Linear gantries

FESTO

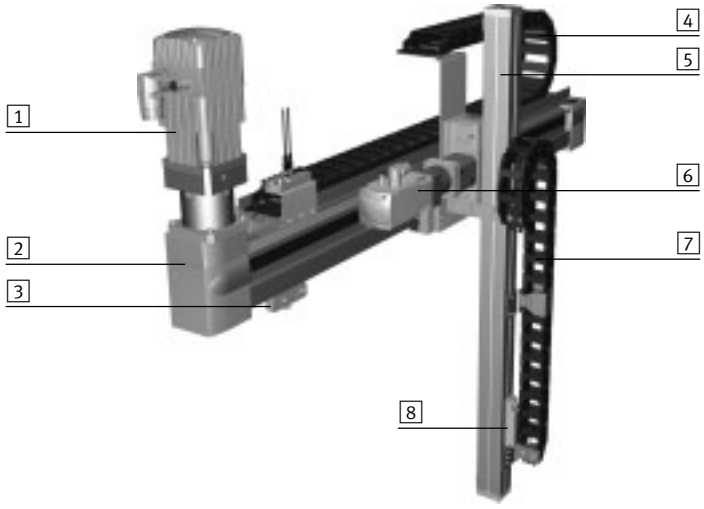
Linear gantries

Key features

At a glance

A linear gantry (YXCL) is an assembly of several axis modules (EHM.../DHMZ) to produce a movement in 2D space.
The linear gantry facilitates movement in 2D space.
Depending on the requirements, the gantry is either composed of several axis modules (YXCL) or using the linear gantry EXCT (YXML). All of these are tried-and-tested components from Festo.

- Ideal for long gantry strokes and heavy loads
- High mechanical rigidity and sturdy design
- Frequently used in feeding or loading applications
- Use of tried-and-tested drives/axes from Festo



1 Servo motor for Y-module
2 Y-axis
3 Profile mounting/adjusting kit
4 Energy chain for Y-module
5 Z-axis
6 Servo motor for Z-module
7 Energy chain for Z-module
8 Multi-pin plug distributor which transfers all electrical signals such as for end-position sensing

Description of the modules

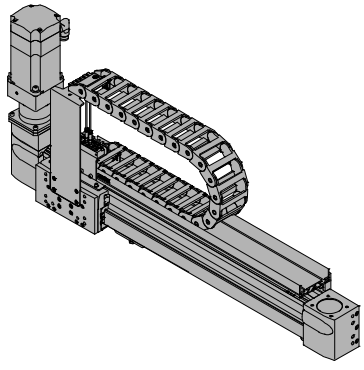
Y-module

Configuration:

The Y-module EHMY comprises a linear axis which is powered by a servo motor.
Adapters are installed on the slides of the Y-axis to connect the Z-module.
The following components are located on the motor side:

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

Sample image:



Linear gantries

Key features

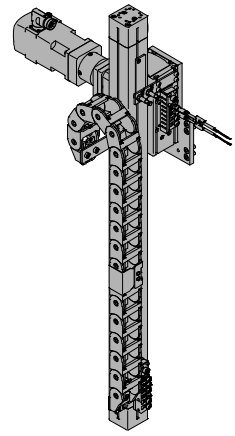
Description of the modules

Z-module

Configuration:

The Z-module EHMZ comprises an electric drive, the DHMZ comprises a pneumatic drive. In both variants, an energy chain is attached as a cable guide. The Z-module can be selected using the configurator, depending on the application.

Sample image:

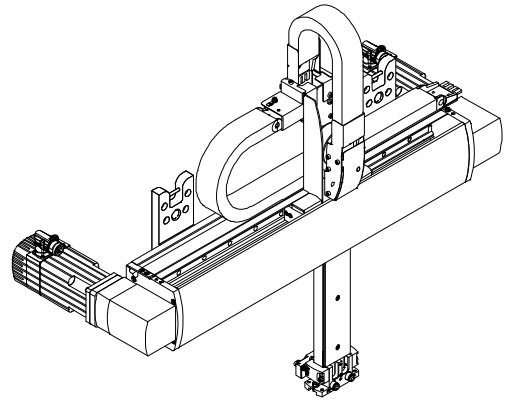


YZ-module (EXCT)

Configuration:

Two fixed servo motors drive a toothed belt arranged in a T-shape.
The toothed belt moves the slide of the Y-axis and the interface located on the Z-axis in a two-dimensional space.
A controller calculates the position of the interface. The controlled interaction of the motors results in the movement of the interface.
Attachment components enables additional processes to be carried out.

