

Modular controllers CECX



Modular controllers CECX

Key features

At a glance			
Versatile		Economical	
The controller is functionally designed as a master and motion controller. It is a powerful control unit that can simultaneously execute both		The modular structure offers the right solutions for all requirements. It has a high component density, is easy to use and can be mounted on H-rails. It is fully compatible with all products from Festo and other manufacturers.	
comprehensive PLC functions and multi-axis movements with interpolation.			
Controlling electric axes		Flexible	
Simple commissioning, programming and servicing: With the SoftMotion module, the CoDeSys software offers a powerful programming environment		Programming to the IEC 61131-3 standard means the CECX is flexible and open for all types of control tasks. Numerous communication modules (Profibus, CANopen, Ethernet) guarantee compatibility with other systems.	
for controlling all electric axes with CANopen fieldbus connection. Additionally available: module libraries, configuration tools and drivers.			
Reliable		Product features	
It is certified to CE, UL/CSA, produced based on global experience in front end automation and uses standard hardware and CoDeSys standard software.		- Two product versions - Modular master controller with CoDeSys - Motion controller with CoDeSys and SoftMotion - Easy configuration - Automatic module detection - Search function for finding controllers in the network - DHCP-compatible - Automatic transfer of the communication settings to the project	

Module selection			
CPU unit	Optional modules	Input/output modules	Communication modules
- Power PC 400 MHz - Ethernet interface - CAN bus interface - RS 485 interface - USB interface - Compact Flash card as removable storage - Slots for optional modules	The controller CECX-X can be extended with the following optional modules: - Ethernet interface - CAN interface - RS 232 serial interface - RS 485-A/422-A serial interface	- Digital modules - Analogue modules for current and voltage - Temperature input modules - Encoder counter modules	- Profibus master DP-V1 - Profibus slave DP-V0 - Profibus slave DP-V1 2x RS 232 serial interface

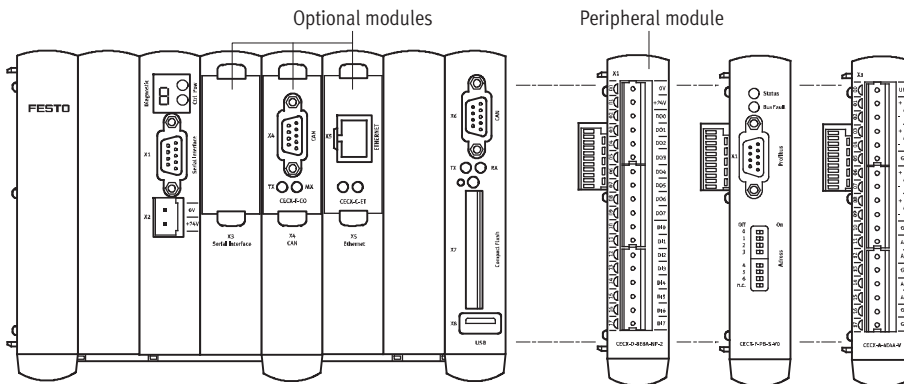
Actuating electric axes from Festo via CANopen interface	
- Motor controllers CMMP-AS and CMMS-AS for servo motors - Motor controller CMMS-ST for stepper motors - Motor controllers SFC-DC and SFC-LAC - Motor unit MTR-DCI	

Modular controllers CECX

Key features

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Controller CECX with peripheral modules and optional modules



Type	Brief description	→ Page/Internet
Peripheral modules		
Input/output module, digital CECX-D-...E8A	• 6 or 8 digital inputs • 8 digital outputs	9
Input/output module, analogue CECX-A-4E4A-V	• 4 analogue voltage inputs • 4 analogue voltage outputs	11
Input/output module, analogue CECX-A-4E4A-A	• 4 analogue current inputs • 4 analogue current outputs	11
Input module, digital CECX-D-16E	• 16 digital inputs	14
Input module, analogue CECX-A-4E-V	• 4 analogue voltage inputs	16
Output module, digital CECX-D-14A-2	• 14 digital outputs	18
Output module, analogue CECX-A-4A-V	• 4 analogue voltage outputs	20
Input module, analogue CECX-E-...E-T-P...	• 4 or 6 temperature inputs	22
Encoder interface CECX-C-2G2/-2G1	• 2 encoder inputs/4 encoder inputs SSI (RS 422)	25
Bus interface CECX-F-PB-S-V...	• Profibus slave DP-V0 • Profibus slave DP-V1	28
Bus interface CECX-F-PB-V1	• Profibus master DP-V1	30
Bus interface CECX-B-CO	• Connection via CAN bus to the modular controller • For connecting decentralised peripheral modules in series	32
Electrical interface CECX-C-2S1	• 2 RS 232 serial interfaces	34
Optional modules		
Bus interface CECX-F-CO	• CAN interface	36
Electrical interface CECX-C-ET	• Ethernet interface	38
Electrical interface CECX-C-S1	• RS 232 serial interface	40
Electrical interface CECX-S-S4	• RS 485-A/422-A serial interface	40

Note

Max. 12 peripheral modules
can be mounted.

Mounting rules → System manual.

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Type codes

		CECX	–	X	–	C1
Type						
CECX	Modular controller					
Controller						
X	CPU					
Control type						
C1	CoDeSys					
M1	MotionControl					

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Technical data

Controller CECX-X-C1

Modular master controller
with CoDeSys

Controller CECX-X-M1

Motion controller with CoDeSys
and SoftMotion

The controller is the central module in the modular control unit. It provides the resources for executing the application software.

The controller has three plug-in slots for optional modules to effect the following connections for interfaces:

- CAN bus interface
- Ethernet electrical interface
- RS 232 serial interface

The controller is equipped with the optional module for the Ethernet electrical interface by default.



General technical data		
	CECX-X-C1	CECX-X-M1
Operating voltage range	[V DC]	19.2 ... 30
Power consumption at 24 V	[W]	14
Max. power output at 5 V	[W]	10
Max. power output at 24 V	[W]	45
Max. power consumption	[W]	69
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	
Control elements	CTRL button	
CPU data	64 MB DRAM 400 MHz processor	
Programming software	CoDeSys provided by Festo	CoDeSys provided by Festo
	–	SoftMotion
Programming language	SFC, IL, FCH, LD and ST to IEC 61131-3 Additionally CFC	SFC, IL, FCH, LD and ST to IEC 61131-3 Additionally CFC
Status displays	7-segment display LED green = power	
Slots	1x CAN optional module → 36 1x Compact Flash type 1 1x Ethernet optional module → 38 1x serial interface module → 40	
USB interface	USB 1.1	
Protection class	IP20	
Electrical protection class	III	
Product weight	[g]	580
Materials		
Note on materials	Contains PWIS (paint-wetting impairment substances)	
	RoHS-compliant	

Modular controllers CECX

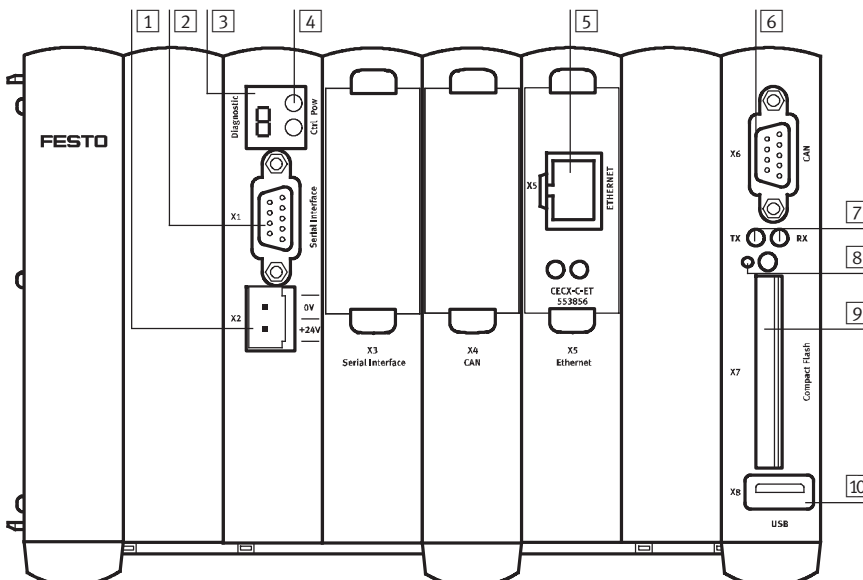
Technical data

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Technical data – Interfaces		
	CECX-X-C1	CECX-X-M1
Ethernet		
Connector plug	RJ45 socket, 8-pin	
Data transmission speed	[Mbps]	10/100
Supported protocols	TCP/IP, EasyIP and 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
Galvanic isolation	No	
Serial interface		
Type	RS 485-A	
Number	1	
Connection technology	Sub-D plug, 9-pin	
Transmission rate	[bps]	1,200 ... 115,000
		Adjustable via software
Galvanic isolation	No	

