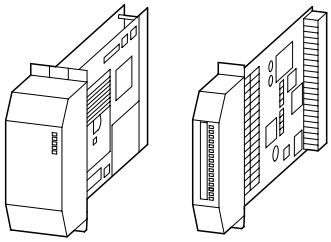
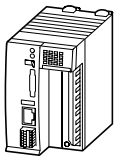
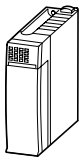
PS416



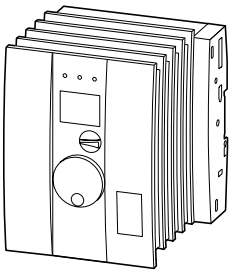
XC100/200



XI/OC



XC600



Modular PLC
Powerful Modular PLCs
Tailored to the Application

The modular PLCs are characterised by having a wide spectrum of applications with freely scalable structure to suit. The user thus has the flexibility of designing his automation system precisely to his requirement. Access via the Ethernet for example, is absolutely essential for many applications, for efficient communication between the PLCs within the system on the one hand, and for data exchange with primary level control systems via communication standards such as OPC on the other.

Nowadays, technology is increasingly being combined with automation solutions. In addition to mere control functions these include fieldbus connection, operating and monitoring functions, as well as integration into planning and quality control systems. In this context, the capability of coupling via Ethernet is constantly growing in importance. For modular PLCs, this presents no problem: bus connection is always an option, whether via simple gateways or via the integrated Ethernet interface.

Comprehensive software functions of course, complement the high-performance hardware components. Extensive libraries for building services automation, such as for heating, ventilation and air-conditioning, as well as closed-loop control, cut down on engineering and commissioning time for complex building installations. In addition, there are the options of simple remote diagnostics and remote programming, even when control systems are physically dispersed. Prepared solutions for simple remote monitoring via the Internet are available, as is the possibility for remote alarm signalling via mobile telephone by way of the SMS service.

PS416

Modular control system, multiprocessor capable, with numerous expansion options. Can be equipped with up to 19 cards in the central rack.

XC100/200

Modular, space-requirement optimised control system. Can be locally expanded to up to 15 I/O modules. Fieldbus connection via integrated CANopen fieldbus master. Ethernet interface for programming and linking to higher-level systems.
.

XC600

High-end control system for large-scale applications. Extensive program and data memories together with high processing speeds ensure efficient implementation of applications.
A four-line display provides the operator with excellent menu guidance and indication.

PS416

PS416 central units

The flexibility of the PS416 series is based on three CPUs having differing program memories.

Program memories

PS416-CPU-200	256 kByte
PS416-CPU-300	512 kByte
PS416-CPU-400	1 MByte

Supported memory cards

SRAM	2 MByte or 4 MByte
FLASH	2 MByte or 4 MByte

Expandability

Locally: PS416 cards

Remotely: EM4, PS4 (not PS416-CPU-200)

Further networking capability

Via additional cards to PROFIBUS-DP, PROFIBUS-FMS, Modbus, Suconet K, Ethernet, transparent serial interface.

Racks and power supply modules

Racks

PS416-BGT-400	9 slots
PS416-BGT-410	13 slots
PS416-BGT-420	19 slots

Can also be used as a rack for remote expansion.

Power supply modules

PS416-POW-400	230 V AC, 8 A
PS416-POW-410	24 V DC, 10 A
PS416-POW-420	115 V AC, 8 A

PS416 – the modular PLC with concentrated performance

The PS416 is used for the control of complex processes, from measured-value monitoring, to calculation of control algorithms, to the control of actuators. Its modular construction and the large range of available cards enable flexible solutions to be designed for every branch of industry.

Distributed peripherals are easily connected via a number of different fieldbus systems. Programming is always carried out to international Standard IEC61131-3 using the Sucosoft S40 software. The task becomes even simpler using complete function libraries that provide the user with the necessary modules, from simple timers to highly dynamic regulators, for a time-saving solution.

Input and output modules

Digital input/output modules

PS416-INP-400
16 digital inputs 24 V DC, 3 ms

PS416-INP-401
16 digital inputs 24 V DC, 0.3 ms

PS416-OUT-400
16 digital inputs 24 V DC, 0.5 A

PS416-OUT-401
8 digital inputs 24 V DC, 2 A

Analog input/output modules

PS416-AIN-400
8 analog inputs for voltage/current

PS416-AIO-400
4 analog inputs for voltage/current
4 analog outputs for voltage/current

Networking and technology modules

Networking modules

PS416-NET-230	PROFIBUS-FMS card
PS416-NET-400	Suconet K master and slave
PS416-NET-440	PROFIBUS-DP master
PS416-NET-441	PROFIBUS-DP slave
PS416-MOD-200	Modbus-/JBUS card

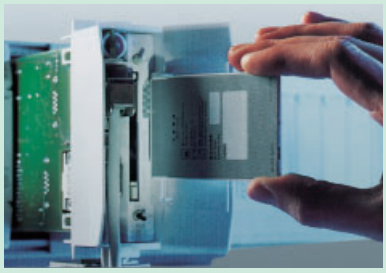
Technology modules

PS416-CNT-200
Up to 6 counter channels, 0-50 kHz, 5 V or 24 V DC

PS416-COM-200
Card for serial protocols.
RS232, RS232C, TTY, RS485 or RS422 are supported depending on the module

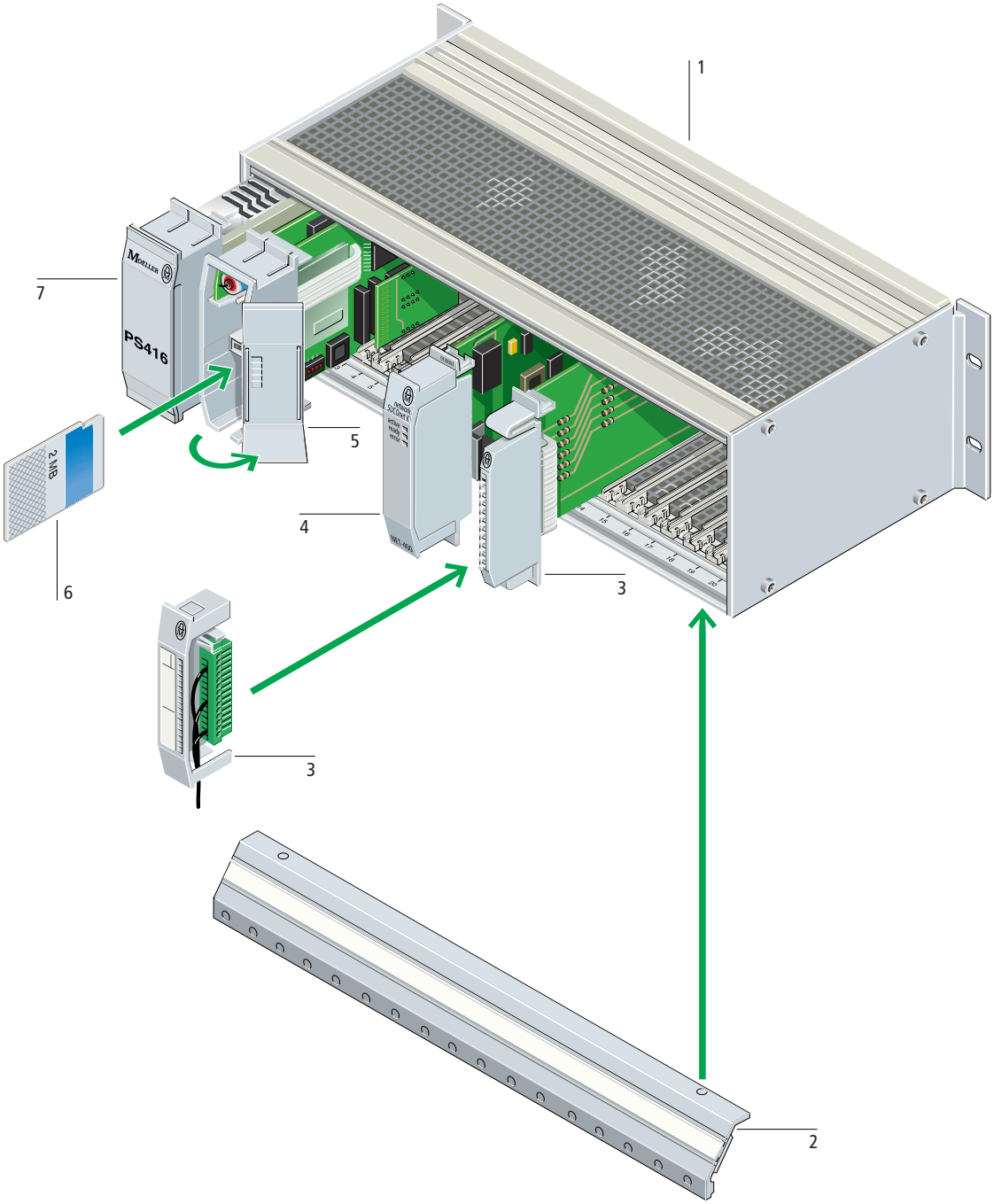
PS416-TCS-200
Telecontrol (IEC/EN 60870-5) for leased line or dial-up line

Recipe and program storage on PCMCIA memory card
Using standard PCMCIA memory cards offers a convenient way of storing data in voltage-independent security. These cards can be used in updating programs or recipe data, as well as for saving large quantities of production data.

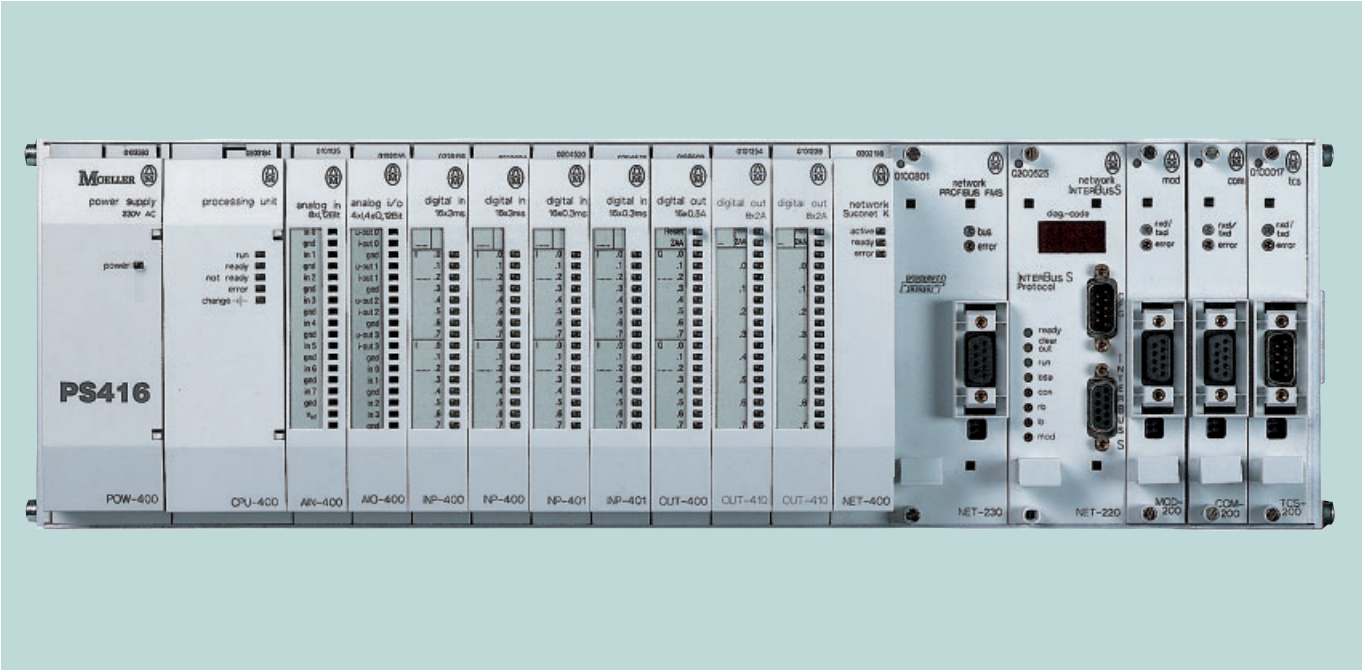


Plug-in connections
All the I/O connectors in the PS416 input/output cards are easily accessible via detachable plugs. Exchanging cards is therefore no problem.

Flexibility of size
You can select from racks for 9, 13 or 19 slots, for central or remote installation – just as you require.



Basic elements		Modules		Accessories	
Rack	1	**Standard cards**	3	**Potential equalization bar**	2
→ Page 3/8		→ Page 3/9		→ Page 3/12	
Power supply card	7	**Communication cards**	4	**Memory card**	6
→ Page 3/8		→ Page 3/10		→ Page 3/12	
CPU card	5				
→ Page 3/8					



Type overview

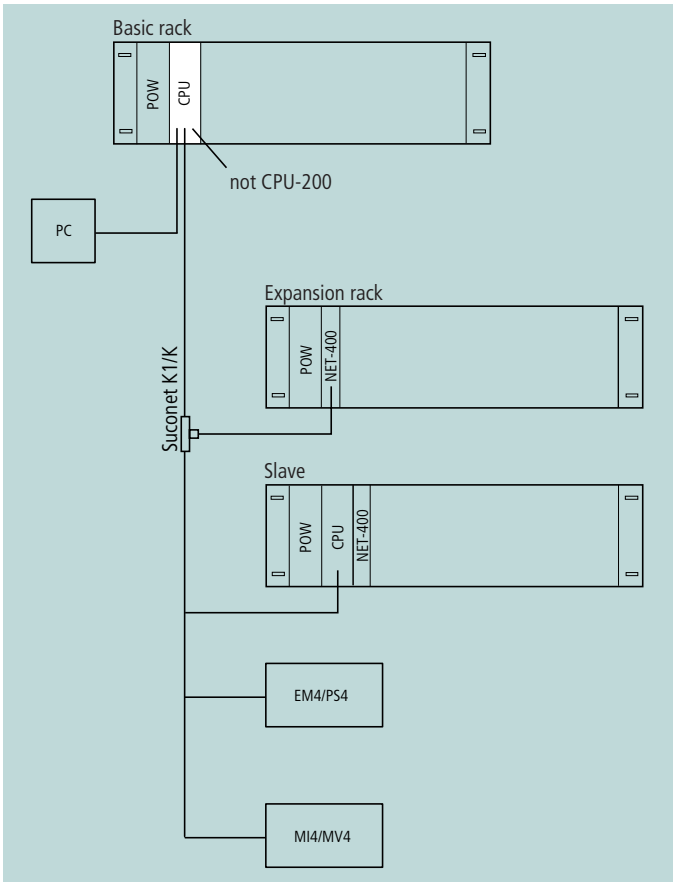
PS416-BGT-.. Rack
PS416-POW-.. Power supply card
PS416-CPU-.. CPU card
PS416-INP-.. Digital input card
PS416-OUT-.. Digital output card
PS416-AIN-.. Analog input card
PS416-AIO-.. Analog input/output card
PS416-CNT-.. Counter card
PS416-NET-.. Network card
PS416-COM-.. Communications card
PS416-MOD-.. Communications card

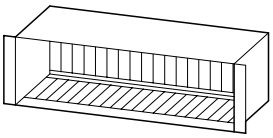
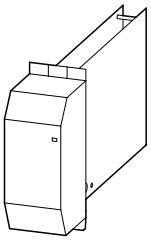
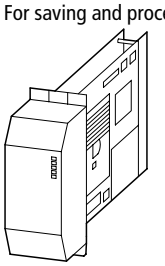
Application

The PS416 is a programmable logic controller for medium to high complexity applications. Thanks to its modular design it can be adapted easily to the automation tasks at hand.

Features

Modular design
- Allows connection of digital and analog sensors/actuators
- Digital and analog signal processing
- A range of fieldbus systems facilitates the problem-free and manufacturer-independent connection of remote peripherals
- Controls processes in machines and plants
- Controls complex processes; from measured value acquisition and calculating complex control algorithms to actuating control actuators
- Processes and manages control and process data
- Local and/or remote expansion through Suconet K
- Real-time clock
- Programming with Sucosoft S40 according to IEC/EN 61131-3
- No external ventilation required



	Description	Type Article no.	Price See Price List	Std. pack
Rack				
				
For mounting on mounting plate with fixing screws (can be adapted for front mounting)				
9 free slots	–	**PS416-BGT-400** 040891		1 off
13 free slots	–	**PS416-BGT-410** 040892		
19 free slots	–	**PS416-BGT-420** 040889		
For front mounting With fixing screws (can be adapted for mounting on mounting plate)				
19 free slots	–	**PS416-BGT-421** 040890		1 off
Power supply cards				
With electrical isolation of primary and secondary circuits				
				
230 V AC	Primary 230 V AC Secondary 5 V DC/1.5 – 8 A	**PS416-POW-400** 054127		1 off
24 V DC	Primary 24 V DC Secondary 5 V DC/1,5 – 10 A	**PS416-POW-410** 032750		
115 V AC	Primary 115 V AC Secondary 5 V DC/1.5 – 8 A	**PS416-POW-420** 082247		
Central processing units				
For saving and processing PLC programs, using the programming software S40				
				
256 kByte user memory	• Suconet-K interface (PS416-CPU-300/-400) • Programming interface • PCMIA interface for memory card • PS416-ZBB-410 battery modules are not supplied with the CPU, order 2 battery modules separately	**PS416-CPU-200** 202381		1 off
512 kByte user memory		**PS416-CPU-300** 202382		
1 MByte user memory		**PS416-CPU-400** 051747		

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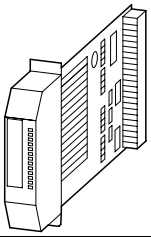
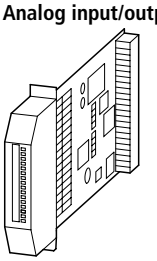
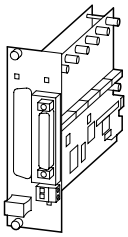
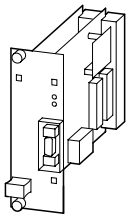
	Description	Type Article no.	Price See Price List	Std. pack
Digital input/output cards				
				
Digital input cards • 24 V DC input • 16 inputs with optocoupler				
	Switch-on delay: 3.0 ms Switch-off delay: 3.0 ms	**PS416-INP-400** 051339		1 off
	Switch-on delay: 0.2 ms Switch-off delay: 0.3 ms	**PS416-INP-401** 051340		1 off
Digital output cards 24 V DC output				
	16 outputs, each for 500 mA with optocoupler	**PS416-OUT-400** 051337		1 off
	8 outputs, each for 2 A with optocoupler	**PS416-OUT-410** 051338		1 off
Analog input/output cards				
				
Analog input card				
	• 8 analog inputs, up to 12-bit resolution • Input voltage ranges: channel 0 – 3: 0 – 1 V, ± 5 V, ± 10 V, 0 – 5 V, 0 – 10 V, channel 4 – 7: 0 – 1 V • Input current ranges: channel 0 – 7: 0 – 20 mA, 4 – 20 mA	**PS416-AIN-400** 030166		1 off
Analog input/output card				
	• 4 analog inputs, up to 12-bit resolution • 4 analog outputs, up to 12-bit resolution • Voltage input/output ranges: 0 – 5 V, ± 5 V, ± 10 V, 0 – 10 V • Current input/output ranges: 0 – 20 mA, 4 – 20 mA	**PS416-AIO-400** 030165		1 off

	Description	Type Article no.	Price See Price List	Std. pack
Digital counter card				
• Acquisition of fast counter pulses: • For 5 V/24 V signals • Up/down and/or reverse/down counter function • Max. 6 channels, depending on the operating mode: – Operating mode 1: 6 × reverse/down – Operating mode 2: 3 × up/down – Operating mode 3: 2 × up/down and 2 × reverse/down • For up/down counter function: selectable with/without complementary signals				
	Count direction and signal level depend on the counter modules that have been fitted to the module.	**PS416-CNT-200** 053874		1 off
Counter module, plug-in, with fixing screws				
Down counter module				
	Input signal 24 V DC Space required: 1 slot	**CM61.1** 069299		1 off
	Input signal 5 V DC Space required: 1 slot	**CM61.2** 071672		1 off
Up/down counter module				
	Input signal 24 V DC Space required: 2 slots	**CM62.1** 074045		1 off
	Input signal 5 V DC Space required: 2 slots	**CM62.2** 076418		1 off
PROFIBUS-FMS card				
	Interface for organizing and controlling data exchange between PS416 and PROFIBUS-FMS networks	**PS416-NET-230** 053877		1 off

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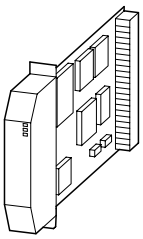
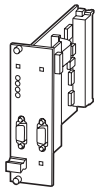
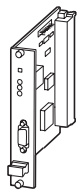
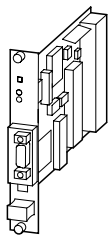
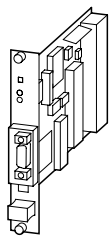
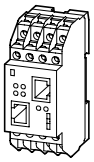
	Description	For use with	Type Article no.	Price See Price List	Std. pack
Suconet K card					
	Interface for connecting a PS416 expansion rack and for organizing and controlling data exchange between PS416 and Suconet-K networks. For use in connection with PS416-CPU-200/-300/-400 CPU cards.	–	**PS416-NET-400** 037090		1 off
PROFIBUS-DP card, master					
	Interface for organizing and controlling data exchange between PS416 and PROFIBUS-DP networks The required CFG-DP configurator is included in Sucosoft S40 from Version 2.1. The corresponding configuration file (*.GSD) is available by download from: • Internet address: www.moeller.net/automation • Internet address: www.profibus.com	–	**PS416-NET-440** 206742		1 off
PROFIBUS-DP card, slave					
	Interface for data exchange between PS416 and PROFIBUS-DP standard networks up to 12 MBit/s. Max. 244 bytes each for input and output data (max. total 400 bytes). The corresponding configuration file (*.GSD) is available by download from: • Internet address: www.moeller.net/automation • Internet address: www.profibus.com	–	**PS416-NET-441** 214816		1 off
Serial communication card					
	Interface for asynchronous serial point-to-point communication between PS416 and data terminals. To be fitted with one of the interface modules listed under Accessories.	–	**PS416-COM-200** 053875		1 off
MODBUS/JBUS communication card					
	Bus or point-to-point connection between PS416 (as a slave station) and devices that communicate according to the MOD-BUS/JBUS protocol. To be fitted with one of the interface modules listed under Accessories. Application areas include: • Control rooms • Building services management • Process control engineering	–	**PS416-MOD-200** 082190		1 off
Interface module					
	RS232C without control cable	PS416-COM-... PS416-MOD-...	**IFM232.1** 083537		1 off
	RS232C with control cable	PS416-COM-...	**IFM232.2** 085910		
	20 mA (TTY)	PS416-COM-... PS416-MOD-...	**IFMTTY.1** 012888		
	RS485	PS416-COM-...	**IFM485.1** 078791		
	RS422	PS416-COM-... PS416-MOD-...	**IFM422.1** 081164		

Description	For use with	Type Article no.	Price See Price List	Std. pack
Potential equalization bar				
with 5 contact clamps ∅ 3.5 mm and 4 contact clamps ∅ 4.8 mm				
For PS416-BGT-400	PS416-BGT-400 PS416-BGT-410 PS416-BGT-420/-421	**PS416-ZBX-403** 054126		1 off
For PS416-BGT-410		**PS416-ZBX-402** 054125		
For PS416-BGT-420/-421		**PS416-ZBX-401** 054124		
Spare contact clamps				
with 5 contact clamps ∅ 3.4 mm and 3 contact clamps ∅ 4.8 mm	PS416-BGT-...	**PS416-ZBX-404** 030533		1 off
Front blanking plate				
For PS416-BGT-... expansion racks	PS416-BGT-...	**PS416-NOP-200** 030538		5 off
Ferrite ring				
For damping high frequency interference signals in data and power lines	PS416-POW-... PS416-OUT-... PS416-CNT-... PS416-NET-2.. PS416-COM-... PS416-MOD-...	**PS416-ZBX-405** 025519		2 off
Memory card				
Memory card, for use with Sucosoft S40 version: PS416-MEM-432 ≧ V1.12 PS416-MEM-442 ≧ V4.10 PS416-MEM-443 ≧ V4.10				
2 MByte SRAM	PS416-CPU-...	**PS416-MEM-432** 221131		1 off
2 MByte Flash		**PS416-MEM-442** 221133		
4 MByte Flash		**PS416-MEM-443** 221134		
Spare battery for SRAM memory card				
For PS416-MEM-430/-431	PS416-MEM-430/-431	**PS416-ZBB-300** 037055		1 off
For PS416-MEM-432/-433	PS416-MEM-432/-433	**PS416-ZBB-301** 222433		1 off
Battery module				
For PS416-CPU-200/-300/-400	PS416-CPU-200/-300/-400	**PS416-ZBB-410** 051748		1 off
Programming cable				
For connecting the programming PC to the CPU card via the RS232C interface	PS416-CPU-...	**PS416-ZBK-210** 051751		1 off
Suconet K/K1 data cable				
For coupling all devices with Suconet-K/K1 interface For customer assembly of Suconet cables 2 × 0.5 mm² shielded and twisted, cable length (as ring) 100 m				
–	PS416-CPU-... PS416-NET-4.. PS4	**LT309.096** 019233		100 off

Description	For use with	Type Article no.	Price See Price List	Std. pack
Data plug				
9-pole SUB-D pin connector, right-angled, kit without cable for connecting data cables	PS416-CPU-... PS416-NET-2.. PS416-NET-4.. PS416-COM-... PS416-MOD-... EM4-...	**PS416-ZBS-410** 051752		1 off
25-pole (socket), assembly kit without cable, for connecting signal leads	PS416-CNT-...	**DS25.3** 090938		
Pin connector, 9-pole, 90° angled cable entry	PROFIBUS-DP	**ZB4-209-DS2** 206982		
T connector				
For setting up a bus node (e.g. Suconet K), with a connecting cable to the CPU card/network module for Suconet K	PS416-CPU-... PS416-NET-4.. PS416-COM-...	**PS416-ZBX-410** 030532		1 off
Interface converter				
RS232C to RS485	PS416-CPU-...	**UM1.5** 055722		1 off
Spare plug connector				
For PS416-INP-401	PS416-INP-401 PS416-INP-400 PS416-OUT-400 PS416-AIO-400	**PS416-ZBS-401** 051341		1 off
For PS416-INP-400		**PS416-ZBS-402** 051342		
For PS416-OUT-400		**PS416-ZBS-403** 051343		
For PS416-AIO-400		**PS416-ZBS-406** 030536		
Spare insert labels				
With perspex covers, in the following assortment: 40 insert labels for PS416-INP-400, PS416-INP-401 40 insert labels for PS416-OUT-400 10 insert labels for PS416-OUT-410 10 insert labels for PS416-AIN-400 10 insert labels for PS416-AIO-400 10 perspex covers	PS416-INP-... PS416-OUT-... PS416-AIN-... PS416-AIO-...	**PS416-ZBX-902** 040895		1 off

