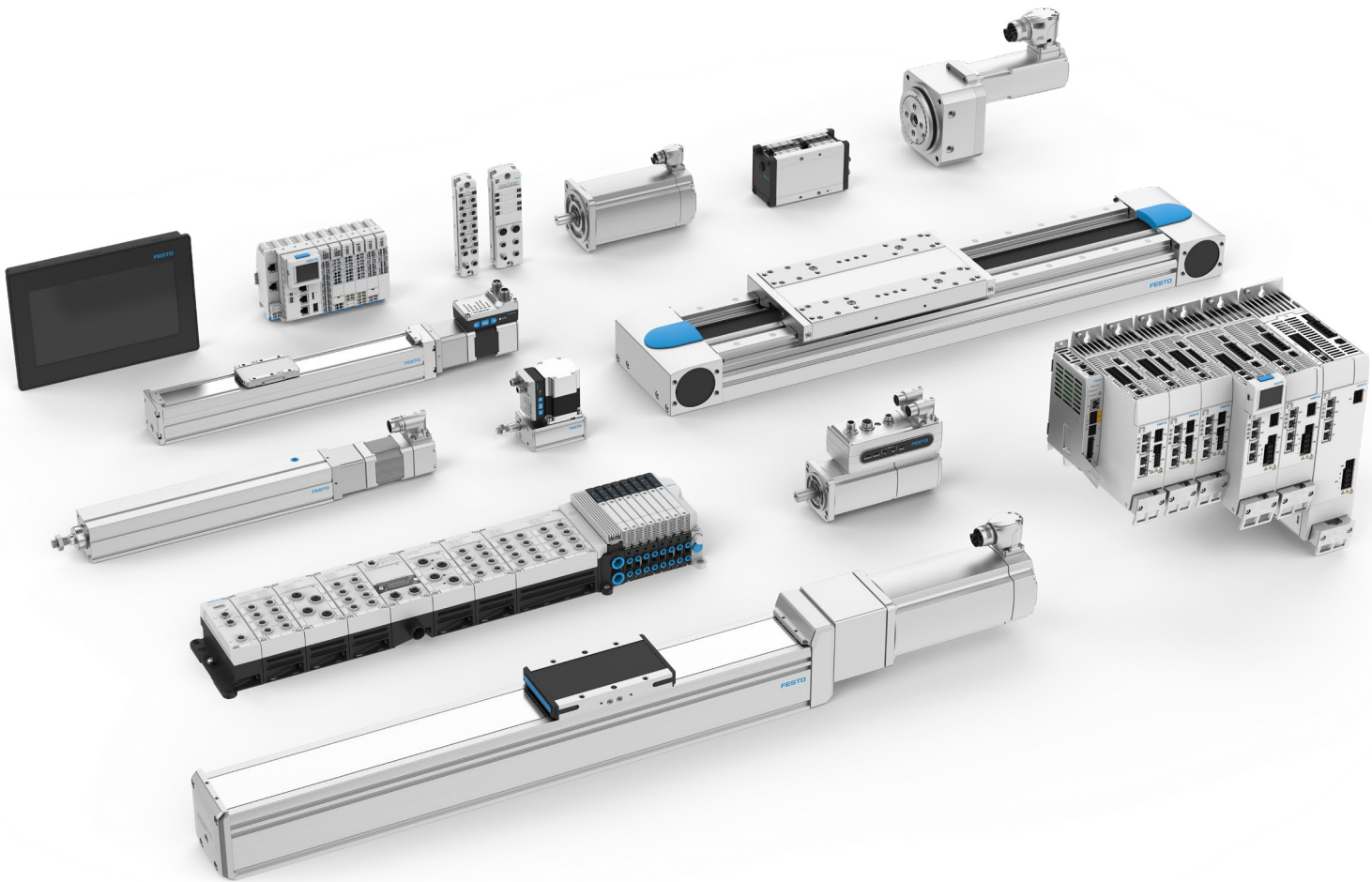


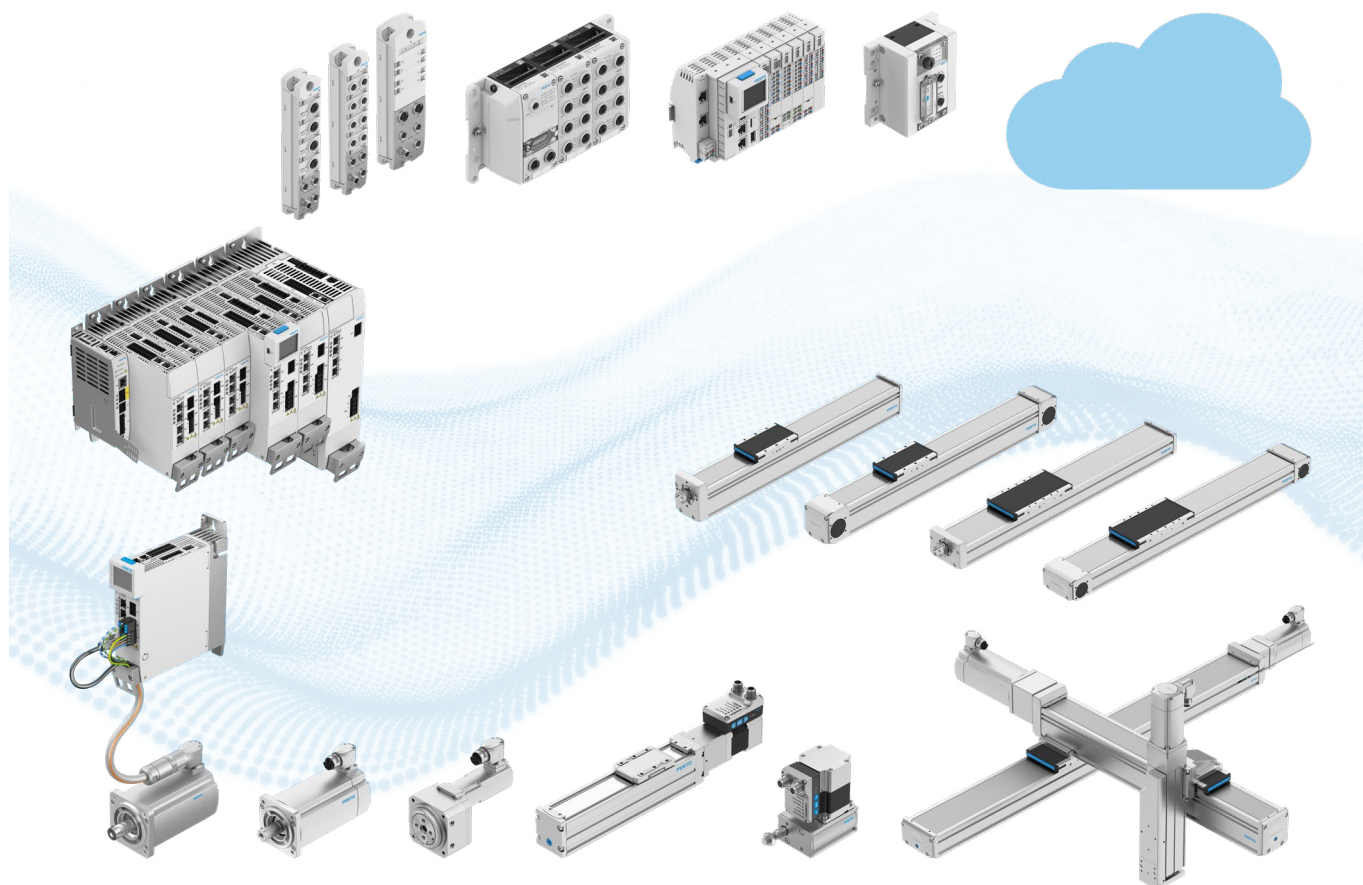
Electric automation

FESTO



Do you want easy and seamless connectivity?
Are you looking for lasting and compatible concepts?
We connect the present to the future!

→ **WE ARE THE ENGINEERS
OF PRODUCTIVITY.**



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Seamless connectivity

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Servo drives, motors, decentralised drives

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Seamless connectivity is electric automation without any compromise

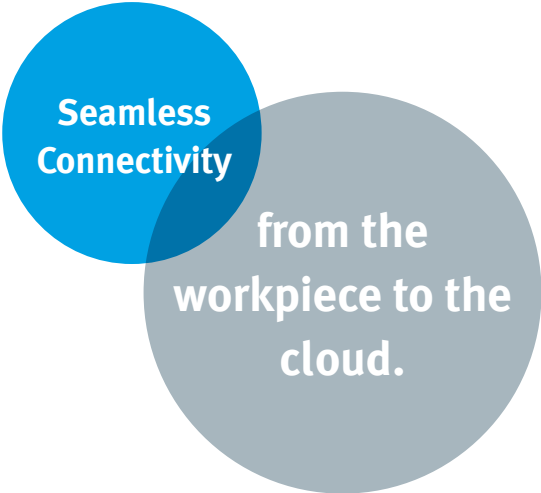
Put your trust in a partner who has been setting technological standards for decades, whether in pneumatic or electric automation. And don't expect anything less than a comprehensive offer of solutions, from mechanical systems, integrated motion control solutions and subsystems to modern cloud solutions for a wide range of industries.

On the road to seamless automation of machines and systems, Festo offers a unique variety of solutions. We help you to connect your automation components and modules so that they interact perfectly at all times, mechanically, electrically and intelligently.

Mechanical connectivity
The extensive portfolio of mechanical linear axes and rotary modules offers you almost infinite variety for automating motion, compatible with your in-house standard and of course with our servo motors.

Electrical connectivity
Our range of servo motors and servo drives is the ideal link between your mechanical system and your control technology, as it is always optimally coordinated and easily configured with our engineering software.

Intelligent connectivity
The decentralised control of individual process modules, the free and flexible communication with other control devices and the integrated motion control solutions from Festo enable a wide variety of solutions for industrial automation tasks. Supported by innovative software for engineering and configuration.



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Simplified Motion Series, design software, handling systems, safety

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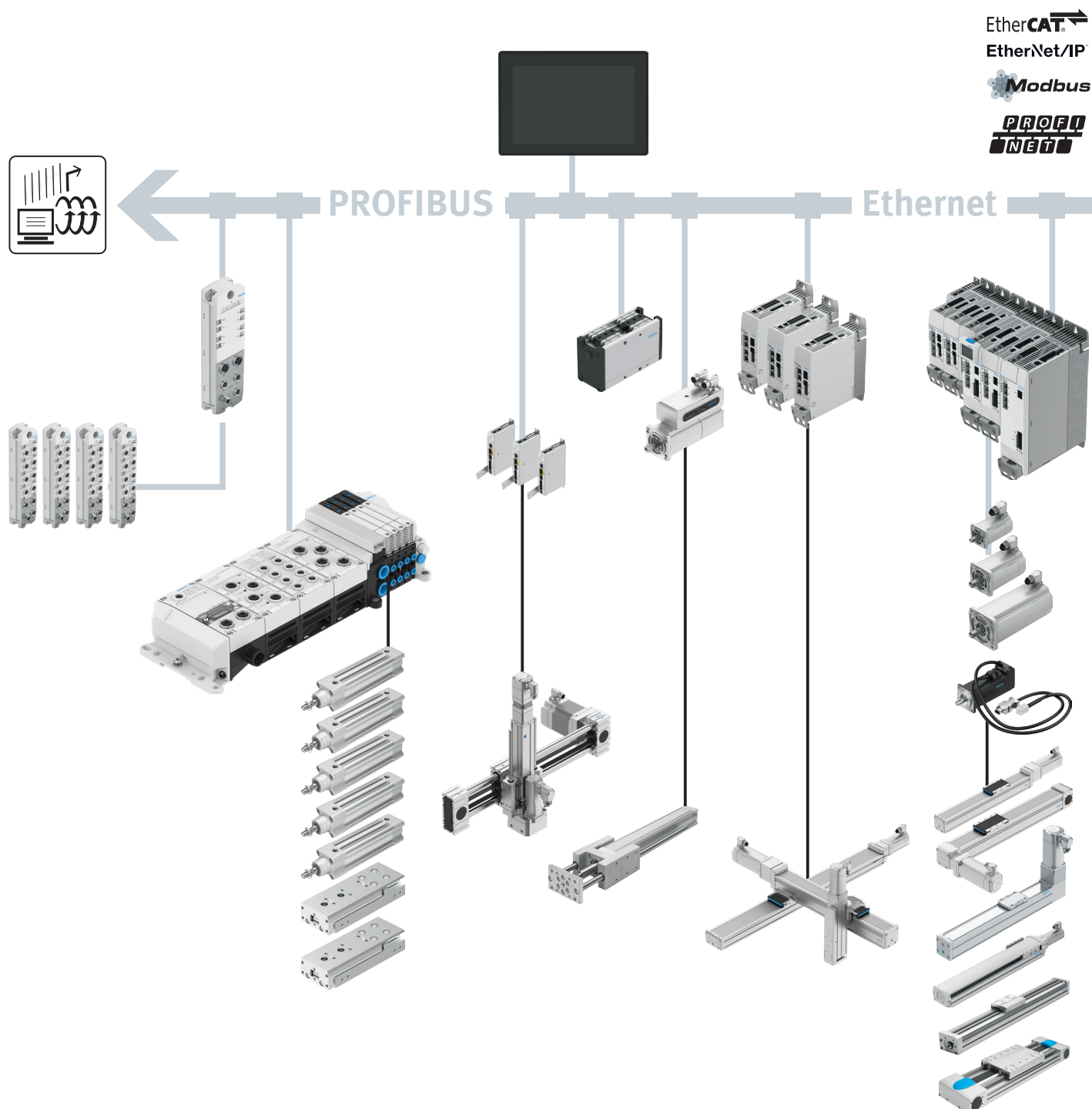
Seamless connectivity: direct integration into host systems

Servo drives, integrated drives and remote I/O systems as well as valve terminals can be integrated directly and seamlessly into your system environment, be it for electric or pneumatic automation solutions. You can very

quickly and easily define the mechatronic 1D, 2D or 3D kinematics and select the matching motor and servo drive or appropriate valve terminals, plus the necessary remote I/O system, since we support you every step

of the way with innovative software tools for configuration and selection. These solutions can then be directly integrated into larger or different automation environments using Ethernet-based protocols such as

PROFINET, EtherNet/IP, EtherCAT®, Modbus®, etc. In addition, Festo provides you with the function blocks you need to integrate the parameters into automation solutions from Siemens, Rockwell, Omron, Beckhoff and others.

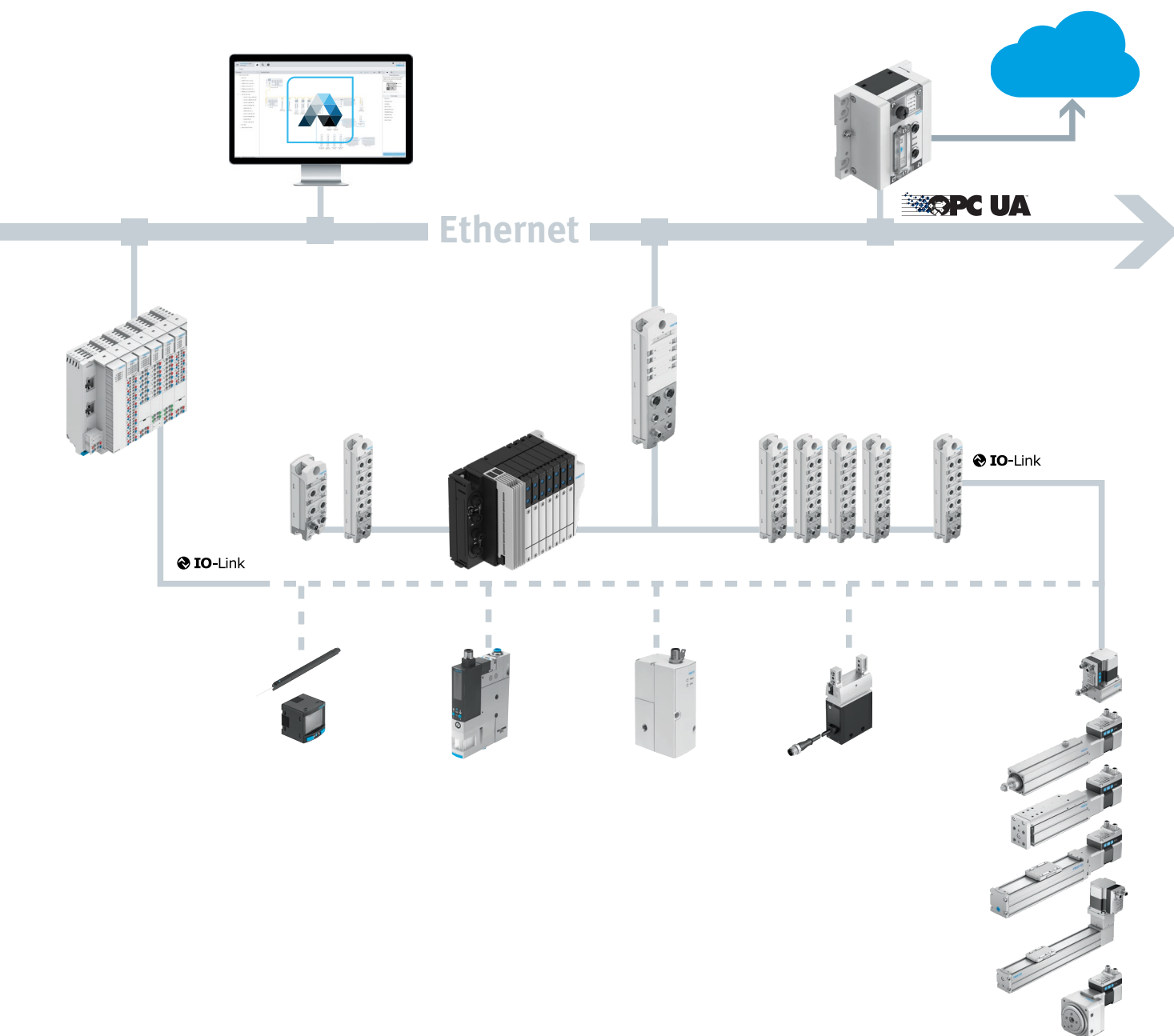


Connecting electric and pneumatic automation technology to Ethernet-based protocols using IO-Link® is even easier. The remote I/O solutions CPX-AP-A, CPX-E and CPX-AP-I with their IO-Link masters enable you to

quickly and easily connect a large number of automation components from Festo and third-party suppliers to a host PLC. As well as servo drives and grippers, valve terminals, proportional valves and sensors, you can also

directly integrate the products from the Simplified Motion Series. Further valve terminals and additional digital and analogue I/Os can also be connected to the network via the AP system communication tech-

nology of the CPX-AP-A and CPX-AP-I. The innovative and universal software solutions from Festo make it easy for you and support you at every stage.



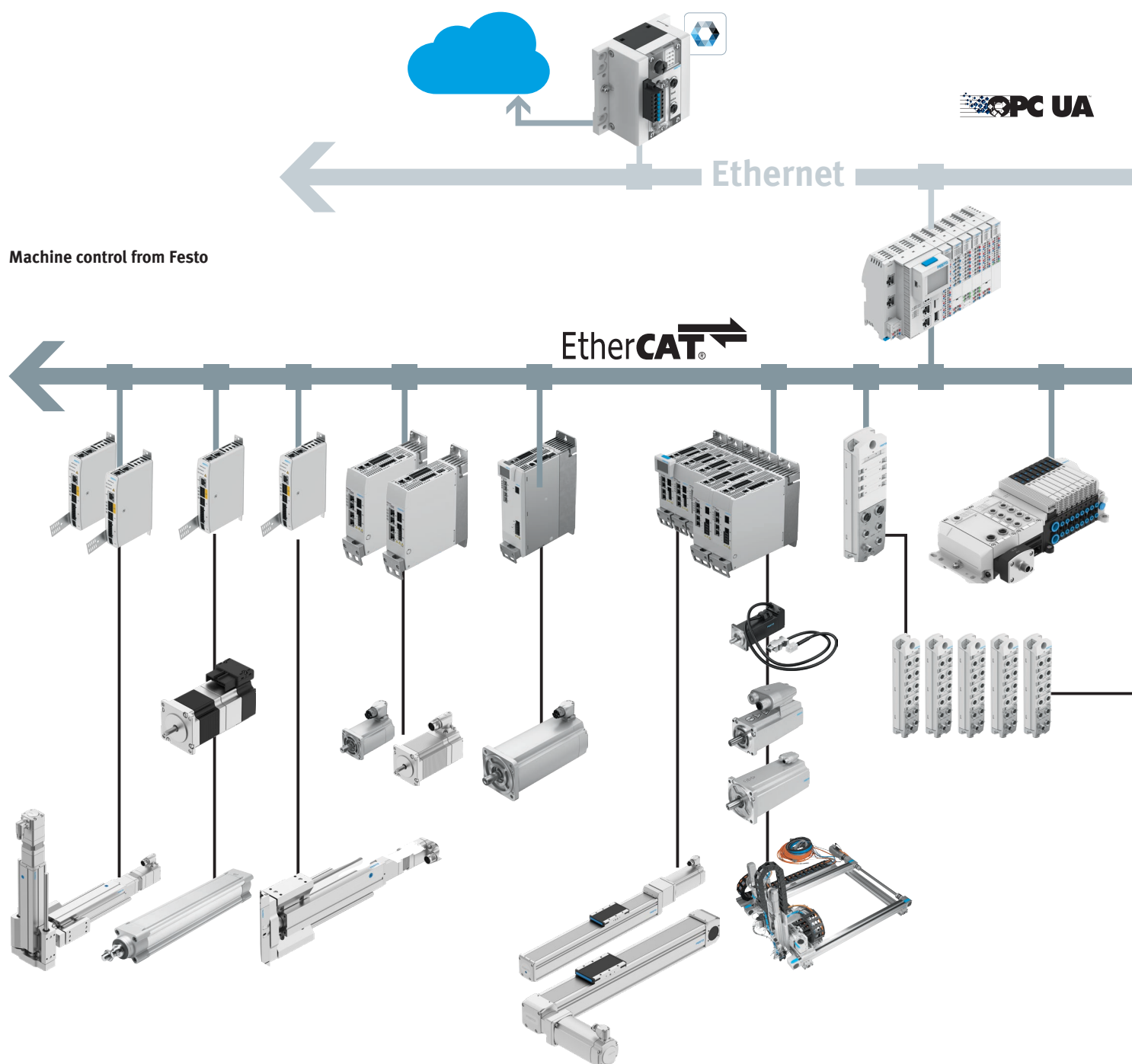
Seamless connectivity: Festo Automation Platform and EtherCAT®

If you are looking for solutions for autonomous cells or subsystems, or if you require powerful preprocessing, the new Festo EtherCAT® master controller CPX-E-CEC is perfect.

You can integrate it as a subsystem into larger or different automation environments by using Ethernet-based protocols such as Modbus®, PROFINET and EtherNet/IP.

