Multi-axis controllers CMXR-C2

Multi-axis controllers CMXR-C2

Key features

At a glance

Benefits

The comfort of a multi-axis controller with the flexibility of a PLC on one platform: the multi-axis controller CMXR-C2 is the top performer class in the CMXR series. The applications range from simple to complex handling of moving objects on several conveyor systems.

The multi-axis controller CMXR-C2 is especially suitable for tracking applications; vision sensors (e.g. camera, etc ...) can be connected for detecting parts.

In addition to motion control, the multi-axis controller CMXR-C2 also offers an integrated PLC to CoDeSys V2.3.

Powerful – reducing cycle times with optimum motion

Reducing cycle times is a requirement of all customers. There are limits, however, to what is possible based on, for example, the mechanical system, the travel distances or the maximum forces acting on a workpiece.
The challenge is to be quick and at the same time protect the mechanical system. The multi-axis controller CMXR offers the following features:

- Motion path smoothing for positions
- Ramp shapes for acceleration
- Constant path speed

Economical – reducing costs with easy configuration

Reducing costs is always an important issue. The Festo Configuration Tool (FCT) in combination with the programming language Festo Teach Language (FTL) makes configuration quick and easy and significantly shortens configuration times. This enables the full focus to be on developing the application, since the basic motion programs are contained in the CMXR. The FTL programming tool utilises these basic programs. The FTL programs can therefore be used immediately.

Reliable – easy handling of tools in 3D space

The flange is not the end of a kinematic system. Mounted on the flange are the tools, which can, for example, comprise pneumatic drives such as the semi-rotary drive DRQD. Tools oriented other than vertically are a challenge for a controller. The CMXR enables the end position of the tool, for example a vacuum suction cup, to be defined in 3D space and transfers this point to the programmed path. This feature also makes it easy to move the three-dimensionally positioned tool in the direction of the tool's path simply by pressing a button on the teach pendant CDSA. The teach-in of positions on parts slides, for example, is thus very easy and efficient.

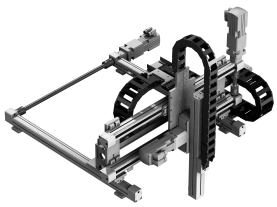
Reliable – easy integration with finished interfaces

The CMXR system offers fully defined interfaces for actuation via an external controller. This can be done with a simple method using digital signals or via a Profibus.
These interfaces enable programs to be selected, started or stopped, for example. The Profibus variant also offers the option of reading or writing variables from the CMXR controller.

This transfer of variables enables movements to be influenced or even coupled with a process running on the external controller. To minimise the complexity when using an external PLC, modules for the PLC systems Siemens Simatic S7 and systems based on CoDeSys V2.3 are supplied for actuation via Profibus.

Flexible – from simple to complex kinematic systems

Cartesian system



Tripod kinematics

The multi-axis controller CMXR is the heart of a complete kinematic system solution. It combines a mechanical system, electrical drive technology and control technology into a complete motion control package with integrated and harmonised interfaces for all system components included.

The multi-axis controller enables simple axis movements, from point to point to complex path control. It is able to control simple and complex kinematic systems with up to six degrees of freedom in 3D space. These include, among others, linear and three-dimensional gantries (Cartesian systems) as well as tripod kinematic systems.

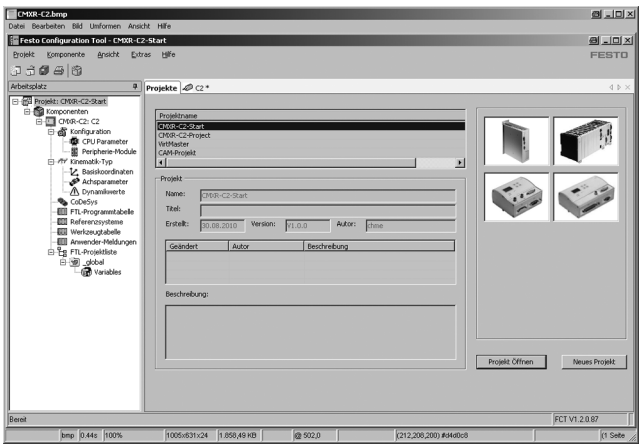
PROFIBUS®, CoDeSys® is a registered trademark of its respective trademark holder in certain countries.

Multi-axis controllers CMXR-C2

Key features

At a glance

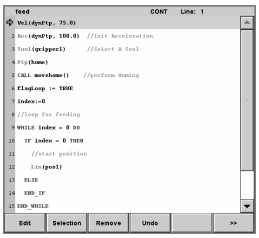
Convenient – quick and easy configuration



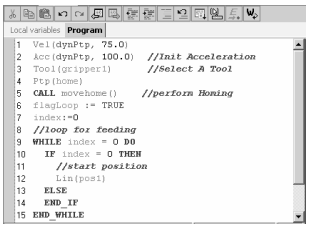
The main requirements for product configuration software are speed, reliability and user-friendliness. The multi-axis controller CMXR, like other products from Festo, is configured via the Festo Configuration Tool (FCT). Electrical variables (e.g. inputs and outputs) as well as mechanical variables (e.g. choice of the kinematic system) are defined in the configuration. The sophisticated user guidance system guarantees quick and easy configuration of the complex multi-axis system.

Transparent – programming in plain text with FTL

Via teach pendant CDSA



Via Festo Configuration Tool (FCT)



The motion programs are programmed using the text-based macro programming tool of the Festo Teach Language (FTL). This powerful programming tool contains macros, for example for movements, dynamic settings as well as I/O processing of peripheral devices such as grippers, for example, and has been specially developed for the CMXR. Programming can be done online via the teach pendant CDSA or offline via the FTL programming editor. The FTL editor is integrated in the Festo Configuration Tool (FCT).

Convenient – easy programming via teach-in

When creating a motion program, the motion sequence is very often known but the precise position to be approached, for example of a gripper or a tray is not. These can only be determined directly during commissioning by means of accurate approaching. The CMXR in combination with the teach pendant CDSA offers dialogue-based software for this purpose, thus enabling quick and easy teach-in of the necessary positions.

