Mounting and Operating Instructions

Limit Switch Type 4747

Fig. 1
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**EB 4747 EN**

- 2 -
General notes

The devices are to be assembled, started up or operated only by trained and experienced personnel familiar with the product.

According to these mounting and operating instructions, trained personnel referes to as 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 applicable standards.

Explosion-protected versions of this device are to be operated only by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

Any hazards that could be caused in the valve by the process medium, the signal pressure or by moving parts are to be prevented by means of the appropriate measures.

If inadmissible motions or forces are produced in the pneumatic actuator as a result of the supply pressure level, it must be restricted using a suitable supply pressure reducing station.

Proper shipping and storage are assumed.

For electrical installation, observe the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. In Germany, these are the VDE regulations and the accident prevention regulations of the employers’ liability insurance.

The following regulations apply to installation in hazardous areas: EN 60079-14:2008 Explosive atmospheres – Part 14: Electrical Installations, design, selection and erection (or VDE 0165 Part 1) and EN 61241-14:2004 Electrical Apparatus for Use in the Presence of Combustible Dust (or VDE 0165 Part 1). For ordering data, accessories and spare parts see Data Sheet T 4747 EN.

Model number and device index

The model number and the device index are shown on the nameplate:

4747-XXXXXXXXXXXXXXXXXX, XX

Model code

Limit Switch

<table>
<thead>
<tr>
<th>Type 4747-XXXXXXXXXXXX0XXXXX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of protection</td>
</tr>
<tr>
<td>Without explosion protection 000</td>
</tr>
<tr>
<td>Ex d (ATEX) 210</td>
</tr>
<tr>
<td>Ex d (GOST-R) 213</td>
</tr>
<tr>
<td>Ex d (FM) 230</td>
</tr>
<tr>
<td>Contact</td>
</tr>
<tr>
<td>Inductive proximity switch   01</td>
</tr>
<tr>
<td>Electric microswitch         11</td>
</tr>
<tr>
<td>– with silver contact 11</td>
</tr>
<tr>
<td>– with gold contact 12</td>
</tr>
<tr>
<td>Number of contacts</td>
</tr>
<tr>
<td>1 contact                    1</td>
</tr>
<tr>
<td>2 contacts                   2</td>
</tr>
<tr>
<td>Angle of rotation 0 … 100°, adjustable 0</td>
</tr>
<tr>
<td>Electrical</td>
</tr>
<tr>
<td>connection threads</td>
</tr>
<tr>
<td>M 20 x 1.5 1</td>
</tr>
<tr>
<td>1/2 NPT 2</td>
</tr>
<tr>
<td>Degree of protection</td>
</tr>
<tr>
<td>IP 66, NEMA Type 4X          0</td>
</tr>
<tr>
<td>Permissible</td>
</tr>
<tr>
<td>ambient temperature 25 … +80°C 0</td>
</tr>
<tr>
<td>– 40 … +80°C 1</td>
</tr>
<tr>
<td>Material for enclosure</td>
</tr>
<tr>
<td>Aluminum 0</td>
</tr>
<tr>
<td>Safety function</td>
</tr>
<tr>
<td>None 0</td>
</tr>
<tr>
<td>Special version</td>
</tr>
<tr>
<td>None 0</td>
</tr>
</tbody>
</table>

000
## Technical data

<table>
<thead>
<tr>
<th>Limit Switch Type</th>
<th>4747-XXX11</th>
<th>4747-XXX12</th>
<th>4747-XXX01</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contact</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Version</td>
<td>Electric microswitch XG</td>
<td>Inductive proximity switch NCB2-V3-N0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Silver contact</td>
<td>Gold contact</td>
<td></td>
</tr>
<tr>
<td>Number of contacts</td>
<td>2 contacts</td>
<td>1 or 2 contacts</td>
<td></td>
</tr>
<tr>
<td>Switching function</td>
<td>Double-throw contact</td>
<td>Break contact</td>
<td></td>
</tr>
<tr>
<td>Loading capacity</td>
<td>250 V AC/10 A, 125 V DC/ 0.5 A, 24 V DC/10 A</td>
<td>Using isolating switch amplifier according to EN 60947-5/-6</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>−40 ... +80 °C</td>
<td>−25 ... +80 °C</td>
<td></td>
</tr>
</tbody>
</table>

| **General data**   |            |            |            |
| Angle of rotation  | 0 ... 100°, adjustable |            |            |
| Travel range       | 0 ... 30 mm, adjustable | (for SAMSON Type 3277 and Type 3277-5 Linear Actuators), 0 ... 200 mm, adjustable | (for linear actuators with NAMUR rib according to IEC 60534-6-1) |
| **Material**       |            |            |            |
| Enclosure          | Aluminum, powder-coated, grayish beige RAL 1019 |            |            |
| Enclosure cover    | Aluminum, powder-coated, grayish beige RAL 1019 |            |            |
| Lever and pin      | Stainless steel 1.4301/1.4305 |            |            |
| Screws             | Non-corrosive steel A2/A4 according to ISO 3506 |            |            |
| Electromagnetic compatibility | Requirements according to EN 61000-6-2, EN 61000-6-3 and NAMUR Recommendation NE 21 are met |            |            |
| Degree of protection | IP 66, NEMA Type 4X3) |            |            |
| **Explosion protection** | ATEX2) | II 2G Ex db IIC T6, T5 and T4 / II 2D Ex tdb IIC T80 °C IP66 |            |
| FM3)               | Class I, Division 1, Groups A, B, C and D, T6 ... T4, Type 4X, Class II, Division 1, Groups E, F and G, T6 ... T4, Type 4X, Class III, Division 1, T6 ... T4, Type 4X, Class I, Zone 1, AEx d IIC T6 ... T4, Type 4X | Class I, Division 1, Groups A, B, C and D, T6 ... T4, Type 4X, Class II, Division 1, Groups E, F and G, T6 ... T4, Type 4X, Class III, Division 1, T6 ... T4, Type 4X, Class I, Zone 1, AEx d IIC T6 ... T4, Type 4X |
| GOST-R4)           | 1Ex d IIC T4 ... T6 X; DIP A21 T 80 °C IP 66 |            |            |
| IECEx5)            | Ex d IIC T6, T5 and T4 / Ex tD A21 IP 66 T 80 °C |            |            |
| Mounting position  | As desired (see “Attachment”, page 5) |            |            |
| Electrical connection | Cable entry M 20×1.5 (1/2 NPT) to screw terminals | (for connecting cables with 0.2 to 2.5 mm² conductor cross section and 5 to 8 mm external diameter) |            |
| Weight approx.     | 0.65 kg    |            |            |

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1) The limits specified in the certificate additionally apply when used in hazardous areas (see “Certification”, page 32 ff.)
2) According to EC Type Examination Certificate PTB 09 ATEX 1113 X
3) According to FM Certificate of Compliance 3037212
4) According to GOST-R Certificate of Compliance POCC DEGB05.B03116 and Operating License PPC 00-042126
5) According to IECEx Examination Certificate IECEx PTB 09.0060X
Before mounting the device onto a control valve, depressurize the relevant plant section.

