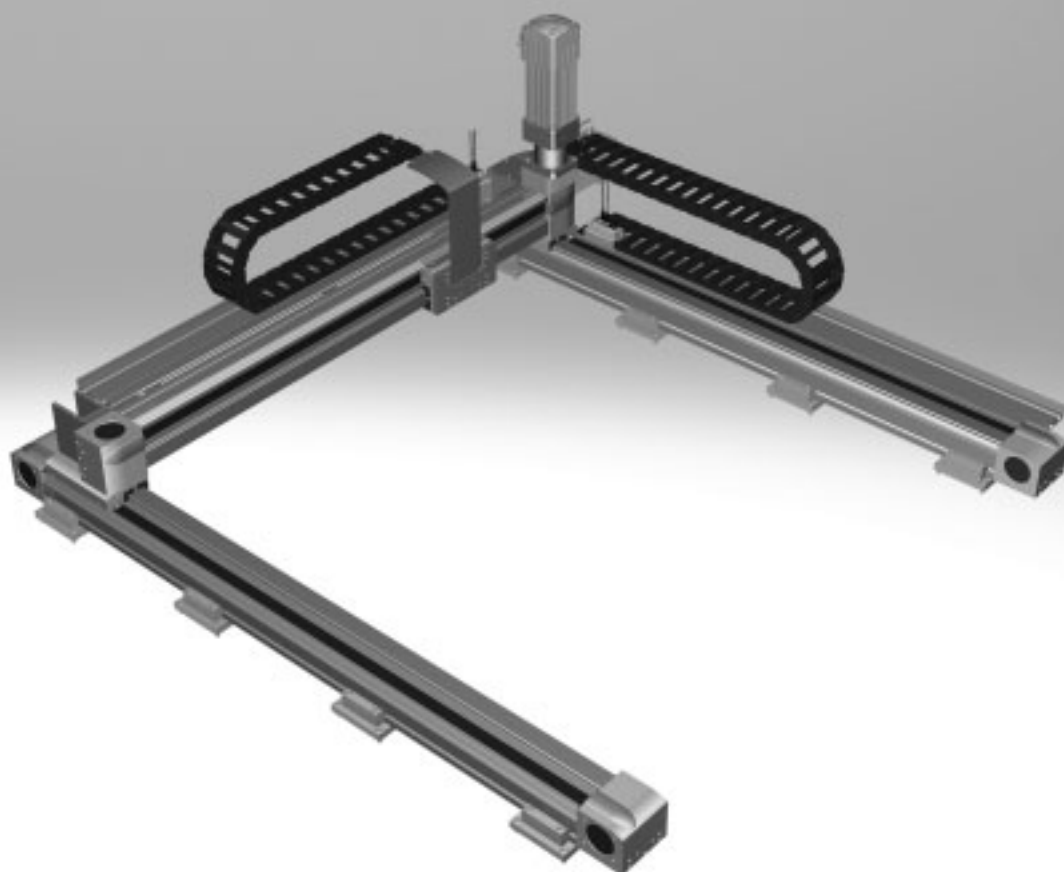


2D planar surface gantries

FESTO



2D planar surface gantries

Key features

FESTO

At a glance

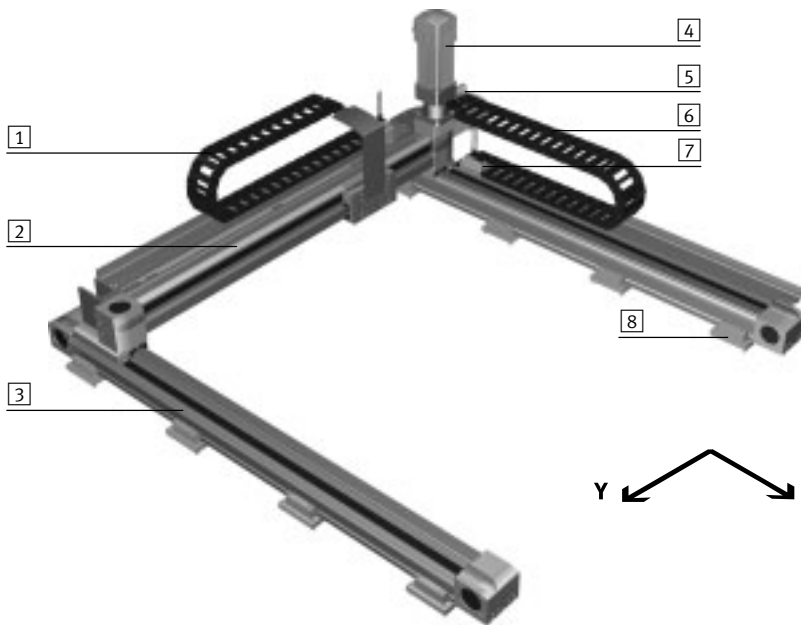
A 2D planar surface gantry (YXCF) is an assembly of several axis modules (EHM...) to produce a movement in 2D space.

