

# Series 3730

## Type 3730-1 Electropneumatic Positioner



### Application

Single-acting or double-acting positioner for attachment to pneumatic control valves. Self-calibrating, automatic adaptation to valve and actuator.

Set point	4 to 20 mA
Travels	3.75 to 200 mm
Opening angle	24 to 100°



The positioner ensures a predetermined assignment of the valve position (controlled variable  $x$ ) to the input signal (set point  $w$ ). It compares the input signal received from a control system to the travel or rotational angle of the control valve and issues a corresponding output signal pressure (output variable  $y$ ).

### Special features

- Simple attachment to all common linear and rotary actuators with interface for SAMSON direct attachment, NAMUR rib or valves with rod-type yokes according to IEC 60534-6-1, or to rotary actuators according to VDI/VDE 3845
- Any desired mounting position of the positioner
- Simple single-knob, menu-driven operation
- LCD easy to read in any mounted position due to selectable reading direction
- Variable, automatic start-up
- Preset parameters - only values deviating from the standard need to be adjusted
- Calibrated travel sensor without gears susceptible to wear
- Permanent storage of all parameters in EEPROM (protected against power failure)
- Two-wire system with a small electrical load of 300  $\Omega$
- Tight-closing function can be activated
- Continuous monitoring of zero point
- Two standard programmable position alarms

