Conventional PLCs and small-scale controllers

Would you like to program in accordance with IEC 61131-3? In order to satisfy your requirements, we offer controllers in all performance classes. Use our PLCs, for example, in machine building and systems manufacturing, renewable energy or automotive applications. Utilize our PLC systems with the matching I/Os or select a high-performance controller for maximum performance.

Axiocontrol – Fast, robust, easy

Axiocontrol (AXC) controllers are designed for maximum performance, easy handling, and use in harsh industrial environments. All models support modular extension with the Axioline F I/O system.

Inline controllers – Flexible and cost-effective

Inline controllers (ILC) are the proven standard in the PLC portfolio. The controllers support all common communication paths, such as Ethernet and mobile communication. In addition, they can be easily extended with versatile Inline I/O terminals and provide optimum communication with an integrated, freely programmable web server.

High-performance PLCs

Redundant and safe controllers with maximum performance. Thanks to the powerful processor, comprehensive automation tasks can be processed at maximum speed.

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PLCnext Control

PLCnext Control AXC F 2152 –
Controller for PLCnext Technology
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PLCnext Control RFC 4072S –
High-performance safety PLC for
PLCnext Technology
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COMPLETE line

The comprehensive solution for
your control cabinet:
Easy planning, intuitive installation
Page 522

Axiocontrol

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High-performance PLCs

Class 400
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Software PLC

PC Worx RT Basic –
Software PLC with real-time extension
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PC Worx SRT –
Software PLC without real-time extension
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Starter kits

Starter kit for automation with PLCnext Control

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Starter kit for automation with small-scale controllers – PROFINET

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Starter kit for automation with small-scale controllers – INTERBUS

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Software for control technology

Functional and industry-specific software and drivers

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Software for control technology

PLCnext Engineer – Engineering software platform

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PC Worx – Software package for conventional programmable logic controllers

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PC Worx Express – Free software package for class 100 programmable logic controllers

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WebVisit – Development software for web-based visualizations

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Programmable logic relay system

Programmable logic relay system

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Services for automation

Services – Hotline, on-site service, startup support, professional workshops

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Training – Individual training concepts, training courses

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Engineering – Configuration, programming, visualization, coaching

Page 60

I/O systems

I/O systems for the control cabinet (IP20)

Page 100

I/O systems for field installation (IP67)

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System cabling

• See Catalog 5 – System cabling for controllers

Your web code: #0702

Charging controllers

• See Catalog 7 – Charging technology for electromobility

Your web code: #0501

Class 1000

The AXC 1050 Axiocontrol controllers are fast, robust, and user-friendly, i.e., they are all designed for maximum performance, easy handling, and use in harsh industrial environments.

Together with the Axioline I/O systems they form a high-performance, flexible, and particularly resistant automation system for every requirement.

Thanks to the integrated UPS, you can respond promptly to any voltage failures. Push-in connection technology simplifies wiring noticeably and also saves time.

Your advantages:

- Maximum flexibility – numerous I/Os and function modules can be mounted side by side
- Cost-effective solution, thanks to the excellent price/performance ratio with high function density
- Optimum communication, thanks to integrated, freely programmable web server
- Versatile use, as all common IT protocols are supported

Additional features:

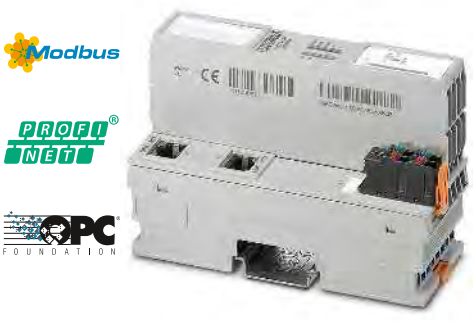
- Continuous shock-resistant up to 10g
- Increased EMC robustness
- SD card slot: for quick memory expansion and easy enabling of software blocks
- FTP server
- Flash file system
- Complete Axiobus master
- Integration of IT standards: FTP, HTTP, HTTPS, SNMP, SMTP, SQL, ODP, OPC, and many more
- Web-based management for easy diagnostics
- Integrated PROFINET controller and integrated PROFINET device

AXC 1050 (XC):

- Modbus/TCP (client and server) is integrated in the firmware – this increases performance and simplifies configuration
- Intuitive programming using PC Worx or using the free PC Worx Express software (IEC 61131-3)
- Visualization with WebVisit software (HTML5, Java)

Notes:

You can find matching I/O modules for these controllers from page 66



Axiocontrol small-scale controller

Technical data

		AXC 1050	AXC 1050 XC
Interfaces			
Axioline F local bus		Bus base module	
Ethernet		2 x RJ45 socket	
Parameterization/operation/diagnostics		1 x Micro USB type B	
AXIOBUS master			
Number of supported devices		max. 63 (per station)	
IEC 61131 runtime system			
Programming tool		PC WORX PC WORX EXPRESS	
Processor		Altera Nios II 1x 100 MHz	
Program memory		2 Mbyte	
Mass storage		2 Mbyte	
Retentive mass storage		48 kByte (NVRAM)	
Number of data blocks		depends on mass storage	
Number of timers, counters		depends on mass storage	
Number of control tasks		8	
Real-time clock		Yes	
Power supply			
Supply voltage		24 V DC	
Supply voltage range		19.2 V DC ... 30 V DC	
Typical current consumption		125 mA	
General data			
Dimensions	W / H / D	45 mm / 125.9 mm / 74 mm	
Degree of protection		IP20	
Ambient temperature (operation)		-25°C ... 60°C	-40°C ... 70°C (observe derating as per user manual)
EMC note		Class A product, see page 527	

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Axiocontrol, complete with accessories (connector and marking field)			
	AXC 1050	**2700988**	1
- with extended temperature range	**AXC 1050 XC**	**2701295**	1

Accessories

Parameterization memory, Flash card without license			
- 2 GB	**SD FLASH 2GB**	**2988162**	1
- 512 MB	**SD FLASH 512MB**	**2988146**	1
- 2 GB	**SD FLASH 2GB APPLIC A**	**2701190**	1
- 512 MB	**SD FLASH 512MB APPLIC A**	**2701799**	1
Programming cable			
	CAB-USB A/MICRO USB B/2,0M	**2701626**	1

Function modules — **See page 55**

Class 3000

The AXC 3050 is the high-end controller in the Axiocontrol range. It offers all the EMC, shock, and vibration properties of the AXC 1050, as well as Push-in connection technology and intelligent functions for sophisticated automation.

Thanks to the powerful processor and technology functions such as fast counters and event tasks, you can even implement complex applications reliably and efficiently.

