

Positioners CMSX

FESTO



Festo core product range
Covers 80% of your automation tasks

Worldwide:

Always in stock

Superb:

Festo quality at an attractive price

Easy:

Reduces procurement and storing complexity

★ Ready for dispatch from the Festo factory in 24 hours

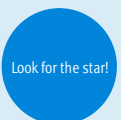
Held in stock in 13 service centres worldwide

More than 2200 products

★ Ready for dispatch in 5 days maximum from stock

Assembled for you in 4 service centres worldwide

Up to 6×10^{12} variants per product series



Positioners CMSX

Key features

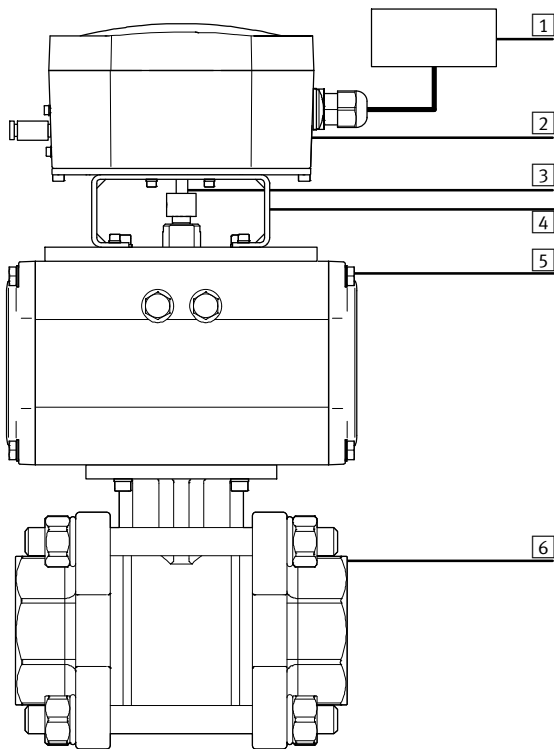


Function and application

The positioner CMSX is used to control the position of single- and double-acting pneumatic actuators and double-acting linear actuators in process automation systems. It is suitable for operation with actuators that have a swivel angle of approx. 90° and a mechanical interface in accordance with VDI/VDE Directive 3845. The CMSX enables simple and efficient position control based on the PID control algorithm. Positions are specified via a setpoint signal. The integrated

potentiometer senses the current position of the quarter turn actuator via the shaft and forwards the measured value to the internal regulator. The regulator compares the setpoint value specified by analogue means with the measured value and actuates the solenoid valves accordingly via pulse-width modulation (PWM).

System structure



- 1 Higher-level system (PLC/IPC or external setpoint generator)
- 2 Positioner CMSX
- 3 Mechanical coupling
- 4 Mounting bridge DARQ
- 5 Quarter turn actuator (example: DFPD)
- 6 Process valve (example: VZBA)

CMSX-...	Piston Ø [mm]	Drives	Sizes	1st generation	2nd generation
Semi-rotary drives					
single-acting	≥ 63	DAPS	≥ 53	-	■
		DFPD	≥ 40		
double-acting	53 ... 63	DFPD	20 ... 40	■	-
	≥ 63	DAPS	≥ 60	-	■
		DFPD	≥ 40		
Linear drives					
double-acting	≥ 63	DFPI	100 ... 320	-	■
→ Page/Internet				6	12

Positioners CMSX

Key features

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Variants

CMSX-...-A

On this product variant, working port 4 is exhausted and working port 2 is pressurised. The process valve is opened or closed depending on the tubing connections between the CMSX-...-A and the quarter turn actuator.

CMSX-...-C

On the product variant CMSX-...-C, working ports 2 and 4 are pressurised to maintain the current position of the quarter turn actuator.

Security

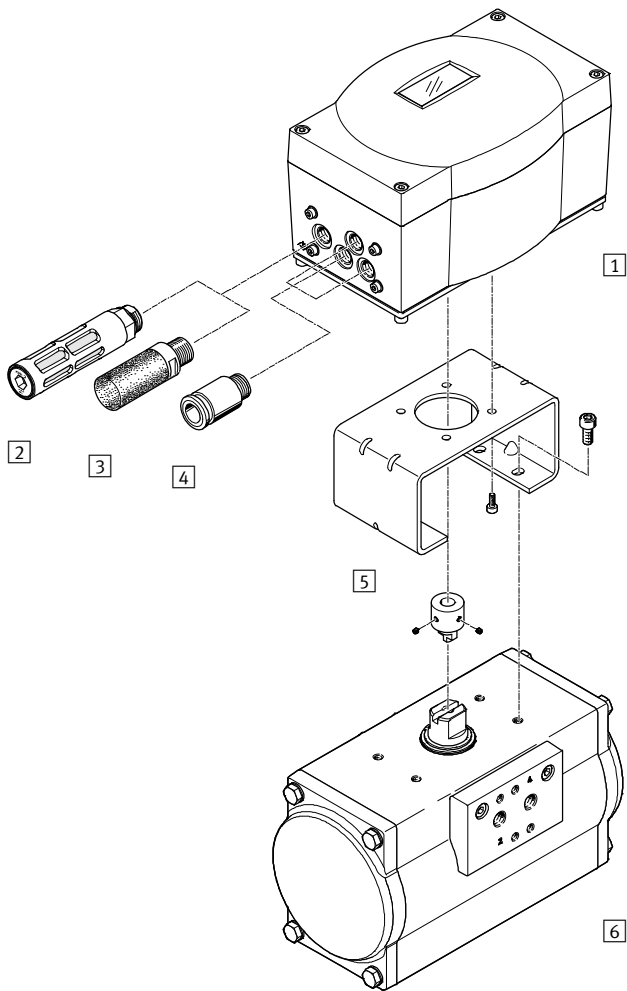
Several freely programmable safety positions in case of current failure, additional digital error signal for emergency shut-down.
Several freely configurable, analogue input signals for each task, for reliable monitoring of the actual position via the analogue feedback signal.

