

# Series 3725

## Electropneumatic Positioner Type 3725



### Application

Single-acting positioner for attachment to pneumatic linear and rotary valves. Self-calibrating, automatic adaptation to valve and actuator.

Reference variable	4 to 20 mA
Travels	3.75 to 50 mm
Opening angle	24 to 100°



The positioner ensures a predetermined assignment of the valve (controlled variable  $x$ ) to the input signal (reference variable  $w$ ). 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 direct attachment to SAMSON Type 3277 Actuator (120 to 700 cm<sup>2</sup>, see Fig. 1)
- Attachment according to IEC 60534-6 (NAMUR)
- Attachment to rotary actuators according to VDI/VDE 3845 (see Fig. 3)
- Attachment to Type 3372 Actuator for Series V2001 Valves (see Fig. 2)
- Easy operation with intuitive navigation menu using three capacitive keys
- 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)
- Permanent storage of all parameters in EEPROM (protected against power failure)
- Two-wire system with a small electrical load of 300  $\Omega$
- Activatable tight-closing function
- Continuous monitoring of zero point
- Non-contact position sensing
- Unaffected by environmental effects and steam hammering

### Version

- **Type 3725** · Electropneumatic positioner with local operation and LCD

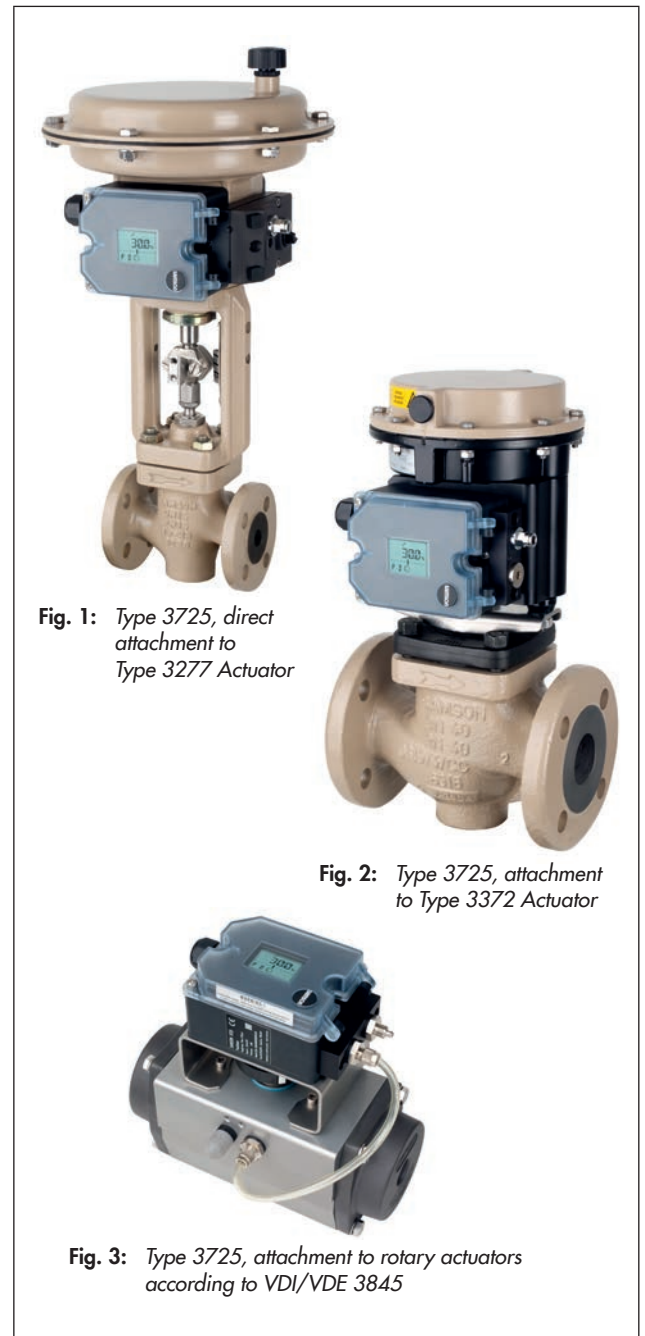


Fig. 1: Type 3725, direct attachment to Type 3277 Actuator

Fig. 2: Type 3725, attachment to Type 3372 Actuator

Fig. 3: Type 3725, attachment to rotary actuators according to VDI/VDE 3845

## Principle of operation

The positioner is mounted on pneumatic control valves and is used to assign the valve position (controlled variable  $x$ ) to the control signal (reference variable  $w$ ). The positioner compares the electric control signal of a control system to the travel or rotational angle of the control valve and issues a signal pressure (output variable  $y$ ) for the pneumatic actuator.