Your advantages:

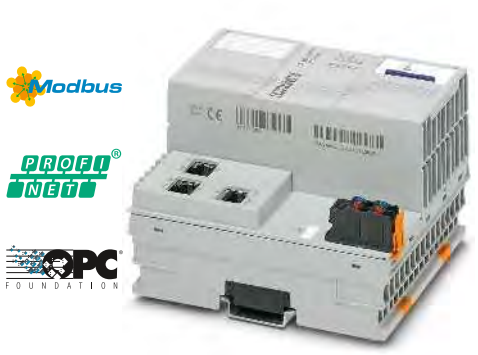
- Highly flexible, thanks to expansion with numerous I/O modules
- Communication in real time via PROFINET
- Optimum connection, with integrated web server and support for all common IT standards
- Maximum performance, thanks to high processor speed

Additional features:

- Micro USB interface: for fast startup or changing the PLC settings without knowing the IP address
- 3 integrated Ethernet interfaces for implementing different topologies
- Modbus/TCP (client and server) is integrated in the firmware – this increases performance and simplifies configuration
- USB A interface for easy firmware update using a USB stick
- Integrated web server for visualization with WebVisit
- FTP server
- Flash file system
- Numerous protocols supported such as: HTTP, FTP, SNTP, SNMP, SMTP, SQL, MySQL, etc.
- Complete Axiobus master
- Integrated PROFINET controller and integrated PROFINET device

Notes:

You can find matching I/O modules for these controllers from page 66



Axiocontrol high-performance controller

Technical data

Interfaces		
Axioline F local bus		Bus base module
Ethernet		3 x RJ45 socket
Parameterization/operation/diagnostics		1 x Micro USB type B
Service		1 x USB type A, socket
AXIOBUS master		
Number of supported devices		max. 63 (per station)
IEC 61131 runtime system		
Programming tool		PC WORX
Processor		Intel® Atom™ E660 1x 1.3 GHz
Program memory		4 Mbyte
Mass storage		8 Mbyte
Retentive mass storage		128 kByte
Number of data blocks		depends on mass storage
Number of timers, counters		depends on mass storage
Number of control tasks		16
Real-time clock		Yes
Power supply		
Supply voltage		24 V DC
Supply voltage range		19.2 V DC ... 30 V DC
Typical current consumption		typ. 408 mA (without I/Os and U_L = 24 V)
General data		
Dimensions	W / H / D	100 mm / 125.9 mm / 74 mm
Degree of protection		IP20
Ambient temperature (operation)		-25°C ... 60°C (up to 2000 m above sea level)
EMC note		Class A product, see page 527

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Axiocontrol, complete with accessories (connector and marking field)	**AXC 3050**	**2700989**	1

Accessories

Parameterization memory, Flash card without license			
- 2 GB	**SD FLASH 2GB**	**2988162**	1
- 512 MB	**SD FLASH 512MB**	**2988146**	1
- 2 GB	**SD FLASH 2GB APPLIC A**	**2701190**	1
- 512 MB	**SD FLASH 512MB APPLIC A**	**2701799**	1
Programming cable			
	CAB-USB A/MICRO USB B/2,0M	**2701626**	1

Function modules	**See page 55**

PLC for the energy industry

Now you can also use the robust AXC 1050 controller for applications in the energy industry.

The license on the SD card enables you to activate the communication protocol and quickly develop IEC-61850-compliant interfaces. The APPLIC A extension also gives you a license for further function block libraries.

Your advantages:

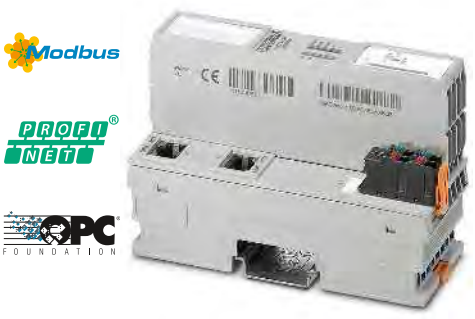
– Direct use of the IEC 61850 data model
– Flexible, thanks to freely programmable control functionality
– Simultaneous communication via Modbus/TCP and PROFINET

Additional features:

– Communication in accordance with IEC 61850-5, MMS, and GOOSE
– Automatic time stamping

Notes:

You can find matching I/O modules for these controllers from page 66



IEC 61850 solution

Technical data

Interfaces		
Axioline F local bus		Bus base module
Ethernet		2 x RJ45 socket
Parameterization/operation/diagnostics		1 x Micro USB type B
AXIOBUS master		
Number of supported devices		max. 63 (per station)
IEC 61131 runtime system		
Programming tool		PC WORX PC WORX EXPRESS
Processor		Altera Nios II 1x 100 MHz
Program memory		2 Mbyte
Mass storage		2 Mbyte
Retentive mass storage		48 kByte (NVRAM)
Number of data blocks		depends on mass storage
Number of timers, counters		depends on mass storage
Number of control tasks		8
Real-time clock		Yes
Power supply		
Supply voltage		24 V DC
Supply voltage range		19.2 V DC ... 30 V DC
Typical current consumption		125 mA
General data		
Dimensions	W / H / D	45 mm / 125.9 mm / 74 mm
Degree of protection		IP20
Ambient temperature (operation)		-25°C ... 60°C
EMC note		Class A product, see page 527

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Axiocontrol, complete with accessories (connector and marking field)			
	AXC 1050	**2700988**	1
- with extended temperature range	**AXC 1050 XC**	**2701295**	1
Program and configuration memory, Flash card with license key for IEC 61850 communication			
- 2 GB	**SD FLASH 2GB 61850**	**2400435**	1
- 2 GB, with license key for activating further function block libraries	**SD FLASH 2GB APPLIC A 61850**	**2400436**	1

Accessories

Programming cable			
	CAB-USB A/MICRO USB B/2,0M	**2701626**	1

Function modules **See page 55**

PLC for building infrastructure

You can use the ILC 2050 BI controller to automate different subsections in the building infrastructure, data centers, and distributed properties. The integrated Niagara Framework enables you to have IoT-based automation due to standardization of various data types.

Your advantages:
- Reduced startup costs, thanks to different protocols
- Standardized integration of sensors and actuators
- Easy programming using drag & drop
- Web-based maintenance, monitoring, and programming from any location
- Functionality can be extended with the Inline I/O range

Additional features:
- Integrated safety functions
- Flexible licensing
- Supports numerous protocols: BACnet IP, BACnet MS/TP, KNX IP, SNMP, M-Bus, DALI, Modbus

Find out more with the web code

You can find further information about engineering software for building infrastructure on our website.

Simply enter # and numbers in the search field.

