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Distributed DA&C Systems ADAM-5000 Series

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.

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Class I, Div. 2 Groups ABCD
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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.
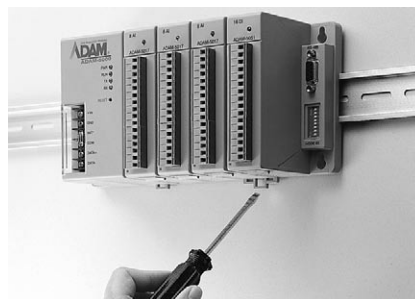
DIN-rail Mounting
Installed with industrial standard DIN-rails

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

Simple & Low Cost Network Diagram
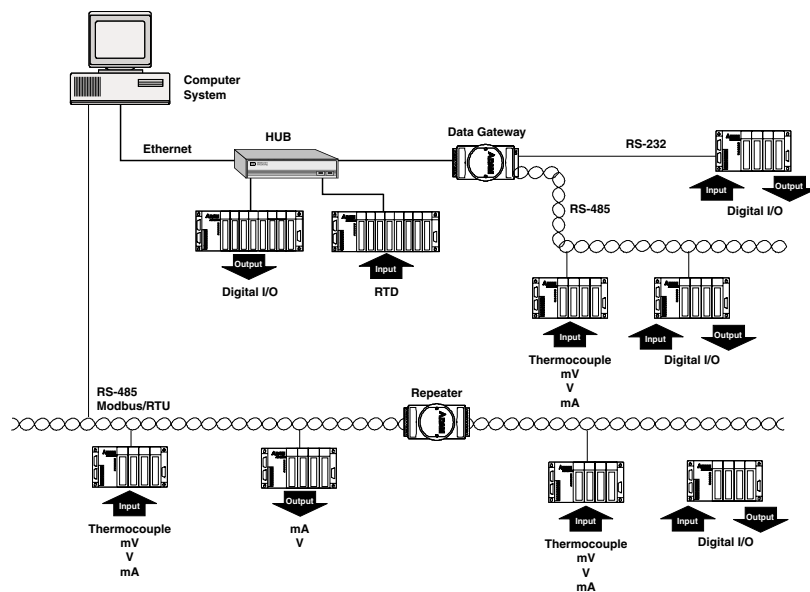
Computer System

HUB

Data Gateway

RS-232

Ethernet

Digital I/O

Output — Digital I/O

Input — RTD

RS-485

Input — Thermocouple mV V mA

Input — Digital I/O

Output

RS-485 Modbus/RTU

Repeater

Input — Thermocouple mV V mA

Output — mA V

Input — Thermocouple mV V mA

Output — Digital I/O

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

All product specifications are subject to change without notice — Last updated : January 2005

ADAM-5000 Series

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.

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.

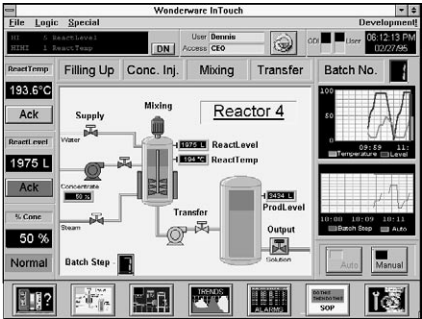**ADVANTECH**   **Distributed DA&C Systems**

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	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
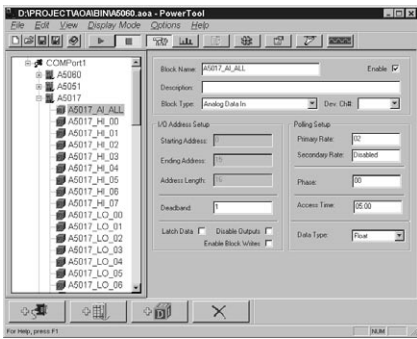
ADAM-5000/485
ADAM-5000E