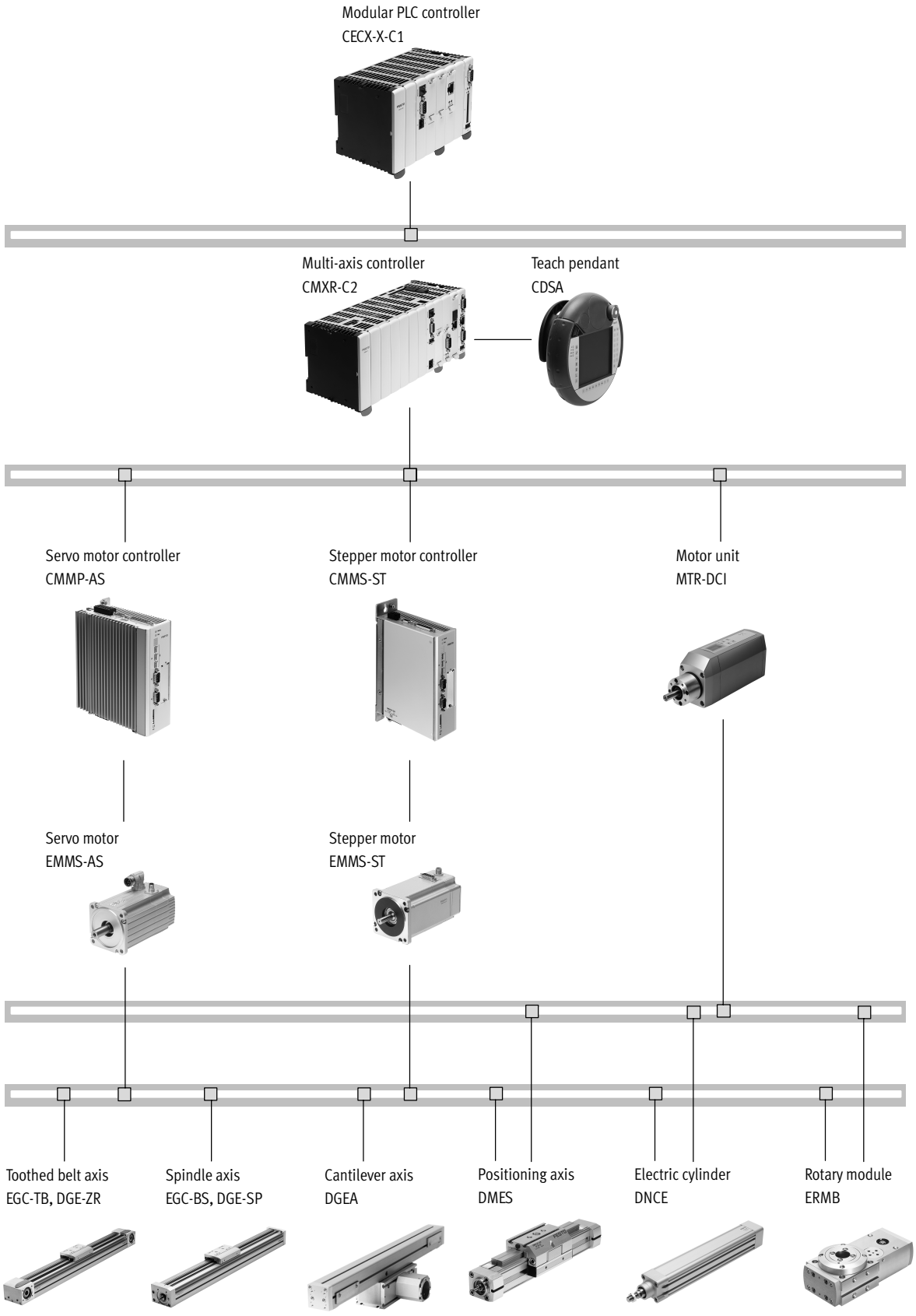
Flexible – mobile operation and monitoring with CDSA

The teach pendant CDSA features an emergency stop switch as well as a 3-stage enabling key. Both devices are designed with two channels and are prepared for integration in the customer's safety circuits. The purpose of the enabling key is to approve the drive power during set-up. In addition to the hardware and ergonomic handle, the CDSA also features a colour touch screen as an alternative to the keypad for starting actions.

