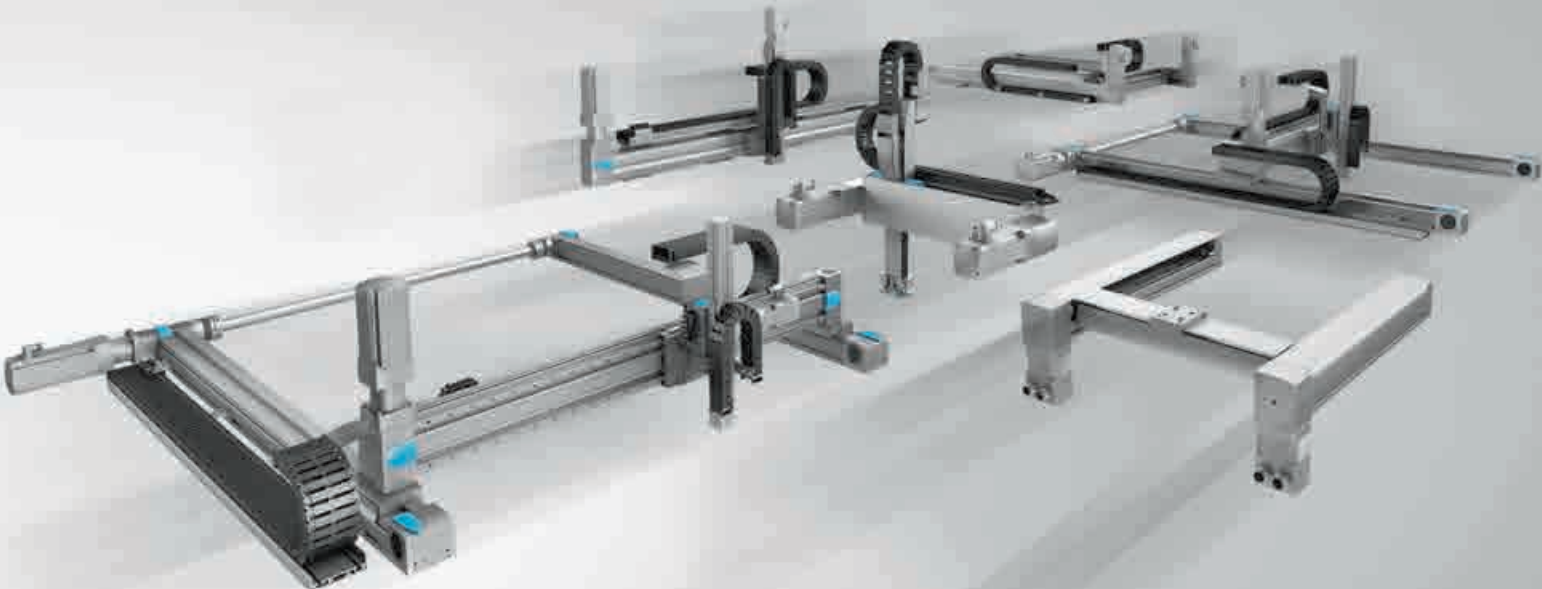


# Handling systems

**FESTO**



You need complete systems.  
You want reduced complexity.  
We are your dependable solutions partner.

→ WE ARE THE ENGINEERS  
OF PRODUCTIVITY.



#### Page 4

##### Introduction

- 4 Everything from a single source
- 6 Advantages of a Cartesian robot
- 7 Handling Guide Online

#### Page 8

##### Overviews

- 8 Overview of the different handling systems
- 10 Typical application examples
- 12 The system components in detail
- 16 Overview of standardised peripherals

#### Page 18

##### Solutions

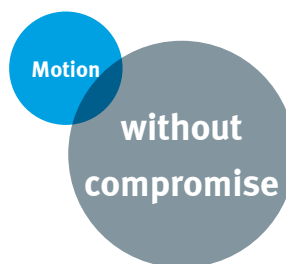
- 18 Single-axis system
- 20 Linear gantry
- 22 Highly dynamic linear gantry
- 24 Planar surface gantry
- 26 Highly dynamic planar surface gantry
- 28 Compact planar surface gantry
- 30 Three-dimensional gantry
- 32 Compact three-dimensional gantry
- 34 Cantilever systems
- 36 Advanced handling solutions

## Handling systems from Festo: versatile, economical, perfectly fitting. And always very productive.

Precisely fitting, economical, dynamic and flexible: create the perfect system using the extensive range of handling systems from Festo, from standard solutions for common applications through to customised solutions for very specific requirements.

And our ready-to-install systems, software and services reduce engineering time and effort. We support you from the design stage through to installation and commissioning. That allows you to concentrate entirely on your core business and increase your productivity.

Festo – the right partner for your new handling system.



### Page 40

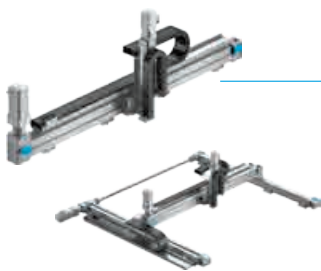
#### Peripherals and services

- 40 Motion control
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- 46 Frames
- 47 Servo-pneumatics
- 48 Services

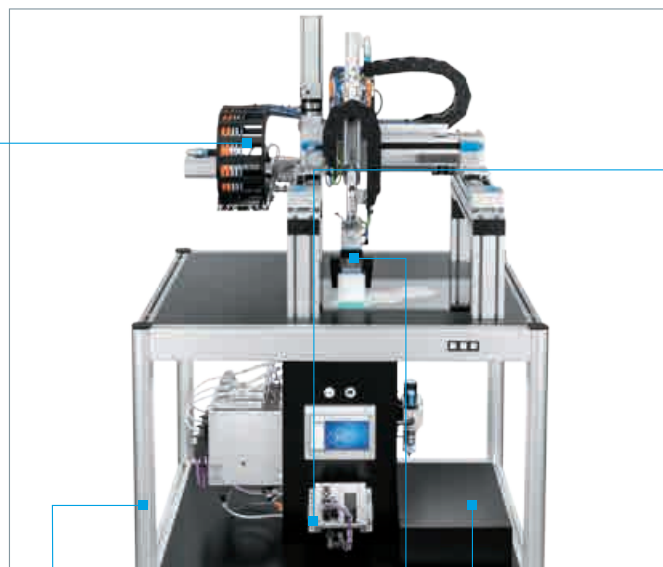
## Simply complete: everything from a single source ...

Optimally coordinated hardware, software and services from one supplier: Festo. The complete, worry-free package extends from design engineering and advice on hardware to application-specific commissioning and after-sales service and training. It will enable you to quickly put your handling system to optimum use, lower your process costs and increase system availability.

### Kinematics



Our highly dynamic mechanical systems with integrated energy chain are available in numerous sizes and stroke ranges.



### Controllers



For centralised control directly in the installation or decentralised control in the control cabinet.

### Frames



Tested frames you can rely on. Designed to match every kinematic system and application, in aluminium or steel.

### Front unit



Rotating, gripping or vacuum: you receive lightweight, precise and powerful solutions.

### Service

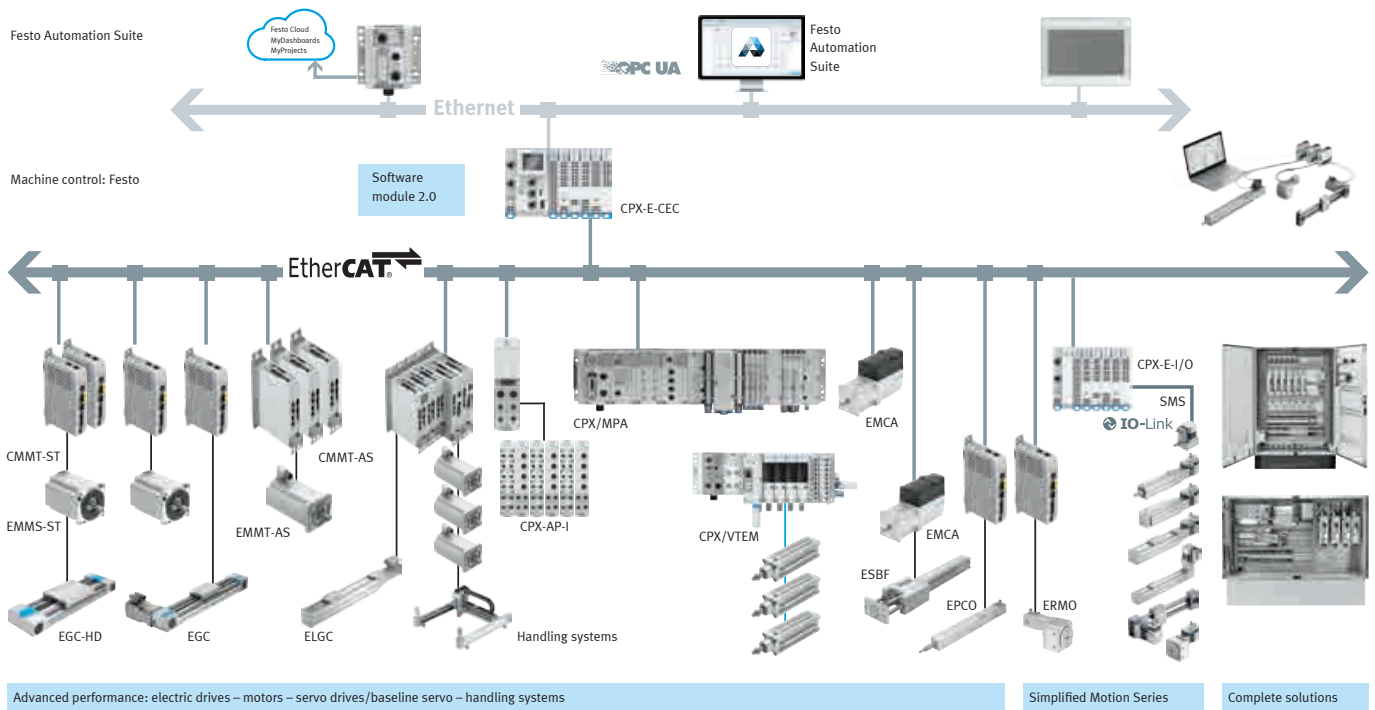


Our experts take care of your handling systems. From commissioning and training to after-sales service, we are there to help.

## ... and fully networked, right up to the cloud.

We provide support at all levels as you get started with perfect connectivity – universal, intelligent, electrical and mechanical. And with Festo as a partner, you can expand your automation expertise across all areas, from a wide range of durable components and complete systems to monitoring and control solutions. The universal interfaces help you to reach your ambitious goals step by step. That's how you get your production ready for Industry 4.0 – with compatible components, future-proof systems and everything from a single source!

### Festo automation platform



## Why is it worthwhile to use Cartesian robots?

The answer is simple: Cartesian robots from Festo offer many benefits. They are always exactly right for the task and are never oversized. In addition, the use of electric and pneumatic technologies or a mix of the two also makes them very flexible and offers excellent value for money. Moreover, the high-speed variants and compact handling systems offer full flexibility when it comes to load, dynamic response, working space and mechanical design.

The space-optimised systems with freely scalable strokes are designed specifically for the application. They require less space for movement and lend themselves more easily to customised and modular adaptation to application conditions. This enables maximum working space coverage.

Their mechanical design makes the systems easy to program; for example, only one axis needs to be activated for vertical movements.

### The quickest way ever to the right handling system

There really is no quicker or easier way: the Handling Guide Online considerably increases your engineering efficiency and gives you the certainty that your system is correctly sized. From design to delivery and installation only takes around three weeks.



### Benefits

**Fast:** the right handling system in just 20 minutes including CAD model and commissioning file.

**Intuitive:** the Handling Guide Online is very easy to use and features structured data prompts.

**Efficient:** greatly reduces engineering time and effort since the design is ready in just a few minutes.

**Planning reliability:** the net price is displayed immediately, allowing you to calculate your costs with certainty.

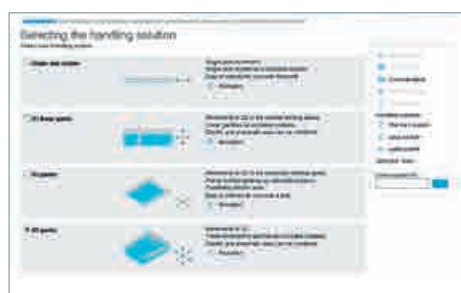
**Shorter time-to-market:** only around 3 weeks from configuration and ordering to delivery and installation. It helps you reach your goal more quickly.

**Versatile:** the Handling Guide Online now includes highly dynamic and compact handling systems. So nothing is left to be desired. If you still cannot find what you need, we will design it for you.

## The Handling Guide Online – the right handling system in just three steps

The Handling Guide Online is an all-in-one configuration and ordering system and is integrated into our online product catalogue. This unique online engineering tool helps you to configure and order your handling system. It reduces your engineering time and effort to a minimum and guides you to the right handling system in record time.

Three steps to your handling system:  
→ [www.festo.com/handling-guide](http://www.festo.com/handling-guide)



### 1st step:

Choose the type of handling system and enter your application data into the Handling Guide Online. The tool calculates appropriate handling systems, including price.



### 2nd step:

Select the most suitable handling system from the list of suggestions. The correctly configured CAD model and the data sheet with all the relevant figures are immediately available for download.



### 3rd step:

You can use additional options to configure your selected system in accordance with your requirements. Then add the preferred handling system to your shopping basket and confirm your order. Festo will deliver a ready-to-install system, including all user documentation in accordance with the EC Machinery Directive, as quickly as possible.

### Efficient commissioning:

The commissioning files are custom created in the Handling Guide Online on the basis of user input and the calculated system. They can be loaded directly into the servo drive. The sets of values are individually adapted to the handling system and consist of axis dimensions, motor characteristics, feed constants and dynamic data. A special feature is that the controller settings are automatically calculated based on the payload, the dead weight and the system dynamics entered by the user. With EPLAN, you can design and document circuit diagrams quickly and easily. This shortens the time-to-market for you or your users.