Distributed DA&C System Based on RS-485
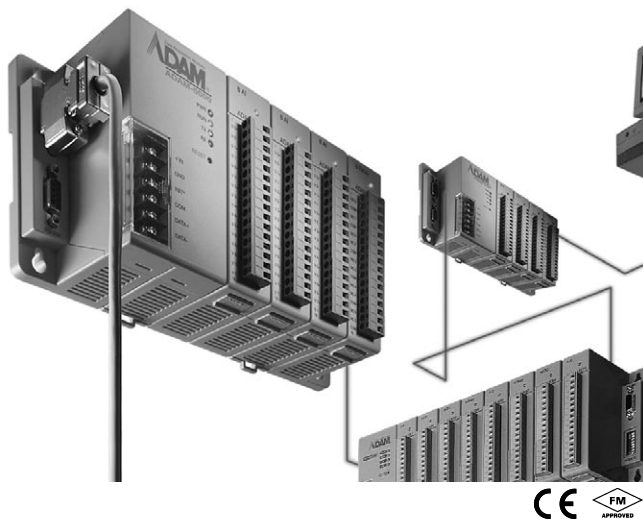
Features

- RS-485 Communication for easy installation and networking
- 4 or 8 slots for up to 128 points data monitoning card control in one module
- Extensive Software support, includes windows DLL drivers, OCX drivers, OPC server and popular HMI/SCAPA 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 mm^2 to 2.5 mm^2, 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

Panel/rack mounting hole — RS-485 port — Diagnostic LED — RS-485 port — Locking buttons — Panel/rack mounting hole

RS-232 port — Communication terminal (RS-485 port) — Power terminal — Industrial connector — DIP switch — Plug-in terminal
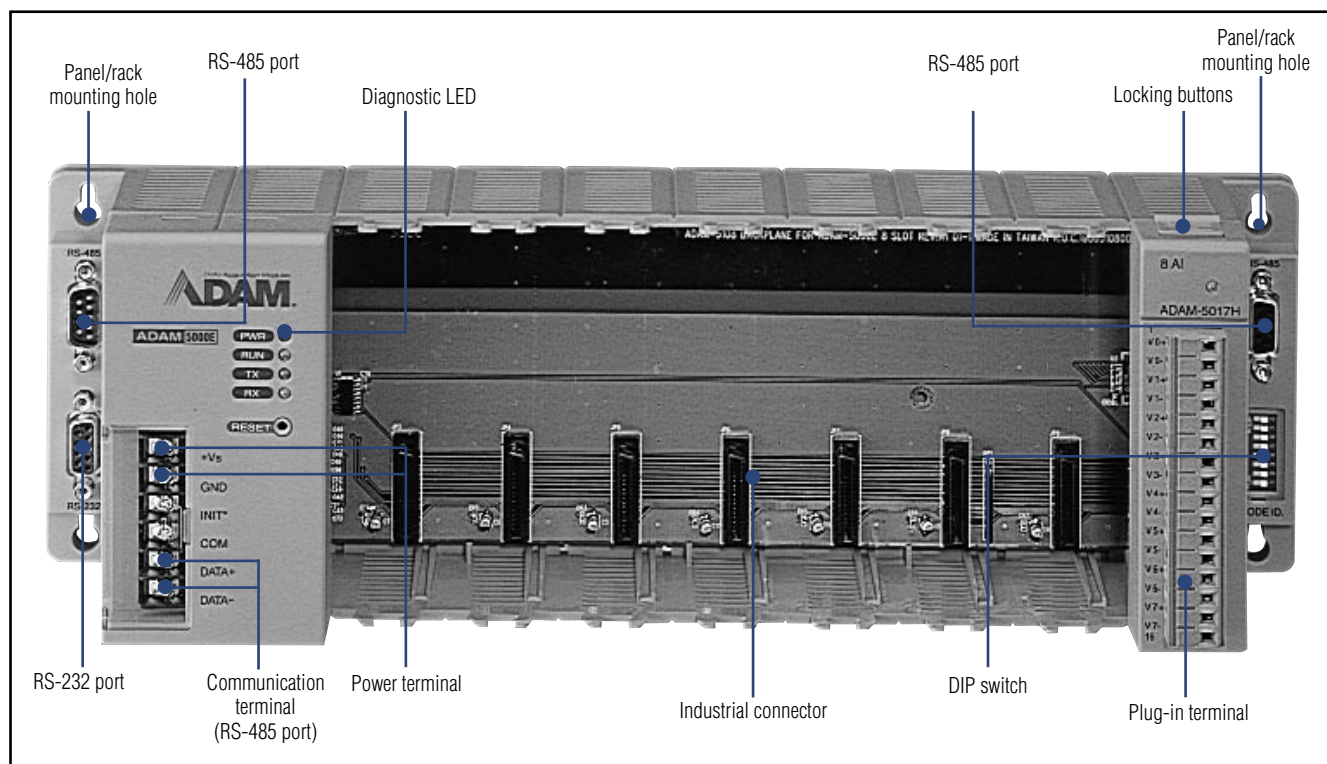
Feature Details

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.

