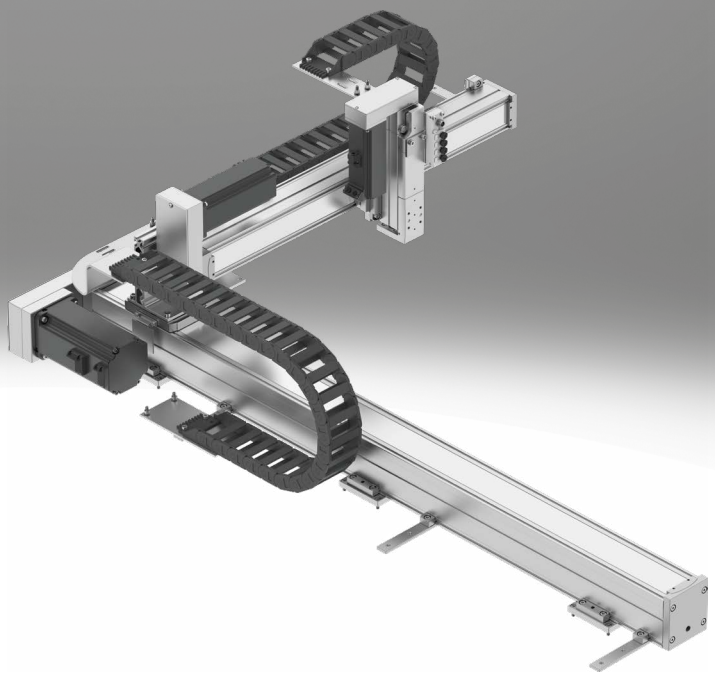
Cantilever systems

FESTO



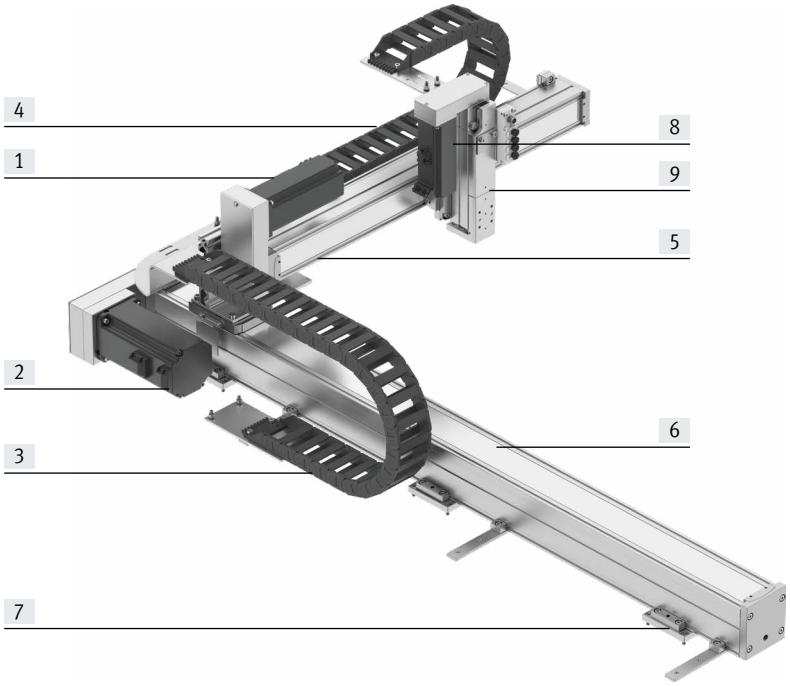
Key features

At a glance

The cantilever system facilitates movement in 3D space.
The cantilever system is composed of several axis modules depending on the requirements.
These are all tried-and-tested components from Festo.