Your web code: #1166

Notes:

You can find matching I/O modules for these controllers from page 100

IoT-based networking of infrastructures

Technical data

Interfaces		
Ethernet		4 x RJ45 socket, shielded
RS-485		2 x Spring-cage connection
USB 1.0/USB 2.0		1 x USB type A, socket
USB OTG		1 x Mini-USB
Other interfaces		1 x microSD slot
AXIOBUS master		
Number of supported devices		max. 63
IEC 61131 runtime system		
Programming tool		Niagara 4 WorkPlace
Processor		Arm® Cortex®-A8 1000 MHz
Program memory		512 kByte (SRAM)
Mass storage		1.8 GByte (eMMC)
Retentive mass storage		2 GByte (eMMC)
Real-time clock		Yes
Power supply		
Supply voltage		24 V DC
Supply voltage range		19.2 V DC ... 30 V DC
Typical current consumption		≤ 170 mA (at nominal voltage without local bus device)
General data		
Dimensions	W / H / D	80 mm / 119.8 mm / 71.5 mm
Degree of protection		IP20
Ambient temperature (operation)		-25°C ... 55°C

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Small-scale controller			
	ILC 2050 BI	**2403160**	1

Accessories

Programming cable			
	CAB-USB A/MICRO USB B/2,0M	**2701626**	1

Class 100

Class 100 programmable logic controllers impress with their high function density. They support all common communication paths, such as Ethernet, mobile communication or fixed-line network.

Thanks to integrated Modbus/TCP and PROFINET, the controllers communicate with numerous fieldbus devices without any additional programming, both passively as a Modbus server as well as actively as a Modbus client.

As the interface between the control center and I/O level, they efficiently control the data flow within your system. In short, they are ideal for small to medium-sized applications, even in distributed systems.

Your advantages:

- Maximum flexibility – numerous I/Os and function modules can be mounted side by side
- Quick and easy integration of additional user libraries with function blocks
- Optimum communication – with integrated, freely programmable web server for visualization with the WebVisit software
- Versatile use, as all common IT protocols are supported
- High processing speed, thanks to the high-performance Altera NIOS II processor
- Easy to integrate in existing PROFINET networks by means of PROFINET device functionality

Additional features:

- Maximum flexibility in I/O connectivity, thanks to integrated fieldbus master and Modbus/TCP (client and server)
- SD card slot: for quick memory expansion and easy enabling of software blocks
- FTP server
- Flash file system
- Numerous protocols supported such as: HTTP, FTP, SNTP, SNMP, SMTP, SQL, MySQL, etc.
- Intuitive programming using PC Worx or using the free PC Worx Express software
- The XC versions are also suitable for increased temperature requirements (-40°C to +60°C)

Notes:

You can find matching I/O modules for these controllers from page 100

Basic device

Ex:

Technical data

		ILC 131 ETH	ILC 131 ETH/XC
Interfaces			
INTERBUS local bus (master)		Inline data jumper	
Ethernet		1 x RJ45 socket	
Parameterization/operation/diagnostics		1 x 6-pos. MINI DIN socket (PS/2)	
INTERBUS master			
Number of devices with parameter channel		max. 8	
Number of supported devices		max. 63	
Amount of process data		max. 2048 Bit (INTERBUS) max. 8192 Bit (internal Modbus /TCP client)	
Digital inputs/outputs			
Number of inputs		8	
Number of outputs		4	
IEC 61131 runtime system			
Programming tool		PC WORX PC WORX EXPRESS	
Processor		Altera Nios II 64 MHz	
Program memory		192 kByte	
Mass storage		192 kByte	
Retentive mass storage		8 kByte (NVRAM)	
Number of data blocks		depends on mass storage	
Number of timers, counters		depends on mass storage	
Number of control tasks		8	
Real-time clock		Yes	
Power supply			
Supply voltage		24 V DC	
Supply voltage range		19.2 V DC ... 30 V DC	
Typical current consumption		210 mA	
General data			
Dimensions	W / H / D	80 mm / 119.8 mm / 71.5 mm	
Degree of protection		IP20	
Ambient temperature (operation)		-25°C ... 55°C	-40°C ... 60°C
EMC note		Class A product, see page 527	

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Compact controller, complete with accessories (connector and marking field)			
	ILC 131 ETH	**2700973**	1
- with extended temperature range	**ILC 131 ETH/XC**	**2701034**	1

Accessories

- 2 GB	**SD FLASH 2GB**	**2988162**	1
- 512 MB	**SD FLASH 512MB**	**2988146**	1
- 2 GB	**SD FLASH 2GB APPLIC A**	**2701190**	1
- 512 MB	**SD FLASH 512MB APPLIC A**	**2701799**	1
Programming cable			
	COM CAB MINI DIN	**2400127**	1
AX OPC SERVER, communication interface for OPC-compatible visualization with PC Worx-based controllers			
- ILC 1x1, AXC 1xxx, ILC 3xx, AXC 3xxx, RFC 4xx, PC WORX RT BASIC/SRT	**AX OPC SERVER**	**2985945**	1

Function modules — **See page 55**

With remote bus support

With two Ethernet ports

With integrated floating-point arithmetic

Ex:

Technical data

ILC 151 ETH	ILC 151 ETH/XC
Inline data jumper 1 x RJ45 socket 1 x 6-pos. MINI DIN socket (PS/2)	
max. 16 max. 128 max. 4096 Bit (INTERBUS) max. 16384 Bit (internal Modbus /TCP client)	
8 4	
PC WORX PC WORX EXPRESS Altera Nios II 64 MHz 256 kByte 256 kByte 8 kByte (NVRAM) depends on mass storage depends on mass storage 8 Yes	
24 V DC 19.2 V DC ... 30 V DC 210 mA	
80 mm / 119.8 mm / 71.5 mm IP20 -25°C ... 55°C	-40°C ... 60°C
Class A product, see page 527	

Ordering data

Type	Order No.	Pcs./Pkt.
ILC 151 ETH	2700974	1
ILC 151 ETH/XC	2701141	1

Accessories

SD FLASH 2GB	2988162	1
SD FLASH 512MB	2988146	1
SD FLASH 2GB APPLIC A	2701190	1
SD FLASH 512MB APPLIC A	2701799	1
COM CAB MINI DIN	2400127	1
AX OPC SERVER	2985945	1

See page 55

Technical data

Inline data jumper 2 x RJ45 socket 1 x 6-pos. MINI DIN socket (PS/2)
max. 24 max. 128 max. 4096 Bit (INTERBUS) max. 32768 Bit (internal Modbus /TCP client)
8 4
PC WORX PC WORX EXPRESS Altera Nios II 64 MHz 512 kByte 512 kByte 48 kByte (NVRAM) depends on mass storage depends on mass storage 8 Yes
24 V DC 19.2 V DC ... 30 V DC 210 mA
80 mm / 119.8 mm / 71.5 mm IP20 -25°C ... 55°C
Class A product, see page 527

Ordering data

Type	Order No.	Pcs./Pkt.
ILC 171 ETH 2TX	2700975	1

Accessories

SD FLASH 2GB	2988162	1
SD FLASH 512MB	2988146	1
SD FLASH 2GB APPLIC A	2701190	1
SD FLASH 512MB APPLIC A	2701799	1
COM CAB MINI DIN	2400127	1
AX OPC SERVER	2985945	1

