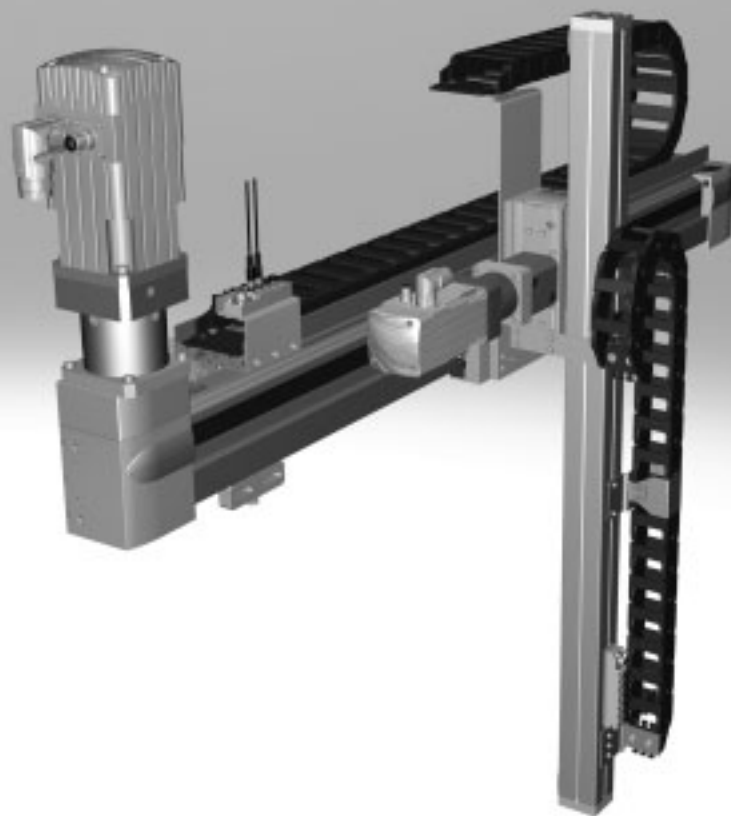


Linear gantries

FESTO



Linear gantries

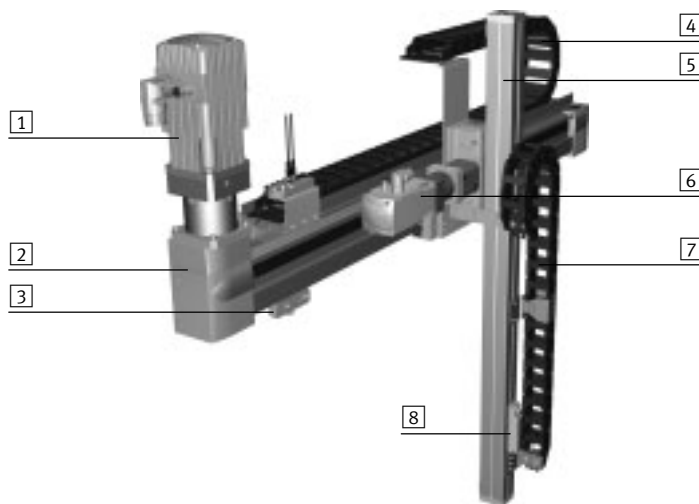
Key features

FESTO

At a glance

A linear gantry (YXCL) is an assembly of several axis modules (EHM.../DHMZ) to produce a movement in 2D space.

- 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 collectively transfers electrical signals such as end-position sensing

Description of the modules

Y module

Structure:

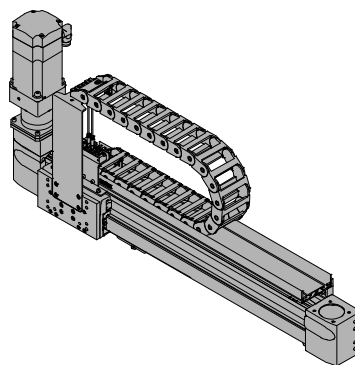
The Y module EHY comprises a linear axis which is powered by a servo motor.

Adapters are installed on the slide of the Y-axis to connect the Z module.

