FESTO



Key features

At a glance

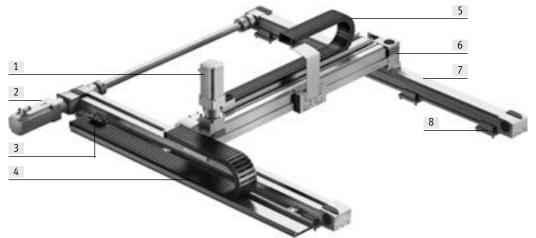
The planar surface gantry facilitates movement in 2D space.

Depending on the requirements, the gantry is either composed of several axis modules (YXCF) or using the planar surface gantries EXCM or EXCH (YXMF). All of these are triedand-tested components from Festo.

- Can be used universally for handling light to heavy workpieces or high payloads
- Especially suitable for very long strokes
- High mechanical rigidity and sturdy design
- Freely positionable/any intermediate positions

Range of application:

- For any movements in 2D space
- Very high requirements for precision and/or very heavy workpieces combined with long strokes



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

Description of the modules

X-module

Structure:

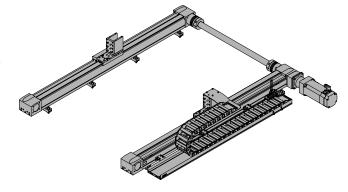
The X-module EHMX comprises two parallel toothed belt axes which are connected by a connecting shaft. They are powered by a servo motor.

Adapters are mounted on the slides of the X-axes 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
- Multi-pin plug distributor for the proximity sensor (if sensor package has been selected)

Sample image:



Description of the modules

Y-module

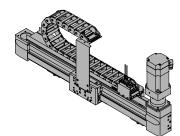
Structure:

The Y-module EHMY comprises a linear axis which is powered by a servo motor. 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
- Multi-pin plug distributor for the proximity sensor (if sensor package has been selected)

Sample image:



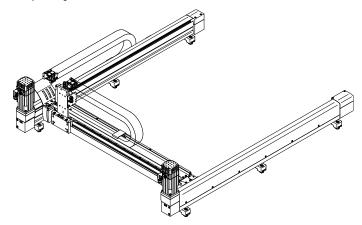
XY-module (EXCM, EXCH)

Structure::

A slide is moved in a 2-dimensional space (X-axis/Y-axis) via a toothed belt. The system is powered by two fixed motors that are coupled to the toothed belt. The belt is guided via pulleys so that the slide can move to any position in a working space when the motors are actuated.

When using attachment components, additional processes can be carried out by independent Z-axes.

Sample image:



Dispatch options

Fully assembled:

The planar surface gantry is fully assembled. All cables 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 planar surface gantry is delivered partially assembled. This means that both axis modules (X-/Y-axis) are assembled, each with 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 overview1)

- ,							
Size	YXCF-1	YXCF-2	YXCF-3	YXCF-4	YXMF-1	YXMF-2	YXMF-3
Max. working stroke	X: 1900 mm	X: 3000 mm	X: 3000 mm	X: 3000 mm	X: 700 mm	X: 2000 mm	X: 2500 mm
	Y: 1900 mm	Y: 2000 mm	Y: 2000 mm	Y: 2000 mm	Y: 510 mm	Y: 1000 mm	Y: 1500 mm
Max. payload	Dependent on the selected dynamic response						
Required flatness of the mounting surface	≤ 0.1 mm/m						
Mounting position	Horizontal						

 $1) \quad \hbox{ Drive package depends on configuration selected.}$

Key features

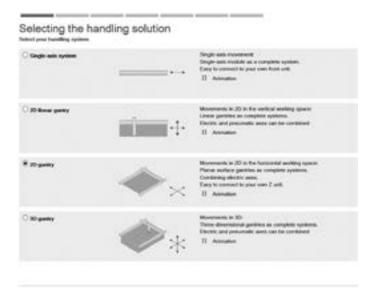
Configurator: Handling Guide Online (HGO)

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
- Planar surface gantry
- 3-dimensional gantry

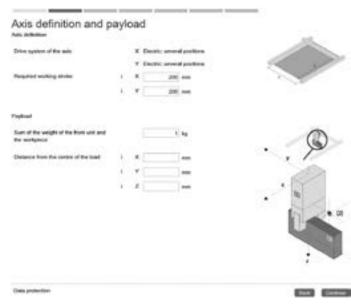


Advantages:

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



→ Internet: www.festo.com/catalogue/...

