Series 3725
Electropneumatic Positioner
Type 3725

Fig. 1 · Type 3725 Positioner

Mounting and Operating Instructions

EB 8394 EN (1300-1621)

Firmware version 1.0x

Edition February 2012

Definitions of the signal words used in these instructions

WARNING!
indicates a hazardous situation which, if not avoided, could result in death or serious injury.

NOTICE
indicates a property damage message.

Note: *Supplementary explanations, information and tips*

Contents Page

Firmware revisions	
1.02 (previous)	1.03 (new)
	Internal revisions

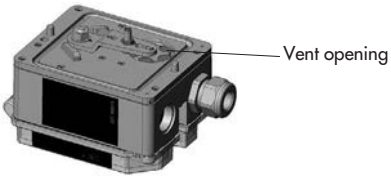
1 Safety instructions

For your own safety, follow these instructions concerning the mounting, start up and operation of the positioner:

- The positioner is to be mounted, started up or operated only by trained and experienced personnel familiar with the product.
  According to these Mounting and Operating Instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible dangers due to their specialized training, their knowledge and experience as well as their knowledge of the relevant standards.
- Explosion-protected versions of this positioner may only be operated by personnel who have undergone special training or instructions or who are authorized to work on explosion-protected devices in hazardous areas.
- Any hazards that could be caused by the process medium, the operating pressure, the signal pressure or by moving parts of the control valve are to be prevented by means of the appropriate measures.
- If inadmissible motions or forces are produced in the actuator as a result of the supply pressure, the supply pressure must be restricted by means of a suitable supply pressure reducing station.
- Proper shipping and appropriate storage are assumed.

To avoid damage to any equipment, the following also applies:

- Do not operate the positioner with the back of the positioner/vent opening facing upwards.
  The vent opening must not be sealed when the positioner is installed on site.
- Do not ground electric welding equipment near to the positioner.



Note: *The device with a CE marking fulfills the requirements of the Directives 94/9/EC (ATEX) and 89/336/EEC (EMC).*
The Declaration of Conformity is available on request.

2 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											
⟨Ex⟩ II 2 G Ex ia IIC T4 acc. to ATEX		1	1	0	0										

* Other approvals in preparation

3 Design and principle of operation

The electropneumatic positioner is mounted on pneumatic control valves. It is used to assign the valve stem position (controlled variable x) to the control signal (reference variable w). The electric control signal received from a control system is compared to the travel or rotational angle of the control valve and a signal pressure (output variable y) is produced for the pneumatic actuator.

The positioner consists of an anisotropic magnetoresistive (AMR) sensor (2), an analog i/p converter (7) with a downstream booster 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 (2) installed in the housing and the electronics.

The motion of the pick-up lever causes the direction of the magnetic field to change. This change is sensed by the AMR sensor. The microprocessor determine the momentary valve position from this information.

The position of the valve is transmitted to the microcontroller (4) over the A/D converter (3). The PD control algorithm in the microprocessor (4) compares this actual position to the 4 to 20 mA control signal (reference variable) after it has been converted by the A/D converter (3).

In case of a system deviation, the operation of the i/p converter (6) is changed so that the actuator (1) is filled or vented by the downstream air capacity booster (7).

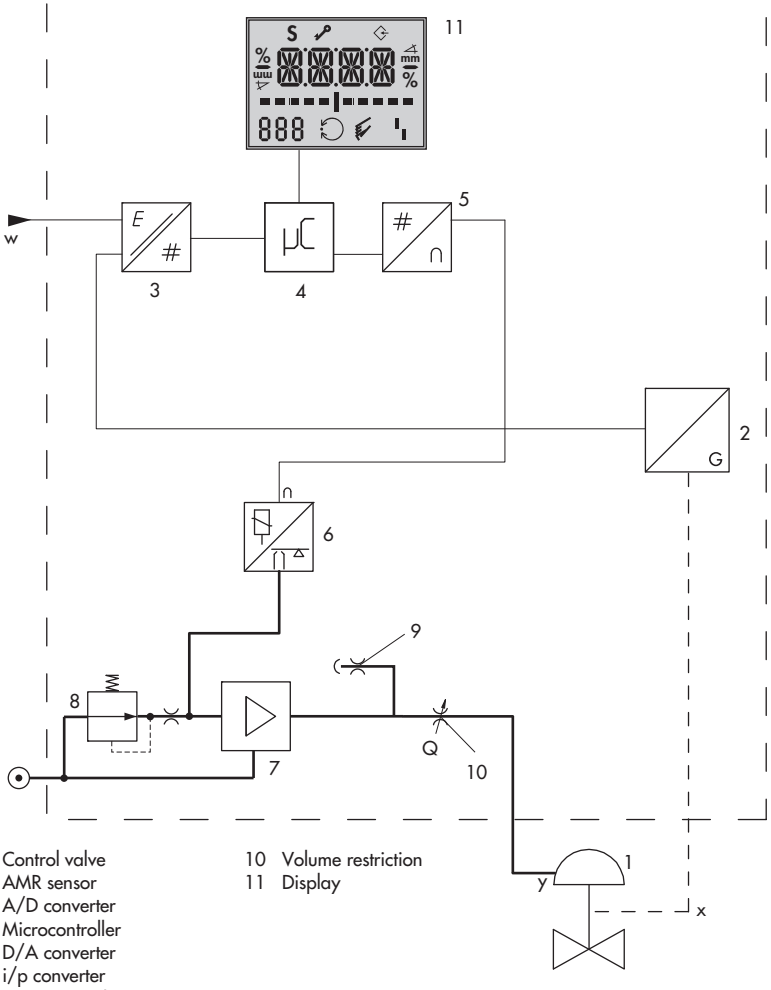
The pneumatic air capacity booster (7) and the pressure regulator (8) are supplied with supply air.
The output signal pressure supplied by the booster can be limited to 2.4 bar by software.

The volume restriction Q (10) is used to optimize the positioner by adapting it to the actuator size.

Tight-closing function

The pneumatic actuator is completely filled with air or vented as soon as the reference variable falls below 1 % or exceeds 99 % (see end positions set over parameter codes P10 and P11).

Air to open (ATO): P10 → ON; P11 → OFF
Air to close (ATC): P10 → OFF; P11 → ON



1 Control valve
2 AMR sensor
3 A/D converter
4 Microcontroller
5 D/A converter
6 i/p converter
7 Air capacity booster
8 Pressure regulator
9 Fixed restriction
10 Volume restriction
11 Display

Fig. 2 · Functional diagram

3.1 Technical data

Type 3725 Positioner		
Travel, adjustable		Direct attachment to Type 3277 Actuator: 3.75 to 30 mm Attachment acc. to IEC 60 534-6-1 (NAMUR): 3.75 to 50 mm Attachment to Type 3372 Actuator: 15/30 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
Minimum current		3.8 mA
Load impedance		≤ 6 V (corresponds to 300 Ω at 20 mA)
Supply air	Supply pressure	1.4 to 7 bar (20 to 105 psi)
	Air quality acc. to ISO 8573-1 (2001)	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
Characteristics		3 characteristics for globe valves · 9 characteristics for rotary valves
Hysteresis		≤ 0.3 %
Sensitivity		≤ 0.1 %
Transit time		< 0.5 s not permissible for initialization, adaptation using volume restriction
Direction of action		w/x reversible
Air consumption		≤ 100 l_n/h with a supply pressure up to 6 bar and a signal pressure of 0.6 bar
Air output capacity	Actuator pressurized	At Δp = 6 bar: 8.5 m_n^3/h · At Δp = 1.4 bar: 3.0 m_n^3/h · $K_{Vmax\ (20\ °C)}$ = 0.09
	Actuator vented	At Δp = 6 bar: 14.0 m_n^3/h · At Δp = 1.4 bar: 4.5 m_n^3/h · $K_{Vmax\ (20\ °C)}$ = 0.15
Permissible ambient temperature		–25 to +80 °C Limits in test certificates additionally apply for explosion-protected devices.
Influences	Temperature	≤ 0.15 %/10 K
	Supply air	None
	Vibrations	≤ 0.25 % up to 2000 Hz and 4 g according to IEC 770
Electromagnetic compatibility		Complying with the requirements of EN 61000-6-2, EN 61000-6-3, EN 61326-1 and NAMUR Recommendation NE 21
Electrical connections		One M20x1.5 cable gland for 6 to 12 mm clamping range Cage clamp terminals for 0.2 to 1.5 mm² wire cross-sections
Explosion protection		⟨Ex⟩ II 2 G Ex ia IIC T4
Degree of protection		IP 66

Materials	
Housing	Polyphthalamide (PPA)
Cover	Polycarbonate, transparent
External parts	Stainless steel 1.4571 and 1.4301
Cable gland	Polyamide, black, M20 x 1.5
Weight	Approx. 1.0 kg

4 Attachment to the control valve – Mounting parts and accessories

WARNING!
Attach the positioner, keeping the following sequence:
1. Mount the positioner on the control valve
2. Connect the supply air
3. Connect the electrical power
4. Perform the start-up settings

The positioner is suitable for the following types of attachment:

- Direct attachment to SAMSON Type 3277 Actuator
- Attachment to actuators according to IEC 60534-6 (NAMUR)
- Attachment to Type 3372 Linear Actuator (V2001 Valve Series)
- Attachment to rotary actuators according to VDI/VDE 3845

NOTICE
Attach the positioner to the control valve, observing the following instructions to avoid damaging the positioner.
– *Use only the mounting parts/accessories listed in the table (section 4.5). Observe the type of attachment!*
– *Observe the assignment between lever and pin position!*

Lever and pin position

The positioner is adapted to the actuator and to the rated travel by the lever on the back of the positioner and the pin inserted into the lever.

