

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.

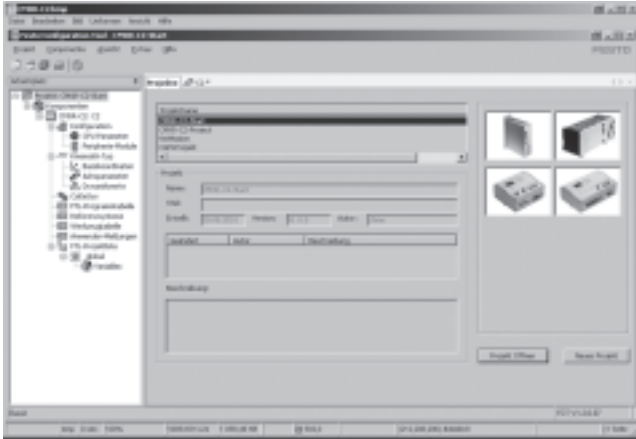
Multi-axis controllers CMXR-C2



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

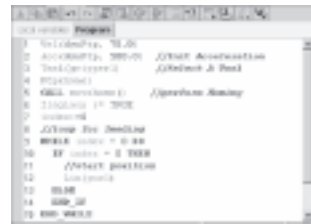
outputs) as well as mechanical variables (e.g. choice of the kinematic system) are defined in the configuration. The sophisticated user guidance system guarantees quick and easy configuration of the complex multi-axis system.

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



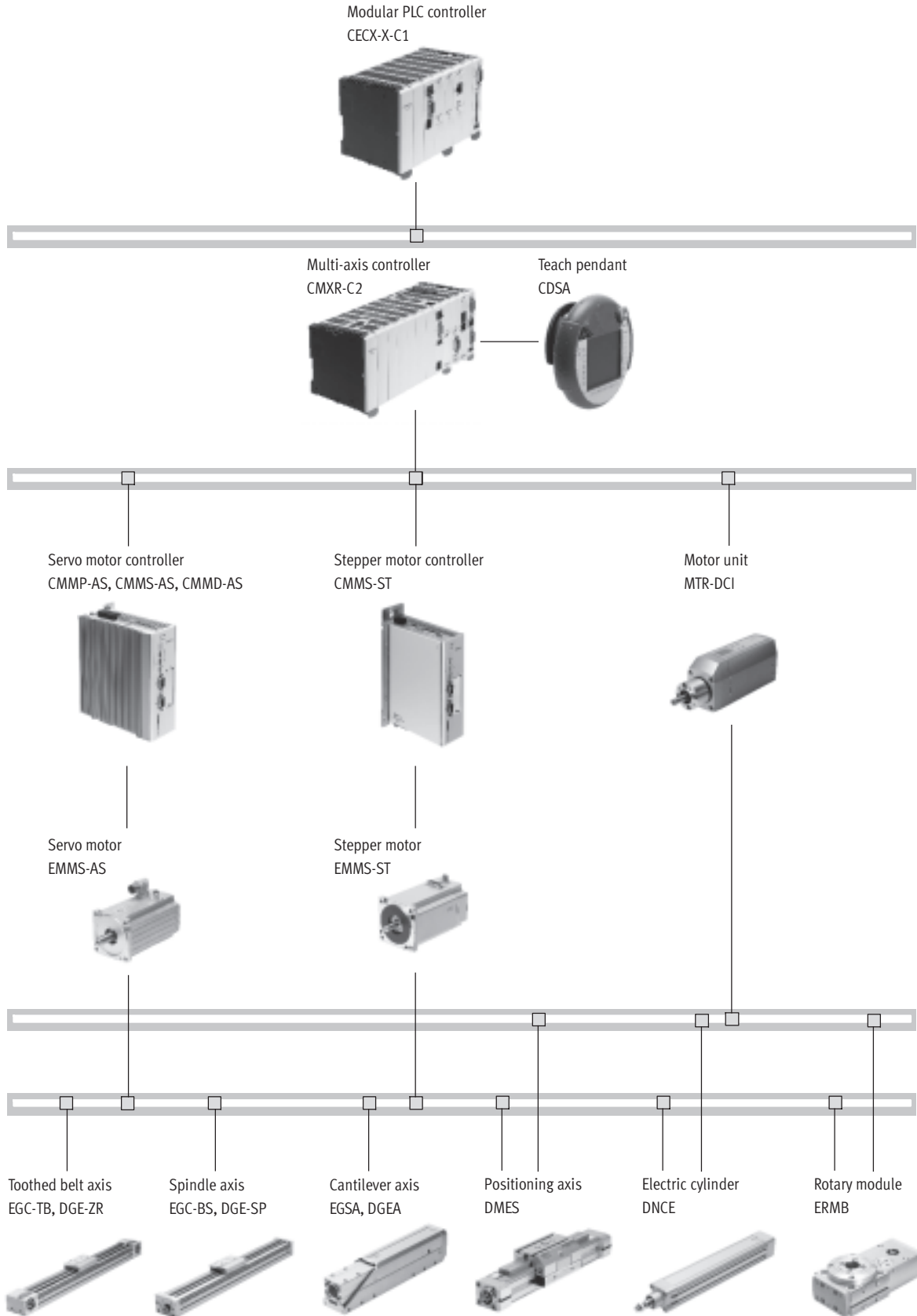
The teach pendant CDSA features an emergency stop switch as well as a 3-stage enabling key. Both devices are designed with two channels and are prepared for integration in the customer's safety circuits. The purpose of the enabling key is to approve the drive power during set-up. In addition to the hardware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

