

ELECTROPNEUMATIC POSITIONER type A781

THE POSITIONER type A781 IS DESIGNED FOR COOPERATION WITH MEMBRANE PNEUMATIC AND ROTARY ONE-SIDED WORKING ACTUATORS.

IT MAKES POSSIBLY FAST AND PRECISELY CONTROL OF POSITION THE ACTUATOR'S PISTON ROD BY ANALOGUE CONTROL SIGNAL 4...20 mA.



- * reliable and simple in installation
- * input signals dividing possibility
- * linear characteristics
- * suitable for cooperation with pneumatic actuators of different manufacturers
- * spark-safety version made acc. to ATEX directive

TECHNICAL DATA

- input signal (control)	
full	4...20 mA, 0...20 mA
half	4...12 mA, 12...20 mA, 0...10 mA, 10...20 mA
- input resistance	≤ 250 Ω (control terminals shorted)
- pneumatic output signal	
(at overload >4%)	0...100% of supply pressure
- supply pressure	0,14...0,25 MPa or 0,25...0,60 MPa

IMPORTANT:

It's not allow using higher than permissible value of control pressure the cooperating actuator supply pressure

- actuator mandrel stroke or rotation	10...102 mm (1/2"...4") (if the versions table does not show another values) or 0...60°; 0...90°
- working characteristic	linear
- sensitivity threshold	0,05% for supply pressure 0,14...0,25 MPa 0,12% for supply pressure 0,25...0,60 MPa
- nonlinearity (except the characteristic distortion in the actuator mandrel movement restriction point)	max. 1%
- hysteresis	max. 0,5% for supply pressure 0,14...0,25 MPa
- proportionality range:	
in relation with control signal with range width 0,08 MPa	max. 1% for supply pressure 0,14...0,25 MPa
in relation with control signal with range width 0,16 MPa	max. 1,2% for supply pressure 0,25...0,60 MPa max. 2% for supply pressure 0,14...0,25 MPa max. 2,5% for supply pressure 0,25...0,60 MPa
- output air flux:	
at $p_z = 0,14$ MPa	≥ 7,5 kg/h
at $p_z = 0,25$ MPa	≥ 15 kg/h
at $p_z = 0,6$ MPa	≥ 26 kg/h
- air flux at steady state:	} with maximally unscrewed choke and pipes $\phi 8 \times 1$ connectors

Control signal [MPa]	Supply pressure [MPa]			
	0,14	0,25	0,4	0,5
0,02	0,310 kg/h	0,380 kg/h	----	----
0,1	0,380 kg/h	0,510 kg/h	0,580 kg/h	0,710 kg/h
0,2	----	0,610 kg/h	0,710 kg/h	0,800 kg/h

TECHNICAL DATA cont.

- **ambient temperature** -40°C...+80°C
- **relative humidity** <100%
- **additional errors**
 - from supply pressure changes 0,14...0,25 MPa 0,5% / 10%
 - from supply pressure changes 0,25...0,60 MPa 1% / 10%
 - from ambient temperature changes 0,4% / 10°C
 - from vibrations in range
 - 10...60 Hz, amplitude <0,35 mm
 - 60...500 Hz, acceleration 5g 1%
 - from the influence of constant and alternate magnetic field at strength 100 A/m, 50 Hz (acc. to PN-EN 6100-4-8:1998) max. 0,5 of allowable nonlinearity
 - from the electromagnetic field radiation perturbations at the radio frequency 10 V/m, in the frequency range from 80 Mhz to 1 GHz (acc. to PN-EN 6100-4-3:2002) max. 0,5 of allowable nonlinearity
 - from the series of quick intermediate states, caused by the voltage of peak value 2 KV (acc. to PN-EN 6100-4-4:2002) max. 0,5 of allowable nonlinearity
 - from the surge at 0,5 kV (acc. to PN-EN 6100-4-5:2006) max. 1%
- **positioner operation** normal or reversed (change by the current direction switch - the current floating by coil)
- **spark protection mark**  II 2G EEx ia IIC T6/T5/T4
- **use conditions in the danger zone**