Sample image:



Dispatch options

Fully assembled:

The linear gantry is fully assembled. All cables and tubing are installed and connected.

Partially assembled:

The linear gantry is delivered partially assembled. This means that both axis modules (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	YXCL-1	YXCL-2	YXCL-3	YXCL-4	YXML-1	YXML-2	YXML-3
Max. working stroke	Y: 1900 mm Z: 50 mm	Y: 3000 mm Z: 800 mm	Y: 3000 mm Z: 800 mm	Y: 3000 mm Z: 800 mm	Y: 1000 mm Z: 200 mm	Y: 1500 mm Z: 500 mm	Y: 2000 mm Z: 800 mm
Max. payload	Dependent on the selected dynamic response						
Mounting position	Horizontal						

1) Drive package depending on configuration selected.

Linear gantries

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) configurator to design a customised handling system for your application in just a few steps.

You can choose from the following systems:

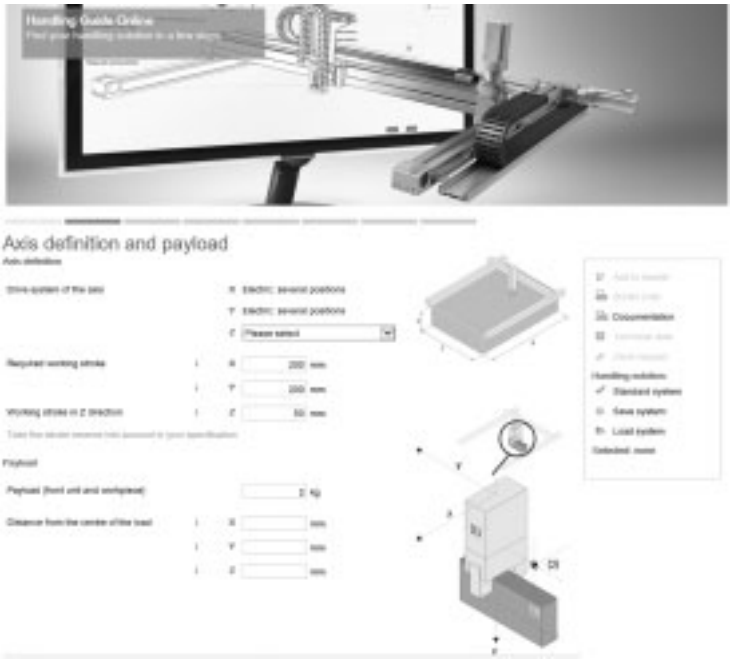
- Single-axis system
- 2D linear gantry
- 2D planar surface gantry
- 3-dimensional gantry

Advantages:

- Automatic selection of all relevant components
- Automatic design and calculation of workload
- Quote created automatically
- CAD model available immediately
- 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



Linear gantries

Key features

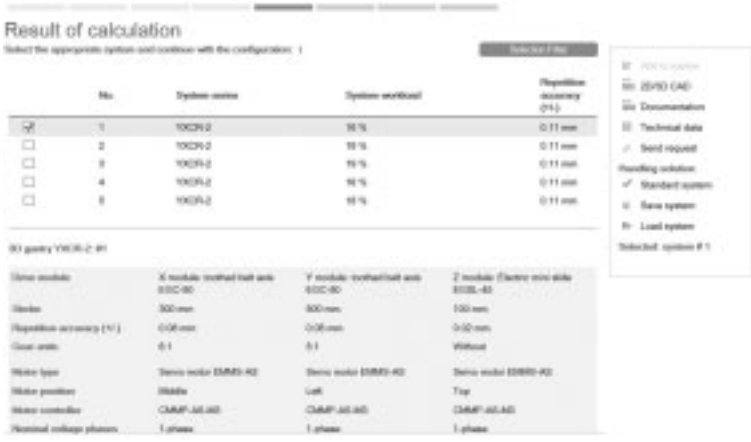
Configurator: Handling Guide Online (HGO)

