

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-6DO-XV

Program memory: 256 kByte
Data memory: 256 kByte

XC-CPU201-EC512K-8DI-6DO-XV

Program memory: 512 kByte
Data memory: 512 kByte

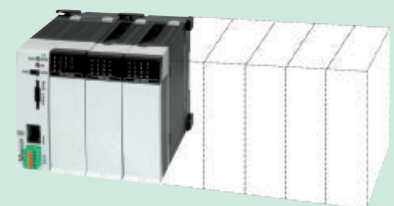
Ethernet integrated

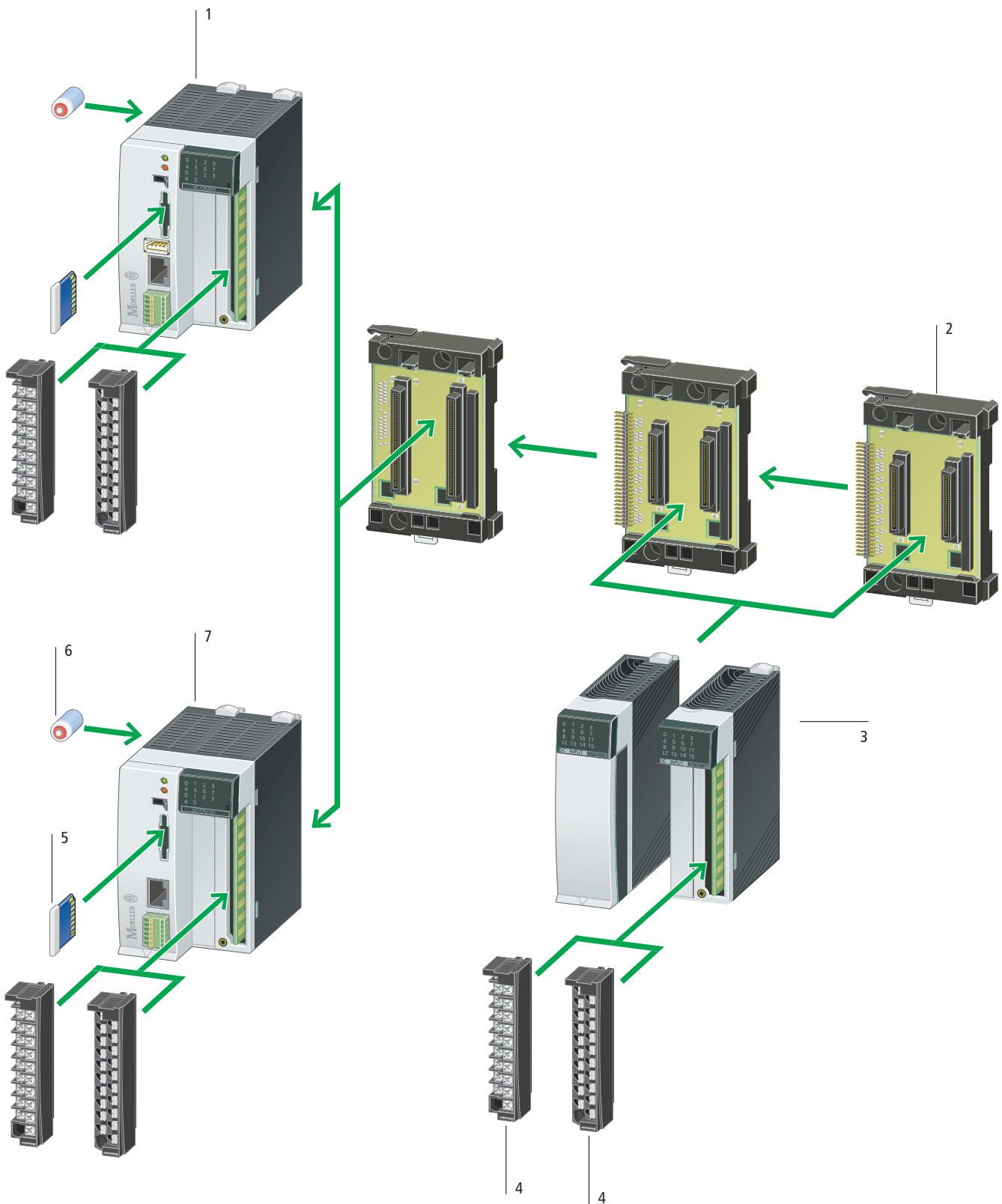
The 10/100 MBit Ethernet interface of the XC200 offers the perfect link to IT communication. Whether you need rapid access to programs, high-speed data exchange between PLC, WEB server or OPC, this is as easy and quick as you could wish.



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.