CPX-E-CEC can also be linked into Industry 4.0 host environments and cloud concepts using the interface OPC-UA. By using dashboards from Festo, you can also

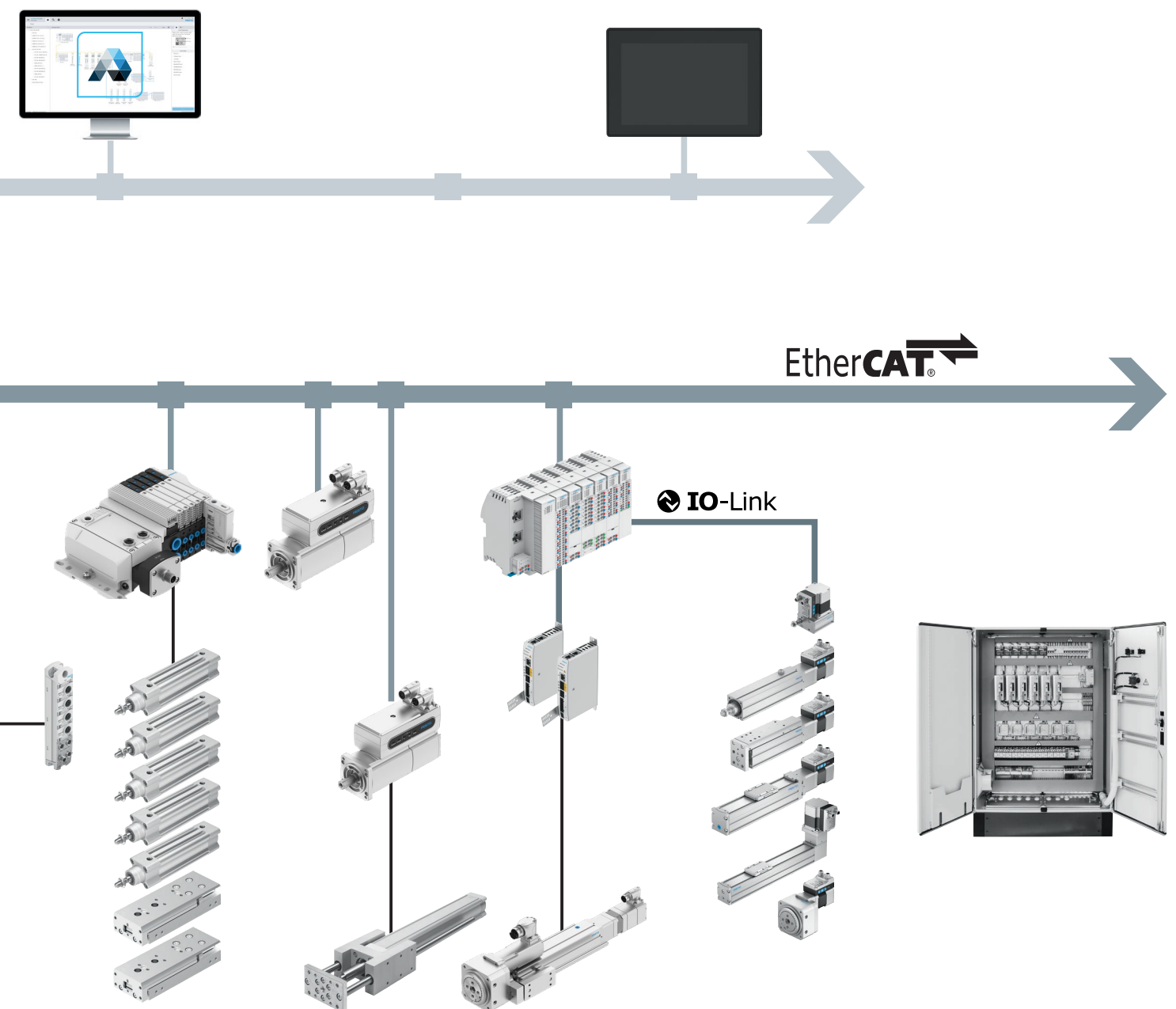
integrate the data from Festo components into Siemens MindSphere or Factory Talk from Rockwell's IoT environment.



This approach allows you to realise autonomous cells and subsystems and subsequently network them; or you can fully automate the powerful preprocessing of a mechatronic solution

from Festo. And, when integrated into the host system of an EtherNet/IP environment, e.g. from Rockwell, all drives can be interpolated!

In addition, all the engineering advantages are available for you in subsystems, including fast mechatronic design as well as easy programming within the Festo Automation Platform.



Seamless connectivity – from the mechanics to the cloud

Easily integrated into your automation environment

Installation and control concepts influence each other. This means that architectures must be cleverly networked to achieve seamless connectivity. Hardware and software work together intelligently on the Festo Automation Platform – a perfect and seamless combination of controller, servo drive and mechanics. The wide range of mechanical systems offers a solution for virtually any motion requirement. And the Festo Automation Suite software ensures quick and perfect commissioning of all hardware components.

Festo offers a unique range of concepts for your drive solution. Whether you

- want an autonomous control concept for greater modularity and freedom in the system layout,
- perfectly networked control solutions with other standard control concepts, or
- perfect, seamless integration into your system environment with Ethernet-based protocols: everything is possible.

Control level

System diversity together with seamless connectivity requires the smooth connection between servo drives from different controller manufacturers and networks while still offering full functionality.

The controller CPX-E from Festo is suitable for small and medium-sized production systems or subsystems. The complete controller and motion control solution with EtherCAT® master controller is also suitable for

challenging tasks with real-time requirements. Autonomous, compact, modular – or to put it another way, stand-alone.

Drive level

Optimally coordinated servo drive packages comprising motor and state-of-the-art servo drive connect the controller and mechanics.

The CMMT-AS is one of the most compact servo drives on the market for low-voltage drives and is suitable for both point-to-point and interpolating movements. The low-voltage controller CMMT-ST stands for highly economical positioning tasks and motion solutions with low power requirements of up to 300 W. What the CMMT and the associ-

ated motors have in common is that can be commissioned in just a few minutes via the Festo Automation Suite.

System connection is not a problem.

You can integrate the servo drive CMMT-AS and CMMT-ST directly into the system environment of third-party suppliers. The CMMT will function just like the servo drive of the controller supplier. The identical behaviour means that no drive-specific expertise is required for the CMMT. The complete drive system comprising servo drive, motor and mechanics is perfectly integrated.

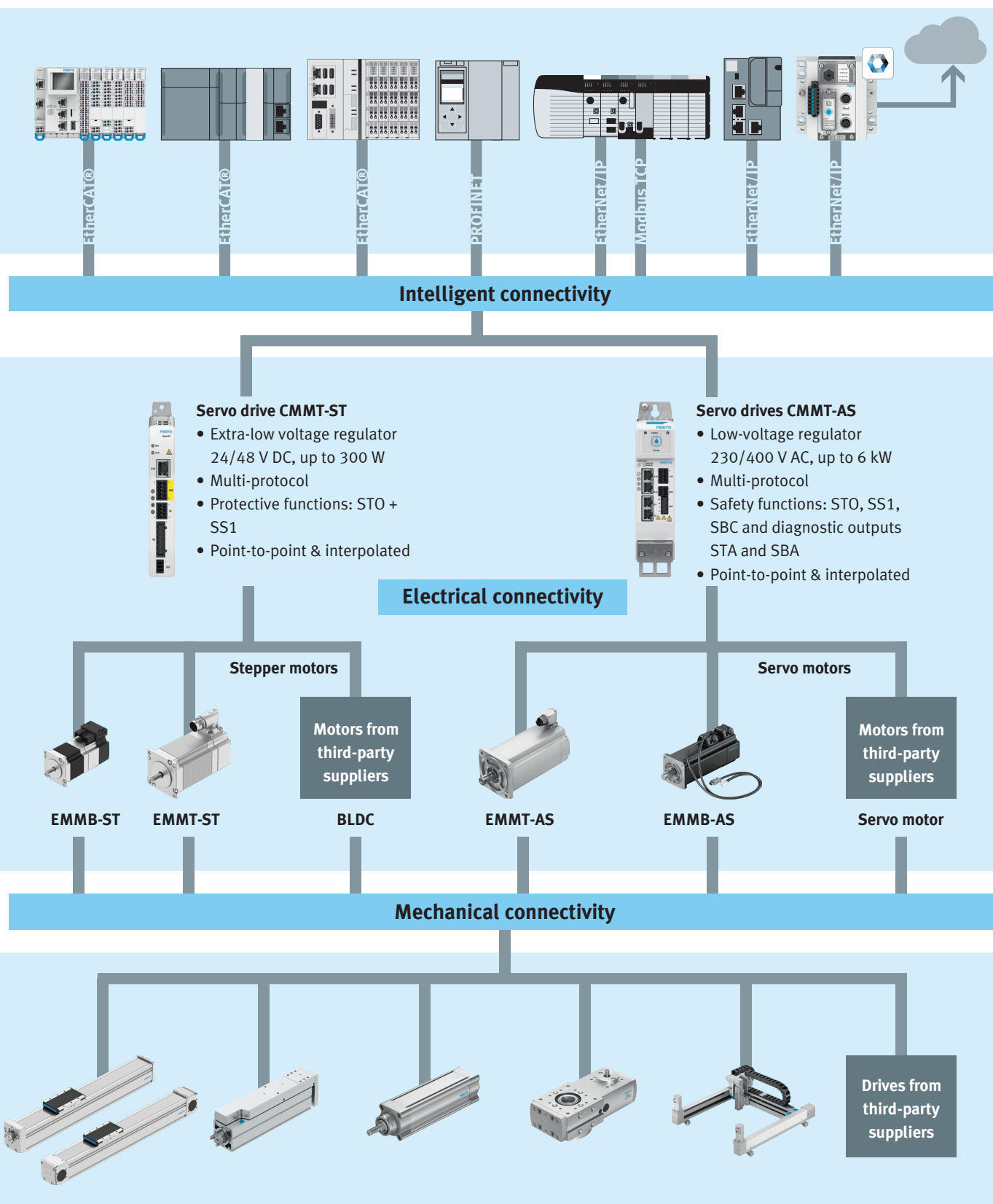
This requires an Ethernet-based protocol such as PROFINET, PROFIBUS, EtherNet/IP, EtherCAT® or Modbus. Function blocks for several manufacturers such as Festo, Siemens, Rockwell, Beckhoff and Omron are available.

Mechanical system at field level

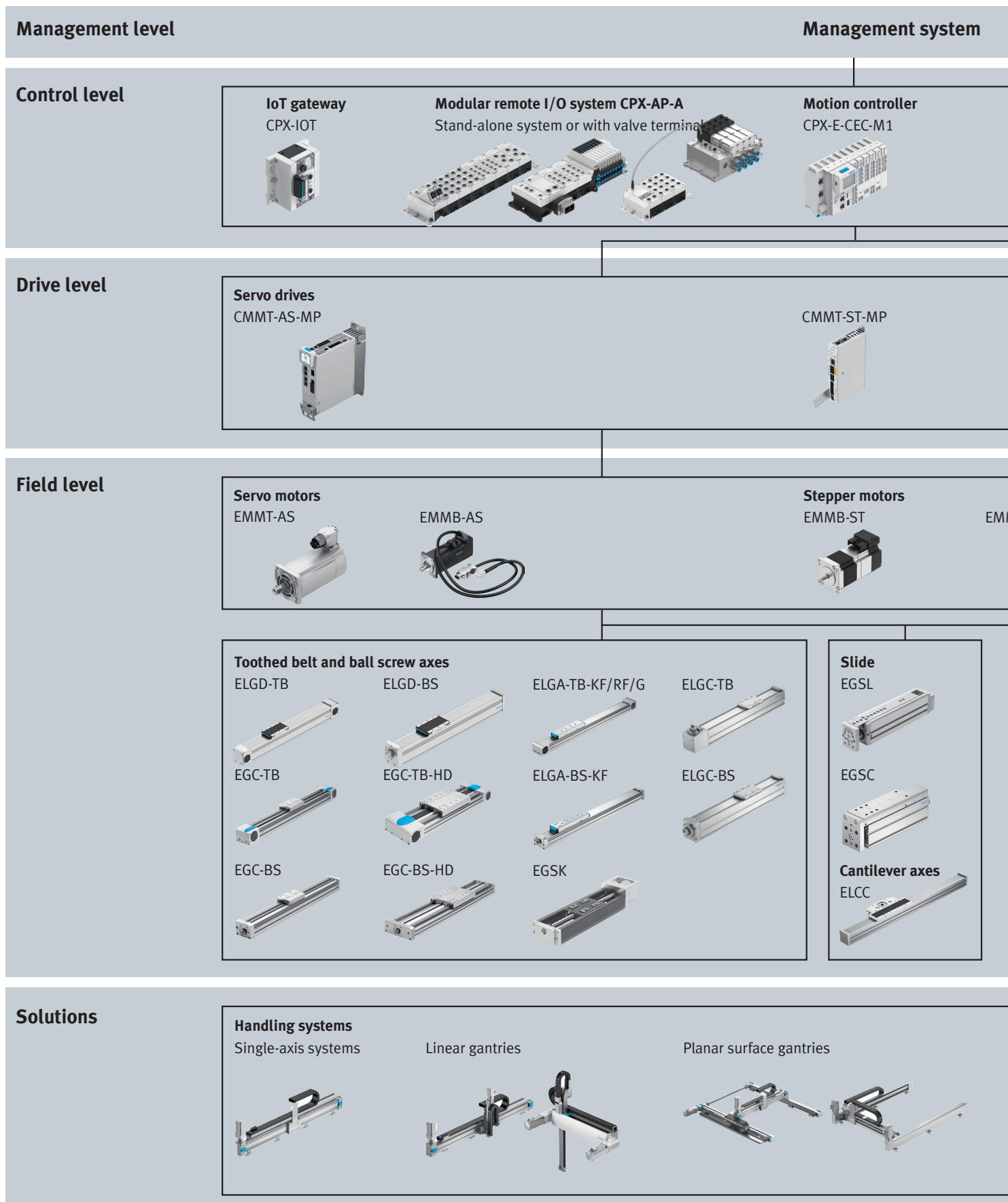
Festo offers one of the most wide-ranging product portfolios for linear and rotary mechanical systems. In addition to rotary and linear drives, it includes precise ball screw axes and dynamic

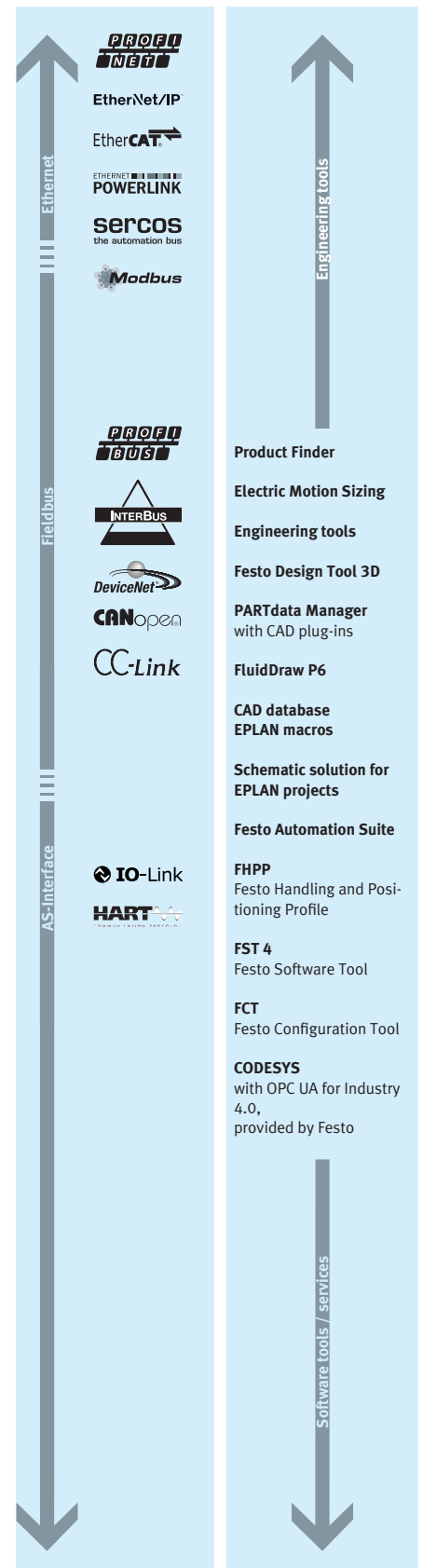
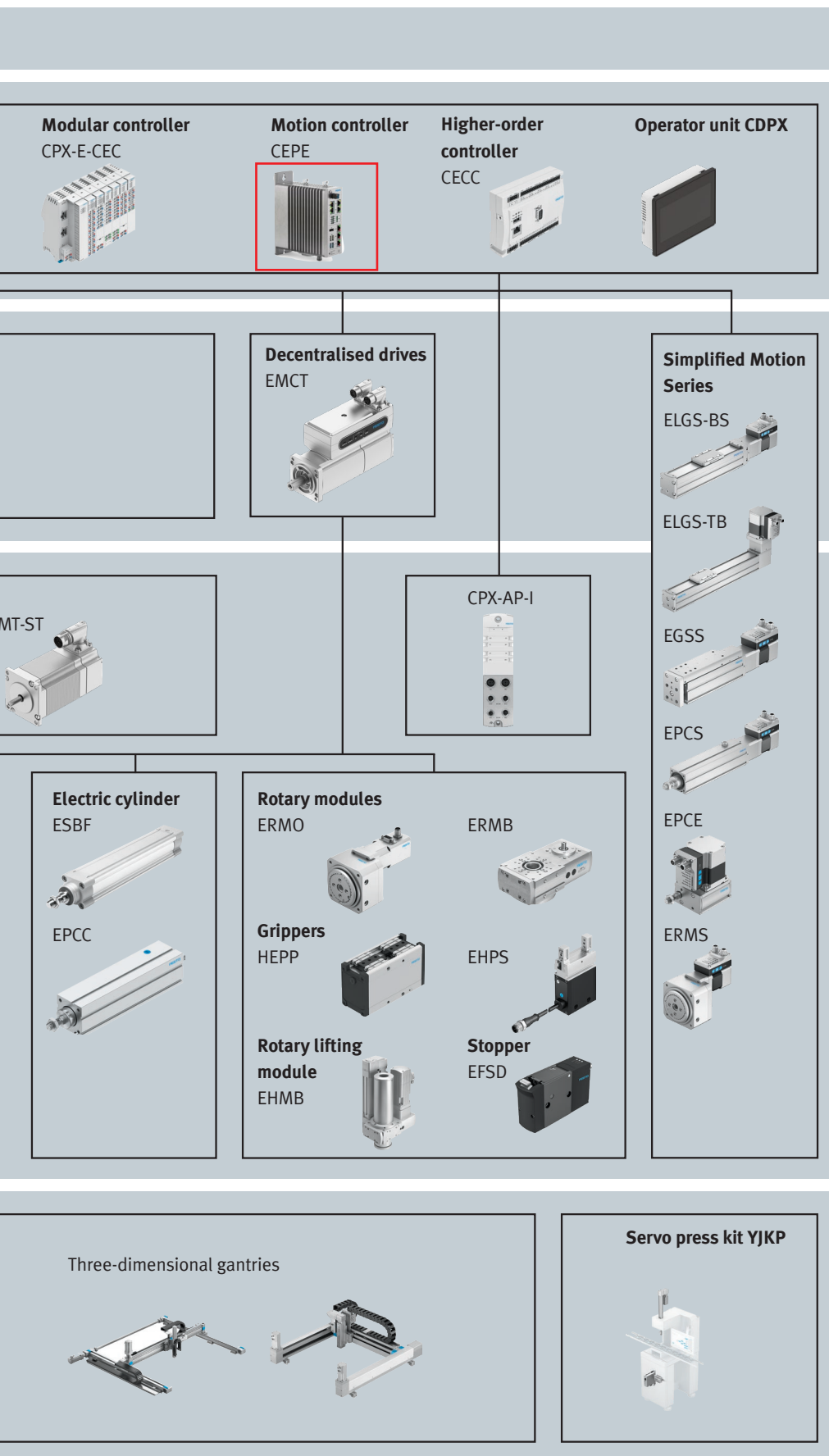
toothed belt axes with a stroke of up to 8.5 m, highly precise mini slides with accuracy of up to 15 µm, powerful electric cylinders as well as rigid and dynamic cantilever axes. It offers the right

mechanics for almost every application, including variants in IP65, with FDA-compliant materials or non-ferrous metal-free for use in battery production.



Electric automation – product overview





Modular remote I/O system CPX-AP-A: Stand-alone system or with valve terminal

The Automation Platform for real-time performance at a glance

The goal is to have unrestricted and seamless connectivity, embedded in future-ready and compatible concepts for the flexible automation of complete machines or individual machine modules. That is why Festo offers mechanical, electric and intelligent automation modules that work together perfectly and do not impose any technical limitations.

This includes mechanics, complete servo drive systems, state-of-the-art communication and control concepts as well as digitalisation with suitable cloud solutions.

Combined on the Automation Platform (AP)

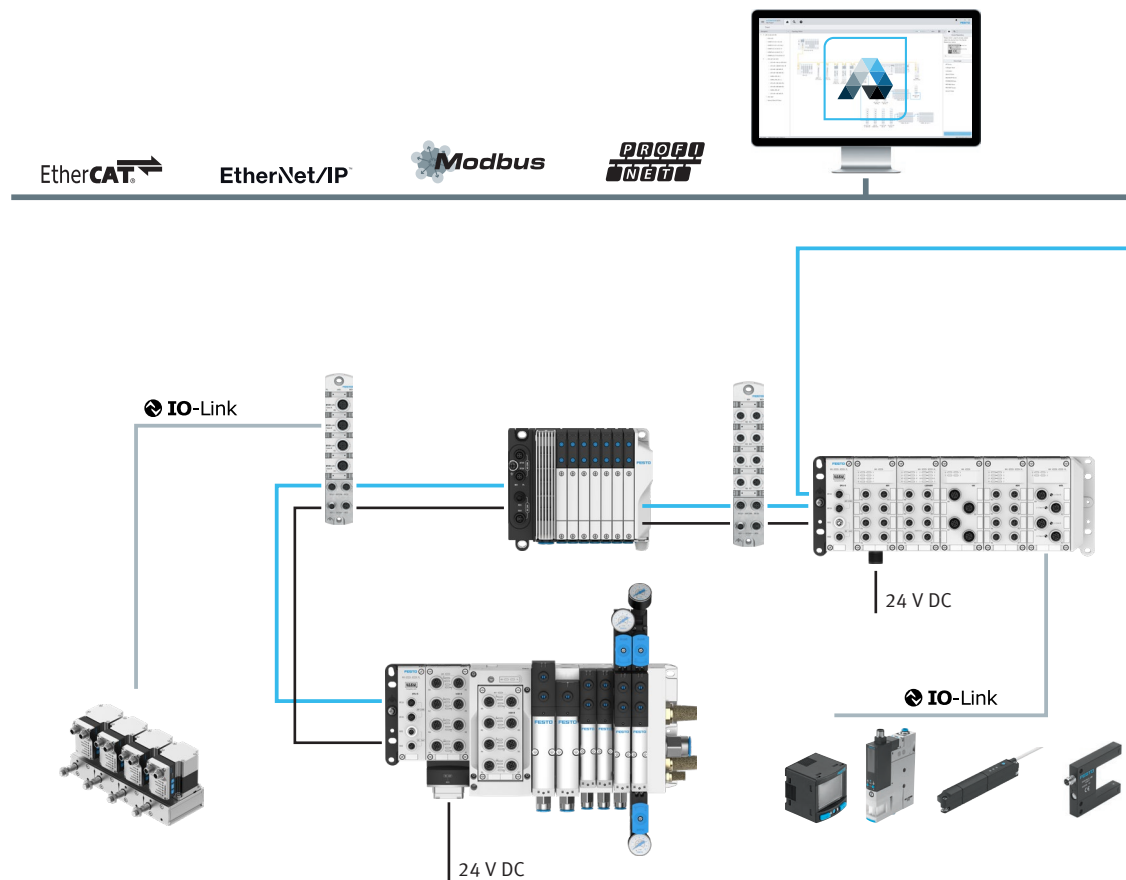
The Automation Platform (AP) from Festo forms the basis for a new generation of remote I/O systems that enables a freely scalable, flexible and powerful system architecture. The AP uses a hybrid approach to combine modular CPX-AP-A and decentralised CPX-AP-I structures. Remote I/O and control technology are thus combined with electric and pneumatic automation technology to create a comprehensive architecture.