See page 55

Technical data

Inline data jumper 2 x RJ45 socket 1 x 6-pos. MINI DIN socket (PS/2)
max. 24 max. 128 max. 4096 Bit (INTERBUS) max. 32768 Bit (internal Modbus /TCP client)
8 4
PC WORX PC WORX EXPRESS Altera Nios II 64 MHz 1 Mbyte 1 Mbyte 48 kByte (NVRAM) depends on mass storage depends on mass storage 8 Yes
24 V DC 19.2 V DC ... 30 V DC 210 mA
80 mm / 119.8 mm / 71.5 mm IP20 -25°C ... 55°C
Class A product, see page 527

Ordering data

Type	Order No.	Pcs./Pkt.
ILC 191 ETH 2TX	2700976	1

Accessories

SD FLASH 2GB	2988162	1
SD FLASH 512MB	2988146	1
SD FLASH 2GB APPLIC A	2701190	1
SD FLASH 512MB APPLIC A	2701799	1
COM CAB MINI DIN	2400127	1
AX OPC SERVER	2985945	1

See page 55

Class 100 for machine building

The ME versions of our small-scale controllers have been specifically developed for the requirements of machine building. For example, for addressing drives via step motor drivers or frequency converters.

The compact controllers offer all the functions of the ILC 1x1 and come with pre-installed functions for machine building. This means that various drive types can be controlled and sensors can be connected without any additional external modules.

Use analog input channels for position detection.

With Modbus/RTU and Easy Motion function block libraries, you can use the RS-485 and pulse/direction interface for positioning on simple 1-axis applications. The function block libraries are available to download free of charge.

Additional features:

– PWM/pulse/direction interface, RS-485
– 2 analog inputs
– 2 analog outputs

Notes:

You can find matching I/O modules for these controllers from page 100

For easy drive control

Ex:

Technical data

Interfaces		
INTERBUS local bus (master)		Inline data jumper
Ethernet		2 x RJ45 socket
RS-422/RS-485		1 x 4-pos. for full duplex
Parameterization/operation/diagnostics		1 x 6-pos. MINI DIN socket (PS/2)
INTERBUS master		
Number of devices with parameter channel		max. 24
Number of supported devices		max. 128
Amount of process data		max. 4096 Bit (INTERBUS) max. 32768 Bit (internal Modbus /TCP client)
Digital inputs/outputs		
Number of inputs		8
Number of outputs		4
Analog inputs/outputs		
Number of inputs		2
Number of outputs		2
IEC 61131 runtime system		
Programming tool		PC WORX PC WORX EXPRESS
Processor		Altera Nios II 64 MHz
Program memory		1 Mbyte
Mass storage		1 Mbyte
Retentive mass storage		48 kByte (NVRAM)
Number of data blocks		depends on mass storage
Number of timers, counters		depends on mass storage
Number of control tasks		8
Real-time clock		Yes
Power supply		
Supply voltage		24 V DC
Supply voltage range		19.2 V DC ... 30 V DC
Typical current consumption		310 mA
General data		
Dimensions	W / H / D	164 mm / 136.8 mm / 71.5 mm
Degree of protection		IP20
Ambient temperature (operation)		-25°C ... 55°C
EMC note		Class A product, see page 527

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Compact controller, complete with accessories (connector and marking field) - Analog inputs/outputs	**ILC 191 ME/AN**	2700074	1

Accessories

Parameterization memory, Flash card without license			
- 2 GB	**SD FLASH 2GB**	2988162	1
- 512 MB	**SD FLASH 512MB**	2988146	1
- 2 GB	**SD FLASH 2GB APPLIC A**	2701190	1
- 512 MB	**SD FLASH 512MB APPLIC A**	2701799	1
Programming cable			
	COM CAB MINI DIN	2400127	1
AX OPC SERVER, communication interface for OPC-compatible visualization with PC Worx-based controllers			
- ILC 1x1, AXC 1xxx, ILC 3xx, AXC 3xxx, RFC 4xx, PC WORX RT BASIC/SRT	**AX OPC SERVER**	2985945	1

Class 100 for remote communication

These small-scale controllers offer all the functions of our 1x1 controllers.

In addition, they have an integrated mobile phone modem and more memory. This makes them the ideal solution for remote control and remote maintenance. The corresponding remote control software is: Resy+.

Additional features:

– Integrated GSM/GPRS modem, 16 digital inputs, 4 digital outputs
– Modbus/TCP (client and server) is integrated in the firmware – this increases performance and simplifies configuration
– SD card slot: for quick memory expansion and easy enabling of software blocks
– FTP server
– Flash file system
– Complete fieldbus master (4096 I/O points)
– Numerous protocols supported such as: HTTP, FTP, SNTP, SNMP, SMTP, SQL, MySQL, etc.
– Intuitive programming using PC Worx or using the free PC Worx Express software
– OPC functionality

Notes:

You can find matching I/O modules for these controllers from page 100

With integrated GSM/GPRS modem

Ex:

Technical data

Interfaces		
INTERBUS local bus (master)		Inline data jumper
Ethernet		1 x RJ45 socket
GSM / GPRS		SIM card, SMA antenna connection
INTERBUS master		
Number of devices with parameter channel		max. 16
Number of supported devices		max. 128
Amount of process data		max. 4096 Bit (INTERBUS)
Digital inputs/outputs		
Number of inputs		16
Number of outputs		4
IEC 61131 runtime system		
Programming tool		PC WORX PC WORX EXPRESS
Processor		Altera Nios II 64 MHz
Program memory		512 kByte
Mass storage		512 kByte
Retentive mass storage		48 kByte (NVRAM)
Number of data blocks		depends on mass storage
Number of timers, counters		depends on mass storage
Number of control tasks		8
Real-time clock		Yes
Power supply		
Supply voltage		24 V DC
Supply voltage range		19.2 V DC ... 30 V DC
Typical current consumption		210 mA
General data		
Dimensions	W / H / D	85 mm / 119.8 mm / 71.5 mm
Degree of protection		IP20
Ambient temperature (operation)		-25°C ... 55°C

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Compact controller, complete with accessories (connector and marking field)	**ILC 151 GSM/GPRS**	2700977	1

Accessories

Multiband antenna for UMTS and quad band GSM, with omnidirectional characteristics - 2 m antenna cable	**PSI-GSM/UMTS-QB-ANT**	2313371	1
Parameterization memory, Flash card without license			
- 2 GB	**SD FLASH 2GB**	2988162	1
- 512 MB	**SD FLASH 512MB**	2988146	1
- 2 GB	**SD FLASH 2GB APPLIC A**	2701190	1
- 512 MB	**SD FLASH 512MB APPLIC A**	2701799	1
Programming cable	**COM CAB MINI DIN**	2400127	1
AX OPC SERVER, communication interface for OPC-compatible visualization with PC Worx-based controllers - ILC 1x1, AXC 1xxx, ILC 3xx, AXC 3xxx, RFC 4xx, PC WORX RT BASIC/SRT	**AX OPC SERVER**	2985945	1

Function modules — **See page 55**

Class 400

More memory, more speed, more power. The class 400 PROFINET-compatible controllers are the most powerful programmable logic controllers available from Phoenix Contact. Control demanding automation tasks with maximum performance and intelligent features.