The device can be mounted in any position. The device must be mounted so that the cable entry preferably faces down, or if this is not possible, aligned in the horizontal position (see “Electrical connection”, page 26).

The devices are suitable for the following attachments:

<table>
<thead>
<tr>
<th>Attachment kit</th>
<th>Actuator</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment kit for SAMSON Type 3277 Linear Actuators</td>
<td>SAMSON Type 3277 Linear Actuators</td>
<td>1400-7471</td>
</tr>
<tr>
<td>Attachment kit for SAMSON Type 3277-5 Linear Actuators</td>
<td>SAMSON Type 3277-5 Linear Actuators</td>
<td>1400-7472</td>
</tr>
<tr>
<td>Attachment kit for NAMUR rib according to IEC 60534-6-1</td>
<td>Linear actuators with NAMUR rib according to IEC 60534-6-1</td>
<td>1400-7468</td>
</tr>
<tr>
<td>Attachment kit for SAMSON Type 3510 Micro-flow Valve</td>
<td>SAMSON Type 3510 Micro-flow Valve</td>
<td>1400-7469</td>
</tr>
<tr>
<td>Attachment kit according to VDI/VDE 3845 – fixing level 1 (heavy-duty version)</td>
<td>Rotary actuators according to VDI/VDE 3845</td>
<td>1400-9974</td>
</tr>
<tr>
<td>Attachment kit according to VDI/VDE 3845 – fixing level 2 (heavy-duty version)</td>
<td>Rotary actuators according to VDI/VDE 3845</td>
<td>1400-7473</td>
</tr>
<tr>
<td>Attachment kit according to VDI/VDE 3845 – fixing level 2 (heavy-duty version)</td>
<td>Rotary actuators according to VDI/VDE 3845</td>
<td>1400-9384</td>
</tr>
<tr>
<td>Attachment kit for VETEC Type R and Type S 160 Rotary Actuators (heavy-duty version)</td>
<td>VETEC Type R and Type S 160 Rotary Actuators</td>
<td>1400-9385</td>
</tr>
<tr>
<td>Attachment kit for AIR TORQUE 10000 Rotary Actuators (heavy-duty version)</td>
<td>AIR TORQUE 10000 Rotary Actuators</td>
<td>1400-9992</td>
</tr>
</tbody>
</table>
Lever and pin

The limit switch is adapted to the actuator used and the rated travel by the lever ② on the bottom of the limit switch and by the pin ⑤ inserted into the lever (see Fig. 2).
The travel tables (see page 7) show the maximum adjustment range at the limit switch. 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.

Note: The limit switch is delivered with the lever M mounted and the pin inserted in pin position 35.
In some cases, a longer lever must be used in place of lever M and a longer pin must be used in place for the mounted pin.

Changing the lever
Undo hexagon nut ④ and disk spring ③ from the mounted lever M. Remove the lever M from the shaft of the limit switch. Do not remove the safety plate ①!
Place the longer lever ② onto the shaft and fasten it using hexagon nut ④ and disk spring ③. On mounting the lever, make sure the safety plate ① is correctly positioned underneath the lever ②.

Changing the pin
Undo hexagon nut ⑦ and disk spring ⑥ from the mounted pin. Remove the pin from pin position 35. Insert the longer pin ⑤ in the adequate pin position and fasten it using hexagon nut ⑦ and disk spring ⑥ underneath.
## Direct attachment to Type 3277 and Type 3277-5 Linear Actuators

<table>
<thead>
<tr>
<th>Actuator size [cm²]</th>
<th>Travel [mm]</th>
<th>Lever</th>
<th>Pin position</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>7.5</td>
<td>M</td>
<td>25</td>
</tr>
<tr>
<td>120/240/350</td>
<td>15.0</td>
<td>M</td>
<td>35</td>
</tr>
<tr>
<td>700</td>
<td>30.0</td>
<td>M</td>
<td>50</td>
</tr>
</tbody>
</table>

## Attachment to linear actuators with NAMUR rib according to IEC 60534-6-1

<table>
<thead>
<tr>
<th>SAMSON valves/ Other valves/</th>
<th>Actuator size [cm²]</th>
<th>Travel [mm]</th>
<th>Travel [mm]</th>
<th>Lever</th>
<th>Pin position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 3271 Linear Actuator</td>
<td>60/120 with Type 3510 Micro-flow Valve</td>
<td>7.5</td>
<td>3.6 ... 18.0</td>
<td>S</td>
<td>17</td>
</tr>
<tr>
<td>120</td>
<td>7.5</td>
<td>5.0 ... 25.0</td>
<td>M</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>120/240/350</td>
<td>15.0</td>
<td>7.0 ... 35.0</td>
<td>M</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>700</td>
<td>15.0</td>
<td>7.0 ... 35.0</td>
<td>M</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>700</td>
<td>15.0/30.0</td>
<td>10.0 ... 50.0</td>
<td>M</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>1400/2800</td>
<td>30.0</td>
<td>14.0 ... 70.0</td>
<td>L</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>1400/2800</td>
<td>60.0</td>
<td>20.0 ... 100.0</td>
<td>L</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>1400/2800</td>
<td>120.0</td>
<td>40.0 ... 200.0</td>
<td>XL</td>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>

## Attachment to rotary actuators according to VDI/VDE 3845

<table>
<thead>
<tr>
<th>Angle of rotation [°]</th>
<th>Lever</th>
<th>Pin position</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 ... 100</td>
<td>M</td>
<td>90°</td>
</tr>
</tbody>
</table>
Direct attachment to SAMSON Type 3277
Linear Actuators
(actuator size 240/350/700 cm²)

For the direct attachment to SAMSON Type 3277 Linear Actuators (actuator size 240/350/700 cm²), an attachment kit is required (see Fig. 3, page 9). During attachment, observe the additional instructions on lever and pin (page 6) and the specifications in the travel tables (page 7).