Multi-axis controllers CMXR-C2

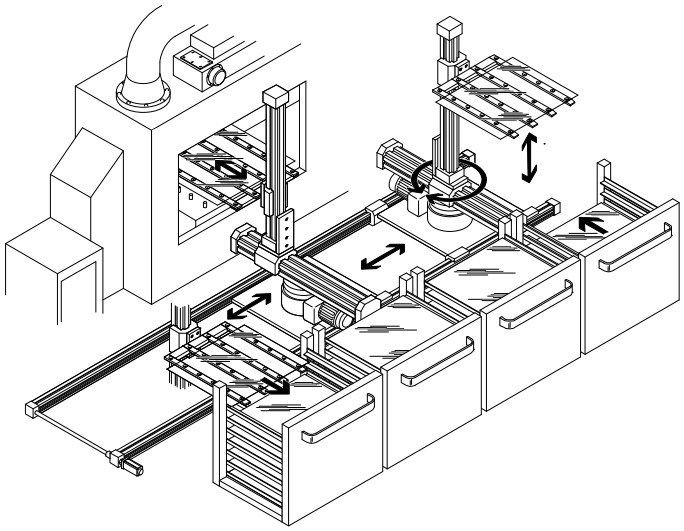
Key features

Everything from a single source – perfectly co-ordinated

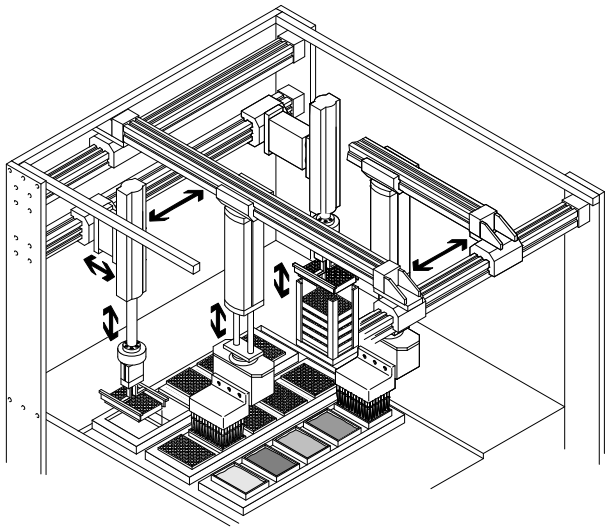


Application examples

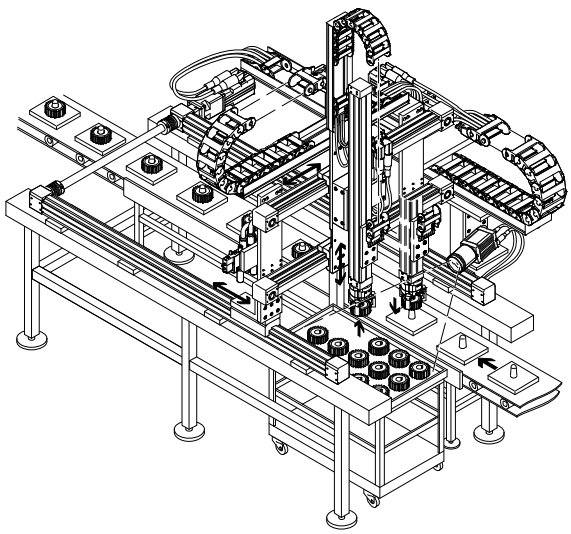
Removing and palletising workpieces



Handling and picking carrier plates

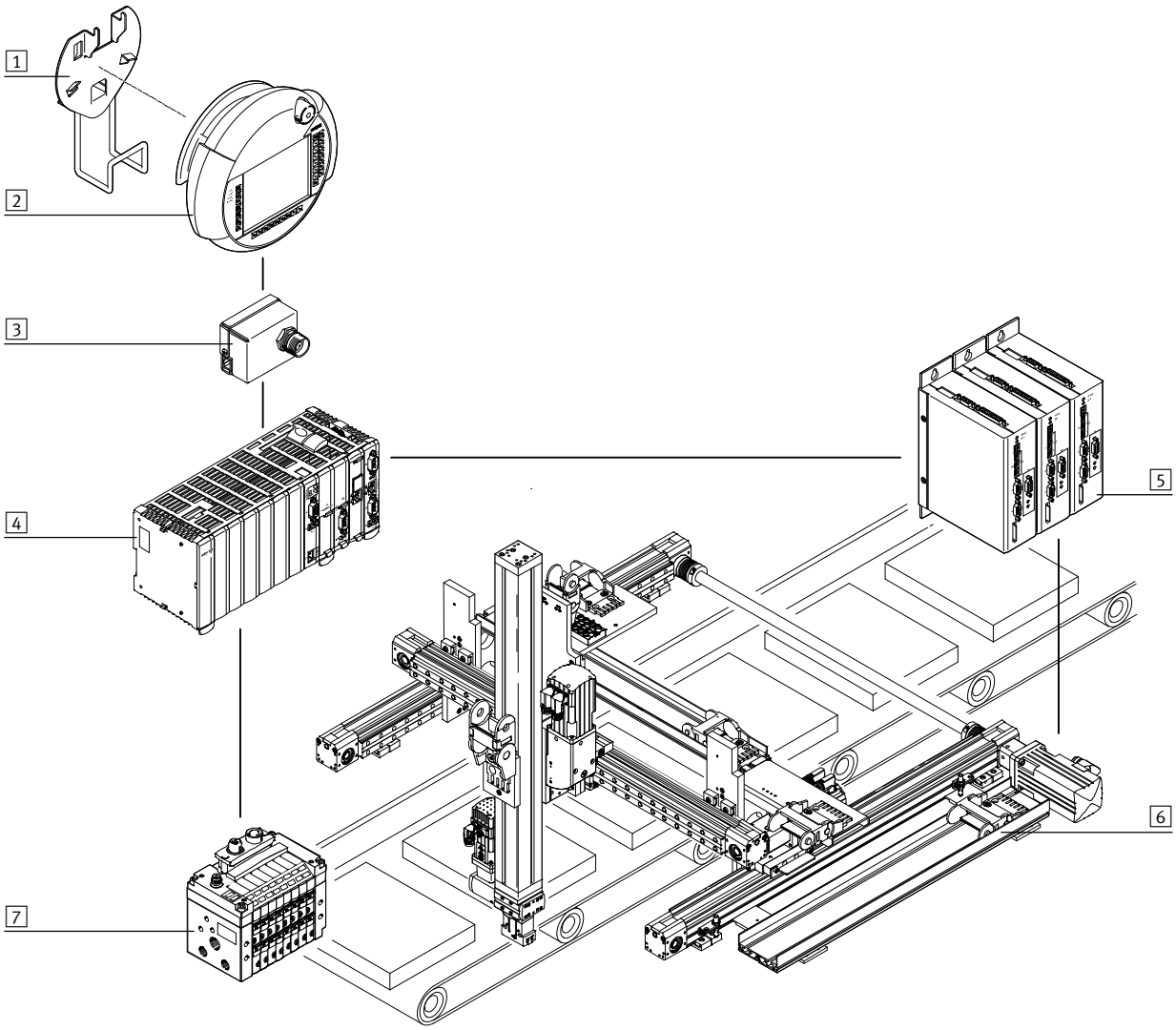


Feeding workpieces with simultaneous quality inspection via a vision system



Multi-axis controllers CMXR-C2

Peripherals overview



Multi-axis controllers CMXR-C2

Peripherals overview

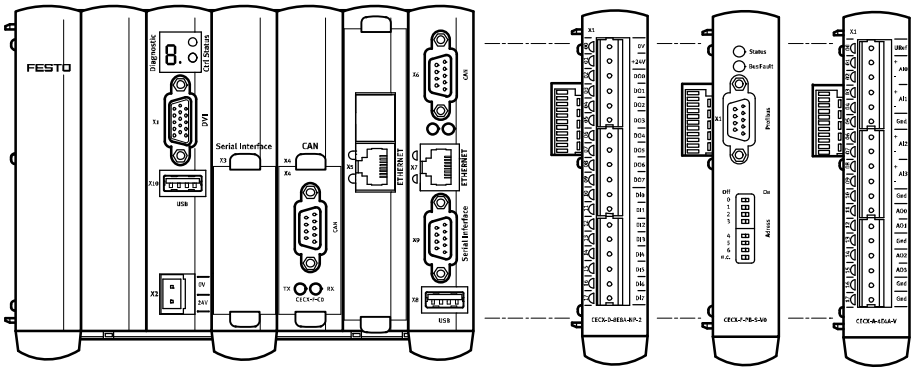
Accessories			
	Type	**Brief description**	**➔ Page/Internet**
1	Retainer CAFM	Wall fixture for the teach pendant CDSA with cable support	27
2	Teach pendant CDSA	For operating, monitoring and programming the multi-axis controller CMXR-C1	28
3	Interface housing CAMI	Adapter for connecting the teach pendant CDSA outside a control cabinet with the controller CMXR inside a control cabinet	30
4	Multi-axis controller CMXR-C2	Enables simple axis movements, from point to point to complex path control	9
5	Motor controller CMM...	For controlling stepper or servo motors from Festo via a CAN interface	cmm
6	Three-dimensional gantry	Wide range of kinematic systems within the multi-axis modular system from Festo	three-dimensional gantry
7	Valve terminal	The multi-axis controller enables the connection of peripheral devices, for example valve terminals, via a CAN interface	valve terminal
–	Cables and plugs	Connecting cables and plugs for connecting the individual devices	30

Multi-axis controllers CMXR-C2

Peripherals overview and type codes

FESTO

Controller CMXR-C2 with peripheral modules



Peripheral modules

Type	Brief description	➔ Page/Internet
Input/output module, digital CECX-D-6E8A-PN-2, CECX-D-8E8A-NP-2	• 6 or 8 digital inputs • 8 digital outputs	12
Input module, digital CECX-D-16E	• 16 digital inputs	14
Output module, digital CECX-D-14A-2	• 14 digital outputs	15
Input/output module, analogue CECX-A-4E4A-V	• 4 analogue voltage inputs • 4 analogue voltage outputs	16
Input/output module, analogue CECX-A-4E4A-A	• 4 analogue current inputs • 4 analogue current outputs	16
Input module, analogue CECX-A-4E-V	• 4 analogue voltage inputs	18
Output module, analogue CECX-A-4A-V	• 4 analogue voltage outputs	19
Input module, analogue CECX-E-4E-T-P1, CECX-E-6E-T-P2	• 4 or 6 temperature inputs	20
Encoder interface CECX-C-2G2, CECX-C-2G1	• 2 or 4 encoder interfaces	22
Fieldbus interface CECX-F-PB-S-V1	• Profibus slave DP-V1	24
Electrical interface CECX-S-2S1	• 2 serial interfaces RS232	25
Electrical interface CECX-S-S4	• Serial interface RS485-A/422-A	26

Note

- Plugs are not included in the scope of delivery for the peripheral modules (plugs ➔ 30)
- Max. 1 Profibus slave module can be used
- Max. 12 peripheral modules can be used

More product information
➔ www.festo.com

Type codes

CMXR	–	C2

Type	
CMXR	Multi-axis controller

Controller	
C2	Controller 2

Multi-axis controllers CMXR-C2

Technical data

Controller
CMXR-C2

General technical data		
Operating voltage range	[V DC]	19.2 ... 30
Nominal operating voltage	[V DC]	24
Power consumption at 24 V	[W]	32
Max. power consumption	[W]	99
Max. protection	[A]	10
Type of mounting		On H-rail (TS 35x7.5)
Controller operating mode		Manual
		Automatic
Operating elements		CTRL button
Status display		7-segment display
		LED green = power
Supported kinematic systems		2-axis gantries
		3-axis gantries
		H-gantries
		T-gantries
		Any interpolation
		Tripod kinematics
Total number of axes		9
Breakdown of the axes		3 basic axes
		3 manual axes
		3 auxiliary axes
CPU data		256 MB SDRAM
		512 KB SRAM
		600 MHz processor
Memory card		Compact Flash ≥ 256 MB
Control methods		Can be individually programmed thanks to integrated PLC with CoDeSys
		I/O
		Profibus DP
		CANopen
Program organisation		Via FTL programs
		PLC programming to CoDeSys
Configuration support		FCT (Festo Configuration Tool)
Command set		Mathematical functions
Max. number of commands		Approx. 10,000
Programming software		FCT (Festo Configuration Tool)
		CoDeSys V2.3
		CDSA-D1-VX
Programming language		FTL (Festo Teach Language)
		PLC programming to CoDeSys
		Text-based macro language
USB interface		USB 2.0
Electrical protection class		III
Product weight	[g]	1,270