Operating and environmental conditions			
Ambient temperature	[°C]	+5 ... +55	
Storage temperature	[°C]	–40 ... +70	
Relative air humidity	[%]	10 ... 95	
Certification		cULus listed (OL)	

Connection and display components

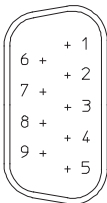


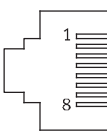
- 1 Operating voltage connection (X2)
- 2 RS 485 serial interface (X1)
- 3 7-segment display
- 4 Power LED
- 5 Ethernet interface (X5)
- 6 CAN interface (X6)
- 7 CAN status LEDs (TX, RX)
- 8 Compact Flash status LED
- 9 Compact Flash plug-in slot (X7)
- 10 USB interface (X8)

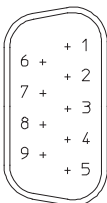
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Pin allocation – RS 485 serial interface (X1)			
	Pin	Signal	Meaning
Sub-D plug			
	1	GND	Ground
	2	Therm B	Terminating resistor
	3	B / B'	Transmit/receive +
	4	n.c.	Not connected
	5	GND	Ground
	6	n.c.	Not connected
	7	Therm A	Terminating resistor
	8	A / A'	Transmit/receive –
	9	n.c.	Not connected

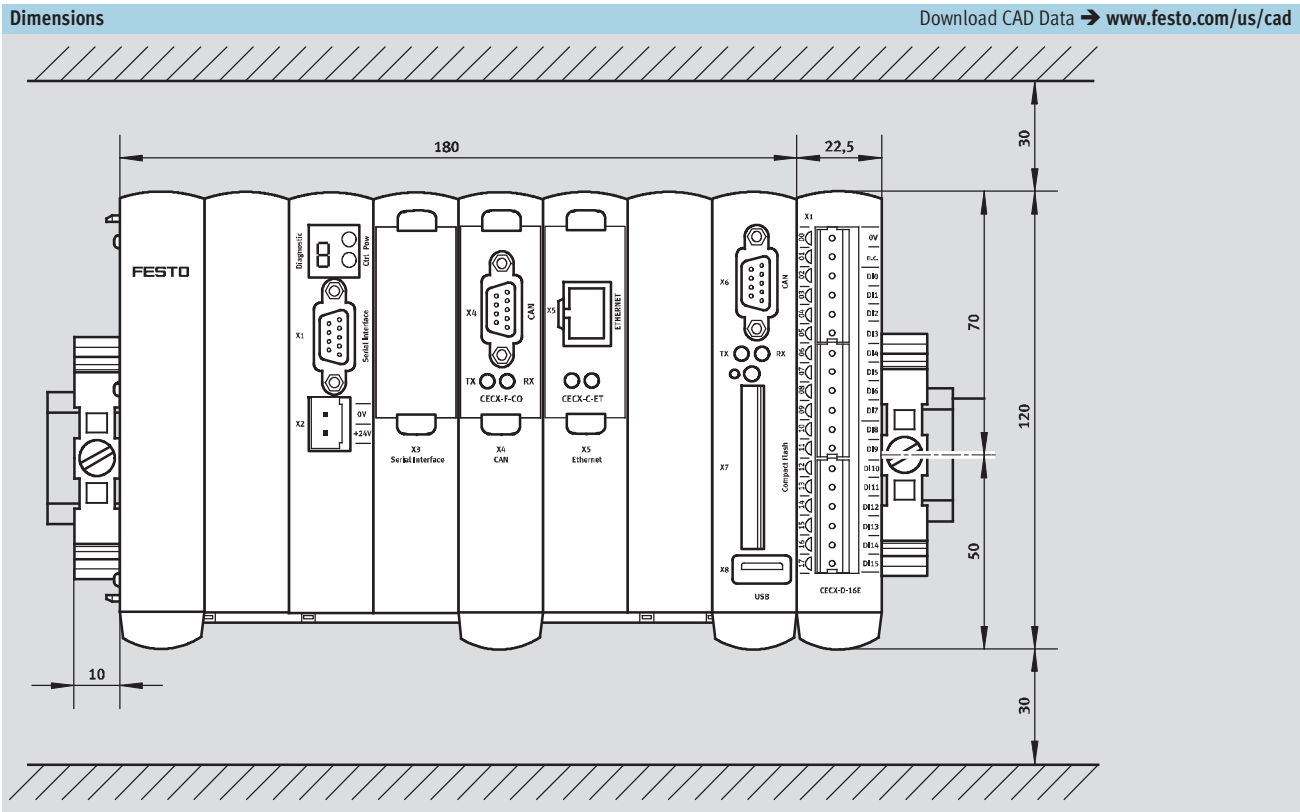
Pin allocation – Ethernet interface (X5)			
	Pin	Signal	Meaning
RJ45 plug			
	1	TD+	Transmitted data +
	2	TD–	Transmitted data –
	3	RD+	Received data +
	4	n.c.	Not connected
	5	n.c.	Not connected
	6	RD–	Received data –
	7	n.c.	Not connected
	8	n.c.	Not connected
	Housing	Screened	Screened

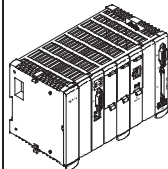
Pin allocation – CAN interface (X6)			
	Pin	Signal	Meaning
Sub-D plug			
	1	n.c.	Not connected
	2	CAN_L	CAN low
	3	SGND	Signal ground
	4	TERM1	Connection for activating the internal terminating resistor
	5	TERM1	Connection for activating the internal terminating resistor
	6	GND	Ground
	7	CAN_H	CAN high
	8	TERM2	Connection for activating the internal terminating resistor
	9	TERM2	Connection for activating the internal terminating resistor
	Housing	Screened	Screened

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Ordering data		Part No.	Type
	With CoDeSys	553852	CECX-X-C1
	With CoDeSys and SoftMotion	553853	CECX-X-M1

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Technical data

Input/output module, digital CECX-D-...E8A

There are 6 or 8 digital inputs and 8 digital outputs available for processing digital process signals.

The following functions are available:

- Address setting
- Short circuit monitoring for outputs
- Debounce function for inputs
- Interrupt function DIO and DI1



General technical data		
Operating voltage range	[V DC]	19.2 ... 30
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
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
Protection class		IP20
Electrical protection class		III
Product weight	[g]	135
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances) RoHS-compliant

Technical data – Interfaces			
		CECX-D-6E8A-PN	CECX-D-8E8A-NP
Digital inputs			
Number		6	8
Fast clock pulse inputs		2, interruptible, response time 50 µs	
Input voltage/current	[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	[V DC]	LED green	
Switching logic		Negative logic (NPN)	Positive logic (PNP)
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	[V DC]	LED orange	
Switching logic		Negative logic (NPN)	Positive logic (PNP)

Modular controllers CECX

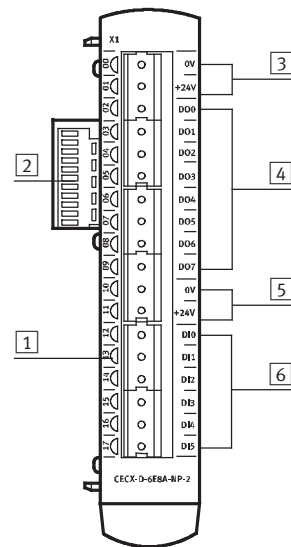
Technical data

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Operating and environmental conditions		
Ambient temperature	[°C]	+5 ... +55
Storage temperature	[°C]	−40 ... +70
Relative air humidity	[%]	10 ... 95
Certification		cULus listed (OL)