Attachment
1. Place follower clamp ④ on the actuator stem, align and screw tight so that the hexagon screw ③ is located in the groove of the actuator stem.
2. Attach mounting plate ① to the actuator yoke using two countersunk-head screws ②.
3. ▶ 15.0 mm travel
   Lever M with pin in pin position 35 (delivered state).
   ▶ 30.0 mm travel
   Lever M with pin in pin position 50.
   Remove the pin from pin position 35 and fasten it to pin position 50 using a hexagon nut and a disk spring.
4. Fasten the limit switch to the mounting plate ① using four hexagon socket head screws ⑤.
5. Check to ensure the pin rests on the top of the follower clamp ④. In the correct position, the lever M presses the pin with spring force onto the follower clamp ④.
6. Fasten the cover ⑥ to the back of the actuator yoke.
7. For linear actuators with fail-safe action “actuator stem extends”, insert vent plug ⑦.
Direct attachment to SAMSON Type 3277 Linear Actuators (Actuator size 240/350/700 cm²)

Attachment kit for SAMSON Type 3277 Linear Actuators (actuator size 240/350/700 cm²)

<table>
<thead>
<tr>
<th>Order no.</th>
<th>Description</th>
<th>Stock no. 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mounting plate</td>
<td>0360-3633</td>
</tr>
<tr>
<td>2</td>
<td>Countersunk-head screw ISO 10642 - M 5 × 12</td>
<td>8333-1069</td>
</tr>
<tr>
<td>3</td>
<td>Hexagon screw ISO 4017 - M 5 × 16</td>
<td>8320-0559</td>
</tr>
<tr>
<td>4</td>
<td>Follower clamp</td>
<td>0300-1167</td>
</tr>
<tr>
<td>5</td>
<td>Hexagon socket head screw DIN 7984 – M 5 × 12</td>
<td>8333-2703</td>
</tr>
<tr>
<td>6</td>
<td>Cover</td>
<td>1790-1420</td>
</tr>
<tr>
<td>7</td>
<td>Vent plug</td>
<td>8145-0639</td>
</tr>
</tbody>
</table>

Fig. 3
Direct attachment to SAMSON Type 3277-5 Linear Actuators (actuator size 120 cm²)

For the direct attachment to SAMSON Type 3277-5 Linear Actuators (actuator size 120 cm²), an attachment kit is required (see Fig. 4, page 11). During attachment, observe the additional instructions on lever and pin (page 6) and the specifications in the travel tables (page 7).

Attachment

1. Place follower clamp 4 on the actuator stem, align and screw tight so that the hexagon screw 3 is located in the groove of the actuator stem.

2. Fasten mounting plate 1 to the actuator yoke using two countersunk-head screws 2.

3. 7.5 mm travel
   Lever M 5 with pin 9 in pin position 25. Remove the pin 9 from pin position 35 and fasten it to pin position 25 using hexagon nut 7 and disk spring 8.

4. 15.0 mm travel
   Lever M 5 with pin 9 in pin position 35 (delivered state).

4. Fasten the limit switch to the mounting plate 1 using four hexagon socket head screws 6.

5. Check to ensure the pin 9 rests on the top of the follower clamp 4. In the correct position, the lever M 5 presses the pin 9 onto the follower clamp 4 with spring force.

6. Fasten the cover 10 to the back of the actuator yoke.
Direct attachment to SAMSON Type 3277-5 Linear Actuators (actuator size 120 cm²)

Order no. | 1400-7472
---|---
1 | Mounting plate
2 | 4 x Countersunk-head screw ISO 10642 – M 5 x 12
3 | 1 x Hexagon screw ISO 4017 – M 5 x 16
4 | 1 x Follower clamp
5 | 1 x Lever M
6 | 4 x Hexagon socket head screw DIN 7984 – M 5 x 12
7 | 1 x Hexagon nut ISO 4032 – M 6
8 | 1 x Disk spring DIN 2093 – B 8
9 | 1 x Pin
10 | 1 x Cover

(delivered with the limit switch) | 0510-0510
(delivered with the limit switch) | 8350-0084
(delivered with the limit switch) | 8392-0690
(delivered with the limit switch) | 1890-8643
(delivered with the limit switch) | 1790-1420

Fig. 4
For the attachment to linear actuators with NAMUR rib according to IEC 60534-6-1, an attachment kit is required (see Fig. 5, page 13). During attachment, observe the additional instructions on lever and pin (page 6) and the specifications in the travel tables (page 7).

Attachment

1. Screw two spacer bolts into the stem connector between the actuator stem and plug stem.
2. Fasten the follower plate to the spacer bolts using two hexagon screws and two disk springs.
3. Fasten the bracket to the NAMUR rib using screw, serrated lock washer and washer. Align the bracket in such a way that it is centrally aligned to the mid valve travel mark on the travel indicator.

4. **Actuator size 120 cm²**
   - (7.5 mm travel)
   - Lever M with pin in pin position 25.
   - Remove the pin from pin position 35 and fasten it to pin position 25 using two hexagon nuts and disk spring.
   - **Actuator size 120/240/350/700 cm²**
     - (15.0 mm travel)
     - Lever M with pin in pin position 35 (delivered state).
   - **Actuator size 700 cm²**
     - (30.0 mm travel)
     - Lever M with pin in pin position 50.
     - Remove the pin from pin position 35 and fasten it to pin position 50 using two hexagon nuts and disk spring.
   - **Actuator size 1400/2800 cm²**
     - (30.0 mm travel)
     - Lever L with pin in pin position 70.
     - Undo hexagon nut and disk spring from the mounted lever M. Remove the lever M from the shaft of the limit switch. **Do not remove the safety plate!**
     - Fasten pin with collar to pin position 200 of lever XL using two hexagon nuts and disk spring.

5. Place limit switch onto the mounting bracket so that the pin slides into the slot of the follower plate. To do this, move the lever correspondingly.

6. Fasten the limit switch onto the mounting bracket using two counter-sunk head screws, two hexagon head screws and two disk springs.
Attachment kit for linear actuators with NAMUR rib according to IEC 50534-6-1

Order no. | 1400-7468
---|---
1 | 2 × Hexagon socket head screw ISO 4762 – M 5 × 16
2 | 2 × Disk spring DIN 2093 – B 10
3 | 2 × Countersunk-head screw ISO 10642 M 5 × 12
4 | 1 × Hexagon screw ISO 4017 – M 8 × 25
5 | 1 × Serrated lock washer DIN 6798 – A 8.4
6 | 1 × Washer – 20.5
7 | 1 × Mounting bracket
8 | 2 × Spacer bolt
9 | 1 × Follower plate
10 | 3 × Disk spring DIN 2093 – B 8
11 | 2 × Hexagon screw ISO 4017 – M 4 × 8
12 | 1 × Lever XL
13 | 1 × Lever L
14 | 1 × Pin with collar
15 | 1 × Hexagon nut ISO 4032 – M 6
16 | 1 × Disk spring DIN 2093 – B 12.5
17 | 2 × Hexagon nut ISO 4032 – M 4

Fig. 5
Attachment to SAMSON Type 3510 Micro-flow Valves
(actuator size 60/120 cm²)

For the attachment to SAMSON Type 3510 Micro-flow Valves (actuator size 60/120 cm²), an attachment kit is required (see Fig. 6, page 15). During attachment, observe the additional instructions on lever and pin (page 6) and the specifications in the travel tables (page 7).