1. Positioner A781 - A2XX - ... may cooperate only with the spark protected circuit with the following parameters:
 $U_i = 28 \text{ V dc}$, $I_j = 100 \text{ mA}$, $P_j = 0,7 \text{ W}$
2. The connection between positioner and cooperating devices must be made from the separate wires or cable, which will connect the spark protected circuits **only**. The L and C parameters of the external circuit should be the same as for the device cooperating with positioner.
3. The allowable ambient temperature, according to the temperature class:

Gases and liquid vapours temperature class	T6	T5	T4
Allowable ambient temperature (T_a)			
- version without manometers	-40°C...+50°C	-40°C...+65°C	-40°C...+80°C
- version with manometers	-25°C...+50°C	-25°C...+50°C	-25°C...+65°C

- **cover protection rating** IP54
- **operational position** arbitrary
- **pneumatic terminals** acc. to versions table (CODE4)
- **electric terminals** screw terminals for cables with diameter up to 2,5 mm
- **weight**
 - A781-AX00 and AX02...AX14-... A781-AX17- and Ax18-... without manometers 1,2 kg
 - A781-AX00 and AX02...AX14-... A781-AX17- and Ax18-... with manometers 1,5 kg
 - A781-AX01-... without manometers 1,5 kg
 - A781-AX01-... with manometers 1,8 kg

MATERIALS

- housing powder coated aluminium alloy, colour RAL5010
- pneumatic connectors nickel plated brass or stainless steel
- manometers brass, galvanized, lacquered or stainless steel
- other external parts stainless or galvanized steel

OPERATING CONDITIONS

The A781 positioner is designed to operate in the following conditions:

a) working medium:

air free from dust, oil, aggressive impurities, particulates larger than $1.5 \mu\text{m}$, with the relative humidity allowing for the dew point temperature not lower than 10°C (10°K) from the ambient temperature (acc. to PN-EN 60654-2:1999)

b) ambient temperature:

- standard version: $-40^\circ\text{C} \dots +80^\circ\text{C}$
- spark-safety version: please look at data on page 2, point 3 (table with temperatures)

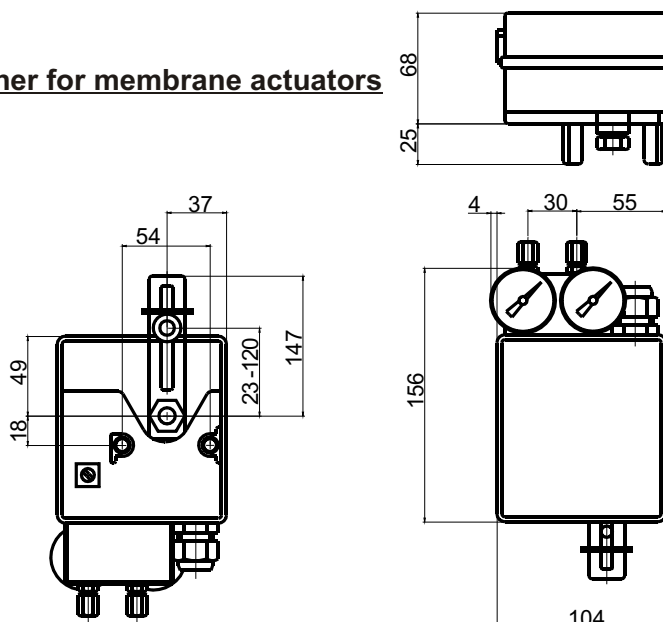
c) allowable vibrations:

10...60 Hz, amplitude $<0,35 \text{ mm}$, 60...5000 Hz, acceleration 5g (acc. to PN-EN 60654-3:2000; class Vh6)