Your advantages:
– Highly flexible, thanks to expansion with numerous I/O modules
– Communication in real time via PROFINET
– Optimum connection, with integrated web server and support for all common IT standards
– Maximum performance, thanks to high processor speed

Additional features:
– Control and fieldbus system status messages are easily read via the diagnostic display
– Thanks to the powerful processor, comprehensive automation tasks can be processed at maximum speed
– Integrated Ethernet interface
– Integrated web server for visualization with WebVisit
– FTP server
– Flash file system
– Numerous protocols supported such as: HTTP, FTP, SNTP, SNMP, SMTP, SQL, MySQL, etc.
– Integrated INTERBUS master
– Integrated PROFINET controller and PROFINET device
– Intuitive programming with PC Worx (IEC 61131−3)

The RFC 480S PN 4TX is equipped with an integrated **safety controller** for applications up to SIL 3. It supports the PROFIsafe protocol.

Uninterrupted processes are vital in complex systems and large plants. Ensure the continuous operation of your automation – with the **PROFINET redundancy controllers** from Phoenix Contact.

The high-performance PLCs establish a redundant system automatically, thanks to AutoSync technology.

Your advantages:
– Fast startup and automatic configuration of all redundancy functions, thanks to AutoSync technology
– Uninterrupted process in the event of failure or when a controller is replaced
– Optimum device integration, thanks to PROFINET standards; redundancy for your future-proof Ethernet network
– A distance of up to 80 km between the controllers via fiber optics; cost-optimized thanks to plug-in SFP modules
– High-resolution display for displaying status and error messages in plain text
– Uninterrupted visualization, thanks to redundancy-capable OPC server

Notes:

Further information on safety versions can be found in the “Functional safety” section on page 275

Interfaces	
INTERBUS (Master)	
Ethernet	
Parameterization/operation/diagnostics	
Synchronization interface	
USB 2.0	
INTERBUS master	
Number of devices with parameter channel	
Number of supported devices	
Amount of process data	
Digital inputs/outputs	
Connection method	
Number of inputs	
Number of outputs	
IEC 61131 runtime system	
Processor	
Program memory	
Mass storage	
Retentive mass storage	
Number of data blocks	
Number of timers, counters	
Number of control tasks	
Real-time clock	
Power supply	
Supply voltage	
Supply voltage range	
Typical current consumption	
General data	
Dimensions	W / H / D
Degree of protection	
Ambient temperature (operation)	
EMC note	

Description
Remote Field Controller - 3 x 10/100 Ethernet, PROFINET controller
- 4 x 10/100/1000 Ethernet, PROFINET controller

Parameterization memory - 256 MB - 512 MB - 2 GB
Programming cable, for connecting the controller boards to the PC (RS-232-C), length: 3 m
USB memory stick, memory capacity 8 GB
RS-232 null modem adapter - 9-pos. female to 9-pos. male
Fan module for Remote Field Controller
AX OPC SERVER, communication interface for OPC-compatible visualization with PC Worx-based controllers
- ILC 1x1, AXC 1xxx, ILC 3xx, AXC 3xxx, RFC 4xx, PC WORX RT BASIC/SRT

Remote Field Controller

With integrated safety controller

With redundancy function

Technical data		
1 x D-SUB-9 female connector	-	-
2 x RJ45 socket	4 x RJ45 socket	3 x RJ45 socket
1 x D-SUB 9 plug	-	-
-	-	1 x SFP port
-	1 x USB type A, male connector	2 x USB type A, socket
max. 126	-	-
max. 512 (of which 254 are remote bus devices/bus segments)	max. 256	-
max. 8192 Bit (INTERBUS-Master)	-	-
14-pos. FLK pin strip	-	-
5	-	-
3	-	-
Intel® Celeron® 927 UE 1.5 GHz	Intel® Core™ i5-6300U 2x 2.4 GHz (Dual-Core)	Intel® Celeron® 927 UE 1.5 GHz
typ. 8 Mbyte	typ. 16 Mbyte	typ. 8 Mbyte
16 Mbyte	32 Mbyte	16 Mbyte
240 kByte (NVRAM)	2 Mbyte	120 kByte (NVRAM)
depends on mass storage	-	depends on mass storage
depends on mass storage	-	depends on mass storage
16	16	1
Integrated (battery backup)	Integrated (battery backup)	Integrated (battery backup)
24 V DC	24 V DC	24 V DC
19.2 V DC ... 30 V DC (including ripple)	19.2 V DC ... 30 V DC (including ripple)	19.2 V DC ... 30 V DC (including ripple)
1 A	1 A	1 A
124 mm / 185 mm / 190 mm	122 mm / 182 mm / 173 mm	124 mm / 185 mm / 190 mm
IP20	IP20	IP20
0°C ... 55°C (from 45°C only with fan module)	0°C ... 55°C (from 40°C only with fan module)	0°C ... 55°C (from 45°C only with fan module)
Class A product, see page 527	Class A product, see page 527	Class A product, see page 527

Ordering data

Type	Order No.	Pcs./Pkt.
RFC 470 PN 3TX	2916600	1

Accessories

CF FLASH 256MB	2988780	1
CF FLASH 2GB	2701185	1
IBS PRG CAB	2806862	1
USB FLASH DRIVE	2402809	1
PSM-AD-D9-NULLMODEM	2708753	1
RFC DUAL-FAN	2730239	1
AX OPC SERVER	2985945	1

Ordering data

Type	Order No.	Pcs./Pkt.
RFC 480S PN 4TX	2404577	1

Accessories

SD FLASH 512MB	2988146	1
SD FLASH 2GB	2988162	1
RFC FAN MODULE	2404085	1
AX OPC SERVER	2985945	1

Ordering data

Type	Order No.	Pcs./Pkt.
RFC 460R PN 3TX	2700784	1

Accessories

CF FLASH 256MB	2988780	1
CF FLASH 2GB	2701185	1
USB FLASH DRIVE	2402809	1
AX OPC SERVER	2985945	1

Software PLC for installation on IPCs

Industrial PCs for visualizing and operating processes are often only utilized to a limited extent. Make use of these available resources and also transform your industrial PC into a full-fledged PLC.

Depending on the performance requirements, choose between **PC Worx SRT** with statistically guaranteed response times for small to medium tasks and **PC Worx RT Basic** for complex automation with real-time requirements.