Attachment

1. Place follower clamp ① on the stem connector, align it at a right angle and fasten with hexagon screw ②.

2. Lever S with pin in pin position 17.
   Undo hexagon nut ⑦ and disk spring ⑧ from the mounted lever M. Remove the lever M from the shaft of the limit switch. Do not remove the safety plate!

3. Place lever S ② onto the shaft and fasten using hexagon nut ⑦ and disk spring ⑧. On mounting the lever, make sure the safety plate is correctly positioned underneath lever S ②.

4. Insert the pin ③ into pin position 17 and fasten using hexagon nut ⑤ and disk spring ④.

5. Fasten bracket ⑩ onto the limit switch using two hexagon socket head screws ⑥ and two disk springs ⑦.

6. Place the limit switch together with the bracket ⑩ onto the valve yoke so that the pin ③ slides into the groove of the follower clamp ①. To do this, move the lever S ② correspondingly.

7. Fasten the bracket ⑩ onto the valve yoke using two hexagon screws ⑨ and two disk springs ⑧.
Attachment to SAMSON Type 3510 Micro-flow Valves (actuator size 60/120 cm²)

**Fig. 6**

**Attachment kit for SAMSON Type 3510 Micro-flow Valves (Actuator size 60/120 cm²)**

<table>
<thead>
<tr>
<th>Order no.</th>
<th>1400-7469</th>
</tr>
</thead>
<tbody>
<tr>
<td>① 1 x Follower clamp</td>
<td><a href="#">0300-1180</a></td>
</tr>
<tr>
<td>② 1 x Hexagon screw ISO 4017 – M 5 x 16</td>
<td><a href="#">8320-0559</a></td>
</tr>
<tr>
<td>③ 1 x Pin</td>
<td><a href="#">1890-8643</a></td>
</tr>
<tr>
<td>④ 1 x Disk spring DIN 2093 – B 8</td>
<td><a href="#">8392-0690</a></td>
</tr>
<tr>
<td>⑤ 1 x Hexagon nut ISO 4032 – M 4</td>
<td><a href="#">8350-0064</a></td>
</tr>
<tr>
<td>⑥ 2 x Hexagon socket head screw ISO 4762 – M 5 x 12</td>
<td><a href="#">8333-1249</a></td>
</tr>
<tr>
<td>⑦ 2 x Disk spring DIN 2093 – B 10</td>
<td><a href="#">8392-0691</a></td>
</tr>
<tr>
<td>⑧ 3 x Disk spring DIN 2093 – A 12.5</td>
<td><a href="#">8392-0683</a></td>
</tr>
<tr>
<td>⑨ 2 x Hexagon screw ISO 4017 – M 6 x 10</td>
<td><a href="#">8320-0590</a></td>
</tr>
<tr>
<td>⑩ 1 x Bracket</td>
<td><a href="#">0300-1180</a></td>
</tr>
<tr>
<td>⑪ 1 x Hexagon nut ISO 4032 – M 6</td>
<td><a href="#">8350-0084</a></td>
</tr>
<tr>
<td>⑫ 1 x Lever S</td>
<td><a href="#">0510-0522</a></td>
</tr>
</tbody>
</table>

---

*EB 4747 EN*
Attachment to rotary actuators according to VDI/VDE 3845 – fixing level 1 (heavy-duty version)

For the attachment to rotary actuators according to VDI/VDE 3845 – fixing level 1 (heavy-duty version), an attachment kit is required (see Fig. 8, page 17). During attachment, observe the additional instructions on lever and pin (page 6) and the specifications in the travel tables (page 7).

Attachment
1 Fasten mounting plate 9 onto the bracket (delivered by the actuator manufacturer) using four hexagon screws 11 and four disk springs 4.
2 Fasten housing 8 to the mounting plate 9 using four hexagon socket head screws 6 and four disk springs 7.
3 Place adapter 10 onto the shaft end of the rotary actuator.
4 Place coupling wheel 5 onto the adapter 10 and fasten with hexagon screw 3 and disk spring 4.
5 Lever M with pin in pin position 90°. Undo the mounted pin from pin position 35. Insert the longer pin 14 in pin position 90° and fasten it using hexagon nut 5 and disk spring 7 underneath.
6 Fasten the limit switch onto the mounting plate 2 using four countersunk-head screws 1.
7 Fasten the mounting plate 2 onto the housing 8 using two countersunk-head screws 1. Align lever M so that the pin engages into the corresponding slot of the coupling wheel, taking into account the direction of rotation of the rotary actuator (see Fig. 7).
Attachment to rotary actuators according to VDI/VDE 3845 – fixing level 1 (heavy-duty version)

**Attachment kit for rotary actuators according to VDI/VDE 3845 – fixing level 1 (heavy-duty version)**

<table>
<thead>
<tr>
<th>Order no.</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>6 × Countersunk-head screw ISO 10642 – M 5 × 12</td>
<td>8333-1069</td>
</tr>
<tr>
<td>②</td>
<td>1 × Mounting plate</td>
<td>0360-3585</td>
</tr>
<tr>
<td>③</td>
<td>1 × Hexagon screw ISO 4017 – M 6 × 75</td>
<td>8320-0081</td>
</tr>
<tr>
<td>④</td>
<td>1 × Disk spring DIN 2093 – A 12.5</td>
<td>8392-0683</td>
</tr>
<tr>
<td>⑤</td>
<td>1 × Coupling wheel</td>
<td>0858-0354</td>
</tr>
<tr>
<td>⑥</td>
<td>4 × Hexagon socket head screw ISO 4762 – M 5 × 12</td>
<td>8333-1249</td>
</tr>
<tr>
<td>⑦</td>
<td>5 × Disk spring DIN 2093 – B 10</td>
<td>8392-0691</td>
</tr>
<tr>
<td>⑧</td>
<td>1 × Housing</td>
<td>0103-3494</td>
</tr>
<tr>
<td>⑨</td>
<td>1 × Mounting plate</td>
<td>0360-3598</td>
</tr>
<tr>
<td>⑩</td>
<td>1 × Adapter</td>
<td>0230-3116</td>
</tr>
<tr>
<td>⑪</td>
<td>4 × Hexagon screw ISO 4017 – M 6 × 16</td>
<td>8320-0596</td>
</tr>
<tr>
<td>⑫</td>
<td>2 × Adhesive label</td>
<td>0190-5291</td>
</tr>
<tr>
<td>⑬</td>
<td>1 × Adhesive label</td>
<td>0190-5292</td>
</tr>
<tr>
<td>⑭</td>
<td>1 × Pin</td>
<td>1992-1939</td>
</tr>
<tr>
<td>⑮</td>
<td>1 × Hexagon nut ISO 4035 – M 5 – A 4</td>
<td>8350-0509</td>
</tr>
</tbody>
</table>