The positioner consists of an anisotropic magnetoresistive (AMR) sensor (2), an analog i/p converter (6) with a downstream booster (7) and the electronics unit with microcontroller (4).

The travel or opening angle is measured by the pick-up lever connected to a magnet and a non-contact AMR sensor installed in the positioner and the downstream electronics.

When a system deviation occurs, the actuator is either vented or filled with air. If necessary, the signal pressure change can be slowed down by a volume restriction as necessary.

The i/p module (6) is supplied with a constant upstream pressure by the pressure regulator (8) to make it independent of the supply air pressure.

## Operation

A user-friendly, intuitive concept using three capacitive keys and a LCD has been developed: Users select parameters by touching the arrow keys and confirm the settings with the confirmation key. In the menu, all parameters are listed in one level, meaning there is no need to search through submenus. All parameter settings can be read and changed on site.

All values are displayed on the LCD. The reading direction of the LCD can be rotated by  $180^\circ$ .

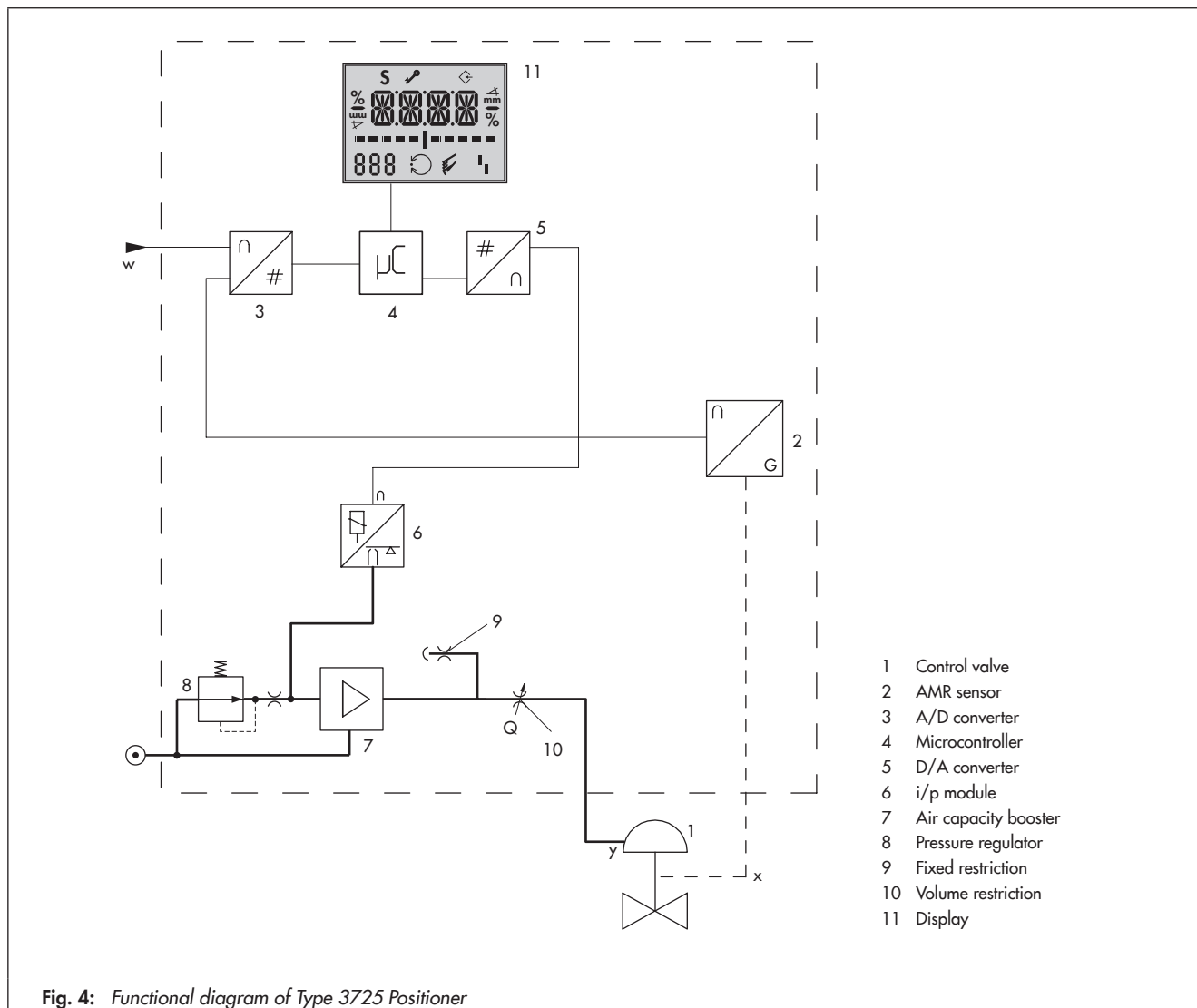


Fig. 4: Functional diagram of Type 3725 Positioner

**Table 1: Technical data**

Positioner	
Travel, adjustable	Direct attachment to Type 3277 Actuator: 3.75 to 30 mm Direct attachment to Type 2780-2 Actuator: 6/12/15 mm Attachment to Type 3372 Actuator: 15/30 mm Attachment according to IEC 60534-6 (NAMUR): 3.75 to 50 mm Attachment to rotary actuators: 24 to 100°
Reference variable w	Signal range 4 to 20 mA · Two-wire device with reverse polarity protection · Split-range operation 4 to 11.9 mA and 12.1 to 20 mA · Static destruction limit 33 V
