

SMP981 Pneumatic Position Transmitter



The SMP981 converts the linear or rotary movement of valve actuators into a 0.2 to 1 bar pneumatic signal.

FEATURES

- Non-reactive conversion of stroke position into a 0.2 to 1 bar pneumatic standard signal
- Simple installation and adjustment
- Zero and range settings non-interactive
- Attachment acc. to DIN IEC 534 part 6 (NAMUR)
- Robust, corrosion-protected design
- Simple matching to strokes of 8 to 115 mm and, by means of rotary adaptor, to angular displacements of 60° to 120°
- Protection class IP 54

TECHNICAL DATA

Input

Stroke range ¹⁾ 8 to 115 mm with attachment
kit for diaphragm actuators ²⁾

Rotation angle range 30 to 120° with attachment
kit for rotary actuators

Output

Signal range 0.2 to 1 bar (3 to 15 psi)
or split range

Note: For stability reasons, the output should be connected
to a signal line of at least 8 m (24 ft) length.

Auxiliary energy

Supply air pressure 1.4 bar ± 0.1 bar
Inherent air consumption . . . approx. 70 l/h

Performance characteristics ³⁾

Non-linearity (terminal
based adjustment) < 1% of final value
Hysteresis < 1%
Supply pressure
dependency < 0.2 % / 0,1 bar
Sensitivity < 0.03 %
Temperature effect < 0.3% / 10 K
Air capacity 2200 l/h

Ambient conditions

Ambient temperature -40 ... 80 °C (-40 ... 176 °F)
Relative humidity ≤ 100 %
Operating conditions
as per IEC 654-1 The device can be operated
at a class D2 location
Transport and storage
temperature -50 ... 80 °C (-58 ... 176 °F)
Protection class IP 54 (IP 65 on request)

Mounting

Mounting to diaphragm
actuators acc. to DIN IEC 534-6
(NAMUR)
Mounting to rotary actuators . acc. to VDI/VDE 3845
Mounting orientation any ⁴⁾

Pneumatic connections

Female thread R 1/8 ports

Materials

Base plate Aluminum (alloy No. 230)
finish with DD enamel
Cover impact-resistant polyester
All moving parts of
feedback system 1.4305 / 1.4571
Mounting bracket 1.4301

Weight

SMP981 approx. 1.4 kg (3.1 lbs)
Attachment kit
for diaphragm actuators approx. 0.3 kg (0.6 lbs)
for rotary actuators approx. 0.5 kg (1.1 lbs)

Accessories

Additional limit signaling by means of inductive alarm units
and el. Position Transmitter on request

1) Standard; other stroke ranges as auxiliary
2) Feedback lever effective length 117.5 mm
3) Based on 30 mm stroke, spring 420 494 019 and feedback lever effective
length 117.5 mm
4) In suspended mounting position protect vent hole against water ingress.

RANGE SPRINGS

To permit matching to the stroke and output signal range, 5 differently rated springs are available. The particular spring required can be determined from the stroke factor U.

For FOXBORO ECKARDT actuators 1500 cm²
 Right-hand mounting: 122.5 / 146.5 mm
 Left-hand mounting: 98.5 / 122.5 / 152.5 mm

