Measuring modules CPX-CMIX

FESTO

Measuring modules CPX-CMIX

Key features

At a glance

Movement and measurement in one, 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, end-position controllers and measuring modules, as appropriate to the application, can be combined in almost any way on the CPX terminal.

Advantages:

- Pneumatics and electrics – movement and measurement on one platform
- Innovative measurement 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

Retracting/advancing and measuring in one work step

Fully digital data acquisition and transmission means pneumatic cylinders can now be used as sensors. With very high repetition accuracy and incorporating both analogue and digital measuring sensors.

Time and space-saving

Electrical peripherals enable the highly efficient measuring module to be seamlessly and compactly integrated into existing control environments. The new component is tailored to the proven CPX system and can be commissioned quickly and easily.

Process reliability

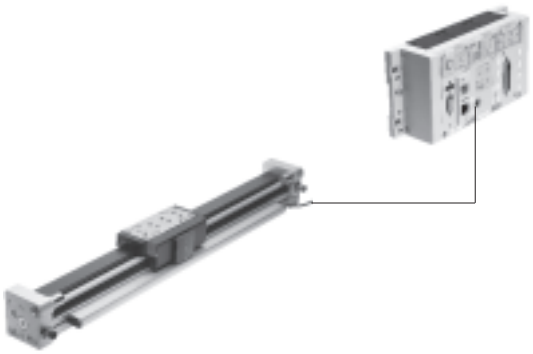
All process steps are measured and documented, which significantly improves quality. The adjustable contact force (via pressure regulator) also increases the precision of the “displacement sensor”.

Reduced system costs

As with all modules in the electrical terminal CPX, easy functional integration in fieldbus/Ethernet networks is a matter of course.

Drives to use

Linear drives DGCI



- The measurement signal of the linear drive DGCI supplies a CAN signal, which is read in directly into the CPX-CMIX module
- The measuring system measures absolute values, in other words the actual position is immediately available for the controller after the system is switched on

Technical data

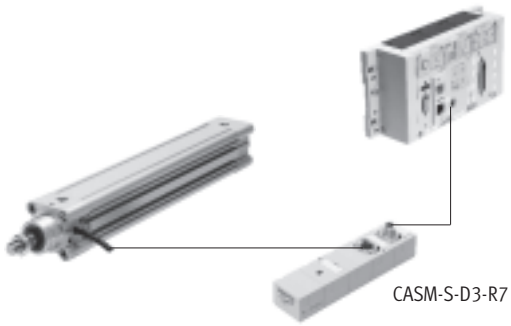
Linearity	[%]	≤ ±0.01 full scale (nominal length)
Repetition accuracy	[mm]	< ±0.01
Hysteresis	[µm]	< 4
Shortest measurable speed	[mm/s]	10

Measuring modules CPX-CMIX

Key features

Drives to use

Linear drives DNCI

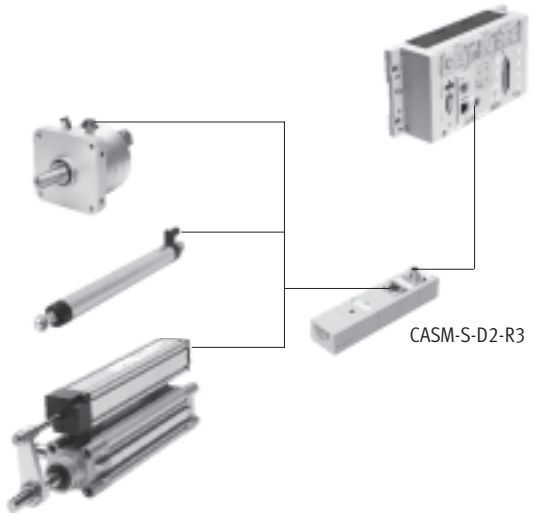


CASM-S-D3-R7

- The measuring signal of the linear drive DNCI is an incremental signal, which is converted to a CAN signal in the sensor interface CASM-S-D3-R7. The converted signal is then read into the CPX-CMIX
- The measuring system does not measure absolute values, so must be homed after it is switched on. The actual position is available for the controller once this has been done

Technical data		
Linearity	[mm]	≤ ±0.07
Repetition accuracy	[mm]	< ±0.02
Hysteresis	[µm]	< 0.03
Shortest measurable speed	[mm/s]	10

Swivel modules DSMI, standard cylinders DNCM or potentiometers MLO-POT



CASM-S-D2-R3

- The measuring systems supply an analogue measuring signal, which is converted to a CAN signal in the sensor interface CASM-S-D2-R3. The converted signal is then read into the CPX-CMIX
- Potentiometers measure absolute values, in other words the actual position is immediately available for the controller after the potentiometer is switched on

