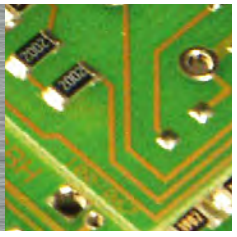
КОНТРОЛЛЕРЫ

Технические характеристики на ControlEdge PCD HPCD3.M6893

ControlEdge PCD - HPCD3.M6893

IEC Controller
Cyber Secure, IEC 61131-3



General

HPCD3.M6893

The powerfull HPCD3.M6893 is a cyber secure PLC and programmable in accordance with IEC 61131-3.
The high-level language for structured text (ST) according to IEC 61131-3, has a strong syntax and supports object-oriented methods. The most recent cyber security level (ANSI ISA 62443 – SL3/SL4) enables the use in mission critical and IoT / Cloud applications. This modular PLC provides integrated USB, Ethernet, RS-485 and is compatible to the modular and robust I/O System from the HPS PCD3 family.

Features

HPCD3.C200

Maximum peripheral connections

- Ethernet and USB-port onboard
- One serial interface RS-485 onboard
- One serial interface RS-485 pluggable on Slot A
- Up to 1023 central inputs/outputs with expansion module holder HPCD3.Cx00 (up to 64 modules with max. 16 contact points each). The first module holder must always be a HPCD3.C200
- Additional remote inputs/outputs via Modbus IP with HPCD3 controller and I/O modules

HPCD3 I/O modules in cassette form

More than 40 I/O modules available with different functionalities, see order details

- Status of digital signals indicated via LEDs
- Configurable process image via System Configuration software

HPCD3.C100

Efficient programming tools

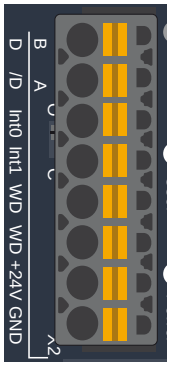
- IEC programming software ControlEdge PCD Builder from HPS with integrated System- and Account Management Configuration and comprehensive application components make programming convenient and efficient
- A coordinating combination of operating system and programming tool achieves maximum speed, reliability and functionality

General technical data / Operating conditions

Power supply	
Supply voltage (according EN/IEC 61131-2)	24 VDC –20 / +25%, incl. 5% ripples
Current / Power consumption (Without the burden of the I/Os)	typ. 175 mA / 4.2 W, max. 500 mA / 18 W
Load-carrying ability 5 V / 24 V internal	max. 600 mA / 100 mA
Short voltage interruption (according EN/IEC 61131-2)	≤ 10 ms with interval ≥ 1 s
Electrical data	
2 Interrupt inputs	24 VDC up to 100 Hz
Watchdog relay closing contact	48 VAC or VDC [1], 1 A
Real-time clock (RTC)	Yes
Supercap to support the real-time clock	10 days
Environmental influences	
Storage temperature (according EN/IEC 61131-2)	–25…+70 °C
Ambient temperature operating (according EN/IEC 61131-2)	0…+55 °C [2] or 0…+40 °C (depending on mounting situation)
Relative air humidity (acco 61131-2)	10…95 % r.h., non condensing
Mechanical	
Type of mounting	Top-hat rail according to DIN EN 60715 TH35 (formerly DIN EN 50022) (1 × 35 mm)
Protection	IP 20
Flame resis	UL 94 V0
Vibration (according EN/IEC 61131-2)	3.5 mm / 1.0 g sinusoidally
Shock (acco 61131-2)	15 g / 1 ms sinus half wave

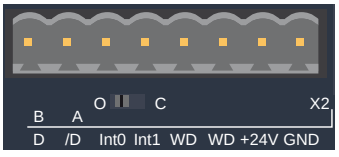
1) mount a free-wheeling diode over the load when switching DC tension

2) when assembling on vertical surface, all other mounting methods 0…40 °C



Pin		Explanation
1	D	Port #2
2	/D	RS-485 up to 115.2 kbit/s usable as free user interface
3	Int0	2 interrupt inputs 24 VDC or 1 rapid counter 24 VDC
4	Int1	
5	WD	Watchdog
6	WD	
7	+24V	Voltage supply
8	GND	