Economic efficiency

Via integrated, analogue feedback functions and the definable safety positions.
No air consumption if the actuator is not moving.

Positioners CMSX, 1st generation

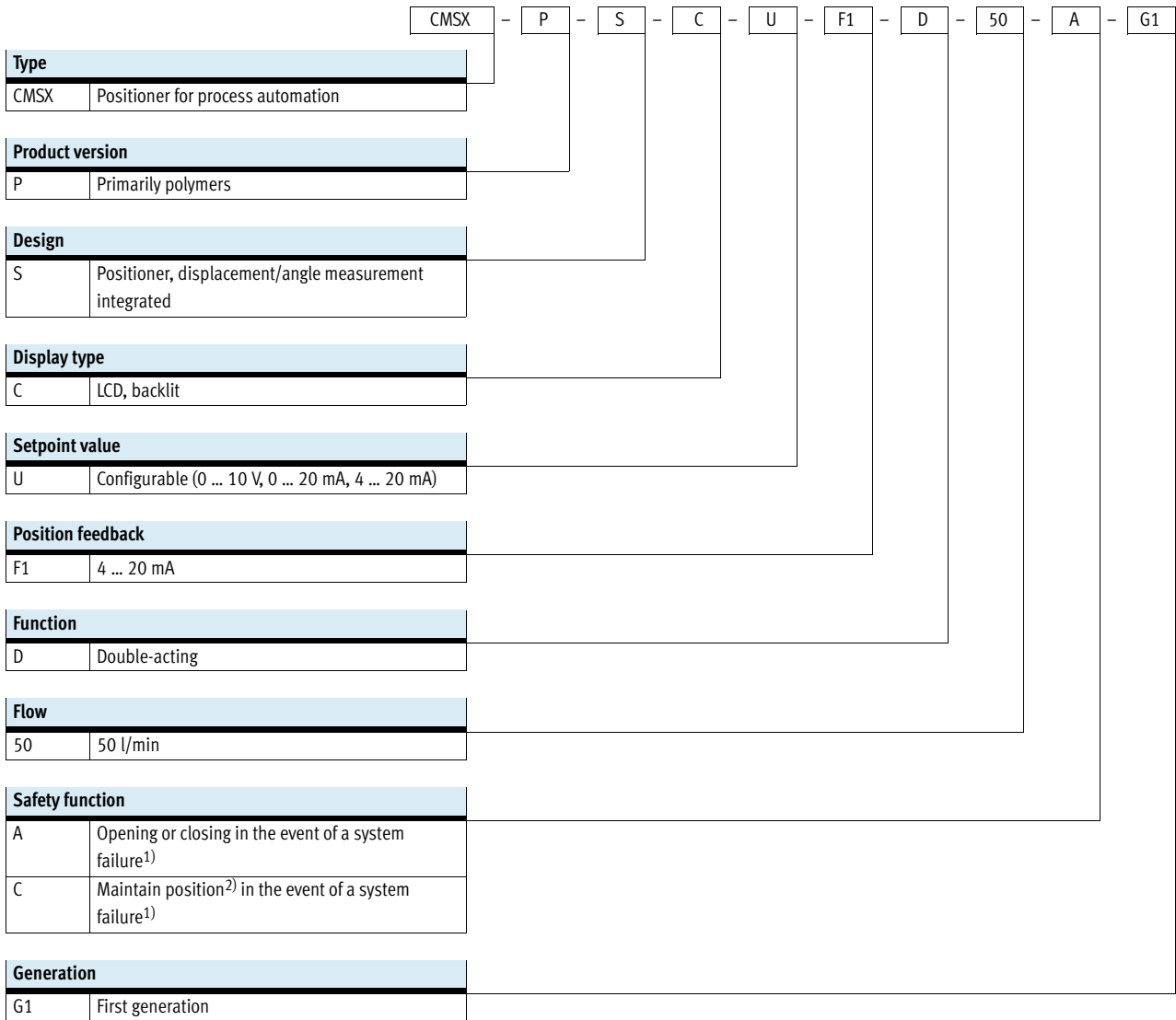
Peripherals overview



Mounting components and accessories		
	Brief description	→ Page/Internet
1	CMSX Positioner For position control of single- and double-acting quarter turn actuators in process automation	6
2	U-Silencer With polymer, male thread	u
3	UC-Silencer For reducing noise at exhaust ports	uc
4	QS Push-in fittings A secure solution for every connection	qs
5	DARQ Mounting bridges For connecting positioners/actuators for process automation	18
6	DFPD Quarter turn actuators Actuators for process automation	dfpd, daps

