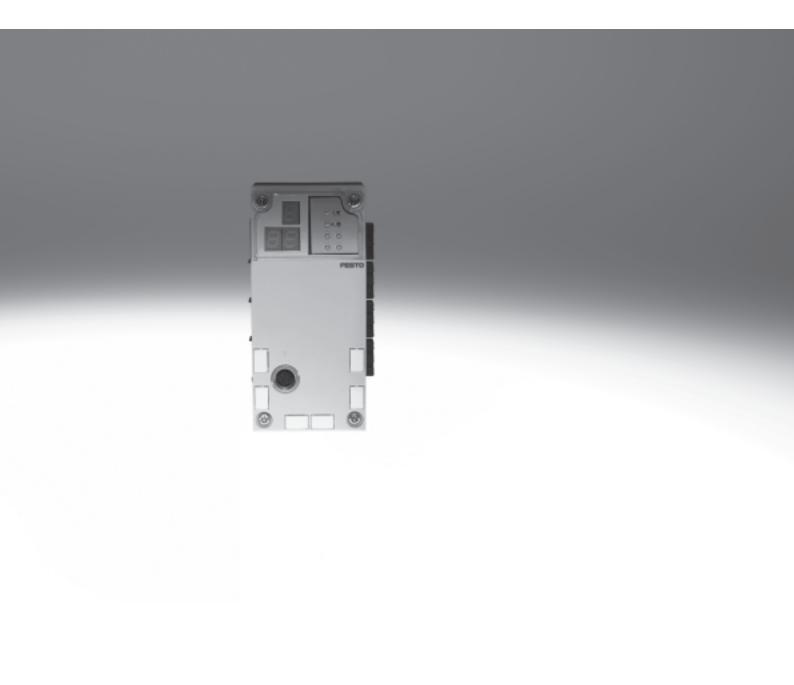
# **FESTO**

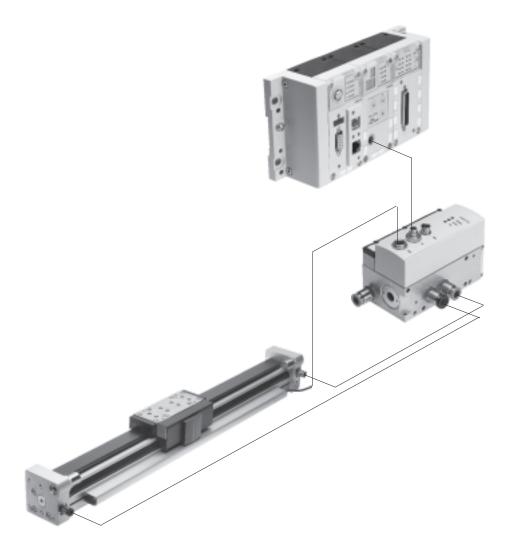


Overview

#### Servo-pneumatic drive technology

Positioning and Soft Stop applications as an integral component of the valve terminal CPX – the modular peripheral system for decentralised automation tasks. The modular design means that valves, digital inputs and outputs, positioning modules and end-position controllers, as appropriate to the application, can be combined in almost any way on the CPX terminal.

- Pneumatics and electrics control and positioning on one platform
- Innovative positioning technology piston rod drives, rodless drives, rotary drives
- Actuation via fieldbus
- Remote maintenance, remote diagnostics, web server, SMS and e-mail alert are all possible via TCP/IP
- Modules can be quickly exchanged and expanded without altering the wiring



Key features

#### **FESTO**

#### Axis controllers CPX-CMAX



#### Free choice:

Position and force control, directly actuated or selected from one of 64 configurable position sets. If you are looking for something

the configurable function for switching to the next set enables simple functional sequences to be realised in the axis controller CPX-CMAX.

Everything is recognisable: the auto-identification function identifies each station with its device data on the controller CPX-CMAX.

#### Also included:

The functional scope of the controller CPX-CMAX includes actuation of a brake or clamping unit via the proportional directional control valve VPWP.

Up to 7 modules (max. 7 axes) can be operated in parallel and independently of each other.
Commissioning via FCT (Festo configuration software) or via fieldbus:

no programming, only configuration.

- Technical data → 7
- OEM friendly commissioning
- also via fieldbusClear installation and fast commissioning

Greater flexibility

• Cost-effective

Advantages:

 You program the system in your PLC environment

#### End-position controllers CPX-CMPX



Fast travel between the mechanical end stops of the cylinder, stopping gently and without impact in the end position.