- Can be used universally for handling light to medium-weight workpieces or payloads
- Optimum ratio of installation space to working space
- Working space with minimal interfering contours – freely accessible from three sides
- Pneumatic and electric components are freely combinable
- As an electrical solution it is freely positionable/any intermediate positions

Range of applications:
- For any movements in 3D space
- Ideal for line assembly processes
- Cost-effective handling unit in a compact format for small parts handling and simple tasks (YXCR-B)



[1] Servo motor for the Y-module
[2] Servo motor for the X-module
[3] Energy chain for the X-module
[4] Energy chain for the Y-module
[5] Y-axis
[6] X-axis
[7] Profile mounting/adjusting kit
[8] Servo motor for the Z-module
[9] Z-axis

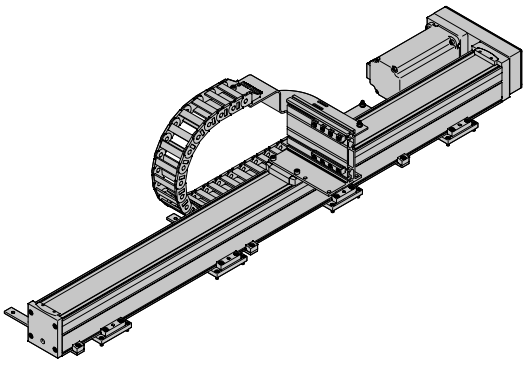
Description of the modules

X-module

Design:

The X-module EHMX-AS comprises a linear axis which is powered by a servo or stepper motor.
Adapters are mounted on the slide of the X-axis to connect the Y-module.
The position of the motor and energy chain can be selected using the configurator.
The following components are located on the motor side:
- Energy chain (optional)
- Multi-pin plug distributor for proximity switch (if a sensor package has been selected)

Sample image:



Key features

Description of the modules

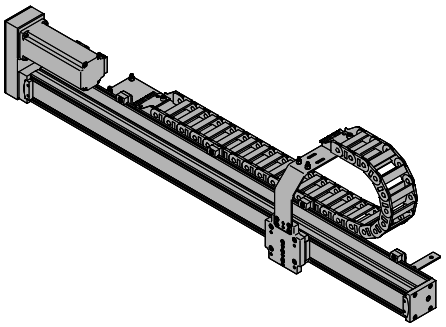
Y-module

Design:

The Y-module EHMY comprises a linear axis which is powered by a servo or stepper motor.
Adapters are mounted on the slide of the Y-axis to connect the Z-module.
The position of the motor and energy chain is dependent on the position of the motor on the X-module.
The following components are located on the motor side:

- Energy chain (optional)
- Multi-pin plug distributor for proximity switch (if a sensor package has been selected)

Sample image:

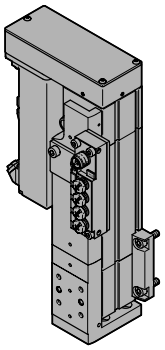


Z-module

Design:

The Z-module EHMZ comprises an electric drive, the DHMZ comprises a pneumatic drive. Based on the configuration, an energy chain is optionally installed as a cable guide depending on the axis type and stroke.
The Z-module can be selected using the configurator, depending on the application.

Sample image:



Key features

Dispatch options

Fully assembled:

The cantilever system is fully assembled. All cables and tubing are installed and connected. The system is already set up on delivery, but must be adapted to the particular mounting surface during installation.
Note flatness ➔ table below.

Partially assembled:

The cantilever system is delivered partially assembled. This means that all three axis modules (X-/Y-/Z-axis) are assembled, each with the optional motors. The partially assembled system must be completed by the customer. Help can be found in the assembly instructions provided.
Optional accessories (➔ page 9) are enclosed.
Note flatness ➔ table below.

System overview[1)]

Size	YXCA-1-B	YXCA-2-B
Max. working stroke	X: 800 mm Y: 300 mm Z: 150 mm	X: 1000 mm Y: 400 mm Z: 200 mm
Max. payload	Dependent on the selected dynamic response	
Required flatness of the mounting surface	≤ 0.1 mm/m	
Mounting position	Horizontal	

1) Drive package depends on the configuration selected.