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Key features



Everything from a single source – perfectly co-ordinated

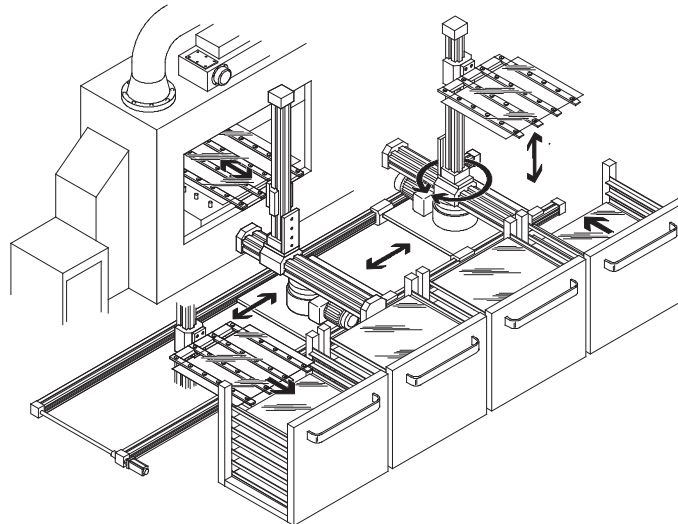


Multi-axis controllers CMXR-C2

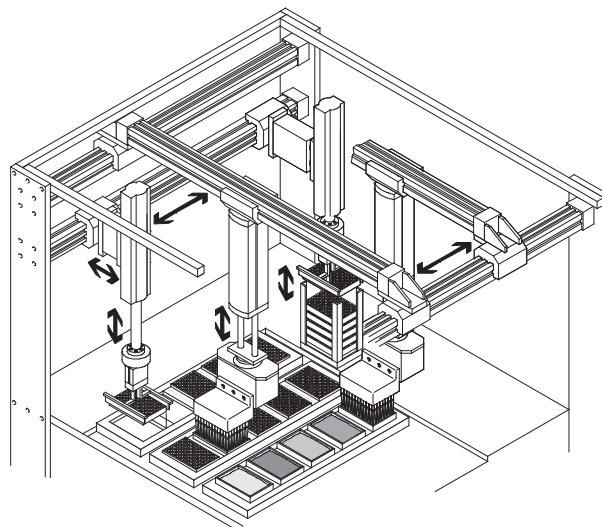
Key features

Application examples

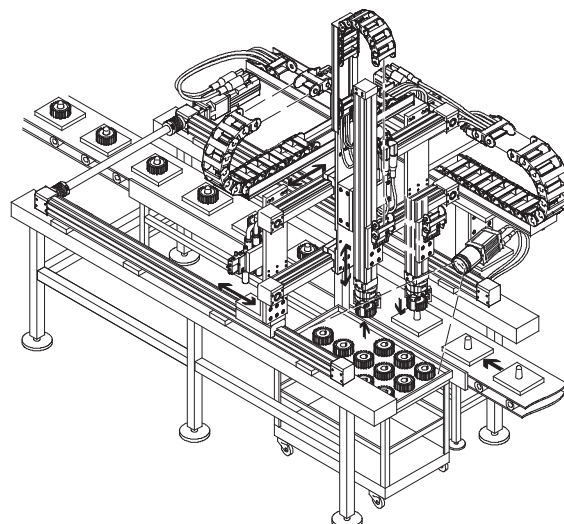
Removing and palletising workpieces



Handling and picking carrier plates