### Version

- **Type 3730-1:** electropneumatic positioner with on-site operation and LCD


### Additional options

- Inductive limit contact with proximity switches
- Stainless steel housing










**Table 1: Technical data of Type 3730- Positioner**

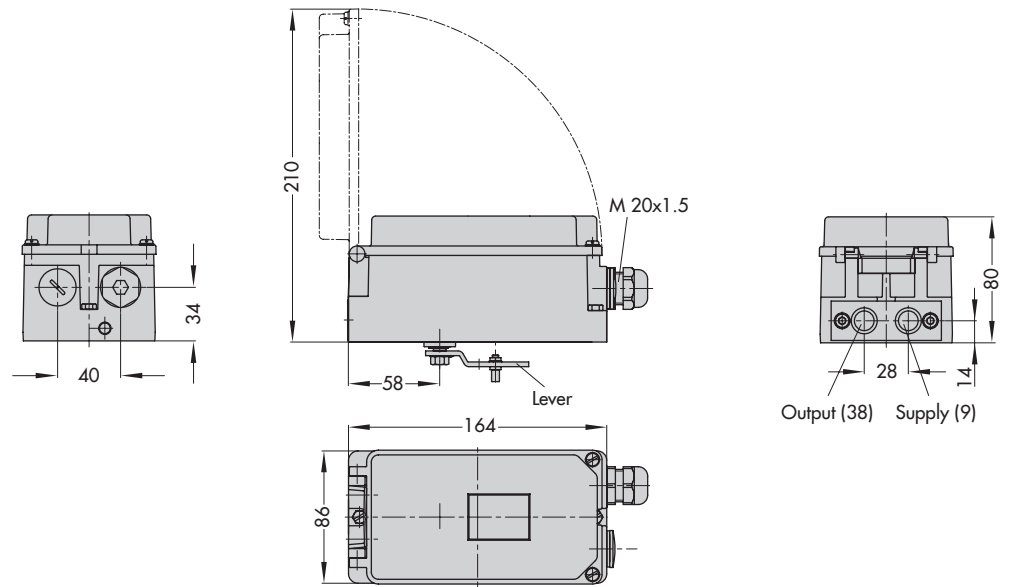
The technical data for the explosion-protected devices may be restricted by the limits specified in the test certificates.			
Travel	Adjustable	Direct attachment to Type 3277 Actuator	3.6 to 30 mm
		Attachment according to IEC 60534-6 (NAMUR)	3.6 to 200 mm
		Attachment to rotary actuators according to VDI/VDE 3845	24 to 100° opening angle
Travel range		Adjustable within the initialized travel/angle of rotation; travel can be restricted to 1/5 at the maximum	
Set point w	Signal range	4 to 20 mA · Two-wire device, reverse polarity protection	
	Split-range operation	4 to 11.9 mA and 12.1 to 20 mA	
	Static destruction limit	100 mA	
Minimum current		3.7 mA	
Load impedance		≤6 V (corresponding to 300 Ω at 20 mA)	
Supply air	Air quality acc. to ISO 8573-1 (edition 2001-02)	1.4 to 7 bar (20 to 105 psi)	
		Max. particle size and density: Class 4 · Oil content: Class 3 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected	
Signal pressure (output)		0 bar up to the capacity of the supply pressure · Can be limited to approx. 2.4 bar over software	
Characteristic		Optionally, 3 characteristics for globe valves and 8 characteristics for rotary valves	
Hysteresis		≤1 %	
Sensitivity		≤0.1 %	
Transit time		<0.5 s for initialization not permissible · Adaptation over volume restriction Q	
Direction of action		Reversible	
Air consumption		Independent from supply pressure approx. 110 l <sub>n</sub> /h	
Air output capacity	to fill actuator with air	At Δp = 6 bar: 8.5 m <sub>n</sub> <sup>3</sup> /h · At Δp = 1.4 bar: 3.0 m <sub>n</sub> <sup>3</sup> /h · K <sub>Vmax(20 °C)</sub> = 0.09	
	to vent actuator	At Δp = 6 bar: 14.0 m <sub>n</sub> <sup>3</sup> /h · At Δp = 1.5 bar: 4.5 m <sub>n</sub> <sup>3</sup> /h · K <sub>Vmax(20 °C)</sub> = 0.15	
Permissible ambient temperature		-20 to 80 °C in all versions -45 to 80 °C with metal cable gland <b>The temperature limits for the explosion-protected devices may be restricted by the limits specified in the test certificates.</b>	
Influences	Temperature	≤0.15 %/10 K	
	Supply air	None	
	Effect of vibration	≤0.25 % up to 2000 Hz and 4 g according to IEC 770	
Electromagnetic compatibility		Complying with EN 61000-6-2, EN 61000-6-3, EN 61326-1 and NAMUR Recommendation NE 21	
Electrical connections		One M20 x 1.5 cable gland for 6 to 12 mm clamping range · Second M20 x 1.5 threaded connection additionally exists · Screw terminals for 0.2 to 2.5 mm <sup>2</sup> wire cross-sections	
Explosion protection		See Table 2	
Degree of protection		IP 66/NEMA 4X	
Use in safety-instrumented systems (SIL)		Observing the requirements of IEC 61508, the systematic capability of the pilot valve for emergency venting as a component in safety-instrumented systems is given.	
		Use is possible on observing the requirements of IEC 61511 and the required hardware fault tolerance in safety-instrumented systems up to SIL 2 (single device/HFT = 0) and SIL 3 (redundant configuration/HFT = 1).	
Weight		1.0 kg · Special version in stainless steel: 2.2 kg	
Compliance			
<b>Materials</b>			
Housing		Die-cast aluminum EN AC-ALSi12(Fe) (EN AC-44300) acc. to DIN EN 1706, chromated and powder coated · Special version: stainless steel 1.4581	
External parts		Stainless steel 1.4404/316L	
Cable gland		M20 x 1.5, black polyamide	
<b>Binary contacts</b>			
Two software limit contacts with configurable limits (0.5 % steps), reverse polarity protection, floating · See rows below for default settings			
Signal state	Version without explosion protection	Ex	
	No response: Conductive (R = 348 Ω) Response: Non-conducting	No response: ≥ 2.2 mA Response: ≤ 1.0 mA	
Operating voltage	For connection to the binary input of the PLC acc. to IEC 61131-2, P <sub>max</sub> = 400 mW or for connection to NAMUR switching amplifier acc. to EN 60947-5-6	For connection to NAMUR switching amplifier acc. to EN 60947-5-6	
<b>Options</b>			
Pepperl+Fuchs inductive limit contact		For connection to switching amplifier acc. to EN 60947-5-6. Can be used in combination with a software limit contact.	
SJ2-SN proximity switch		Measuring plate not detected: ≥3 mA · Measuring plate detected: ≤1 mA	