RS-485 terminator switch for Port #2

Switch	Switch position	Designation	Explanation
	left	o	without termination resistors
	right	c	with termination resistors

Communication interfaces

Interface	Marking	Port #	Desciption
Ethernet 1	**Eth 1**		Single Port, 10/100 MBit/s
Ethernet 2	**Eth 2.1** **Eth 2.2**		Two ports switched 10/100 MBit/s
USB Device	**USB**		One port with Remote NDIS driver, a virtual IP port for Programming, Commissioning, Service and Web access
USB Host	**Port 3**	**3**	One port for External Hardware Key/Dongle for software licensing
RS-485	**X2** **D + /D**	**2**	One port, not isolated for general purpose, up to 115.2 kbit/s, on board bus termination switch
Slot A	**Slot A** **X0**	**1**	One socket for PCD7.F110S or PCD7.F150S communication interface modules
Micro SD	**micro SD**		One Slot for optional Micro SD card PCD7.R-MSD1024 *
CAN	**X1** **CAN**		One port, galvanic isolated, hardware prepared for CAN 20a and 20b, up to 1 MBit/s, on board bus termination switch (120 Ω)

* The optional file system is requered for application programs handling user defined data

Connections X0 and X1

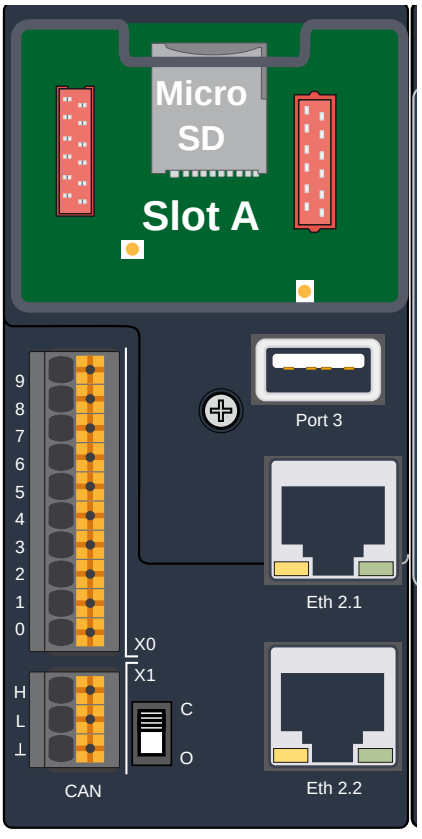
X0 – Communication interfaces: position Slot A

Pin	PCD7.F110S	PCD7.F150S
	RS-485	RS-485*
0	PGND	PGND
1	Rx-Rx	Rx-Rx
2	/Rx-/Tx	/Rx-/Tx
3		
4		
5	PGND	PGND
6		
7		
8		SGND
9		

* galvanic isolation

X1 – CAN bus terminal

Pin	Signal
H	CAN_H
L	CAN_L
⊥	CAN_GND



Protocol overview

Protocol	Interfaces	Application note
Engineering tool	Ethernet 1, 2, USB Device	Programming tool communication encrypted. Defaults: Port 11740 USB via RNDIS Driver, see factory set up
Modbus	Ethernet 1, 2	Modbus TCP Server and Client configurable via software Configurator. A maximum of 32 slaves can be attached to a master.
Profinet	Ethernet 1, 2	Station configurable via Software Configurator. Minimum Communication Cycle time 2 ms
OPC-UA	Ethernet 1, 2	Address space configurable according PLC-Open for IEC 61131-3 controllers. Encryption and Authentication configurable, default enabled
User defined	All	User defined protocols can be implemented via the application program based on system low level drivers like SysCom, …
CAN	CAN	Hardware prepared for CAN 20a, 20b. CAN raw, J1939 and CAN open. Not supported by standard product, available on demand.