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



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

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

Y-axis

Toothed belt axis EGC-TB-KF



, KI

- 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

Possible axis combinations¹⁾ Size Y-module X-module YXCF-1 Toothed belt axis Toothed belt axis EGC-50-TB-KF EGC-50-TB-KF YXCF-2 Toothed belt axis Toothed belt axis EGC-80-TB-KF EGC-80-TB-KF Toothed belt axis with heavy-duty guide EGC-HD-125-TB YXCF-3 · Toothed belt axis Toothed belt axis EGC-120-TB-KF EGC-120-TB-KF Toothed belt axis with heavy-duty guide EGC-HD-160-TB YXCF-4 Toothed belt axis Toothed belt axis EGC-185-TB-KF EGC-185-TB-KF Toothed belt axis with heavy-duty guide EGC-HD-220-TB YXMF-1 • Planar surface gantry Planar surface gantry EXCM-30 EXCM-30 YXMF-2 Planar surface gantry Planar surface gantry EXCM-40, EXCH-40 EXCM-40, EXCH-40 YXMF-3 Planar surface gantry Planar surface gantry EXCH-60 EXCH-60

¹⁾ Drive package depends 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



Stepper motors EMMS-ST



- Dynamic, brushless, permanently excited servo motor
- Digital absolute displacement encoder in single-turn or multi-turn version
- · With optional brake
- 2-phase hybrid technology
- Step angle 1.8°
- With optional brake

Servo motors EMME-AS



Gear unit EMGA



- Dynamic, brushless, permanently excited servo motor
- Digital absolute displacement encoder in single-turn or multi-turn version
- · With optional brake
- Low-backlash planetary gear
- Gear ratioi = 3 and 5
- · Life-time lubrication

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.

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 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
- Bus protocols
 - CANopen
 - DeviceNet
 - PROFIBUS DP

Controller CMXH-ST2, for stepper motor



 The controller controls two stepper motors in servo mode which drive an H-shaped recirculating toothed belt. The toothed belt moves a slide whose position is calculated by the controller using the encoder signals from the motors

Options:

- Safety function: safe torque off (STO)/category 3, Performance Level e
- Bus protocols
 - I/O interface
 - CAN interface
 - Ethernet TCP/IP

Module/motor combinations

We recommend that the planar surface 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			
X-module						
EHMX-EGC-50-TB-KF	-	EMME-AS-40-M-LV	EMMS-ST-42-S			
EHMX-EGC-80-TB-KF	EMMS-AS-70-M-LS	EMME-AS-60-M-LS	EMMS-ST-57-S			
EHMX-EGC-120-TB-KF	EMMS-AS-100-M-HS	EMME-AS-80-S-LS	-			
EHMX-EGC-185-TB-KF	EMMS-AS-140-L-HS	-	-			
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					
XY-module (EXCM, EXCH)						
EXCM-30	-	-	EMMS-ST-42-S			
EXCM-40	-	-	EMMS-ST-57-M			
EXCH-40	EMMS-AS-70-M-LS	-	-			
EXCH-40	EMMS-AS-100-S-HS	-	-			
EXCH-60	EMMS-AS-100-M-HS	-	-			
EXCH-60	EMMS-AS-140-S-HV	-	-			

Ordering data - Accessories

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
		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
O's	EMMS-AS-100-M-HS/EMMS-AS-140-S-HS/ EMMS-AS-140-L-HS	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/	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/ EMMS-AS-140-L-HS	15 m	550320	NEBM-M12W8-E-15-N-S1G15
For stepper motor			·	·
Motor cable ¹⁾				
	For stepper motor EMMS-ST-42-S/EMMS-ST-57-M	2.5 m	1450369	NEBM-S1G9-E-2.5-Q5-LE6
		5 m	1450370	NEBM-S1G9-E-5-Q5-LE6
Encoder cable ¹⁾	'			
	For stepper motor EMMS-ST-42-S/EMMS-ST-57-M and motor controller	5 m	550748	NEBM-M12G8-E-5-S1G9
	CMMS-ST	10 m	550749	NEBM-M12G8-E-10-S1G9
		15 m	550750	NEBM-M12G8-E-15-S1G9

Cables especially suitable for the motor controller and motor.

Degree of protection to IP65 (in assembled state)

Possible cable lengths

- Cables are selected so that the minimum length available from the energy chain output is the connection length specified when ordering.
- Cables 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	2 m	5 m	7 m	10 m
Motor cable	•	•	•	•
Encoder cable	•	•	•	•
Multi-pin plug connecting cable	•	•	•	•