Your advantages:

– Stable and reliable, thanks to operating system expansion with PC Worx RT Basic
– Easy and inexpensive visualization, thanks to integrated web server
– Maximum Ethernet openness, as all common protocols are supported

Software PLC with real-time extension

Software PLC without real-time extension

	Technical data	Technical data
Hardware requirements		
Processor	min. Intel® Core™2 Duo	min. Intel® Atom™
Main memory (RAM)	min. 2 GByte	min. 512 Mbyte
Hard disk memory	min. 1 GByte	min. 1 GByte
Interfaces	Ethernet port, USB port	Ethernet Port
Operating equipment	Keyboard, mouse recommended	Keyboard, mouse recommended
Monitor resolution	XGA (1024 x 768)	XGA (1024 x 768)
Software requirements		
Operating system	Windows® 7 (32-Bit/64-Bit) Windows® 8.1 (32-Bit/64-Bit) Windows® Embedded Standard 7 Windows® Embedded 2009 Windows® 10 (32-Bit/64-Bit)	Windows® 7 (32-Bit/64-Bit) Windows® 8.1 (32-Bit/64-Bit) Windows® Embedded Standard 7 Windows® Embedded 2009 Windows® 10 (32-Bit/64-Bit)
Supported browsers	Internet Explorer Version 8 or later	Internet Explorer Version 8 or later
Basic functions		
	Complete PLC PROFINET controller and device functionality only in conjunction with a Valueline PC INTERBUS functionality only in conjunction with an INTERBUS master controller board Integration of Modbus/TCP in the firmware	Complete PLC Non-real-time-capable software PLC for installation on a standard PC with integrated Modbus/TCP, plus PROFINET controller and device functionality
IEC 61131 runtime system		
Programmable under	PC WorX in IEC 61131	PC WorX in IEC 61131
Processing speed	0.001 ms (1 K mixed instructions, Intel® Core™2 Duo 1.5 GHz) 0.7 µs (1 K bit instructions, Intel® Core™2 Duo 1.5 GHz)	5.5 µs (1 K mixed instructions, Intel® Atom™ Z510PT) 4 µs (1 K bit instructions, Intel® Atom™ Z510PT)
Program memory	8 Mbyte	1 Mbyte
Mass storage	16 Mbyte	1 Mbyte
Retentive mass storage	240 kByte	48 kByte
Number of data blocks	depends on mass storage	depends on mass storage
Number of timers, counters	depends on mass storage	depends on mass storage
Number of control tasks	16	8

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Software PLC	**PC WORX RT BASIC**	2700291	1	**PC WORX SRT**	2701680	1
	Accessories			**Accessories**		
PC controller board	**IBS PCI SC/I-T**	2725260	1			
AX OPC SERVER, communication interface for OPC-compatible visualization with PC Worx-based controllers	**AX OPC SERVER**	2985945	1	**AX OPC SERVER**	2985945	1
Industrial PC	**See page 474 onwards**			**See page 474 onwards**		

Function blocks/libraries

Programmable logic controllers from Phoenix Contact can be adapted to any requirement quickly and easily using SD cards and function blocks. This means that you can install parameterization memories, licenses for function block libraries or fully tested applications at a later time, without the need for additional hardware.

Industry-specific function blocks are tailored to the individual requirements of a particular industry and offer considerable advantages when it comes to engineering.

Extend your system quickly and easily with the following functions:
– IEC 61850 communication
– Integration of SafetyBridge I/O modules
– Energy measurement
– Multiplexer function
– webMI functionality of atvise®
– Control technology
– Network protocols
– IT security
– Network management
– Databases
– CAN bus
– Motor management
– Remote control protocols (Resy+)

Your advantages:
– Individual expansion of the controller solution with complete and tested applications
– Activation of libraries and function blocks via license keys
– Uncomplicated device replacement by transferring the data via SD card

If the card is marked with the **APPLIC A** suffix, it contains a corresponding license for activating further function block libraries.

These function block libraries can be downloaded from our website.

i Your web code: #1390

SD memory card with function block license

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Program and configuration memory, Flash card with license key for IEC 61850 communication			
- 2 GB	**SD FLASH 2GB 61850**	2400435	1
- 2 GB, with license key for activating further function block libraries	**SD FLASH 2GB APPLIC A 61850**	2400436	1
Program and configuration memory, Flash card with license key and user program for easy web-based configuration and startup of a SafetyBridge solution			
- 2 GB, for Inline	**SD FLASH 2GB EASY SAFE BASIC**	2403297	1
- 2 GB, for Inline including communication via Modbus/TCP, PROFINET, and e-mail	**SD FLASH 2GB EASY SAFE PRO**	2403298	1
- 2 GB, for Axioline including communication via Modbus/TCP, PROFINET, and e-mail	**SD FLASH 2GB AXC EASY SAFE PRO**	2403730	1
Program and configuration memory, plug-in, 2 GB with license key and user program for reading from measuring devices	**SD FLASH 2GB EMLOG**	2403484	1
Program and configuration memory, Flash card with license key for multiplexer applications. For configuring two ILC 131 ETH devices as multiplexers			
- 512 MB	**SD FLASH 512MB MODULAR MUX**	2701872	1
Program and configuration memory, Flash card for using the webMI functionality of atvise®			
- 2 GB	**SD FLASH 2GB ATVISE**	2400088	1
- 2 GB, with license key for activating further function block libraries	**SD FLASH 2GB APPLIC A ATVISE**	2400089	1
Program and configuration memory, Flash card with license key for controller function blocks with self-optimization for temperature control			
- 512 MB	**SD FLASH 512MB PDPI BASIC**	2701800	1
- 256 MB	**CF FLASH 256MB PDPI BASIC**	2700549	1
- 512 MB, extended with functions for process automation	**SD FLASH 512MB PDPI PRO**	2701801	1
- 256 MB, extended with functions for process automation	**CF FLASH 256MB PDPI PRO**	2700550	1
Program and configuration memory, Flash card with license key for function block libraries such as SNMP, SQL, wireless, and motion functions, remote control protocols (Resy+), etc.			
- 2 GB	**SD FLASH 2GB APPLIC A**	2701190	1
- 2 GB	**CF FLASH 2GB APPLIC A**	2701189	1
- 512 MB	**SD FLASH 512MB APPLIC A**	2701799	1
- 256 MB	**CF FLASH 256MB APPLIC A**	2988793	1

Starter kit for automation with small-scale controllers – PROFINET

The PROFINET starter kit provides a cost-effective introduction that enables you to discover the advantages of PROFINET technology. Here, an automation station consisting of an Axiocontrol PLC and Axioline F I/O system is used to integrate the latest robust components. This allows you to build your own test and learning application.