Result of calculation

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

The following are available immediately:

- CAD model
- Data sheet of the selected system
- Price information



System overview

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

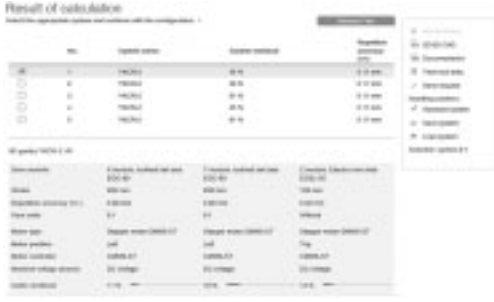
- Request price
- Send request
- Add to basket

Linear gantries

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

Y-axis

Toothed belt axis EGC-TB-KF

- Electric
- Rigid, closed profile
- Recirculating ball bearing guide for high loads and torques
- High dynamic response and minimum vibration

Toothed belt axis EGC-HD-TB

- Electric
- Flat drive unit with rigid, closed profile
- Duo guide rail
- For maximum loads and torques, high feed forces and speeds and long service life

Z-axis

Mini slide DGSL

- Pneumatic
- Flat design
- High load capacity
- High dynamic response
- Easy adjustment of end positions

Mini slide EGSL

- Electric
- Compact design
- High load capacity
- High dynamic response
- Easy adjustment of end positions

Spindle axis EGC-BS-KF

- Electric
- Rigid, closed profile
- Recirculating ball bearing guide for high loads and torques
- High dynamic response and minimum vibration
- Various spindle pitches

Cantilever axis DGEA

- Electric
- High rigidity
- High load capacity
- High dynamic response

Possible axis combinations[1]		
Size	Y-module	Z-module
YXCL-1	• Toothed belt axis EGC-50-TB-KF	• Mini slide Pneumatic: DGSL-6 Electric: EGSL-35
YXCL-2	• Toothed belt axis EGC-80-TB-KF • Toothed belt axis with heavy-duty guide EGC-HD-125-TB	• Mini slide Pneumatic: DGSL-12/16 Electric: EGSL-45/55 • Cantilever axis DGEA-18 • Spindle axis EGC-70-BS-KF
YXCL-3	• Toothed belt axis EGC-120-TB-KF • Toothed belt axis with heavy-duty guide EGC-HD-160-TB	• Mini slide Pneumatic: DGSL-20/25 Electric: EGSL-75 • Cantilever axis DGEA-25/40 • Spindle axis EGC-80-BS-KF
YXCL-4	• Toothed belt axis EGC-185-TB-KF • Toothed belt axis with heavy-duty guide EGC-HD-220-TB	• Cantilever axis DGEA-40 • Spindle axis EGC-120-BS-KF
YXML-1	• Linear gantry EXCT-15	• Linear gantry EXCT-15
YXML-2	• Linear gantry EXCT-30	• Linear gantry EXCT-30
YXML-3	• Linear gantry EXCT-100	• Linear gantry EXCT-100

1) Drive package depending on configuration selected.

Linear gantries

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 EMMS-AS

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

Servo motors EMME-AS

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

Stepper motors EMMS-ST

- 2-phase hybrid technology
- Step angle 1.8°
- With optional brake

Gear unit EMGA

- Low-backlash planetary gear
- Gear ratio
  i = 3 and 5
- Life-time lubrication

Motor controller CMMP-AS for servo motor

- Complete integration of all components for controller and power section, including USB interface
- Integrated brake chopper
- Integrated EMC filters
- Automatic activation for a brake

Selectable:

- Safety function: safe torque off (STO)/category 4, Performance level e
- Additional digital inputs and outputs

- Bus protocols
  - CANopen
  - DeviceNet®
  - EtherCAT®
  - EtherNet/IP
  - PROFIBUS DP
  - PROFINET

Motor controller CMMS-ST for stepper motor

- Complete integration of all components for controller and power section, including RS232 interface
- Integrated brake chopper
- Integrated EMC filters
- Automatic activation for a brake