Combined with pneumatics

Many of the valve terminals from Festo, such as VTUX and VTUG, MPA-L and VTSA, can be very flexibly integrated into the system using AP communication. They are either connected directly to the CPX-AP-A or integrated into a decentralised system as a stand-alone valve terminal using the AP interface. In addition, all IO-Link-capable valve terminals can be integrated into the AP via IO-Link master. This means that both CPX remote I/O systems and AP communication allow the valve terminals to be freely and flexibly integrated in the machine architecture.

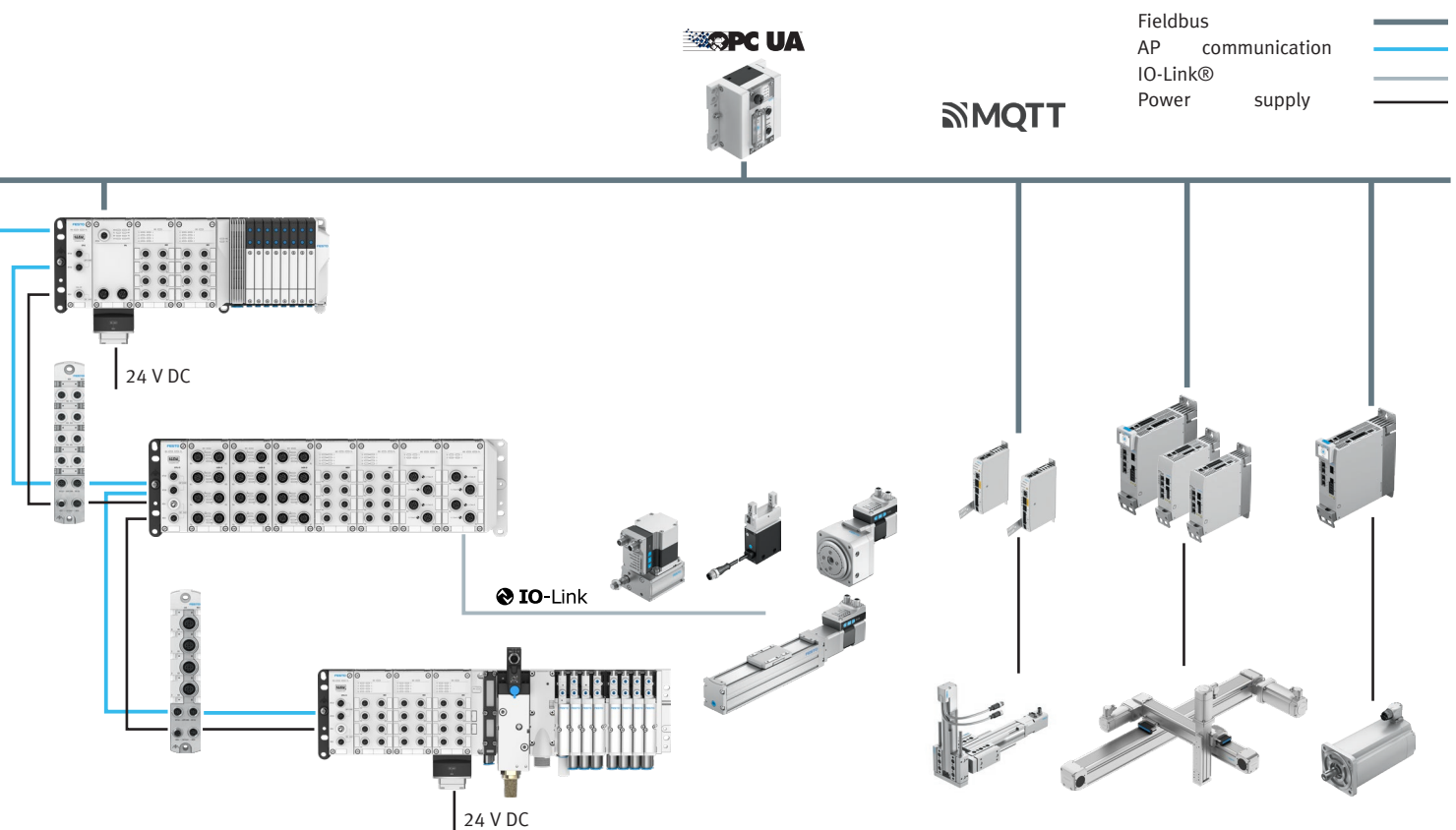
Combined with electric drives

All electric drives from the Simplified Motion Series can be connected directly to the remote I/O systems via IO-Link®. A wide variety of linear and rotary electric movements can thus be an integral part of technology-independent automation concepts based on AP and can be flexibly integrated into different networks.



"You can adapt the automation architecture of your machine to your individual design philosophy at low cost and with little effort. With seamless connectivity from Festo, you can freely combine remote I/O systems with electric and pneumatic automation, and you are always supported by suitable engineering tools."

Samuel Haas
Product Management Controls, Festo SE & Co. KG



Real-time performance: modular remote I/O system CPX-AP-A

The modular system combines valve terminals and decentralised CPX-AP-I modules in line or star topologies to create modern system architectures; it also communicates with many other products, such as electric drives, vacuum generators and proportional valves, via IO-Link master.

A few technical highlights

- Real-time communication with a data rate of 200 MBaud and a cycle time of up to 250 µs
- Wide range of modules, e.g. digital I/O up to 16-way, 32-way in future, analogue inputs, IO-Link master, fieldbus interfaces, etc.
- Protection class IP65/67 for direct installation in the machine
- Decentralised system with a cable length of up to 50 m between the AP participants

Built-in performance: decentralised remote I/O system CPX-AP-I

The individual, high-performance I/O modules are either integrated into the higher-level network via the fieldbus module or decentrally connected to the CPX-AP-A via AP communication, and supplemented by valve terminals with AP interfaces and electric drives via IO-Link®.

A few technical highlights

- Very sturdy line topology with up to 80 ultralight and compact modules in one or two lines
- Flexible system design with decentralised I/Os and valve terminals.
- Protection class IP65/67 for direct installation in the machine
- Cable length of up to 50 m between the AP participants

Real-time capable, fast and compatible: Decentralised remote I/O system CPX-AP-I

The remote I/O is compatible with all host systems commonly found on the market and, with up to 80 modules, can be flexibly integrated into applications of any scale. With its real-time capability and short bus cycles, the CPX-AP-I is suitable for fast production processes and high-speed data transfer. Its sturdy yet compact and ultra-lightweight design makes it suitable for assembly machines with limited installation space.

Fieldbus communication

The bus interface is used to connect the CPX-AP-I to the higher-order controller

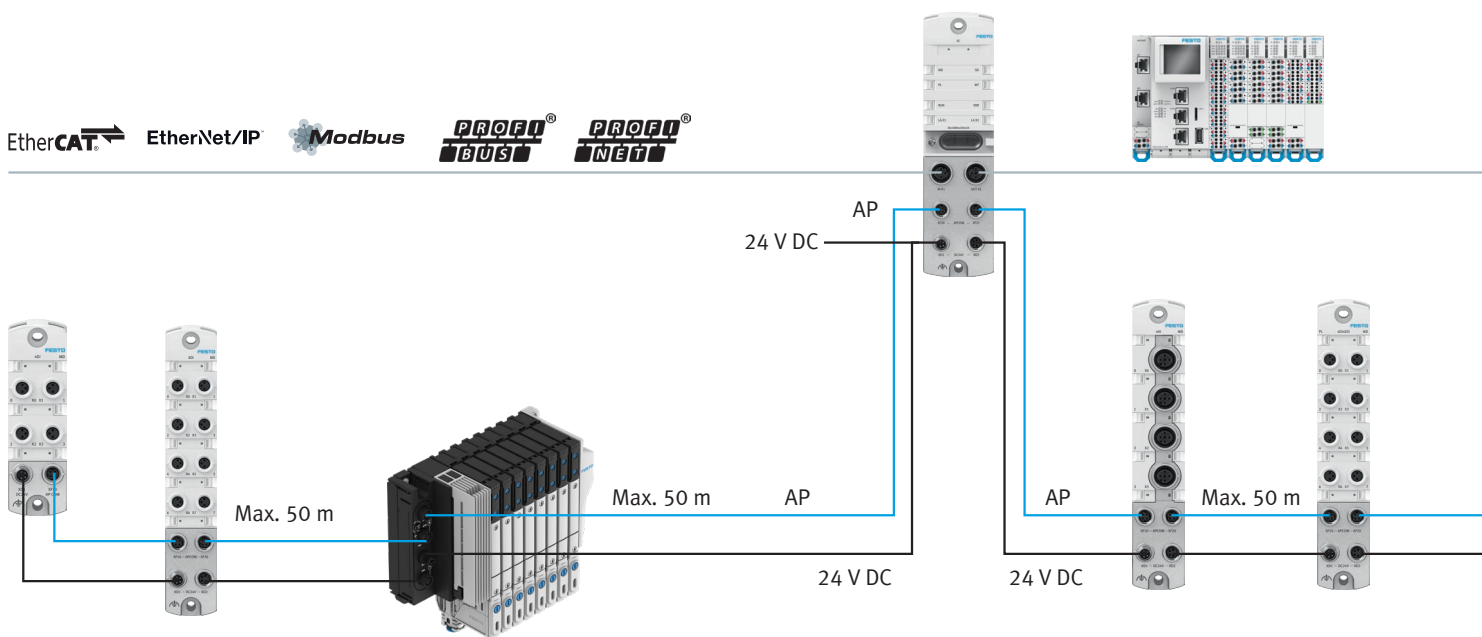
via Ethernet-based bus protocols as well as EtherCAT® or PROFIBUS.

It is also perfect for handling and tool changing systems or in mobile applications, for example at the robot front end, where low weight and minimal installation space are crucial. With a cable length of up to 50 m between the individual modules, the CPX-AP-I also comes into its own in systems and intralogistics where long distances need to be covered.

System topology

Starting from the bus interface, one or two lines can be set up using the daisy chain principle.

The star and tree topology will also be possible in the future.



AP system communication

The new AP communication technology combines a host PLC with IO-Link devices, digital and analogue inputs and outputs, and data transfer to the cloud in a simple package.

What makes it unique is the direct integration of existing Festo valve terminals into the remote I/O system.

- Simplified engineering without additional software
- Real-time communication to the valve terminal

Power supply concept

The CPX-AP-I automation system has separate cables for communication and power supply as well as two separate circuits.

- Power can be supplied separately for each individual module or shared from module to module as a central supply
- Possible to create different voltage zones
- Stable data transfer

Seamless connectivity is automation without any compromises! Everything is interlinked: from pneumatics to electrics, from the workpiece to the cloud.

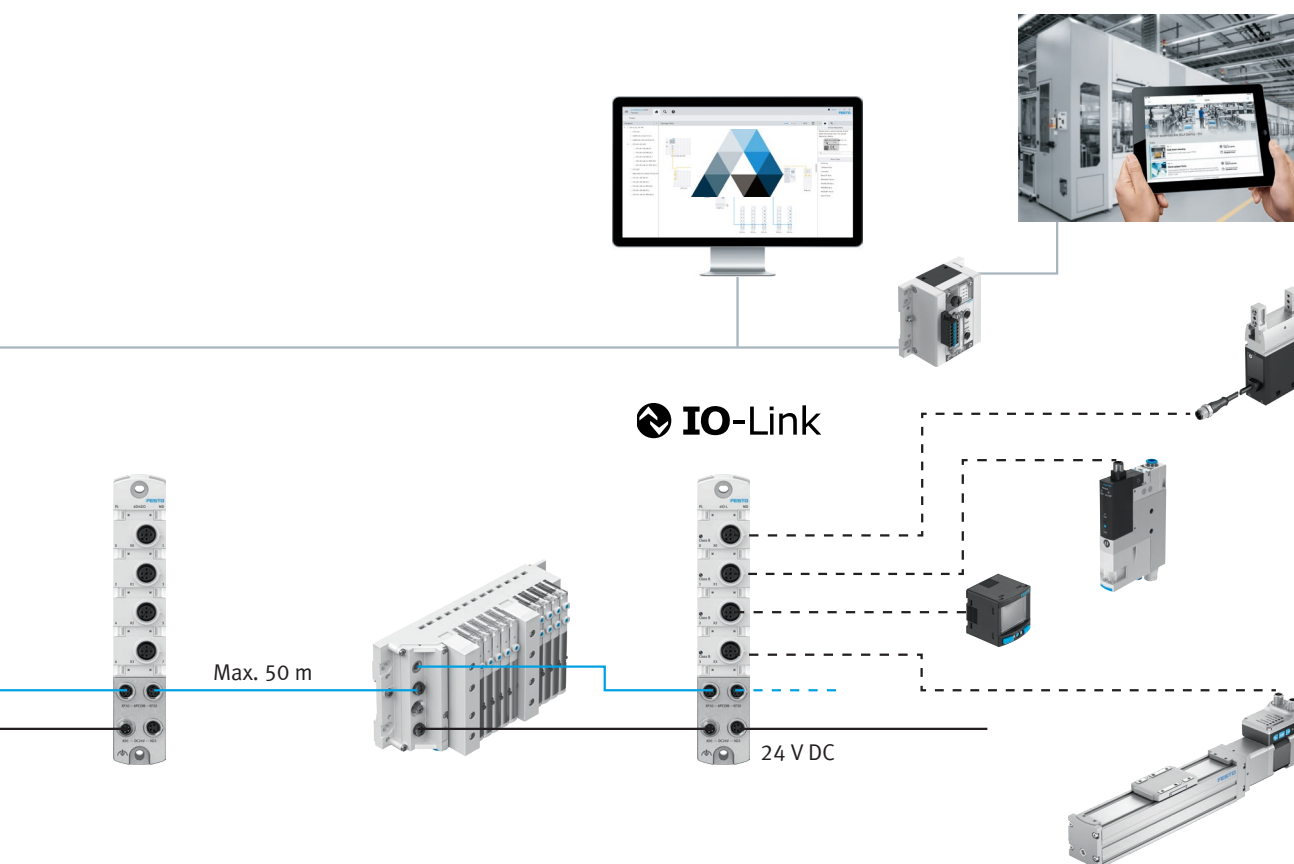
Festo Automation Suite

The integration into the commissioning software enables firmware updates, smart engineering and enhanced diagnostics.

Digitalisation and Industry 4.0

When connected to the IoT gateway from Festo, CPX-AP-I communicates right up to the cloud via standard cloud protocols such as MQTT and OPC UA.

This will make it easy in future to carry out predictive maintenance and condition monitoring.



IO-Link® with CPX-AP-I

Up to four IO-Link® devices per IO-Link master can be integrated into the CPX-AP-I system and several IO-Link masters can be connected to a bus interface.

IO-Link products from Festo:

- Simplified Motion Series
- Servo drive
- Grippers
- Sensors
- Festo valve terminals
- Proportional pressure regulators
- Vacuum generators

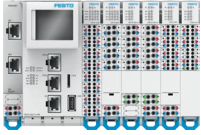
Modules of CPX-AP-I

An automation system CPX-AP-I consists of the bus interface and at least one other input/output module or an IO-Link master. In the system, up to 79 modules can be connected to the bus interface in any combination.

- Bus interface

- IO-Link® master
- Digital input/output modules
- Analogue input module

Intelligent connectivity: controllers and motion control



Control system CPX-E

High-performance automation system as an EtherCAT® master controller and motion controller to IP20 or as a low-cost remote I/O.

- Comprehensive PLC functions, multi-axis applications with interpolation
- Easy to integrate in host systems or as a controller for decentralised automation solutions
- For Industry 4.0 host environments: cloud and digitalisation concepts, OPC UA client and server functions



Electrical terminal CPX

CPX is used as a modular and flexible automation platform, including embedded CODESYS controller, or as a versatile remote I/O to IP65 for scalable installation concepts. For universal communication via fieldbus/Ethernet.

- For decentralised and networked intelligence
- Industry 4.0 thanks to OPC UA and CODESYS V3
- Optimised versions for IP20 and potentially explosive environments
- Diagnostics and condition monitoring, also via IoT gateway and Festo Cloud



Motion controller CEPE

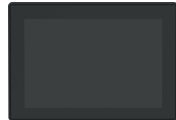
CEPE is an industrial control unit that has been developed for controlling and monitoring electrical actuators in automated systems. It is a powerful programmable logic controller that offers a wide range of interfaces and software functions and is the configurable control system for industrial motion and IOT applications



Compact controller CECC

The versatile controller with CODESYS is ideal for simple control of electric and pneumatic drives. CECC stand-alone or as part of mechatronic solutions enables interpolating motion control for up to 3 axes.

- IO-Link® variant with master and device interface
- Direct connection of the Simplified Motion Series via IO-Link®
- Integrated IO-Link® interface for connecting Festo valve terminals, electric drives and sensors
- Digital I/O

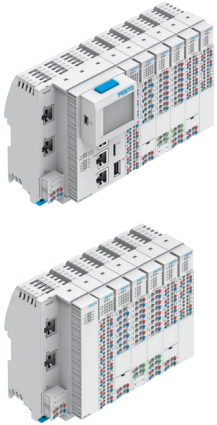


Operator unit CDPX

The operator units CDPX are high-performance processors combined with wide-screen technology. They therefore provide more functions at a higher resolution.

- PoE (Power-over-Ethernet) for maximum ease of connection with standard shielded CAT 5 cabling
- The product series CDPX has been optimised for use as an embedded browser or Designer Studio HMI device

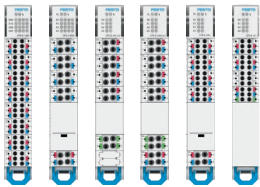
Modular control system CPX-E



CPX-E is a powerful automation system and, as an EtherCAT® master controller and motion controller in IP20, is the central control system for handling applications. The version without control unit is a compact and affordable remote I/O including different bus modules.

Thanks to comprehensive PLC functions and multi-axis applications with interpolation, the CPX-E can be easily integrated into existing host systems. The OPC UA client and server functions ensure easy integration and interoperability in Industry 4.0 host environments with cloud and digitalisation concepts.

- Fast EtherCAT® master interface
- Bus slave interfaces: PROFINET, Ethernet/IP
- High performance (dual core processor with 766 MHz and 512 MB RAM)
- USB and SD card interface
- Display optional
- CODESYS V3 from SP10
- Motion functions such as SoftMotion
- UL/CSA, C-Tick and IEC Ex certifications

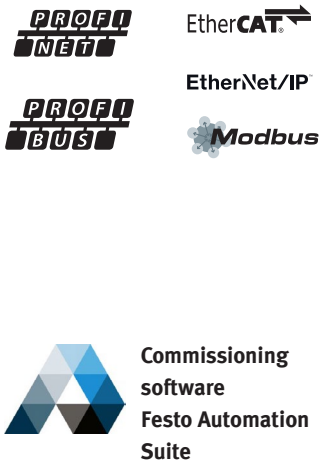


Remote I/O module

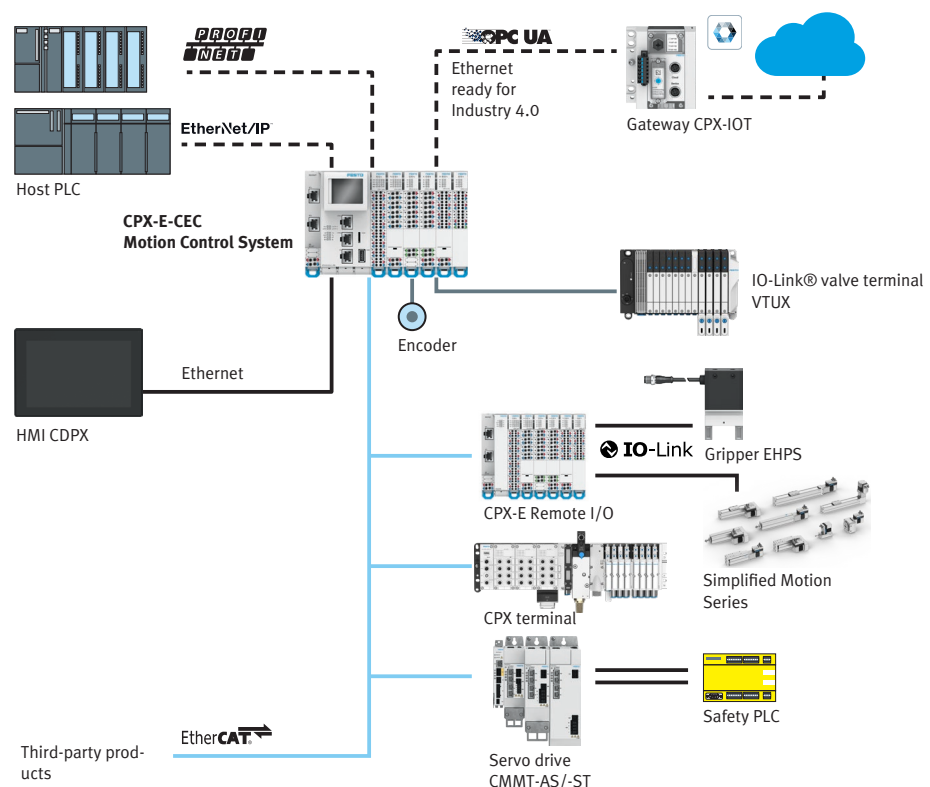
- Digital input modules (16 DI)
- Digital output modules (8 DO/0.5 A)
- Analogue input module (4 AI current/voltage)
- Analogue output module (4 AO current/voltage)
- IO-Link® master modules (4 channels)
- Counter module

Control options

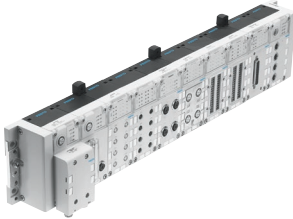
- CPX-E-CEC-C1: powerful CODESYS V3 control unit with comprehensive PLC functions, but without any motion control functions
- CPX-E-CEC-M1-EP: motion controller with CODESYS V3 and SoftMotion



Architecture of the automation system CPX-E



Terminal CPX



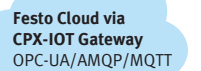
The CPX terminal is used as a modular and flexible automation platform, including embedded CODESYS controller, or as a versatile remote I/O in IP65. With CPX, you can integrate pneumatic and electrical control chains easily, quickly, flexibly and, above all, seamlessly into all automation concepts and company-specific standards. This makes it the perfect platform for electrical peripherals of a machine with decentralised and networked intelligence. It is a forward-looking technology that can now be connected to host environments for Industry 4.0 as well as to the Festo Cloud and others via the IoT gateway.

Perfect networking thanks to:

- Universal communication via fieldbus/Ethernet
- A choice of pneumatic platforms (valve terminals)
- Subordinate, decentralised installation systems CPI, IO-Link® or I-Port
- Maximum range of modules for almost any automation requirement

Function integration

- Front-end control
- A choice of scalable installation concepts
- Comprehensive diagnostics and condition monitoring, also via IoT gateway and Festo Cloud
- Motion control for electric and servo-pneumatic drives
- Installation concepts in Ex zones with CPX-P and NAMUR sensors in Ex zones 0 and 1
- Extensive safety functions via PROFIsafe input and output modules



Motion controller CEPE



CEPE has high computing power and an open software ecosystem to control and automate assembly lines and machines as well as production processes; it can gather and analyse local data, program its own applications and install third-party applications via various app stores.