The following elements 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

FESTO

Description of the modules

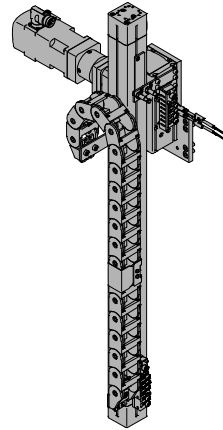
Z module

Structure:

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:



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 an optional motor. 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 evenness → table below.

System overview¹⁾

Size	YXCL-1	YXCL-2	YXCL-3	YXCL-4
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
Max. payload	Dependent on the selected dynamic response			
Mounting position	Horizontal			

1) Drive package depending on configuration selected.

Linear gantries

Key features

FESTO

Configurator: Handling Guide Online (HGO)

Selecting a handling system

Planning complex handling systems takes a lot of time. You can use the "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
- 3D gantry

Benefits:

- 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 assembled or unassembled systems through the online shop
- Lots of possible options

Single-axis system



Single-axis movement
Single-axis module as a complete system.
Easy to connect to your own front unit.

☐ Animation

2D linear gantry



Movements in 2D in the vertical working space:
Linear gantries as complete systems.
Combining electric and pneumatic axes is possible.

☐ Animation

2D planar surface gantry



Movements in 2D in the horizontal working space:
Planar surface gantries as complete systems.
Combining electric axes.
Easy to connect to your own Z-unit.

☐ Animation

3D gantry



Movements in 3D:
Three-dimensional gantries as complete systems.
Combining electric and pneumatic axes is possible.

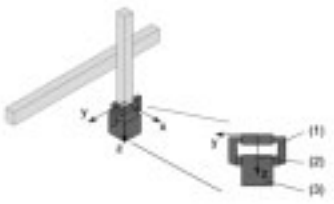
☐ Animation

Entering the application data

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

Payload

Free load handling position (in a few steps)



Definition of payload
(1) Main front unit
(2) Centre of gravity
(3) Four supports

Specify the characteristic values of the payload

Parameter (front and rear supports)		mm	%
Distance from the centre of the load	X		mm
	Y		mm
	Z		mm
Working or penetration at the front unit	☐ No		%
	☐ Yes		%

Linear gantries

Key features

FESTO

Result of calculation

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

The following are available immediately:

- CAD model
- Technical data for the selected system
- Price information

Result of calculation

Find your handling solution in a few steps

Select the appropriate system and continue with the configuration: 1

Qty	Qty	System series	System workload	Repetitive accuracy (x/z)
1	1	YOC-2	64 %	±0.05 mm
1	2	YOC-2	17 %	±0.05 mm
1	3	YOC-2	64 %	±0.05 mm
1	4	YOC-2	17 %	±0.05 mm
1	5	YOC-2	64 %	±0.05 mm

2D linear gantry YOC-2 (1)

Drive module	Drive units	Motor type	Motor position	Motor controller	Minimum voltage phases	Motor workload	Drive workload	Axis workload
1 module SoftDrive EDC 60	2 x	Series motor SMD 60	Left	CMS 60	1 phase	30 %	3 %	3 %
2 module Tension arm EDC 70	None	Series motor SMD 60	Top	CMS 60	1 phase	30 %	31 %	64 %

Notes:
The calculation is subject to the following requirements:
• Operating pressure 1 bar
• Motor and motor controller for 1 phase
• No loading on external drive shaft and

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

Your handling solution

Find your handling solution in a few steps

Your selected system overview

Your system	Value
Characteristics	
Handling type	2D linear gantry
Payload	12 kg
Repeatability error	0.05 mm
Drive system of the Y-axis	Electric servo motor
Drive system of the Z-axis	Electric servo motor
Working stroke in Y direction	200 mm
Working stroke in Z direction	200 mm
Motor position on the Y-axis	Left
Feedback interface	10 speed or 10 speed integrated
AC 1 phase	230 V
AC 3 phase	400 V
Travel, vertical 1 in Z direction	200 mm
Travel, horizontal in Y direction	200 mm
Travel, vertical 2 in Z direction	200 mm
Travel time	10 s



Your final step:

Send request

Linear gantries

Key features

FESTO

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 HGO configurator on the “Result of calculation” page.