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/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
- **Terminal Block** #22 AWG

Serial Network

- **Interface** RS-485
- **Comm. Protocal** Modbus/RTU
- **Max. Node** Up to 32 modes
- **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
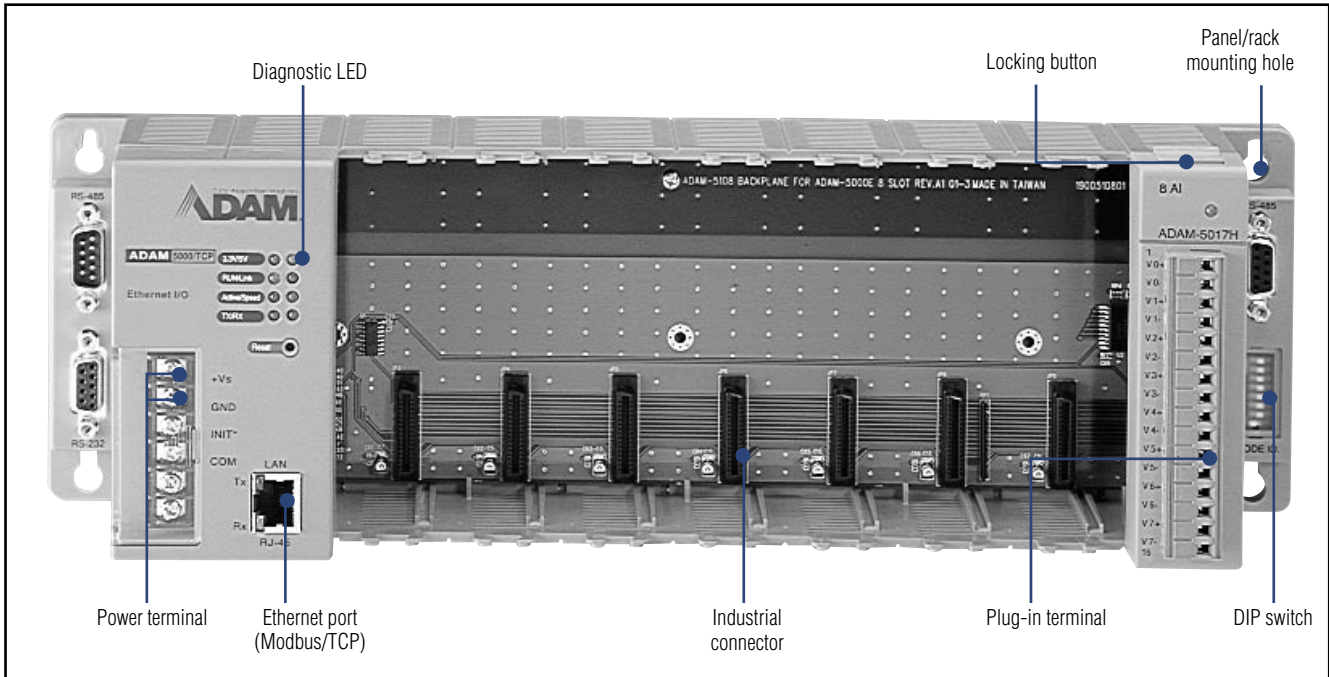- **Modbus/TCP OPC Server**

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

ADVANTECH **Distributed DA&C Systems**

Diagnostic LED

Locking button

Panel/rack
mounting hole

Power terminal

Ethernet port
(Modbus/TCP)

Industrial
connector

Plug-in terminal

DIP switch

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 Handing & 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
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17 BAS

ADAM-5510

PC-Based Programmable Controller

FCC FM APPROVED CE
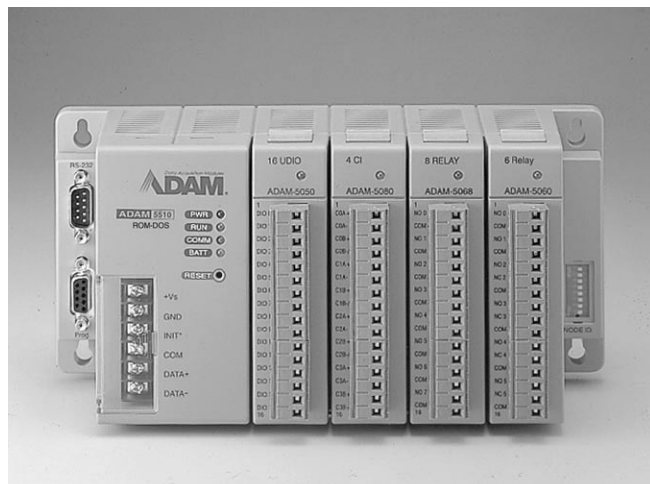
Features

- 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

ADVANTECH **Distributed DA&C Systems**

All product specifications are subject to change without notice

Last updated : January 2005

ADAM-5511

PC-based Programmable Controller with Modbus®

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)