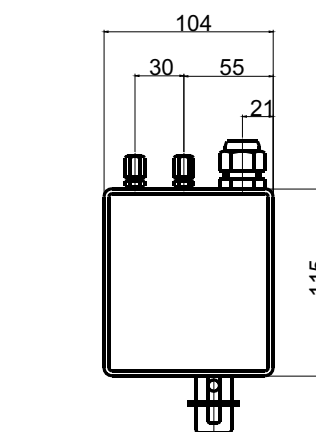
d) working position - arbitrary

DIMENSIONED DRAWINGS

Positioner for membrane actuators

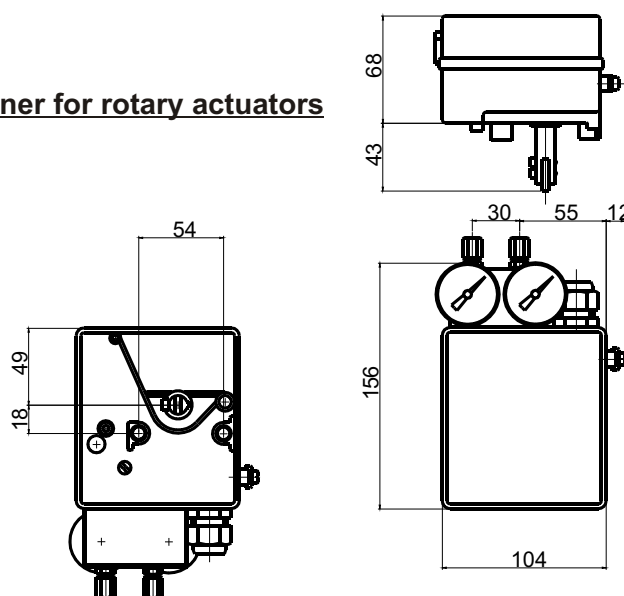


Version with manoments



Version without manometers

Positioner for rotary actuators



Version with manometers

Version without manometers

ORDERING METHOD

A781-A	Electropneumatic positioner	
CODE1	VERSION	
1	normal	
2	spark protected with certificate KDB 04 ATEX 025X II 2G EEx ia IIC T6/T5/T4	
CODE2	ELEMENTS ALLOWING FOR INSTALLATION ACTUATOR	
00	membrane type 37 or 38 from POLNA S.A. made from galvanized carbon steel	
01	membrane type P3 or R3 from POLNA S.A.	
02	membrane type 37 or 38 from Polna S.A., made from stainless steel	
03	membrane column type P or R from POLNA S.A. made from galvanized carbon steel	
04	membrane column type P or R from POLNA S.A. made from stainless steel	
05	actuator acc. to customer's needs	
06	no fixing elements	
07	membrane multispring type P1 or R1 from POLNA S.A. made from galvanized carbon steel	
08	membrane multispring type P1 or R1 from POLNA S.A., made from stainless steel	
09	Membrane rotary type BR99-R from POLNA S.A. made from carbon steel covered by pulverize lacquer	
10	Membrane rotary type BR99-P from POLNA S.A. made from carbon steel covered by pulverize lacquer	
11	rotary single-sided, consistent with EN ISO 5211, DIN 3337, VDI/VDE 38450 Namur standard (the actuator mandrel rotates left, i.e. anticlockwise), made from galvanized carbon steel, e.g.: rotary actuators from ARA PNEUMATIC series AT...S, EBRO ARMATUREN type EB-EW, EL-O-MATIC series PE and ES	
12	rotary single-sided, consistent with EN ISO 5211, DIN 3337, VDI/VDE 38450 Namur standard (the actuator mandrel rotates left, i.e. anticlockwise), made from stainless steel, e.g.: rotary actuators from ARA PNEUMATIC series AT...S, EBRO ARMATUREN type EB-EW, EL-O-MATIC series PE and ES	
13	with control valve with rib, acc. to PN-EN-60534-6-1:2001, made from galvanized carbon steel, e.g. actuator with valve from Samson or Arka Regler	
14	with control valve with rib, acc. to PN-EN60534-6-1:2001, made from stainless steel, e.g. actuator with valve from Samson or Arka Regler	
17	rotary single-sided, consistent with EN ISO 5211, DIN 3337, VDI/VDE 38450 Namur standard (the actuator mandrel rotates right, i.e. clockwise), made from galvanized carbon steel, e.g.: rotary actuators from ARA PNEUMATIC series AT...S, EBRO ARMATUREN type EB-EW, EL-O-MATIC series PE and ES	
18	rotary single-sided, consistent with EN ISO 5211, DIN 3337, VDI/VDE 38450 Namur standard (the actuator mandrel rotates right, i.e. clockwise), made from stainless steel, e.g.: rotary actuators from ARA PNEUMATIC series AT...S, EBRO ARMATUREN type EB-EW, EL-O-MATIC series PE and ES	
CODE3	SUPPLY PRESSURE AND PNEUMATIC AMPLIFIER	
01	0.14...0.25 MPa, standard amplifier	
02	0.25...0.6 MPa, standard amplifier	
03	0.14...0.25 MPa, amplifier with increased dynamics	
04	0.25...0.6 MPa, amplifier with increased dynamics	
CODE4	PNEUMATIC CONNECTORS	
L0	StB hole 1/8"	
L1	copper pipes connector ø6 mm	
L2	copper pipes connector ø8 mm	
L3	polyethylene pipes connector ø6 mm	
L4*	quick joint connector for polyethylene pipes ø6 mm (operational temp. -20°C...+80°C)	