Selectable:

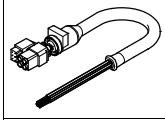
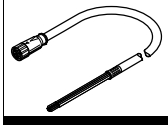
- Safety function: safe torque off (STO)/category 3, Performance level d

- Bus protocols
  - CANopen
  - DeviceNet®
  - PROFIBUS DP

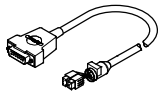
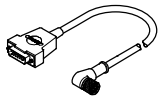
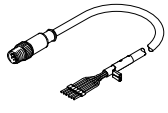
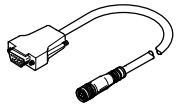
Module/motor combinations

We recommend that the linear 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	Servo motor	Stepper motor
Y-module			
EHMY-...-EGC-50-TB-KF	–	EMME-AS-40-S-LV-...	EMMS-ST-57-M-...
EHMY-...-EGC-80-TB-KF	EMMS-AS-55-S-LS-...	EMME-AS-60-M-LS-...	EMMS-ST-57-S-...
EHMY-...-EGC-120-TB-KF	EMMS-AS-100-S-HS-...	EMME-AS-80-S-LS-...	EMMS-ST-87-S-...
EHMY-...-EGC-125-TB-HD	EMMS-AS-70-S-LS-...	EMME-AS-60-M-LS-...	EMMS-ST-57-S-...
EHMY-...-EGC-160-TB-HD	EMMS-AS-100-S-HS-...	EMME-AS-80-S-LS-...	EMMS-ST-87-S-...
EHMY-...-EGC-185-TB-KF	EMMS-AS-100-M-HS-...	EMME-AS-100-M-HS-...	–
	EMMS-AS-140-S-HS-...		
EHMY-...-EGC-220-TB-HD	EMMS-AS-100-M-HS-...	EMME-AS-100-M-HS-...	–
	EMMS-AS-140-S-HS-...		
Z-module			
EHMZ-DGEA-18-TB-KF	EMMS-AS-55-S-LS-...	EMME-AS-60-M-LS-...	EMMS-ST-57-S-...
EHMZ-DGEA-25-TB-KF	EMMS-AS-70-S-LS-...	EMME-AS-60-M-LS-...	EMMS-ST-57-S-...
EHMZ-DGEA-40-TB-KF	EMMS-AS-100-S-HS-...	EMME-AS-80-M-LS-...	–
EHMZ-EGC-70-BS-KF	EMMS-AS-55-S-LS-...	EMME-AS-60-M-LS-...	EMMS-ST-57-S-...
EHMZ-EGC-80-BS-KF	EMMS-AS-70-S-LS-...	EMME-AS-60-M-LS-...	EMMS-ST-57-S-...
EHMZ-EGC-120-BS-KF	EMMS-AS-100-S-HS-...	EMME-AS-80-S-LS-...	–
EHMZ-EGSL-35-BS-KF	–	EMME-AS-40-S-LV-...	EMMS-ST-28-L-...
EHMZ-EGSL-45-BS-KF	EMMS-AS-40-M-LS-...	EMME-AS-40-S-LV-...	EMMS-ST-57-S-...
EHMZ-EGSL-55-BS-KF	EMMS-AS-55-S-LS-...	EMME-AS-60-M-LS-...	EMMS-ST-57-S-...
EHMZ-EGSL-75-BS-KF	EMMS-AS-70-M-LS-...	EMME-AS-80-S-LS-...	EMMS-ST-87-S-...
YZ-module (EXCT)			
EXCT-15	EMMS-AS-70-M-LS-...	–	–
EXCT-30	EMMS-AS-100-S-HS-...	–	–
EXCT-100	EMMS-AS-100-M-HS-...	–	–