- Can be used universally for handling light to very 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 Energy chain for Y module
- 2 Y-axis
- 3 X-axis
- 4 Servo motor for Y module
- 5 Servo motor for X module
- 6 Energy chain for X module
- 7 Multi-pin plug distributor which collectively transfers electrical signals such as end-position sensing
- 8 Profile mounting/adjusting kit

Description of the modules

X module

Structure:

The X module EHMx comprises 2 parallel toothed belt axes which are connected to one another by a connecting shaft. They are powered by a servo motor.

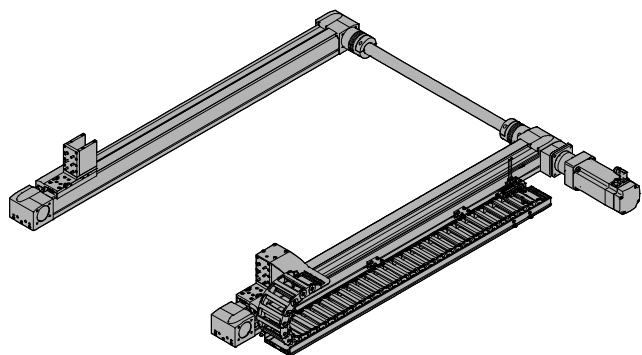
Adapters are installed on the slide of the X axes to connect the Y module.

The position of the motor and energy chain can be selected using the configurator.

The following elements are located on the motor side:

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

Sample image:



2D planar surface gantries

Key features

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Description of the modules

Y module

Structure:

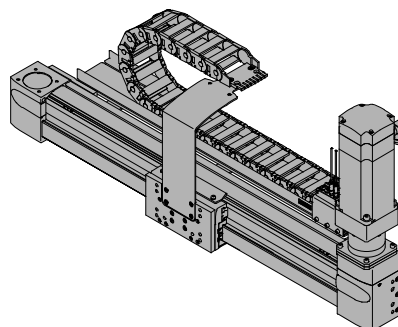
The Y module EHYM comprises a linear axis which is powered by a servo motor.

The position of the motor and energy chain is dependent on the position of the motor on the X module.

The following elements are located on the motor side:

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

Sample image:



Dispatch options

Fully assembled:

The 2D 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 evenness → table below.

Partially assembled:

The 2D planar surface gantry is delivered partially assembled. This means that both axis modules (X-/Y-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 8) are enclosed. Note evenness → table below.

System overview¹⁾

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

1) Drive package depending on configuration selected.

2D planar surface gantries

Key features

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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

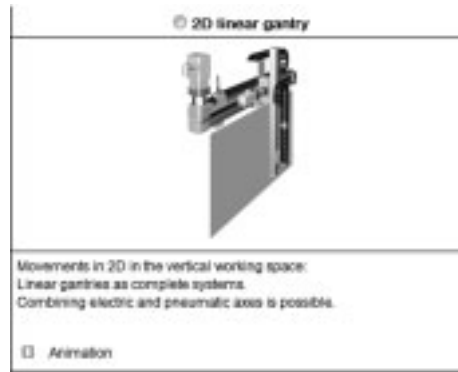
Benefits:

- 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



2D linear gantry



2D planar surface gantry



3D gantry



Entering the application data

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

Payload

Find your handling solution in a few steps

Calculation of payload
(Z/Y/X) from the center of the load

Specify the characteristic values of the payload
required distance and working stroke

	X	Y	Z
Distance from the center of the load			
Working stroke			

Handling system motion activated and

☐ No
☐ Yes

2D planar surface gantries

Key features

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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

Following the selection of the system

Select the appropriate system and continue with the configuration:

No.	System series	System workload	Repetition accuracy (µm)
1	YBCF-2	10%	0.10 mm
2	YBCF-2	8%	0.10 mm
3	YBCF-2	6%	0.10 mm
4	YBCF-2	4%	0.10 mm
5	YBCF-4	7%	0.20 mm