## Overview of the different handling systems

### Complete ready-to-install system solutions ...

#### 1D handling systems/ single-axis systems

**Single-axis system**  
Page 18



#### 2D handling systems/ linear gantries

**Linear gantry YXCL**  
Page 20



**Linear gantry YXCL-B**  
Page 20



**Highly dynamic linear  
gantry YXML**



#### 2D handling systems/ planar surface

**Planar surface gantry YXCF**  
Page 24



**Planar surface gantry YXCF-B**  
Page 24



**Highly dynamic three-dimensional  
gantry YXMF**  
Page 26



**Compact three-dimensional  
gantry YXMF**  
Page 28





... with the Handling Guide Online

### 3D handling systems/ three-dimensional

#### Three-dimensional gantry

Page 30



#### Three-dimensional gantry YXCR

Page 30



#### Highly dynamic three-dimensional gantry YXMR

Page 33



#### Compact three-dimensional gantry YXMR

Page 32



### 3D handling systems/ cantilever systems

#### Cantilever system YXCA

Page 34



### Advanced solutions

#### Handling modules HSP/HSW for pick & place

Page 38



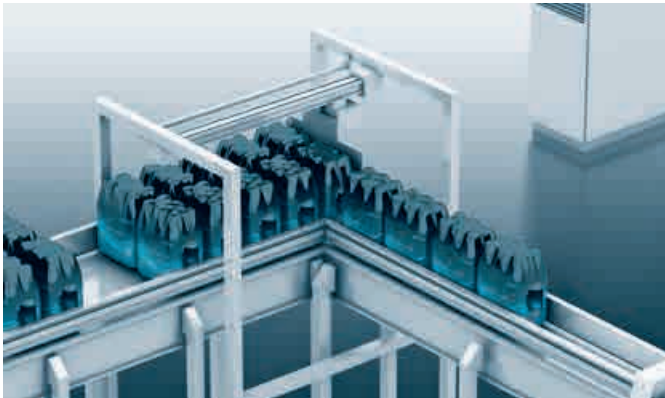
#### Compact handling system for desktop applications

Page 36

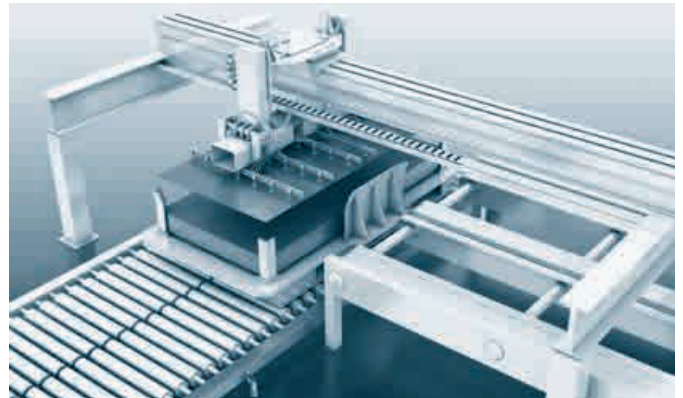


## Typical application examples of Festo handling systems

### Handling systems

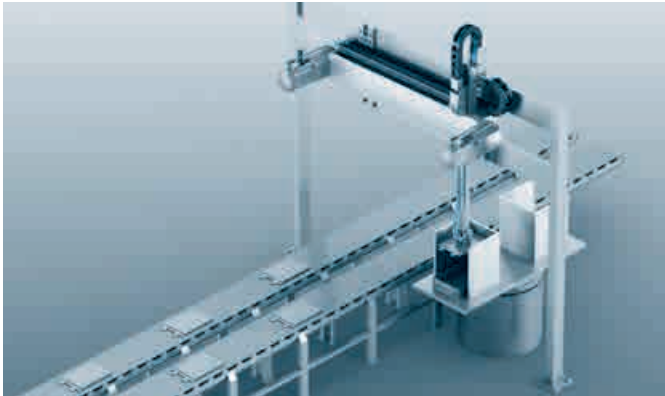


Feed separation/ejection: YXCS Page 18

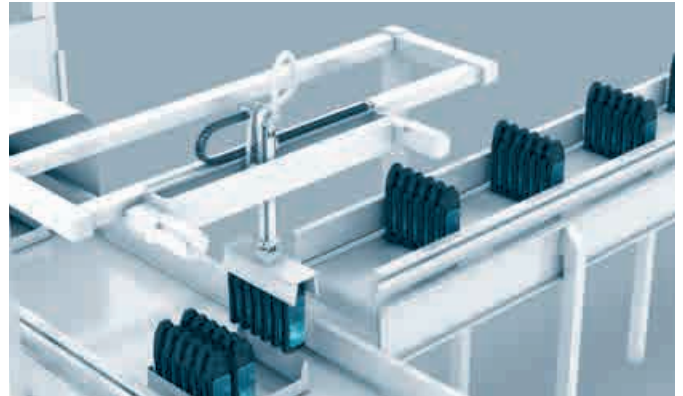


Stacking sheet metal plates: YXCL Page 20

### Highly dynamic handling systems



Stacking battery cells: YXML Page 22

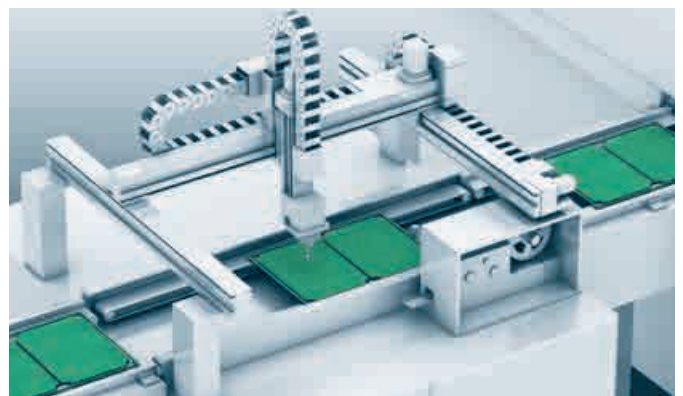


Loading crates: YXML Page 22

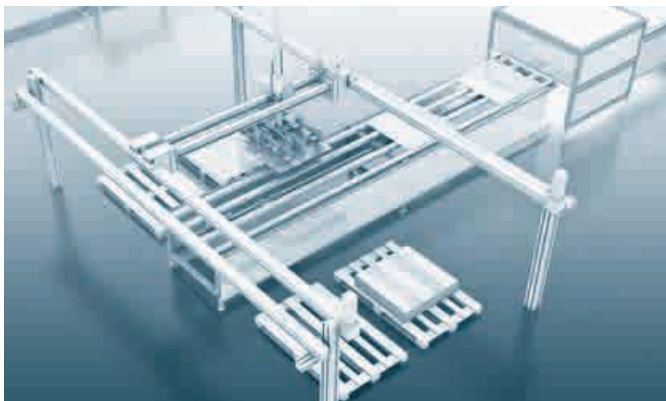
### Compact handling systems



Feeding: YXCA Page 34



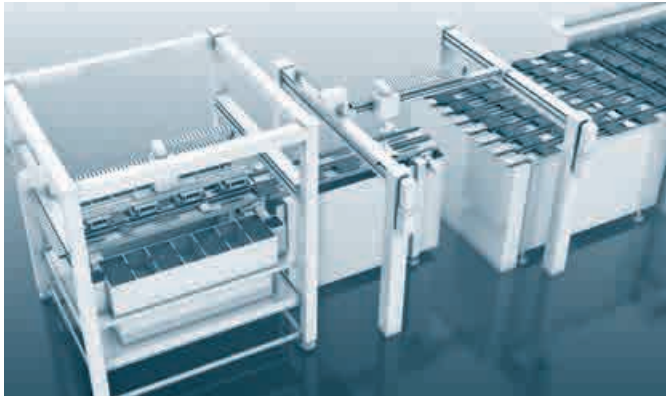
Applying labels YXMR Page 32



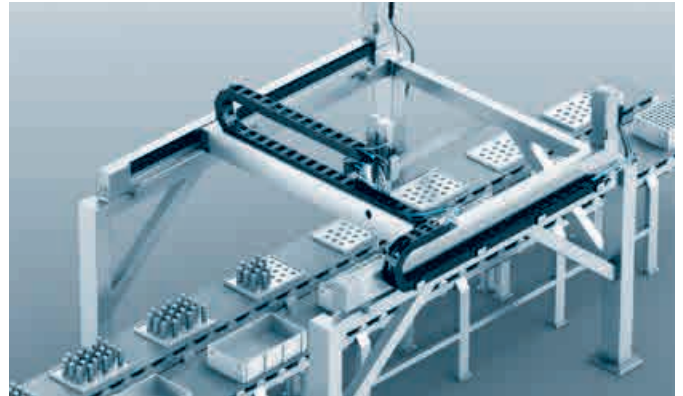
**Positioning workpieces: YXCF** Page 24



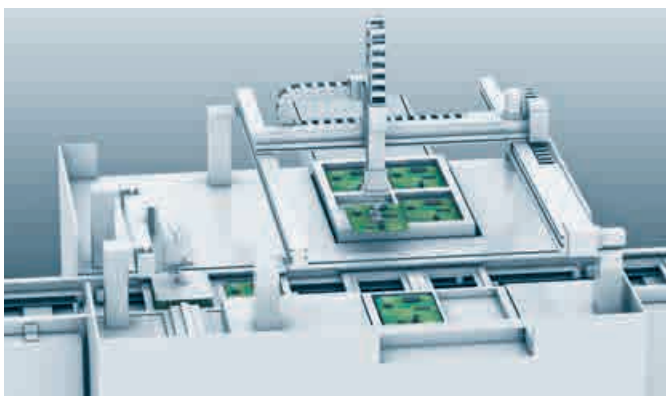
**Palletising: YXCR** Page 30



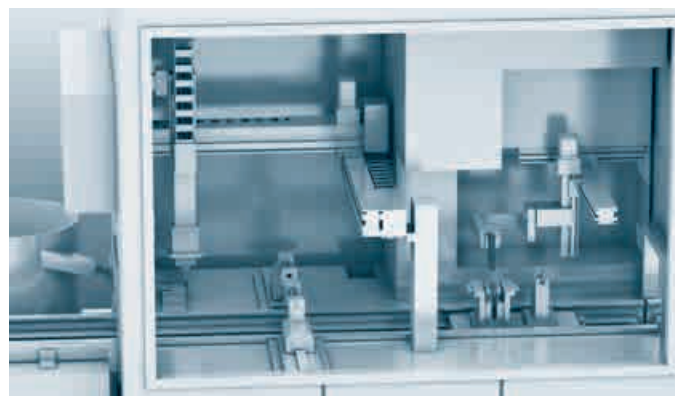
**Separating solar wafers: YXMF** Page 26



**Assembling battery modules: YXMR** Page 32



**Testing: YXMR** Page 32



**Screwing in: YXMR** Page 32

# The system components in detail

## Front unit

### Gripper fingers

### Gripping

Parallel grippers	Radial and angle grippers	Three-point grippers	Bellows gripper
DHPS	DHRS	DHDS	DHEB
HGPL	DHWS	HGDT/HGDT-F	
EHPS	HGRT	HGDD	<b>Bernoulli gripper</b>
HGPLE	HGPT-B	<b>Adaptive gripper</b>	OGGB
	HGPP	DHEF	
	HGPL-B/DHAS-GF		

### Suction cups

VAS/VAS-B

ESS/ESV

### Vacuum

Suction grippers	Suction cup holders	Vacuum generators	Intelligent vacuum generators
ESG variants	VAL/LJK	VN variants	OVEM
ESH	ESH		OVEL
			Suction cup-ejector combination