**Table 2: Explosion protection certificates**

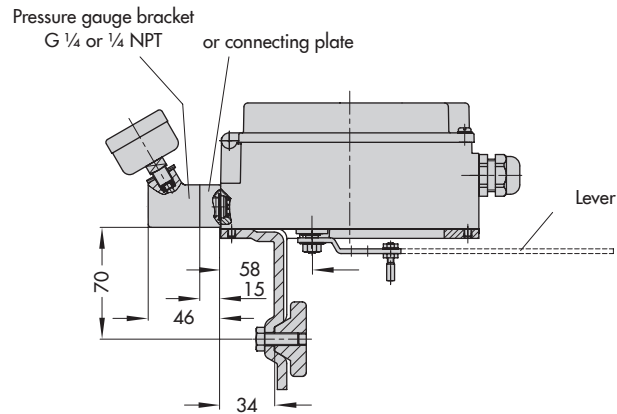
Type	Certification	Type of protection/comments			
3730	-7 <b>STCC</b>	On request			
		 EC type examination certificate	Number Date	PTB 04 ATEX 2033 2017-01-24	II 2G Ex ia IIC T6-T4 Gb; II 2D Ex tb IIIC T80°C Db
	-11 <b>CCoE</b>	Number A/P/HQ/MH/144/1164 Date 2014-10-27 Valid until 2019-10-26			Ex ia IIC T6
			Number Date Valid until	RU C-DE08.B.00113 2013-11-15 2018-11-14	1Ex ia IIC T6 Gb; 1Ex tb IIIC T80°C Db IP66
			<b>IECEX</b>	Number Date	IECEX PTB 06.0055X 2017-01-26
		<b>NEPSI</b>	Number Date Valid until	GYJ14.1109 2014-05-08 2019-05-07	Ex ia IIC T4~T6 Gb
		-13 <b>CSA</b>	Number Date	1675820 2017-05-18	Ex ia IIC T6; Class I, Zone 0; Class II, Groups E, F, G; Ex nA II T6; Class I, Zone 2 Class I, Div.2, Groups A, B, C, D Class II, Div.2, Groups E, F, G Class III: Type 4 Enclosure
	<b>FM</b>		Number Date	3023478 2008-11-03	Class I, Zone 0 AEx ia IIC Class I, II, III, Div.1, Groups A, B, C, D, E, F, G Class I, Div.2, Groups A, B, C, D Class II, Div.2, Groups F, G NEMA Type 4X
	-15 	EC type examination certificate	Number Date	PTB 04 ATEX 2033 2017-01-24	II 2D Ex tb IIIC T80°C Db
		<b>IECEX</b>	Number Date	IECEX PTB 06.0055X 2017-01-26	Ex tb IIIC T80°C Db
	-18 	Certificate of conformity	Number Date	PTB 04 ATEX 2114 X 2017-01-26	II 3G Ex nA II T6 Gc, II 3D Ex tc IIIC T80°C Dc
		Number Date Valid until	RU C DE.08.B.00113 2013-11-15 2018-11-14	2 Ex nA IIC T6/T5/T4 Gc X; 2 Ex ic IIC T6/T5/T4 Gc X; Ex tc IIIC T80°C Dc X	
		<b>IECEX</b>	Number Date	IECEX PTB 06.0055X 2017-01-26	Ex nA IIC T6-T4 Gc, Ex tc IIIC T80°C Dc
<b>NEPSI</b>		Number Date Valid until	GYJ14.1110X 2014-05-08 2019-05-07	Ex ic IIC T4~T6 Gc; Ex nA IIC T4~T6 Gc	