Key features

Configurator: Handling Guide Online (HGO)

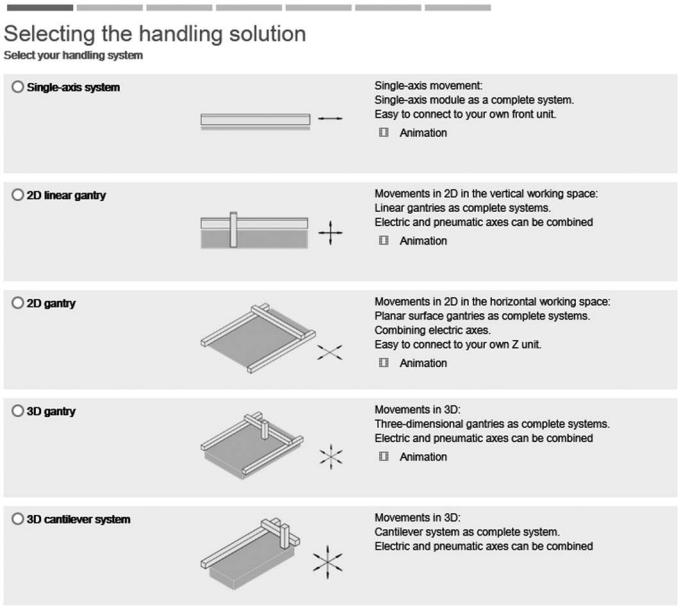
Selecting a handling system

Planning complex handling systems takes a lot of time. You can use the configurator "Handling Guide Online" (HGO) to design a customised handling system for your application in just a few steps.
You can choose from the following systems:

- Single-axis system
- 2D linear gantry
- 2D planar surface gantry
- Three-dimensional gantry
- 3D cantilever system

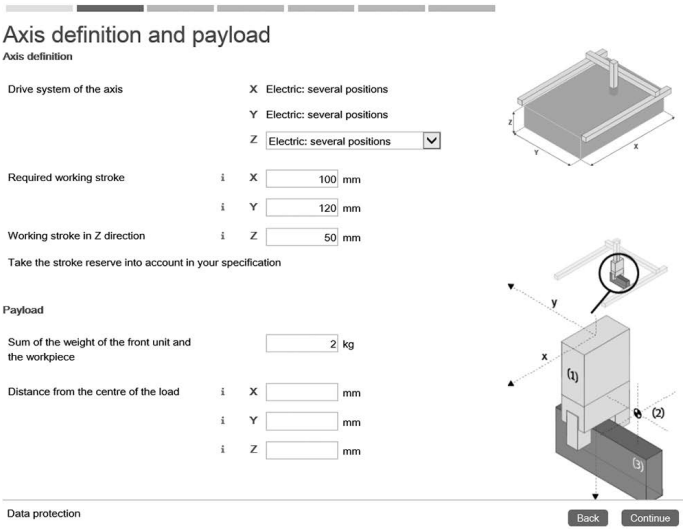
Advantages:

- Automatic selection of all relevant components
- Automatic design and calculation of the workload
- Quote created automatically
- CAD model available immediately
- Configuration-specific parameters for servo drives available immediately
- Complete Eplan project can be ordered according to the individual configuration
- Fully automated processing
- You can order fully or partially assembled systems through the Online Shop
- Lots of possible options



Entering the application data

- Payload
- Drive system of the axis
- Distance from the centre of the load
- Working stroke
- Reference cycle



