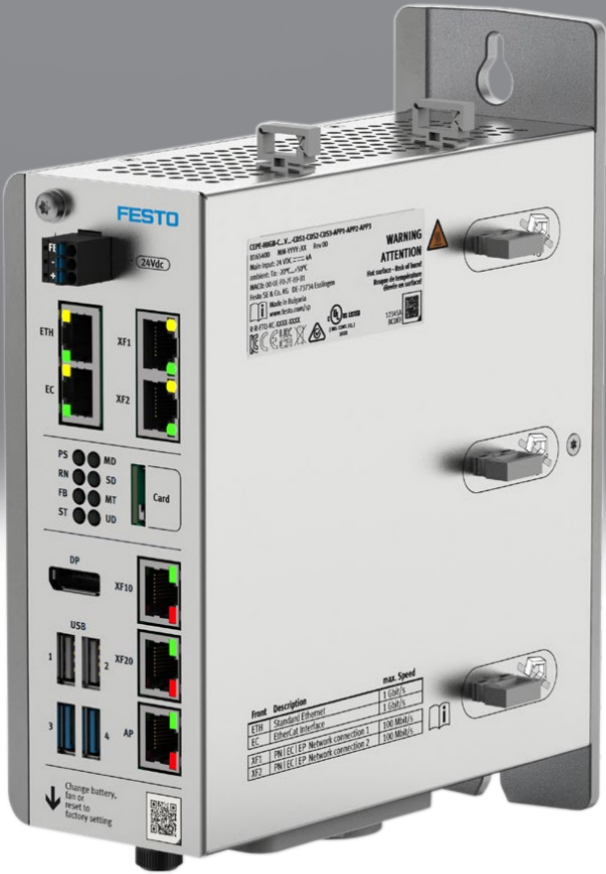


Control unit CEPE



Characteristics

At a glance

The high-performance controller CEPE is available with the AX OS operating system from Festo and pre-installed software packages for the IOT and motion area. The open software ecosystem allows for functionalities to be expanded modularly and ensures the efficient and configurable control and monitoring of pneumatic and electric components in automation systems in real time.

- High-performance industrial PC with real-time operating system Festo AX OS
- Based on PLCnext Technology – the open ecosystem for modular automation
- Extension of IEC standards with IT languages such as Python and C++ to open up new automation potential
- Easy programming with CODESYS or Visual Studio Code
- Extended functionality available via apps from the Festo and PLCnext App Store
- Seamless connectivity from OT servo technologies to IT cloud services

Controller variant

The high-performance controller CEPE is perfect for use in the factory automation environment.

[C1] IoT

The CEPE-IOT variant enables a wide range of application data to be gathered and analysed and can be easily extended with various apps such as Python.

[M1] Motion

The CEPE Motion variant is the perfect solution for complex motion sequences.

Type code

001	Series	
CEPE	Control unit	

002	CPU	
H	Intel Core i3-6100U (2x2.30 Ghz, GT2, 15 W)	

003	Working memory (RAM)	
8GB	8 gigabytes	

004	Hard drive size	
128GB	128 gigabytes	

005	Controller variant	
C1	IoT	
M1	Motion	

Datasheet

General technical data

The CEPE controller is available in two different software versions with the pre-installed operating system AX OS (IOT and Motion). Thanks to the modular concept, additional functionalities and licences can be added quickly and easily at any time via the Festo or PLCnext app store.

Both versions include the following functions as standard:

1. Festo AX OS based on PLCnext
2. Festo AX Controls CODESYS PLC Basic incl.:
 - CODESYS V3
 - EtherCAT® master
 - Modbus® TCP
 - OPC UA server client
 - WebVisu
 - MQTT
 - Remote Target Visualisation
 - CANopen
 - Modbus® RTU

Series	Control unit [CEPE]	
Controller variant	IoT [C1]	Motion [M1]
CPU data	8 GB RAM, Dual core 2.2 GHz	
storage medium	SSD 128 GB	
Buffering time real-time clock	520	
Flag	128 kB remanent data CODESYS variable concept	
Additional functions	256 I/Os CODESYS V3 OPC-UA, MQTT Licences included: Festo AX Controls CODESYS PLC Basic	2,048 I/Os 8 SoftMotion axis + CNC Robotics + FTL (Festo Teach Language) CoDeSys V3 with SoftMotion OPC-UA, MQTT WebIQ 1000 tags + 2500 alarms Licences included: Festo AX Controls CODESYS PLC Basic Festo AX Controls CODESYS PLC Standard Festo AX Controls CODESYS PLC Advanced Festo AX Controls CODESYS SoftMotion 4 Festo AX Controls CODESYS SoftMotion 8 Festo AX Controls WebIQ 1000 Festo AX Controls Motion Robotic
IP address setting	DHCP, Static via web server	
Mounting position	Vertical	
Type of mounting	Screw-clamped	
Product weight	1.8 kg	
Dimensions (W x L x H)	69 mm x 174 mm x 222 mm	

