

Control block CPX-CEC-C1

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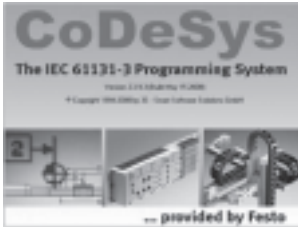
Control block CPX-CEC-C1

Key features

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Application

Controller



The CoDeSys controller is a modern control system for CPX terminals that enables programming with CoDeSys to IEC 61131-3.

Setting options

The CPX-CEC-C1 has the following interfaces for monitoring, programming and commissioning:

- Rotary switch for STOP/RUN and selection
- For the CPX-MMI
- Ethernet interface for programming with CoDeSys

Communication protocols

Interfaces in the CPX-CEC-C1:

- CANopen
- Ethernet Modbus/TCP
- Ethernet EasyIP
- Ethernet TCP/IP

CPX interfaces:

Can be combined with all fieldbus nodes from the CPX range

Bus connection

The CPX-CEC-C1 is a separate controller that can be connected to a higher-order PLC via the fieldbus nodes of the CPX terminal or via Ethernet.

- PROFINET
- Ethernet/IP
- EtherCAT
- Profibus
- DeviceNet
- and many more

Operating modes

- Stand-alone
- Remote Controller on the fieldbus
- Remote controller on the Ethernet

Fieldbus master

The CANopen interface of the module enables the connection of 31 stations without repeaters.

System configuration

CANopen connects CPX-CEC-C1 with valve terminals and electric drive controllers from Festo:

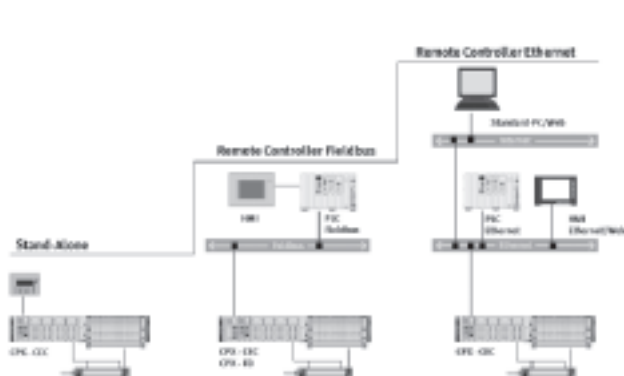
- CPX, CPV
- CMMP-AS, CMMS-ST/AS, etc.
- AS-interface gateway, wireless gateway

Ethernet connects CPX-CEC-C1 with additional controllers and operator units from Festo:

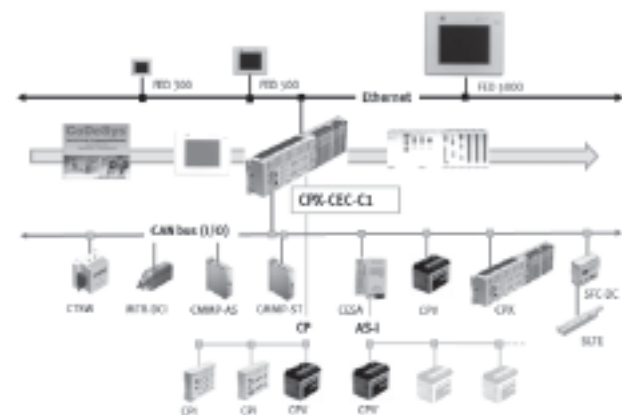
- CECX
- FED-50 to FED-5000
- FED-CEC
- Camera SBOQ

CPX-CEC-C1

As a stand-alone or remote controller



As a CANopen fieldbus master



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Key features

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Advantages for users

Greater performance, reduced costs

Improved cycle times – more connectable actuators. Intelligent pneumatic and electric axes can be actuated via fieldbus by means of the CANopen master integrated in the controller.

The extensive CoDeSys function library provides diagnostics and condition monitoring options.

Programming in a global language

For standardised preprocessing: reduces installation costs as an intelligent remote I/O terminal to IP65/IP67 directly at the machine.

CPX-CEC-C1 is ideally adapted to CPX and motion applications with up to 31 electric drives.

Simple, yet efficient: decentralised structures

The modular I/O system with up to 512 I/Os and CAN master functionality offers complete flexibility, whether for open-loop or closed-loop control.

Stand-alone for low-cost automation of manual workstations, for example, or remote control with preprocessing.

The only one in the world to IP65

The fully integrated automation platform for standard, proportional and servopneumatics, sensors and motion control to IP65.

Easy commissioning included.

Classification of CPX-CEC-C1 in the portfolio for multi-axis controllers for electric drive technology

Embedded controller

The controller FED-CEC (CoDeSys) for insertion in the display and operator units from Festo facilitates compact solutions for small control tasks in combination with electric drive technology.