Positioners CMSX, 1st generation




Type codes

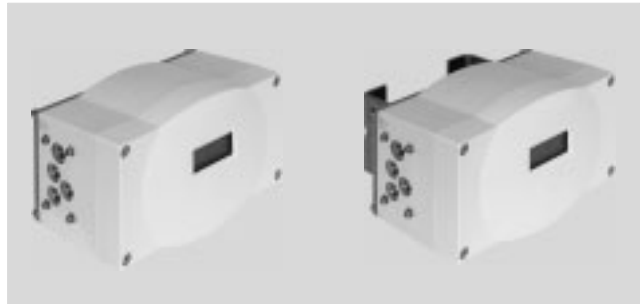


1) Failure of the power supply
 2) Pressurise quarter turn actuator at both ends

Positioners CMSX, 1st generation

Technical data

-  Voltage
21.6 ... 26.4 V DC
-  Temperature range
-5 ... +60 °C
-  Flow rate
50 l/min



General technical data		
Type	CMSX-P-S-C-U-F1-D-50-A-G1	CMSX-P-S-C-U-F1-D-50-C-G1
Pneumatic connection	G $\frac{1}{8}$	
Conforms to standard	VDI/VDE 3845 (NAMUR)	
Cable connector	M20x1.5	
Type of mounting	On flange to ISO 5211, via accessories	
Type of process valve characteristic curves	Freely adjustable over 21 support points Linear, equal percentage (1:25, 1:33, 1:50)	
Leakproof characteristics	Automatic Adjustable	
Control range adaptation	Adjustable	
Alarm for exceeding limit value	No	
Active direction	Adjustable Rising, falling	
Safety precaution	Adjustable	-
	-	Retaining
	Opening	-
	Closing	-
UV resistance	Yes	
Display type	Backlit LCD	
Setting options	Via display and keys	
Standard nominal flow rate	[l/min]	50
Sensing range in degrees	[deg]	0 ... 100
Size of the dead zone	[%]	0.1 ... 10
Product weight	[g]	970

Electrical data		
Protection against short circuit	Yes	
Protection against incorrect polarity	For operating voltage connections	
	For setpoint value	
Operating voltage range DC	[V]	21.6 ... 26.4
Setpoint value	[V]	0 ... 10
	[mA]	0 ... 20
	[mA]	4 ... 20
Max. output current	[mA]	500
Max. load resistance of current output	[ohms]	500
Max. current consumption	[A]	1
Idle current	[mA]	100 ... 300
Switching level	[V]	Signal 0 \leq 5
	[V]	Signal 1 \geq 10

Positioners CMSX, 1st generation

Technical data

Operating and environmental conditions		
Operating pressure	[bar]	3 ... 8
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Lubricated operation not possible
Ambient temperature	[°C]	-5 ... 60
Temperature of medium	[°C]	-5 ... 60
Storage temperature	[°C]	-20 ... 60
Corrosion resistance class CRC ¹⁾		2
CE marking (see declaration of conformity)		To EU EMC Directive
Approval certificate		C-Tick
Degree of protection		IP65

1) Corrosion resistance class 2 according to Festo standard 940070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with the surrounding industrial environment or media such as coolants or lubricating agents.

Materials	
Housing	PC
Threaded coupling	High-alloy stainless steel
Adapter plate	Aluminium
Plate	Aluminium
Seals	NBR
Cable connection	PA
Note on materials	Contains paint-wetting impairment substances
	RoHS compliant

