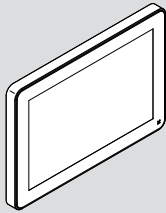


CDPX-X-E2-...-EX2

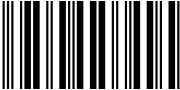
Operator unit



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8213962

Operating instruction | Operating conditions EX

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Original instructions

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1 About this document

1.1 Identification EX

Marking		Certificates
	Class I, Division 2, Groups A, B, C and D	E245518

Tab. 1: Identification EX

1.2 Certified products

Type	Part number
CDPX-X-E2-W-5-EX2	8155219
CDPX-X-E2-W-7-EX2	8155220
CDPX-X-E2-W-10-EX2	8155221
CDPX-X-E2-W-15-EX2	8155222
CDPX-X-E2-W-21-EX2	8155223

Tab. 2: Certified products

1.3 Applicable documents

 All available documents for the product ➔ www.festo.com/sp.

2 Safety

2.1 Safety instructions

- The device can be used under the stated operating conditions in zone 2 of explosive gas atmospheres.
- Use the device in its original status, without any unauthorised modifications.
- Clean the device with a soft cloth.

2.2 Intended use

The product is an operator unit and display unit in conjunction with PLC systems.

2.3 Cyber security measures

Accidental or improper execution of functions on the product can lead to failure or malfunction of the product and thus the entire connected system. In addition, unauthorised access to information stored on the product may be possible. The system operator must therefore take appropriate measures to prevent accidental or improper access to the product. Cyber security information ➔ www.festo.com/psirt.

Access with Festo service tools

The following table shows the device functions and the ports used for the specific device function.

Function [BT1]	Description	Port [BT2]	Operation
Search	The device can be found on the network with a search protocol.	990 (UDP) 991 (UDP) 10002 (UDP/MULTICAST)	☐
Network	The device supports the display and setting of the network parameters. On completion of setting the device will restart.	990 (UDP) 10002 (UDP/MULTICAST)	☐
Firmware	The device supports the download of a new firm-ware version.	10002 (UDP/MULTICAST)	☐
Backup/restore	The device supports data backup and data recovery. This will restart the device.	10002 (UDP/MULTICAST)	☐
Homepage	The device provides an information page for Internet browsers. In addition, after entering the user and password, it enables changes to parameters in the system, firmware updates, switching services on/off.	80 (TCP) 443 (TCP)	☒
Identification	The device supports the prompt for identification, for example, with a flashing LED display.	10002 (UDP/MULTICAST)	☒
File transfer	The device supports file transfer in the command line mode.	10002 (UDP/MULTICAST)	☒
FTP	File transfer protocol	21 (TCP)	☐
☐ To avoid potential damage to the system do not perform the function during operation. ☒ The function can be executed during operation.			

Tab. 3: Functions available via the protocols used by Festo service tools

Access via the CODESYS development environment

The following table shows the functions and ports used for each function.



Function	Description	Port	Configu- rable
CODESYS commu- nication	Connection from CODESYS to the controller, exe- cution of system-critical commands (start/stop/ reset/reload/delete application, reboot, configu- ration change, PLC Shell).	1740 ... 1743 (UDP) 11740 ... 11743 (TCP)	☐
Gateway	Gateway, to connect CODESYS to the gateway (scan, wink).	1217 (TCP)	☐
Web server	Web server for CODESYS web visualisation.	8080 (TCP)	☒
Web server (HTTPS)	Web server for CODESYS web visualisation (https)	443 (TCP)	☒
Network variables	Read and write access to the variable interface of the controller. The default port can be reconfigured.	1202 (UDP)	☒
Modbus TCP server	Access to the variable interface of the controller with read and write services. The default port can be reconfigured.	502 (TCP)	☒
Festo_EasyIP	Access to the variable interface of the controller with read and write services.	995 (UDP)	☒
OPC UA server	Access to the variable interface of the controller with read and write services.	4840 (TCP)	☒
☐ The network ports are always in use. ☒ The network ports are only used if they are configured in the CODESYS application.			

Tab. 4: Functions available via the CODESYS development environment

Access with Festo Designer Studio

The following table shows the functions and ports used for each function.

