Operator unit CDPX

FESTO

Characteristics

At a glance

Operator units CDPX from Festo are a combination of high-performance processors and wide-screen technology. They offer more functions and higher resolution for human-machine interfaces.

PoE (Power-over-Ethernet) for maximum connection simplicity with standard CAT 5 shielded cabling. Full IP protection with dedicated connectors for maximum installation flexibility, from mounting arm to a simple M22 drilled hole. The product includes environmental and motion sensors that make this a true IoT edge device for Industry 4.0 applications.

The CDPX product family has been optimised for use as an embedded browser or Designer Studio HMI device
- Open platform for Linux applications
- Powerful HTML5-compatible browser with graphics accelerator
- Designer Studio runtime environment with OPC UA (Open Platform Communications Unified Architecture) server and client

Display format

The operator units CDPX visualise data and operate simultaneously as an on-site server and with external clients worldwide; it is simply networked using the Ethernet interface with integrated switch. They benefit from high-resolution graphic displays, as well as simple intuitive project planning and programming in the Designer Studio. They are perfect in combination with CODESYS controllers from Festo or ModbusTCP networks and flexibly display a wide range of data and parameters in an easy, graphical format. Thanks to the modern touch technology, the communication with machines and systems couldn't be easier. With the optionally integrable CODESYS controller, the operator units CDPX can be expanded into a space-saving control concept.

Device version

[B] Browser version	[E1] Performance version
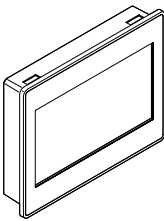
The products are designed to offer an excellent price/performance ratio for demanding applications. They are the ideal choice for HMI applications in factory and building automation.

- Full support of vector graphics, native support of SVG graphic objects, transparency and alpha blending
- Dynamics of screen objects: control visibility and transparency, move, resize, rotate any object on the screen
- Makes it easy to create, install, and manage applications in multiple languages to meet global requirements
- Extensive state-of-the-art HMI functions: data acquisition and logging, trending, alarm handling, scheduler and scheduled actions, security and user management, email and RSS feeds
- Selection of communication drivers with the option to communicate with multiple drivers
- Remote monitoring and controller with client-server functionality
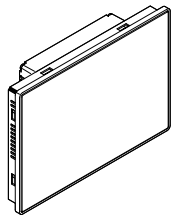
The products are designed as IoT edge devices combining a powerful controller with networking capability (up to 3 Ethernet networks) and excellent communication options including client/server OPC UA. They are the ideal choice for all demanding IoT edge applications in factory and process automation.

- Designer Studio runtime environment with OPC UA server and client
- Optional CODESYS V3 PLC for integrated HMI and control applications including PROFINET I/O and EtherCAT® master
- Optional plug-in modules for CAN field bus system as well as digital and analogue I/Os

Characteristics

[E2]   Field version
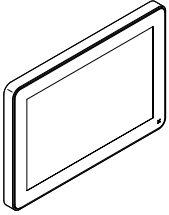
The products are ideal for on-site installation in critical areas. High-resolution displays and multi-touch PCAP touchscreen with sturdy glass front. Power-over-Ethernet (PoE) for maximum connection simplicity with standard CAT 5 shielded cabling. Full IP protection with dedicated connections for maximum installation flexibility.

- Optional CODESYS V3 PLC for integrated HMI and control applications
- Built-in sensors (temperature and acceleration)

Function module

The expansion of the CDPX series with the PLC operating system CODESYS, a CANopen master module, as well as 2 I/O modules with digital and analogue I/O channels. The integration of CODESYS in the operator unit CDPX creates a so-called PAC (Programmable Automation Controller), the combination of a PLC and an operator unit. The PLC functions are programmed in the programming languages LDR, IL, ST, FBD, SFC or CFC. External components can be controlled via the integrated Ethernet interfaces using the ModbusTCP, EtherCAT® or PROFINET protocol. If the application requires local digital and/or analogue inputs and outputs, one or two of the I/O modules – which are also optional – are plugged onto the back of the CDPX operator unit.

Type code

001	Series	
CDPX	Operator unit	

002	Function module	
F	Fieldbus connection	
X	CPU	
EA	Inputs/outputs	
SL	Software licence	

003	Device version	
	None	
B	Browser version	
E1	Performance version	
E2	Field version	

004	Display format	
	None	
W	Widescreen 16:9	

005	Display size ["]	
	None	
4	4.3"	
5	5"	
7	7"	
10	10.4"	
15	15"	
21	21"	

006	EU certification	
	None	
EX2	II 3GD	

Datasheet

General technical data, browser version [B]

Display size	4.3"	7"	10.1"
Display type	TFT colour		
Display characteristics	Touchscreen		
Display	With backlighting		
Type of mounting	Front panel mounting		
Display resolution	480x272 pixels	800x480 pixels	1024x600 pixels
CPU data	256 MB RAM		
Number of colours	64 M	64 k	
Length	34 mm		
Width	147 mm	187 mm	282 mm
Height	107 mm	147 mm	197 mm
Mounting depth	29 mm		
Max. front panel thickness	5 mm		
Product weight	400	600	1,000

Electrical characteristics, browser version [B]

Display size	4.3"	7"	10.1"
Nominal operating voltage DC	24		
Operational voltage range DC	10 … 32 V		
Current consumption at nominal operating voltage	0.25 A	0.3 A	0.38 A
Programming software	Designer Studio		
PLC interface	RS485		
Supported PLC protocol	CoDeSys 3.X Modbus RTU client Modbus RTU server Modbus TCP client ModbusTCP server		
USB interface	yes		
Ethernet interface	RJ45 10/100 MBd		
Backup battery	Super capacitor		
Real-time clock	Yes		
Deviation, real-time clock	<100 ppm at 25°C		

Operating and environmental conditions, browser version [B]

Ambient temperature	0 … 50°C
Note on ambient temperature	For vertical mounting
Storage temperature	-20 … 70°C
Relative air humidity	5 - 85% Non-condensing
Degree of protection	IP20 IP66
Note on degree of protection	IP20 rear IP66 front
CE mark (see declaration of conformity)	To EU EMC Directive In accordance with EU RoHS Directive
CE marking (see declaration of conformity)	To UK instructions for EMC To UK RoHS instructions
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364 zone III
Approval	c UL us listed (OL)

Datasheet

General technical data, performance version [E1]			
Display size	7"	10.1"	15.6"
Display type	TFT colour		
Display characteristics	Touchscreen		
Display	With backlighting		
Type of mounting	Front panel mounting		
Display resolution	800x480 pixels	1280x800 pixels	1366x768 pixels
CPU data	1 GB RAM		2 GB RAM
Number of colours	16 M		
Length	55 mm	64 mm	
Width	187 mm	282 mm	422 mm
Height	147 mm	197 mm	267 mm
Mounting depth	47 mm	56 mm	
Max. front panel thickness	8 mm		
Product weight	1,300	1,700	4,100