CODE5	EQUIPMENT
M00	without manometers
M01	with supply pressure manometer (manometer diameter 40 mm, standard materials)
M02	with output signal manometer (manometer diameter 40 mm, standard materials)
M03	with supply pressure and output signal manometer (manometer diameter 40 mm, standard materials)
M04***	with supply pressure manometer (manometer diameter 50 mm, stainless steel)
M05***	with output signal manometer (manometer diameter 50 mm, stainless steel)
M06***	with supply pressure and output signal manometer (manometer diameter 50 mm, stainless steel)
M07***	with supply pressure manometer (manometer diameter 50 mm, materials: housing stainless steel, other elements standard)
M08***	with output signal manometer (manometer diameter 50 mm, materials: housing stainless steel, other elements standard)
M09***	with supply pressure and output signal manometer (manometer diameter 50 mm, materials: housing stainless steel, other elements standard)

CODE6	ELECTRIC CABLE INSERT
D1**	standard cable inlet PG 13.5 or M20x1.5 (metal from galvanized carbon steel, cable diameter 6...10 mm for standard and spark protected versions)
D2	polyamide cable inlet PG 13.5, cable diameter 8...13 mm or M20x1.5, cable diameter 7...10.5 mm (for normal versions)
D4	polyvinyl cable inlet M20x1.5, cable diameter 5...8 mm (for spark protected versions)
D5***	polyvinyl cable inlet M20x1.5, cable diameter 7...8 mm (for spark protected versions)
D6***	polyvinyl cable inlet M20x1.5, cable diameter 9...13 mm (for spark protected versions)
D7***	metal cable inlet M20x1.5 (bass covered nickel coat) cable diameter 5...8 mm - only for spark protected versions)
D8***	metal cable inlet M20x1.5 (bass covered nickel coat) cable diameter 7...10.5 mm - only for spark protected versions)
D9***	metal cable inlet M20x1.5 (bass covered nickel coat) cable diameter 9...13 mm - only for spark protected versions)

CODE7	SINUSOIDAL VIBRATIONS RESISTANCE
W0	standard (consistent with technical data)
W1	increased

A781-A	1	00	-	01,	L1,	M03,	D1,	W0	EXEMPLARY POSITIONER TYPE
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* - not in spark protected version

** - not in connection with elements, allowing for installation on stainless steel actuator

*** - versions with longer realization time

ORDER EXAMPLE

Electropneumatic positioner A781 in standard version, with fixing elements for actuator type 37 from POLNA, made from galvanized carbon steel, for pressure range 0.14...0.25 MPa, pneumatic amplifier in standard version, with connector for copper pipes $\varnothing 6$ mm, with supply pressure and output signal manometer (manometer diameter 40 mm, standard material), universal cable inlet PG13.5, with standard sinusoidal vibrations resistance has a designation:

Electropneumatic positioner type typ A781 - A100 - 01, L1, M03, D1, W0

We reserve the right to implement the product structural changes without the parameters deterioration.