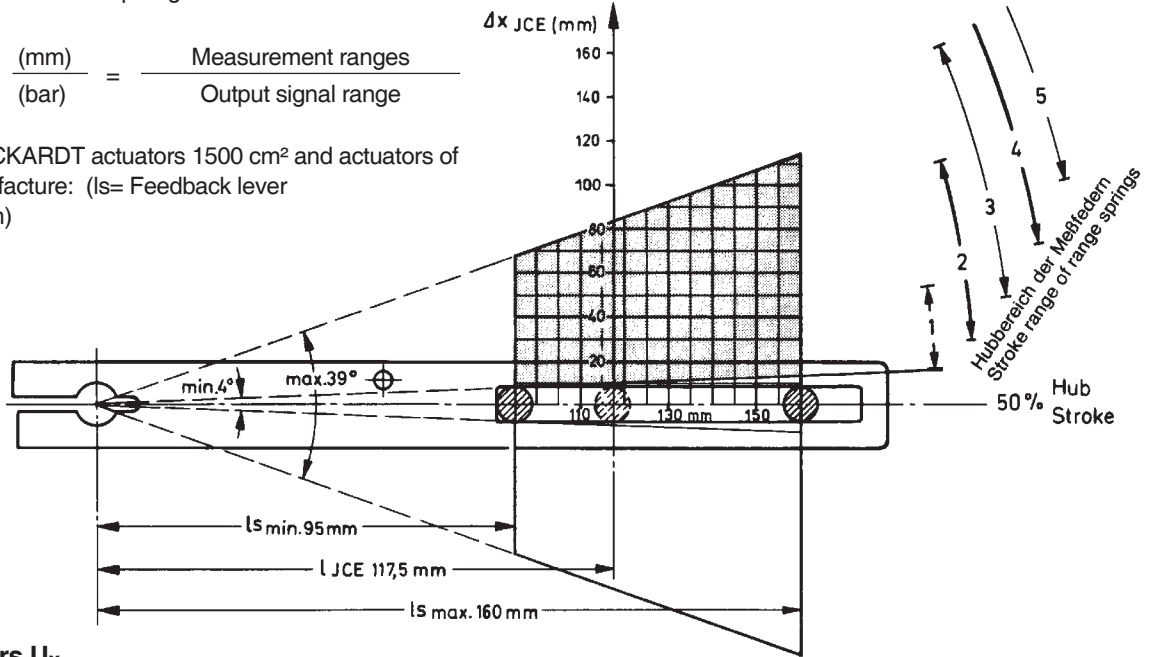
FOR LINEAR MOVEMENTS

FOXBORO ECKARDT diaphragm actuators 250 ... 1000 cm²:

$$U_{xJCE} = \frac{\Delta x \text{ (mm)}}{\Delta w \text{ (bar)}} = \frac{\text{Measurement ranges}}{\text{Output signal range}}$$

FOXBORO ECKARDT actuators 1500 cm² and actuators of different manufacture: (ls= Feedback lever effective length)

By varying the effective length of the feedback lever supplied with the instrument, the following actuator strokes can be accommodated:



Stroke factors U_x

Spring Ident No.	old ID.	Color	Stroke factor	Stroke ranges for l _s = 117.5 mm / Δw = 0.8 bar	Comment
1	420 493 013	FES 627/1	yellow	10 – 30 (max. 42)	8 – 34 mm 2)
2	420 494 019	FES 628/1	green	22 – 60 (max. 84)	17 – 68 mm built-in
3	502 558 017	FES 612/1	w/o	35 – 90 (max. 130)	28 – 105 mm 2)
4	420 496 011	FES 715/1	gray	50 – 140 (max. 190)	40 – 115 mm 2)
5	420 495 014	FES 629/1	blue	70 – 180 (max. 250)	55 – 115 mm 2)

FOR ROTARY MOVEMENTS

In conjunction with attachment kit for rotary actuators the rotation angle factor U_φ can be determined as follows:

$$U_{\phi} = \frac{\Delta\phi}{\Delta w} = \frac{\text{Rotation angle range}}{\text{Output signal range}}$$

Stroke factors U

Spring	Cam				Comm..	
	linear	equal percentage ¹⁾				
		max. 120 °	70 °	60 °		50 °
1	420 493 013	42 – 120 (max. 170)	51 – 110 (max. 145)	45 – 105 (max. 130)	40 – 90 (max. 112)	2)
2	420 494 019	90 – 230 (max. 350)	91 – 170 (max. 205)	81 – 150 (max. 180)	70 – 130 (max. 153)	built-in
3	502 558 017	150 – 360 (max. 540)	130 – 210 (max. 241)	115 – 180 (max. 206)	100 – 155 (max. 178)	2)
4	420 496 011	210 – 540 (max. 810)	160 – 240 (max. 269)	140 – 210 (max. 235)	120 – 180 (max. 200)	2)
5	420 495 014	290 – 690 (max. 1030)	190 – 250 (max. 280)	165 – 220 (max. 244)	140 – 190 (max. 205)	2)

1) Using the equal percentage cam, the rotation angle factors are dependent on the corresponding rotation angle
 2) Included in spring set FESG-FN