Electrical characteristics, performance version [E1]			
Display size	7"	10.1"	15.6"
Nominal operating voltage DC	24		
Operational voltage range DC	10 ... 32 V		
Current consumption at nominal operating voltage	0.7 A	1 A	1.2 A
Programming software	Designer Studio		
PLC interface	RS485		
Supported PLC protocol	CoDeSys 3.X Modbus RTU client Modbus RTU server Modbus TCP client ModbusTCP server		
USB interface	yes		
Additional functions	SD card slot		
Ethernet interface	RJ45 10/100 MBd		
Backup battery	Rechargeable lithium battery		
Real-time clock	Yes		
Deviation, real-time clock	<100 ppm at 25°C		

Operating and environmental conditions, performance version [E1]	
Ambient temperature	-20 ... 60°C
Note on ambient temperature	For vertical mounting
Storage temperature	-20 ... 70°C
Relative air humidity	5 - 85% Non-condensing
Degree of protection	IP20 IP66
Note on degree of protection	IP20 rear IP66 front
CE mark (see declaration of conformity)	To EU EMC Directive In accordance with EU RoHS Directive
CE marking (see declaration of conformity)	To UK instructions for EMC To UK RoHS instructions
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364 zone III
Approval	c UL us listed (OL)

Datasheet

General technical data, field version [E2]					
Display size	5"	7"	10.1"	15.6"	21.5"
Display type	TFT colour				
Display characteristics	Touchscreen				
Display	With backlighting				
Type of mounting	VESA interface				
Display resolution	800x480 pixels	1025x600 pixels	1280x800 pixels	1366x768 pixels	1920x1080 pixels
CPU data	1 GB RAM			2 GB RAM	
Number of colours	16 M				
Length	34 mm			43 mm	
Width	148 mm	195 mm	265 mm	399 mm	534 mm
Height	105 mm	132 mm	138 mm	248 mm	326 mm
Mounting depth	17 mm				
Max. front panel thickness	17 mm			26 mm	
Product weight	500	700	1,200	4,000	6,000

Electrical characteristics field version [E2]					
Display size	5"	7"	10.1"	15.6"	21.5"
Nominal operating voltage DC	–				
Operational voltage range DC	–				
Current consumption at nominal operating voltage	–				
Programming software	Designer Studio				
PLC interface	–				
Supported PLC protocol	CoDeSys 3.X Modbus RTU client Modbus RTU server Modbus TCP client ModbusTCP server				
USB interface	yes				
Ethernet interface	RJ45 10/100 MBd				
Backup battery	Rechargeable lithium battery				
Real-time clock	Yes				
Deviation, real-time clock	<100 ppm at 25°C				

Operating and environmental conditions, field version [E2]	
Ambient temperature	-20 … 55°C
Note on ambient temperature	For vertical mounting
Storage temperature	-30 … 80°C
Relative air humidity	5 - 85% Non-condensing
Degree of protection	IP67
Note on degree of protection	In assembled state
CE mark (see declaration of conformity)	To EU EMC Directive In accordance with EU RoHS Directive
CE marking (see declaration of conformity)	To UK instructions for EMC To UK RoHS instructions
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364 zone III
Approval	c UL us listed (OL)

Datasheet

Digital inputs I/O module		
I/O variant	1 digital input, 2 digital outputs and 1 analogue output	20 digital inputs, 12 digital outputs, 4 analogue inputs and 2 analogue outputs
Digital input, number	8	20
Digital inputs, high-speed counter inputs	–	2
Digital inputs, incremental encoder connection	–	2
Digital inputs, input signal delay	0.1 ms 3 ms 10 ms 20 ms	
Digital inputs, input voltage/current	24 V DC	
Digital inputs, nominal value for TRUE	12 - 30 V DC	
Digital inputs, nominal value for FALSE	0 V	
Digital inputs, electrical isolation	yes	

Analogue inputs I/O module		
I/O variant	1 digital input, 2 digital outputs and 1 analogue output	20 digital inputs, 12 digital outputs, 4 analogue inputs and 2 analogue outputs
Analogue inputs, number	–	4
Analogue inputs, resolution	–	12 bit
digital input, signal range	–	0 - 10 V 0 - 20 mA 8 single-ended/4 differential PT 100 ± 10 V
Analogue inputs, absolute accuracy at 25°C	–	0.1%
Analogue inputs, linearity error at 25 °C	–	0.1% FS
Analogue inputs, input resistance	–	47 Ohm

Digital outputs I/O module		
I/O variant	1 digital input, 2 digital outputs and 1 analogue output	20 digital inputs, 12 digital outputs, 4 analogue inputs and 2 analogue outputs
Digital outputs, number	7	12
Digital outputs, contact	1 relay	–
Digital outputs, output voltage	12 - 30 V DC	
Digital outputs, output current	0.5 A	
Digital outputs, electrical isolation	yes	
Digital outputs, short circuit current rating	yes	
Digital outputs, overload protection	yes	

Analogue outputs I/O module		
I/O variant	1 digital input, 2 digital outputs and 1 analogue output	20 digital inputs, 12 digital outputs, 4 analogue inputs and 2 analogue outputs
Analogue outputs, number	–	4
Analogue outputs, resolution	–	12 bit
Analogue outputs, max. load impedance	–	470 Ohm
digital output, signal range	–	± 10 V
Analogue outputs, linearity error at 25°C	–	± 0.2%

Datasheet

General technical data, I/O module

I/O variant	1 digital input, 2 digital outputs and 1 analogue output	20 digital inputs, 12 digital outputs, 4 analogue inputs and 2 analogue outputs
Length	41	125
Height	89	
Mounting depth	34	
Product weight	80	230

Operating and environmental conditions I/O module

Ambient temperature	0 … 50
Storage temperature	-20 … 70
Relative air humidity	5 - 85% Non-condensing
CE mark (see declaration of conformity)	To EU EMC Directive In accordance with EU RoHS Directive
CE marking (see declaration of conformity)	To UK instructions for EMC To UK RoHS instructions
Approval	C-Tick, c UL us listed (OL)
Degree of protection	IP20
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364 zone III

General technical data, bus interface

Fieldbus interface	CANopen
Field bus interface, connection system	Plugs Sub-D 9-pin
Field bus interface, transmission rate	9.6 kbit/s to 1 Mbit/s
Length	41
Height	91
Mounting depth	24
Product weight	150

Operating and environmental conditions, bus interface

Ambient temperature	0 … 50
Storage temperature	-20 … 70
Relative air humidity	5 - 85% Non-condensing
CE mark (see declaration of conformity)	To EU EMC Directive, In accordance with EU RoHS Directive
CE marking (see declaration of conformity)	To UK instructions for EMC, To UK RoHS instructions
Approval	C-Tick, c UL us listed (OL)
Degree of protection	IP20
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364 zone III

General technical data, software licence

Programming software	CODESYS provided by Festo V3.5
Programming language	LDR IL ST FBD SFC CFC
Ethernet, supported protocols	TCP/IP, EasyIP, Modbus TCP