Festo AX OS platform

The real-time platform Festo AX OS offers a complete software ecosystem with application frameworks, software development kits, motion function blocks and software packages and apps from third-party providers.

Important applications

- Programming and real-time monitoring of production processes and automation tasks
- Motion applications such as conveyors, rotary tables, pick & place, palletising, rotary knives, flying saws, servo presses and many more
- Visualisation of machines
- IOT data acquisition and analysis
- Remote monitoring and control
- Condition monitoring and fault diagnostics
- Connectivity to software services on site or in the cloud

Highlights

- Powerful PC hardware
- Real-time platform with Festo AX OS, based on PLCnext Technology – the open ecosystem for modular automation
- Simple programming with standardised CODESYS programming interface
- Extension of software functions: Motion application frameworks, software development kits, software packages and apps from third-party providers
- Industrial Ethernet multiprotocol connection to the PLC
- Seamless combination of servo technology and stepper motor technology



Compact controller CECC



The CECC is a versatile controller with CODESYS V3 provided by Festo and offers a huge number of functions on a compact device. With the CECC, electric or pneumatic drives are easy to control, especially for small tasks. The innovative, object-oriented programming and function library for motion control for interpolating up to 3 axes make operation and programming very easy.

CECC-D with basic functions:

- CANopen master for connecting servo drives
- Ethernet, Modbus® TCP client/server, EasyIP, TCP/IP, OPC server are available
- 12 digital inputs, 8 digital outputs, additionally 2 high-speed counters up to 180 kHz

CECC-S with additional interfaces:

- IO-Link® master and device
- RS232, RS422, RS485 for free programming or as a direct encoder interface

CECC-LK with IO-Link:

- Four IO-Link® masters and one IO-Link® device interface
- Easy to connect with sensors and valve terminals
- Direct connection with the Simplified Motion series

OPC UA client server is available on request, making CECC ready for Industry 4.0.

- MQTT can be configured with CODESYS.

Operator unit CDPX



The operator units CDPX are high-performance processors combined with wide-screen technology. They therefore provide more functions at a higher resolution. PoE (Power-over-Ethernet) for maximum ease of connection with standard shielded CAT 5 cabling. The product series CDPX has been optimised for use as an embedded browser or Designer Studio HMI device

Browser version

The products are designed to offer an excellent price/performance ratio for demanding applications. They are the ideal choice for HMI applications in factory and building automation.

Performance version

The products have been designed as IoT edge devices combining a powerful controller with network capability (up to 3 Ethernet networks) and excellent communication options including client/server OPC UA. They are the ideal choice for all demanding IoT edge applications in factory and process automation.

Field version

The products are ideal for on-site installation in critical areas. High-resolution displays and multi-touch PCAP touchscreen with sturdy glass front. Power-over-Ethernet (PoE) for maximum simplicity of connection thanks to shielded CAT 5 cabling as standard. Full IP protection with special connections for maximum installation flexibility.

Servo drive CMMT-AS-MP

The state-of-the-art, price- and size-optimised, compact servo drive CMMT-AS is an integral part of the automation platform from Festo. It is suitable for point-to-point and interpolating motions and can be commissioned with the Festo Automation Suite in just a few steps – with no errors! The servo drive is suitable for different Ethernet-based bus systems and can be seamlessly integrated into the controller environments of various manufacturers. The controller-specific function blocks needed for this are included.

Ethernet-based communication

- 1 servo drive platform for numerous fieldbuses
- With the multiprotocol device, all available fieldbuses are contained in one piece of hardware
- Easy to integrate into automation solutions with controllers from Siemens, Rockwell, Beckhoff and others



Operator unit CDSB

- Control element with touchscreen and USB interface
- Simple, full-text diagnostics and setting of the servo drive on site
- Ideal for easy data backup of parameters and firmware
- 1 CDSB can be used for several CMMT-AS. For example, on series machines the same program data can be downloaded to several CMMT-AS.



Compact design

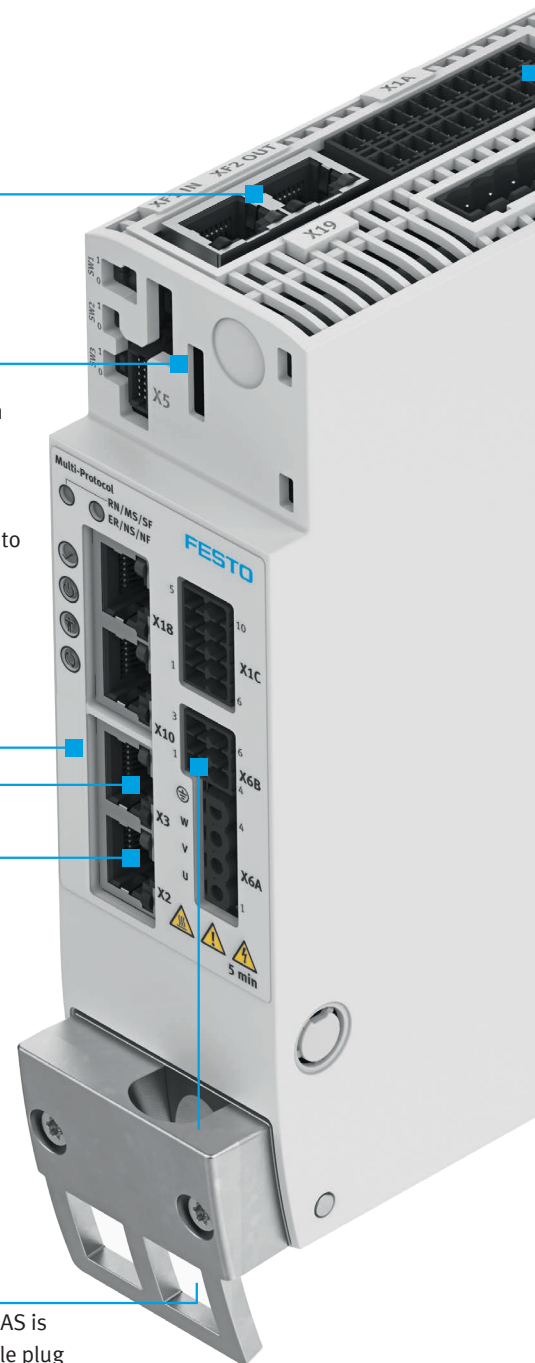
- All connections and the control unit CDSB are at the front and on top of the closed-loop controller.
- Compact and optimised cooling element ensures adequate cooling.

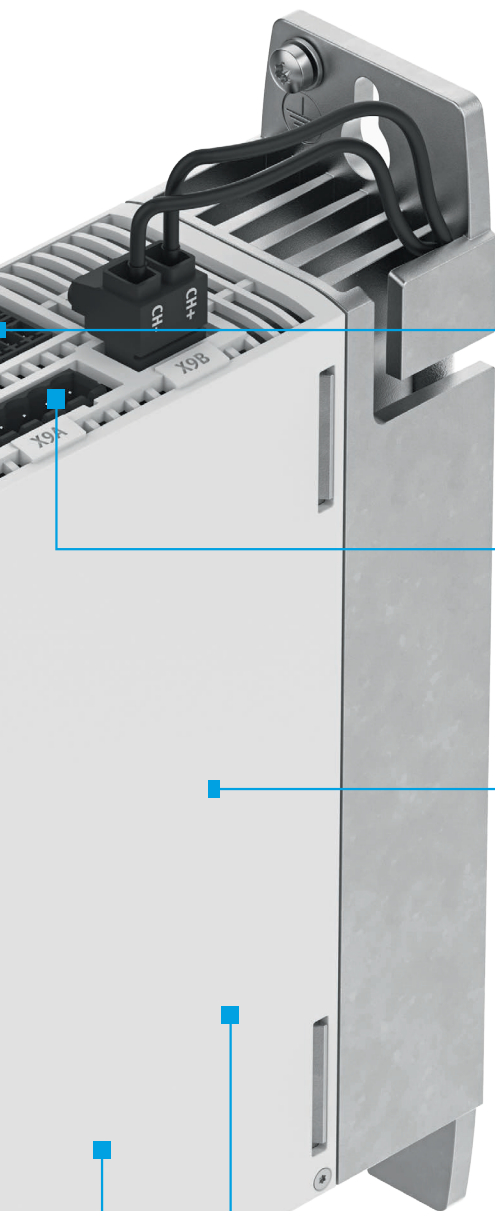
Encoder interfaces

- Multi-encoder input for motors
- Formats: ENDAT2.1/2.2 (One Cable), HIPERFACE, Nikon, BiSS-C
- Input for second encoder
 - For safety-related 2-channel solutions with redundant measuring system
 - For greater positioning accuracy of the axis mechanism
 - For special applications (e.g. flying saws)
 - For synchronising two axes
 - CMMT-AS as external encoder module – saves on an additional encoder module and reduces costs
 - Formats: ENDAT2.2, Nikon, A/B and SIN/COS incremental

Motor connection

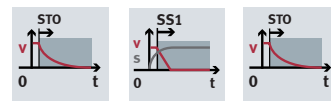
- The servo motor EMMT-AS is connected with one cable plug (OCP).
- Other servo motors are connected with separate cables.





Integrated safety and reliability

- Standard safety functions:
 - STO: safe torque off (SIL3/Cat. 4 PL e)
 - SS1: safe stop 1 (Type c) when using a suitable external safety relay unit and suitable circuits
 - SBC: safe brake control (up to SIL3/Cat. 3 PL e)
 - Diagnostic outputs STA and SBA for feedback on the active safety function
- Extended safety functions such as SS2 (safe stop 2), SOS (safe operating stop), SLS (safely limited speed) or SSR (safe speed range) in preparation
- Standard safety functions can be configured without software



DC link coupling

- Feed energy back via the intermediate circuit
- Simple and inexpensive energy compensation between drives
- Improved energy efficiency

Mains filters

- Mains filter integrated as standard
- Ensure reliable operation of the CMNT-AS under poor EMC conditions
- Saves additional external mains filters, reduces installation time and saves space in the control cabinet

Parameter sets

- Optimal parameters for optimised cycle times and process reliability
- Save up to three parameter sets on the drive for complex applications
 - The parameter set can be changed during operation
 - Easy to implement new requirements for the machine sequence
 - The correct closed-loop parameters are always used, even with variable payloads

Function elements

- Easily integrated into automation solutions from Siemens, Rockwell, Beckhoff and others
- Quick to implement point-to-point motions and interpolating motions with standard drive profiles such as PROFIdrive and CiA402
- Typical PLC functions such as E-Camming Editor, NC-axes, technology objects and kinematics models are convenient to use

MC_MoveAbsolute_Festo		
Axis	AXIS_REF_FESTO	BOOL Done
Execute	BOOL	BOOL Busy
Position	REAL	BOOL CommandAborted
Velocity	REAL	BOOL Error
Acceleration	REAL	ERROR_ID ErrorID
Deceleration	REAL	STRING ErrorString
Jerk	REAL	
Direction	MC_DIRECTION	
BufferMode	MC_BUFFER_MODE	

Servo drive CMMT-ST-MP

The extra-low voltage servo drive CMMT-ST is perfect highly economical positioning tasks and motion solutions with low power requirements up to 300 W. It is even more compact and significantly less expensive than its big brother, the CMMT-AS, while the connection and communication concept, function blocks and standard safety remain the same. The consistent control concept means that the CMMT-AS and CMMT-ST can be easily combined with both large and small axes.

Ethernet-based communication

- 1 servo drive platform for numerous fieldbuses
- With the multiprotocol device, all available fieldbuses are contained in one piece of hardware
- Easily integrated into automation solutions with controllers from, for example, Siemens, Rockwell, Beckhoff and others

EtherCAT

PROFINET

EtherNet/IP

Modbus

Integrated standard safety

- STO: safe torque off (SIL3/cat. 3 PL e)
- SS1: safe stop 1 (type c) when using a suitable external switching device and a suitable circuit
- Can be configured without software

Encoder interface

- For greater positioning accuracy of the axis mechanism
- BiSS-C and incremental

Motor connection

- Optimised with the new stepper motors EMMB-ST and EMMT-ST from Festo
- Suitable for BLDC motors (brushless DC motor)

Technical data

- Max. continuous output: 300 W
- Peak power: 800 W
- Primary voltage: 24 ... 48 V DC
- Motor current: 8 A/peak 20 A

Commissioning

- Commissioning with the Festo Automation Suite takes just a few steps and is error-free

Extremely compact

- 50% more compact than the smallest CMMT-AS with almost the exact same performance

Energy management strategy

- for recovering energy

Dynamic movement and precise positioning

- Point-to-point
- Interpolating

Webserver

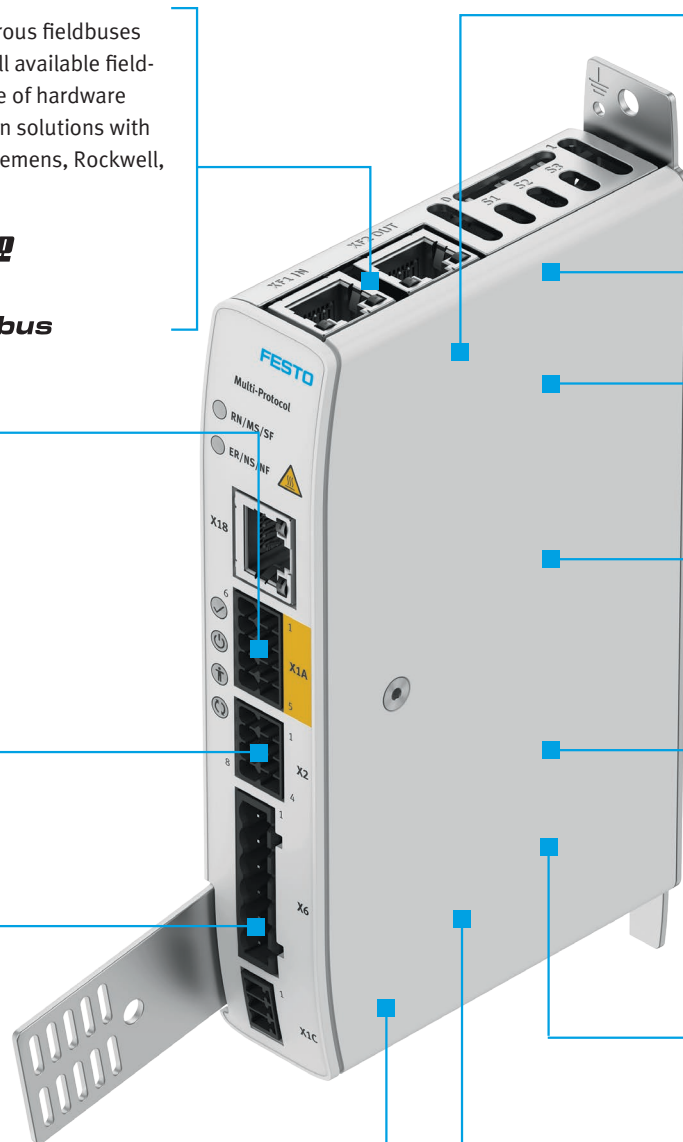
- Quick and easy online diagnostics
- Transferring and updating firmware and parameters

Project engineering

- Create the optimum drive package quickly and reliably with Electric Motion Sizing
- Seamless transition to commissioning and transfer of all necessary parameters in one file

Parameter sets

- Optimal parameters for optimised cycle times and process reliability
- Save up to three parameter sets on the drive for complex applications
- The parameter set can be changed during operation



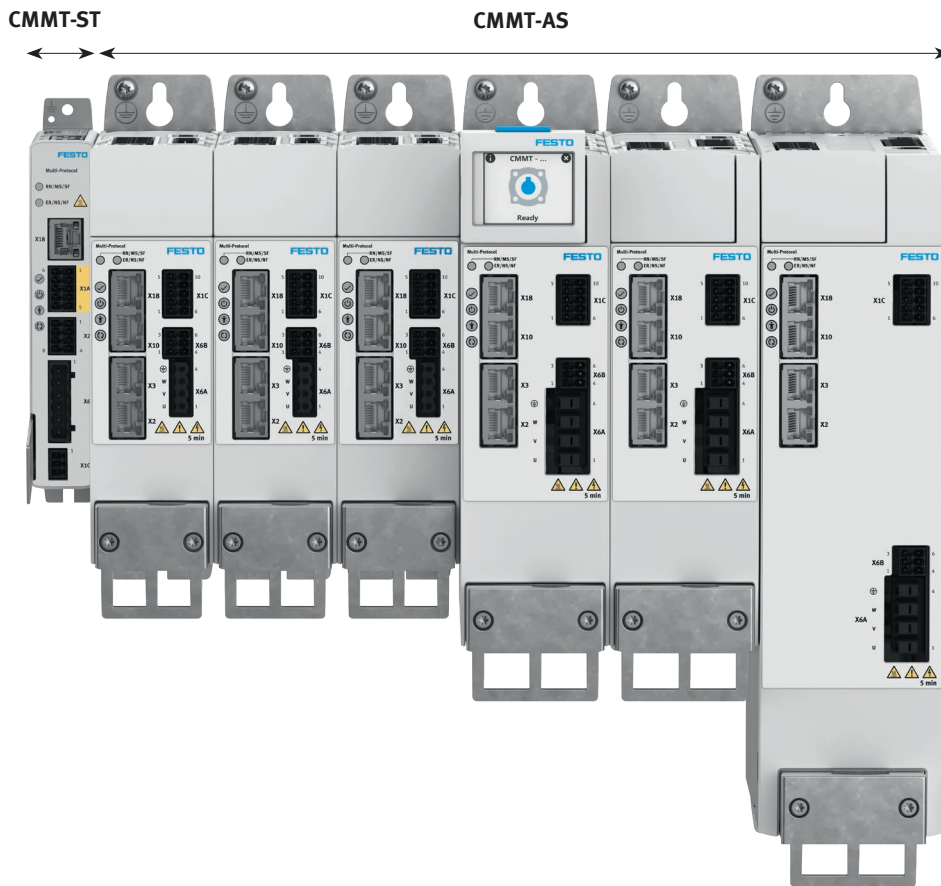
Tip:

There is no need for a separate power supply unit when operating the CMMT-ST with the existing 24 V DC network in a control cabinet and a continuous output of 150 W. This saves on additional costs, reduces the installation effort and reduces the required cooling capacity.

The power spectrum of the CMMT-ST thus ranges from below 50 W up to a continuous output of 300 W and a peak output of 800 W at 48 V DC.

Compact and powerful package: CMMT-AS-MP and CMMT-ST-MP

It may be one of the smallest among its competitors, but the extremely compact servo drive series CMMT is still very powerful in all sizes. All servo drives can be installed directly in series. The intelligent design has the same operating and connection concept for all sizes, which really simplifies installation and operation. In addition, the optimised cooling element also ensures outstanding cooling, even when several drives are connected together.



The complete range of servo drives

- CMMT-ST up to 300 W continuous power
- CMMT-AS from 350 W to 12 kW continuous power

Compact, easy to install, easy to connect

- Save space in the control cabinet
- All connections and the operating panel CDSB are at the front and on top of the drive
- The extremely compact size makes it one of the smallest servo drives compared to its competitors
- Simplified installation effort, requiring much less time for the connections
- Unique high-density assembly of the servo drive thanks to good series connection
- Virtually perfect ratio of size and performance, such as with the compact, optimised cooling element and the position of the connections
- Extremely effective cooling performance even with high component density

Combining low-voltage and extra-low voltage servo drives for high performance and excellent economic efficiency

The servo drives CMMT-AS (low voltage servo drive) and CMMT-ST (extra-low voltage servo drive) are characterised by a common platform concept. They can be easily combined so that individual movements of the application can be optimally designed and operated. The CMMT-ST covers the power spectrum from below 50 W up to 300 W while the CMMT-AS enables power outputs between 350 W and 12 kW.

Thanks to the same fieldbus interfaces and the seamless, consistent integration into the system environment of the controller manufacturer, project engineering and operation of the entire servo drive series is really easy and convenient.

At the same time, the required space in the machine, and especially in the control cabinet, is minimal.

Servo motor EMMB-AS

This compact and particularly economical synchronous servo motor in four power classes from 100 to 750 W is perfect for simple positioning tasks, particularly in the electronics industry and small parts assembly as well as in test stations.

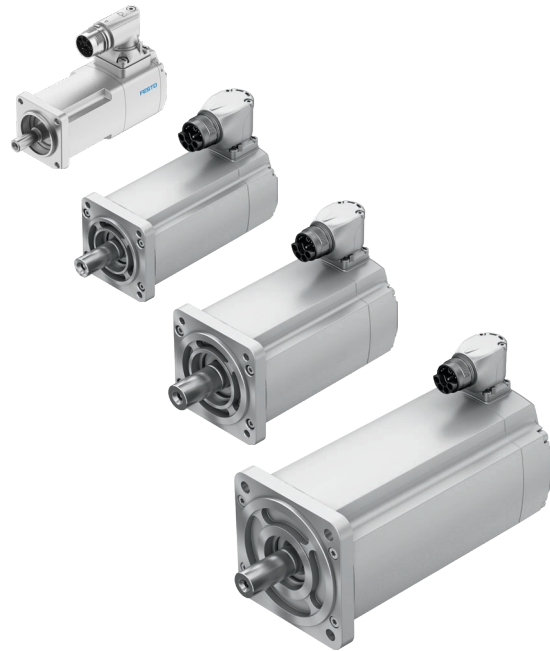
- Single-turn encoder, optional: multi-turn with battery adapter
- Optional holding brake
- Motor, brake and encoder cables with optimised connection technology
 - 2.5 ... 25 m
 - Optional: versions suitable for energy chains
- Degree of protection:
 - IP65 for motor housing and cable connections
 - IP50 on the motor shaft without and IP54 with shaft seal ring
- Shaft and flange compatible with EMMT-AS



Servo motor EMMT-AS

The AC synchronous servo motor for demanding and dynamic applications is characterised by an extremely low cogging torque. This ensures good control characteristics and tracking accuracy with positioning tasks. The electronic rating plate contains all the important motor data. This can be read by the servo drive CMMT-AS and then used to automatically set the parameters for the servo motor. This makes commissioning effortless and totally reliable.

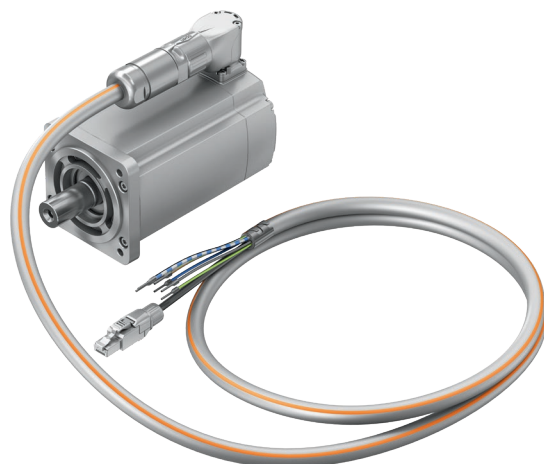
- 6 sizes with flange dimensions from 40 to 190 and 151 W to 8.6 kW or M_0 from 0.28 to 93 Nm
- Single-turn or multi-turn absolute encoder
- With or without holding brake
- Degree of protection IP67 for motor housing incl. connection technology
- Degree of protection for shaft:
 - Standard: IP40
 - With sealing ring suitable for unlubricated operation: IP65
- Temperature measurement integrated in motor, interference-proof and digital transmission via the encoder protocol
- Smooth, painted surface that is dirt-resistant and easy to clean



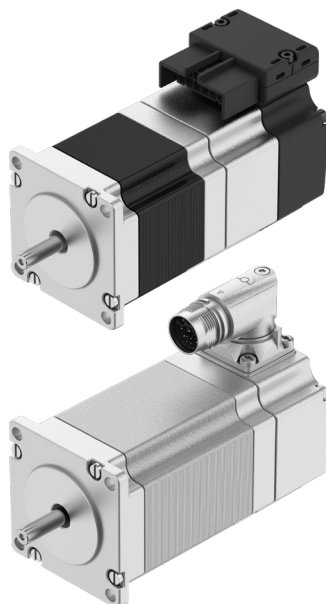
Space-saving: one cable plug with the EMMT-AS

The space-saving one cable plug (OCP) requires much less installation effort. The servo motor is connected with only one cable for power, encoder signals and holding brake. This simplifies wiring and replacement.