	Description	For use with	**Type** Article no.	**Price** See Price List	Std. pack
Filter					
	For RFI suppression of the 24 V DC supply	PS416-CNT-...	**FIL-DC1.1** 001870		1 off
Connection cable					
	For connecting the PS416-NET-220 to the COM interface (9-pole serial/RS232C) of the PC, length 2 m	PS416-NET-2..	**KPC-VTP1** 011888		1 off
PROFIBUS-DP data cable					
	Without plug 2-core, 2 × 0.64 mm² Twisted	PS416-NET-44.	**ZB4-900-KB1** 206983		100 m
Memory module					
	For communication and bus parameters; EEPROM 32 kByte; one module can be plugged in per card	PS416-NET-2.. PS416-COM-... PS416-MOD-...	**SM3-EE32** 009590		1 off
PROFIBUS-FMS data cable					
	4-core, 4 × 0.56 mm², length: 100 m	PS416-NET-2...	**LT309.099.1** 095917		1 off
	4-core, 4 × 0.56 mm², length: 500 m	PS416-NET-2...	**LT309.099.2** 095880		1 off
Ethernet network module					
	• Universal "Device Server" for Ethernet with TCP/IP and UDP protocol • Mounting on top-hat rail on the left of the PS4. Interface selection via slide switch • Interfaces – Control side: optionally RS232 or RS485, via RJ-45 plug or screw terminal – Ethernet side: 10 Base-T, 10/100 MBaud, via RJ-45 plug • Baud rate options: 9.6/19.2/38.4 kBaud • LEDs for Ready, Link, Active, Error • Reset button	PS4-... PS416... ZB4-501-UM3/4	**COBOX** 226984		1 off
COBOX connecting cable					
	For connecting to PS4-150, -200, -300 and COBOX.	PS4-... COBOX	**ZB4-508-KB1** 281946		1 off

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CPU card		PS416-CPU-200	PS416-CPU-300	PS416-CPU-400
General				
Standards		EN 61131-2, EN 50178	EN 61131-2, EN 50178	EN 61131-2, EN 50178
Ambient temperature	°C	0/55	0/55	0/55
Ambient temperature for storage	°C	-25/70	-25/70	-25/70
Weight	kg	Approx. 0.38	Approx. 0.38	Approx. 0.38
Space required		8 space units = 2 slots	8 space units = 2 slots	8 space units = 2 slots
Electromagnetic compatibility (EMC)		→ Page 4/59	→ Page 4/59	→ Page 4/59
Current consumption	A	Approx. 1.5	Approx. 1.5	Approx. 1.5
Power supply	V DC	5	5	5
Power loss	W	7.5	7.5	7.5
Memory				
Free working memory	kByte	256	512	1000
For operating system,		permanently reserved	permanently reserved	permanently reserved
Memory card Flash-EEPROM	MByte	0.5 /1/2/4	0.5 /1/2/4	0.5 /1/2/4
Memory card SRAM	MByte	0.5 /1/2/4	0.5 /1/2/4	0.5 /1/2/4
Back-up time		At least 1 year	At least 0.5 year	At least 0.5 year
PRG interface (RS232C/RS485)				
Data transfer rate	kBit/s	2.4 4.8 9.6 19.2 38.4 57.6	2.4 4.8 9.6 19.2 38.4 57.6	2.4 4.8 9.6 19.2 38.4 57.6
Cable length, RS485	m	≦ 600	≦ 600	≦ 600
Cable length, RS232C	m	≦ 10	≦ 10	≦ 10
Stations, RS485	Qty.	≦ 30	≦ 30	≦ 30
Stations, RS232C	Qty.	≦ 1	≦ 1	≦ 1
Connection types		9-pole SUB-D socket	9-pole SUB-D socket	9-pole SUB-D socket
SBI interface, RS485				
Connection types		–	9-pole SUB-D socket	9-pole SUB-D socket
Suconet K mode				
Data transfer rate	kBit/s	–	187.5 375	187.5 375
Cable length for 187.5 kBit/s	m	–	600	600
Cable length for 375 kBit/s	m	–	300	300
Stations	Qty.	–	max. 30	max. 30
Connection types		–	9-pole SUB-D socket	9-pole SUB-D socket
Transparent mode				
Data transfer rate	kBit/s	–	0.3 0.6 1.2 2.4 4.8 9.6 19.2	0.3 0.6 1.2 2.4 4.8 9.6 19.2
Cable lengths	m	–	max. 1200	max. 1200
Stations	Qty.	–	max. 1	max. 1

Rack		PS416-BGT-400	PS416-BGT-410	PS416-BGT-420	PS416-BGT-421
General					
Weight	kg	Approx. 1.7	Approx. 2.3	Approx. 3.05	Approx. 3.05
Current drawn (own requirements)	A	≦ 0.5	≦ 0.5	≦ 0.5	≦ 0.5
Power loss	W	2.5	2.5	2.5	2.5

Power supply card			PS416-POW-400	PS416-POW-410	PS416-POW-420
General					
Standards			EN 61131-2, EN 50178	EN 61131-2, EN 50178	EN 61131-2, EN 50178
Ambient temperature		°C	0/55	0/55	0/55
Ambient temperature for storage		°C	-25/70	-25/70	-25/70
Weight		kg	Approx. 0.74	Approx. 0.74	Approx. 0.74
Space required			8 space units = 2 slots	8 space units = 2 slots	8 space units = 2 slots
Electromagnetic compatibility (EMC)			→ Page 4/59	→ Page 4/59	→ Page 4/59
Protection class			1	1	1
Humidity class			RH 1	RH 1	RH 1
Off-load stable			Yes	Yes	Yes
Test voltage		kV	2.5	0.85	2.5
Mains overvoltage protection			Yes	Yes	Yes
Rated voltage	U_e	V	230 AC	24 DC	115 AC
Rated frequency		Hz	47 – 440	–	47 – 440
Rated current	I_e	A	max. 0.5	3	1
Inrush current		A	Up to 50 (2 ms)	Up to 45 (2 ms)	Up to 50 (2 ms)
Output current		A	1.5 – 8	1.5 – 10	1.5 – 8
Efficiency		%	≧ 75	≧ 75	≧ 75
Active power factor			0.8	1	0.8
Switching frequency		kHz	66	70	66
Power hold-up capability		ms	≧ 10	≧ 10	≧ 10
Repetition rate		s	1	1	1
Vibration resistance 10 – 150 Hz		g	1	1	1
Shock resistance, shock duration 11 ms		g	> 15	> 15	> 15
Insulation test	U_i	V AC	1800	–	–

Digital input card				PS416-INP-400	PS416-INP-401
General					
Standards				EN 61131-2, EN 50178	EN 61131-2, EN 50178
Ambient temperature			°C	0/55	0/55
Ambient temperature for storage			°C	-25/70	-25/70
Weight			kg	Approx. 0.15	Approx. 0.15
Space required				4 space units = 1 slot	4 space units = 1 slot
Electromagnetic compatibility (EMC)				→ Page 4/59	→ Page 4/59
Humidity class				RH 1	RH 1
Digital inputs 24 V DC			Qty.	16	16
Electrical isolation between input and logic 5 V bus				Yes	Yes
Connection types				Plug-in screw terminals	Plug-in screw terminals
Terminal cross-section			mm^2	≦ 1.5	≦ 1.5
Indicating elements				LED	LED
Current drawn, 5 V bus			mA	Normally 30	Normally 30
Power loss					
Internal 5 V bus			W	Normally 0.15	Normally 0.15
External 16 × Input			W	≦ 5.8	≦ 5.8
Rated voltage		U_e	V DC	24	24
Rated current		I_e	mA	Normally 8.6 ± 0.5	Normally 8.6 ± 0.5
Input resistance			kΩ	Normally 2.8	Normally 2.8
Voltage range for U_e					
0-level			V	-3 – 5	-3 – 5
1-level			V	15 – 30.2	15 – 30.2
Current range for I_e					
0-level			mA	0 – 0.6	0 – 0.6
1-level			mA	2.5 – 12	2.5 – 12
Make/break delay				Normally 3.0/3.0 (ms)	Normally 0.2/0.3 (ms)
Utilization factor		g	%	1	1
Duty factor			% DF	100	100

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Digital output card			PS416-OUT-400	PS416-OUT-410
General				
Standards			EN 61131-2, EN 50178	EN 61131-2, EN 50178
Ambient temperature		°C	0/55	0/55
Ambient temperature for storage		°C	-25/70	-25/70
Weight		kg	Approx. 0.15	Approx. 0.15
Space required			4 space units = 1 slot	4 space units = 1 slot
Electromagnetic compatibility (EMC)			→ Page 4/59	→ Page 4/59
Humidity class			RH 1	RH 1
Supply voltage for card		V DC	5, internally via bus	5, internally via bus
External supply voltage for the outputs		V DC	24	24
Tolerance			+20 %/-15 %	+20 %/-15 %
Residual ripple		%	≦ 5	≦ 5
Protection against polarity reversal			Provided	Provided
Current consumption				
Logic, 5 V bus		mA	Normally 150	Normally 85
External 24 V (no load)		mA	Normally 230	Normally 70
Power loss				
Logic, 5 V bus		W	Approx. 0.74	Approx. 0.425
External 24 V		W	Approx. 5.6	Approx. 4.5
Outputs				
Qty.			16	8
Rated current				
Per output for U_e = 24 V	I_e	A	0.5	2
Electrical isolation between output and logic 5 V bus			Yes	Yes
Terminals			Plug-in screw terminals	Plug-in screw terminals
Terminal cross-section		mm^2	≦ 1.5	≦ 1.5
Indicating element			LED	LED
Short-circuit threshold			–	WIth restart lock-out
Short-circuit threshold, operating mode 1			WIth restart lock-out	–
Short-circuit threshold, operating mode 2			Without restart lock-out	–
Parallel wiring of outputs per card (per group)			max. 4	No
Signal for triggered monitoring				
LED			Provided	Provided
ZAA			Active LOW	Active LOW
Residual current for OFF signal		µA	≦ 300	≦ 400
Signal range for U_e				
OFF signal		V	≦ 2.5	≦ 2
ON signal			= rated voltage	= rated voltage
Rated current				
Per output for U_e = 24 V	I_e	A	0.5	2
Per output at U_{max}	I_e	A	0.6	2.4
Delay time				
Switch-on 0 V → 24 V		µs	60	60
Switch-off 24 V → 0 V		µs	100	700
Utilization factor	g	%	1	1
Duty factor		% DF	100	100
Monitoring				
Short-circuit			Provided	Provided, with restart lock-out
Thermal			Provided	–
Overload			Provided	–
Switching frequency with inductive load			as per DC-13	as per DC-13

Analog input/output card		PS416-AIN-400	PS416-AIO-400
General			
Standards		EN 61131-2, EN 50178	EN 61131-2, EN 50178
Ambient temperature	°C	0/55	0/55
Ambient temperature for storage	°C	-25/70	-25/70
Weight	kg	Approx. 0.2	Approx. 0.2
Space required		4 space units = 1 slot	4 space units = 1 slot
Electromagnetic compatibility (EMC)		→ Page 4/59	→ Page 4/59
Protection class		1	1
Degree of protection		IP20	IP20
Cards per rack	Qty.	Max. 8/11 (limited by power supply)	Max. 6/8 (limited by power supply)
Supply voltage, PS416 bus	V DC	5/max. 700 mA	5/max. 1 A
External power supply		Not applicable	Not applicable
Analog I/O for PS416 bus	V AC	600	600
Inputs/outputs			
Electrical isolation		To internal bus of the PS 416	To internal bus of the PS 416
Input channels	Qty.	8	4
Output channels	Qty.	–	4
Input voltage range			
Channel 0 – 3	V	± 5 0 – 5 ± 10 0 – 10	–
Channel 4 – 7	V	0 – 1	–
Input/output voltage range	V	–	± 5 0 – 5 ± 10 0 – 10
Selection of voltage ranges			
Channel 0 – 3		Via software, from the PLC	–
Channel 4 – 7		Fixed 0 – 1 V	–
All channels		–	Via software, from the PLC
Input current range	mA	0 – 20 4 – 20	–
Input/output current ranges	mA	–	0 – 20 4 – 20
Selection of the current ranges		Via software, from the PLC	Via software, from the PLC
Changeover current/voltage per channel		By selector switch	By selector switch, wiring
Measuring method of the input channels		Successive approximation	Successive approximation
Resolution			
±10 V, 0 – 10 V	Bit	≦ 12	≦ 12
± 5 V, 0 – 5 V	Bit	≦ 12	≦ 11 (outputs) ≦ 12 (inputs)
0 – 1 V	Bit	≦ 12	–
0 – 20 mA	Bit	≦ 12	≦ 12
4 – 20 mA	Bit	≦ 11	≦ 11
Outputs are short-circuit/overload protected		–	Yes
Accuracy			
Differential non-linearity 0 – 55 °C	LSB	< 1 (all ranges)	< 1 (all ranges)
Overall error, voltage and current inputs/outputs (0 –55 °C)	%	Normally 0,4	Normally 0.4
Deviations caused by EMC interference	%	Max. 10 (Interference Class 3)	Max. 10 (Interference Class 3)
Conversion time			
Inputs (8/12-bit)	ms	1.6 – 14	1.6 – 7.6
Outputs (12-bit)	ms	–	1.6 – 2.8
Loading of the voltage outputs	kΩ	–	≧ 2
Load on current outputs	Ω	–	≧ 560
Input impedance, voltage inputs		> 100 kΩ, 56 pF	> 100 kΩ, 56 pF
Input impedance, current inputs	Ω	50	50
Data output		With image register	With image register
Sampling time/mean-value generation		Configurable using S 40 Topology Configurator software	Configurable using S 40 Topology Configurator software
Notes		All error details refer to the particular range value.	

Digital counter card			PS416-CNT-200
General			
Standards			EN 61131-2, EN 50178
Ambient temperature		°C	0/55
Ambient temperature for storage		°C	-25/70
Weight		kg	Approx. 0.35
Space required			8 space units = 2 slots
Electromagnetic compatibility (EMC)			→ Page 4/59
Supply voltage for card		V DC	5, internally via bus
Current drawn (bus circuit)		mA	Typ. 350 (24 V DC external)
Current drawn (external)		mA	Normally 250
Voltage range		V DC	18 – 30
Residual ripple	U_{ss}	V	≦ 1.3
Power losses when fully fitted with modules		W	Normally 8
Short-circuit protection			1.6 A slow-blow/250 V
Inputs			
Power supply of encoders		V DC	24/5 ± 1 % via module
Current consumption of encoders			
At 24 V DC		mA	≦ 250
At 5 V DC		mA	≦ 100
Counters per module		Qty.	≦ 6, depending on the modules fitted
Counter frequency		kHz	0 – 50
Electrical isolation			Yes, from inputs modules to PS416 bus
Rated insulation voltage			
Power supply to module/card rack		V AC	1500
Counter inputs to PS 416 bus		V AC	600
Power connection			
Max. permissible cable length, single, from source to module input		m	< 10 m with external interference signal (shielded) > 10 m under the following installation conditions (see note):

Notes

Cables made up from twisted pairs, common shielding, max. cross-section for connection: 0.5mm²
The max. possible cable length is determined by the signal levels that are required. The spacing between signal cables and power cables must be as large as is feasible. The requirements and specifications of the manufacturer of the signal source must be observed.

		Reverse/down counter modules		Up/down counter module	
		CM61.1	CM61.2	CM62.1	CM62.2
Modules					
Input pulse form as per DIN 19 240		Square wave, triangular wave, sinewave		Square wave, triangular wave, sinewave 2 pulse trains with 90° phase shift	
Max. input voltage	V DC	30	5	30	5
Min. input voltage	V DC	-3	-1	-3	-1
Typical input current	mA	1.6	0.33	1.6	0.33
1-level detection	V	> 15	> 2	> 15	> 2
0-level detection	V	< 5	< 1	< 5	< 1
Stability compensation		–	–	Yes	Yes
Space required per module		1 slot in the rack		2 slots in the rack	

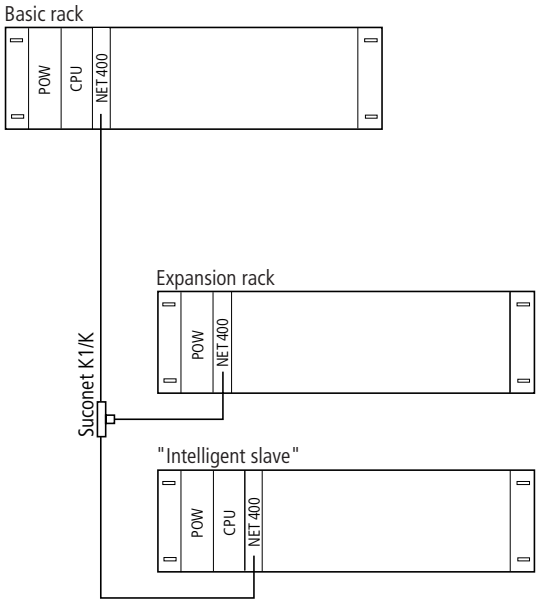
PROFIBUS-FMS card		PS416-NET-230
General		
Standards		EN 61131-2, EN 50178
Ambient temperature	°C	0/55
Ambient temperature for storage	°C	-25/70
Weight	kg	Approx. 0.31
Space required		8 space units = 2 slots
Electromagnetic compatibility (EMC)		→ Page 4/59
Supply voltage for card	V DC	5, internally via bus
Current consumption	A	Max. 1.4; typ. 1.0
Power loss	W	Approx. 5
Interfaces		
Qty.		1 (RS485)
Communication connections	Qty.	Approx. 40
Data transfer rate	kBit/s	9.6 19.2 93.75 187.5 500
Data transfer rate for modem operation	kBit/s	1.2 2.4 4.8
Distance (depending on the baud rate)		
Without repeater	m	200 – 1200
With doubled core cross-section	m	400 – 2400
Programming		
Function blocks PROFIBUS- FMS		Any number

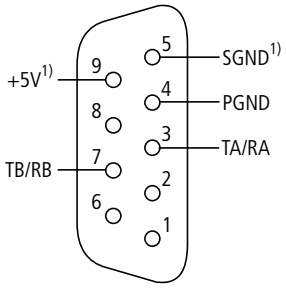
Suconet K card		PS416-NET-400
General		
Standards		EN 61131-2, EN 50178
Ambient temperature	°C	0/55
Ambient temperature for storage	°C	-25/70
Weight	kg	Approx. 0.16
Space required		4 space units = 1 slot
Electromagnetic compatibility (EMC)		→ Page 4/59
Supply voltage for card	V DC	5, internally via bus
Current consumption	A	max. 1
Power loss	W	Approx. 5
Interfaces		
Qty.		1 (RS485)
Data transfer rate/distance		187.5 kBit/s, max. 600 m 375 kBit/s, max. 300 m
Stations	Qty.	max. 30
Data length		
Transmit	Byte	≦ 120
Receive	Byte	≦ 120

PROFIBUS-DP module			PS416-NET-440	PS416-NET-441
General				
Standards			EN 61131-2, EN 50178	IEC/EN 61131-2, EN 50178
Ambient temperature		°C	0/55	0/55
Ambient temperature for storage		°C	-25/70	-25/70
Weight		kg	Approx. 0.21	Approx. 0.13
Space required			8 space units = 2 slots	4 space units = 1 slot
Electromagnetic compatibility (EMC)			→ Page 4/59	→ Page 4/59
Vibration resistance		g	–	Constant, 1 g/f = 10 to 150 Hz
Shock resistance, shock duration 11 ms		g	–	> 15
Rated insulation voltage	U_i	V DC	–	850
Degree of protection			–	IP20
Power supply		V DC	5	5/backplate bus
Current consumption		A	Approx. 0.8	Approx. 0.5
Power loss		W	4.5	2.5
PROFIBUS-DP interface (RS485) as per EN 50170				
Data transfer rate		kBit/s	9,6/19,2/93,75/187,5/500	9,6/19,2/93,75/187,5/500
Cable length		m	1200/1200/1200/1000/400	–
Data transfer rate		MBit/s	1,5/3/6/12	1,5/3/6/12
Cable length		m	200/100/100/100	–
Station type			Master	PROFIBUS-DP interface, slave
Electrical isolation			Yes	Yes, for internal supply voltage
Status indication			LED	–
Operating data				
Bus protocol			PROFIBUS-DP, master (EN 50170)	PROFIBUS-DP, slave (EN 50170 Vol 2)
Interface			RS485	RS485
Bus diagnosis			LED	LED
Slave mode				
Addresses			–	1 to 125 can be set through software
Send and receive data			–	244I/244Q, 400 total max.
Max. bus length		m	–	1200 (depending on the transfer rate)
Cable			PROFIBUS-DP 2-wire cable ZB4-900-kB1	PROFIBUS-DP 2-wire cable ZB4-900-kB1

		Serial communication card PS416-COM-200	MODBUS/JBUS communication card PS416-MOD-200
General			
Standards		EN 61131-2, EN 50178	EN 61131-2, EN 50178
Ambient temperature	°C	0/55	0/55
Ambient temperature for storage	°C	-25/70	-25/70
Weight	kg	Approx. 0.18	Approx. 0.18
Space required		4 space units = 1 slot	4 space units = 1 slot
Electromagnetic compatibility (EMC)		→ Page 4/59	→ Page 4/59
Supply voltage for card	V DC	5, internally via bus	5, internally via bus
Current drawn with modules fitted	mA	Normally 930	Normally 930
Power loss	W	Approx. 4.7	Approx. 4.7
Interface modules			
Qty.		1 can be plugged in per module: IFM 232.1, IFM 232.2, IFM TTY.1, IFM 485.1, IFM 422.1	1 can be plugged in per module: IFM 232.1, IFM TTY.1, IFM 422.1
Memory required for interface parameters	kByte	0.4	0.4
Memory modules			
Qty.		1 can be connected per card	1 can be connected per card
Storage medium		EEPROM, 32 kByte	EEPROM, 32 kByte
Storage duration	Years	> 10	> 10
Rewrite capability	Cycles	> 10000	> 10000

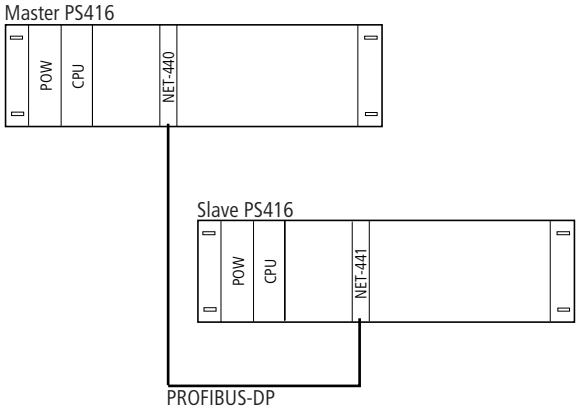
PS416-NET-400





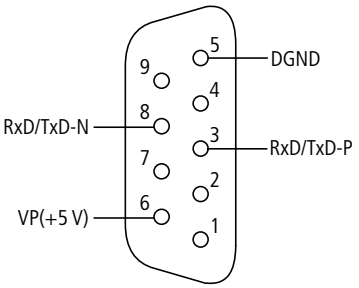
1) Only for interface converter UM1.5

PS416-NET-440
PS416-NET-441

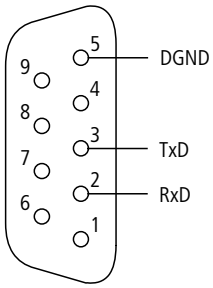


PS416-NET-440/-441

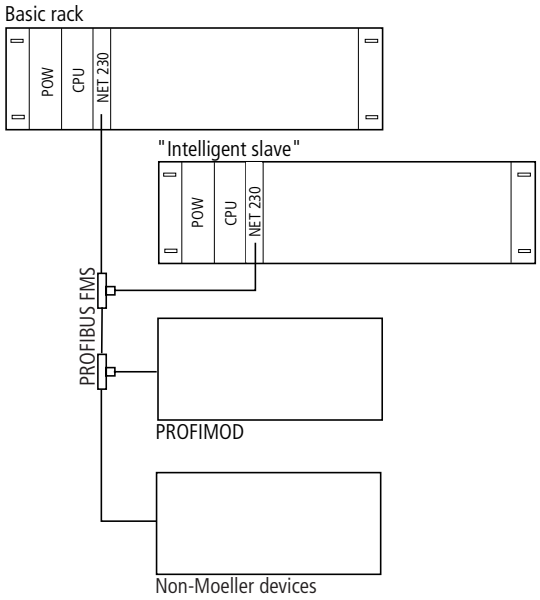
Pin assignment
PROFIBUS-DP

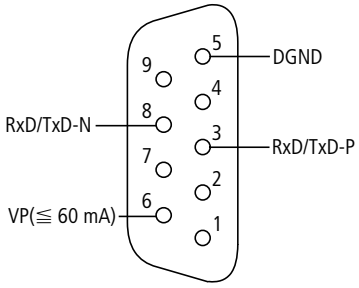


Pin assignment
CFG interface



PS416-NET-230

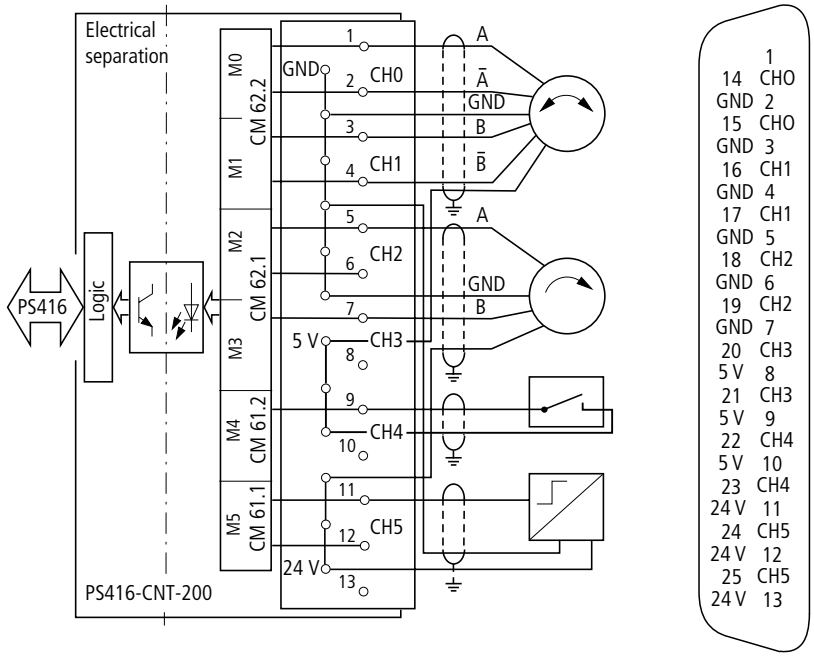




Data cable

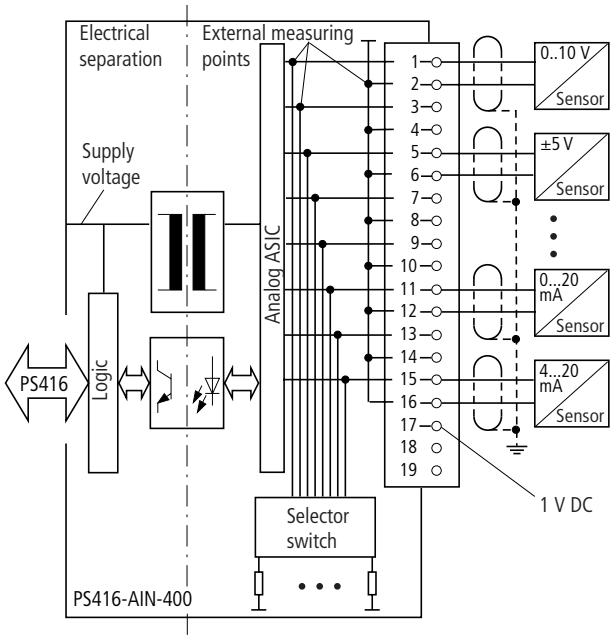
Technical data	**LT309.098**	**LT309.099**
Temperature range	-20 to +80 °C	-40 to +80 °C
Operating voltage	250 V	250 V
Outer casing	PVC	PVC
Core insulation	PE	PE
Terminal cross-section	0.25 mm^2	0.56 mm^2
Number of cores	2 twisted, shielded, no connector	4 twisted, shielded, no connector
External diameter	4.9 mm	8.0 mm
Cable lengths	100 m, 500 m	100 m, 500 m
Capacitance per unit length A/A'	60 pF/m	60 pF/m
Cable type	Li2YCY (TP)	Li2Y+CY

