RTD Input Module

8-channel Analog Input Module

8-channel High-Speed Analog Input Module



ADAM-5013



ADAM-5017



ADAM-5017H



Specifications

- **Channels** 3
- **Effective Resolution** 16-bit
- **Input Type** PT100 or Ni RTD
- **RTD Types and Temperature Ranges**
 - IEC RTD 100 ohms**
 - Pt -100° C to +100° C a=0.00385
 - Pt 0° C to +100° C a=0.00385
 - Pt 0° C to +200° C a=0.00385
 - Pt 0° C to +600° C a=0.00385
 - JIS RTD 100 ohms**
 - Pt -100° C to +100° C a=0.00392
 - Pt 0° C to +100° C a=0.00392
 - Pt 0° C to +200° C a=0.00392
 - Pt 0° C to +600° C a=0.00392
 - Ni RTD**
 - Ni -80° C to +100° C
 - Ni 0° C to +100° C
- **Isolation Voltage** 3000 V_{DC}
- **Sampling Rate** 10 samples/sec. (total)
- **Input Impedance** 2 MΩ
- **Bandwidth** 13.1 Hz @ 50 Hz, 15.72 Hz @ 60 Hz
- **Input Connections** 2, 3 or 4 wire
- **Accuracy** ±0.1% or better
- **Zero Drift** ±0.015° C/° C
- **Span Drift** ±0.01° C/° C
- **CMR @ 50/60 Hz** 150 dB
- **NMR @ 50/60 Hz** 100 dB
- **Power Consumption** 0.85 W (typical); 1.1 W (max.)

Ordering Information

- **ADAM-5013-A1** 3-channel RTD Input Module

Specifications

- **Channels** 8 differential
- **Effective Resolution** 16-bit
- **Input Type** mV, V, mA
- **Input Range** ±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V; ±20 mA
- **Isolation Voltage** 3000 V_{DC}
- **Fault and Overvoltage Protection** Withstands overvoltage up to ±35 V
- **Sampling Rate** 10 samples/sec. (total)
- **Input Impedance** 2 MΩ
- **Bandwidth** 13.1 Hz @ 50 Hz, 15.72 Hz @ 60 Hz
- **Accuracy** ±0.1% or better
- **Zero Drift** ±1.5 mV/° C
- **Span Drift** ±25 PPM/° C
- **CMR @ 50/60 Hz** 92 dB min.
- **Power Consumption** 1 W (typical); 1.25 W (max.)
- **Analog Signal Range** ±15 V max.

Note: The voltage difference between any two pins must not exceed ±15 V

Ordering Information

- **ADAM-5017** 8-channel Analog Input Module - mV, V, mA

Specifications

- **Channels** 8 differential
- **Effective Resolution** 12-bit plus sign bit
- **Input Type** mV, V, mA
- **Input Range** ±250 mV, ±500 mV, ±1 V, ±5 V, ±10 V, 0 ~ +500 mV, 0 ~ +1 V, 0 ~ +5 V, 0 ~ +10 V, 0 ~ 20 mA, 4 ~ 20 mA
- **Isolation Voltage** 3000 V_{DC}
- **Sampling Rate** Depends on base unit
 - ADAM-5000/485 & 5000E:** 100 samples/sec
 - ADAM-5510:** 8000 samples/sec max.: one ADAM-5017H installed
 - ADAM-5510KW:** Up to 100 samples/sec
 - ADAM-5511:** Up to 100 samples/sec
 - ADAM-5000/TCP:** 1000 samples/sec max.: depending on the performance of client server or controller
- **Input Impedance** 20 MΩ (voltage inputs) 125 Ω (current inputs)
- **Bandwidth** 1 kHz
- **Signal Input Bandwidth** 1 kHz for both voltage and current inputs
- **Accuracy** ±0.1% or better
- **CMR @ 50/60 Hz** 92 dB min
- **Power Consumption** 1.75 W (typical); 2.2 W (max)
- **Distinct Range Settings Allowed on Each Channel**

Note: The voltage difference between any two pins must not exceed ±15 V

Ordering Information

- **ADAM-5017H** 8-channel High-Speed Analog Input Module - mV, V, mA

ADAM-5017UH ADAM-5018 ADAM-5024

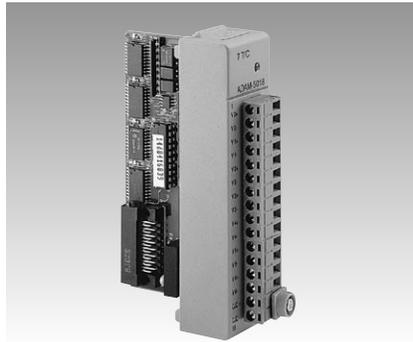
8-channel Ultra High Speed Analog Input Module

7-channel Thermocouple Input Module

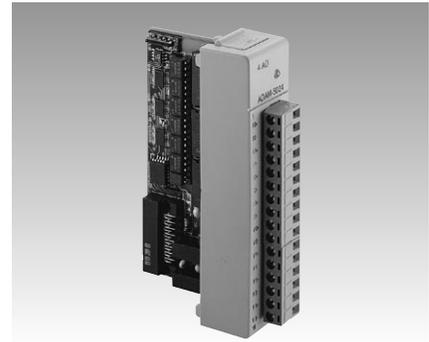
4-channel Analog Output Module



ADAM-5017UH



ADAM-5018



ADAM-5024



Specifications

Analog Input

- **Channels** 8 differential
- **Resolution** 12-bit
- **Integral Non-linear** +/-1 LSB
- **Differential Non-linear** +/-1 LSB
- **Low or high pass filter** Configured by User
- **Input Type** mV, V, mA
- **Input Range** ±10V, +0~10V, 0~20mV, +4~20mA
- **Isolation Voltage** 3000 V_{DC}
- **Sampling Rate** 200K (single channel)
35K (8 channel)
- **Input Impedance** 20 MΩ (voltage inputs)
120 Ω (current inputs)
- **Bandwidth** 200 kHz
- **Signal Input Bandwidth** 200 kHz for both voltage and current inputs
- **Accuracy** ±0.1% or better
- **CMR @ 50/60 Hz** 92 dB min
- **Power Consumption** 1.75 W (typical)
2.2 W (max)
- **Distinct Range Settings Allowed on Each Channel**

Note: The voltage difference between any two pins must not exceed 15 V

Ordering Information

- **ADAM-5017UH** 8-channel Ultra High Speed Analog Input Module

Specifications

- **Channels** 7 differential
- **Effective Resolution** 16-bit
- **Input Type** mV, V, mA, thermocouple
- **Input Range** ±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V, ±20 mA
- **T/C Type and Temperature Range**

J	0°	~	760° C
K	0°	~	1370° C
T	-100°	~	400° C
E	0°	~	1000° C
R	500°	~	1750° C
S	500°	~	1750° C
B	500°	~	1800° C
- **Isolation Voltage** 3000 V_{DC}
- **Fault and Overvoltage Protection** Withstands overvoltage Up to ±35 V
- **Sampling Rate** 10 samples/sec. (total)
- **Input Impedance** 2 MΩ
- **Bandwidth** 13.1 Hz @ 50 Hz, 15.72 Hz @ 60 Hz
- **Accuracy** ±0.1% or better
- **Zero Drift** ±0.3 mV/° C
- **Span Drift** ±25 PPM/° C
- **CMR @ 50/60 Hz** 92 dB min
- **Power Consumption** 0.5 W (typical);
0.63 W (max.)

Ordering Information

- **ADAM-5018** 7-channel Thermocouple Input Module - mV, V, mA, thermocouple

Specifications

- **Channels** 4
- **Effective Resolution** 12-bit
- **Output Type** mA, V
- **Output Range** 0 ~ 20 mA, 4 ~ 20 mA, 0 ~ 10 V
- **Isolation Voltage** 3000 V_{DC}
- **Accuracy** ±0.1% of FSR for current output
±0.2% of FSR for voltage output
- **Resolution** ±0.015% of FSR
- **Zero Drift** Voltage output: ±30 mV/° C
Current output: ±0.2 mA/° C
- **Span Temperature Coefficient** ±25 PPM/° C
- **Programmable Output Slope** 0.125 ~ 128.0 mA/sec.;
0.0625 ~ 64.0 V/sec.
- **Current Load Resistor** 0 ~ 500 Ω (source)
- **Power Consumption** 1.4 W (typical);
2.9 W (max.)

Ordering Information

- **ADAM-5024** 4-channel Analog Output Module - mA, V

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-5050 ADAM-5051 ADAM-5051D ADAM-5051S

16-channel Universal Digital I/O Module

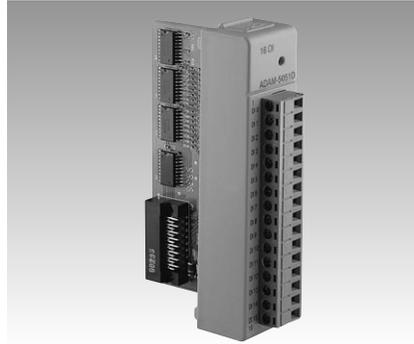
16-channel Digital Input Module

16-channel Digital Input w/ LED Module

16-channel Isolated Digital Input w/ LED Module



ADAM-5050



ADAM-5051
ADAM-5051D



ADAM-5051S



Specifications

- **Channels** 16
- **I/O Type** Bit-wise selectable by DIP switch
- **Digital Input** Dry Contact:
Logic level 0: close to GND
Logic level 1: open
Wet Contact:
Logic level 0: +2 V max.
Logic level 1: +4 V to +30 V
- **Digital Output** Open collector to 30 V, 100 mA and 450 mW max. load
- **Power Consumption** 0.35 W (typical); 1.2 W (max.)

Ordering Information

- **ADAM-5050** 16-channel Universal Digital Input/Output Module

Specifications

- **Channels** 16
- **Input Voltage** 30 V_{max}
- **Logic Level** Logic level 0: +1 V_{max}
Logic level 1: +3.5 V to +30 V
- **Circuit Type** Pull-up current: 0.5 mA (Source Type)
- **Power Consumption** ADAM-5051: 0.4 W (typical); 0.53 W (max.)
ADAM-5051D: 0.5 W (typical); 0.84 W (max.)
- **LED Indicators: (ADAM-5051D)**
On: Input logic level 1
Input floating
Off: Input logic level 0
- **Certifications** CE
FM (ADAM-5051 only)

Ordering Information

- **ADAM-5051** 16-channel Digital Input Module
- **ADAM-5051D** 16-channel Digital Input W/LED Module

Specifications

- **Channels** 16
- **Input Voltage** 50 V_{max}
- **Input Voltage level** Logic level 0: +3 V_{max}
Logic level 1: +10 to 50 V
- **Optical Isolation** 2500 V_{DC}
- **Over Voltage Protection** 70 V_{DC}
- **Power Consumption** 0.8 W (typical)
- **LED Indicators** On: Active
Off: Non-active

Ordering Information

- **ADAM-5051S** 16-channel Isolated Digital Input W/LED Module

ADAM-5052 ADAM-5055S ADAM-5056 ADAM-5056D

8-channel Isolated Digital Input Module

16-channel Isolated Digital I/O w/ LED Module

16-channel Digital Output Module

16-channel Digital Output w/ LED Module



ADAM-5052

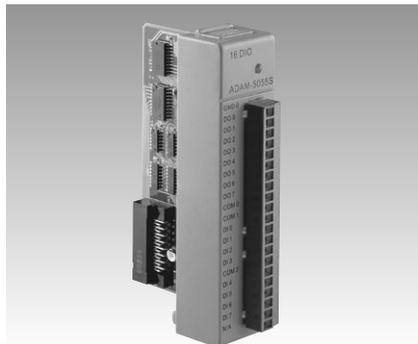


Specifications

- **Channels** 8
- **Digital Input Level** Logic level 0: +1 V_{max}
Logic level 1: +3.5 V to +30 V
- **Isolation Voltage** 5000 V_{RMS}
- **Input Resistance** 3 kΩ / 0.5 W
- **Power Consumption** 0.21 W (typical);
0.27 W (max)

Ordering Information

- **ADAM-5052** 8-channel Isolated Digital Input w/LED Module



ADAM-5055S



Specifications

- **Channels** 16
- **I/O Type** 8 DO & 8 DI
- **Digital Output** Open collector to 40 V
200 mA max. load
- **Digital Input** Dry contact:
Logic level 0: open
Logic level 1: close to GND
Wet contact: Logic level 0: +3 V max.
Logic level 1: +10 to 50 V
- **Optical Isolation** 2500 V_{DC}
- **Over Voltage Protection** 70 V_{DC}
- **Power Consumption** 0.68 W (Typical)
- **LED Indicators** On: Active
Off: Non-active

Ordering Information

- **ADAM-5055S** 16-channel Isolated Digital I/O Module w/LED



ADAM-5056
ADAM-5056D



Specifications

- **Channels** 16
- **Operating Voltage** 30 V_{max}
- **Digital Output** Open collector to 30 V,
100 mA max. load
- **Power Consumption** ADAM-5056: 0.25 W (typical); 0.53 W (max.)
ADAM-5056D: 0.5 W (typical); 0.84 W (max.)
- **Power Dissipation** 450 mΩ for each channel
- **LED Indicators: (ADAM-5056D)** On: output logic level "1"
Off: output logic level "0"
- **Output Status Hold Function (ADAM-5056D)**
- **Certifications** CE
FM (ADAM-5056 only)

Ordering Information

- **ADAM-5056** 16-channel Digital Output Module
- **ADAM-5056D** 16-channel Digital Output w/LED Module

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-5056S/ADAM-5056SO

ADAM-5060

ADAM-5068

ADAM-5069

16-ch Sink / Source Type Isolated Digital Output Module

6-ch Relay Output Module

8-ch Relay Output Module

8-ch Power Relay Output w/ LED Module



ADAM-5056S
ADAM-5056SO



Specifications

- **Channels** 16
- **Digital Output** Open collector to 40 V, 200 mA max. load
5056S (sink)
5056SO (source)
- **Optical Isolation** 2500 V_{DC}
- **Over Voltage Protection** 70 V_{DC}
- **Power Consumption** 0.6 W (typical)
- **LED Indicator** On: active
Off: non-active
- **Certifications** CE
FCC (5056SO only)

Ordering Information

- **ADAM-5056S** 16-channel Sink Type Isolated Digital Output w/LED Module
- **ADAM-5056SO** 16-channel Source Type Isolated Digital Output w/LED Module



ADAM-5060
ADAM-5068



Specifications

- **Channels** ADAM-5060: 6-channel relay, two from A and four from C
ADAM-5068: 8, from A
- **Contact Rating** ADAM-5060:
AC: 125 V @ 0.6 A;
250 V @ 0.3 A
DC: 30 V @ 2 A; 110 V @ 0.6 A
ADAM-5068:
AC: 120 V @ 0.5 A
DC: 30 V @ 1 A
- **Breakdown Voltage** 500 V_{AC} (50/60 Hz)
- **Relay On Time (typical)** ADAM-5060: 3 ms
ADAM-5068: 7 ms
- **Relay Off Time (typical)** ADAM-5060: 1 ms
ADAM-5068: 3 ms
- **Total Switching Time** 10 ms
- **Insulation Resistance** 1000 M Ω minimum at 500 V_{DC}
- **Power Consumption** ADAM-5060: 0.7 W (typical); 1.8 W (max.)
ADAM-5068: 0.25 W (typical); 1.8 W (max.)
- **Certifications** CE
FM (ADAM-5060 only)

Ordering Information

- **ADAM-5060** 6-channel Relay Output Module - two form A, four form C
- **ADAM-5068** 8-channel Relay Output Module - eight form A



NEW

ADAM-5069

Specifications

- **Channels** 8, from A
- **Contact Rating** AC: 250 V @ 5 A
DC: 30 V @ 5 A
- **Breakdown Voltage** 750 V_{AC} (50/60 Hz)
- **Relay On Time** 5 ms
- **Relay Off Time** 5.6 ms
- **Insulation Resistance** 1000 M Ω @ 500 V_{DC}
- **LED Indicator** On: Active
Off: Non-active
- **Power Consumption** 0.25 W (typical);
2.2 W (max.)

Ordering Information

- **ADAM-5069** 8-channel Power Relay Output w/ LED Module

ADAM-5080 ADAM-5090

4-channel Counter/Frequency Module

4-port RS-232 Module



ADAM-5080



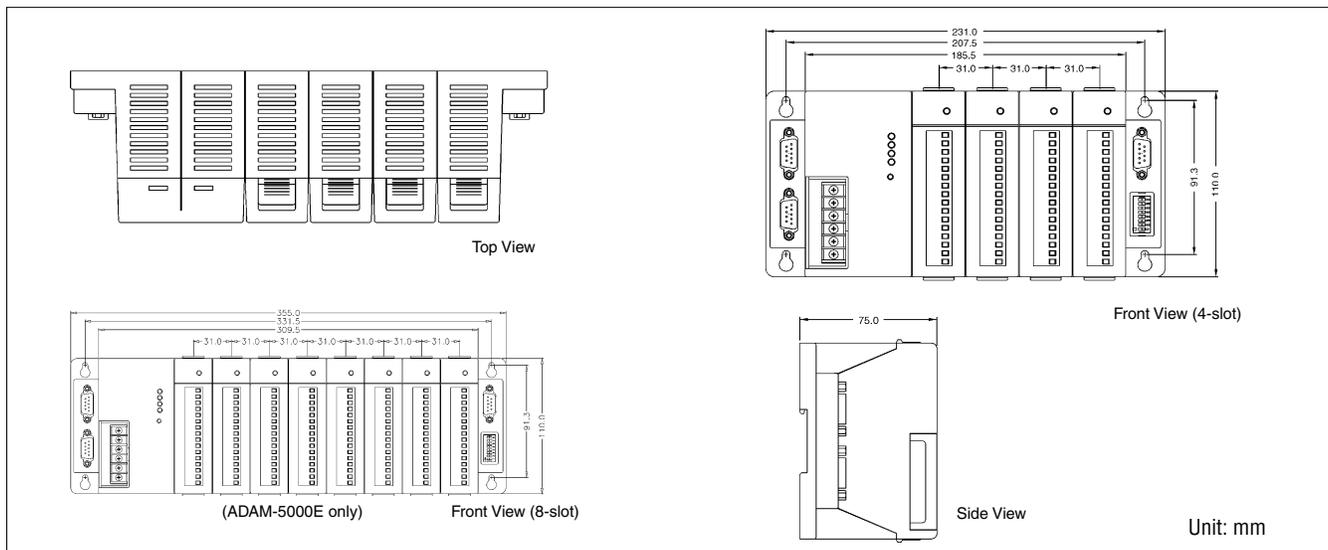
Specifications

- **Channels** 4
- **Maximum Count** 4,294,967,285 (32 bit)
- **Input Frequency** 0.3 ~ 1000 Hz max. (frequency mode)
5000 Hz max. (counter mode)
- **Input Level** Isolated or TTL level
- **Minimum Pulse Width** 500 ms (frequency mode)
100 ms (counter mode)
- **Minimum Input Current** 2 mA (isolated)
- **Isolation Input Level** Logic level 0: +1 V_{max}
Logic level 1: +3.5 V to 30 V
- **TTL Input Level** Logic level 0: 0 V to 0.8 V
Logic level 1: 2.3 V to 5 V
- **Isolation voltage** 1000 V_{RMS}
- **Mode** Counter (up/down, bi-direction) frequency
- **Counter Aux. Function** Initial preset, hi-low alarm setting, alarm digital output mapping, overflag
- **Programmable Digital Noise Filter** 8 ~ 65000 ms
- **Power Consumption** 1.3 W (typical); 1.5 W (max.)