The travel tables show the maximum adjustment range at the positioner. The travel that can be implemented at the valve is additionally restricted by the selected fail-safe position and the required compression of the actuator springs.

The positioner is standard equipped with the lever **M** (pin position **35**).

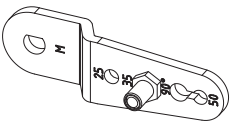


Fig. 3 · Lever M with pin position 35

NOTICE
When undoing the lever, e.g. with a screwdriver, do not move the shaft by moving the lever past the mechanical stops. Otherwise, the internal stops may be damaged.

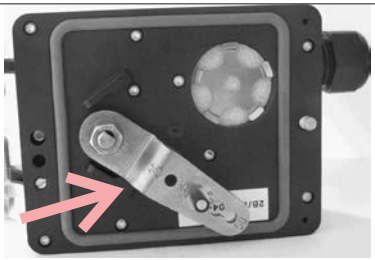


Fig. 4 · Stop for lever

Travel tables

*Note: The lever **M** is included in the scope of delivery.*

Direct attachment to Type 3277-5 and Type 3277 Actuators

Actuator size [cm²]	Rated travel [mm]	Adjustment range at positioner			Required lever	Assigned pin position
		Min.	Travel	Max.		
120	7.5	5.3	to	15.0	M	25
120/240/350	15	7.5	to	21.2	M	35
355/700	30	10.6	to	30.0	M	50

Attachment according to IEC 60534-6 (NAMUR)

SAMSON Type 3271 Actuator		Travel of other valves [mm]		Required lever	Assigned pin position
Actuator size [cm²]	Rated travel [mm]	min.	max.		
120	7.5	3.75	10.6	S	17
120	7.5	5.3	25.0	M	25
120/240/350	15	5.0	35.0	M	35
700	7.5				
700	15	10.8	50.0	M	50

Attachment to rotary actuators according to VDI/VDE 3845

Rotary actuators			Required lever	Assigned pin position
Min.	Opening angle	Max.		
24	to	100°	M	90°

4.1 Direct attachment

4.1.1 Type 3277-5 Actuator

Refer to Table 1 on page 26 for required mounting parts and accessories.

Note the travel table on page 13!

Actuator with 120 cm²

Depending on the type of positioner attachment, the signal pressure is routed either left or right of the yoke through a bore to the actuator diaphragm.

Depending on the fail-safe action of the actuator "Actuator stem extends" or "Actuator stem retracts" (valve closes or opens if the supply air fails), the switchover plate (9) must first be attached to the actuator yoke. Align the switchover plate with the corresponding symbol for left or right attachment according to the marking (view looking onto the switchover plate).

1. Mount connecting plate (6) or pressure gauge bracket (7) with pressure gauges onto the positioner, making sure both seal rings (6.1) are seated properly.
2. Insert the screw (4) on the back of the positioner into the hole below it (park position) (see Fig. 6) and seal the signal pressure output on the connecting plate (6) or on the pressure gauge bracket (7) with the stopper (5) included in the accessories.
3. Place follower clamp (3) on the actuator stem, align and screw tight so that the mounting screw is located in the groove of the actuator stem.
4. **15 mm travel:** Keep the follower pin (2) at lever **M** (1) on the back of the positioner in the pin position **35** (delivered state).
   7.5 mm travel: Remove the follower pin (2) from the pin position **35**, reposition it in the hole for pin position **25** and screw tight.
5. Insert formed seal (15) into the groove of the positioner housing.
6. Place positioner on the actuator in such a manner that the follower pin (2) rests on top of the follower clamp (3). During which, press on the ribbed area shown in Fig. 5 to lock the pick-up lever in the top position.
   The lever (1) must rest on the follower clamp with spring force.
   Mount the positioner on the actuator using the two fixing screws.
7. Mount cover (11) on the other side.
   Make sure that the vent plug points downwards when the control valve is installed to allow any condensed water that collects to drain off.

Fig. 5 · Locking the pick-up lever in position

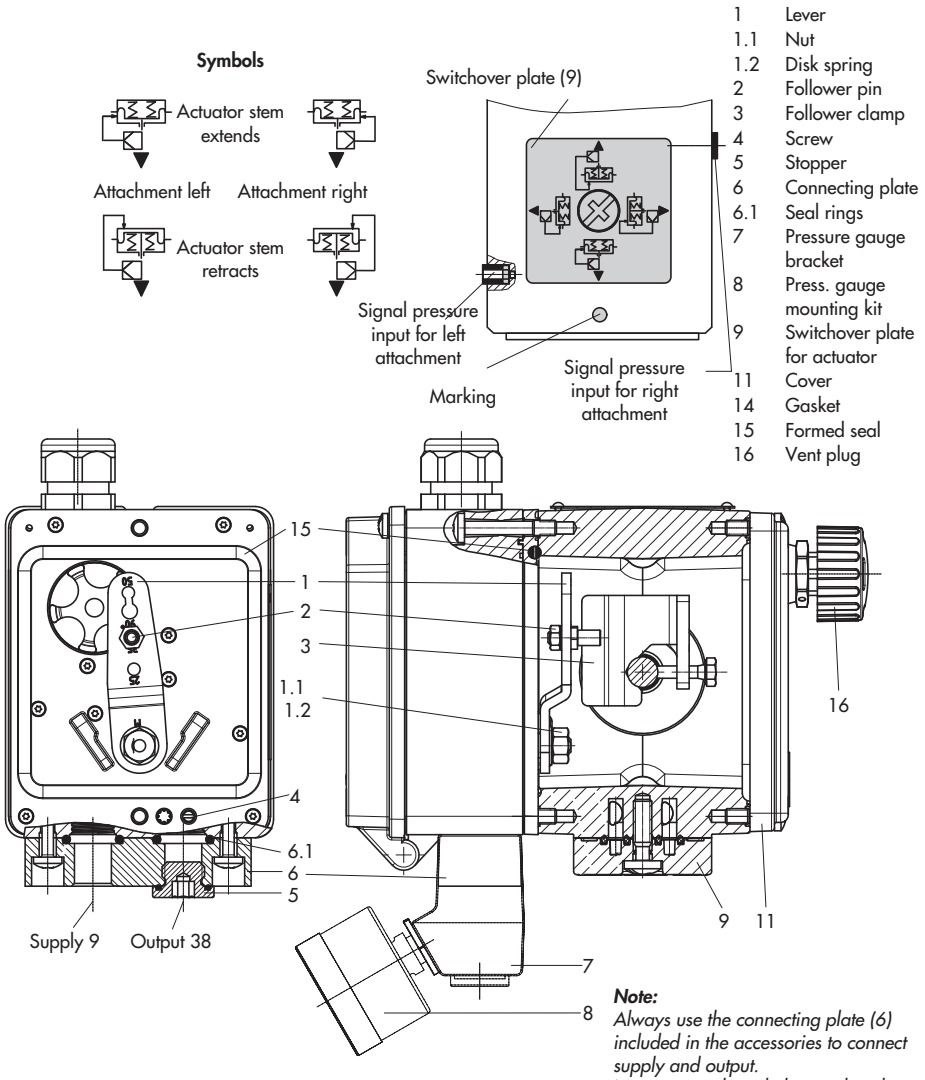


Fig. 6 · Direct attachment – Signal pressure connection for Type 3277-5 Actuator with 120 cm²

Additional solenoid valve

If a solenoid valve is additionally mounted onto the actuator, the signal pressure port at the back of the positioner must be sealed. To do this, unscrew the screw located in the middle hole (screw in park position) and screw it into the signal pressure port to seal it.

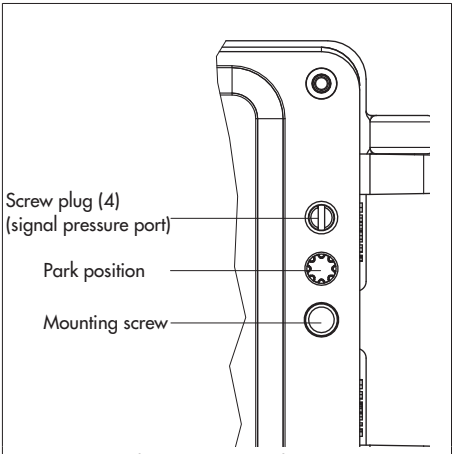


Fig. 7 · Signal pressure port and screw park position

In this case, the signal pressure must be routed from the signal pressure output to the actuator over the connecting plate (6) or pressure gauge bracket (7). The connecting plate (accessories for the actuator) replaces the switchover plate (9).

Note: *The switchover plate or connecting plate are accessories for the actuator (120 cm²) listed in Table 1 on page 26.*

4.1.2 Type 3277 Actuator

Refer to Table 2 on page 26 for the required mounting parts as well as the accessories with their order numbers.
Note the travel table on page 13!

Note: *The actuators with 240 to 700 cm² effective areas are described on the following pages.*

Fig. 8 · Type 3277 Actuator with Type 3725 Positioner (direct attachment)

Actuators with 240 to 700 cm²

The positioner can be mounted either on the left or right side of the yoke. The signal pressure is routed to the actuator over the connection block (12), for actuators with fail-safe action "Actuator stem extends" internally through a bore in the valve yoke and for "Actuator stem retracts" through external piping.