Application notes

PLC program

- Program size: 10 MBytes
- Program Memory: 50 MBytes
- Program Memory, persistent none volatile: 128 KBytes

PCD3 I/O Process Image

I/O update via process image within one program,

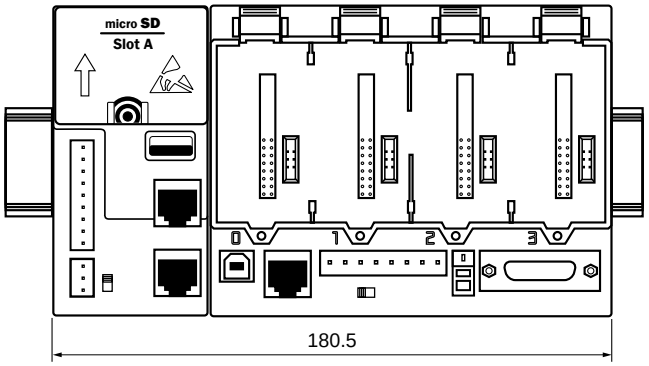
- Bus cycle task configurable, min. 2 ms
- Digital Inputs / Outputs: Update cycle 2 ms
- Analogue Input / Outputs: Update cycle per module (8 channels), multiple analogue module in parallel 50…100 ms

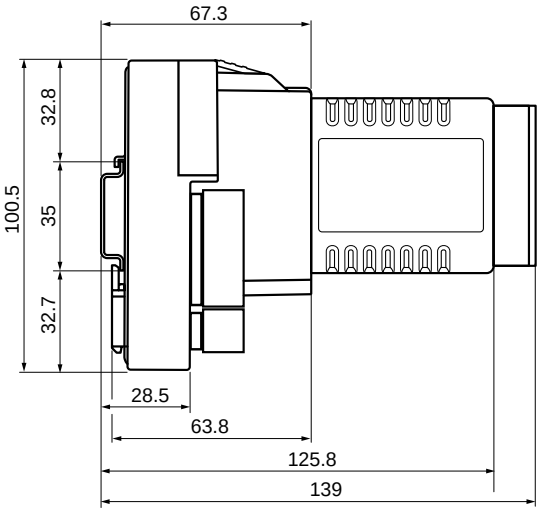
Factory set up

- USB Device RNDIS driver enabled, Firewall open for engineering tool IP address 169.254.1.1, Subnet 255.254.0.0
- Ethernet 1 Disabled
- Ethernet 2 Disabled
- Serial Com Port 2 Disabled
  Serial Com. Port on slot A Disabled