Ordering Information

- **ADAM-5080** 4-channel Counter/Frequency Module

Dimensions



ADAM-5090



Specifications

- **Ports** 4 serial ports
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** none, even, odd
- **UARTs** 1 x 16C954 (128-byte FIFO)
- **Speed** 50 ~ 115.2 kbps
- **Data Signals** T x D, R x D, RTS, CTS, DTR, DSR, DCD, RI, GND
- **Connector** RJ-45
- **LED Display** TX, RX
- **Power Consumption** 0.6 W (max.)
- **For ADAM-5510, ADAM-5511 only**

Ordering Information

- **ADAM-5090** 4-port RS-232 Module
(only for ADAM-5510/5510M & ADAM-5511)

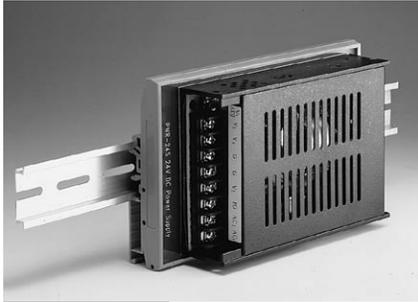
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- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

PWR-242 PWR-243 PWR-244

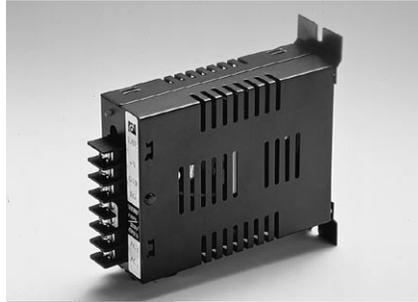
Switching Power Supply for DIN-rail Mounting

Switching Power Supply for Panel Mounting

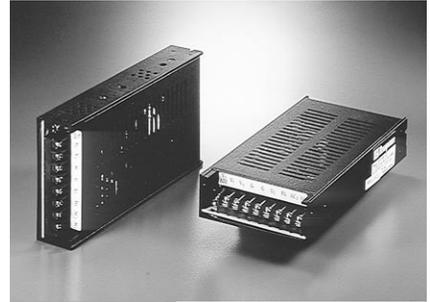
Switching Power Supply for Panel Mounting



PWR-242



PWR-243



PWR-244



Specifications

Input

- **Input Voltage** 90 ~ 264 V_{AC} wide input range
- **Input Frequency** 47 ~ 63 Hz
- **Input Current** 1.2 A max.
- **Short Protection**

Output

- **Output Voltage** +24 V_{DC} ±10%
- **Output Current** 2.1 A max.
- **Overload Protection**

General

- **Dimensions (LxWxH)** 181 x 113 x 60 mm (7.01" x 4.43" x 2.35")
- **Operating Temperature** 0 ~ 50°C (32 ~ 122°F)

Ordering Information

- **PWR-242** Switching Power Supply for DIN-rail Mounting

Specifications

Input

- **Input Voltage** 85 ~ 132 V_{AC} or 170 ~ 264 V_{AC}, switchable
- **Input Frequency** 47 ~ 63 Hz
- **Input Current** 1.4 A max.
- **Short Protection**

Output

- **Output Voltage** +24 V_{DC} ±10%
- **Output Current** 3 A max.
- **Overload Protection**

General

- **Dimensions (LxWxH)** 128 x 97 x 40 mm (5" x 3.8" x 1.6")
- **Operating Temperature:** 0 ~ 50°C (32 ~ 122°F)

Ordering Information

- **PWR-243** Switching Power Supply for Panel Mounting

Specifications

Input

- **Input Voltage** 100~240 V_{AC}
- **Input Frequency** 47 ~ 63 Hz
- **Inrush Current (cold)** 25 A/110 V_{AC} 50 A/220 V_{AC}
- **Short Protection**

Output

- **Output Voltage** +24 V_{DC} ±10%
- **Output Current** 4.2 A max.
- **Overload Protection**

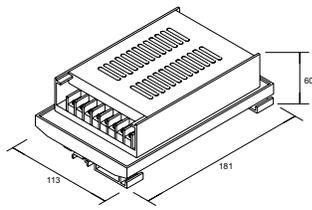
General

- **Dimensions (LxWxH)** 198 x 99 x 35 mm (7.80" x 3.90" x 1.38")
- **Operating Temperature** 0 ~ 50°C (32 ~ 122°F)

Ordering Information

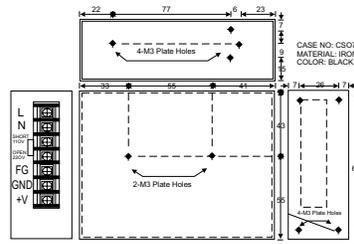
- **PWR-244** Switching Power Supply for Panel Mounting

Dimensions



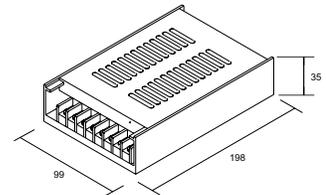
Unit: mm

Dimensions



Unit: mm

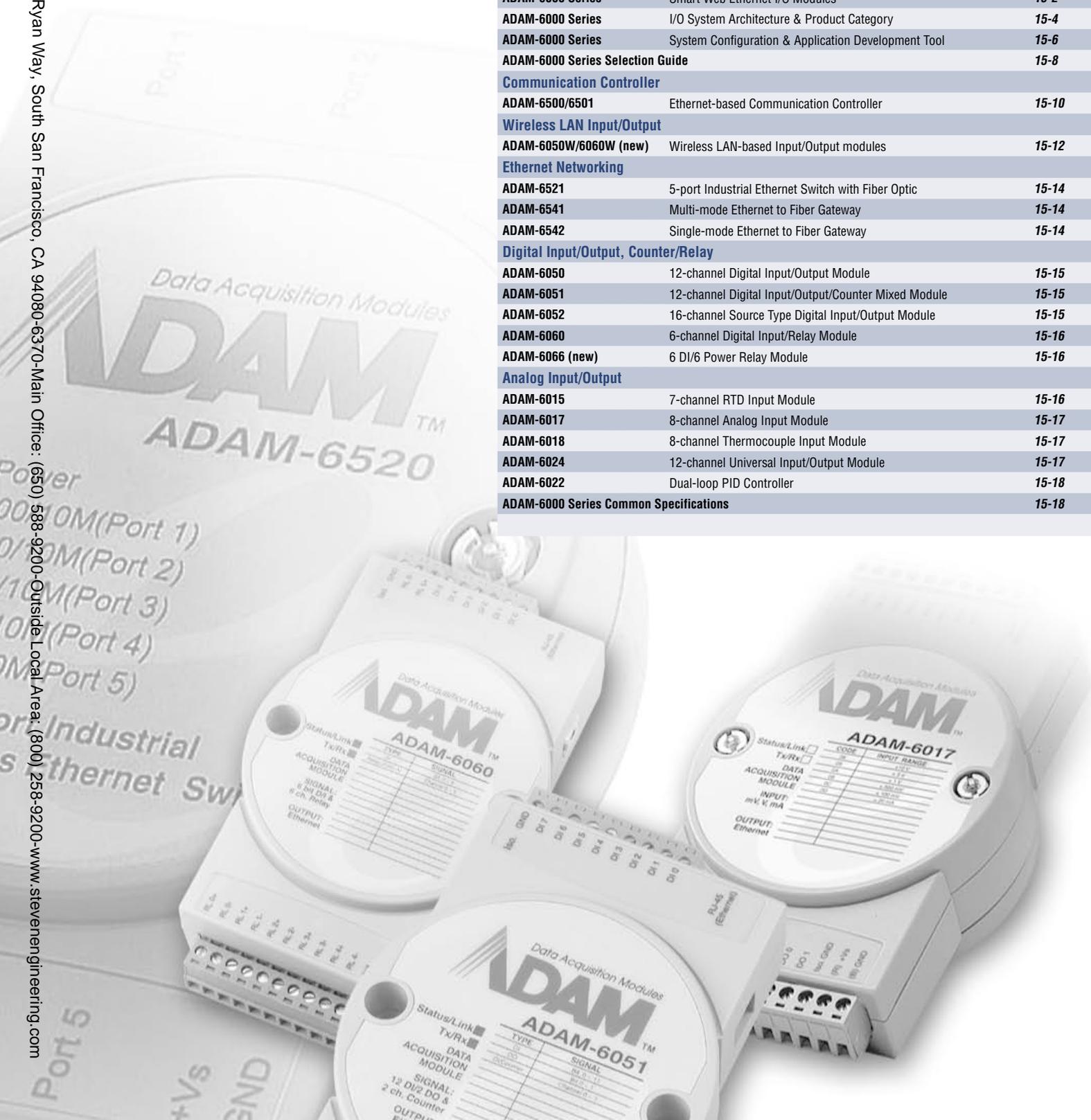
Dimensions



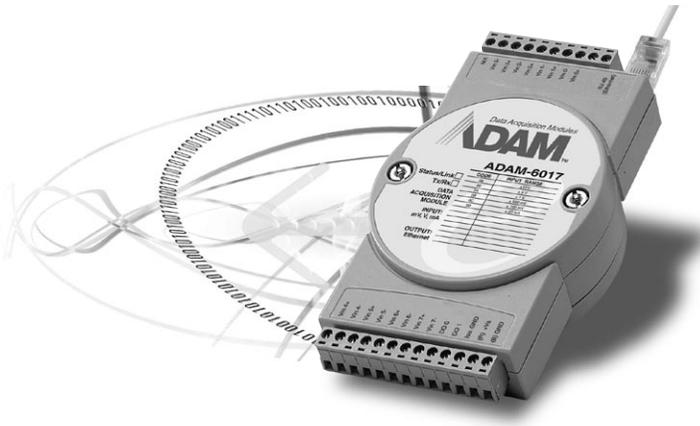
Unit: mm

Smart Web Ethernet I/O Modules ADAM-6000 Series

ADAM-6000 Series	Smart Web Ethernet I/O Modules	15-2
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Digital Input/Output, Counter/Relay		
ADAM-6050	12-channel Digital Input/Output Module	15-15
ADAM-6051	12-channel Digital Input/Output/Counter Mixed Module	15-15
ADAM-6052	16-channel Source Type Digital Input/Output Module	15-15
ADAM-6060	6-channel Digital Input/Relay Module	15-16
ADAM-6066 (new)	6 DI/6 Power Relay Module	15-16
Analog Input/Output		
ADAM-6015	7-channel RTD Input Module	15-16
ADAM-6017	8-channel Analog Input Module	15-17
ADAM-6018	8-channel Thermocouple Input Module	15-17
ADAM-6024	12-channel Universal Input/Output Module	15-17
ADAM-6022	Dual-loop PID Controller	15-18
ADAM-6000 Series Common Specifications		15-18



ADAM-6000 Series



Features

- Ethernet-based smart I/O
- Mixed I/O in single module
- Pre-built HTTP server and web page in each module for data/ alarm monitoring
- User-defined web pages
- Active alarm/event handling
- Industrial Modbus/TCP protocol
- Remote F/W upgrade through the internet
- Pre-built mathematic functions in analog input modules

The Path to Seamless Integration

The integration of automation and enterprise systems require a change in the architecture of open control systems. From Advantech's point of view, the level of integration between automation and enterprise systems can only be accomplished through Internet technology. The seamless level of integration between plant floor and office floor has not been achieved in all automation systems. However, many enterprises are approaching this goal.

The key element of the seamless integration is a common network architecture, which breaks the traditional layers (enterprise layer, plant information layer, control layer and device level layer, sensor layer) that require a data gateway as an interface to communicate between different layers. Industrial Ethernet is regarded as the most appropriate network to accomplish the task in industrial automation.

It is believed that IP/Ethernet protocols will progress beyond the control layer, into the field layers. Placing remote I/O with IP/Ethernet connections on the shop floor is economical. Advantech believes that over the next five years, Internet protocols over Ethernet will dominate major field connections. The Advantech ADAM-6000 series comprises industrial-grade Ethernet hubs/switches/fiber optics for infrastructure Ethernet solutions in industrial automation environments.

Control Strategy Moves to Field Devices

It is a trend to move I/O to remote locations to reduce wiring costs. Remote I/O is becoming smarter and equipped with control functions as they move from today's 16 to 64 I/O multi-plexers to the smallest remote I/O units, with perhaps as few as four I/O in the near future as shown in Figure 1.

The ADAM-6000 series is designed to realize the concept of the smart I/O blocks. With control algorithms and mathematical functions built in, the ADAM-6000 series is a revolutionary smart I/O module close to the sensor layer in automation.

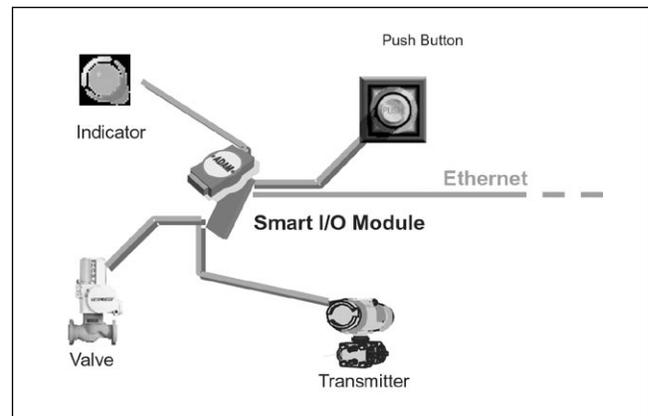


Figure 1: The Future Concept of Smart I/O Blocks

Web-Enabled Technology Becomes Popular on Factory Floors

As Internet technologies and standards have rapidly developed over the past decade, Web-based control methodologies now obviously represent a powerful opportunity for extending efficient network-based management techniques to encompass non-IT real-world assets.

The ADAM-6000 series is equipped with a built-in web server so that its data can be viewed, anytime-anywhere via the Internet. Moreover, ADAM-6000 allows users to configure user-defined web pages to meet the diverse needs in various applications. With this powerful function, the ADAM-6000 series breaks the boundary of traditional multi-layer automation architecture and allows users to access field data directly in real time, which enables seamless integration between the plant floor and the front office.

HMI has provided a friendly operator interface for discrete control and sharply reduced the cost and complexity of automation systems. A web server has been added to most HMI software and a browser allows access to HMI displays from remote locations via the network. The end user is able to see and use an identical HMI from any Internet connected computer anytime, anywhere. ADAM-6000 can be fully integrated with standard HMI software which supports Modbus TCP/IP, including Advantech Studio.

Smart Web Ethernet I/O Modules

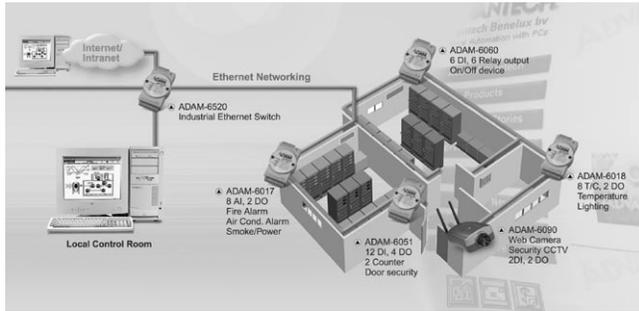


Figure 2: ADAM-6000 Application Architecture

ADAM-6000 Smart Web Ethernet I/O

The integration of automation and enterprise systems and the adoption of an e-manufacturing strategy requires a shift in the manufacturing system architecture. E-manufacturing demands open access to real-time production data from the field. To achieve a seamless level of integration between plant floors and the enterprise level, some fundamental changes have to occur in I/O systems. E-manufacturing means the power of the Internet and I/O systems are used to take things one step further by leveraging Internet technology. These revolutionary I/O systems are web-enabled, smart and are "just-fit" mixed I/O modules. Improvement of the PLC has been gradually moving from logic and I/O in a single chassis, to I/Os in remote locations. The ADAM-6000 series is based on the concept described above.

Why Smart I/O

To meet the requirements of future automation, smart I/O blocks have become popular in I/O system design. To implement the smart I/O blocks concept, I/O systems should be placed as close to the field sensors as possible. Therefore, intelligent control algorithms or basic mathematical functions are essential in I/O systems. ADAM-6000 provides intelligent functions that accelerate future automation development.

Why Web I/O

The Internet is the major technology that allows all levels of an organization to be able to communicate and make the sensor-to-boardroom model a reality. Access can be realized from any device that utilizes a standard web browser, so connections between remote manufacturing plants, production planners, plant managers, and the CEO can be made without having to create a dedicated proprietary network. Since a web page can be installed in the I/O system as a Web I/O, then not only a sensor-to-boardroom model can be practiced, but sensor-to-home, and a sensor-to-mobile display can also be realized. ADAM-6000 Smart Web Ethernet I/O modules provide built-in standard and customizable web pages, which truly demonstrate the power of Web I/O.

Why Mixed I/O

The impact of a tailor-made business model is spreading in automation, and I/O design is no exception. Over the past few years, the average size of PLCs have been reduced by the use of many small and micro PLCs to replace larger PLCs. A compact-sized and application-oriented mixed I/O is the trend. A just-fit mixed I/O module reduces the engineering effort, as well as installation and maintenance cost. It simplifies system architecture and increases system reliability. Obviously the ADAM-6000 series is the perfect choice to meet the specific requirements of many vertical markets.

Common Key Features

1. Industrial Ethernet Networking Based

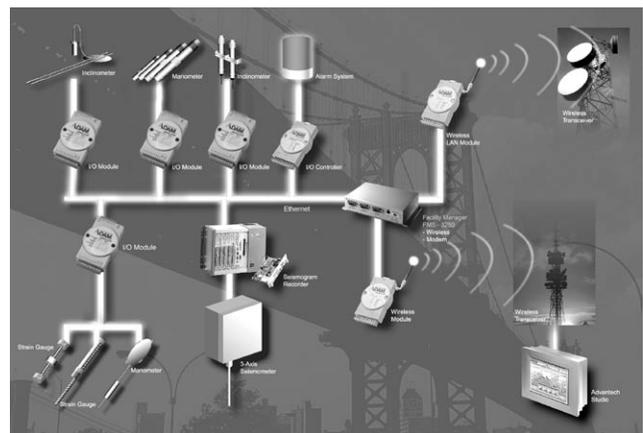
The ADAM-6000 series provides various communication modules such as Ethernet hubs, Ethernet switches and Ethernet switches with fiber ports. ADAM-6000 supports both Modbus/TCP and UDP. Embedded with a 10/100 Mbps Ethernet chip, ADAM-6000 supports industrial Modbus/TCP over TCP/IP networks which are commonly used in most business environments. ADAM-6000 also supports UDP, which allows users to develop their applications and handle events.

2. Smart and Mixed I/O Modules

ADAM-6000 provides built-in mathematical functions, including MAX, MIN, AVG, and others in analog input/output modules. ADAM-6000's mixed I/O modular design optimizes the performance and usage of I/O and minimizes the engineering efforts and maintenance cost.

3. Built-in Standard Web Pages and User-defined Web pages

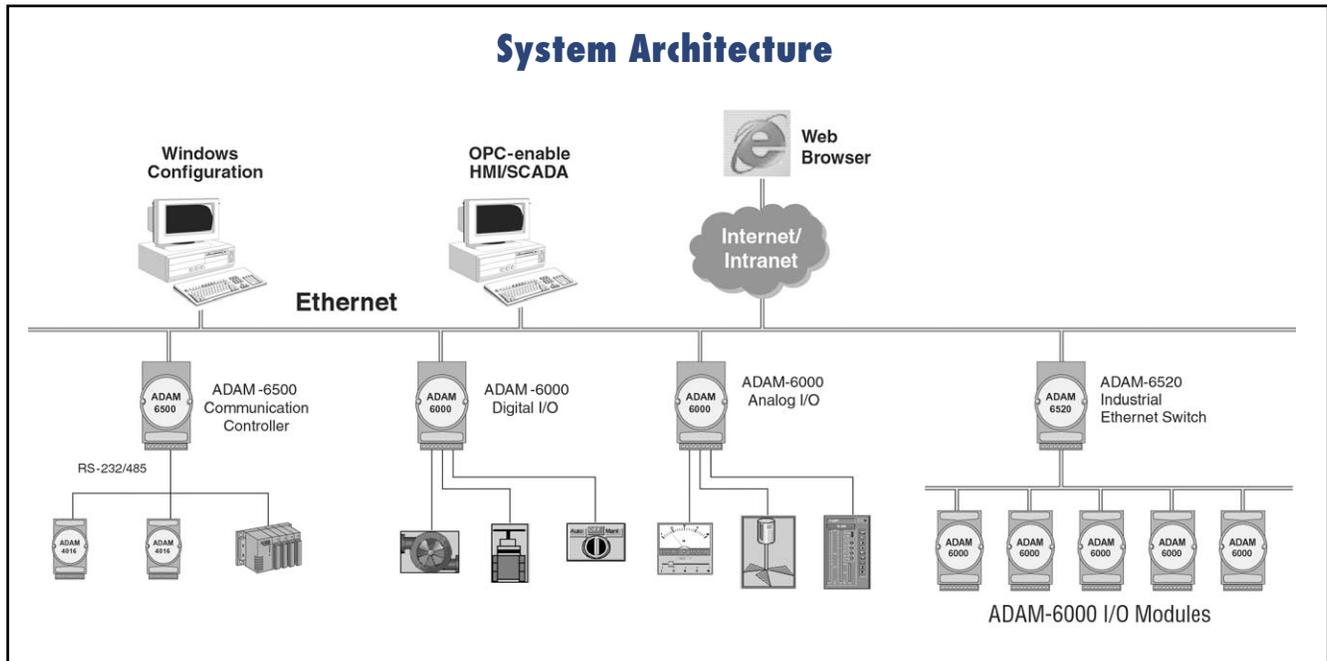
ADAM-6000 adopts web technology to enable remote monitoring via Internet. In addition to standard web pages, ADAM-6000 allows users to use the Java programming language to develop pages to meet their own requirements. ADAM-6000 supports standard HMI software with Modbus/TCP OPC drivers and ActiveX drivers.



ADAM-6000 Application Diagram

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-6000 Series



The ADAM-6000 is a controller independent, distributed I/O solution with modular design for maximum flexibility. Its powerful onboard intelligence makes it well suited to SCADA and stand-alone control applications.

Ethernet-Enabled Networking

The ADAM-6000 series Ethernet-enabled data acquisition and control module works as an Ethernet I/O data processing center. This new product is not only a standard I/O, but also an intelligent system designed with local control functions and a Modbus/TCP standard for users to easily develop various applications over Ethernet.

Analog Input Modules

The ADAM-6000 analog input modules use microprocessor-controlled, high-resolution, 16-bit, sigma-delta A/D converters to acquire sensor signals such as voltage, current, thermocouple or RTD. They translate analog data into two's complement. After the modules receive a request from the host, they send the data in the desired format over the Ethernet network. ADAM-6000 analog input modules protect your equipment from ground loops by providing 3000 V_{DC} isolation. The ADAM-6017 and ADAM-6018 modules feature digital outputs which may also be used for alarms and event counting. The analog input module's two digital output channels are open-collector transistor switches that you can control from the host computer. By switching solid state relays, the output channels can control heaters, pumps and other power equipment. The module can use its digital input channel to sense the state of a remote digital signal.

Programmable Alarm Output

Analog input modules include high and low alarm signals with remotely configurable boundary values. After each A/D conversion, the digital value is compared with the high and low limit. The module can change the state of a digital output depending on the result of this comparison. This function allows it to perform on/off control of a device independently of the host PC.

Independent Channel Input Type Configuration

The ADAM-6015 6-channel RTD module, provides independent channel input type configuration. You can configure PT-100, Pt-1000 or Balco mA for each channel. This independent channel input type configuration gives the ADAM-6015 more flexibility for versatile applications. This functionality saves customers the cost of buying multiple modules and reduces inventory as well.

I/O System Architecture & Product Category

Loop Controller Module

The ADAM-6022 offers two analog inputs, two analog outputs, two digital inputs and four digital outputs in one module. The ADAM-6022 is a two loop PID controller. Each loop may be configured as single loop, dual loop ratio, dual loop cascade or single loop with override. An auto tune function is provided to maximize the effectiveness of the control.

Analog Input Modules

The ADAM-6017/6018 are 16-bit, 8-channel analog input modules that provide programmable input ranges on all channels. These modules are an extremely cost-effective solution for industrial measurement and monitoring applications. 3000 V_{DC} optical isolation between the analog input and the modules protects the modules and peripherals from damage due to high input-line voltages.

The ADAM-6018 also supports thermocouple input in combination with the ADAM-6015 7 channels RTD input module. These two modules can offer a complete solution for temperature measurement applications.