Designation	Description	Cable length	Part no.	Type
For servo motor				
Motor cable[1)]				
	• For servo motor EMMS-AS-40-M-LS-.../ EMMS-AS-55-S-LS-...	5 m	**550306**	**NEBM-T1G8-E-5-Q7N-LE8**
		10 m	**550307**	**NEBM-T1G8-E-10-Q7N-LE8**
		15 m	**550308**	**NEBM-T1G8-E-15-Q7N-LE8**
Motor cable[1)]				
	• For servo motor EMMS-AS-70-S-LS-.../ EMMS-AS-70-M-LS-.../EMMS-AS-100-S-HS-.../ EMMS-AS-100-M-HS-.../EMMS-AS-140-S-HS-...	5 m	**550310**	**NEBM-M23G8-E-5-Q9N-LE8**
		10 m	**550311**	**NEBM-M23G8-E-10-Q9N-LE8**
		15 m	**550312**	**NEBM-M23G8-E-15-Q9N-LE8**

1) Cables especially suitable for the motor controller and motor.
Degree of protection to IP65 (in assembled state)

Designation	Description	Cable length	Part no.	Type
For servo motor				
Encoder cable[1]				
	• For servo motor EMMS-AS-40-M-LS-...	5 m	**550314**	**NEBM-T1G8-E-5-N-S1G15**
		10 m	**550315**	**NEBM-T1G8-E-10-N-S1G15**
		15 m	**550316**	**NEBM-T1G8-E-15-N-S1G15**
Encoder cable[1]				
	• For servo motor EMMS-AS-70-S-LS-.../ EMMS-AS-70-M-LS-.../EMMS-AS-100-S-HS-.../ EMMS-AS-100-M-HS-.../EMMS-AS-140-S-HS-...	5 m	**550318**	**NEBM-M12W8-E-5-N-S1G15**
		10 m	**550319**	**NEBM-M12W8-E-10-N-S1G15**
		15 m	**550320**	**NEBM-M12W8-E-15-N-S1G15**
For stepper motor				
Motor cable[1]				
	• For stepper motor EMMS-ST-28-L-...	1.5 m	**1449600**	**NEBM-SM12G8-E-1.5-Q5-LE6**
		2.5 m	**1449601**	**NEBM-SM12G8-E-2.5-Q5-LE6**
		5 m	**1449602**	**NEBM-SM12G8-E-5-Q5-LE6**
		7 m	**1449603**	**NEBM-SM12G8-E-7-Q5-LE6**
		10 m	**1449604**	**NEBM-SM12G8-E-10-Q5-LE6**
Encoder cable[1]				
	• For stepper motor EMMS-ST-28-L-...	5 m	**550748**	**NEBM-M12G8-E-5-S1G9**
		10 m	**550749**	**NEBM-M12G8-E-10-S1G9**
		15 m	**550750**	**NEBM-M12G8-E-15-S1G9**

1) Cables especially suitable for the motor controller and motor.
Degree of protection to IP65 (in assembled state)

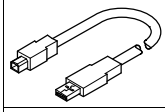
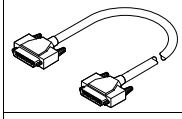
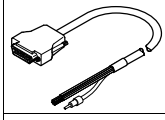
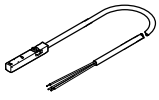
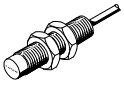
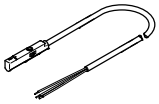
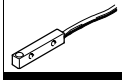
Possible cable and tube lengths

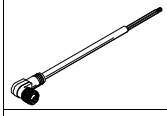
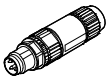
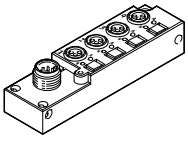
- Cables and tubing are sized so that the length specified when ordering will be the minimum connection length from the energy chain output.
- Cables and tubing are only available in fixed lengths as stated in the table below. This can mean that the plug connectors of the different cables do not end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

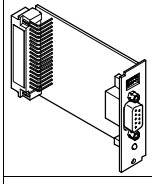
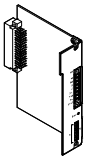
Length	1 m	2 m	5 m	7 m	10 m
Motor cable	–	■	■	■	■
Encoder cable	–	■	■	■	■
Multi-pin plug connecting cable	–	■	■	■	■
Tubing (for DHMZ only)	■	■	■	–	–

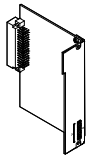
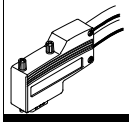
Standard components within the handling system

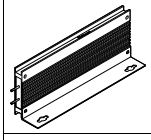
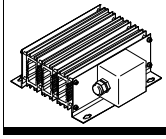
The handling system comprises a number of tried-and-tested standard components from Festo. Different components are used depending on the configuration. You can alter the scope and design of the accessories in the configurator HGO on the "System configuration" page.