## Rotary and swivel modules

## Function combinations

DRRD



DRRD with intermediate position



DRRD with energy through-feed



DRVS



DSM-B



DSM-T



DSM-HD



DSMI with displacement encoder



ERMB



ERMO



EHMB



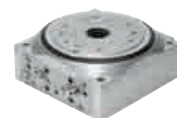
HGDS



DSL-B



DHTG



DHGT with energy through-feed



# The system components in detail

## Drives, axes and cylinders

### Pneumatics

#### Piston rod cylinders

ADN with or without guide rods

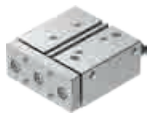


DSBC



#### Guided drives

DFM



DFM-YSRW



#### Rodless cylinders

DGC-GF



DGC-KF



DGC-HD



#### Slides

DGSL



DGST



### Servo-pneumatics

#### Drives with piston rod and displacement encoder

DNCI



DDPC



#### Rodless drives with displacement encoder

DGCI



DDLI



#### Rotary drive

DSMI



#### Valve terminals

MPA



CPX-MPA



CPV



VTEM



VTSA



#### Valves

VUVG



#### Position controllers and end-position controllers

CPX-CMAX



CPX-CMPX



#### Proportional valve

VPWP



#### Sub-base

VABP



## Electric systems

### Gantry axes and guide axes

EGC-TB/BS-KF



EGC-FA



ELGA-TB-G



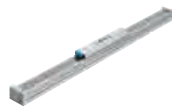
ELGA-TB-RF



ELGA-TB/BS-KF



ELFA-RF



EGC-HD-TB/BS/-KF



ELGR



ELGG



EGSK



DGE-RF



ELGC-TB



ELGC-BS



ELGT



### Cylinders and cantilever axes

EPCO



EPCC



ESBF



ELCC



EHHM



### Slides

EGSL



EGSC



### Servo and stepper motors

EMMT-AS



EMMB-AS



EMME-AS



EMMS-ST



### Gear unit

EMGA/EMGB



### Servo drives

CMMT-AS



CMMP-AS



CMMT-ST



CMMS-ST

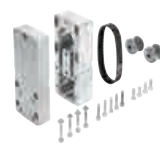


EMCA



### Axial and parallel kits

EAMM-U



EAMM-A



# Overview of standardised peripherals

## Motion control and software

### Controllers

Page 40

#### Cost-optimised controllers

Integrated controller  
CDPX



Compact controller  
CECC-D/CECC-LK



#### Modular controllers

CODESYS controller  
CPX-CEC-C1



CPX-E-CEC-C1



#### Motion controllers and robotics

Motion controller  
CPX-CEC-M1



CPX-E-CEC-M1



### Control cabinet

Page 46

#### Suitable control cabinet solutions for Festo handling systems

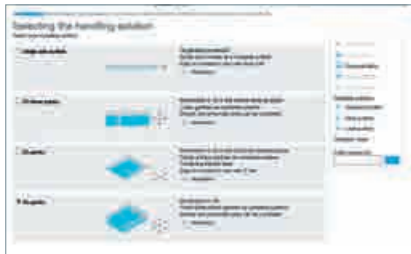




## Software

### Conceptualise and design

Handling Guide Online:  
select, configure



Page 7

Electric Motion Sizing: for sizing servo  
drive packages



### Installation and commissioning

Festo Automation Suite:  
commissioning



Page 42

Festo Positioning Basic Lib with  
function modules

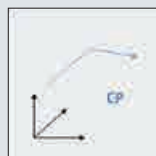


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### CPX-E motion licence

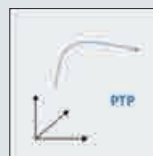


### CART licence



Cartesian linear and  
circular interpolation

### PTP licence

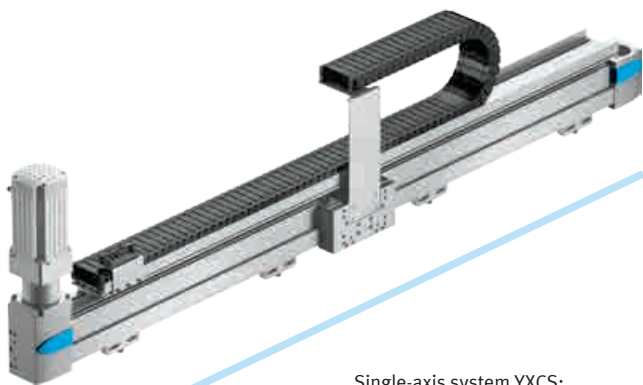


Point-to-point  
interpolation

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## Single-axis system YXCS

The single-axis system YXCS is characterised by its high mechanical rigidity and sturdy design, which are ideal for long, one-dimensional strokes and large loads. With coordinated stepper and servo motors, servo drives and the integrated energy supply concept, you get a reliable, ready-to-install solution.



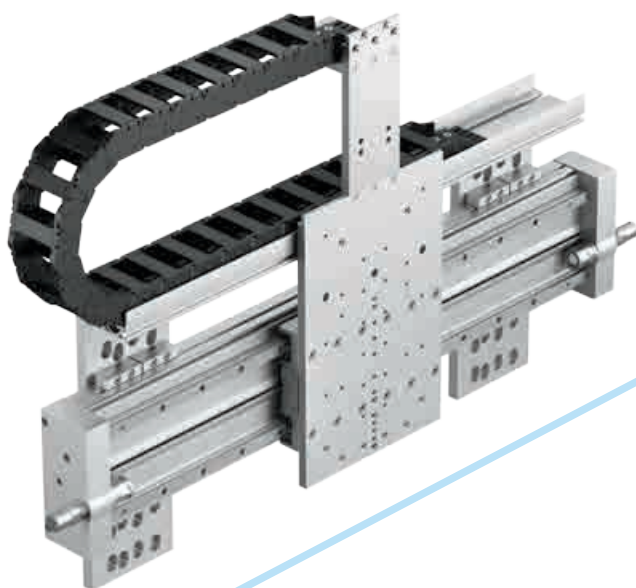
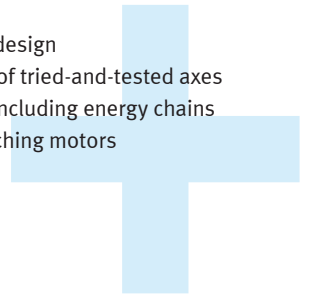
Single-axis system YXCS:  
designed using standard modules.  
In this example: Y: ECG 120

### Applications:

- For any single-axis movement
- Ideal for long gantry strokes and heavy loads

### Features and benefits:

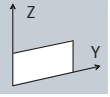
- High mechanical rigidity and sturdy design
- Process reliability thanks to the use of tried-and-tested axes
- Ready-to-install complete systems, including energy chains for cables and tubing as well as matching motors and servo drives



For additional requirements:  
with individually selected axis

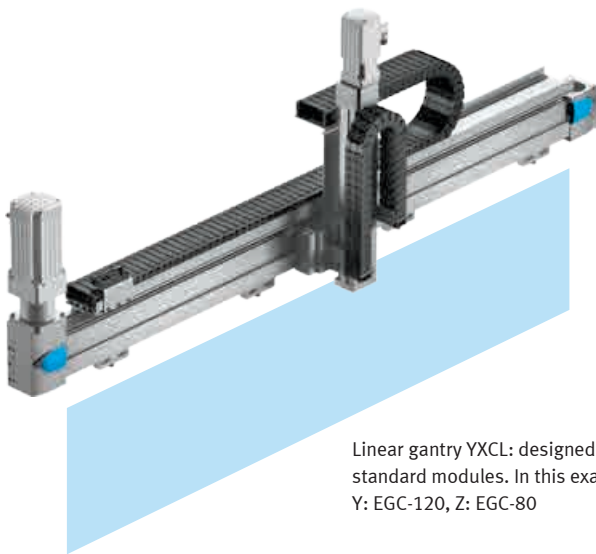
System size	Possible axes	Max. working stroke (mm)	Max. payload	Mounting position
<b>YXCS</b> (standard)	EGC-50-TB-KF	1900	Dependent on the selected dynamic response	Horizontal
	EGC-80-TB-KF	3000		
	EGC-120-TB-KF	3000		
	EGC-185-TB-KF	3000		
	EGC-HD-125-TB-KF	3000		
	EGC-HD-160-TB-KF	3000		
	EGC-HD-220-TB-KF	3000		
Additional requirements	Customised on request			

Drive package depends on the configuration selected.  
 Configure your system yourself in the Handling Guide Online:  
 → [www.festo.com/handling-guide](http://www.festo.com/handling-guide)



### Linear gantry YXCL

The linear gantry YXCL combines two axis modules for two-dimensional vertical motion. High mechanical rigidity makes it reliable and precise, even with very long strokes of up to 3000 mm in the Y direction.



Linear gantry YXCL: designed using standard modules. In this example: Y: EGC-120; Z: EGC-80

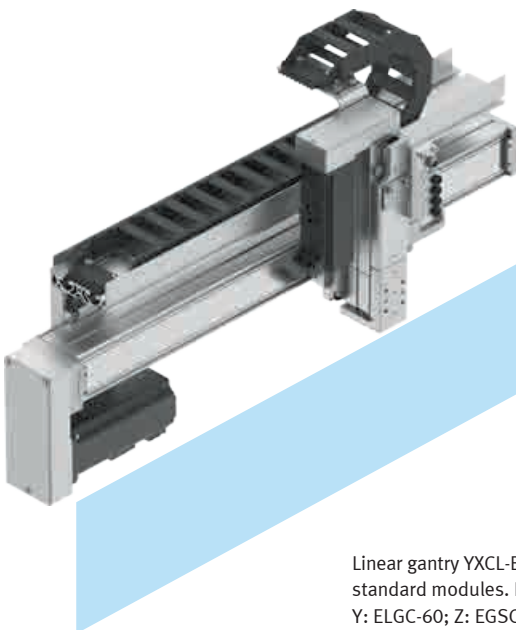
#### YXCL

##### Applications:

For long gantry strokes up to 3000 mm in the Y direction and large loads, e.g. for feeding and loading. Suitable for a wide range of applications thanks to different sizes and variants.

##### Features and benefits:

- High mechanical rigidity and sturdy design
- User-friendly mounting and installation, even during servicing
- Ready-to-install complete system, including energy chain for cables and tubing as well as matching motor and servo drive



Linear gantry YXCL-B: designed using standard modules. In this example: Y: ELGC-60; Z: EGSC-45

#### YXCL-B

##### Applications:

Cost-effective implementation of vertical 2D movements for simple handling tasks such as small parts handling.

##### Features and benefits:

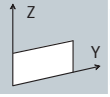
- Spindle or toothed belt axes combined with mini slides for vertical 2D working space
- Free choice of axial or parallel motor connection for the best use of the installation space
- Energy chain made of ESD material

System size	Axis type Y direction	Axis type Z direction	Max. working stroke (mm)	Max. payload	Mounting position
<b>YXCL-1</b> (standard)	• EGC-50-TB-KF	• EGSL-35 • DGSL-6	Y: 1900 Z: 50	Dependent on the selected dynamic response	Horizontal
<b>YXCL-1-B</b> (standard)	• ELGC-60-TB-KF • ELGC-60-BS-KF	• EGSC-45 • DGST-12/16	Y: 1200 Z: 150		
Additional requirements	• EGC-50 / 70-TB/BS-KF • ELGA-70-TB/BS-KF/RF • DGC(I)-18-KF • DGC-12 / 18-KF	• EGSL-35 • DGSL-8/10 • DFM-12	Y: 3000 Z: 200		
<b>YXCL-2</b> (standard)	• EGC-80-TB-KF • EGC-HD-125-TB-KF	• EGSL-45 / 55 • DGEA-18 • EGC-70-BS-KF • DGSL-12 / 16	Y: 3000 Z: 800		
<b>YXCL-2-B</b> (standard)	• ELGC-80-TB-KF • ELGC-80-BS-KF	• EGSC-60 • DGST-16/20	Y: 1200 Z: 200		
Additional requirements	• EGC-80-TB/BS-KF • ELGA-70/80-TB/BS-KF/RF • EGC-HD-125-TB/BS-KF • DGC(I)-25/40-KF	• EGSL-45/55 • DGEA-18 • EGC-70-BS-KF • ELGA-70-BS-KF • DGSL-12/16 • DFM-16/20 • DNC(E/I)-32 with FENG	Y: 8500 Z: 1000		
<b>YXCL-3</b> (standard)	• EGC-120-TB-KF • EGC-HD-160-TB-KF	• EGSL-75 EGSL-75 • DGEA-25/40 • EGC-80-BS-KF • DGSL-20/25	Y: 3000 Z: 800		
Additional requirements	• EGC-120-TB/BS-KF • ELGA-80/120-TB/BS-KF/RF • EGC-HD-160-TB/BS-KF • DGC(I)-25/32/40-KF	• EGSL-75 • DGEA-25 • EGC-80-BS-KF • ELGA-80-BS-KF • DGSL-20/25 • DFM-25/32 • DNC(E/I)-32 with FENG	Y: 8500 Z: 1000		
<b>YXCL-4</b> (standard)	• EGC-185-TB-KF • EGC-HD-220-TB-KF	• DGEA-40 • EGC-120-BS-KF	Y: 3000 Z: 800		
Additional requirements	• EGC-120/185-TB/BS-KF • ELGA-150-TB/BS-KF • ELGA-120-TB/BS-RF • EGC-HD-220-TB/BS-KF • DGC(I)-40/63 with FA	• DGEA-40 • EGC-80/120/185-BS-KF • ELGA-80/120/150-BS-KF • DFM-40/50 • DNC(E/I)-40/63 with FENG	Y: 8500 Z: 1000		
Additional requirements <b>Heavy-duty</b>		• EHMH-40 • ELCC	Y: 8500 Z: 2500		

Drive package depends on the configuration selected.

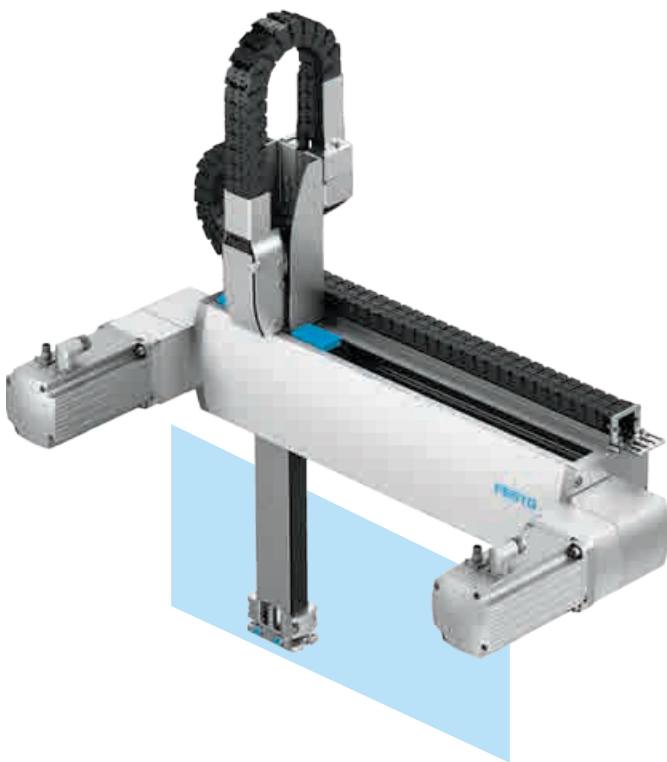
Configure your system yourself in the Handling Guide Online:

→ [www.festo.com/handling-guide](http://www.festo.com/handling-guide)



### Highly dynamic linear gantry YXML

The Cartesian high-speed robot offers maximum dynamic response with max. 95 picks/minute, high flexibility and a compact design. Its mechanical design is based on the linear gantry EXCT. As a dynamic alternative to conventional serial kinematic individual axes, this linear gantry features an impressive parallel kinematic drive concept with a recirculating toothed belt and two fixed motors.