Digital Input and Output Modules

The ADAM-6050 features twelve isolated digital input channels and six isolated digital output channels. The outputs are open-collector transistor switches that you can control from the host computer. You can also use the switches to control solid-state relays, which in turn can control heaters, pumps or other power equipment. The host computer can use the module's digital inputs to determine the state of limit switches, safety switches or remote digital signals. The ADAM-6051 provides twelve isolated digital input channels, two isolated digital output channels and two counter channels. All have 5000 V_{RMS} isolation to prevent ground loop effects and prevent damage from power surges on the input lines.

Digital Input

The ADAM-6050 & ADAM-6051 digital input channels provide three operational modes:

- Normal digital input with inverter setting,
- 1 kHz counter with digital filter,
- Hi-to-Lo, Lo-to-Hi latch.

Each digital input channel can set its operational mode independently.

Digital Output

The ADAM-6050 & ADAM-6051 digital output channels also provide three operational modes: normal digital output, pulse output with continuous or burst count mode, Hi-to-Lo, Lo-to-Hi delay. Each digital output channel can set its operational mode independently as well.

Counter/Frequency

The ADAM-6051 offers two 32-bit counter channels and a built-in programmable timer for frequency measurement.

Programmable Alarm Output

The ADAM-6051 modules include two digital output channels for alarm functions. You can set alarm values (32-bit) into the module from your host computer.

Relay Output Module

The ADAM-6060 offers six isolated digital input channels and six isolated relay channels. The digital input channel accepts 10 ~ 30 V_{DC} input. Just like other ADAM modules, the ADAM-6060 relay module is controlled remotely and stores its configuration data in EEPROM. It provides six Form A relay channels with 24 V_{AC} output. This module is excellent for on/off control or low-power switching applications.

12-channels Universal Input/Output Module

The ADAM-6024 offers six analog inputs, two analog outputs, two digital inputs and two digital outputs. This module is especially cost-effective for applications that require various signal type I/O points. The ADAM-6000 series also offers analog output functions.

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-6000 Series

Software Support

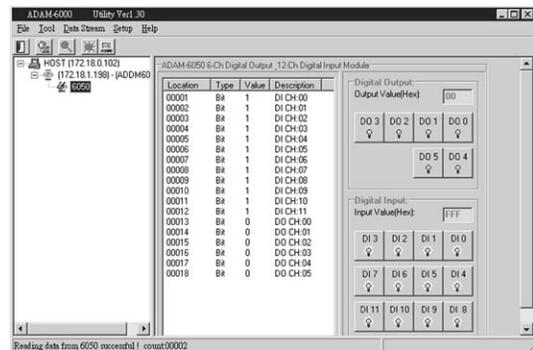
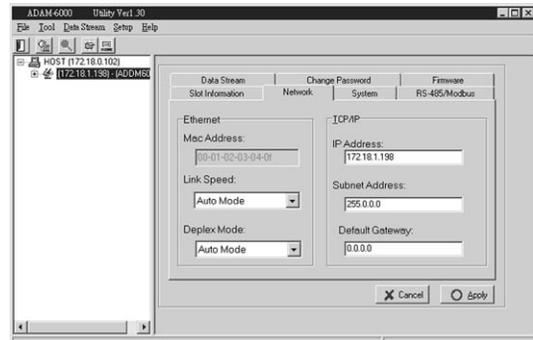
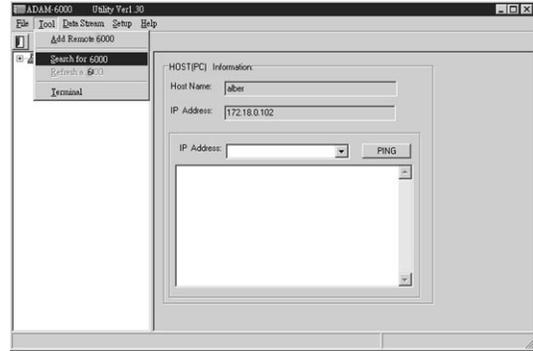
Based on the Modbus/TCP standard, the ADAM-6000 firmware has a built-in Modbus/TCP server. Advantech provides the necessary DLL drivers, OPC Server, and Windows Utility for the ADAM-6000. You can configure this DA&C system via Windows Utility and integrate it with a HMI software package via Modbus/TCP driver or Modbus/TCP OPC Server. Furthermore, you can use the DLL driver to develop your own applications.

Windows Utility

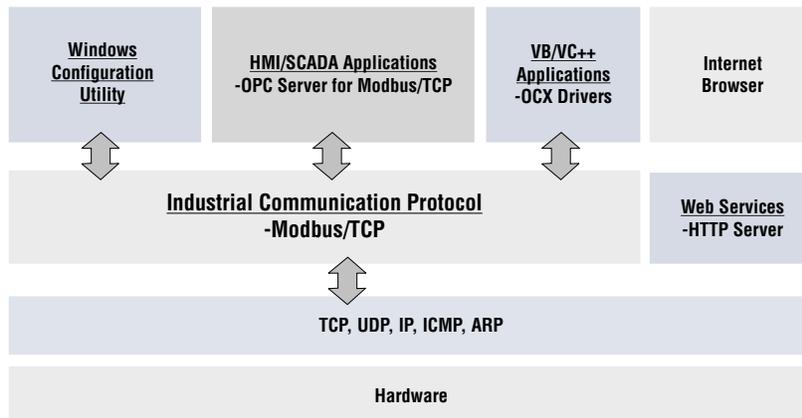
For system configuration, Windows utility offers a friendly operating environment to calibrate I/O modules, monitor current data, set IP addresses etc. As you execute this program, it will automatically search each ADAM-6000 device on the network. There are also some advanced functions, such as the scaling function, which helps users convert various field signals to engineering units, and a latch output function, which forces data or status to create system simulations.

Browser-Based Online Monitoring

Each ADAM-6000 module features an embedded HTTP server for remote monitoring and diagnostics. The ADAM-6000 also pre-builds a default html page in each module for online support for monitoring analog input/output, digital input/output, alarm/event, counter, or real-time values, all done remotely via the Intranet/Internet. Just enter the IP address of the ADAM-6000 module in any standard browser, and you can get dynamic, real-time values of ADAM-6000 I/O modules immediately, without any required programming.



How to Develop Applications



System Configuration & Application Development Tool

Modbus/TCP OPC Server

OPC is a common data exchange tool worldwide. Almost all hardware and software vendors support this standard. Modbus/TCP OPC servers are designed for connecting Modbus devices via the Ethernet. It acquires data from the ADAM-5000/TCP, then links with the OPC client from HMI. In this way, HMI software packages can be used and easily integrated with ADAM Ethernet solutions.

ActiveX Controls

Advantech offers an easy-to-use integration tool, Modbus/TCP ActiveX Controls for ADAM-6000 I/O data access. This can be used for users to develop applications with VB, VC, and other Windows development kits. (Note: The UDP function isn't fully supported in the existing version.)

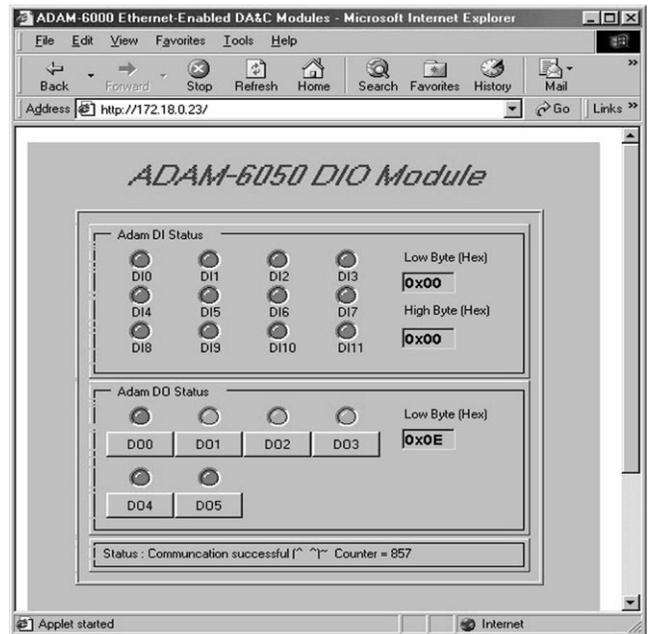
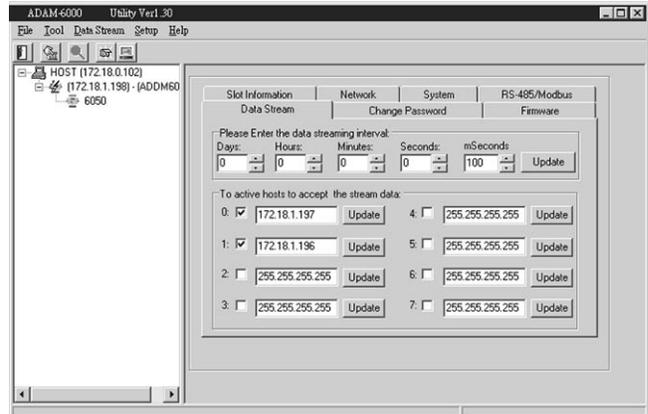
DLL Driver

Advantech also offers another easy-to-use integration tool, the ADAM-6000 DLL driver, for users to develop their own applications with VB, VC, BCB, Delphi, and other Windows development kits.

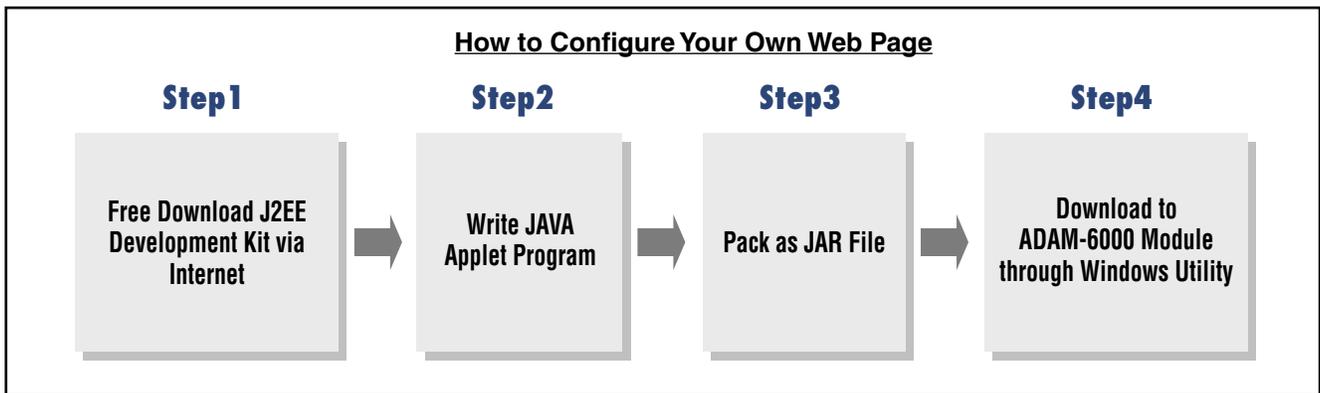
Customizeable Web Page

Since the ADAM-6000 modules have a built-in web server with a default web page, users can monitor and control the I/O status everywhere, through any web browser that supports Java applets. The ADAM-6000 modules data can also be downloaded to a user-defined web page for custom applications. Advantech has provided sample JAVA applets to use as a reference if you want to design your own operator interfaces. These interfaces can be downloaded into ADAM-6000 modules via Windows Utility.

To create an applet web page for ADAM-6000 modules is quick and easy. The following steps show a simple method to configure your own web page in short time.



- 1 Software
- 2 IPCC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS



ADAM-6000 Series

Module	ADAM-6015	ADAM-6017	ADAM-6018	ADAM-6022	ADAM-6024	ADAM-6050	ADAM-6051	ADAM-6052	ADAM-6060	ADAM-6066	ADAM-6050W	ADAM-6060W	
Interface*	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	802.11 b wireless LAN	802.11 b wireless LAN	
Resolution	16 bit	16 bit	16 bit	16 bit for AI 12 bit for AO	16 bit for AI 12 bit for AO	-	-	-	-	-	-	-	
Analog	Input	Input channels	7 differential	8 differential	6 differential	6 diff. AI	-	-	-	-	-	-	
	Sampling Rate	10 samples/sec	10 samples/sec	10 samples/sec	10 samples/sec	10 samples/sec	-	-	-	-	-	-	
	Input Type	PT-50 PT-100 PT-200 PT-1000 Balco 500 NI 50	±150 mV ±500 mV 0 ~ 5 V ±10 V	-	±2.5 V	0 ~ 10 V _{DC}	-	-	-	-	-	-	-
	Current Input		0 ~ 20 mA 4 ~ 20 mA	0 ~ 20 mA 4 ~ 20 mA	0 ~ 20 mA 4 ~ 20 mA	0 ~ 20 mA 4 ~ 20 mA	-	-	-	-	-	-	
	Direct Sensor Input	Pt, Balco and Ni RTD	-	J.K.T.E.R.S.B. Thermocouple	-	-	-	-	-	-	-	-	
	Burn-out Detection	Yes	-	Yes	-	-	-	-	-	-	-	-	
	Channel Independent Configuration	Yes	Yes	Yes	Yes	Yes	-	-	-	-	-	-	
	Math. Functions	Max. Min. Avg.	Max. Min. Avg.	Max. Min. Avg.	-	-	-	-	-	-	-	-	
Analog Output	Output Channels	-	-	-	2 AO	2 AO	-	-	-	-	-	-	
	Voltage Output	-	-	-	4 ~ 20 mA with 15 V _{DC}	4 ~ 20 mA with 15 V _{DC}	-	-	-	-	-	-	
	Drive Current	-	-	-	0 ~ 10 V _{DC} with 30 mA	0 ~ 10 V _{DC} with 30 mA	-	-	-	-	-	-	
Digital Input and Output	Digital Input Channels	-	-	-	2 (Sink)	2 (Sink)	12 (Sink)	12 (Sink)	8 (Source)	6 (Sink)	6 (Sink)	12 (Sink)	6 (Sink)
	Digital Output Channels	-	2 (Sink)	8 (Sink)	2 (Sink)	2 (Sink)	6 (Sink)	2 (Sink)	8 (Source)	6-channel relay	6-channel power relay	6 (Sink)	6-channel relay
	Event Counter	-	-	-	-	-	-	2 (5 kHz)	-	-	-	-	-
	High/Low Alarm Settings	Yes	Yes	Yes	-	-	-	-	-	-	-	-	-
Isolation	2000 V _{RMS}	2000 V _{RMS}	2000 V _{RMS}	2000 V _{RMS}	2000 V _{RMS}	2000 V _{RMS}	2000 V _{RMS}	2000 V _{RMS}	2000 V _{RMS}	2000 V _{RMS}	2000 V _{RMS}	2000 V _{RMS}	
Watchdog Timer	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Remark	-	-	-	Built-in Dual Loop PID Control Algorithm	-	-	-	-	-	-	-	-	
Page	15-16	15-17	15-17	15-18	15-17	15-15	15-15	15-15	15-16	15-16	15-12	15-12	

Selection Guide

Name	ADAM-6500	ADAM-6501	ADAM-6510	ADAM-6520	ADAM-6521
Interface	10Base-T	10/100Base-T	10Base-T	10/100Base-T	10/100Base-T, 100Base-FX
Ethernet Port	1	1	4	5	5
Serial Port	5	2	-	-	-
Speed	10 Mbps	10/100 Mbps	10 Mbps	10/100 Mbps	10/100 Mbps
Surge Protection	1500 V _{RMS}	1500 V _{RMS}	3000 V _{ESD}	3000 V _{ESD}	3000 V _{ESD}
Parity	Even, odd, none, space, mark	Even, odd, none, space, mark			
Data Bit	5, 6, 7, 8	5, 6, 7, 8			
Stop Bit	1, 1.5, 2	1, 1.5, 2			
S/W	Configuration/ port mapping utility	Configuration/ port mapping utility			
Connector	Network: RJ-45 Serial: Sub-D9 & Screw Terminator	Network: RJ-45 Serial: RJ-48 & Screw Terminator	Network: RJ-45	Network: RJ-45 Serial: terminal block	Network: RJ-45 Fiber: SC type
Mounting	DIN-Rail, Wall, Piggyback	DIN-Rail, Wall, Piggyback	DIN-Rail, Wall, Piggyback	DIN-Rail, Wall, Piggyback	DIN-Rail, Wall, Piggyback
Power Requirement	10 - 30 V	10 - 30 V	10 - 30 V	10 - 30 V	10 - 30 V
Power Consumption	4 W	4 W	1 W	2.4 W	3.6 W
Operating Temperature	0 ~ 55° C	0 ~ 55° C	-10 ~ 70° C	-10 ~ 70° C	-10 ~ 65° C
Page	15-10	15-10	15-14	15-14	15-14

1	Software
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12	UNO
13	ADAM-4000
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15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-6500 ADAM-6501

Web-enabled Communication Controller Web-enabled Universal Communication Controller



CE FCC

Features

- Powerful Ethernet-enabled communication controller in a small package
- Built-in Windows CE .NET to run embedded Ethernet applications
- Built-in web server
- Microsoft embedded VC++ development environment supported
- Built-in CompactFlash® slot
- Flash disk for WinCE and user's AP (ADAM-6500: 16 MB, ADAM-6501: 32 MB)
- Built-in real-time clock and watchdog timer
- Offers RS-232 and RS-485 series communication port (ADAM-6500: 3 x RS-232, 2 x RS-485; ADAM-6501: 1 x RS-232, 1 x RS-485)
- Automatic data flow control in RS-485 mode
- Communication speed up to 115.2 kbps
- Easy to mount on a DIN-rail or panel

Introduction

ADAM-6500 and ADAM-6501 are fully functional Ethernet-enabled controllers for industrial automation and control. They provide an ideal environment to develop applications converting RS-232/485 devices/equipment data to the Ethernet/Internet world with minimum effort. Their built-in Windows CE .NET operating system lets users run new programs produced in Microsoft embedded VC++. The Windows environment also includes a web server to allow the designer to develop web-enabled applications.

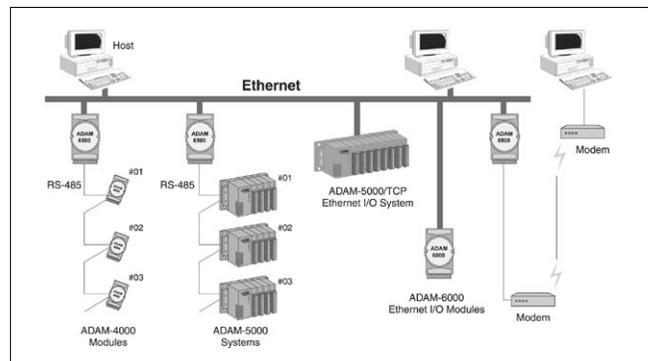
Specifications

- **CPU** ADAM-6500: 32 bit Intel® StrongArm® 206 MHz
ADAM-6501: 32 bit Intel® XScale® 400 MHz
- **Flash Memory** 16 MB flash memory for ADAM-6500
32MB flash memory for ADAM-6501
- **Memory** 64 MB SDRAM
- **Operating System** Windows CE .NET
- **Ethernet Port** ADAM-6500: One 10Base-T
ADAM-6501: One 10/100Base-T
- **Serial Ports (isolated)** ADAM-6500: 3 RS-232, 2 RS-485
ADAM-6501: 1 RS-232 (RJ-48), 1 RS-485
Speed: 115.2 kbps
- **Built-in Watchdog Timer** Yes
- **Real-time Clock** Yes
- **LED Indicators** Power, diagnostics, communication
- **Protocols Supported** TCP/IP, UDP
- **System Management** Web-based remote configuration via standard browser with Java® support.
Console mode command line configuration.
- **Mounting** DIN-rail, panel, wall, piggyback stack
- **Default Setting** Onboard
- **Recovery**
- **Power Supply Voltage** +24 V_{DC} (Range: 10 ~ 30 V_{DC})
- **Max. Power** +24 V_{DC} @ 0.25 A
- **Requirements**
- **Operating Temperature** 0 ~ 55° C
- **Storage Temperature** -20~ 80° C

Feature Details

Built-in Ethernet and RS-232/485 COM Ports

The ADAM-6500 has one Ethernet (10BASE-T), and four communication ports (3 x RS-232 and 2 x RS-485). The ADAM-6501 has one Ethernet (10/100BASE-T), one RS-232 and one RS-232/485 ports. These provide easy communication between the controller and devices in your applications, and has been designed for program downloading, debugging and linking serial devices with the Ethernet/Internet. Both ADAM-6500 and 6501 is equipped with a COM1 port (RS-232) supporting full RS-232 signals for applications such as modem connections, while the 3-pin RS-232 and RS-485 are designed as the interface for traditional RS-232/485 devices/equipment. This design allows the controller to be used in a variety of applications. For example, the user may download a data logging application into the ADAM-6500/6501's memory while the ADAM-6500/6501 is connected to a RS-485 network, and then collect the data over the network.



Built-in Real-time Clock and Watchdog Timer

The real-time clock in the controller ensures accurate time recording when the system operates. The watchdog timer is designed to automatically reset the CPU if the system fails.

Ordering Information

- **ADAM-6500** Web-enabled Communication Controller
- **ADAM-6501** Web-enabled Universal Communication Controller

ADAM-6500 ADAM-6501

Feature Details Cont.

ADAM-6500/6501AS PC-Based HMI Station/SCADA

The ADAM-6500/6501AS embeds Advantech Studio into ADAM-6500/6501 hardware. So you can easily develop the required application in a desktop PC, then download it into ADAM-6500/6501AS as a cost effective, compact size SCADA/HMI station. Advantech Studio (AStudio), a powerful, integrated collection of automation tools that includes all the building blocks required to develop modern Human Machine Interfaces (HMI), and Supervisory Control and Data Acquisition System (SCADA) applications. AStudio in ADAM-6500/6501AS can run native on Windows CE.NET or in an Internet and Intranet environment. A simple drag and drop, point and click development environment mimics the most complex behavior of your live processes. AStudio is an eAutomation solution that allows designers to develop web-enabled applications.