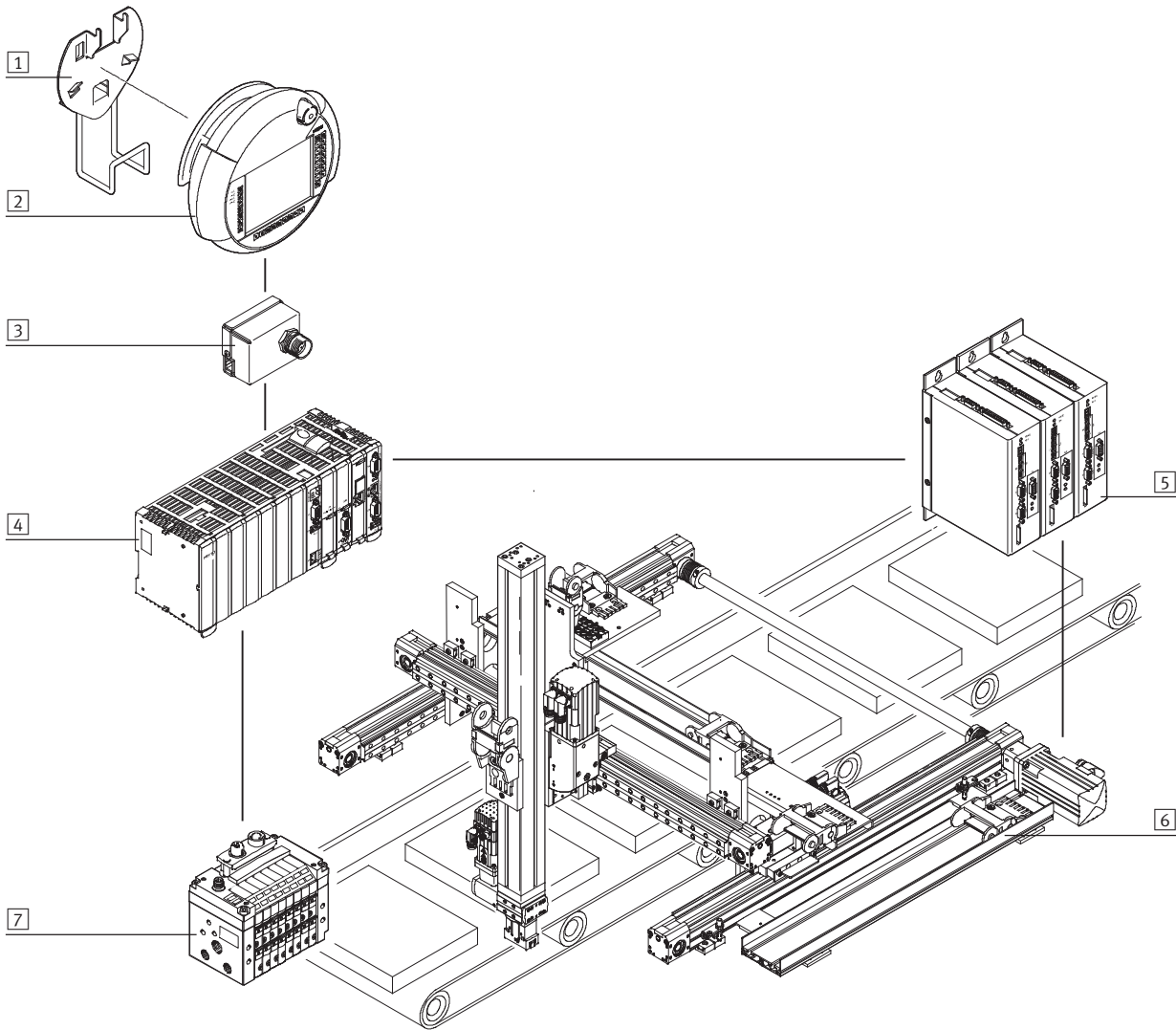


Feeding workpieces with simultaneous quality inspection via a vision system



Multi-axis controllers CMXR-C2

Peripherals overview



Multi-axis controllers CMXR-C2

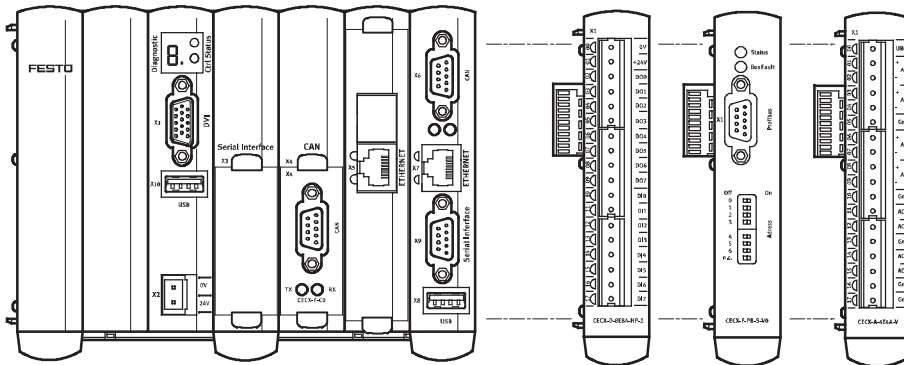
Peripherals overview

Accessories		
Type	Brief description	→ Page/Internet
1 Retainer CAFМ	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