Power consumption (start-up)	3.8 mA
Power consumption (operation)	3.6 mA
Load impedance	Max. 6.3 V
Supply air Air quality acc. to ISO 8573-1	Supply air: 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 by software
Characteristic	3 characteristics for globe valves · 9 characteristics for rotary valves
Hysteresis	≤ 0.3 %
Sensitivity	≤ 0.1 %
Transit time	Only for actuators with initialization time > 0.5 s <sup>1)</sup>
Direction of action	w/x reversible
Air consumption	≤ 100 l <sub>n</sub> /h with a supply pressure up to 6 bar and a signal pressure of 0.6 bar
Air output capacity Actuator filled with air Actuator vented	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</sub> (20 °C) = 0.09 At Δp = 6 bar: 14.0 m <sub>n</sub> <sup>3</sup> /h,                      At Δp = 1.4 bar: 4.5 m <sub>n</sub> <sup>3</sup> /h                      K <sub>vmax</sub> (20 °C) = 0.15
Permissible ambient temperature	-20 to +80 °C · -25 to +80 °C with metal cable gland The limits in the test certificate additionally apply for explosion-protected versions
Influences	Temperature: ≤ 0.15 %/10 K Vibrations: ≤ 0.25 % up to 2000 Hz and 4 g according to IEC 770 Supply air: None
Electromagnetic compatibility	Complying with EN 61000-6-2, EN 61000-6-3 and NAMUR Recommendation NE 21
Explosion protection	⊕ II 2 G Ex ia IIC T4
Degree of protection	IP 66

<sup>1)</sup> For faster actuators, a volume restriction must be used. Otherwise, the initialization cannot be performed successfully.

**Table 2: Materials and weight**

Materials	
Body	Polyphthalamide (PPA)
Cover	Polycarbonate (transparent)
External parts	Stainless steel 1.4571 and 1.4301
Cable gland	M20x1.5, black polyamide
Venting	High-density polyethylene (PE-HD)
<b>Weight</b>	<b>Approx. 0.5 kg</b>