ADAM-6500/6501KW PC-Based Softlogic Controller

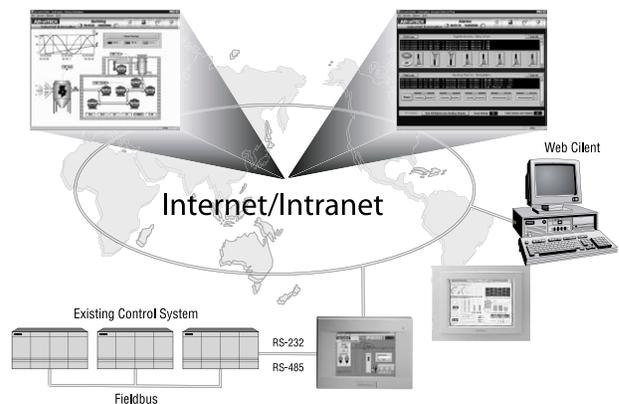
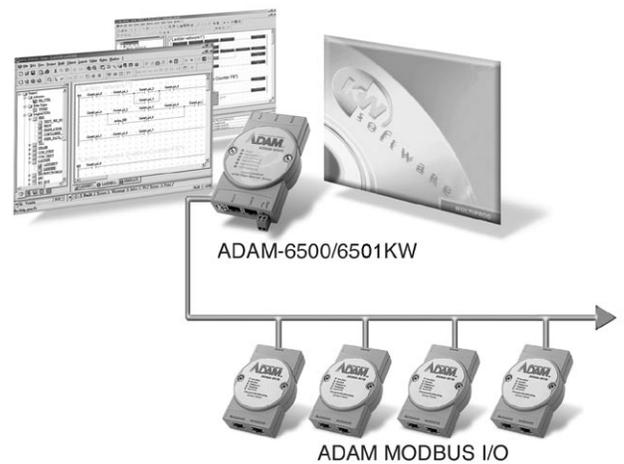
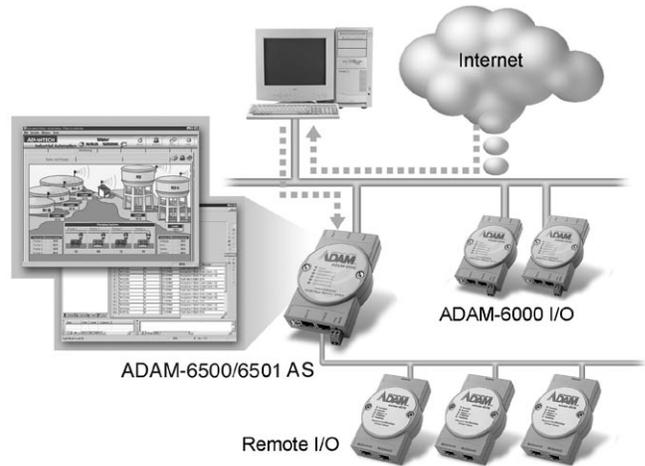
As PC-based automation has developed, Advantech PC-based controllers have been widely applied in variety of industrial automation applications. In order to empower the PC-based controllers, Advantech has allied with KW software to develop a new generation of softlogic controllers with MULTIPROG - IEC 61131 complied softlogic control engine. Evolved from the ADAM-6500/6501, the ADAM-6500/6501KW is a new softlogic controller that features with large memory capacity, multi communication interfaces, user-friendly configuration tools and much more.

ADAM-6500/6501KW is not only a cost-effective micro-controller, but also features several powerful control functions that improve on traditional programmable logic controllers.

- Process IEC-61131 standard with rich development environment
- Cross-Language programming
- Large memory for programming and storage
- Real time multi-tasking engine
- Free pre-defined function library
- Powerful debug / diagnostic / simulation / force tools
- Open Standard connection - Modbus standard Interface
- Online editing & partial download
- RS-232/485 communication ability
- Built-in ROM and RAM disk for programming
- Built-in real-time clock and watchdog timer

Applications

- Distributed data acquisition and control
- Embedded control application (Advantech AStudio SCADA Software and KW Softlogic)
- Data logging applications
- Serial to Ethernet conversion
- Web-enabled data acquisition and control



1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-6050W ADAM-6060W

**Wireless Web-enabled 18-channel
DI/O Module**

**Wireless Web-enabled 6-channel
Relay Output**



Features

- Supports IEEE802.11b wireless LAN
- Built-in web page
- Supports Modbus/TCP & UDP protocols
- Supports event trigger function

Introduction

ADAM-6050W and ADAM-6060W are new ADAM-6000 I/O modules bundled with wireless LAN technology. The hardware design of these two modules were based on ADAM-6050 and ADAM-6060, but a wireless LAN interface replaces the RJ-45 Ethernet port. ADAM-6050W and ADAM-6060W Wireless Web-enabled modules support IEEE802.11b. They can be accessed via wireless LAN without any hardwiring for environments with wiring limitations.

Specifications

ADAM-6050W

- **Communication Port** IEEE802.11b Wireless LAN
- **Channels** 18
- **I/O Type** 12 DI & 6 DO
- **Digital Input** Dry Contact:
Logic level 0: Close to GND
Logic level 1: Open (Logic level status can be inverted by Utility)
- **Digital Output** Open Collector to 30 V
200 mA max. load
- **Optical Isolation** 5000 V_{RMS}
- **Built-in Watchdog Timer**
- **Built-in Web Page**
- **Support Protocol** Modbus/TCP and UDP
- **Power Requirement** 24 V_{AC}
- **Power Consumption** 2 W (typical)
- **Environment** Operating Temp. : -10 ~ 60 °C (14 ~ 140 °F)
Storage Temp. : 25 ~ 85 °C (-13 ~ 185 °F)
Humidity : 5 ~ 95% non-condensing

Ordering Information

- **ADAM-6050W-A** 18 channel Web-enabled Wireless LAN Digital Input/Output Module
- **ADAM-6060W-A** 12 channel Web-enabled Wireless LAN Digital Input/Relay Output Module

Specifications

ADAM-6060W

- **Channels** 12
- **I/O Type** 6 Relay & 6 DI
- **Relay Output (Form A)** Contact rating: AC: 120 V @ 0.5 A, DC: 30 V @ 1 A
Breakdown voltage: 500 V_{AC} (50/60 Hz)
Relay on time: 7 msec; Relay off time: 3 ms
Total switching time: 10 ms
Insulation resistance: 1000 MΩ minimum at 500 V_{DC}
- **Digital Input** Dry Contact:
Logic level 0: Close to GND
Logic level 1: Open
(Logic level status can be inverted by Utility)
- **Optical Isolation** 2000 V_{RMS}
- **Built-in Watchdog Timer**
- **Built-in Web Page**
- **Support Protocol** Modbus/TCP and UDP
- **Power Requirement** 24 V_{AC}
- **Power Consumption** 2 W (Typical)
- **Environment** Operating Temp. : -10 ~ 60 °C (14 ~ 140 °F)
Storage Temp. : -25 ~ 85 °C (-13 ~ 185 °F)
Humidity : 5 ~ 95% non-condensing

ADAM-6050W ADAM-6060W

Feature Details

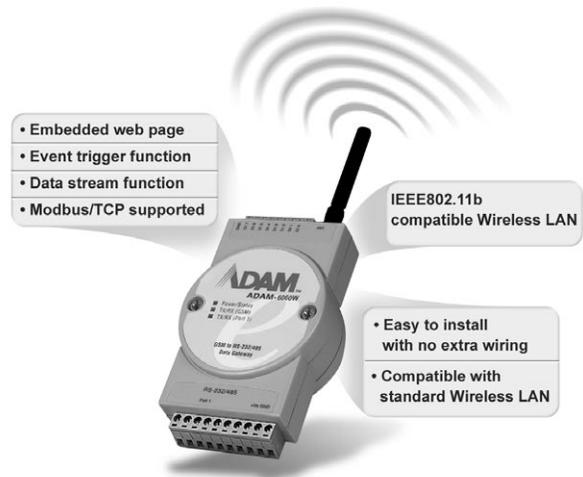
ADAM-6050W and ADAM-6060W support IEEE802.11b, the most popular wireless LAN standard. So ADAM-6050W and ADAM-6060W can be connected through most wireless LAN Access Points (AP).

Communication

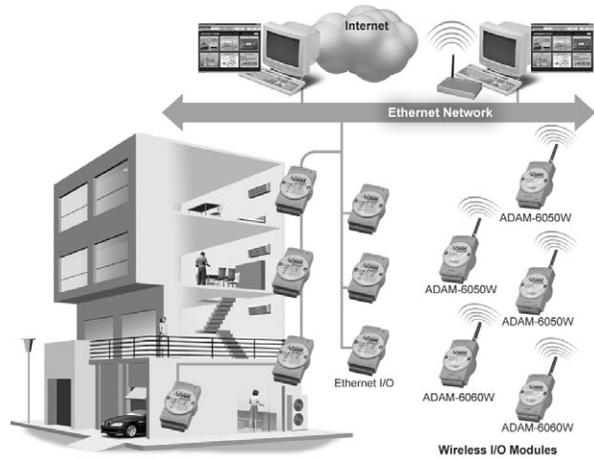
Like other ADAM-6000 modules, ADAM-6050W and ADAM-6060W also support the Modbus/TCP and UDP protocols. You can use the HMI/SCADA software to communicate with ADAM-6050W and ADAM-6060W through Modbus/TCP. The pre-built UDP protocol supports event trigger and data streaming functions for critical and real time responses.

All New Built-in Web Page

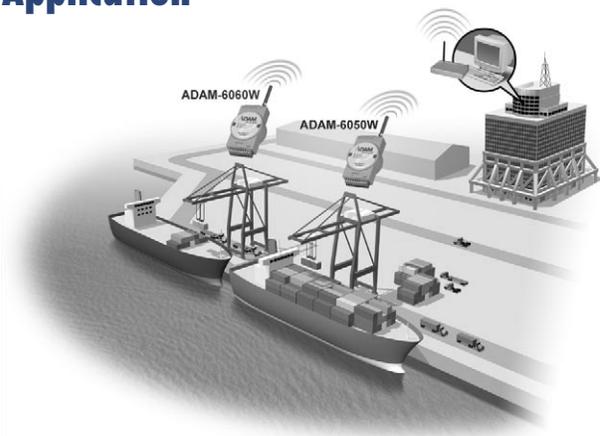
ADAM-6050W and ADAM-6060W has a built-in webpage that can be configured by an utility for: Tag Name, Status Label (for example, Start/Stop, Run/Stop, Enable/Disable and Alarm/Normal), and Channel Enable. There is no need to learn how to write Java applets to design a customized web page. By using ADAM-6000 utility software, the webpage can be customized to exact requirements.



Home/Building Application



Port Crane Monitoring & Control Application



1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-6521 ADAM-6541 ADAM-6542

5-port Industrial 10/100 Mbps Ethernet Switch with Fiber Optic Ethernet to Multi-Mode Fiber Optic Converter Ethernet to WDM Single Strand Fiber Optic Converter



ADAM-6520/6521

CE FCC

Specifications

- **Interface** 10/100Base-T & 10/100 Base-FX standard
- **Port** 4 x 10/100 Mbps (RJ-45), 1 x 100 Mbps (Fiber)
- **Connector** 4 x RJ-45 & 1 x Fiber (SC type)
- **Compatibility** IEEE 802.3, IEEE 802.3u
- **Surge Protection (Power)** 3000 V_{DC}
- **LED** Power, 10/100 Mbps
- **Transmission Distance (Fiber)** 2000 m
- **Power Requirements** Unregulated 10 ~ 30 V_{DC}
- **Power Consumption** 3.5 W (typical)
- **Case** ABS with captive mounting hardware
- **Mounting** DIN-rail, panel mounting, piggyback stack
- **Operating Temperature** -10 ~ 65° C
- **Storage Temperature** -20 ~ 80° C
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)

Ordering Information

- **ADAM-6521** 5-port Industrial 10/100 Mbps Ethernet Switch with Fiber port



ADAM-6541

CE FCC

Specifications

- **Interface** 10/100Base-TX & 100Base-FX standard
- **Port** 1 x 10/100 Mbps (RJ-45), 1 x 100 Mbps (Fiber)
- **Connector** 1 x RJ-45 & 1 x Fiber (SC type)
- **Compatibility** IEEE 802.3, IEEE 802.3u
- **Surge Protection (Power)** 3,000 V_{DC}
- **Isolation (Ethernet port)** 1,500 V_{RMS}
- **LED** Power, LNK/ACT, 10/100 Mbps
- **Transmission Distance (Ethernet)** 100 m
- **Communication Distance (Multi mode fiber)** 50/125, 62.5/125 or 100/140 μm multi mode fiber, 412 m for half duplex, 2 km for full duplex.
- **Power Requirement** Unregulated 10 ~ 30 V_{DC}
- **Power Consumption** 3 W
- **Case** ABS/PC with captive mounting hardware.
- **Mounting** DIN-rail, panel mounting, piggyback stack
- **Operating Temperature** -10 ~ 70° C
- **Storage Temperature** -20 ~ 80° C
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)

Ordering Information

- **ADAM-6541** Ethernet to Multi-Mode Fiber Optics Converter



ADAM-6542

CE FCC

Specifications

- **Interface** 10/100Base-TX & 100Base-FX standard
- **Port** 1 x 10/100 Mbps (RJ-45), 1 x 100 Mbps (Fiber)
- **Connector** 1 x RJ-45 & 1 x Fiber (SC type)
- **Compatibility** IEEE 802.3, IEEE 802.3u
- **Surge Protection (Power)** 3,000 V_{DC}
- **Isolation (Ethernet port)** 1,500 V_{RMS}
- **LED** Power, LNK/ACT, 10/100 Mbps
- **Transmission Distance (Ethernet)** 100 m
- **Communication Distance (Single mode fiber)** 8.3/125, 8.7/125, 9/125 or 10/125 μm single mode fiber, 20 km for WDM (Wavelength Division Multiplexing)
- **Power Requirement** Unregulated 10 ~ 30 V_{DC}
- **Power Consumption** 3 W
- **Case** ABS/PC with captive mounting hardware.
- **Mounting** DIN-rail, panel mounting, piggyback stack
- **Operating Temperature** -10 ~ 70° C
- **Storage Temperature** -20 ~ 80° C
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)

Ordering Information

- **ADAM-6542** Ethernet to WDM Single Strand Fiber Optics Converter

ADAM-6050 ADAM-6051 ADAM-6052

18-channel Isolated Digital I/O Module

16-channel Isolated Digital I/O w/Counter Module

16-channel Source Type Digital I/O Module



ADAM-6050

CE FCC

Specifications

- **Channels** 18
- **I/O Type** 12 DI & 6 DO
- **Digital Input**
 - Dry Contact:
 - Logic level 0: close to GND
 - Logic level 1: open
 - Wet Contact:
 - Logic level 0: +3 V max
 - Logic level 1: +10 V to 30 V_{DC}
- **Digital Output** Open Collector to 30 V
200 mA max. load
- **Optical Isolation** 2000 V_{RMS}
- **Power Consumption** 2 W (typical)

Ordering Information

- **ADAM-6050** 18-channel isolated Digital I/O module



ADAM-6051

CE FCC

Specifications

- **Channels** 16
- **I/O Type** 12 DI / 2 DO / 2 Counter
- **Digital Input**
 - Dry Contact:
 - Logic level 0: close to GND
 - Logic level 1: open
 - Wet Contact:
 - Logic level 0: +3 V max
 - Logic level 1: +10 V to 30 V_{DC}
- **Digital Output** Open Collector to 30 V
200 mA max. load
- **Optical Isolation** 2000V_{RMS}
- **Counter**
 - Maximum Count: 4,294,967,285(32 bit)
 - Input frequency: 0.3 ~ 1000 Hz max. (frequency mode)
 - 5000 Hz max. (counter mode)
 - Isolation voltage: 2000 V_{RMS}
 - Mode: Counter, Frequency
- **Power Consumption** 2 W (typical)

Ordering Information

- **ADAM-6051** 16-channel isolated Digital I/O with counter module



ADAM-6052

CE FCC

Specifications

- **Channels** 16
- **I/O Type** 8 DI/ 8 DO
- **Digital Input**
 - Dry Contact:
 - Logic level 0: close to GND
 - Logic level 1: open
 - Wet Contact:
 - Logic level 0: +3 V max
 - Logic level 1: +10 V to 30 V_{DC}
- **Digital Output: (Source Type)** V_{DC}: 35 V
Current: 1 A
- **Optical Isolation** 2000 V_{RMS}
- **Power Consumption** 2 W (typical)

Ordering Information

- **ADAM-6052** 16-channel Source Type Digital I/O module

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-6060 ADAM-6066 ADAM-6015

6 DI/6 Relay Module

6 DI/6 Power Relay Module

7-channel RTD Module



ADAM-6060

CE FCC



ADAM-6066

CE FCC



ADAM-6015

CE FCC

Specifications

- **Channels** 12
- **I/O Type** 6 Relay & 6 DI
- **Relay Output (Form A)** Contact Rating:
AC: 120 V @ 0.5 A
DC: 30 V @ 1 A
Breakdown voltage: 500 V_{AC} (50/60 Hz)
Relay on time: 7 ms
Relay off time: 3 ms
Total switching time: 10 ms
Insulation resistance: 1000 MΩ minimum at 500V_{DC}
- **Digital Input** Dry Contact:
Logic level 0: close to GND
Logic level 1: open
Wet Contact:
Logic level 0: +3Vmax
Logic level 1: +10 V to 30 V_{DC}
- **Optical Isolation** 2000V_{RMS}
- **Power Consumption** 2 W (Typical)

Specifications

- **Channels** 12
- **I/O Type** 6 Relay & 6 DI
- **Relay Output (Form A)** Contact Rating:
AC: 250 V @ 5 A
DC: 30 V @ 5 A
Breakdown voltage: 500 V_{AC} (50/60 Hz)
Relay on time: 7 ms
Relay off time: 3 ms
Total switching time: 10 ms
Insulation resistance: 1000 MΩ minimum at 500V_{DC}
- **Digital Input** Dry Contact:
Logic level 0: close to GND
Logic level 1: open
Wet Contact:
Logic level 0: +3Vmax
Logic level 1: +10 V to 30 V_{DC}
- **Optical Isolation** 2000V_{RMS}
- **Power Consumption** 2.5 W (Typical)

Specifications

- **Channels** 7 differential
- **Effective Resolution** 16-bit
- **Input Type** Pt, Balco and Ni RTD
- **RTD Types and Temperature Ranges**
 - PT-100 RTD
 - Pt-50° C to 150° C
 - Pt 0° C to 100° C
 - Pt 0° C to 200° C
 - Pt 0° C to 400° C
 - Pt-200° C to 200° C
 - IEC RTD 100 ohms.= 0.00385)
 - JIS RTD 100 ohms.= 0.00392)
 - Pt 1000 RTD
 - Pt -40° C to 160° C
 - Balco 500 RTD
 - 30° C to 120° C
 - Ni 50 RTD
 - 100° C
 - Ni 508 RTD
 - Ni 0° C to 100° C
- **Isolation Voltage** 2000 V_{DC}
- **Sampling Rate** 10 samples / sec.
- **Input Impedance** 10 kΩ
- **Input Connections** 2 or 3 wire
- **Accuracy** ± 0.05 % or better
- **Zero Drift** ± 3 μV/° C
- **Span Drift** ± 25 ppm/° C
- **CMR @ 50/60 Hz** 150 dB
- **NMR @ 50/60 Hz** 100 dB
- **Built-in Watchdog Timer**
- **Individual Wire Burn-out Detection**
- **Power Requirements** Unregulated
+10 ~ +30 V_{DC}
- **Power Consumption** 2 W

Ordering Information

- **ADAM-6060** 6 Isolated Digital Inputs & 6 Relays Module

Ordering Information

- **ADAM-6066** 6 Isolated Digital Inputs & 6 Power Relays Module

Ordering Information

- **ADAM-6015** 7-channel RTD Input Module

ADAM-6017 ADAM-6018 ADAM-6024

8-channel Analog Input w/DO Module

8-channel Thermocouple Input w/DO Module

12-channel Universal Input Output Module



ADAM-6017

CE FCC



ADAM-6018

CE FCC



ADAM-6024

CE FCC

Specifications

Analog Input

- **Effective Resolution** 16-bit
- **Channels** 8 differential
- **Input Type** mV, V, mA
- **Input Range** ±150 mV, ±500 mV, ±5 V, ±10 V, 0-20 mA, 4-20 mA
- **Isolation Voltage** 2000 V_{DC}
- **Fault and Overvoltage Protection** Withstands overvoltage up to ±35 V
- **Sampling Rate** 10 samples/sec.
- **Input Impedance** 20 MΩ
- **Bandwidth** 13.1 Hz @ 50 Hz, 15.72 Hz @ 60 Hz
- **Accuracy** ±0.1% or better
- **Zero Drift** ±6 μV/°C
- **Span Drift** ±25 ppm/°C
- **CMR @ 50/60 Hz** 92 dB min.

Digital Output

- **Channels** 2
Open Collector to 30 V
100 mA max. load
- **Optical Isolation** 2000V_{RMS}

Power

- **Power Requirements** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 2 W
- **Built-in Watchdog Timer**

Ordering Information

- **ADAM-6017** 8-channel Analog Input with DO Module

Specifications

Analog Input

- **Effective Resolution** 16-bit
- **Channels** 8 differential
- **Input Type** Thermocouple
- **Thermocouple Type and Thermocouple Range:**

J	0	~	760° C
K	0	~	1370° C
T	-100	~	400° C
E	0	~	1000° C
R	500	~	1750° C
S	500	~	1750° C
B	500	~	1800° C
- **Isolation Voltage** 2000 V_{DC}
- **Fault and Overvoltage Protection** Withstands overvoltage up to ±35 V
- **Sampling Rate** 10 samples/sec.
- **Input Impedance** 10 kΩ
- **Bandwidth** 13.1 Hz @ 50 Hz, 15.72 Hz @ 60 Hz
- **Accuracy** ±0.1% or better
- **Zero Drift** ±6 μV/°C
- **Span Drift** ±25 ppm/°C
- **CMR @ 50/60 Hz** 92 dB min.