Function	Description	Port	Configu- rable
FTP FTPS	Connection from Designer Studio to the CDPX HMIs, project download, firmware update, run-time system update.	21 (TCP) 990 (TCP)	–
HTTP HTTPS	Connection from Designer Studio to the CDPX HMIs, search function, project download, firm-ware update, runtime system update.	80 (TCP) 443 (TCP)	–
Codesys communi- cation	Connection of CDPX HMIs via CODESYS protocol to CODESYS controllers, access to the variable interface of the controller by read and write serv-ices.	1740-1743 (UDP) 11740-11743 (TCP), 1200[UDP]	– ☒
ModBusTCP client	Access to the variable interface of the controller with read and write services. The default port can be reconfigured.	502 (TCP)	☐
Festo_EasyIP	Access to the variable interface of the controller with read and write services.	995 (UDP)	☐

Function	Description	Port	Configurable
OPC UA client	Access to the variable interface of the controller with read and write services.	4840 (TCP)	☐
– The network ports are always in use. ☐ The network ports are only in use if the corresponding communication driver is selected in the Designer Studio project. ☒ The network ports are only used in connection with communication to a CODESYS V2.3 controller.			

Tab. 5: Functions available with Festo Designer Studio

3 Product overview

3.1 Connecting elements

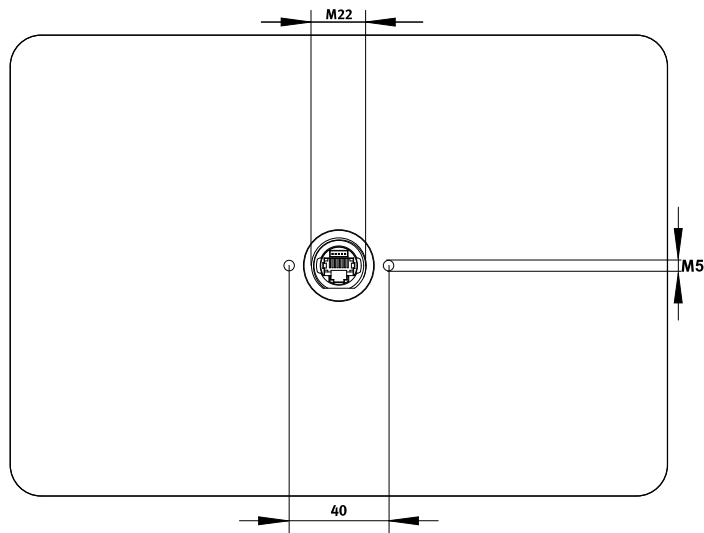


Fig. 1: Dimensions of CDPX-X-E2-... connection

Connection	Pin	Description
	1	TX+
	2	TX-
	3	RX+
	4	Reserved
	5	Reserved
	6	RX-
	7	Reserved
	8	Reserved

Tab. 6: CDPX-X-E2-... serial interface

The Ethernet interface has two status indicators.

LED	Meaning
Green On	No activity
Green Flashing	Activity
Red On	Valid connection found.
Red Off	Valid 10 Mbps connection found.

Tab. 7: LED table

3.2 Function

- The product CDPX-X-... is intended for use with the Designer Studio software.
- Compatible with Designer Studio version 4.5 or higher.
 - Full support for vector graphics and native support for SVG graphic objects, transparency and alpha blending.
 - Dynamic Objects: control of visibility and transparency, move, resize, rotate any object. Changing the properties of simple and complex objects.
 - Creating and managing multilingual applications. The additional software included in the Designer Studio enables translations by third-party companies.
 - Data can be presented numerically, as text, as a bar graph, with analogue instruments or graphics.

- Data collection, alarm management, scheduler and timed actions, recipes, user management, RSS feed, rotating menu.
- Support for various communication drivers.
- Multiple communication drivers at the same time.
- Remote monitoring and remote maintenance with client-server functionality.
- Online and offline simulation in Designer Studio.
- Integrated script debugger.
- Existing collection of vector graphics, symbols and objects.

4 Mounting

The CDPX operator unit is designed for front mounting.