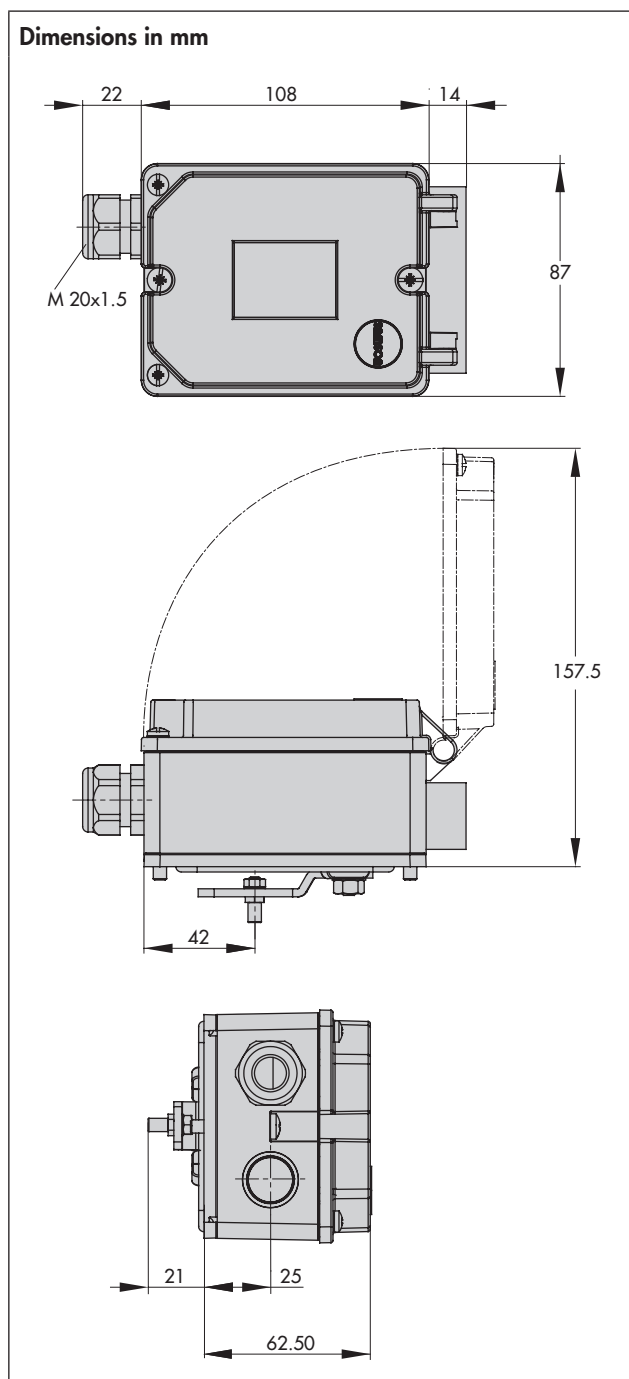
## Explosion protection certificates

Type of approval	Certificate number	Date	Comments
EC Type Examination Certificate	PTB 11 ATEX 2020 X	2011-08-25	II 2 G EEx ia IIC T4

## Article code

Positioner	Type 3725-	x	x	x	0	0	0	0	0	0	0	9	9	9	9
With LCD and autotune, 4 to 20 mA reference variable															
Explosion protection															
Without		0	0	0											
⊕ II 2 G Ex ia IIC T4 acc. to ATEX		1	1	0	0										

### Dimensions in mm



Specifications subject to change without notice

### Mounting the positioner

The Type 3725 Electropneumatic Positioner can be attached directly to the Type 3277 Actuator over a connection block.

When attached to the Type 3277-5 Actuator (120 cm<sup>2</sup>), the signal pressure is routed over an internal bore in the actuator yoke to the actuator.

In actuators with fail-safe action "Actuator stem retracts" and in actuators with effective diaphragm areas of 240 cm<sup>2</sup> or larger, the signal pressure is routed to the actuator over ready-made external piping.

### Ordering text

- Type 3725 Positioner
- Without pneumatic connecting rail (only when directly attached to Type 3277)
- Direct attachment to Type 3277 Actuator (120 to 700 cm<sup>2</sup>)
- Attachment according to IEC 60534-6 (NAMUR)
- Attachment to rotary actuators acc. to VDI/VDE 3845
- Attachment to Type 3278 Rotary Actuator (160/320 cm<sup>2</sup>)
- With pneumatic connecting rail G 1/4
- With pneumatic connecting rail 1/4 NPT
- Without/with pressure gauge up to max. 6 bar