Key features

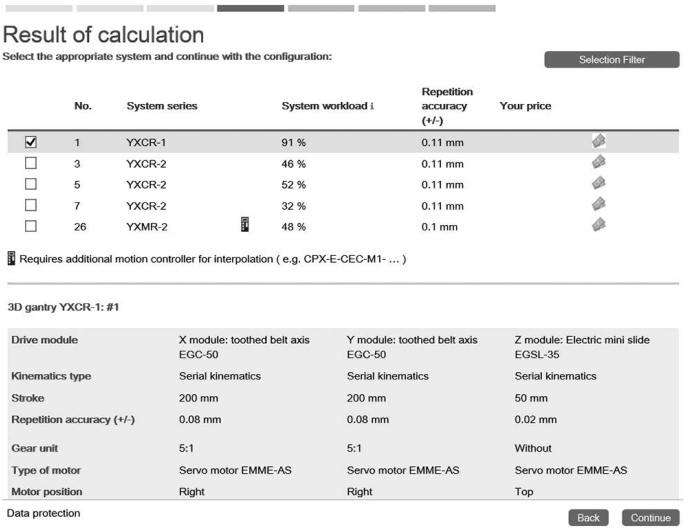
Configurator: Handling Guide Online (HGO)

Result of the calculation

You will be offered a selection of systems that have been calculated based on the application data you entered.

The following are available immediately:

- CAD model
- Datasheet of the selected system
- Price information



System overview

You will be given an overview of the complete system.
You will also have the following options:

- Show price
- Send request
- Add to basket

Key features

Standard components within the handling system

The handling system comprises a number of tried-and-tested standard components from Festo. Different components are used depending on the configuration. The single axes installed will be displayed in the configurator HGO on the "Result of calculation" page.

Drives/axes

X-axis

Ball screw axis ELGC-BS

- Electrical
- Optimal installation space to working space ratio
- Protected against external influences by internal guide
- Various spindle pitches

Y-axis

Ball screw axis ELGC-BS

- Electrical
- Optimal installation space to working space ratio
- Protected against external influences by internal guide
- Various spindle pitches

Z-axis

Mini slide EGSC

- Electrical
- Compact design
- High load capacity
- Precision guide and ball screw
- Easy adjustment of end positions

Mini slide DGST

- Pneumatic
- Precise and resilient roller bearing guide
- Slide and yoke plate as a single component
- High dynamic response

Possible axis combinations[1)]

Size	X-module	Y-module	Z-module
YXCA-1-B	• Ball screw axis ELGC-60-BS	• Ball screw axis ELGC-45-BS	• Mini slide pneumatic: DGST-8/12 electric: EGSC-32
YXCA-2-B	• Ball screw axis ELGC-80-BS	• Ball screw axis ELGC-60-BS	• Mini slide pneumatic: DGST-12/16 electric: EGSC-45

1) Drive package depends on the configuration selected.

Key features

Standard components within the handling system

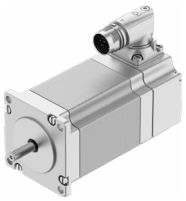
The handling system comprises a number of tried-and-tested standard components from Festo. Different components are used depending on the configuration. You can alter the scope and design of the drive package in the configurator HGO on the "System configuration" page.

Motors and controllers

Servo motors EMMB-AS

- Dynamic, brushless, permanently excited servo motor
- Digital absolute displacement encoder in single-turn or multi-turn version
- With optional brake

Stepper motors EMMT-ST



- Two-phase hybrid technology
- Digital absolute displacement encoder in single-turn or multi-turn version
- Simple connection technology (OCP: one cable plug) – hybrid cable: motor cable and connecting cable for supply and encoder in one
- Plug can be rotated 310°
- With optional brake

Stepper motors EMMB-ST

- Two-phase hybrid technology
- Digital absolute displacement encoder in single-turn or multi-turn version
- Simple connection technology (OCP: one cable plug) – hybrid cable: motor cable and connecting cable for supply and encoder in one
- Can be positioned to the front or the rear
- With optional brake