Digital Output

- **Channels** 8
Open Collector to 30 V
100 mA max. load
- **Optical Isolation** 2000 V_{RMS}

Power

- **Power Requirements** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 2 W
- **Built-in Watchdog Timer**

Ordering Information

- **ADAM-6018** 8-ch. Thermocouple Input with DO Module

Specifications

Analog Input

- **Channels** 6 differential
- **Effective Resolution** 16-bit
- **Input Range** ±10 V_{DC}, 0 ~ 20 mA, 4 ~ 20 mA
- **Isolation Voltage** 2,000 V_{DC}
- **Sampling Rate** 10 samples/sec.
- **Input Impedance** 20 MΩ
- **Bandwidth** 13.1 Hz @ 50 Hz, 15.72 Hz @ 60 Hz
- **Accuracy** ±0.1 % or better
- **Zero Drift** ±6 μV/°C
- **Span Drift** ±25 ppm/°C
- **CMR @ 50/60 Hz** 92 dB min.

Analog Output

- **Channels** 2
- **Effective Resolution** 12-bit
- **Output Range** 0 ~ 10 V_{DC}, 4 ~ 20 mA, 0 ~ 20 mA
- **Drive Voltage** 15 V_{DC} (for current output)
- **Isolation Voltage** 2,000 V_{DC}
- **Accuracy** 0.05% of FSR
- **Drift** ±50 ppm/°C

Digital Inputs

- **Channels** 2
Dry Contact
logic level 0: close to GND
logic level 1: open
Wet Contact:
Logic level 0: +3Vmax
Logic level 1: +10 V to 30 V_{DC}

Digital Outputs

- **Channels** 2
Open Collector to 30 V
100 mA max. load

Power

- **Power Consumption** 4 W (typical)

Ordering Information

- **ADAM-6024** 12-channel Universal Input/Output Module

1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AWS

6
DA&C

7
cPCI

8
ADAM-3000

9
Motion Control

10
ICOM

11
eConnectivity

12
UNO

13
ADAM-4000

14
ADAM-5000

15
ADAM-6000

16
ADAM-8000

17
BAS

ADAM-6022 ADAM-6000

Ethernet-based Dual-loop PID Controller Series Common Specifications



ADAM-6022

CE FCC

Specifications

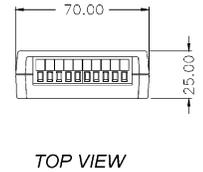
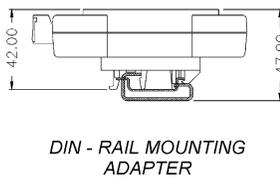
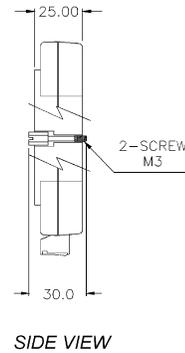
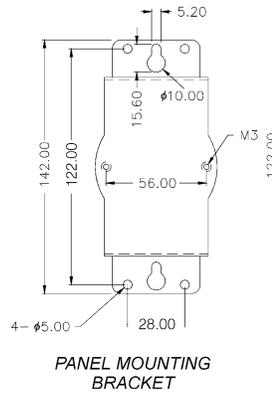
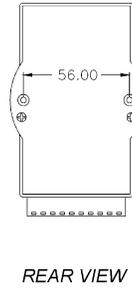
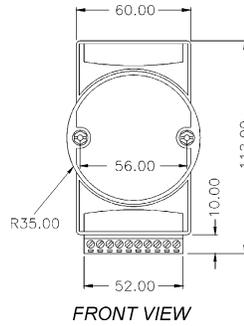
- **Loop Number** 2 (3 AI, 1 AO, 1 DI, 1 DO for each control loop)
- **Analog Input**
 - Channels 6 differential
 - Effective Resolution 16-bit
 - Input Range 0 ~ 10 V_{DC}, 0 ~ 20 mA, 4 ~ 20 mA
 - Isolation Voltage 2,000 V_{DC}
 - Sampling Rate 10 samples/sec.
 - Input Impedance 20 MΩ
 - Bandwidth 13.1 Hz @ 50 Hz
15.72 Hz @ 60 Hz
 - Accuracy ±0.1 % or better
 - Zero Drift ±6 μV/°C
 - Span Drift ±25 ppm/°C
 - CMR @ 50/60 Hz 92 dB min.
- **Analog Output**
 - Channels 2
 - Effective Resolution 12-bit
 - Output Range 0 ~ 10 V_{DC}, 4 ~ 20 mA, 0 ~ 20 mA
 - Drive Voltage 15 V_{DC} (for current output)
 - Isolation Voltage 2,000 V_{DC}
 - Accuracy 0.05% of FSR
 - Drift ±50 ppm/°C
- **Digital Inputs**
 - Channels 2
 - Dry Contact: logic level 0: close to GND
logic level 1: open
 - Wet Contact: Logic level 0: +3Vmax
Logic level 1: +10 V to 30 V_{DC}
- **Digital Outputs**
 - Channels 2
 - Open Collector to 30 V
100 mA max. load
- **Power Consumption** 4 W (typical)

Ordering Information

- **ADAM-6022** Dual-loop PID Controller

Dimensions

Unit: mm



Common Specifications

Communication

- Ethernet Interface (RJ-45)
- **Speeds** 10/100 Mbps
- **Max. communication distance** 333 feet (100 m), can be extended by using switch hub
- Power and communication LED indicator
- TCP/IP, UDP, MODBUS/TCP supported
- Online module insertion and removal

Power Requirements

- Unregulated +10 ~ +30 V_{DC}
- Protected against power reversal

Mechanical

- **Case** ABS with captive mounting hardware

Plug-in Screw

Accepts 0.5 mm² to 2.5 mm², 1 - #12 or 2 - #22 AWG

Terminal Block

Environment

- **Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- **EMI** Meets FCC Class A
- **Storage Temperature** -20 ~ -80° C (-13 ~ 185° F)
- **Humidity** 5 ~ 95%, non-condensing

Software Ordering Information

- **PCLS-OPC/MTP** Modbus/TCP OPC Server
- **AStudio-WNT/DEV** AStudio-WNI/PRO Web-enabled HMI/SCADA Software

Distributed Control I/O System ADAM-8000 Series

ADAM-8000 Series	Distributed Control I/O	16-2
ADAM-8000 Series	Total Fieldbus Solution	16-4
CPU Modules		
ADAM8214-1BA01	PLC CPU214 Module	16-6
ADAM8214-2BM01	PLC CPU214 with Profibus-DP Master	16-6
ADAM8214-2BT01	PLC CPU214 with Ethernet-CP	16-6
ADAM8215-1BA01	PLC CPU215 Module	16-6
ADAM8215-2BM01	PLC CPU215 with Profibus-DP Master	16-6
ADAM8215-2BT01	PLC CPU215 with Ethernet-CP	16-7
Communication Interface Modules		
ADAM8208-1DP01	Profibus-DP Master Module	16-7
ADAM8208-2DP10	Profibus-DP Master Fiber Optic Module	16-7
ADAM8253-1DP00	Profibus-DP Slave Module	16-7
ADAM8253-1DP10	Profibus-DP Slave Fiber Optic Module	16-7
ADAM8208-1CA00	CANopen Master Module	16-8
ADAM8253-1CA01	CANopen Slave Module	16-8
ADAM8253-1DN00	DeviceNet Slave Module	16-8
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ADAM8222-1BF10	8xDO DC 24V, 2 A Module	16-11
ADAM8222-1BF20	8xDO DC 24V, 2 A Module	16-11
ADAM8222-1HF00	8xDO Relay Module	16-11
ADAM8222-1BH10	16xDO DC 24V, 1 A Module	16-11
ADAM8222-1BH20	16xDO DC 24V, 2 A Module	16-11
ADAM8222-2BL10	32xDO DC 24V Module	16-12
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ADAM8231-1BF00	8xAI 16-bit Module	16-12
Analog Output Module		
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ADAM-8000 Series Distributed Control I/O



Applications

- Factory Automation
- Machine Automation
- Environment Monitoring
- Facility Management System

Introduction

The ADAM-8000 series consists of universal controllers that provide an optimum solution for various industrial applications in centralized and distributed system architectures. The concept of the ADAM-8000 is to fulfill today's PLC requirement, and take a step further, to help customers get into the fast-growing PC-based control and web-based automation market. Integrating web-based technology, industrial Fieldbus interfaces, high-performance CPUs and user friendly programming development tools, the ADAM-8000 series offers a complete solution.

Full-range Fieldbus for Various Industrial Applications

Various integrated interfaces are available for various industrial applications. It can be connected to the most popular Fieldbus networks such as: Profibus, CANopen, DeviceNet and Ethernet (Modbus/TCP).

Configurable Modular Design for Easy Expansion

The ADAM-8000 series features a configurable backplane bus design to conveniently customize your system setup. One, two, four or eight-module configurations are offered to ease installation and expansion. Besides, space-saving design and minimum wiring make maintenance simple and more cost effective.

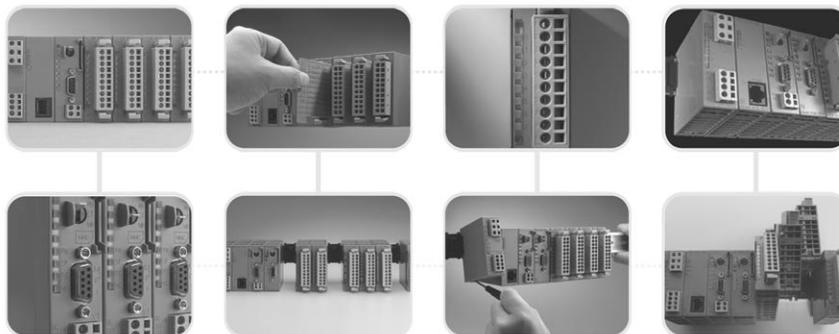
High-Performance CPUs

The ADAM-8000 series offers a wide range of CPUs to serve versatile applications. At the moment, nine CPU modules are available. These high-performance CPU modules ensure faster execution time at 0.18 μ s/bit or 0.78 μ s/word.

Web-Based Technology Integrated with Automation

eAutomation integrates IT technology with automation technology, a key competence sought by enterprises. By using Advantech Weblink (an internet gateway) and Advantech Studio, (a web-based HMI software), the ADAM-8000 series provides a web-enabled control system; the fundamental element of the entire eAutomation architecture. Open yet secure.

The ADAM-8000 represents a low-cost and future-oriented automation solution. Centralized control through distributed controllers. PLC and PC-based control. The best connections in distributed structures and integration with IT systems and more. The ADAM-8000 optimizes I/O systems to make them efficient and successful. You can deploy different CPU modules with Fieldbus connections, and easily implement a PLC control system or a PC-based control system without changing any ADAM-8000 I/O or remote I/O modules.



ADAM-8000 Series

PLC Control

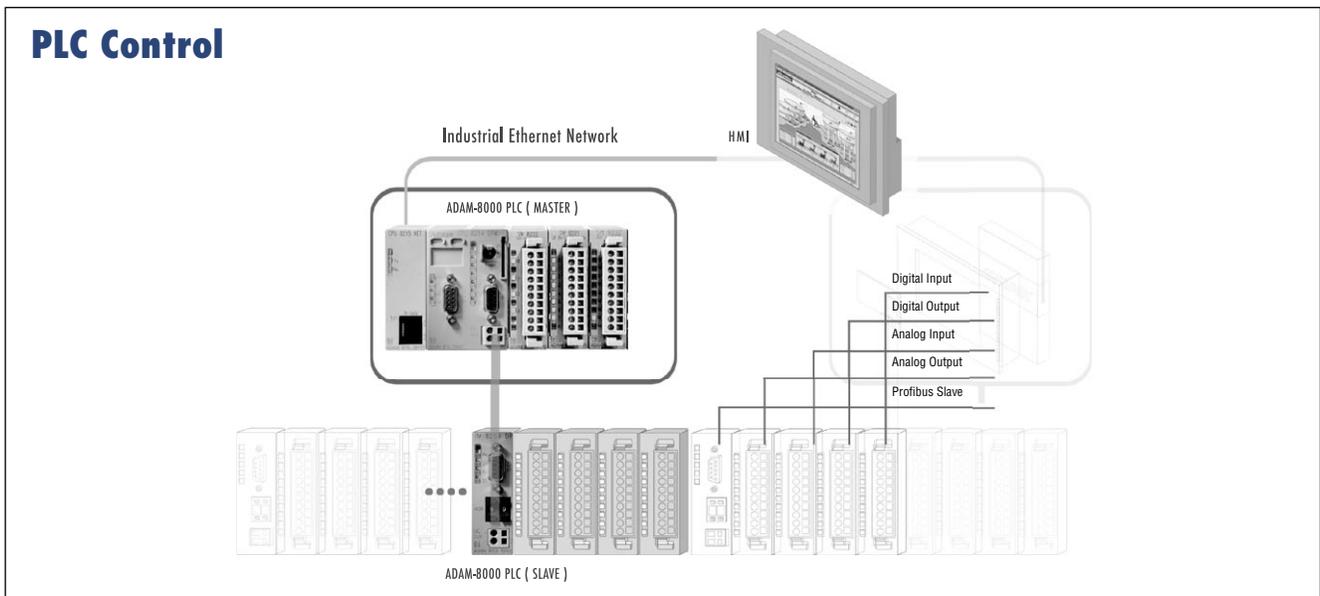
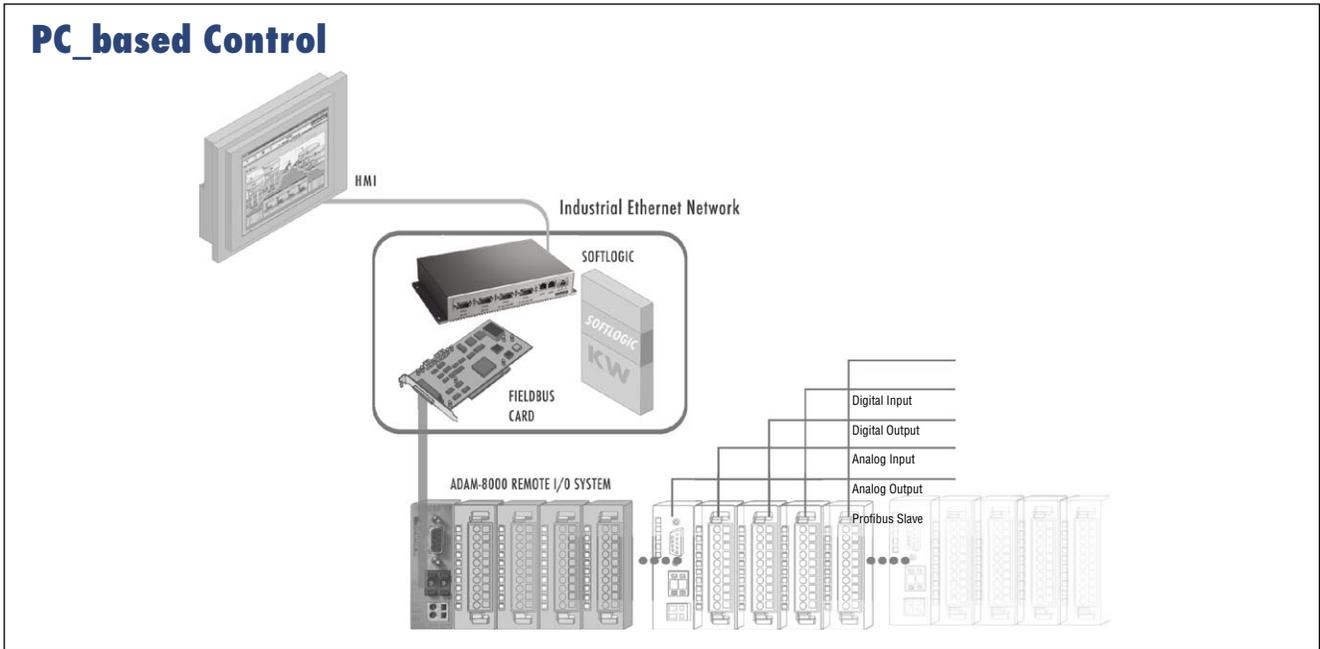
The ADAM-8000 series is a typical PLC control system. You can configure the ADAM-8000 CPU with I/O modules to create a stand-alone controller for distributed control applications. Each ADAM-8000 PLC controller can control up to 1024 I/Os, and the PLC controllers can also be extended by remote ADAM-8000 I/O systems, based on the Profibus-DP network for centralized control architectures. Flexible PLC control systems are therefore easily implemented.

PC-based Control

The ADAM-8000 series can be deployed in a centralized PC-based control architecture with the concept of DCS (Distributed Control System). Compared to other solutions, the ADAM-8000 offers a powerful and more economic process control system.

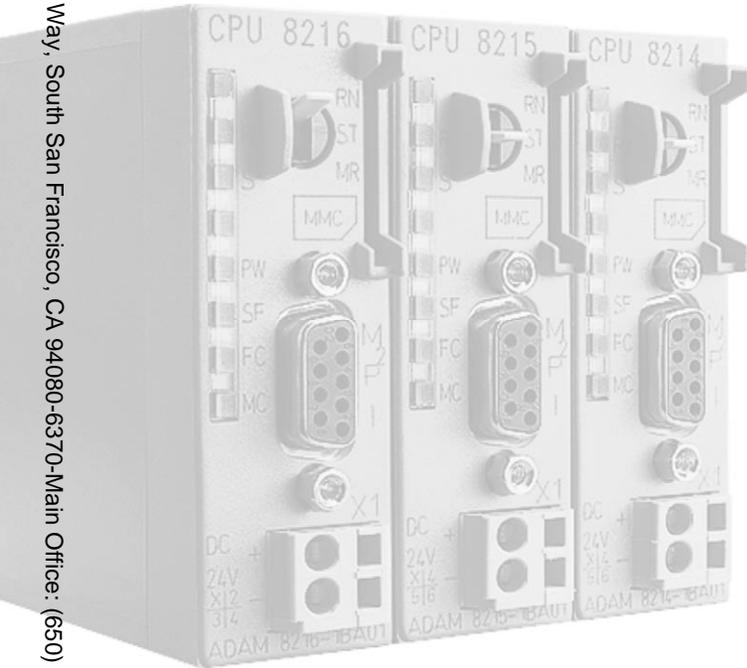
For a PC-based architecture, as long as the industrial PC comes with IEC61131-3 certified SoftLogic software (i.e. KW), the remote ADAM-8000 I/O system can be installed in a distributed field at the plant using Profibus, DeviceNet, CANopen, Modbus or Ethernet networks. The PC-based control system can perform with high reliability, stability, and at high communication speeds. Of course, the modular design brings great benefits for installation and maintenance. With the ADAM-8000 series, you can easily establish a PC-based centralized process control system with minimum investment.

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS



ADAM-8000

ADAM-8000 Total Fieldbus Solution



Total Fieldbus Solutions

Ethernet Networking

INDUSTRIAL ETHERNET Ethernet Industrial Protocol (Ethernet/IP) is an open industrial networking standard that supports both real-time I/O messaging and message exchange. It emerged due to the high demand for using the Ethernet network for control applications. Ethernet/IP uses off-the-shelf Ethernet communication chips and physical media.

Profibus Networking

PROFIBUS Profibus is an international standard applicable to an open fieldbus for building, manufacturing and process automation. Profibus defines the technical and functional characteristics of a serial fieldbus system that can be used to create a low (sensor/actuator level) or medium (process level) performance network of programmable logic controllers.

DeviceNet Networking

DeviceNet The DeviceNet network is a low-level network that provides connections between simple industrial devices (such as sensors and actuators) and higher-level devices (such as PLC controllers and computers). The DeviceNet network is a flexible, open network that works with devices from multiple vendors.

CANOpen Networking

CANopen CANopen is a network technology optimized for the usage in industrial control environments, in machine internal networks and in embedded systems (any control unit deeply "embedded" in a device with electronics). The lower-layer implementation of CANopen is based upon CAN (Controller Area Network) which is implemented on microcontrollers of more than 22 chip manufacturers.