1. Place follower clamp (3) on the actuator stem, align it and screw tight so that the mounting screw is located in the groove of the actuator stem.
2. For actuators 240 and 350 cm² with 15 mm travel, keep the follower pin (2) in pin position **35**.
   For actuators with 355 or 700 cm², remove the follower pin (2) at lever **M** (1) on the back of the positioner from pin position **35**, reposition it in the bore for pin position **50** and screw tight.
3. Insert formed seal (15) in the groove of the positioner housing.
4. Place positioner on the actuator in such a manner that the follower pin (2) rests on top of the follower clamp (3). During which, press on the ribbed area to lock the pick-up lever in the top position (Fig. 9).
   The lever (1) must rest on the follower clamp with spring force.
   Mount the positioner on the actuator using the two mounting screws.
5. Make sure that the tip of the gasket (16) projecting from the side of the connection block (12) is positioned above the actuator symbol that corresponds with the actuator with fail-safe action "Actuator stem extends" or "Actuator stem retracts". If necessary, remove the three mounting screws and the cover. Then reposition the gasket (16) turned by 180°.
6. Place the connection block (12) with the associated seal rings against the positioner and the actuator yoke and fasten using the screw (12.1).
   For actuators with fail-safe action "Actuator stem retracts", additionally remove the stopper (12.2) and fit on the external signal pressure piping.
7. Mount cover (11) on the other side. Make sure that the vent plug points downwards when the control valve is installed to allow any condensed water that collects to drain off.

1 Lever
1.1 Nut
1.2 Disk spring
2 Follower pin
3 Follower clamp
11 Cover
12 Connection block
12.1 Screw
12.2 Stopper or connection for external piping
15 Formed seal
16 Gasket

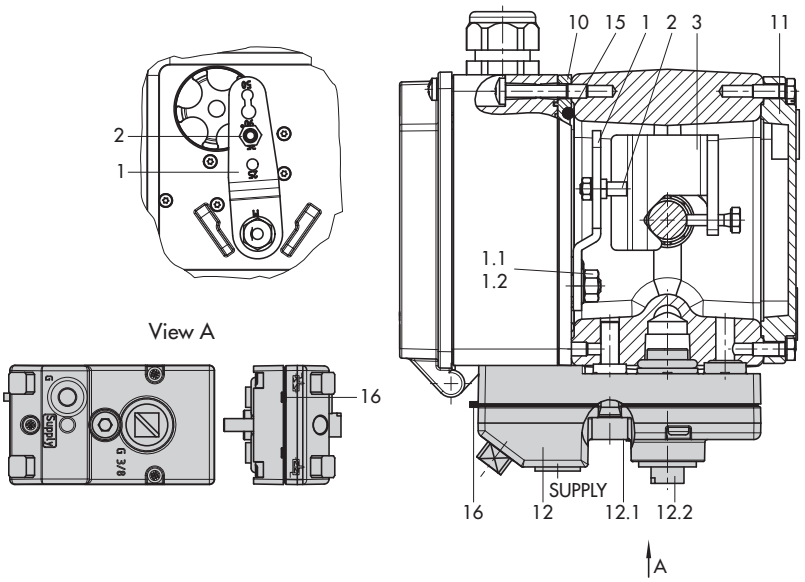


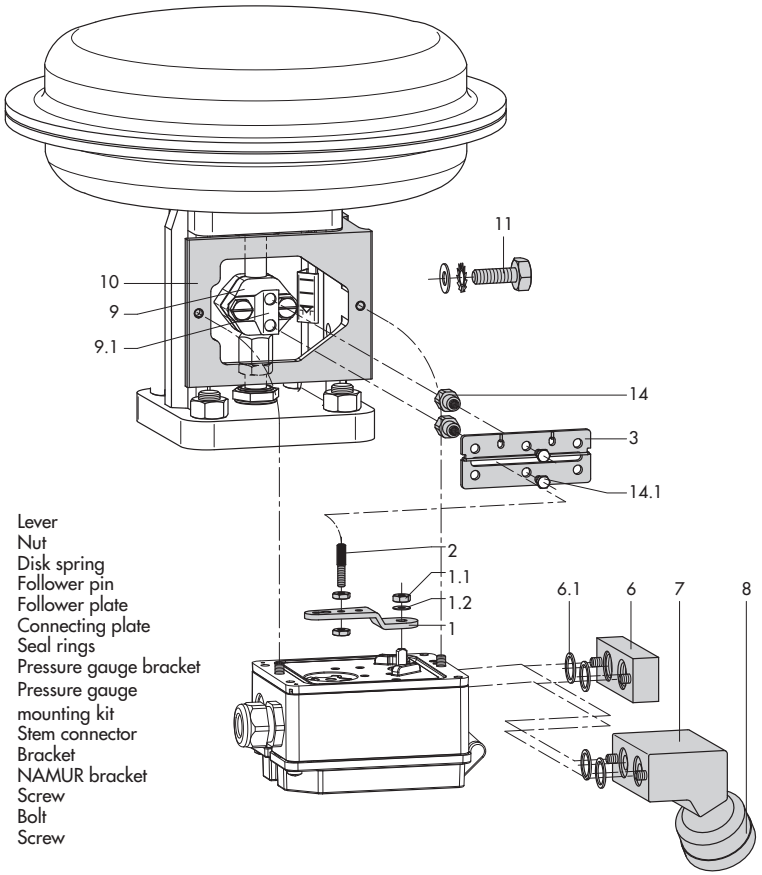
Fig. 9 · Direct attachment – Signal pressure connection for Type 3277 Actuator with 240 to 700 cm²

4.2 Attachment according to IEC 60534-6

The positioner is attached to the control valve with a NAMUR bracket (10).

Refer to Table 3 on page 26 for the required mounting parts as well as the accessories with their order numbers.
Note the travel table on page 13!

1. Screw the two bolts (14) to the bracket (9.1) of the stem connector (9), place the follower plate (3) on top and use the screws (14.1) to tighten.
2. Mount NAMUR bracket (10) using the M8 screw (11) and toothed lock washer directly to the yoke bore.
   Align the NAMUR bracket (10) according to the embossed scale so that the slot of the follower plate (3) is centrally aligned with the NAMUR bracket at mid valve travel.
3. Mount connecting plate (6) or pressure gauge bracket (7) with pressure gauges (8) on the positioner, making sure both seal rings (6.1) are seated properly.
4. Place positioner on the NAMUR bracket in such a manner that the follower pin (2) rests in the slot of the follower plate (3). Adjust the lever (1) correspondingly. Screw the positioner to the NAMUR bracket using both its mounting screws.



1 Lever
1.1 Nut
1.2 Disk spring
2 Follower pin
3 Follower plate
6 Connecting plate
6.1 Seal rings
7 Pressure gauge bracket
8 Pressure gauge mounting kit
9 Stem connector
9.1 Bracket
10 NAMUR bracket
11 Screw
14 Bolt
14.1 Screw

Fig. 10 · Attachment according to IEC 60534-6 (NAMUR)

4.3 Attachment to Type 3372 Actuator (V2001)

The Type 3725 Positioner is already included in the scope of delivery for V2001 valve series (Type 3372 Actuator).

The attachment is briefly described below to allow conversion work to be performed.

Actuator 120 and 350 cm², stem extends

The signal pressure is routed through the corresponding port in the support element to the actuator diaphragm.

Thread the screw on the positioner into the hole below (park position) (Fig. 7).

Actuator 120 and 350 cm², stem retracts

The signal pressure is routed through piping at the side of the support element to the actuator diaphragm.

Attachment including solenoid valve

The signal pressure is routed from the output port of the positioner to the solenoid valve and through a corresponding hole on the support element to the actuator diaphragm.

Type 3372 Actuator, 120 cm²

Type 3372 Actuator, 350 cm²

Fig. 11 · Attachment to Type 3372 Actuator

4.4 Attachment to rotary actuators

The positioner is mounted to the rotary actuator using a mounting bracket.

Refer to Table 4 on page 27 for the required mounting parts as well as the accessories.

Before attaching the positioner onto the SAMSON Type 3278 Rotary Actuator (160 cm²) or VETEC Type S160 Actuator, first mount the adapter (13) to the free end of the shaft end using four screws (11, 12).

NOTICE

On attaching the positioner as described below, it is imperative that the actuator's direction of rotation is observed.

---

1. Place follower clamp (3) on the slotted actuator shaft or adapter (13).
2. Place coupling wheel (4) with flat side facing the actuator on the follower clamp (3). Refer to Fig. 12 to align slot so that it matches the direction of rotation when the valve is in its closed position.
3. Fasten the coupling wheel (4) and follower clamp (3) tightly onto the actuator shaft using screw (4.1) and disk spring (4.2).
4. Mount connecting plate (6) or pressure gauge bracket (7) with pressure gauges to the positioner, making sure both O-rings are seated properly.
5 Fasten the mounting bracket (10) to the actuator using four screws (10.1).
6. Unscrew the standard follower pin (2) from the positioner's lever **M** (1). Use the metal follower pin (Ø5) included in the mounting kit and screw tight into the bore for pin position **90**°.
7. Place positioner on the mounting bracket (10) and screw tight. Considering the actuator's direction of rotation, adjust lever (1) so that it engages in the slot of the coupling wheel (4) with its follower pin (see Fig. 13). It must be guaranteed that the lever (1) is parallel to the long side of the positioner when the actuator is at half its angle of rotation.
8. Stick the scale label on the coupling wheel so that the arrow tip indicates the closed position and it can be easily read when the valve is installed.