Dimensions

Dimensions – Browser version [B]
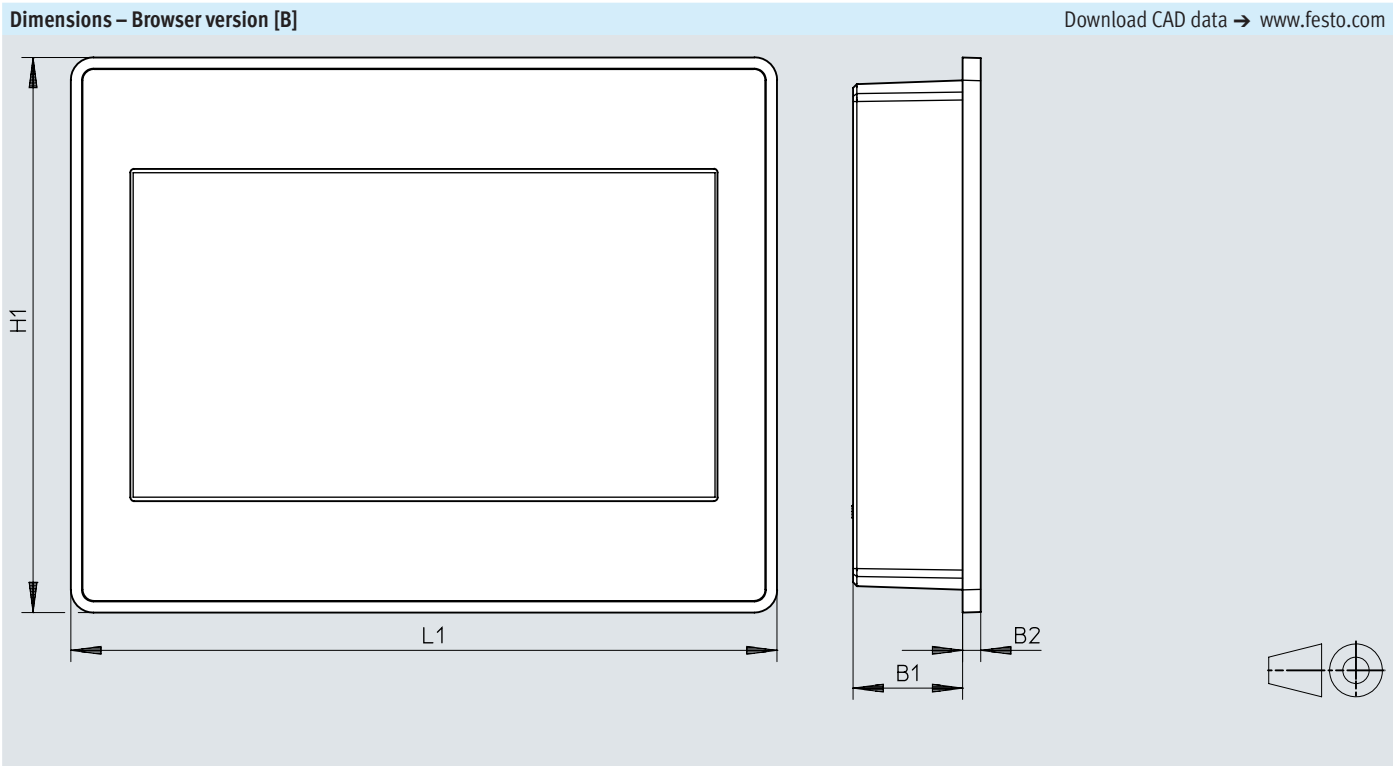
	B1	B2	H1	L1
CDPX-X-B-W-4	29	5	107	147
CDPX-X-B-W-7	29	5	147	187
CDPX-X-B-W-10	29	6	197	282

Dimensions

Dimensions – Performance version [E1]
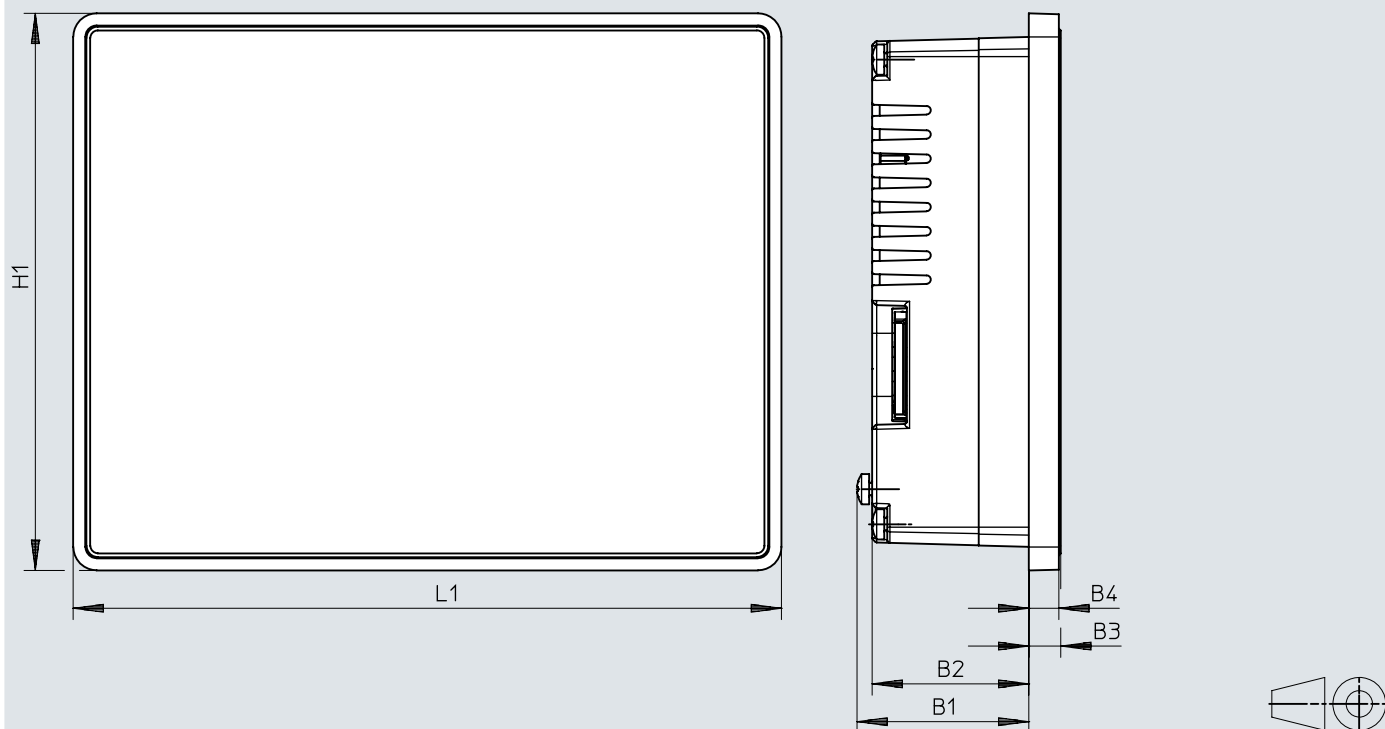
	B1	B2	B3	B4	H1	L1
CDPX-X-E1-W-7	47	42	8,5	8	147	187
CDPX-X-E1-W-10	52	48	8,5	8	197	282
CDPX-X-E1-W-15	56	52	8,5	8	267	422