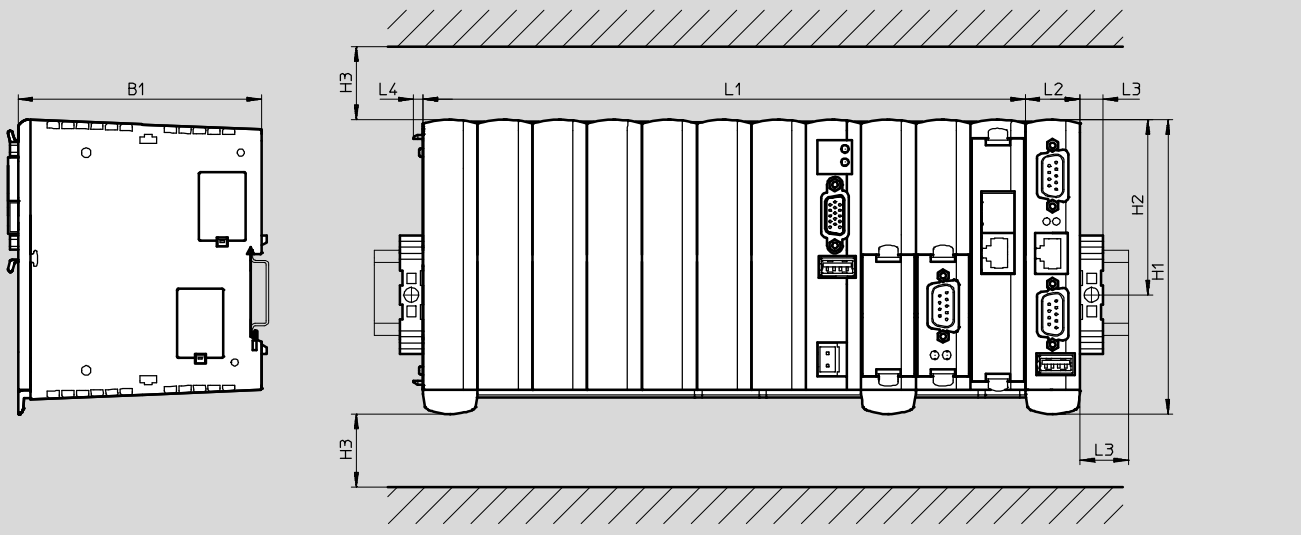
CANopen® is a registered trademark of its respective trademark holder in certain countries.

General technical data	
Materials	
Note on materials	Contains PWIS (paint-wetting impairment substances)
	RoHS-compliant

Technical data – Interfaces		
Ethernet		
Connector plug		RJ45 socket, 8-pin
Transmission speed	[Mbps]	10/100
Supported protocols		TCP/IP
Fieldbus interface		
Type		CAN bus
Number		2x CANopen masters
Connection technology		Sub-D plug, 9-pin
Max. fieldbus transmission rate	[Mbps]	1
		Can be set via software
Electrical isolation		No

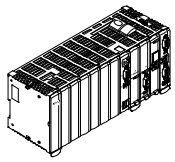
Operating and environmental conditions		
Ambient temperature	[°C]	5 ... 55
Storage temperature	[°C]	–40 ... +70
Resistance to shock		EN 60068-2-27 EA
		15 g, 11 ms (half-sine)
Resistance to vibration		EN 60068-2-6-FC
		5 ... 9 Hz 3.5 mm
		9 ... 150 Hz 1g
Relative air humidity	[%]	10 ... 95
Protection class		IP20
CE mark (see declaration of conformity)		To EU EMC Directive
Certification		cULus listed (OL)
		C-Tick

Dimensions

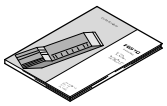


Type	B1 ±2	H1 ±2	H2 ±1	H3	L1 ±2	L2	L3	L4
CMXR-C2	100	121	72	50	247.5	22.5	9.5	4

Ordering data

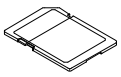
Controller	Part No.	Type
	**567869**	**CMXR-C2**

Ordering data – Manuals[1)]

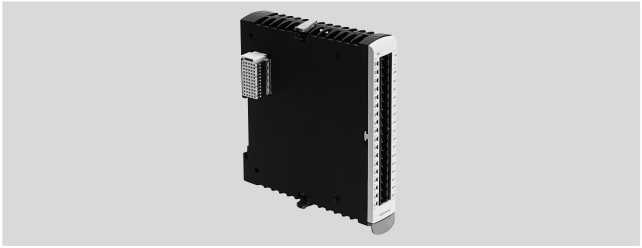
	Language	Part No.	Type		Part No.	Type
		System manual			Hardware manual	
	DE	**571687**	**GDCP-CMXR-C2-SY-DE**		**571693**	**GDCP-CMXR-C2-HW-DE**
	EN	**571688**	**GDCP-CMXR-C2-SY-EN**		**571694**	**GDCP-CMXR-C2-HW-EN**
	ES	**571689**	**GDCP-CMXR-C2-SY-ES**		**571695**	**GDCP-CMXR-C2-HW-ES**
	FR	**571690**	**GDCP-CMXR-C2-SY-FR**		**571696**	**GDCP-CMXR-C2-HW-FR**
	IT	**571691**	**GDCP-CMXR-C2-SY-IT**		**571697**	**GDCP-CMXR-C2-HW-IT**
		Basic FTL programming manual			Tracking programming manual	
	DE	**560315**	**GDCP-CMXR-SW-DE**		**571705**	**GDCP-CMXR-C2-ST-DE**
	EN	**560316**	**GDCP-CMXR-SW-EN**		**571706**	**GDCP-CMXR-C2-ST-EN**
	ES	**560317**	**GDCP-CMXR-SW-ES**		**571707**	**GDCP-CMXR-C2-ST-ES**
	FR	**560318**	**GDCP-CMXR-SW-FR**		**571708**	**GDCP-CMXR-C2-ST-FR**
	IT	**560319**	**GDCP-CMXR-SW-IT**		**571709**	**GDCP-CMXR-C2-ST-IT**
		Control interface manual				
	DE	**571699**	**GDCP-CMXR-C2-CS-DE**			
	EN	**571700**	**GDCP-CMXR-C2-CS-EN**			
	ES	**571701**	**GDCP-CMXR-C2-CS-ES**			
	FR	**571702**	**GDCP-CMXR-C2-CS-FR**			
	IT	**571703**	**GDCP-CMXR-C2-CS-IT**			

1) Manual in paper form is not included in the scope of delivery

Ordering data – Memory card

	Brief description	Part No.	Type
	For storing the operating system and configuration data	**570812**	**CAMC-P3-C-M256**

Input/output module, digital
CECX-D-6E8A-PN-2,
CECX-D-8E8A-NP-2



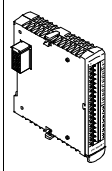
General technical data			
Operating voltage range	[V DC]	19.2 ... 30	
Nominal operating voltage	[V DC]	24	
Electrical connection technology for I/O		Socket strip, grid 5.08 mm	
Power consumption at 5 V	[W]	0.4	
Power consumption at 24 V	[W]	1.9	
Electrical protection class		III	
Product weight	[g]	135	
Materials			
Note on materials		Contains PWIS (paint-wetting impairment substances)	
		RoHS-compliant	

Technical data			
Type		CECX-D-6E8A-PN-2	CECX-D-8E8A-NP-2
Digital inputs			
Number		6	8
Fast clock pulse inputs		2, interruptible, response time 50 µs	
Input voltage	[V DC]	24	
Nominal value for FALSE	[V DC]	≤ 5	
Nominal value for TRUE	[V DC]	≥15	
Input signal delay	[ms]	2, 100, adjustable	20, 100, adjustable
	[kHz]	12 with interrupt input	
Electrical isolation		Yes, via optocoupler	
Status display		Green LED	
Switching logic		NPN (negative logic)	PNP (positive logic)
Digital outputs			
Number		8	
Contact		Transistor	
Output voltage	[V DC]	24	
Output current	[A]	2 with 50% concurrence	
Short circuit proof		Yes	
Electrical isolation		Yes, via optocoupler	
Status display		Orange LED	
Switching logic		NPN (negative logic)	PNP (positive logic)