PS416-CNT-200

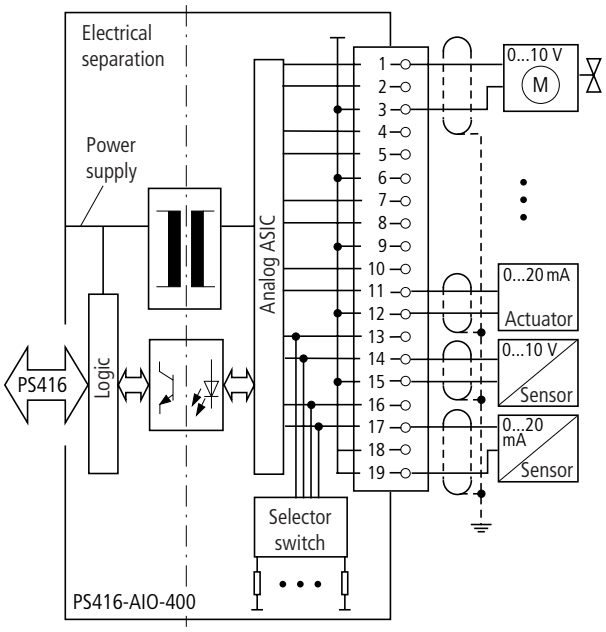


Control mode	Function	Switch
1	6 down counters	S1/1: OFF S1/2: ON
2	3 up/down counters	S1/1: ON S1/2: OFF
3	2 up/down counters 2 down counters	S1/1: ON S1/2: ON

PS416-AIN-400



PS416-AIO-400

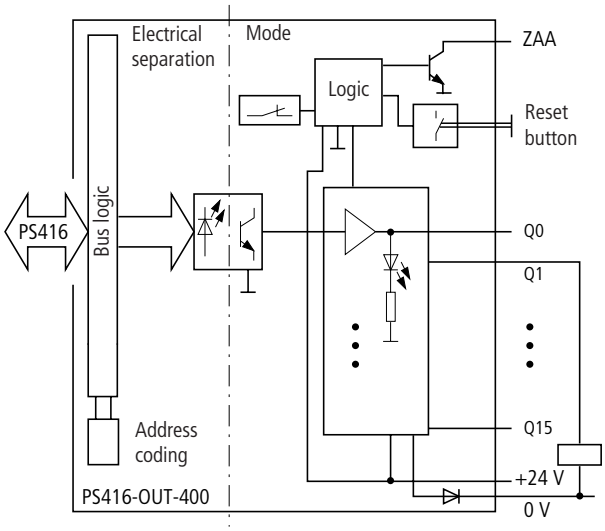


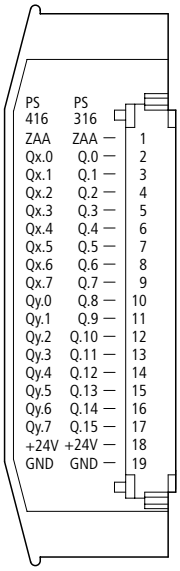
Pin	Inputs
1	Channel 0
2	Channel 0 (GND)
3	Channel 1
4	Channel 1 (GND)
5	Channel 2
6	Channel 2 (GND)
7	Channel 3
8	Channel 3 (GND)
9	Channel 4 (0 to 1 V)
10	Channel 4 (GND)
11	Channel 5 (0 to 1 V)
12	Channel 5 (GND)
13	Channel 6 (0 to 1 V)
14	Channel 6 (GND)
15	Channel 7 (0 to 1 V)
16	Channel 7 (GND)
17	1 V DC (test voltage)
18	–
19	–

Pin	Inputs/outputs
1	Channel 0 voltage output
2	Channel 0 current output
3	Channel 0 (GND)
4	Channel 1 voltage output
5	Channel 1 current output
6	Channel 1 (GND)
7	Channel 2 voltage output
8	Channel 2 current output
9	Channel 2 (GND)
10	Channel 3 voltage output
11	Channel 3 current output
12	Channel 3 (GND)
13	Channel 4 current/voltage input
14	Channel 5 current/voltage input
15	Channel 4/5 (GND)
16	Channel 6 current/voltage input
17	Channel 7 current/voltage input
18	Channel 6 (GND)
19	Channel 7 (GND)

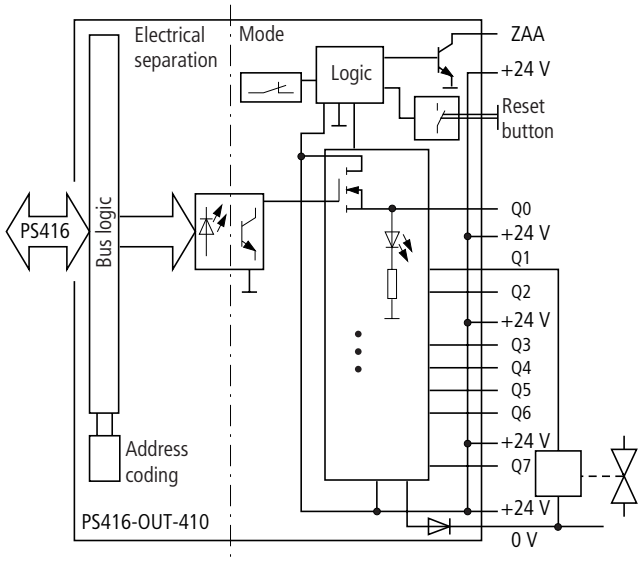
Moeller HPL0213-2004/2005

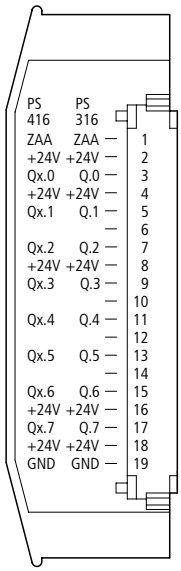
PS416-OUT-400





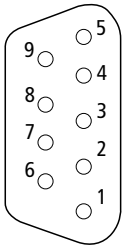
PS416-OUT-410

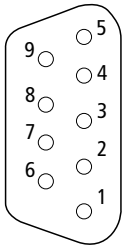




PS416-CPU-200/-300/-400

Pin assignments for the PRG and Suconet-K interface

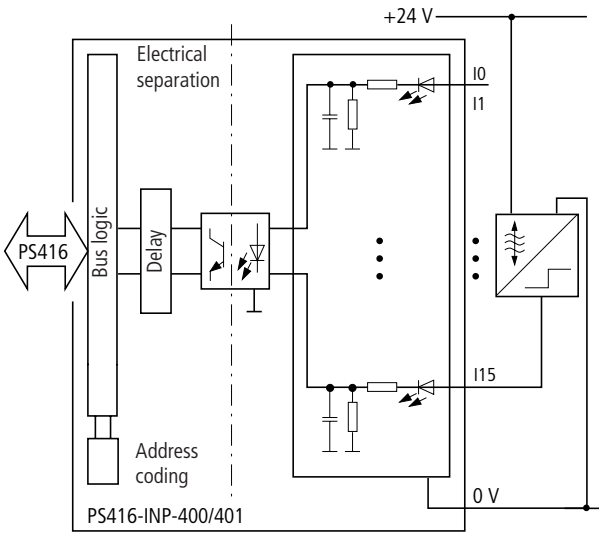


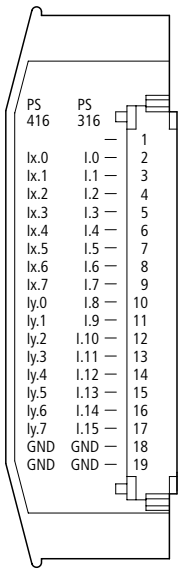


Pin	RS232C **PRG**	RS485 **Suconet-K (not PS416 CPU 200)**
2	RxD	–
3	TxD	TA/RA
4	–	PGND
5	SGND	SGND[1)]
7	–	TB/RB
9	–	+ 5 V[1)]

[1)] Only for interface converter UM1.5

PS416-INP-...





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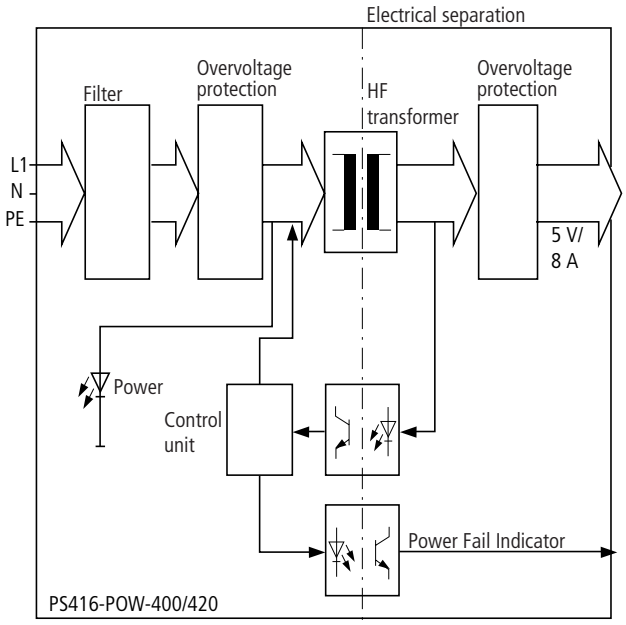
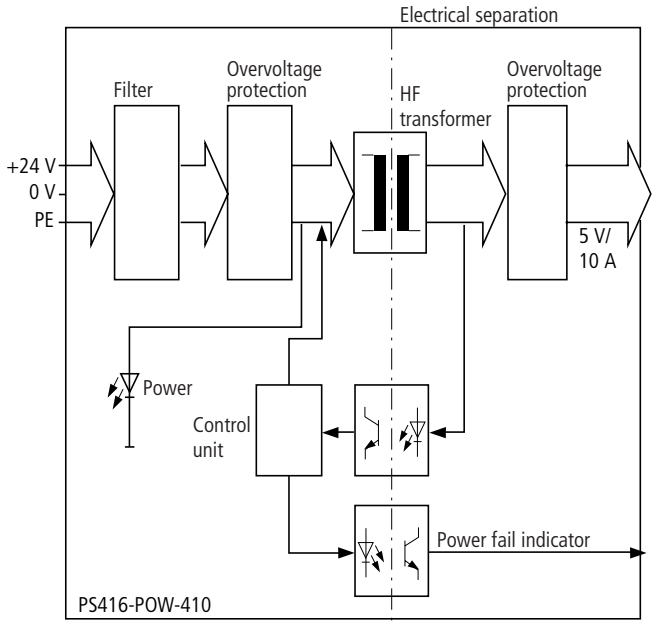
PS416-POW-400
PS416-POW-420



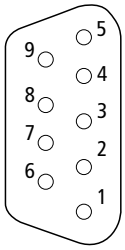
PS416-POW-410

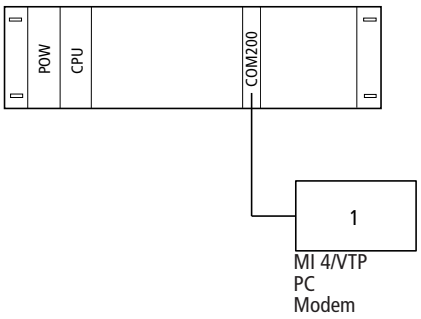


PS416-COM-200

Pin	IFM 485.1 RS485	IFM 422.1 RS485 RS422	IFM 232.2 RS232C	IFM 232.1 RS232C	IFM TTY 20 mA passive
1	–	–	DCDE	–	–
2	–	B′ (RA)	RxDE	RxDE	TxD+
3	B/B′ (TA/RA)	B (TA)	TxDA	TxDA	TxD–
4	PGND	PGND	DTRA	–	–
5	GND	–	SGND–	SGND–	–
6	–	A′ (RB)	DSRE	–	RxD+
7	A/A′ /TB/RB)	A (TB)	RTSA	–	RxD–
8	PGND	PGND	CTSE	–	–
9	+ 5 V	–	–	–	–

Designations A, A′, B, B′, A/A′, B/B′ as per ISO

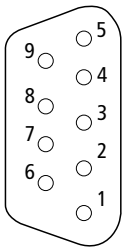


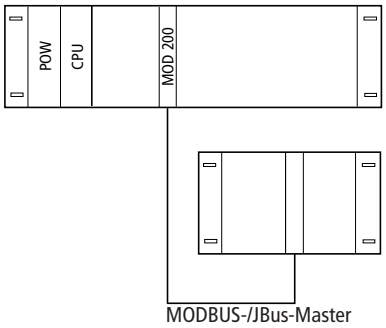


PS416-MOD-200

Pin	IFM 422.1 RS485 RS422	IFM 232.1 RS232C	IFM TTY 20 mA passive
1	–	–	–
2	B′ (RA)	RxDE	TxD+
3	B (TA)	TxDA	TxD–
4	PGND	–	–
5	–	SGND–	–
6	A′ (RB)	–	RxD+
7	A (TB)	–	RxD–
8	PGND	–	–
9	–	–	–

Designations A, A′, B, B′, A/A′, B/B′ as per ISO

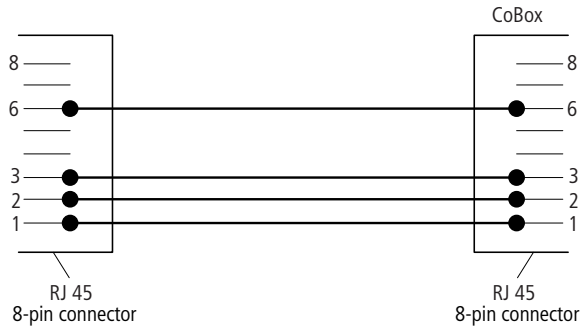




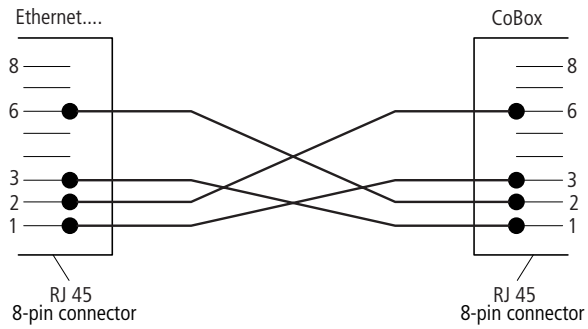
Moeller HPL0213-2004/2005

Ethernet cable connection

K1
Standard Ethernet (to hub/switch)

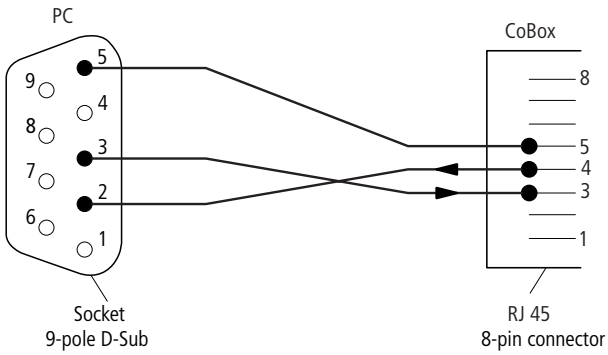


K2
Cross-connect Ethernet

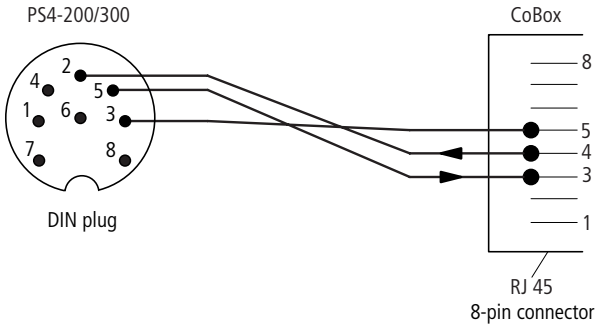


Serial interface cable connection

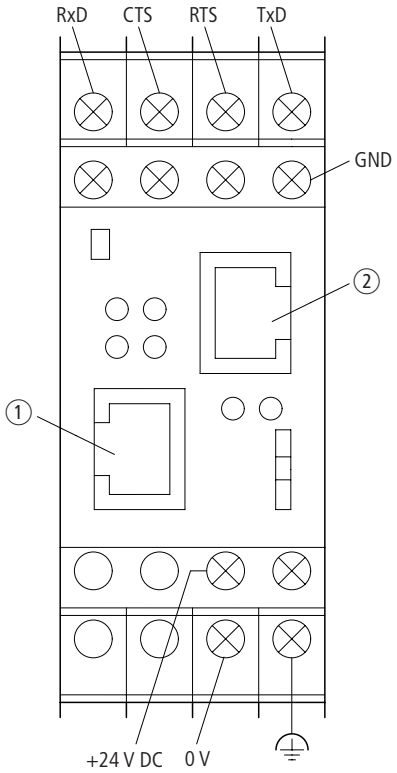
K3
Cable for configuration



K4
Cable for PS4 controller

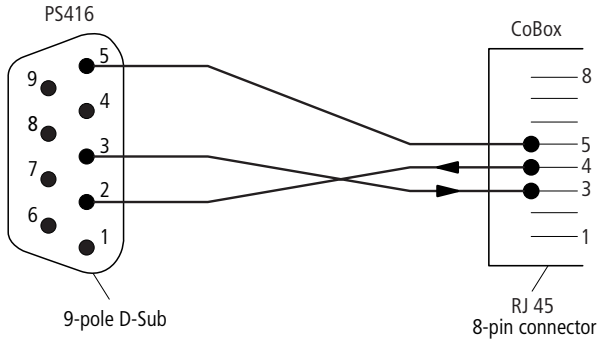


Device conection

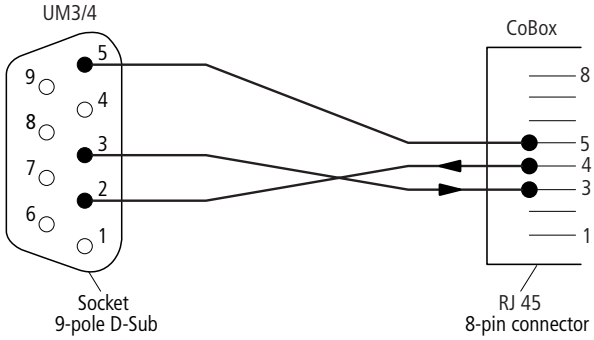


① Ethernet cable connection
② Serial interface cable connection

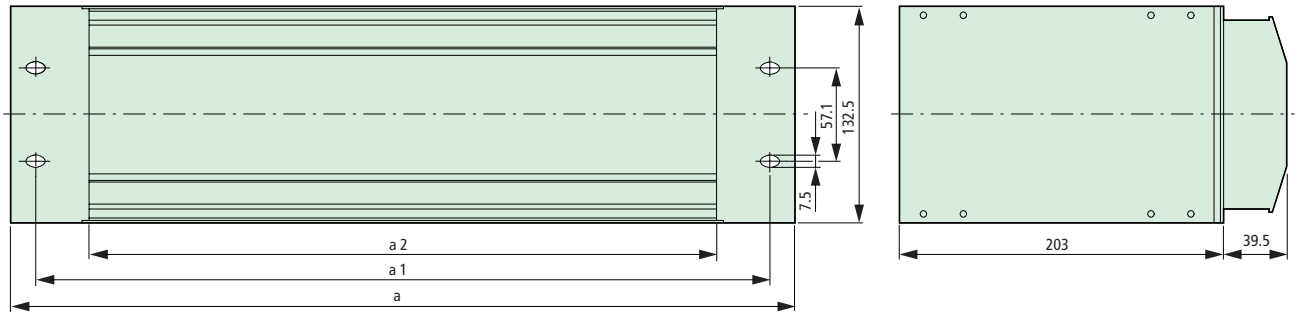
K5
Cable for PS416 controller



K6
Cable for ZB4-501-UM3/-4 (as for PC cable)

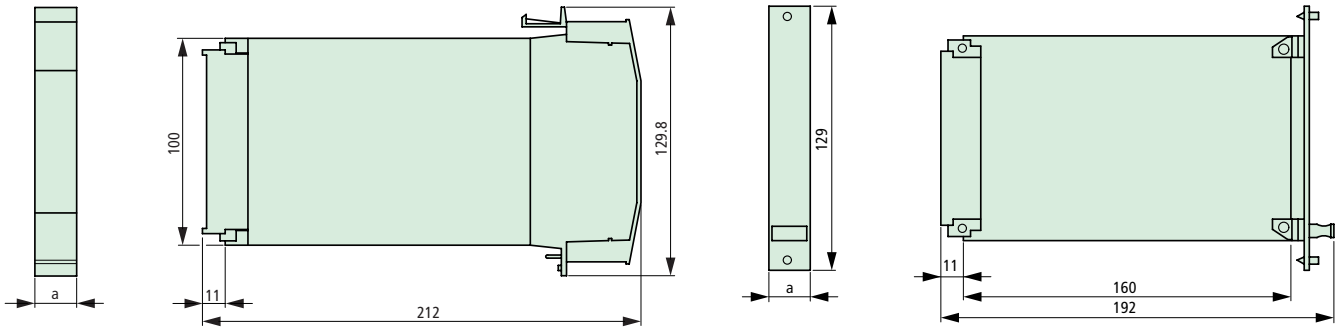


PS416 module/card rack



Type	a	a1	a2
PS416-BGT-400	280	262	224
PS416-BGT-410	361	343	305
PS416-BGT-420	483	465	427
PS416-BGT-421	483	465	427

PS416 modules



Type	a
PS416-AIN-400	20.2
PS416-AIO-400	20.2
PS416-INP-400	20.2
PS416-INP-401	20.2
PS416-OUT-400	20.2
PS416-OUT-410	20.2
PS416-NET-400	20.2

Type	a
PS416-CPU-200	40.4
PS416-CPU-300	40.4
PS416-CPU-400	40.4
PS416-POW-400	40.4
PS416-POW-410	40.4
PS416-POW-420	40.4

Type	a
PS416-COM-200	20.2
PS416-MOD-200	20.2
PS416-TCS-200	20.2
PS416-NET-441	20.2

Type	a
PS416-CNT-200	40.4
PS416-NET-230	40.4
PS416-NET-440	40.4

Sucosoft S40

Effective and ergonomic software is the basis for efficient processing of automation tasks and saves expenditure as well.

Any range of mutually compatible hardware components therefore, needs equally high-performance software products, from programming to communication.

The S40 software package is the comprehensive tool for the PS4 control system:
Sucosoft S40 for programming to IEC61131
S40 Library Manager for efficient project administration
S40 OPC Server for open communication links

It goes without saying that these products can be used with all PS4 controllers.

Sucosoft S40

Sucosoft S40 is a cohesive programming system for PS4/PS416 PLCs.

S40 supports the following programming languages IL, LD, FBL and ST to IEC61131.

The following dialog languages are available: English, German, French, Italian, Spanish.

The topology configurator for controllers and Suconet K networks is based on graphics and enables convenient configuration of local stations and fieldbus participants.

Testing and commissioning, diagnostics and wiring test of the entire device configuration is effected via one central connection on the master PLC.

Online program modifications can be carried out locally and via the network. With remote programming, this happens via modem.

Manufacturer-generated function blocks offer solutions for complex tasks, such as shift registers, and just need to be incorporated into the program.

S40 Library Manager

The add-on package, the S40 Library Manager, allows the user to establish his own library for PS4 and PS416 control systems. In such a library, he can collect his own in-house generated functions and function blocks. Since these libraries do not contain source information, the user's expertise is fully protected in the stored function blocks.

In addition, it is possible to connect to WINDOWS Help texts that can explain the operation online.

The data can be protected against unauthorised access, by using a password.

License texts and serial numbers can be obtained for the user to market his own software libraries.

Libraries created using the S40 Library Manager can be imported by the user into Sucosoft S40, and then applied for processing his project.

S40 OPC-Server

The S40 OPC Server supplies the OPC clients (e.g. process control systems, visual display units) with the process data from the PS4 or PS416 PLCs. It supports the OPC specifications Data Access Versions 1.0 and 2.0, Alarm and Events Version 1.0.

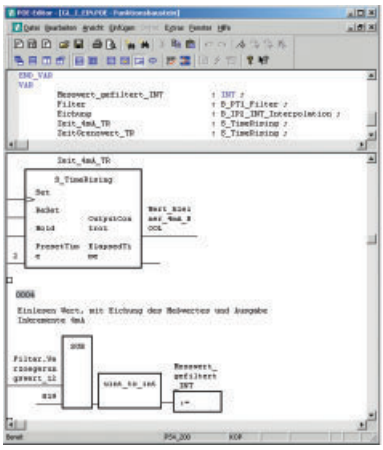
The integrated scaling and data type conversion functions facilitate the adaptation of variables to the requirements of the process.

A comprehensive range of test and simulation functions makes testing and commissioning user-friendly.

PLC variables can be transferred directly from the application program via the data import function, with the actual values of the variables being displayed on the monitor screen.

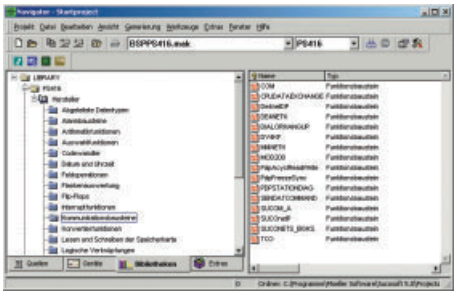
Communication between client and server can be checked via a Test Client.