» 10000 »

2D gantry YBCF-2-81

Drive module	Drive units	Motor type	Motor position	Motor controller	Nominal voltage phases	Guide workload	Drive workload	Axis workload
X module (selected) YBCF-2-81	2/1	Servo motor (SMAI-AS)	Left	CUAS-AS	1 phase	10%	2%	4%
Y module (selected) YBCF-2-81	2/1	Servo motor (SMAI-AS)	NULL	CUAS-AS	1 phase	10%	2%	4%

Notes:

The calculations are subject to the following requirements:

- Operating pressure 1 bar
- Motor and motor controller from Festo
- No loading or axial motion at the end of the stroke

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 3D

Your selected system overview:

Characteristic	Value
Handling type	2D gantry
Payload	12 kg
Repetition accuracy	0.10 mm
Drive system (X/Y/Z axis)	Electric direct position
Drive system (X/Y/Z axis)	Electric direct position
Working distance in X direction	300 mm
Working distance in Y direction	300 mm
Motor position on the X axis	Left
Motor position on the Y axis	Left
Positioning time	10 seconds (in 1000 mm)
AC voltage	230 V
AC voltage	400 V
Travel, horizontal (X/Y direction)	300 mm
Travel, vertical (Z direction)	300 mm
Travel time	10 s

3D preview



Your next step:

Send request

2D planar surface gantries

Key features

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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	YXCF-1
☐	2	YXCF-2
☐	3	YXCF-3
☐	4	YXCF-3
☐	5	YXCF-4

2D gantry YXCF-2i, 2T

Drive module	Clear width	Motor type
X module: toothed belt axis EGC-80	2T	Servo motor EMMS-40
Y module: toothed belt axis EGC-80	2T	Servo motor EMMS-40

Drives/axes

X-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

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

Possible axis combinations ¹⁾		
Size	X module	Y module
YXCF-1	• Toothed belt axis EGC-50-TB-KF	• Toothed belt axis EGC-50-TB-KF
YXCF-2	• Toothed belt axis EGC-80-TB-KF	• Toothed belt axis EGC-80-TB-KF • Toothed belt axis with heavy-duty guide EGC-HD-125-TB
YXCF-3	• Toothed belt axis EGC-120-TB-KF	• Toothed belt axis EGC-120-TB-KF • Toothed belt axis with heavy-duty guide EGC-HD-160-TB
YXCF-4	• Toothed belt axis EGC-185-TB-KF	• Toothed belt axis EGC-185-TB-KF • Toothed belt axis with heavy-duty guide EGC-HD-220-TB

1) Drive package depending on configuration selected.

Key features

System configuration

Find appropriate location of files below

Freebsd-server and server controller package

Freebsd-server
 The requested performance data, administration data, server controller data, Freebsd-bsd and
 other software

Server location, controller location

Location of system kernel architecture

Controller interface

Controller location (in reference to any controller)

Programming status

Overclocking or trade

Other tools

Controller-A1

Performance (MHz) (Integer) 24.0

Units

Overclocking or reference frequency

☒ Yes ☐ No
☒ Yes ☐ No
 Advanced controller, single bit

☒ Yes ☐ No
☒ Yes ☐ No

Freebsd-server package

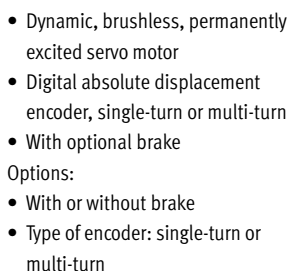
Learning status

Learning amount (bytes)

Free

Not changed

Servo motors EMMS-AS



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

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

- 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

2D planar surface gantries

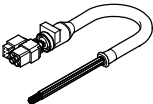
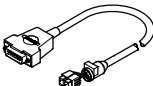
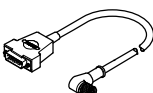
Ordering data – Accessories

FESTO

Module/motor combinations

We recommend that the 2D 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
X module	
EHM-EGC-50-TB-KF	EMMS-AS-40-M-LS-...
EHM-EGC-80-TB-KF	EMMS-AS-70-M-LS-...
EHM-EGC-120-TB-KF	EMMS-AS-100-M-HS-...
EHM-EGC-185-TB-KF	EMMS-AS-140-L-HS-...
Y module	
EHM-EGC-50-TB-KF	EMMS-AS-40-M-LS-...
EHM-EGC-80-TB-KF	EMMS-AS-70-S-LS-...
EHM-EGC-120-TB-KF	EMMS-AS-100-S-HS-...
EHM-EGC-125-TB-HD	EMMS-AS-70-S-LS-...
EHM-EGC-160-TB-HD	EMMS-AS-100-S-HS-...
EHM-EGC-185-TB-KF	EMMS-AS-100-S-HS-...
EHM-EGC-220-TB-HD	EMMS-AS-140-S-HS-...