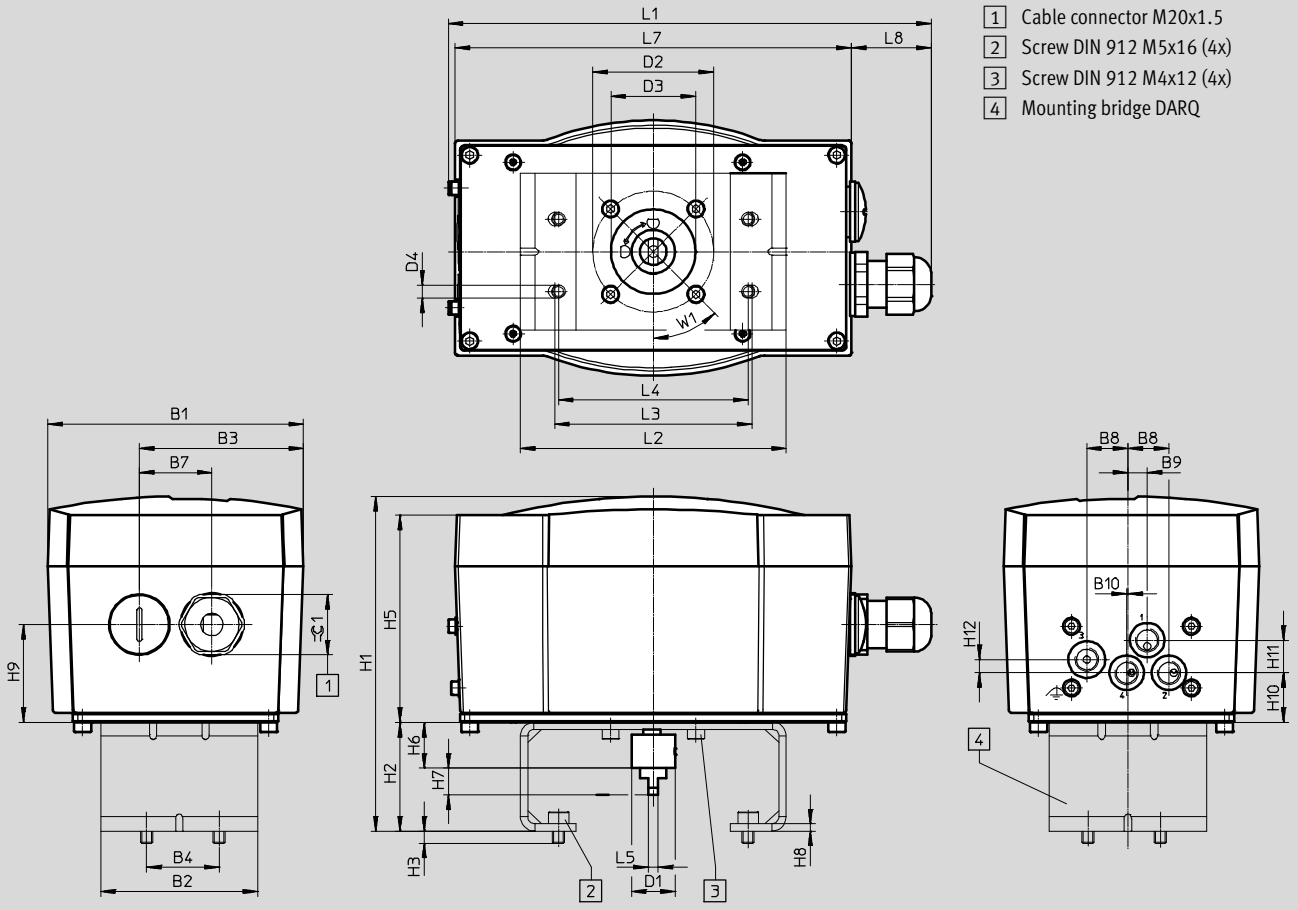
Positioners CMSX, 1st generation

Technical data

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Dimensions

Download CAD data → www.festo.com



Type	B1	B2	B4	B7	B8	B9	B10	D1	D2	D3	D4	H3	H5
CMSX-P-S-C-U-F1-D-50-A-G1	105.8	65	30	30	17	8	0.5	18	50	35	5.4	5	85.8
CMSX-P-S-C-U-F1-D-50-C-G1													


Type	H6	H7	H8	H9	H10	H11	H12	L1	L5	L7	W1	∠1
CMSX-P-S-C-U-F1-D-50-A-G1	19	11	3	40.5	20.5	13.5	5.5	200	4	164	45°	25
CMSX-P-S-C-U-F1-D-50-C-G1												


Positioner	Mounting bridge	H1	H2	L2	L3	L4
CMSX-P-S-C-U-F1-D-50-A-G1	DARQ-K-P-A1-F05-20-R1	138.5	45	110	81.6	78.4
	DARQ-K-P-A1-F05-30-R1	148.5	55	110	81.6	78.4
	DARQ-K-P-A2-F05-30-R1	148.5	55	160	131.6	128.4
CMSX-P-S-C-U-F1-D-50-C-G1	DARQ-K-P-A1-F05-20-R1	138.5	45	110	81.6	78.4
	DARQ-K-P-A1-F05-30-R1	148.5	55	110	81.6	78.4
	DARQ-K-P-A2-F05-30-R1	148.5	55	160	131.6	128.4

Positioners CMSX, 1st generation

Technical data

★ Core product range

Ordering data					
Positioner		Standard nominal flow rate [l/min]	Sensing range in degrees [deg]	Part No.	Type
	Opening or closing in the event of a system failure	50	0 ... 100	★ 2092434	CMSX-P-S-C-U-F1-D-50-A-G1

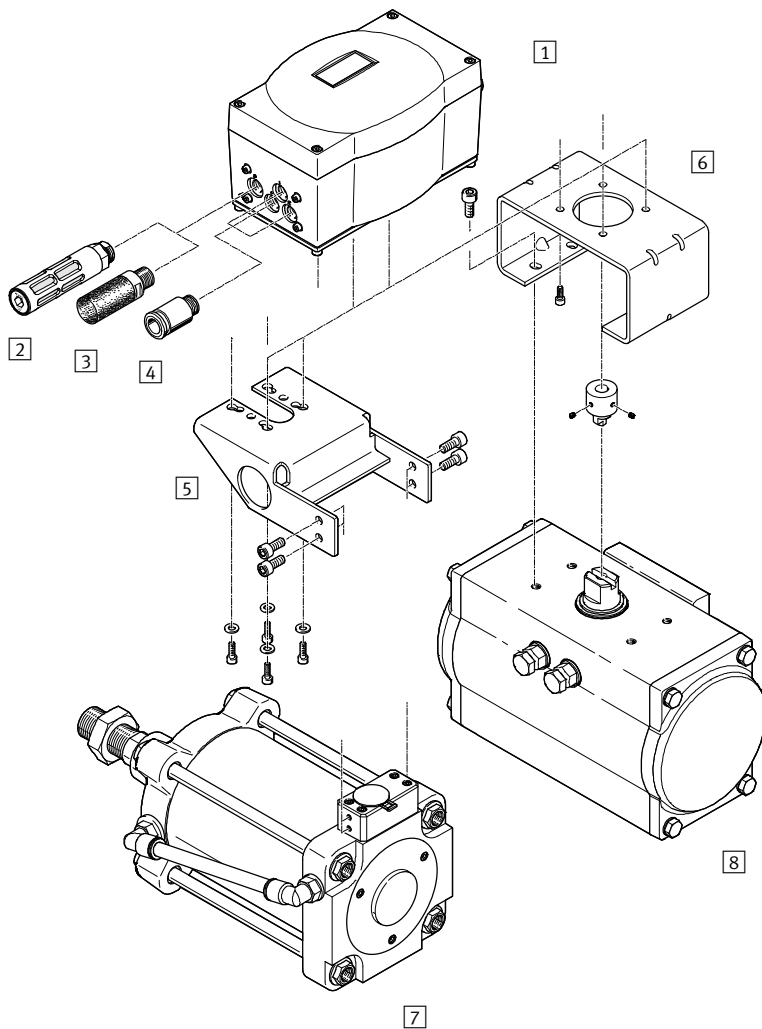
Ordering data					
Positioner		Standard nominal flow rate [l/min]	Sensing range in degrees [deg]	Part No.	Type
	Maintain position in the event of a system failure	50	0 ... 100	2110841	CMSX-P-S-C-U-F1-D-50-C-G1