Sucosoft S40 Programming Software



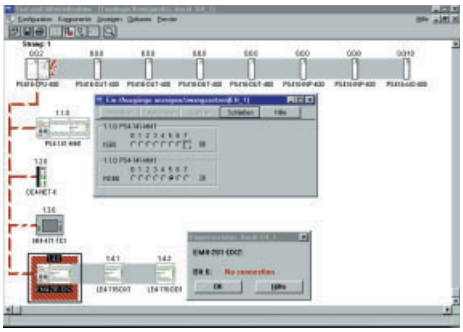
Programming made easy
With Sucosoft S40, the programming software for the PS4 and PS416 system, Moeller fulfils the demand for a single software for all the PLCs.
Sucosoft S40 complies with the international Standard IEC 61131-3, and enables programming in the following languages:
- Instruction Set (IS)
- Ladder Diagram (LD)
- Function Block Language (FBL)
- Structured Text (ST)

The central tool for project processing is the navigator. It supports the user in the organisation and storage of project files, and offers sources, programs and installed libraries corresponding to the selected control system.

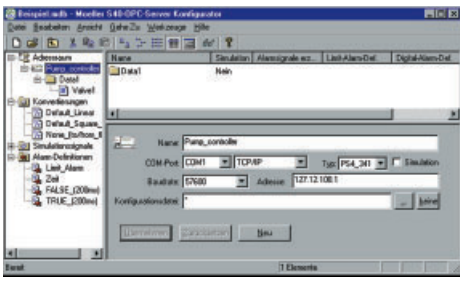


Hardware configuration just like using a child's building blocks
Every project begins with the configuration of the hardware. The hardware components of the automation system are put together in a clear way using the graphics topology configurator. User-friendly dialog boxes assist with selection and subsequent parameter allocation. This avoids input errors and inadmissible device combinations from the start.

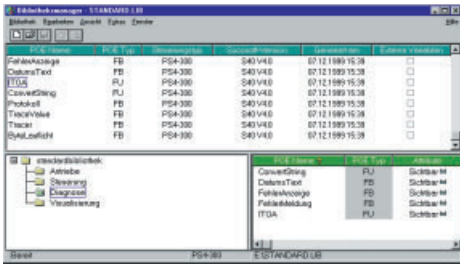
Testing and commissioning
A clear and definitive insight into the system is extremely valuable, in particular during the commissioning phase. Faults can be quickly and systematically eliminated given the status indication for individual data and devices, as well as the possibility of carrying out online program modifications over the entire networked system via the master PLC.



Protecting your expertise!
The utilisation of proven building blocks prevents errors and speeds up commissioning. The S40 Library Manager lets you put together your own libraries of in-house generated and tested function blocks.
The modules stored there can be simply used like vendor-obtained function blocks. The user however, cannot access the source code, and your expertise therefore remains where it belongs – at home, with you!

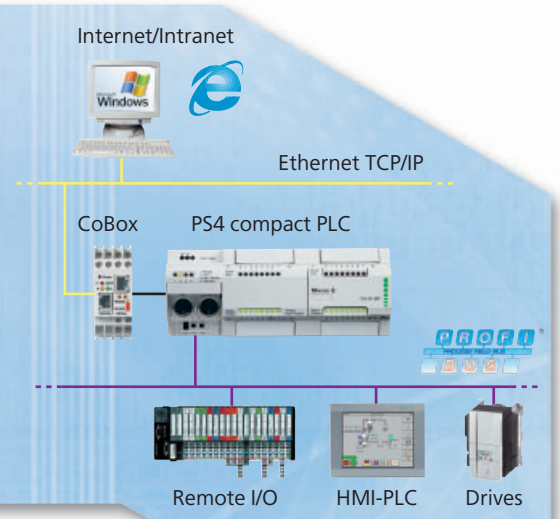


Open communication standards
The exchange of data via standardised interfaces is gaining in importance all the time. The S40 OPC server allows several PS4 controllers to be connected to OPC client applications such as visualisation systems. The data for configuration of the communication variables are simply imported from the corresponding application programs.

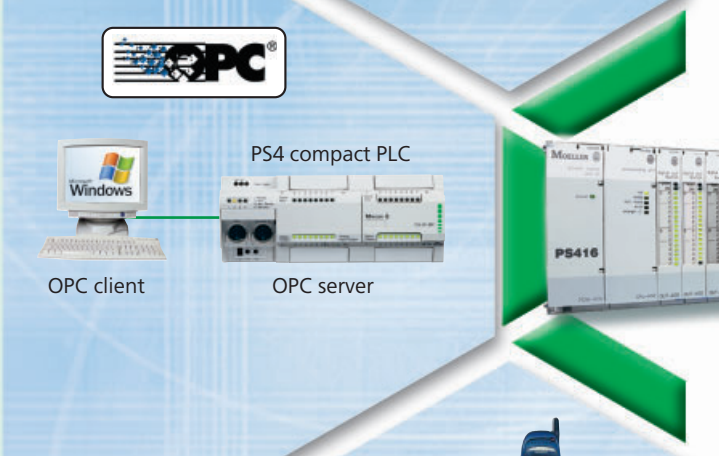


Software Libraries Provide Flexibility, Versatility and Efficiency

Using the CoBox to access the Ethernet
The CoBox network module makes all PS4 and PS416 controllers Ethernet and WEB capable. The integrated WEB server allows them to be connected to the Intranet and Internet with their own IP address. Using the CoBox, an event-driven data exchange can be implemented between PLCs. Every PS4 controller can function as a bus master and can, if required, send data to every other PLC.
Characteristics:
- Universal device server for Ethernet with TCP/IP and UDP protocol
- Interfaces:
  Controller side: either RS232 or RS485 as required
  Ethernet side: 10-base T, 10 MBaud
- Network interface: integrated 10-base T port (RJ-45 plug)
  (Separate hardware optionally required)



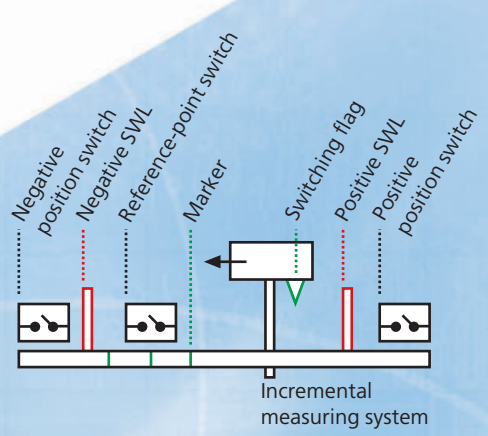
OPC-server
Virtually all SCADA, visualisation and process control systems support the OPC client server interface. PS4 and PS416 controllers supply the OPC client with process data via their OPC server.
It supports access to the data via the serial interface and via Ethernet. In this operating mode, the OPC server automatically configures the PS4 CoBox. Even data transfer to individual Excel applications is catered for. Each OPC server can process enquiries from several clients.
Where data are to be used by more than one application, say by a visual display system or a data base, then various software packages can have access to the OPC server data without the need for vendor-specific agreements or additional implementation functions.



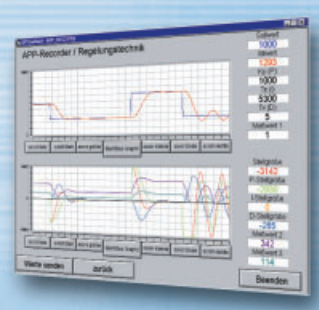
Notification via SMS
System status or alarm messages can be simply sent via SMS, whether for protocol purposes or for direct communication with the service engineer.
Using prepared application modules, you have all these options, and can at all times be kept abreast of the operational status of your machine and system.

Tailor-made application libraries

- Prepared, proven and branch-specific software function blocks for Sucosoft S40
- Function blocks with self-explanatory names for the variables
- Numerous parameters and monitor outputs for adaptation of function blocks to individual requirements
- Representation of function blocks in Instruction List (IL), Function Block Diagram (FBD) or Ladder Diagram (LD).

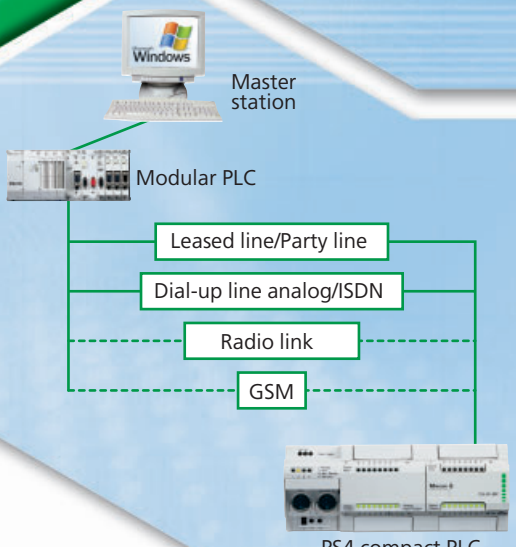


Motion control toolbox
The Motion control toolbox is a comprehensive set of system modules for positioning tasks.
It contains functions such as:
- Asynchronous point-to-point positioning
- Incremental positioning
- Rotary axis positioning with optimised travel beyond zero
- Electronic gearbox
- Cam shafts



Closed-loop control toolbox
Typical applications for the Closed-loop control toolbox are: highly dynamic auto-tuning temperature regulation of packaging machines, extruder temperature regulation, Fuzzy control of heating stations and pressure and volume controls.
There are more than 100 function blocks available:
- Various PID loop controls
- Fuzzy controls
- Auto-tuning regulators

The mathematical basis of the toolbox can be utilised to expand the functions of the PS4 system, by, for example, enabling calculation of trigonometric functions or interpolations within the PLC.



Telecontrol and remote signalling
Telecontrol using secure transmission options:
- Telecontrol to IEC 870-5
- Telecontrol to Companion Standard 870-5-101
- Remote signalling via SMS

The PS4 telecontrol toolbox enables large geographical distances between various parts of a system to be bridged simply and securely.
Moeller offers hardware and software components for leased-line, dial-up-line or radio transmission/ GSM, depending on the system and the transmission distance involved.

	Language	For use with	**Type** Article no.	**Price** See Price List	Std. pack
Programming the PS4-150/PS4-200/PS4-300/PS416					
Software package S40 (WINDOWS) • CD-ROM • Documentation on CR-ROM in English, French, German • Programming languages to IEC/EN 61131-3 – Instruction list (IL) – Ladder diagram (LD) – Function block diagram (FBD) – Structured text (ST) • Dialog languages: English, French, German, Italian, Spanish • Graphical topology configurator for control systems, Suconet-K and PROFIBUS-DP networks	–	PS4-150 PS4-200 PS4-300 PS416	**S40-CD** 235237		1 off
Upgrade S40 Sucosoft S40 V4.x must be installed. Observe ordering conditions.	–	PS4-150 PS4-200 PS4-300 PS416	**S40-CD-U** 258663		1 off
S40 LIBRARY MANAGER additional package					
S40 LIBRARY MANAGER additional package • CD-ROM • Documentation on CR-ROM in English, French, German • Create controller-specific libraries • Structured storage of user functions and user function blocks in the library • Link to Windows help texts for the functions and function blocks that are stored in the library • Full know-how protection for the stored blocks, since library does not contain source informationn • Passwort protection against unauthorized access • Entry of license texts • Serial numbers can be assigned • Documentation in English, French and German on CD-ROM • Menu operation in 5 languages (English, French, German, Italian, Spanish) Product cannot be used separately! Software requirements: WINDOWS 98, ME, 2000, XP or WINDOWS NT from 4.0 Sucosoft S 40 V 5.0 or higher	–	PS4-150 PS4-200 PS4-300 PS416	**S40-LIBRARY-MANAGER** 219926		1 off
S40 OPC server					
• CD-ROM • Documentation on CR-ROM in English, French, German • OPC specification – The S40 OPC server supports the OPC specifications Data Access Version 1.0 & 2.0 Alarm & Events Version 1.0 • Physical connections between the PC and the PLC – Serial connection via the COM interface – Modem connection via the COM interface – Ethernet TCP/IP connection with Ethernet card in the PC • Scaling and data type conversion • Simulation of process variables • Configurator with variable import function • Sample client	German and English	PS4-150 PS4-200 PS4-300 PS416	**S40-OPC-SERVER** 226834		1 off
PROFIBUS-FMS Configurator (WINDOWS 3.1, WINDOWS 95)					
PROFIBUS-FMS Configurator (WINDOWS 3.1, WINDOWS 95) PC software tool for parameterization of the PS416-NET-230 module, with manual	English	–	**CFG-SUCONET-P-GB** 070856		1 off

Notes

Ordering conditions for upgrades:
To use an upgrade, a previous version must be installed. When the upgrade is installed, the system searches for a previous version. The upgrade is the same as the standard version.
Information on updates, software standards (application modules) for closed-loop control, open-loop control data processing etc. can be obtained from:
Internet address: www.moeller.net/automation

	Language	For use with	**Type** Article no.	**Price** See Price List	Std. pack
Closed-loop control toolbox, full version					
• CD-ROM • Documentation Application examples: • Synchrocontrol for brush manufacturing • Extruder temperature control • High-dynamics autotuning, temperature control of packing machinery • De-icing control for airplanes • Chlorine control for indoor swimming pools • Standard application in PID controllers and pulse-width modulation for various control tasks, e.g. control of pressure or flow volume	German	PS4-150 PS4-200 PS4-300 PS416	**APP-RTT-E-D** 210160		1 off
	English	PS4-150 PS4-200 PS4-300 PS416	**APP-RTT-E-GB** 218606		1 off
Closed-loop control toolbox, basic version					
• Diskette • Documentation	German and English	PS4-150 PS4-200 PS4-300 PS416	**APP-RTT-B-D/GB** 215084		1 off
Positioning toolbox					
• Diskette • Documentation Application examples: • Asynchronous point-to-point axis control for electrical and hydraulic axes with controllable acceleration and deceleration ramps and the following functions: – Manual mode – Automatic mode – Referencing • Rotary axis positioning with optimised paths over the zero point • Typical cam controller applications • Incremental dimension positioning • Master - slave interconnected axes with any functional relationship • Electronic gears	German	PS4-150 PS4-200 PS4-300 PS416	**APP-POS-S-D** 227053		1 off
	English	PS4-150 PS4-200 PS4-300 PS416	**APP-POS-S-GB** 229412		1 off

Notes

Ordering conditions for upgrades:
To use an upgrade, a previous version must be installed. When the upgrade is installed, the system searches for a previous version. The upgrade is the same as the standard version.
Information on updates, software standards (application modules) for closed-loop control, open-loop control data processing etc. can be obtained from:
Internet address: www.moeller.net/automation

Task

The APP-RTT-E-D and APP-RTT-E-GB closed-loop control toolbox is a function block library for the Sucosoft S40 programming software.
It contains approximately 100 function blocks for the following areas and is available in two versions:

	Full version	Basic version
Regulating		
PID controller	●	●
PID split range closed-loop controller (heating/cooling)	●	
PID auto-tuning closed-loop controller	●	
3-point step controller	●	●
2-point controller, 3-point controller	●	●
Pulse-width modulation		
Conventional	●	●
Dynamic	●	
Noise shape process	●	
Split range (heating/cooling)	●	
Signal processing		
Scaling	●	●
Characteristics interpolation	●	
PT1 signal filter	●	●
Simulation		
PTn systems	●	
Fuzzy	●	
Simple fuzzy systems with up to 4 linguistic input variables and up to 5 terms per input variable	●	
Mathematical functions		
Trigonometric functions (also arc function)	●	
Exponential function, root function	●	

Task

The APP-POS-S-D and APP-POS-S-GB positioning toolbox is a function block library for the Sucosoft S40 programming software.
Approximately 30 function blocks are available for the following areas:

- Position control
  – Basic positioning
  – Rapid traverse crawl speed
  – Characteristics control
  – Closed-loop position control
- Step sequence
  – Sequencer with 10 step sequences
- Simulation
  – Simulation of a rotating axis
- Frequency measurement
  – Single and multi-layer frequency measurement
- Synchronization
  – Rotation and angle synchronization with electronic gears
- Visualization
  – Data-buffering of fast positioning movemments with slow-motion read-out ⇒ substitute for an oscilloscope
- Other function blocks
  – Camshaft controller
  – Hydraulics
  – Referencing
  – Incremental encoder evaluation

Type overview

Telecontrol application module
S40-AM-TL

Application

- Provision of communication services
- Management of telecontrol data

S40-AM-TL

- Communication between telecontrol stations via a dedicated line / party line

Features

S40-AM-TL V2.1

- Basic and universal function blocks for master stations and outstations
- Suconet asynchronous/synchronous mode as required
- GAP time for wireless modem adjustable

Hardware and software requirements

Module	Hardware	Software (Version V... and higher)
S40-AM-TL V2.1	ZB4-501-TC1/-TC2 PS416-TCS-200	S40 V4.1

Type overview

Telecontrol application module
S40-AM-TD

Application

- Provision of communication services
- Management of telecontrol data

S40-AM-TD

- Communication between telecontrol stations via a dial-up line / GSM

Features

S40-AM-TD from V2.0

- Dial-up and telecontrol function blocks for telecontrol stations
- The dial-up function blocks initialize the modems and control connection establishment and termination.
- Suconet asynchronous/synchronous mode as required
- GAP time for GSM modem adjustable

Hardware and software requirements

Module	Hardware	Software (Version V... and higher)
S40-AM-TD V2.0	ZB4-501-TC1/-TC2 PS416-TCS-200	S40 V4.1

Services		S40-AM-TL	S40-AM-TD
Variable Access Services			
Send Data, fixed telegram length	RAM	●	●
	RAM Broadcast	●	
Send data, variable telegram length	RAM	●	●
	FLASH/RAM Memory Card	●	●
	RAM Broadcast	●	
Read data, variable telegram length	RAM	●	●
	FLASH/RAM Memory Card	●	●
Send/read data, fixed telegram length	RAM	●	●
Support services			
Read PLC time of outstation		●	●
Synchronize the PLC clock of outstation		●	●
Synchronize the PLC clock of outstation Broadcast		●	
Remote Control			
Remote Reset		●	●
Read Status		●	●
Send Token		●	
Send Information String			●

XC100/200

XC-CPU-101

The efficient first step into automation.

Inputs/outputs:
8 digital inputs
6 digital outputs

Memory card:
MMC

Expandability:
Up to 15 XIOC modules

Integrated fieldbus:
CANopen (500 kBaud)

OPC server

Further interfaces:
RS232

XC-CPU101-C64K-8DI-6DO
Program memory: 64 kByte
Data memory: 64 kByte

XC-CPU101-C128K-8DI-6DO
Program memory: 128 kByte
Data memory: 128 kByte

XC-CPU101-C256K-8DI-6DO
Program memory: 256 kByte
Data memory: 256 kByte

XC-CPU-101-XV

Combined with XVision displays to offer an efficient text display HMI PLC.

Inputs/outputs:
8 digital inputs
6 digital outputs

Memory card:
MMC

Expandability:
Up to 15 XIOC modules

Integrated fieldbus
CANopen (500 kBaud)

OPC server

Further interfaces:
RS232

XC-CPU101-C64K-8DI-6DO-XV
Program memory: 64 kByte
Data memory: 64 kByte
Text/graphics memory: 256 kByte

XC-CPU101-C128K-8DI-6DO-XV
Program memory: 128 kByte
Data memory: 128 kByte
Text/graphics memory: 256 kByte

XC-CPU101-C256K-8DI-6DO-XV
Program memory: 256 kByte
Data memory: 256 kByte
Text/graphics memory: 256 kByte

Compact and powerful
The XC100 and XC200 modular PLCs between them cover a wide range of applications, from simple applications with a small number of digital inputs and outputs to complex applications with direct Ethernet and WEB connection. The range is well equipped with virtually all you may need, from memory card to integrated fieldbus. It forms a good basis for meeting constantly increasing requirements.

Integrated fieldbus
The integrated CANopen interface enables the system to be directly coupled to standard CANopen fieldbus participants with a transmission speed of up to 1 MBaud.

Programming via fieldbus
Lower-level fieldbus controllers can be programmed from the host controller. This facilitates commissioning, as well as the diagnostics later on. In this way, it is also possible to monitor and even program all the systems remotely via modem.

XC-CPU-201

The efficient specialised intelligent controller with direct connection to the world of IT. Ideal where high-speed cycles and great communication capability are the order of the day.

Inputs/outputs:
8 digital inputs
6 digital outputs

Memory card
MMC

Expandability:
Up to 15 XIOC modules

Integrated fieldbus
CANopen (1 MBaud)

OPC server

Further interfaces:
RS232, USB, Ethernet

XC-CPU201-EC256K-8DI-6DO
Program memory: 256 kByte
Data memory: 256 kByte

XC-CPU201-EC512K-8DI-6DO
Program memory: 512 kByte
Data memory: 512 kByte

XC-CPU-201-XV

The efficient specialised intelligent XC200 Web Server for convenient remote access.

Inputs/outputs:
8 digital inputs
6 digital outputs

Memory card:
MMC

Expandability:
Up to 15 XIOC modules

Integrated fieldbus
CANopen (1 MBaud)

OPC server

Integrated WEB server

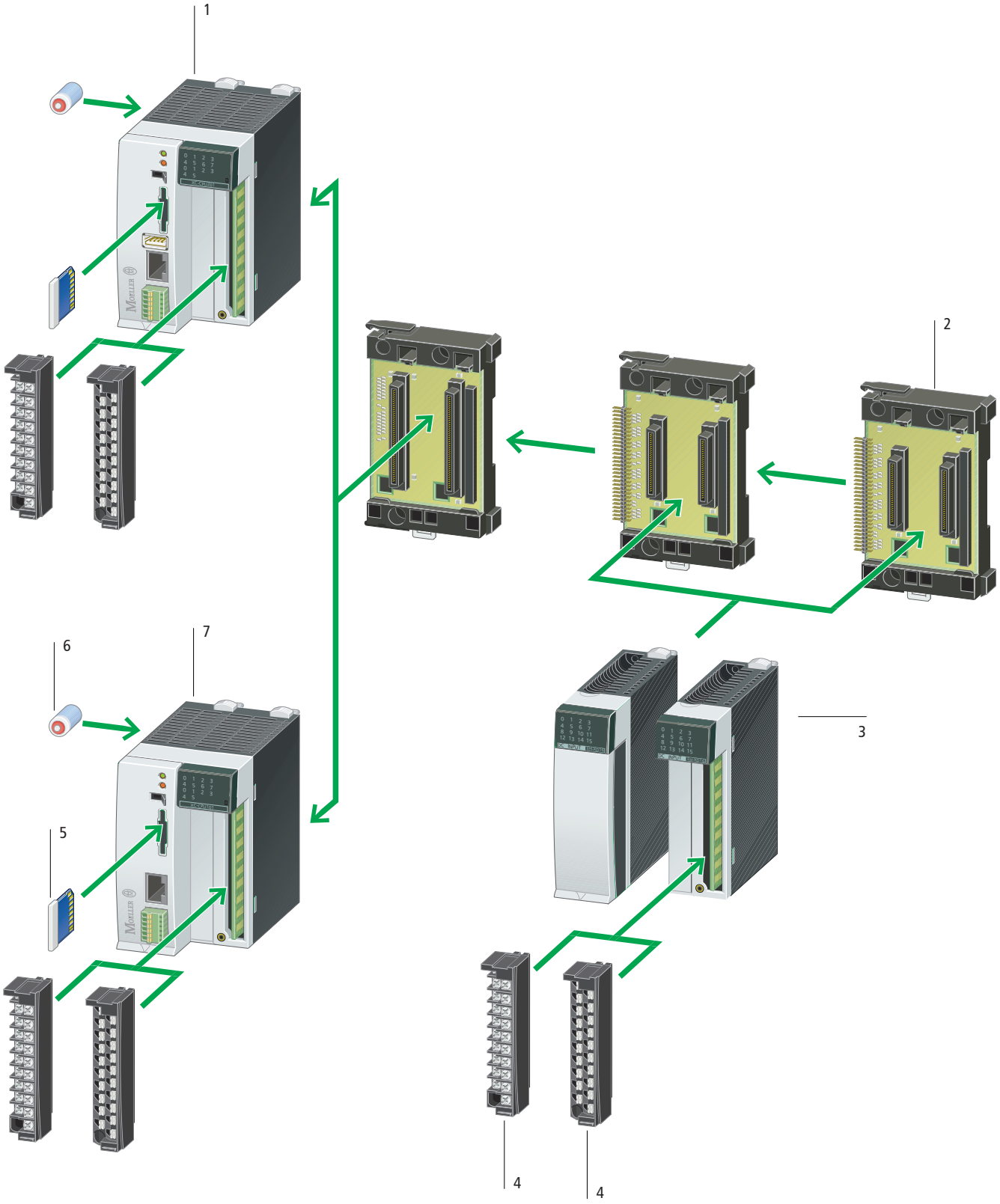
Further interfaces:
RS232, USB, Ethernet

XC-CPU201-EC256K-8DI-6D-XV
Program memory: 256 kByte
Data memory: 256 kByte

XC-CPU201-EC512K-8DI-6DO-XV
Program memory: 512 kByte
Data memory: 512 kByte

Ethernet integrated
The 10/100 MBit Ethernet interface of the XC200 offers the perfect link to IT communication. Whether you need rapid access to programs, high-speed data exchange between PLC, WEB server or OPC, this is as easy and quick as you could wish.

Compact construction
Expansion is in steps of 30 mm, from units with 14 integrated inputs/outputs at a width of 60 mm, via 238 I/O at 270 mm, up to the maximum of 494 I/O at a width of 510 mm. This helps you implement compact automation solutions.