Dimensions in mm

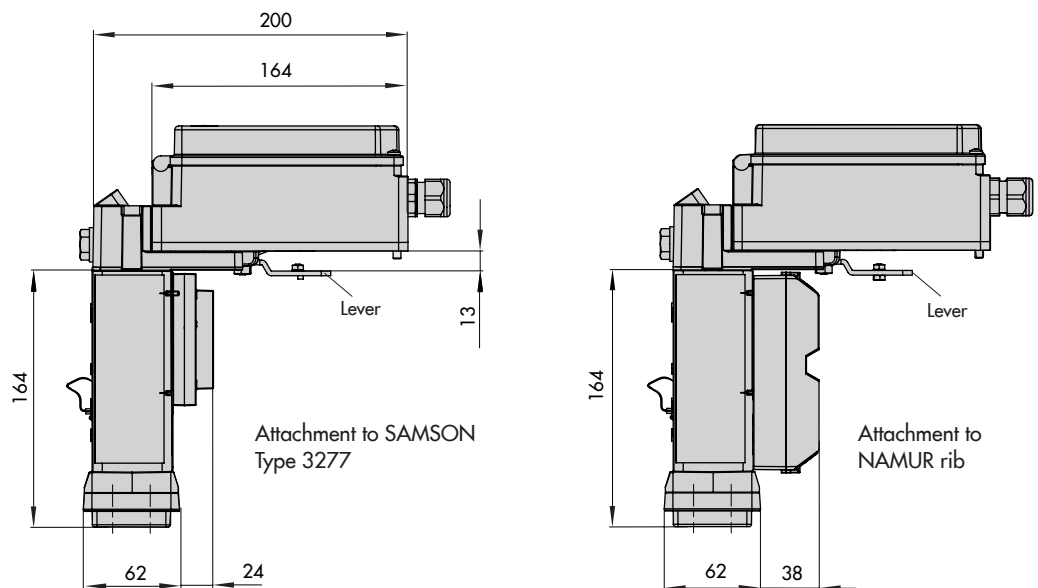
Direct attachment



Attachment according to IEC 60534-6 (NAMUR)

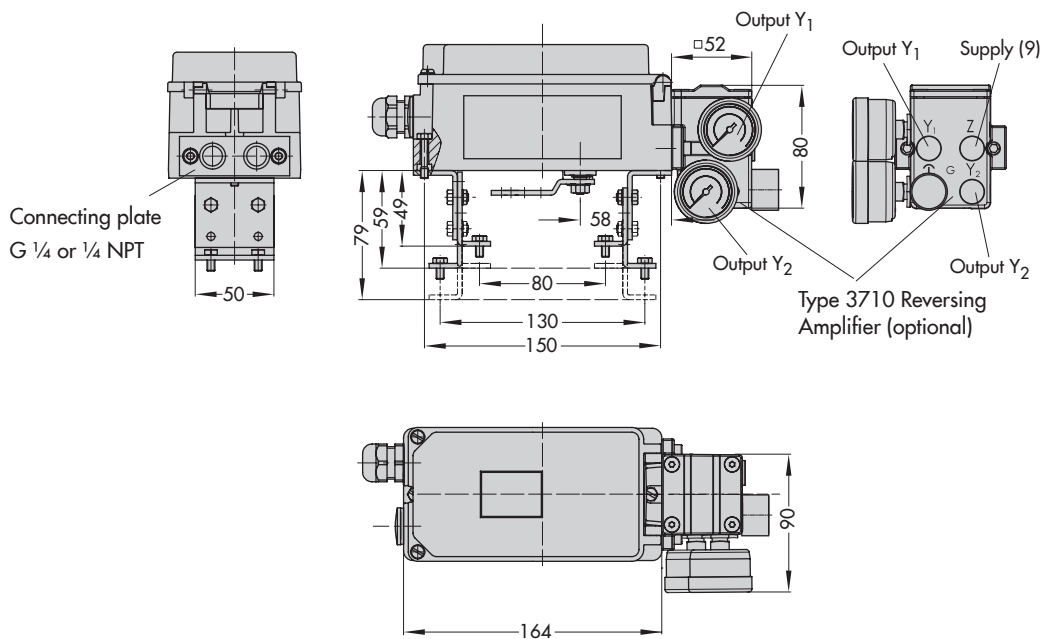


Attachment according to VDI/VDE 3847



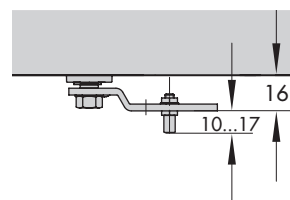
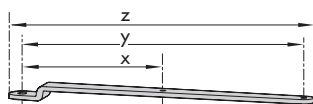
Dimensions in mm