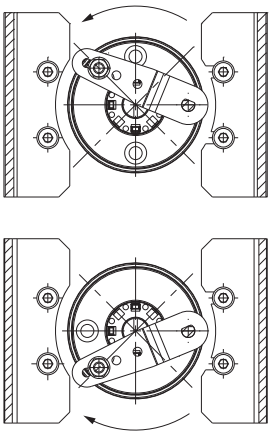
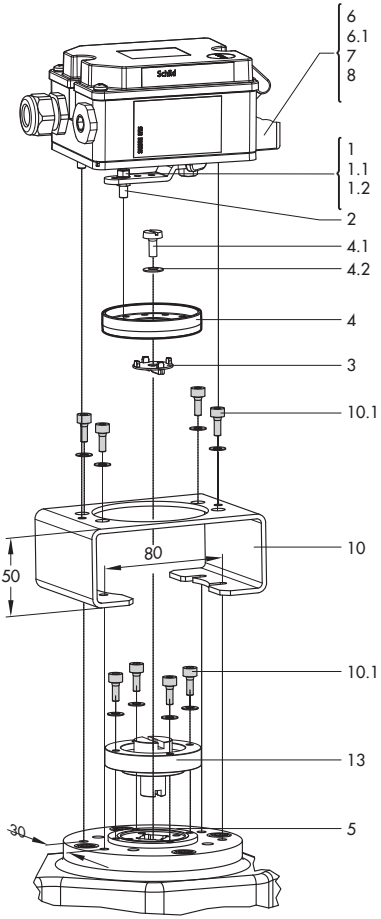
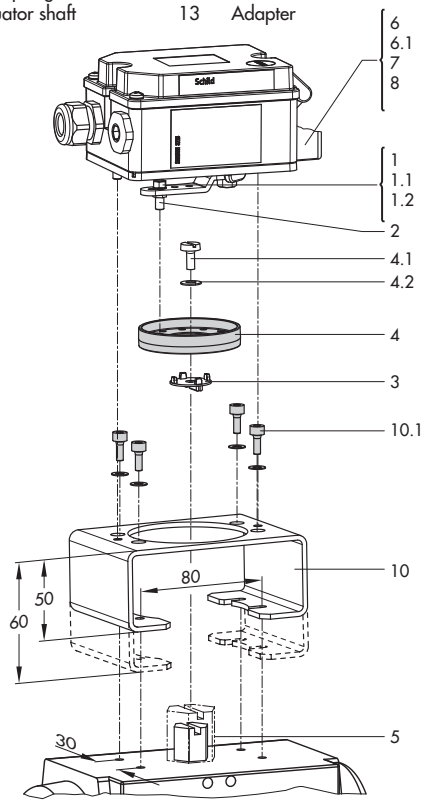


Fig. 12 · Direction of rotation

1	Lever	6	Connecting plate
1.1	Nut	6.1	Seal rings
1.2	Disk spring	7	Pressure gauge bracket
2	Follower pin	8	Pressure gauge mounting kit
3	Follower clamp	10	Mounting bracket
4	Coupling wheel	10.1	Screw
4.1	Screw	13	Adapter
4.2	Disk spring		
5	Actuator shaft		



Attachment to SAMSON Type 3278 Rotary Actuator (160 cm²) or VETEC Type S160 Actuator



Attachment according to VDI/VDE 3845, level 2

Fig. 13 · Attachment to rotary actuators

4.5 Mounting parts and accessories

Table 1 · Direct attachment to Type 3277-5 Actuator (see section 4.1)			Order no.
Mounting parts	Mounting parts for actuators 120 cm² or smaller		1402-0239
Accessories for the actuator	Switchover plate for Type 3277-5xxxxxx.**01** Actuator		1400-6822
	Connecting plate for additional attachment of, e.g. a solenoid valve: G ⅛		1400-6820
Accessories for the positioner	Connecting plate (6)	G ¼	1402-0235
		¼ NPT	1402-0236
	Pressure gauge bracket (7)	G ¼	1402-0237
		¼ NPT	1402-0238
	Pressure gauge mounting kit (8) up to max. 6 bar (output/supply)	St. steel/brass	1400-6950
		St. steel/st. steel	1400-6951

Table 2 · Direct attachment to Type 3277 (see section 4.1.2)			Order no.
Mounting parts	Attachment to actuators 240, 350, 355 and 700 cm²		1402-0240
Accessories	Connection block with seals and screw	G ¼	1402-0241
		¼ NPT	1402-0242
	Pressure gauge mounting kit up to max. 6 bar (output/supply)	St. steel/brass	1400-6950
		St. steel/st. steel	1400-6951

Table 3 · Attachment to NAMUR ribs according to IEC 60534-6 (see section 4.2)				
Travel [mm]	Lever	For actuators		Order no.
3.75 to 50	Without, already on positioner	Actuators from other manufacturers and Type 3271 with 120 to 700 cm²		1402-0330
Accessories	Connecting plate		G ¼	1402-0235
			¼ NPT	1402-0236
	Pressure gauge bracket		G ¼	1402-0237
			¼ NPT	1402-0238
	Pressure gauge mounting kit up to max. 6 bar (output/supply)		St. steel/brass	1400-6950
			St. steel/st. steel	1400-6951

Table 4 · Attachment to rotary actuators (see section 4.4)			Order no.
Mounting parts	Attachment according to VDI/VDE 3845 (level 2*), 20 mm shaft height		1402-0243
	Attachment according to VDI/VDE 3845 (level 2*), 30 mm shaft height		1402-0244
	Attachment to VETEC Type S160 Actuator or SAMSON Type 3278 Rotary Actuator, 160 cm² (level 2*)		1402-0294
Accessories	Connecting plate	G ¼	1402-0235
		¼ NPT	1402-0236
	Pressure gauge bracket	G ¼	1402-0237
		¼ NPT	1402-0238
	Pressure gauge mounting kit up to max. 6 bar (output/supply)	St. steel/brass	1400-6950
		St. steel/st. steel	1400-6951

*) Designation since 2010: For sizes AA1 and AA2 (see section 11.1)

Table 5 · General accessories		Order no.
Cable gland	M20 x 1.5, blue	8808-1012
Brief instructions inside cover	DE/EN (delivered state)	0190-6173/ 0190-6174

5 Connections

5.1 Pneumatic connections

NOTICE
The threaded connections in the positioner housing are not designed for the direct connection of pneumatic fittings!

The screw fittings must be screwed into the connecting plate, the pressure gauge mounting block or the connection block from the accessories.
The pneumatic connections are optionally designed as a bore with ¼ NPT or G ¼ thread.
The customary fittings for metal and copper pipes or plastic hoses can be used.

Keep the length of the line as short as possible to avoid delays in control signal transmission.

Note: *The supply air must be dry and free from oil and dust.*
The maintenance instructions for upstream pressure reducing stations must be observed.
Blow through all air pipes and hoses thoroughly prior to connecting them.

If the positioner is attached directly to the Type 3277 Actuator, the connection of the positioner's output pressure to the actuator is fixed.

For attachment according to IEC 60534-6 (NAMUR), the signal pressure can be routed to either the top or bottom diaphragm chamber of the actuator, depending on the actuator's fail-safe action "Actuator stem extends" or "Actuator stem retracts".

For rotary actuators, the manufacturer's specifications for connection apply.

5.1.1 Signal pressure gauges

To monitor the supply air (Supply) and signal pressure (Output), we recommend mounting pressure gauges (see accessories in section 4.5).

5.1.2 Supply pressure

The required supply air pressure depends on the bench range and the actuator's operating direction (fail-safe action).
The bench range is registered on the nameplate either as spring range or signal pressure range depending on the actuator. The direction of action is marked **FA** or **FE**, or by a symbol.

Actuator stem extends FA (Air to open)

Fail-safe position "Valve Closed"
(for globe and angle valves):

Required supply pressure = Upper bench range value + 0.2 bar, minimum 1.4 bar.

Actuator stem retracts FE (Air to close)

Fail-safe position "Valve Open"
(for globe and angle valves):
For tight-closing valves, the maximum signal pressure pst_{max} is roughly estimated as follows:

$$pst_{max} = F + \frac{d^2 \cdot \pi \cdot \Delta p}{4 \cdot A} \text{ [bar]}$$

d = Seat diameter [cm]
Δp = Differential pressure across the valve [bar]
A = Actuator diaphragm area [cm²]
F = Upper bench range value [bar]

If there are no specifications, calculate as follows:

Required supply pressure =
Upper bench range value + 1 bar.

Note: *The signal pressure at the output (38) of the positioner can be restricted to approx. 2.4 bar by setting parameter code* ***P9*** *to* ***ON****.*

5.2 Electrical connections

DANGER!
Risk of electric shock and/or the formation of an explosive atmosphere!

- *For electrical installation, observe the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use.*
- *The following regulations apply to mounting and installation in hazardous areas: EN 60079-14: 2008* ***Explosive atmospheres – Part 14: Electrical installations design, selection and erection****.*

Risk of explosion due to electrostatic charging

Avoid electrostatic charging of the plastic housing when mounting and servicing the positioner in hazardous areas.

NOTICE
- *Adhere to the terminal assignment! Switching the assignment of the electrical terminals may cause the explosion protection to become ineffective!*
- *Do not loosen enameled screws in or on the housing.*
- *The maximum permissible values specified in the national EC type examination certificates apply when interconnecting intrinsically safe electrical equipment (U_i, I_i, P_i, L_i and C_i).*

Selecting cables and wires:

*Observe **Clause 12 of EN 60079-14: 2008** when installing intrinsically safe circuits. The Subclause 12.2.2.7 applies when running multi-core cables containing more than one intrinsically safe circuit.*

In particular, the radial thickness of the conductor insulation for common insulation materials, such as polyethylene, must have a minimum radial thickness of 0.2 mm.