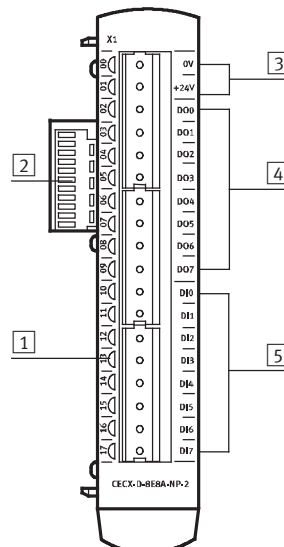
Connection and display components

CECX-D-6E8A-PN



- 1 Digital output or digital input status LEDs
- 2 Bus plug
- 3 Power supply for outputs
- 4 Digital output D00 ... D07
- 5 Power supply for inputs
- 6 Digital input DI0 ... DI5

CECX-D-8E8A-NP



- 1 Digital output or digital input status LEDs
- 2 Bus plug
- 3 Power supply
- 4 Digital output D00 ... D07
- 5 Digital input DI0 ... DI7

Pin allocation		
Pin	Designation	Meaning
Socket strip		
00	0 V	0 V power supply for outputs
01	24 V	24 V power supply for outputs
02 ... 09	D00 ... D07	Digital output 0 ... 7
10	0 V	0 V power supply for inputs
11	24 V	24 V power supply for inputs
12 ... 17	DI0 ... DI5 ¹⁾	Digital input 0 ... 5

Pin allocation		
Pin	Designation	Meaning
Socket strip		
00	0 V	0 V power supply
01	24 V	24 V power supply
02 ... 09	D00 ... D07	Digital output 0 ... 7
10 ... 17	DI0 ... DI7 ¹⁾	Digital input 0 ... 7

1) DI0, DI1: interrupt inputs

Ordering data		
Input/output module, digital	Part No.	Type
	553972	CECX-D-6E8A-PN-2
	552099	CECX-D-8E8A-NP-2

Note

Accompanying manuals in German and English can be found on the CD-ROM supplied with the controller CECX-X.

Modular controllers CECX

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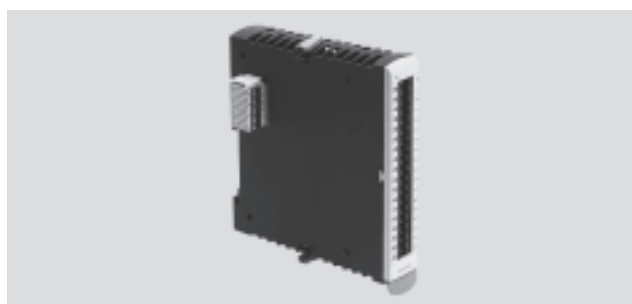
Technical data

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

There are 4 analogue voltage inputs/
outputs available for processing
analogue process signals.

The following function is available:

- Sensor failure detection



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

There are 4 analogue current inputs/
outputs available for processing
analogue process signals.

General technical data			
	CECX-A-4E4A-V		CECX-A-4E4A-A
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
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		
Protection class	IP20		
Electrical protection class	III		
Product weight	[g]	135	
Materials			
Note on materials	Contains PWIS (paint-wetting impairment substances) RoHS-compliant		

Technical data – Interfaces			
		CECX-A-4E4A-V	CECX-A-4E4A-A
Analogue inputs			
Number		4	4
Resolution	[bit]	14	14
Signal range	[V]	0 ... 10 Vref	–
		±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]	10 10 ⁶	< 200
Absolute accuracy at 25 °C	[%]	±0.01	±0.01
Sampling repeat time	[ms]	1	1
Galvanic 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

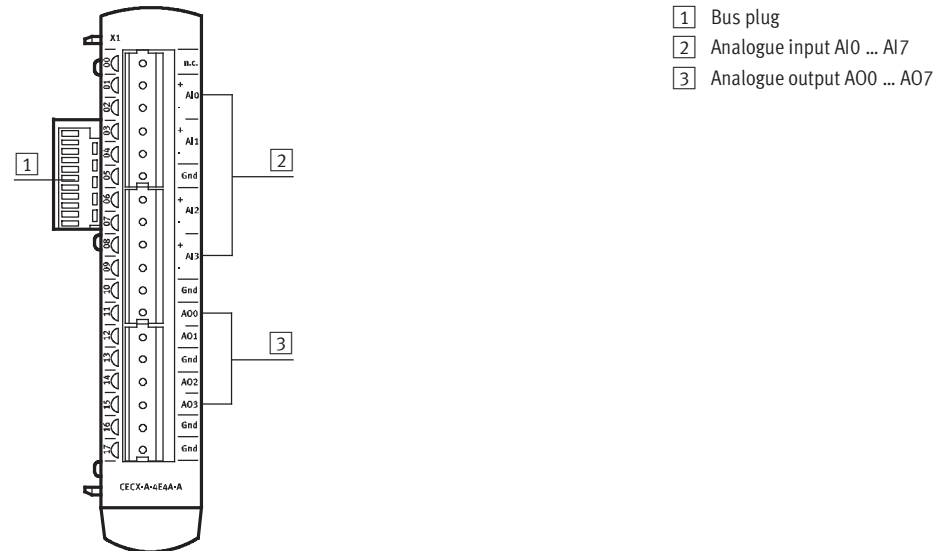
Modular controllers CECX

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Operating and environmental conditions			
Ambient temperature	[°C]	+5 ... +55	
Storage temperature	[°C]	-40 ... +70	
Relative air humidity	[%]	10 ... 95	
Certification		cULus listed (OL)	

Connection and display components

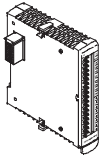


Pin allocation			
Pin	Designation	Meaning	
		CECX-A-4E4A-V	CECX-A-4E4A-A
Socket strip			
00	V _{REF} / n.c.	Reference voltage	Not connected
01	AI0+	Positive voltage input signal AI0	Positive current input signal AI0
02	AI0-	Negative voltage input signal AI0	Negative current input signal AI0
03	AI1+	Positive voltage input signal AI1	Positive current input signal AI1
04	AI1-	Negative voltage input signal AI1	Negative current input signal AI1
05	GND	Reference potential GND	Reference potential GND
06	AI2+	Positive voltage input signal AI2	Positive current input signal AI2
07	AI2-	Negative voltage input signal AI2	Negative current input signal AI2
08	AI3+	Positive voltage input signal AI3	Positive current input signal AI3
09	AI3-	Negative voltage input signal AI3	Negative current input signal AI3
10	GND	Reference potential GND	Reference potential GND
11	AO0	Voltage output signal AO0	Current output signal AO0
12	AO1	Voltage output signal AO1	Current output signal AO1
13	GND	Reference potential GND	Reference potential GND
14	AO2	Voltage output signal AO2	Current output signal AO2
15	AO3	Voltage output signal AO3	Current output signal AO3
16	GND	Reference potential GND	Reference potential GND
17	GND	Reference potential GND	Reference potential GND

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Technical data

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Ordering data			
Input/output module, analogue		Part No.	Type
	With 4 analogue voltage inputs/outputs	552100	CECX-A-4E4A-V
	With 4 analogue current inputs/outputs	552101	CECX-A-4E4A-A

Note

Accompanying manuals in German and English can be found on the CD-ROM supplied with the controller CECX-X.

Modular controllers CECX

Technical data

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Input module, digital

CECX-D-16E

There are 16 digital inputs available for processing digital process signals.