Electrical data

Series	Control unit [CEPE]	
Controller variant	IoT [C1]	Motion [M1]
Nominal operating voltage DC	24 V	
Max. power supply	4 A	
Power failure bridging	10 ms	
Reverse polarity protection	yes	
Note on reverse polarity protection	Self-protection	

Datasheet

Operating and environmental conditions

Series	Control unit [CEPE]	
Controller variant	IoT [C1]	Motion [M1]
Ambient temperature	0 ... 50°C	
Note on ambient temperature	Note ambient temperature derating to IEC 61131-2:2018	
Storage temperature	-20 ... 70°C	
Relative air humidity	95%, Non-condensing	
Degree of protection	IP20	
Nominal altitude of use	<= 2000 m ASL (> 79.5 kPa)	
Max. installation height	3,000 m	
Note on max. installation height	< 3000 m ASL (> 70 kPa)	
CE mark (see declaration of conformity)	To EU EMC Directive, In accordance with EU RoHS Directive	
UKCA marking (see declaration of conformity)	To UK instructions for EMC, To UK RoHS instructions	
Approval	RCM trademark	
Vibration resistance	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	
Shock resistance	Shock test with severity level 1 to FN 942017-5 and EN 60068-2-27	
Protection against direct and indirect contact	PELV	
Corrosion resistance class CRC	0 - No corrosion stress	

Ethernet interface

Series	Control unit [CEPE]	
Controller variant	IoT [C1]	Motion [M1]
Ethernet interface, connection type	Socket	
Ethernet interface, connection system	RJ45	
Ethernet interface, transmission rate	10 Mbit/s, 100 Mbit/s, 1,000 Mbps, 1 Gbit/s	
Ethernet interface, function	Cloud connection, Network	
Ethernet interface, protocol	TCP/IP	
Ethernet, data transmission rate	1 Gbit/s	

Fieldbus interface

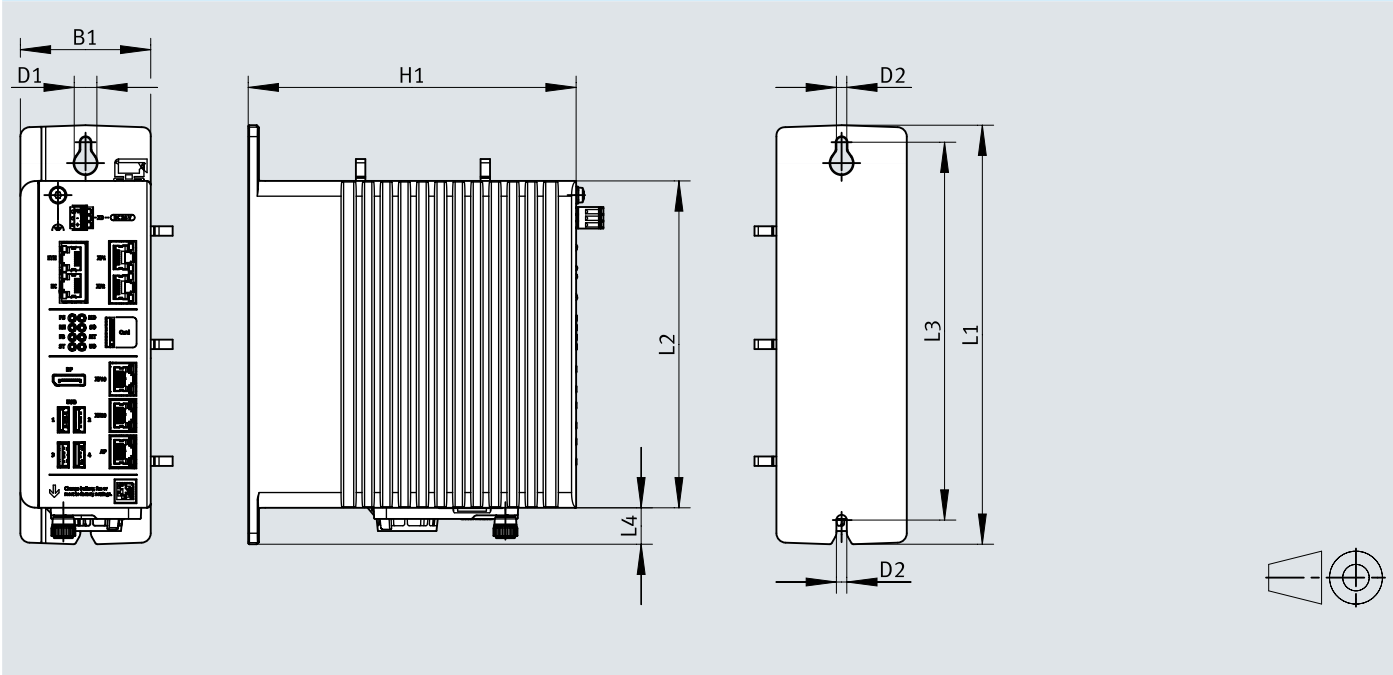
Series	Control unit [CEPE]	
Controller variant	IoT [C1]	Motion [M1]
Field bus, connection type	Socket	
Field bus, connection system	RJ45	
Field bus, protocol	EtherCAT®	
Fieldbus interface, function	EtherCAT® master	
Specification of fieldbus cable	Ethernet	
Field bus interface, transmission rate	100 Mbit/s	