Other potentiometers can be used, in which case the following must be noted:

- The connection resistance of the potentiometer must be 3 ... 20 kΩ
- Poorer potentiometer values for linearity and temperature coefficient will decrease the accuracy of the measured value
- A special cable must be used for connection to the sensor interface

Technical data								
Measuring length	[mm]	100	150	225	300	360	450	500
Linearity	[% of stroke]	±0.1	±0.09	±0.08	±0.07	±0.06	±0.05	±0.05
Repetition accuracy	[mm]	±0.01	±0.01	±0.01	±0.01	±0.011	±0.014	±0.016
Shortest measurable speed	[mm/s]	3	5	7	9	11	14	15
Temperature coefficient	[ppm/°C]	5						

Measuring length	[mm]	600	750	1,000	1,250	1,500	1,750	2,000
Linearity	[% of stroke]	±0.05	±0.04	±0.04	±0.03	±0.03	±0.03	±0.02
Repetition accuracy	[mm]	±0.019	±0.023	±0.03	±0.038	±0.046	±0.054	±0.062
Shortest measurable speed	[mm/s]	18	23	31	38	46	53	61
Temperature coefficient	[ppm/°C]	5						

Measuring modules CPX-CMIX

Type codes and peripherals overview

Type codes

CPX – CMIX – M1 – 1

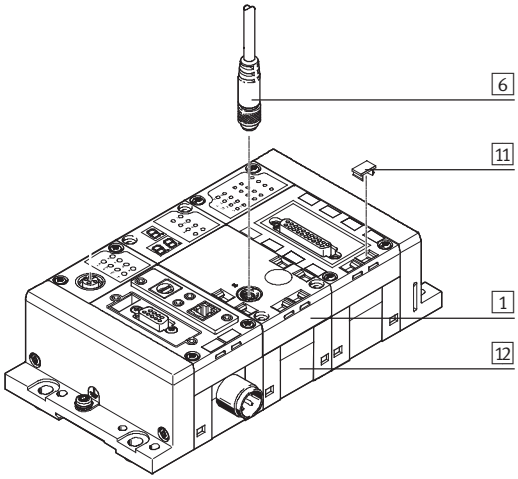
Valve terminal	
CPX	Terminal

Type	
CMIX	Measuring module

Function module	
M1	Measuring unit

Axes	
1	One axis

Peripherals overview



Accessories

	Type	Brief description	➔ Page/Internet
1	Measuring module CPX-CMIX	Integrated in the CPX terminal. Screws for mounting on the plastic interlinking block are included in the scope of delivery.	5
6	Connecting cable KVI-CP-3	For connecting the measuring module CPX-CMIX and displacement encoder.	7
11	Inscription label IBS	For labelling the modules.	7
12	Interlinking block CPX-GE	Connects the individual modules. Two versions are available: plastic or metal interlinking block.	8
–	Screws CPX-M-M3	For mounting on the metal interlinking block.	7

Measuring modules CPX-CMIX

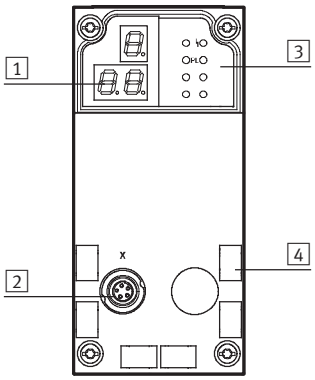
Technical data

The measuring module CPX-CMIX 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
Protection against short circuit			Yes
Power failure bridging		[ms]	10
No. of axis strings			1
Axes per string			1
Length of connecting cable to axis		[m]	≤ 30
Max. no. of modules			9
Display			7-segment display
Assigned addresses	Outputs	[bit]	6x8
	Inputs	[bit]	6x8
Diagnostics			Channel and module-oriented
			Via local 7-segment display
			Undervoltage of modules
			Undervoltage of measuring system
Status display			Power Load
			Error
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

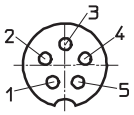
Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Relative air humidity	[%]	5 ... 95, non-condensing
Protection class to IEC 60529		IP65

Connection and display components



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

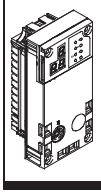
Pin allocation – Plug 2

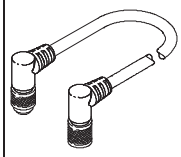
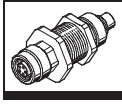


Pin	Signal	Designation
1	+24 V	Nominal operating voltage
2	+24 V	Load voltage
3	0 V	Ground
4	CAN_H	CAN high
5	CAN_L	CAN low
Housing	Screened	Cable screening