General technical data	
Electrical connection technology for I/O	Socket strip, grid 5.08 mm
Power consumption at the system bus [W]	0.4
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
Protection class	IP20
Electrical protection class	III
Product weight [g]	130
Materials	
Note on materials	Contains PWIS (paint-wetting impairment substances) RoHS-compliant

Technical data – Interface	
Digital inputs	
Number	16
Fast clock pulse inputs	2, interruptible, response time 100 µs
Input voltage/current [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	Positive logic (PNP)

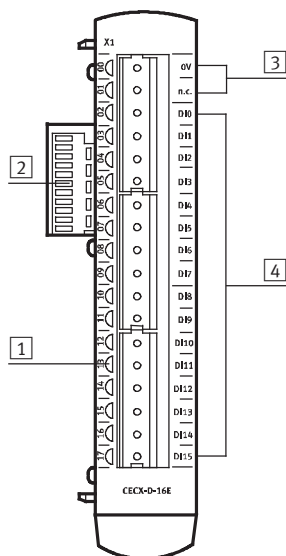
Operating and environmental conditions	
Ambient temperature [°C]	+5 ... +55
Storage temperature [°C]	–40 ... +70
Relative air humidity [%]	10 ... 95

Modular controllers CECX

Technical data

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Connection and display components



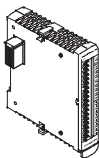
- 1 Digital input status LEDs
- 2 Bus plug
- 3 Reference potential
- 4 Digital input DI0 ... DI15

Pin allocation

Pin	Designation	Meaning
Socket strip		
00	0 V	Reference potential
01	n.c.	Not connected
02 ... 17	DI0 ... DI15	Digital input 0 ... 15 ¹⁾

1) DI0 and DI1 are interruptible

Ordering data

Input module, digital	Part No.	Type
	552096	CECX-D-16E

Note

Accompanying manuals in German and English can be found on the CD-ROM supplied with the controller CECX-X.

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Technical data

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

There are 4 analogue voltage inputs available for processing analogue process signals.

The following function is available:

- Sensor failure detection



General technical data	
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
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
Protection class	IP20
Electrical protection class	III
Product weight [g]	132
Materials	
Note on materials	Contains PWIS (paint-wetting impairment substances) RoHS-compliant

Technical data – Interfaces	
Analogue inputs	
Number	4
Resolution [bit]	14
Signal range [V]	0 ... 10 Vref
[V]	±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 [MΩ]	10
Absolute accuracy at 25 °C [%]	±0.01
Sampling repeat time [ms]	1
Galvanic isolation	No

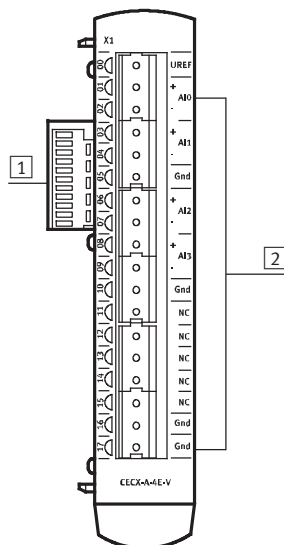
Operating and environmental conditions	
Ambient temperature [°C]	+5 ... +55
Storage temperature [°C]	–40 ... +70
Relative air humidity [%]	10 ... 95
Certification	cULus listed (OL)

Modular controllers CECX

Technical data

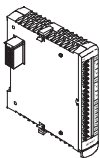
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Connection and display components



- 1 Bus plug
- 2 Analogue voltage input AI0 ... AI3

Pin allocation		
Pin	Designation	Meaning
Socket strip		
00	V _{REF} / n.c.	Reference voltage
01	AI0+	Pos. voltage input signal AI0
02	AI0-	Neg. voltage input signal AI0
03	AI1+	Pos. voltage input signal AI1
04	AI1-	Neg. voltage input signal AI1
05	GND	Reference potential GND
06	AI2+	Pos. voltage input signal AI2
07	AI2-	Neg. voltage input signal AI2
08	AI3+	Pos. voltage input signal AI3
09	AI3-	Neg. voltage input signal AI3
10	GND	Reference potential GND
11	n.c.	Not connected
12	n.c.	Not connected
13	n.c.	Not connected
14	n.c.	Not connected
15	n.c.	Not connected
16	GND	Reference potential GND
17	GND	Reference potential GND

Ordering data		
Input module, analogue	Part No.	Type
	With 4 analogue voltage inputs	553975 CECX-A-4E-V

Note

Accompanying manuals in German and English can be found on the CD-ROM supplied with the controller CECX-X.

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Output module, digital

CECX-D-14A-2

There are 14 digital outputs available for processing digital process signals.



General technical data		
Operating voltage range	[V DC]	24 +25%/−15%
Electrical connection technology for I/O		Socket strip, grid 5.08 mm
Power consumption at the system bus	[W]	0.4
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
Protection class		IP20
Electrical protection class		III
Product weight	[g]	135
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances) RoHS-compliant

Technical data – Interface		
Digital outputs		
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		Positive logic (PNP)

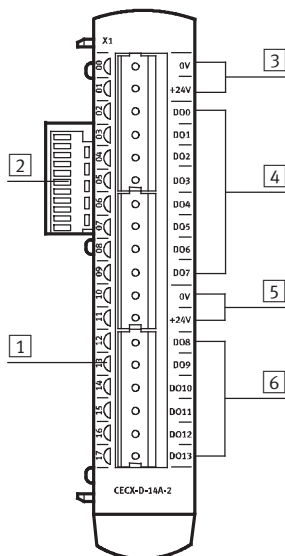
Operating and environmental conditions		
Ambient temperature	[°C]	+5 ... +55
Storage temperature	[°C]	−40 ... +70
Relative air humidity	[%]	10 ... 95

Modular controllers CECX

Technical data

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Connection and display components

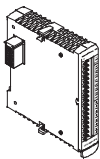


- 1 Digital output status LEDs
- 2 Bus plug
- 3 Voltage supply for D00 ... D07
- 4 Digital output D00 ... D07
- 5 Voltage supply for D08 ... D013
- 6 Digital output D08 ... D013

Pin allocation

Pin	Designation	Meaning
Socket strip – group 1		
00	0 V	0 V voltage supply for D00 ... D07
01	+24 V	24 V voltage supply for D00 ... D07
02 ... 09	D00 ... D07	Digital output 0 ... 7
Socket strip – group 2		
10	0 V	0 V voltage supply for D08 ... D013
11	+24 V	24 V voltage supply for D08 ... D013
12 ... 17	D08 ... D013	Digital output 8 ... 13

Ordering data

Output module, digital	Part No.	Type
	552097	CECX-D-14A-2

Note

Accompanying manuals in German and English can be found on the CD-ROM supplied with the controller CECX-X.

Modular controllers CECX

Technical data

FESTO

Output module, analogue

CECX-A-4A-V

There are 4 analogue voltage outputs available for processing analogue process signals.

The following function is available:

- Sensor failure detection



General technical data		
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
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	
Protection class	IP20	
Electrical protection class	III	
Product weight	[g]	132
Materials		
Note on materials	Contains PWIS (paint-wetting impairment substances)	
	RoHS-compliant	

Technical data – Interfaces		
Analogue outputs		
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

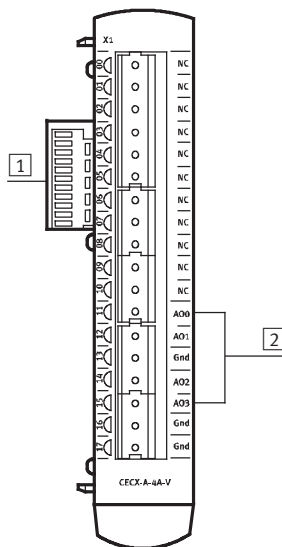
Operating and environmental conditions		
Ambient temperature	[°C]	+5 ... +55
Storage temperature	[°C]	−40 ... +70
Relative air humidity	[%]	10 ... 95
Certification	cULus listed (OL)	

Modular controllers CECX

Technical data

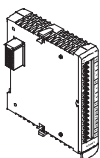
FESTO

Connection and display components



- 1 Bus plug
- 2 Analogue voltage output A00 ... A03

Pin allocation		
Pin	Designation	Meaning
Socket strip		
00	n.c.	Not connected
01	n.c.	Not connected
02	n.c.	Not connected
03	n.c.	Not connected
04	n.c.	Not connected
05	n.c.	Not connected
06	n.c.	Not connected
07	n.c.	Not connected
08	n.c.	Not connected
09	n.c.	Not connected
10	n.c.	Not connected
11	A00	Voltage output signal A00
12	A01	Voltage output signal A01
13	GND	Reference potential GND
14	A02	Voltage output signal A02
15	A03	Voltage output signal A03
16	GND	Reference potential GND
17	GND	Reference potential GND

Ordering data		
Output module, analogue	Part No.	Type
	With 4 analogue voltage outputs	553976 CECX-A-4A-V

Note

Accompanying manuals in German and English can be found on the CD-ROM supplied with the controller CECX-X.

