

# MOUNTING AND OPERATING INSTRUCTIONS



## EB 4747 EN

Translation of original instructions



## Type 4747 Limit Switch

Edition January 2025

**CE** Ex  
certified

## Note on these mounting and operating instructions

These mounting and operating instructions assist you in mounting and operating the device safely. The instructions are binding for handling SAMSON devices. The images shown in these instructions are for illustration purposes only. The actual product may vary.

- For the safe and proper use of these instructions, read them carefully and keep them for later reference.
- If you have any questions about these instructions, contact SAMSON's After-sales Service (aftersaleservice@samsongroup.com).



Documents relating to the device, such as the mounting and operating instructions, are available on our website at [www.samsongroup.com](http://www.samsongroup.com) > **Downloads > Documentation.**

### Definition of signal words

#### **DANGER**

*Hazardous situations which, if not avoided, will result in death or serious injury*

#### **WARNING**

*Hazardous situations which, if not avoided, could result in death or serious injury*

#### **NOTICE**

*Property damage message or malfunction*

#### **Note**

*Additional information*

#### **Tip**

*Recommended action*

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# 1 Safety instructions and measures

## Intended use

The SAMSON Type 4747 Limit Switch issues an electric signal when the valve travel exceeds or falls below an adjusted limit. The signal is suitable for switching control signals, issuing visual and audible alarms or for connection to central control or alarm systems. The device is designed to operate under exactly defined conditions (e.g. temperature). Therefore, operators must ensure that the limit switch is only used in applications where the operating conditions correspond to the technical data. In case operators intend to use the limit switch in applications or conditions other than those specified, contact SAMSON.

SAMSON does not assume any liability for damage resulting from the failure to use the device for its intended purpose or for damage caused by external forces or any other external factors.

➔ Refer to the technical data for limits and fields of application as well as possible uses.

## Reasonably foreseeable misuse

The Type 4747 Limit Switch is **not** suitable for the following applications:

- Use outside the limits defined during sizing and by the technical data

Furthermore, the following activities do not comply with the intended use:

- Use of non-original spare parts
- Performing maintenance activities not described in these instructions

## Qualifications of operating personnel

The limit switch must be mounted, started up and serviced by fully trained and qualified personnel only; the accepted industry codes and practices must be observed. According to these mounting and operating instructions, trained personnel is referred 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 must 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.

## Safety instructions and measures

### Personal protective equipment

No personal protective equipment is required for the direct handling of the limit switch. Work on the control valve may be necessary when mounting or removing the device.

- Observe the requirements for personal protective equipment specified in the valve documentation.
- Check with the plant operator for details on further protective equipment.

### Revisions and other modifications

Revisions, conversions or other modifications of the product are not authorized by SAMSON. They are performed at the user's own risk and may lead to safety hazards, for example. Furthermore, the product may no longer meet the requirements for its intended use.

### Warning against residual hazards

To avoid personal injury or property damage, plant operators and operating personnel must prevent hazards that could be caused in the control valve by the process medium, the operating pressure, the signal pressure or by moving parts by taking appropriate precautions. Plant operators and operating personnel must observe all hazard statements, warnings and caution notes in these mounting and operating instructions, especially for installation, start-up and service work.

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

### Responsibilities of the operator

Operators are responsible for proper use and compliance with the safety regulations. Operators are obliged to provide these mounting and operating instructions to the operating personnel and to instruct them in proper operation. Furthermore, operators must ensure that operating personnel or third parties are not exposed to any danger.

### Responsibilities of operating personnel

Operating personnel must read and understand these mounting and operating instructions as well as the specified hazard statements, warnings and caution notes. Furthermore, the operating personnel must be familiar with the applicable health, safety and accident prevention regulations and comply with them.

### Referenced standards, directives and regulations

Devices with a CE marking fulfill the following requirements of the Directives:

- Type 4747-0: 2014/30/EU, 2014/35/EU, 2011/65/EU
- Types 4747-110, -210, -810: 2014/30/EU, 2014/34/EU, 2011/65/EU

### Referenced documentation

The following documents apply in addition to these mounting and operating instructions:

- The mounting and operating instructions of the components on which the limit switch is mounted (valve, actuator, valve accessories etc.).

## 1.1 Notes on possible severe personal injury

### DANGER

#### **Risk of fatal injury due to the formation of an explosive atmosphere.**

Incorrect installation, operation or maintenance of the limit switch in potentially explosive atmospheres may lead to ignition of the atmosphere and ultimately to death, even with a harmless supply voltage.

- For mounting and electrical installation in hazardous areas, observe the explosion protection approvals as well as the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. EN 60079-14 applies in Europe.
- Do not connect the electrical supply before mounting is completed.
- Installation, operation or maintenance of the limit switch is to be performed only by personnel with qualifications according to Clause 4.5 of IEC 60079-14 who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.
- Do not open devices with flameproof enclosures while they are energized.

#### **Risk of fatal injury as a result of electrostatic discharge at the device.**

An electric spark generated by electrostatic discharge may lead to ignition of a potentially explosive atmosphere and cause fatal injuries.

- In hazardous areas (with type of protection Ex t), mount the device in such a way that electrostatic charging cannot take place.

## 1.2 Notes on possible personal injury

### WARNING

**Crush hazard arising from moving parts on the valve and actuator.**

The control valves contain moving parts (actuator and plug stem), which can injure hands or fingers if inserted into the valve.

- Do not touch any moving valve parts while the control valve is in operation.
- While performing any mounting or installation on the valve or actuator, disconnect and lock the pneumatic air supply as well as the control signal.

## 1.3 Notes on possible property damage

### NOTICE

**An incorrect electrical power supply will damage the limit switch.**

The Type 4747 Limit Switch is designed to operate under exactly defined electrical conditions.

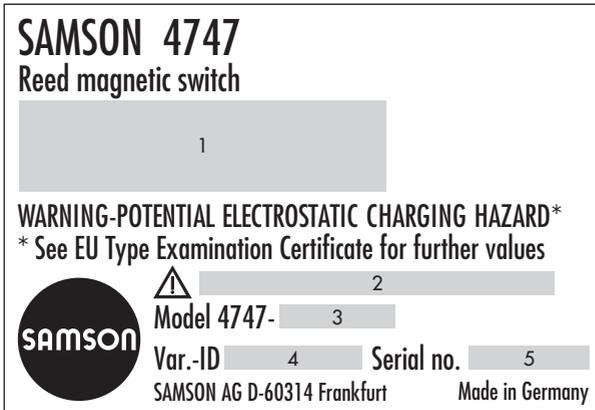
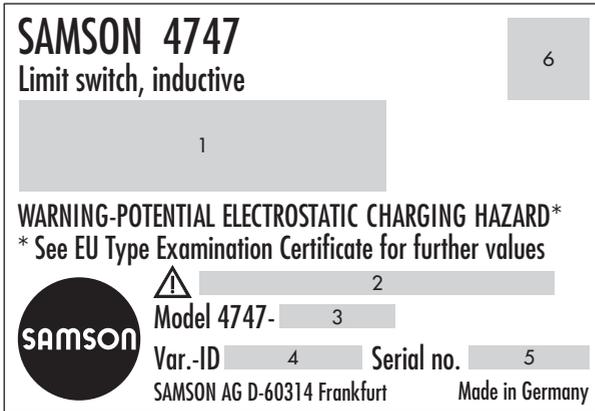
- Only connect the limit switch to a suitable power supply after mounting is completed.

