

Electropneumatic Positioner and Pneumatic Positioner for Rotary Actuators



Type 3761

Application

Single-acting or double-acting positioner designed for attachment to rotary actuators.

Reference variable: 0.2 to 1 bar (3 to 15 psi) or 4 to 20 mA



The positioners ensure a predetermined assignment of the valve stem position (controlled variable x) to the control signal (reference variable w). They compare the control signal from the controller with the opening angle of the control valve and issue an output signal pressure p_{st} (output variable y).

Special features

- Easy operation
- Compact, low-maintenance design
- Reversible operating direction
- Low supply air consumption
- Control characteristics adaptable to butterfly control valves, rotary plug valves, or segmented ball valves
- Attachment to all actuators by means of fixing level 1 acc. to VDI/VDE 3845

Options

- Second pneumatic output for double-acting actuators
- Tight-closing function
- Electric limit switch with microswitch
- Intrinsically safe version with type of protection Ex II 2 G EEx ia IIC T6 for hazardous areas

Optionally available with pressure gauge for supply air and signal pressure (scale 0 to 6 bar and 0 to 90 psi); pressure gauge housing made of stainless steel, connections nickel-plated or made of stainless steel.

Versions

Common data for Type 3761

Supply air Max. 6 bar

Signal pressure 0 to max. 6 bar

- **Type 3761 · Pneumatic Positioner**
Reference variable 0.2 to 1.0 bar (3 to 15 psi)
- **Type 3761 · Electropneumatic Positioner** (Fig. 1)
Reference variable 4 to 20 mA

Additional equipment

- Tight-closing function at 0 or 100 % of the reference variable
- Electric limit switch
- Type of protection Ex II 2 G EEx ia IIC T6



Fig. 1 · Type 3761 Electropneumatic Positioner attached to Type 3378 Pneumatic Rotary Actuator with Type 3310 Segmented Ball Valve

Principle of operation

The only difference between the positioners is that the electro-pneumatic positioner has an electropneumatic (i/p) converter to convert the electric signal received from a controller into a proportional pneumatic signal.

These positioners operate according to the force-balance principle.

Operating direction

When the reference variable increases, the pneumatic output signal pressure can be selected to be increasing-increasing (direct action >>) or increasing-decreasing (reverse action <>). The operating direction depends on the position of the cam disc that can be turned by 180° and on the selected pneumatic force switch.

Refer to the Mounting and Operating Instructions EB 8386 EN for more details on installation and settings.