FCC CE

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
PC-based Programmable Controller

ADAM-5510E
8-slot PC-based Programmable Controller

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

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Last updated : January 2005

Panel/Rack Mounting Hole — Diagnostic LED — I/O Modules — Locking Button
Power Terminal — Plug-in Terminal — DIP Switch
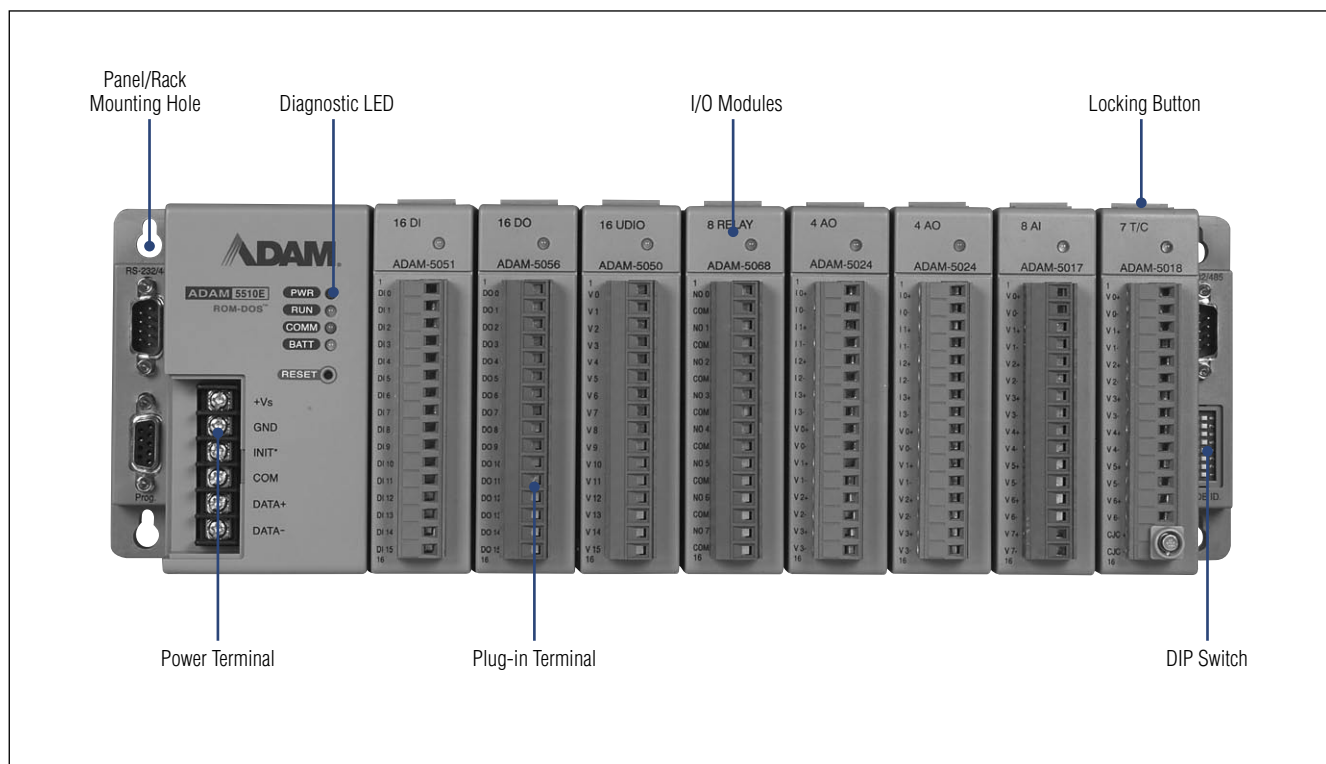
Why PC-based Control?

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.