Your advantages:

– Fast introduction to automation with PROFINET, thanks to step-by-step instructions for the test structure
– Structure with the latest automation station based on Axiocontrol and Axioline components
– Get started straight away with a set of all the necessary products

Test setup for a fast introduction to PROFINET automation

Technical data

See AXC 1050 on page 44

Ordering data

Description	Type	Order No.	Pcs./Pkt.
PROFINET starter kit, incl. AXC 1050 controller, bus coupler, I/O modules, power supply, and cables as well as PC Worx software with quick start guide and application example	**AXC 1050 PN STARTERKIT**	2400361	1

Starter kit for automation with small-scale controllers – INTERBUS

The ILC 131 starter kit provides an easy introduction to our controllers. Learn about control technology with the aid of a pre-assembled test structure with programmed examples. Then use the PC Worx Express programming software to create custom solutions.

Begin by starting up the controller, configure it, and parameterize the bus structure. With the test structure, enter the world of IEC 61131−3-compliant programming.

Controller performance data at a glance:

– Supply voltage: 24 V DC
– Integrated inputs /outputs: 8 / 4
– Processing time per 1000 instructions: 90 µs (bit data types), 1.7 ms (mixed data types)
– Program / mass storage: 192 kB / 192 kB
– Retentive mass storage: 8 kB

Ethernet

Modbus

INTERBUS

Test setup for a fast introduction to INTERBUS automation

EAC

Technical data

See ILC 131 ETH on page 48

Ordering data

Description	Type	Order No.	Pcs./Pkt.
ILC 131 starter kit, incl. ILC 131 ETH, analog input module, control panel, power supply unit, plus accessories and cables with test application set up	**ILC 131 STARTERKIT**	2701835	1

Accessories

Programming cable	**COM CAB MINI DIN**	2400127	1
AX OPC SERVER, communication interface for OPC-compatible visualization with PC Worx-based controllers - ILC 1x1, AXC 1xxx, ILC 3xx, AXC 3xxx, RFC 4xx, PC WORX RT BASIC/SRT	**AX OPC SERVER**	2985945	1

Programmable logic relay system – PLC logic

The PLC logic programmable logic relay system combines logic, interface, and field connection levels in a single unit. It processes digital and analog input signals as well as logic functions and timer modules. With the PLC logic logic relay system you can implement small automation tasks easily, flexibly, and in a way that is highly compact. You can therefore replace conventional switching and control devices.

The system consists of the PLC-V8C logic modules, the PLC-INTERFACE relay system, and the Logic+ software.

Up to 16 I/O signals can be processed using the stand-alone logic modules on an overall width of just 50 mm. If more I/O signals are required, a maximum of 48 I/O signals can be linked using the basic and extension modules.

The logic modules are simply plugged into a row of eight PLC-INTERFACE terminal blocks. Assemble each channel individually as an input or output with relay or analog modules, depending on the application requirements.

Additional information:

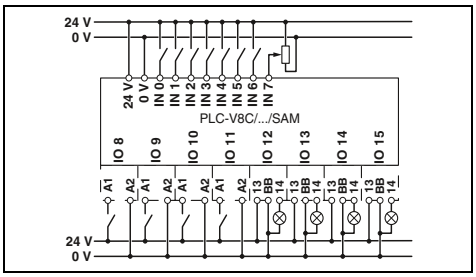
The complete product range for the PLC logic programmable logic relay system can be found in our Catalog 5 – Interface technology and switching devices.

Find out more with the web code

Detailed information on these products can be found on our website. Simply enter # and numbers in the search field.

i #0687

Stand-alone module



Technical data

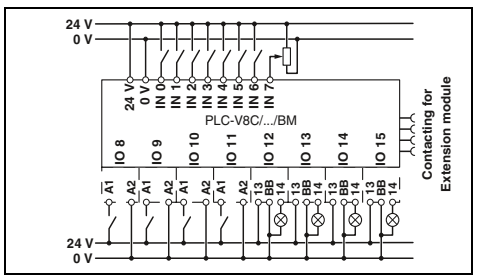
Supply	
Supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 26.4 V DC
Maximum input current at U_N	160 mA
Input data (digital)	
Number of inputs	8 (2 configurable as analog)
Input voltage	24 V DC
Description of the input	EN 61131-2, type 3
Input current 0-signal	< 1 mA
Input current 1-signal	typ. 2.5 mA
Input data (analog)	
Number of inputs	2 (IN6 and IN7 are configurable as analog)
Input voltage range	0 V ... 10 V
Input resistance	> 3.5 kΩ
Input data (PLC-INTERFACE)	
Number of inputs	≤ 8
Output data (for controlling PLC-INTERFACE)	
Number of outputs	≤ 8
Nominal voltage	24 V DC
Nominal current	9 mA
Real-time clock (basic module only)	
Buffer time (capacitor)	96 h (capacitor)
Real-time clock accuracy	±2 s/d
General data	
Ambient temperature (operation)	-20°C ... 50°C
Ambient temperature (storage/transport)	-20°C ... 70°C
Permissible humidity (operation)	95%
Air clearances and creepage distances between the power circuits	DIN EN 50178
Rated insulation voltage	50 V
Rated surge voltage	0.8 kV
Insulation	Basic insulation
Mounting type	can be plugged onto 8 x PLC-INTERFACE terminal blocks
Degree of protection	IP20
Push-in connection rigid / flexible / AWG	0.14 - 1.5 mm² / 0.14 - 1.5 mm² / 26 - 16

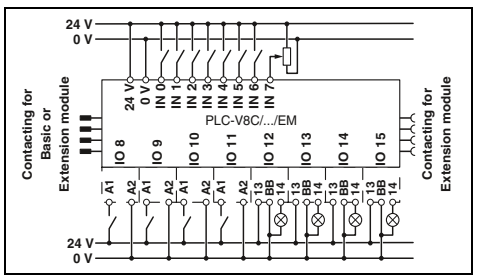
Ordering data

Description	Type	Order No.	Pcs./Pkt.
PLC-V8C plug-in logic modules			
with Push-in connection	**PLC-V8C/PT-24DC/SAM2**	2907443	1

Basic module
(can be extended)

