Linear gantries

FESTO



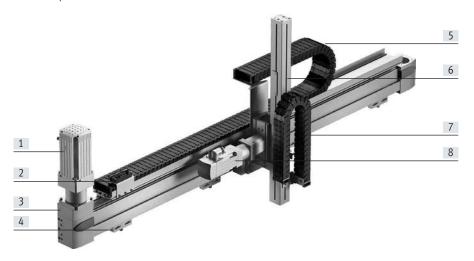
At a glance

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

Description of the modules

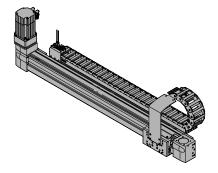
Y-module

Structure:

The Y-module EHMY comprises a linear axis which is powered by a servo motor. Adapters are mounted 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 a proximity sensor (if a sensor package has been selected)

Sample image:



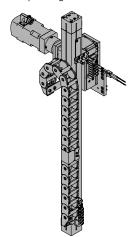
Description of the modules

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:



YZ-module (EXCT)

Structure:

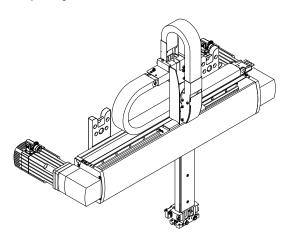
Two fixed servo motors drive a toothed belt arranged in a T-shape.

The toothed belt moves the slide of the Y-axis and the interface located on the Z-axis in a 2-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 enable 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. usable stroke	Y: 1900 mm	Y: 3000 mm	Y: 3000 mm	Y: 3000 mm	Y: 1000 mm	Y: 1500 mm	Y: 2000 mm
	Z: 50 mm	Z: 800 mm	Z: 800 mm	Z: 800 mm	Z: 200 mm	Z: 500 mm	Z: 800 mm
Max. payload	Dependent on the selected dynamic response						
Mounting position	Horizontal						

¹⁾ Drive package depending on configuration selected.

Configurator: Handling Guide Online (HGO)

Selecting a handling system

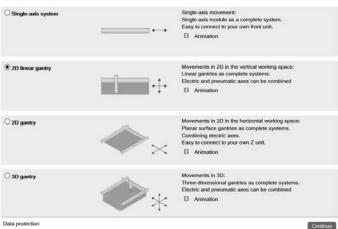
Planning complex handling systems takes a lot of time. You can use the configurator "Handling Guide Online" (HGO) to design a customised handling system for your application in just a few steps.

You can choose from the following systems:

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

Selecting the handling solution

Select your handling system



Advantages:

- · Automatic selection of all relevant components
- Automatic design and calculation of workload
- Quote created automatically
- CAD model available immediately
- Fully automated processing
- Fully assembled or unassembled systems can be ordered 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

Axis definition and payload Axis definition Drive system of the axis Y Electric: several positions Z Electric: several positions V Electric: several p

Back Continue

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

Result of calculation Selection Filter YXML-1 11 % 0.1 mm YXCL-1 44 % 0.08 mm 95 % YXCL-3 0.08 mm YXCL-2 34 % 0.08 mm 25 % YXCL-2 11 on controller for interpolation (e.g. CPX-E-CEC-M1- ...) 20 linear gantry YXML-1: #1 YZ module: Linear gantry EXCT-15 Kinematics type 200 mm/100 mm Type of motor Servo motor EMMS-AS

System overview

Data protection

You will be given an overview of the whole system.

You will also have the following options:

Request price

Back Continue

- Send request
- Add to basket



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



- 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

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

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.

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





- 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 ratioi = 3 and 5
- · Life-time lubrication

Motor controllers 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
- Bus protocols
 - CANopen
 - DeviceNet
 - EtherCAT
 - EtherNet/IP
 - PROFIBUS DPPROFINET

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
- 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			
EHMYEGC-50-TB-KF	-	EMME-AS-40-S-LV	EMMS-ST-57-M
EHMYEGC-80-TB-KF	EMMS-AS-55-S-LS	EMME-AS-60-M-LS	EMMS-ST-57-S
EHMYEGC-120-TB-KF	EMMS-AS-100-S-HS	EMME-AS-80-S-LS	EMMS-ST-87-S
EHMYEGC-125-TB-HD	EMMS-AS-70-S-LS	EMME-AS-60-M-LS	EMMS-ST-57-S
EHMYEGC-160-TB-HD	EMMS-AS-100-S-HS	EMME-AS-80-S-LS	EMMS-ST-87-S
EHMYEGC-185-TB-KF	EMMS-AS-100-M-HS	EMME-AS-100-M-HS	-
	EMMS-AS-140-S-HS		
EHMYEGC-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.	Туре				
For servo motor								
Motor cable ¹⁾								
	For servo motor EMMS-AS-40-M-LS/	5 m	550306	NEBM-T1G8-E-5-Q7N-LE8				
	EMMS-AS-55-S-LS	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/	5 m	550310	NEBM-M23G8-E-5-Q9N-LE8				
	EMMS-AS-70-M-LS/EMMS-AS-100-S-HS/	10 m	550311	NEBM-M23G8-E-10-Q9N-LE8				
	EMMS-AS-100-M-HS/EMMS-AS-140-S-HS	15 m	550312	NEBM-M23G8-E-15-Q9N-LE8				

Cables especially suitable for the motor controller and motor.