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 int					
	For controller CMMP-AS, CMMS-ST		2.5 m	552254	NEBC-S1G25-K-2.5-N-LE26
	For controller CMXH-ST2		2.5 m	2052917	NEBC-S1H15-E-2.5-N-LE15
Proximity sensor for sen	sing the position of the slide on the X-axis				
	For EXCM-40, EXCH-40, EXCH-60	N/O contact	-	150491	SIES-V3B-PS-S-L
60 0	For EXCM-40, EXCH-40, EXCH-60	N/C contact	-	174552	SIES-Q8B-PO-K-L
Proximity sensor (induct	ive) for sensing the position of the slide on the X-	axis			
	Cable with open end				
	For toothed belt axis EGC-TB	PNP, N/C contact	7.5 m	551391	SIES-8M-PO-24V-K-7.5-OE
(E)	For direct voltage	PNP, N/O contact	7.5 m	551386	SIES-8M-PS-24V-K-7.5-OE
ľ	Included if the "Festo sensor package" is	NPN, N/C contact	7.5 m	551401	SIES-8M-NO-24V-K-7.5-OE
,	selected: • 2 pieces	NPN, N/O contact	7.5 m	551396	SIES-8M-NS-24V-K-7.5-OE
Proximity sensor (induct	ive) for sensing the position of the slide on the Y-	axis			•
	Cable with plug			,	
	For toothed belt axis EGC-TB,	PNP, N/C contact	0.3	551392	SIES-8M-PO-24V-K-0.3-M8D
THE STATE OF THE S	EGC-HD-TB	PNP, N/C contact	2.5	551393	SIES-8M-PO-24V-K-2.5-M8D
	For direct voltage	PNP, N/O contact	0.3	551387	SIES-8M-PS-24V-K-0.3-M8D
	Included if the "Festo sensor package" is	PNP, N/O contact	2.5	551388	SIES-8M-PS-24V-K-2.5-M8D
	selected:	NPN, N/C contact	0.3	551402	SIES-8M-NO-24V-K-0.3-M8D
	• 2 pieces	NPN, N/C contact	2.5	551403	SIES-8M-NO-24V-K-2.5-M8D
		NPN, N/O contact	0.3	551397	SIES-8M-NS-24V-K-0.3-M8D
		NPN, N/O contact	2.5	551398	SIES-8M-NS-24V-K-2.5-M8D

Ordering data – Accessories

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
Plugs				
	For connection to the multi-pin plug distributor	-	562024	NECU-S-M8G3-HX
Multi-pin plug distributor				
// Programmen	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				
	For additional I/Os		567855	CAMC-D-8E8A
	For DeviceNet		547451	CAMC-DN
	For DeviceNet For EtherCAT		547451 567856	CAMC-DN CAMC-EC
	For DeviceNet For EtherCAT For EtherNet/IP		547451 567856 1911917	CAMC-DN CAMC-EC CAMC-F-EP
	For DeviceNet For EtherCAT For EtherNet/IP For PROFINET RT		547451 567856 1911917 1911916	CAMC-EC CAMC-F-EP CAMC-F-PN
	For DeviceNet For EtherCAT For EtherNet/IP		547451 567856 1911917	CAMC-DN CAMC-EC CAMC-F-EP
Safety module	For DeviceNet For EtherCAT For EtherNet/IP For PROFINET RT		547451 567856 1911917 1911916	CAMC-EC CAMC-F-EP CAMC-F-PN

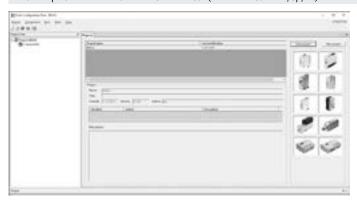
Designation	Description	Part no.	Туре				
Switch module	witch module						
	If the safety module CAMC-G-S1 is not used, the switch module is absolutely essential for operating the motor controller CMMP-ASM3	1501329	CAMC-DS-M1				
Bus connection							
	For DeviceNet interface	525635	FBSD-KL-2X5POL				
Plugs							
	For CANopen interface For PROFIBUS interface	533783	FBS-SUB-9-WS-CO-K FBS-SUB-9-WS-PB-K				
Designation	Description	Part no.	Туре				
Braking resistor		·					
	For EXCH-40 Essential in the case of a vertical mounting position	2882342	CACR-LE2-50-W500				
	For EXCH-60 Essential in the case of a vertical mounting position	2882343	CACR-KL2-40-W2000				

Designation	Description			Туре
Mounting kit				
	Mounting kit for the energy chain and a Z-axis, such as EGSL, DGSL	• EXCM-30	4070088	EAHT-E9-FB-3D-30
Adjusting kit				
	Height-adjustable mounting kit	• EXCM-30	4070088	EADC-E11-30
Sensor mounting	,			
-13 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	For homing in combination with third-party motors	• EXCM-30	4070088	EAPR-E11-30
Sensor mounting				
	• For mounting the proximity sensors SIES-Q8B,	• EXCM-40, EXCH-40	2536353	EAPR-E12-40
	SIES-V3B on the X-axis	• EXCH-60	2478805	EAPR-E12-60
Energy chain			-	
	For routing the cables for the Z-axis	• EXCM-30	8059999 8060324	EADH-U-3D-40
Connector set				
₹%	Holder for mounting the energy chain	• EXCM-30	8060325	EAHT-AE-3D-30
388			8060326	EAHT-AE-3D-40
Adjusting tool				
	For aligning and checking the flatness of the plate the second seco	anar surface gantry	3197697	EADT-W-E12
Adjusting kit				
la 🗪	Used to mount the handling system on the	EHMYEGC-50-TB-KF	8047565	EADC-E15-50-E7
	supporting surface	EHMYEGC-80-TB-KF	8047566	EADC-E15-80-E7
	Can be used to easily compensate for any unevenness in the supporting surface	EHMYEGC-120-TB-KF EHMYEGC-185-TB-KF	8047567 8047568	EADC-E15-120-E7 EADC-E15-185-E7
Profile mounting	1			
Profile mounting	Used to mount the handling system on the sup It is not height-adjustable	porting surface	-	

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