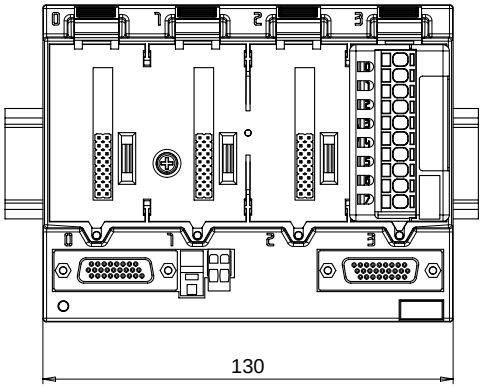
Dimension Drawing

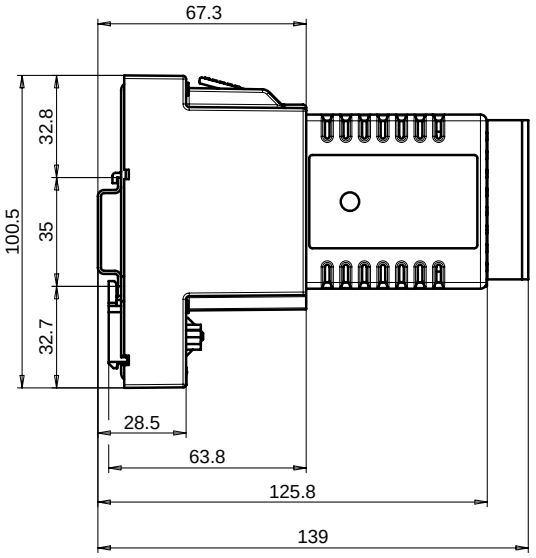
HPCD3.M6893



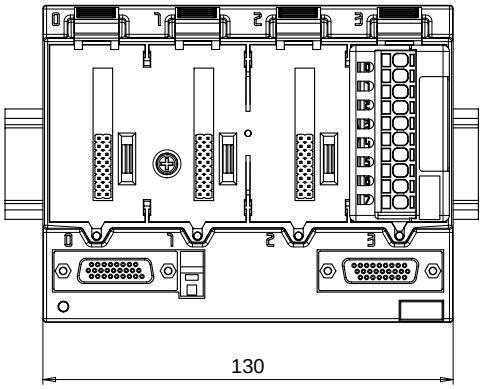


HPCD3.C200





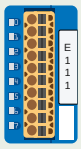
HPCD3.C100



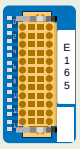
Dimensions like HPCD3.C200
(see drawing above)

Connecting plugs/terminals

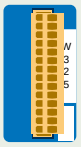
Type A
10-pin
2.5 mm²



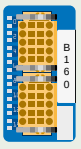
Type C
24-pin
1.0 mm²



Type E
14-pin
1.5 mm²



Type K
10-pin
1.0 mm²



▲ Spare terminals, ribbon connectors with system cables and separate terminals are ordered as accessories.

Compatibility note

Minimum required firmware package for all I/O modules: 3.0.0

Digital input modules

Type	Number of inputs	Input		Electrical isolation	Internal current draw		I/O connector type [3]
		voltage	delay		5 V-Bus [1]	V-Bus [2]	
PCD3.E110 PCD3.E111	8 8	15…30 VDC 15…30 VDC	8 ms 0.2 ms	---	24 mA 24 mA	---	A A
PCD3.E165 PCD3.E166	16 16	15…30 VDC 15…30 VDC	8 ms 0.2 ms	---	10 mA 10 mA	---	C C
PCD3.E500	6	80…250 VAC *	20 ms	●	1 mA	---	A
PCD3.E610 PCD3.E613	8 8	15…30 VDC 30…60 VDC	10 ms 9 ms	● ●	24 mA 24 mA	---	A A

* These ratings are not UL-listed

Digital output modules

Type	Number of outputs	Output switching capacity		Electrical isolation	Internal current draw		I/O connector type [3]
		DC	AC		5 V-Bus [1]	V-Bus [2]	
PCD3.A200 PCD3.A210	4, relay (make)* 4, relay (break)*	2 A/50 VDC** 2 A/50 VDC**	2 A/250 VAC 2 A/250 VAC	● ●	15 mA 15 mA	---	A A
PCD3.A220	6, relay (make)	2 A/50 VDC**	2 A/250 VAC	●	20 mA	---	A
PCD3.A251	8, relay (6 changeover + 2 make)	2 A/50 VDC***	2 A/48 VAC	●	25 mA	---	C
PCD3.A300	6, transistor	2 A/10…32 VDC	---	---	20 mA	---	A
PCD3.A400	8, transistor	0.5 A/5…32 VDC	---	---	25 mA	---	A
PCD3.A410	8, transistor	0.5 A/5…32 VDC	---	●	24 mA	---	A
PCD3.A465	16, transistor	0.5 A/10…32 VDC	---	---	10 mA	---	C

* With contact protection
** For UL 61010 compliant operation the following switching capacity applies: 2 A/35 VDC
*** For UL 61010 compliant operation the following switching capacity applies: 2 A/30 VDC