Dimensions

Dimensions – Field version [E2]
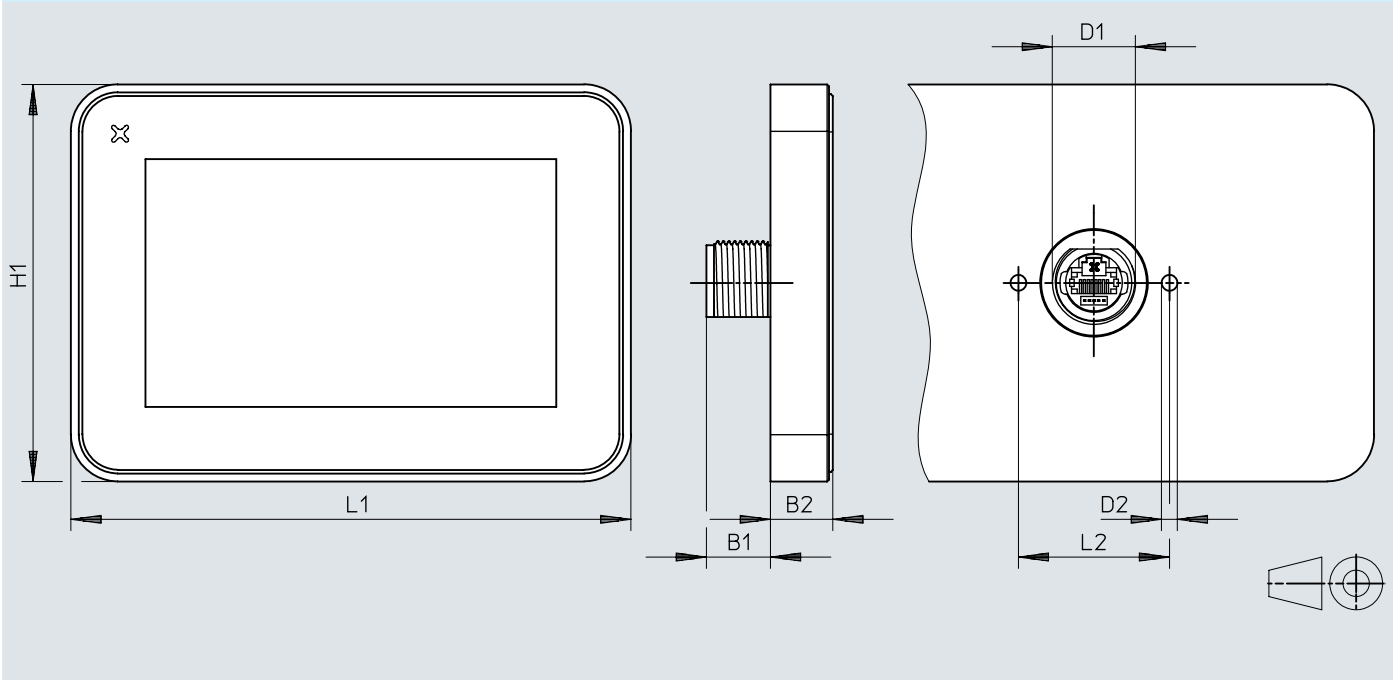
	B1	B2	D1	D2 Ø	H1	L1	L2
CDPX-X-E2-W-5-EX2	17	16,5	M22	M5x5 (2x)	105	148	40
CDPX-X-E2-W-7-EX2	17	16,5	M22	M5x5 (2x)	132	195	40
CDPX-X-E2-W-10-EX2	17	16,5	M22	M5x5 (2x)	183	265	40
CDPX-X-E2-W-15-EX2	17	26,5	M22	M5x5 (4x)	248	399	40
CDPX-X-E2-W-21-EX2	17	26,5	M22	M5x5 (4x)	326	534	40

Dimensions
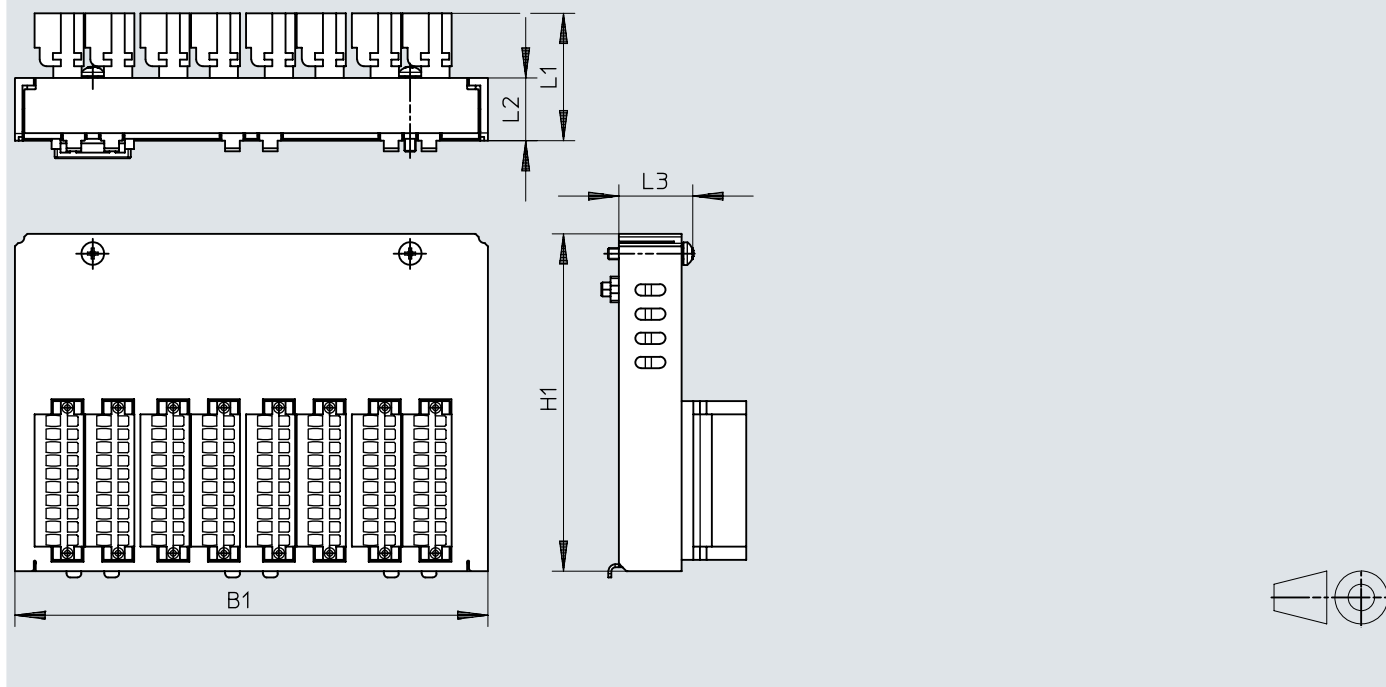
	B1	H1	L1	L2	L3
CDPX-EA-V1	125,2	89,3	33,7	16,6	20