Attachment to rotary actuators



Lever

Lever	x	y	z
S	17 mm	25 mm	33 mm
M	25 mm	50 mm	66 mm
L	70 mm	100 mm	116 mm
XL	100 mm	200 mm	216 mm



## Article code

Positioner	Type 3730-1	x	x	0	0	0	0	0	0	0	0	x	0	0	x	0	0	0
With LCD and autotune, 4 to 20 mA set point, two software limit contacts*																		
Explosion protection																		
Without		0																
ATEX: II 2G Ex ia IIC T6..T4 Gb; II 2D Ex ia IIIC T80°C Db		1																
FM/CSA: Class I, Zone 0 AEx ia IIC; Class I, II, III, Div.1, Groups A–G; Class I, Div.2, Groups A–D; Class II, Div.2, Groups F, G/ Ex ia IIC T6; Class I, Zone 0; Class II, Groups E–G; Ex nA II T6; Class I, Zone 2; Class I, Div.2, Groups A–D; Class II, Div.2, Groups E–G		3																
ATEX: II 2D Ex tb IIIC T80°C Db		5																
ATEX: II 3G Ex nA II T6 Gc; II 3D Ex tc IIIC T80°Dc		8																
Option: Inductive limit contact																		
Without		0																
With SJ2-SN proximity switch (NC contact)		1																
Housing material																		
Aluminum (standard)												0						
Stainless steel 1.4581												1						
Special applications																		
Without																		0
Device compatible with paint (lowest permissible ambient temperature –20 °C)																		1
Exhaust air port with ¼ NPT thread, back of housing sealed																		2
Special version																		
Without																		0 0 0

\* Additional functions such as limit contacts, solenoid valve, position transmitter or external position sensor, e.g. with Type 3730-2 Positioner

### Mounting the positioner

The Type 3730 Electropneumatic Positioner can be attached directly to the Type 3277 Actuator over a connection block.

In actuators with fail-safe action “actuator stem extends” and Type 3277-5 Actuator (120 cm<sup>2</sup>), the signal pressure is routed over an internal hole in the actuator yoke to the actuator.

In actuators with fail-safe action “actuator stem retracts” and in actuators with effective diaphragm areas of 175 cm<sup>2</sup> or larger, the signal pressure is routed to the actuator over ready-made external piping.

Using the appropriate bracket, the positioner can also be attached according to IEC 60534-6-1 (NAMUR recommendation). The positioner can be mounted on either side of the control valve.

A pair of universal brackets is used for the attachment to Type 3278 Rotary Actuators or other rotary actuators according to VDI/VDE 3845. The rotary motion of the actuator is transferred to the positioner over a coupling wheel with scale.

### Ordering text

Positioner Type 3730-1x

- Without pneumatic connecting rail (only when directly attached to Type 3277)
- With pneumatic connecting rail ISO 228/1-G ¼
- With pneumatic connecting rail ¼-18 NPT
- Without/with pressure gauge up to max. 6 bar
- Additional cover label with list of parameters and operating instructions in English/Spanish or English/French (standard version German/English)
- Attachment to Type 3277 Actuator (120 to 750 cm<sup>2</sup>)
- Attachment acc. to IEC 60534-6-1 (NAMUR)  
Travel: ... mm, if applicable, stem diameter: ... mm
- Attachment to Type 3278 Rotary Actuator (160/320 cm<sup>2</sup>)
- Attachment to rotary actuators according to VDI/VDE 3845
- Pneumatic reversing amplifier for double-acting actuators with connection acc. to ISO 228/1-G ¼ or ¼-18 NPT
- Adapter M20 x 1.5 to ½ NPT
- Metal cable gland
- Free of substances that impair paint adhesion
- Exhaust air port with ¼ NPT thread
- Special version: housing made of CrNiMo steel

Specifications subject to change without notice



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