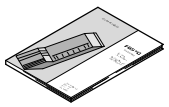
Operating and environmental conditions		
Ambient temperature	[°C]	5 … 55
Storage temperature	[°C]	–40 … +70
Resistance to shock		EN 60068-2-27 EA
		15 g, 11 ms (half sine)
Resistance to vibration		EN 60068-2-6-FC
		5 … 9 Hz 3.5 mm
		9 … 150 Hz 1g
Relative air humidity	[%]	10 … 95
Protection class		IP20
Certification		cULus listed (OL)

Ordering data

Input/output module, digital

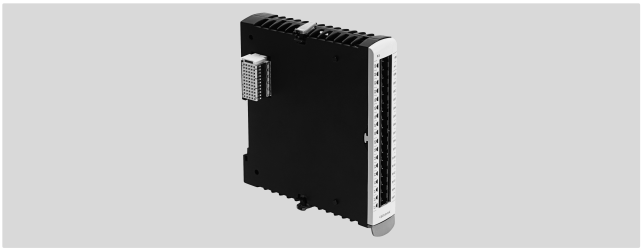
	Part No.	Type
	6 inputs/8 outputs	
	553972	**CECX-D-6E8A-PN-2**
	8 inputs/8 outputs	
	552099	**CECX-D-8E8A-NP-2**

Manual[1)]

	Language	Part No.	Type
	6 inputs/8 outputs		
	–		
	8 inputs/8 outputs		
	DE	**560585**	**GDCC-CECX-D-8E8A-NP-DE**
	EN	**560586**	**GDCC-CECX-D-8E8A-NP-EN**
	ES	**560587**	**GDCC-CECX-D-8E8A-NP-ES**
	FR	**560588**	**GDCC-CECX-D-8E8A-NP-FR**
	IT	**560589**	**GDCC-CECX-D-8E8A-NP-IT**

1) Manual in paper form is not included in the scope of delivery

Input module,
digital
CECX-D-16E



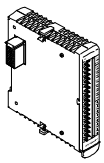
General technical data		
Electrical connection technology for I/O		Socket strip, grid 5.08 mm
Power consumption at the system bus	[W]	0.4
Electrical protection class		III
Product weight	[g]	130
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

Technical data		
Number		16
Fast clock pulse inputs		2, interruptible, response time 100 µs
Input voltage	[V DC]	24
Nominal value for FALSE	[V DC]	≤ 5
Nominal value for TRUE	[V DC]	≥15
Input signal delay	[ms]	20, 200, adjustable
		Additionally 0.2 ms with interrupt inputs
Electrical isolation		Yes, via optocoupler
Status display	[V DC]	LED
Switching logic		PNP (positive logic)

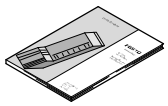
Operating and environmental conditions		
Ambient temperature	[°C]	5 … 55
Storage temperature	[°C]	–40 … +70
Resistance to shock		EN 60068-2-27 EA
		15 g, 11 ms (half sine)
Resistance to vibration		EN 60068-2-6-FC
		5 … 9 Hz 3.5 mm
		9 … 150 Hz 1g
Relative air humidity	[%]	10 … 95
Protection class		IP20
Certification		cULus listed (OL)

Ordering data

Input module, digital

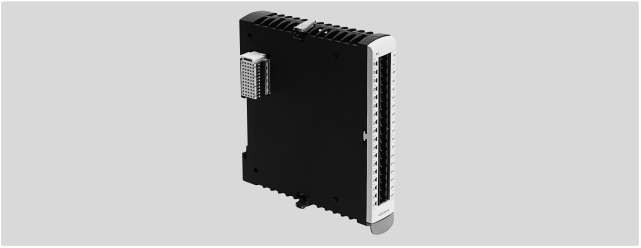
	Part No.	Type
	**552096**	**CECX-D-16E**

Manual[1)]

	Language	Part No.	Type
	DE	**560573**	**GDCC-CECX-D-16E-DE**
	EN	**560574**	**GDCC-CECX-D-16E-EN**
	ES	**560575**	**GDCC-CECX-D-16E-ES**
	FR	**560576**	**GDCC-CECX-D-16E-FR**
	IT	**560577**	**GDCC-CECX-D-16E-IT**

1) Manual in paper form is not included in the scope of delivery

Output module, digital
CECX-D-14A-2



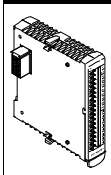
General technical data		
Operating voltage range	[V DC]	19.2 ... 30
Nominal operating voltage	[V DC]	24
Electrical connection technology for I/O		Socket strip, grid 5.08 mm
Power consumption at the system bus	[W]	0.4
Electrical protection class		III
Product weight	[g]	135
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

Technical data		
Number		14
Contact		Transistor
Output voltage	[V DC]	24
Output current	[A]	2 with 50% concurrence per group
Short circuit proof		Yes
Electrical isolation		Yes, via optocoupler
Electrical isolation in groups		Yes, in 2 groups
Status display	[V DC]	LED
Switching logic		PNP (positive logic)

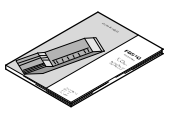
Operating and environmental conditions		
Ambient temperature	[°C]	5 ... 55
Storage temperature	[°C]	–40 ... +70
Resistance to shock		EN 60068-2-27 EA
		15 g, 11 ms (half sine)
Resistance to vibration		EN 60068-2-6-FC
		5 ... 9 Hz 3.5 mm
		9 ... 150 Hz 1g
Relative air humidity	[%]	10 ... 95
Protection class		IP20
Certification		cULus listed (OL)

Ordering data

Output module, digital

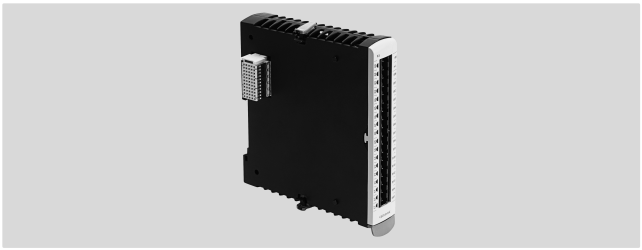
	Part No.	Type
	**552097**	**CECX-D-14A-2**

Manual[1)]

	Language	Part No.	Type
	DE	**560579**	**GDCC-CECX-D-14A-DE**
	EN	**560580**	**GDCC-CECX-D-14A-EN**
	ES	**560581**	**GDCC-CECX-D-14A-ES**
	FR	**560582**	**GDCC-CECX-D-14A-FR**
	IT	**560583**	**GDCC-CECX-D-14A-IT**

1) Manual in paper form is not included in the scope of delivery

Input/output module, analogue
CECX-A-4E4A-V,
CECX-A-4E4A-A



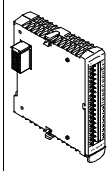
General technical data			
Type		CECX-A-4E4A-V	CECX-A-4E4A-A
Variant		Voltage inputs/outputs	Current inputs/outputs
Electrical connection technology for I/O		Socket strip, grid 5.08 mm	
Power consumption at 5 V	[W]	0.3	0.3
Power consumption at 24 V	[W]	3.3	3.6
Electrical protection class		III	
Product weight	[g]	135	
Materials			
Note on materials		Contains PWIS (paint-wetting impairment substances)	
		RoHS-compliant	