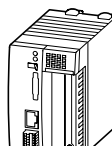
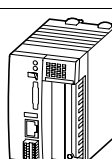
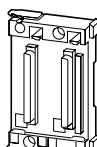




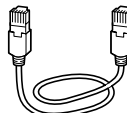
XC100	7	XI/OC I/O modules	3	Memory card (multi-media card)	5
Modular PLC		Space-optimized input/output modules		16/32 MB memory for program, recipes and visualization texts	
8 digital inputs		Local extension on XC100/200			
6 digital outputs		To be clipped onto XVision as MMI PLC			
4 interrupt inputs		Digital, analog, technology, counter and communication modules		→ Page 3/46	
CANopen fieldbus interface		XI/OC modules can be exchanged without the need to undo wiring			
RS232 interface					
Locally expandable with XI/OC					
→ Page 3/46		→ Page 3/66			
XC200	1	XI/OC terminal block	4	Battery	6
Modular PLC with Ethernet interface		Connection options via spring-loaded or screw terminals			
8 digital inputs		Exchange/remove without disconnecting wiring			
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		→ Page 3/67			
Rack	2				
XI/OC backplane					
For connecting the XC100 controller and the XI/OCmodules with the top-hat rail					
→ 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 × 2 × 0.22 mm ² Characteristic impedance: 100 – 120 Ω Effective capacitance: 800 Hz, max. 60 nF/km			

Modular PLC





			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





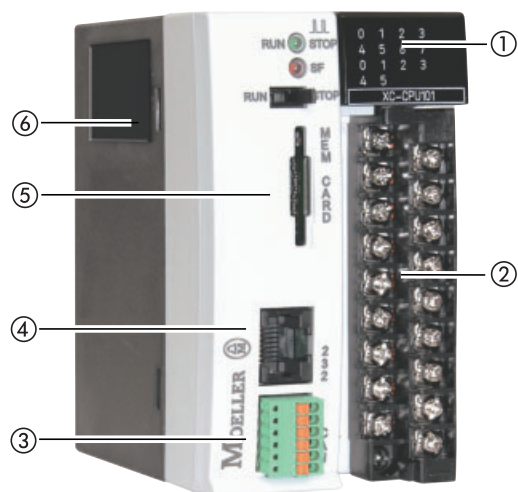
				XC-CPU201-EC256K-8DI-6DO(-XV)	XC-CPU201-EC512K-8DI-6DO(-XV)
General					
Standards				IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178
Ambient temperature		°C		0 to +55	0 to +55
Storage		°C		-25 to +70	-25 to +70
Mounting position				Horizontal	Horizontal
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%		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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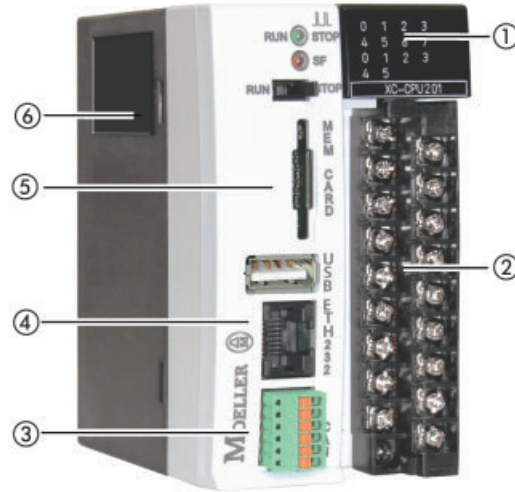
			XC-CPU201-EC256K-8DI-6DO(-XV)	XC-CPU201-EC512K-8DI-6DO(-XV)
Interfaces				
Ethernet				
Data transfer rate	MBit/s		10/100 Autodetect	10/100 Autodetect
Connection type			RJ45	RJ45
Electrical isolation			No	No
Serial interface (RS232) without handshake lines				
Data transfer rate	kBit/s		max. 115.2	max. 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 parameterized: 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

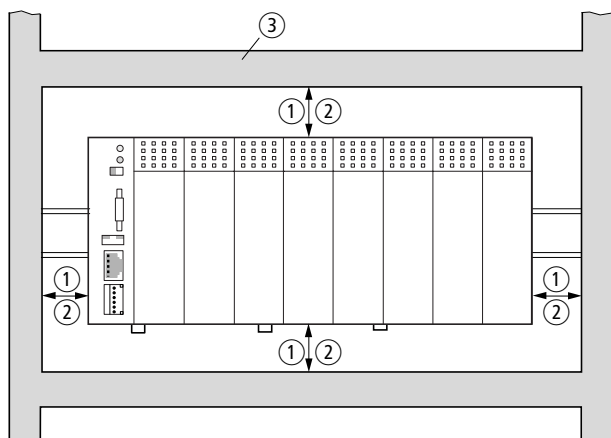


Layout of CPU module XC100/XC200

- 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

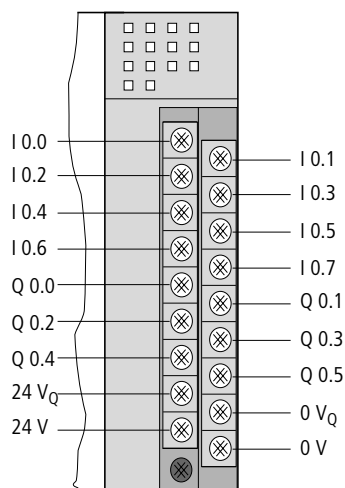
Mount the module rack and controller in a horizontal position in the switchgear cabinet – as shown in the following diagram.