MODEL CODES SMP981

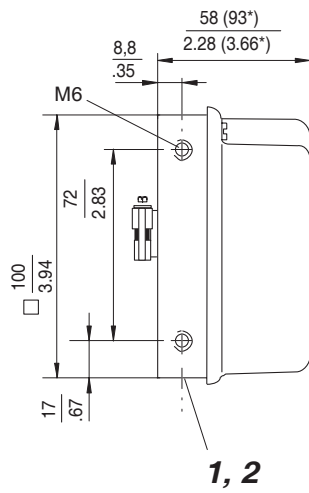
Pneumatic Position Transmitter	SMP981			011005	
Output					
Signal range 0.2 - 1 bar / 3 -15 PSI / 20 - 100 kPa		-I			
Attachment kit					
order as auxiliary			N		
Options					
Tag.No. Labeling					
Stamped with weather resistant color				-G	
Stainless steel label fixed with wire				-L	
Example:		SMP981	-I	N	-G
<p>Tube fittings see EOO9001</p>					

MODEL CODES Accessories

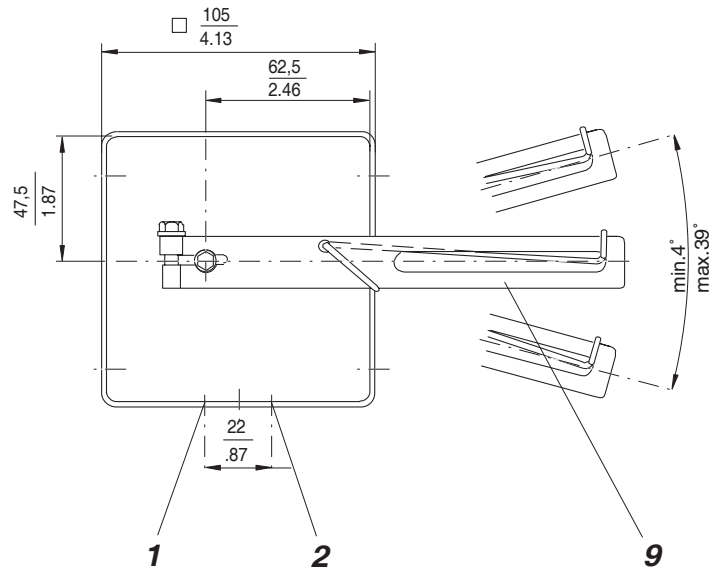
Attachment kit	EBZG	
for diaphragm actuators with casting yoke acc. NAMUR (incl. standard Couple lever)		-GN
(for SRP981, SRI983, SMP981, SMI983, SGE985)		
for diaphragm actuators with pillar yoke acc. NAMUR (incl. standard Couple lever).		-FN
(for SRP981, SRI983, SMP981, SMI983, SGE985)		
for rotary actuators, without flange, 3 drill holes 6.5 mm (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985).		-PN
for rotary actuators, without flange, 4 threads M6 (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985)		-NN
for rotary actuators, with flange (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985)		-JN
for rotary actuators, with shaft (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985)		-ZN
for Masoneilan type Camflex II (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985).		-RN
Couple lever / cam		
standard (a = 72 mm)		-AN
extended (a = 91 mm)		-BN
inverse equal percentage cam for rotary actuators		-CN
Spring set	FESG	
range springs (4pc.)		-FN
<p>Tube fittings see EOO9001</p>		

DIMENSIONS

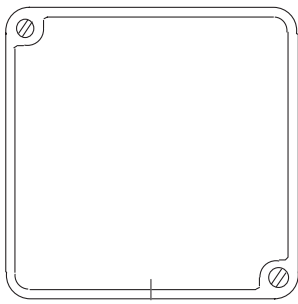
Pneumatic position transmitter



mm
in



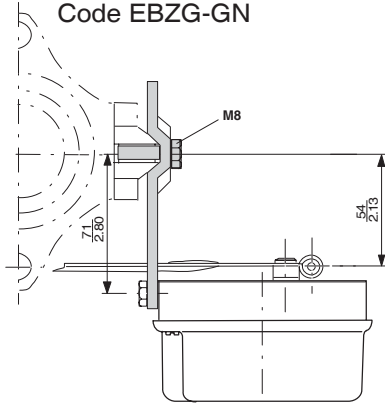
Pneumatic position transmitter, front view