Linear gantry YXML based on the EXCT

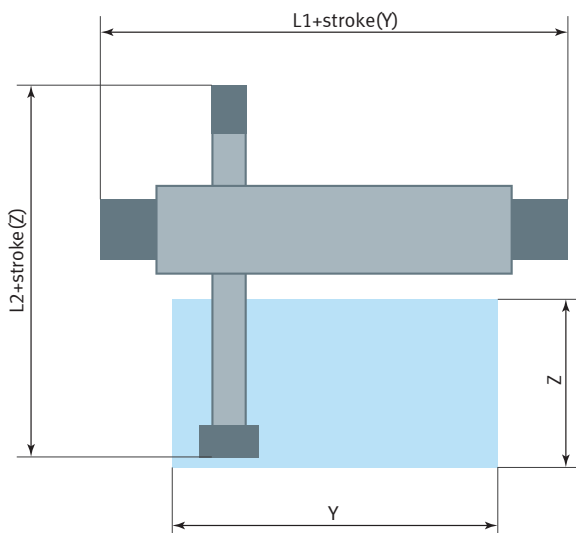
#### Applications:

- For rapid processes with high cycle rates
- Fast repositioning of parts and modules in a large, rectangular working space, such as pick & place, feeding, stacking, packaging and filling tasks

#### Features and benefits:

- Extremely high dynamic response and efficient operation up to max. 95 picks/minute thanks to low moving mass and inertia of the Z-axis: for precision positioning with high acceleration and deceleration, as well as minimal vibration
- Long service life thanks to tried-and-tested series components, drastically reduced vibrations and optimal running performance
- Flexible working space through scalable strokes in the Y and Z direction
- Minimum space requirement thanks to the compact design
- Universal: front unit interface for mechanical or vacuum-assisted rotating and gripping solutions
- Integrated energy chain concept for easy and safe installation, even in the event of subsequent modification or expansion
- Optimal actuation: the coordinate transformation required to actuate the gantry is already included in the Festo Positioning Basic Lib. Programming is quick and easy when used together with the CPX-E-CEC-M1 controller, for example.

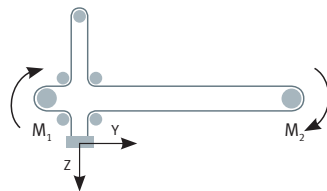
**Working space and installation space**



L2 without energy chain  
L3 without motors

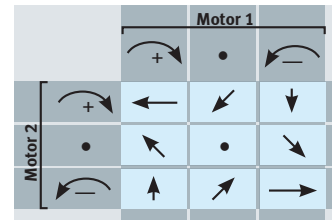
**The kinematic chain:**

- Two fixed servo motors  $M_1$  and  $M_2$
- One recirculating toothed belt ZR
- One very rigid Y-axis, one rigid yet lightweight Z-axis



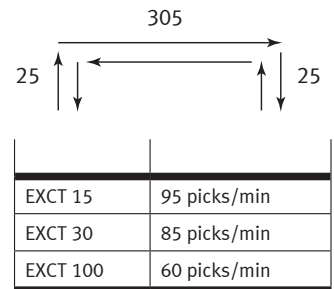
**The kinematics in detail:**

- By synchronising the two motors the front plate can be moved in the Y and Z direction
- Both motors together ensure maximum acceleration and speed for exclusive movement of the front plate in the Y or Z direction



**Pick rate as a function of the payload and horizontal stroke**

- The specified cycle rate refers to a double stroke
- Gripping and waiting times are not taken into consideration
- Double-stroke cycle [mm]



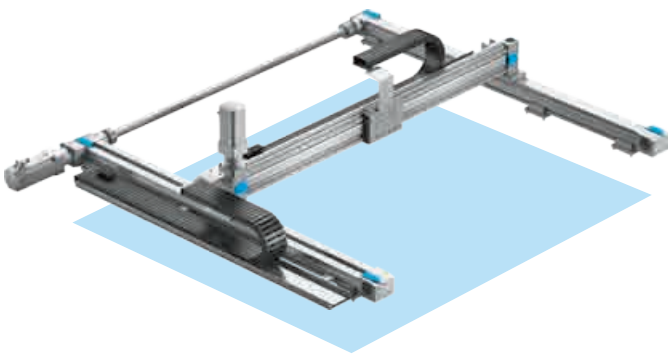
System size	Axis type XY direction	L1 (mm)	L2 (mm)	Max. working stroke (mm)	Max. acceleration (m/s <sup>2</sup> )	Max. speed (m/s)	Rated load for max. dynamic response (kg)	Repetition accuracy (mm)
YXML-1	EXCT-15	326	361.5	Y: 100...1000 Z: 100, 200	50	4.8	1.5	± 0.1
YXML-2	EXCT-30	443.5	454	Y: 100...1500 Z: 250, 500	50	5	3	
YXML-3	EXCT-100	455.5	511	Y: 100...2000 Z: 250, 500, 800	30	4	10	
Additional requirements	Electric 360° rotary unit with optional pneumatic processing Other requirements available on request							

Drive package depends on the configuration selected.  
Configure your system yourself in the Handling Guide Online:  
→ [www.festo.com/handling-guide](http://www.festo.com/handling-guide)



### Planar surface gantry YXCF

You can use the planar surface gantry YXCF in a wide variety of applications thanks to its high mechanical rigidity and sturdy design. These Cartesian robots skilfully master both light and heavy workpieces or payloads and long strokes. You can approach any position in a horizontal, rectangular 2D working space. Your complete system then comprises three linear axes with precision guides. Your planar surface gantries are set up using a serial design.



Linear gantry YXCF: designed using standard modules. In this example, X: EGC-120, Y: EGC-HD-160

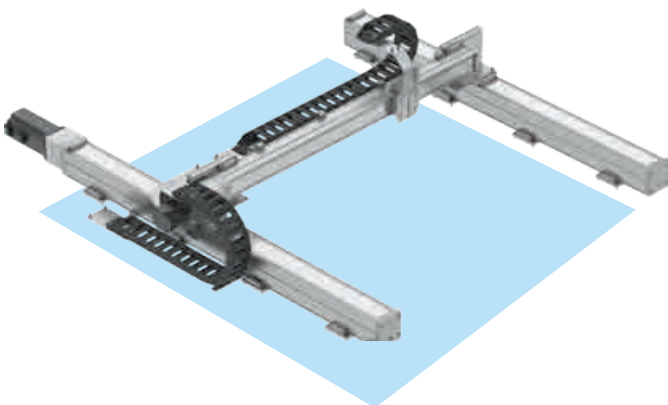
#### YXCF

##### Applications:

- For any movements in 2D space
- Universal for low to high payloads
- For very high requirements in terms of precision and/or very heavy workpieces
- For very long strokes
- Positioning of end effectors like grippers and vacuum systems or workpieces

##### Features and benefits:

- High mechanical rigidity and sturdy design
- Coordinated drive package with stepper and servo motors, as well as powerful servo drives
- Coupled X-axes with connecting shaft for high precision and large Y spans



Planar surface gantry YXCF-B: designed using standard modules. In this example: X: ELGC-80/ELFC-80; Y: ELGC-60

#### YXCF-B

##### Applications:

- Low-cost handling system in a compact format for small parts handling and simple tasks.
- Positioning end effectors for example in test and inspection systems.

##### Features and benefits:

- Freely positionable electric axes with any intermediate positions
- Drive axis and guide unit in X direction for absorbing forces and torques in the gantry structure
- Clean look axes with weight-optimised design
- Energy chain made of ESD material



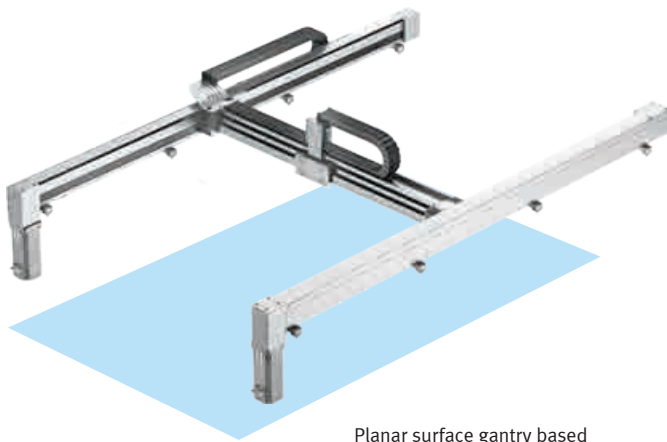
System size	Axis type X direction	Axis type Y direction	Max. working stroke (mm)	Max. payload	Mounting position
<b>YXCF-1</b> (standard)	• EGC-50-TB-KF	• EGC-50-TB-KF	X: 1900 Y: 1900	Dependent on the selected dynamic response	Horizontal
<b>YXCF-1-B</b> (standard)	• ELGC-60-BS-KF	• ELGC-45-BS-KF • ELGC-60-BS-KF	X: 800 Y: 600		
Additional requirements	• EGC-50/70/80-TB-KF • ELGA-70-TB-RF	• EGC-50/70-TB/BS-KF • ELGA-70-TB/BS-KF/RF • DGC-12/18-KF • DGCI-18-KF	X: 5,000 Y: 1,000		
<b>YXCF-2</b> (standard)	• EGC-80-TB-KF	• EGC-80-TB-KF • EGC-HD-125-TB-KF	X: 3000 Y: 2000		
<b>YXCF-2-B</b> (standard)	• ELGC-80-BS-KF	• ELGC-60-BS-KF • ELGC-80-BS-KF	X: 1000 Y: 800		
Additional requirements	• EGC-80-TB-KF • ELGA-70/80-TB-KF/RF	• EGC-80-TB/BS-KF • ELGA-70/80-TB/BS-KF/RF • EGC-HD-125-TB/BS-KF	X: 8500 Y: 1500		
<b>YXCF-3</b> (standard)	• EGC-120-TB-KF	• EGC-120-TB-KF • EGC-HD-160-TB	X: 3000 Y: 2000		
Additional requirements	• EGC-80-/120-TB-KF • ELGA-80/120-TB-KF/RF	• EGC-120-TB/BS-KF • ELGA-80/120-TB/BS-KF/RF • EGC-HD-160-TB/BS-KF • DGC()-40/63-KF • DGC-40-KF	X: 8500 Y: 2000		
<b>YXCF-4</b> (standard)	• EGC-185-TB-KF	• EGC-185-TB-KF • EGC-HD-220-TB-KF	X: 3000 Y: 2000		
Additional requirements	• EGC-185-TB-KF • ELGA-150-TB-KF	• EGC-120/185-TB/BS-KF • ELGA-120-TB/BS-KF/RF • EGC-HD-220-TB/BS-KF • DGC()-40/63-KF	X: 8500 Y: 2000		
Additional requirements	Other requirements available on request				

Drive package depends on the configuration selected.  
 Configure your system yourself in the Handling Guide Online:  
 → [www.festo.com/handling-guide](http://www.festo.com/handling-guide)



### Highly dynamic planar surface gantry YXMF

The Cartesian planar surface gantry, which has a mechanical design that is based on the EXCH series, is a high-speed system with a very large rectangular working space. The handling system provides a true cost-saving alternative to conventional robotic systems that require the working space of two SCARA robots. You get an affordable system with a long service life and low power consumption.



Planar surface gantry based on EXCM

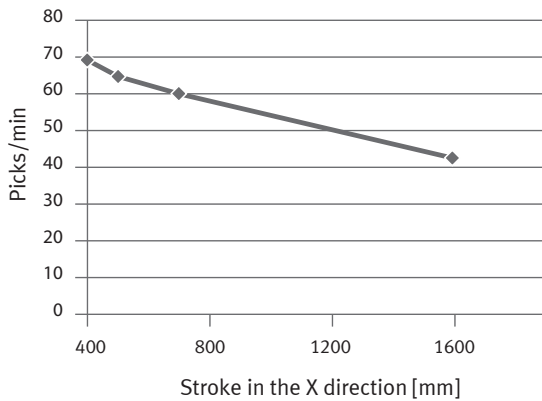
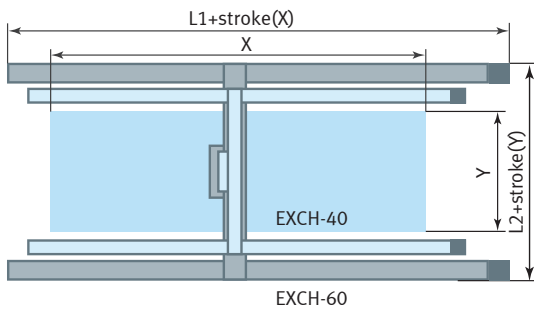
#### Applications:

- For optimum dynamic response with up to 100 picks/minute in a rectangular installation space
- Loading and unloading
- Packaging and sorting
- Display and solar wafer handling
- Assembly

#### Features and benefits:

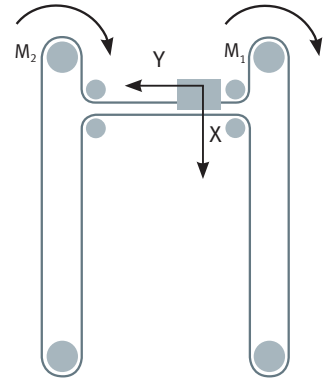
- Parallel kinematic drive concept for high dynamic response
- Optimal use of installation space: extremely compact and flat with scalable working space in the X and Y direction
- 30% more performance due to a lower moving mass as the drive for positioning the front plate is omitted
- Universal: front unit interface for mechanical or vacuum-assisted rotating and gripping solutions
- Low centre of gravity: minimal overshoot, enhanced positioning accuracy and reduced demands on the frame
- Integrated energy chain concept for easy and safe installation, even in the event of subsequent modification or expansion