Servo drive CMMT-AS, for servo motor

- Universal servo drive
- For synchronous servo motors
- Integrated EMC filters
- Integrated brake chopper
- Integrated braking resistor
- Position controller
- Speed controller
- Force controller
- Range of control functions

Options:

- Safety function: safe torque off (STO)/ category 4, Performance Level e
- Safe stop 1 (SS1)
- Safe brake control (SBC) up to SIL3/ category 3, Performance Level e

- Bus protocols
  - EtherCAT®
  - PROFINET RT/IRT
  - EtherNet/IP
  - Modbus TCP

Servo drive CMMT-ST, for stepper motor

- Servo drive for operating stepper motors and brushless direct current motors
- Options for point-to-point and interpolating motion and for precise positioning
- Primary voltage from 24 ... 48 V DC
- Position controller
- Speed controller
- Force controller
- Range of control functions

Options:

- Safety function: safe torque off (STO)/ category 3, Performance Level e
- Safe stop 1 time controlled (SS1-t)

- Bus protocols
  - EtherCAT®
  - PROFINET RT/IRT
  - EtherNet/IP
  - Modbus TCP

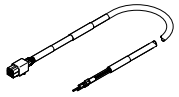
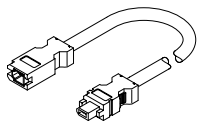
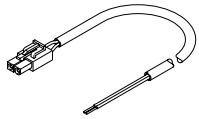
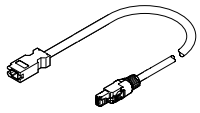
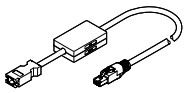
Ordering data – Accessories

Module/motor combinations

We recommend that the three-dimensional gantry is operated with the proposed motors from Festo. These precisely match the mechanical system. When using third-party motors, it is essential that the technical limits are observed.

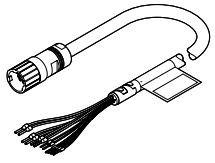
Module	Motor		
	Servo motor	Stepper motor	
X-module			
EHMX-ELGC-60-BS	EMMB-AS-80-07	EMMT-ST-57-L	EMMB-ST-57-L
EHMX-ELGC-80-BS	EMMB-AS-80-07	EMMT-ST-87-M	EMMB-ST-87-M
Y-module			
EHMY-RP-ELGC-45-BS	EMMB-AS-40-01	EMMT-ST-42-L	EMMB-ST-42-L
EHMY-RP-ELGC-60-BS	EMMB-AS-60-04	EMMT-ST-57-L	EMMB-ST-57-L
Z-module			
EHMZ-EGSC-32	EMMB-AS-40-01	EMMT-ST-42-L	EMMB-ST-42-L
EHMZ-EGSC-45	EMMB-AS-40-01	EMMT-ST-42-L	EMMB-ST-42-L