Dimensions
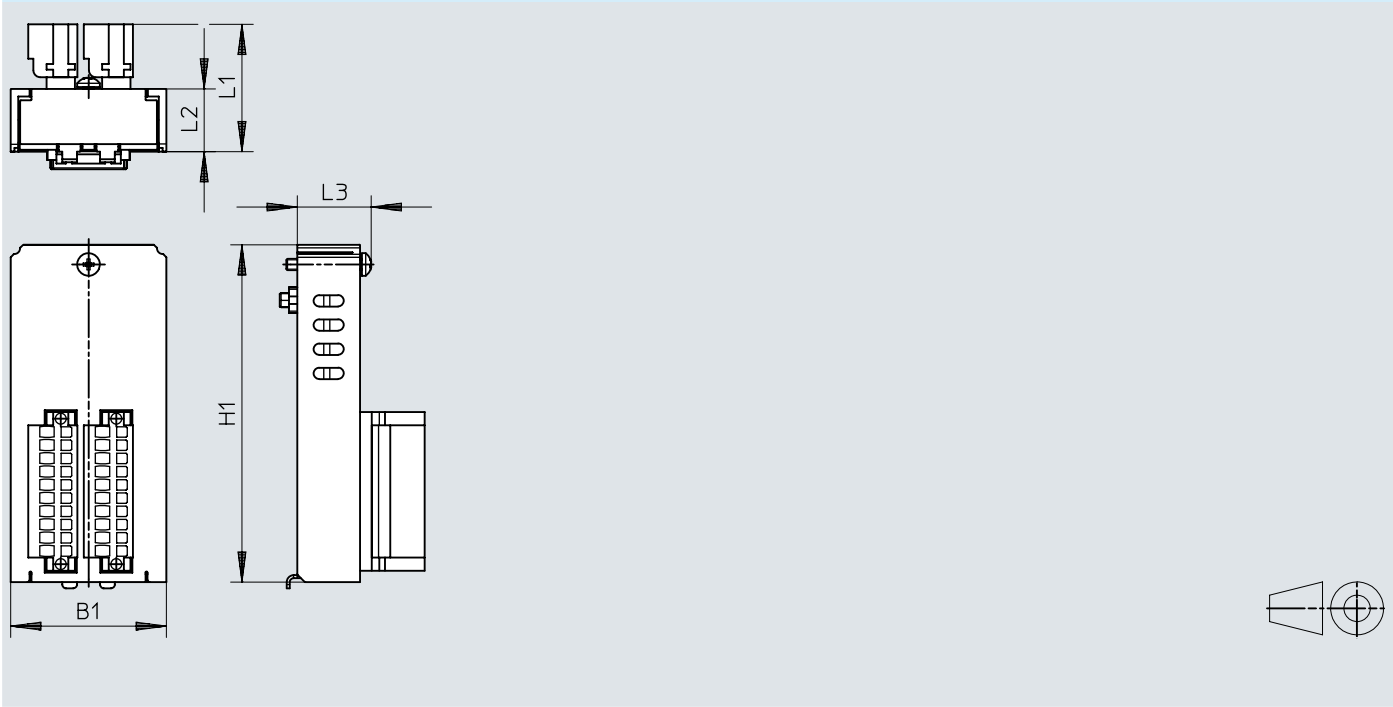
	B1	H1	L1	L2	L3
CDPX-EA-V2	41,2	89,3	33,7	16,6	20

Dimensions
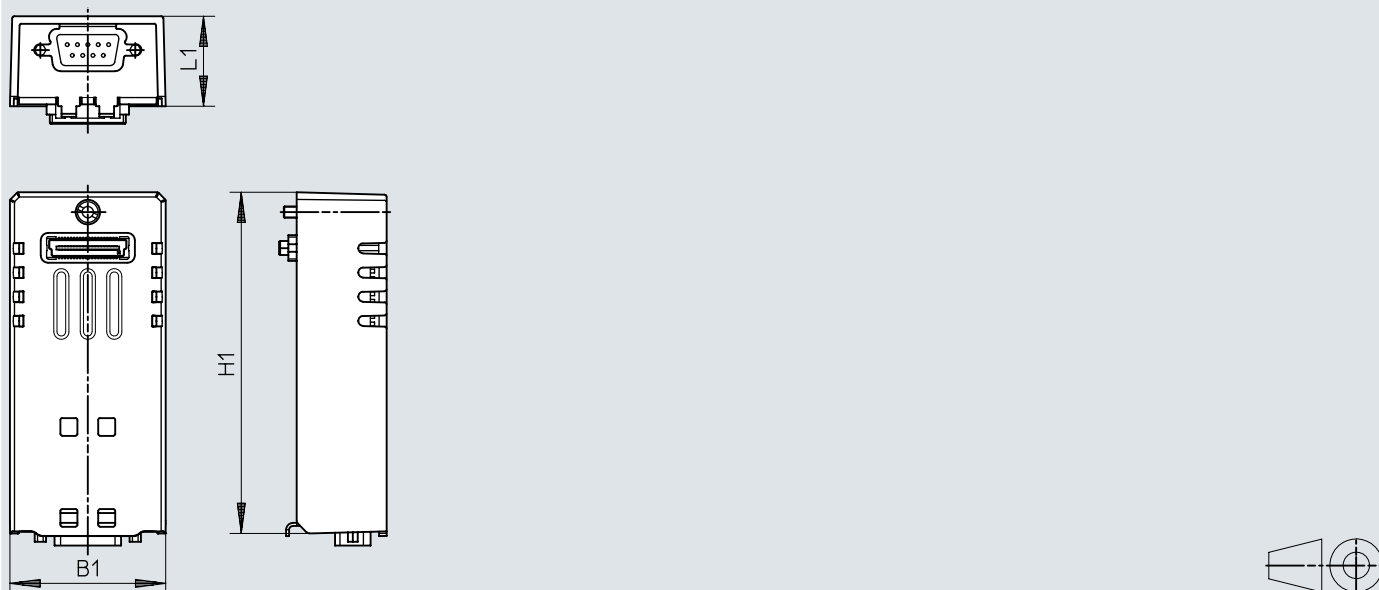
	B1	H1	L1
CDPX-F-CO	41,2	90,3	23,8

Dimensions

Dimensions – Retaining bracket CAFM   Download CAD data ➜ www.festo.com
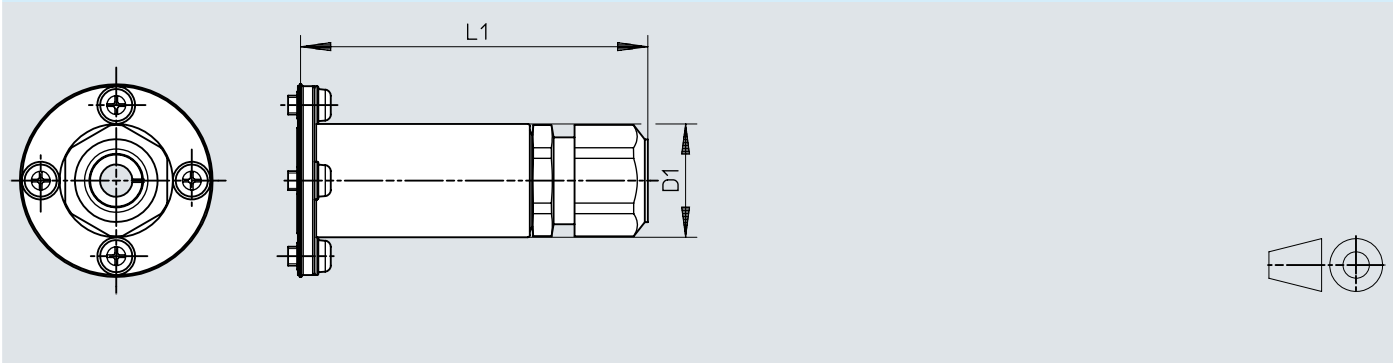
	D1 Ø	L1
CAFM-D4-Q	30	88