**Risk of malfunction due to incorrect mounting parts/accessories or incorrect assignment of lever and pin position.**

- Only use mounting parts/accessories listed in these mounting and operating instructions to mount the limit switch.
- Observe the type of attachment.
- Observe the assignment between lever and pin position.

## 2 Markings on the device

### 2.1 Nameplate



- 1 Type of protection for explosion-protected devices
- 2 Temperature limits in the test certificates for explosion-protected devices
- 3 Model number
- 4 Configuration ID
- 5 Serial number
- 6 CE marking

## 2.2 Article code

Limit switch		Type 4747-	x	x	x	x	x	x	x	x	x	x	0	x	x	x	x
Type of protection																	
Without			0	0	0												
ATEX	II 2G Ex ia IIC T6 Gb		1	1	0												
	II 2D Ex ia IIIC T85°C Db IP66																
TR CMU 1055	II 2D Ex tb IIIC T85°C Db IP66		1	1	6												
	II 2D Ex tb IIIC T85 °C Db IP66																
ATEX	II 2 G Ex db IIC T6...T4 Gb		2	1	0												
	II 2 D Ex tb IIIC T80 °C Db																
IECEX	Ex db IIC T6...T4 Gb		2	1	1												
	Ex tb IIIC T80 °C Db																
CCC Ex	Ex d IIC T4 ~ T6 Gb		2	1	2												
	Ex tD A21 IP66 T80°C																
NEPSI	Ex d IIC T4~T6 Gb		2	1	2												
	DIP A21 Ta, T4~T6																
TR CMU 1055	II 2G Ex db IIC T6...T4 Gb		2	1	6												
	II 2D Ex tb IIIC T80 °C Db																
FM	XP/I/1/ABCD/T6		2	3	0												
	DIP/II,III/EFG/T6 I/1/AEx d/IIC/T6 Type 4X, IP66																
CSA	Class I, Div 1 + 2, Groups A, B, C, D		2	3	1												
	Class II, Div 1 + 2, Groups E, F, G Class III Class I, Zone 1, Ex d IIC, T6...T4 Class II, Zone 21, Ex tb IIIC T85°C Type 4X, IP66																
ATEX	II 3G Ex ic IIC T6 Gc		8	1	0												
	II 3G Ex nAc II T6 Gc II 3D Ex tc IIIC T85°C Dc IP66																
TR CMU 1055	II 3G Ex ic IIC T6 Gc		8	1	6												
	II 3G Ex nAc II T6 Gc II 3D Ex tc IIIC T85 °C Dc IP66																

## Markings on the device

Limit switch	Type 4747- x x x x x x x x x x 0 x x x x x													
<b>Limit contact</b>														
Inductive proximity sensor NCB2-V3-N0 (-25 to +80 °C)	0	1												
Microswitches with silver contacts (-40 to +80 °C)	1	1												
Microswitches with gold contacts (-40 to +80 °C)	1	2												
<b>Number of contacts</b>														
1			1											
2			2											
<b>Switching angle</b>														
< 100° adjustable				0										
<b>Electrical connection</b>														
M20x1.5					1									
½ NPT					2									
<b>Degree of protection</b>														
IP 66						0								
<b>Ambient temperature <sup>1)</sup></b>														
-25 to +80 °C (+65 °C in T6)							0							
-40 to +80 °C (+65 °C in T6)								1						
-25 to +70 °C (+65 °C in T6)									2					
<b>Material</b>														
Aluminum										0				
Stainless steel											1			
<b>Safety approval</b>														
Without											0			
<b>Special version</b>														
Without												0	0	0

<sup>1)</sup> The maximum permissible ambient temperature of the limit switch depends on the permissible ambient temperature of the components, type of protection and temperature class.

### 3 Design and principle of operation

The limit switch is equipped with a maximum of two inductive proximity switches or two electric microswitches.

For most applications the contacts are adjusted to issue a signal when the actuator has reached one of its end positions. The switching point can be adjusted to any position within the opening angle or travel range to signalize intermediate positions.

The shaft (4) of the limit switch is connected to the actuator by a follower pin. The shaft has a maximum of two metal tags or cam disks (3).

#### 3.1 Type 4747-xxx01 Inductive Limit Switch

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##### **i** Note

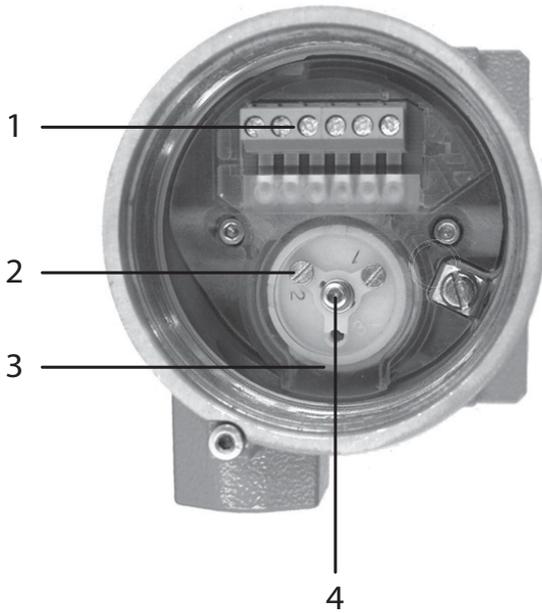
*A NAMUR signal is required to control the inductive contacts (see Chapter 6.6).*

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The limit switch has adjustable metal tags (3) on the shaft (4). When the tag (3) is inside the magnetic field of the NAMUR proximity switch, the proximity switch is attenuated and the output has a high impedance (switching function "Contact open"). When the tag (3) leaves the magnetic field, the NAMUR proximity switch is unattenuated and the output has a low impedance (switching function "Contact closed"). The tag (3) can be adjusted to a switching point between 0 and 100° at the adjustment screw (2).

#### 3.2 Type 4747-xxx1x Electric Limit Switch

The limit switch has a maximum of two adjustable metal cam disks (3) on the shaft (1). The cam disk (3) activates the electric microswitch over the roller on the switch lever. The cam disks (3) can be adjusted to a switching point between 0 and 100° at the adjustment screws (2).