- Suitable for transmitting high electrical power
- Robust and durable for dynamic applications, e.g. in energy chains
- Long cables for large distances over 50 m
- Cable lengths up to 100 m with improved protection against interference possible



Stepper motors EMMB-ST and EMMT-ST



The new, optimised stepper motor series EMMB-ST and EMMT-ST together with the servo drive controller CMMT-ST-MP offers you a perfect servo system at an attractive price. Experience this new scope of stepper motors!

Stepper motors EMMB-ST

Cost-effective basic range for applications with straightforward requirements, particularly suitable for series machine builders and for applications in electronics and light assembly.

- 3 flange sizes:
 M_H : 0.25 ... 6.6 Nm
- OCP cable (one cable plug) with space-saving plug, can be positioned at the front or rear
- Motor in IP20 (shaft in IP40), without UL certification

Stepper motors EMMT-ST

Technology series for higher IP rating requirements and solid connectivity, with UL certification.

- 3 flange sizes:
 M_H : 0.25 ... 9.4 Nm
- OCP cable (one cable plug) with solid M17 plug, can be rotated 310°
- Motor in IP65 (shaft in IP40), with UL certification

Engineering tools

Save time with our engineering tools for the optimum solution:

- Create the optimum drive package quickly and reliably with Electric Motion Sizing (EMS)
- Commissioning with the Festo Automation Suite (FAS) is quick and easy

Highlights

- 2-phase hybrid technology – new design!
- Real servo operation with field weakening function for increased performance
- Absolute encoder, single- or multi-turn (without battery)
- Simple connection technology (OCP: one cable plug) with hybrid cable: a common motor and connecting cable for supply and encoder
- With or without holding brake
- Motor flange and shaft dimension NEMA 17 / 23 / 34
- "Electronic rating plate" with motor correction table for perfect control and quiet running characteristics
- Length of cable up to 25 m

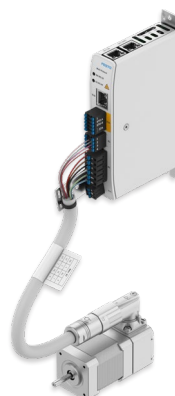
Type	EMMB-ST-42		EMMB-ST-57		EMMB-ST-87		EMMT-ST-42		EMMT-ST-57		EMMT-ST-87		
Flange size	42		57		87		42		57		87		
Length	S	L	M	L	S	M	S	L	M	L	S	M	L
Nominal operating voltage [V]	48		48		48		48		48		48		
Continuous stall current [A]	2.0	3.7	6.1	5.8	9.5	8.2	2.0	3.7	6.6	6.1	9.5	8.2	10.0
Nominal motor power [W]	17	49	81	83	142	87	17	56	87	86	159	87	126
Motor holding torque [Nm]	0.25	0.63	1.05	1.8	2.4	6.6	0.25	0.63	1.12	1.86	2.4	6.6	9.4
Peak torque [Nm]	0.25	0.63	1.1	2.1	2.7	6.8	0.25	0.63	1.1	2.1	2.7	6.8	9.4
Max. speed [1/min]	2700	3200	2600	1500	2200	600	2700	3200	2600	1500	2200	600	430
Brake holding torque [Nm]	0.63		1.74		4.26		0.63		1.74		4.26		
Ambient temperature [°C]	0 ... 40	-15 ... 40					0 ... 40	-15 ... 40					

Electrical connection

- Simple connection technology (OCP: one cable plug) with hybrid cable: a common motor and connecting cable for supply and encoder
- Cable length between the servo drive and motor up to 25 m



EMMB-ST with CMMT-ST-MP



EMMT-ST with CMMT-ST-MP

Connection example

Decentralised drive EMCT-EC



Standard design EMCT-EC-60



Version with optional module

**PROFI
NET**

EtherCAT®

EtherNet/IP™

Modbus

The decentralised drive EMCT is a permanently excited synchronous servo motor with a supply voltage of up to 48 V DC and with an integrated servo drive for installation without a control cabinet. When combined with high-resolution single-turn and multi-turn encoders, it offers high dynamics and torques for demanding positioning tasks in a space-saving design.

A single hybrid cable supplies the motor with voltage, fieldbus communication and STO circuit. An additional motor can be connected to each motor to create a chain (daisy chain). The use of a single cable connection for multiple drives significantly reduces the installation effort and is ideal for modular and compact machine designs.

The motor of the EMCT is based on the successful EMMT-AS from Festo, while the integrated servo drive is based on the hardware and software platform of the CMMT series. This makes EMCT a complete positioning drive with multi-protocol communication for various bus systems such as

PROFINET, EtherCAT®, EtherNet/IP or ModBus in a single device. And thanks to the Festo Automation Suite, programming, parameterisation and control are just as easy as with the CMMT. This ensures easy integration into existing systems and smooth operation.

With the STO (safe torque off) safety function integrated as standard, the drive can be stopped safely.

Overall, the EMCT as a decentralised drive offers an efficient solution for positioning applications. It is perfect for decentralised machine concepts. For example, functional system units in a machine can be supplemented by additional system units without the need for additional space in the control cabinet. With its technical capabilities, compact design and single-cable solution combined with the daisy-chain concept, EMCT is the perfect choice for applications where space in the control cabinet and installation costs need to be reduced.

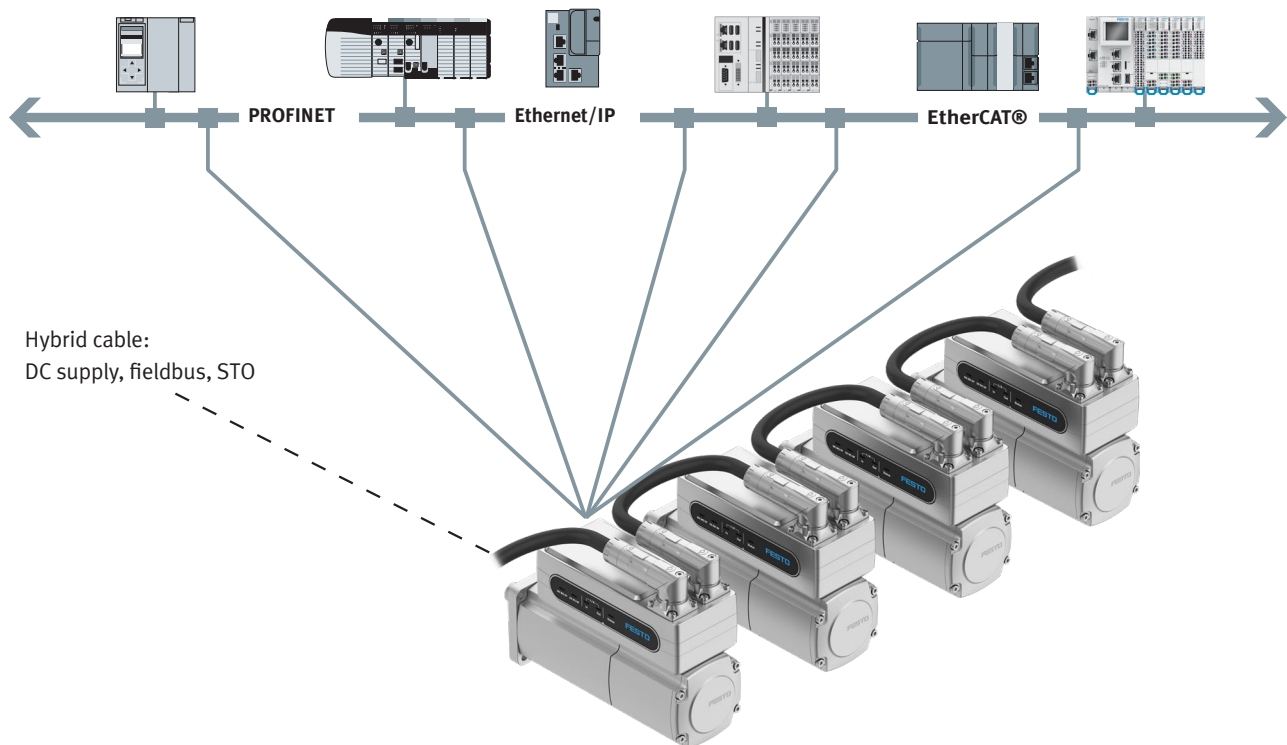
The variety of different sizes and motor lengths also allows it to be customised in line with the power and torque requirements of the application. A holding brake and multi-turn encoder are available as options.

Type	EMCT-EC-60		EMCT-EC-80	
Flange size	60		80	
Length	S	M	S	M
Nominal operating voltage [DC V]	24 ... 48		24 ... 48	
Continuous stall current [A]	5.9	8	7.9	8
Nominal motor power [W]	104	187	162	220
Motor holding torque [Nm]	0.54	0.92	1.34	2.2
Peak torque [Nm]	1.41	2.0	2.9	5.3
Max. speed [1/min]	5300	4300	3000	1810
Brake holding torque [Nm]	2.5	2.5	4.5	4.5
Ambient temperature [°C]	-5...+40, up to 70 with derating			

Highlights

- Simple connection technology (OCP: one cable plug) thanks to the hybrid cable for transmission of supply voltage, fieldbus signals and safety signals (STO)
- Daisy chain concept: signals are transmitted from one drive to the next
- 2 sizes 60/80 with up to 300 W nominal power and 2.2 Nm continuous standstill torque
- Single-turn or multi-turn absolute encoder (battery-free)
- Optional holding brake
- Shaft end with or without feather key
- Protection class IP65 for the entire housing and connection technology with connected plug
- Degree of protection IP40 on the shaft, optionally IP65 with sealing ring suitable for unlubricated operation
- Configure standard safety functions – STO and SS1 – without software
- Direct fieldbus integration for controllers from the major manufacturers
- Full parameterisation for commissioning series machines directly via your master controller with PROFINET and EtherCAT®
- Point-to-point and interpolating motion as well as precise positioning
- Same communication concept, function blocks and standard safety features as the CMMT-ST/AS thanks to an identical platform:

Single-cable solution, multi-protocol and daisy-chain concept



High-precision: the ball screw axis ELGD-BS

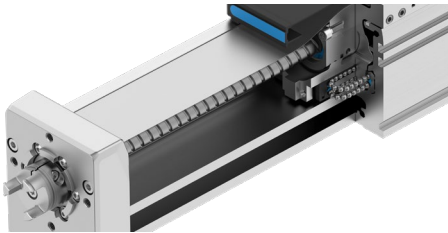
The ball screw axis ELGD-BS with innovative dual recirculating ball bearing guide and the drive with recirculating ball screw are protected by a permanently magnetic stainless-steel cover strip. The portfolio with 6 standard sizes and 4 versions with a width of 30 to 220 mm is already available now in the main 60/80/100 WD series. Further sizes

will follow later in 2024. The axis with a maximum stroke of 2.5 m and two slide lengths can be purchased right now.

1

Innovative guide technology developed in-house with optimised design for electric axis mechanics

- Excellent rigidity
- Guide has exceptional load bearing capacity
- Lightweight
- Precise and smooth slide movement over the entire stroke range up to 2.5 m
- It is possible to choose a smaller size for lower weight, smaller installation dimensions, reduced costs
- Very long service life



2

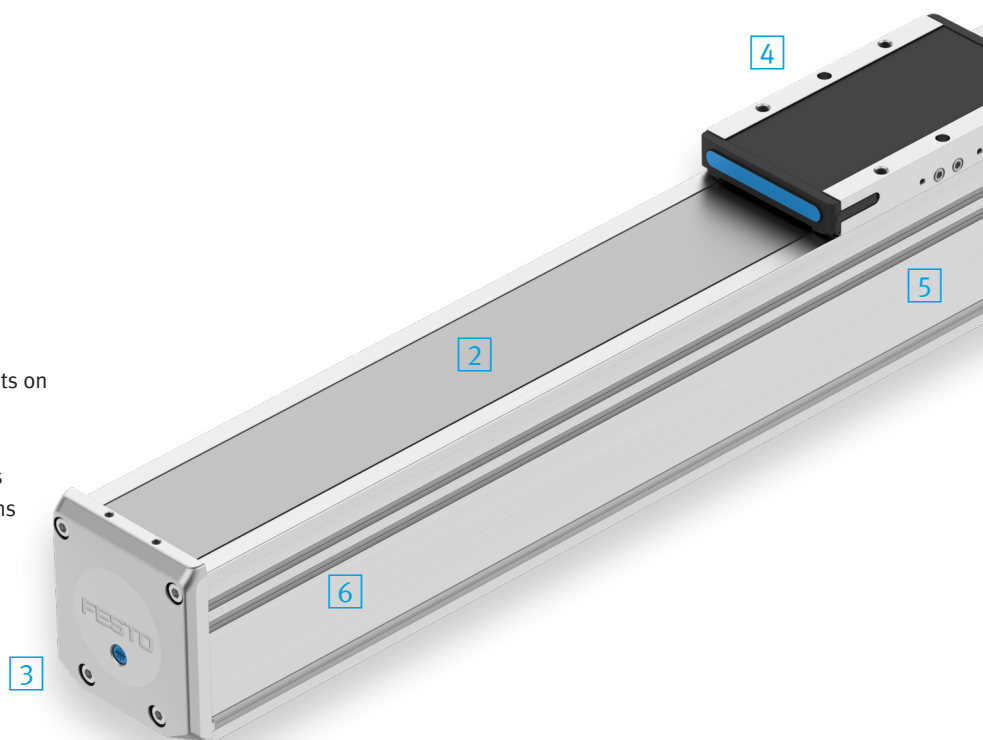
Innovative stainless-steel cover strip solution

- Magnetic belt reversal without rubbing components on the outside
- Clean surface, no abrasion on the outside
- Minimised particle emission for use in cleanrooms
- Reduced ingress of dirt in harsh ambient conditions

4

Various slide options

- Long slide and freely movable second slide
- For higher axial and lateral forces and higher loads
- Additional mounting options
- Longer service life thanks to a second slide that allows the guide load to be distributed

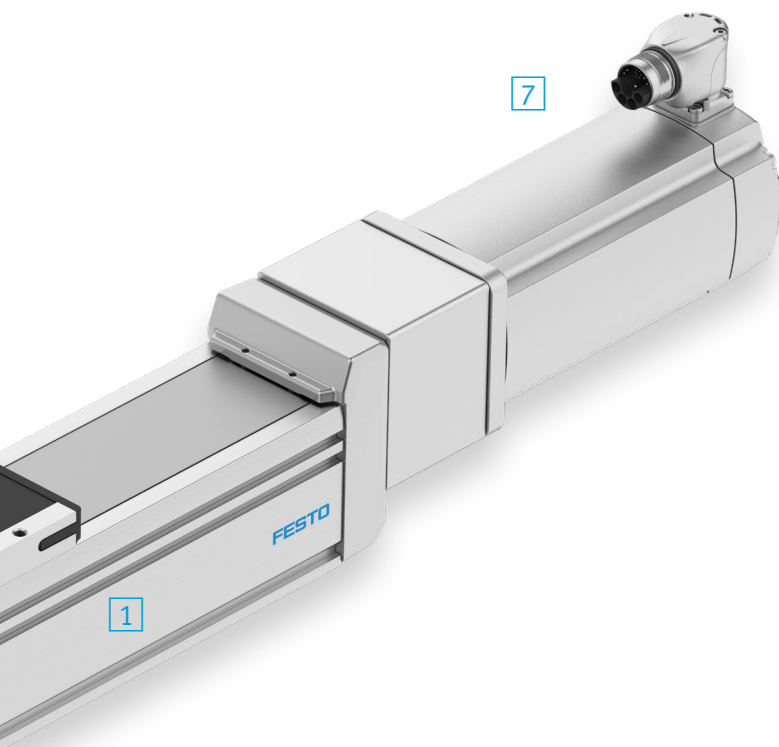


3

Two profile variants

- Standard: square profile cross-section with optimised design
- Wide: reduced profile height for smaller installation dimensions and more compact handling systems
 - High torsional rigidity with lower weight and reduced costs
 - 30% lighter, while rigidity and load capacity are still similar to the axis with normal profile width
 - Overall height reduced by 30%, yet feed forces are similar to the axis with a standard profile height





5

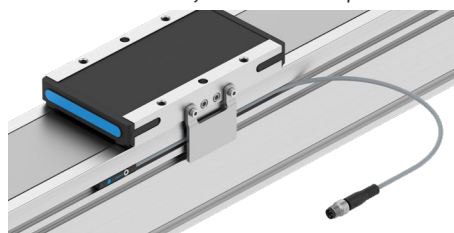
Optimised profile design for the best force flow and torque absorption

- Excellent rigidity
- Long strokes up to max. 2.5 m

6

Optional sensing for greater reliability

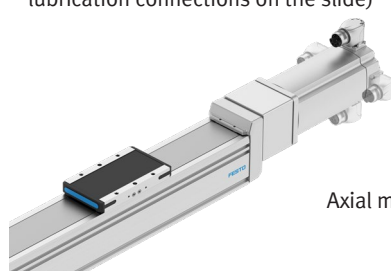
- Inductive proximity sensor SIES-8M as N/C or N/O with switching output PNP and NPN and degree of protection IP67
- Easy to mount up to 2 sensors in the profile slot without needing additional mounting materials
- Flush mounting without interfering edges outside the drive cross-section
- Sensors can easily be added or repositioned at a later date



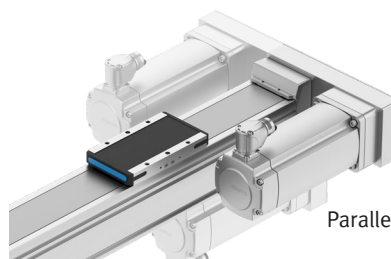
7

Freely selectable motor positions

- Motor mounting options: axial or parallel
- Axial: the motor can be mounted rotated $4 \times 90^\circ$ around its own axis during mounting
- Parallel: a mounting kit can be fitted at $3 \times 90^\circ$ and the motor can be rotated $3 \times 90^\circ$ around its own axis
- The axis can be ordered with motor mounting on the right (MR) or left (ML)
(MR/ML defines the position of the motor in relation to the central lubrication connections on the slide)



Axial mounting kit



Parallel mounting kit

The highly dynamic toothed belt axis ELGD-TB

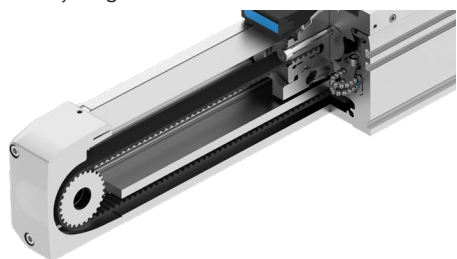
The toothed belt axis ELGD-TB with innovative dual recirculating ball bearing guide and toothed belt drive is protected by a stainless-steel cover strip with magnetic deflection. The portfolio with 6 standard sizes and 4 versions with a width of 30 to 220 mm is already available

now in the main 60/80/100 WD series. Further sizes will follow later in 2024. The axis with a maximum stroke of 8.5 m and different slide options can be purchased right now.

1

Innovative guide technology developed in-house with optimised design for electric axis mechanics

- Excellent rigidity
- Guide has exceptional load bearing capacity
- Lightweight
- It is possible to choose a smaller size for lower weight, smaller installation dimensions, reduced costs
- Very smooth carriage movement
- High speeds over the entire stroke range up to 8.5 m
- Very long service life



2

Innovative stainless-steel cover strip solution

- Magnetic belt reversal without rubbing components on the outside
- Clean surface, no abrasion on the outside
- Minimised particle emission for use in cleanrooms
- Reduced ingress of dirt in harsh ambient conditions

3

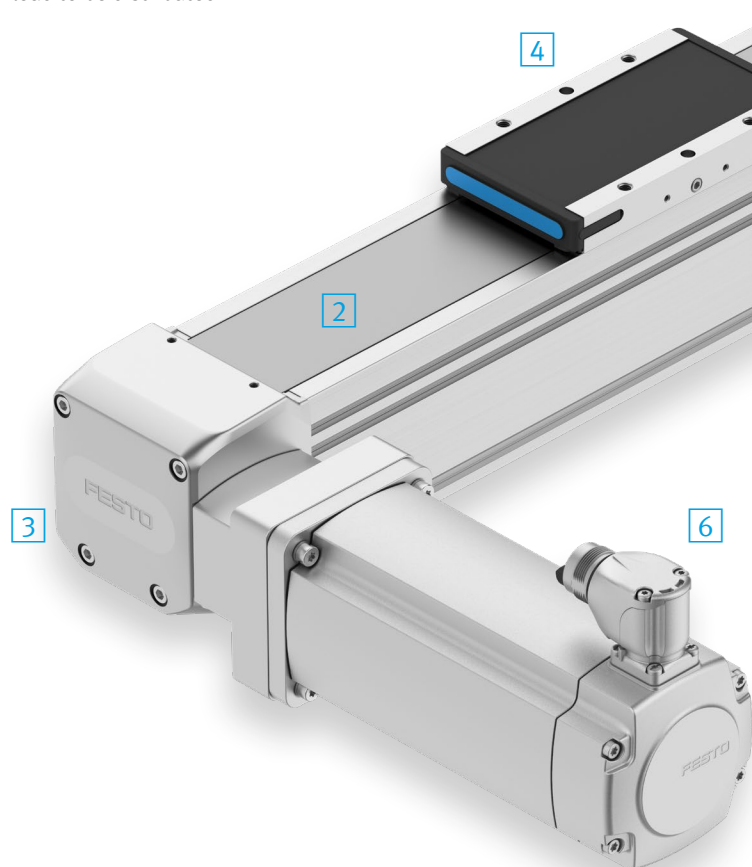
Two profile variants

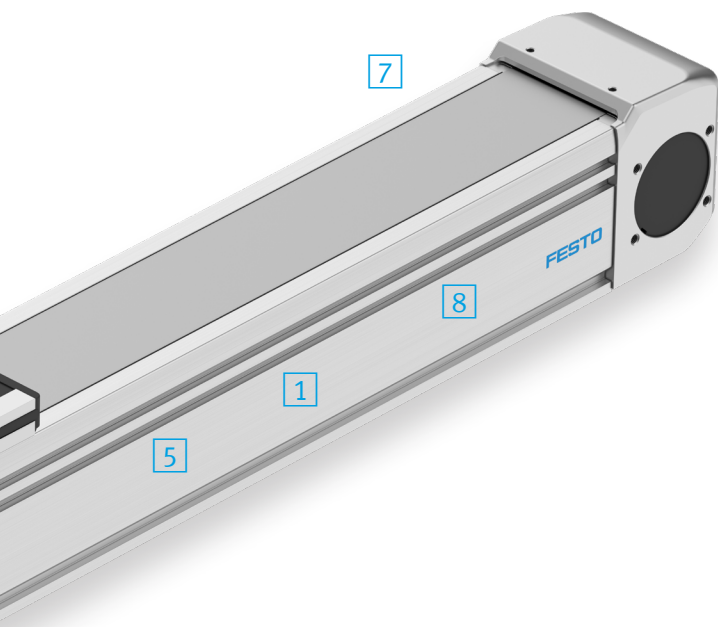
- Standard: square profile cross-section with optimised design
- Wide: reduced profile height for smaller installation dimensions and more compact handling systems
 - High torsional rigidity with lower weight and reduced costs
 - 30% lighter, while rigidity and load capacity are still similar to the axis with normal profile width
 - Overall height reduced by 30%, yet feed forces are similar to the axis with a standard profile height

4

Various slide options

- Long slide and freely movable second slide
- For higher axial and lateral forces and higher loads
- Additional mounting options
- Longer service life thanks to a second slide that allows the guide load to be distributed





5

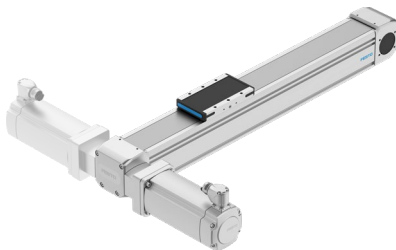
Optimised profile design

- Optimised force flow and torque absorption
- Excellent rigidity
- Long strokes up to max. 8.5 m

6

Freely selectable motor positions

- Freely selectable at two positions at the end of the axis
- Motor with cable connection can be mounted 4 x 90° around its own axis
- Position can be changed at any time
- Define a standard mounting position with a part number and change the position as and when needed



7

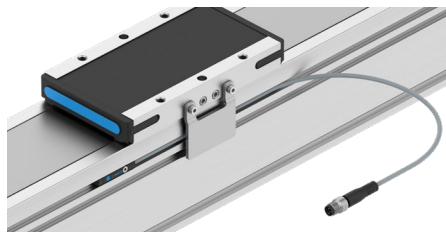
Different toothed belt materials

- Polyurethane (PU2) with fabric coating for long service life and greater resistance to cooling and lubricating fluids. Steel cord tension members enable high forces to be transmitted and also allow the axis to be dynamically controlled
- Polyurethane (PU1) without coating, but with a steel cord tension member for applications in the food zone

8

Optional sensing for greater reliability

- Inductive proximity sensor SIES-8M as N/C or N/O with switching output PNP and NPN and degree of protection IP67
- Easy to mount up to 2 sensors in the profile slot without needing additional mounting materials
- Flush mounting without interfering edges outside the drive cross-section
- Sensors can easily be added or repositioned at a later date



Ball screw and toothed belt axes EGC and EGC-HD



Comprehensive range with numerous variants, e.g. for high dynamic response and speed, heavy loads and high torque. All in all, this range of heavy-duty axes from the mechatronic multi-axis modular system is suitable for stand-alone as well as complete system solutions.