**Maximum working space and installation space**



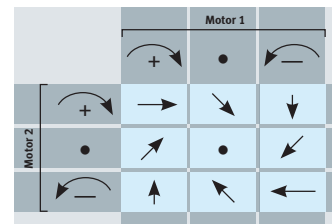
**The kinematic chain:**

- Two fixed, high-performing servo motors M1 and M2
- One H-shaped recirculating toothed belt ZR
- Two very rigid X-axes, one very rigid Y-axis



**The kinematics in detail:**

- By synchronising the two motors the front plate can be moved in the Y and Z direction
- Both motors together ensure maximum acceleration and speed for moving the front plate in the X or Y direction



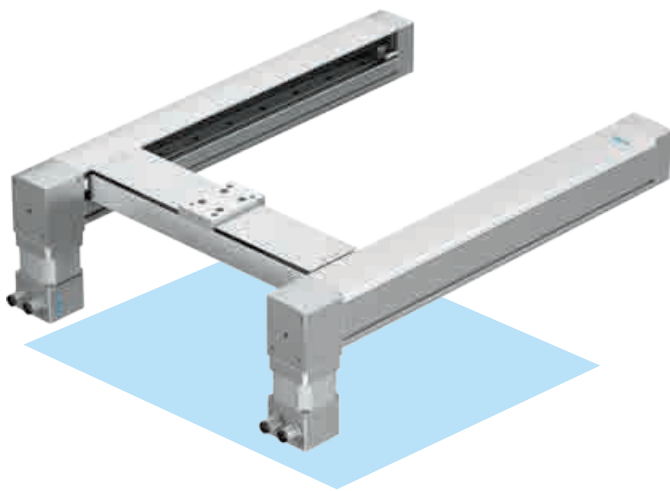
System size	Axis type XY direction	L1 (mm)	L2 (mm)	Max. working stroke (mm)	Max. acceleration (m/s <sup>2</sup> )	Max. speed (m/s)	Rated load for max. dynamic response (kg)	Repetition accuracy (mm)
YXMF-2	EXCH-40	382	360	X: 200...2000 Y: 200...1000	Horizontal mounting position: 50 Vertical: 30	Horizontal mounting position: 5 Vertical: 4	4	±0.1
YXMF-3	EXCH-60	643	507	X: 500...2500 Y: 500...1500	Horizontal mounting position: 50 Vertical: 30	Horizontal mounting position: 5 Vertical: 3	6	
Additional requirements	Other requirements available on request							

Drive package depends on the configuration selected.  
 Configure your system yourself in the Handling Guide Online:  
 → [www.festo.com/handling-guide](http://www.festo.com/handling-guide)



### Compact planar surface gantry YXMF

When every millimetre counts, the compact planar surface gantry YXMF, based on the EXCM series, shows its advantages. It combines outstanding functionality with an extremely compact, flat design and maximum working space coverage. It includes a coordinated drive package that contains stepper motors with optical encoders and the double servo drive CMXH for position-controlled closed-loop operation.



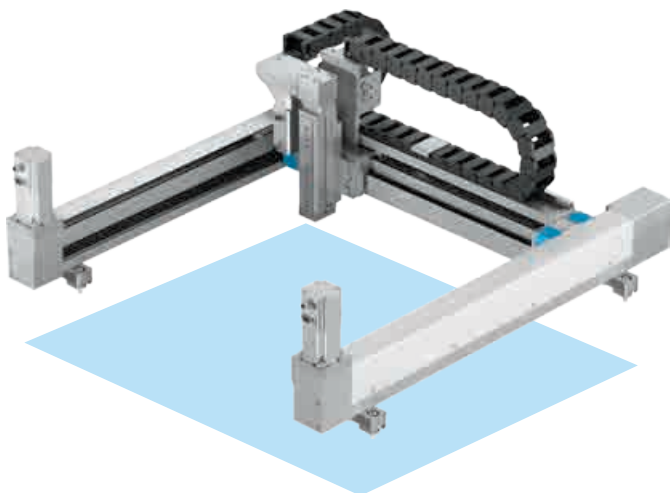
Planar surface gantry YXMF based on EXCM-30

#### Applications:

- For desktop applications in small parts assembly, electronics manufacture and laboratory processes
- For extremely small working spaces

#### Features and benefits:

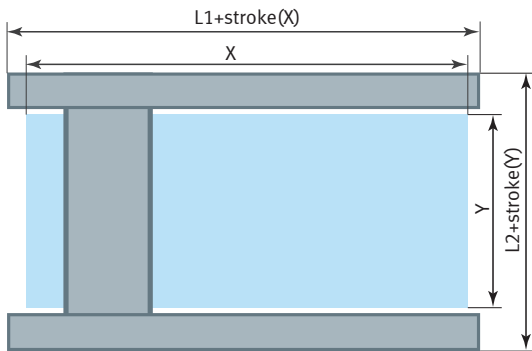
- Maximum functionality thanks to parallel kinematic drive concept
- Flat and compact for optimum use of space
- Clean look
- High payload
- Festo plug & work including pre-parameterisation
- Configurable length and width
- Flexible 3D energy chain
- Optional adjusting kit



#### EXCM-40

High performance thanks to 48 V supply voltage. For loads of up to 4 kg with extensive working space coverage.

**Maximum working space and installation space**

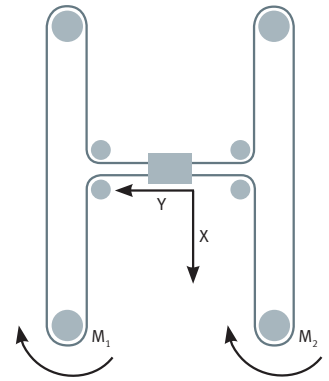


**Functional principle**

The EXCM can travel to any position within a working space. The recirculating toothed belt, driven by fixed motors, moves the slide within a two-dimensional space.

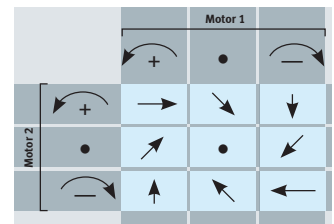
**The kinematic chain:**

- Two fixed servo motors  $M_1$  and  $M_2$
- One recirculating toothed belt ZR
- Two very rigid X-axes, one very rigid Y-axis



**The kinematics in detail:**

- By synchronising the two motors the front plate can be moved in the Y and Z direction
- Both motors together ensure maximum acceleration and speed for moving the front plate in the X or Y direction

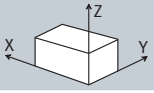


System size	Axis type XY direction	L1 (mm)	L2 (mm)	Max. working stroke (mm)	Max. acceleration (m/s <sup>2</sup> )	Max. speed (m/s)	Rated load for max. dynamic response (kg)	Repetition accuracy (mm)
YXMF-1*	EXCM-30	133	122	X: 90...700 Y: 110...510	20	1	3	± 0.05
YXMF-2*	EXCM-40	382	360	X: 200...2000 Y: 200...1000	5	1	4	± 0.1
Additional requirements	Other requirements available on request							

\* Not suitable for Positioning Basic Lib

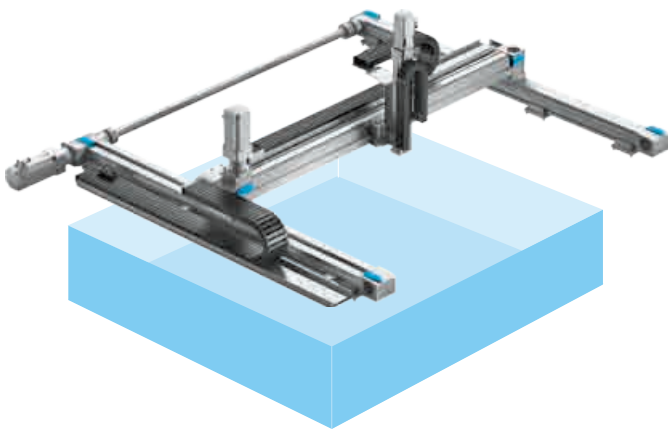
Drive package depends on the configuration selected. Configure your system yourself in the Handling Guide Online:

→ [www.festo.com/handling-guide](http://www.festo.com/handling-guide)



### Three-dimensional gantry YXCR

The Cartesian robot YXCR for three-dimensional movement in the working space is ideal for very long strokes up to 3000 mm in the X direction, even with high loads. The combination of several axis modules means it can be used anywhere, for light to heavy workpieces or large payloads. A three-dimensional gantry that is perfectly tailored to the requirements of a great number of applications.



Three-dimensional gantry YXCR based on standard modules. In this example: X: EGC-120, Y: EGC-120, Z: EGC-80

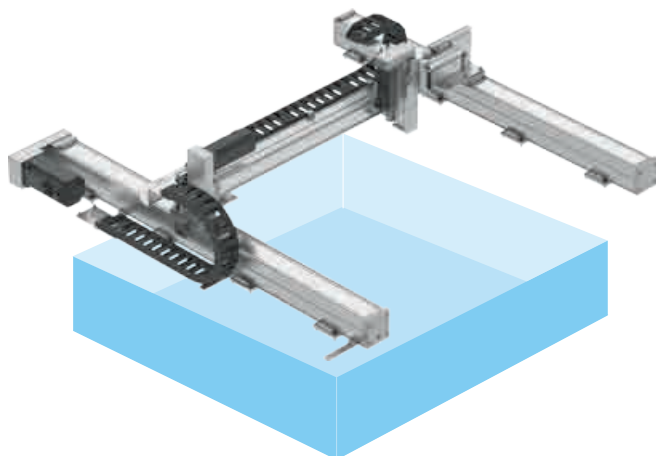
#### YXCR

##### Applications:

- For any movements in 3D space
- Can be used universally for handling light to heavy workpieces or high payloads
- For very high requirements for precision and/or very heavy workpieces combined with long strokes

##### Features and benefits:

- Reliable and precise thanks to high mechanical rigidity, sturdy design and coupled X-axes
- Pneumatic and electric components can be freely combined
- Extremely precise with a high load capacity, even with very long strokes
- With matching Festo motor and servo drive package and energy chain



Three-dimensional gantry YXCR-B: designed using standard modules. In this example: Y: ELGC-80/ELFC-80, X: ELGC-60 Z: EGSC-45

#### YXCR-B

##### Applications:

Extremely compact 3D gantry system with attractive price/performance ratio, for example for simple assembly tasks and small parts handling in the electronics industry.

##### Features and benefits:

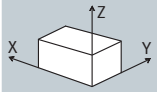
- Spindle and toothed belt axes with internal, protected recirculating ball bearing guide
- Free choice of axial or parallel motor connection for the best use of the installation space
- Pneumatic and electric components can be freely combined
- Energy chain made of ESD material

System size	Axis type X direction	Axis type Y direction	Axis type Z direction	Max. working stroke [mm]	Max. payload	Mounting position
<b>YXCR-1</b> (standard)	• EGC-50-TB-KF	• EGC-50-TB-KF	• EGSL-35 • DGSL-6	X: 1900 Y: 1900 Z: 50	Dependent on the selected dynamic response	Horizontal
<b>YXCR-1-B</b> (standard)	• ELGC-60-BS-KF	• ELGC-45-BS-KF • ELGC-60-BS-KF	• EGSC-32/45 • DGST-8/12/16	X: 800 Y: 600 Z: 150		
Additional requirements	• EGC-50/70/80-TB-KF • ELGA-70-TB-RF	• EGC-50/70-TB/BS-KF • ELGA-70-TB/BS-KF/RF • DGCI-18-KF • DGC-12/18-KF	• EGSL-35 • DGSL-6/8/10 • DFM-12	X: 5000 Y: 1000 Z: 80		
<b>YXCR-2</b> (standard)	• EGC-80-TB-KF	• EGC-80-TB-KF • EGC-HD-125-TB	• EGSL-45 / 55 • DGEA-18 • EGC-70-BS-KF • DGSL-12 / 16	X: 3000 Y: 2000 Z: 800	Dependent on the selected dynamic response	Horizontal
<b>YXCR-2-B</b> (standard)	• ELGC-80-BS-KF	• ELGC-60-BS-KF • ELGC-80-BS-KF	• EGSC-45/60 • DGST-12/16/20	X: 1000 Y: 800 Z: 200		
Additional requirements	• EGC-80-TB-KF • ELGA-70/80-TB-KF/ RF	• EGC-80-TB/BS-KF • ELGA-70/80-TB/BS-KF/RF • EGC-HD-125-TB/BS-KF • DGC(I)-25/40-KF	• EGSL-45/55 • DGEA-18 • DNC(E/I)-32 with FENG • EGC-70-BS-KF • DGSL-12/16 • DFM-16/20	X: 8500 Y: 1500 Z: 1000		
<b>YXCR-3</b> (standard)	• EGC-120-TB-KF	• EGC-120-TB-KF • EGC-HD-160-TB	• EGSL-75 • DGEA-25/40 • EGC-80-BS-KF • DGSL-20/25	X: 3000 Y: 2000 Z: 800	Dependent on the selected dynamic response	Horizontal
Additional requirements	• EGC-80-/120-TB-KF • ELGA-80/120-TB-KF/RF	• EGC-120-TB/BS-KF • ELGA-80/120-TB/BS-KF/RF • EGC-HD-160-TB/BS-KF • DGC(I)-40/63-KF • DGC-40-KF	• EGSL-75 • DGEA-25 • DNC(E/I)-32/40 with FENG • EGC-70/80-BS-KF • ELGA-80-BS-KF • DGSL-20/25 • DFM-25/32/40	X: 8500 Y: 2000 Z: 1000		
<b>YXCR-4</b> (standard)	• EGC-185-TB-KF	• EGC-185-TB-KF • EGC-HD-220-TB-KF	• DGEA-40 • EGC-120-BS-KF	X: 3000 Y: 2000 Z: 800		
Additional requirements	• EGC-185-TB-KF • ELGA-120-150-TB-KF/RF	• EGC-120/185-TB/BS-KF • ELGA-120-TB/BS-KF/RF • EGC-HD-220-TB/BS-KF • DGC(I)-63-KF	• DGEA-40 • DNC(E/I)-63 with FENG • EGC-120/185-BS-KF • ELGA-120/150-BS-KF • DFM-50	X: 8500 Y: 2000 Z: 1000	Dependent on the selected dynamic response	Horizontal
Additional requirements <b>Heavy-duty</b>			• ELGR • ELCC	Y: 8500 Y: 2000 Z: 2500		

Drive package depends on the configuration selected.