- 1 Terminal block
- 2 Adjustment screw
- 3 Cam disk or metal tag
- 4 Shaft

**Fig. 1:** *Type 4747 Limit Switch*

### 3.3 Accessories

**Table 1:** *Cable glands*

Designation	Order no.
M20x1.5 <b>Ex d</b> cable gland, made of brass, with O-ring, for non-armored cable (6.5 to 14 mm cable diameter)	8808-0200
½ NPT <b>Ex d</b> cable gland, made of brass, with O-ring, for non-armored cable (6.5 to 14 mm cable diameter)	8808-2010
M20x1.5 <b>Ex e</b> cable gland, made of polyamide (black), with O-ring	8808-0178 <sup>1)</sup>
M20x1.5 cable gland, made of brass, with O-ring	1890-4875 <sup>1)</sup>
M20x1.5 cable gland, made of brass (blue), with O-ring	1890-4876 <sup>1)</sup>
M20x1.5 cable gland, made of polyamide (black), without O-ring	8808-1011 <sup>1)</sup>
M20x1.5 cable gland, made of polyamide (blue), without O-ring	8808-1012 <sup>1)</sup>
O-ring 18x2	8421-0067

<sup>1)</sup> The cable gland is **not** suitable for Ex d instrumentation.

**Table 2:** *Mounting kits*

Designation	Order no.
Attachment according to VDI/VDE 3845, level 2, heavy-duty version	1400-9974
Attachment according to VDI/VDE 3845, level 1, light version (AA1 to AA4 size)	1400-7473
Attachment according to VDI/VDE 3845, level 1, heavy-duty version (AA1 to AA4 size)	1400-9384
Attachment according to VDI/VDE 3845, level 1, heavy-duty version (AA5 size)	1400-9992
Attachment for VETEC S 160/R, heavy-duty version	1400-9385
Mounting kit for Type 3277 Linear Actuators (240, 350, 700 cm <sup>2</sup> )	1400-7471
Mounting kit for Type 3271 Linear Actuators (120 cm <sup>2</sup> )	1400-7472
Mounting kit for SED diaphragm valves (both mounting kits are required)	1402-1093 1400-7472
Mounting kit for control valves with NAMUR rib or attachment to valves with rod-type yokes according to IEC 60534-6 (20 to 35 mm rod diameter)	1400-7468
Mounting kit for Type 3510 Micro-flow Valve with 60 or 120 cm <sup>2</sup> actuator area	1402-0479

### 3.4 Travel tables

**i Note**

The M lever is included in the scope of delivery.

S, L, XL levers for attachment according to IEC 60534-6 (NAMUR rib) are available as accessories in the mounting kits.

#### Direct attachment to Type 3277-5 and Type 3277 Actuators

Actuator area [cm <sup>2</sup> ]	Rated travel [mm]	Required lever	Assigned pin position
120	7.5	M	25
120/175/240/350	15	M	35
355/700/750	30	M	50

#### Attachment according to IEC 60534-6 (NAMUR rib)

SAMSON valves with Type 3271 Actuator		Other control valves	Required lever	Assigned pin position
Actuator area [cm <sup>2</sup> ]	Rated travel [mm]	Max. travel [mm]		
60 and 120 with Type 3510 Valve	7.5	17	S	17
120	7.5	25	M	25
120/175/240/350	15	35	M	35
700/750	7.5	35	M	35
355/700/750	15 and 30	50	M	50
1000/1400/2800	30	70	L	70
	60	100	L	100
1400/2800	120	200	XL	200

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

Opening angle	Required lever	Assigned pin position
0 to 100°	M	90°

### 3.5 Technical data

<b>Type 4747-xxx0 Inductive Limit Switch</b> The technical data for the explosion-protected devices may be restricted by the limits specified in the test certificates. → Refer to test certificates in the appendix.	
Control circuit	Switching amplifier according to EN 60947-5-6: 2000
Inductive proximity sensor	NCB2-V3-NO
Switching element	NAMUR NC contact
Contacts	1 or 2
Permissible ambient temperature	-25 to +80 °C
Electrical connection	M20x1.5 or ½ NPT
Degree of protection	IP66
Weight	Approx. 0.65 kg
<b>Type 4747-xxx1 Electric Limit Switch · Specifications apply to silver and gold-plated contacts</b>	
Switching element	Electric limit switch: changeover contact/SPDT (single-pole/double-throw type)
Permissible load	AC voltage
	250 V/10 A
Contacts	2
Permissible ambient temperature <sup>1)</sup>	-40 to +80 °C
Electrical connection	M20x1.5 or ½ NPT
Degree of protection	IP66
Weight	Approx. 0.65 kg
<b>Materials</b>	
Enclosure and cover	Aluminum, powder coated, gray beige RAL 1019 or stainless steel 1.4409
External parts	Stainless steel 1.4301/1.4310/1.4409
Conformity	<b>CE</b>

## Design and principle of operation

Electric data for connection to intrinsically safe current circuits (Ex ia) The listed technical data may be restricted by the limits specified in the test certificates. → Refer to test certificates in the appendix.			
Limit Switch		Type 4747-11x01	
Limit contacts		Inductive	
Output voltage <sup>1)</sup>	U <sub>i</sub>	16 V	16 V
Output current <sup>1)</sup>	I <sub>i</sub>	25 mA	52 mA
Power dissipation <sup>1)</sup>	P <sub>i</sub>	64 mW	169 mW
Outer capacitance <sup>1)</sup>	C <sub>i</sub>	100 nF	
Outer inductance <sup>1)</sup>	L <sub>i</sub>	100 µH	
Permissible ambient temperature		-25 to +80 °C	-25 to +80 °C

<sup>1)</sup> Permissible maximum values when connected to a certified intrinsically safe circuit.