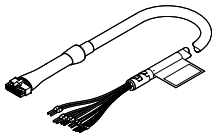
Ordering data – Accessories

Ordering data				
		Cable length [m]	Part no.	Type
For servo motor EMMB-AS				
Motor cable				
	• For EMMB-AS-40/60/80 with CMMT-AS	2.5	**5219197**	**NEBM-H6G4-E-2.5-Q13N-LE4**
		5	**5219198**	**NEBM-H6G4-E-5-Q13N-LE4**
		7.5	**5219199**	**NEBM-H6G4-E-7.5-Q13N-LE4**
		10	**5219200**	**NEBM-H6G4-E-10-Q13N-LE4**
		15	**8097203**	**NEBM-H6G4-E-15-Q13N-LE4**
Encoder cable				
	• For EMMB-AS-40/60/80 with CMMT-AS	2.5	**5219213**	**NEBM-REG6-E-2.5-Q14N-REG6**
		5	**5219214**	**NEBM-REG6-E-5-Q14N-REG6**
		7.5	**5219215**	**NEBM-REG6-E-7.5-Q14N-REG6**
		10	**5219216**	**NEBM-REG6-E-10-Q14N-REG6**
		15	**8097200**	**NEBM-REG6-E-15-Q14N-REG6**
Connecting cable for brake				
	• For EMMB-AS-40/60/80 with CMMT-AS	2.5	**5219205**	**NEBM-H7G2-E-2.5-Q14N-LE2**
		5	**5219206**	**NEBM-H7G2-E-5-Q14N-LE2**
		7.5	**5219207**	**NEBM-H7G2-E-7.5-Q14N-LE2**
		10	**5219208**	**NEBM-H7G2-E-10-Q14N-LE2**
		15	**8097206**	**NEBM-H7G2-E-15-Q14N-LE2**
Adapter for encoder cable (absolutely essential)				
	• For EMMB-AS-40/60/80 with CMMT-AS	**For single-turn version with CMMT-AS**		
		0.5	**8097197**	**NEFM-REG6-K-0.5-R3G8**
	• For EMMB-AS-40/60/80 with CMMT-AS	**For multi-turn version with CMMT-AS[1)]**		
		0.5	**8097195**	**NEFM-REG6-K-0.5-B-R3G8**
		For multi-turn version with CMMB-AS[1)]		
		0.5	**8097196**	**NEFM-REG6-K-0.5-B-REG6**

1) The required battery is not included in the scope of delivery

Ordering data – Accessories

Designation	Description	Cable length [m]	Part no.	Type
For stepper motor EMMT-ST				
Motor cable				
	• For EMMT-ST-42-... with CMMT-ST	2.5	**8181670**	**NEBM-M17G12-EH-2.5-Q6N-LE12**
		5	**8181668**	**NEBM-M17G12-EH-5-Q6N-LE12**
		7	**8190096**	**NEBM-M17G12-EH-7.5-Q6N-LE12**
		10	**8195457**	**NEBM-M17G12-EH-10-Q6N-LE12**
		15	**8214679**	**NEBM-M17G12-EH-15-Q7N-LE12**
	• For EMMT-ST-57-... with CMMT-ST	2.5	**8181670**	**NEBM-M17G12-EH-2.5-Q6N-LE12**
		5	**8181668**	**NEBM-M17G12-EH-5-Q6N-LE12**
		7	**8195460**	**NEBM-M17G12-EH-7.5-Q7N-LE12**
		10	**8195461**	**NEBM-M17G12-EH-10-Q7N-LE12**
		15	**8214683**	**NEBM-M17G12-EH-15-Q9N-LE12**
	• For EMMT-ST-87-... with CMMT-ST	2.5	**8195458**	**NEBM-M17G12-EH-2.5-Q7N-LE12**
		5	**8195459**	**NEBM-M17G12-EH-5-Q7N-LE12**
		7	**8214681**	**NEBM-M17G12-EH-7.5-Q9N-LE12**
		10	**8214682**	**NEBM-M17G12-EH-10-Q9N-LE12**
		15	**8214683**	**NEBM-M17G12-EH-15-Q9N-LE12**

Designation	Description	Cable length [m]	Part no.	Type
For stepper motor EMMB-ST				
Motor cable				
	• For EMMB-ST-42-... with CMMT-ST	2.5	**8181675**	**NEBM-L5G14-EH-2.5-Q6N-LE12**
		5	**8181664**	**NEBM-L5G14-EH-5-Q6N-LE12**
		7	**8181676**	**NEBM-L5G14-EH-7.5-Q6N-LE12**
		10	**8181672**	**NEBM-L5G14-EH-10-Q6N-LE12**
		15	**8214680**	**NEBM-L5G14-EH-15-Q6N-LE12**
	• For EMMB-ST-57-... with CMMT-ST	2.5	**8181677**	**NEBM-L10G14-EH-2.5-Q6N-LE12**
		5	**8181667**	**NEBM-L10G14-EH-5-Q6N-LE12**
		7	**8181674**	**NEBM-L10G14-EH-7.5-Q7N-LE12**
		10	**8181673**	**NEBM-L10G14-EH-10-Q7N-LE12**
		15	**8214689**	**NEBM-L10G14-EH-15-Q9N-LE12**
	• For EMMB-ST-87-... with CMMT-ST	2.5	**8181666**	**NEBM-L10G14-EH-2.5-Q7N-LE12**
		5	**8181671**	**NEBM-L10G14-EH-5-Q7N-LE12**
		7	**8214687**	**NEBM-L10G14-EH-7.5-Q9N-LE12**
		10	**8214688**	**NEBM-L10G14-EH-10-Q9N-LE12**
		15	**8214689**	**NEBM-L10G14-EH-15-Q9N-LE12**