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/TCP
ADAM-5510E/TCP

Ethernet-enabled Programmable Controller

8-Slot Ethernet-enabled Programmable Controller

NEW

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

FCC CE

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

ADVANTECH **Distributed DA&C Systems**

Panel/Rack Mounting Hole   Diagnostic LED   I/O Modules   Locking Button

Power Terminal   Ethernet Port   Plug-in Terminal   DIP Switch
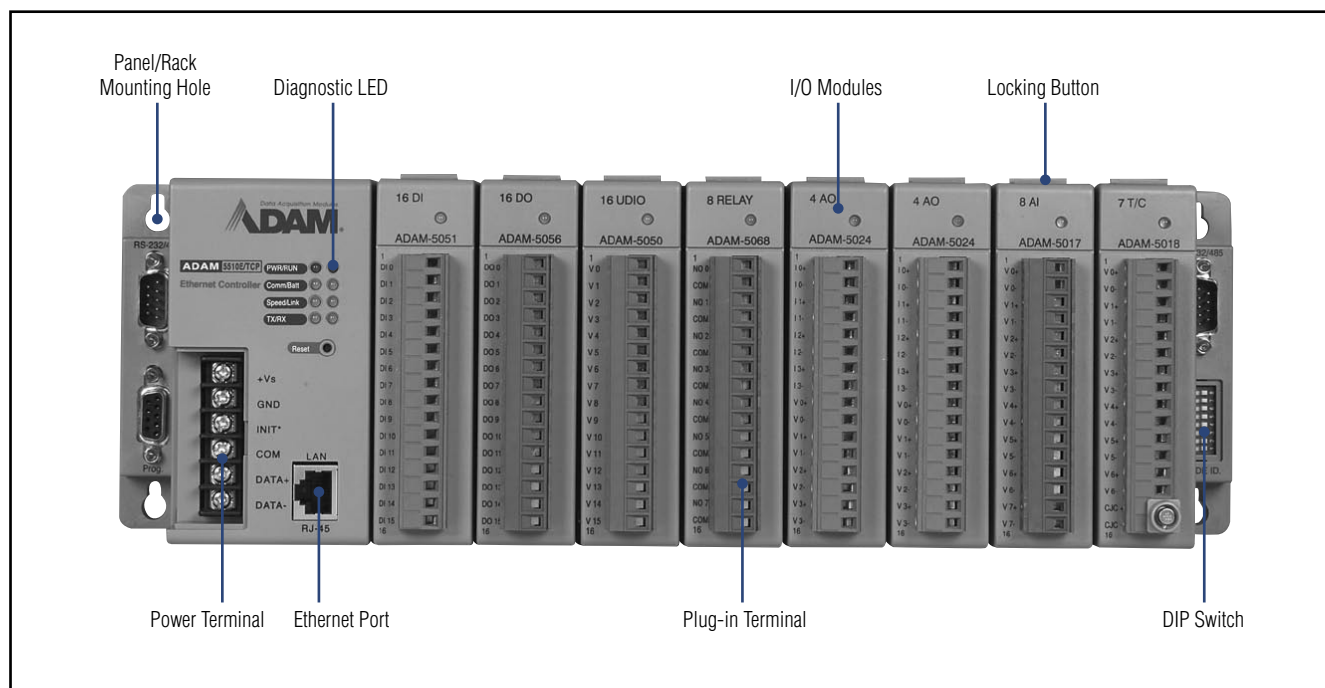
Feature Details

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.

Software   IPPC   TPC   FPM   ATM & AWS   DA&C   cPCI   ADAM-3000   Motion Control   ICOM   eConnectivity   UNO   ADAM-4000   ADAM-5000   ADAM-6000   ADAM-8000   BAS

ADAM-5510KW
PC-based SoftLogic Controller

ADAM-5510EKW
8-slot PC-based SoftLogic Controller

NEW

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

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All product specifications are subject to change without notice

Last updated : January 2005

ADAM-5510EKW/TP

8-slot Ethernet-enabled SoftLogic Controller

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

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
14 ADAM-5000
15 ADAM-6000
16 ADAM-8000
17 BAS

All product specifications are subject to change without notice   Last updated : January 2005

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-55510KW) 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%	
Page	14-10	14-11	14-12	14-14	14-17	14-16	

ADVANTECH **Distributed DA&C Systems**

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	

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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

All product specifications are subject to change without notice   Last updated : January 2005