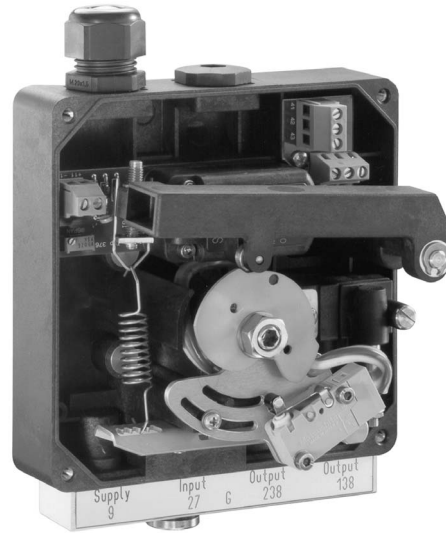


Fig. 2 · Type 3761 i/p Positioner, opened

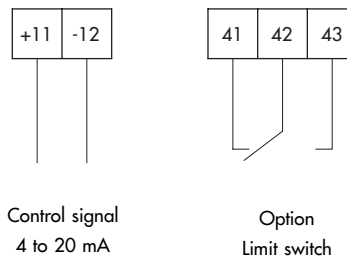


Fig. 3 · Electrical connection

Table 1 · Technical data for Type 3761 Positioner

Opening angle		55° · 70° · 75° · 90°	
Reference variable w	Pneumatic	0.2 to 1.0 bar (3 to 15 psi)	
	Electric	4 to 20 mA · Min. current: 3.6 mA, may only be operated from a current source. Load: 300 Ω at 20 mA (350 Ω at 20 mA with tight-closing function and explosion-protected version) Reverse polarity protection · Static destruction limit at 60 mA or 6.4 V (version without explosion protection) or 7.6 V (explosion-protected version)	
Span adjustment	Pneumatic	None	
	Electric	±5 %	
Supply air		1.4 to 6 bar (20 to 90 psi)	
Output signal pressure		0 to 6 bar (0 to 90 psi)	
Characteristic	Standard	Linear	
	Deviation	≤ 2 % (from terminal-based conformity)	
	Optionally linear or equal percentage	90° 75° · for VETEC rotary plug valves 70° · for butterfly control valves 90° · for Type 3310 Segmented Ball Valves 70° · for Type 3310 Segmented Ball Valves with reverse flow 55° · for Type 3310 Segmented Ball Valves when opening angle is reduced	
Operating direction		Reversible	
Principle of operation		Single-acting or double-acting	
Hysteresis		≤ 1 %	
Variable position		≤ 7 %	
Air consumption in steady state		At supply air of 1.4 bar	At supply air of 6 bar
	Single-acting	80 l _n /h	200 l _n /h
	Double-acting	150 l _n /h	350 l _n /h
Permissible ambient temperature		-20 to 70 °C with plastic cable gland · -30 to 70 °C with metal cable gland Limits in the EC Type Examination Certificate additionally apply for explosion-protected versions	
Influences	Temperature	0.5 % / 10 K	
	Vibrations	2 % up to 250 Hz at 2 g	
Explosion protection		Ⓔ II 2 G EEx ia IIC T6	
Degree of protection		IP 54 · IP 65 (special version)	
Weight		Approx. 0.9 kg	
Additional equipment			
Electric limit switch		250 VAC · 3 A (microswitch with gold-plated contact, SPDT)	
Tight-closing function (can be deactivated)		At ≤ 4.08 mA or at ≥ 19.92 mA	

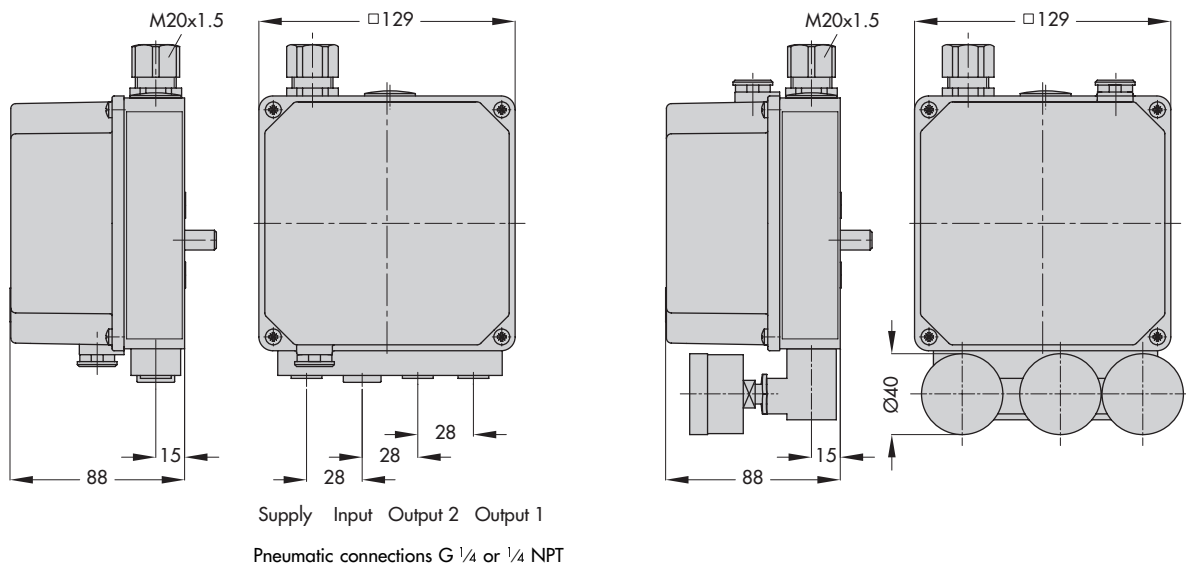
Table 2 · Materials

Housing	Polyamide
Pneumatic connecting rail	Aluminum, anodized

Explosion protection certificates for Type 3761 Positioner

Type of approval	Certificate number	Date	Comments
EC Type Examination Certificate	PTB 00 ATEX 2159	2001-01-09	Ⓔ II 2 G EEx ia IIC T6 Switch-on and switch-off electronics; Type 3761-1
First Addendum		2001-06-07	
Second Addendum		2003-09-30	

Dimensions



Article code

Positioner	Type 3761-	x	x	x	x	x	x	0	0	0	0	0
Explosion protection												
Without		0										
⊕ II 2 G EEx ia IIC T6 acc. to ATEX		1										
Version												
Pneumatic			1	0								
Electropneumatic			2									
Tight-closing function												
Without				0								
Function activate at 0 % reference variable				1								
Function activate at 100 % reference variable				2								
Type of action												
Single-acting output					1							
Double-acting output					2							
Additional equipment												
Without						0						
Electric limit switch for explosion-protected version (U _i < 45 V, P _i < 2 W)						1						
Pneumatic connections												
ISO 228/1 - G 1/4							1					
1/4 - 18 NPT								2				

Accessories

For single-acting positioners:

Pressure gauge for supply air and output

For double-acting positioners:

Pressure gauge for supply air and two outputs

Mounting block with Type 4708-58 Supply Pressure Regulator

Cam disks according to Table 1

Specifications subject to change without notice