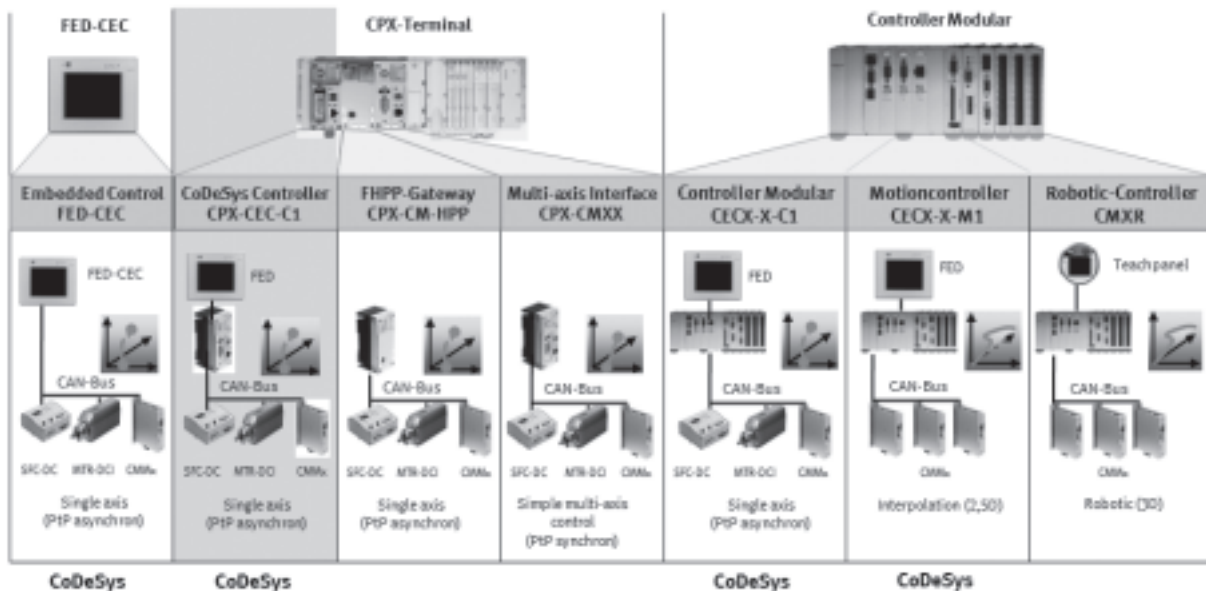
CPX-CEC-C1 (CoDeSys) permits the flexible connection of valve actuators and electric drives on the terminal – programmable in CoDeSys and can, if necessary, be directly installed at the machine to IP65. The ideal complement to the gateway module CPX-CM-HPP and the multi-axis interface CPX-CM-XX.

Modular controller

The modular controllers complete the upper end of the range for actuating electric drives. CECX-X-C1 (CoDeSys) is the ideal expansion option for a control cabinet in combination with electric drive technology and general control technology. The CECX-X-M1 (CoDeSys) executes

advanced tasks such as cam disks, multi-axis function modules to PLCopen and simple NC functions up to 2.5D. The robot controller CMXR provides interpolating control for different kinematic systems (e.g. tripod) with up to 6 axes.

CPX-CEC-C1 in the e-drive world



Control block CPX-CEC-C1

Technical data

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The CoDeSys controller is a modern control system for CPX terminals that enables programming with CoDeSys to IEC 61131-3.

- Easy actuation of valve terminal configurations with MPA, VTSA
- Connection to all fieldbuses as a remote controller and for preprocessing
- Actuation of electric drives as individual axes via CANopen
- Diagnostics with flexible monitoring options for pressure, flow rate, cylinder operating time, air consumption
- Early warnings and visualisation options
- Actuation of decentralised installation systems on the basis of CPI actuation of applications in proportional pneumatics
- Servopneumatic applications
- AS-interface actuation via gateway



General technical data	
Protocol	CoDeSys level 2
	EasyIP
	Modbus TCP
	TCP/IP
CPU data	32 MB RAM
	32 MB flash
	400 MHz processor
Control interface	CAN bus
Processing time	Approx. 200 µs/1k instruction
Baud rate	10/100 bps to IEEE 802.3 (10BaseT) or 802.3u (100BaseTx)
Programming software	CoDeSys provided by Festo
Programming language	SFC, IL, FCH, LD and ST to IEC 61131-3
	Additionally CFC
Programming, operating language	German
	English
Programming, support for file handling	Yes
Program memory	4 MB user program
Flags	30 kB remanent memory
	8 MB global data memory
	CoDeSys variable concept
Device-specific diagnostics	Diagnostic memory
	Channel and module-oriented diagnostics
	Undervoltage/short circuit of modules
LED displays (bus-specific)	TP: Link/traffic
LED displays (product-specific)	RUN: PLC status
	STOP: PLC status
	ERR: PLC runtime error
	PS: Electronics supply, sensor supply
	PL: Load supply
	SF: System fault
Parameterisation	M: Modify/forcing active
	CoDeSys
	CoDeSys
Configuration support	DHCP
	Via CoDeSys
	Via MMI
IP address setting	DIL switch for CAN termination
	Rotary switch for RUN/STOP