ADAM-8000

Network Master

Network Slave

ADAM8208-1DP01



ADAM8253-1NE00



ADAM8253-1DP00



ADAM8253-1DN00



ADAM8208-1CA00



ADAM8253-1CA01



- 1 Software
- 2 IPPC
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- 6 DA&C
- 7 cPCI
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- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

ADAM8214-1BA01 ADAM8214-2BM01 ADAM8214-2BT01

ADAM8215-1BA01 ADAM8215-2BM01



ADAM8214-1BA01



Specifications

Electrical Data

- Supply Voltage 24 V_{DC}
- Current Consumption Max. 1.5 A

System Data

- Work Memory 32 KB
- Load Memory 40 KB
- Battery Buffer Yes
- Real-time Clock Yes
- Timer/Counter 128/256
- Typ. Bit/Word Cycle Time 0.18 μs/0.78 μs



ADAM8214-2BM01



Specifications

Electrical Data

- Supply Voltage 24 V_{DC}
- Current Consumption Max. 1.5 A

System Data

- Work Memory 32 KB
- Load Memory 40 KB
- Battery Buffer Yes
- Real-time Clock Yes
- Timer/Counter 128/256
- Typ. Bit/Word Cycle Time 0.18 μs/0.78 μs

Profibus-DP Data

- Interface 9-pin D-type socket
- Max. Baudrate 9.6 k up to 12 Mbps
- Connectable Slaves Max. 125 (without repeater Max. 32)



ADAM8214-2BT01



Specifications

Electrical Data

- Supply Voltage 24 V_{DC}
- Current Consumption Max. 1.5 A

System Data

- Work Memory 32 KB
- Load Memory 40 KB
- Battery Buffer Yes
- Real-time Clock Yes
- Timer/Counter 128/256
- Typ. Bit/Word Cycle Time 0.18 μs/0.78 μs

Ethernet Interface

- Connector RJ-45
- Rate of Transfer 10 Mbps
- Overall Length Max. 100 m per segment



ADAM8215-1BA01

Specifications

Electrical Data

- Supply Voltage 24 V_{DC}
- Current Consumption Max. 1.5 A

System Data

- Work Memory 64 KB
- Load Memory 80 KB
- Battery Buffer Yes
- Real-time Clock Yes
- Timer/Counter 128/256



ADAM8215-2BM01



Specifications

Electrical Data

- Supply Voltage 24 V_{DC}
- Current Consumption Max. 1.5 A

System Data

- Work Memory 64 KB
- Load Memory 80 KB
- Battery Buffer Yes
- Real-time Clock Yes
- Timer/Counter 128/256

Profibus-DP Data

- Interface 9-pin D-type socket
- Max. Baudrate 9.6 k up to 12 Mbps
- Connectable Slaves Max. 125 (without repeater Max. 32)

Ordering Information

- ADAM8214-1BA01 PLC CPU214 Module
- ADAM8214-2BM01 PLC CPU214 with Profibus-DP Master
- ADAM8214-2BT01 PLC CPU214 with Ethernet-CP
- ADAM8215-1BA01 PLC CPU215 Module
- ADAM8215-2BM01 PLC CPU215 with Profibus-DP Master

ADAM8215-2BT01 ADAM8208-1DP01 ADAM8208-2DP10

ADAM8253-1DP00 ADAM8253-1DP10



ADAM8215-2BT01



Specifications

Electrical Data

- Supply Voltage 24 V_{DC}
- Current Consumption Max. 1.5 A

System Data

- Work Memory 64 KB
- Load Memory 80 KB
- Battery Buffer Yes
- Real-time Clock Yes
- Timer/Counter 128/256

Ethernet Commands

- Connector RJ-45
- Rate of Transfer 10 Mbps
- Overall Length Max. 100 m per segment



ADAM8208-1DP01



Specifications

- Interface RS-485/9pin SubD
- Baudrates 9.6 k up to 12 Mbps
- Connectable Slaves 122 (without repeater max. 32)
- Parameter Memory MMC card
- Max. Input 1024 byte
- Max. Output 1024 byte
- Supply Voltage int. Bus 5 V_{DC}
- Current Consumption int. bus 380 mA



ADAM8208-2DP10



Specifications

- Interface LWL: POF/HCS
- Baudrates 9.6 k up to 12 Mbps
- Connectable Slaves 122 (without repeater max. 32)
- Parameter Memory MMC card
- Max. Input 1024 byte
- Max. Output 1024 byte
- Supply Voltage int. Bus 5 V_{DC}
- Current Consumption int. bus 380 mA



ADAM8253-1DP00



Specifications

- Interface RS-485/9pin SubD
- Baudrates 9.6 k up to 12 Mbps
- Connectable Slaves 32
- Max. Input 152 byte
- Max. Output 152 byte
- Supply Voltage 24 V_{DC}
- Current Consumption 800 mA



ADAM8253-1DP10



Specifications

- Interface LWL: POF/HCS
- Baudrate 9.6 k up to 12 Mbps
- Connectable Slaves 32
- Max. Input 152 byte
- Max. Output 152 byte
- Supply Voltage 24 V_{DC}
- Current Consumption 800 mA

Ordering Information

- ADAM8215-2BT01 PLC CPU215 with Ethernet-CP
- ADAM8208-1DP01 Profibus-DP Master Module
- ADAM8208-2DP10 Profibus-DP Master Fiber Optic Module
- ADAM8253-1DP00 Profibus-DP Slave Module
- ADAM8253-1DP10 Profibus-DP Slave Fiber Optic Module

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM8208-1CA00 ADAM8253-1CA01 ADAM8253-1DN00

ADAM8253-1NE00 ADAM8221-1FD00



ADAM8208-1CA00



Specifications

▪ Interface	9-pin SubD
▪ Baudrate	10 k up to 1 Mbps
▪ Connectable Slaves	126
▪ Parameter Memory	MMC card
▪ Max. Input	256 byte
▪ Max. Output	256 byte
▪ Supply Voltage Int. Bus	5 V _{DC}
▪ Current Consumption Int. bus	380 mA



ADAM8253-1CA01

Specifications

▪ Interface	9-pin SubD
▪ Baudrate	10 k up to 1 Mbps
▪ Connectable Slaves	32
▪ Max. Input	80 byte
▪ Max. Output	80 byte
▪ Supply Voltage	24 V _{DC}
▪ Current Consumption	700 mA



ADAM8253-1DN00



Features

- Group 2 only Device, employs the predefined connection set
- Poll only Device, no BIT STROBE mode & CHANGE STATE support

Specifications

▪ Interface	DeviceNet Open Style
▪ Baudrate	125 k, 250 k, 500 kbps
▪ Connectable Slaves	32
▪ Max. Input	256 byte
▪ Max. Output	256 byte
▪ Supply Voltage	24 V _{DC}
▪ Current Consumption	800 mA



ADAM8253-1NE00



Features

- Easy error search via diagnostics LEDs
- Supports MODBUS/TCP protocol
- Embedded Web Page
- Compatible with ADAM Ethernet Utility Software

Specifications

▪ Interface	Ethernet RJ-45 Module
▪ Baudrate	10/100 Mbps
▪ Connectable slaves	256
▪ Supply Voltage	24 V _{DC}
▪ Current consumption	800 mA



ADAM8221-1FD00



Specifications

▪ Input Voltage	AC/DC 90-230 V
▪ Channels	4
▪ Channel Single Floating	Yes
▪ Optical Isolation	500 V _{DC}
▪ Input Data	1 byte
▪ Input Voltage at "1"	DC 90-230 V
▪ Input Voltage at "0"	DC 0-35 V
▪ Delay Time	25 ms
▪ Supply Voltage Int. Bus	5 V _{DC}
▪ Current Consumption Int. Bus	80 mA

Ordering Information

- **ADAM8208-1CA00** CANopen Master Module
- **ADAM8253-1CA01** CANopen Coupler
- **ADAM8253-1DN00** DeviceNet™ Coupler
- **ADAM8253-1NE00** Ethernet/TCP Slave Module
- **ADAM8221-1FD00** 4 DI AC/DC90-230 V Module

ADAM8221-1BF00 ADAM8221-1BF50 ADAM8221-1FF20

ADAM8221-1FF30 ADAM8221-1BH10



ADAM8221-1BF00



Specifications

- **Input Voltage** DC 24 V
- **Channels** 8
- **Optical Isolation** 500 V_{DC}
- **Input Data** 1 byte
- **Input Voltage at "1"** DC 15-30 V
- **Input Voltage at "0"** DC 0-5 V
- **Delay Time** 3 ms



ADAM8221-1BF50



Specifications

- **Input Voltage** DC 24 V
- **Channels** 8
- **Optical Isolation** 500 V_{DC}
- **Input Data** 1 byte
- **Input Voltage at "1"** DC 0-5 V
- **Input Voltage at "0"** DC 15-30 V
- **Delay Time** 3 ms



ADAM8221-1FF20



Specifications

- **Input Voltage** AC/DC 60-230 V
- **Channels** 8
- **Optical Isolation** 500 V_{DC}
- **Input Data** 1 byte
- **Input Voltage at "1"** DC 60-230 V
- **Input Voltage at "0"** DC 0-35 V
- **Delay Time** 25 ms



ADAM8221-1FF30



Specifications

- **Input Voltage** AC/DC 24-48 V
- **Channels** 8
- **Optical Isolation** 500 V_{DC}
- **Input Data** 1 byte
- **Input Voltage at "1"** DC 18-48 V
- **Input Voltage at "0"** DC 0-8 V
- **Delay Time** 25 ms



ADAM8221-1BH10



Specifications

- **Input Voltage** DC 24 V
- **Channels** 16
- **Optical Isolation** 500 V_{DC}
- **Input Data** 2 byte
- **Input Voltage at "1"** DC 15-30 V
- **Input Voltage at "0"** DC 0-5 V
- **Delay Time** 3 ms

Ordering Information

- **ADAM8221-1BF00** 8 DI DC 24 V Module
- **ADAM8221-1BF50** 8 DI DC 24 V Active Low Input Module
- **ADAM8221-1FF20** 8 DI AC/DC60-230 V Module
- **ADAM8221-1FF30** 8 DI AC/DC24-48 V Module
- **ADAM8221-1BH10** 16 DI DC 24 V Module

1
Software

2
IPPC

3
TPC

4
FPM

5
ATM & AHS

6
DA&C

7
cPCI

8
ADAM-3000

9
Motion Control

10
ICOM

11
eConnectivity

12
UNO

13
ADAM-4000

14
ADAM-5000

15
ADAM-6000

16
ADAM-8000

17
BAS

ADAM8221-1BH20 ADAM8222-2BL10 ADAM8222-1HD10

ADAM8222-1HD20 ADAM8222-1BF00



ADAM8221-1BH20



Specifications

- **Input Voltage** DC 24 V
- **Channels** 14 DI/2 Counter
- **Optical Isolation** 500 V_{DC}
- **Input Data** 2 byte/4 byte
- **Input Voltage at "1"** DC 15 ~ 30 V
- **Input Voltage at "0"** DC 0 ~ 5 V
- **Delay Time** 3 ms



ADAM8221-2BL10



Specifications

- **Input Voltage** DC 24 V
- **Channels** 32
- **Optical Isolation** 500 V_{DC}
- **Input Data** 4 byte
- **Input Voltage at "1"** DC 15~30 V
- **Input Voltage at "0"** DC 0~5 V
- **Delay Time** 3 ms



ADAM8222-1HD10



Specifications

- **Load Voltage** AC 230 V/DC 30 V
- **Channels** 4
- **Channel Floating** Yes
- **Optical Isolation** 500 V_{DC}
- **Output Data** 1 byte



ADAM8222-1HD20



Specifications

- **Load Voltage** AC 230 V/DC 30 V
- **Channels** 4 (bistable)
- **Channel Floating** Yes
- **Optical Isolation** 500 V_{DC}
- **Output Data** 1 byte



ADAM8222-1BF00



Specifications

- **Load Voltage** DC 24 V
- **Channels** 8
- **Output Current per Channel** 1 A
- **Optical Isolation** 500 V_{DC}
- **Output Data** 1 byte

Ordering Information

- **ADAM8221-1BH20** 16 DI DC 24 V, 2 Counter Module
- **ADAM8221-2BL10** 32 DI DC 24 V Module
- **ADAM8222-1HD10** 4 DO Relay Module
- **ADAM8222-1HD20** 4 DO Relay Module
- **ADAM8222-1BF00** 8 DO DC 24 V, 1 A Module

ADAM8222-1BF10 ADAM8222-1BF20 ADAM8222-1HF00

ADAM8222-1BH10 ADAM8222-1BH20



ADAM8222-1BF10



Specifications

- Load Voltage DC 24 V
- Channels 8
- Output Current per Channel 2 A
- Optical Isolation 500 V_{DC}
- Output Data 1 byte



ADAM8222-1BF20



Specifications

- Load Voltage DC 24 V
- Channels 8
- Output Current per Channel 2 A
- Max. Sum Current Total 16 A
- Optical Isolation 500 V_{DC}
- Output Data 1 byte
- Channel Floating in Groups 2



ADAM8222-1HF00



Specifications

- Load Voltage AC 230 V/DC 30 V
- Channels 8
- Optical Isolation 500 V_{DC}
- Output Data 1 byte
- Output Current per Channel 5 A
- Operating Frequency 100 Hz



ADAM8222-1BH10



Specifications

- Load Voltage DC 24 V
- Channels 16
- Output Current per Channel 1 A
- Max. Sum Current Total 10 A
- Optical Isolation 500 V_{DC}
- Output Data 1 byte
- Channel Floating in Groups 16



ADAM8222-1BH20



Specifications

- Load Voltage DC 24 V
- Channels 16
- Output Current per Channel 2 A
- Max. Sum Current Total 10 A
- Optical Isolation 500 V_{DC}
- Output Data 1 byte
- Channel Floating in Groups 16

Ordering Information

- ADAM8222-1BF10 8 DO DC 24 V, 2 A Module
- ADAM8222-1BF20 8 DO DC 24 V, 2 A Module
- ADAM8222-1HF00 8 DO Relay Module
- ADAM8222-1BH10 16 DO DC 24 V, 1 A Module
- ADAM8222-1BH20 16 DO DC 24 V, 2 A Module

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AHS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM8222-2BL10 ADAM8231-1BD52 ADAM8231-1BD60

ADAM8231-1BF00 ADAM8232-1BD50



ADAM8222-2BL10



Specifications

- **Load Voltage** DC 24 V
- **Channels** 32
- **Output Current per Channel** 1 A
- **Max. Sum Current per Row** 10 A
- **Optical Isolation** 500 V_{DC}
- **Output Data** 4 byte
- **Channel Floating in Groups** 16



ADAM8231-1BD52



Specifications

- **Channels** 4 or 2 (with 4 wire)
- **Input Data** 8 byte
- **Resolution** 12/16 bit
- **Input Resistance** Voltage 100 k Ω
Current 50 Ω
- **Integration Time** 5 ~ 70 ms
- **Input Range** +/-10 V, +/-4 V, +/-400 mV,
0/4 ~ 20 mA, +/-20 mA
- **Thermo Coupler** J, K, N, R, S, T
(compensation connectable)
- **2 or 4 Wire Cabling** Pt100, Pt1000, Ni100,
Ni1000
- **Resistance** 60 Ω , 600 Ω , 3000 Ω



ADAM8231-1BD60



Specifications

- **Channels** 4
- **Input Data** 8 byte
- **Resolution** 12 bit
- **Input Resistance** 20 Ω
- **Integration Time** 8.6 ms
- **Input Range** 0/4~20 mA
- **Channel Separation** Yes



ADAM8231-1BF00



Specifications

- **Channels** 8 or 4 (with 4 wire)
- **Input Data** 16 byte
- **Resolution** 16 bit
- **Input Resistance** >1 M Ω
- **Integration Time** 80 ms
- **Input Range** 0 ~ 60 mV
- **Thermo Coupler** J, K, T
- **2 or 4 Wire Cabling** Pt100



ADAM8232-1BD50



Specifications

- **Channels** 4
- **Output Data** 8 byte
- **Resolution** 12 bit
- **Actuator Resistance** Voltage Min. 1 k Ω
Current Max. 500 Ω
- **Supply Voltage** 24 V_{DC}
- **Output Range** 0~10 V, +/-10 V, 1~5 V,
0~20 mA, 4~20 mA,
+/-20 mA

Ordering Information

- **ADAM8222-2BL10** 32 DO DC 24 V Module
- **ADAM8231-1BD52** 4 AI Multi-input Module
- **ADAM8231-1BD60** 4 AI 12-bit Floating Module
- **ADAM8231-1BF00** 8 AI 16-bit Module
- **ADAM8232-1BD50** 4 AO 12-bit Multioutput Module

ADAM8234-1BD50 ADAM8250-1BA00 ADAM8240-1CA10

ADAM8201-1AA20 ADAM8207-1BA00



ADAM8234-1BD50



Specifications

- **Channels** 2/2
- **Output Data** 4 byte/4 byte
- **Resolution** 12 bit
- **Input Resistance** Voltage 100 kΩ
Current 50 Ω
- **Integration Time** 3 ms
- **Supply Voltage** 24 V_{DC}
- **Input/Output Range** 0-10 V, +/-10 V, 1-5 V,
0-20 mA, 4-20 mA,
+/-20 mA



ADAM8250-1BA00



Specifications

- **Channels** 2 or 4
- **Counter Range** 32 or 16 bit
- **Counter Frequency** 1 MHz
- **Digital Outputs** 2
- **Input/Output Data** 10 byte/10 byte
- **Supply Voltage** 24 V_{DC}
- **Operating Models** Up/down counter compare/
auto-reload, encoder
impulse, period duration,
frequency measuring



ADAM8240-1CA10



Specifications

- **Channels** 1
- **Interface** RS-422/485
- **Baudrates** 150 up to 38.4 kbps
- **Input/Output Data** 16 byte/16 byte
- **Protocol** Modbus[®] (ASCII/RTU)



ADAM8201-1AA20



Specifications

- **Number of Rows** 2
- **Number of Terminals per Row** 11
- **Terminal Colors** Red/blue



ADAM8207-1BA00



Specifications

- **Input Voltage** AC100 - 240 V
- **Frequency** 50/60 Hz
- **Input Current** 0.24 A/AC230 V
- **Inrush Current** Max. 15 A
- **Buffer Time** Min. 10 ms/AC230 V
- **Output Voltage** DC24 V, +/-5%
- **Residual Ripple** <100 mV_{SS} incl. spikes
- **Output Current** 2 A (48 W)
- **Efficiency** Typical 90%
- **Losses** Typical 5 W
- **Connect in Parallel** Yes

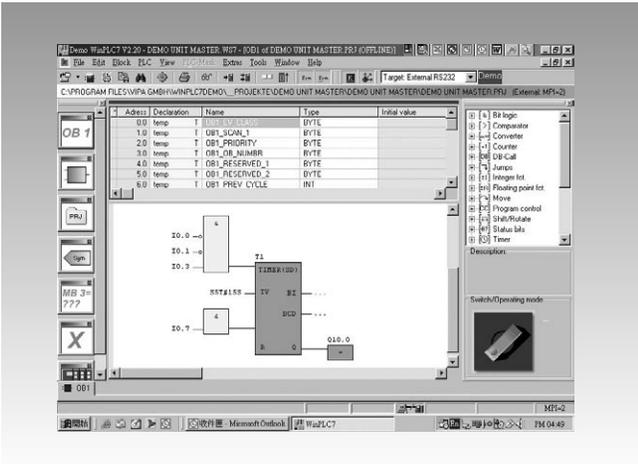
Ordering Information

- **ADAM8234-1BD50** 2 AI/2 AO 12-bit Multi-range Module
- **ADAM8250-1BA00** Counter Module
- **ADAM8240-1CA10** Modbus[®] Module
- **ADAM8201-1AA20** Terminal Module
- **ADAM8207-1BA00** Power Supply

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

ADAM-WinPLC7 ADAM-WinNCS

ADAM8290 ADAM8950-0KB00



ADAM-WinPLC7

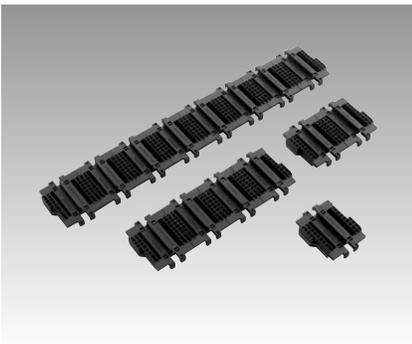
Introduction

The software tool ADAM WinPLC7 is a programming, diagnostics and simulation tool for the ADAM-8000 system.

ADAM WinPLC7 can be used to create simple programs for the ADAM-8000 CPU, diagnostics of the developed program, offline program simulation without controller hardware, import and export configuration file and create related documents.

Features

- Create PLC program (Function Block & Ladder Diagram)
- Fast online connection
- Simple simulation of the PLC program with integrated debugger (breakpoints, single step)
- Powerful control and status display of variables



ADAM8290

Specifications

- **ADAM8290-0AA10** 1-position backplane
- **ADAM8290-0AA20** 2-position backplane
- **ADAM8290-0AA40** 4-position backplane
- **ADAM8290-0AA80** 8-position backplane

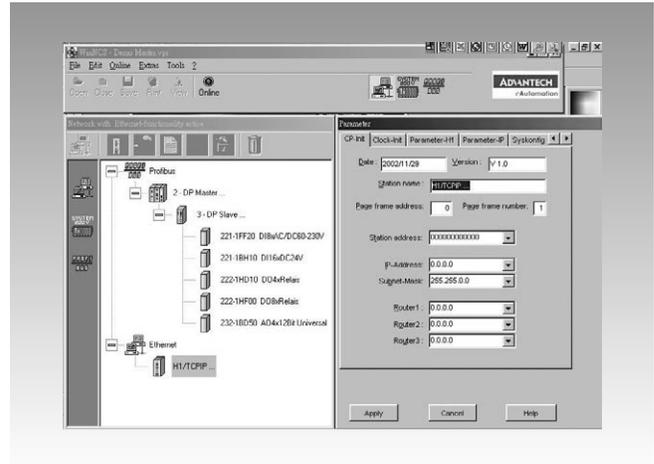


ADAM8950-0KB00

Introduction

ADAM-8000 "Green Cable", programming and download cable for ADAM-8000 CPU 8214/8215/8216 and ADAM-8000 fieldbus master for Profibus-DP

- Programming
- Parameter Setting
- Firmware Update



ADAM-WinNCS

Introduction

ADAM WinNCS was developed for additional convenience for parameterization and handling of ADAM-8000 system components. ADAM WinNCS supports the parameterization of TCP/IP and Profibus master/slave interface module. It also supports the parameterization of the CPU modules for S7 from Siemens®.

