

End-position controllers CPX-CMPX

FESTO



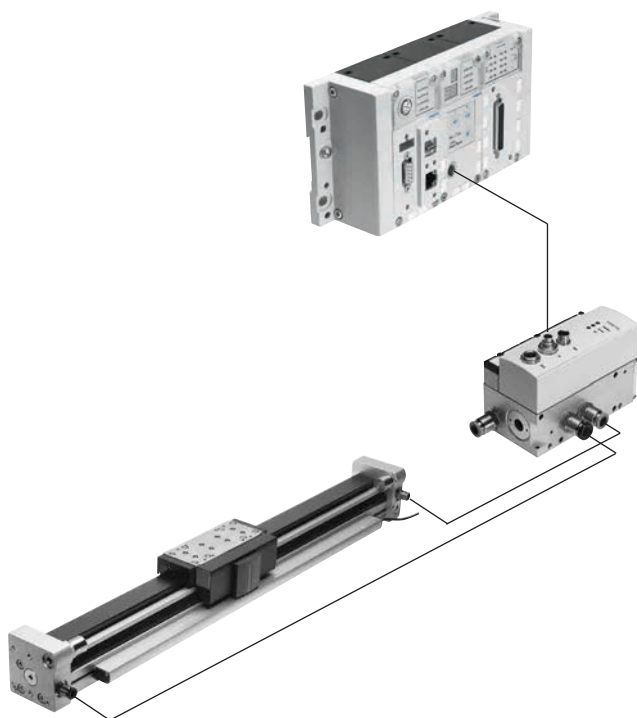
Overview

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.

Advantages:

- 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 alerts are all possible via TCP/IP
- Modules can be quickly exchanged and expanded without altering the wiring



Key features

Axis controller CPX-CMAX



Free choice:

Position and force control, directly actuated or selected from one of 128 configurable position sets.

If you are looking for something more: The configurable record sequencing function enables simple functional sequences to be realised in the axis controller CPX-CMAX.

Everything is recognisable:

The auto-identification function identifies each participant with its device data on the controller CPX-CMAX.

Also included:

Actuation of a brake or clamping unit via the proportional directional control valve VPWP is also part of the scope of performance of the controller CPX-CMAX.

Up to 8 modules (max. 8 axes) can be operated in parallel and independently of each other.

Commissioning via FCT (Festo configuration software) or via fieldbus: no programming, only configuration.

Advantages:

- Greater flexibility
- OEM friendly – commissioning also via fieldbus
- Easy installation and fast commissioning
- Cost-effective
- You program the system in your PLC environment

End-position controllers CPX-CMPX

Data sheets → Internet: 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 downtime control.

Actuation of a brake or clamping unit via the proportional directional control valve VPWP is an integral part 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.

Advantages:

- Greater flexibility
- OEM friendly – commissioning also via fieldbus
- Easy 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

Data sheets → Internet: 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, 8 and 10.

Flow rates of 350, 700, 1400 and 2000 l/min.

With switching output for controlling a brake.

Coloured compressed air supply ports. Pre-assembled cables guarantee faultless and fast connection with the controllers CPX-CMPX and CPX-CMAX.

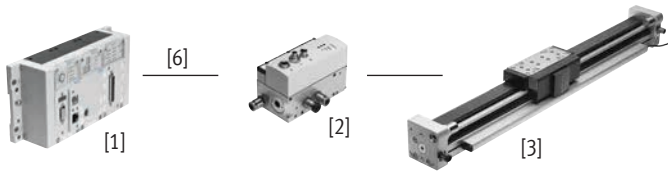
Advantages:

- Easy 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

System with linear drive DDLI, DGCI

Data sheets → Internet: [ddli](#) or [dgci](#)



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

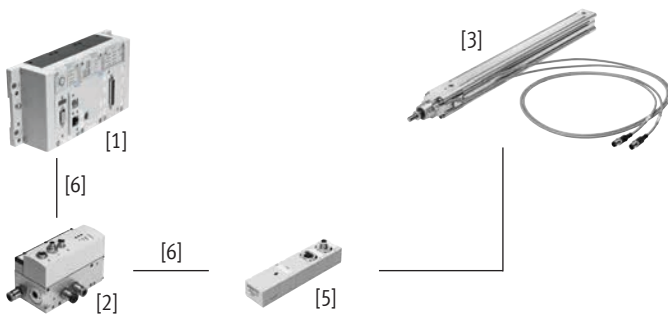
- Pneumatic rodless linear drive with displacement encoder, with or without recirculating ball bearing guide
- Displacement encoder with absolute and contactless measurement
- Diameter:
 - With DGCI: 18 ... 63 mm
 - With DDLI: 25 ... 63 mm
- Stroke: 100 ... 2000 mm in fixed lengths
- Range of applications: Soft Stop and pneumatic positioning
- Loads from 1 ... 180 kg
- No sensor interface required