Fast commissioning via control panel, fieldbus or handheld unit. Improved control of downtime. Actuation of a brake or clamping unit via the proportional directional control valve VPWP is an integral component of the controller CMPX.

Depending on the fieldbus chosen, up to 9 end-position controllers can be actuated on the CPX terminal. All system data can be read and written via the fieldbus, including, for example the mid positions.

#### Technical data → Internet: cpx-cmpx

#### Advantages:

- Greater flexibility
- OEM friendly commissioning also via fieldbus
- Clear installation and fast commissioning
- Cost-effective
  - Up to 30% faster cycle rates
  - Significantly reduced system vibration
- Improved work ergonomics thanks to significantly reduced noise level
- The extended diagnostics help to reduce the service time of the machine

#### Proportional directional control valve VPWP



The 5/3-way proportional directional control valve for applications with Soft Stop and pneumatic positioning. Fully digitalised – with integrated pressure sensors, with new diagnostic functions. In sizes 4, 6 and 8. Flow rate of 350, 700 and 1,400 l/min.

With switching output for actuating a brake.

Coloured supply ports.

Pre-assembled cables guarantee faultless and fast connection with the controllers CPX-CMPX and CPX-CMAX.

#### Technical data → Internet: vpwp

- Clear installation and fast commissioning
- Reduction of system downtimes thanks to the new diagnostic options
- With switching output for actuating a brake/clamping unit

Drive options

#### **FESTO**

#### System with linear drive DGCI



- 1 Controller module CPX-CMPX or CPX-CMAX
- 2 Proportional directional control valve VPWP
- 3 Linear drive DGCI with displacement encoder
- 6 Connecting cable KVI-CP-3-...

- Pneumatic rodless linear drive with displacement encoder and recirculating ball bearing guide
- Displacement encoder with absolute and contactless measuring
- Identical construction as pneumatic linear drive DGC
- Diameter: 18 ... 40 and 63 mm
- Stroke: 100 ... 2,000 mm in fixed lengths
- Range of application of Soft Stop and pneumatic positioning of loads from 1 ... 180 kg
- No sensor interface required

#### Technical data → Internet: dgci

#### Advantages:

- Finished drive unit, precision guide
- Excellent running characteristics
- For fast and accurate positioning down to ±0.2 mm (only with axis controller CPX-CMAX)

#### System with linear drive DGPI, DGPIL or displacement encoder MME-MTS



- 1 Controller module CPX-CMPX or CPX-CMAX
- 2 Proportional directional control valve VPWP
- 3 Linear drive DGPI, DGPIL with displacement encoder
- 6 Connecting cable KVI-CP-3-...
- 9 NEBP-M16W6-K-2-M9W5

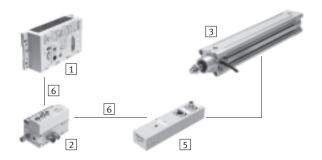
- Pneumatic rodless linear drive with displacement encoder, with or without recirculating ball bearing guide
- Displacement encoder with absolute and contactless measuring
- Diameter: 25 ... 63 mm
- Stroke: 225 ... 2,000 mm in fixed lengths
- Range of application of Soft Stop and pneumatic positioning of loads from 2 ... 180 kg
- No sensor interface required

#### Technical data → Internet: dgpi

#### Advantages:

- · Finished drive unit
- Excellent running characteristics
- For fast and accurate positioning down to ±0.2 mm (only with axis controller CPX-CMAX)

#### System with standard cylinder DNCI



- 1 Controller module CPX-CMPX or CPX-CMAX
- 2 Proportional directional control valve VPWP
- 3 Standard cylinder DNCI with displacement encoder
- 5 Sensor interface CASM-S-D3-R7
- 6 Connecting cable KVI-CP-3-...