Analogue input modules

Type	Number of channels	Signal ranges/description	Resolution	Electrical isolation	Internal current draw		I/O connector type [3]
					5 V-Bus [1]	+ V-Bus [2]	
PCD3.W200	8 In	0…+10 V	10 Bit	---	8 mA	5 mA	A
PCD3.W210	8 In	0…20 mA [4]	10 Bit	---	8 mA	5 mA	A
PCD3.W220	8 In	Pt1000: –50 °C…400 °C Ni1000: –50 °C…+200 °C	10 Bit	---	8 mA	16 mA	A
PCD3.W300	8 In	0…+10 V	12 Bit	---	8 mA	5 mA	A
PCD3.W310	8 In	0…20 mA [4]	12 Bit	---	8 mA	5 mA	A
PCD3.W340	8 In	0…+10 V/0…20 mA [4] Pt1000: –50 °C…400 °C Ni1000: –50 °C…+200 °C	12 Bit	---	8 mA	20 mA	A
PCD3.W350	8 In	Pt100: –50 °C…+600 °C Ni100: –50 °C…+250 °C	12 Bit	---	8 mA	30 mA	A
PCD3.W360	8 In	Pt1000: –50 °C…+150 °C	12 Bit	---	8 mA	20 mA	A
PCD3.W380	8 In	–10 V…+10 V, –20 mA…+20 mA, Pt/Ni1000, Ni1000 L&S, NTC10k/NTC20k (configuration using software)	13 Bit	---	25 mA	25 mA	2× K
PCD3.W305	7 In	0…+10 V	12 Bit	●	60 mA	0 mA	I
PCD3.W315	7 In	0…20 mA [4]	12 Bit	●	60 mA	0 mA	I
PCD3.W325	7 In	–10 V…+10 V	12 Bit	●	60 mA	0 mA	I
PCD3.W745	4 In	Temperature module for TC type J, K and 4-wire Pt/Ni 100/1000	16 Bit	●	200 mA	0 mA	[5]

Analogue output modules

Type	Number of channels	Signal ranges/description	Resolution	Electrical isolation	Internal current draw		I/O connector type [3]
					5 V-Bus [1]	+ V-Bus [2]	
PCD3.W400	4 Out	0…+10 V	8 Bit		1 mA	30 mA	A
PCD3.W410	4 Out	0…+10 V/0…20 mA/4…20 mA jumper-selectable	8 Bit	---	1 mA	30 mA	A
PCD3.W600	4 Out	0…+10 V	12 Bit		4 mA	20 mA	A
PCD3.W610	4 Out	0…+10 V/–10 V…+10 V/ 0…20 mA/4…20 mA jumper-selectable	12 Bit	---	110 mA	0 mA	A
PCD3.W605	6 Out	0…+10 V	10 Bit	●	110 mA	0 mA	I
PCD3.W615	4 Out	0…20 mA/4…20 mA parameters can be set	10 Bit	●	55 mA	0 mA	I
PCD3.W625	6 Out	–10 V…+10 V	10 Bit	●	110 mA	0 mA	I

Overview of the internal bus capacity of the module holders

	HPCD3.M6893	HPCD3.C200
1) Internal	600 mA	1500 mA
2) Internal +V (24	100 mA	200 mA

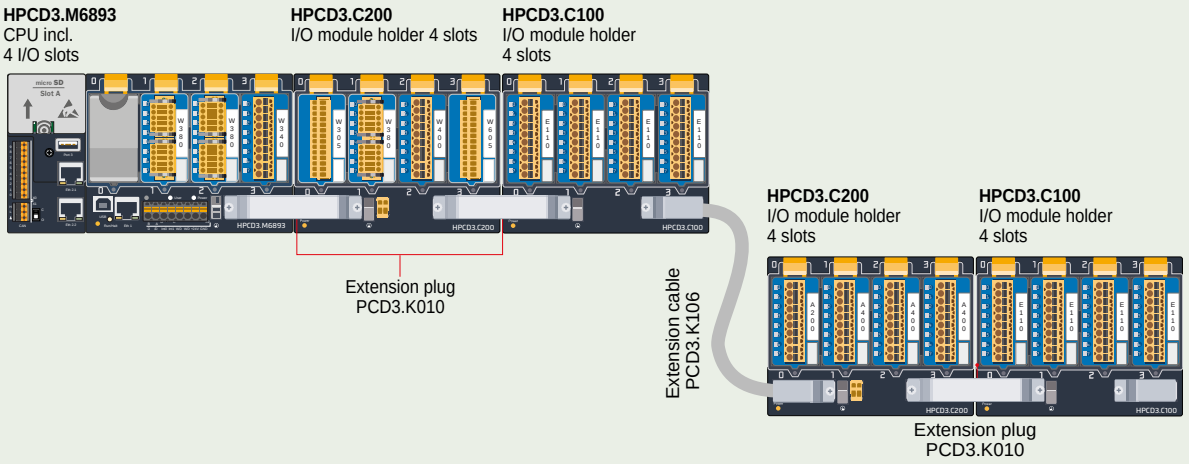
The electrical requirement of the internal +5V and +V bus for the I/O modules can be calculated in the Control Edge PCD IO-Calculator (Excel sheet)