Advantages:

- Complete drive unit
- DDLI for easy connection to the customer's guide system
- Excellent running characteristics
- For fast and accurate positioning up to ± 0.2 mm (only with axis controller CPX-CMAX)

System with standards-based cylinder DNCI, DDPC

Data sheets → Internet: [dncl](#)



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

- Standards-based 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 32 ... 100 mm
- Stroke: 100 ... 750 mm
- Range of applications: Soft Stop and pneumatic positioning
- Loads from 3 ... 450 kg and the corresponding sensor interface CASM-S-D3-R7
- Pre-assembled cables guarantee faultless and fast electrical connection

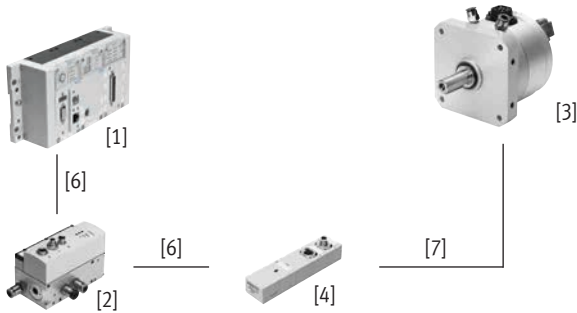
Advantages:

- Compact drive unit
- Can be used universally
- Also with guide unit
- For fast and accurate positioning up to ± 0.5 mm (only with axis controller CPX-CMAX)

Drive options

System with semi-rotary drive DSMI

Data sheets → Internet: [dsmi](#)



- [1] Controller module CPX-CMPX or CPX-CMAX
- [2] Proportional directional control valve VPWP
- [3] Semi-rotary drive 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

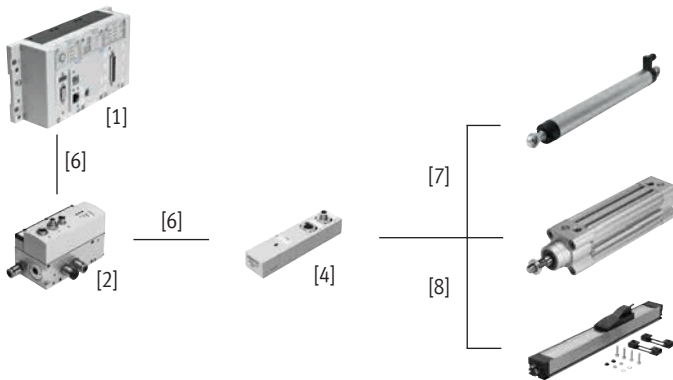
- Semi-rotary drive DSMI with integrated displacement encoder
- Identical design to pneumatic semi-rotary drive DSM
- Absolute displacement encoder based on a potentiometer
- Swivel range from 0 ... 270°
- Size: 25, 40, 63
- Max. torque: 5 ... 40 Nm
- Range of applications: Soft Stop and pneumatic positioning
- Mass moments of inertia of 15 ... 6000 kgcm² and the corresponding sensor interface CASM-S-D2-R3
- Pre-assembled cables guarantee faultless and fast connection with the proportional directional control valve VPWP

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

Data sheets → Internet: [casm](#)



- [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:
Connecting rod: 100 ... 750 mm
Moment compensator: 225 ... 2000 mm
- Pre-assembled cables guarantee faultless and fast connection with the sensor interface CASM
- Range of applications: Soft Stop and pneumatic positioning with cylinder diameters of 25 ... 80 mm
- Loads from 1 ... 300 kg

Advantages:

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

Drive options

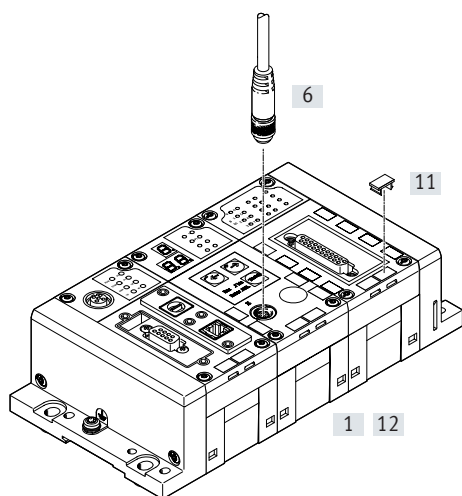
| System components for Soft Stop systems with end-position controller CPX-CMPX | | | | | | | |
|---|---|--------------|--------------------------|-------------------|----------------------|---------|---------------------|
| [3] | | Linear drive | Standards-based cylinder | Semi-rotary drive | Displacement encoder | | → Page/ Internet |
| | | DDLI/DGCI | DNCI/DDPC | DSMI | MLO-LWG/-TLF | MME-MTS | |
| [1] | End-position controller CPX-CMPX | ■ | ■ | ■ | ■ | ■ | 8 |
| [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 |
| – | Connecting cable NEBP-M16W6-... | – | – | – | – | ■ | vpwp |

Type codes and peripherals overview

Type codes

| | | | |
|----------|---|-----|---------------|
| 001 | Series | 003 | Axes |
| CPX-CMPX | End-position controller for electrical terminal | 1 | One |
| 002 | Function module | 004 | Control panel |
| C | Controller | H1 | Integrated |

Peripherals overview



| Accessories | | Brief description | → Page/Internet |
|-------------|----------------------------------|--|-----------------|
| Type | | | |
| [1] | End-position controller CPX-CMPX | Integrated in the CPX terminal. Screws for mounting on the polymer interlinking block are included in the scope of delivery | 8 |
| [6] | Connecting cable KVI-CP-3 | For connecting end-position controller CPX-CMPX and proportional directional control valve VPWP | 10 |
| [11] | Inscription label IBS | For labelling the modules | 10 |
| [12] | Interlinking block CPX-GE | Connects the individual modules. Two versions are available: Polymer or metal interlinking block. | 11 |
| – | Screws CPX-M-M3 | For mounting on the metal interlinking block | 10 |

Data sheet

The end-position controller CPX-CMPX is intended exclusively for use in 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 operating voltage | [mA] | 80 |

Load voltage

| | | |
|--------------------------|--------|-----------|
| Load voltage range | [V DC] | 20 ... 30 |
| Nominal load voltage | [V DC] | 24 |
| Permissible load current | [A] | 2.5 |

| | | |
|------------------------------------|---------|--|
| Number of axes per module | | 1 |
| Length of connecting cable to axis | [m] | ≤ 30 |
| Max. number of modules | | 9 |
| Display | | 7-segment display |
| Control elements | | 3 buttons |
| Assigned addresses | Outputs | [bit] 6x8 |
| | Inputs | [bit] 6x8 |
| Diagnostics | | Module-orientated Via local 7-segment display |
| Status indication | | Module status Power load |

Control interface

| | | |
|-----------------------|--|-----------------------------|
| Data | | CAN bus with Festo protocol |
| | | Digital |
| Electrical connection | | 5-pin |
| | | M9 |
| | | Socket |

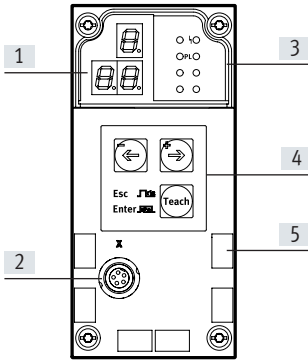
| | | | |
|--------------------|--------|------|---------------|
| Materials: Housing | | | Reinforced PA |
| Product weight | | [g] | 140 |
| Dimensions | Length | [mm] | 107 |
| | Width | [mm] | 50 |
| | Height | [mm] | 55 |

Data sheet

Operating and environmental conditions

| | | |
|--|------|--------------------------|
| Ambient temperature | [°C] | –5 ... +50 |
| Relative humidity | [%] | 5 ... 95, non-condensing |
| Degree of protection to IEC 60529 | | IP65 |
| CE marking (see declaration of conformity) | | To EU EMC Directive |

Connection and display components



- [1] 3-digit display
- [2] Control interface
- [3] Status LEDs
- [4] Operating buttons
- [5] Inscription labels