Features

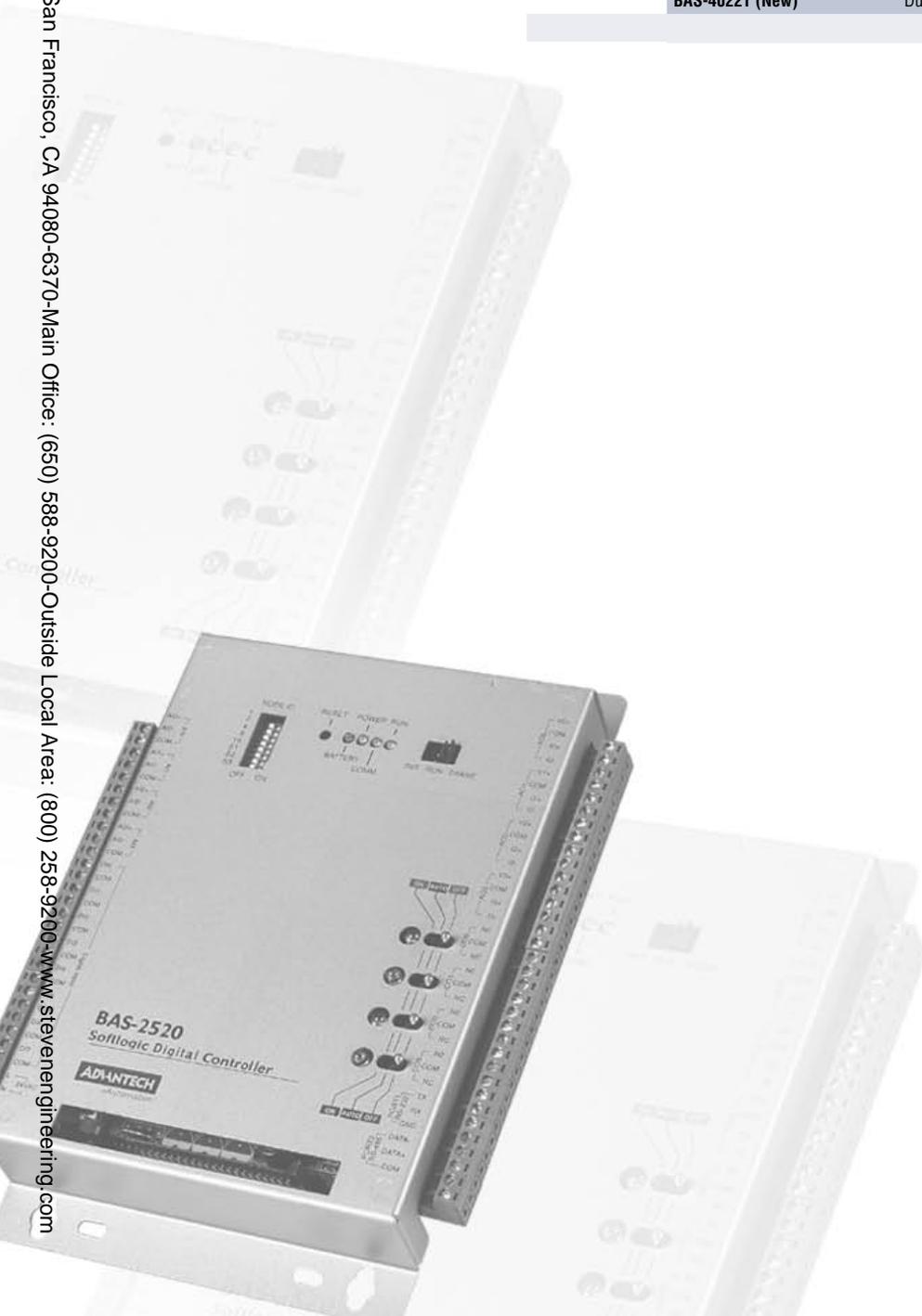
- Parameterization of:
- TCP/IP modules of ADAM CPU214Net/215Net
 - ADAM-8000 Profibus DP master/slave modules
 - TCP/IP CPU modules of S7 from Siemens
 - ADAM-8000 WinNCS Parameterization for Profibus-DP, TCP/IP, H1, IPK and RFC1006

Ordering Information

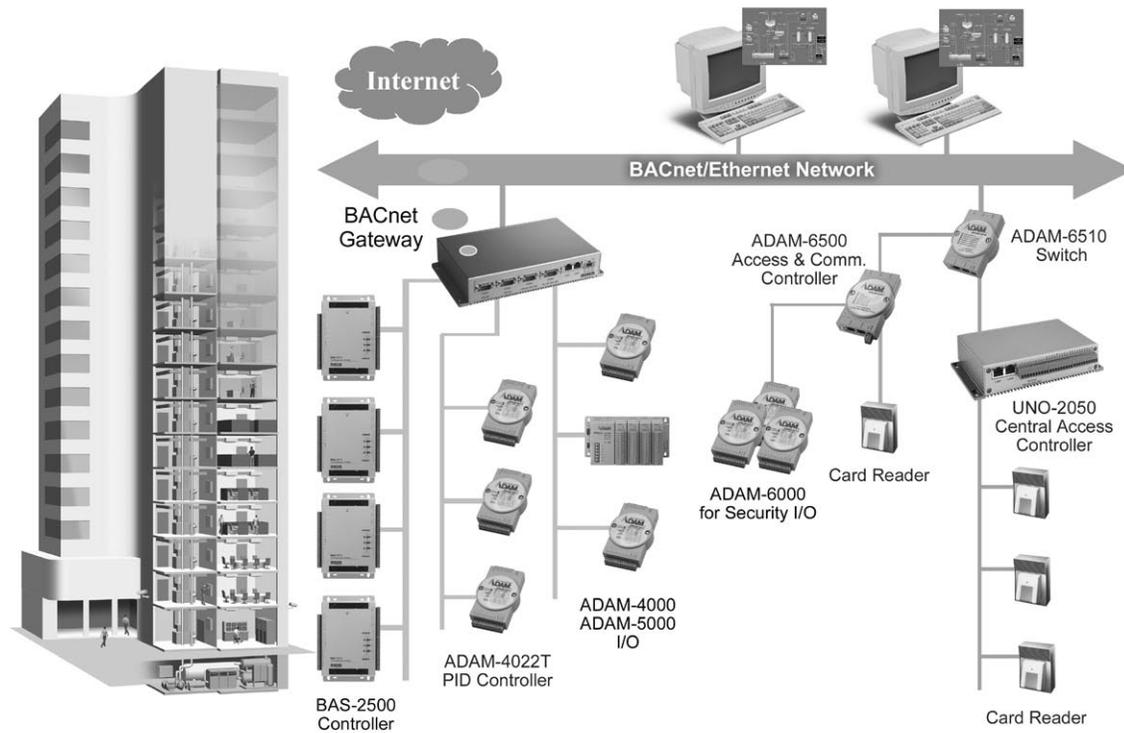
- **ADAM-WinPLC7** ADAM-8000 WinPLC7, single license software for programming, testing, diagnosis and simulation for ADAM-8000 PLC
- **ADAM-WinNCS** ADAM-8000 WinNCS Software
 - **ADAM8290-0AA10** 1-position backplane
 - **ADAM8290-0AA20** 2-position backplane
 - **ADAM8290-0AA40** 4-position backplane
 - **ADAM8290-0AA80** 8-position backplane
 - **ADAM8950-0KB00** Green Cable

Building Automation System BAS-2000 Series

BAS-2000 Series	Building Automation System Overview	17-2
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KW SoftLogic & BA Function Library	IEC 61131 Softlogic Digital Control programming software & function library	17-6
BAS-2520/2514 Series (New)	DOS-based Softlogic Digital Controller	17-8
BAS-2020/2014 Series (New)	20/14-ch Universal Input/Output modules	17-10
BAS-4022T (New)	Dual Loop Thermistor PID Controller	17-12

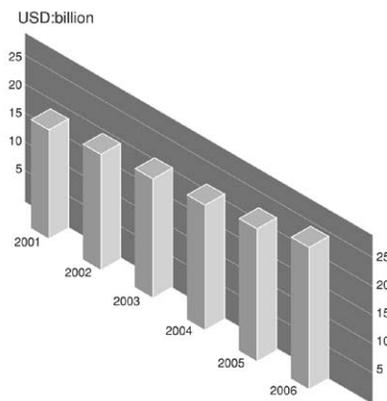


BAS-2000 Series



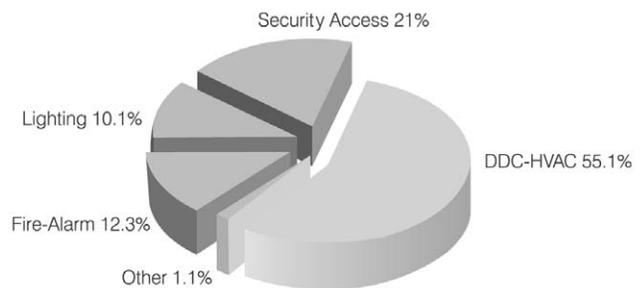
Market Overview

Based on ARC's survey for the worldwide Building Automation market, there is strong growth. They estimate the total market revenue will be grow from 20.4 billions in 2004 to 21.5 billions in 2005 to 24.4 billions in 2006.



A building automation system includes: HVAC-DDC, Security Access, Fire Alarms, Lighting and others miscellaneous equipment. The HVAC system uses about 60% of the energy consumption for a building, so HVAC control would be the most important system for BAS applications. If we look at the total cost of a BAS system, the HVAC system will represent 55%.

BAS Business by System Type (Percent of Revenues)



	DDC System	PLC System
Control Model	Stand-alone control	Stand-alone control
I/O Type	Universal I/O design	Specific I/O design
Networking	RS-485 or RS-232	Serial or Ethernet
Programming Tool	Easy parameter setting	Ladder / Functional block
HMI Software	Device-oriented environment	Object-oriented environment
Integration Capacity w/HMI	Allows integration with proprietary HMI only	Allows Integration with most HMI software

Building Automation System Overview

Controller for Building Automation

A Building Automation system is a different purposed application from typical industrial automation applications. It is designed for commercial building requirements, not for industrial environment requirements. So the controller should be designed for this purpose.

The DDC (Direct Digital Controller) is a controller dedicated to Building Automation applications. The DDC controller must be a stand-alone operating unit, and in order to satisfy the requirements of building I/O and control applications, the I/O design of DDC is universal. Because of wiring costs and wiring installation environments, RS-485 is the major physical layer of the network. Most importantly, the DDC must be a stand-alone operation. Please refer to the table on the previous page for a comparison of the DDC and typical PLC control systems.

System Network

Because of the lower wiring costs and simpler installation, RS-485 is the standard network protocol in the control and device layer of building automation system networks.

Power Supply Requirements

The power supply requirements of typical BAS devices are quite different from industrial equipment. Most industrial controllers and devices are designed with 110/220 V AC or 24 V DC power supply, while most BAS controllers use 24 V AC.

Communication Protocol

BA system networks have their own standards. There are two major standards for BAS networks: BACnet and LonWorks. BACnet (Building Automation Control network) was defined by ASHRAE (American Society of Heating, Refrigerating and Air-conditioning Engineers), the major institute of HVAC vendors in the world. Because it was defined by ASHRAE, it is widely used and accepted for HVAC equipment. LonWorks was defined by Echelon, which is a private company. The basic system architectures of these two standards are different. The BACnet system architecture is quite similar to a typical industrial control system network, so it is more suitable for BA systems in commercial buildings. It has therefore gained the position of almost becoming the de-facto standard for BA systems in commercial buildings. The Advantech BAS-2000 system is designed with this protocol as its standard communication protocol, and for compatibility with 3rd party devices, MODBUS/RTU is also supported.



Modbus-IDA
the architecture for distributed automation

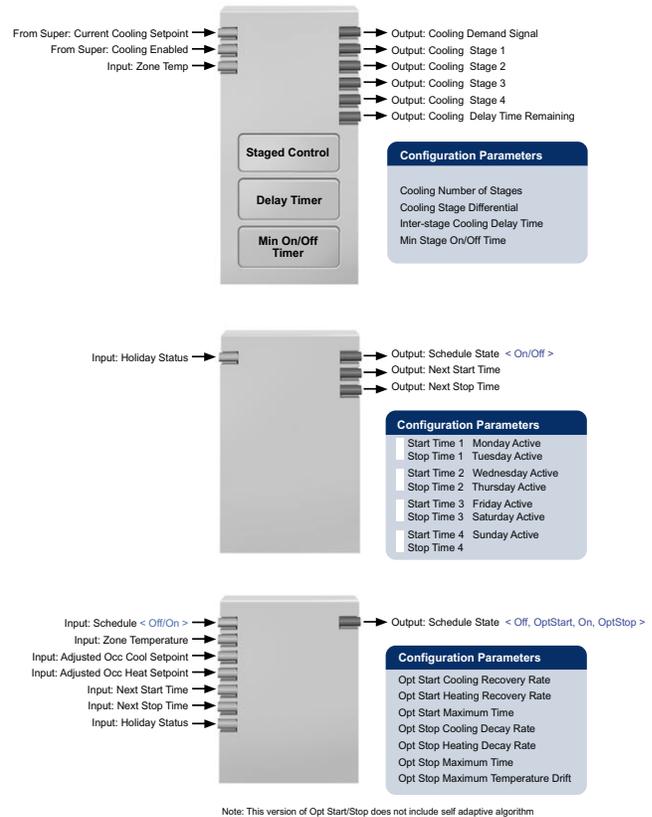
Special Control Functions for BAS

BA systems must be designed for the behavior of the people inside the building, and since the operators and users are unlikely to be engineers or familiar with BA systems, the BAS controls must be designed to be as simple as possible.

For example, a commercial building can be used for offices, hotels and apartments simultaneously. To save energy and operating costs, some parts of the building may be scheduled to reduce/increase the temperature to a level closer to the outside temperature. A schedule function is therefore very important for building automation systems.

HVAC is usually the major control system used in buildings and air-conditioning is a major part of HVAC. Air-conditioning is an industry with much technology know-how, but it has traditionally been the domain of mechanical engineers. Most programmers have difficulties making a solid control program for such applications. So building automation control software must have many built-in HVAC control functions.

Advantech BAS-2000 products have built-in these control functions into a function block library for easy access and development.



1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
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11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

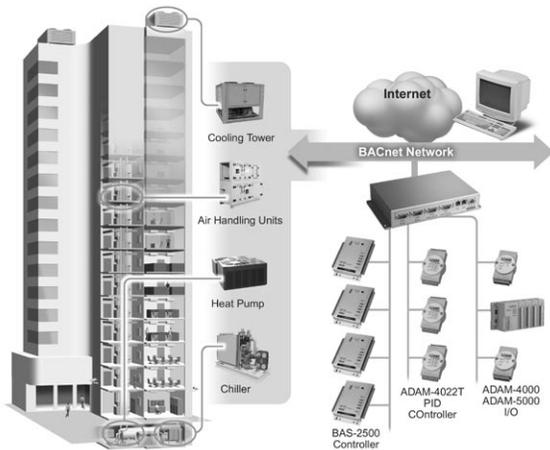
BAS-2000 Series

Building Automation System Configuration



Introduction

Advantech offers a total solution for Building Automation systems including facility management (HVAC, water treatment, power, etc.), security (access control, door/window alarm, etc.) and CCTV systems. Equipped with Advantech's BAS-2000, UNO, VBox and ADAM modules, system integrators can easily create powerful and flexible BAS applications.



Advantech BAS Facility Management Solution

The facility management system includes the control of :

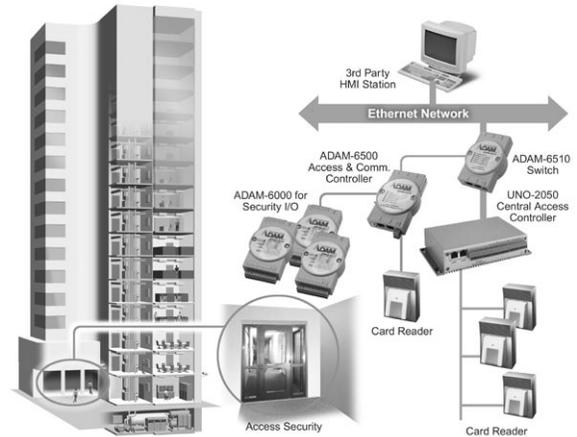
- Chiller Plants
- Water Pumps
- Waste Water Treatment
- Cooling Towers
- Heat Pumps
- Other HVAC Equipment
- Environment Monitoring System (Temperature, Humidity, etc.)
- Other Facility Control/Monitoring Applications

For facility control applications like chiller plant automation, water pump control and cooling tower control, the BAS-2000 system with KW's BA function block library can help build a powerful control system. For distributed zone temperature control, the BAS-4022T dual-loop PID controller would be a perfect selection, and the ADAM-4000 and ADAM-5000 I/O data acquisition modules can be used for facility and environment monitoring systems.

Security System

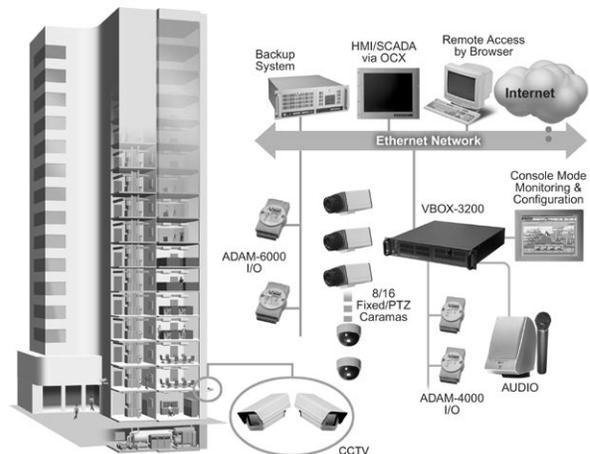
The scope of a typical security system can include :

- Access Control
 - Card reader for system access
 - Access history record
- Illegal access monitoring/alarm system



For access control systems, the UNO-2000 series and ADAM-6500 PC-based platform would be an ideal choice. The ADAM-6000 DI/O module with an event trigger function via the UDP protocol can be a real-time response to start security alarms.

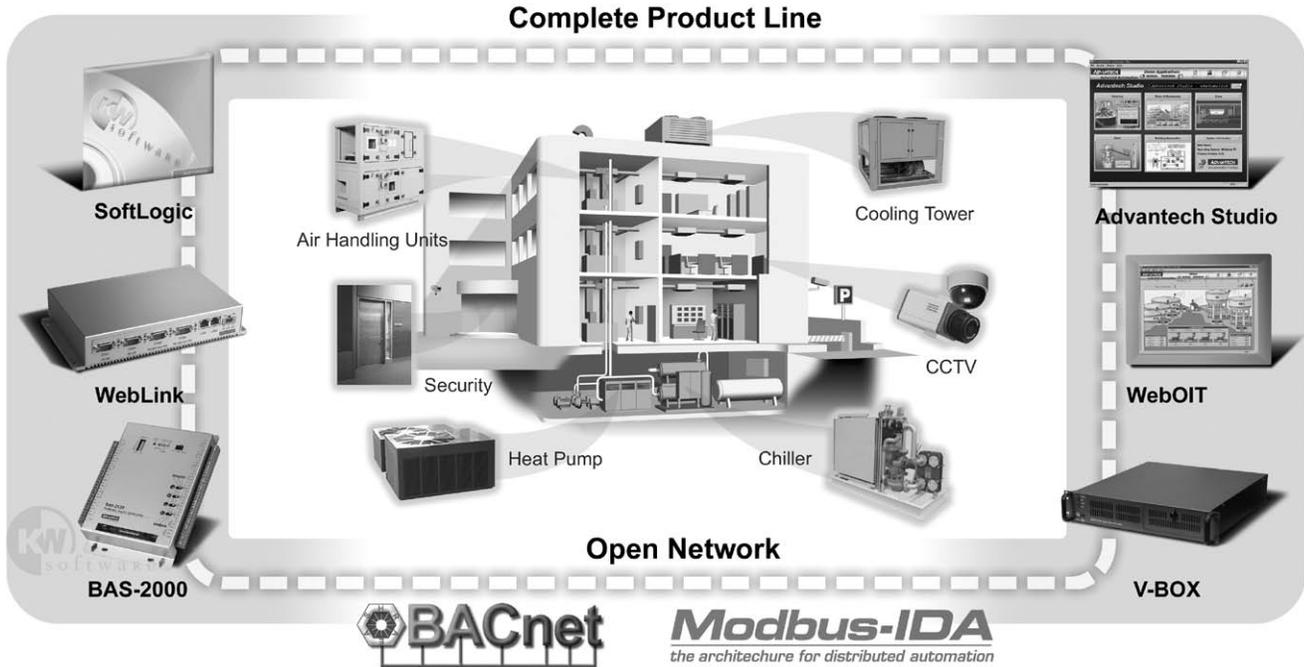
Video System



The VBOX-3200 series is the CCTV system platform for Advantech's BA solution. It supports the MPEG-4 compression algorithm, up to 480 FPS video display and 120 FPS recording capacity, web-enabled remote monitoring, playback function and motion detection plus much more. By equipping it with ADAM I/O modules as a security interlock I/O it can satisfy any requirement for CCTV and security applications.

BAS-2000 Series

BACnet & Modbus Communication



Introduction

The BAS-2000 series supports both BACnet and Modbus protocols. Selection of protocol can be done with software. For the BACnet protocol, BAS-2000 supports the format of BACnet MS/TP. For the Modbus protocol, MODBUS/RTU is the format supported.

Why BACnet

BACnet (Building Automation Control network) protocol is developed by the ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers). It has become the most popular Building Automation network standard worldwide, and most BAS devices and HVAC equipment has been built with this protocol now. Because the main physical layer of the network in the BAS controller layer is RS-485, the format of the BACnet protocol being used in RS-485 is BACnet MS/TP. This is a good reason why the BAS-2000 series use the BACnet MS/TP as its default protocol.

Why Modbus

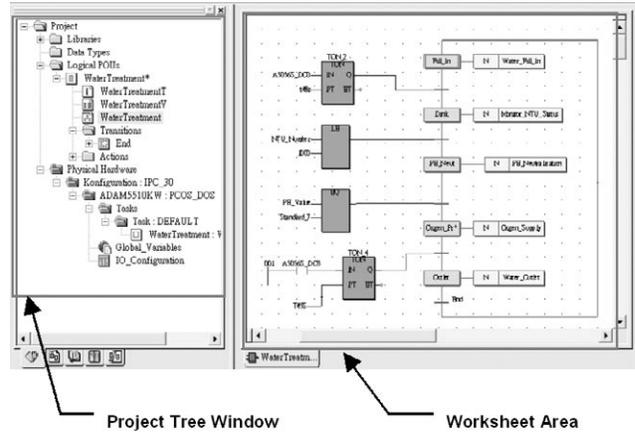
Modbus is the most popular protocol in automation systems so far. Almost all traditional control systems or equipment support or is compatible with this protocol. It is widely used in general-purpose devices and equipment.

In a typical building there are power systems, water supply systems, HVAC systems, water treatment systems and so on. These systems require quite a lot of machinery, and most of this machinery is not designed for building automation systems. They are designed for both building and industrial applications, and therefore do not support the BACnet protocol. But the Modbus protocol can usually be found in these machines.

For a complete building automation system, all equipment should be controlled by one system. The easiest method to implement this is by using a BAS DDC controller. But most traditional DDC controllers don't support this feature. The BAS-2000 series controllers supports Modbus, which means you can create Modbus compatible building automation control systems and control all equipment in a building with one system.