Designation	Description	Cable length	Part No.	Type
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-.../ EMMS-AS-70-M-LS-.../EMMS-AS-100-S-HS-.../ EMMS-AS-100-M-HS-.../EMMS-AS-140-S-HS-.../ EMMS-AS-140-L-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-LE87
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-.../ EMMS-AS-140-L-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)

Possible cable lengths

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

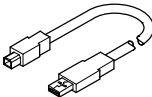
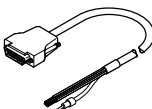
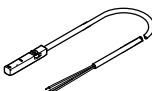
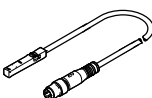
2D planar surface gantries

Ordering data – Accessories

FESTO

Standard components within the handling system

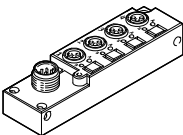
The handling system comprises a number of tried and tested standard components from Festo. Different components are used depending on the configuration. You can alter the scope and design of the accessories in the HGO configurator on the “System configuration” page.

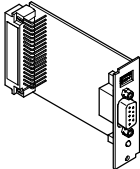
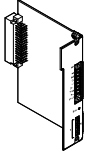
Designation	Description	Cable length	Part No.	Type	
Programming cable					
	High-speed USB 2.0 connecting cable	1.8 m	1501332	NEBC-U1G4-K-1.8-N-U2G4	
Control cable					
	For I/O interface to any controller	2.5 m	552254	NEBC-S1G25-K-2.5-N-LE26	
Proximity sensor (inductive) for sensing the position of the slide on the X-axis					
	Cable with open end				
	- For toothed belt axis EGC-TB - 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 Y-axis					
	Cable with plug				
	For toothed belt axis EGC-TB, EGC-HD-TB	PNP, N/C contact	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
		PNP, N/C contact	2.5	551393	SIES-8M-PO-24V-K-2,5-M8D
	For DC voltage	PNP, N/O contact	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		PNP, N/O contact	2.5	551388	SIES-8M-PS-24V-K-2,5-M8D
	Included if “Festo sensor package” is selected:	NPN, N/C contact	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D
		NPN, N/C contact	2.5	551403	SIES-8M-NO-24V-K-2,5-M8D
	2 pieces	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

2D planar surface gantries

Ordering data – Accessories

FESTO

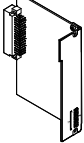
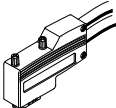
Designation	Description	Cable length	Part No.	Type
Plug socket with cable				
	• Connection between multi-pin plug distributor and control cabinet	5 m	525618	SIM-M12-8GD-5-PU
		10 m	570008	SIM-M12-8GD-10-PU
Plug connector				
	• For connection to the multi-pin plug distributor	–	562024	NECU-S-M8G3-HX
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

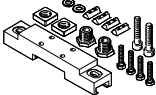
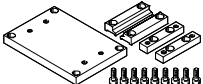
Designation	Description	Part No.	Type
Interface			
	For additional I/Os	567855	CAMC-D-8E8A
	For DeviceNet	547451	CAMC-DN
	For EtherCAT	567856	CAMC-EC
	For EtherNet/IP	1911917	CAMC-F-EP
	For PROFINET RT	1911916	CAMC-F-PN
	For PROFIBUS DP	547450	CAMC-PB
Safety module			
	For safe torque off (STO)	1501330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

2D planar surface gantries

Ordering data – Accessories

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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 the bearing surface - Can be used to compensate any unevenness in the bearing surface	EHMY-...-EGC-50-TB-KF	8047565 EADC-E15-50-E7
		EHMY-...-EGC-80-TB-KF	8047566 EADC-E15-80-E7
		EHMY-...-EGC-120-TB-KF	8047567 EADC-E15-120-E7
		EHMY-...-EGC-185-TB-KF	8047568 EADC-E15-185-E7
Profile mounting			
	- Used to mount the handling system on the bearing surface - It is not height-adjustable	-	

2D planar surface 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