Festo core product range

- ★ Ready for dispatch from the Festo factory in 24 hours
- ☆ Ready for dispatch in 5 days maximum from stock

Positioners CMSX, 2nd generation

Peripherals overview



Mounting components and accessories		
	Brief description	→ Page/Internet
1	CMSX Positioner For controlling the position of single- and double-acting quarter turn actuators in process automation	6
2	U-Silencer With polymer, male thread	u
3	UC-Silencer For reducing noise at exhaust ports	uc
4	QS Push-in fittings A secure solution for every connection	qs
5	DADG Adapter kit For direct mounting of a positioner on the actuator	dadg
6	DARQ Mounting bridges For connecting positioners/actuators for process automation	18
7	DFPI Linear actuator Actuators for process automation with integrated displacement encoder	dfpi
8	DFPD Quarter turn actuator Actuators for process automation	dfpd

Positioners CMSX, 2nd generation

Type codes

CMSX - P - S - C - U - F1 - D - 50 - A

Type

CMSX	Positioner for process automation
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Product version

P	Primarily polymers
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Design

S	Positioner, displacement/angle measurement integrated
SE	Positioner, displacement/angle measurement external

Display type

C	LCD, backlit
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Setpoint value

U	Configurable (0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA)
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Position feedback

F1	4 ... 20 mA
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Function

D	Double-acting
S	Single-acting

Flow

50	50 l/min
130	130 l/min

Safety function

A	Opening or closing in the event of a system failure ¹⁾
C	Maintain position ²⁾ in the event of a system failure ¹⁾

Generation




	Second generation
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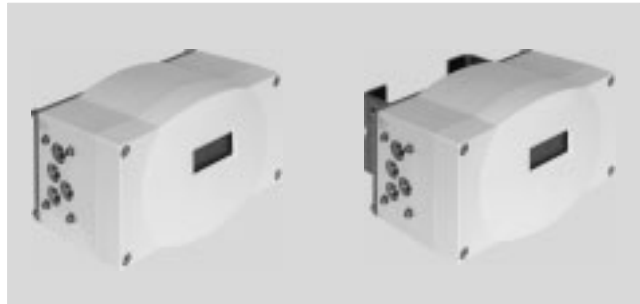
- 1) Failure of the power supply
- 2) Pressurise quarter turn actuator at both ends

Positioners CMSX, 2nd generation

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Technical data

-  Voltage
21.6 ... 26.4 V DC
-  Temperature range
-5 ... +60 °C
-  Flow rate
50 ... 130 l/min



General technical data	
Pneumatic connection	G $\frac{1}{8}$
Conforms to standard	VDI/VDE 3845 (NAMUR)
Cable connector	M20x1.5
Type of mounting	On flange to ISO 5211, via accessories
Type of process valve characteristic curves	Freely adjustable over 21 support points Linear, equal percentage (1:25, 1:33, 1:50)
Leakproof characteristics	Automatic Adjustable
Control range adaptation	Adjustable
Alarm for exceeding limit value	No
Active direction	Adjustable Rising, falling
UV resistance	Yes
Display type	Backlit LCD
Setting options	Via display and keys
Size of the dead zone	[%] 0.5 ... 10
Product weight	[g] 970

Electrical data	
Protection against short circuit	Yes
Protection against incorrect polarity	For operating voltage connections For setpoint value
Operating voltage range DC	[V] 21.6 ... 26.4
Setpoint value	[V] 0 ... 10 [mA] 0 ... 20 [mA] 4 ... 20
Max. output current	[mA] 500
Max. load resistance of current output	[ohms] 500
Max. current consumption	[A] 1
Idle current	[mA] 90 ... 300
Switching level	[V] Signal 0 \leq 5 [V] Signal 1 \geq 10

Positioners CMSX, 2nd generation

Technical data

Operating and environmental conditions		
Operating pressure	[bar]	3 ... 8
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Lubricated operation not possible
Ambient temperature	[°C]	-5 ... 60
Temperature of medium	[°C]	-5 ... 60
Storage temperature	[°C]	-20 ... 60
Corrosion resistance class CRC ¹⁾		2
CE marking (see declaration of conformity)		To EU EMC Directive
Approval certificate		C-Tick
Protection class		IP65

1) Corrosion resistance class 2 according to Festo standard 940070
 Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with the surrounding industrial environment or media such as coolants or lubricating agents.