The diameter of an individual wire in a fine-stranded conductor must not be smaller than 0.1 mm. Protect the conductor ends against splicing, e.g. by using wire-end ferrules.

Equipment for use in zone 2

In equipment operated with type of protection Ex nA II (non-sparking equipment) according to EN 60097-15: 2003, circuits may be connected, interrupted or switched while energized only during installation, maintenance or repair.

Cable entries

The M20 x 1.5 cable gland is designed for a clamping range of 6 to 12 mm.
The cage clamp terminals hold wire cross-sections of 0.2 to 1.5 mm² and additionally have test connections for 1 mm probe tips.

Fig. 14 · Cage clamp terminal with test contact

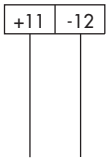
To remove the cable, press the tip of a screwdriver into the cage clamp terminal and pull out the wire at the same time.

The wires for the reference variable must be connected to the terminals 11 and 12 located in the housing. Only use **a current source!**

NOTICE
The static destruction limit of the positioner is at ± 33 V.
Do not allow the input signal to fall below the lowest permissible value of 3.8 mA for positioner operation.

Accessories:

Plastic cable gland M20 x 1.5:
– Black Order no. 8808-1011
– Blue Order no. 8808-1012



mA control signal

Fig. 15 · Electrical connections

6 Operation

Three capacitive keys and a LCD are used to operate the positioner.
To adapt the air capacity, the volume restriction must be adjusted (section 7.2).

6.1 Operator controls

Press ▽ or △ to select parameter codes (***P0*** to ***P20***). Press ✳ to ✳ confirm the selected code.

NOTICE
*Any parameter code settings that have been changed are first saved in a non-volatile memory after the display has returned to the display with status indication. Go to Code **P0** by pressing ▽ or △ or wait three minutes until the display returns automatically. The ◇ icon on the display indicates that the changed parameter settings have not yet been saved in the non-volatile memory.*

Note: *After changing settings in parameter codes **P2, P3, P4, P8** and **P9**, the positioner must be re-initialized.*

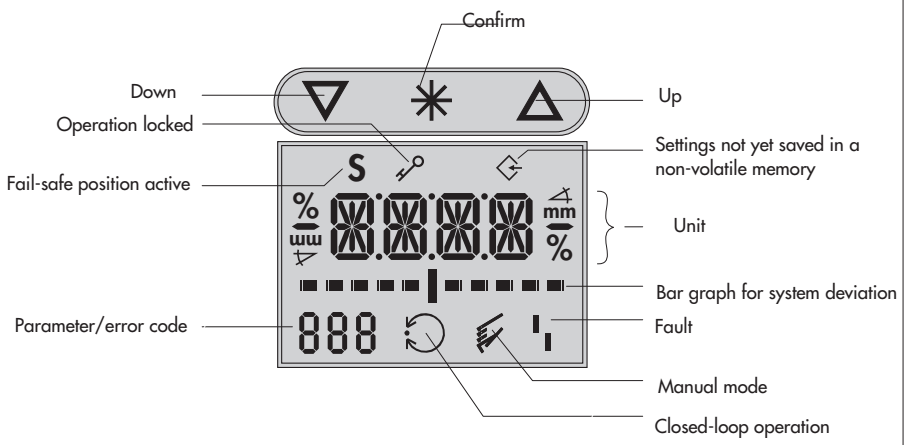


Fig. 16 · Capacitive keys and display

Volume restriction Q

The volume restriction is used to adapt the air delivery to the actuator size. Two fixed settings are possible depending on how the air is routed to the actuator. Refer to section 7.2.

Display

Reading on display	Meaning
ESC	Cancel
Err	Error
LOW	w too small
MAN	Manual mode
MAX	Maximum range
RST	Reset
INIT	Initialization
ON/OFF	Activated/deactivated
ZERO	Zero calibration

Icons assigned to certain codes and functions are indicated on the display. The bar elements indicate the system deviation that depends on the sign (+/–) and the value. One bar element appears per 1 % system deviation.

If the positioner has not yet been initialized, the lever position in degrees in relation to the longitudinal axis is indicated. One bar element corresponds to approximately a 5° angle of rotation.
If the fault indication icon appears on the display, press ▽ or △ until ***ERR*** appears on the display to view the error code(s) ***E0*** to ***E15***. Refer to section 7.11 for details and the code list in section 8).

7 Start-up – Settings

WARNING!
Do not perform a start-up while the process is running.
On applying supply air and the electric control signal, the control valve may move through its entire travel range/rotational angle range depending on the setting.

- Connect the supply air (Supply 9).
- Connect the 4 to 20 mA signal (terminals +11/–12). Do not touch the key panel!

Note: *After connecting the electrical signal (power supply), the positioner performs a calibration of the capacitive keys which takes approx. three seconds. During this time, do not touch the key panel. Otherwise, the keys will not work properly.*
Disconnect and reconnect the electrical signal to restart the calibration of keys.

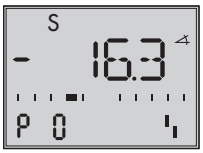
LOW on the display indicates that the reference variable is lower than 4 mA (0 %).

The positioner is ready for operation with its default settings for most applications, provided it has been mounted properly.

Note: *The positioner needs to be initialized again after the position of the volume restriction has been changed.*
The positioner also needs to be initialized again after the setting for the fail-safe position has been changed.

Display after connecting the electrical signal

The fault indication icon and **S** (fail-safe position) appear on the display when the positioner has **not yet been initialized**. The reading indicates the lever positioner in degrees relative to the longitudinal axis.

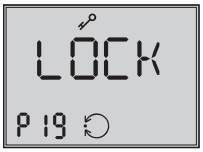


Display when the positioner has not yet been initialized

- Code 0 appears on the display after connecting the electrical signal to an **initialized** positioner. The positioner goes to the last active operating mode.

7.1 Enabling configuration

Note: *Before changing parameter settings, configuration must be enabled first by selecting Code **P19**.*



Enabling configuration over Code 19

If no settings are entered within three minutes, the enabled configuration function becomes invalid.

Press ▽ or △ until Code ***P19*** appears.

Press ✳ to confirm selected code. ***P19*** blinks.

Press △ until OPEN appears on the display.

Press ✳ to confirm unlocking.

WARNING!
During start-up the actuator stem moves. Do not touch the actuator stem or obstruct it to avoid risk of injury to hands or fingers.

If the left or right outer bar element blinks (reading > 30°), the permissible angle of rotation has been exceeded.

The positioner goes to the fail-safe position (SAFE).

Make sure that the lever and pin position match the details as described in section 4.

Note: *The positioner has a function to monitor the working range.*
*If the lever moves too close to the mechanical stops (risk of mechanical damage), the positioner vents the actuator and the valve moves to its fail-safe position (**S** displayed together with error code **E8**).*
*In this case, check the positioner attachment. Reset the displayed error code by selecting **RST** (see section 7.12).*

7.2 Setting the volume restriction Q

Fig. 17 · Volume restriction Q MAX/MIN setting

The volume restriction Q is used to adapt the air delivery to the size of the actuator:

- Actuators with a **transit time < 1 s**, e.g. linear actuators with an effective area smaller than 240 cm², require a restricted air flow rate (MIN setting).
- Actuators with a **transit time ≥ 1 s** do not require the air flow rate to be restricted (MAX setting).

Intermediate settings are not permitted.

Note: *The positioner needs to be initialized again after the position of the restriction has been changed.*

7.3 Adapting the display

The data representation on the positioner display can be turned by 180°.
If the displayed data appear upside down, proceed as follows:

Press ▽ or △ until Code ***P1*** appears.

Press ✳ to confirm the selected code. ***P1*** blinks.

Reading direction for right attachment of pneumatic connections

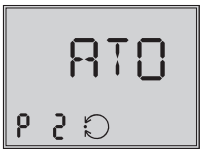
Press ▽ or △ until the display is adjusted to the desired direction, then confirm reading direction by pressing ✳ .

7.4 Entering the opening direction

- AIR TO OPEN/ATO applies to a valve opening as the signal pressure increases.
- AIR TO CLOSE/ATC applies to a valve closing as the signal pressure increases

The signal pressure is the pneumatic pressure at the output of the positioner applied to the actuator.

Enable configuration (refer to section 7.1).



Standard *ATO*

Press △ or ▽ until Code ***P2*** appears.

Press ✳ to confirm the selected code. ***P2*** blinks.

Press △ or ▽ to select the required fail-safe position.

Press ✳ to ✳ confirm setting.

Note: *The changed opening direction first becomes effective after the positioner has been re-initialized.*

7.5 Defining the direction of action

The direction of action is set to increasing/increasing by default.

For checking purposes:
After successfully completing initialization, the positioner display should read 0 % when the valve is closed and 100 % when the valve is open.

If necessary, the direction of action can be changed either before or after initialization.

The following correlation applies:

Valve		CLOSED	OPEN
Display		0 %	100 %
ATO	↗↗	4 mA	20 mA
	↗↘	20 mA	4 mA
ATC	↗↗	4 mA	20 mA
	↗↘	20 mA	4 mA

↗↗ Increasing/increasing
↗↘ Increasing/decreasing

7.6 Limiting the signal pressure

If the maximum actuator force may cause damage to the valve, the signal pressure must be limited.

Set Code ***P9*** to ON. This limits the signal pressure to approx. 2.4 bar.