3) Plug-in I/O terminal blocks are included with I/O modules.
Spare terminals, ribbon connectors with system cables and separate terminals have to be ordered as accessories.
4) 4 … 20 mA via user program
5) With soldered spring terminal block

Information for project planning with HPCD3 module holders

The internal load current taken by the I/O modules from the +5V and +V (24V) supply must not exceed the maximum supply current specified for the CPUs, RIOs or HPCD3.C200 module holders.

Example calculation for the current consumption of the internal +5V and +V (24V) bus of the I/O modules



Consumption M6893 + C200 + C100

Module	Internal 5V	Internal +V (24V)
Not used		
W380	25 mA	25 mA
W380	25 mA	25 mA
W340	8 mA	20 mA
Total M6893	**58 mA**	**70 mA**
W340	8 mA	20 mA
W340	8 mA	20 mA
W610	110 mA	0 mA
E160	10 mA	
Total C200	**136 mA**	**40 mA**
E160	10 mA	
E160	10 mA	
E160	10 mA	
E160	10 mA	
Total C100	**40 mA**	**0**
Total C200	**176 mA**	**40 mA**

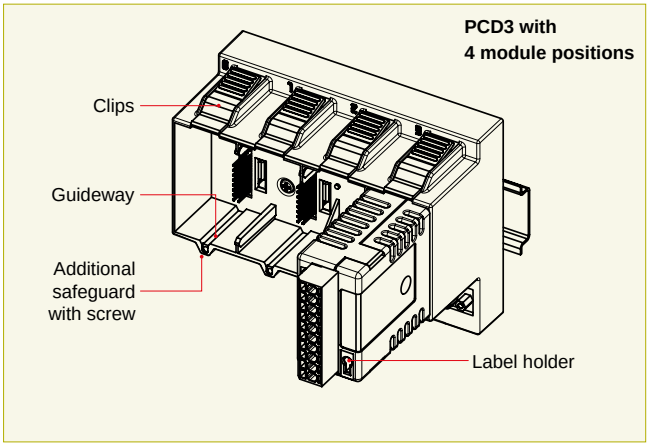
Consumption C200 + C100

Module	Internal 5V	Internal +V (24V)
A200	15 mA	
A810	40 mA	
A810	40 mA	
A860	18 mA	
Total C200	**113 mA**	
A460	10 mA	
A460	10 mA	
A460	10 mA	
W380	25 mA	25 mA
Total C100	**55 mA**	**25 mA**
Total C200	**168 mA**	**25 mA**

Capacity	HPCD3.M6893	HPCD3.C200
Internal 5V	600 mA	1500 mA
Internal +V (24V)	100 mA	200 mA

The calculation example shows that internal capacity is maintained in the CPU basic module HPCD3.M6895 and the holder module HPCD3.C200. The CPU basic module has a sufficient reserve to receive an additional communication module in the empty slot 0. The holder module HPCD3.C200 also has sufficient reserves to connect an additional HPCD3.C100 holder module. The power consumption of the internal +5V and +V (24 V) bus for the I/O modules can be calculated in the Control Edge PCD IO-Calculator Excel sheet.