Cabinet layout

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

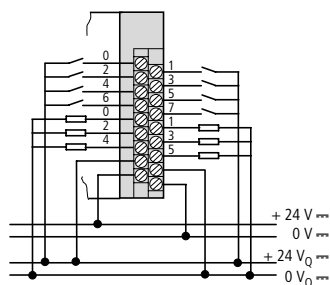
Terminal assignments



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:

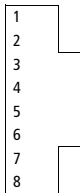
- 24 V to 24VQ and 0 V to 0VQ.

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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:

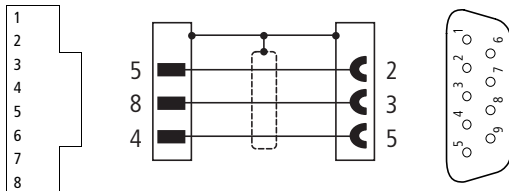
Pin	Designation	Description
4	GND	Ground
5	TxD	Transmit Data
7	GND	Ground
8	RxD	Receive Data



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:



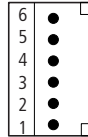
Pin	Designation	Description
2	RxD	Receive Data
3	TxD	Transmit Data
5	GND	Ground



CANopen interface,

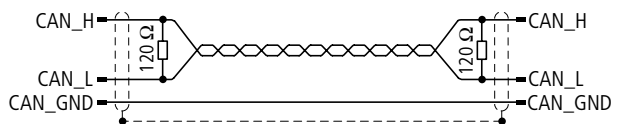
The 6-pole Combicon plug has the following pin assignments:

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

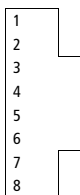
Interface parameters:

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.

Battery

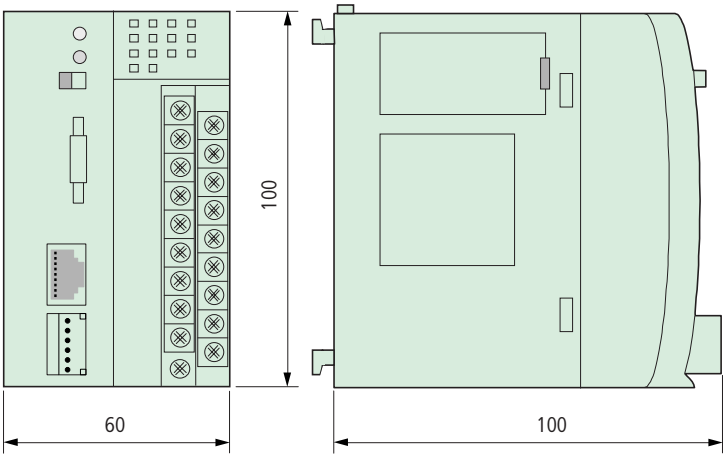
Data back-up buffering is provided with the help of a lithium battery, type 1/2 AA (3.6 V). The battery compartment can be found on the left side of the CPU module, behind a cover plate. The battery charge level is monitored. If the battery voltage falls below a preset threshold, a system fault signal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

The back-up buffer times are:

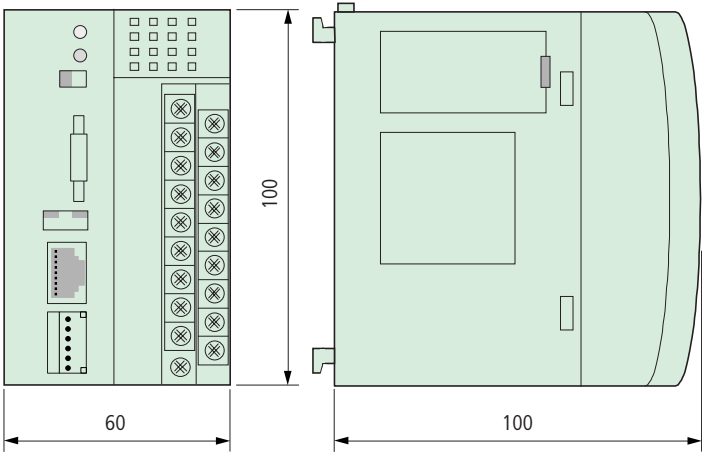
- Worst case: 3.3 years continuous buffering
- Typical: 19 years continuous buffering



XC-CPU101...



XC-CPU202...



Rack

XIOC-BP-XC

XIOC-BP-XC1