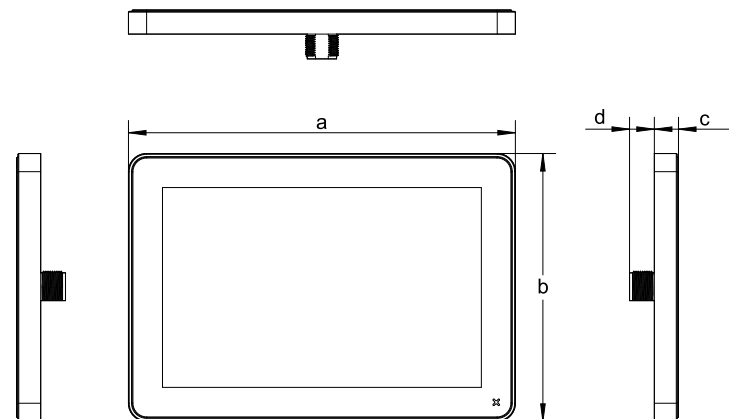


Fig. 2: CDPX-X-E2-... dimensions

Dimensions		a	b	c	d
CDPX-X-E2-W-5-EX2	[mm]	148.3	105.1	16.5	17
CDPX-X-E2-W-7-EX2	[mm]	195.2	131.6	16.5	17
CDPX-X-E2-W-10-EX2	[mm]	264.5	183.1	16.5	17
CDPX-X-E2-W-15-EX2	[mm]	398.6	348	26.5	17
CDPX-X-E2-W-21-EX2	[mm]	534.1	325.6	26.5	17

Tab. 8: CDPX-X-E2-... dimensions

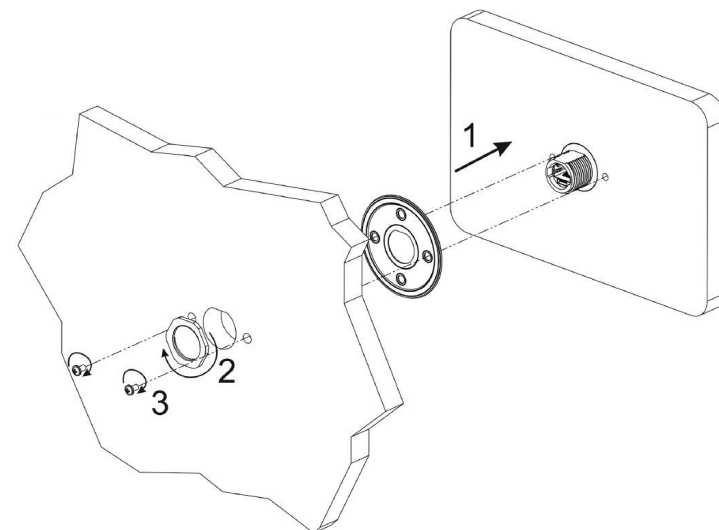


Fig. 3: Mounting CDPX to a surface

The correct installation procedure must be followed in order to maintain the protection class:

- The edges of the cutout must be flat.
- The tightening torque for the nut is 10 Nm.
- The tightening torque for the retaining screws is 1.3 Nm.
- Maximum permitted deviation from the surface flatness of the cutout: ≤ 0.5 mm.
- Thickness of the frame in which the equipment is mounted: 1.5 ... 3 mm.
- Maximum roughness of the surface on which the seal is applied: $\leq 120 \mu\text{m}$.

5 Earthing

The system is earthed by a shielded CAT 5 cable or the retaining screws with an unshielded CAT 5 cable.

Only fixed power supplies that ensure reliable electrical insulation of the operating voltage in accordance with IEC/DIN EN 60204-1 are permitted. The general requirements of IEC/DIN EN 60204-1 for PELV circuits must also be observed.

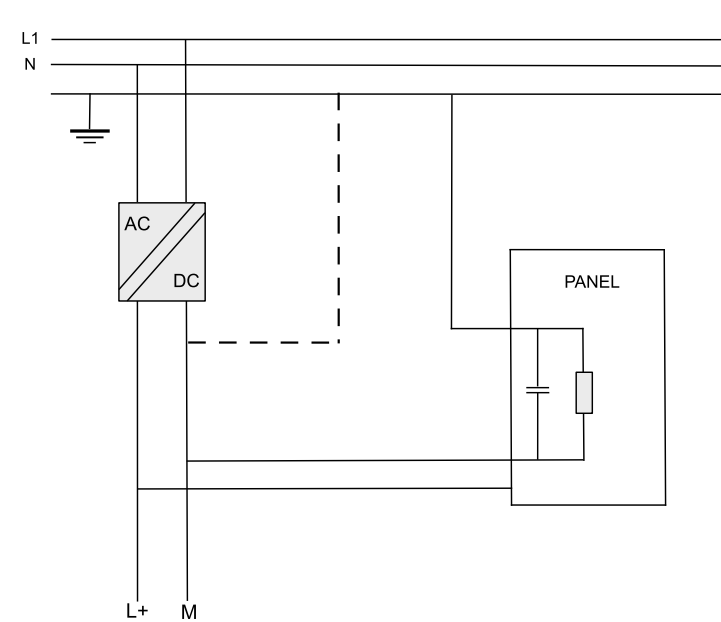


Fig. 4: CDPX-X circuit diagram, earthed power supply circuit

6 System settings

The CDPX operator units have the ‘System settings’ tool (system settings), which can be used to make basic, preliminary settings on the unit.