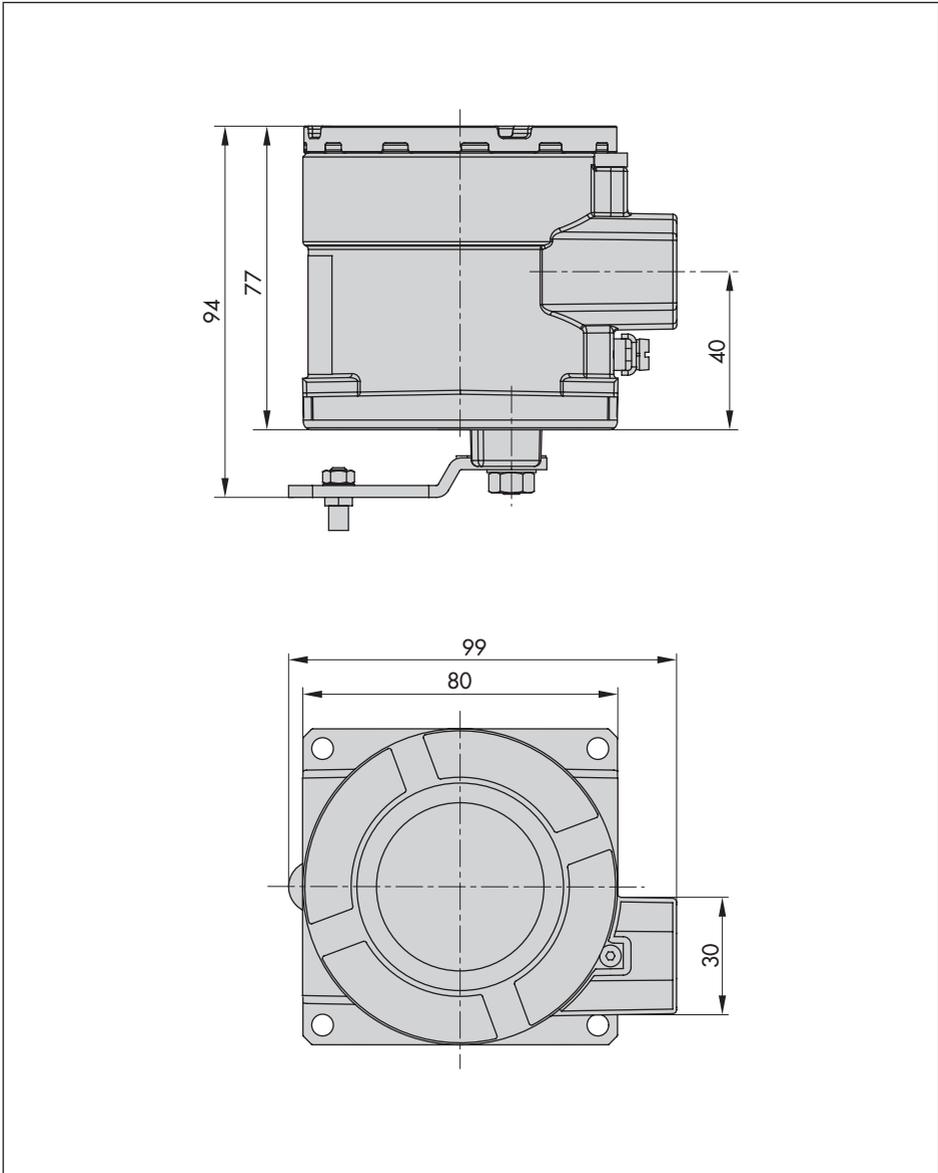
## 3.6 Summary of explosion protection approvals

Type	Certification	Type of protection/comments
4747-110	<b>ATEX</b> <sup>1)</sup> Number PTB 12 ATEX 2020 Date 2013-04-26	II 2G Ex ia IIC T6 Gb II 2D Ex ia IIIC T85 °C Db IP66 II 2D Ex tb IIIC T85 °C Db IP66
4747-116	<b>TR CMU 1055</b> Number ZETC/36/2021 Date 2021-07-26 Valid until 2024-07-25	II 2G Ex ia IIC T6 Gb II 2D Ex ia IIIC T85 °C Db IP66 II 2D Ex tb IIIC T85 °C Db IP66
4747-210	<b>ATEX</b> <sup>1)</sup> Number KIWA 16ATEX0052 X Date 2018-10-18	II 2 G Ex db IIC T6...T4 Gb II 2D Ex tb IIIC T80 °C Db
4747-211	<b>IECEX</b> Number KIWA 16.0026X Date 2018-10-18	Ex db IIC T6...T4 Gb Ex tb IIIC T80 °C Db
4747-212	<b>CCC Ex</b> Number 2020032231503131 Date 2020-11-04 Valid until 2025-11-03	Ex d IIC T4 ~ T6 Gb Ex tD A21 IP66 T80 °C
	<b>NEPSI</b> Number GYJ20.1056X Date 2020-02-12 Valid until 2025-01-25	Ex d IIC T4~T6 Gb DIP A21 Ta, T4~T6
4747-216	<b>TR CMU 1055</b> Number ZETC/36/2021 Date 2021-07-26 Valid until 2024-07-25	II 2G Ex db IIC T6...T4 Gb II 2D Ex tb IIIC T80 °C Db

Type	Certification	Type of protection/comments
4747-230	<b>FM</b> Number 3037212 Date 2011-03-08	XP/I/1/ABCD/T6 DIP/II,III/EFG/T6 I/1/AEx d/IIC/T6 Type 4X, IP66
4747-231	<b>CSA</b> Number 70004607 Date 2016-06-02	Class I, Div 1+2, Groups A, B, C, D Class II, Div 1+2, Groups E, F, G Class III Class I, Zone 1, Ex d IIC, T6...T4 Class II, Zone 21, Ex tb IIIC T85°C Type 4X, IP66
4747-810	<b>ATEX</b> <sup>1)</sup> Number PTB 12 ATEX 2020 Date 2013-04-26	II 3G Ex ic IIC T6 Gc II 3G Ex nAc II T6 Gc II 3D Ex tc IIIC T85°C Dc IP66
4747-816	<b>TR CMU 1055</b> Number ZETC/36/2021 Date 2021-07-26 Valid until 2024-07-25	II 3G Ex ic IIC T6 Gc II 3G Ex nAc II T6 Gc II 3D Ex tc IIIC T85 °C Dc IP66

<sup>1)</sup> EU type examination certificate

### 3.7 Dimensions in mm



## 4 Measures for preparation

After receiving the shipment, proceed as follows:

1. Check the scope of delivery. Compare the shipment received with the delivery note.
2. Check the shipment for transportation damage. Report any transportation damage.

### 4.1 Unpacking

#### **i** Note

*Do not remove the packaging if the limit switch is to be transported to another location or kept in storage.*

Before mounting the limit switch, proceed as follows:

1. Remove the packaging from the limit switch.
2. Dispose of the packaging in accordance with the valid regulations.

### 4.2 Transporting

→ Pack the limit switch properly to comply with terms of transportation.

#### Transport instructions

- Protect the limit switch against external influences (e.g. impact).
- Protect the limit switch against moisture and dirt.

- Observe transport temperature depending on the permissible ambient temperature (see technical data in Chapter 3.5).

### 4.3 Storage

#### **!** NOTICE

***Risk of damage to the limit switch due to improper storage.***

*Observe the storage instructions. Contact SAMSON, if need be.*

#### Storage instructions

- Protect the limit switch against external influences (e.g. impact, shocks, vibration).
- Do not damage the corrosion protection (coating).
- Protect the limit switch against moisture and dirt. In damp spaces, prevent condensation. If necessary, use a drying agent or heating.
- Observe storage temperature depending on the permissible ambient temperature (see technical data in Chapter 3.5).