Materials

Series	Control unit [CEPE]	
Controller variant	IoT [C1]	Motion [M1]
Material housing	Die-cast aluminium, PC, High-alloy stainless steel	
Material screws	Nickel-plated steel	
LABS (PWIS) conformity	VDMA24364 zone III	
Note on materials	RoHS-compliant	

Dimensions

Dimensions – CEPE Download CAD data www.festo.com



	B1	D1 Ø	D2	H1	L1	L2	L3	L4
CEPE-H8GB-128GB-C1	69	12	5,5	173,5	222	173	200	19,3
CEPE-H8GB-128GB-H1								

Ordering data

CEPE				
	Controller variant	CPU	Part no.	Type
	Motion	Intel Core i3-6100U (2x2.30 Ghz, GT2, 15 W)	8165401	CEPE-H8GB-128GB-M1
	IoT		8165400	CEPE-H8GB-128GB-C1

Accessories

General information on licences



Available languages:

- German
- English

Licences CODESYS/PLC (Festo AX Controls CODESYS PLC)

The CODESYS PLC app displays the PLC runtime system and enables the controller to function as an EtherCAT® master and Modbus® TCP controller at various performance levels. SoftMotion licences can be used to achieve extended motion functions, ranging from standard movements to synchronised applications. The Festo AX PLC Advanced Licence is required for CNC and robotics applications.

Licences CODESYS/PLC (Festo AX Controls CODESYS PLC)

Additional article description	Required basic licence	Software functionality	Part no.	Type
Basic		EtherCAT® master, Festo AP Master, I/O [256], MQTT, Modbus® TCP, Multi-protocol Fieldbus Slave, OPC-UA server & client, Remote target visualisation, WebVisu, CANopen, Modbus® RTU	8233401	GSBE-PLC1-P
Standard	Festo AX Controls CODESYS PLC Basic	I/O [1024], Multicore processing	8233402	GSBE-PLC2-P
Advanced	Festo AX Controls CODESYS PLC Standard	CNC, I/O [2048], Robotic	8233403	GSBE-PLC3-P
Performance	Festo AX Controls CODESYS PLC Advanced	I/O [unlimited]	8233404	GSBE-PLC4-P

Licences CODESYS/Motion (Festo AX Controls CODESYS SoftMotion)

With the Motion Robotic package, the FTL (Festo Teach Language) interpreter can be used for programming within CODESYS. This provides a practical solution for creating handling and robotics applications with PTP (point-to-point) and CP (continuous path) movements.

The solution becomes even more user-friendly when combined with the optional CDSA-D3-RV teach pendant, which adds functions such as teach-in, confirmation and emergency off.

In addition, with an API programming can be carried out via an external software, for example with Visual Studio short code or the Python app.

New functions, such as improved trigger points based on distance, event or time offset, can reduce cycle times in certain applications.