- Standard cylinder with integrated displacement encoder, conforms to DIN ISO 6432, VDMA 24 562, NF E 49 003.1 and Uni 10 290
- Displacement encoder with contactless and incremental measuring
- Diameter: Ø 32 ... 63 mm
- Stroke: 100 ... 750 mm
- Range of application of Soft Stop and pneumatic positioning: loads from 3 ... 180 kg and the matching sensor interface CASM-S-D3-R7
- Pre-assembled cables guarantee faultless and fast electrical connection

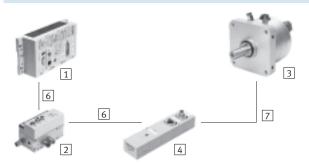
### Technical data → Internet: dnci

- Compact drive unit
- Universal applications
- · Also with guide unit
- For fast and accurate positioning down to ±0.3 mm (only with axis controller CPX-CMAX)

Drive options

#### **FESTO**

#### System with swivel module DSMI



- 1 Controller module CPX-CMPX or CPX-CMAX
- 2 Proportional directional control valve VPWP
- 3 Swivel module DSMI with displacement encoder
- 4 Sensor interface CASM-S-D2-R3
- 6 Connecting cable KVI-CP-3-...
- 7 Connecting cable NEBC-P1W4-K-0,3-N-M12G5

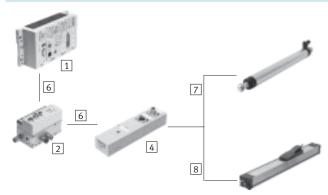
- Swivel module DSMI with integrated displacement encoder
- Identical construction as pneumatic swivel module DSM
- Absolute displacement encoder on basis of potentiometer
- Swivel range from 0 ... 270°
- Size: 25, 40, 63
- Max. torque: 5 ... 40 Nm
- Range of application of Soft Stop and pneumatic positioning: mass moments of inertia from 15 ... 6,000 kgcm<sup>2</sup> and the matching sensor interface CASM-S-D2-R3
- Pre-assembled cables guarantee faultless and fast connection with the proportional directional control valve VPWP

#### Technical data → Internet: dsmi

#### Advantages:

- Complete drive unit, compact, can be used immediately
- High angular acceleration
- With adjustable fixed stops
- For fast and accurate positioning down to ±0.2° (only with axis controller CPX-CMAX)

#### System with potentiometer



- 1 Controller module CPX-CMPX or CPX-CMAX
- 2 Proportional directional control valve VPWP
- 4 Sensor interface CASM-S-D2-R3
- 6 Connecting cable KVI-CP-3-...
- 7 Connecting cable NEBC-P1W4-K-0,3-N-M12G5
- 8 Connecting cable NEBC-A1W3-K-0,4-N-M12G5

#### Attachable potentiometers with absolute measurement, with high degree of protection

- With connecting rod or moment compensator
- Measuring range:100 ... 2,000 mm
- Pre-assembled cables guarantee faultless and fast connection with the sensor interface CASM
- Range of application of Soft Stop and pneumatic positioning with cylinder Ø 18 ... 80 mm, loads from 1 ... 300 kg

#### Technical data → Internet: casm

- Clear installation and fast commissioning
- Cost-effective
- Can also be used in harsh environmental conditions
- Variety in the drives: CPX-CMPX and CPX-CMAX also support cylinders with external displacement encoder

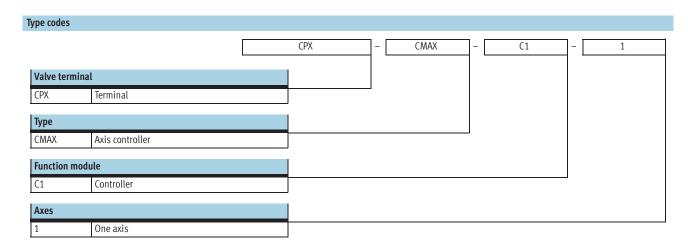


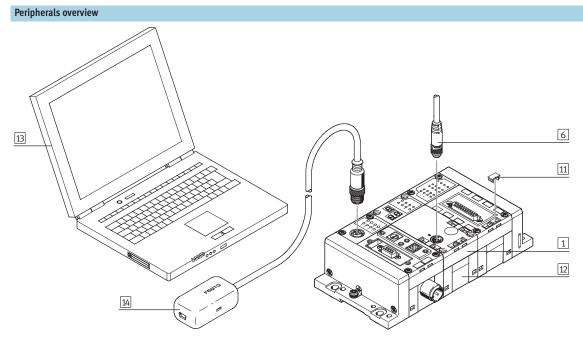
Drive options

3		Linear drive	Linear drive		Standard Swivel module cylinder		Potentiometer		→ Page/ Internet
		DGCI	DGPI, DGPIL	DNCI	DSMI	MME	LWG	TLF	1
1	Axis controller CPX-CMAX	-	-	-	-	-	•	•	7
2	Proportional directional control valve VPWP	•	•	•	•	•	•	•	vpwp
4	Sensor interface CASM-S-D2-R3	-	-	-	-	-	•	•	casm
5	Sensor interface CASM-S-D3-R7	-	-	•	-	-	-	-	casm
6	Connecting cable KVI-CP-3	•	•	•	•	-	-	•	10
7	Connecting cable NEBC-P1W4	-	-	-	•	-	-	-	nebc
8	Connecting cable NEBC-A1W3	_	-	-	-	-	-	•	nebc
9	Connecting cable NEBP-M16W6	-	•	-	-	•	-	-	nebp