## 5 Mounting

The limit switch is suitable for the following types of attachment:

- Direct attachment to SAMSON Type 3277 Actuator
- Attachment to actuators according to IEC 60534-6 (NAMUR rib)

## Mounting

- Attachment to Type 3510 Micro-flow Valve
- Attachment according to VDI/VDE 3845 to rotary actuators

### 5.1 Mounting orientation

Any mounting position may be used. The following applies concerning the installation:

- ➔ Install the limit switch in such a way that the M20x1.5 cable gland faces downward (in cases where this is not possible, mount it in the horizontal position).
- ➔ On mounting, make sure that 300 mm or more clearance is kept above the enclosure cover.

### 5.2 Lever and pin position

#### **NOTICE**

**Risk of malfunction due to incorrect mounting parts/accessories or incorrect assignment of lever and pin position.**

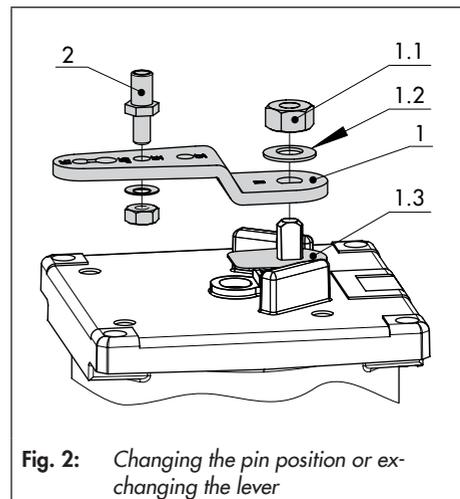
Only use mounting parts/accessories listed in these mounting and operating instructions to mount the limit switch. Observe the type of attachment.

Observe the assignment between lever and pin position.

The limit switch is adapted to the actuator and to the rated travel by the lever on the bottom of the limit switch and the pin inserted into the lever. The travel tables (Chapter 3.4 on page 16) show the maximum adjustment range at the limit switch.

The travel that can be implemented at the valve is additionally restricted by the required compression of the actuator springs. If a pin position other than position **35** with the standard **M** lever is required or a different lever size is required, proceed as follows (see Fig. 2):

1. Place the lever (1) in mid-position and hold it in place. Unthread the nut (1.1) and remove the lever together with the disk spring (1.2) from the shaft.
  - ➔ Do not remove the tab washer (1.3).
2. Remove the follower pin (2) from its pin position and move it to the hole for the recommended pin position (according to travel tables on page 16) and screw tight. Only use the longer follower pin included in the mounting kit.
3. Place the lever (1) on the shaft of the limit switch and fasten it tight using the disk spring (1.2) and nut (1.1).



**Fig. 2:** Changing the pin position or exchanging the lever

### 5.3 Direct attachment to Type 3277 and Type 3277-5 Actuators

→ See Fig. 3.

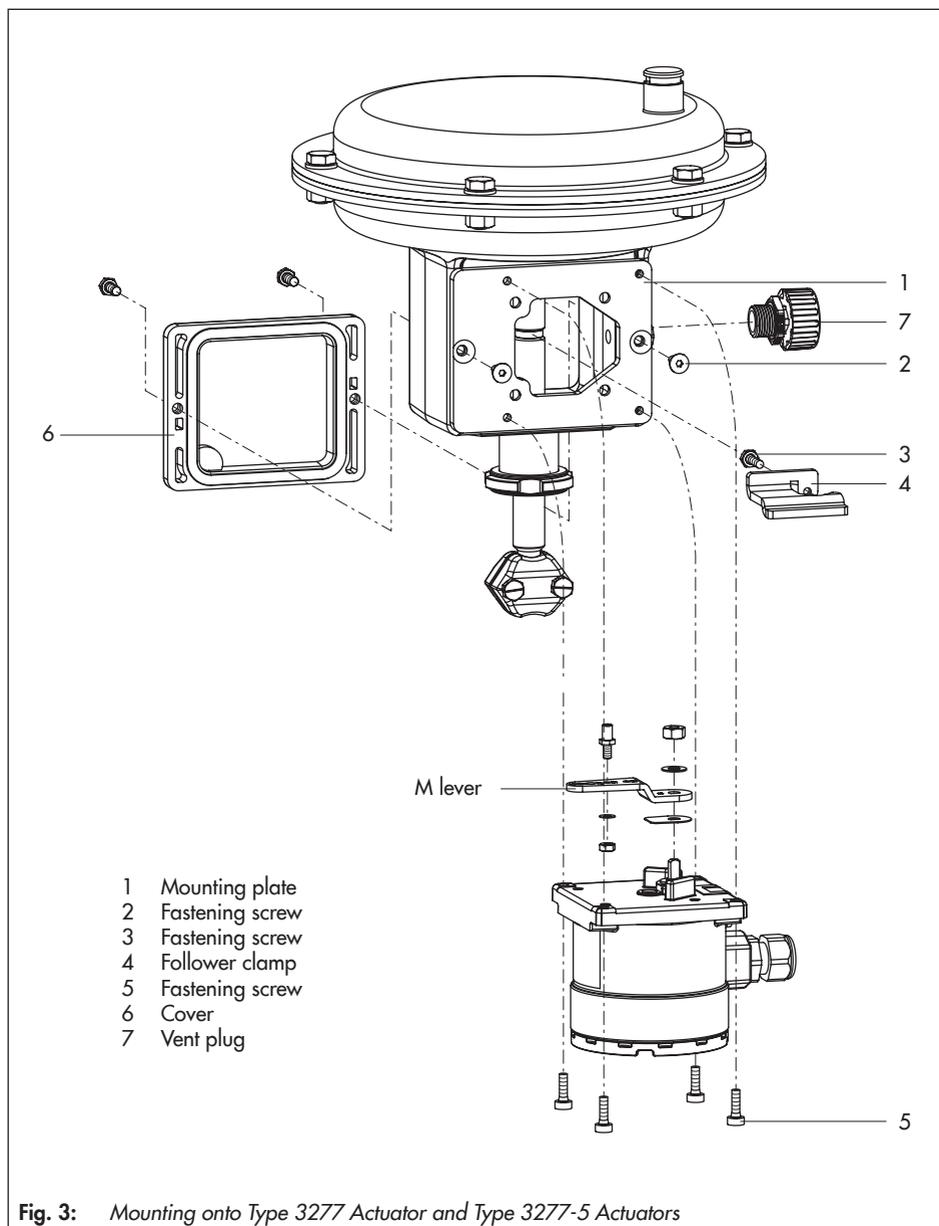
→ Required mounting parts and accessories:  
Chapter 3.3 on page 15.