Pin allocation – Control interface

| | Pin | Signal | Designation |
|--|---------|--------|---------------------------|
| | 1 | +24 V | Nominal operating voltage |
| | 2 | +24 V | Load voltage |
| | 3 | 0 V | Ground |
| | 4 | CAN_H | CAN high |
| | 5 | CAN_L | CAN low |
| | Housing | Shield | Cable shielding |

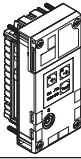
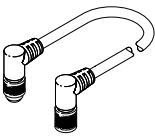

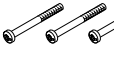



Permitted bus nodes/CEC

| Bus node/CEC | Protocol | Max. no. of CMPX modules |
|--------------|-------------------------|--|
| CPX-CEC... | – | 9 |
| CPX-FB6 | INTERBUS | 2 |
| CPX-FB11 | DeviceNet ¹⁾ | 9 |
| CPX-FB13 | PROFIBUS ²⁾ | 9 |
| CPX-FB14 | CANopen | 5 |
| CPX-M-FB21 | INTERBUS | 2 |
| CPX-FB23-24 | CC-LINK [®] | 5 (as function module F23) 9 (as function module F24) |
| CPX-FB33 | PROFINET RT, M12 | 9 |
| CPX-M-FB34 | PROFINET RT, RJ45 | 9 |
| CPX-M-FB35 | PROFINET RT, SCRJ | 9 |
| CPX-FB36 | EtherNet/IP | 9 |
| CPX-FB37 | EtherCAT | 9 |
| CPX-FB39 | Sercos III | 9 |
| CPX-FB40 | POWERLINK | 9 |
| CPX-M-FB41 | PROFINET RT | 9 |

1) As of revision 20 (R20)

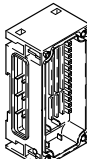

2) As of revision 23 (R23)

Accessories

| Ordering data | | Brief description | | Part no. | Type |
|--|---|-------------------|-----------|----------------------|----------|
| End-position controller | | | | | |
|  | Order code in the CPX configurator: T20 | | 548931 | CPX-CMPX-C-1-H1 | |
| | | | | | |
| Connecting cables | | | | | |
|  | Connecting cable with angled plug and angled socket | 0.25 m | 540327 | KVI-CP-3-WS-WD-0.25 | |
| | | 0.5 m | 540328 | KVI-CP-3-WS-WD-0.5 | |
| | | 2 m | 540329 | KVI-CP-3-WS-WD-2 | |
| | | 5 m | 540330 | KVI-CP-3-WS-WD-5 | |
| | | 8 m | 540331 | KVI-CP-3-WS-WD-8 | |
|  | Connecting cable with straight plug and straight socket | 2 m | 540332 | KVI-CP-3-GS-GD-2 | |
| | | 5 m | 540333 | KVI-CP-3-GS-GD-5 | |
| | | 8 m | 540334 | KVI-CP-3-GS-GD-8 | |
|  | Connecting component for control cabinet through-feed | | 543252 | KVI-CP-3-SSD | |
| Screws | | | | | |
|  | For mounting on the metal interlinking block | | 550219 | CPX-M-M3X22-4X | |
| Inscription labels | | | | | |
|  | Inscription labels 6x10, in frames | | 64 pieces | 18576 | IBS-6X10 |
| User documentation | | | | | |
|  | Description of end-position controller CPX-CMPX ¹⁾ | German | 555479 | P.BE-CPX-CMPX-SYS-DE | |
| | | English | 555480 | P.BE-CPX-CMPX-SYS-EN | |
| | | Spanish | 555481 | P.BE-CPX-CMPX-SYS-ES | |
| | | French | 555482 | P.BE-CPX-CMPX-SYS-FR | |
| | | Italian | 555483 | P.BE-CPX-CMPX-SYS-IT | |

1) User documentation in paper form is not included in the scope of delivery

Accessories

| Ordering data | | Brief description | | Part no. | Type |
|---|---|-------------------|--------|----------------------|------|
| Polymer interlinking block as extension block | | | | | |
|  | Without power supply | – | 195742 | CPX-GE-EV | |
| | With additional supply for outputs | M18 – 4-pin | 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 – 4-pin | 533577 | CPX-GE-EV-V | |
| | | 7/8" – 4-pin | 541252 | CPX-GE-EV-V-7/8-4POL | |
| Tie rod | | | | | |
|  | For expansion using an interlinking block | Single | 525418 | CPX-ZA-1-E | |

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