Type codes and peripherals overview





Acces	Accessories					
	Туре	Brief description	→ Page/Internet			
1	Axis controller	Integrated in the CPX terminal.	8			
	CPX-CMAX	Screws for mounting on the plastic interlinking block are included in the scope of delivery.				
6	Connecting cable	For connecting axis controller CPX-CMAX and proportional directional control valve VPWP.	10			
	KVI-CP-3					
11	Inscription label	For labelling the modules.	10			
	IBS					
12	Interlinking block	Connects the individual modules.	11			
	CPX-GE	Two versions are available: plastic or metal interlinking block.				
13	Laptop	The CMAX can be configured and commissioned using the FCT software (Festo Configuration Tool).	-			
14	Adapter	For connecting the interface on the CPX node with the PC.	11			
	NEFC	A conventional USB cable with mini USB connector is also required.				
-	Screws	For mounting on the metal interlinking block.	10			
	CPX-M-M3					

**FESTO** 

Technical data

The axis controller CPX-CMAX is intended exclusively for valve terminals CPX.



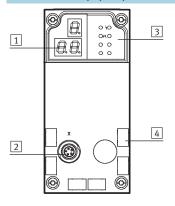
General technical data			
Operating voltage			
Operating voltage range		[V DC]	18 30
Nominal operating voltage		[V DC]	24
Current consumption at nominal	l operating voltage	[mA]	200
Fuse protection (short circuit)			Electronic
Power failure bridging		[ms]	10
Load voltage			
Load voltage range		[V DC]	20 30
Nominal load voltage		[V DC]	24
Perm. load current		[A]	2.5
Fuse protection (short circuit)			Electronic
Number of axis strings			1
Number of axis strings			1
Axes per string	1-	f1	1
Length of connecting cable to ax	ilS	[m]	≤ 30
Max. no. of modules			7
Display	2	F1 +-1	7-segment display
Assigned addresses	Outputs	[bit]	8x8
	Inputs	[bit]	8x8
Operating modes			Record Select mode
			Direct mode
Controller types			Position control
			Force control
Diagnostics			Module-orientated
			Via local 7-segment display
Status display			Module status
			Power Load
			Display/Error Axis X
			MC Axis X
Control interface			
Data			CAN bus with Festo protocol
			Digital
Electrical connection			5-pin
			M9
			Socket
Materials: Housing			Reinforced polyamide
Note on materials			RoHS-compliant
Product weight		[g]	140
Dimensions	Length	[mm]	107
	Width	[mm]	50
	Height	[mm]	55



Technical data

Operating and environmental conditions		
Ambient temperature	[°C]	−5 +50
Relative air humidity	[%]	5 95, non-condensing
Protection class to IEC 60529		IP65

#### **Connection and display components**



- 1 3-digit display
- 2 Control interface
- 3 Status LEDs
- 4 Inscription labels

Pin allocation – plug 2			
	Pin	Signal	Designation
/3	1	+24 V	Nominal operating voltage
2 4	2	+24 V	Load voltage
	3	0 V	Ground
1 5	4	CAN_H	CAN high
	5	CAN_L	CAN low
	Housing	Screened	Cable screening

Permitted bus nodes/FEC	Permitted bus nodes/FEC					
Bus node/FEC	Protocol	Max. no. of CMAX modules				
CPX-FEC	-	7				
CPX-FB6	Interbus	1				
CPX-FB11	DeviceNet <sup>1)</sup>	7				
CPX-FB13	PROFIBUS DP <sup>2)</sup>	7				
CPX-FB14	CANopen	2				
CPX-FB23	CC-Link	7				
CPX-FB32	Ethernet/IP	7				
CPX-FB33	PROFINET, M12	7				
CPX-M-FB34	PROFINET, RJ45	7				
CPX-FB38	EtherCat	7				

- 1) With Revision 20 (R20) 2) With Revision 23 (R23)

PROFIBUS®, DeviceNet®, CANopen®, INTERBUS®, CC-LINK®, EtherCAT®, PROFINET®, EtherNet/IP® is a registered trademark of its respective trademark holder in certain countries.