Controller CMXR-C2 with peripheral modules

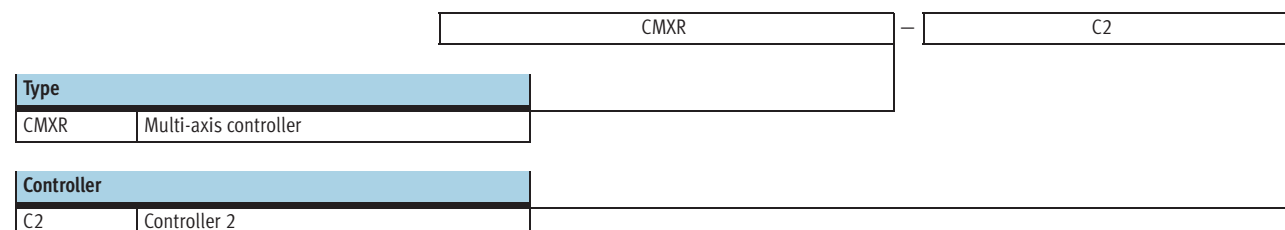


Peripheral modules		
Type	Brief description	→ Page/Internet
Input/output module, digital CECX-D-6E8A-PN-2, CECX-D-8E8A-NP-2	<ul style="list-style-type: none"> • 6 or 8 digital inputs • 8 digital outputs 	12
Input module, digital CECX-D-16E	<ul style="list-style-type: none"> • 16 digital inputs 	14
Output module, digital CECX-D-14A-2	<ul style="list-style-type: none"> • 14 digital outputs 	15
Input/output module, analogue CECX-A-4E4A-V	<ul style="list-style-type: none"> • 4 analogue voltage inputs • 4 analogue voltage outputs 	16
Input/output module, analogue CECX-A-4E4A-A	<ul style="list-style-type: none"> • 4 analogue current inputs • 4 analogue current outputs 	16
Input module, analogue CECX-A-4E-V	<ul style="list-style-type: none"> • 4 analogue voltage inputs 	18
Output module, analogue CECX-A-4A-V	<ul style="list-style-type: none"> • 4 analogue voltage outputs 	19
Input module, analogue CECX-E-4E-T-P1, CECX-E-6E-T-P2	<ul style="list-style-type: none"> • 4 or 6 temperature inputs 	20