Possible cable and tube lengths

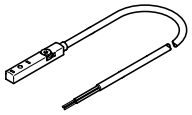
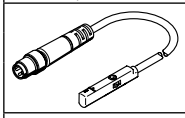
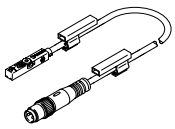
- Cables and tubing are selected so that the length specified when ordering will be the minimum connection length from the energy chain output.
- Cables and tubing are only available in fixed lengths as stated in the table below. This can mean that the cable plugs of the different cables do not end at the same point.

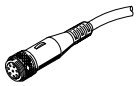
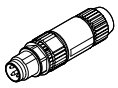
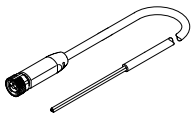
Length	1 m	2 m	5 m	7 m	10 m
Motor cable	–	■	■	■	■
Encoder cable	–	■	■	■	■
Multi-pin plug connecting cable	–	■	■	■	■
Tubing (for DHMZ only)	■	■	■	–	–

Ordering data – Accessories

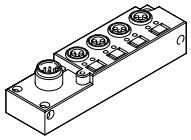
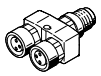
Standard components within the handling system

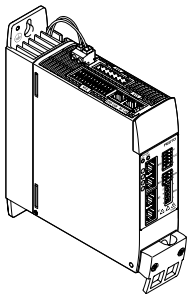
The handling system comprises a number of tried-and-tested standard components from Festo. Different components are used depending on the configuration. You can alter the scope and design of the accessories in the configurator HGO on the "System configuration" page.

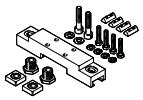
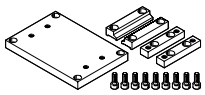
Designation	Description		Cable length	Part no.	Type
Proximity switch (inductive) for sensing the position of the slide on the X-/Y-/Z-axis					
	**Cable with open end**				
	• For ball screw axis ELGC-BS • For mini slide EGSC • For DC voltage Included if the "Festo sensor package" is selected: • For ELGC: 2 pieces • For EGSC: 1 piece	PNP, N/C contact	7.5 m	**551391**	**SIES-8M-PO-24V-K-7.5-OE**
		PNP, N/O contact	7.5 m	**551386**	**SIES-8M-PS-24V-K-7.5-OE**
		NPN, N/C contact	7.5 m	**551401**	**SIES-8M-NO-24V-K-7.5-OE**
		NPN, N/O contact	7.5 m	**551396**	**SIES-8M-NS-24V-K-7.5-OE**
Proximity switches (magneto-resistive) for sensing the position of the slide on the Z-axis					
	• For mini slide DGST-8/-12 • For DC voltage Included if the "Festo sensor package" is selected: • 2 pieces	PNP, N/O contact	2.5 m	**551375**	**SMT-10M-PS-24V-E-0.3-L-M8D**
		NPN, N/O contact	2.5 m	**551379**	**SMT-10M-NS-24V-E-0.3-L-M8D**
	• For mini slide DGST-16/-20 • For DC voltage Included if the "Festo sensor package" is selected: • 2 pieces	PNP, N/O contact	2.5 m	**574334**	**SMT-8M-A-PS-24V-E-0.3-M8D**
		NPN, N/O contact	2.5 m	**574339**	**SMT-8M-A-NS-24V-E-0.3-M8D**