Result of calculation
Find your handling solution in a few steps

Select the appropriate system and continue with the configuration:

No.	System series
1	YHCL-0
2	YHCL-0
3	YHCL-0
4	YHCL-0
5	YHCL-0

2D linear gantry YHCL-0 #1

Drive module	Clear width	Motor type
Y-module toothed belt axis EGC-00	31	Drive motor EMMD-00
Z-module toothed belt axis EGC-00	NONE	Drive motor EMMD-00

Drives/axes

Y-axis

Toothed belt axis EGC-TB-KF



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

Toothed belt axis EGC-HD-TB



- Electrical
- 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



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

Toothed belt axis EGC-TB-KF



- Electrical
- Rigid, closed profile
- Recirculating ball bearing guide for high loads and torques
- High dynamic response and minimum vibration
- Small toothed disc diameter

Cantilever axis DGEA



- Electrical
- High rigidity
- High load capacity
- High dynamic response

Linear gantries

Key features

FESTO

Drives/axes

Z-axis

Spindle axis EGC-BS-KF



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

Possible axis combinations ¹⁾		
Size	Y module	Z module
YXCL-1	• Toothed belt axis EGC-50-TB-KF	• Mini slide pneumatic: DGSL-6 • electrical: 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 • electrical: 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 • electrical: 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

1) Drive package depending on configuration selected.

Linear gantries

Key features

FESTO

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 HGO configurator on the “System configuration” page.

The screenshot shows the 'System configuration' page of the HGO configurator. It is divided into two main sections: 'EMMS motor and motor controller package' and 'EMMS motor package'. The first section includes options for 'Motor type' (set to 'Dynamic brushless'), 'Encoder' (set to 'Digital absolute displacement'), and 'Brake' (set to 'Optional'). The second section includes options for 'Motor controller' (set to 'CMMP-AS') and 'Motor package' (set to 'CMMS-ST').

Motors and controllers

Servo motors EMMS-AS



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

Options:

- With or without brake
- Type of encoder: single-turn or multi-turn

Gear unit EMGA



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

Stepper motors EMMS-ST



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

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

Options:

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

- Fieldbus interface
 - 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

Options:

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

- Fieldbus interface
 - CANopen
 - DeviceNet
 - PROFIBUS DP

Linear gantries

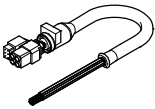
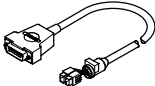
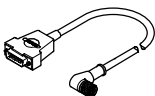
Ordering data – Accessories

FESTO

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
Y module	
EHMY-...-EGC-50-TB-KF	EMMS-AS-40-M-LS-...
EHMY-...-EGC-80-TB-KF	EMMS-AS-70-S-LS-...
EHMY-...-EGC-120-TB-KF	EMMS-AS-100-S-HS-...
EHMY-...-EGC-125-TB-HD	EMMS-AS-70-S-LS-...
EHMY-...-EGC-160-TB-HD	EMMS-AS-100-S-HS-...
EHMY-...-EGC-185-TB-KF	EMMS-AS-100-S-HS-...
EHMY-...-EGC-220-TB-HD	EMMS-AS-140-S-HS-...
Z module	
EHMZ-DGEA-18-TB-KF	EMMS-AS-55-S-LS-...
EHMZ-DGEA-25-TB-KF	EMMS-AS-70-S-LS-...
EHMZ-DGEA-40-TB-KF	EMMS-AS-100-S-HS-...
EHMZ-EGC-70-BS-KF	EMMS-AS-55-S-LS-...
EHMZ-EGC-80-BS-KF	EMMS-AS-70-S-LS-...
EHMZ-EGC-120-BS-KF	EMMS-AS-100-S-HS-...
EHMZ-EGSL-35-BS-KF	EMMS-ST-28-L-...
EHMZ-EGSL-45-BS-KF	EMMS-AS-40-M-LS-...
EHMZ-EGSL-55-BS-KF	EMMS-AS-55-S-LS-...
EHMZ-EGSL-75-BS-KF	EMMS-AS-70-S-LS-...