Fig. 8
Attachment to rotary actuators according to VDI/VDE 3845 – fixing level 2

For the attachment to rotary actuators according to VDI/VDE 3845 – fixing level 2, an attachment kit is required (see Fig. 10, page 19). During attachment, observe the additional instructions to lever and pin (page 6) and the specifications in the travel tables (page 7).

Attachment

1. Fasten both long brackets to the rotary actuator using two hexagon screws and two disk springs for each bracket.
2. Fasten both short brackets to the long brackets using two hexagon screws, two disk springs and two hexagon nuts for each bracket.
3. Place the follower clamp on the shaft end of the rotary actuator.
4. Place the coupling wheel on the follower clamp and fasten using slotted pan head screw and disk spring.
5. Lever M with pin in pin position 90°. Undo the mounted pin from pin position 35. Insert the longer pin in pin position 90° and fasten it using hexagon nut and disk spring underneath.
6. Fasten the limit switch onto the mounting plate using four countersunk-head screws.
7. Fasten the mounting plate to the short brackets using two countersunk-head screws. Align lever M so that the pin engages into the corresponding slot of the coupling wheel, taking into account the direction of rotation of the rotary actuator (see Fig. 9).
Attachment to rotary actuators according to VDI/VDE 3845 – fixing level 2

Fig. 10

Attachment kit for rotary actuators according to VDI/VDE 3845 – fixing level 2

<table>
<thead>
<tr>
<th>Order no.</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 × Hexagon nut ISO 4035 – M 5 – A 4</td>
<td>8350-0509</td>
</tr>
<tr>
<td>2</td>
<td>9 × Disk spring DIN 2093 – B 10</td>
<td>8392-0691</td>
</tr>
<tr>
<td>3</td>
<td>1 × Pin</td>
<td>0170-1388</td>
</tr>
<tr>
<td>4</td>
<td>6 × Countersunk-head screw ISO 10642 – M 5×12</td>
<td>8333-1069</td>
</tr>
<tr>
<td>5</td>
<td>1 × Mounting plate</td>
<td>0360-3585</td>
</tr>
<tr>
<td>6</td>
<td>2 × Short bracket</td>
<td>0300-1170</td>
</tr>
<tr>
<td>7</td>
<td>8 × Hexagon bolt ISO 4017 – M 5×12</td>
<td>8320-0553</td>
</tr>
<tr>
<td>8</td>
<td>4 × Hexagon nut ISO 4032 – M 5 – A 4-70</td>
<td>8350-0073</td>
</tr>
<tr>
<td>9</td>
<td>2 × Long bracket</td>
<td>0300-1171</td>
</tr>
<tr>
<td>10</td>
<td>1 × Follower clamp</td>
<td>0300-1176</td>
</tr>
<tr>
<td>11</td>
<td>1 × Coupling wheel</td>
<td>0480-2036</td>
</tr>
<tr>
<td>12</td>
<td>1 × Adhesive label</td>
<td>0190-4909</td>
</tr>
<tr>
<td>13</td>
<td>1 × Slotted pan head screw ISO 1580 – M 6×12</td>
<td>8330-0736</td>
</tr>
<tr>
<td>14</td>
<td>1 × Disk spring DIN 2093 – A 12.5</td>
<td>8392-0683</td>
</tr>
</tbody>
</table>
Attachment to rotary actuators according to VDI/VDE 3845 – fixing level 2 (heavy-duty version)

For the attachment to rotary actuators according to VDI/VDE 3845 – fixing level 2 (heavy-duty version), an attachment kit is required (see Fig. 12, page 21). During attachment, observe the additional instructions on lever and pin (page 6) and the specifications in the travel tables (page 7).

Attachment

1. **Length of shaft end B = 20 or 30 mm**
   Fasten housing ② to the rotary actuator using four hexagon socket head screws ⑧ and four disk springs ⑩.

2. **Length of shaft end B = 50 mm**
   Fasten housing ② on two spacers ③ to the rotary actuator using four hexagon socket head screws ⑨ and four conical spring washers ⑪.

3. **Length of shaft end B = 20 or 50 mm**
   Place adapter ② onto the shaft end of the rotary actuator.
   Place coupling wheel ⑥ onto the adapter ② and fasten using hexagon screw ④ and a disk spring ⑤.

4. **Length of shaft end B = 30 mm**
   Place coupling wheel ⑥ onto the shaft end of the rotary actuator and fasten using a hexagon screw ④ and a disk spring ⑤.

5. **Lever M with pin in pin position 90°**
   Undo the mounted pin from pin position 35.
   Insert the longer pin ⑥ in pin position 90° and fasten it using hexagon nut ⑦ and disk spring ⑧ underneath.

6. Fasten the limit switch onto the mounting plate ② using four countersunk-head screws ①.

7. Fasten the mounting plate ② to the housing using two countersunk-head screws ①.
   Align lever M so that the pin engages into the corresponding slot of the coupling wheel, taking into account the direction of rotation of the rotary actuator (see Fig. 11).
Attachment to rotary actuators according to VDI/VDE 3845 – fixing level 2 (heavy-duty version)

Fig. 12

Attachment kit for rotary actuators to VDI/VDE 3845 – fixing level 2 (heavy-duty version)