Licences CODESYS/Motion (Festo AX Controls CODESYS SoftMotion)

Additional article description	Required basic licence	Software functionality	Part no.	Type
4	Festo AX Controls CODESYS PLC Basic	Axes: 4 real and 4 virtual	8233405	GSBE-SM1-P
8	Festo AX Controls CODESYS PLC Standard, Festo AX Controls CODESYS SoftMotion 4	Axes: 8 real and 8 virtual	8233406	GSBE-SM2-P
16	Festo AX Controls CODESYS PLC Advanced, Festo AX Controls CODESYS SoftMotion 8	Axes: 16 real and 16 virtual	8233407	GSBE-SM3-P
Unlimited	Festo AX Controls CODESYS PLC Advanced, Festo AX Controls CODESYS SoftMotion 16	Axes: unlimited number, real and virtual	8233408	GSBE-SM4-P

Licences Motion (Festo AX Controls Motion Robotic)

With the Festo AX Motion Robotic Tracking licence, the functions can be expanded modularly.

The licence enables tracking functions that are particularly useful for tasks such as encoder tracking (e.g. conveyor belt tracking) or signal tracking (e.g. pressing applications).

Accessories

Licences Motion (Festo AX Controls Motion Robotic)				
Additional article description	Required basic licence	Software functionality	Part no.	Type
	Festo AX Controls CODESYS PLC Advanced	FTL (Festo Teach Language), Point-to-point (PTP) interpolation, Robotic, Single axis, Cartesian interpolation (CP) of linear and circular movements	8233409	GSBE-M-P
Tracking	Festo AX Controls Motion Robotic	Conveyor tracking, Standard tracking	8233410	GSBE-M1-P

Licences Programming with Python (Festo AX Controls Python)

The web-based Python app is an integrated development environment for programming with the Python programming language.

The app can be used directly in a web browser.

Visual Studio Code can also be used as an integrated development environment (IDE).

By providing access to all existing signals and information (variables) the Python app offers all options for creating application programs.

With the API, motion control applications can be programmed in Python and it offers new development opportunities beyond the traditional IEC standard.

Licences Programming with Python (Festo AX Controls Python)			
Software functionality		Part no.	Type
Development environment for Python programming, Remote development with Visual Studio (IDE), Integrated web browser environment		8233420	GSBE-PY1-P

Licences Programming with Node-RED (Festo AX Controls Node-RED)

The Node-RED app provides an intuitive, flow-based development tool for connecting hardware devices, APIs and online services in a visually designed user interface.

The app can be used directly in a web browser.

It simplifies the process of creating complex automation workflows and makes it accessible for both beginners and advanced end users.

With access to all existing signals and information (variables) all options for creating application programs with monitoring functions are available.

A pre-installed demo flow sequence helps customers get started with the app.

Licences Programming with Node-RED (Festo AX Controls Node-RED)			
Software functionality		Part no.	Type
Low-code development visual progr., Flow-based development for visual programming		8233419	GSBE-NR-P

Licences Visualisation (Festo AX Controls WebIQ)

The WebIQ app enables the dashboards to be flexibly visualised and personalised for system monitoring.

It offers a user-friendly development environment that makes it possible to create modern, professional and customised web-based HMIs that run on all devices thanks to the responsive design.

The WebIQ Designer is a WYSIWYG (What You See is What You Get) editor that simplifies the creation of customised interfaces. The WebIQ Runtime runs as a background service and ensures high performance and adaptability.

Licences Visualisation (Festo AX Controls WebIQ)				
Additional article description	Required basic licence	Software functionality	Part no.	Type
1,000		Alarms [2500], I/O handler [2], Integrated web clients [2], Logging tags [50], Tags [1000]	8233412	GSBE-WIQ1-P
2,500	Festo AX Controls WebIQ 1000	Alarms [10000], I/O handler [2], Integrated web clients [2], Logging tags [5000], Tags [2500]	8233413	GSBE-WIQ2-P
7,500	Festo AX Controls WebIQ 2500	Alarms [10000], I/O handler [2], Integrated web clients [2], Logging tags [5000], Tags [7500]	8233414	GSBE-WIQ3-P
Client 5	Festo AX Controls WebIQ 1000	Additional [3] WebIQ clients as WebIQ extension	8233415	GSBE-WIQ4-P
IO 5		Additional [3] I/O handler as WebIQ extension	8233416	GSBE-WIQ5-P