Encoder interface CECX-C-2G2, CECX-C-2G1	<ul style="list-style-type: none"> • 2 or 4 encoder interfaces 	22
Fieldbus interface CECX-F-PB-S-V1	<ul style="list-style-type: none"> • Profibus slave DP-V1 	24
Electrical interface CECX-S-2S1	<ul style="list-style-type: none"> • 2 serial interfaces RS232 	25
Electrical interface CECX-S-S4	<ul style="list-style-type: none"> • 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



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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.

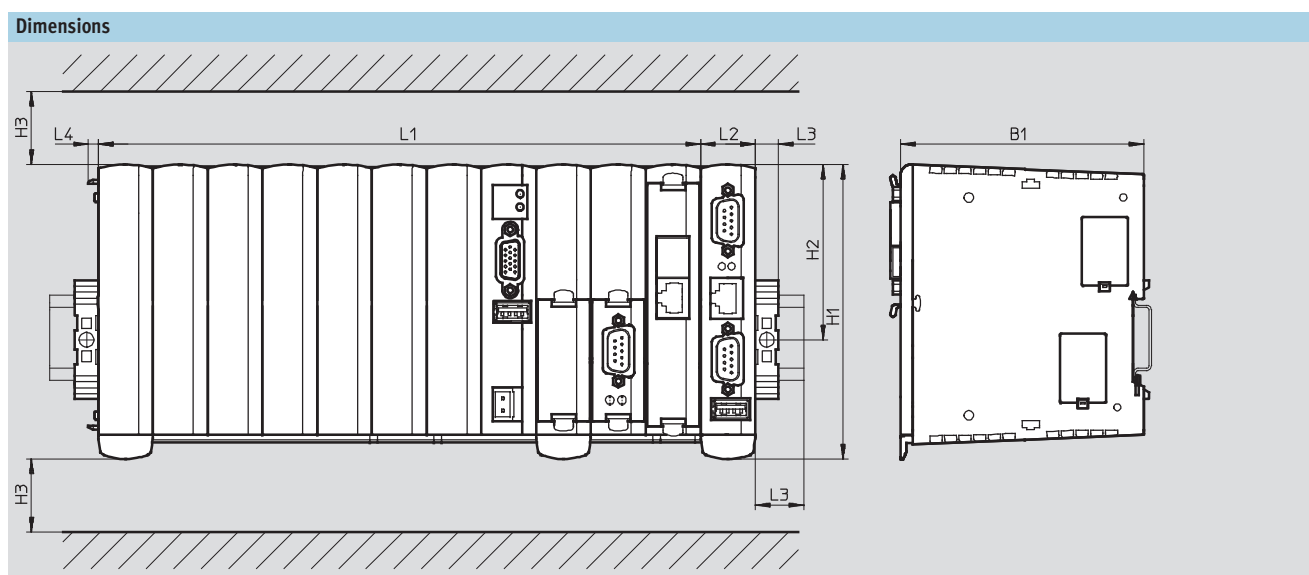
Multi-axis controllers CMXR-C2

Technical data

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

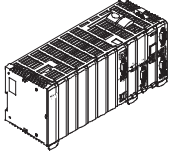
Operating and environmental conditions	
Ambient temperature [°C]	5 ... 55
Storage temperature [°C]	-40 ... +70
Resistance to shock	EN 60068-2-27 EA 15 g, 11 ms (half-sine)
Resistance to vibration	EN 60068-2-6-FC 5 ... 9 Hz 3.5 mm 9 ... 150 Hz 1g
Relative air humidity [%]	10 ... 95
Protection class	IP20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