Degree of protection to IP65 (in assembled state)

Linear gantries

Ordering data - Accessories

Designation	Description	Cable length	Part no.	Туре
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/	5 m	550318	NEBM-M12W8-E-5-N-S1G15
	EMMS-AS-70-M-LS/EMMS-AS-100-S-HS/	10 m	550319	NEBM-M12W8-E-10-N-S1G15
	EMMS-AS-100-M-HS/EMMS-AS-140-S-HS	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
Winds of the last		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
ST. DE ST		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 minimum length available from the energy chain output is the connection length specified when ordering.
- 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)	•	•	•	-	-

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.	Туре
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 interfa	ce 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-a	xis			
	Cable with open end				
	For toothed belt axis EGC-TB, EGC-HD-TB	PNP, N/C contact	7.5 m	551391	SIES-8M-PO-24V-K-7.5-OE
	For spindle axis EGC-BS	PNP, N/O contact	7.5 m	551386	SIES-8M-PS-24V-K-7.5-0E
	For mini slide EGSL	NPN, N/C contact	7.5 m	551401	SIES-8M-NO-24V-K-7.5-0E
	For direct voltage Included if a "Festo sensor package" is selected: For EGC: 2 For EGSL: 1	NPN, N/O contact	7.5 m	551396	SIES-8M-NS-24V-K-7.5-0E
Proximity sensor (inductive)	for sensing the position of the slide on the Z-axis				
<i>^</i>	Cable with open end				
	For cantilever axis DGEA	PNP, N/C contact	2.5 m	150398	SIEN-M8NB-PO-K-L
	For direct voltage	PNP, N/O contact	2.5 m	150394	SIEN-M8NB-PS-K-L
	Included if a "Festo sensor package" is selected:	NPN, N/C contact	2.5 m	150396	SIEN-M8NB-NO-K-L
- 1	2	NPN, N/O contact	2.5 m	150392	SIEN-M8NB-NS-K-L
Provimity concor (magneter	esistive) for sensing the position of the slide on th	a 7-avis			•
Proximity sensor (magnetor	Cable with open end	E Z-dAIS			
	For mini slide DGSL	PNP, N/O contact	2.5 m	551373	SMT-10M-PS-24V-E-2.5-L-0E
	For direct voltage	NPN, N/O contact	2.5 m	551377	SMT-10M-NS-24V-E-2.5-L-OE
	Included if a "Festo sensor package" is selected:	in it, it o contact	2.5 111	331377	3111 1011 113 244 2 2.3 2 0 2
Proximity sensor for sensing	the position of the slide on the Y/Z-axis	·			·
January School St. School St. School St. School St. School St. St. School St.	• For EXCT	N/C contact	-	174552	SIES-Q8B-PO-K-L
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\					

Designation	Description	Cable length	Part no.	Туре
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				
8	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, electrical signals such as for	_	574586	NEDU-L4R1-M8G3L-M12G8
	end-position sensing can be transferred collectively Options: - 4 individual connections - 6 individual connections		574587	NEDU-L6R1-M8G3L-M12G8
Designation	Description		Part no.	Туре
Interface				
MAN .	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.	Туре				
Switch module	Switch module						
	If the safety module CAMC-G-S1 is not used, the switch module is absolutely essential for operating the motor controller CMMP-ASM3	1501329	CAMC-DS-M1				
Bus connection							
	For DeviceNet interface	525635	FBSD-KL-2X5POL				
Plug							
	For CANopen interface For PROFIBUS interface	533783 533780	FBS-SUB-9-WS-CO-K FBS-SUB-9-WS-PB-K				
Designation	Description	Part no.	Туре				
Braking resistor							
	• For EXCT-15	2882342	CACR-LE2-50-W500				
	• For EXCT-30/100	2882343	CACR-KL2-40-W2000				

Linear gantries

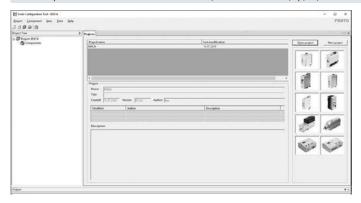
Ordering data – Accessories

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

Programming aid

FCT software - Festo Configuration Tool

Software platform for electric drives from Festo (→ www.festo.com/sp/fct)



- 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: 1877 463 3786 Fax: 1877 393 3786



2 Festo Pneumatic

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

Multinational Contact Center

01 800 337 8669



3 Festo Corporation

1377 Motor Parkway Suite 310 Islandia, NY 11749



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







www.festo.com/socialmedia