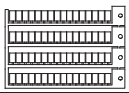
Permitted bus nodes/FEC

Bus node/FEC	Protocol	Max. no. of CMIX modules	Remarks
CPX-FEC	–	9	On request
CPX-FB6	Interbus	2	On request
CPX-FB11	DeviceNet	9	Revision 20 (R20) and above
CPX-FB13	Profibus DP	9	Revision 23 (R23) and above
CPX-FB14	CANopen	3	On request
CPX-FB23	CC-Link	9	On request
CPX-FB32	Ethernet/IP	9	On request
CPX-FB33	Profinet, M12	9	On request
CPX-M-FB34	Profinet, RJ45	9	On request
CPX-FB38	EtherCat	9	On request

Ordering data – Measuring module			
	Brief description	Part No.	Type
	Order code in the CPX configurator: T23	**567417**	**CPX-CMIX-M1-1**

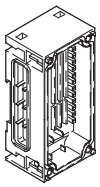
Ordering data – Connecting cables				
	Brief description	Cable length [m]	Part No.	Type
	Connecting cable with angled plug and angled socket	0.25	**540327**	**KVI-CP-3-WS-WD-0,25**
		0.5	**540328**	**KVI-CP-3-WS-WD-0,5**
		2	**540329**	**KVI-CP-3-WS-WD-2**
		5	**540330**	**KVI-CP-3-WS-WD-5**
		8	**540331**	**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.	Type
	For mounting on the metal interlinking block	**550219**	**CPX-M-M3X22-4X**

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

Documentation[1)]			
	Language	Part No.	Type
	DE	**567053**	**P.BE-CPX-CMIX-DE**
	EN	**567054**	**P.BE-CPX-CMIX-EN**
	ES	**567055**	**P.BE-CPX-CMIX-ES**
	FR	**567056**	**P.BE-CPX-CMIX-FR**
	IT	**567057**	**P.BE-CPX-CMIX-IT**
	SV	**567058**	**P.BE-CPX-CMIX-SV**

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

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 rod				
	Brief description	Expansion	Part No.	Type
	For expansion using an interlinking block	1-fold	**525418**	**CPX-ZA-1-E**

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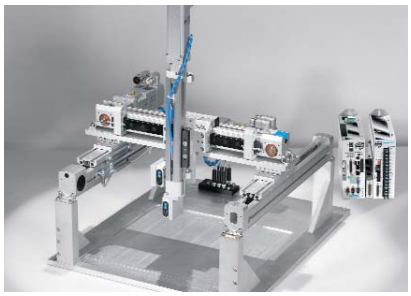

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Festo North America

Festo Regional Contact Center

5300 Explorer Drive
Mississauga, Ontario L4W 5G4
Canada

USA Customers:

For ordering assistance,
Call: 1.800.99.FESTO (1.800.993.3786)
Fax: 1.800.96.FESTO (1.800.963.3786)
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Email: festo.canada@ca.festo.com

USA Headquarters

Festo Corporation
395 Moreland Road
P.O. Box 18023
Hauppauge, NY 11788, USA
www.festo.com/us

USA Sales Offices

Appleton
North 922 Tower View Drive, Suite N
Greenville, WI 54942, USA

Boston
120 Presidential Way, Suite 330
Woburn, MA 01801, USA

Chicago
1441 East Business Center Drive
Mt. Prospect, IL 60056, USA

Dallas
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Detroit – Automotive Engineering Center
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Auburn Hills, MI 48326, USA

New York
395 Moreland Road
Hauppauge, NY 11788, USA

Silicon Valley
4935 Southfront Road, Suite F
Livermore, CA 94550, USA

United States

USA Headquarters, East: Festo Corp., 395 Moreland Road, Hauppauge, NY 11788
Phone: 1.631.435.0800; Fax: 1.631.435.8026;
Email: info@festo-usa.com **www.festo.com/us**

Canada

Headquarters: Festo Inc., 5300 Explorer Drive, Mississauga, Ontario L4W 5G4
Phone: 1.905.624.9000; Fax: 1.905.624.9001;
Email: festo.canada@ca.festo.com **www.festo.ca**

Mexico

Headquarters: Festo Pneumatic, S.A., Av. Ceylán 3, Col. Tequesquinahuac,
54020 Tlalnepantla, Edo. de México
Phone: 011 52 [55] 53 21 66 00; Fax: 011 52 [55] 53 21 66 65;
Email: festo.mexico@mx.festo.com **www.festo.com/mx**

Central USA
Festo Corporation
1441 East Business
Center Drive
Mt. Prospect, IL 60056, USA
Phone: 1.847.759.2600
Fax: 1.847.768.9480

Western USA
Festo Corporation
4935 Southfront Road,
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Livermore, CA 94550, USA
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