1. Place follower clamp (4) on the actuator stem, align it and screw tight so that the fastening screw (3) is located in the groove of the actuator stem.
2. Fasten the mounting plate (1) onto the actuator yoke using both fastening screws (2).
3. Check the pin position of the follower pin (2) on the lever (1). Refer to travel tables for type of attachment. If necessary, change the pin position (see Chapter 5.2).
4. Screw the stop screw into the enclosure cover and unscrew the cover.
5. Place the limit switch onto the mounting plate so that the follower pin rests on the top of the follower clamp (4). The lever must rest on the follower clamp with spring force. Fasten the limit switch onto the actuator yoke using the four fastening screws (5).
6. Mount cover (6) on the other side. Make sure that the vent plug faces downward (in cases where this is not possible, mount it in the horizontal position) when the control valve is installed to allow any

condensed water that collects to drain off.

7. For Type 3277 Linear Actuators with "actuator stem retracts" fail-safe action, screw a vent plug (7) into the connection at the side of the yoke.
8. Mount the enclosure cover. Check the O-ring for damage and replace it, if necessary.
9. Lock the enclosure cover by unscrewing the stop screw.

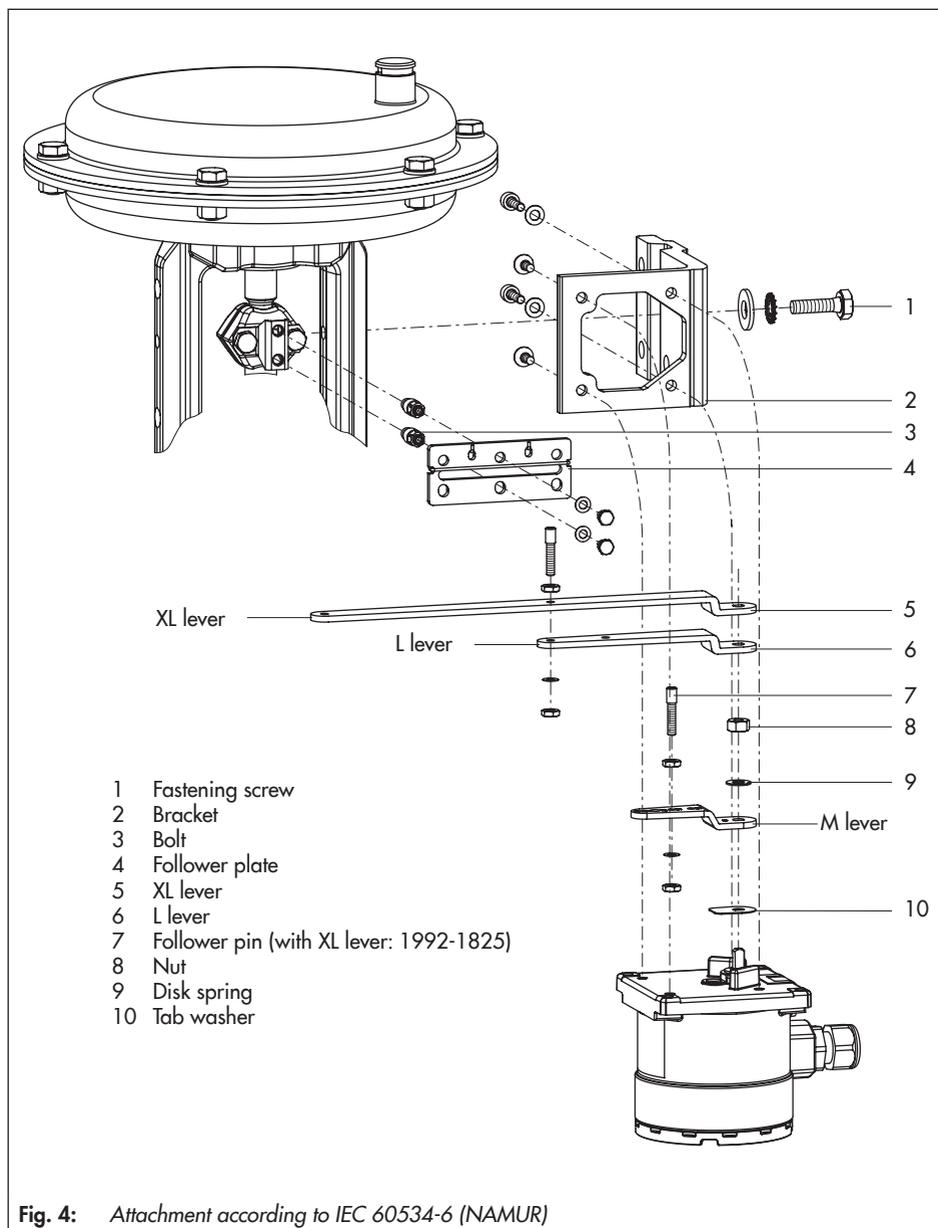
## Mounting



## 5.4 Attachment according to IEC 60534-6 (NAMUR rib)

- See Fig. 4.
  - Required mounting parts and accessories:  
Chapter 3.3 on page 15.
1. Check the pin position of the follower pin (2) on the lever (1). Refer to travel tables for type of attachment. If necessary, change the pin position (see Chapter 5.2).
  2. Screw the stop screw into the enclosure cover and unscrew the cover.
  3. Fasten the limit switch on the bracket (2).
  4. Screw the two bolts (3) to the bracket of the stem connector, place the follower plate (4) on top and use the screws for fastening.
  5. Place the bracket with limit switch on the NAMUR rib of the valve in such a manner that the follower pin (7) rests in the slot of the follower plate (4).
  6. Align the middle of the bracket to the 50 % marking on the travel indicator scale and fasten it using its screw (1) onto the valve.