<table>
<thead>
<tr>
<th>Order no.</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6 × Countersunk-head screw ISO 10642 – M 5 × 12</td>
<td>8333-1069</td>
</tr>
<tr>
<td>2</td>
<td>1 × Mounting plate</td>
<td>0360-3585</td>
</tr>
<tr>
<td>3</td>
<td>1 × Hexagon screw ISO 4017 – M 6 × 25 (for B = 20 or 50 mm)</td>
<td>8320-0617</td>
</tr>
<tr>
<td>4</td>
<td>1 × Hexagon screw ISO 4017 – M 6 × 16 (for B = 30 mm)</td>
<td>8320-0596</td>
</tr>
<tr>
<td>5</td>
<td>1 × Disk spring DIN 2093 – A 12,5</td>
<td>8392-0683</td>
</tr>
<tr>
<td>6</td>
<td>1 × Coupling wheel</td>
<td>0858-0354</td>
</tr>
<tr>
<td>7</td>
<td>1 × Adapter (for B = 20 or 50 mm)</td>
<td>0230-3061</td>
</tr>
<tr>
<td>8</td>
<td>4 × Hexagon socket head screw ISO 4762 – M 5 × 12 (for B = 20 or 30 mm)</td>
<td>8333-1249</td>
</tr>
<tr>
<td>9</td>
<td>4 × Hexagon socket head screw ISO 4762 – M 5 × 45 (for B = 50 mm)</td>
<td>8333-1289</td>
</tr>
<tr>
<td>10</td>
<td>5 × Disk spring DIN 2093 – B 10 (for B = 20 or 30 mm)</td>
<td>8392-0691</td>
</tr>
<tr>
<td>11</td>
<td>4 × Conical spring washer DIN 6796 – 5 (for B = 50 mm)</td>
<td>8392-0149</td>
</tr>
<tr>
<td>12</td>
<td>1 × Housing</td>
<td>0103-3494</td>
</tr>
<tr>
<td>13</td>
<td>2 × Spacer (for B = 50 mm)</td>
<td>0858-0358</td>
</tr>
<tr>
<td>14</td>
<td>2 × Adhesive label</td>
<td>0190-5291</td>
</tr>
<tr>
<td>15</td>
<td>1 × Adhesive label</td>
<td>0190-5292</td>
</tr>
<tr>
<td>16</td>
<td>1 × Pin</td>
<td>1992-1939</td>
</tr>
<tr>
<td>17</td>
<td>1 × Hexagon nut ISO 4035 – M 5 – A 4</td>
<td>8350-0509</td>
</tr>
</tbody>
</table>
Attachment to VETEC Type R and Type S 160 Rotary Actuators (heavy-duty version)

For the attachment to VETEC Type R and Type S 160 Rotary Actuators (heavy-duty version), an attachment kit is required (see Fig. 14, page 23). During attachment, observe the additional instructions on lever and pin (page 6) and the specifications in the travel tables (page 7).

Attachment

1. VETEC Type R
   Fasten housing to the rotary actuator using four hexagon socket head screws and four disk springs.
   
   VETEC Type S 160
   Fasten housing to the rotary actuator using four hexagon socket head screws and four disk springs.

2. VETEC Type R
   Place adapter onto the shaft end of the rotary actuator.
   Place adapter onto the adapter.
   
   VETEC Type S 160
   Place adapter onto the shaft end of the rotary actuator and fasten using four hexagon socket head screws and four disk springs.
   Place adapter onto the adapter.

3. VETEC Type R
   Place coupling wheel onto the adapter and fasten using hexagon screw and disk spring.
   
   VETEC Type S 160
   Place coupling wheel onto the adapter and fasten using hexagon screw and disk spring.

4. Lever M with pin in pin position 90°.
   Undo the mounted pin from pin position 35. Insert the longer pin in pin position 90° and fasten it using hexagon nut and disk spring underneath.

5. Fasten the limit switch onto the mounting plate using four countersunk-head screws.

6. Fasten the mounting plate to the housing using two countersunk-head screws. Align lever M so that the pin engages into the corresponding slot of the coupling wheel, taking into account the direction of rotation of the rotary actuator (see Fig. 13).
Attachment kit for VETEC Type R and Type S 160 Rotary Actuators (heavy-duty version)

Order no. | 1400-9385
---|---
1 | 6 x Countersunk-head screw ISO 10642 – M 5 x 12
2 | 1 x Mounting plate
3 | 1 x Hexagon screw ISO 4017 – M 6 x 50
4 | 1 x Hexagon screw ISO 4017 – M 6 x 25
5 | 5 x Disk spring DIN 2093 – A 12.5
6 | 1 x Coupling wheel
7 | 1 x Adapter
8 | 4 x Hexagon socket head screw ISO 4762 – M 4 x 16
9 | 4 x Washer DIN 433 – 4.3
10 | 1 x Adapter
11 | 1 x Adapter
12 | 4 x Hexagon socket head screw ISO 4762 – M 6 x 16
13 | 4 x Hexagon socket head screw ISO 4762 – M 6 x 16
14 | 5 x Disk spring DIN 2093 – B 10
15 | 1 x Housing
16 | 1 x Adhesive label
17 | 1 x Adhesive label
18 | 1 x Pin
19 | 1 x Hexagon nut ISO 4035 – M 5 – A 4

VETEC Type R

VETEC Type S 160

Fig. 14
Attachment to AIR TORQUE 10000
Rotary Actuators (heavy-duty version)

For the attachment to AIR TORQUE 10000
Rotary Actuators (heavy-duty version), an
attachment kit is required (see Fig. 16, page
25).
During attachment, observe the additional in-
structions on lever and pin (page 6) and the
specifications in the travel tables (page 7).

Attachment
1 Screw four spacer bolts into the flange of
the rotary actuator.
2 Fasten mounting plate to the four spacer
bolts using four countersunk-head screws.
3 Fasten housing to the mounting plate using four hexagon socket head screws and four disk springs.
4 Place adapter onto the shaft end of the
rotary actuator.
5 Place coupling wheel onto the adapter and fasten using hexagon screw and disk
spring.
6 Lever with pin in pin position 90°.
Undo the mounted pin from pin position 35.
Insert the longer pin in pin position 90°
and fasten it using hexagon nut and disk
spring underneath.
7 Fasten the limit switch onto the mounting
plate using four countersunk-head screws.
8 Fasten mounting plate to the housing using two countersunk-head screws.
Align lever so that the pin engages in the
corresponding slot of the coupling wheel,
taking into account the direction of rotation of the rotary actuator (see Fig. 15).
Attachment kit for AIR TORQUE 10000 Rotary Actuators (heavy-duty version)

Order no. | 1400-9992
---|---
1 | 6 × Countersunk-head screw ISO 10642 – M 5 × 12
2 | 1 × Mounting plate
3 | 1 × Hexagon screw ISO 4014 – M 6 × 55
4 | 1 × Disk spring DIN 2093 – A 12.5
5 | 1 × Coupling wheel
6 | 1 × Adapter
7 | 4 × Hexagon socket head screw ISO 4762 – M 5 × 12
8 | 5 × Disk spring DIN 2093 – B 10
9 | 1 × Housing
10 | 4 × Countersunk-head screw ISO 10642 – M 6 × 12
11 | 1 × Mounting plate
12 | 4 × Spacer bolt
13 | 2 × Adhesive label
14 | 1 × Adhesive label
15 | 1 × Pin
16 | 1 × Hexagon nut ISO 4035 – M 5 – A 4

Fig. 16
Electrical connection

For electrical installation, observe the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. In Germany, these are the VDE regulations and the accident prevention regulations of the employers’ liability insurance.