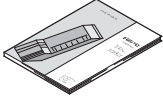


Type	B1	H1	H2	H3	L1	L2	L3	L4
CMXR-C2	100 ±2	121 ±2	72 ±1	50	247.5 ±2	22.5	9.5	4


Multi-axis controllers CMXR-C2

Technical data

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	
	SV	571692	GDCP-CMXR-C2-SY-SV	571698	GDCP-CMXR-C2-HW-SV	
			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	
	SV	560320	GDCP-CMXR-SW-SV	571710	GDCP-CMXR-C2-ST-SV	
			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			
	SV	571704	GDCP-CMXR-C2-CS-SV			

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

Multi-axis controllers CMXR-C2

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Technical data

Input/output module,
digital

CECX-D-6E8A-PN-2,
CECX-D-8E8A-NP-2



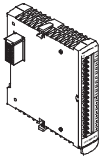
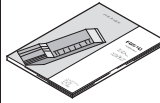
General technical data		
Operating voltage range	[V DC]	19.2 ... 30
Nominal operating voltage	[V DC]	24
Electrical connection technology for I/O		Socket strip, grid 5.08 mm
Power consumption at 5 V	[W]	0.4
Power consumption at 24 V	[W]	1.9
Electrical protection class		III
Product weight	[g]	135
Materials		
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
	[kHz]	20, 100, adjustable
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)

Multi-axis controllers CMXR-C2

Technical data

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			Manual ¹⁾			
	Part No.	Type		Language	Part No.	Type	
	6 inputs/8 outputs			6 inputs/8 outputs			
	553972	CECX-D-6E8A-PN-2		-			
8 inputs/8 outputs		8 inputs/8 outputs					
552099	CECX-D-8E8A-NP-2	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			
		SV	560590	GDCC-CECX-D-8E8A-NP-SV			

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

Multi-axis controllers CMXR-C2

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Technical data

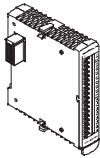
Input module,
digital
CECX-D-16E



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		Manual ¹⁾	
Input module, digital	Part No. Type	Language	Part No. Type
	552096 CECX-D-16E	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
		SV	560578 GDCC-CECX-D-16E-SV

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Multi-axis controllers CMXR-C2

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Technical data

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			Manual ¹⁾		
Output module, digital	Part No.	Type	Language	Part No.	Type
	552097	CECX-D-14A-2	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
			SV	560584	GDCC-CECX-D-14A-SV

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

Multi-axis controllers CMXR-C2

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Technical data

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



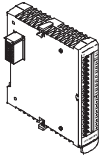
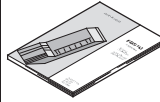
General technical data		
Type	CECX-A-4E4A-V	CECX-A-4E4A-A
Variant	Voltage inputs/outputs	Current inputs/outputs
Electrical connection technology for I/O	Socket strip, grid 5.08 mm	
Power consumption at 5 V [W]	0.3	0.3
Power consumption at 24 V [W]	3.3	3.6
Electrical protection class	III	
Product weight [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

Multi-axis controllers CMXR-C2

Technical data

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			Manuals ¹⁾			
Input/output module, analogue						
	Part No.	Type		Language	Part No.	Type
	Voltage inputs/outputs			Voltage inputs/outputs		
	552100	CECX-A-4E4A-V		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		
		SV	560596	GDCC-CECX-A-4E4A-V-SV		
Current inputs/outputs		Current inputs/outputs				
552101	CECX-A-4E4A-A	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		
		SV	560602	GDCC-CECX-A-4E4A-A-SV		