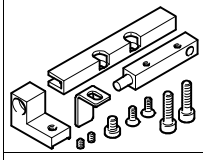
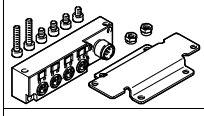
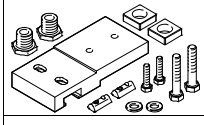
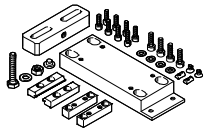
Designation	Description		Cable length	Part no.	Type
Programming cable					
	• High-speed USB 2.0 connecting cable • For controller CMMP-AS		1.8 m	**1501332**	**NEBC-U1G4-K-1.8-N-U2G4**
	• For controller CMMS-ST		2 m	**160786**	**PS1-ZK11-NULLMODEM-2,0M**
Control cable (for I/O interface to any controller)					
	• For controller CMMP-AS, CMMS-ST		2.5 m	**552254**	**NEBC-S1G25-K-2.5-N-LE26**
Proximity sensor (inductive) for sensing the position of the slide on the Y-/Z-axis					
	Cable with open end				
	• For toothed belt axis EGC-TB, EGC-HD-TB • For spindle axis EGC-BS • For mini slide EGSL • For direct voltage Included if "Festo sensor package" is selected: • 2 pieces	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 sensor (inductive) for sensing the position of the slide on the Z-axis					
	Cable with open end				
	• For cantilever axis DGEA • For direct voltage Included if "Festo sensor package" is selected: • 2 pieces	PNP, N/C contact	2.5 m	**150398**	**SIEN-M8NB-PO-K-L**
		PNP, N/O contact	2.5 m	**150394**	**SIEN-M8NB-PS-K-L**
		NPN, N/C contact	2.5 m	**150396**	**SIEN-M8NB-NO-K-L**
		NPN, N/O contact	2.5 m	**150392**	**SIEN-M8NB-NS-K-L**
Proximity sensor (magnetoresistive) for sensing the position of the slide on the Z-axis					
	Cable with open end				
	• For mini slide DGSL • For direct voltage Included if "Festo sensor package" is selected: • 2 pieces	PNP, N/O contact	2.5 m	**551373**	**SMT-10M-PS-24V-E-2,5-L-OE**
		NPN, N/O contact	2.5 m	**551377**	**SMT-10M-NS-24V-E-2,5-L-OE**
Proximity sensor for sensing the position of the slide on the YZ-axis					
	• For EXCT	N/C contact	–	**174552**	**SIES-Q8B-PO-K-L**

Designation	Description	Cable length	Part no.	Type
Plug socket with cable				
	• Connection between multi-pin plug distributor and control cabinet	5 m	**525618**	**SIM-M12-8GD-5-PU**
		10 m	**570008**	**SIM-M12-8GD-10-PU**
Plug socket with cable				
	• For multi-pin plug set EADH	15 m	**8048086**	**NEBU-M12W8-K-15-N-LE8**
Plug				
	• For connection to the multi-pin plug distributor	–	**562024**	**NECU-S-M8G3-HX**
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 Selectable: – 4 individual connections – 6 individual connections	–	**574586**	**NEDU-L4R1-M8G3L-M12G8**
			574587	**NEDU-L6R1-M8G3L-M12G8**

Designation	Description	Part no.	Type
Interface			
	For additional I/Os	**567855**	**CAMC-D-8E8A**
	For DeviceNet®	**547451**	**CAMC-DN**
	For EtherCAT®	**567856**	**CAMC-EC**
	For EtherNet/IP	**1911917**	**CAMC-F-EP**
	For PROFINET RT	**1911916**	**CAMC-F-PN**
	For PROFIBUS DP	**547450**	**CAMC-PB**
Safety module			
	For safe torque off (STO)	**1501330**	**CAMC-G-S1**