Enable configuration at the positioner before activating the pressure limit function (refer to section 7.1)

7.7 Setting other parameters

The following table lists all the parameter codes and their default settings.
If you want to change the default setting of a parameter, proceed in the same manner as previously described.

Note: *The selected parameter code remains active until you change the setting or exit the parameter code.*

More details concerning the parameter codes can be found in section 8.

Parameter codes Codes marked with * can be changed without having to re-initialize the positioner [...] Default setting			
P0	Display with status indication	***P11***	End position w > [OFF]
P1	Reading direction	***P14***	Display of reference variable w
P2*	Fail-safe position [ATO]	***P15***	INIT Start initialization
P3*	Pin position [35]	***P16***	ZERO Start zero calibration
P4*	Nominal range [MAX]	***P17***	Manual mode
P5	Characteristic [1]	***P18***	Reset
P6	Reference variable [4 to 20 mA]	***P19***	Enable configuration
P7	w/x direction of action [>>]	***P20***	Read firmware
P8*	Gain Kp [50]		
P9*	Pressure limit 2.4 bar [OFF]		
P10	End position w < [ON]		

7.8 Initialization

During initialization the positioner adapts itself optimally to the friction conditions and the signal pressure required by the control valve.

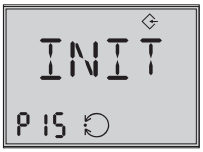
The type and extent of self-adaptation depends on the preset parameters.

MAX is the default setting for the nominal range (Code ***P4***).

During the initialization process, the positioner determines the travel/rotational angle of the closing element from the CLOSED position as far as it will go in the other direction.
Alternatively, a different travel can be selected in Code ***P4***. Refer to section 8.

WARNING!
During the initialization, the control valve moves through its entire travel/angle of rotation range. Therefore, do not start initialization while a process is running, but only during start-up, when all shut-off valves are closed.

Start initialization by activating Code ***P15*** as follows:

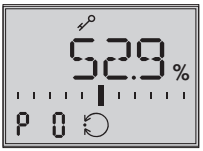


Press ▽ or △ to select Code ***P15***.

Press ✳ six seconds long,
6-5-4-3-2-1- is counted down on the display

Initialization has started, the display blinks!

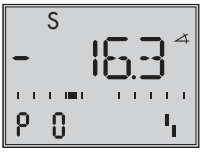
Note: *The time required for the initialization procedure depends on the actuator transit time and can take a few minutes.*



Initialization successfully completed, positioner runs in closed-loop operation

After a successful initialization, the positioner runs in closed-loop operation indicated by the ↻ closed-loop operation icon and control position in % predetermined by the reference variable on the display.

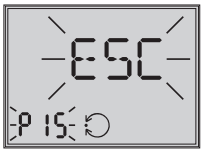
A malfunction leads to the process being interrupted. The fault indication icon appears on the display. See section 7.12 for details.



Initialization canceled

Canceling initialization

The initialization can be canceled by pressing ✳.



Canceling initialization

- ESC blinks on the display.
- Press ✳ to confirm the code.

Note: *This code must be confirmed by pressing ✳. Otherwise, the code remains active.*

Example 1: A positioner that has **not yet been initialized** goes to the fail-safe position after the initialization process has been canceled.

Example 2: The **initialized** positioner goes to AUTO mode after the re-initialization process has been canceled. The settings of the previous initialization are used.

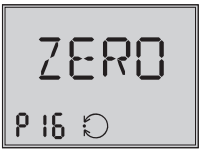
A new initialization can be started directly afterwards.

7.9 Zero calibration

In case of inconsistencies in the closing position of the valve, e.g. with soft-sealed plugs, it might be necessary to recalibrate zero.

Enable configuration (refer to section 7.1).

Start the zero calibration by activating Code ***P16*** as follows:



Press ▽ or △ until Code ***P16*** appears.

Press ✳ button six seconds long, ***6-5-4-3-2-1*** is counted down on the display.

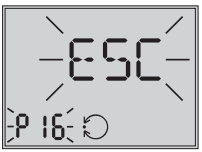
Zero calibration has started, the display blinks!

The positioner moves the control valve to the CLOSED position and recalibrates the internal electric zero point.

When the zero calibration has been successfully completed, the positioner returns to closed-loop operation (display with status indication).

Canceling zero calibration

The zero calibration can be canceled by pressing ✳.



- ESC blinks on the display
- Press ✳ to confirm the code.

Note: *This code must be confirmed by pressing ✳. Otherwise, this code remains active.*

The positioner returns to closed-loop operation without performing a zero calibration.

A new zero calibration can be started directly afterwards.

7.10 Manual mode

The valve position can be moved as follows using the ***Manual mode*** function:

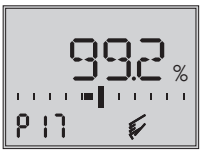
Enable configuration (refer to section 7.1).

Press ▽ or △ until Code ***P17*** appears.

Press ✳ for six seconds, the display counts down ***6-5-4-3-2-1***.

P17 blinks.

The manual set point (w man) is indicated on the display of an **initialized positioner**.



The lever position in degrees in relation to the longitudinal axis is indicated on the display of a **positioner that has not been initialized**.

Press ▽ or △ to change the manual set point.

Initialized positioner

The manual mode starts using the last set point of the automatic mode, ensuring a bumpless changeover.
The bar elements on the display indicate the

system deviation between the manual and automatic set point while manually moving the valve in Code ***P17***.
The manual set point is adjusted in steps of 0.1 %. You can move the valve controlled within its range.

Positioner that has not been initialized

Keep ▽ or △ pressed to move the valve manually.

The valve is only moved in one direction uncontrolled. The bar elements on the display indicate the change in direction.

Press ✳ to deactivate the manual adjustment function.

Note: *The* Manual mode *function can only be exited as described. The positioner* ***does not automatically*** *exit this function and return to the display with status indication.*

7.11 Reset

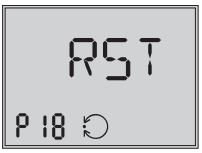
The positioner is in closed-loop operation after the initialization has been successfully completed.

A reset causes an initialization to be canceled and all parameters settings are reset to the default settings (refer to the code list in section 8).

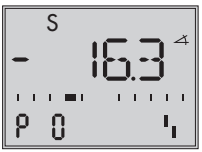
Enable configuration (refer to section 7.1).

Press ▽ or △ until Code ***P18*** appears.

Press ✳ for six seconds, the display counts down ***6-5-4-3-2-1***.
RST blinks.



After the positioner has been reset, the display automatically returns to status indication (P0). In this display, the angle is indicated in degree relative to the longitudinal axis.



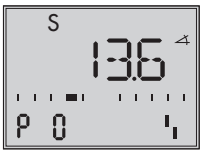
7.12 Faults

On the occurrence of a fault, the fault indication icon appears at the bottom of the display.

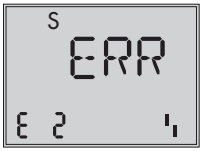
If the fault indication icon appears after a parameter code setting has been changed, this indicates that these settings do not match the values determined during initialization. See Code E1 (refer to section 8).

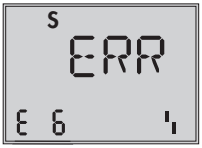
Press ▽ or △ past Code ***P 0*** or ***P 20,*** the respective error code ***E0*** to ***E15*** together with ***ERR*** appear on the display.
Refer to the code list in section 8 for the cause of the errors and the recommended action.

Example:
If, for instance, a travel has been entered over Code ***P4*** (nominal range) which is larger than the maximum valve travel possible, the initialization process would be interrupted (error code ***E2***) because the rated travel would not have been reached (error code ***E6***). The valve moves to the fail-safe position (***S*** indicated on the display).



Display of the fault indication

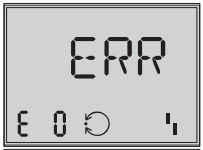


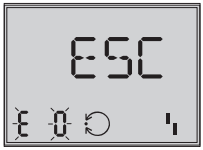


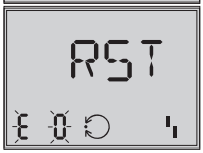
The nominal range (Code ***P4***) must be changed and the positioner re-initialized to remedy this problem.

Reset error codes

The error codes ***E0*** and ***E8*** can be reset as follows:







Press ▽ or △ until the error code appears.

Press ✳, ***ESC*** appears.

Press ▽ or △ , ***RST*** appears.

Press ✳ to reset error.

The resetting procedure can be canceled by pressing ✳ when ***ESC*** appears.