Modular controllers CECX

Technical data

FESTO

Input module, analogue

CECX-E-4E-T-P1

There are 4 temperature inputs available for the temperature sensor PT 100.

The following function is available:

- 2-wire and 4-wire connection

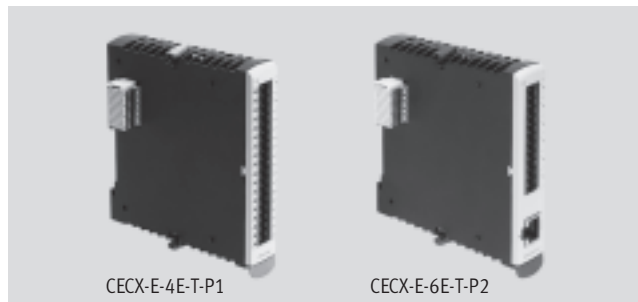
Input module, analogue

CECX-E-6E-T-P2

There are 6 temperature inputs available for the thermoelement type J, K and L.

The following function is available:

- Internal and external cold junction compensation



General technical data		
	CECX-E-4E-T-P1	CECX-E-6E-T-P2
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
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	
Protection class	IP20	
Electrical protection class	III	
Product weight [g]	134	142
Materials		
Note on materials	Contains PWIS (paint-wetting impairment substances)	
	RoHS-compliant	

Technical data – Interfaces		
	CECX-E-4E-T-P1	CECX-E-6E-T-P2
Analogue inputs		
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]	10 10 ⁶	> 10 10 ³
Absolute accuracy at 25 °C [%]	±0.01	± 1.0 °C
Internal cycle time [ms]	2	100
Galvanic isolation	No	Yes

Operating and environmental conditions		
Ambient temperature [°C]	+5 ... +55	
Storage temperature [°C]	–40 ... +70	
Relative air humidity [%]	10 ... 95	
Certification	cULus listed (OL)	

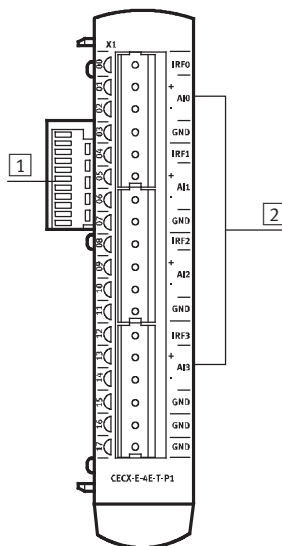
Modular controllers CECX

Technical data

FESTO

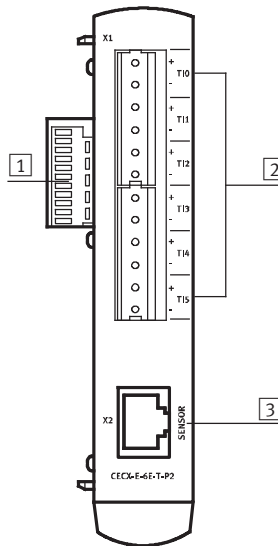
Connection and display components

CECX-E-4E-T-P1



- 1 Bus plug
- 2 Analogue input for temperature sensor AI0 ... AI3

CECX-E-6E-T-P2



- 1 Bus plug
- 2 Analogue input for temperature sensor TI0 ... TI5
- 3 Sensor interface for external temperature compensation

Pin allocation

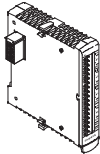
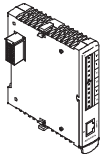
Pin	Designation	Meaning
Socket strip		
00	IRF 0	
01	AI0+	Temperature sensor0 +
02	AI0–	Temperature sensor0 –
03	GND	Reference potential GND
04	IRF 1	
05	AI1+	Temperature sensor1 +
06	AI1–	Temperature sensor1 –
07	GND	Reference potential GND
08	IRF 2	
09	AI2+	Temperature sensor2 +
10	AI2–	Temperature sensor2 –
11	GND	Reference potential GND
12	IRF 3	
13	AI3+	Temperature sensor3 +
14	AI3–	Temperature sensor3 –
15	GND	Reference potential GND
16	GND	Reference potential GND
17	GND	Reference potential GND

Pin	Designation	Meaning
Socket strip		
00	+TI0	Temperature sensor0 +
01	– TI0	Temperature sensor0 –
02	+TI1	Temperature sensor1 +
03	– TI1	Temperature sensor1 –
04	+TI2	Temperature sensor2 +
05	– TI2	Temperature sensor2 –
06	+TI3	Temperature sensor3 +
07	– TI3	Temperature sensor3 –
08	+TI4	Temperature sensor4 +
09	– TI4	Temperature sensor4 –
10	+TI5	Temperature sensor5 +
11	– TI5	Temperature sensor5 –

Modular controllers CECX

Technical data

FESTO

Ordering data		
Input module, analogue	Part No.	Type
	553973	CECX-E-4E-T-P1
With 4 temperature inputs for the temperature sensor PT 100		
	553974	CECX-E-6E-T-P2
With 6 temperature inputs for the thermoelements type J, K and L		

Note

Accompanying manuals in German and English can be found on the CD-ROM supplied with the controller CECX-X.

Modular controllers CECX

FESTO

Technical data

Encoder interface

CECX-C-2G2

The following functions are available:

- Displacement measurement: incremental/decremental counter (displacement measurement) using A and B track, 1-way, 2-way, 4-way evaluation, 32-bit resolution
- Pulse counter on track A, 32-bit resolution
- Pulse counter on track A with direction evaluation for track B, 32-bit resolution
- Speed measurement by means of sampling with internal time basis

- Shaft encoder monitoring using zero-track information
- Counter reading latch function via an external latch input
- Counter reading latch function via zero pulse
- Sensor rupture monitoring for tracks A, B and zero

Encoder interface

CECX-C-2G1

The following function is available:

- Power/receive status display
- Binary/grey signal range



General technical data		
	CECX-C-2G2	CECX-C-2G1
Operating voltage range [V DC]	19.2 ... 30	
Electrical connection technology for I/O	Socket strip, grid 5.08 mm	
Power consumption at 5 V [W]	0.6	0.65
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	
Status displays	–	LED green = power
		LED yellow = receive
Protection class	IP20	
Electrical protection class	III	
Product weight [g]	135	140
Materials		
Note on materials	Contains PWIS (paint-wetting impairment substances)	
	RoHS-compliant	

Technical data – Interfaces		
	CECX-C-2G2	CECX-C-2G1
Digital inputs		
Fast clock pulse inputs	2 (latch) 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
	Displacement measurement: 24	Adjustable via software
Encoder supply voltage [V DC]	24	24 (250 mA/channel)
	5.05 ±4 % (100 mA/channel)	–
Max. input frequency [kHz]	250	–
Baud rate [kbps]	–	125; 250; 500; 1,000
		Adjustable via software
Signal range	5 differential (RS 422)	SSI (RS 422)
	24 single-ended	Binary/grey can be set using software
Galvanic isolation	–	No

Modular controllers CECX

Technical data

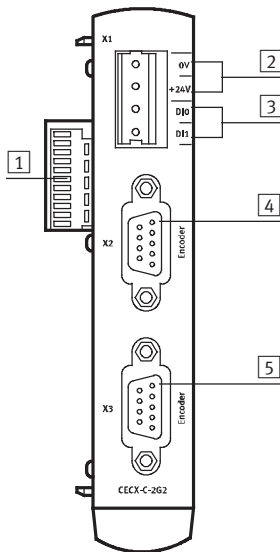
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Operating and environmental conditions		
Ambient temperature	[°C]	+5 ... +55
Storage temperature	[°C]	−40 ... +70
Relative air humidity	[%]	10 ... 95
Certification		cULus listed (OL)