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

Multi-axis controllers CMXR-C2

Technical data

FESTO

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

FESTO

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

Multi-axis controllers CMXR-C2

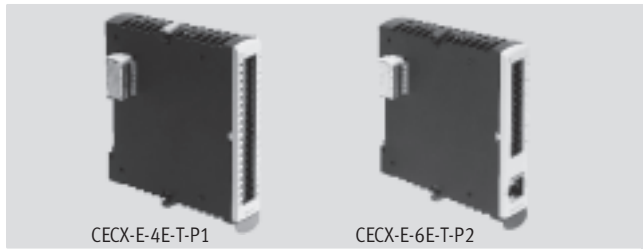
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Technical data

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



- With 4 or 6 temperature inputs



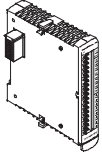
General technical data		
Type	CECX-E-4E-T-P1	CECX-E-6E-T-P2
Variant	4 temperature inputs	6 temperature inputs
Electrical connection technology for I/O	Socket strip, grid 5.08 mm	
	–	Gold contacts
Power consumption at 5 V [W]	0.3	0.6
Power consumption at 24 V [W]	2.5	1.6
Electrical protection class	III	
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)	

Multi-axis controllers CMXR-C2

Technical data

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

Multi-axis controllers CMXR-C2

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Technical data

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



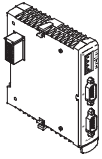
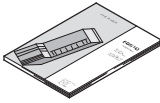
General technical data		
Type	CECX-C-2G2	CECX-C-2G1
Operating voltage range	[V DC] 19.2 ... 30	
Nominal operating voltage	[V DC] 24	
Electrical connection technology for I/O	Socket strip, grid 5.08 mm	
Power consumption at 5 V	[W] 0.6	0.65
Electrical protection class	III	
Product weight	[g] 135	140
Materials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

Multi-axis controllers CMXR-C2

Technical data

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		Manuals ¹⁾ 		
	Part No.	Type			
	2 encoder inputs				
	552117	CECX-C-2G2	Language		
			Part No.		
			Type		
	4 encoder inputs		2 encoder inputs		
	553977	CECX-C-2G1	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
			SV	560608	GDCC-CECX-C-2G2-SV
			4 encoder inputs		
			-		

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

Multi-axis controllers CMXR-C2

Technical data

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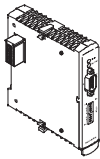
Fieldbus interface,
Profibus slave DP-V1
CECX-F-PB-S-V1



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

Multi-axis controllers CMXR-C2

Technical data

Electrical interface
CECX-S-2S1

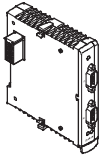


Peripheral module for extending the controller with two RS232 serial interfaces.



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

Multi-axis controllers CMXR-C2

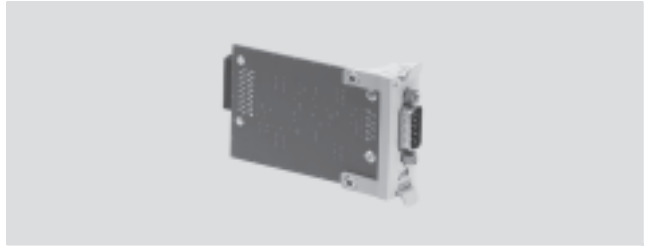
Technical data

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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