Designation	Description	Part no.	Type
Switch module			
	If the safety module CAMC-G-S1 is not used, the switch module is absolutely essential for operating the motor controller CMMP-AS-...-M3	**1501329**	**CAMC-DS-M1**
Bus connection			
	For DeviceNet interface	**525635**	**FBSD-KL-2X5POL**
Plug			
	For CANopen interface	**533783**	**FBS-SUB-9-WS-CO-K**
	For PROFIBUS interface	**533780**	**FBS-SUB-9-WS-PB-K**

Designation	Description	Part no.	Type
Braking resistor			
	• For EXCT-15	**2882342**	**CACR-LE2-50-W500**
	• For EXCT-30/100	**2882343**	**CACR-KL2-40-W2000**

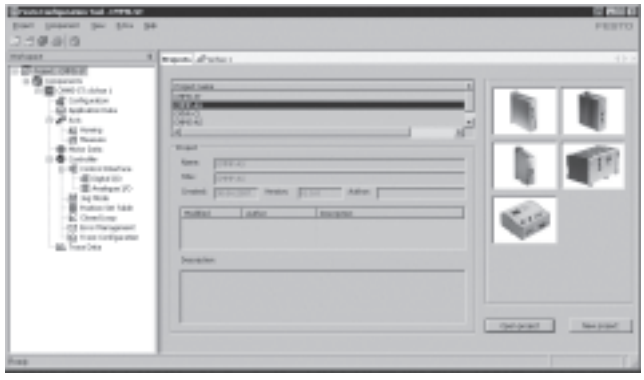
Designation	Description		Part no.	Type
Sensing kit				
	• Included in the scope of delivery: Proximity sensor SIES-Q8B, sensor bracket, switch lug, mounting bracket and screws		**2478427**	**EAPR-E17-S**
Multi-pin plug set				
	• For connecting up to 4 inputs/outputs		**2972137**	**EADH-E17-MP1**
Mounting kit				
	• For mounting and aligning on a bearing surface • The kit is height-adjustable		**3838164**	**EAHM-E17-K2-15**
			3838337	**EAHM-E17-K2-30**
			3838404	**EAHM-E17-K2-100**
Adjusting kit				
	• Used to mount the handling system on a vertical surface • Following mounting, the axis can be aligned horizontally	EHMY-...-EGC-50-TB-KF	**8047576**	**EADC-E16-50-E7**
		EHMY-...-EGC-80-TB-KF	**8047577**	**EADC-E16-80-E7**
		EHMY-...-EGC-120-TB-KF	**8047578**	**EADC-E16-120-E7**
		EHMY-...-EGC-185-TB-KF	**8047579**	**EADC-E16-185-E7**
		EHMY-...-EGC-125-TB-HD	**8047580**	**EADC-E16-125-E14**
		EHMY-...-EGC-160-TB-HD	**8047581**	**EADC-E16-160-E14**
		EHMY-...-EGC-220-TB-HD	**8047582**	**EADC-E16-220-E14**

Easy programming with

FCT software – Festo Configuration Tool

Software platform for electric drives from Festo

- All drives in a system can be managed and saved in a common project
- Project and data management for all supported types of equipment
- Easy to use thanks to graphically supported parameter entry
- Universal mode of operation for all drives
- Work offline at your desk or online at the machine



Festo - Your Partner in Automation

1 Festo Inc.

5300 Explorer Drive
Mississauga, ON L4W 5G4
Canada

Festo Customer Interaction Center
Tel: 1 877 463 3786
Fax: 1 877 393 3786
Email: customer.service.ca@festo.com

2 Festo Pneumatic

Av. Ceylán 3,
Col. Tequesquináhuac
54020 Tlalnepantla,
Estado de México

Multinational Contact Center
01 800 337 8669

ventas.mexico@festo.com

3 Festo Corporation

1377 Motor Parkway
Suite 310
Islandia, NY 11749

4 Regional Service Center

7777 Columbia Road
Mason, OH 45040

Festo Customer Interaction Center
1 800 993 3786
1 800 963 3786
customer.service.us@festo.com

Connect with us

www.festo.com/socialmedia

www.festo.com

Subject to change