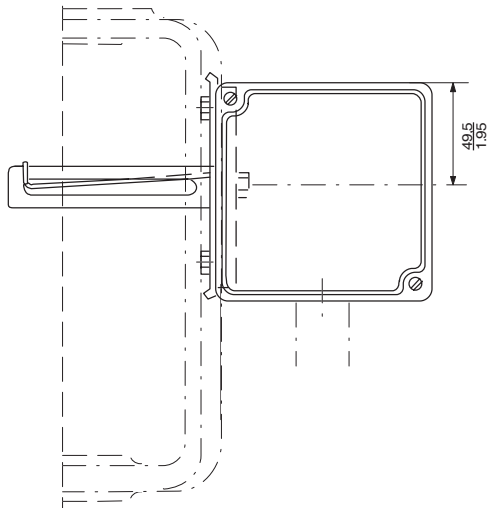
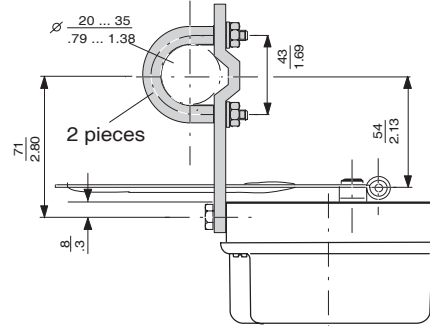
- 1** Output 0.2 to 1 bar
- 2** Supply air 1.4 bar
- 9** Feedback lever

ATTACHMENT KIT FOR DIAPHRAGM ACTUATORS

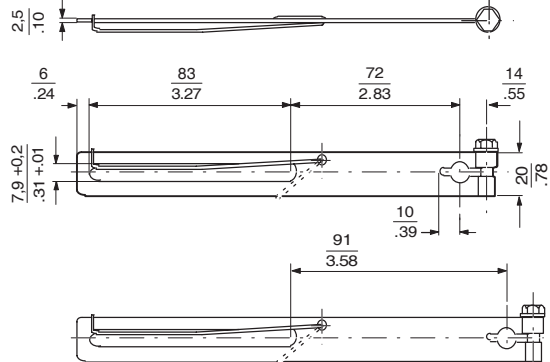
Attachment to casting yoke
according to IEC 534-6 (NAMUR)
Code EBZG-GN



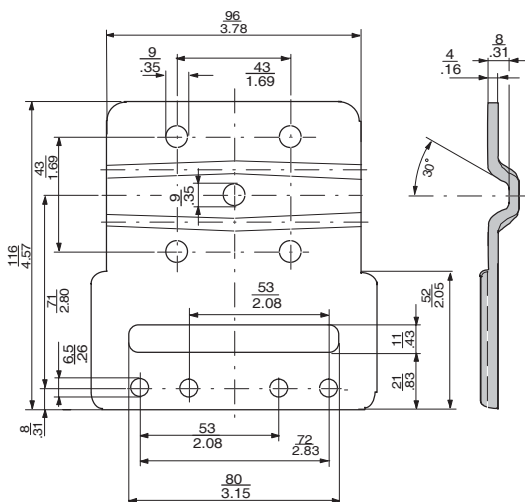
Attachment to pillar yoke
according to IEC 534-6 (NAMUR)
Code EBZG-FN



Feedback lever
Code EBZG-AN, -FN, -GN
Code EBZG-BN (extended version)