Control block CPX-CEC-C1

Technical data

General technical data		
Function blocks		CPX diagnostic status
		Copy CPX diagnostic trace
		Read CPX module diagnostics
Additional functions		Diagnostic functions
		Motion functions for electric drives
Total number of axes		31
Nominal operating voltage	[V DC]	24
Nominal operating voltage of the load voltage	[V DC]	24
		18 ... 30, without pneumatics
		21.6 ... 26.4, with pneumatics type midi/maxi
		20.4 ... 26.4, with pneumatics type CPA
		18 ... 30, with pneumatics type MPA
Power failure bridging	[ms]	10
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 85
Protection class		IP65
		IP67
Dimensions W x L x H (incl. interlinking block)	[mm]	50 x 107 x 55
Product weight	[g]	155
Materials		
Housing		Reinforced polyamide, polycarbonate
Note on materials		RoHS-compliant

Technical data – Interfaces		
Ethernet		
Number		1
Ethernet interface		RJ45
Connector plug		RJ45 socket, 8-pin
Data transmission speed	[Mbps]	10/100
Supported protocols		TCP/IP
		Easy IP
		Modbus TCP
Fieldbus interface		
Type		CAN bus
Connection technology		Sub-D plug, 9-pin
Transmission rate	[kbps]	125; 250; 500; 800; 1,000
		Adjustable via software
Electrical isolation		Yes

Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Relative air humidity	[%]	95, non-condensing
Corrosion resistance class CRC ¹⁾		2

1) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Control block CPX-CEC-C1

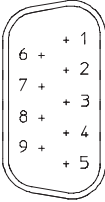
Technical data

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Connection and display components

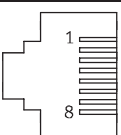


Pin allocation – Fieldbus interface

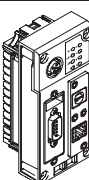
	Pin	Signal	Meaning
Sub-D plug			
	1	n.c.	Not connected
	2	CAN_L	CAN low
	3	CAN_GND	CAN ground
	4	n.c.	Not connected
	5	CAN_SHLD	Connection to functional earth (FE)
	6	CAN_GND	CAN ground (optional) ¹⁾
	7	CAN_H	CAN high
	8	n.c.	Not connected
	9	n.c.	Not connected
	Housing	Screened	Plug housing must be connected to FE

1) If a drive controller is connected to an external power supply, CAN ground (optional), pin 6, cannot be used on the CPX-CEC-C1.

Pin allocation – Ethernet interface

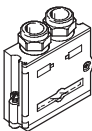





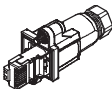

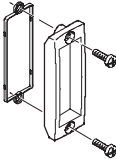

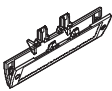
	Pin	Signal	Meaning
RJ45 plug			
	1	TD+	Transmitted data+
	2	TD-	Transmitted data-
	3	RD+	Received data+
	4	n.c.	Not connected
	5	n.c.	Not connected
	6	RD-	Received data-
	7	n.c.	Not connected
	8	n.c.	Not connected
	Housing	Screened	Screened


Ordering data

Designation	Part No.	Type
	Control block	567347 CPX-CEC-C1

Control block CPX-CEC-C1

Accessories

Ordering data – Bus connection			
Designation		Part No.	Type
	Sub-D plug, 9-pin	532219	FBS-SUB-9-BU-2x5POL-B
	Bus connection, plug 2xM12, 5-pin	525632	FBA-2-M12-5POL
	Plug socket for fieldbus connection, M12, 5-pin	18324	FBSD-GD-9-5POL
	Plug, M12, 5-pin	175380	FBS-M12-5GS-PG9
	Bus connection, 5-pin	525634	FBA-1-SL-5POL
	Bus connection, screw terminal, 5-pin	525635	FBSD-KL-2x5POL
	RJ45 plug, 8-pin	534494	FBS-RJ45-8-GS
	Cover for RJ45 connection	534496	AK-RJ45
	Inspection cover, transparent for Sub-D plug/socket	533334	AK-SUB-9/15-B
	Cover for Sub-D plug/socket	557010	AK-SUB-9/15
	Inscription label holder for manifold block	536593	CPX-ST-1

Documentation			
Designation		Language	Part No. Type
	Manual for control block CPX-CEC-C1	German	569121 P.BE-CPX-CEC-DE
		English	569122 P.BE-CPX-CEC-EN