The following regulations apply to installation in hazardous areas: EN 60079-14:2008 Explosive atmospheres – Part 14: Electrical Installations, design, selection and erection (or VDE 0165 Part 1) and EN 61241-14:2004 Electrical Apparatus for Use in the Presence of Combustible Dust (or VDE 0165 Part 1).

Electrical connections in compliance with type of protection “d”

Connect the devices using suitable cable entries or conduit systems that comply with EN 60079-1:2007 Explosive Atmospheres – Part 1: Equipment Protection by Flameproof Enclosures “d”, Clauses 13.1 and 13.2, and for which a separate test certificate is available. Do not use cable entries and blanking plugs of simple construction.

Install the connecting cable properly so that it is protected against mechanical damage.

If the temperature at the inlet parts exceeds 70°C, use a temperature-resistant connecting cable.

Include the devices in the on-site equipotential bonding system.

Connecting cable

The power supply cable is connected through a cable entry 1 to screw terminals 2 and 3 underneath the enclosure cover (Fig. 2 and 3). For electrical installation, the electric connecting data (see “Technical Data”, page 5) must be observed.

The device must be mounted so that the cable entry 1 preferably faces down, or if this is not possible, aligned in the horizontal position.

It is recommended to use connecting cables with a conductor cross-section of 0.2 to 2.5 mm² and an external diameter of 5 to 8 mm are used.

Protect the conductor ends against splicing, e.g. by using wire-end ferrules.
Do not loosen enameled screws on the enclosure.

To prevent ignition of hazardous atmospheres, open circuits before removing cover. Keep cover tightly closed when in operation.

Degree of protection

The devices are protected against water and dust with an O-ring at the enclosure cover (see Fig. 19).

Before mounting the enclosure cover ② the O-ring ① must be checked for damage and, if necessary, changed (see also “Servicing of explosion-protected devices”, page 31).

The attached enclosure cover ② must be locked by unscrewing a hexagon socket head screw ③.

The required degree of protection IP 66 according to IEC 60529:1989 can be only guaranteed with installed enclosure cover, closed cable entry and proper installation of the connections.

When connecting to conduit systems use suitable conduit entry sealant to maintain the ingress protection.
Contacts

The devices are equipped either with one or two inductive proximity switches or two electric microswitches. For most applications, the contacts are adjusted to provide a signal when the actuator has reached one of its end positions. The switching point can also be adjusted to any position within the rotary range or travel range to signalize an intermediate position.

Switching point shift due to changes in temperature

The contacts and their actuating appliances are sensitive to changes in temperature. In order to ensure safe switching, the switching hysteresis between the switching position of the actuator and the switching point of the contact must be larger than the switching point shift due to changes in temperature. For this reason, when adjusting the contacts, the shift of the switching point must be compensated for with \( x \) turnings of the adjustment screw (see table “Adjustment data”).

<table>
<thead>
<tr>
<th>Adjustment data</th>
<th>Switching point shift ( \Delta T = 50 , \text{K} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle of rotation</td>
<td>Travel</td>
</tr>
<tr>
<td>( \leq 2^\circ )</td>
<td>( \leq 0.8 , \text{mm} )</td>
</tr>
<tr>
<td>Turning of the adjusting screw</td>
<td>( x = \frac{1}{16} )</td>
</tr>
</tbody>
</table>

| Turning of the adjusting screw | \( x = \frac{1}{16} \) |
Inductive proximity switches

Principle of operation
For devices with inductive proximity switches, the shaft ① has one or two adjustable metal tags ② (see Fig. 20).
When the metal tag ② is within the magnetic field of the proximity switch, the proximity switch is attenuated and the output has a high impedance (switching function “Contact open”).
When the metal tag ② leaves the magnetic field, the proximity switch is unattenuated and the output has low impedance (switching function “Contact closed”).

Adjusting the switching points
The metal tags ② of proximity switches that have been mounted by the manufacturer are adjusted so that the proximity switches are unattenuated in the switching positions of the control valve (switching function “Contact closed”).
The metal tags ② can be adjusted as follows to switching points between 0° and 100° with adjusting screws ③ using a screwdriver (blade 4.5 mm):
1. Unscrew enclosure cover ⑤ from the enclosure.
2. Move control valve to the desired switching position.
3. Turn adjusting screw ③, until the metal tag ② moves out of the magnetic field of the proximity switch and the output signal changes.
4. To compensate for the switching point shift due to changes in temperature, turn adjusting screw ③ by x turnings (see table “Adjustment data”, page 28) in the opposite direction.
5. Move control valve out of the switching position and check whether the output signal changes.
6. Move control valve to the switching position again and check the switching point.
7. Screw enclosure cover ⑤ onto the enclosure (see Fig. 21). Before mounting the enclosure cover ⑤ the O-ring ④ must be checked for damage and, if necessary, changed.
8. Lock attached enclosure cover ⑤ by unscrewing a hexagon socket head screw ⑥.

Fig. 20

Fig. 21
Electric microswitches

Principle of operation
For devices with two electric microswitches, the shaft ① has two adjustable cam disks ② (see Fig. 22).
Each cam disk ② actuates an electric microswitch by the roller on the switch lever.
The electric microswitches have a double-throw contact which can be used as make contact or break contact.

Adjusting the switching points
The cam disks ② can be adjusted to switching points between 0° and 100° with adjusting screws ③ using a screwdriver (blade 4.5 mm) as follows:
1. Unscrew enclosure ⑤ cover from the enclosure.
2. Move control valve to the desired switching position.
3. Turn adjusting screw ③ until the cam disk ② actuates the electric microswitch and the output signal changes.
4. To compensate for the switching point shift due to changes in temperature, turn adjusting screw ③ by x turnings (see table “Adjustment data”, page 28) in the opposite direction.
5. Move control valve out of the switching position and check whether the output signal changes.
6. Move control valve to the switching position again and check the switching point.
7. Screw enclosure cover ⑤ onto the enclosure (see Fig. 23). Before mounting the enclosure cover ⑤ the O-ring ④ must be checked for damage and, if necessary, changed.
8. Lock attached enclosure cover ⑤ by unscrewing a hexagon socket head screw ⑥.

Adjusting the switching points

Attaching the enclosure cover

Fig. 22

Fig. 23
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 an expert has inspected it according to explosion 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.