Materials	
Housing	PC
Threaded coupling	High-alloy stainless steel
Adapter plate	Aluminium
Plate	Aluminium
Seals	NBR
Cable connection	PA
Note on materials	Contains paint-wetting impairment substances
	RoHS compliant

Positioners CMSX, 2nd generation

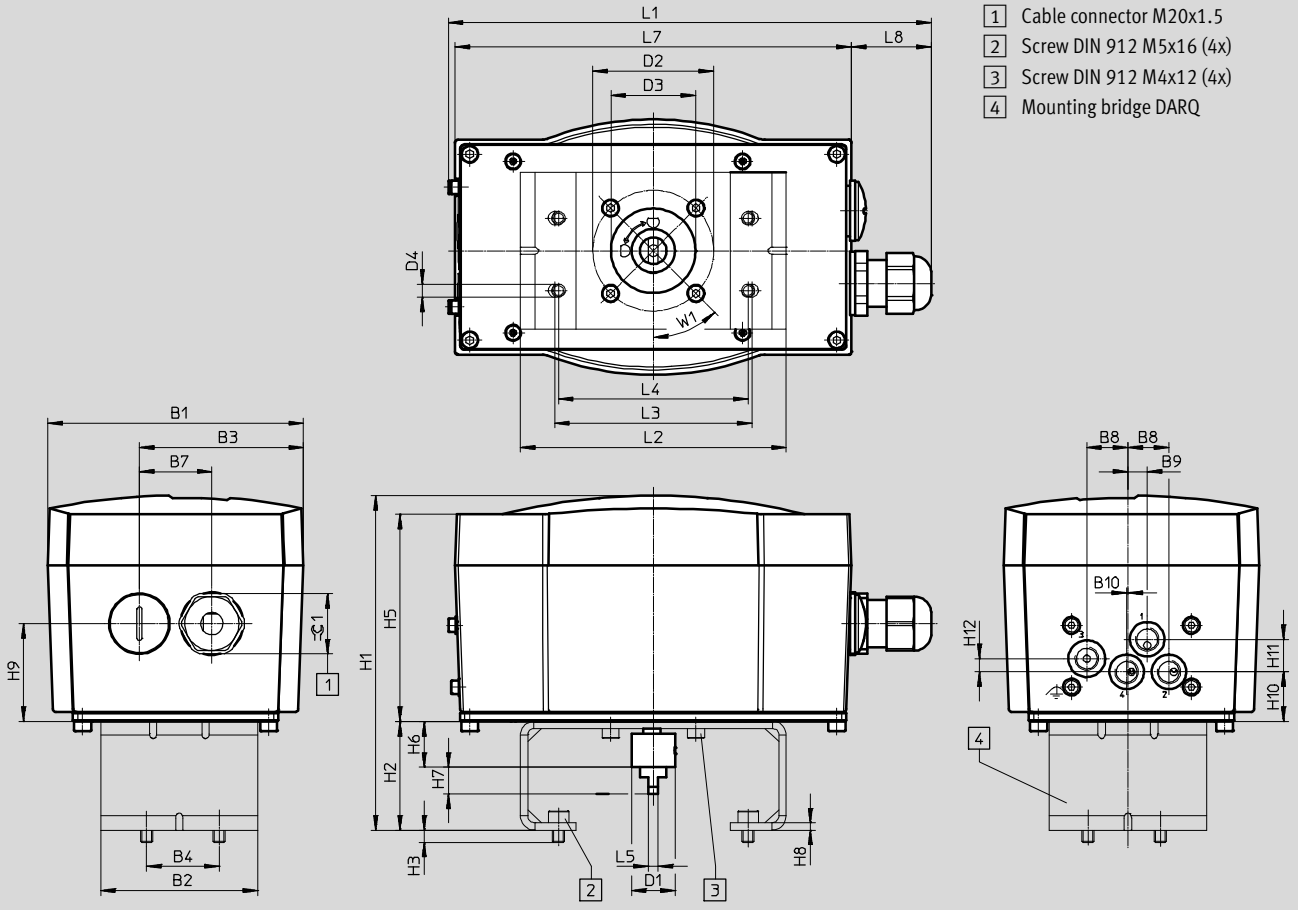
Technical data



Dimensions

Download CAD data → www.festo.com

Displacement/angle measurement integrated



- 1 Cable connector M20x1.5
- 2 Screw DIN 912 M5x16 (4x)
- 3 Screw DIN 912 M4x12 (4x)
- 4 Mounting bridge DARQ

Type	B1	B2	B3	B4	B7	B8	B9	B10	D1 Ø	D2 Ø	D3 Ø	D4 Ø	H3	H5
CMSX-P-S-C-U-F1-D-130-...	105.8	65	67.9	30	30	17	8	0.5	18	50	35	5.4	5	85.8
CMSX-P-S-C-U-F1-D-50-...														
CMSX-P-S-C-U-F1-S-50-...														
CMSX-P-S-C-U-F1-S-130-...														