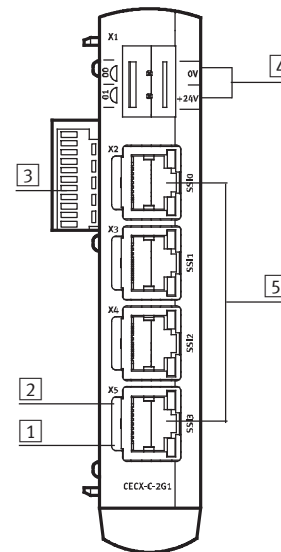
Connection and display components

CECX-C-2G2

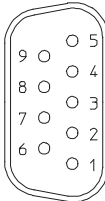
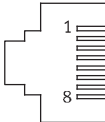
CECX-C-2G1



- 1 Bus plug
- 2 Power supply
- 3 Latch inputs
- 4 Encoder input X2
- 5 Encoder input X3



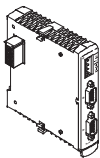
- 1 LED
- 2 LED
- 3 Bus plug
- 4 Power supply
- 5 SSI interface SSI0 ... SSI3

Pin allocation				
	Pin	Signal	Meaning	
			Signal range 5 V	Signal range 24 V
Sub-D socket				
	1	GND	Ground	
	2	24 V	Encoder supply	
	3	0+	Zero track+	
	4	B+	Track B+	
	5	A+	Track A+	
	6	5 V (max. 100 mA)	Encoder supply	
	7	0–	Zero track–	Do not connect
	8	B–	Track B–	Do not connect
	9	A–	Track A–	Do not connect
RJ45 socket				
	1	n.c.	Not connected	
	2	n.c.	Not connected	
	3	DI+	Data input +	
	4	CK–	Clock input –	
	5	CK+	Clock input +	
	6	DI–	Data input –	
	7	24 V	Encoder supply	
	8	0 V	Encoder supply	

Modular controllers CECX

Technical data

FESTO

Ordering data			
Encoder interface		Part No.	Type
	With 2 encoder inputs	552117	CECX-C-2G2
	With 4 encoder inputs SSI (RS 422)	553977	CECX-C-2G1

Note

Accompanying manuals in German and English can be found on the CD-ROM supplied with the controller CECX-X.

Modular controllers CECX

Technical data

FESTO

Bus interface

CECX-F-PB-S-V...

The modular controller can be connected to the Profibus DP-V0 or to the Profibus DP-V1 as a slave using this peripheral module.



General technical data		
Power consumption at 5 V	[W]	1.4
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
Status displays		LED (status)
		LED red = bus fault
Protection class		IP20
Electrical protection class		III
Product weight	[g]	140
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

Technical data – Interface		
CECX-F-PB-S-	V0	V1
Fieldbus		
Type	Profibus slave DP-V0	Profibus slave DP-V1
Connection technology	Sub-D socket, 9-pin	
Transmission rate	9.6 kbps ... 12 Mbps	
Galvanic isolation	Yes	

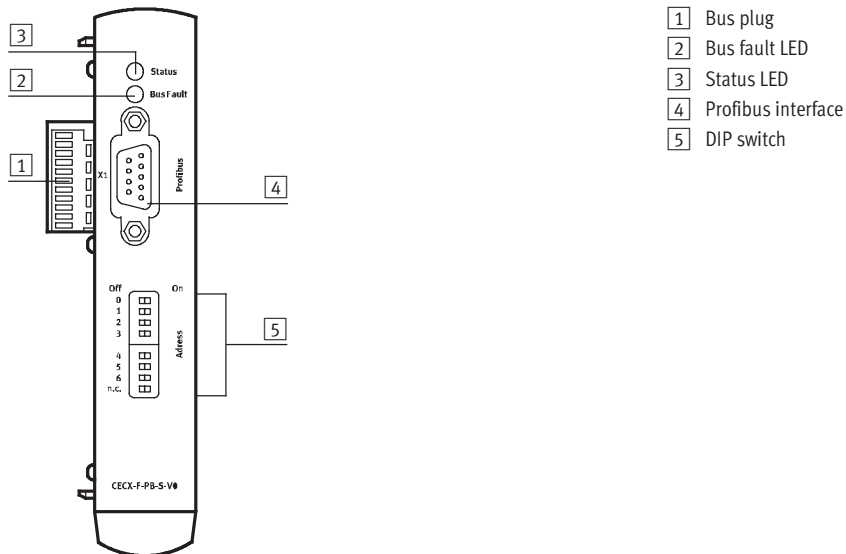
Operating and environmental conditions		
Ambient temperature	[°C]	+5 ... +55
Storage temperature	[°C]	–40 ... +70
Relative air humidity	[%]	10 ... 95
Certification		cULus listed (OL)

Modular controllers CECX

Technical data

FESTO

Connection and display components



Pin allocation

	Pin	Signal	Meaning
Sub-D socket			
	3	RxD/TxD-P	Received/transmitted data P, B cable
	4	RTS	Signal is HIGH if module is sending data
	5	GND	Ground (galvanically isolated)
	6	5 V	5 V (galvanically isolated)
	8	RxD/TxD-N	Received/transmitted data N, A cable

Ordering data

Bus interface		Part No.	Type
	As a slave to the Profibus DP-V0	552102	CECX-F-PB-S-V0
	As a slave to the Profibus DP-V1	565598	CECX-F-PB-S-V1

Note

Accompanying manuals in German and English can be found on the CD-ROM supplied with the controller CECX-X.

Modular controllers CECX

Technical data

FESTO

Bus interface

CECX-F-PB-V1

The modular controller can be connected to the Profibus DP-V1 as a master using this peripheral module.



General technical data		
Power consumption at 5 V	[W]	2
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
Status displays		LED yellow = RDY, STA
		LED green = RUN
		LED red = ERR
Protection class		IP20
Electrical protection class		III
Product weight	[g]	138
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

Technical data – Interface	
Fieldbus	
Type	Profibus master DP-V1
Connection technology	Sub-D socket, 9-pin
Transmission rate	9.6 kbps ... 12 Mbps
	Adjustable via software
Galvanic isolation	Yes

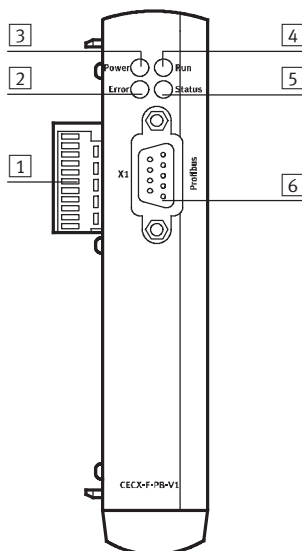
Operating and environmental conditions		
Ambient temperature	[°C]	+5 ... +55
Storage temperature	[°C]	–40 ... +70
Relative air humidity	[%]	10 ... 95
Certification		cULus listed (OL)

Modular controllers CECX

Technical data

FESTO

Connection and display components



- 1 Bus plug
- 2 Error LED
- 3 Power LED
- 4 Run LED
- 5 Status LED
- 6 Profibus interface

Pin allocation

	Pin	Signal	Meaning
Sub-D socket			
	3	RxD/TxD-P	RS-485-A: B cable
	5	GND	Ground (galvanically isolated)
	6	5 V	5 V (galvanically isolated)
	8	RxD/TxD-N	RS-485-A: A cable

Ordering data

Bus interface	Part No.	Type
	As a master to the Profibus DP-V1	553981 CECX-F-PB-V1

Note

Accompanying manuals in German and English can be found on the CD-ROM supplied with the controller CECX-X.

Modular controllers CECX

Technical data

FESTO

Bus interface

CECX-B-CO

The peripheral module is connected to the modular connector via CAN bus. Decentralised modules can then be connected in series to this module.