Technical data			
Type		CECX-A-4E4A-V	CECX-A-4E4A-A
Analogue inputs			
Number		4	4
Resolution	[bit]	14	14
Signal range	[V]	0 ... 10 Uref	–
		±10	–
	[mA]	–	0 ... 20
		–	4 ... 20
Value of the least significant bit (LSB)	[mV]	1.3	–
	[µA]	–	1.35
Supply voltage for actuators	[V DC]	10 ±2.5% (max. 20 mA)	–
Input resistance	[Ω]	$10x10^6$	< 200
Absolute accuracy at 25 °C	[%]	±0.01	±0.01
Sampling repeat time	[ms]	1	1
Electrical isolation		No	No
Analogue outputs			
Number		4	4
Resolution	[bit]	12	12
Max. load resistance	[Ω]	≥ 1,000	≤ 600
Signal range	[V]	±10	–
	[mA]	–	0 ... 20
Value of the least significant bit (LSB)	[mV]	5.32	–
	[µA]	–	5.39
Conversion time	[ms]	1	1
Absolute accuracy at 25 °C	[%]	±0.15	±0.15

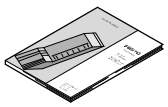
Operating and environmental conditions		
Ambient temperature	[°C]	5 ... 55
Storage temperature	[°C]	–40 ... +70
Resistance to shock		EN 60068-2-27 EA
		15 g, 11 ms (half sine)
Resistance to vibration		EN 60068-2-6-FC
		5 ... 9 Hz 3.5 mm
		9 ... 150 Hz 1g
Relative air humidity	[%]	10 ... 95
Protection class		IP20
Certification		cULus listed (OL)

Ordering data

Input/output module, analogue

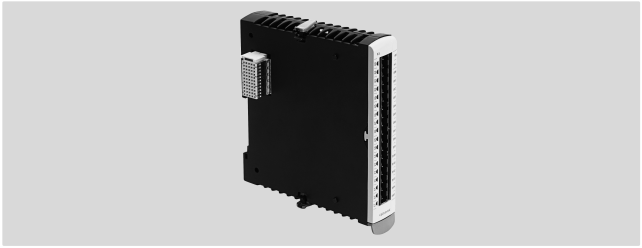
	Part No.	Type
	Voltage inputs/outputs	
	552100	**CECX-A-4E4A-V**
	Current inputs/outputs	
	552101	**CECX-A-4E4A-A**

Manuals[1)]

	Language	Part No.	Type
	Voltage inputs/outputs		
	DE	**560591**	**GDCC-CECX-A-4E4A-V-DE**
	EN	**560592**	**GDCC-CECX-A-4E4A-V-EN**
	ES	**560593**	**GDCC-CECX-A-4E4A-V-ES**
	FR	**560594**	**GDCC-CECX-A-4E4A-V-FR**
	IT	**560595**	**GDCC-CECX-A-4E4A-V-IT**
	Current inputs/outputs		
	DE	**560597**	**GDCC-CECX-A-4E4A-A-DE**
	EN	**560598**	**GDCC-CECX-A-4E4A-A-EN**
	ES	**560599**	**GDCC-CECX-A-4E4A-A-ES**
	FR	**560600**	**GDCC-CECX-A-4E4A-A-FR**
	IT	**560601**	**GDCC-CECX-A-4E4A-A-IT**

1) Manual in paper form is not included in the scope of delivery

Input module, analogue
CECX-A-4E-V



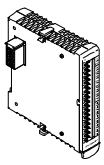
General technical data		
Variant		Voltage inputs
Electrical connection technology for I/O		Socket strip, grid 5.08 mm
Power consumption at 5 V	[W]	0.3
Power consumption at 24 V	[W]	2
Electrical protection class		III
Product weight	[g]	132
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

Technical data		
Number		4
Resolution	[bit]	14
Signal range	[V]	0 ... 10 Uref
		±10
Value of the least significant bit (LSB)	[mV]	1.3
Supply voltage for actuators	[V DC]	10 ±2.5% (max. 20 mA)
Input resistance	[Ω]	$10x10^6$
Absolute accuracy at 25 °C	[%]	±0.01
Sampling repeat time	[ms]	1
Electrical isolation		No

Operating and environmental conditions		
Ambient temperature	[°C]	5 ... 55
Storage temperature	[°C]	–40 ... +70
Resistance to shock		EN 60068-2-27 EA
		15 g, 11 ms (half sine)
Resistance to vibration		EN 60068-2-6-FC
		5 ... 9 Hz 3.5 mm
		9 ... 150 Hz 1g
Relative air humidity	[%]	10 ... 95
Protection class		IP20
Certification		cULus listed (OL)

Ordering data

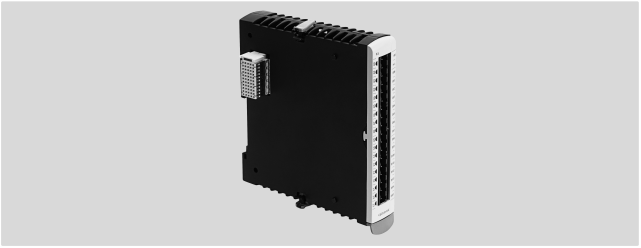
Input module, analogue

	Part No.	Type
	**553975**	**CECX-A-4E-V**

Multi-axis controllers CMXR-C2

Technical data

Output module, analogue
CECX-A-4A-V



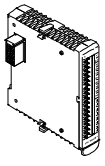
General technical data		
Variant		Voltage outputs
Electrical connection technology for I/O		Socket strip, grid 5.08 mm
Power consumption at 5 V	[W]	0.3
Power consumption at 24 V	[W]	1.9
Electrical protection class		III
Product weight	[g]	132
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

Technical data		
Number		4
Resolution	[bit]	12
Max. load resistance	[Ω]	≥ 1,000
Signal range	[V]	±10
Value of the least significant bit (LSB)	[mV]	5.32
Conversion time	[ms]	1
Absolute accuracy at 25 °C	[%]	±0.15

Operating and environmental conditions		
Ambient temperature	[°C]	5 ... 55
Storage temperature	[°C]	–40 ... +70
Resistance to shock		EN 60068-2-27 EA
		15 g, 11 ms (half sine)
Resistance to vibration		EN 60068-2-6-FC
		5 ... 9 Hz 3.5 mm
		9 ... 150 Hz 1g
Relative air humidity	[%]	10 ... 95
Protection class		IP20
Certification		cULus listed (OL)

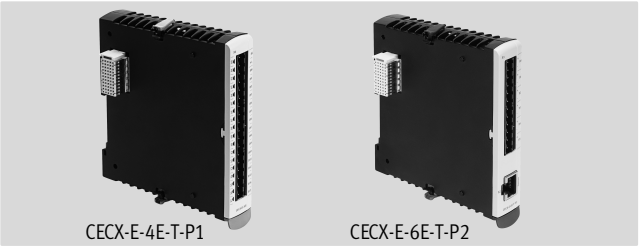
Ordering data

Output module, analogue

	Part No.	Type
	**553976**	**CECX-A-4A-V**

Input module, analogue
CECX-E-4E-T-P1,
CECX-E-6E-T-P2

- With 4 or 6 temperature inputs



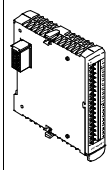
General technical data			
Type		CECX-E-4E-T-P1	CECX-E-6E-T-P2
Variant		4 temperature inputs	6 temperature inputs
Electrical connection technology for I/O		Socket strip, grid 5.08 mm	
		–	Gold contacts
Power consumption at 5 V	[W]	0.3	0.6
Power consumption at 24 V	[W]	2.5	1.6
Electrical protection class		III	
Product weight	[g]	134	142
Materials			
Note on materials		Contains PWIS (paint-wetting impairment substances)	
		RoHS-compliant	

Technical data			
Type		CECX-E-4E-T-P1	CECX-E-6E-T-P2
Number		4	6
Resolution	[bit]	14	
Signal range		PT100 (-100 ... +850 °C)	–
		–	Thermoelement
		–	Type J (Fe-CuNi, -100 ... +700 °C)
		–	Type K (NiCr-Ni, -100 ... +1,000 °C)
		–	Type L (Fe-CuNi, -100 ... +700 °C)
Value of the least significant bit (LSB)	[°C]	0.058	–
Input resistance	[Ω]	$10x10^6$	$> 10x10^3$
Absolute accuracy at 25 °C		±0.01 %	±1.0 °C
Internal cycle time	[ms]	2	100
Electrical isolation		No	Yes