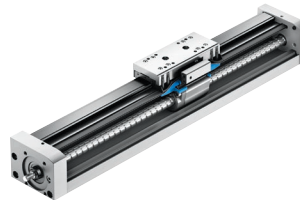
The generously sized profiles of the EGC with their optimised cross-sections provide the drives with maximum rigidity and load capacity. Speed, acceleration and torque absorption represent a new benchmark, also for the EGC-HD with heavy-duty guide for extremely high load and torque absorption and with high speed and acceleration at the same time.

An additional advantage is the high performance of the axes, which often makes it possible to choose a smaller design, especially in the case of ball screw axes!

The individual versions



Toothed belt axis EGC-(HD)-TB
Dynamic drive for high speeds together with heavy loads and long strokes.

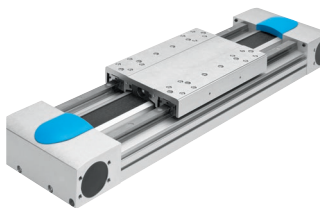


Ball screw axis EGC-(HD)-BS
Precision drive for accurate and smooth running together with high loads and long strokes.



Guide axis EGC-FA
Passive linear guide unit for supporting frames and torques in multi-axis applications.

Heavy-duty variants EGC-...-HD

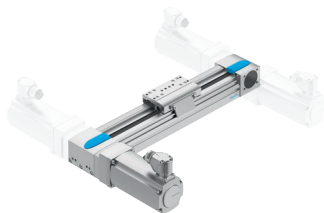


Toothed belt axis EGC-HD-TB



Ball screw axis EGC-HD-BS

Flexible motor mounting for EGC-(HD)-TB



- Motor position freely selectable on 4 sides
- Can be changed later at any time

The benefits to you:

Define a standard mounting position with a part number and change the position as and when needed

Slide variants



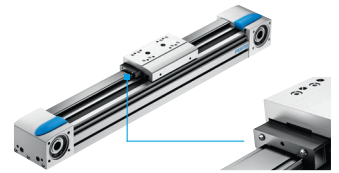
Second slide

- For greater axial and lateral torques
- Can be freely moved



Extended slide

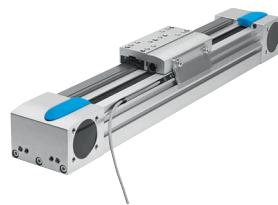
- Longer guide
- For greater axial torque



Protected slide

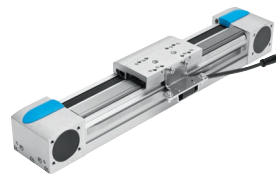
- Scrapers on both sides of the slide remove dirt particles and liquids from the external guide

Focus on safety



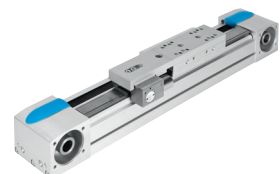
Optional sensing for greater reliability

- Inductive proximity sensor SIES-8 M
- Flush mounting of up to 2 sensors per profile slot



Additional inductive displacement encoder EGC-...-M

- Increased absolute accuracy, minimum resolution 2.5 µm
- Suitable for safety-oriented applications (2- channel)
- Inherent system inaccuracies can be easily adjusted



Clamping unit EGC-...-HPN for clamping the slide

- For safety-oriented applications
- Solutions of categories 1, 2 and 3 to EN 13849-1 can be implemented with 1 and 2-channel versions

Type	EGC-TB/BS-KF	EGC-HD-TB/BS
Size	50/70/80/120/185	125/160/220
Drive	Toothed belt drive/ball screw drive	Toothed belt drive/ball screw drive
Max. stroke [mm]	5000/8500 (10 000)	5000/2400
Max. speed [m/s]	2/5	5/1.5
Repetition accuracy [mm]	±0.08 ... 0.02	±0.08 ... 0.02
Max. force F _x [N]	2500/3000	1500/1300
Max. torque load M _x [Nm]	529	900
Max. torque load M _y /M _z [Nm]	1820	1450
Options	Connecting module for central lubrication	Connecting module for central lubrication

Ball screw and toothed belt axis ELGC



The ball screw and toothed belt axes ELGC stand out thanks to their internal, recirculating ball bearing guide protected by a permanent stainless-steel cover strip. They both have a clean look, weight-optimised design and flexibly mounted motor in common.

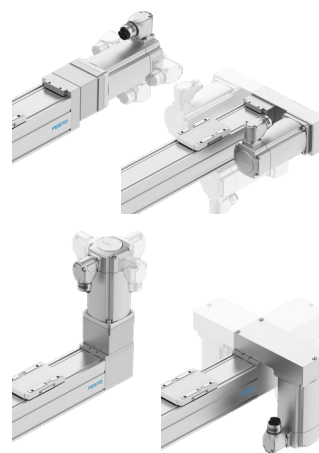
The ball screw axes ELGC-BS offer precise and smooth running, whether installed horizontally or vertically. The toothed belt axes ELGC-TB are designed for higher acceleration and speed, while maintaining good rigidity and load bearing capacity.

The unique and universal "one-size-down" mounting system with attachment components enables direct mounting of the axes without additional adapter plates. Thanks to the matching interfaces, the axes are suitable for XY movements and vertical Z movements.



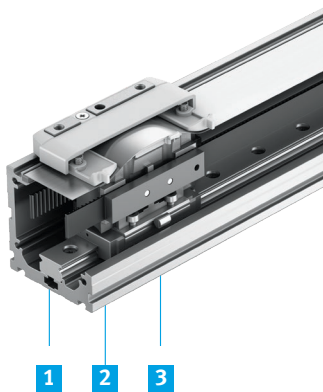
Vacuum connection

- Standard: sealed connection for leak-proof axis
- Optional: can be upgraded with vacuum connection later if required
- With vacuum connection: increased protection of the system thanks to lower particle emissions



Flexible motor mounting

- Free choice of motor positions and mounting kits, can also be changed at a later date:
 - Axial kit: motor position rotated 4 x 90°
 - Parallel kit: mounting direction rotated 3 x 90° and motor position rotated 3 x 90°



1 Stainless-steel cover strip

- To protect the interior guide and toothed belt
- Tight seal thanks to magnetic strips
- No sagging with inverted installation

2 Recirculating ball bearing guide

- Integrated recirculating ball bearing guide with long service life
- Rigid precision guide rail to absorb high guide forces

3 Magnet for position sensing

- Position magnet on both sides of the slide
- Standard with ball screw and toothed belt axes
- For simple, low-cost position sensing together with proximity switch SMT-8M

Configure your handling system quickly and easily with the Handling Guide Online. Find out more on page 52.

Type	ELGC-BS	ELGC-TB
Size	32/45/60/80	45/60/80
Drive	Ball screw drive	Toothed belt drive
Max. stroke [mm]	1000	2000
Max. speed [m/s]	1	1.5
Max. feed force [N]	350	250
Repetition accuracy [mm]	±0.015	±0.1

Ball screw and toothed belt axis ELGA

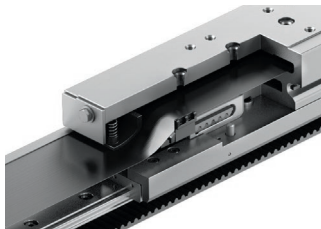


The complete ELGA series with a protected guide in different variants is available with toothed belt or ball screw, both as an individual axis or a complete solution in standard handling systems.

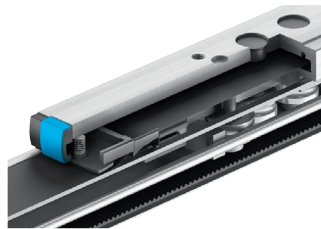
The toothed belt axes ELGA-TB are highly dynamic and are designed for high speeds. The ball screw axes ELGA-BS offer precise and smooth running. Both can manage heavy loads and long strokes.

The internal slide guide, the stainless-steel cover strip, its virtually gap-free design and guide pulley in the slide provide perfect protection on the outside and inside, even in cleanrooms.

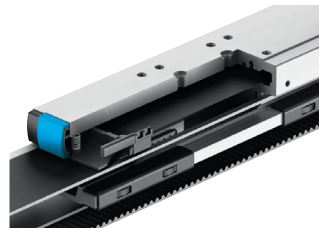
An overview of guide variants



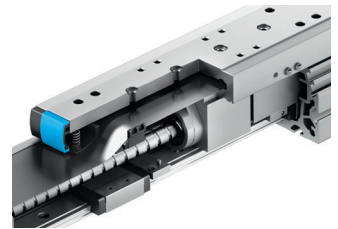
Recirculating ball bearing guide
ELGA-TB-KF



Roller bearing guide ELGA-TB-RF



Plain-bearing guide ELGA-TB-G



Recirculating ball bearing guide
ELGA-BS-KF

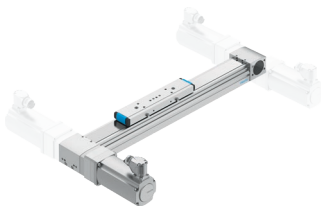
Toothed belt axis ELGA-TB-...

- Recirculating ball bearing guide -KF for absorbing high loads from slides and guides with lateral forces and torques, even during motion.
- Roller guide for highly dynamic operation, even when handling medium-sized and large workpieces.
- Plain-bearing guide -G for simple positioning and handling tasks or as a drive axis for applications with an external guide.

Ball screw axis ELGA-BS-..

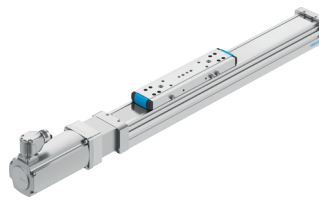
- Recirculating ball bearing guide -KF for absorbing high lateral forces and torques, even during motion.

Motor positions



Toothed belt axis ELGA-TB

- Motor attachment freely selectable on 4 sides, can be changed later at any time
- Plug connection can be rotated 4 x 90°, can be changed at any time

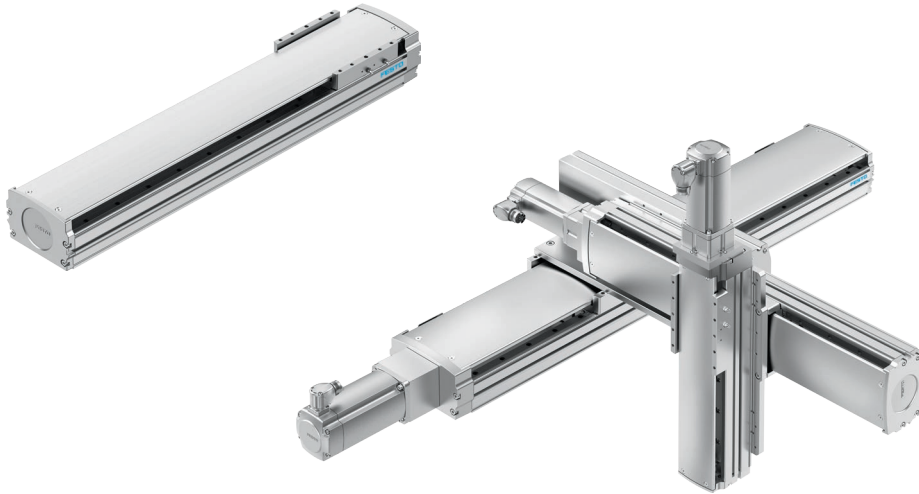


Ball screw axis ELGA-BS

- Motor position freely selectable at both ends
- Plug connection can be rotated 4 x 90°
- Can be rotated at any time

Type	ELGA-TB-KF				ELGA-TB-RF			ELGA-TB-G			ELGA-BS-KF			
Size (= profile width in mm)	70	80	120	150	70	80	120	70	80	120	70	80	120	150
Drive system	Toothed belt										Ball screw			
Guide type (slide)	Recirculating ball bearing guide				Roller bearing guide			Plain-bearing guide			Recirculating ball bearing guide			
Max. stroke [mm]	8500				7400			8500			2900			
Max. speed [m/s]	5				10			5			0.5	1	1.5	2
Repetition accuracy [µm]	±80				±80			±80			±20			
Max. feed force F _z [N]	350	800	1300	2000	350	800	1300	350	800	1300	300	600	1300	3000

Ball screw axis ELGT



The compact and low-cost ball screw axes ELGT with integrated double guide are perfect for combining into 2D and 3D cantilever systems. They have been developed for a wide range of applications, whether in the electronics industry, desktop applications or battery manufacturing, and they can be easily combined with axes ELGC and mini slide EGSC. Or they can be used in test and inspection systems, in small parts handling or in assembly systems.

Sophisticated technology for outstanding performance

The high load carrying capacity and rigidity provided by the integrated double guide and the extremely sturdy connectors make the ELGT ideal for high payloads and strokes of up to 1,400 mm. For example, as a 3D cantilever system it can transport up to 20 kg at speeds of up to 0.5 m/s. A copper and zinc content of less than 1% means it can also be used in battery manufacturing.

Economical in combination – versatile in use

The ELGT becomes even more economical when combined with the axes ELGC or the mini slide EGSC as a Z-axis for vertical movements. Installation is made easy thanks to the matching adapter kits for all Festo servo motors and many Asian and European motor suppliers as well as the adapter kit for optical sensors commonly used in Asia, e.g. from Omron. Position sensing is cost-effective and easy using inductive proximity sensors.



Free choice of motor positions (rotated 4 x 90°), can also be changed at a later date

Technical data	Size: 90	Size 120	Size 160
Working stroke (in 50 mm increments) [mm]	50 ... 1,000	100 ... 1,100	100 ... 1,400
Spindle pitch [mm]	10 / 20		
Max. feed force [N]	340 / 175	700 / 350	1,050 / 260
Max. speed [m/s]	0.5 / 1		
Repetition accuracy [mm]	± 0.02		
Horizontal payload ⁽¹⁾ [kg]	50 / 18	115 / 56	234 / 114
Vertical payload ⁽¹⁾ [kg]	50 / 18	39 / 18	80 / 38
Payload dynamic response in 3D ⁽²⁾ [kg]	20		

⁽¹⁾ Max. acceleration 2.5 m/s² with 10 mm spindle pitch and 5 m/s² with 20 mm spindle pitch

⁽²⁾ Acceleration max. 3 m/s², speed max. 0.5 m/s, working stroke max. 900 x 600 x 300

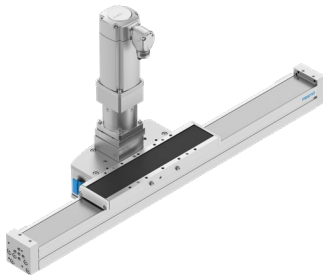
Cantilever axis with toothed belt ELCC



The cantilever axis, which is available in four sizes, is extremely rigid and lightweight as well as fast and reliable. The powerful ELCC is perfect for palletising or erecting boxes in the packaging industry, as well as for a wide range of positioning tasks with long strokes at vertical, horizontal or other installation angles.

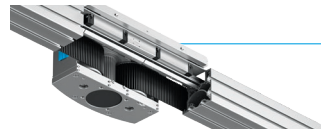
- Fewer vibrations and up to 50% shorter settling time
- Very high acceleration and cycle times up to 30% faster
- Maximum stroke of 2 m and load of up to 100 kg

- Optional stainless-steel cover strip
- Optional shock absorber prevents damage during set-up and cushions short dropping distances during vertical installation



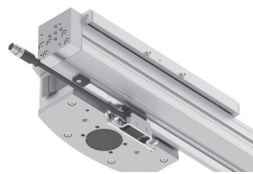
Flexible motor positioning

- Freely selectable mounting direction up or down
- Mounting axial, parallel or transverse to the axis
- Motor alignment $4 \times 90^\circ$
- Can be changed at any time



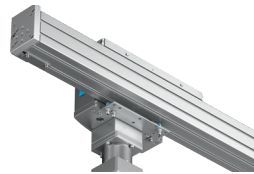
Optional clamping unit

- Safely clamps the stationary axis for a secure hold even in the event of a power failure or cable break
- Also suitable for emergency braking



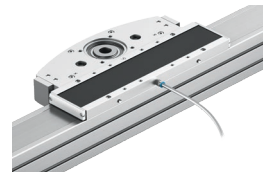
Incremental displacement encoder

Contactless position sensing with 2.5 μm resolution, also suitable for safety-oriented dual-channel solutions. Mounting for size 60/70 on the outside and for 90/110 on the inside.



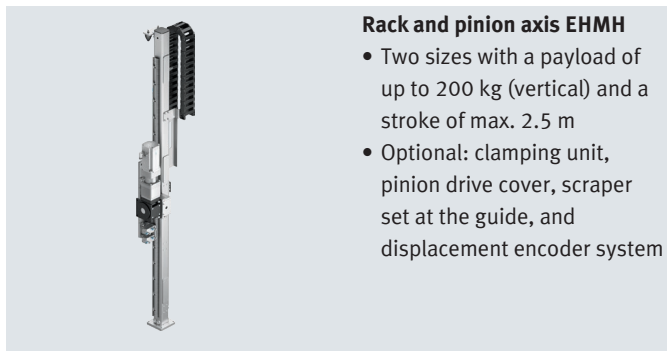
Inductive proximity sensor SIEN-M8

Suitable for homing or end-position sensing and can be installed alongside the displacement encoder.



Sealing air connection

The sealing air, together with the cover strip, minimises the number of particles that get into the guide area, e.g. in dusty environments or on machine tools.



Rack and pinion axis EHHH

- Two sizes with a payload of up to 200 kg (vertical) and a stroke of max. 2.5 m
- Optional: clamping unit, pinion drive cover, scraper set at the guide, and displacement encoder system

Size	60	70	90	110
Guide	Recirculating ball bearing guide			
Max. stroke [mm]	1300	1500	2000	2000
Max. payload, vertical [kg]	10	20	60	100
Max. speed [m/s]	5			
Max. acceleration [m/s²]	50		30	
Repetition accuracy [mm]	±0.05			
Max. feed force [N]	300	600	1200	2500

* When designed using the engineering software PositioningDrives, higher loads can also be supported in some cases.

Electric cylinder ESBF



The electric cylinder ESBF enables dynamic positioning with feed forces of up to 17 kN, is available in six sizes, and has a ball screw as standard. Up to size 50, it is also available with lead screw. It is based on standard ISO 15552 and its piston rod is non-rotating with a plain bearing guide. The smooth surfaces and the clean look design make the ESBF easy to clean and thus less susceptible to contamination. All that with a service life of 10000 km.

Cylinder options

- Guide unit
 - Recirculating ball bearing guide with high load bearing capacity
 - Absorption of lateral forces
 - Increased protection against torsion at high torque loads
- Piston rod with female thread
- Piston rod extension
- Food-safe lubricant NSF-H1 for conditional use in the food zone
- Sealed motor mounting kits together with a connection for the venting hole for degree of protection IP65

Optional position sensing

- Alternative sensor bracket (can be glued on):
 - Sensor rail made of aluminium
 - Plastic sensor bracket in clean design
- Proximity sensor SME/SMT-8 for homing or position sensing



Flexible motor mounting

- Axial mounting: freely selectable outlet direction for motor cables: 4 x 90°
- Parallel mounting: freely selectable outlet direction for motor cables: 3 x 90°

Optional protection

- Connection of the venting hole for use in harsh or contaminated environments (IP65)
- Protected piston rod, seal and bearing with a leak-proof protective bellows for use in highly contaminated environments



Size	32	40	50	63	80	100
Drive system/screw type	Ball screw (BS), lead screw (LS)			Ball screw (BS)		
Max. stroke [mm]	800	800	1000	1200	1500	1500
Max. feed force [N]	1000	3000	5000	7000	12000	17000
Max. speed [m/s]	1.1	1.2	1.2	1.35	1.34	1.34
Repetition accuracy [mm]	±0.01					

Electric cylinder EPCC

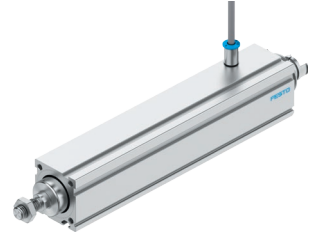


The powerful yet affordable electric cylinder EPCC is suitable for simple positioning tasks. Thanks to the ball screw, it is precise and fast as well as sturdy and resilient. Its compact dimensions are ideal when installation space is limited, e.g. in assembly systems, test and inspection systems, desktop applications, small parts handling or the electronics industry.

The weight-optimised design improves dynamic response and reduces cycle times.