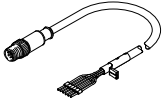
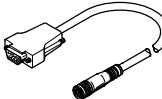
Designation	Description	Cable length	Part No.	Type
For servo motor				
Motor cable ¹⁾				
	• For servo motor EMMS-AS-40-M-LS-.../ EMMS-AS-55-S-LS-...	5 m	550306	NEBM-T1G8-E-5-Q7N-LE8
		10 m	550307	NEBM-T1G8-E-10-Q7N-LE8
		15 m	550308	NEBM-T1G8-E-15-Q7N-L
Motor cable ¹⁾				
	• For servo motor EMMS-AS-70-S-LS-.../ EMMS-AS-100-S-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
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-100-S-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

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

Linear gantries

Ordering data – Accessories

FESTO

Designation	Description	Cable length	Part No.	Type
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 cable 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)	■	■	■	–	–

Linear gantries

Ordering data – Accessories

FESTO

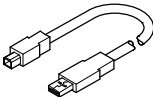
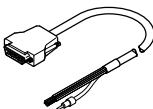
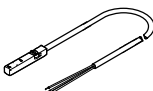
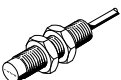
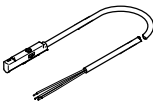
Standard components within the handling system

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 HGO configurator on the “System configuration” page.

System configuration

First accessories section is shown below

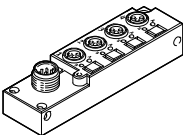
Electrical system	Axis	
Minimum cable length from energy chain outlet	Slide	
Additional modules and plug-in modules (series 2 components)		
Pneumatics	Slide	
Number of additional slides	Energy chain	
Slide diameter of additional selective (optional)	Slide	
Minimum cable length from energy chain outlet		
Availability		
Accounting method	Completed quantity	
Production documentation	Downloaded	
	English	

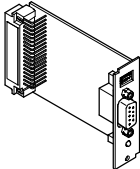
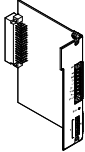
Designation	Description	Cable length	Part No.	Type	
Programming cable					
	High-speed USB 2.0 connecting cable	1.8 m	1501332	NEBC-U1G4-K-1.8-N-U2G4	
Control cable					
	For I/O interface to any controller	2.5 m	552254	NEBC-S1G25-K-2.5-N-LE26	
Proximity sensor (inductive) for sensing the position of 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 DC 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 DC 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 (magneto-resistive) for sensing the position of the slide on the Z-axis					
	Cable with open end				
	- For mini slide DGSL - For DC 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

Linear gantries

Ordering data – Accessories

FESTO

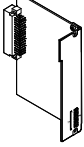
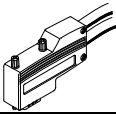
Designation	Description	Cable length	Part No.	Type
Plug socket with cable				
	• Connection between multi-pin plug distributor and control cabinet	5 m	525618	SIM-M12-8GD-5-PU
		10 m	570008	SIM-M12-8GD-10-PU
Plug connector				
	• For connection to the multi-pin plug distributor	–	562024	NECU-S-M8G3-HX
Multi-pin plug distributor				
	• With the help of the multi-pin plug distributor, electrical signals such as end-position sensing can be collectively transferred Options: – 4 individual connections – 6 individual connections	–	574586	NEDU-L4R1-M8G3L-M12G8
			574587	NEDU-L6R1-M8G3L-M12G8

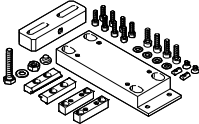
Designation	Description	Part No.	Type
Interface			
	For additional I/Os	567855	CAMC-D-8E8A
	For DeviceNet	547451	CAMC-DN
	For EtherCAT	567856	CAMC-EC
	For EtherNet/IP	1911917	CAMC-F-EP
	For PROFINET RT	1911916	CAMC-F-PN
	For PROFIBUS DP	547450	CAMC-PB
Safety module			
	For safe torque off (STO)	1501330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

Linear gantries

Ordering data – Accessories

FESTO

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 of the motor controller CMMP-AS-...-M3	1501329	CAMC-DS-M1
Bus connection			
	For DeviceNet interface	525635	FBSD-KL-2X5POL
Plug connector			
	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
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

Linear gantries

Programming aid

FESTO

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 device types
- 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