General technical data		
Operating voltage range	[V DC]	19.2 ... 30
Power consumption at 24 V	[W]	6.5
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
Status displays		LED (status)
		LED yellow = transmit
		LED green = receive
Protection class		IP20
Electrical protection class		III
Product weight	[g]	121
Materials		
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

Technical data – Interface		
Fieldbus		
Type		CAN bus
Connection technology		Sub-D plug, 9-pin
Transmission rate		125; 250; 500; 800; 1,000 kbps
		Can be adjusted using rotary switch
Galvanic isolation		No
Electrical connection technology for I/O		Socket strip, grid 5.08 mm
Output voltage/power output	[W]	24 V: 45
		5 V: 8.5

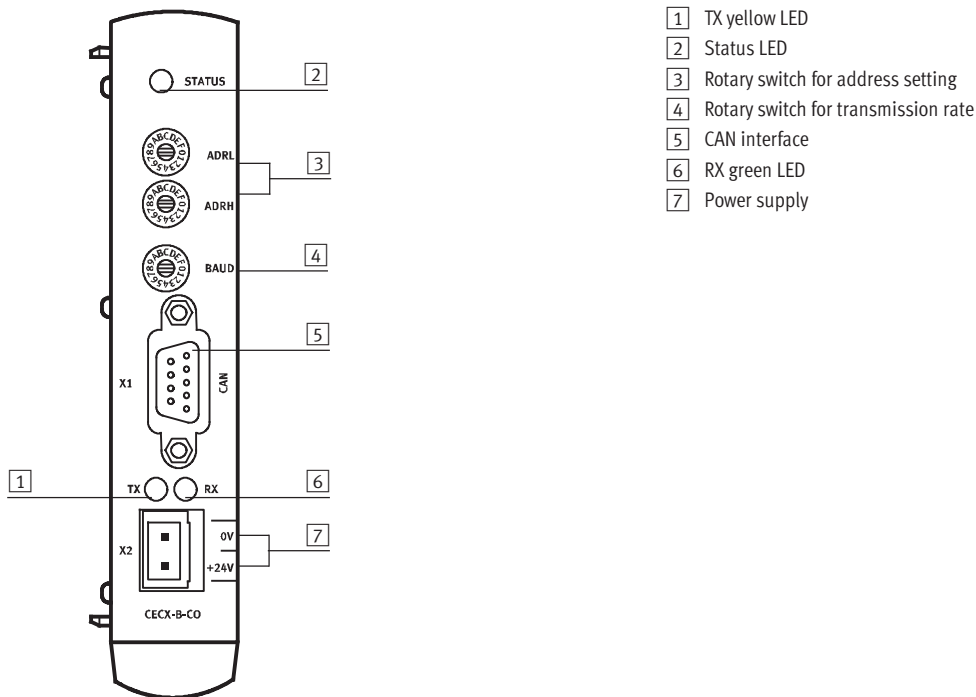
Operating and environmental conditions		
Ambient temperature	[°C]	+5 ... +55
Storage temperature	[°C]	–40 ... +70
Relative air humidity	[%]	10 ... 95
Certification		cULus listed (OL)

Modular controllers CECX

Technical data

FESTO

Connection and display components



Pin allocation			
	Pin	Signal	Meaning
Sub-D plug			
	1	n.c.	Not connected
	2	CAN_L	CAN low
	3	SGND	Signal ground
	4	TERM1	Connection for activating the internal terminating resistor
	5	TERM1	Connection for activating the internal terminating resistor
	6	GND	Ground
	7	CAN_H	CAN high
	8	TERM2	Connection for activating the internal terminating resistor
	9	TERM2	Connection for activating the internal terminating resistor
	Housing	Screened	Screened

Ordering data			
Bus interface		Part No.	Type
	To the CAN bus	553980	CECX-B-CO

Note

Accompanying manuals in German and English can be found on the CD-ROM supplied with the controller CECX-X.

Modular controllers CECX

Technical data

FESTO

Electrical interface

CECX-S-2S1

Peripheral module for extending the controller with two RS 232 serial interfaces.



General technical data		
		CECX-S-2S1
Type		RS 232
Number		2
Connection technology		Sub-D plug, 9-pin
Transmission rate	[bps]	1,200 ... 115,000
		Adjustable via software
Power consumption at 5 V	[W]	0.4
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
Status display		LED (status)
Galvanic 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

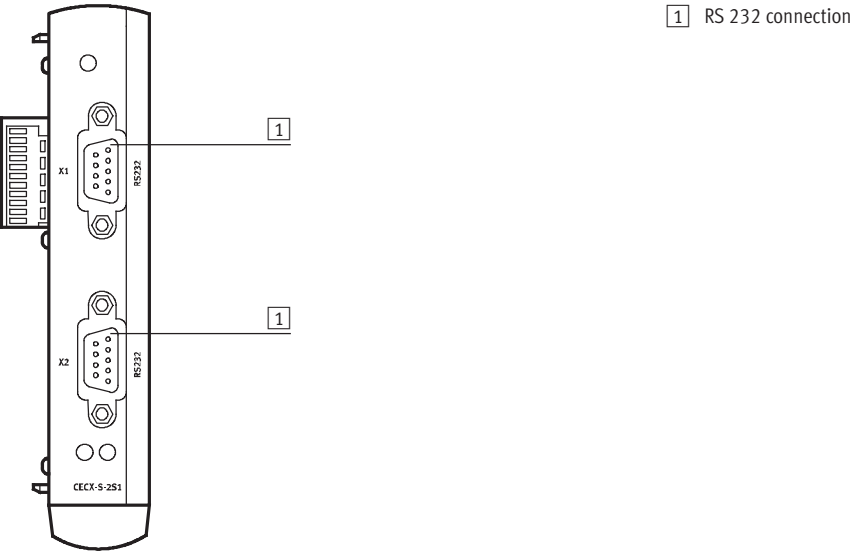
Operating and environmental conditions		
Ambient temperature	[°C]	+5 ... +55
Storage temperature	[°C]	-40 ... +70
Relative air humidity	[%]	10 ... 95
Certification		cULus listed (OL)

Modular controllers CECX

Technical data



Connection and display components



Pin allocation			
	Pin	Signal	Meaning
Sub-D plug			
	1	n.c.	Not connected
	2	RxD	Receive data (input)
	3	TxD	Transmit data (output)
	4	n.c.	Not connected
	5	GND	Ground
	6	n.c.	Not connected
	7	RTS	Request to send (output)
	8	CTS	Clear to send (input)
	9	n.c.	Not connected
	Housing	Screened	Screened

Ordering data			
Electrical interface		Part No.	Type
	2x RS 232 serial interface	553978	CECX-S-2S1

Modular controllers CECX

Technical data

FESTO

Bus interface

CECX-F-CO

Optional module for extending the controller with a CAN interface.

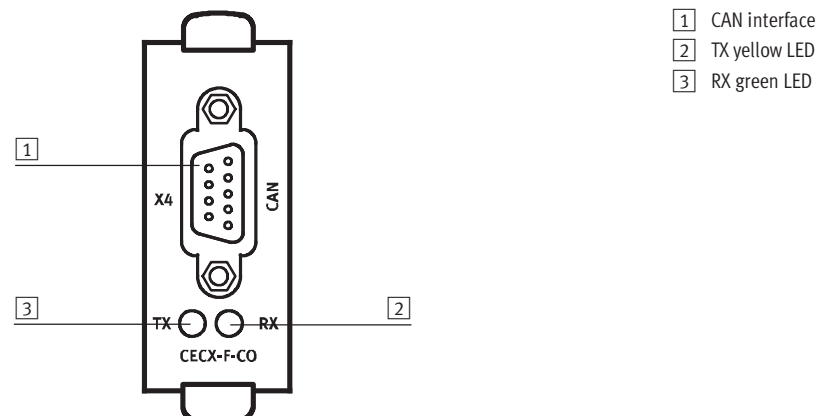


General technical data	
Resistance to shock	EN 60068-2-27 EA 15 g, 11 ms (half sine)
Resistance to vibration	EN 60068-2-6-FC 5 ... 9 Hz, 3.5 mm 9 ... 150 Hz, 1g
Status displays	LED yellow = transmit LED green = receive
Electrical protection class	III
Product weight [g]	27
Materials	
Note on materials	Contains PWIS (paint-wetting impairment substances) RoHS-compliant