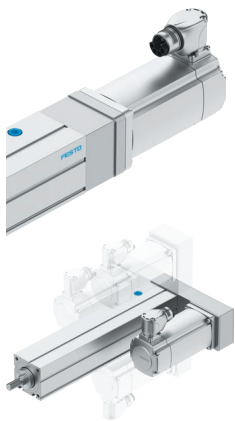
Technical highlights of the EPCC

- High-quality ball screw with low internal friction for smaller motors, i.e. requires less weight, installation space and electrical power
- Space-saving integration of double bearing and coupling to absorb drive forces and torques
- The unique "one-size-down" mounting allows the ELGC to be attached without an adapter, optimising the installation space, reducing weight and improving dynamic response



Optional ducted air pressure compensation

- No particles or moisture are drawn from the environment into the electric cylinder
- No particles are emitted from the drive into the environment



Highly flexible motor mounting

Free choice of motor positions and mounting kits, can also be changed at a later date:

- Axial kit: motor position rotated 4 x 90°
- Parallel kit: mounting direction rotated 4 x 90° and motor position rotated 3 x 90°



Cost-effective position sensing

- Simple and cost-effective sensing with magneto-resistive proximity sensor SMT-8M
- Sensor bracket for flexible, secure and rapid mounting on the profile
- Can be added to or repositioned at any time

Size	25	32	45	60
Drive system/screw type	Ball screw/lead screw			
Stroke length [mm]	25 ... 200	25 ... 200	25 ... 300	25 ... 500
Max. feed force [N]	75	150	450	1000
Max. speed (low/high) [mm/s]	133/400	188/500	180/600	250/600
Spindle pitch (low/high) [mm/U]	2/6	3/8	3/10	5/12
Max. rotary speed [rpm]	4000	3750	3600	3000
Max. acceleration [m/s²]	15			
Repetition accuracy [mm]	±0.02			

Mini slide EGSL



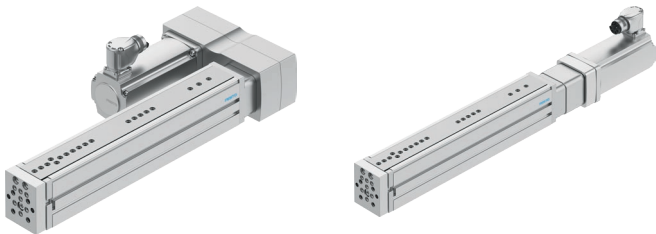
The electric slide range EGSL is designed for outstanding performance when it comes to precision, high load capacity and dynamic response, even in compact spaces. This makes it a favourite for high-precision positioning and strokes of up to 300 mm. Its strengths come into their own, especially in vertical applications and short-stroke slide functions with variable positioning; they include very accurate pushing, picking and insertion with linearity and parallelism in the 1/100 mm range, even with high mechanical loads!

Advantages

- Precise and free positioning with a repetition accuracy of max. ± 0.02 mm
 - Perfect for vertical applications such as press-fitting or joining
 - The guide area is protected against contamination and small parts because the spindle is fully closed; an additional cover for the guide is optional
 - Simple, low-cost sensing with integrated sensor slots on the right and left
- Suitable software tools for engineering (Positioning-Drives), configuration, commissioning and more with the Festo Configuration Tool (FCT) software package

Motor attachment variants

Greater flexibility thanks to lateral or axial motor mounting options The motor can be easily adapted to the installation space: when mounted axially it can be rotated 4 x 90°, and when mounted laterally it can be rotated 3 x 90°.



Size		35	45	55	75
Working stroke [mm]		50	100, 200	100, 200, 250	100, 200, 300
Max. speed [m/s]		0.5	1.0	1.0	1.3
Feed force F _x [N]		75	150	300	450
Torque	M _x [Nm]	6.2	18.6	33.1	67.4
	M _y [Nm]	6.0	16.3	33.3	47.1
	M _z [Nm]	6.0	16.3	33.3	47.1
Repetition accuracy [mm]		± 0.015			
Max. horiz./vert. payload [kg]		2	6	10	14

Mini slide EGSC



The compact mini slide EGSC offers very cost-effective yet precise positioning. The internal, protected recirculating ball bearing guide absorbs forces and torques, the compact ball screw ensures quiet operation while the life-time lubrication guarantees a long service life. The mini slide is ideal in very small installation spaces or when cost efficiency is important, e.g. in the electronics industry, desktop applications, assembly systems, small parts handling or in test and inspection systems.

The unique "one-size-down" mounting system with its universal profile mounting

enables direct mounting without additional adapters. In combination with the rotary drive ERMO and the axis series ELGC, space-optimised and very economical 2D and 3D handling systems can be easily and flexibly created.



Optional ducted air pressure compensation

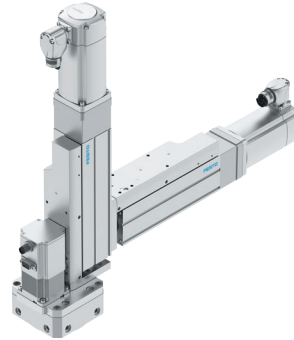
- Fittings and tubing can be retrofitted for ducting the pressure compensation air
- No particles or moisture are drawn from the environment into the electric cylinder
- No particles are emitted from the drive into the environment



Highly flexible motor mounting

Free choice of motor positions and mounting kits, can also be changed at a later date:

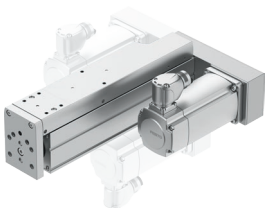
- Axial kit: motor position rotated 4 x 90°
- Parallel kit: mounting direction rotated 3 x 90° and motor position rotated 3 x 90°



Pick & place solution

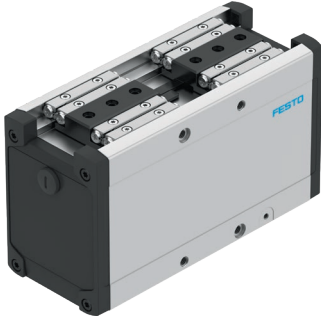
Compact solution to precisely position and align workpieces even with high loads

- Cost-effective direct mounting without an adapter of both mini slides EGSC and the rotary drive ERMO
- Mechanically rigid and sturdy design with precision positioning



Technical data	
Design	Electric mini slide with ball screw
Sizes	25 / 32 / 45 / 60
Working stroke [mm]	25 ... 200
Max. feed force [N]	20 / 60 / 120 / 250
Max. speed [m/s]	0.6
Max. acceleration [m/s²]	15
Repetition accuracy [µm]	± 15

Parallel grippers HEPP



**PROFI
NET**

EtherNet/IP™

EtherCAT®

The powerful, compact electric parallel gripper HEPP is flexible in operation and ideal for a wide range of workpieces in electric systems or applications without compressed air. It is optimised for the electronics and small-parts industry, laboratory automation and special machine building. You can adapt the gripping force of the HEPP of up to 400 N and its stroke of up to 56 mm to a wide range of workpieces, regardless of size or material properties. All you need to do is input the parameters for position, stroke, speed, acceleration or gripping force. The parameter input together with the dynamic electric motor make it easy to adjust the HEPP to your individual requirements. The motion response and how work-

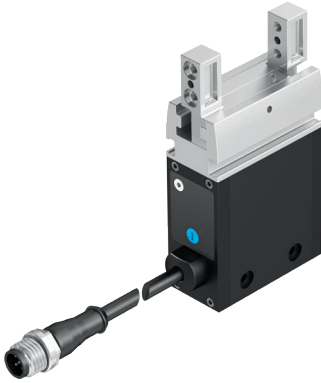
pieces are handled can also be defined as required, including for complex production processes in the electronics and small parts industry, laboratory automation and special machine building. The HEPP with its integrated controller makes for a very compact unit. And communication via interfaces such as PROFINET®, EtherNet/IP® or EtherCAT® simplifies commissioning, parameterisation and monitoring in real-time. You can optimise your processes via EtherCAT® with the Festo automation system CPX-E and obtain smart system solutions with compatible products. If the power supply fails, the tried-and-tested integrated holding brake will bring the system to a safe stop.

Highlights

- Powerful and flexible
- Dynamic motor for adjustable motion response
- Easy, adjustable parameterisation
- Compact with integrated controller
- Cross-roller guide for high accuracy
- Safe thanks to integrated holding brake
- Control via PROFINET®, EtherNet/IP®, EtherCAT®

Size			28	36	42
General technical data					
Stroke per gripper jaw		[mm]	15	22.5	28
Total stroke		[mm]	30	45	56
Max. permissible static force Fz at the gripper jaws		[N]	680	1100	
Max. permissible static torque at the gripper jaws	Mx	[Nm]	6.5	13.9	
	My	[Nm]	14.5	34.5	38.5
	Mz	[Nm]	6.5	13.9	
Gripper repetition accuracy		[mm]	0.02		0.01
Max. gripper jaw backlash Sz		[mm]	0.35		
Position sensing			Motor encoder		
Gripping force		[N]	150	250	400
Weight		[g]	1400	2100	2600
Electrical data					
Nominal voltage logic supply		[V DC]	24 ± 10 %		
Max. current consumption	Logic	[A]	0.1		
	Load	[A]	0.9	1.3	5.0
Degree of protection			IP40		
Fieldbus interfaces					
Protocol			EtherCAT®, EtherNet/IP, PROFINET IRT, PROFINET RT		
Communication profile			CiA402, EoE (Ethernet over EtherCAT®), FoE (File over EtherCAT®), PROFIdrive, DriveProfile		
Configuration support			EDS file, ESI file, GSDML file		

Parallel gripper EHPS



The electric parallel gripper EHPS allows flexible and efficient gripping in handling and assembly technology, as well as in the electronics industry or small parts assembly. It can also be used wherever mono-energetic, electric power-based systems or solutions are required, and especially in clean environments where compressed air is not permitted.

It is characterised by its ease of use, minimal installation effort and safe operation

- Quick to commission without external controller
- Easy 4-step adjustment of the gripping force all the way up from 50% to the maximum via a latched switch
- IO-Link® communication
- Self-locking in the event of power failure prevents the gripped product being dropped



Optional position monitoring of the gripper jaws

- Easy and low-cost sensing:
 - Proximity sensor SMT-8M/-8G
 - Position transmitter SMAT
- Flush mounting in the sensor slot
- Can be extended at any time

Size	16	20	25
Max. gripping force [N]	50	90	125
Opening angle per jaw/total [mm]	10/20	13/26	16/32
Repetition accuracy [µm]	30	10	10
Closing time [s]	0.3	0.42	0.44
Max. switching frequency [Hz]	2.2	1.7	1.3
Weight [Kg]	0.31	0.54	0.9
Degree of protection	IP40		
Connecting cable	Cable length 0.3 m, plug 5-pin M12x1		
Operating voltage [VDC]	24		

Electric stopper cylinder EFSD

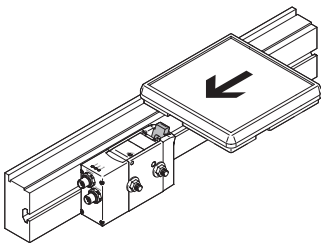


The EFSD stops workpiece carriers or packaging goods. Thanks to the correlation between load and conveying speed, the stopper can stop, for example, 100 kg at 6 m/min or up to 20 kg at 36 m/min. The stopper has cushioning that protects the transported goods as well as the stopper and that can be adjusted on site. The cushioning module operates using ambient air, is easy to maintain and to install.

It is actuated and controlled directly by the higher-level control system via digital I/O; no additional controller is required thanks to the internal logic. M12 plugs are used for connection to the drive and for the integrated position sensing. This enables the upper and lower position of the stop (extended or retracted) to be sensed. In addition, the electric stopper EFSD is designed to save energy, because the motor automatically switches off in the end positions; this means that no energy is needed to hold or continuously open the line.

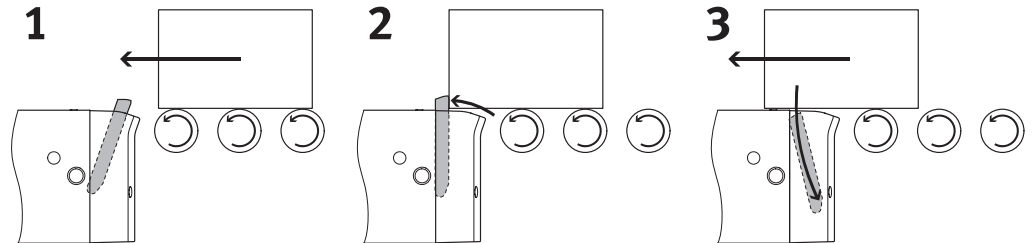
- Quick and easy set-up of transfer systems without compressed air
- Three sizes for stopping transported goods weighing between 0.25 kg and 100 kg (the size is determined by the conveying speed and the load)
- Actuation via digital I/O simplifies commissioning
- Integrated sensor technology for position sensing (stop retracted or advanced)
- LED display: status and error message for visual error diagnostics
- Easy mounting on the transfer system with two retaining screws
- Easy electrical connection for input and output signals via two cables with 5-pin M12 plug

Use in the transfer system



This stopper is specifically designed for use in transfer systems, where objects are transported from one processing station to the other. The EFSD can be mounted directly on the profile of the transfer system with just two screws.

Functional sequence "stop"



Position 1: Stopper cylinder is in the initial position

The stop has advanced and ready to stop a conveyed item

Position 2: Stopper cylinder is in the holding position

The transported material has been slowed down by internal cushioning and kept in position

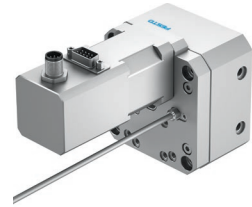
Position 3: Stopper cylinder is in release position

The stop is retracted and the conveyed item is released

Rotary drive ERMO



The rotary drive ERMO has a sturdy and backlash-free bearing to absorb high forces and torques. The stepper motor, gear unit and sealed hollow shaft are all integrated. It is an ideal complete solution for rotating and aligning parts and work-pieces or for swivelling tasks subjected to heavy loads. It is also suitable for simple rotary indexing table applications such as at manual workstations. With the optional external mounting kit, the swivel angle can be limited to max. 270°.

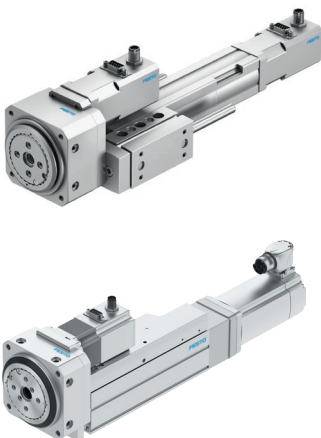


Motor and connecting cables

- The motor can be mounted and rotated 3 x 90°
- Can be changed later at any time
- Cables in IP54 suitable for energy chains for power supply (load) and encoder, up to 10 m in length

Optional reference sensor

- Inductive proximity sensor SIEN with M8 connection integrated in the housing
- For homing or position sensing
- Ideal for multi-turn applications
- Degree of protection IP67



Mounting interfaces

- Interfaces on flange and housing, identical to the pneumatic semi-rotary drive DSM/DSM-B
- Interfaces suitable for connection to other electromechanical components, e.g.
 - Electric cylinder EPCC
 - Electric slide EGSL
 - Electric slide EGSC

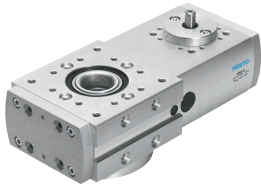


Optional energy through-feed for infinite rotation

- Kit for energy through-feed including suitable connection technology
- Pneumatic, e.g. for grippers, including plug-in connections for tubing
 - Electric, e.g. for sensors or the transmission of IO-Link® signals, including 8-pin plug and M12 socket

Size	12	16	25	32
Flange size [mm]	58 x 58	68 x 68	83x 83	105 x 105
Torque [Nm]	0.15	0.8	2.5	5
Speed [°/s]	600	600	400	300
Repetition accuracy [°]	±0.05	±0.05	±0.05	±0.1
Max. axial/radial torque [N]	500/500	600/750	700/1200	800/2000

Rotary module ERMB



Rotary drive module with motor and sensing module EAPS (optionally with additional housing)

Weights of up to 15 kg can be rotated dynamically and flexibly with the freely positionable, electric rotary module ERMB.

It can be used as an axis of rotation with any rotation angle $>360^\circ$ or as a small, stand-alone NC rotary table.

Mounting interfaces on all sides and the large hollow shaft diameter on the high-strength rotary flange make installing the module exceptionally easy.

Matching motor range

Servo or stepper motors simplify the uniform closed-loop controller concept, while the universal software platform simplifies commissioning and activation. The ERMB adapts its performance to the requirements depending on the motor technology used.

Adaptable safety

Sensing module EAPS can be used to define impermissible ranges. The freely adjustable index pins in the retaining ring are sensed using two inductive sensors.

Reduced vibration

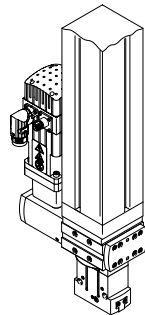
Rotary module ERMB minimises vibrations in multi-axis systems, thereby increasing their performance thanks to uniform movements and user-defined acceleration ramps. The movements into the end positions are smooth and wear-free.

Technical data

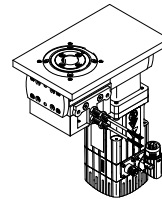
- 3 sizes: 20, 25, 32 with a max. output speed of 300 rpm
- Repetition accuracy: $\pm 0.03/0.05/0.08^\circ$

Positioning time

- Min. positioning time at a swivel angle of 180° : <0.18 s



Rotary drive module with gripper on a Z-axis



Rotary drive module as small NC rotary table

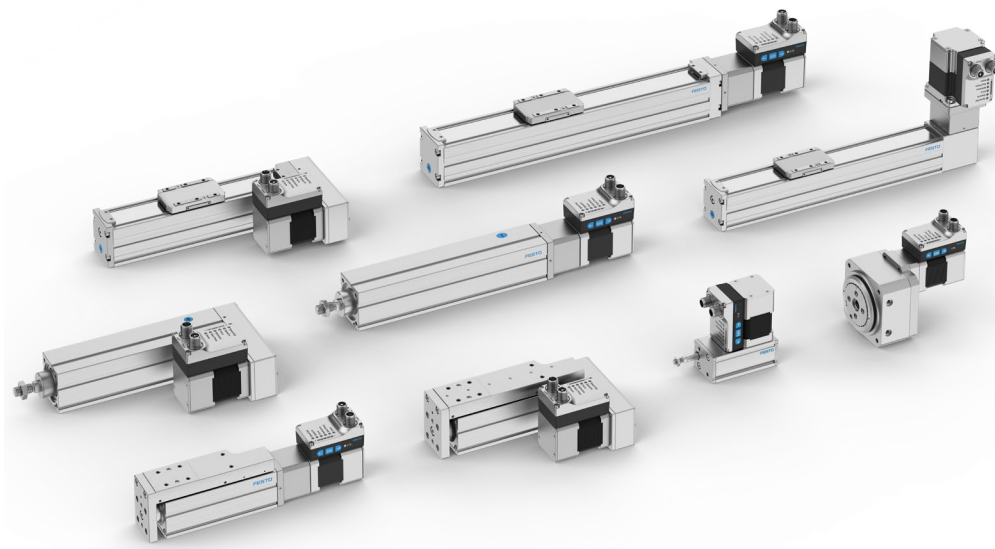
Highly dynamic rotary/lifting module EHMB



This extremely compact handling unit combines rotary and linear movements, which can be positioned independently of each other.

The max. payload is 8 kg. The positioning time for a 1 kg load time at swivel angle of 180° is 0.25 s

Simplified Motion Series



The Simplified Motion Series consists of different electromechanical components together with a simple and application-optimised combination of motor and servo drive, the so-called integrated drive. This solution therefore requires no external servo drives, because all the necessary electronic components are already integrated and optimised for simple movements between two end positions, including intermediate position.

Special motion characteristics can be set and adjusted, such as gently cushioned retracting into the end position, or a simplified press-fitting and clamping function.

This electric alternative for very simple linear and rotary motion and positioning tasks doesn't require the usual commissioning process for traditional electric drive systems that can often be quite complex. Commissioning is quick and easy to carry out

without the need for any software, computers or other accessories, because all parameters can be manually set directly on the drive. Simplified Motion Series drives are directly connected to the controller, either via digital I/O (DIO) or IO-Link®, both of which are integrated as standard. A control cabinet is not required for installation, since the drives are mounted directly into the machine.



Powerful point-to-point communication is also integrated via IO-Link® for intelligent connection with the controller and all the way to the cloud.

Extended range of functions with IO-Link®:

- Remote configuration of motion parameters
- Copy and backup function for transferring parameters between the drive and the computer or from the computer to another identical drive
- Read functions of the process parameters
- Updating the firmware of all new Simplified Motion Series products or those that are already installed can now be done via IO-Link®.



1

During commissioning, all relevant parameters can be simply and intuitively set directly on the integrated drive.

- Speed out: speed for the movement away from the reference end position
- Speed in: speed for the movement to the reference end position

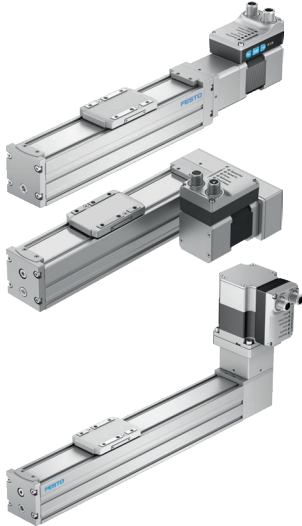
- Force: force of the drive in the "advanced" position
- Reference: setting the reference end position of the drive
- Start press: setting the position at which the power-controlled movement begins
- Demo: manual start (similar to manual override)

2

Simple electrical connection via M12 plug

- Power (4-pin): power supply for the motor
- Logic (8-pin): control signal, sensor signal and power for the integrated electronics

Overview of the Simplified Motion Series



Ball screw axis ELGS-BS

Extremely compact and cost-effective ball screw axis with precise, resilient recirculating ball bearing guide for the slide and powerful ball screw drive.

- Three sizes for a payload of up to 20 kg at a max. stroke of 800 mm
- Choice of axial or parallel motor mounting
- Variety of cable outlet directions and motor positions that can be changed at any time

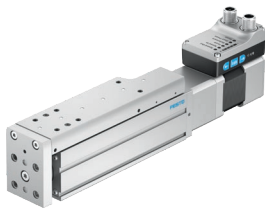
Toothed belt axis ELGS-TB

Compact and extremely cost-effective toothed belt axis with precise, resilient recirculating ball bearing guide for the slide and durable toothed belt.

- Two sizes for up to 1.3 m/s at a max. stroke of 2,000 mm

Common features

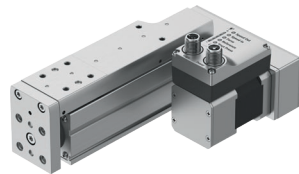
- Permanent stainless-steel cover strip protects the guide and ball screw or toothed belt
- Unique "one-size-down" assembly system
- Optional: vacuum connection to minimise the emissions of particles from the axis into the system



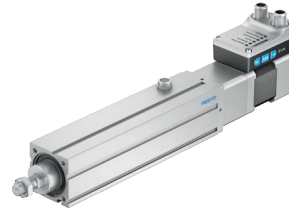
Mini slide EGSS

The powerful and resilient EGSS with smooth-running spindle is the right solution for guided individual linear movements or vertical Z-movements.

- Three sizes with a max. stroke of 200 mm at a repetition accuracy of $\pm 20 \mu\text{m}$
- The internal guide absorbs lateral forces and provides very good resistance to torsion at high torques.