Equipment used in explosive gas atmospheres in ambient temperature ranges corresponding to temperature class T4 or T5 may be used in explosive dust atmospheres after servicing only if a new O-ring in the enclosure cover has been inserted (see “Degree of protection”, page 27).
(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 09 ATEX 1113 X

(4) Equipment: Limiting-signal transmitter, type 4747
(5) Manufacturer: SAMSON AG Mess- und Regeltechnik
(6) Address: Weismüllerstr. 3, 60314 Frankfurt am Main, Germany

(7) This equipment and any acceptable variation thereof 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 C09-19249.

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

(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:

\[\text{II 2G Ex d IIC T6, T5 and T4}\]
\[\text{II 2D Ex tD A21 IP66 T 80°C}\]

Zertifizierungssektor Explosionsschutz
By order:

(signature)

Dr.-Ing. M. Thedens
Oberregierungsrat

Braunschweig, November 20, 2009
EC-TYPE-EXAMINATION CERTIFICATE PTB 09 ATEX 1113 X

Description of equipment

The series 4747 limiting-signal transmitter are suited for attachment to single-acting or double-acting pneumatic or electric control valves. They are equipped with inductive or electric contacts. When an adjusted limit value is exceeded or not reached, particularly when one of the control valve's end positions is reached, the limiting-signal transmitter issues a limit signal, e.g. for transmission to an alarm or indicating unit.

Technical data

Limiting-signal transmitter version
4747-21001
4747-21011 / 4747-21012

Degree of protection IP 66
according to EN 60529

Operating values

\[ U_N = 8 \, \text{V DC}, \quad P_{\text{max}} = 4W \]
\[ U_N = 250 \, \text{V AC}, \quad I = 10 \, \text{A}, \quad P_{\text{max}} = 4W \]

Type code

- System identifier
- Limiting-signal transmitter
- Ex protection
- 210 Ex d acc. to EN 60079-1
- Type/limiting contact
- 01 Inductive
- 11 Mechanical – silver contact
- 12 Mechanical – gold contact

- No. of contacts
- 1 1 contact
- 2 2 contacts

- Electrical connection threads
- 1 M20 x 1.5
- 2 NPT ½”
(16) **Assessment and test report** PTB Ex 09-19249

(17) **Special conditions for safe use**

For repair of the flameproof joints due regard must be given to the structural specifications provided by the manufacturer. Repair on the basis of the values in tables 1 and 2 of EN 60079-1 is not accepted.

**Notes for manufacturing, installation and operation**

Limiting-signal transmitter used in explosive gas atmospheres at ambient temperatures that correspond to temperature classes T4 or T5 may be used in explosive dust atmospheres after maintenance only if a new O-ring has been inserted.

**Connection conditions**

1. The type 4747 limiting-signal transmitter is to be connected with suitable cable glands or conduit systems that meet the requirements stipulated in EN 60079-1, sections 13.1 and 13.2, and for which a separate test certificate has been issued.

2. Cable glands (high-strength cable glands) and blanking plugs of a simple design must not be used.

3. Any openings of the type 4747 limiting-signal transmitter that are not used must be sealed as specified in EN 60079-1, section 11.9.

4. The connecting cable of the type 4747 limiting-signal transmitter must be fixed and routed so that it will be adequately protected against mechanical damage.

5. If the temperature at the input parts exceeds 70 °C, temperature-resistant connecting cables have to be used.

6. The type 4747 limiting-signal transmitter has to be included in the local equipotential bonding system.

These notes and instructions have to accompany each device in an adequate form.

Components attached or installed (terminal compartments, bushings, Ex-type cable glands, connectors) must be of a technical standard that complies as a minimum with the specifications on the cover sheet, and they must have a separate examination certificate. The operating conditions specified in the component certificates must be complied with!
Ambient temperature

The type 4747 limiting-signal transmitter can be operated within the following range:
In explosive gas atmospheres:
in temperature class T6 at ambient temperatures between -55 °C and +65 °C,
in temperature class T5 at ambient temperatures between -55 °C and +80 °C, and
in temperature class T4 at ambient temperatures between -55 °C and +85 °C.
In explosive dust atmospheres:
At a maximum surface temperature of 80 °C,
The maximum permissible ambient temperatures are -55 °C to +65 °C.

(18) Essential health and safety requirements
Met by compliance with the afore-mentioned Standards.

Zertifizierungssektor Explosionsschutz
By order:

(signature)

Dr.-Ing. M. Theodors

Braunschweig, 20 November 2009

4 pages, correct and complete as regards content.
By order:

[Signature]

Dipl.-Phys. U. Vökel
May 12, 2010

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
CERTIFICATE OF COMPLIANCE
HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

**4747-230ab0c. Limit Switch.**
XP/I/1/ABCD/T6 Ta = -50°C to +65°C; T5 Ta = -50°C to +80°C; T4 Ta = -50°C to +85°C
DIP/II,III/1/EFG/T6 Ta = -50°C to +65°C; T5 Ta = -50°C to +80°C; T4 Ta = -50°C to +85°C
I/1/AEx d/IIIC/T6 Ta = -50°C to +65°C; T5 Ta = -50°C to +80°C; T4 Ta = -50°C to +85°C
Type 4X, IP66
a = Design/switching elements 01, 02, 03, 04, 05, 06, 07, 08, 11, 12, 13, 14, 15 or 16.
b = Number of switching elements 1 or 2.
c = Field wiring entries 1 or 2.

Special Conditions of Use:
1. Type 4747 Limit Switches marked with the 18 inch conduit seal requirement will be marked with a -55°C low ambient temperature.
2. Type 4747 Limit Switches configured with the Pepperl-Fuchs NBB2-F1-US inductive sensor will be marked with a -25°C low ambient temperature.

Equipment Ratings:

Explosionproof for use in Class I, Division 1, Groups A, B, C and D; Dust-ignitionproof for use in Class II/III, Division 1, Groups E, F, and G and Flameproof for Class I, Zone 1, AEx d IIC hazardous (classified) locations, indoors and outdoors (Type 4X, IP66).

FM Approved for:
Samson AG
Frankfurt, Germany

FM Approvals HLC 6/07
This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

- Class 3600 1998
- Class 3615 2006
- Class 3810 2005
- ANSI/ISA-60079-0 2005
- ANSI/ISA-60079-1 2005
- ANSI/NEMA 250 2003
- ANSI/IEC 60529 2004

Original Project ID: 3037212

Approval Granted: March 8, 2011

Subsequent Revision Reports / Date Approval Amended

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FM Approvals LLC

J.E. Marquedant
Group Manager, Electrical

8 March 2011

Date
(Specifications subject to change without notice.)