Type	H6	H7	H8	H9	H10	H11	H12	L1	L5	L7	L8	W1	∠ 1
CMSX-P-S-C-U-F1-D-130-...	19	11	3	40.5	20.5	13.5	5.5	200	4	164	32.5	45°	25
CMSX-P-S-C-U-F1-D-50-...													
CMSX-P-S-C-U-F1-S-50-...													
CMSX-P-S-C-U-F1-S-130-...													

Positioners CMSX, 2nd generation

Technical data

Positioner	Mounting bridge	H1	H2	L2	L3	L4
CMSX-P-S-C-U-F1-D-130-...	DARQ-K-P-A1-F05-20-R1	138.5	45	110	81.6	78.4
	DARQ-K-P-A1-F05-30-R1	148.5	55			
	DARQ-K-P-A2-F05-30-R1		160	131.6	128.4	
	DARQ-K-P-A2-F05-50-R1	168.5				75
CMSX-P-S-C-U-F1-D-50-...	DARQ-K-P-A1-F05-20-R1	138.5	45	110	81.6	78.4
	DARQ-K-P-A1-F05-30-R1	148.5	55			
	DARQ-K-P-A2-F05-30-R1		160	131.6	128.4	
	DARQ-K-P-A2-F05-50-R1	168.5				75
CMSX-P-S-C-U-F1-S-50-...	DARQ-K-P-A1-F05-20-R1	138.5	45	110	81.6	78.4
	DARQ-K-P-A1-F05-30-R1	148.5	55			
	DARQ-K-P-A2-F05-30-R1		160	131.6	128.4	
	DARQ-K-P-A2-F05-50-R1	168.5				75
CMSX-P-S-C-U-F1-S-130-...	DARQ-K-P-A1-F05-20-R1	138.5	45	110	81.6	78.4
	DARQ-K-P-A1-F05-30-R1	148.5	55			
	DARQ-K-P-A2-F05-30-R1		160	131.6	128.4	
	DARQ-K-P-A2-F05-50-R1	168.5				75