Operating and environmental conditions		
Ambient temperature	[°C]	5 ... 55
Storage temperature	[°C]	–40 ... +70
Resistance to shock		EN 60068-2-27 EA
		15 g, 11 ms (half sine)
Resistance to vibration		EN 60068-2-6-FC
		5 ... 9 Hz 3.5 mm
		9 ... 150 Hz 1g
Relative air humidity	[%]	10 ... 95
Protection class		IP20
Certification		cULus listed (OL)

Ordering data

Input module, analogue

	Part No.	Type
	4 temperature inputs	
	553973	**CECX-E-4E-T-P1**
	6 temperature inputs	
	553974	**CECX-E-6E-T-P2**

Encoder interface
CECX-C-2G2,
CECX-C-2G1

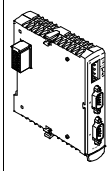
General technical data			
Type		CECX-C-2G2	CECX-C-2G1
Operating voltage range	[V DC]	19.2 ... 30	
Nominal operating voltage	[V DC]	24	
Electrical connection technology for I/O		Socket strip, grid 5.08 mm	
Power consumption at 5 V	[W]	0.6	0.65
Electrical protection class		III	
Product weight	[g]	135	140
Materials			
Note on materials		Contains PWIS (paint-wetting impairment substances)	
		RoHS-compliant	

Technical data – Interfaces			
Type		CECX-C-2G2	CECX-C-2G1
Digital inputs			
Fast clock pulse inputs		2 (latch function) response time 20 µs NPN/PNP	–
Electrical isolation		No	–
Encoder inputs			
Number		2	4
Connection technology		Sub-D socket, 9-pin	RJ45
Resolution	[bit]	Speed measurement: 32	16 ... 32
	[bit]	Distance measurement: 24	Can be set via software
Encoder supply voltage	[V DC]	24	24 (250 mA/channel)
	[V DC]	5.05 ±4% (100 mA/channel)	–
Max. input frequency	[kHz]	250	–
Baud rate	[kbps]	–	125; 250; 500; 1,000
		–	Can be set via software
Signal range	[V]	5 differential (RS422)	SSI (RS422)
	[V]	24 single-ended	Binary/grey can be set using software
Electrical isolation		–	No

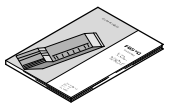
Operating and environmental conditions		
Ambient temperature	[°C]	5 ... 55
Storage temperature	[°C]	–40 ... +70
Resistance to shock		EN 60068-2-27 EA
		15 g, 11 ms (half sine)
Resistance to vibration		EN 60068-2-6-FC
		5 ... 9 Hz 3.5 mm
		9 ... 150 Hz 1g
Relative air humidity	[%]	10 ... 95
Protection class		IP20
Certification		cULus listed (OL)

Ordering data

Encoder interface

	Part No.	Type
	2 encoder inputs	
	552117	**CECX-C-2G2**
	4 encoder inputs	
	553977	**CECX-C-2G1**

Manuals[1)]

	Language	Part No.	Type
	2 encoder inputs		
	DE	**560603**	**GDCC-CECX-C-2G2-DE**
	EN	**560604**	**GDCC-CECX-C-2G2-EN**
	ES	**560605**	**GDCC-CECX-C-2G2-ES**
	FR	**560606**	**GDCC-CECX-C-2G2-FR**
	IT	**560607**	**GDCC-CECX-C-2G2-IT**
	4 encoder inputs		
	–		

1) Manual in paper form is not included in the scope of delivery

Fieldbus interface,
Profibus slave DP-V1
CECX-F-PB-S-V1

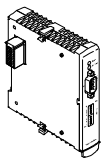
General technical data		
Power consumption at 5 V	[W]	1.4
Status displays		LED (status)
		LED red = bus fault
Electrical protection class		III
Product weight	[g]	140
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

Technical data – Interface	
Fieldbus	
Type	Profibus slave DP-V1
Connection technology	Sub-D socket, 9-pin
Transmission rate	9.6 kbps ... 12 Mbps
Electrical isolation	Yes

Operating and environmental conditions		
Ambient temperature	[°C]	5 ... 55
Storage temperature	[°C]	–40 ... +70
Resistance to shock		EN 60068-2-27 EA
		15 g, 11 ms (half sine)
Resistance to vibration		EN 60068-2-6-FC
		5 ... 9 Hz 3.5 mm
		9 ... 150 Hz 1g
Relative air humidity	[%]	10 ... 95
Protection class		IP20
Certification		cULus listed (OL)

Ordering data

Fieldbus interface, Profibus slave DP-V1

	Part No.	Type
	**565598**	**CECX-F-PB-S-V1**

Electrical interface
CECX-S-2S1

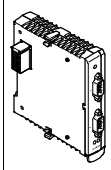
Peripheral module for extending the controller with two RS232 serial interfaces.

General technical data		
Type		RS232
Number		2
Connection technology		Sub-D plug, 9-pin
Transmission rate	[bps]	1,200 ... 115,000
		Can be set via software
Power consumption at 5 V	[W]	0.4
Status display		LED (status)
Electrical isolation		No
Protection class		IP20
Electrical protection class		III
Product weight	[g]	132
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	5 ... 55
Storage temperature	[°C]	–40 ... +70
Resistance to shock		EN 60068-2-27 EA
		15 g, 11 ms (half sine)
Resistance to vibration		EN 60068-2-6-FC
		5 ... 9 Hz 3.5 mm
		9 ... 150 Hz 1g
Relative air humidity	[%]	10 ... 95
Protection class		IP20
Certification		cULus listed (OL)

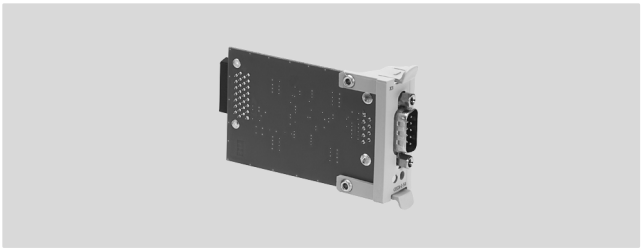
Ordering data

Electrical interface

	Part No.	Type
	**553978**	**CECX-S-2S1**

Electrical interface
CECX-S-S4

Optional module for extending the controller with an RS485-A/422-A serial interface.

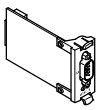


General technical data		
Type		RS485-A/422-A
Number		1
Connection technology		Sub-D plug, 9-pin
Transmission rate	[bps]	1,200 ... 115,000
		Can be set via software
Electrical isolation		No
Electrical protection class		III
Product weight	[g]	31
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

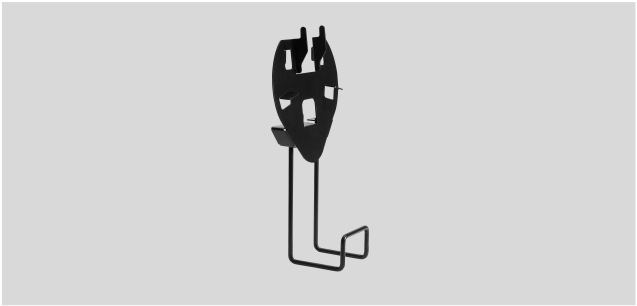
Operating and environmental conditions		
Ambient temperature	[°C]	5 ... 55
Storage temperature	[°C]	–40 ... +70
Resistance to shock		EN 60068-2-27 EA
		15 g, 11 ms (half sine)
Resistance to vibration		EN 60068-2-6-FC
		5 ... 9 Hz 3.5 mm
		9 ... 150 Hz 1g
Relative air humidity	[%]	10 ... 95
Protection class		IP20
Certification		cULus listed (OL)