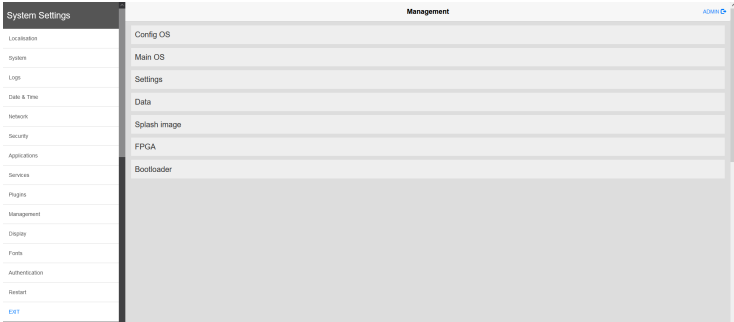


Fig. 5: System settings

There are two operating modes for the system settings: User Mode (user mode) and System Mode (system mode).

User Mode

The system settings in User Mode are activated from the context menu. The context menu is accessed by touching an unoccupied area of the touchscreen for a few seconds. The default time is two seconds. However, this is a runtime parameter that can be changed.

The User Mode offers access to the basic settings of the operator unit:

Settings	Description
Calibrate Touch	Calibration of the touchscreen user interface.
Network	Change to integrated network card options.
Time	Change of the real-time clock including time zone and daylight-saving and standard time.
Display settings	Setting the brightness and automatic switch-off of the backlight.
BSP settings	BSP version check.
Plugin list	Check for optional plug-in modules.

Tab. 9

System Mode

The system settings in System Mode can be activated using what is referred to as the emergency system access. When the system boots up, quickly tap the centre of the touchscreen multiple times with a finger. The emergency procedure can only be accessed during boot-up.

The System Mode includes the full System Settings user interface with all the available options. In addition to the ‘User Mode’ options, the following important options are available:

Settings	Description
Format Flash	Formatting the internal flash disk. All data will be deleted.
Resize Image Area	Changing the size of the flash area.
Download Configuration OS	Checking the version of the backup operating system and updating the operating system.
Download Main OS	Checking the version of the main operating system and updating the operating system.

Settings	Description
Download Splash Image	Changing the splash screen image.
Download Bootloader	Checking and updating the system bootloader.

Tab. 10

7 Commissioning

CDPX operator units must be programmed with the Designer Studio programming package.

To program a CDPX HMI, the operator unit must be connected to a personal computer running the Designer Studio software package. The operator unit must be in configuration mode for this process. CDPX operator units are programmed via the Ethernet interface.

The Designer Studio software is a WINDOWS application and must be correctly installed. The WINDOWS environment is not included in the Designer Studio software package but must be previously installed on the PC.

A Designer Studio project can be transferred with the PC Ethernet interface or a USB device. The firewall must be configured for transfer over the Ethernet interface to allow Designer Studio to access the network.

If a USB device is used for the transfer, an update package must be created with Designer Studio.

1

The version of Designer Studio must be compatible with the runtime version of Designer Studio that is installed on the operator unit that is to be programmed. If necessary, further information regarding compatibility of the firmware and the programming software can be obtained from the customer support.

8 Calibrating touchscreen

- Tap the touchscreen at high frequency immediately after power is switched on.
 - The touchscreen displays ‘Tap detected.’
- Wait for the touchscreen to display ‘Open system settings.’
- Press and hold the touchscreen to select ‘Touchscreen calibration’.

9 Technical data

CDPX-X-E2-...		
Certificates, declaration of conformity	➔	www.festo.com/sp
Operating voltage range	[V DC]	10 ... 32
Backup battery	[mAh]	50
	[V]	3
Storage temperature	[°C]	–30 ... 80
Ambient temperature	[°C]	–20 ≤ T _a ≤ 55
Relative humidity		5 ... 85%, non-condensing
Protection class in accordance with EN 60529		IP67
Contamination level		2
Electromagnetic compatibility		
Immunity to interference	➔	www.festo.com/sp
Materials		
Housing	All aluminium alloys used contain less than 7.5% magnesium (Mg).	

Tab. 11: Technical data