Positioners CMSX, 2nd generation

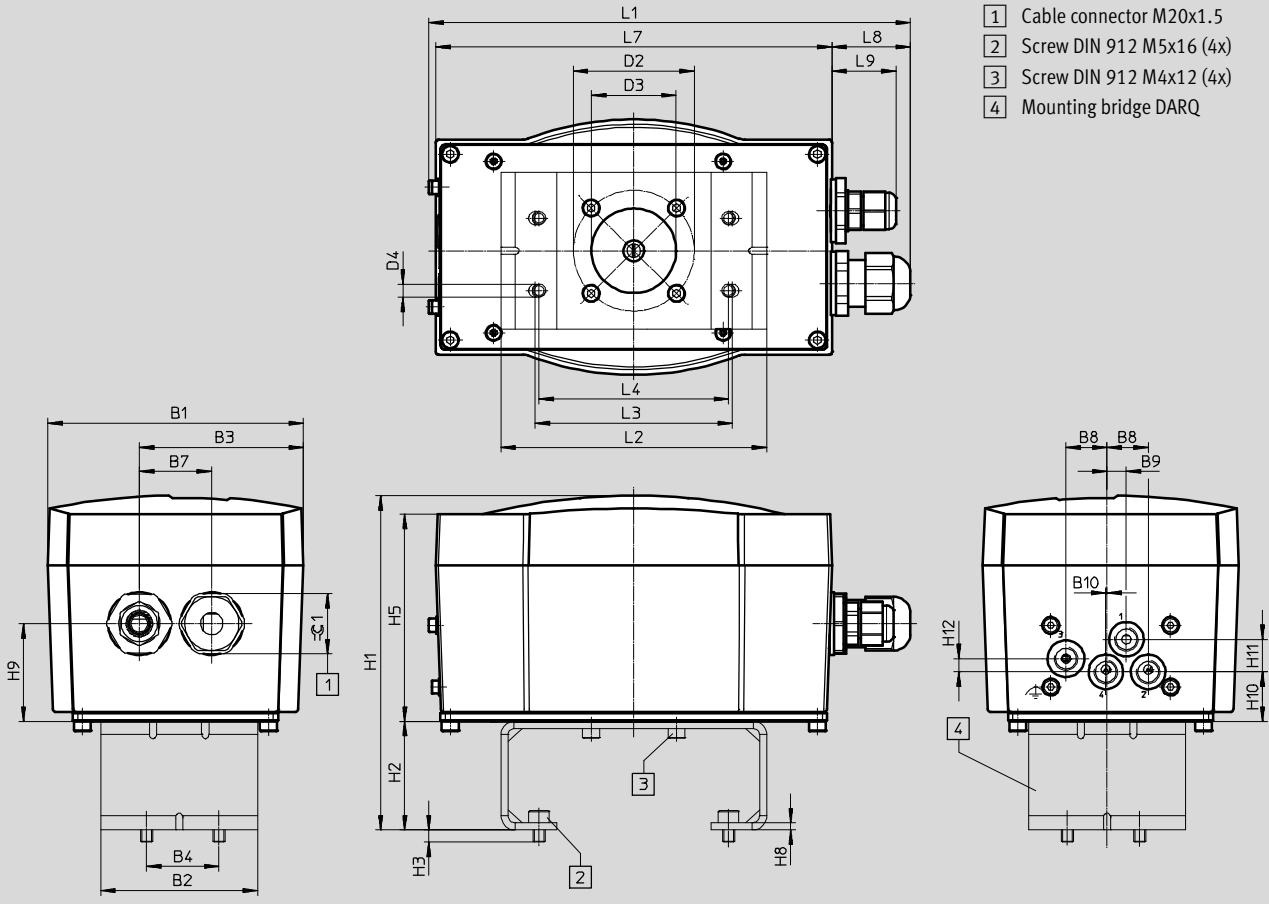
Technical data



Dimensions

Download CAD data → www.festo.com

Displacement/angle measurement external



Type	B1	B2	B3	B4	B7	B8	B9	B10	D2	D3	D4	H3
CMSX-P-S-A1-C-U-F1-D-...	105.8	65	67.9	30	30	17	8	0.5	50	35	5.4	5


Type	H5	H8	H9	H10	H11	H12	L1	L7	L8	L9	⌀1
CMSX-P-S-A1-C-U-F1-D-...	85.8	3	40.5	20.5	13.5	5.5	200	164	32.5	25.6	25



Positioner	Mounting bridge	H1	H2	L2	L3	L4
CMSX-P-S-A1-C-U-F1-D-...	DARQ-K-P-A1-F05-20-R1	138.5	45	110	81.6	78.4
	DARQ-K-P-A1-F05-30-R1	148.5	55			
	DARQ-K-P-A2-F05-30-R1	168.5	75	160	131.6	128.4
	DARQ-K-P-A2-F05-50-R1					

Positioners CMSX, 2nd generation

Technical data

★ Core product range

Ordering data					
Positioner		Standard nominal flow rate [l/min]	Sensing range in degrees [deg]	Part No.	Type
	Can be set to open or close in the event of a system failure	50	0 ... 100	★ 3929313	CMSX-P-S-C-U-F1-D-50-A
		50		★ 3929370	CMSX-P-S-C-U-F1-S-50-A
		130	–	★ 3929539	CMSX-P-SE-C-U-F1-D-130-A

Ordering data					
Positioner		Standard nominal flow rate [l/min]	Sensing range in degrees [deg]	Part No.	Type
	Can be set to open or close in the event of a system failure	130	0 ... 100	3929312	CMSX-P-S-C-U-F1-D-130-A
				3929369	CMSX-P-S-C-U-F1-S-130-A
	Maintain position in the event of a system failure	130	–	3929540	CMSX-P-SE-C-U-F1-D-130-C
			0 ... 100	3929314	CMSX-P-S-C-U-F1-D-130-C
		50	3929315	CMSX-P-S-C-U-F1-D-50-C	

Festo core product range

- ★ Ready for dispatch from the Festo factory in 24 hours
- ☆ Ready for dispatch in 5 days maximum from stock

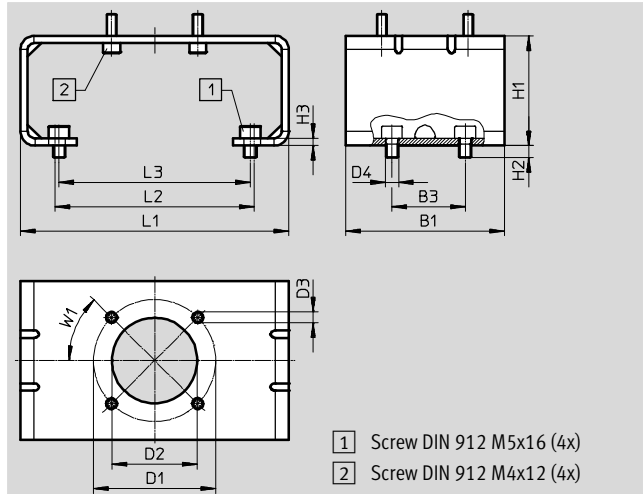
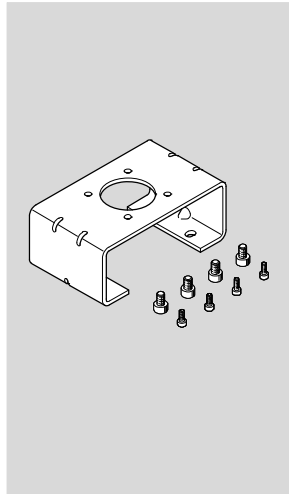
Positioners CMSX

Accessories



Mounting bridge DARQ-K-P-...

- Mounting bridge for mounting on standard actuators as per VDI/VDE 3845
- Mounting screws included in the scope of delivery
- Material: High-alloy stainless steel
- Contains paint-wetting impairment substances, RoHS compliant



Dimensions and ordering data																
B1	B3	D1 ∅	D2 ∅	D3 ∅	D4 ∅	H1	H2	H3	L1	L2	L3	W1	CRC ¹⁾	Weight [g]	Part No.	Type
65	30	50	35	4.5	5.4	45	5	3	110	81.6	78.4	45°	2	350	★ 2197135	DARQ-K-P-A1-F05-20-R1
														380	★ 2197136	DARQ-K-P-A1-F05-30-R1
														460	2197137	DARQ-K-P-A2-F05-30-R1

1) Corrosion resistance class 2 according to Festo standard 940070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with the surrounding industrial environment or media such as coolants or lubricating agents.