Extension module





Technical data

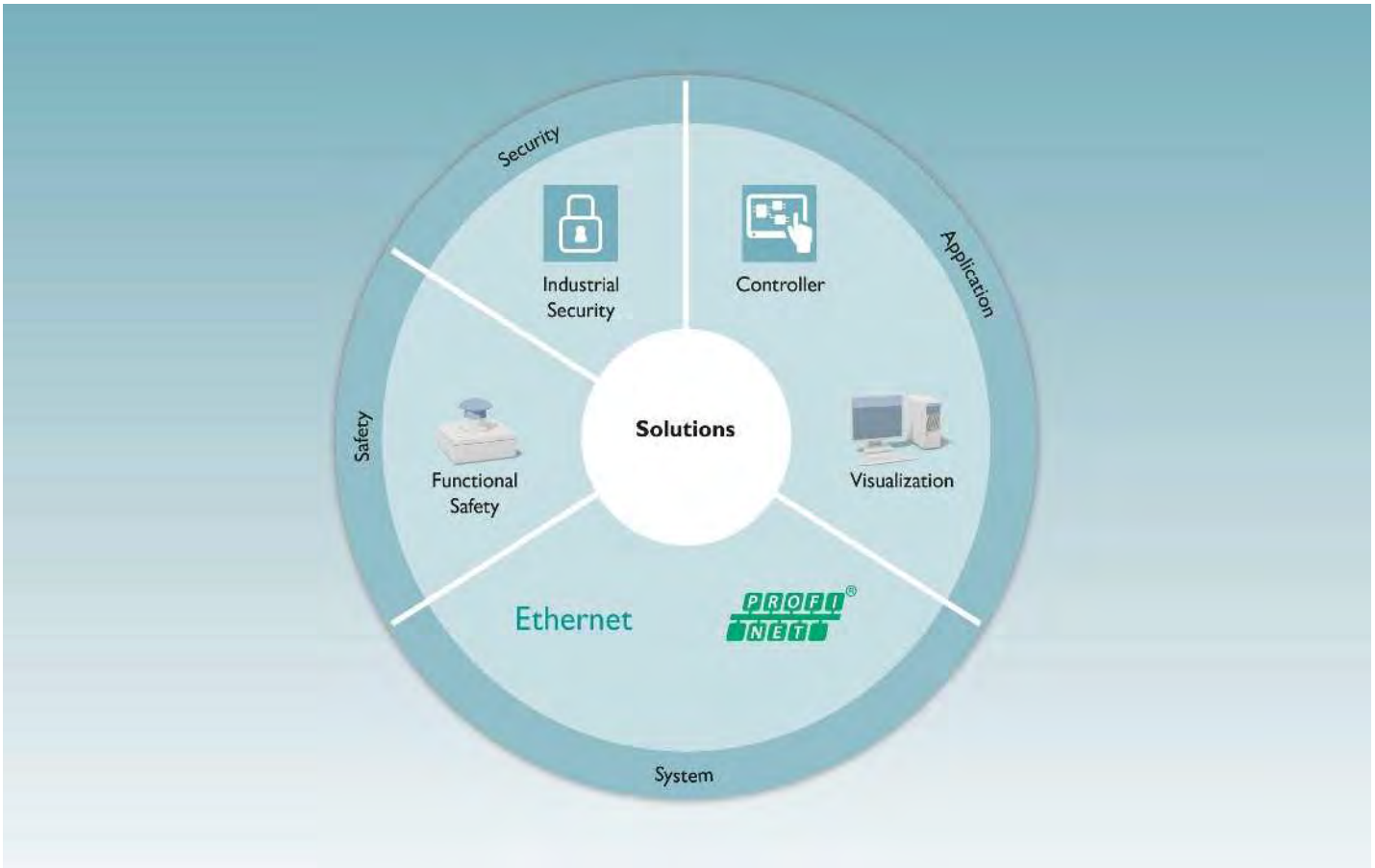
24 V DC	24 V DC
19.2 V DC ... 26.4 V DC	19.2 V DC ... 26.4 V DC
160 mA	65 mA
8 (2 configurable as analog)	8 (2 configurable as analog)
24 V DC	24 V DC
EN 61131-2, type 3	EN 61131-2, type 3
< 1 mA	< 1 mA
typ. 2.5 mA	typ. 2.5 mA
2 (IN6 and IN7 are configurable as analog)	2 (IN6 and IN7 are configurable as analog)
0 V ... 10 V	0 V ... 10 V
> 3.5 kΩ	> 3.5 kΩ
≤ 8	≤ 8
≤ 8	≤ 8
24 V DC	24 V DC
9 mA	9 mA
96 h (capacitor)	-
±2 s/d	-
-20°C ... 50°C	-20°C ... 45°C
-20°C ... 70°C	-20°C ... 70°C
95%	95%
DIN EN 50178	DIN EN 50178
50 V	50 V
0.8 kV	0.8 kV
Basic insulation	Basic insulation
can be plugged onto 8 x PLC-INTERFACE terminal blocks	can be plugged onto 8 x PLC-INTERFACE terminal blocks
IP20	IP20
0.14 - 1.5 mm² / 0.14 - 1.5 mm² / 26 - 16	0.14 - 1.5 mm² / 0.14 - 1.5 mm² / 26 - 16

Ordering data

Type	Order No.	Pcs./Pkt.
PLC-V8C/PT-24DC/BM2	2907446	1

Ordering data

Type	Order No.	Pcs./Pkt.
PLC-V8C/PT-24DC/EM	2905137	1



Whatever your automation task: our specialists in the AUTOMATIONWORX Competence Center are available to answer any questions you may have. This is made possible by our flexible service concept.

Based on the typical phases of a project, we work with you at each stage. With our expertise and years of experience we provide support that is tailored to your industry and the specific phase of your project.

Your advantages:
- Save time by transferring automation tasks to Phoenix Contact
- Optimum automation solution, thanks to comprehensive technology and product expertise
- Sophisticated process management, thanks to the consistent consideration of all requirements
- Target-oriented project management with optimally coordinated process steps
- Traceable, legal protection, thanks to consistent documentation

Services for functional safety can be found on page 282.

Service

You can rely on our support for the smooth operation of your application. Our experts deal with queries encountered in practical applications every day. They draw on their experience of all sectors and knowledge of the components and technologies used.

Our service specialists will be happy to support you with the following services:
– Hotline
– On-site service
– Startup support
– Professional workshops

If queries arise during startup and operation, in addition to your local specialists you can also contact our free 24-hour hotline at any time:
+49 5281 946-2888
Or send us an e-mail:
automation-service@phoenixcontact.com

We will be happy to answer general questions regarding the functionality of individual components or the system. If this is not sufficient, our startup support team and on-site service will be there to provide assistance.

Training

Discover the added value our individual training concepts and training services offer.

With our tailor-made concepts, we help you and your employees to make optimum use of the control and I/O systems from Phoenix Contact.

With our free consultation service, we can work together to arrange the contents, duration, location, and date of your individual training session.

Should you have any queries regarding our training services and qualification concepts, please contact your local contact person or contact our Back Office Training team directly:
+49 5281 946-2161
Or send us an e-mail:
automation-training@phoenixcontact.com

We will happily advise you on the implementation of your qualification requirements and work with you to create your own individual training program.

Engineering

Whatever your automation task: our engineering specialists are available to answer any questions you may have. Based on the typical phases of a project, we work with you at each stage.

With our expertise and years of experience we provide support that is tailored to your industry and the specific phase of your project.

Simply give us an outline of the applications you would like to implement and we will provide you with a technical concept that includes suitable hardware and software.
– Configuration
– Programming
– Visualization
– Coaching