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

ADAM-5052	ADAM-5055S	ADAM-5056	ADAM-5056D	ADAM-5056S /5056SO	ADAM-5060	ADAM-5068	ADAM-5069	ADAM-5080	ADAM-5090
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	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$_{RMS}$	-
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Side navigation tabs:
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13 ADAM-4000
14 ADAM-5000
15 ADAM-6000
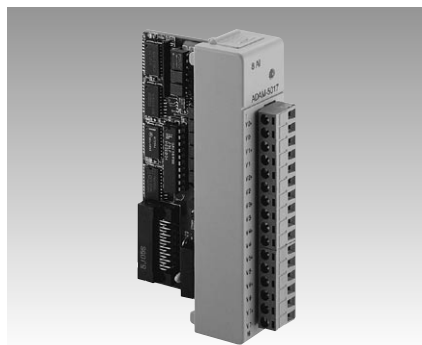16 ADAM-8000
17 BAS

ADAM-5013
ADAM-5017
ADAM-5017H

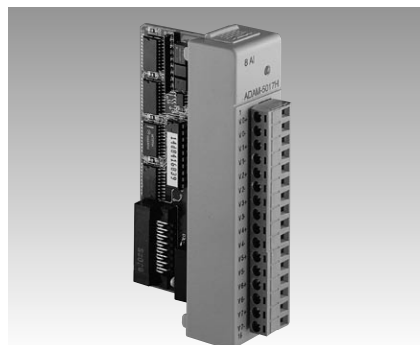**3-channel RTD Input Module**

8-channel Analog Input Module

8-channel High-Speed Analog Input Module
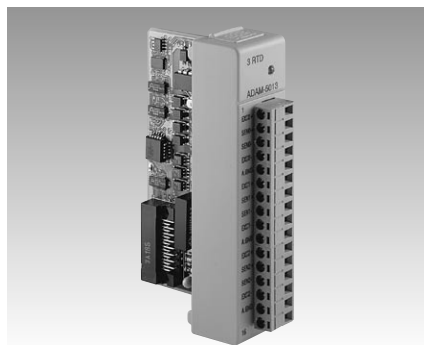
| ADAM-5013 | ADAM-5017 | ADAM-5017H |

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
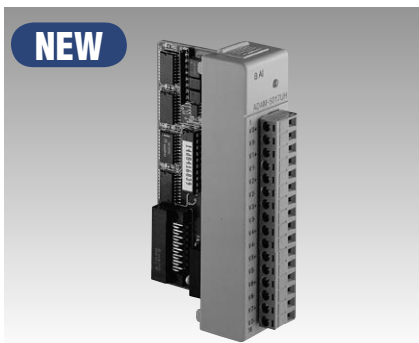
Ordering Information

- **ADAM-5017H** 8-channel High-Speed Analog Input Module - mV, V, mA

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ADAM-5017UH
ADAM-5018
ADAM-5024

8-channel Ultra High Speed Analog Input Module

7-channel Thermocouple Input Module

4-channel Analog Output Module

NEW

ADAM-5017UH

ADAM-5018 CE FM APPROVED

**ADAM-5024** CE FM APPROVED

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
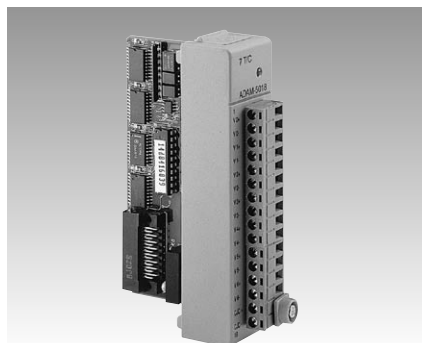
Specifications

- **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
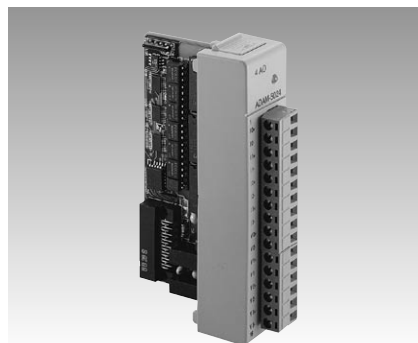
Specifications

- **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

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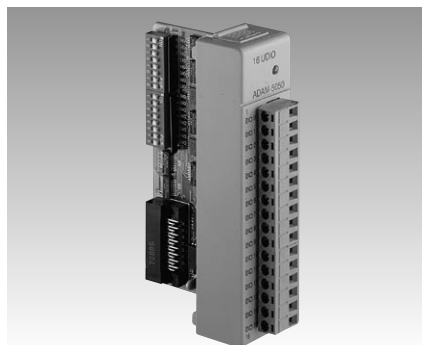
ADAM-5050
ADAM-5051
ADAM-5051D
ADAM-5051S