Ordering data

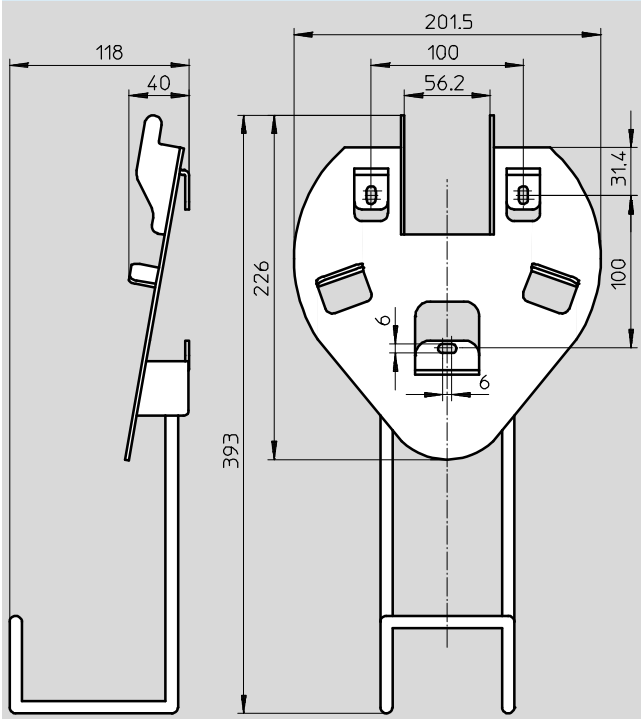
Electrical interface

	Part No.	Type
	**553979**	**CECX-S-S4**

Retainer
CAFM-D1-W



Dimensions Download CAD data ➔ **www.festo.com**



Ordering data

	Part No.	Type
Retainer	**552107**	**CAFM-D1-W**

Teach pendant
CDSA-D1-VX

General technical data		
Operating voltage range	[V DC]	19 ... 30
Nominal operating voltage	[V DC]	24
Current consumption[1)]	[A]	0.4
User memory	[MB]	256
Display		Colour TFT
Display size		6.5"
Display resolution		VGA, 640x480 pixels
Display properties		Touch screen
Number of function keys		31
Number of system LEDs		4
Operating elements		2 enabler keys
		Emergency stop
Area of application		Only with multi-axis controller CMXR
Ethernet interface		2 interfaces
		RJ45, 10/100 Mbps
USB interface		Yes
Backup battery		Yes
Product weight	[g]	1,250
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

1) At nominal operating voltage

Operating and environmental conditions		
Ambient temperature	[°C]	0 ... +50
Storage temperature	[°C]	–20 ... +70
Relative air humidity	[%]	5 ... 95
Protection class		IP65
CE mark (see declaration of conformity)		To EU EMC Directive

Dimensions

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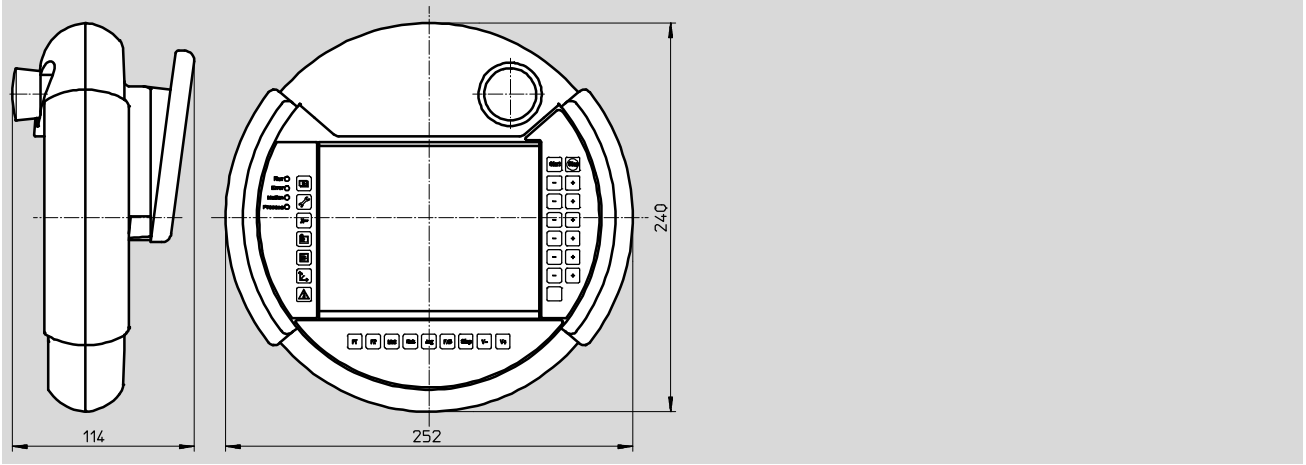
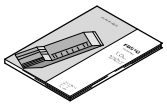


Ordering data

	Part No.	Type
Teach pendant	**552103**	**CDSA-D1-VX**

Ordering data – Manuals[1)]

	Language	System manual Part No.	System manual Type	Software manual Part No.	Software manual Type
	DE	**560333**	**GDCP-CDSA-SY-DE**	**560339**	**GDCP-CDSA-SW-DE**
	EN	**560334**	**GDCP-CDSA-SY-EN**	**560340**	**GDCP-CDSA-SW-EN**
	ES	**560335**	**GDCP-CDSA-SY-ES**	**560341**	**GDCP-CDSA-SW-ES**
	FR	**560336**	**GDCP-CDSA-SY-FR**	**560342**	**GDCP-CDSA-SW-FR**
	IT	**560337**	**GDCP-CDSA-SY-IT**	**560343**	**GDCP-CDSA-SW-IT**

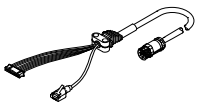
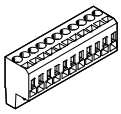
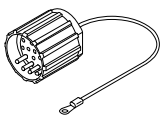
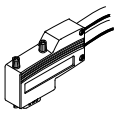
1) Manual in paper form is not included in the scope of delivery

Interface housing
CAMI-C

General technical data		
Type of mounting		On control cabinet wall (M25)
Mounting position		Any
Electrical connection		Ethernet interface: RJ45
		Coninver connector M25, 17-pin
		Spring force connector, 11-pin
Protection class		IP65 to IEC 60529
Dimensions		
Length	[mm]	26
Width	[mm]	67.2
Height	[mm]	76.1
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

Ordering data	Part No.	Type
Interface housing	**552116**	**CAMI-C**

Ordering data – Cables and plugs

	Brief description	Cable length [m]	Part No.	Type
	Connecting cable: between multi-axis controller CMXR and teach pendant CDSA via interface housing CAMI-C	5	**552104**	**NESC-C-D1-5-C1**
		10	**552105**	**NESC-C-D1-10-C1**
		15	**552106**	**NESC-C-D1-15-C1**
	Plug for interface housing CAMI-C, 11-pin	–	**558328**	**NECC-L1G11-C1**
	Plug for peripheral modules, 2-pin		**553857**	**NECC-L1G2-C1**
	Plug for peripheral modules, 4-pin		**553858**	**NECC-L1G4-C1**
	Plug for peripheral modules, 6-pin		**553859**	**NECC-L1G6-C1**
	Plug for peripheral modules, 8-pin		**553860**	**NECC-L1G8-C1**
	Plug for peripheral modules, 18-pin		**553861**	**NECC-L1G18-C1**
	Plug: is used to bridge the emergency stop circuit when the teach pendant is disconnected	–	**555676**	**CAMF-B-M25-G4**
	Plug: for Profibus interface; Sub-D, 9-pin, without terminating resistor	–	**533780**	**FBS-SUB-9-WS-PB-K**
	Plug: for CANopen interface; Sub-D, 9-pin, without terminating resistor	–	**533783**	**FBS-SUB-9-WS-CO-K**