XC100 7

Modular PLC

8 digital inputs
6 digital outputs
4 interrupt inputs
CANopen fieldbus interface
RS232 interface
Locally expandable with XI/OC

→ Page 3/46

XC200 1

Modular PLC with
Ethernet interface

8 digital inputs
6 digital outputs
2 counters
2 interrupt inputs
1 incremental input
CANopen fieldbus interface
web-server
RS232 interface
Locally expandable with XI/OC

→ Page 3/46

Rack 2

XI/OC backplane

For connecting the XC100 controller and the XI/OCmodules with the top-hat rail

→ Page 3/46

XI/OC I/O modules 3

Space-optimized input/output modules
Local extension on XC100/200
To be clipped onto XVision as MMI PLC
Digital, analog, technology, counter and communication modules
XI/OC modules can be exchanged without the need to undo wiring

→ Page 3/66

XI/OC terminal block 4

Connection options via spring-loaded or screw terminals
Exchange/remove without disconnecting wiring

→ Page 3/67

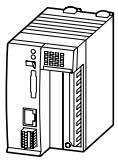
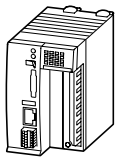
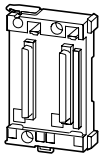
Memory card (multi-media card) 5

16/32 MB memory for program, recipes and visualization texts

→ Page 3/46

Battery 6

→ Page 3/46

		Description	Type Article no.	Price See Price List	Std. pack
XC100/XC200					
• Controller with digital inputs/outputs, locally and remotely expandable • CANopen interface, 24V power supply • Locally expandable by up to 15 XI/OC modules • The following accessory equipment is required: terminal clamps, module rack, battery					
XC100 Controller with 8 digital inputs (4 interrupt inputs), 6 digital outputs; RS232 interface for programming and communication, CANopen interface; slot for memory card, optional expansion with text display, RUN/STOP switch and LED indicators					
	–	64 kByte user memory	**XC-CPU101-C64K-8DI-6DO** 262152		1 off
	–	128 kByte user memory	**XC-CPU101-C128K-8DI-6DO** 262146		
	–	256 kByte user memory	**XC-CPU101-C256K-8DI-6DO** 274399		
	Operation with display XV-101-...	64 kByte user memory	**XC-CPU101-C64K-8DI-6DO-XV** 262247		
		128 kByte user memory	**XC-CPU101-C128K-8DI-6DO-XV** 262150		
		256 kByte user memory	**XC-CPU101-C256K-8DI-6DO-XV** 279280		
XC200 Controller with 8 digital inputs (2 counters, 2 interrupt inputs, 1 incremental input) and 6 digital outputs; Ethernet and RS232 interface for programming and communication; CANopen interface; slot for memory card; optional expansion with text display; RUN/STOP switch and LED indicators					
	–	256 kByte user memory	**XC-CPU201-EC256K-8DI-6DO** 262155		1 off
	–	512 kByte user memory	**XC-CPU201-EC512K-8DI-6DO** 262157		
	Operation with display XV-101-...	256 kByte user memory Integrated web-server	**XC-CPU201-EC256K-8DI-6DO-XV** 262156		
	Operation with display XV-101-...	512 kByte user memory Integrated web-server	**XC-CPU201-EC512K-8DI-6DO-XV** 262158		
Accessories					
Terminations For digital or analog I/O. One terminal clamp connector is required per XC100/200.					
	–	18-pole plug with spring-loaded terminal	**XIOC-TERM-18T** 258104		1 off
	–	18-pole plug with screw terminal	**XIOC-TERM-18S** 258102		1 off
Rack					
	Basic rack for mounting XC100/200 on top-hat rail, expandable	Width: 2 slots for controller	**XIOC-BP-XC** 260792		1 off
		Width: 3 slots for controller and one XI/OC module	**XIOC-BP-XC1** 260793		1 off
Multi-media card For storage of programs, data, recipes					
	–	16 MByte	**XT-MEM-MM16M** 262176		1 off
	–	32 MByte	**XT-MEM-MM32M** 262731		1 off
Battery					
	–	For back-up of real-time clock and retentive data	**XT-CPU-BAT1** 256209		1 off
Programming cable					
	For XC100	2 m length	**XT-SUB-D/RJ45** 262186		1 off

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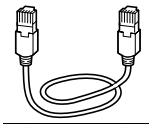
		Description	Type Article no.	Price See Price List	Std. pack
Accessories					
Ethernet cross cable					
	2 m length	Ethernet cross-cable for programming	**XT-CAT5-X-2** 256487		1 off
	5 m length	Ethernet cross-cable for programming	**XT-CAT5-X-5** 256488		1 off
Ethernet patch cable					
	2 m length	–	**CAT5-KG2,0** 262184		1 off
	5 m length	–	**CAT5-KG5,0** 262185		
	Length: 10 m	–	**CAT5-KG10,0** 262448		
Ethernet hub/switch					
	–	Hub with 4 ports, 10 MBit/s	**FL-HUB-10BASE-T** 262159		1 off
	–	Switch with 5 ports, 10 100 MBit/s	**FL-SWITCH-TX** 262170		1 off
CAN cable to ISO 11898					
	–	Recommendation: UNITRONIC bus LD, Messrs. LAPPKABEL $2 \times 2 \times 0.22$ mm² Characteristic impedance: 100 – 120 Ω Effective capacitance: 800 Hz, max. 60 nF/km			

			XC-CPU101-C64K-8DI-6DO(-XV)	XC-CPU101-C128K-8DI-6DO(-XV)	XC-CPU101-C256K-8DI-6DO(-XV)
General					
Standards			IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178
Ambient temperature		°C	0 to +55	0 to +55	0 to +55
Storage		°C	-25 to +70	-25 to +70	-25 to +70
Mounting position			Horizontal	Horizontal	Horizontal
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	10 – 95	10 – 95	10 – 95
Atmospheric pressure (operation)		hPa	795 – 1080	795 – 1080	795 – 1080
Vibration resistance			10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 g	10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 g	10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 g
Mechanical shock resistance			15 g/11 ms	15 g/11 ms	15 g/11 ms
Overvoltage category			II	II	II
Pollution degree			2	2	2
Degree of protection			IP20	IP20	IP20
Rated insulation voltage	U_i	V	500	500	500
Emitted interference			EN 50081-2, Class A	EN 50081-2, Class A	EN 50081-2, Class A
Noise immunity			EN 50081-2	EN 50081-2	EN 50081-2
Battery (service life)			Normally 5 years	Normally 5 years	Normally 5 years
Weight		kg	0.23	0.23	0.23
Terminations			Plug-in terminal block	Plug-in terminal block	Plug-in terminal block
Terminal capacity					
Screw terminals					
Flexible with ferrule		mm^2	0.5 – 1.5	0.5 – 1.5	0.5 – 1.5
Solid		mm^2	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5
Spring-loaded terminals					
Flexible		mm^2	0.34 – 1.0	0.34 – 1.0	0.34 – 1.0
Solid		mm^2	0.14 – 1.0	0.14 – 1.0	0.14 – 1.0
Electromagnetic compatibility (EMC)					
			→ Page 4/59	→ Page 4/59	→ Page 4/59
Power supply					
Length of supply interruption		ms	10	10	10
Repetition rate		s	1	1	1
Input voltage		V DC	24	24	24
Admissible range		V DC	20.4 – 28.8	20.4 – 28.8	20.4 – 28.8
Input rating		W	max. 26	max. 26	max. 26
Residual ripple		%	≦ 5	≦ 5	≦ 5
Maximum power loss (without local I/O)	P_v	W	6	6	6
Overvoltage protection			Yes	Yes	Yes
Protection against polarity reversal			Yes	Yes	Yes
Mains filter (external)			Yes (built-in)	Yes	Yes
Inrush current		× I_n	No limitation (limited only by upstream 24 V DC power supply unit)		
Signal module output voltage					
Nominal value		V DC	5	5	5
Output current		A	3.2	3.2	3.2
Short-circuit rating			Yes	Yes	Yes
Electrically isolated from the supply voltage			No	No	No
CPU					
Microprocessor			Infineon C164	Infineon C164	Infineon C164
Memory					
Program code and program data		kByte	64/64	128/128	256/256
Markers and/or retained data		kByte	4	8	8
Cycle time for 1 k of instructions (Bit, Byte)		ms	0.5	0.5	0.5

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			XC-CPU101-C64K-8DI-6DO(-XV)	XC-CPU101-C128K-8DI-6DO(-XV)	XC-CPU101-C256K-8DI-6DO(-XV)
Interfaces					
Serial interface (RS232) without handshake lines					
Data transfer rate		kBit/s	max. 57.6	max. 57.6	max. 57.6
Connection types			RJ45	RJ45	RJ45
Electrical isolation			No	No	No
CANopen					
Maximum data transfer rate		Bits/s	500000	500000	500000
Electrical isolation			Yes	Yes	Yes
Device profile			To DS 301 V4	To DS 301 V4	To DS 301 V4
PDO type			Asyn., cyc., acyc.	Asyn., cyc., acyc.	Asyn., cyc., acyc.
Connection			Plug-in terminal block	Plug-in terminal block	Plug-in terminal block
Bus terminating resistors			External	External	External
Stations		Qty.	max. 126	max. 126	max. 126
Watch-dog			Yes	Yes	Yes
RTC (real-time clock)			Yes	Yes	Yes
Power supply of local inputs/outputs (24 V_Q/0 V_Q)					
Input voltage		V DC	24	24	24
Voltage range		V DC	19.2 – 30, note polarity		
ELectrical isolation					
Power supply against CPU voltage			Yes	Yes	Yes
Overvoltage protection			Yes	Yes	Yes
Protection against polarity reversal			Yes	Yes	Yes
Digital inputs					
Input current per channel at nominal voltage		mA	Normally 3.5	Normally 3.5	Normally 3.5
Power loss per channel			Normally 85 mW	Normally 85 mW	Normally 85 mW
Voltage level to IEC/EN 61131-2					
Limit value type 1			Low < 5 V DC, high > 15 V DC		
Input delay					
Off → On		ms	Normally 0.1	Normally 0.1	Normally 0.1
On → Off		ms	Normally 0.1	Normally 0.1	Normally 0.1
Inputs		Qty.	8 (of which, 4 interrupt inputs)		
Channels with the same reference potential		Qty.	8	8	8
Status indication			LED	LED	LED
Digital outputs					
Channels		Qty.	6	6	6
Power loss per channel		W	0.08	0.08	0.08
Load circuit		A	0.5	0.5	0.5
Output delay					
Off → On			Normally 0.1 ms	Normally 0.1 ms	Normally 0.1 ms
On → Off			Normally 0.1 ms	Normally 0.1 ms	Normally 0.1 ms
Channels with the same reference potential		Qty.	6	6	6
Status indication			LED	LED	LED
Switching capacity			IEC/EN 60947-5-1, utilization category DC-13		
Duty factor		% DF	100	100	100
Utilization factor		g	1	1	1

				XC-CPU201-EC256K-8DI-6DO(-XV)	XC-CPU201-EC512K-8DI-6DO(-XV)
General					
Standards				IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178
Ambient temperature			°C	0 to +55	0 to +55
Storage			°C	-25 to +70	-25 to +70
Mounting position				Horizontal	Horizontal
Relative humidity, non-condensing (IEC/EN 60068-2-30)			%	10 – 95	10 – 95
Atmospheric pressure (operation)			hPa	795 – 1080	795 – 1080
Vibration resistance				10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 g	10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 g
Mechanical shock resistance				15 g/11 ms	15 g/11 ms
Overvoltage category				II	II
Pollution degree				2	2
Degree of protection				IP20	IP20
Rated impulse withstand voltage		U_{imp}	V	850	850
Emitted interference				EN 50081-2, Class A	EN 50081-2, Class A
Noise immunity				EN 50081-2	EN 50081-2
Battery (service life)				Normally 5 years	Normally 5 years
Weight			kg	0.23	0.23
Terminations				Plug-in terminal block	Plug-in terminal block
Terminal capacity					
Screw terminals					
	Flexible with ferrule		mm^2	0.5 – 1.5	0.5 – 1.5
	Solid		mm^2	0.5 – 2.5	0.5 – 2.5
Spring-loaded terminals					
	Flexible		mm^2	0.34 – 1.0	0.34 – 1.0
	Solid		mm^2	0.14 – 1.0	0.14 – 1.0
Electromagnetic compatibility (EMC)					
				→ Page 4/59	→ Page 4/59
Power supply					
Length of supply interruption			ms	10	10
Repetition rate			s	1	1
Input voltage			V DC	24	24
Admissible range			V DC	20.4 – 28.8	20.4 – 28.8
Input rating			W	max. 33	max. 33
Residual ripple			%	≦ 5	≦ 5
Maximum power losses		P_v	W	6	6
Overvoltage protection				Yes	Yes
Protection against polarity reversal				Yes	Yes
Mains filter				Yes	Yes
Inrush current			× I_n	No limitation (limited only by upstream 24 V DC power supply unit)	
Signal module output voltage					
Nominal value			V DC	5	5
Output current			A	3.2	3.2
Short-circuit rating				Yes	Yes
Electrically isolated from the supply voltage				No	No
CPU					
Microprocessor				NEC VR4181 A MIPS	NEC VR4181 A MIPS
Memory					
Program code and program data			kByte	256/256	512/512
Markers and/or retained data			kByte	16/32	16/32
Cycle time for 1 k of instructions (Bit, Byte)			ms	0.05	0.05

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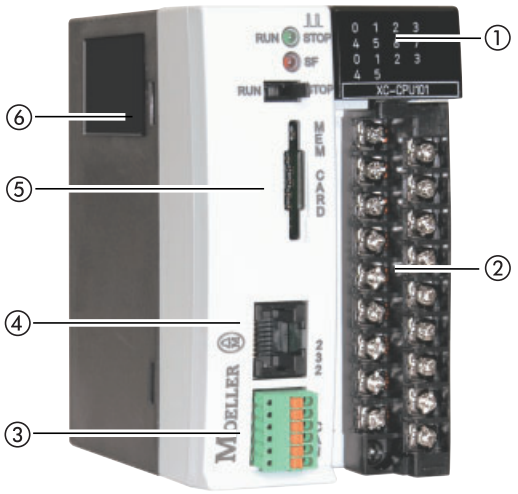
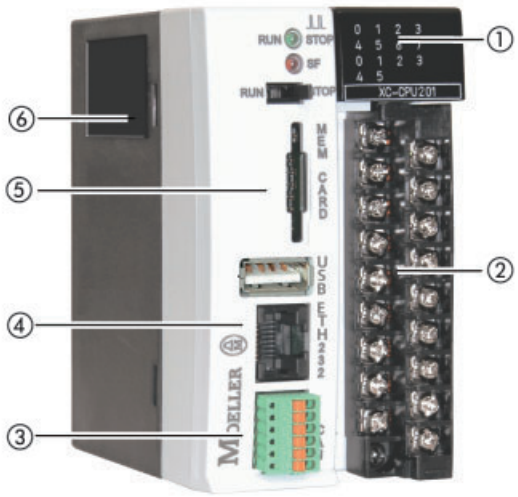
			XC-CPU201-EC256K-8DI-6DO(-XV)	XC-CPU201-EC512K-8DI-6DO(-XV)
Interfaces				
Ethernet				
Data transfer rate		MBit/s	10/100 Autodetect	10/100 Autodetect
Connection type			RJ45	RJ45
Electrical isolation			No	No
Serial interface (RS232) without handshake lines				
Data transfer rate		kBit/s	max. 115.2	max. 115.2
Connection types			RJ45	RJ45
Electrical isolation			No	No
CANopen				
Maximum data transfer rate		MBit/s	1	1
Electrical isolation			Yes	Yes
Device profile			To DS 301 V4	To DS 301 V4
PDO type			Asyn., cyc., acyc.	Asyn., cyc., acyc.
Connection			Plug-in terminal block	Plug-in terminal block
Bus terminating resistors			External	External
Stations		Qty.	max. 126	max. 126
Watch-dog			Yes	Yes
RTC (real-time clock)			Yes	Yes
Power supply of local inputs/outputs (24 V_Q/0 V_Q)				
Input voltage		V DC	24	24
Voltage range		V DC	19.2 – 30, note polarity	19.2 – 30, note polarity
Electrical isolation				
Power supply against CPU voltage			Yes	Yes
Power supply against inputs/outputs			No	No
Status indication			LED	LED
Terminations			Plug-in terminal block	Plug-in terminal block
Overvoltage protection			Yes	Yes
Protection against polarity reversal			Yes	Yes
Digital inputs				
Input current per channel at nominal voltage		mA	Normally 3.5	Normally 3.5
Power loss per channel			Normally 85 mW	Normally 85 mW
Voltage level to IEC/EN 61131-2				
Limit value type 1			Low < 5 V DC, high > 15 V DC	Low < 5 V DC, high > 15 V DC
Input delay				
Off → On		ms	Normally 0.1	Normally 0.1
On → Off		ms	Normally 0.1	Normally 0.1
Inputs		Qty.	8, of which these can be paremeterized: 2 counters, 50 kHz, 2 interrupt inputs, 1 incremental input	
Channels with the same reference potential		Qty.	8	8
Status indication			LED	LED
Digital outputs				
Channels		Qty.	6	6
Power loss per channel		W	0.08	0.08
Load circuit		A	0.5	0.5
Output delay				
Off → On			Normally 0.1 ms	Normally 0.1 ms
On → Off			Normally 0.1 ms	Normally 0.1 ms
Channels with the same reference potential		Qty.	6	6
Status indication			LED	LED
Switching capacity			IEC/EN 60947-5-1, utilization category DC-13	
Duty factor		% DF	100	100
Utilization factor		g	1	1

CPU XC100 with power supply and local inputs/outputs



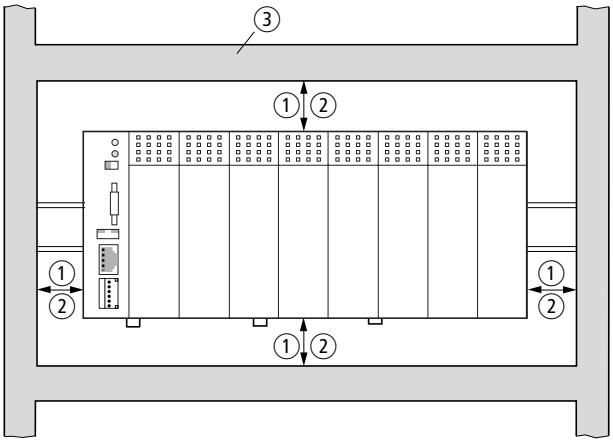
CPU XC200 with power supply and local inputs/outputs



Layout of CPU module XC100/XC200
① LED indicators for terminals, as well as RUN/STOP and SF (system fault)
② Terminations
③ CANopen Combicon interface
④ Programming interface:
XC100: RS 232
XC200: Ethernet/RS 232
⑤ Lot for memory card
⑥ Battery compartment

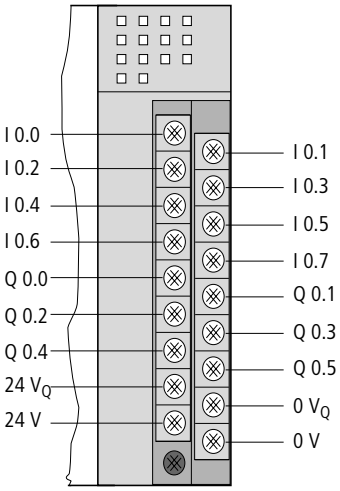
Device arrangement

Mount the module rack and controller in a horizontal position in the switchgear cabinet – as shown in the following diagram.



Cabinet layout
① Spacing > 50 mm
② Spacing > 75 mm to active components
③ Cable duct

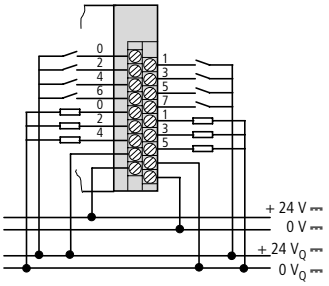
Terminal assignments



Connections for supply voltage and local I/O

Example of power supply wiring

The supply voltage connection 0VQ/24VQ is used exclusively for the supply voltage to the 8 local inputs and 6 local outputs, and is electrically isolated from the bus. The outputs can carry a 500 mA load at 100 % duty cycle, with a simultaneity factor of 1.

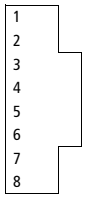


Local I/O XC100/XC200: Example of terminal block wiring

The wiring example shows the connections when using a separate supply voltage for the controls and I/O terminals. If only one supply is used, then the following terminals must be connected together:
- 24 V to 24VQ and 0 V to 0VQ.

Serial interface RS 232

Communication between the XC100/XC200 controller and the programming device (PC) is conducted via the RS232 serial interface. The physical connection is an RJ45 interface connector. This interface is not electrically isolated. The connector assignment is as follows:

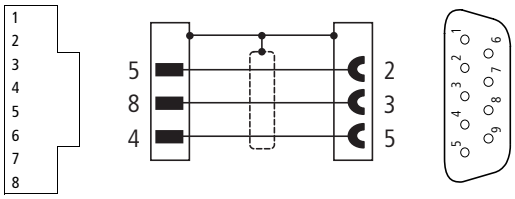


Pin	Designation	Description
4	GND	Ground
5	TxD	Transmit Data
7	GND	Ground
8	RxD	Receive Data

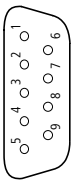
You can use the COM1 or COM2 port as the PC interface.
Please use the XT-SUB-D/RJ45 programming cable to make the physical connection.

Programming cable

The programming cable is made up as follows:



Pin	Designation	Description
2	RxD	Receive Data
3	TxD	Transmit Data
5	GND	Ground

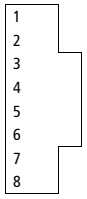


Interface parameters:

Data transfer rate:	1.2 – 115 kBit/s, selectable
Parity:	None
Stop bit:	1
Handshake:	No

Ethernet/RS232 interface (XC200)

The XC200 controller can also be programmed via the Ethernet interface.
The connector assignment is as follows:

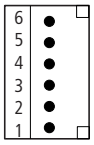


Ethernet interface		
Pin	**Designation**	**Description**
1	Tx +	Transmit +
2	Tx -	Transmit -
3	Rx +	Receive +
6	Rx -	Receive -
RS232 interface		
4	GND	Ground
5	TxD	Transmit Data
7	GND	Ground
8	RxD	Receive Data

You can use the Ethernet cross-cable XT-CAT5-X-2 or XT-CAT5-X-5 to make the physical Ethernet connection.

CANopen interface,

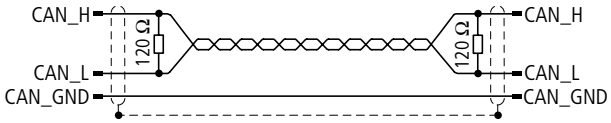
The 6-pole Combicon plug has the following pin assignments:



Terminal	Signal
6	GND
5	CAN_L
4	CAN_H
3	GND
2	CAN_L
1	CAN_H

Please use only a cable that is approved for CANopen, with the following characteristics:

- Characteristic impedance: 108 – 132
- Capacitance per unit length: 50 pF/m



CANopen cable

Baud rate [kBit/s]	Max. length [m]	Core cross-section [mm²]	Loop resistance
20	1000	0.75 – 0.80	16 Ω/km
125	500	0.50 – 0.60	40 Ω/km
250	250	0.50 – 0.60	40 Ω/km
500	100	0.34 – 0.60	60 Ω/km
1000	40	0.25 – 0.34	70 Ω/km

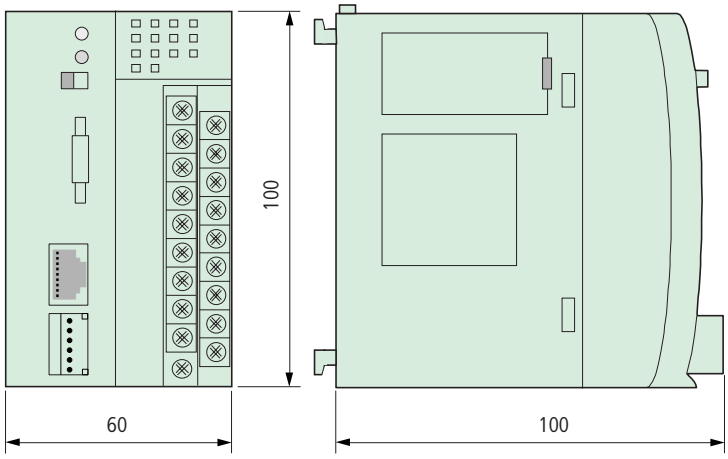
Battery

Data back-up buffering is provided with the help of a lithium battery, type 1/2 AA (3.6 V). The battery compartment can be found on the left side of the CPU module, behind a cover plate. The battery charge level is monitored. If the battery voltage falls below a preset threshold, a system fault signal will be generated.

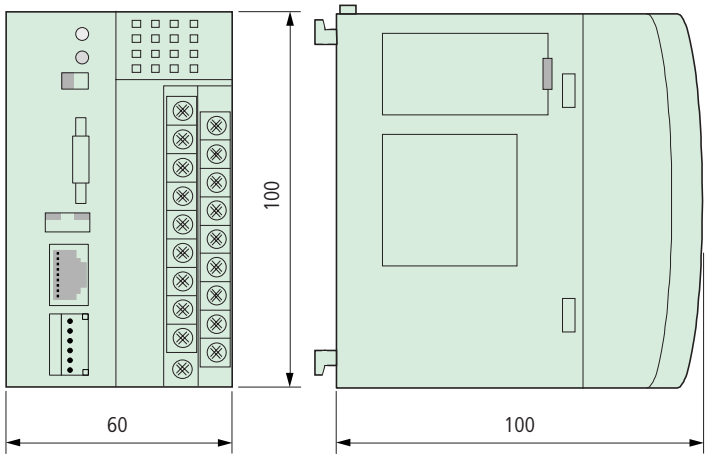
The back-up buffer times are:

- Worst case: 3.3 years continuous buffering
- Typical: 19 years continuous buffering

XC-CPU101...

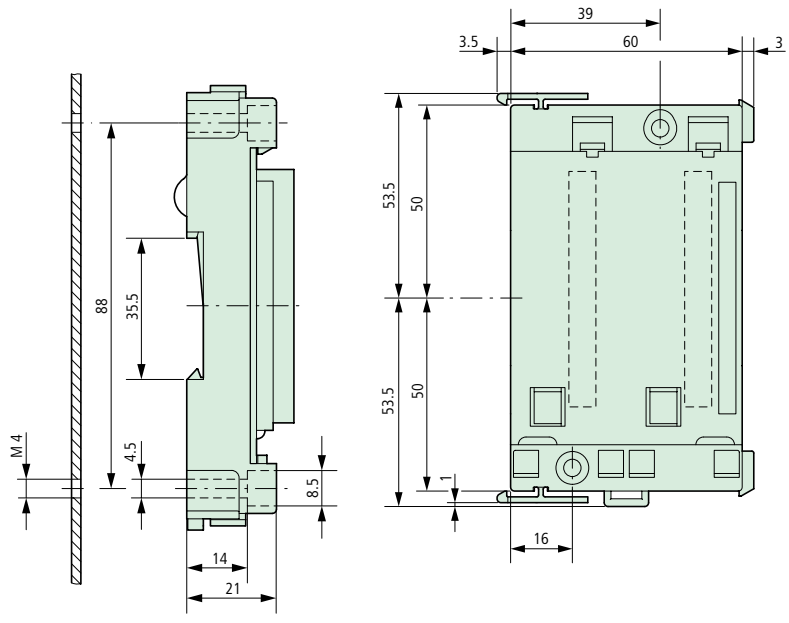


XC-CPU202...

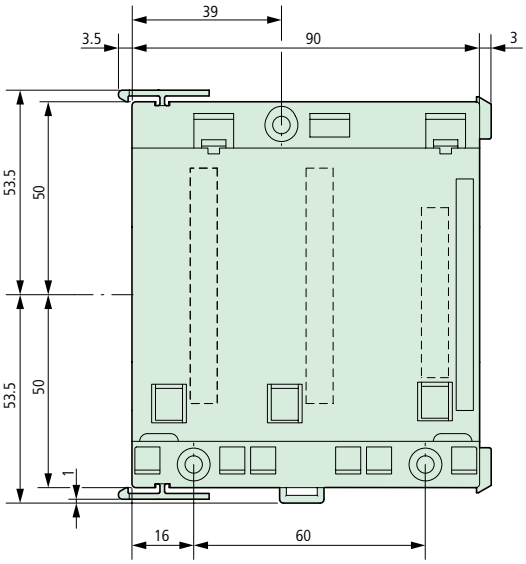


Rack

XIOC-BP-XC



XIOC-BP-XC1



XC600

XC-CPU-601

In view of their high processing speed, the XC600 series controllers are particularly suited to applications with great data and program volumes.