Insertion of I/O modules



▲ **Simple exchange of I/O modules**

Over 40 modules available with different functionalities

Types

- ▶ **PCD3.Axxx** Digital output modules
- ▶ **PCD3.Exxx** Digital input modules
- ▶ **PCD3.Wxxx** Analogue input/output modules

The HPCD3.C200 is used to extend the I/O bus or for the internal power supply +5V and +V (24V) to a module segment. Please note the following rules:

- **Mandatory:** Insert a HPCD3.C200 after the HPCD3.M6893 and after each cable (at the start of a row).
- Do not use more than six HPCD3.C200 in a single configuration, or the time delay will exceed the I/O access time.
  Use a maximum of five PCD3.K106/K116 cables.
- If an application is mounted in a single row (max. 15 module holders), then after five HPCD3.C100 a HPCD3.C200 must be used to amplify the bus signal (unless the configuration ends with the fifth HPCD3.C100).
- If the application is mounted in multiple rows, the restricted length of cable means that only three module holders (1× HPCD3.C200 and 2× HPCD3.C100) may be mounted in one row.

The following aspects should be considered when planning HPCD3 applications:

- In keeping with lean automation, it is recommended to leave the first slot in the CPU basic module free for any subsequent expansions. This slot can accommodate simple I/O modules but also communication modules.
- The total length of the I/O bus is limited by technical factors; the shorter, the better.

The following aspects should be considered for UL conform applications:

- The HPCD3.M6893 base module may only be used with I/O modules listed in UL 61010.
- The HPCD3.M6893 base module is to be powered by an UL Class 2 certified power supply.
- Use only 60°/75° copper conductors.
- This device shall be installed in an industrial control panel or other suitable rated enclosure.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

HPCD3 I/O modules are not hot-plug capable:

- Carefully insert and remove the I/O modules after switching off the power supply (24V).

HPCD3.M6893

HPCD3.C200

HPCD3.C100

Order details

Type	Short description	Description	Weight
HPCD3.M6893	CPU base units for 4 plug-in I/O modules	HPCD3 controller without battery with 1 GByte RAM and 2 GByte Flash for operating system and user program, 1 Socket for user data micro-SD card, max. 32 GByte, 2 Ethernet, 1 RS-485, 1 socket for communication modules, 1 USB Device port for programming and service, 1 USB host, 1 CAN port (20a and 20b on demand) 2 interrupt inputs, 1 watch dog relay, extendable up to 1023 I/O. Supported HPCD3 - I/O Modules: PCD3.Ax, PCD3.Ex, PCD3.W2x, PCD3.W3x, PCD3.W4x, PCD3.W6x, PCD3.W745, PCD3.S100	560 g
HPCD3.C200	Extension module holder	Extension module holder for 4 I/O modules with terminal connectors for external 24 VDC power supply	440 g
HPCD3.C100	Extension module holder	Extension module holder for 4 I/O modules	420 g
PCD7.R-MSD1024	Micro SD card 1024 MB	uSD Flash memory card 1024 MByte (included SD Flash adapter)	10 g

Input/Output Simulator
PCD3.S100

10-
Connector type “A”
4 405 4954 0

24-
Connector type “C”
4 405 4954 0

10-
Connector type “K”
4 405 5048 0

Connecting plug
PCD3.K010

Extension cable 0.7 / 1.2 m
PCD3.K106 / PCD3.K116

Accessories

Type	Short description	Description	Weight
PCD3.S100	Input/Output Simulator	Input/Output Simulator for HPCD3.M/.T/.C (for ex. for test assembly or workshop models)	180 g
4 405 4954 0	Connector type “A”	Plug-in screw terminal block, 10-pin (type A) for wires up to 2.5 mm², labelling 0…9	15 g
4 405 4956 0	Connector type “C”	Plug-in I/O spring terminal block, 2 × 12-pole up to 1.0 mm², labelled 0 to 23 for modules with 16 I/Os or relay module ..A251, connector type “C”	15 g
4 405 5048 0	Connector type “K”	Plug-in spring terminal block, 2 × 5-pole up to 1.0 mm² (orange block), labelled 0 to 9, connector type “K”	6 g
PCD3.K010	Connection plug	Connection plug HPCD3.M/T/C to HPCD3.Cx00	40 g
PCD3.K106	Extension cable 0.7 m	Extension cable for HPCD3.M/T/C to HPCD3.Cx00 (length 0.7 m)	140 g
PCD3.K116	Extension cable 1.2 m	Extension cable for HPCD3.M/T/C to HPCD3.Cx00 (length 1.2 m)	180 g

По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
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