8 Code list

Code	Display, values [default setting]	Description
Parameter codes Codes marked with * can be changed without having to re-initialize the positioner		
P0		Status indication mode of the display showing basic information The reading indicates the valve position or the angle of rotation in % when the positioner is initialized. The position of the lever in relation to the mid-axis is indicated in degrees (°) when ✳ is pressed and the positioner has not yet been initialized.
P1*	**Reading direction**	The reading direction of the display is turned by 180°.
P2	**ATO / ATC** [ATO]	Parameter to adapt the positioner to how the control valve functions: ATO – Air to open (valve CLOSED in fail-safe position) ATC – Air to close (valve OPEN in fail-safe position)
P3	**Pin position** 25/[35]/50/ 90°	The follower pin must be inserted into the correct pin position according to the valve travel/angle of rotation (select as per travel tables on page 13).
P4	**Nominal range** [MAX] Values with default setting [35]: e.g. 7.5/8.92/10.6/12.6/ 15.0/17.8/21.2/ 25.2/30 mm	The possible adjustment range can be selected in stages depending on the selected pin position: ***17*** from 3.75 to 10.6 ***25*** from 5.3 to 15.0 ***35*** from 7.5 to 21.2 ***50*** from 10.6 to 30.0 For ***90°*** Maximum range only, if ***P3*** = 90° ***MAX*** Maximum possible travel
P5*	**Characteristic** 0 to 8 [1]	Characteristic selection: Characteristic 0, 1, 2 for globe valves, Characteristic 0 to 8 with rotary actuators (***P3*** = 90°) 0 Linear 1 Equal percentage 2 Reverse equal percentage 3 SAMSON butterfly valve, linear 4 SAMSON butterfly valve, equal percentage 5 VETEC rotary plug valve, linear 6 VETEC rotary plug valve, equal percentage 7 Segmented ball valve, linear 8 Segmented ball valve, equal percentage

P6 *	**Reference variable** [4...20 mA] SRLO/SRHI	For split-range operation ***SRLO*** – low range 4 to 11.9 mA ***SRHI*** – high range 12.1 to 20 mA
P7 *	**w/x** [>>] /<>	Direction of action of the reference variable w to the travel/rotational angle x (increasing/increasing or increasing/decreasing).
P8	**Gain K_p** 30/[50]	On initializing the positioner, the gain is set to the selected value. If the positioner hunts, the Kp value can be reduced. The positioner must be then re-initialized afterwards.
P9 *	**Pressure limit** ON/[OFF]	The signal pressure can take on the same pressure as the supply air at the maximum [***OFF***] or, in the case that the maximum actuator force can damage the valve, the pressure is limited to approx. 2.4 bar.
P10 *	**End position w <** [ON]/OFF	Lower tight-closing function: If w reaches up to 1 % towards the final value that causes the valve to close, the actuator is immediately completely vented (with ***ATO*** - Air to open) or filled with air (with ***ATC*** - Air to close).
P11 *	**End position w >** ON/[OFF]	Upper tight-closing function: If w reaches up to 99 % towards the final value that causes the valve to open, the actuator is immediately completely filled with air (with ***ATO*** - Air to open) or vented (with ***ATC*** - Air to close).
P14	**Info w** Initialized Not initialized	Indicates the internally adjusted set point (adjusted set point in 0 to 100 % according to the settings in P6 and P7). Press ✳ to display external set point (applied set point in 0 to 100 % according to the 4-20 mA signal). Displays external set point in 0 to 100 % according to the 4-20 mA signal.
P15	**Start initialization**	The initialization process can be interrupted by pressing ✳. The control valve moves to its fail-safe position After a power supply failure during initialization, the positioner starts with the settings from the last initialization (if possible).
P16 *	**Start zero calibration**	The zero calibration process can be interrupted by pressing ✳. The positioner returns to closed-loop operation. **Note:** A zero calibration cannot be started when error code E1 exists. After a power supply failure during zero calibration, the positioner starts with the settings from the last zero calibration.
P17	**Manual mode**	Press ▽ or △ to enter set point.

P18	**Reset**	Parameters are reset to their default setting. The positioner can only return to closed-loop operation after it has be re-initialized.
P19	**Enable configuration**	Enable configuration to change parameter settings. This function is automatically canceled when none of the keys are not pressed within three minutes.
P20	**Display firmware**	Installed firmware version is shown. The last four digits of the serial number are shown when ✳ is pressed.
Error codes		
E0	**Zero error** (operational error)	Only with tight-closing function ***P10*** w < set to ON The zero point has shifted by more than 5 % compared to initialization. The error may arise when the mounting position/linkage of the positioner moves or when the valve seat trim is worn, especially with soft-sealed plugs.
	Recommended action	Check valve and mounting of the positioner. If OK, perform a zero calibration over Code ***P16*** (see section 7.9) or reset the error code (see section 7.12).
E1	**Displayed and INIT values are not identical** (operational error)	Parameter code settings were changed after the initialization had been completed.
	Recommended action	Reset parameters or perform initialization.
E2	**Positioner has not been initialized**	
	Recommended action	Set parameters and initialize the positioner over Code ***P15***.
E3	**K_P setting** (initialization error)	Positioner hunts. Volume restriction set incorrectly, too much gain.
	Recommended action	Check the volume restriction setting as described in section 7.2. Limit gain K_P in Code ***P8***. Re-initialize the positioner.
E4	**Transit time is too fast** (initialization error)	The transit times of the actuator determined during initialization are so short (under 0.5 second) that the positioner cannot adapt itself well enough.
	Recommended action	Check the volume restriction setting as described in section 7.2. Re-initialize the positioner.

E5	**Standstill detection is not possible** (initialization error)	Supply pressure is too low or varies. Mounting incorrect.
	Recommended action	Check supply air and positioner mounting. Re-initialize the positioner.
E6	**Travel is not achieved during initialization** (initialization error)	Supply pressure is too low, actuator leaks, incorrect travel adjusted or pressure limit function activated.
	Recommended action	Check supply air, positioner mounting and setting. Re-initialize the positioner.
E7	**Actuator does not move** (initialization error)	No supply air, mounting blocked. No input signal or input signal below 3.7 mA
	Recommended action	Check supply air, positioner mounting and mA input signal. Re-initialize the positioner.
E8	**Travel signal at lower/upper limit**	Wrong pin position, wrong lever, wrong attachment direction when NAMUR attachment is used.
	Recommended action	Reset error code (see section 7.12). Check positioner mounting and re-initialize the positioner.
E9	**Software**	Internal software error
		Return positioner to SAMSON AG for repair.
E10 to ***E15***	**Hardware**	Internal device error
	Recommended action	Return positioner to SAMSON AG for repair.

9 Maintenance

The positioner does not require any maintenance.

There are filters with a 100 m mesh size in the pneumatic connections for supply and output which can be removed and cleaned, if required.

The maintenance instructions of any upstream supply air pressure reducing stations must be observed.

10 Servicing explosion-protected devices

If a part of the device on which the explosion protection is based needs to be serviced, the device must not be put back into operation until a qualified inspector has assessed it according to explosion protection requirements, has issued an inspection certificate or given the device a mark of conformity.

Inspection by a qualified inspector is not required if the manufacturer performs a routine test on the device prior to putting it back into operation. The passing of the routine test must be documented by attaching a mark of conformity to the device. Replace explosion-protected components only by original, routine-tested components from the manufacturer.

Devices that have already been operated outside hazardous areas and are intended for future use inside hazardous areas must comply with the safety requirements placed on serviced devices. Before being used inside hazardous areas, test the devices according to the specifications for servicing explosion-protected devices.

11 Dimensions in mm

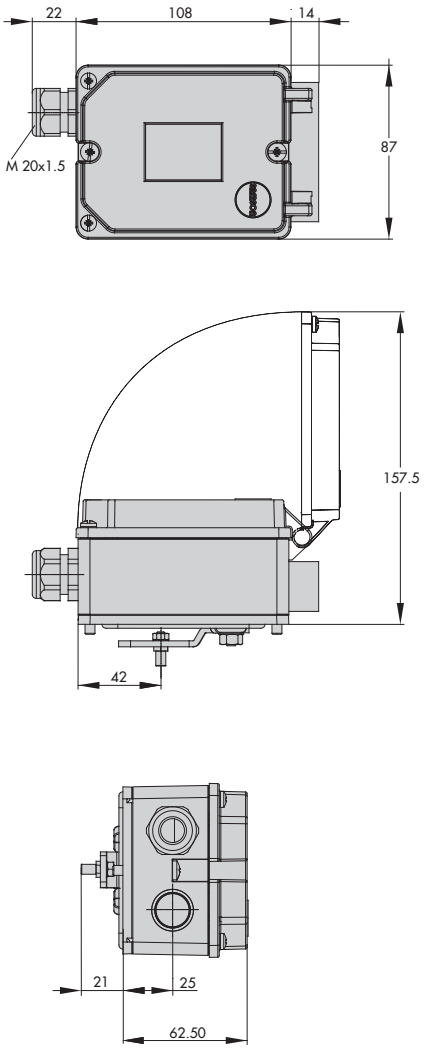
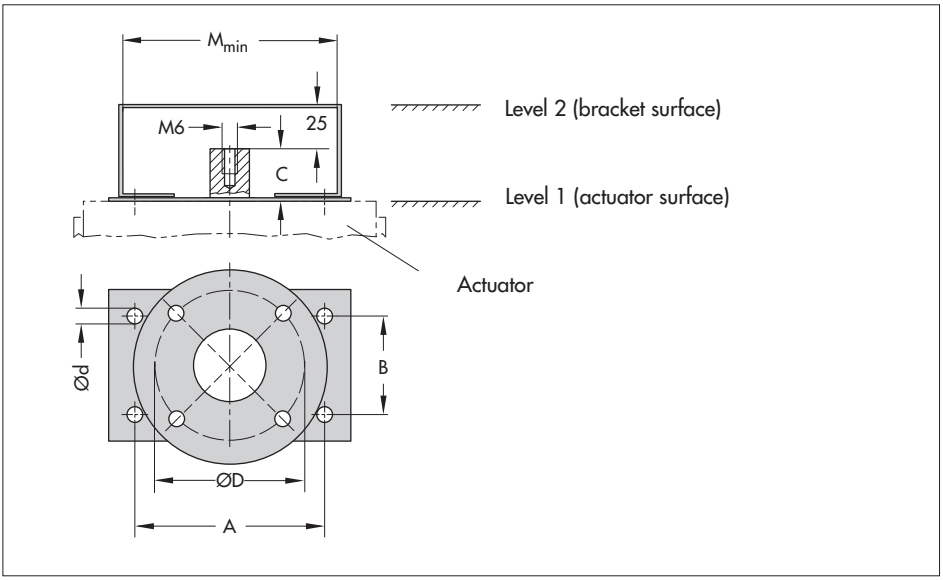


Fig. 18 · Dimensional drawing of Type 3725

11.1 Fixing levels according to VDI/VDE 3845 (September 2010)



Dimensions in mm

Size	A	B	C	Ød	M_{min}	ØD *
AA1	80	30	20	5.5 for M5	96	50
AA2	80	30	30	5.5 for M5	96	50

* Flange type F05 according to DIN EN ISO 5211

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

PTB

(1) # EC-TYPE-EXAMINATION CERTIFICATE
(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

PTB 11 ATEX 2020 X

(4) Equipment: e/p-positioner, type 3725-1100..