Memory card:
CF

Expandability:
Maximum 74 XION slice modules

OPC server

Further interfaces:
RS232, USB, Ethernet

XC-CPU601-E1M
Program memory: 1 MByte
Data memory: 1 MByte

XC-CPU601-E2M
Program memory: 2 MByte
Data memory: 1 MByte

XC-CPU601-E4M
Program memory: 4 MByte
Data memory: 1 MByte

XC-CPU601-E4M-XV
Program memory: 4 MByte
Data memory: 1 MByte
Integrated WEB server

XC-ADP
Base module

XC-ADP-XION
Base module for local XION connection

XC-POW-50-UPS
Power supply module

XC-POW-50-XION-UPS
Power supply module for local XIOC connection

XC-SYS1
Operator unit with display, slot for Compact Flash, real-time clock, battery connector

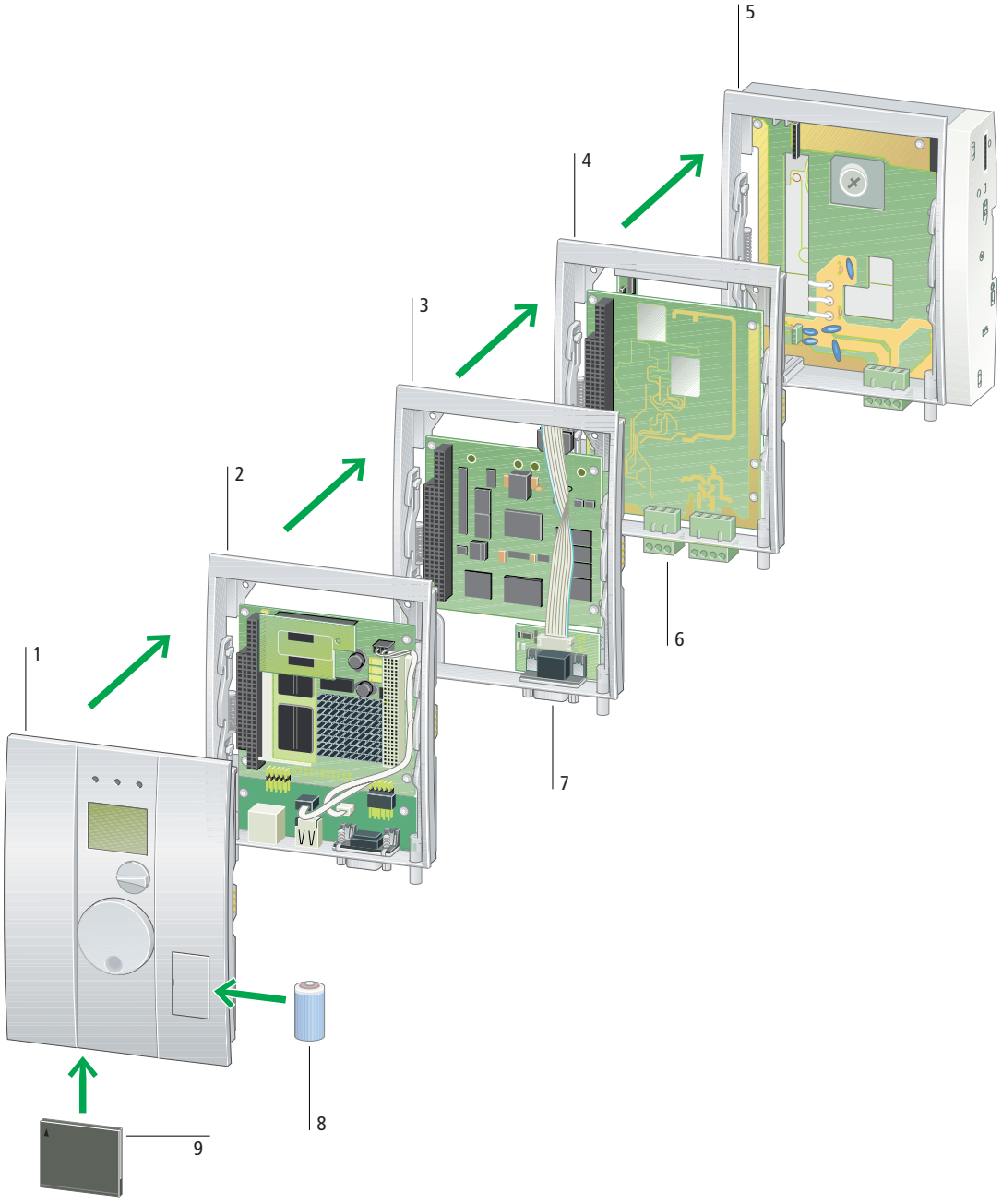
XC-NET-CAN
CAN master, max. 1 MBaud

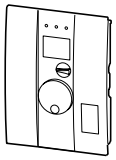
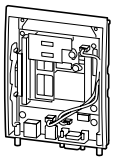
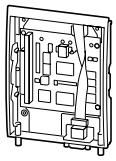
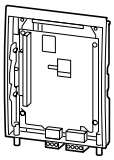
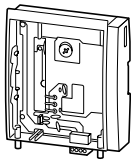
XC-NET-DP-M
PROFIBUS-DP master, max. 12 MBaud

XC600 the high-performance PLC
Modern automation concepts demand up-to-date automation equipment. In addition to speed and the capability of processing large volumes of data, the requirement is for direct and high-speed connection to higher level IT structures. XC600 is a modular high-performance controller that combines the known qualities of a PLC with the latest communication possibilities.

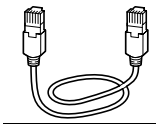
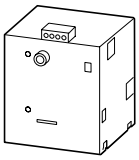
Operator guidance on the screen
The new operating method is unique. Many pieces of information can now be displayed directly on the operator panel screen, without requiring a programming unit. The four-line display gives information about operating status and fault situations in several languages.

High-speed 100 MB Ethernet interface built in
The Ethernet interface can deliver versatility and efficiency in communication, whether you require a simple data exchange between PLCs via global network variables, data transfer to PC applications, linkage to OPC client applications or quick access for programming.



		Description	Type Article no.	Price See Price List	Std. pack
Operator module					
	–	Operator unit with display, status LED, menu and function selector switch, receptor for external Compact flash memory cards. Battery for real-time clock not included as standard.	**XC-SYS1** 255929		1 off
CPU modules					
• Variable program memory • Real time PLC operating system • Interfaces for Ethernet and RS232 • Built-in Flash memory for operating system and application					
	Operating system: Windows NT with real-time PLC operating system; UPS required	1 MByte user memory	**XC-CPU601-E1M** 255908		1 off
		2 MByte user memory	**XC-CPU601-E2M** 255909		
		4 MByte user memory	**XC-CPU601-E4M** 255910		
	For WEB visualization	4 MByte user memory	**XC-CPU601-E4M-XV** 262443		
Communication modules					
	–	CANopen module	**XC-NET-CAN** 255914		1 off
	–	PROFIBUS-DP master module	**XC-NET-DP-M** 255915		1 off
Power supply modules					
24 V DC, for XC601 with UPS connection					
	–	Without local I/O, for XC-ADP base module and XC-ADP-XV	**XC-POW50-UPS** 255927		1 off
	–	For control systems with local XI/ON modules; in combination with base module, XC-ADP-XION.	**XC-POW50-XION-UPS** 255928		1 off
Base modules					
For snap-fitting on top-hat rails to IEC/EN 60715, for control systems without XVision visualization					
	–	Without local I/O, with XC-POW50-UPS	**XC-ADP** 255916		1 off
	–	For local XI/ON connection with XC-POW50-XION-UPS	**XC-ADP-XION** 255917		1 off

Moeller HPL0213-2004/2005

		Description	Type Article no.	Price See Price List	Std. pack
Accessories					
Profibus-DP data cable					
	–	Twisted, without connector, two-wire, 2 0.64 mm^2	**ZB4-900-KB1** 206983		100 m
Ethernet cross cable For programming of XC200, XC600					
	2 m length	–	**XT-CAT5-X-2** 256487		1 off
	5 m length	–	**XT-CAT5-X-5** 256488		1 off
Ethernet patch cable					
	2 m length	–	**CAT5-KG2,0** 262184		1 off
	5 m length	–	**CAT5-KG5,0** 262185		
	10 m length	–	**CAT5-KG10,0** 262448		
Ethernet hub/switch					
	–	Hub with 4 ports, 10 MBit/s	**FL-HUB-10BASE-T** 262159		1 off
	–	Switch with 5 ports, 10 100 MBit/s	**FL-SWITCH-TX** 262170		1 off
CAN cable to ISO 11898					
	–	Recommendation: UNITRONIC bus LD, from LAPPKABEL 2 × 2 × 0.22 mm^2 Characteristic impedance: 100 – 120 Ω Effective capacitance: 800 Hz, max. 60 nF/km			
CompactFlash memory cards					
	–	16 MByte	**XT-MEM-CF16M** 256213		1 off
	–	128 MByte	**XT-MEM-CF128M** 256215		1 off
Battery					
	–	For back-up of real-time clock and retentive data	**XT-CPU-BAT1** 256209		1 off
UPS (uninterruptable power supply)					
	–	Required with XC601; to be switched upstream of the power supply module	**DIP24-4,5-15** 256204		1 off
	–	Spare battery for UPS power supply unit	**BAT24-2,2** 256208		1 off

General		
Standards		IEC/EN 61131-2 EN 50178
Ambient temperature	°C	0 to +55
Storage	°C	-25 to +70
Vibration resistance		10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 g
Mechanical shock resistance		15 g/11 ms
Impact resistance		500 g/∅ 50 mm ±25 g
Overvoltage category		II
Pollution degree		2
Protection class		1
Degree of protection		IP20
Emitted interference		EN 61000-6-1(2, 3, 4)

Modules		
LCD		4 Lines × 12 columns
RTC (real-time clock)		Yes
Battery		XT-CPU-BAT1
Compact flash card		Type I and Type II

		XC-CPU601-E1M	**XC-CPU601-E2M**	**XC-CPU601-E4M(-XV)**
Modules				
Microprocessor		Pentium® 166 MHz	Pentium® 166 MHz	Pentium® 166 MHz
Program code + data	MB	1, 1	2, 1	4, 1
Interfaces				
Ethernet	MBits/s	10/100	10/100	10/100
COM1		RS232 (all pins utilized)	RS232 (all pins utilized)	RS232 (all pins utilized)
Watch-dog		Yes	Yes	Yes
Current consumption	A	Approx. 2.2	Approx. 2.2	Approx. 2.2
Weight	kg	0.3	0.3	0.3

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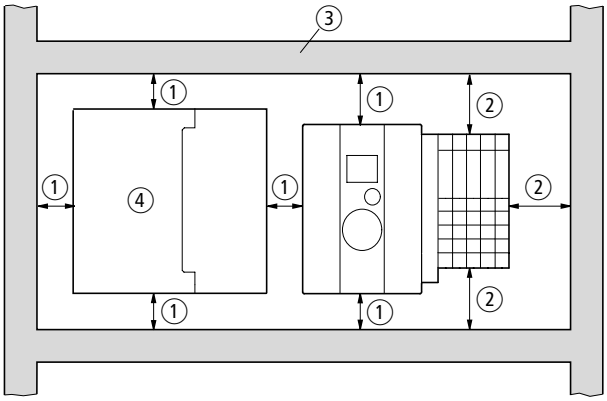
		XC-NET-DP-M	XC-NET-CAN
Modules			
Interfaces		Profibus-DP, RS485, EN 50170	CANopen, ISO 11898
Data transfer rate	MBit/s	Max. 12	Max. 1
Electrical isolation		Yes	Yes
Profile		–	CIA DS-401/-402/-406
PDO type		–	Asyn., cyc., acyc.
Quantity of modules		Max. 125 (slaves)	–
Input/output signals		Max. 244 Bytes per slave	–
Power supply	V DC	5 ±5 %	5 ±5 %
Current consumption	mA	Normally 650	Normally 650
Plug arrangement		9-pole SUB-D socket connector	9-pole SUB-D pin connector
Weight	kg	0.2	0.2

		XC-POW50-UPS	XC-POW50-XION-UPS
Modules			
Input voltage		24 V DC, +20 %/-15 %	24 V DC, +20 %/-15 %
Input rating	W	max. 60	max. 60
Mains overvoltage protection		Yes	Yes
Protection against polarity reversal		Yes	Yes
Mains filter		Yes	Yes
Residual ripple on the input voltage	%	≦ 5	≦ 5
Weight	kg	0.3	0.3
Terminals		Plug-in screw terminals	Plug-in screw terminals
Terminal capacity			
Flexible with ferrule	mm^2	0.5 – 2.5	0.5 – 2.5
Solid	mm^2	0.5 – 2.5	0.5 – 2.5

		XC-ADP	XC-ADP-XION
Modules			
Input voltage, nominal value	V DC	24, +20 %/-15 %	24, +20 %/-15 %
Output current, nominal value	A	10	10
C1 busbar supply			
Voltage range	V DC	24 +20 %/-15 %	24 +20 %/-15 %
Output current	A	10	10
Weight	kg	0.4	0.4
Terminals		Plug-in screw terminals	Plug-in screw terminals
Terminal capacity			
Flexible with ferrule	mm^2	0.5 – 2.5	0.5 – 2.5
Solid	mm^2	0.5 – 2.5	0.5 – 2.5

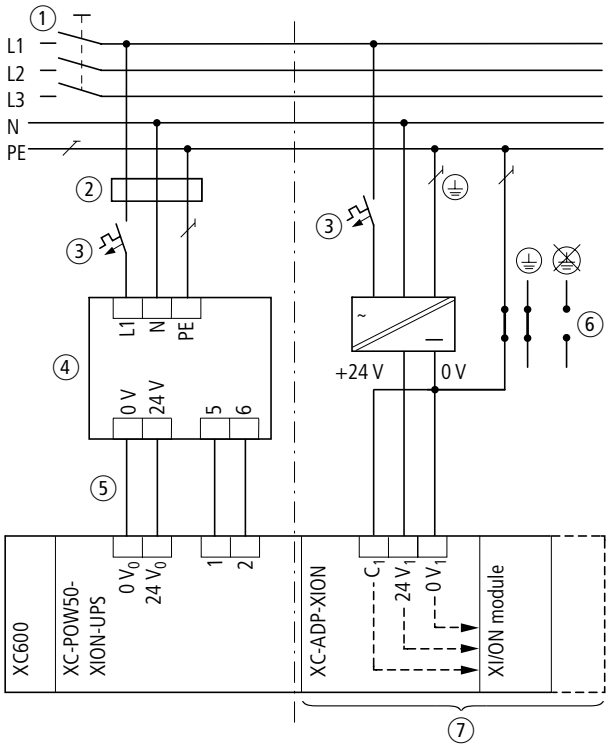
Device arrangement

Build the UPS unit (required with XC600) and the controller horizontally into the switchgear cabinet, as shown in the following diagram.



Cabinet layout
① Spacing > 50 mm
② Spacing > 75 mm to active components
③ Cable duct
④ UPS unit

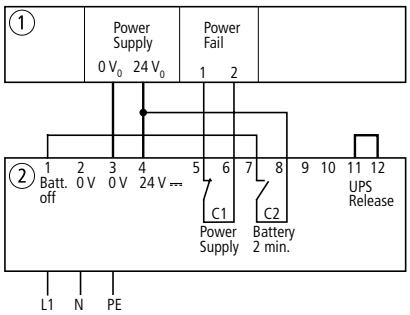
XC600 wiring example (overview)



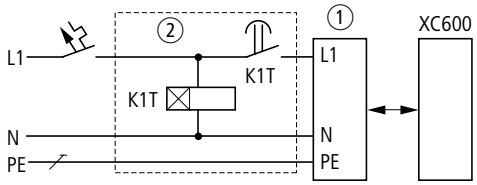
Example of wiring with XI/ON modules
① Main switch
② Delayed switch-on of the supply voltage
③ Circuit protection device
④ UPS unit
⑤ Wiring between the UPS unit and the XC600 supply module
⑥ If the control circuitry is not earthed, a leakage detector must be fitted.
⑦ Only for XI/ON local I/O expansion

Switch on/off supply voltage (only XC600)

With the help of the UPS (uninterruptible power supply) unit, you can ensure that the XC600 controller switches off in a safe manner in the event of a supply voltage failure. To achieve this, the inputs and outputs of the UPS must be wired up according to the diagram below.



Wiring between the UPS unit and the XC600 supply module
① XC600 (XC-POW50-UPS)
② UPS unit



Delayed switch-on of the supply voltage
① UPS unit

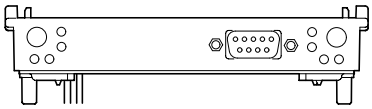
To implement the functions, the UPS unit DIP24-4,5-15 and the XC600 supply moduel are matched to one another. If you use a different UPS, then you will have to adapt the wiring accordingly.

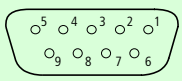
PROFIBUS-DP module XC-NET-DP-M

General
The module provides the master function for PROFIBUS-DP. It organizes and operates the data exchange between the user program and the slaves that are attached. Up to 31 Slaves can be accessed on a single bus section. Rpeaters can be used to couple several section together, so that a maximum of 125 slaves can be accessed. Up to 3 PROFIBUS-DP modules can be plugged in between the supply and CPU modules.

PROFIBUS-DP interface
These connect the module to PROFIBUS-DP via the electrically isolated RS485 interface (9-pole SUB-D socket connector).

Note
Use the special PROFIBUS-DP connector ZB4-209-DS2. It includes the necessary wirng for trouble-free operation up to 12 MBit/s.



Pin	Designation 	Description
3	RxD/TxD-P	Transmit/receive line, positive
5	DGND	Data ground reference potential
6	VP	Supply voltage +5 V
8	RxD/TxD-N	Transmit/receive line, negative

Bus terminating resistors
Termination resistors must be fitted to both ends of the cable.

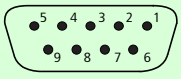
Note
If you use the PROFIBUS connector ZB4-209-DS2, then you can use a slide switch on the connector to switch the bus termination resistors on or off.

CANopen moudle XC-NET-CAN

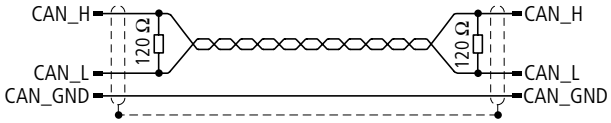
General
This module provides the interface in accordance with ISO 11898 between the CPU module and the CANopen bus.

CANopen interface,
The module can be connected to the CANopen bus via the electrically isolated ISO 11898 interface.

Terminal assignment
The pin assignments conform to the standard CiA DS 102 (CAN Physical Layer for Industrial Applications).

SUB-D connector	Designation 	Description
2	CAN_L	CAN_L bus line
3	CAN_GND	CAN ground reference potential
7	CAN_H	CAN_H bus line

Bus terminating resistors
120 Ω termination resistors must be connected to the ends of the network. Ordinary commercial connectors are available, which provide the facility of switching the termination resistor on or off by a slide switch on the connector, e.g. the SUB-CON-PLUS-CAN connector from Phoenix Contact, Article No. 2744694.
Please use only a cable that is approved for CANopen, with the following characteristics:
- Characteristic impedance: 108 – 132 Ω
- Capacitance per unit length: 50 pF/m

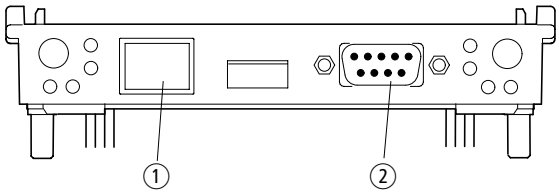


CANopen cable

Baud rate [kBit/s]	Max. length [m]	Core cross-section [mm²]	Loop resistance [Ω/km]
20	1000	0.75 – 0.80	16
125	500	0.50 – 0.60	40
250	250	0.50 – 0.60	40
500	100	0.34 – 0.60	60
1000	40	0.25 – 0.34	70

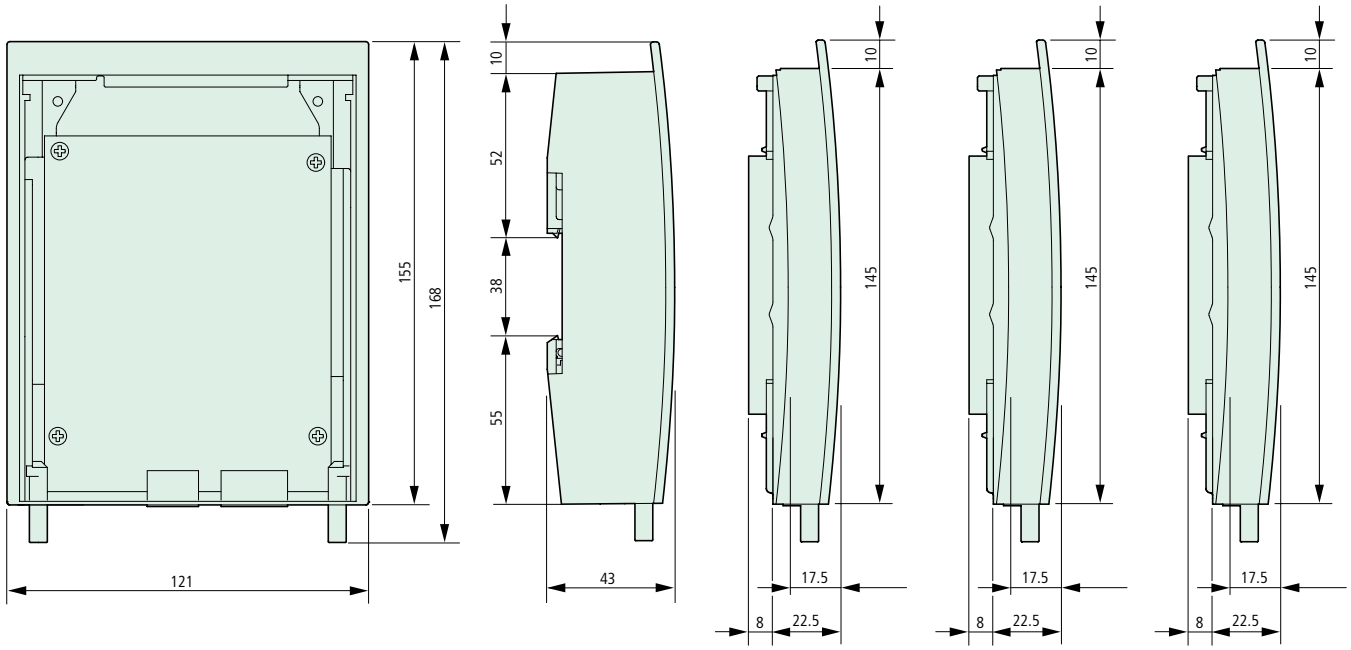
CPU module

Layout
The module contains a pcb with the PC/104+ bus. The following interfaces are available:



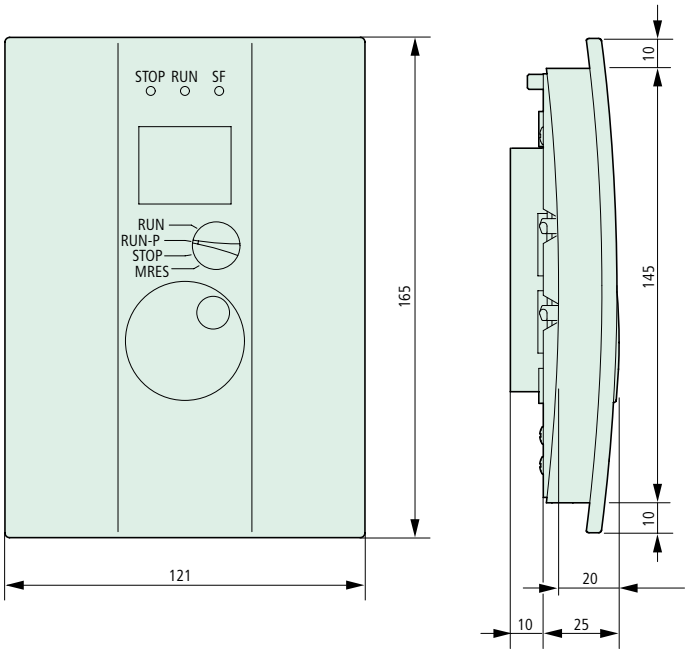
CPU interfaces
① Ethernet 10/100 MBit/s
② COM1 (RS232)

Base modules	Power supply module	Communication module	CPU modules
XC-ADP XC-ADP-XION	XC-POW50-UPS XC-POW50-XION-UPS	XC-NET-DP-M XC-NET-CAN	XC-CPU-601-E1M XC-CPU-601-E2M XC-CPU-601-E4M-(XV)



Operator module

XC-SYS-1



XIOC

XIOC digitale and analog input/output modules

Digital input/output modules

XIOC-8DI	8 inputs, 24 V DC
XIOC-16DI	16 inputs, 24 V DC
XIOC-32DI	32 inputs, 24 V DC
XIOC 16DI-AC	16 inputs 230 V AC
XIOC 16DI-AC110	16 inputs 110 V AC
XIOC-8DO	8 outputs 24 V DC
XIOC-16DO (-S)	16 outputs 24 V DC
XIOC-32DO	32 outputs 24 V DC
XIOC-12DO-R	12 outputs, relays
XIOC-16DX	4-16 inputs 24 V DC 0-12 outputs 24 V DC

Analog input/output modules

XIOC 8AI-U1	8 inputs 0-10 V
XIOC 8AI-U2	8 inputs +-10 V
XIOC 8AI-I2	8 inputs 4-20 mA
XIOC-2AO-U2	2 outputs +-10 V
XIOC-4AO-U1	4 outputs 0-10 V
XIOC-4AO-U2	4 outputs +-10 V
XIOC 2AO-U1-2AO-I2	2 outputs 0-10 V, 2 outputs 4-20 mA
XIOC 2AI-1AO-U1-I1	2 inputs, 0-10 V 1 output 0-10 V or 0-20 mA
XIOC 4AI-2AO-U1-I1	4 inputs, 0-10 V 2 outputs 0-10 V or 0-20 mA
XIOC 4T-PT	4 inputs for temperature monitoring, PT100/1000

XIOC technology and networking modules

Technology

XIOC 1CNT-100KHZ
1 counter 100 kHz

XIOC 2CNT-100KHZ
2 counters 100 kHZ

XIOC-2CNT-2AO-INC
2 counters with 400 kHz,
2 analog outputs +-10 V

Communication

XIOC SER
Serial interface: RS232C, 485, 422

XIOC-DP-M
PROFIBUS-DP master

XIOC the compact I/O and much more

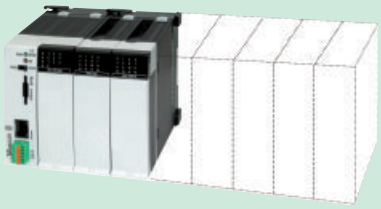
XIOC are local expansion modules for direct connection to all XControl controllers. Up to 15 modules, selected from a wide range of digital, analog and intelligent I/O functions, can be connected directly to each controller.