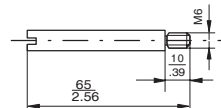


Mounting bracket
according to IEC 534-6 (NAMUR)
for Code EBZG-GN, FN



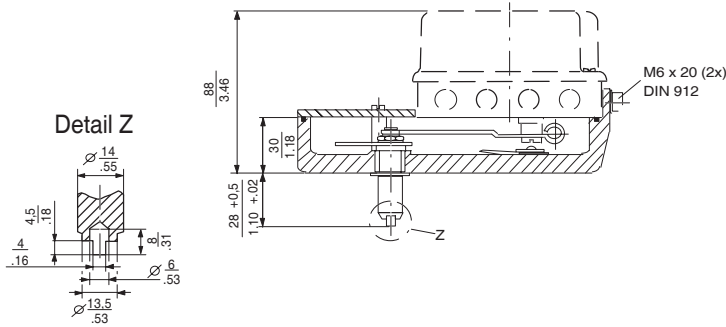
mm
in

Carrier bolt
for attachment to valve stem

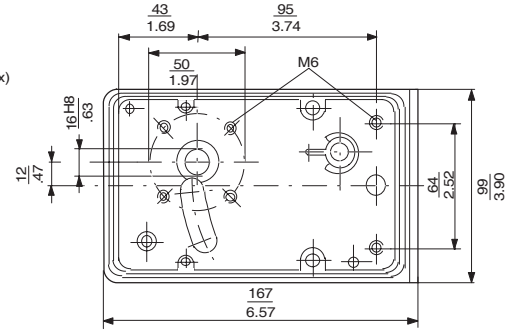


ATTACHMENT KIT FOR ROTARY ACTUATORS

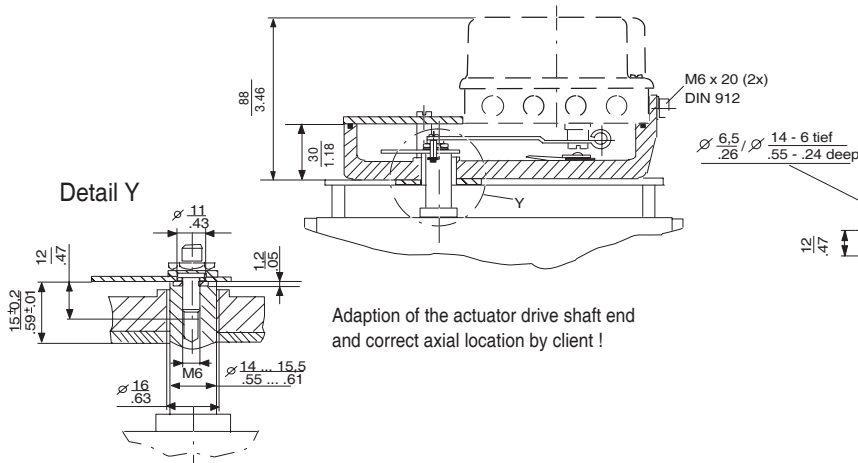
With shaft
(according to VDI/VDE 3845)
Code EBZG-ZN



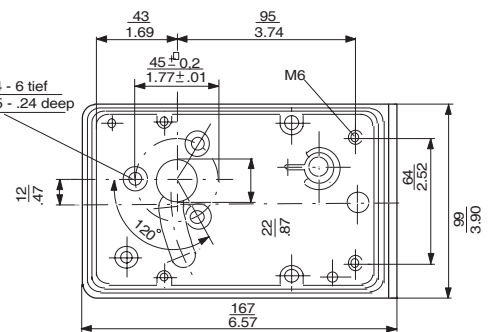
Housing dimensions
Attachment kit with shaft
resp. without flange
Code EBZG-NN



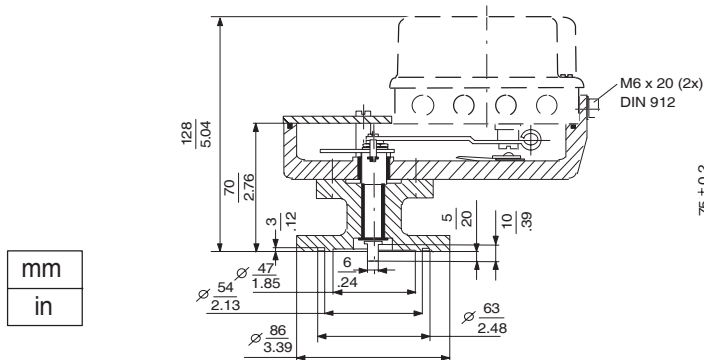
Without flange
Code EBZG-NN, -PN



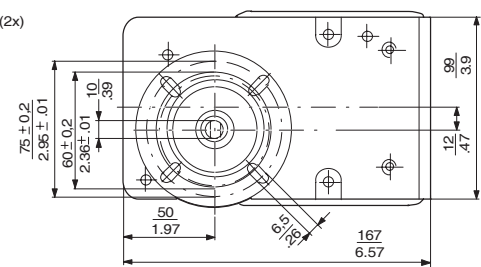
Housing dimensions
Attachment kit without flange
Code EBZG-PN



With flange
Code EBZG-JN



mm
in



Rotation angle max 120°; torque requirement 14 Nm

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invensys