Designation	Description	Cable length	Part no.	Type
Plug socket with cable				
	• Connection between multi-pin plug distributor NEDU and control cabinet	5 m	**525618**	**SIM-M12-8GD-5-PU**
		10 m	**570008**	**SIM-M12-8GD-10-PU**
Plug				
	• For connection to the multi-pin plug distributor NEDU / distributor NEDY	–	**562024**	**NECU-S-M8G3-HX**
Connecting cable				
	• Connection between distributor NEDY and control cabinet	2.5	**8078227**	**NEBA-M8G4-U-2.5-N-LE4**
		5	**8078228**	**NEBA-M8G4-U-5-N-LE4**
		7.5	**8215486**	**NEBA-M8G4-U-7.5-N-LE4**
		10	**8078229**	**NEBA-M8G4-U-10-N-LE4**
		15	**8215487**	**NEBA-M8G4-U-15-N-LE4**

Ordering data – Accessories

Designation	Description	Cable length	Part no.	Type
Multi-pin plug distributor				
	• With the help of the multi-pin plug distributor, all electrical signals such as for end-position sensing can be transferred – 4 individual connections	–	**574586**	**NEDU-L4R1-M8G3L-M12G8**
	• With the help of the distributor, all electrical signals such as for end-position sensing can be transferred – 2 individual connections	–	**8005312**	**NEDY-L2R1-V1-M8G3-N-M8G4**

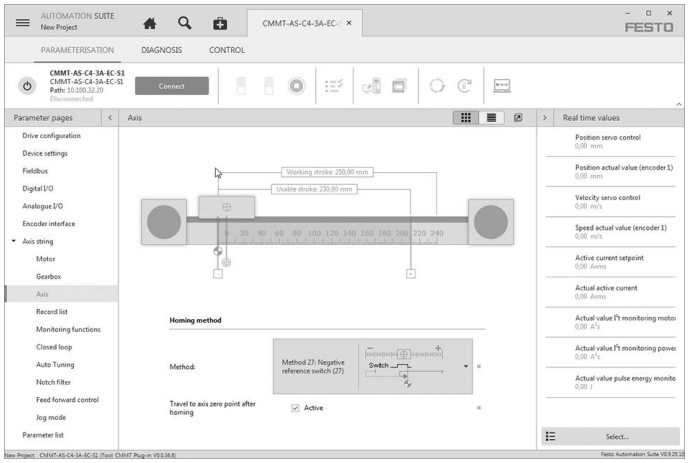
Designation	Description
Motor controller/servo drive	
	The accessories for the relevant motor controllers/servo drives can be found at: • www.festo.com/catalogue/cmmt

Designation	Description		Part no.	Type
Adjusting kit				
	• Used to mount the handling system on the supporting surface • Can be used to easily compensate for any unevenness in the bearing surface	EHMX-...-ELGC-60-BS	**8142650**	**EADC-E15-60-E22**
		EHMX-...-ELGC-80-BS	**8142651**	**EADC-E15-80-E22**
Profile mounting				
	• Used to mount the handling system on the supporting surface • It is not height-adjustable	EHMX-...-ELGC-60-BS	**8142652**	**EAHM-E15-60-E22**
		EHMX-...-ELGC-80-BS	**8142653**	**EAHM-E15-80-E22**

Programming aid

Festo Automation Suite

Parameterisation and programming software for electronic devices from Festo



- Parameterisation, programming and commissioning in a clear and user-friendly interface
- Optimum support for complex processes thanks to guided wizards (e.g. for commissioning, drive configuration, etc.)
- Fast access to the required documents and additional information
- Easy integration of electric drives in the controller programming