Dimensions
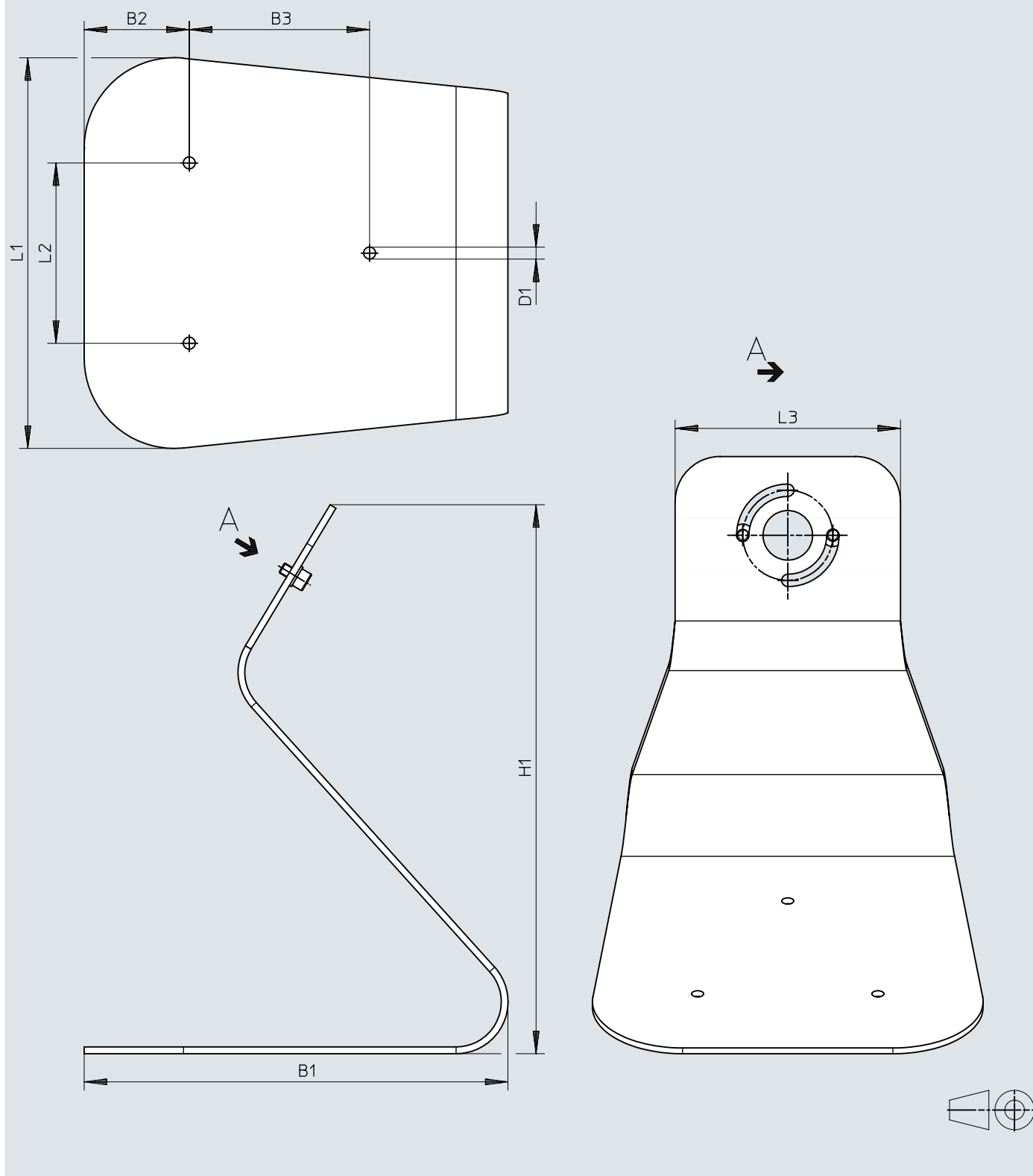
	B1	B2	B3	D1 Ø	H1	L1	L2	L3
CAFM-D4-DE	29	22	4	49	20	25,6	35,6	2

Dimensions

Dimensions – VESA adapter CAFM   Download CAD data ➔ www.festo.com
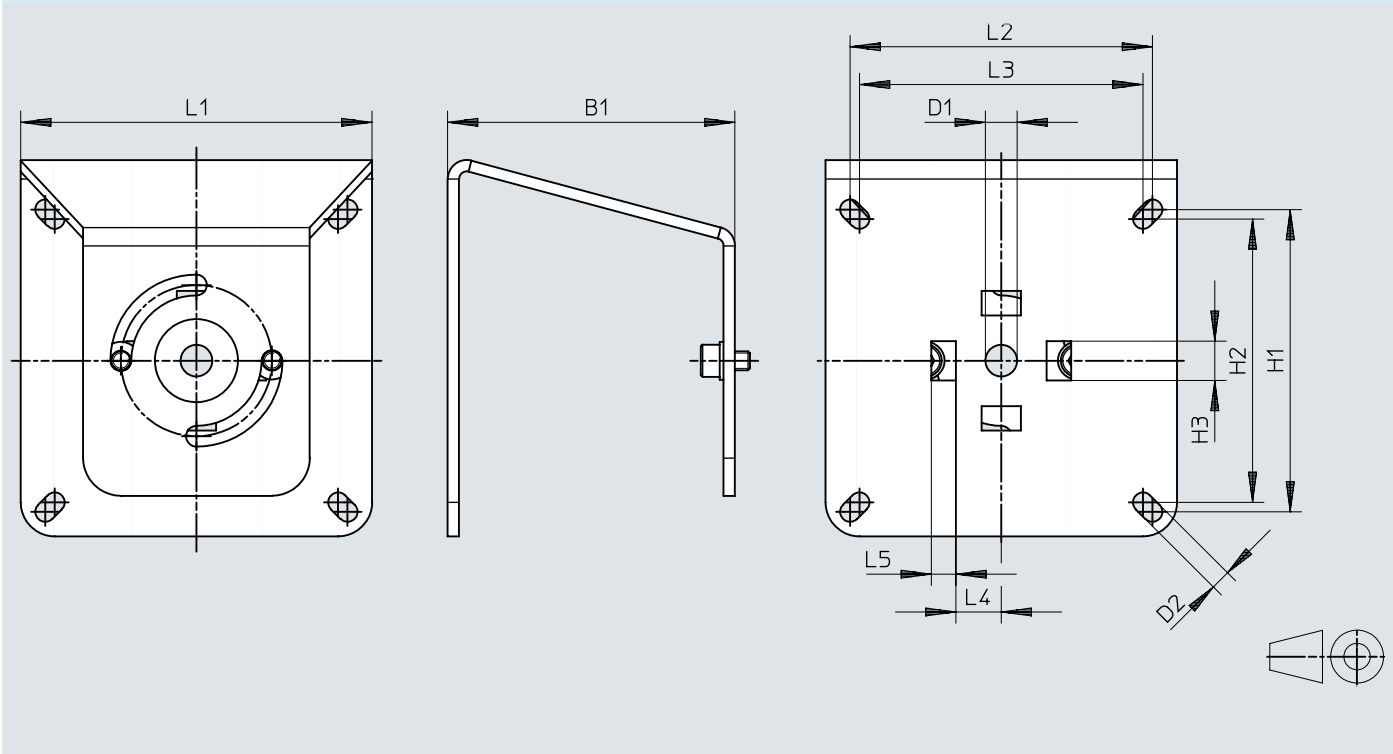
	B1	H1	H2	H3	D1 Ø	D2	L1	L2	L3	L4	L5
CAFM-D4-VE	76	80	75	10,4	8,4	5,3	93	80	75	12	6,5