Configure your system yourself in the Handling Guide Online:

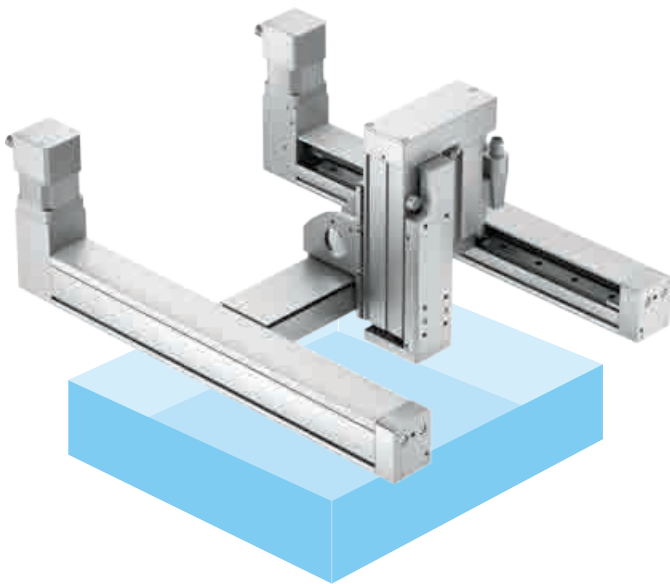
→ [www.festo.com/handling-guide](http://www.festo.com/handling-guide)



### Compact three-dimensional gantry YXMR

The extremely space-saving 3D system is excellent at absorbing high forces and torques. It offers the same smooth running characteristics and high positioning precision. Both the electric mini slide EGSC with recirculating ball bearing guide and the pneumatic mini slide DGSL can be connected to the compact gantry EXCM-30.

Thanks to the parallel kinematic drive concept with recirculating toothed belt and two fixed stepper motors, the YXMR needs minimal installation space and offers very low moving masses and maximum functionality. The stepper motors with optical encoders enable position-controlled closed-loop operation. The compact three-dimensional gantry YXMR is the ideal solution if you want to reliably position high payloads within an extremely small working space.



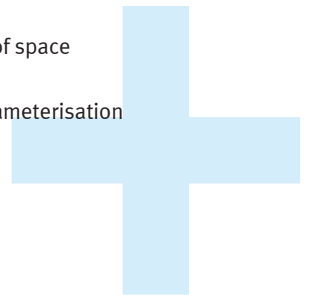
Three-dimensional gantry YXMR:  
XY: EXCM-30, Z: EGSC-32

#### Applications:

- For desktop applications in small parts assembly, electronics manufacture and laboratory processes
- For extremely small working spaces

#### Features and benefits:

- Flat and compact for optimised use of space
- High payload
- Festo plug & work including pre-parameterisation
- Configurable length and width



System size	Axis type XY direction	Axis type Z direction	Max. working stroke (mm)	Max. acceleration (m/s <sup>2</sup> )	Max. speed (m/s)
YXMF-1*	EXCM-30	EGSC-25/32 DGSL-8/10/12	X: 90...700 Y: 110...510 Z: 150	20	1
YXMF-2*	EXCM-40	EGSL-45 DGSL-16	X: 200...2000 Y: 200...1000 Z: 200	5	1
Additional requirements	Other requirements available on request				

\* Not suitable for Positioning Basic Lib

Drive package depends on the configuration selected.  
Configure your system yourself in the Handling Guide Online:

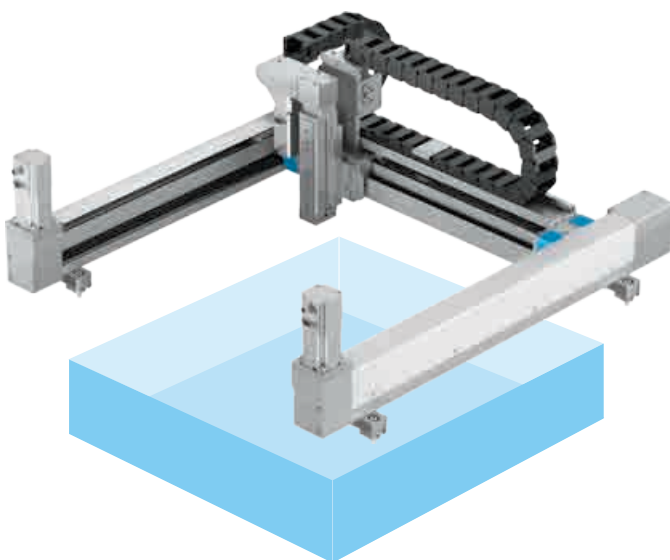
→ [www.festo.com/handling-guide](http://www.festo.com/handling-guide)



## Highly dynamic three-dimensional gantry YXMR

With up to 100 picks/min, the three-dimensional gantry based on the EXCH is highly dynamic. It makes optimal use of its working space thanks to the parallel kinematic drive concept: the YXMR is extremely compact and flat, and the working space is scalable in the X and Y direction.

Optional additional movement can be achieved using the front plate. The front plate accommodates the Z-axis or rotary-lifting module for free movement in 3D space. The clear design provides an improved overview of your system, and the lower moving mass enables 30% more performance.



Three-dimensional gantry YXMR:  
XY: EXCH, Z: EGSS-45

### Applications:

- For optimum dynamic response with up to 100 picks/minute in a rectangular installation space
- Perfect for assembly or test cells and a clear overview of the system
- Assembly, packaging and sorting

### Features and benefits:

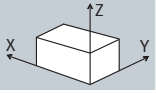
- Optimum dynamic response with up to 100 picks/minute in a rectangular installation space
- Clear overview of the system
- 30% more efficient due to a lower moving mass: drive for positioning the front plate is omitted
- Universal: front unit interface for mechanical or vacuum-assisted rotating and gripping solutions
- Low centre of gravity: minimal overshoot, enhanced positioning accuracy and reduced demands on the frame
- Integrated energy chain concept for easy and safe installation, even in the event of subsequent modification or expansion

System size	Axis type XY direction	Axis type Z direction	Max. working stroke (mm)	Max. acceleration (m/s <sup>2</sup> )	Max. speed (m/s)
YXMF-2	EXCM-40	EGSC-45 DGSL-16	X: 90...700 Y: 110...510 Z: 200	20	1
YXMF-3	EXCM-60	EGSL-55 DGSL-20	X: 200...2000 Y: 200...1000 Z: 200	5	1
Additional requirements	Other requirements available on request				

Drive package depends on the configuration selected.

Configure your system yourself in the Handling Guide Online:

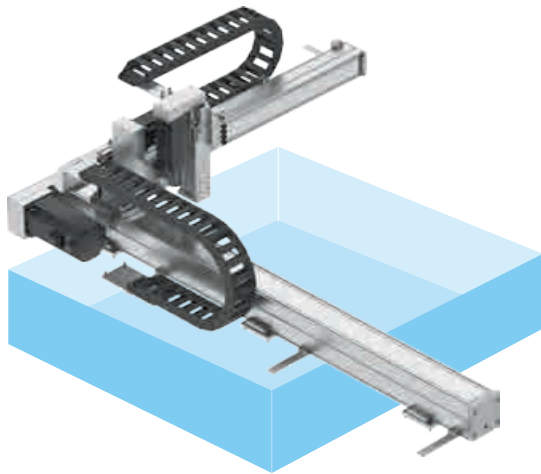
→ [www.festo.com/handling-guide](http://www.festo.com/handling-guide)



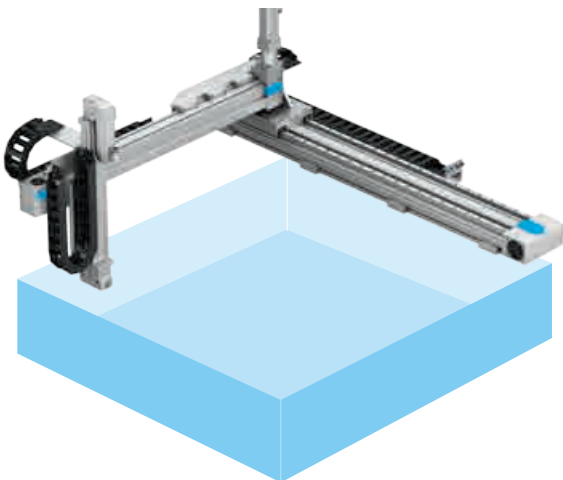
### Cantilever system YXCA

The Cartesian robot YXCA for three-dimensional movements in space is ideal for use in linear assembly units, in assembly tasks and in small parts handling. The cantilever Y-axis allows the work space to be accessed from three sides and makes the best use of the installation space.

With matching stepper and servo motors, servo drives and the integrated energy supply concept, you get a reliable, ready-to-install solution.



Cantilever system YXCA-B: designed using standard modules. In this example: X: ELGC-80; Y: ELGC-60 Z: EGSC-45



Additional requirements, for example increased payload, available on request

#### YXCA-B

##### Applications:

Extremely compact 3D system with attractive price/performance ratio, for example for simple assembly tasks and small parts handling in the electronics industry. Ideal for use in linear assembly processes or desktop applications.

##### Features and benefits:

- Work space free of interference contours accessible from 3 sides
- Spindle and toothed belt axes with internal, protected recirculating ball bearing guide
- Free choice of axial or parallel motor connection for the best use of the installation space
- Pneumatic and electric components can be freely combined
- Energy chain made of ESD material
- Meets the basic requirements of the electronics industry

System size	Axis type XY direction	Axis type Y direction	Axis type Z direction	Max. working stroke (mm)	Max. payload	Mounting position
<b>YXCA-1-B</b> (standard)	• ELGC-60-BS-KF	• ELGC-45-BS-KF	• EGSC-32 • DGST-8/12	X: 800 Y: 300 Z: 150	Dependent on the selected dynamic response	Horizontal
<b>YXCA-2-B</b> (standard)	• ELGC-80-BS-KF	• ELGC-60-BS-KF	• EGSC-45 • DGST-12/16	X: 1000 Y: 400 Z: 200		
Additional requirements	Customised on request					

Drive package depends on the configuration selected.  
 Configure your system yourself in the Handling Guide Online:  
 → [www.festo.com/handling-guide](http://www.festo.com/handling-guide)

## The compact handling system YXMx. From kinematics ...

Screwing in, dispensing, testing, soldering, gripping, opening and closing containers and much more: the compact handling system YXMx forms the basis for a wide variety of desktop applications. The system kit comprising kinematics, controller and software saves you money and reduces your time to market – from development to programming and commissioning.

1. Control technology	2. Scalable hardware	3. Software
<p><b>Controller</b></p> <ul style="list-style-type: none"> <li>• Compact</li> <li>• Powerful</li> <li>• Dual-core architecture</li> <li>• SoftMotion for 3D path applications</li> <li>• Image processing function</li> <li>• High connectivity thanks to numerous interfaces</li> </ul>	<p><b>Planar surface gantry</b></p> <ul style="list-style-type: none"> <li>• Based on EXCM-30</li> <li>• Compact and flat</li> <li>• For very small installation spaces</li> <li>• Scalable stroke lengths                             <ul style="list-style-type: none"> <li>– X: 90...700 mm</li> <li>– Y: 110...510 mm</li> </ul> </li> <li>• Motors with integrated controller and frequency converter</li> <li>• Clean look</li> </ul> <p><b>Optional:</b></p> <ul style="list-style-type: none"> <li>• USB remote camera</li> <li>• Z-axis: precision spindle axis with 75 mm or 125 mm stroke</li> </ul> <p><b>Festo accessories:</b></p> <ul style="list-style-type: none"> <li>• Adjusting kit</li> <li>• 3D energy chain</li> <li>• Universal flange adapter</li> </ul>	<p><b>Included: Festo Positioning Desktop Library</b> Motion control for kinematics</p> <p><b>Optional: Festo Condition Monitoring Library</b> Monitoring of operating parameters</p>

PLC	Vision
Motion	Condition monitoring



Just add a front unit – done!



## ... to software

### Festo Positioning Desktop Library



#### Highlight: the sequencer

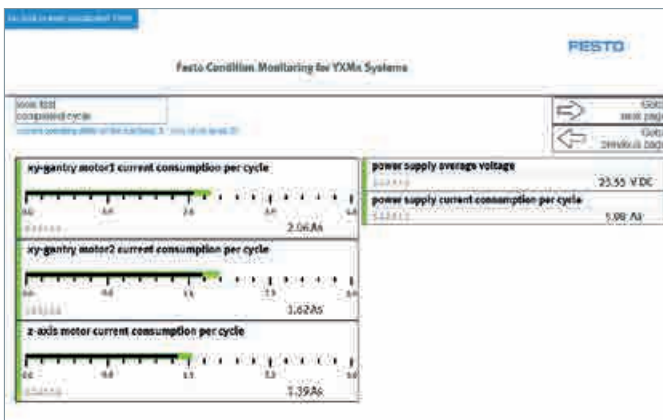
The processes are automatically generated in the background using the graphical user interface of the sequencer. This makes application programming easy, quick and completely intuitive – without the need for any programming skills.