Compact style

In a space of 30 mm width and 100 mm height/depth, you can connect up to 32 I/O. This saves space in the control panel and enables you to design compact automation solutions.

A choice of connections

All the terminations can be made via plug-in terminal blocks in screw or tension-clamp technology. This simplifies pre-wiring and allows a quick exchange of modules.



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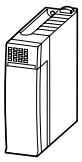
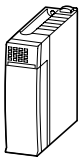
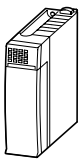
		Description	Type Article no.	Price See Price List	Std. pack
XI/OC					
• Compact I/O system for connection to XC100/200 Modular PLCs • XC100/200 expandable with up to 15 XI/OC modules • Optionally, screw terminals or spring-loaded terminals for digital/analog modules					
Digital modules					
	–	8 inputs, 24 V DC	**XIOC-8DI** 257891		1 off
	–	16 inputs, 24 V DC	**XIOC-16DI** 257892		
	–	32 inputs, 24 V DC	**XIOC-32DI** 267411		
	–	16 inputs, 240 V AC	**XIOC-16DI-AC** 257893		
	–	16 inputs, 110 V AC	**XIOC-16DI-AC110** 267412		
	–	8 outputs, 24 V DC, 0.3 A	**XIOC-8DO** 257894		
	–	16 outputs, 24 V DC, 0.3 A	**XIOC-16DO** 257896		
	–	16 outputs, 24 V DC, 0.8 A, short-circuit proof	**XIOC-16DO-S** 257895		
	–	32 outputs, 24 V DC, 0.2 A	**XIOC-32DO** 267413		
	–	12 relay outputs	**XIOC-12DO-R** 257897		
	–	16 connections, 4 outputs, 12 freely parameterizable as inputs/outputs, 24 V DC Outputs 0.5 A	**XIOC-16DX** 262322		
Analog modules					
	Inputs	8 inputs, 4 – 20 mA	**XIOC-8AI-I2** 262549		1 off
		8 voltage inputs, 0 – 10 V	**XIOC-8AI-U1** 257899		
		8 voltage inputs ±10 V	**XIOC-8AI-U2** 257900		
		4 inputs for temperature monitoring, Pt100/1000	**XIOC-4T-PT** 257901		
	Outputs	2 outputs, 0 – 10 V, 2 outputs, 4 – 20 mA	**XIOC-2AO-U1-2AO-I2** 257902		
		4 outputs, 0 – 10 V	**XIOC-4AO-U1** 257903		
		4 outputs ±10 V	**XIOC-4AO-U2** 257905		
		2 outputs ±10 V	**XIOC-2AO-U2** 257904		
	Combination modules	2 inputs and 1 output, 0 – 10 V 1 ms conversion time	**XIOC-2AI-1AO-U1** 262409		
		4 inputs and 2 outputs, 0 – 10 V 1 ms conversion time	**XIOC-4AI-2AO-U1** 262405		
		2 inputs and 1 output, 0 – 10 V, 2 – 20 mA 1 ms conversion time, individual changeover	**XIOC-2AI-1AO-U1-I1** 281545		
		4 inputs and 2 outputs 0 – 10 V, 2 – 20 mA 1 ms conversion time, individual changeover	**XIOC-4AI-2AO-U1-I1** 281544		
Counter modules					
	–	1 input up to 100 kHz, 24 V DC, 2 digital transistor outputs, opto-isolated, 24 V DC 30-pole connector required for counter module	**XIOC-1CNT-100KHZ** 257906		1 off
	–	2 inputs up to 100 kHz, 24 V DC, 4 digital transistor outputs, opto-isolated, 24 V DC 30-pole connector required for counter module	**XIOC-2CNT-100KHZ** 257907		
	–	2 inputs up to 400 kHz, 24 V DC, 2 analog outputs, 10 to +10 V	**XIOC-2CNT-2AO-INC** 262417		

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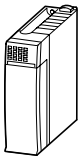
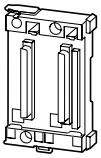
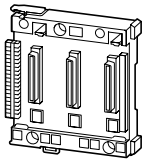
	Description	Type Article no.	Price See Price List	Std. pack
Communication modules				
	PROFIBUS-DP master module	**XIOC-NET-DP-M** 257908		1 off
	Serial interface RS232, RS485, RS422	**XIOC-SER** 267191		1 off
Accessories				
Terminations One 18-pole terminal plug is required for each digital and analog module.				
	18-pole plug with spring-loaded terminal	**XIOC-TERM-18T** 258104		1 off
	18-pole plug with screw terminal	**XIOC-TERM-18S** 258102		
	30-pole connector for counter module, with 4 m cable XIOC-1CNT-100KHZ XIOC-2CNT-100KHZ	**XIOC-TERM30-CNT4** 262248		
	40-pole connector for digital module, with 4 m cable XIOC-32DI XIOC-32DO	**XIOC-TERM32** 267414		
Rack Expander rack for mounting XI/OC modules on top-hat rail, expandable				
	Width: 2 slots for XI/OC modules	**XIOC-BP-2** 260794		1 off
	Width: 3 slots for XI/OC modules	**XIOC-BP-3** 260795		
	Width: 3 slots for XI/OC modules Note: Module rack for expansion with up to 15 modules, must be plugged in after the 6th XIOC module.	**XIOC-BP-EXT** 274291		

General			
Standards			IEC/EN 61131-2 EN 50178
Ambient temperature		°C	0 to +55
Storage		°C	-25 to +70
Vibration resistance			10 – 57 Hz ± 0.075 mm 57 – 150 Hz ± 1.0 g
Mechanical shock resistance			15 g/11 ms
Impact resistance			500 g/∅ 50 mm ±25 g
Overvoltage category			II
Pollution degree			2
Protection class			1
Degree of protection			IP20
Emitted interference			DIN/EN 55011/22, Class A
Electromagnetic compatibility (EMC)			
			→ Page 4/59
External power supply			
Rated voltage	U_e	V DC	24 (12)
Admissible range			20.4 – 28.8 (11.8 – 14.4)
Residual ripple		%	≦ 5
Bridging of voltage dips			
Duration of dip		ms	10
Repetition rate		s	1

		XIOC-8DI	XIOC-16DI	XIOC-32DI	XIOC-16DI-AC110	XIOC-16DI-AC
Modules						
Type of input		DC input	DC input	DC input	AC input	AC input
Input voltage	V DC	24	24	24	–	–
Admissible range	V DC	20.4 – 28.8	20.4 – 28.8	20.4 – 28.8	–	–
Input voltage	V AC	–	–	–	100 – 120	200 – 240
Admissible range	V AC	–	–	–	85 – 132	170 – 264
Input resistance		Typ. 3.5 kΩ	Typ. 5.9 kΩ	Typ. 5.6 kΩ	Typ. 16 kΩ (50 Hz), Typ. 13 kΩ (60 Hz)	Typ. 32 kΩ (50 Hz), Typ. 27 kΩ (60 Hz)
Input current	mA	Normally 6.9	Normally 4.0	Normally 4.3	4.8 – 7.6 (100 V AC/50 Hz)	4.3 – 8.0 (220 V AC/50 Hz)
Voltage level to IEC 61131-2, limit value type 1						
ON	V	≧ 15 DC	≧ 15 DC	≧ 15 DC	≧ 79 AC	≧ 164 AC
OFF	V	≦ 5 DC	≦ 5 DC	≦ 5 DC	≦ 20 AC	≦ 40 AC
Input delay						
OFF → ON	ms	≦ 5 (typ. 4)	≦ 5 (typ. 4)	≦ 5 (typ. 4)	≦ 15	≦ 15
ON → OFF	ms	≦ 5 (typ. 4)	≦ 5 (typ. 4)	≦ 5 (typ. 4)	≦ 25	≦ 25
Input channels	Qty.	8	16	32	16	16
Channels with the same reference potential	Qty.	8	16	32	16	16
Electrical isolation		Opto-isolated				
Indicating elements		LED (green)	LED (green)	LED (green), (not part of module package)	LED (green)	LED (green)
Terminals		Plug-in terminal block		XIOC-TERM32 (connector and cable)	Plug-in terminal block	
Internal current consumption (5 V DC)	mA	Normally 26	Normally 51	Normally 100	Normally 51	Normally 51
Weight	kg	0.16	0.16	0.16	0.18	0.18

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		XIOC-8DO	XIOC-16DO	XIOC-16DO-S	XIOC-32DO
Modules					
Type of output		Transistor (source type)			
Output voltage	V DC	12/24 (-15/+20%)			
Minumum switching current	mA	1	1	1	1
Leakage current	mA	0.1	0.1	0.1	0.1
Maximum load current					
Per circuit	A	0.3	0.3	0.8	0.2
Per common potential terminal	A	2.4	4	5	3.2
Output delay					
OFF → ON	ms	≦ 0.3	≦ 0.3	≦ 0.3	≦ 0.3
ON → OFF	ms	≦ 1	≦ 1	≦ 1	≦ 1
Output channels	Qty.	8	16	16	32
Channels with the same reference potential	Qty.	8	16	16	32
Overvoltage protection		Diode	Diode	Built-in	Diode
Fuse	A	4	8	None	8
Electrical isolation		Opto-isolated			
Indicating element		LED (green)	LED (green)	LED (green)	16 LED (green), switchable: 0 – 15, 16 – 31
Terminations		Plug-in terminal block			XIOC-TERM32 (connector and cable)
Internal current consumption (5 V DC)	mA	Normally 30	Normally 50	Normally 50	Normally 250
External voltage for outputs/module (30 mA for module supply)	V	24 DC (-15/+20%)	24 DC (-15/+20%)	24 DC (-15/+20%)	24 DC (-15/+20%)
External voltage for operating the relay		–	–	–	–
Short-circuit protection		–	–	Yes	–
Weight	kg	0.16	0.16	0.16	0.16

		XIOC-12DO-R
Modules		
Type of output		Relay
Output voltage	V DC	24
Output voltage	V AC	100/240
Minumum switching current	mA	1
Maximum load current		
Per circuit	A	2
Per common potential terminal	A	5
Output delay		
OFF → ON	ms	≦ 10
ON → OFF	ms	≦ 10
Output channels	Qty.	12
Channels with the same reference potential	Qty.	12
Overvoltage protection		External
Fuse	A	External
Electrical isolation		Opto-isolated
Indicating element		LED (green)
Terminations		Plug-in terminal block
Internal current consumption (5 V DC)	mA	Normally 40
External voltage for operating the relay		24 DC (-15/+20%, max. 70 mA)
Weight	kg	0.2

		XIOC-16DX
Power supply		
Supply voltage		24 V DC (-15/+20%)
Residual ripple	%	≦ 5
Overvoltage protection		Yes
Protection against polarity reversal		Yes
Electrical isolation		
Power supply against I/O bus		Yes
Power supply against I/O		No
Internal current consumption (5 V DC)	mA	Normally 80
Channels with the same reference potential	Qty.	16
Terminations		Plug-in terminal block
Status indication		LED
Inputs		
Type of input		DC input
Input voltage	V DC	24 V DC
Inputs	Qty.	4, 12, configurable
Input current	mA	Normally 4
Voltage level to IEC 61131-2, limit value type 1		
ON	V	≧ 15 DC
OFF	V	≦ 5 DC
Input delay		
OFF → ON	ms	Normally 0.1
ON → OFF	ms	Normally 0.1
Outputs		
Type of output		Transistor (source type)
Output voltage	V DC	24 (-15/+20 %)
Output current	A	Normally 0.5
Outputs	Qty.	Max. 12, configurable
Short-circuit tripping current	A	max. 1.2 over 3 ms per output
Lamp load	W	max. 3
OFF-delay (High → Low)	µσ	Normally 100
Switching capacity		IEC/EN 60947-5-1, utilization category DC-13
Short-circuit protected		Yes
Parallel connection of outputs		in groups 0 – 3, 4 – 7, 8 – 11; Actuation of the outputs within a group only in the same program cycle
Number of outputs that can be switched in parallel		max. 3
Total max. current	A	2 per group
Weight	kg	0.16

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			XIOC-8AI-I2	XIOC-8AI-U1	XIOC-8AI-U2	XIOC-4T-PT
Modules						
Input voltage		V DC	–	0 to 10	-10 to +10	–
Input current		mA	4 – 20	–	–	–
Resolution, digital		Bit	12	12	12	15 Bit signed
Conversion time			≦ 5 ms	≦ 5 ms	≦ 5 ms	
Total error		%	≦ ± 1 (of full-scale value)			–
Input resistance		kΩ	–	100	100	–
Electrical isolation						
Circuit within each channel			Opto-isolated			
Between the input channels			No	No	No	No
Input channels		Qty.	8	8	8	4
Terminations			Plug-in terminal block			
External power supply			24 V DC (-15/+20 %), approx. 150 mA			24 V DC (–15/+20 %), 100 mA
External resistance	*R*	kΩ	–	–	–	Max 0.4, 4 channels
Connection type			2-core shielded cable (≦20 m)			Screened cable
Platinum temperature resistance			–	–	–	Pt100 (IEC 751), Pt1000
Accuracy						
-20 to 40 °C (Pt100)		°C	–	–	–	±0.5
-50 to 400 °C (Pt100)		°C	–	–	–	±3
-50 to 400 °C (Pt1000)		°C	–	–	–	±6
Temperature measuring range			–	–	–	-20 to +40 °C/-50 to +400 °C (constant current: 2 mA)
Internal current consumption (5 V DC)		mA	Normally 100	Normally 100	Normally 100	Max. 200
Additional function			–	–	–	Linearization
Error detection						
-20 to 40 °C			–	–	–	≦ -25 °C or ≧ +45 °C = resistance value 7FFFFhex
-50 to 400 °C			–	–	–	≦ -60 °C or ≧ +410 °C = resistance value 7FFFFhex
Behaviour in the event of wire breakage or where inputs are not used			–	–	–	In these cases, the resistance value is 7FFFhex
Weight		kg	0.18	0.18	0.18	0.18

		XIOC-2AO-U1-2AO-I2	XIOC-4AO-U1	XIOC-4AO-U2	XIOC-2AO-U2
Modules					
Output voltage	V DC	0 to 10	0 to 10	-10 to 10	-10 to 10
Output current	A	0.004 to 0.020	–	–	–
Resolution	Bit	14	14	14	14
Conversion time		≦ 5 ms	≦ 5 ms	≦ 5 ms	≦ 5 ms
Total error	%	≦ ± 1 (of full-scale value)			
External load resistance					
Voltage output		≧ 10 kΩ	≧ 10 kΩ	≧ 10 kΩ	≧ 10 kΩ
Current output	Ω	0 – 500 Ω	–	–	–
Electrical isolation					
Circuit within each channel		Opto-isolated			
Between channels		No	No	No	No
Quantity of outputs					
Output voltage		2 (channels 0 and 1)	4	4	2
Output current		2 (channels 2 and 3)	–	–	–
Terminations		Plug-in terminal block			
Internal current consumption (5 V DC)	mA	Normally 100	Normally 100	Normally 100	Normally 100
External power supply		24 V DC (-15/+20 %), approx. 150 mA			
Connection type		2-core shielded cable (≦ 20 m)			

		XIOC-2AI-1AO-U1	XIOC-2AI-1AO-U1-I1	XIOC-4AI-2AO-U1	XIOC-4AI-2AO-U1-I1
Inputs					
Input voltage	V DC	0 – 10	0 – 10	0 – 10	0 – 10
Input current	mA	–	0 – 20	–	0 – 20
Resolution	Bit	12	12	12	12
Conversion time		< 1 ms	< 1 ms	< 1 ms	< 1 ms
Total error	%	Normally 0.4	Normally 0.4	Normally 0.4	Normally 0.4
Electrical isolation					
Circuit within each channel		No	No	No	No
Between the input channels		No	No	No	No
Between input/output channels		No	No	No	No
Channels	Qty.	2	2	4	4
Input resistance	kΩ	40	40	40	40
Outputs					
Output voltage	V DC	0 – 10	0 – 10	0 – 10	0 – 10
Output current	mA	–	0 – 20	–	0 – 20
Resolution	Bit	12	12	12	12
Error		Normally 0.4	Normally 0.4	Normally 0.4	Normally 0.4
Electrical isolation					
Circuit within each channel		No	No	No	No
Between the output channels		No	No	No	No
Quantity of channels		1	1	2	2
External load resistance		≧ 2 kΩ	≧ 2 kΩ	≧ 2 kΩ	≧ 2 kΩ
Short-circuit protected		Yes	Yes	Yes	Yes
Clamp-type terminals					
Terminations		Plug-in terminal block	Plug-in terminal block	Plug-in terminal block	Plug-in terminal block
Internal current consumption (5 V DC)	mA	Normally 200	Normally 200	Normally 200	Normally 200
Weight	kg	0.16	0.16	0.16	0.16

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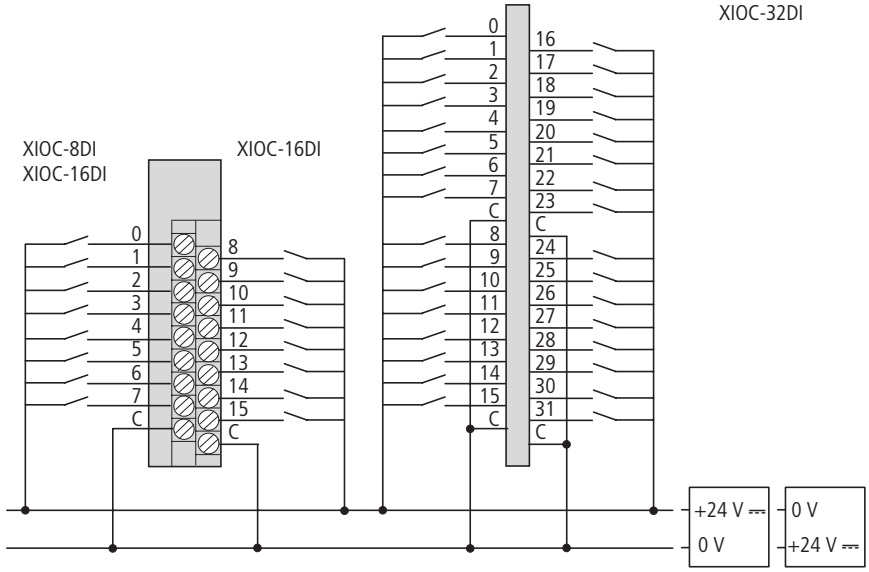
			XIOC-1CNT-100KHZ	XIOC-2CNT-100KHZ	XIOC-2CNT-2AO-INC
Inputs					
Counter limits			0 to 4294967295 (32 Bit)		
Frequency		kHz	100 (25 with four-fold resolution)		400
Quantity of channels			1	2	2
Input current differential		mA	≧ 4	≧ 4	5
Input voltage differential			12 to 24 V DC	12 to 24 V DC	5 V DC
Min. voltage for ON		V DC	10	10	2.4
Max. voltage for OFF		V DC	4	4	0.8
Minimum pulse width		µσ	ON ≧ 4 OFF ≧ 4	ON ≧ 4 OFF ≧ 4	–
Electrical isolation			Opto-isolated		–
Connection for external cabling			30-pole plug: XIOC-TERM30-CNT4		Plug-in terminal block
External cabling			Screened, twisted pair cable		
Outputs					
Type of output			Transistor (open collector)		Analog
External power supply			12/24 V DC (30 max.)		–
Minimum load current		mA	1	1	–
Maximum load current	I_e	mA	20	20	–
Max. leakage current		mA	0.5	0.5	–
Max. voltage dip at ON		V	1.5	1.5	–
Output signal delay					
OFF → ON		ms	≦ 1	≦ 1	–
ON → OFF		ms	≦ 1	≦ 1	–
Connection type			Screened, twisted pair cable		
Output channels		Qty.	2	4	2
Electrical isolation			Opto-isolated		–
Output voltage		V DC	–	–	-10 to +10
Resolution		Bit	–	–	12
Conversion time			–	–	≦ 5 ms
Total error		%	–	–	≦ ± 1 % (of full-scale value)
External load resistance (voltage output)			–	–	≧ 10 kΩ
Connection for external cabling			30-pole plug: XIOC-TERM30-CNT4		Plug-in terminal block
External cabling			Screened, twisted pair cable		2-core, screened cable
Current consumption of encoders					
At 5 V DC		mA	–	–	≦ 300
Power supply of encoders			–	–	5 V DC
Weight		kg	0.16	0.16	0.18

		XIOC-NET-DP-M	XIOC-SER
Interfaces			
Interfaces		Profibus-DP, RS485, EN 50170	RS232, with control lines RS485, RS422
Data transfer rate	kBit/s	Max. 12	0.3 – 115.2
Electrical isolation		Yes	RS232: no RS422/RS485: yes
Quantity of modules		Max. 125 (slaves)	–
Input/output signals		Max. 244 Bytes per slave	–
Current consumption	mA	Normally 650	max. 275
Plug arrangement		9-pole Sub-D socket	RS232: 9-pole SUB-D plug, RS422/RS485: 6-pole spring-loaded terminal block
Weight	kg	0.2	0.2

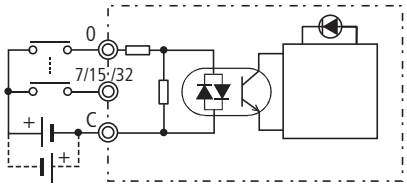
Digital input modules

Terminal layout

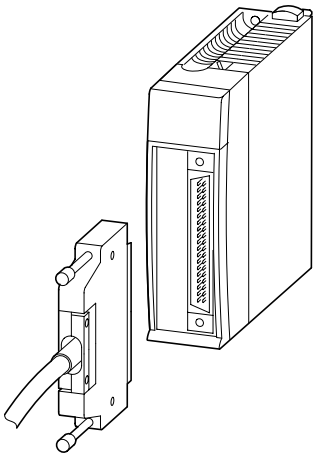


Internal circuit

XIOC-8DI
XIOC-16DI
XIOC-32DI

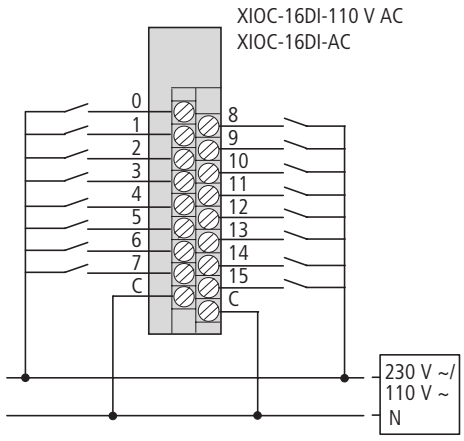


Wiring of the XIOC-32DI input module



Number	Signal name XIOC-32DI	Number	Signal name XIOC-32DI
1	0	21	16
2	1	22	17
3	2	23	18
4	3	24	19
5	4	25	20
6	5	26	21
7	6	27	22
8	7	28	23
9	C	29	C
10	8	30	24
11	9	31	25
12	10	32	26
13	11	33	27
14	12	34	28
15	13	35	29
16	14	36	30
17	15	37	31
18	C	38	C
19	–	39	–
20	–	40	–

Terminal layout



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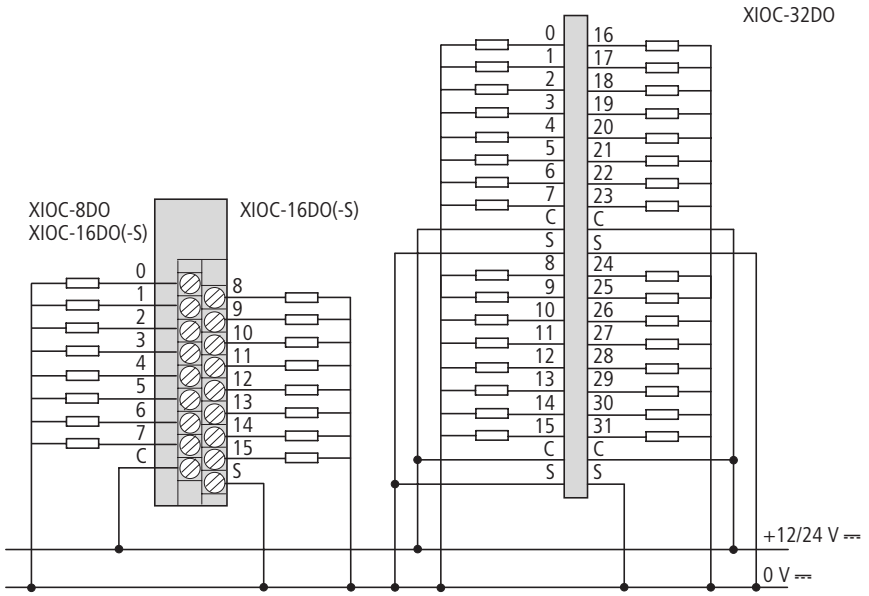
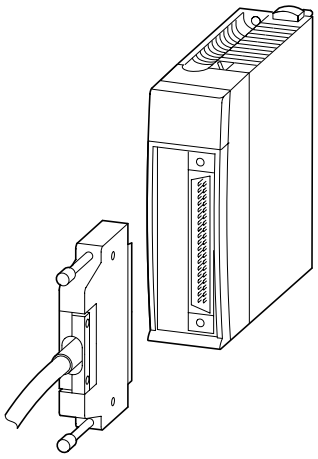
Digital output modules

Terminal layout



Wiring of the XIOC-32DO input module

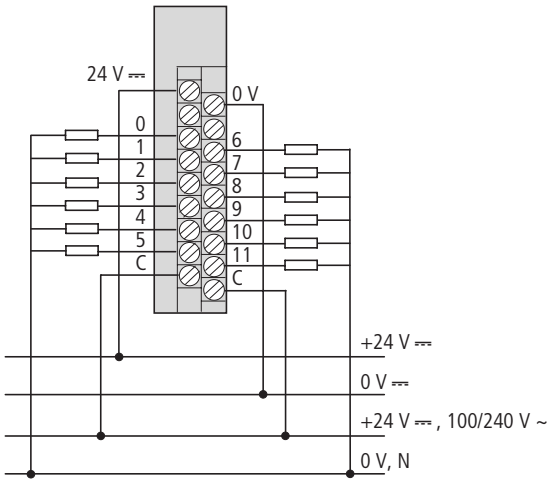


Number	Signal name XIOC-32DO	Number	Signal name XIOC-32DO
1	0	21	16
2	1	22	17
3	2	23	18
4	3	24	19
5	4	25	20
6	5	26	21
7	6	27	22
8	7	28	23
9	C	29	C
10	S	30	S
11	8	31	24
12	9	32	25
13	10	33	26
14	11	34	27
15	12	35	28
16	13	36	29
17	14	37	30
18	15	38	31
19	C	39	C
20	S	40	S

Relay output module

Terminal layout

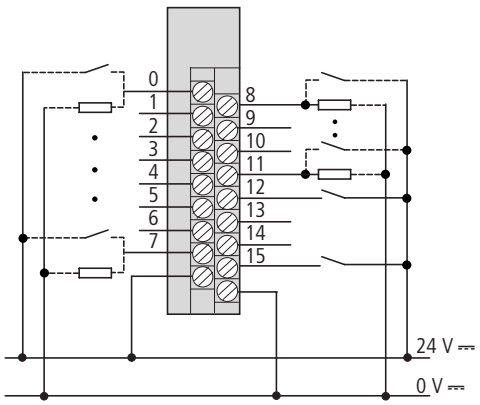
XIOC-12DO-R



Digital module, parameterizable

Terminal layout

XIOC-16DX



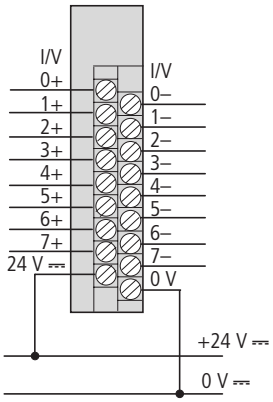
Notes

For UL applications, the supply leads to the module types XIOC-8DO, -16DO, -16DO-S, -12DO-R, -16DX must have a cross-section of at least AWG16 (1.3 mm^2) .