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 | CE | FM APPROVED |

| ADAM-5051 ADAM-5051D | CE |

| ADAM-5051S | CE |

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

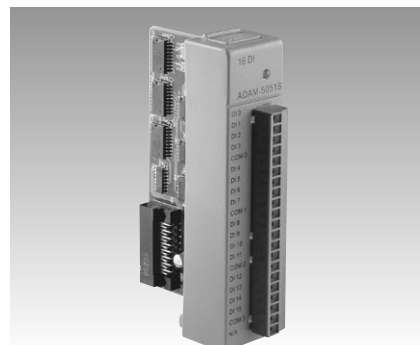- **ADAM-5050** 16-channel Universal Digital Input/Output Module
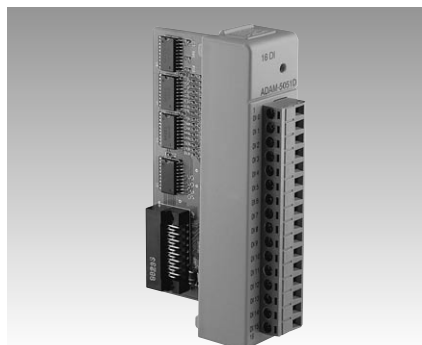
Specifications

- **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

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Last updated : January 2005

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

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13 ADAM-4000
14 ADAM-5000
15 ADAM-6000
16 ADAM-8000
17 BAS

ADAM-5052

ADAM-5055S

ADAM-5056
ADAM-5056D

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

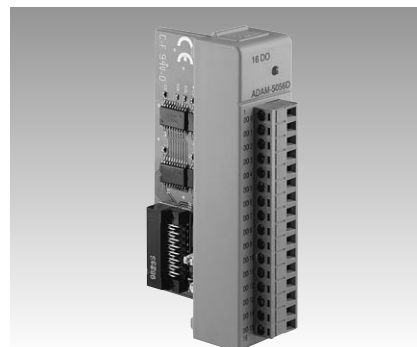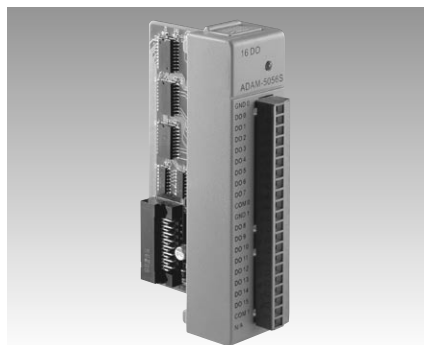▪ **ADAM-5052**   8-channel Isolated Digital Input w/LED Module
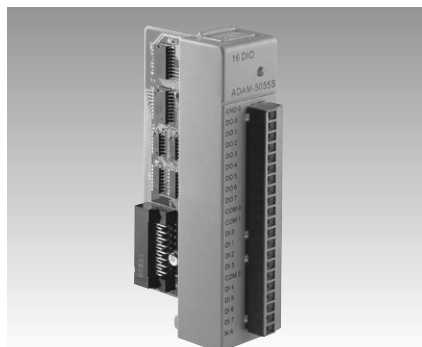
Specifications

▪ **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

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

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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

CE

ADAM-5060
ADAM-5068

CE

NEW

ADAM-5069

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

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 MΩ 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

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 MΩ @ 500 V_{DC}
- **LED Indicator** On: Active
  Off: Non-active
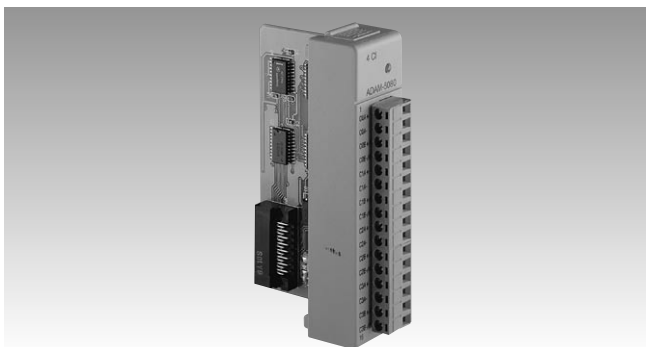- **Power Consumption** 0.25 W (typical); 2.2 W (max.)