#### The reliable, quick and easy way to your goal with the software module for motion control!

The software is pre-installed on the controller and based on the Festo Positioning Basic Library. In addition to basic functions for commissioning and positioning handling systems (for detailed information see page 42), it also provides the following extra functions:

- Plug-and-play function for automatic detection and configuration of motors
- Defined interface for communication with the host system via TCP/IP
- Sequence processing

### Added value on request: Festo Condition Monitoring Library



#### Transparency of maintenance requirements, energy consumption and manufacturing process in one software package!

Nowadays, all system equipment and machinery are expected to provide maximum availability and reliability. The additional condition monitoring software module monitors the operating parameters and current values of the YXMx, such as the running performance, supply pressure, air and energy consumption and much more besides. As a result, it can help you plan your maintenance work professionally while at the same time cutting the associated costs. In addition, it allows you to analyse the production process and offers comprehensive energy monitoring. The software is based on VDMA standard 24582. It includes a basic visualisation component for viewing status messages in the web browser. Using the open interfaces, data can be displayed in customer systems, e.g. by connecting to the cloud via OPC UA.



Software available in the  
Festo App World  
→ [www.festo.com/appworld](http://www.festo.com/appworld)

- Easy to integrate into higher-level systems
- Intuitive user interface
- Customised dashboards on request

## From standard ...

With their extremely short cycle times, these compact and cost-effective pick & place handling modules are ideal for automatic feeding and removal of small parts in very tight spaces. This is achieved by a force-guided swivel and linear motion sequence, forming a complete pick & place cycle.

### Pick & place handling modules HSP/HSW

#### Handling module HSP



Technical data, Variants and options can be found in the Festo online catalogue.



Pneumatic handling module



Handling module for freely configurable drives



#### Handling module HSW



Technical data, Variants and options can be found in the Festo online catalogue.



Pneumatic handling module



Handling module for freely configurable drives



### Pick & place solutions with DGSL/DGST and EGSL/EGSC



- High mechanical rigidity and sturdy design
- Pneumatic and electric components can be freely combined
- As an electrical solution – freely positionable

#### Operating range

- Payload up to 6 kg
- Stroke ranges up to 400 mm
- For applications where the gripper unit has to be retracted from the working area

#### Pick & place variants ±±(as an example)



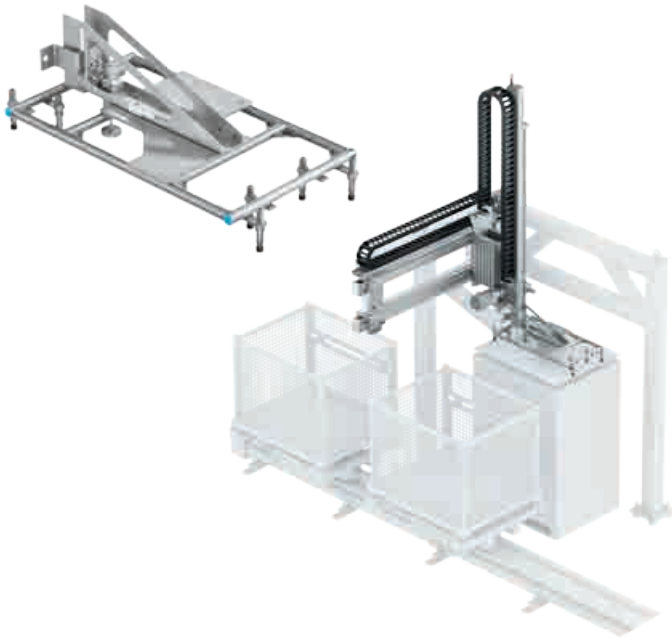
Electr./pneum. pick & place unit DGSL/EGSL



Electric pick & place unit EGSC/EGSC

## ... to customised solutions

### Gantry solution with flexible frames for vacuum gripping



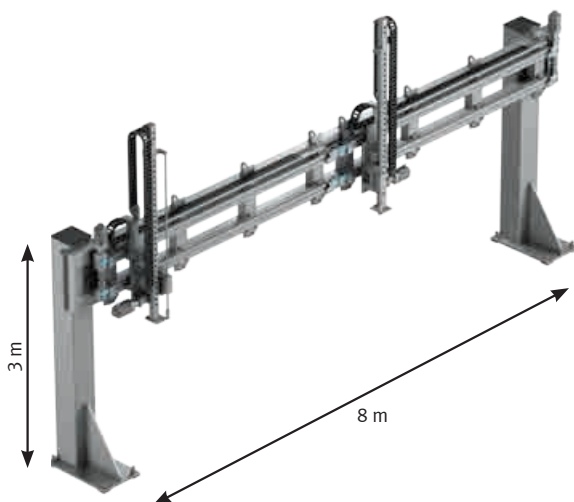
#### Main components:

- Gripping: ESS-20-CN, VN-10
- Workpiece detection: ADN-20
- Z-axis: DGEA-40
- Y-axis: EGC-120-TB

#### Technical features:

- Repositioning thin workpieces/ materials such as cardboard, plastic and metal sheets, etc.
- Stack detection using simple sensors
- Reliable stacking guaranteed thanks to extensive gripping tests prior to the project

### Double gantry system



#### Main components:

- Z-axis: non-Festo product
- Y-axis: EGC-120-TB

#### Technical features:

- Workpiece load: 30 kg per gantry
- Steel frame: 8 metres long, 3 metres high
- Integration of non-Festo products, e.g. vertical gear rack axes
- Special requirements such as clamping unit, central lubrication
- Specific interface for customer's gripping system and motor mounting

## Controllers

The comprehensive motion control solutions from Festo enable a wide variety of solutions for industrial automation tasks. Supported by innovative software solutions for engineering and configuration.

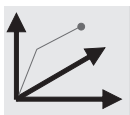


### Control system CPX-E

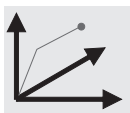
High-performance automation system as an EtherCAT master controller and motion controller to IP20 or as a low-cost remote I/O.

- Comprehensive PLC functions, multi-axis applications with interpolation
- Easy to integrate in host systems or as a controller for decentralised automation solutions
- For Industry 4.0 host environments: cloud and digitalisation concepts, OPC UA client and server functions

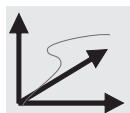
Permitted axes: individual axes open in accordance with EtherCAT® specification or 16 interpolating axes



C1: Single axis



Robotics (3D)

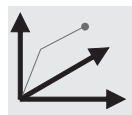


### Electrical terminal CPX

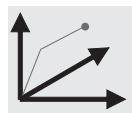
CPX is used as a modular and flexible automation platform, including embedded CODESYS controller, or as a versatile remote I/O in IP65 for scalable installation concepts. For universal communication via fieldbus/Ethernet.

- For decentralised and networked intelligence
- Industry 4.0 thanks to OPC UA and CODESYS V3
- Optimised versions for IP20 and potentially explosive environments
- Diagnostics and condition monitoring, also via IoT gateway and Festo Cloud

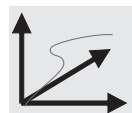
Permitted axes: 128 individual axes or 31 interpolating axes



C1: Single axis



M1: Interpolation (3D)

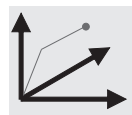


### Compact controller CECC

The versatile controller with CODESYS is ideal for simple control of electric and pneumatic drives. CECC stand-alone or as part of mechatronic solutions enables interpolating motion control for up to 3 axes.

- IO-Link® variant with master and device interface
- Direct connection of the Simplified Motion Series via IO-Link®
- Integrated IO-Link® interface for connecting Festo valve terminals, electric drives, sensors
- Digital I/O

Permitted axes: 4 axes



Single axis (PTP asynchronous)

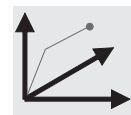


### Operator unit CDPX

The front end display CDPX with touchscreen visualises data and simplifies the communication with machines and systems. Project engineering and programming are easy and intuitive.

- CODESYS controller, CANopen master, digital and analogue I/O modules for easier control at field level
- Optional: digital and analogue I/O

Permitted axes: 8 axes

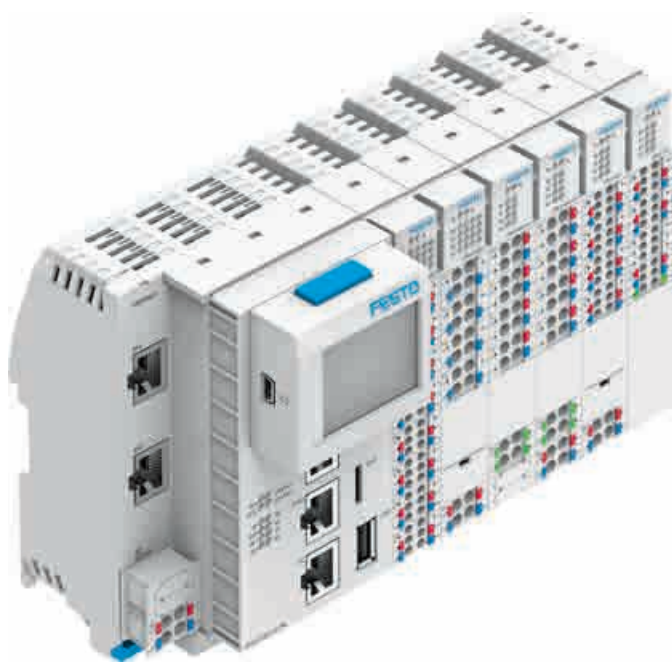


Single axis (PTP asynchronous)



## Compact, cost-effective and powerful for your handling system: the modular control system CPX-E

The automation system is designed as a central control system for handling technology, with an EtherCAT® master controller and a motion controller with IP20 protection.



With the software licence “Motion and robotics” for the controller CPX-E-CEC-M1-xx, you get a user-friendly solution that enables you to design handling quickly and conveniently. The two licences are available in the Festo AppWorld

→ [www.festo.com/appworld](http://www.festo.com/appworld)

### PTP licence

- Point-to-point interpolation
- Actuation of simple kinematic systems
- Graphic visualisation for handheld operator unit CDSA-D3-RV
- Teach-in function in combination with visualisation
- For applications such as pick & place, loading/unloading

### CP licence

- Cartesian linear and circular interpolation
- Interpolation of orientation
- Contour applications
- Graphic visualisation for handheld operator unit CDSA-D3-RV
- Teach-in function in combination with visualisation

### Powerful control:

In addition to comprehensive PLC functions and multi-axis applications with interpolation, the CPX-E can be easily integrated into existing host systems using the EtherCAT® master interface, the integrated PROFINET device interface or the EtherNet/IP slave interface. The OPC UA client and server functions ensure easy integration and interoperability in Industry 4.0 host environments with cloud and digitalisation concepts.

### Complete solution for a large number of applications:

As an integrated solution, the CPX-E features specific software functions tailored to many products and system solution packages from Festo, e.g. for:

- Parts handling
- Assembly systems
- Palletising
- Glueing and dispensing

The CPX-E can also be used to completely automate universal tasks, such as packaging machines (flow wrapper), palletising systems, selective soldering systems or waver handling units.

### Properties and features:

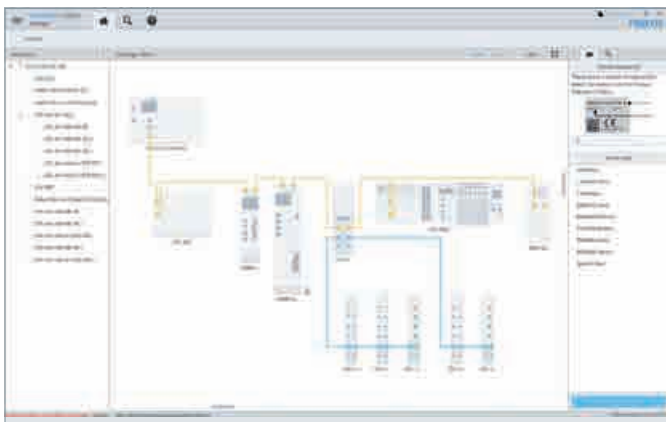
- EtherCAT® master interface as well as PROFINET and EtherNet/IP bus slave interface
- Standardised CODESYS V3 programming interface as of SP10
- Integrated motion functions such as SoftMotion
- Optional display
- Certifications: UL/CSA, C-Tick, IEC Ex
- Uniform data management using the Festo Automation Suite software

### Convenient programming with the Festo Teach Language FTL!

The software FTL is included in the CPX-E motion licences. It provides a variety of functions for programming motion and actuating I/Os. Thanks to its simple design and intuitive operation, programming motions is very quick and requires no extensive programming skills or special training. This means the programmer can focus fully on the application.

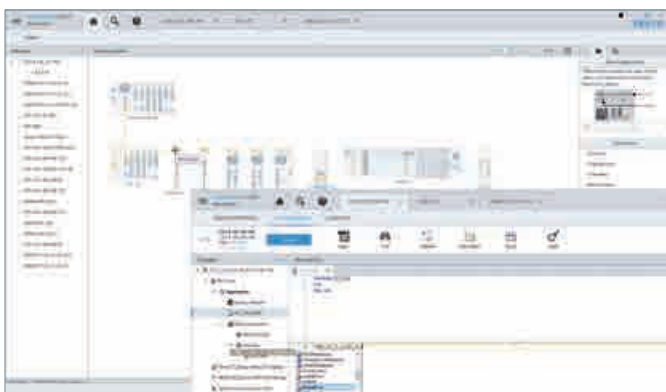
### Festo Automation Suite commissioning software

The PC-based Festo Automation Suite software combines the parameterisation, programming and maintenance of Festo components in one program. It enables the entire drive package, from the mechanical system to the controller, to be commissioned. Perfect for making industrial automation simple, efficient and seamless.



User interface with a uniform look

The basic functionalities of all Festo components are already integrated in the software. To customise the software, plug-ins or add-ons can be installed directly via the program. Device information, manuals and application descriptions can also be downloaded conveniently from the software without having to open a web browser every time.