Analog input modules

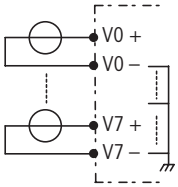
Terminal layout

XIOC-8AI-U1
XIOC-8AI-I1

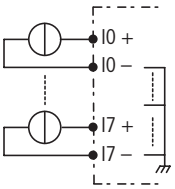


Wiring of the modules

XIOC-8AI-U1
XIOC-8AI-U2

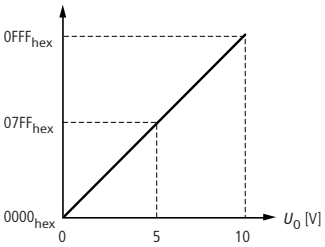


XIOC-8AI-I2

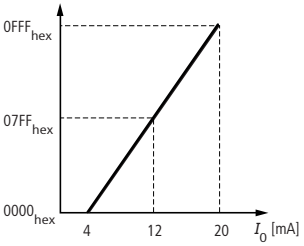


U/I characteristics

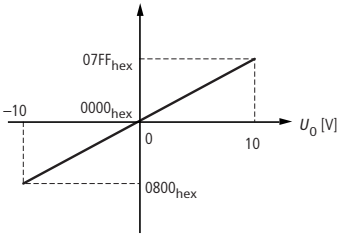
XIOC-8AI-U1



XIOC-8AI-I2

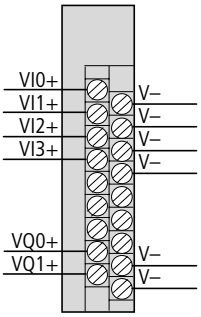


XIOC-8AI-U2

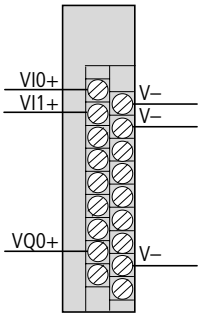


Terminal layout

XIOC-4AI-2AO-U1

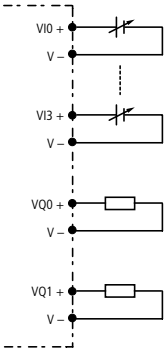


XIOC-2AI-1AO-U1

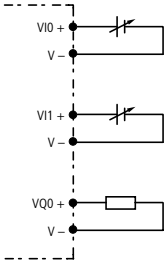


Wiring of the modules

XIOC-4AI-2AO-U1

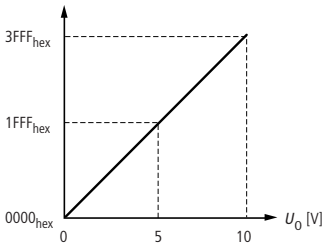


XIOC-2AI-1AO-U1

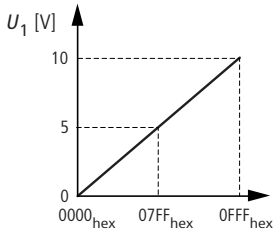


U/I characteristics

Inputs



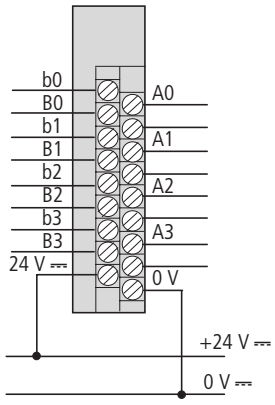
Outputs



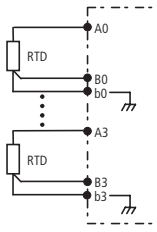
Temperature acquisition module

Terminal layout

XIOC-4T-PT

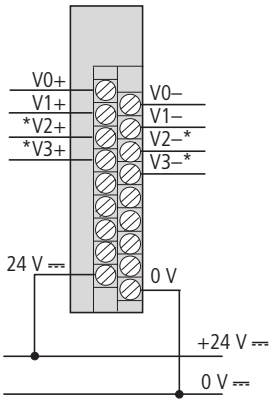


Wiring of the modules

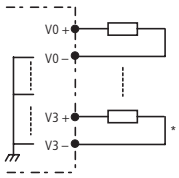


Analog output modules

Terminal layout
XIOC-2AO-U2
XIOC-4AO-U1/-U2

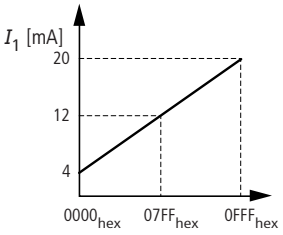


Wiring of the modules
XIOC-2AO-U2
XIOC-4AO-U1/-U2

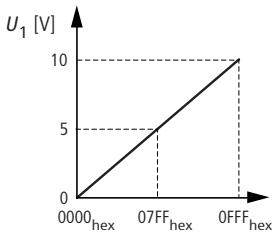


U/I characteristics

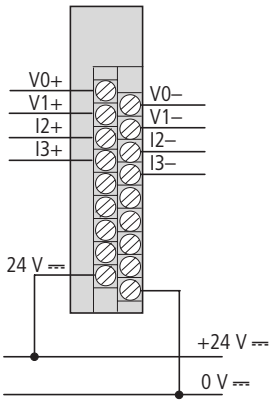
XIOC-2AO-U1-2AO-I2



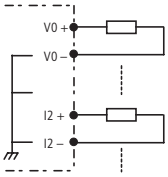
XIOC-2AO-U1-2AO-I2
XIOC-4AO-U1



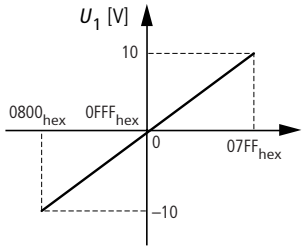
XIOC-2AO-U1-2AO-I2



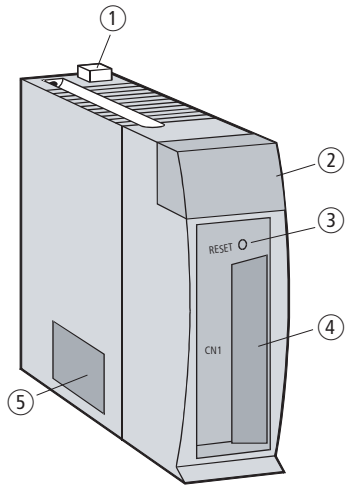
XIOC-2AO-U1-2AO-I2



XIOC-2AO-U2
XIOC-4AO-U2

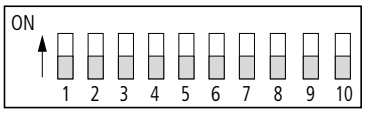


Counter modules



No.	Designation	Comments
①	Lock	
②	LED display	
③	Reset button	This is used if the module generates a hardware error. **Note:** After switching on the supply voltage, pressing the reset button will make the ER-LED light up.
④	Connection for external cabling	30-pole connection (15 pins × 2) for connector XIOC-TERM30-CNT4
⑤	Mode switch (DIP)	This switch is used to select the operating mode. Before setting the DIP switch, the supply voltage must be switched off and the module must be removed from the rack.

Mode switch



Mode switch (setting as delivered)

Mode	Switch	Position	Function	Chan.
Type of counter input				
1.1	1	OFF	2-phase counter, max. 100 kHz	1 + 2
	2	OFF		
1.2	1	ON	1-phase counter, (pulse changeover)	1 + 2
	2	OFF		
1.3	1	OFF	1-phase counter, (polarity changeover)	1 + 2
	2	OFF		
1.4	1	ON	2-phase counter with quadruple evaluation, max. 25 kHz	1 + 2
	2	ON		

Polarity of the marker input				
2	3/4	OFF	Voltage on the input produces a 0 signal	1/2
		ON	Voltage on the input produces a 1 signal	
CPU stop → Counter				
3	5/6	OFF	CPU stop → Counter Stop	1/2
		ON	CPU sop → Counter Run	
Linear/ring counter				
4	7/8	OFF	Linear counter	1/2
		ON	Ring counter	
–	9, 10	OFF	not used	–

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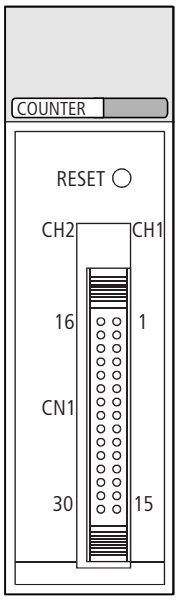
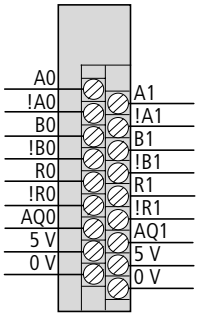
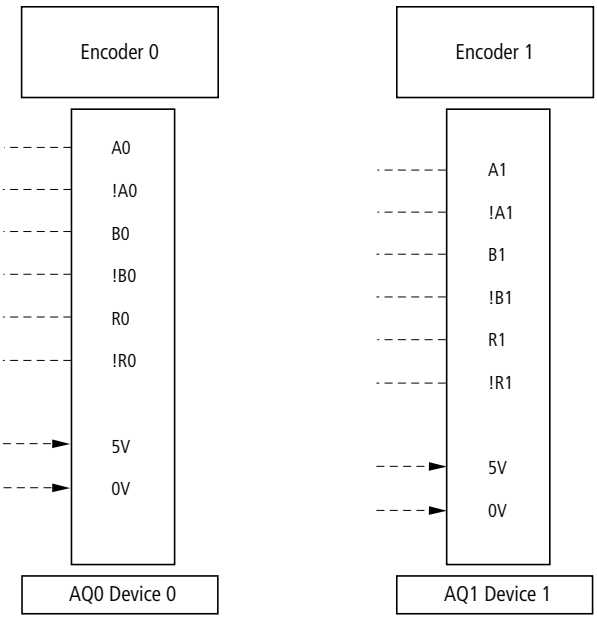
Terminal layout	No.	CH2	No.	CH1		Significance of signals
		XIOC-2CNT		**XIOC-2CNT/ XIOC-1CNT**		
	16	Vin A	1	Vin A	Phase A	When using the voltage input, connect to 12 – 24-V DC supply voltage.
	17	A (+)	2	A (+)		When using the differential input, connect to positive polarity.
	18	A (–)	3	A (–)		When using the voltage input, connect to the open-collector signal. When using the differential input, connect to negative polarity.
	19	Vin B	4	Vin B	Phase B	When using the voltage input, connect to 12 – 24-V DC supply voltage.
	20	B (+)	5	B (+)		When using the differential input, connect to positive polarity.
	21	B (–)	6	B (–)		When using the voltage input, connect to the open-collector signal. When using the differential input, connect to negative polarity.
	22	Vin M	7	Vin M	Marker	When using the voltage input, connect to 12 – 24-V DC supply voltage.
	23	M (+)	8	M (+)		When using the differential input, connect to positive polarity.
	24	M (–)	9	M (–)		When using the voltage input, connect to the open-collector signal. When using the differential input, connect to negative polarity.
	25 – 27	not used	10 – 12	not used		Do not connect anything here.
	28	Y2	13	Y0	Output	Comparison output
	29	Y3	14	Y1		
	30	Com2	15	Com1		(–) Reference potential for the comparison output. For XIOC-2CNT : reference potentials 1 and 2 are independent.

Note: The pin numbers defined for the XIOC-1CNT-100 kHz and XIOC-2CNT-100 kHz do not match the numbers given by the connector manufacturer.

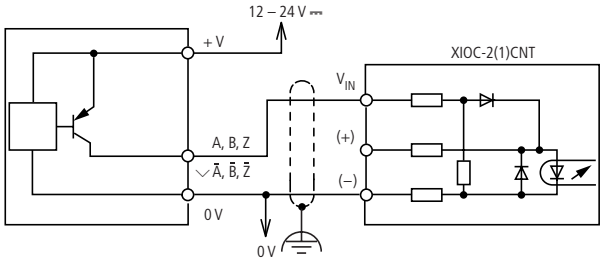
Terminal layout
XIOC-2CNT-2AO-INC



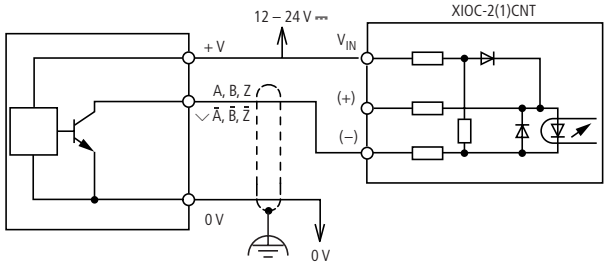


Connecting various types of encoder to XIOC-2(1)CNT

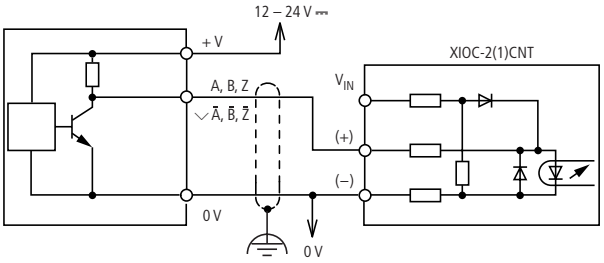
24 V encoder: PNP transistor, open-collector



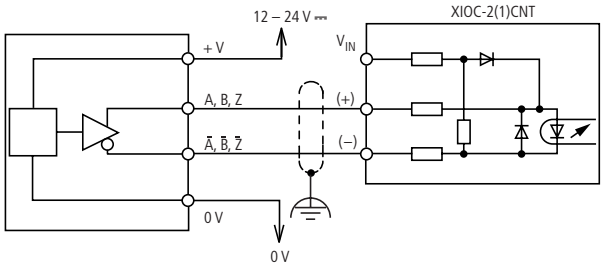
24 V encoder: NPN transistor, open-collector



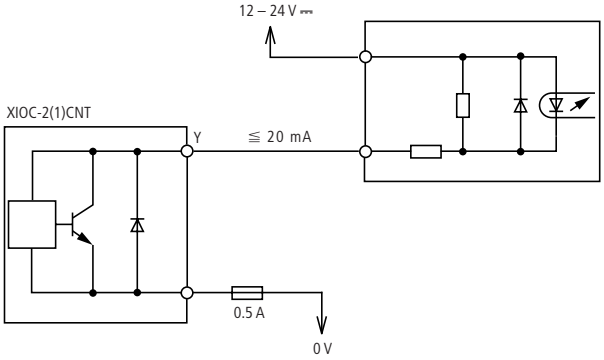
24 V encoder: NPN transistor



5 V encoder with inverted signals

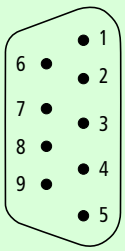


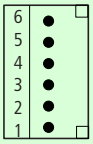
Connecting third-party devices to the comparison output



Note: Wire a fuse (0.5 A) into the lead to protect the internal circuitry.

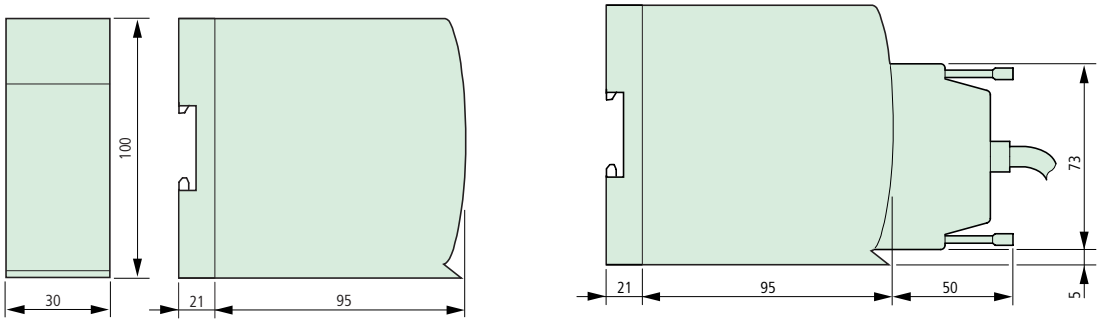
XIOC-SER

RS232C	Pin	RS232C
	1	DCD
	2	RxD
	3	TxD
	4	DTR
	5	SGND
	6	DSR
	7	RTS
	8	CTS

Combicon	Pin	RS485	Pin	RS422
	3, 4, 5, 6	–	6	Rx -
	2	Tx-/Rx-	5	Rx +
	1	Tx+/Rx+	3, 4	–
			2	Tx -
			1	Tx +

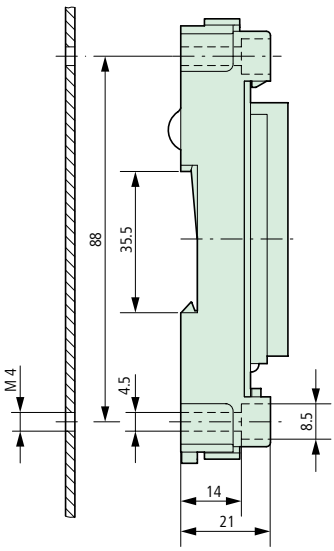
Moeller HPL0213-2004/2005

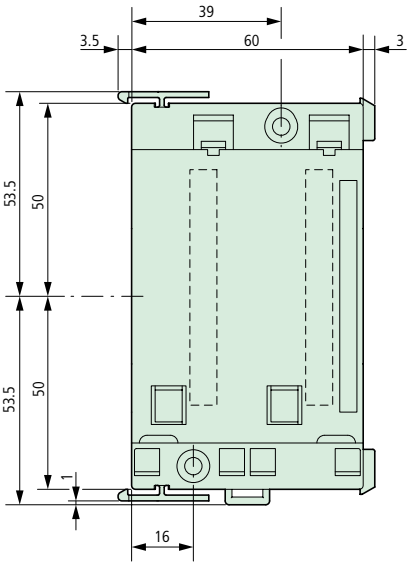
XI/OC modules



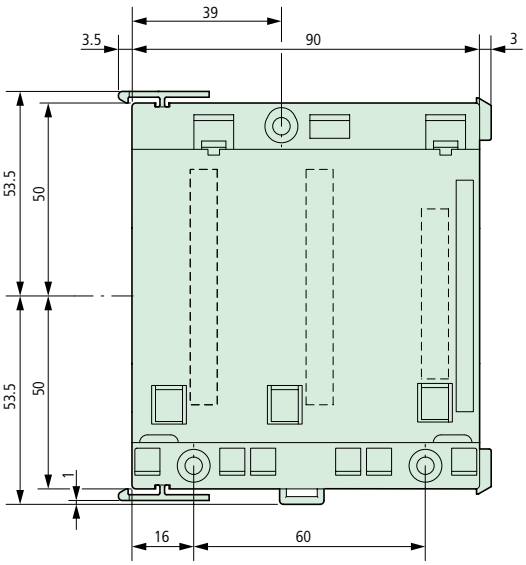
Rack

XIOC-BP-2





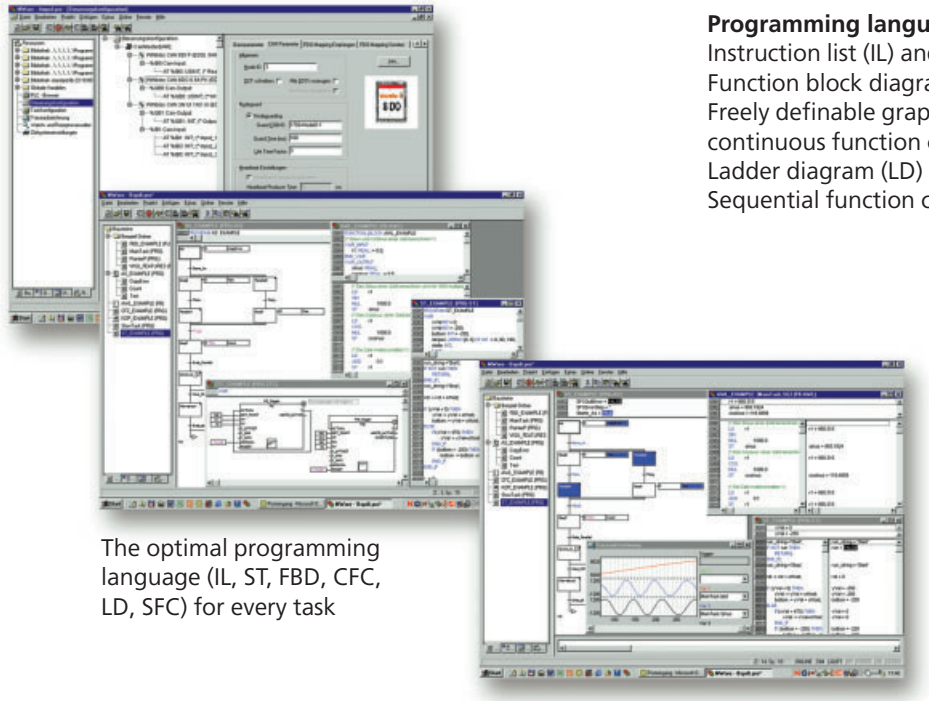
XIOC-BP-3
XIOC-BP-EXT



XSoft: Programming to International Standards

XSoft is a programming system for industrial PLCs in PLC line, compliant with the international Standard IEC61131-3. Fully developed technical features, easy handling and the widespread use of this software in the automation components of different manufacturers guarantee successful programming with this software.

User-friendly PLC configuration



The optimal programming language (IL, ST, FBD, CFC, LD, SFC) for every task

Extensive debugging and commissioning tools save time and money

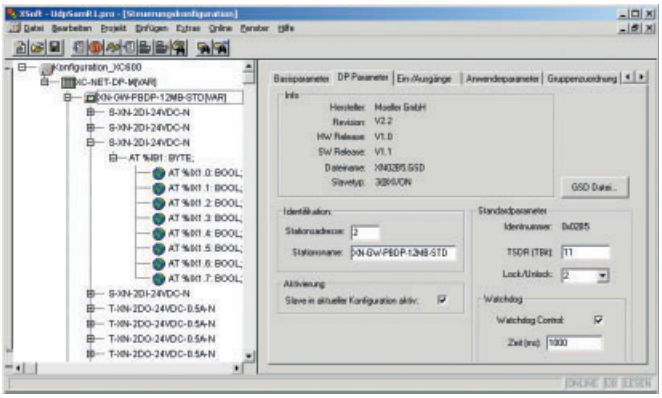
Numerous features facilitate the generation of the application, each with the single aim of saving costs by the reduction of engineering time.
This is just a selection of the available features: global search and replace, generation and utilisation of libraries, context-sensitive help, output of a cross-reference list, checking for unused variables.

Engineering feature
Auto Declare: automatic variable declaration
Auto format /syntax colouring
User-friendly project comparison

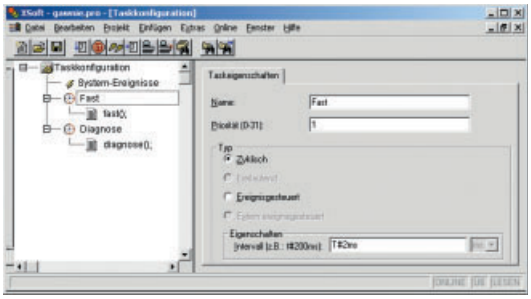
Programming languages
Instruction list (IL) and structured text (ST)
Function block diagram (FBD)
Freely definable graphical function block chart/ continuous function chart (CFC)
Ladder diagram (LD)
Sequential function chart (SFC)

Debugging and commissioning
XSoft offers you a number of important functions for debugging your PLC application quickly and efficiently, for testing and commissioning. All these features are available, as soon as you have logged onto the PLC (online mode).

Simulation
You can test your application program even without the controller being connected. For this purpose, XSoft provides integrated online simulation. You use this on the same operating surface and with the same handling procedure as though you were online with the controller connected.



Multitasking
The fact that the application is structured in several separate run-time programs (multitasking) optimises the resources of your control system and facilitates the implementation of time-critical tasks.
You can give priority to high-speed processes, and to slower processes aalocate only as much computer time as is necessary.



Fieldbus configurator included
The XSoft hardware configurator shows all the local I/O and the distributed peripherals (Profibus or CANopen) on a single level. This allows you to configure inputs and outputs directly, allocating their parameters and their symbolic names. This prevents assignment errors between peripherals and the IEC based program. In addition, you can also test the variables in online operation.

XSoft

Multitasking
Up to 16 time- and/or event-driven tasks

Visual display
Integrated tool supporting diagnostics and commissioning

Configuration
Configurator for local I/O, as well as CANopen and DP participants

Communication
RS232, Ethernet,
in distributed networks
via CANopen,
OPC-Server

WEB-page generation
Yes

Password protection
8 levels

Languages
English, German, French

Libraries
IEC, UDP, MMC/MC access, e-mail

Special characteristics
Network variables for cross traffic via CAN and Ethernet
WEB-page generation

	Description	Type Article no.	Price See Price List	Std. pack
XSoft Professional				
Programming and configuration software	Programming to IEC 61131-1 with IL, ST, LAD, FBS, AS, CFC Bus configuration: CANopen, PROFIBUS-DP, XI/ON, XI/OC Creation of visualizations for simulation and WEB visualization OPC configurator, extensive online and help functions Documentation as a PDF file	**XSOFT-PROFESSIONAL** 255930		1 off
Upgrade XSoft	XSoft 2.x must be installed Observe the ordering conditions	**XSOFT-PROFESSIONAL-U** 283396		1 off
XSoft toolbox				
Closed-loop control toolbox	The closed-loop control toolbox is a function block library comprising approx. 100 function blocks from the following areas: Regulating Pulse-width modulation Signal processing Simulation Mathematical functions CD - incl. documentation as a PDF file	**XSOFT-APPLIB-REG** 262547		1 off
Motion-control toolbox	The motion-control toolbox is a function block library comprising approx. 30 function blocks from the following areas: Step sequence Simulation of a rotating axis Frequency measurement Synchronization Other modules: Camshaft controller Hydraulics Reference position control Incremental encoder evaluation CD - incl. documentation as a PDF file	**XSOFT-APPLIB-MOTIONCONTROL** 262548		1 off

Notes

Ordering conditions for upgrades:
To use an upgrade, a previous version must be installed.
When the upgrade is installed, the system searches for a previous version.
The upgrade is the same as the standard version.
For information on updates in the Internet, see:
Internet address: www.moeller.net/automation