Ordering Information

- **ADAM-5069** 8-channel Power Relay Output w/ LED Module

ADVANTECH **Distributed DA&C Systems**

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Last updated : January 2005

ADAM-5080
ADAM-5090

4-channel Counter/Frequency Module

4-port RS-232 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
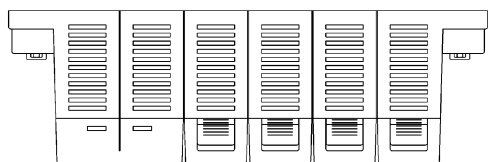17 BAS

ADAM-5080

CE FM APPROVED

ADAM-5090

CE

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
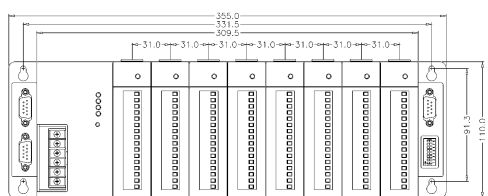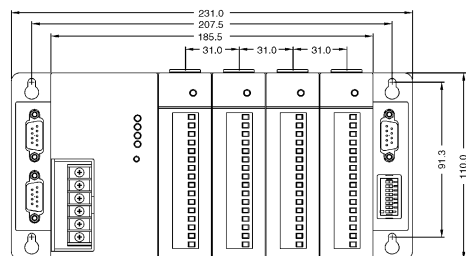- **Power Consumption** 1.3 W (typical); 1.5 W (max.)
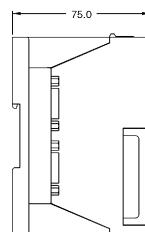
Specifications

- **Ports** 4 serial ports
- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** none, even, old
- **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)

Ordering Information

- **ADAM-5080** 4-channel Counter/Frequency Module

Dimensions

Top View

231.0
207.5
185.5
31.0 31.0 31.0

91.3
110.0

Front View (4-slot)

355.0
331.5
309.5
31.0 31.0 31.0 31.0 31.0 31.0 31.0

91.5
110.0

(ADAM-5000E only)   Front View (8-slot)

75.0

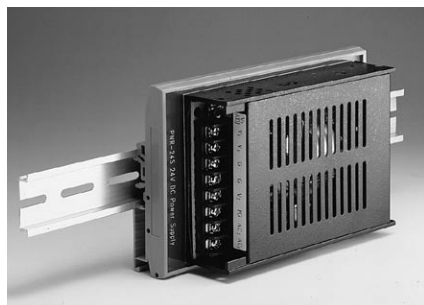Side View

Unit: mm

ADVANTECH 14-27

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   CE $\text{\textcircled{UL}}$ c$\text{\textcircled{UL}}$

PWR-243   CE $\text{\textcircled{UL}}$ c$\text{\textcircled{UL}}$

PWR-244   CE $\text{\textcircled{UL}}$ c$\text{\textcircled{UL}}$

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.
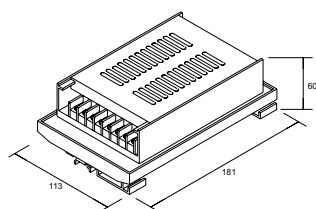- **Overload Protection**

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)
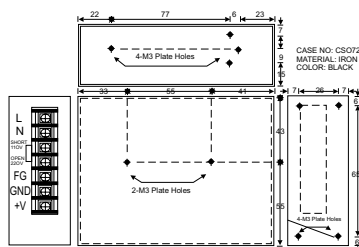
Ordering Information
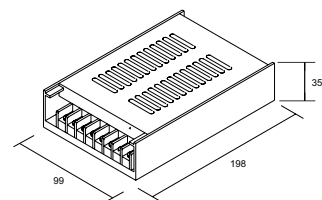- **PWR-244** — Switching Power Supply for Panel Mounting

Dimensions

Unit: mm

Dimensions

CASE NO: CSO72
MATERIAL: IRON
COLOR: BLACK

4-M3 Plate Holes

2-M3 Plate Holes

4-M3 Plate Holes

L
N
SHORT
110V
OPEN
220V
FG
GND
+V

Unit: mm

Dimensions

Unit: mm

ADVANTECH **Distributed DA&C Systems**

All product specifications are subject to change without notice

Last updated : January 2005