Dimensions
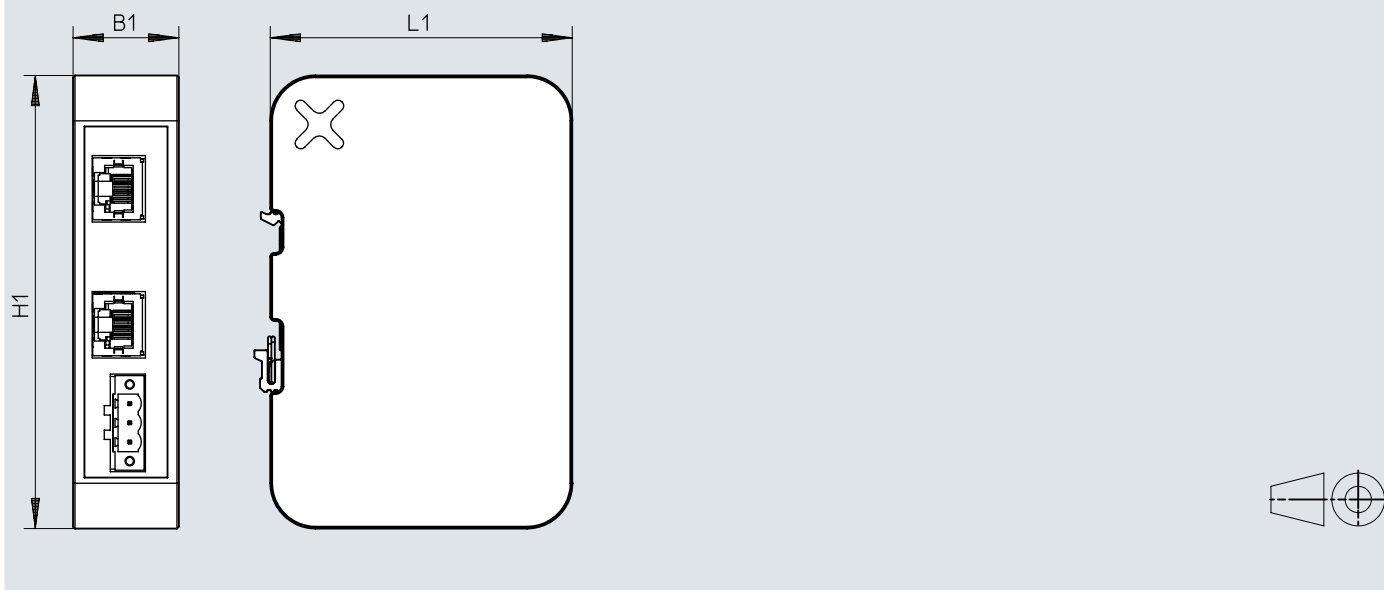
	B1	H1	L1
CACN-H-1-PE-EX2	28	120	80

Dimensions

Dimensions – Connecting cable NEBC Download CAD data ➔ www.festo.com
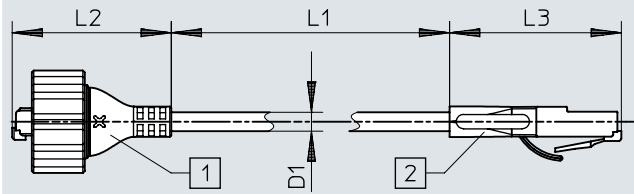
[1]   Field device side, electrical connection 1: RJ45

[2]   Control side, electrical connection 2: RJ45

	D1 Ø	L1	L2	L3
NEBC-R3G8M22-P-5-N-S-R3G8	25	5000	~42,1	~45,5

Dimensions
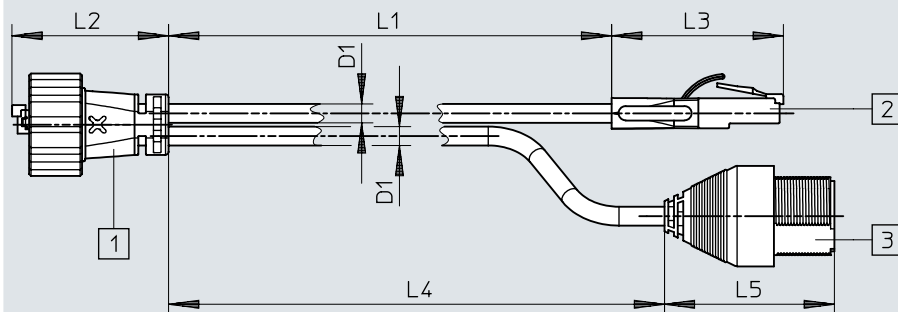
[1]   Field device side, electrical connection 1: RJ45, USB 2.0 type B
[2]   Control side, electrical connection 2: RJ45
[3]   Control side, electrical connection 3: USB

	D1 Ø	L1	L2	L3	L4	L5
NEDU-L1R2-R3L1G12M22-5L1-1L2-P-N-R3U1G12	5	5000	~41,5	~45,5	1000	45

Ordering data

Browser version [B]

	Display size	Display resolution	Part no.	Type
	4.3"	480x272 pixels	**8155213**	**CDPX-X-B-W-4**
	7"	800x480 pixels	**8155214**	**CDPX-X-B-W-7**
	10.1"	1024x600 pixels	**8155215**	**CDPX-X-B-W-10**

Performance version [E1]

	Display size	Display resolution	Part no.	Type
	7"	800x480 pixels	**8155216**	**CDPX-X-E1-W-7**
	10.1"	1280x800 pixels	**8155217**	**CDPX-X-E1-W-10**
	15.6"	1366x768 pixels	**8155218**	**CDPX-X-E1-W-15**

Field version [E2]

	Display size	Display resolution	Part no.	Type
	5"	800x480 pixels	**8155219**	**CDPX-X-E2-W-5-EX2**
	7"	1025x600 pixels	**8155220**	**CDPX-X-E2-W-7-EX2**
	10.1"	1280x800 pixels	**8155221**	**CDPX-X-E2-W-10-EX2**
	15.6"	1366x768 pixels	**8155222**	**CDPX-X-E2-W-15-EX2**
	21.5"	1920x1080 pixels	**8155223**	**CDPX-X-E2-W-21-EX2**