Controller programming with CODESYS in CPX-E plug-in

#### Features and benefits:

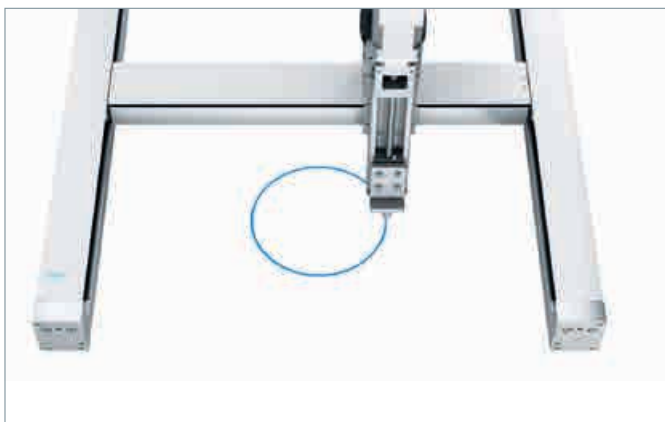
- Topology Editor: clear visualisation of all devices in the project and their connections
- Data import: find the right drive configuration quickly by importing sizing data, for example from the Handling Guide Online
- Commissioning wizard: only a few steps to get a drive system up and running with the CMMT-AS
- 2 clicks instead of 100: greatly simplified integration of the servo drive CMMT-AS into the control program with CPX-E
- Customisable thanks to device-specific plug-ins and add-ons  
Integrated controller programming with CODESYS

Download for free:

→ [www.festo.com/AutomationSuite](http://www.festo.com/AutomationSuite)

## Function modules for CODESYS – with the Festo Positioning Basic Library

The Festo Positioning Basic Library provides basic functions that make commissioning and positioning Festo handling systems much easier and faster. With the CODESYS function blocks and a corresponding basic project with web visualisation, you can program and commission the handling systems in no time. The Positioning Basic Library is available for free from the Festo App World.



Interpolated motions with the Festo Positioning Basic Library

### Functions

- System configuration
- Homing
- Jogging/inching/stepping
- Point-to-point motions
- Execution of CNC programs generated in CODESYS
- Execution of CNC programs as G code from text files
- Message system

### Controllers for the Festo Positioning Basic Lib



CECC-X



CPX-E-CEC-M1-PN



CPX-CEC-M1-V3



Software available in the  
Festo App World

→ [www.festo.com/appworld](http://www.festo.com/appworld)

### Festo handling systems with compatible control cabinet solutions offer control, motion and handling as an integrated package

The matching control cabinet for your handling system for simple control tasks, pick & place applications or complex control systems for coordinated, highly dynamic and precise movement sequences with up to 6 axes. Festo control cabinets for controllers provide protection for control components for single-axis and multi-axis systems.

Designed and built specifically for your application, they contain the latest products and technologies. Of course, the special requirements of your industry such as hygiene regulations are also taken into account. Safety concepts that conform to the EC Machinery Directive are provided if needed, e.g. safe stop SS1 to EN 60204-1 in automatic mode with PL d, cat. 3.

Take advantage of our specialists' many years of experience and expertise and describe your project requirements to us. We will take care of the rest.

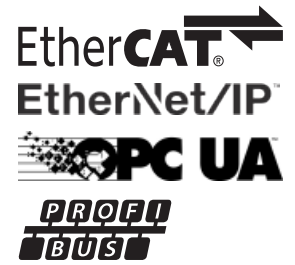
#### Scope of services:

- Custom engineering to suit your handling system
- Complete system for immediate operation – Festo plug and work
- Activation of up to six axes
- Preprogrammed basic projects in CODESYS
- 3D path control, optionally available with integrated PLC
- Safe stop SS1 in automatic mode with PLd
- Easy integration into the customer's safety hierarchy
- Additional digital inputs and outputs optional
- Degree of protection IP54
- Space-saving: precise fit with the frame of the respective kinematics
- Complete system has a user-friendly and maintenance-friendly design



**Quick to configure and integrate:**

- Function components for motion applications
- Host modules for easy integration into your control environment



Single-axis system



Linear gantry



Planar surface gantry



Three-dimensional gantry



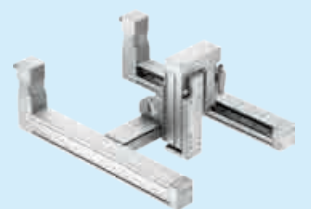
Highly dynamic linear gantry



Highly dynamic planar surface gantry



Compact planar surface gantry



Compact three-dimensional gantry

## Frames

Festo offers tested frames you can rely on for your handling system. Designed to match every kinematic system and application, in aluminium or steel.

### Standard steel frames

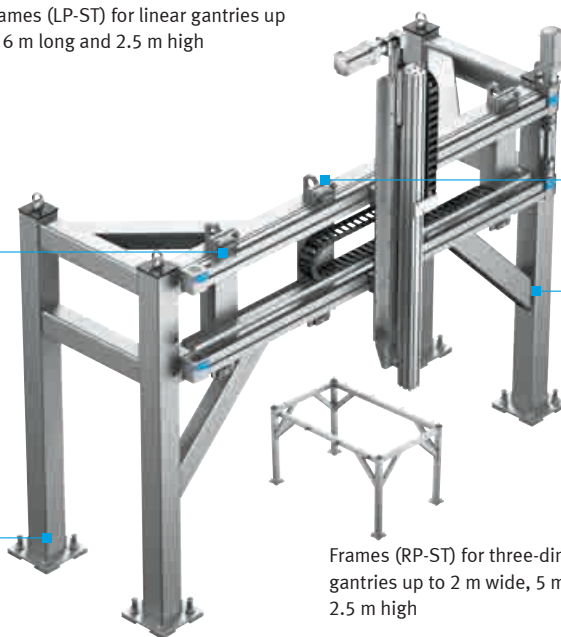


Interface with the handling system, unmachined, adjustment on the handling system



Floor mounting with levelling feet

Frames (LP-ST) for linear gantries up to 6 m long and 2.5 m high



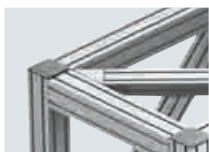
Transport lug permanently welded, optional ring eyelets



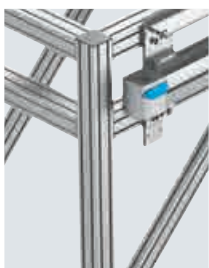
Reinforcing brace for optimum application of force

Frames (RP-ST) for three-dimensional gantries up to 2 m wide, 5 m long and 2.5 m high

### Standard aluminium frames



Direct connection without additional mounting bracket



Simple cross-bracing with profile material

Frames (LP-AL) for linear gantries up to 6 m long and 2 m high



Typical connecting component: cross brace/main profile

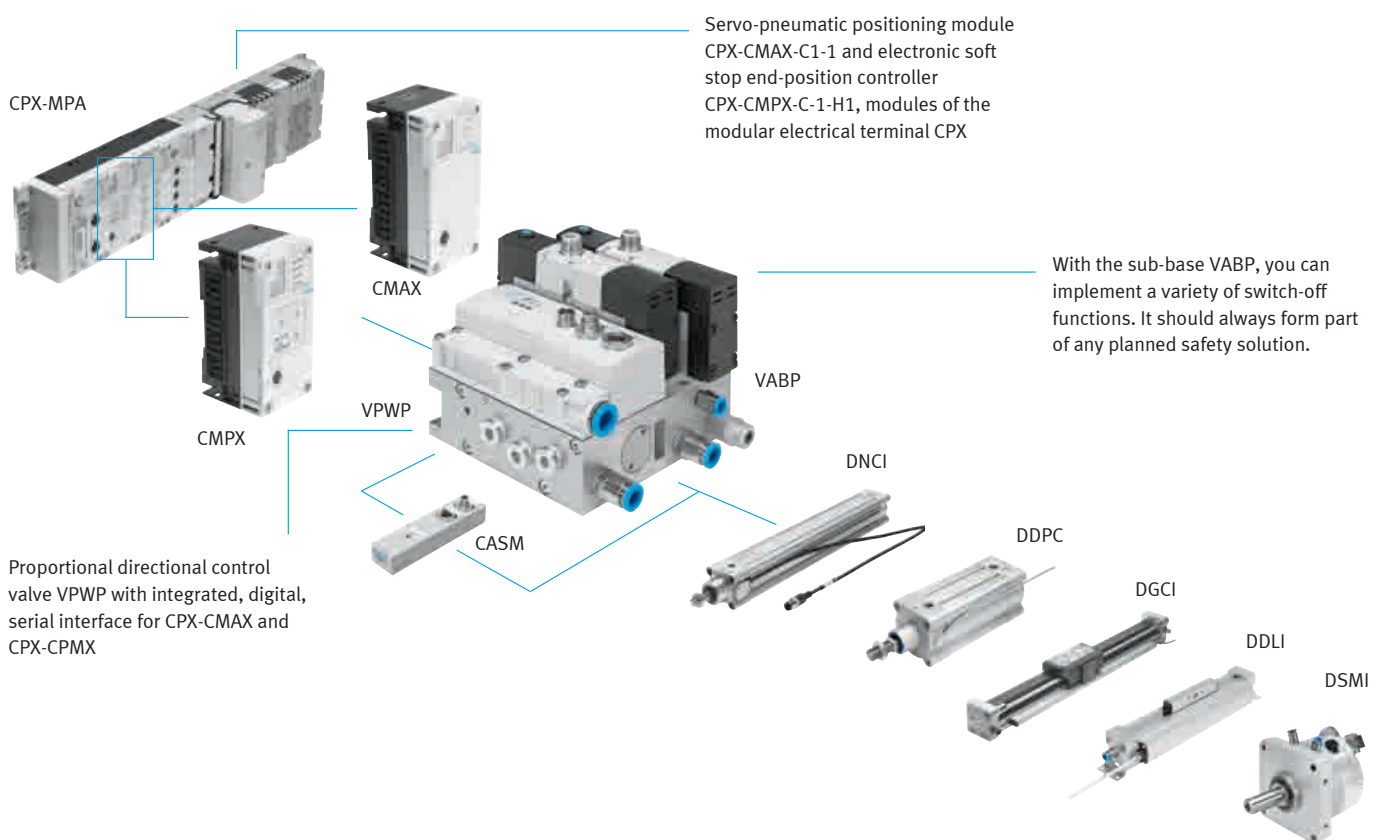


Floor mounting with levelling feet

Frames (RP-ST) for three-dimensional gantries up to 2 m wide, 3 m long and 1.5 m high

## Servo-pneumatics

Are you looking for an individual solution that is precise and position-controlled, gentle and yet powerful? Then why not use servo-pneumatics from Festo? The extremely versatile and modular drive system for servo-pneumatics is especially useful for high moving masses and small installation spaces. With a servo-pneumatic system, you can move a pneumatic cylinder to a preset target position in a position-controlled manner or generate a preset target force in a force-controlled manner.



### Applications:

- For high moving masses and small installation spaces
- Gentle and smooth motions for careful processing of workpieces

### Features and benefits:

- Affordable especially for moving masses from 5 kg
- High dynamic response
- Positioning and force control



## Worldwide, competent, to the point: all-in service and support for your handling system

We support you throughout the entire product life cycle of your handling system, from engineering and operation to modernisation. The services are carried out by trained, professional staff. That gives you planning reliability and ensures that your handling system will be ready for use in a very short space of time. It also frees up your own staff.



**The benefit to you: less effort, greater reliability, shorter time to market!**



### **Creative, customer-oriented and reliable conceptualisation and design!**

We support you with several online engineering tools, such as the Handling Guide Online for example, for planning, conceptualising, designing and simulating your solution. They will help you find the right solution quickly and easily. Everything will be correctly sized and comply with the relevant standards and guidelines. The CAD data can be applied directly to your plans. Or use the engineering service offered by our specialists and project engineers.



### **Cost-effective, fast and efficient procurement and delivery!**

Pneumatic or electric? At Festo, you can get over 33,000 pneumatic and electronic products from a single source. That means you have one order, one invoice and one contact person, so you can save time and cut your procurement costs. It's even easier with the Online Shop: available 24/7, with up-to-date prices and delivery times as well as order tracking.





### **Time-saving and simple installation and commissioning!**

Use our helpful software tools and application notes to get your ready-to-install handling system up and running quickly and easily. Our local service specialists ensure optimal integration with your overall system on site or via remote support.

### **Simple self-help video tutorials**

Our YouTube channel “Festo Service” offers practical and intuitive step-by-step instructions on popular topics such as repairs, configuration, commissioning and modifications.

→ [www.youtube.com/FestoService](http://www.youtube.com/FestoService)

### **Commissioning service for handling systems**

- For reliable operation: checking the wiring, connections, motion paths and energy chains
- For optimum path travel: configuring and parameterising the axes
- For maximum performance: optimising the control parameters and homing

- For tested safety: activating the axes in test mode
- For safe operation: instructing the machine operators, e.g. on error diagnostics and elimination of errors or on changing the position values

The commissioning service is available remotely or on site for single-axis to three-axis systems, and a “SafetyPackage” version is available for axis systems with safety module.

### **Application programming**

- Adjustment of parameters for system components
- Creation of program sequences in the controller
- Creation of visualisation
- Integrating additional components
- Connecting to the master controller

### **Technical training**

- Fundamentals of handling automation
- Motion control solution
- Maintenance and service of specific handling systems

**The benefit to you: maximum system productivity!**



### **Reliable and future-proof operation and modernisation!**

When it comes to maximum system availability and service life, it's a good idea to rely on our maintenance service. Thanks to quickly available spare parts, our repair service and qualified service technicians offer fast on-site help in an emergency and reduce your downtime to a minimum. Use our machine optimisation and energy saving services to increase energy efficiency and overall system effectiveness and make the most of your investments.



# Productivity

## **Maximum productivity is a question of ambition**

Do you share this attitude? We will be glad to help you achieve this goal – through our four outstanding qualities:

- Security • Efficiency • Simplicity • Competency

We are the engineers of productivity.

Discover new dimensions for your company:

→ [www.festo.com/whyfesto](http://www.festo.com/whyfesto)