Technical data – Interface	
Fieldbus	
Type	CAN bus
Connection technology	Sub-D plug, 9-pin
Transmission rate	125; 250; 500; 800; 1,000 kbps Adjustable via software
Galvanic isolation	No

Operating and environmental conditions		
Ambient temperature	[°C]	+5 ... +55
Storage temperature	[°C]	–40 ... +70
Relative air humidity	[%]	10 ... 95
Certification		cULus listed (OL)

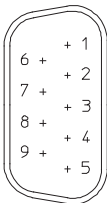
Connection and display components

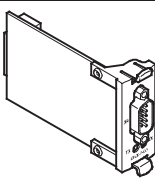


Modular controllers CECX

Technical data

FESTO

Pin allocation			
	Pin	Signal	Meaning
Sub-D plug			
	1	n.c.	Not connected
	2	CAN_L	CAN low
	3	SGND	Signal ground
	4	TERM1	Connection for activating the internal terminating resistor
	5	TERM1	Connection for activating the internal terminating resistor
	6	GND	Ground
	7	CAN_H	CAN high
	8	TERM2	Connection for activating the internal terminating resistor
	9	TERM2	Connection for activating the internal terminating resistor
	Housing	Screened	Screened

Ordering data			
Bus interface		Part No.	Type
	CAN interface	553854	CECX-F-CO

Modular controllers CECX

Technical data

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Electrical interface

CECX-C-ET

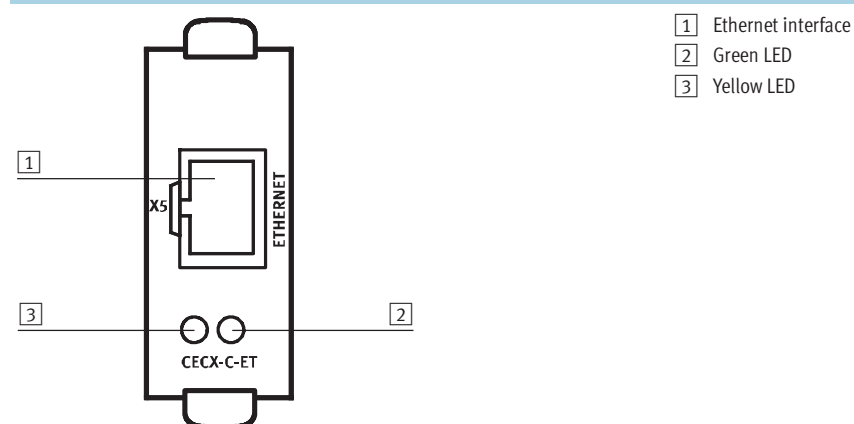
Optional module for extending the controller with an Ethernet interface.



General technical data	
Connector plug	RJ45 socket, 8-pin
Data transmission speed [Mbps]	10/100
Supported protocols	TCP/IP, EasyIP and Modbus TCP
Power consumption at the system bus [W]	0.5
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
Status displays	LED yellow = transmit/receive LED green = link
Electrical protection class	III
Product weight [g]	23
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
Relative air humidity [%]	10 ... 95
Certification	cULus listed (OL)

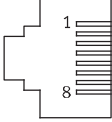
Connection and display components

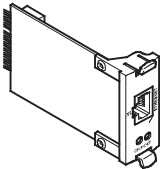


Modular controllers CECX

Technical data

FESTO

Pin allocation			
	Pin	Signal	Meaning
RJ45 socket			
	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
	Metal covering	Screened	Screened

Ordering data			
Electrical interface		Part No.	Type
	Ethernet interface	553856	CECX-C-ET

Modular controllers CECX

Technical data

FESTO

Electrical interface CECX-C-S1

Optional module for extending the controller with an RS 232 serial interface.

Electrical interface CECX-S-S4

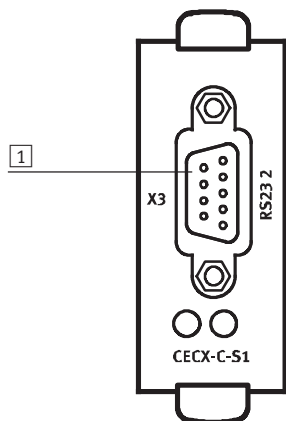
Optional module for extending the controller with an RS 485-A/422-A serial interface.



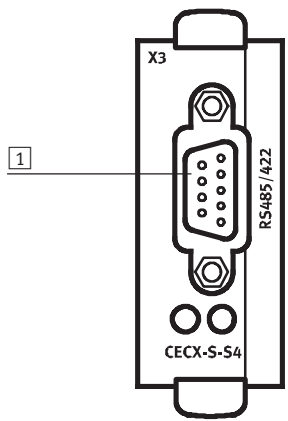
General technical data		
	CECX-C-S1	CECX-S-S4
Type	RS 232	RS 485-A/422-A
Connection technology	Sub-D plug, 9-pin	
Transmission rate [bps]	1,200 ... 115,000	
	Adjustable via software	
Power consumption at the system bus [W]	0.2	–
Resistance to shock	EN 60068-2-27 EA 15 g, 11 ms (half sine)	
Resistance to vibration	EN 60068-2-6-FC 5 ... 9 Hz, 3.5 mm 9 ... 150 Hz, 1g	
Galvanic isolation	No	No
Protection class	–	IP20
Electrical protection class	III	III
Product weight [g]	31	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	
Relative air humidity [%]	10 ... 95	
Certification	cULus listed (OL)	

Connection and display components		
CECX-C-S1	CECX-S-S4	



1 RS 232 connection

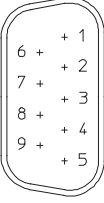


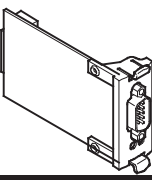
1 RS 485-A/422-A connection

Modular controllers CECX

Technical data

FESTO

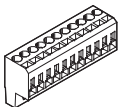
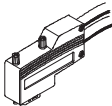
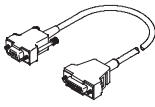
Pin allocation – Sub-D plug			
	Pin	Signal	Meaning
	RS 232		
	1	n.c.	Not connected
	2	RxD	Receive data (input)
	3	TxD	Transmit data (output)
	4	n.c.	Not connected
	5	GND	Ground
	6	n.c.	Not connected
	7	RTS	Request to send (output)
	8	CTS	Clear to send (input)
	9	n.c.	Not connected
	Housing	Screened	Screened
	RS 485-A		
	1	GND	Ground
	2	Term B	Terminating resistor
	3	B / B'	Transmit/receive +
	4	n.c.	Not connected
	5	GND	Ground
	6	n.c.	Not connected
	7	Term A	Terminating resistor
	8	A / A'	Transmit/receive –
	9	n.c.	Not connected
	Housing	Screened	Screened
	RS 422-A		
	1	GND	Ground
	2	Term B	Terminating resistor
	3	B'	Receive +
	4	B	Transmit +
	5	GND	Ground
	6	n.c.	Not connected
	7	Term A	Terminating resistor
	8	A'	Receive –
	9	A	Transmit –
	Housing	Screened	Screened

Ordering data			
Electrical interface		Part No.	Type
	RS 232 serial interface	553855	CECX-C-S1
	RS 485-A/422-A serial interface	553979	CECX-S-S4

Modular controllers CECX

Accessories

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Ordering data			
	Brief description	Part No.	Type
Plug			
	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 for Profibus interface, Sub-D, 9-pin, without terminating resistor	533780	FBS-SUB-9-WS-PB-K
	Plug for CAN bus interface, Sub-D, 9-pin, without terminating resistor	533783	FBS-SUB-9-WS-CO-K
Cable			
	Cable for connecting an FED via RS 485 Cable length 2.5 m Straight socket, Sub-D, 15-pin Straight socket, Sub-D, 9-pin	563782	NEBC-S1G15-K-2.5-N-B-S1G9-V

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