(5) Manufacturer: SAMSON AG Mess- und Regeltechnik

(6) Address: Weismüllerstr. 3, 60314 Frankfurt, Germany

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential assessment and test report PTB Ex 11-21059.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2009 **EN 60079-11:2007**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

Ex **II 2 G Ex ia IIC T4**

U112020.dot

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, August 25, 2011

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

PTB

(13) # SCHEDULE

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 11 ATEX 2020 X**

(15) Description of equipment

The e/p-positioner, type 3725-1100.. is a single-acting positioner intended for the installation onto pneumatic lift drives and slewing-motion actuators. It is used for the assignment of a valve position to an actuating signal. Non-flammable media serve as pneumatic auxiliary power.
The e/p-positioner, type 3725-1100.. is a passive two-terminal network which may be connected to all certified intrinsically safe circuits provided that the permissible maximum values for U_i, I_i and P_i are not exceeded.
The equipment is installed inside the hazardous area.
The permissible ambient temperature range is -25 °C ... 80 °C.

Electrical data

Signal circuit (terminals 11/12) ..... type of protection Intrinsic Safety Ex ia IIC only for connection to a certified intrinsically safe circuit

Maximum values:

U_i = 28 V
I_i = 115 mA
P_i = 1 W

C_i = 8.3 nF
L_i negligibly low

(16) Assessment and test report PTB Ex 11-21059

(17) Special conditions for safe use

The manufacturer documentation and the operating instructions manual shall include all required information to restrict the risc of electrostatic charge to a minimum. A warning label shall be affixed to the equipment.

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.
In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • 38116 Braunschweig • GERMANY

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 11 ATEX 2020 X

(18) Essential health and safety requirements

met by compliance with the standards mentioned above

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Braunschweig, August 25, 2011

VDE Prüf- und Zertifizierungsinstitut

VDE

VDE Prüf- und Zertifizierungsinstitut GmbH • Merianstraße 28 • D-63089 Offenbach

Samson AG
Mess- und Regeltechnik
Herrn Tomislav Varga
Weismüllerstraße 3
60314 Frankfurt

90 Jahre VDE

Offenbach, 2011-05-11

Ihr Zeichen	Ihr Schreiben	Unser Zeichen - bitte angeben	Ansprechpartner
Tomislav Varga	2010-12-14	479000-9010-0001/144591 FG34/bhl-wah	Herr Biehl Tel (069) 83 06-249 Fax (069) 83 06-716 gerhard.biehl@vde.com

PRÜFBERICHT
zur Information des Auftraggebers
Test Report for the Information of the applicant

Schutzartprüfung an SAMSON Stellungsregler

Typ 3725

dieser Prüfbericht enthält das Ergebnis einer einmaligen Untersuchung an dem zur Prüfung vorgelegten Erzeugnis. Ein Muster dieses Erzeugnisses wurde geprüft, um die Übereinstimmung mit den nachfolgend aufgeführten Normen bzw. Abschnitten von Normen festzustellen.
Die Prüfung wurde durchgeführt von 2011-01-10 bis 2011-05-09.

This test report contains the result of a singular investigation carried out on the product submitted. A sample of this product was tested to found the accordance with the thereafter listed standards or clauses of standards resp. The testing was carried out from 2011-01-10 to 2011-05-09.

Der Prüfbericht berechtigt Sie nicht zur Benutzung eines Zertifizierungszeichens des VDE und berücksichtigt ausschließlich die Anforderungen der unten genannten Regelwerke.

The test report does not entitle for the use of a VDE Certification Mark and considers solely the requirements of the specifications mentioned below.

Wenn gegenüber Dritten auf diesen Prüfbericht Bezug genommen wird, muss dieser Prüfbericht in voller Länge an gleicher Stelle verfügbar gemacht werden.

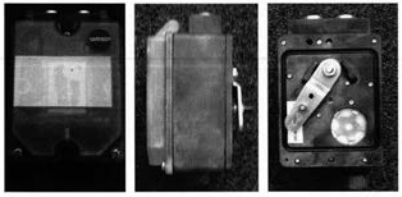
Whenever reference is made to this test report towards third party, this test report shall be made available on the very spot in full length.

1 Aufgabe

An dem unter Punkt 2 bezeichneten Prüfmuster wurde eine Prüfung auf Einhaltung der Schutzart IP66 durchgeführt.

2 Prüfmuster

SAMSON Stellungsregler, Typ 3725



3 Beurteilungsgrundlage

DIN EN 60529 (VDE 0470 Teil 1):2000-09
Schutzarten durch Gehäuse (IP- Code)
Deutsche Fassung EN 60529:1991 + A1:2000

EIN UNTERNEHMEN DES VDE VERBAND DER ELEKTROTECHNIK ELEKTRONIK INFORMATIONSTECHNIK e.V.

Geschäftsführer
Dipl.-Ing./Dipl.-Kfm. Wilfried Jäger
Merianstrasse 28
D-63069 Offenbach
Tel.: +49 (0) 69 83 06-0
Fax: +49 (0) 69 83 06-555
E-mail: vde-institut@vde.com
http://www.vde.com

Gerichtsstand:
Offenbach am Main
HRB 43618
USt.-IdNr.: DE281922990
Steuer-Nr.: 04425092566

Bankkonto
Commerzbank AG
BLZ 500 800 00
Kto.Nr.: 198 027 000
S.W.I.F.T.-Code:
DRES DE FF XXX
IBAN
DE 91500800000198027000

Nach dem Geräte- und Produktsicherheitsgesetz (GPSG) benannte Stelle für technische Arbeitsmittel und Verbraucherprodukte. Nach der EMV-Richtlinie 2004/108/EG benannte Stelle für elektromagn. Verträglichkeit (EMV) von Geräten. Von Akkreditierungsstellen im DAR nach DIN EN ISO/IEC 17020, 17021, 17025 und DIN EN 45011 akkreditiert. Akkreditiert durch: IEC – Internationale Elektrotechnische Kommission – IECEE/CB, IECQ und CENELEC – Europ. Komitee für elektrotechn. Normung – CCA, HAR, ENEC.

4 Durchführung der Prüfung

Die Staubprüfung erfolgte mit Absaugung gemäß Kategorie 1 über die Kabelverschraubung. Der Unterdruck betrug 2 kPa; die Prüfzeit 8 Stunden.

5 Prüfergebnis

Für das unter 2 beschriebene Prüfmuster wurde folgendes Ergebnis erzielt:

- Schutz gegen den Zugang zu gefährlichen Teilen und gegen feste Fremdkörper nach DIN EN 60529/ VDE 0470 Teil 1:2000-09	**IP6X**	**erfüllt**
- Schutz gegen das Eindringen von Wasser nach DIN EN 60529/ VDE 0470 Teil 1:2000-09	**IPX6**	**erfüllt**

Das Gehäuse des SAMSON Stellungsregler erfüllt in der vorgestellten Ausführung die Anforderungen an die Schutzart IP66.

Während der Prüfung drang weder Staub noch Wasser in das Gehäuse des Stellungsregler ein.

VDE Prüf- und Zertifizierungsinstitut GmbH
Fachgebiet FG34

i. A. i. A.

EIN UNTERNEHMEN DES VDE VERBAND DER ELEKTROTECHNIK ELEKTRONIK INFORMATIONSTECHNIK e.V.

Geschäftsführer
Dipl.-Ing./Dipl.-Kfm. Wilfried Jäger
Merianstrasse 28
D-63069 Offenbach
Tel.: +49 (0) 69 83 06-0
Fax: +49 (0) 69 83 06-555
E-mail: vde-institut@vde.com
http://www.vde.com

Gerichtsstand:
Offenbach am Main
HRB 43618
USt.-IdNr.: DE281922990
Steuer-Nr.: 04425092566

Bankkonto
Commerzbank AG
BLZ 500 800 00
Kto.Nr.: 198 027 000
S.W.I.F.T.-Code:
DRES DE FF XXX
IBAN
DE 91500800000198027000

Nach dem Geräte- und Produktsicherheitsgesetz (GPSG) benannte Stelle für technische Arbeitsmittel und Verbraucherprodukte. Nach der EMV-Richtlinie 2004/108/EG benannte Stelle für elektromagn. Verträglichkeit (EMV) von Geräten. Von Akkreditierungsstellen im DAR nach DIN EN ISO/IEC 17020, 17021, 17025 und DIN EN 45011 akkreditiert. Akkreditiert durch: IEC – Internationale Elektrotechnische Kommission – IECEE/CB, IECQ und CENELEC – Europ. Komitee für elektrotechn. Normung – CCA, HAR, ENEC.

SAMSON AG · MESS- UND REGELTECHNIK
Weismüllerstraße 3 · 60314 Frankfurt am Main · Germany
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
Internet: http://www.samson.de

EB 8394 EN 2012-06