1	Software
2	IPPC
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10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

KW SoftLogic & BA Function Library



Project Tree Window

Worksheet Area

Introduction

To make it easier for system integrators to approach the building automation market, the BAS-2000 series is not only embedded with KW SoftLogic software, Advantech has also developed several function blocks that are especially made for building automation applications. These function blocks were developed by experienced BAS consultants in USA. The 30+ building automation function blocks are bundled with the BAS-2000 series, so the control programming work on the BAS-2000 series is the same as a typical DDC. There is no need to create control programs by complicated basic functions such as block and ladder assembly. Just pull the required BA function block into the KW programming worksheet for the specific building control application. It will save programming time, and by using the qualified BA function block, it can reduce potential programming errors for the controller application.

Flexible Expansion

The BAS-2000 series use KW SoftLogic as its control engine. KW SoftLogic opens the function block editing interface for Advantech, that is, new function blocks can be added into the BAS-2000 series controllers at any time. You can use C programming to make a control application program, then compile it to become a function block for KW SoftLogic. Advantech will continuously develop and collect more value-adding building automation function blocks for the BAS-2000 system. Compared with traditional DDCs, the BAS-2000 series of controllers will be much more powerful in the future.

Function Block Libraries

Unitary Zone Temperature-Based Function Blocks

Stage Cooling Control

Provides control of up to four mechanical cooling stages based on the HVAC unit's zone temperature. The Device Supervisor block enables or disables the mechanical cooling section.

Modulating Cooling Control

Provides control of any modulating cooling device such as a valve or damper based on the HVAC unit's zone temperature. The Device Supervisor block enables or disables the mechanical cooling section.

Staged Heating Control

Provides control of up to four heating stages based on the HVAC unit's zone temperature. The Device Supervisor block enables or disables the heating section.

Modulating Heating Control

Provides control of any modulating heating device such as a valve or damper based on the HVAC unit's zone temperature. The Device Supervisor block enables or disables the heating section.

Heat Pump Reversing Valve Control

Provides control of Heat Pump points based on outputs from Staged Cooling and Heating Control Blocks and the values of the listed configuration parameters.

Economizer Control

Enthalpy Calculation

Calculates the Total Heat Content for one zone or air stream. Typically two zones or air streams are compared and the air stream with the least total heat content is identified as the lowest cost cooling source.

Single Speed Fan Control

Provides On/Off control of a single speed fan. The Device Supervisor block sets the Occupancy Mode and HVAC Mode.

VFD Fan Control

Provides control of a Fan Start/Stop point and Fan Speed based on the HVAC unit's Supply Air Static Pressure. The Device Supervisor block sets the Occupancy Mode and HVAC Mode.

Return Fan Tracking

Provides control of Return Fan Start/Stop and Return Fan Speed based on either a percentage of Supply Fan speed, or a fixed CFM offset in the Return Air-stream versus that of the Supply Air-stream.

Sliding Window Smoothing

Smooths out fluctuating values by performing a sliding window average of a number of separate readings of the same value using the parameters listed.

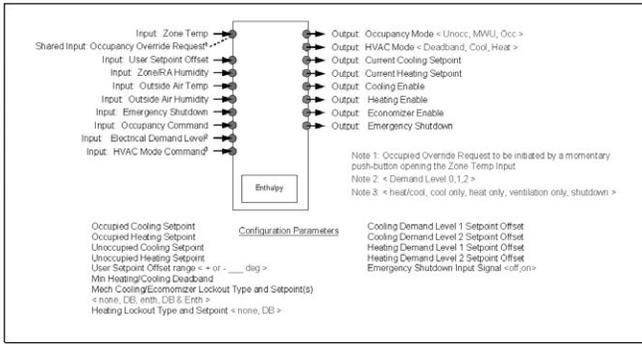
CFM Calculation

Converts measured Velocity Pressure into CFM airflow, using the parameters listed.

Device Supervisor Control "Super"

The Device Supervisor reads in all building-wide information pertaining to the status of Schedules, Holidays, Free Cooling, Electrical Demand, Emergency and other conditions. It also contains all zone-specific setpoints and settings for how to respond to changes in the building-wide values.

IEC 61131 Softlogic Digital Control programming software & function library



Schedule

Provides scheduling capabilities within the unitary controller. The user may enter up to 4 start and stop time pairs, and identify which days of the week those times apply to. Multiple schedules may be used to handle different start and stop times on different days of the week.

Optimum Start/Optimum Stop

Calculates the amount of Early Start Time required to achieve Adjusted Occupied Cooling or Heating zone setpoint at the Next Start Time (from schedule), and the amount of Early Stop Time permissible (which will result in no more temperature drift from setpoint than that specified in Opt Stop Maximum Temperature Drift) by the Next Stop Time. The Schedule State Output will take the Schedule and Optimum Start/Stop times into account and set the integrated Schedule State accordingly.

Alarm

Provides High and Low Zone temperature Alarming capabilities during Occupied periods, based on user entries. Enable Delay sets the amount of time to hold off alarms upon first transitioning to Occupied for the day (this will allow for warm-up, etc.). Alarm Delay sets the amount of time the Zone Temperature may be outside of the safe range before an Alarm is generated. This type of delay is helpful to reduce nuisance alarms, etc.

Minimum Timer

Minimum On Satisfied will be set on once the Monitored Value has been on at least the amount of time specified in Min On Time. Similarly, the Minimum Off Satisfied will be set on once the Monitored Value has been off at least the amount of time specified in Min Off Time.

Delay Timer

On Delay Wait Satisfied will be set on once the Monitored Value has been on at least the amount of time specified in On Delay Wait Time. Off Delay Hold Active will be set on when the Monitored Value goes on. It will stay on until the Monitored Value has transitioned to off, and has been off at least the amount of time specified in Off Delay Hold Time.

“Generic” Function Blocks to add built up Air Handler and other additional functionality

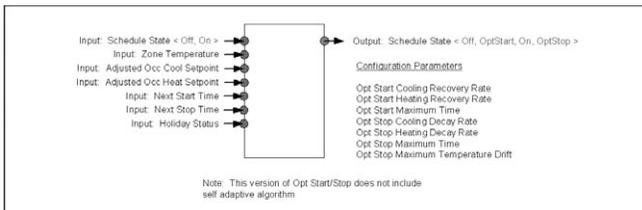
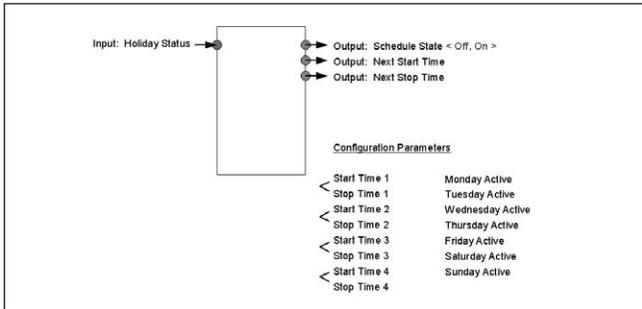
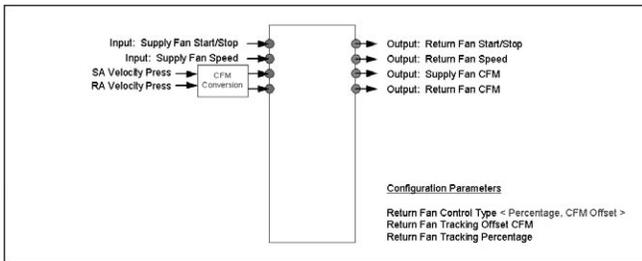
Modulating Control/Modulating Control with Reset

Provides control of any modulating device such as a cooling or heating valve or damper, or a pressure controlled VFD, based on the Control Input. The Enable Input enables or disables the block. When disabled, the Demand Signal Output will be set to 0.0%.

Staged Control/Staged Control with Reset

Provides control of up to eight stages of heating, cooling, pressure, etc., based on the Control Input. The Enable Input enables or disables the block. When disabled, the Demand Signal output will be set to 0.0% and all stages will be set off.

General Alarm Signal Inversion



BAS-2520

20-Channel Softlogic Digital Controller

NEW



Features

- Stand-alone programmable controller
- Pre-built BA Control Function Blocks
- Supports IEC61131-3 control languages
- Supports Modbus/RTU and BACnet protocols
- Up to 115.2 kbps communication speed
- Max. I/O expansion up to 80 points for unique controller
- Built-in Watchdog Timer
- Wall mounting panel case

Introduction

BAS-2520 is a 20-channel stand-alone controller for building automation control applications. Designed as a typical DDC (Direct Digital Controller), but customized for use in buildings, it is designed with universal I/O, a thin wall mountable case, and comes with embedded control algorithms for HVAC, lighting, security and other algorithms that are used in building automation applications.

SoftLogic Programming

This powerful, stand-alone controller is intuitive and easy to use. All controllers in the BAS-2000 series use KW SoftLogic for their programming, which is fully compatible with the IEC61131-3 standard. You can use multiple languages such as: Function Block Diagram (FBD), Sequential Flow Chart (SFC), Ladder Diagram (LD), Structure Text (ST) and Instruction List (IL) for control function configuration. This reduces engineering efforts, as there is no need to learn proprietary programming languages, and development time can be drastically reduced.

Open Modbus/RTU Protocol

The controllers of the BAS-2000 series use the Modbus/RTU protocol, which is the most popular and cost effective solution for field data communication, with transmission speeds up to 115.2 kbps. By using the Modbus/RTU protocol, it is much easier to integrate control data between a BAS-2000 series controller and field machinery such as compressors, chillers, inverters and power panels. The BACnet MS/TP protocol will be an optional protocol in the near future.

Specifications

- **Channels** 20
- **Communication** Port 1 : RS-232 for programming,
Port 2 : RS-485 for Network
Max. Communication Distance : 4000 feet (1.2 km)
Speed : 1200, 2400, 9600, 19200, 38.4 k, 57.6 k,
115.2 kbps Up to 256 node in network
- **I/O Type** On-board 4 AI, 8 DI, 4 AO and 4 DO
(Local Bus for I/O expansion up to total 80 points)
- **Analog Input** 4 ~ 20 mA, 0 ~ 20 mA, 0 ~ 10 V_{DC}, RTD
(PT100/PT1000, Thermistor (software configurable))
- **Digital Input** Dry Contact Logic level 1 : close
Logic level 0 : open
Wet Contact Logic level 1 : +10 ~ 30 V_{DC}
Logic level 0 : +3 V_{DC} max.
- **Analog Output** 4 ~ 20 mA, 0 ~ 20 mA, 0 ~ 10 V_{DC}
(software configurable)
- **Digital Output** Dry Contact (Rating : 240 V_{AC}, 3 A), LED indicator,
manual switch for ON/AUTO/OFF selection
- **LED Indicators** Battery, Power, Communication (for RS-485)

- **Built-in Watchdog Timer**

- **Power Requirement** 24 V_{AC}

- **Power Consumption** 15 W

- **Environment** Operating Temp. : -10 ~ 60 °C (14 ~ 140 °F)
Storage Temp. : -25 ~ 85 °C (-13 ~ 185 °F)
Humidity : 5 ~ 95% non-condensing

Ordering Information

- **BAS-2520** 20-Channel Softlogic Digital Controller

BAS-2514

14-Channel Softlogic Digital Controller

NEW



Features

- Stand-alone programmable controller
- Pre-built BA Control Function Block
- Support IEC61131-3 control languages
- Supports Modbus/RTU and BACnet protocols
- Up to 115.2 kbps communication speed
- Max. I/O expansion up to 74 points for unique controller
- Built-in Watchdog Timer
- Wall mounting panel case

Introduction

BAS-2514 is a 14-channel stand-alone controller for building automation control applications. Designed as a typical DDC (Direct Digital Controller), but customized for use in buildings. It is designed with universal I/O, a thin wall mountable case, and comes with embedded control algorithms for HVAC, lighting, security and other algorithms that are used in building automation applications.

SoftLogic Programming

This powerful, stand-alone controller is intuitive and easy to use. All controllers in the BAS-2000 series use KW SoftLogic for their programming, which is fully compatible with the IEC61131-3 standard. You can use multiple languages such as: Function Block Diagram (FBD), Sequential Flow Chart (SFC), Ladder Diagram (LD), Structure Text (ST) and Instruction List (IL) for control function configuration. This reduces engineering efforts, as there is no need to learn proprietary programming languages, and development time can be drastically reduced.

Open Modbus/RTU Protocol

The controllers of the BAS-2000 series use the Modbus/RTU protocol, which is the most popular and cost effective solution for field data communication, with transmission speeds up to 115.2 kbps. By using the Modbus/RTU protocol, it is much easier to integrate control data between a BAS-2000 series controller and field machinery such as compressors, chillers, inverters and power panels.

Specifications

- **Channels** 14
- **Communication** Port 1 : RS-232 for programming,
Port 2 : RS-485 for Network
Max. Communication Distance : 4000 feet (1.2 km)
Speed : 1200, 2400, 9600, 19200, 38.4 k, 57.6 k,
115.2 kbps
Up to 256 nodes in network
- **I/O Type** On-board 4 AI, 4 DI, 3 AO and 3 DO (Local Bus for I/O expansion up to total 74 points)
- **Analog Input** 4 ~ 20 mA, 0 ~ 20 mA, 0 ~ 10 V_{DC}, RTD (PT100/PT1000, Thermistor (software configurable))
- **Digital Input** Dry Contact Logic level 1 : close
Logic level 0 : open
Wet Contact Logic level 1 : +10 to 30 V_{DC}
Logic level 0 : +3 V_{DC} max.
- **Analog Output** 4 ~ 20 mA, 0 ~ 20 mA, 0 ~ 10 V_{DC} (software configurable)
- **Digital Output** Dry Contact (Rating : 240 V_{AC}, 3A), LED indicator, manual switch for ON/AUTO/OFF selection
- **LED Indicators** Battery, Power, Communication (for RS-485)
- **Built-in Watchdog Timer**
- **Power Requirement** 24 V_{AC}

- **Power Consumption** 15 W
- **Environment** Operating Temp. : -10 ~ 60 °C (14 ~ 140 °F)
Storage Temp. : -25 ~ 85 °C (-13 ~ 185 °F)
Humidity : 5 ~ 95% non-condensing

Ordering Information

- **BAS-2514** 14-Channel Softlogic Digital Controller

1	Software
2	IPPC
3	TPC
4	FPM
5	ATM & AWS
6	DA&C
7	cPCI
8	ADAM-3000
9	Motion Control
10	ICOM
11	eConnectivity
12	UNO
13	ADAM-4000
14	ADAM-5000
15	ADAM-6000
16	ADAM-8000
17	BAS

BAS-2020

20-Channel I/O Expansion Module



Features

- 20-channel I/O Expansion Module for BAS-2514 and BAS-2520
- Local Bus Connection with BAS-2514 and BAS-2520
- Up to 2 meters expansion
- Power Supplied by BAS-2514 and BAS-2520 through Local Bus Cable, no External Power Supply Required
- Wall Mounting panel case

Introduction

BAS-2020 is a 20-channel expansion module for a BAS-2000 system. The I/O capacity of a BAS-2000 system can easily be expanded by cost-effective I/O expansion modules. Up to three expansion modules can be added to the controller, so you can get the number of I/O points you need. Combine a controller with different expansion modules for: 28, 34, 40, 42, 48, 54, 56, 60, 62, 68, 74 or 80 I/O points.

No External Power Required

To reduce wiring costs and make the modules easier to configure, the BAS expansion modules were designed to be powered by the connected BAS-2000 controller. The required power for the I/O expansion module is transferred through the local bus from the BAS-2000 controller. No additional power supply module or power wiring is required.

Specifications

- **Channels** 20
- **I/O Type** On-board 4 AI, 8 DI, 4 AO and 4 DO
- **Analog Input** 4 ~ 20 mA, 0 ~ 20 mA, 0 ~ 10 V_{DC}, RTD (PT100/PT1000, Thermistor (software configurable))
- **Digital Input**
 - Dry Contact Logic level 1 : close
Logic level 0 : open
 - Wet Contact Logic level 1 : +10 to 30 V_{DC}
Logic level 0 : +3 V_{DC} max.
- **Analog Output** 4 ~ 20 mA, 0 ~ 20 mA, 0 ~ 10 V_{DC} (software configurable)
- **Digital Output** Dry Contact (Rating : 240 V_{DC}, 3 A), LED indicator, manual switch for ON/AUTO/OFF selection
- **LED Indicators** Power
- **Built-in Watchdog Timer**
- **Power Requirement** No External Power Supply Required (The I/O Expansion Module is powered by Controller through Local Bus)
- **Power Consumption** 15 W
- **Environment** Operating Temp. : -10 ~ 60 °C (14 ~ 140 °F)
Storage Temp. : -25 ~ 85 °C (-13 ~ 185 °F)
Humidity : 5 ~ 95% non-condensing

Ordering Information

- **BAS-2020** 20-Channel I/O Expansion Module

BAS-2014

14-Channel I/O Expansion Module



Features

- 14-channel I/O Expansion Module for BAS-2514 and BAS-2520
- Local Bus Connection with BAS-2514 and BAS-2520
- Up to 2 meters Expansion Length
- Power Supplied by BAS-2514 and BAS-2520 through Local Bus Cable, no External Power Supply Required
- Wall Mounting panel case

Introduction

BAS-2014 is a 14-channel expansion module for a BAS-2000 system. The I/O capacity of a BAS-2000 system can easily be expanded by cost-effective I/O expansion modules. Up to three expansion modules can be added to the controller, so you can get the number of I/O points you need. Combine a controller with different expansion modules for: 28, 34, 40, 42, 48, 54, 56, 60, 62, 68, 74 or 80 I/O points.

No External Power Required

To reduce wiring costs and make the modules easier to configure, the BAS expansion modules were designed to be powered by the connected BAS-2000 controller. The required power for the I/O expansion module is transferred through the local bus from the BAS-2000 controller. No additional power supply module or power wiring is required.

Specifications

- **Channels** 14
- **I/O Type** On-board 4 AI, 4 DI, 3 AO and 3 DO
- **Analog Input** 4 ~ 20 mA, 0 ~ 20 mA, 0 ~ 10 V_{DC}, RTD (PT100/PT1000, Thermistor (software configurable))
- **Digital Input**
 - Dry Contact Logic level 1 : close
Logic level 0 : open
 - Wet Contact Logic level 1 : +10 to 30 V_{DC}
Logic level 0 : +3 V_{DC} max.
- **Analog Output** 4 ~ 20 mA, 0 ~ 20 mA, 0 ~ 10 V_{DC} (software configurable)
- **Digital Output** Dry Contact (Rating : 240 V_{AC}, 3 A), LED indicator, manual switch for ON/AUTO/OFF selection
- **LED Indicators** Power
- **Built-in Watchdog Timer**
- **Power Requirement** No External Power Supply Required (The I/O Expansion Module is powered by Controller through Local Bus)
- **Power Consumption** 15 W
- **Environment** Operating Temp. : -10 ~ 60 °C (14 ~ 140 °F)
Storage Temp. : -25 ~ 85 °C (-13 ~ 185 °F)
Humidity : 5 ~ 95% non-condensing

Ordering Information

- **BAS-2014** 14-Channel I/O Expansion Module

- 1 Software
- 2 IPPC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS

BAS-4022T

Dual Loop PID Controller



Features

- 2 loop PID control algorithms built in one package
- 2 Analog Input/1 Analog Output/1 Digital Input/1 Digital Alarm Output for 1 PID loop
- Analog Input Signal : 4 ~ 20 mA, 0 ~ 10 V_{DC}, 3 k & 10 k Thermistor
- Analog Output Signal : 0 ~ 10 V_{DC}, 0 ~ 20 mA, 4 ~ 20 mA
- Heating/Cooling (Direct/Reverse) Action Mode
- Loop Open/Close (PID Disable/Enable) and Analog Output Manual Control Modes
- 512 KB Prog. Memory
- First Order Filter
- System Emergency Shutdown
- Modbus/RTU Protocol Support

Introduction

Temperature PID controllers have been widely used in HVAC systems in building automation. Advantech offers the compact dual loop controller BAS-4022T. In addition to dual-loop design for economic reasons, BAS-4022T can be applied to various signals in the field such as: 4-20 mA, 0-10 V_{DC}, 3k and 10k thermistor. BAS-4022T also supports the Modbus/RTU protocol. HMI software can be used to easily access the module to monitor I/O data and change the control parameters through a Modbus interface, Modbus driver or Modbus OPC server.

Built-in PID Loop Control Algorithms

BAS-4022T has been built with 2 PID control loops. There are two analog inputs, one analog output, one digital input and one digital output for I/O control parameters for each loop. For the two analog input signals, AI#1 is for Pv1, and AI#2 is for Pv2. The analog output signal is for the Mv output value. Digital input can be used for the emergency shutdown input signal. It could remotely stop the PID loop action if there is an emergency situation. One digital output is then designed to be an alarm output if the analog input/output signal value is over its limit and action is required.

Built-in Watchdog Timer

The watchdog timer is designed to automatically reset the CPU if the system fails.

Specifications

- **Channels** 2 loop PID Controller
- **Analog Input** 4 Channel Differential Input
Effective resolution : 16-bit
Input type : 4 ~ 20 mA, 0 ~ 10 V_{DC}, 3 k & 10 k Thermistor
- **Analog Output** 2 Channels
Effective resolution : 12-bit
Output type : 0 ~ 10 V, 0 ~ 20 mA, 4 ~ 20 mA
- **Digital Input** 2 Channels
Protected by photocouple
Support Dry/Wet Contact
- **Digital Output** 2 Channels
Open Collect Output
30 V_{DC}/max, 100 mA
Isolation Voltage : 2000 V_{DC}
- **Input Impedance** 10 Ω
- **Accuracy** ± 0.15% or better
- **Zero Drift** ± 6 mV/ °C
- **Span Drift** ± 25 ppm/ °C
- **CMR @ 50/60 Hz** 92 dB
- **Built-in Watchdog Timer**
- **Individual Wire Burn-Out Detection**
- **Power Requirements** Unregulated +10 ~ +30 V_{DC}
- **Power Consumption** 2 W/Typical, 3 W/Max

Environment

- **Operating Temperature** -10 ~ 60° C
- **EMI** Meets FCC Class A
- **Storage Temperature** -25 ~ 85 °C
- **Humidity** 5 ~ 95% non-condensing

Ordering Information

- **BAS-4022T-A** Dual Loop PID Controller for Building Automation

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