Multi-axis controllers CMXR-C2

Accessories

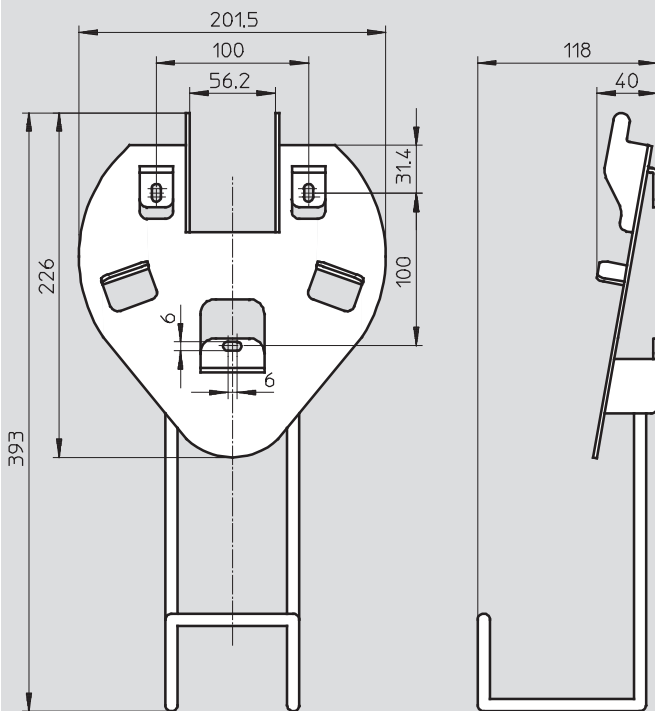


Retainer
CAFM-D1-W



Dimensions

Download CAD Data → www.festo.com/us/cad



Ordering data

	Part No.	Type
Retainer	552107	CAFM-D1-W

Multi-axis controllers CMXR-C2

Accessories

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

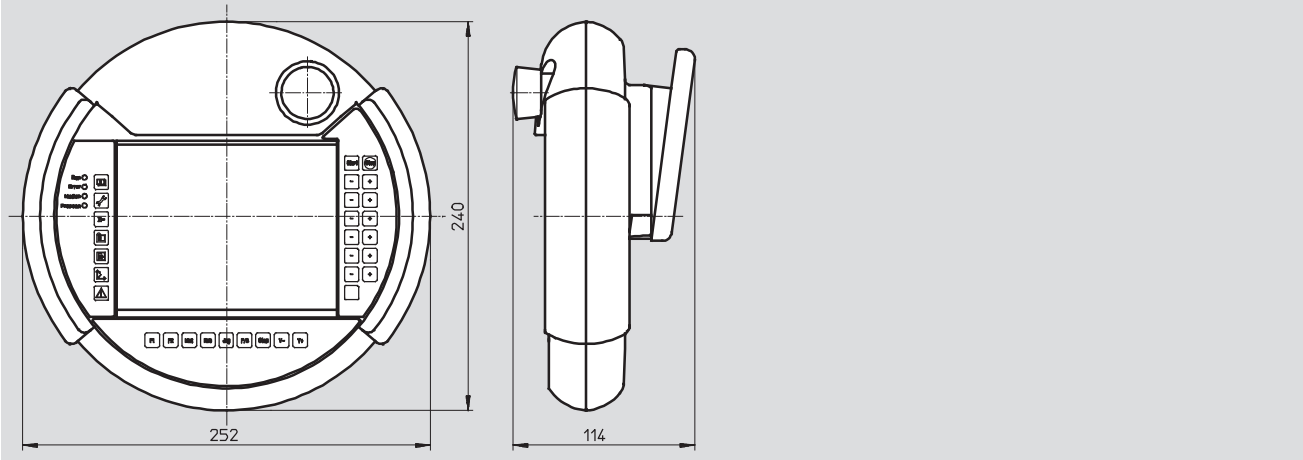
Operating and environmental conditions		
Ambient temperature	[°C]	0 ... +50
Storage temperature	[°C]	-20 ... +70
Relative air humidity	[%]	5 ... 95
Protection class		IP65
CE mark (see declaration of conformity)		To EU EMC Directive

Multi-axis controllers CMXR-C2

Accessories

Dimensions

Download CAD Data → www.festo.com/us/cad



Ordering data

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

Ordering data – Manuals¹⁾

	Language	Part No. Type		Part No. Type	
		System manual		Software manual	
	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
	SV	560338	GDCP-CDSA-SY-SV	560344	GDCP-CDSA-SW-SV

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

Multi-axis controllers CMXR-C2

Accessories



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

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