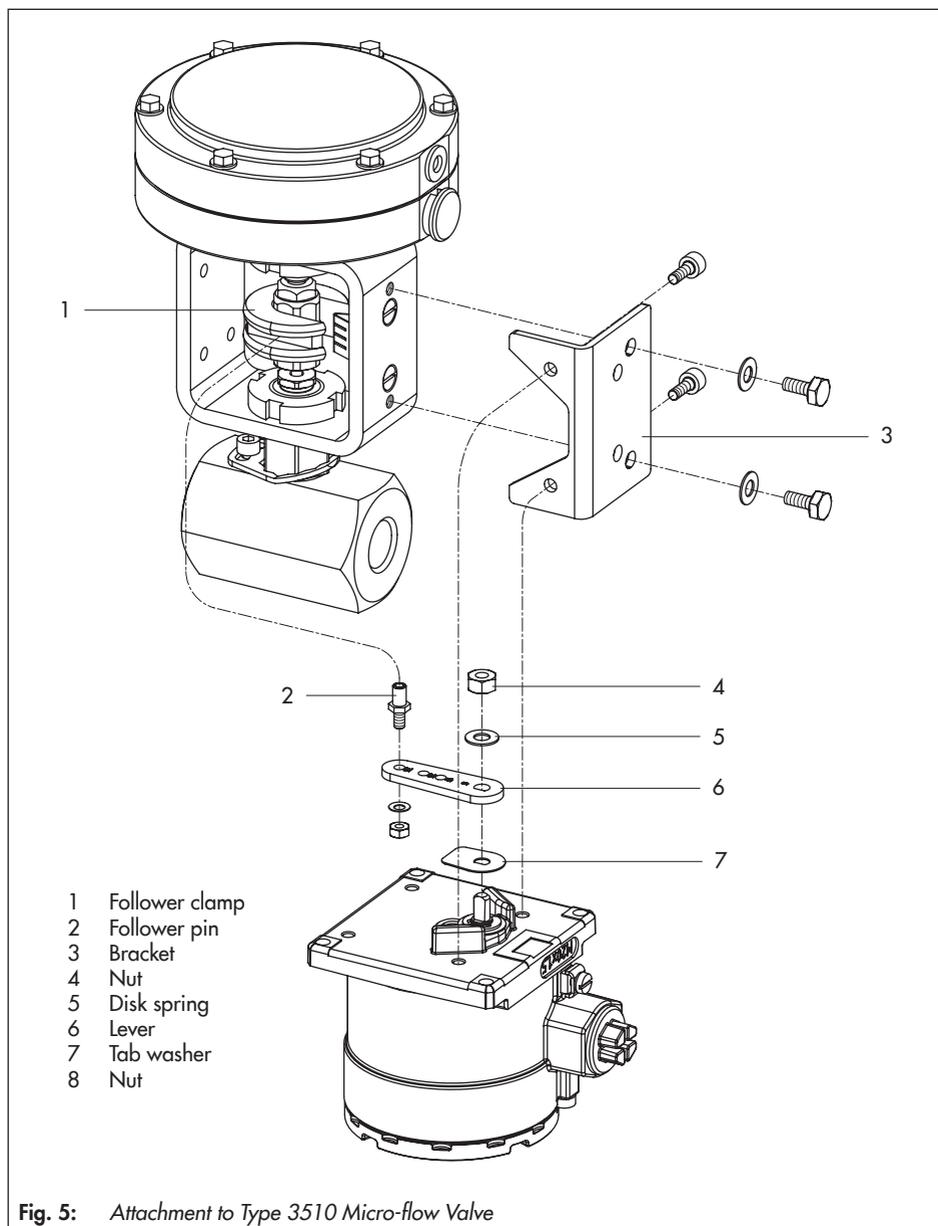
## Mounting



## 5.5 Attachment to Type 3510 Micro-flow Valve

- See Fig. 5.
- Required mounting parts and accessories:  
Chapter 3.3 on page 15.
- 1. Adapt the mounting position as described in Chapter 5.2.
- Select the S lever (6) from the accessories and mount it onto the limit switch.
- Screw the follower pin into the pin position 17.
- 2. Fasten the limit switch on the bracket (3).
- 3. Place follower clamp (1) on the valve stem connector, align at a right angle and screw tight.
- 4. Position the bracket (3) with the limit switch on the valve yoke and screw tight, making sure the follower pin (2) slides into the groove of the follower clamp (1).

## Mounting



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

### 5.6.1 Light version

→ See Fig. 6.

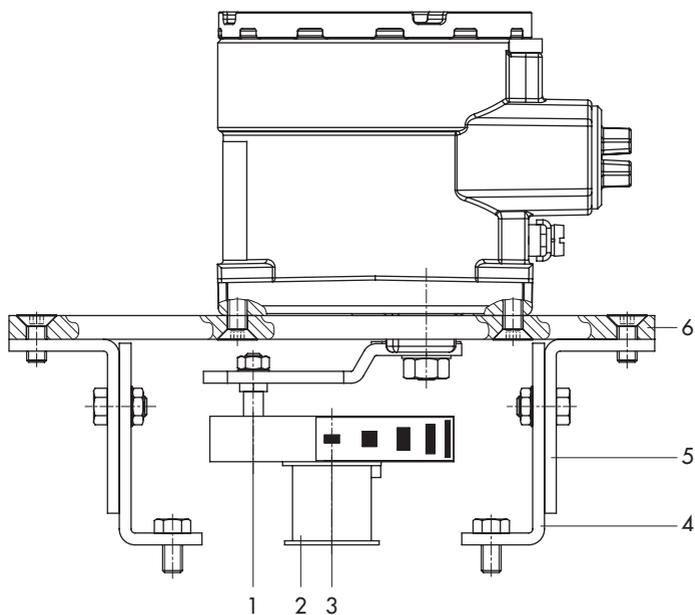
→ Required mounting parts and accessories:

Chapter 3.3 on page 15.

1. Place follower clamp (2) on the slotted actuator shaft or spacer.
2. Place coupling wheel (3) with flat side facing the actuator on the follower clamp (2). Align slot so that it matches the direction of rotation when the valve is in its closed position.
3. Fasten the coupling wheel and follower clamp tightly onto the actuator shaft using screw and disk spring.
4. Fasten the bottom pair of brackets (4) with the bends pointing either facing to the inside (80 mm) or to the outside (130 mm) (depending on the actuator size). Position the top pair of brackets (5) and fasten.
5. Unscrew the standard follower pin from the limit switch's M lever (1). Use the metal follower pin ( $\varnothing$  5 mm) included in the mounting kit and screw tight into the hole for pin position 90°.
6. Fasten the limit switch onto the mounting plate (6).
7. Place the limit switch together with the mounting plate on the top bracket (5)

and screw it tight. Taking the actuator's direction of rotation into account, adjust lever (1) so that it engages in the slot of the coupling wheel (3) with its follower pin.

- Make sure that the lever (1) is parallel to the long side of the limit switch when the rotary actuator is at half its angle of rotation.
8. Stick the scale plate on the coupling wheel so that the arrow tip indicates the closed position and it can be easily read when the valve is installed.



- 1 Lever
- 2 Follower clamp
- 3 Coupling wheel
- 4 Bottom pair of brackets
- 5 Top pair of brackets
- 6 Mounting plate

Fig. 6: Attachment to rotary actuators according to VDI/VDE 3845 (light version)

## 5.6.2 Heavy-duty version

→ See Fig. 7.

→ Required mounting parts and accessories:  
Chapter 3.3 on page 15.