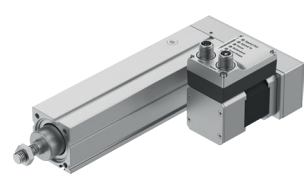


- The electric rotary drive ERMS can be mounted directly without the need for adapters
- Optional: ducted compressed air compensation prevents particles or moisture from entering and particles leaking into the environment
- Choice of axial or parallel motor mounting
- Variety of cable outlet directions and motor positions that can be changed at any time



Electric cylinder EPCS

The EPCS with smooth-running ball screw is ideal for individual linear movements. As an extremely cost-effective complete solution, this electric cylinder is perfect for applications such as clamping, distributing, sorting or ejecting and as a simple Z-axis in handling systems.



- Three sizes with a max. stroke of 500 mm and 0.36 m/s
- Simple and cost-effective position sensing with proximity switches
- Optional: ducted compressed air compensation prevents particles or moisture from entering and particles leaking into the environment
- Choice of axial or parallel motor mounting
- Variety of cable outlet directions and motor positions that can be changed at any time



Electric cylinder EPCE

The EPCE is an electric cylinder for short strokes and cycle times, offering a minimal zero stroke and excellent value for money. It is ideal for use in testing and inspection systems as well as for labelling, in simple centring tasks and for aligning workpieces.

- Optimised product design for maximum component density
- Minimum stroke 5 mm, up to a maximum stroke of 80 mm
- Piston rod variants: one or two, at one or both ends
- Optimised mounting options and flexible cable outlet (4 x 90°)



Rotary drive ERMS

The rotary drive for simple swivelling tasks or for increased mechanical loads has sturdy, precise and backlash-free ball bearings for the rotary plate, thus absorbing transverse loads and torques.

- Two sizes, each with a swivel angle of 90° and 180°
- Sealed hollow shaft for the integrated through-feed of cables or tubing

Simplified Motion Series - Solution Finder

The simplicity of pneumatics is now combined for the first time with the advantages of electric automation thanks to the Simplified Motion Series. These integrated drives are the perfect solution for all users who are looking for an electric alternative for very simple movement and positioning tasks but don't want the commissioning process for traditional electric drive systems that can often be quite complex.

[Share](#) [What's new?](#)

Movement Type
☒ linear ☐ rotary

Actuator Type
☒ linear ☐ rotary

Mounting Position
☒ horizontal ☐ vertical

Stroke
 200 mm

Payload
 0 kg

Motor Mount
☒ axial ☐ parallel

Force in end position
 0 N

Cycles

Solution 1 **Most economic solution**

Actuator Type	Minimum travel time (one way)	Maximum pressing force	Buttons
Toothed belt axis unit ELGE-TB-35-200-... 8083929	0.38 s	50 N	Show prices Configure now
Show details			

Solution 2

Actuator Type	Minimum travel time (one way)	Maximum pressing force	Buttons
Toothed belt axis unit ELGS-TB-KF-45-200-... 8083664	0.44 s	75 N	Show prices Configure now
Show details			

Solution 3

Actuator Type	Minimum travel time (one way)	Maximum pressing force	Buttons
Toothed belt axis unit ELGS-TB-KF-60-200-... 8083557	0.43 s	65 N	Show prices Configure now
Show details			

Solution 4

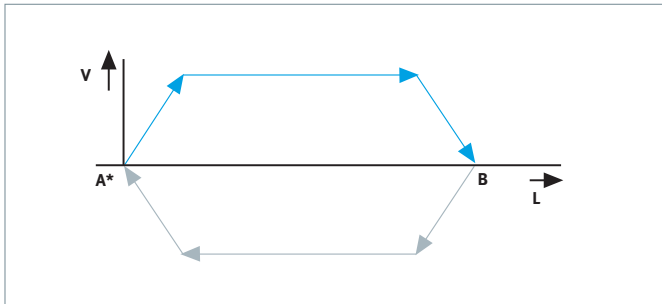
Actuator Type	Minimum travel time (one way)	Maximum pressing force	Buttons
Ball screw axis unit ELGS-B5-KF-45-200-... 8083493	0.91 s	100 N	Show prices Configure now
Show details			

Simplified Motion Series Solution Finder - your online selection tool:

With the Solution Finder, you can configure the right product for every simple linear or rotary motion by just setting the application parameters and selecting and ordering it in the Online Shop.

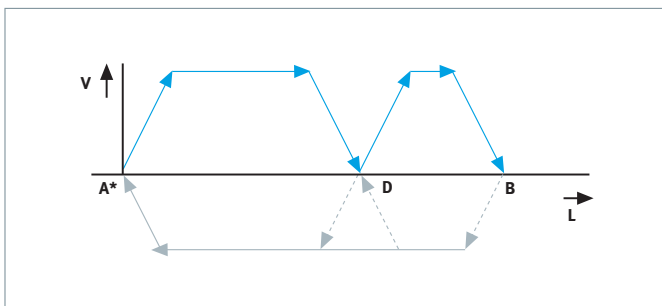
[→ www.festo.com/solution-finder](https://www.festo.com/solution-finder)

Simplified Motion Series – Overview of motion profiles



- End position B is: freely adjustable
- Speed for “Out” and “In” motion is freely adjustable
- Position is maintained after end position B has been reached

Basic profile for movement between two end positions: speed-controlled without intermediate position



- End position B and intermediate position D (movement “Out”) are freely adjustable
- Intermediate position for “In” motion can be used optionally and is freely adjustable
- Speed for “Out” and “In” motion is freely adjustable

Movement option pre-holding position:

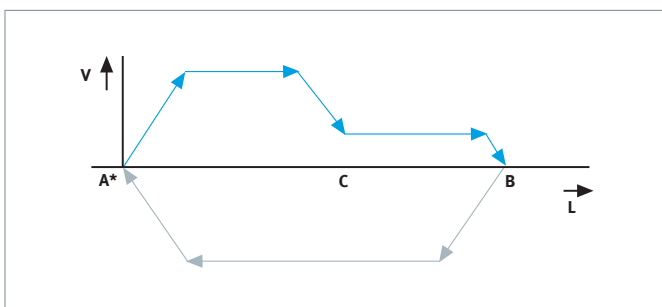
- Same intermediate position D (pre-holding position) for “Out” and “In” motion
- Working motion between D (pre-holding position) and B (operating position)
- Rest position, e.g. during machine standstill in position A

Basic profile for movement between two end positions: speed-controlled with intermediate position

Note: Intermediate position D can only be used with IO-Link®

Note on extended use:

The drive can also be used for very simple positioning tasks by changing the intermediate position several times.

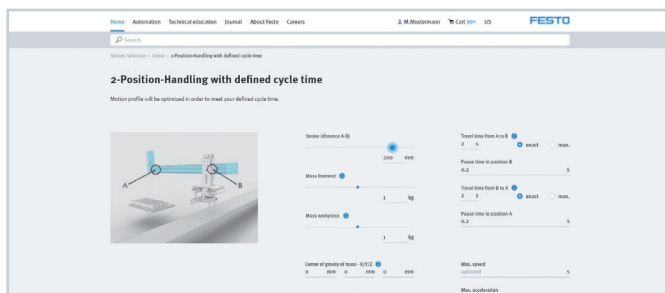
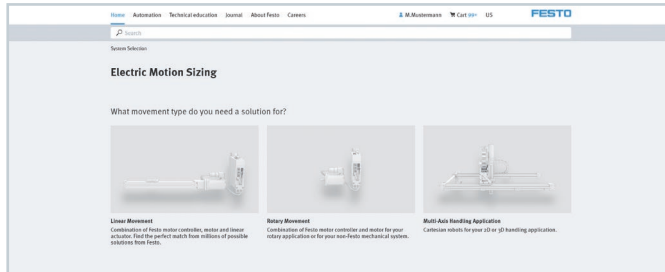


- End position B and begin of “force-controlled motion” C are freely adjustable
- Force of movement from C to B is freely adjustable
- Speed for “Out” (until point C) and “In” movement is: freely adjustable

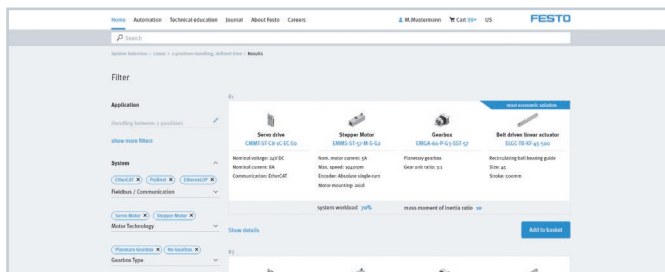
Extended motion profile for simplified press-fitting and clamping functions with speed and force control

- “Out” movement
- “In” movement
- A* Reference end position
- B Operating position
- C Start position “press”
- D Intermediate position

Electric Motion Sizing tool



You only need to input a few parameters to describe the applications.



The results are filtered and selected just like on commercial websites.

Online tool for sizing servo drive packages

Electric Motion Sizing, the new online sizing and simulation tool for electric drives (servo drives + motors = servo drive package) as well as for electromechanical drive solutions (= electromechanical servo drive package comprising servo drives and motors plus mechanics), helps you to find the right electromechanical drive solution for your application quickly and without complications. You only need to enter a few application parameters, for example mass, stroke/

travel distance, cycle time, and Electric Motion Sizing calculates more than 3 million possible product combinations for you. The suggestion you will receive presents the most economical solution from Festo that meets your requirements for the application, including additional alternatives, Electric Motion Sizing also provides the parameterisation data for download into the Festo Automation Suite, and simplifies commissioning too.

The benefits to you

- User-friendly interface for quick, easy and reliable calculation of the right electromechanical drive solution
- Online tool with free access on the Festo website, with no need to register or to download and install software
- The proposed solution combines the best price and availability
- As a registered user, you can select a solution to run a detailed simulation. This provides you with further information about the solution, for example an analysis of the overshoot behaviour.

➔ www.festo.com/ems

Handling systems and Cartesian robots

The ready-to-install systems provide you with fast and reliable solutions for standard applications: fully assembled, tested and perfectly coordinated, including energy chain, connection technology and matching drive package.

Handling Guide Online: the quickest way ever to the right handling system

Configure and order online:

www.festo.com/hgo

Configure single-axis systems, linear, planar surface and three-dimensional gantries as well as highly dynamic and compact handling systems quickly and easily with the Handling Guide Online.

- It only takes 20 minutes to get the right handling system, including CAD model and commissioning file.
- The engineering effort and the design of the handling system are reduced to just a few minutes
- Very easy and intuitive to use and features structured data prompts
- Shorter time-to-market, because it takes only around 3 weeks from configuration and ordering to delivery and installation.

New additions to the

Handling Guide Online: Ball screw and toothed belt axes ELGD, mini slide EGSC as well as servo drive CMMT and servo motor EMMT.

1D handling systems

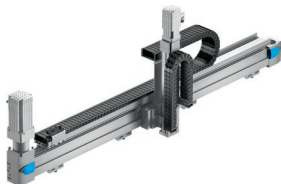


Single-axis systems for linear movement

The single-axis system with its high mechanical rigidity and sturdy design is ideal for long, one-dimensional strokes and large loads. It always includes an energy chain for reliable opera-

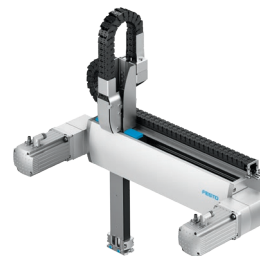
tion. A matching servo drive package from Festo, as well as many other options, round off the ready-to-install complete system.

2D handling systems



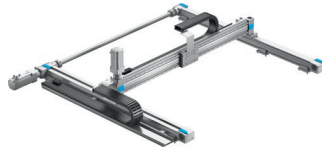
Linear gantry for vertical movements in 2D

High mechanical rigidity makes this linear gantry precise, even with very long strokes of up to 3000 mm in the Y direction. The tubing and cables are routed through energy chains, ensuring outstanding operational and process reliability.



Highly dynamic linear gantry for maximum dynamic response in limited space

The Cartesian high-speed robot based on the EXCT offers excellent dynamic response with max. 95 picks/minute, high flexibility and a compact design. It is a slim design with a very compact Z-axis, ideal for flexible handling tasks with free movement in the vertical plane even when installation space is limited.



Planar surface gantry for horizontal movements in 2D

With its high mechanical rigidity and sturdy design, this planar surface gantry can be used anywhere, whether with heavy workpieces or high payloads. At the same time, it is extremely precise, even with long strokes.



Highly dynamic planar surface gantry for maximum dynamic response throughout the installation space

Thanks to its extremely low moving mass, the gantry with robotic functionality allows up to 100 picks/min and covers the working space of two SCARA robots. It is very compact and flat and moves almost vibration-free. The working space of the XY planar surface gantry makes handling highly flexible with free planar movement.



Compact planar surface gantry for maximum working space coverage

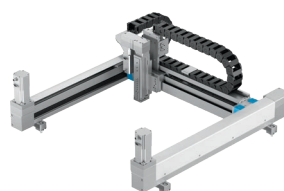
The compact planar surface gantry based on the EXCM shows its strengths, especially when every millimetre counts. It combines outstanding functionality with an extremely compact, flat design and maximum working space coverage.

3D handling systems



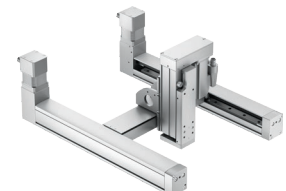
Three-dimensional gantry for 3D movements in a space

The Cartesian robot is ideal for very long strokes of up to 3000 mm in the X direction, even with high loads. The combination of different axis modules means it can be used anywhere, for light to heavy workpieces or a variety of dimensions.



Highly dynamic 3D gantry: maximum performance in 3D

The three-dimensional gantry based on the EXCH offers up to 100 picks/min, is scalable in both X and Y directions, and is very dynamic as well as extremely compact and flat. The low moving mass allows up to 30% more power and the low centre of gravity ensures low overshoot and better positioning accuracy.



Compact three-dimensional gantry for high payloads in the smallest of spaces

The extremely space-saving, compact and flat 3D system absorbs high forces and torques really well, and its length and width are configurable. The solution stands out thanks to its smooth-running characteristics and high positioning precision.

Commissioning software Festo Automation Suite



The PC-based software Festo Automation Suite combines the parameterisation, programming and maintenance of Festo components in one program. It enables the entire drive package to be commissioned, from the mechanical system to the controller. The commissioning software is available free of charge and already contains the basic functionalities of all Festo components.

Plug-ins or add-ons can be installed directly via the program. In addition, device information, manuals and application descriptions can also be downloaded directly from the software without having to open a web browser.

Intelligent connectivity

With the integrated commissioning wizard, it only takes five steps to reliably configure a fully operational drive system. And with just two clicks, the servo drive CMMT-AS is integrated into the controller program of CPX-E. Optionally, the CODESYS add-on enables the further programming of motion control and robotics functions of CPX-E.

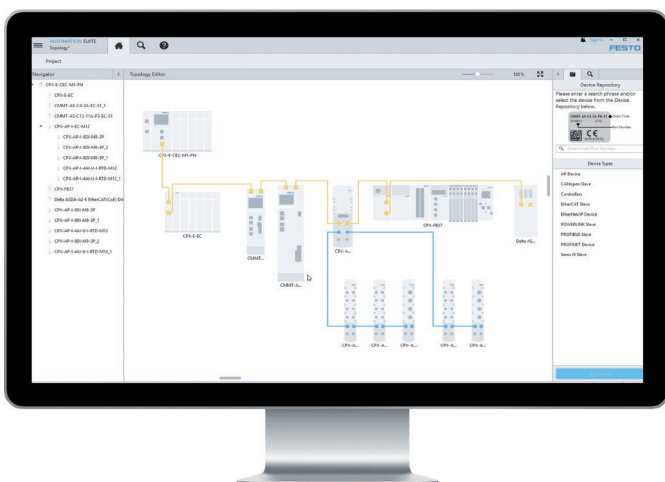


Free download of the software under

→ www.festo.com/Automation-Suite

Highlights

- Just five steps to an operational drive system
- Customisable thanks to device-specific plug-ins and add-ons
- Integrated controller programming
- Access to device information and manuals directly from the software



The user interface has a uniform look across all functions, whether diagnostic information for valve terminals is requested, or a servo drive is parameterised or programmed in CODESYS.

3 Navigation similar to a web browser

Device-specific content is shown on tabs, so that you can conveniently move between the different contents.

1 Tried and tested display

List of all components used and hierarchical display of the communication relationships.

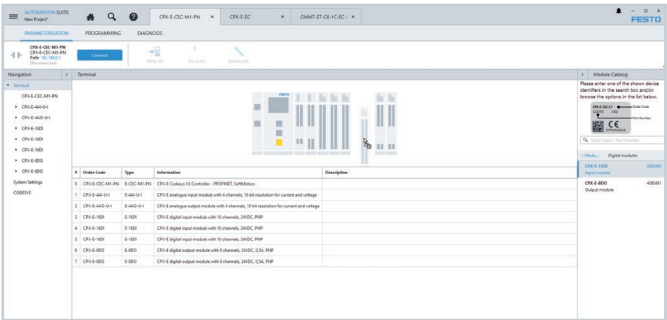
2 User-oriented design

Add the Festo components by dragging and dropping, then establish the communication connections by intuitively drawing the required lines. The software automatically calculates the basic parameters of the stations in the background.

4 Installation of plug-ins

Search for the device you want using the part number or order code, and the Festo Automation Suite will automatically find and install the right plug-in.

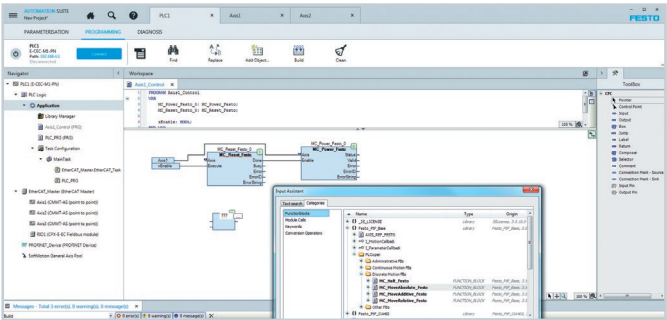
Examples of plug-in features



Flexible configuration of the CPX-E terminal

The individual modules of the CPX-E terminal can be configured and parameterised using a graphical user interface, so they can be changed, replaced, added

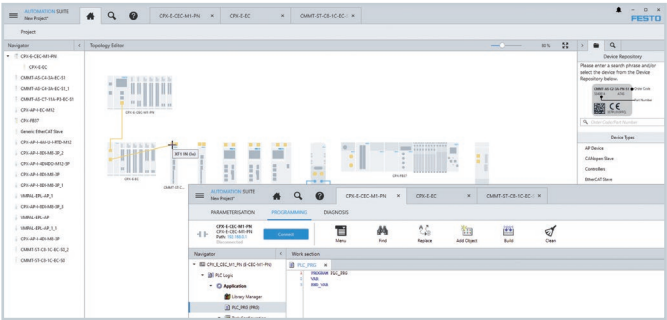
or deleted by dragging and dropping them. Module and channel parameters can also be easily set.



Controller programming with CODESYS

You can download CODESYS as a system extension. It integrates seamlessly into the user interface of the plug-in and makes the common editors for controller programming according to IEC 61131-3 available: from

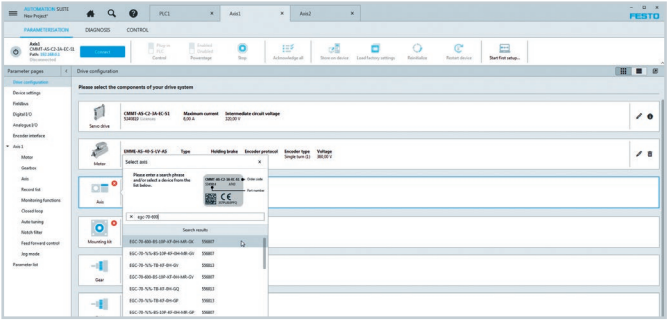
simple point-to-point motion and SoftMotion applications with cam disc and CNC functions to robotics applications according to PLCopen Part 4.



Extremely easy integration of the drive system

Where 100 mouse and keyboard operations were once required, two now suffice. Once the CMMT-AS has been connected to the controller CPX-E by dragging a line, everything else is done automatically, from integrating the necessary libraries and linking the process data to trans-

ferring important axis parameters. The drive system is immediately ready for use in the controller program. The result is fewer errors and more time for your main task: creating and commissioning the machine process.



Simple and reliable parameterisation

The clear parameterisation interface allows you to easily select the required Festo mechanical system using the order information, such as the part number. The program takes care of the correct settings as all the technical data – from the servo drive to the axis – is saved and used to

automatically calculate the drive settings. There no longer is a need for complex, manual calculation of the suitable parameter values, which considerably minimises time, effort and sources of error.

Functional safety



Safety engineering in factory automation or the process industry is one of the key requirements for any machine and

PROFIsafe I/O modules on CPX

The scalable PROFIsafe input and output modules of the automation platform CPX cover the entire local safety chain thanks to IP65/67. Multiple PROFIsafe modules per CPX are possible.

system builder. Our products and solutions provide the ideal prerequisites for implementing safety engineering as economi-

cally and easily as possible. Regardless of whether this is electrical, mechanical or in combination with controllers.

Safe inputs:

- 4 safe inputs for integrating sensors or potential-free contacts
- Reliable detection and evaluation of input statuses up to category 4, PL e / SIL 3

Safe outputs:

- Safely switching off the supply voltage for valves
- Safe outputs for further external devices
- Safe switch-off in accordance with category 3, PL e/SIL 3



Servo drive controller CMMT-AS with integrated safety

The state-of-the-art, price- and size-optimised, compact servo drive CMMT-AS is an integral part of the automation platform from Festo. It is suitable for point-to-point and interpolating motions and can be commissioned with the Festo Automation Suite in just a few steps – with no errors!

- Standard protective functions: STO, SS1, SBC and diagnostic outputs STA and SBA
- Extended safety functions such as SS2, SOS, SLS and SSR in preparation
- Standard safety functions can be configured without software

See page 20 for details



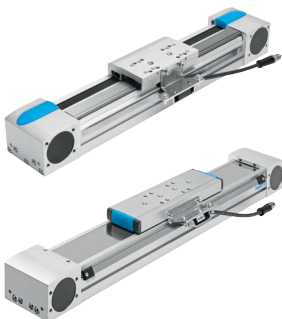
Servo drive controller CMMT-ST with integrates standard safety

The low-voltage controller CMMT-ST stands for highly economical positioning tasks and motion solutions with low power ratings of up to 300 W. The consistent control concept means that, as a drive, the CMMT-AS and CMMT-ST can

be easily combined with both large and small axes.

- Integrated standard safety: STO, SS1
- Can be configured without software

See page 22 for details



Intelligent solutions for monitoring linear axes

It is not possible to monitor drive mechanisms using electric drive technology with encoders in servo motors or by implementing safety functions in motor controllers (drive systems) or external monitoring systems. However, the axis slide position can be monitored using an external

linear displacement encoder mounted directly on the drive and the information can be fed back to a safety system for safety functions up to category 4, PL e.

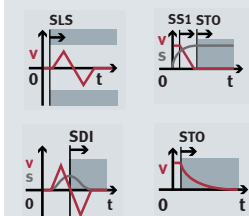
Sample solutions

How do I implement safety functions with electric drive components?

Festo provides a number of solutions. Descriptions, bills of materials, circuit diagrams, application programs and Sistema projects allow rapid integration

into your safety concept – with appropriate documentation.

→ www.festo.com/safety





Productivity

Maximum productivity is a question of ambition

Do you share this attitude? We will be glad to help you achieve this goal – through our four outstanding qualities:

• Security • Efficiency • Simplicity • Competency

We are the engineers of productivity.

Discover new dimensions for your company:

→ www.festo.com/whyfesto