I/O module

	Digital input, number	Digital outputs, number	Part no.	Type
	20	12	**575300**	**CDPX-EA-V1**
	8	7	**8023321**	**CDPX-EA-V2**

Bus interface

	Fieldbus interface	Part no.	Type
	CANopen	**575301**	**CDPX-F-CO**

Ordering data

Software licence			
	Programming software	Part no.	Type
	CODESYS provided by Festo V3.5	**576045**	**CDPX-SL-C3**

Peripherals
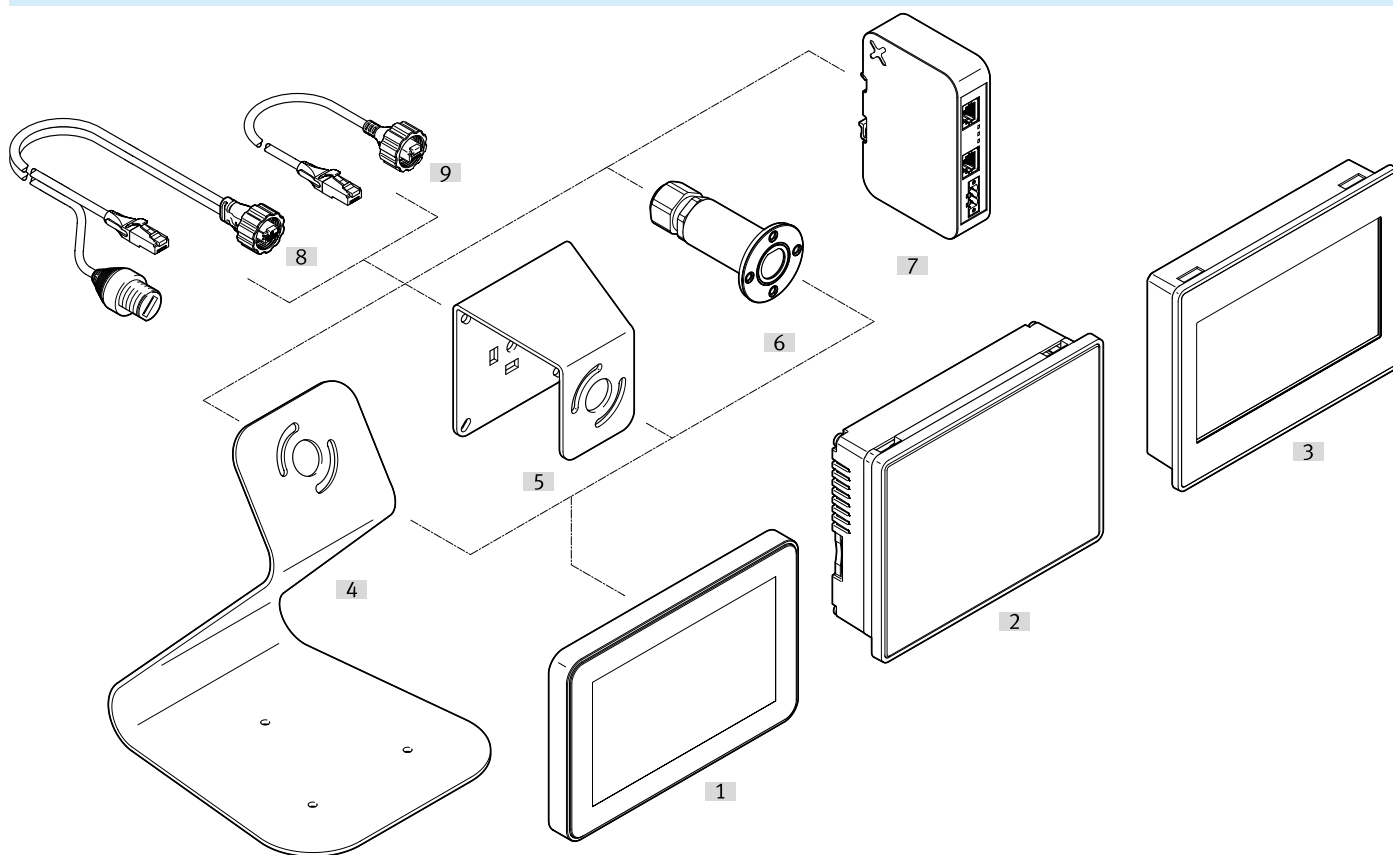
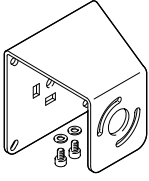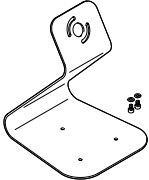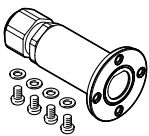| Accessories		Description	→ **Page/Internet**
	Type/order code	Description	
[1]	Operator unit CDPX-X-E2-W-...	Field version [E2]	CDPX
[2]	Operator unit CDPX-X-E1-W-...	Performance version [E1]	CDPX
[3]	Operator unit CDPX-X-B-W-...	Browser version [B]	CDPX
[4]	Table stand CAFM-D4-DE	Adapter for placing the plate on the table	25
[5]	VESA adapter CAFM-D4-VE	Adapter for direct mounting on the control cabinet	25
[6]	Retainer CAFM-D4-Q	Adapter for mounting a swivel arm	25
[7]	Fixed power supply CACN-H-1-PE-EX2	Power over Ethernet (PoE) injector	25
[8]	Distributor NEDU-L1R2-R3L1G12M22-5L1-1L2-P-N-R3U1G12	Connecting cable for the power supply with additional USB port	25
[9]	Connecting cable NEBC-R3G8M22-P-5-N-S-R3G8	Connecting cable for the power supply	25

Accessories

VESA adapter CAFM

	LABS (PWIS) conformity	Product weight	Part no.	Type
	VDMA24364 zone III	445 g	**8155224**	**CAFM-D4-VE**

Table stand CAFM

	LABS (PWIS) conformity	Product weight	Part no.	Type
	VDMA24364 zone III	1,495 g	**8155225**	**CAFM-D4-DE**
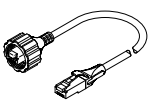
Retaining bracket CAFM

	LABS (PWIS) conformity	Product weight	Part no.	Type
	VDMA24364 zone III	105 g	**8155226**	**CAFM-D4-Q**
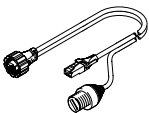
Power supply unit CACN

	power supply, connection system	Operational voltage range DC	Type of mounting	Part no.	Type
	Socket strip, 3-pin	18 … 32 V	With H-rail	**8155227**	**CACN-H-1-PE-EX2**

Connecting cable NEBC

	Conforms to standard	Electrical connection 1, connector system	Electrical connection 2, connector system	Part no.	Type
	IEC 60603-7-3	RJ45	RJ45	**8155228**	**NEBC-R3G8M22-P-5-N-S-R3G8**

Distributor NEDU

	Conforms to standard	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 3, connector system	Electrical connection 3, connection type	Part no.	Type
	IEC 60603-7-3	Circuit board plug connector, RJ45	RJ45	USB 2.0 type B	Socket	**8155230**	**NEDU-L1R2-R3L1G12M22-5L1-1L2-P-N-R3U1G12**