Accessories

Ordering data – Axis controllers						
	Brief description	Part No.	Туре			
	Order code in the CPX configurator: T21	548932	CPX-CMAX-C1-1			

Ordering data - Connectin	g cables			
	Brief description	Cable length [m]	Part No.	Туре
	Connecting cable with angled plug and angled socket	0.25	540327	KVI-CP-3-WS-WD-0,25
		0.5	540328	KVI-CP-3-WS-WD-0,5
		2	540329	KVI-CP-3-WS-WD-2
		5	540330	KVI-CP-3-WS-WD-5
		8	540331	KVI-CP-3-WS-WD-8
	Connecting cable with straight plug and straight socket	2	540332	KVI-CP-3-GS-GD-2
		5	540333	KVI-CP-3-GS-GD-5
		8	540334	KVI-CP-3-GS-GD-8
	Connector for control cabinet through-feed	-	543252	KVI-CP-3-SSD

Ordering data – Screws			
	Brief description	Part No.	Туре
	For mounting on the metal interlinking block	550219	CPX-M-M3X22-4X

Ordering data – Inscription labels							
	Brief description	Number	Part No.	Туре			
	Inscription labels 6x10, in frames	64	18576	IBS-6X10			

Documentation <sup>1)</sup>			
	Language	Part No.	Туре
	DE	559750	P.BE-CPX-CMAX-SYS-DE
	EN	559751	P.BE-CPX-CMAX-SYS-EN
	ES	559752	P.BE-CPX-CMAX-SYS-ES
	FR	559753	P.BE-CPX-CMAX-SYS-FR
	ІТ	559754	P.BE-CPX-CMAX-SYS-IT
	SV	559755	P.BE-CPX-CMAX-SYS-SV

<sup>1)</sup> Manual in paper form is not included in the scope of delivery.



Accessories

Ordering data – Adapters			
	Brief description	Part No.	Туре
	Adapter cable from 5-pin M12 to mini USB socket and controller software	547432	NEFC-M12G5-0.3-U1G5

Ordering data – Interlinking block, plastic, as expansion block							
	Brief description	Connection	Part No.	Type			
	Without power supply	-	195742	CPX-GE-EV			
	With additional power supply for outputs	M18	195744	CPX-GE-EV-Z			
		7/8" - 5-pin	541248	CPX-GE-EV-Z-7/8-5POL			
		7/8" – 4-pin	541250	CPX-GE-EV-Z-7/8-4POL			
	With additional power supply for valves	M18	533577	CPX-GE-EV-V			
		7/8" - 4-pin	541252	CPX-GE-EV-V-7/8-4POL			

Ordering data – Tie rods							
	Brief description	Extension	Part No.	Туре			
	For extension using an interlinking block	1-fold	525418	CPX-ZA-1-E			

### **Product Range and Company Overview**

#### **A Complete Suite of Automation Services**

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.



**Custom Automation Components** Complete custom engineered solutions



**Custom Control Cabinets** Comprehensive engineering support and on-site services



**Complete Systems** Shipment, stocking and storage services

#### The Broadest Range of Automation Components

With a comprehensive line of more than 30,000 automation components, Festo is capable of solving the most complex automation requirements.



Electromechanical Electromechanical actuators, motors, controllers & drives



**Pneumatics** Pneumatic linear and rotary actuators, valves, and air supply



PLCs and I/O Devices PLC's, operator interfaces, sensors and I/O devices

#### Supporting Advanced Automation... As No One Else Can!

Festo is a leading global manufacturer of pneumatic and electromechanical systems, components and controls for industrial automation, with more than 12,000 employees in 56 national headquarters serving more than 180 countries. For more than 80 years, Festo has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Our dedication to the advancement of automation extends beyond technology to the education and development of current and future automation and robotics designers with simulation tools, teaching programs, and on-site services.

#### Quality Assurance, ISO 9001 and ISO 14001 Certifications

Festo Corporation is committed to supply all Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.

To meet this commitment, we strive to ensure a consistent, integrated, and systematic approach to management that will meet or exceed the requirements of the ISO 9001 standard for Quality Management and the ISO 14001 standard for Environmental Management.



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