1. Prepare actuator and mount possibly required adapter supplied by the actuator manufacturer (only necessary for fixing level 2).
2. Mount the housing (7) onto the rotary actuator. In case of VDI/VDE attachment, place spacers (8) underneath, if necessary.
3. For SAMSON Type 3278, VETEC S160 and VETEC R Rotary Actuators, screw the adapter (6) with the supplementary adapter (depending on the mounting kit) onto the free end of the shaft of the actuator. For VDI/VDE version, only place on the adapter (6) when it is required for the actuator size.
4. Stick adhesive label onto the coupling wheel (5) in such a manner that the yellow part of the sticker is visible in the window of the housing when the valve is OPEN. Adhesive labels with explanatory symbols are enclosed and can be stuck on the housing, if required.
5. Fasten coupling wheel (5) on the slotted actuator shaft or adapter (6) using screw (3) and disk spring (4).
6. Unscrew the standard follower pin from the limit switch's M lever (1). Attach the follower pin (Ø5 mm) included in the mounting kit to pin position 90°.
7. Fasten the limit switch onto the mounting plate (2).
8. Place the limit switch together with the mounting plate on the enclosure (7) and screw it tight. Taking the actuator's direction of rotation into account, adjust lever (1) so that it engages in the correct slot with its follower pin.

## Mounting

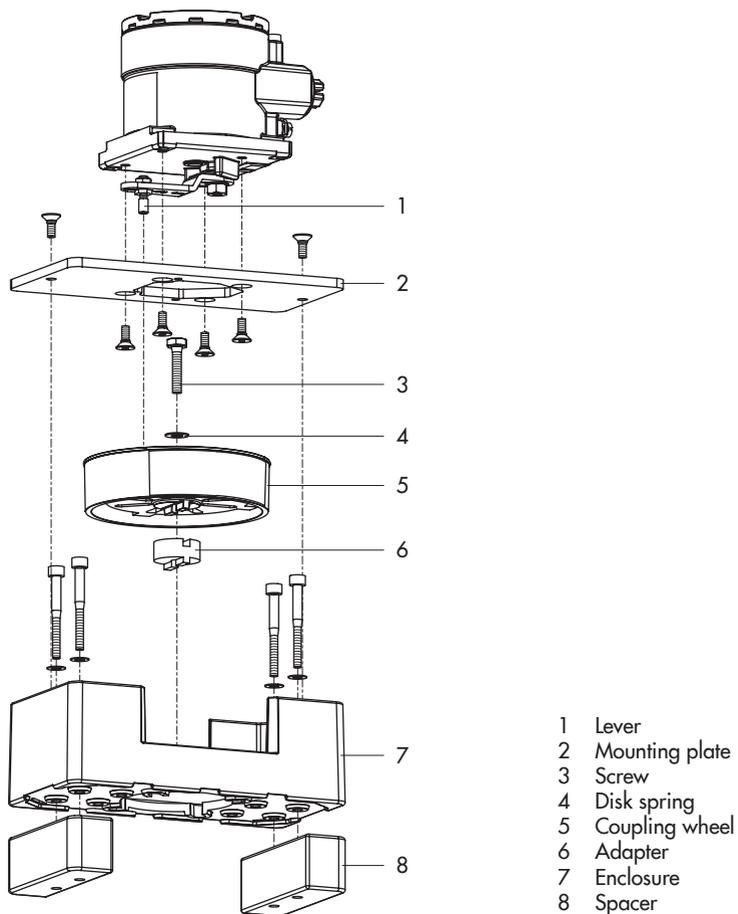


Fig. 7: Attachment to rotary actuators according to VDI/VDE 3845 (heavy-duty version)

## 6 Electrical connections

### **⚠ DANGER**

#### **Risk of fatal injury due to the formation of an explosive atmosphere.**

Incorrect installation, operation or maintenance of the limit switch in potentially explosive atmospheres may lead to ignition of the atmosphere and ultimately to death, even with a harmless supply voltage.

- For mounting and electrical installation in hazardous areas, observe the explosion protection approvals as well as the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. EN 60079-14 applies in Europe.
- Do not connect the electrical supply before mounting is completed.
- Installation, operation or maintenance of the limit switch is to be performed only by personnel with qualifications according to Clause 4.5 of IEC 60079-14 who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.
- Do not open devices with flameproof enclosures while they are energized.

### **ⓘ NOTICE**

The Type 4747 Limit Switch is designed to operate under exactly defined electrical conditions.

Only connect the limit switch to a suitable power supply after mounting is completed.

## 6.1 Electrical connection for type of protection Ex d

### **⚠ DANGER**

**Loss of the explosion protection due to damage to the cover's thread and/or the connecting thread.**

Do not open devices with flameproof enclosures while they are energized.

### **⚠ WARNING**

**The use of unapproved cable glands will render the explosion protection unsafe.**

Only use cable glands and screw plugs which are approved for type of protection Ex d and the certified temperature range.

Connect the devices using suitable cable entries or conduit systems that comply with EN 60079-1 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 entry parts exceeds 70 °C, use a temperature-resistant connecting cable:
  - For Ex db T6 only use cables and cable glands which are suitable for the temperature range from –55 to +80 °C.
  - For Ex db T5 only use cables and cable glands which are suitable for the temperature range from –55 to +95 °C.
  - For Ex db T4 only use cables and cable glands which are suitable for the temperature range from –55 to +100 °C.
- Include the enclosure of the limit switch in the on-site equipotential bonding system. Use the external grounding connection on the enclosure.

## 6.2 Electrical connection for type of protection Ex ia

### WARNING

***Incorrect electrical connection will render the explosion protection unsafe.***

*Adhere to the terminal assignment.*

*Do not undo the enameled screws in or on the enclosure.*

*Do not exceed the maximum permissible values specified in the EU type examination certificates when interconnecting intrinsically safe electrical equipment ( $U_i$  or  $U_o$ ,  $I_i$  or  $I_o$ ,  $P_i$  or  $P_o$ ,  $C_i$  or  $C_o$  and  $L_i$  or  $L_o$ ).*

Observe clause 12 of EN 60079-14: 2008 (VDE 0165, Part 1) for installation of the intrinsically safe circuits.

Clause 12.2.2.7 applies when running multi-core cables and wires with more than one intrinsically safe circuit.

The radial thickness of the insulation of a conductor for common insulating materials (e.g. polyethylene) must not be smaller than 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. Fit equipment used in ambient temperatures below –20 °C with metal cable glands.

## 6.3 Equipment with type of protection Ex t

### **⚠ DANGER**

**Opening the limit switch in potentially explosive dust atmospheres will render the explosion protection unsafe.**

*Do not open the enclosure cover of the limit switch in potentially explosive dust atmospheres.*

In equipment operated according to type of protection Ex t (protection by enclosure), circuits may be connected, interrupted or switched while energized only during installation, maintenance or repair.

- ➔ Use certified cable glands and blanking plugs with appropriate type of protection with an IP rating  $\geq 66$  and suitable for the certified temperature range.
- ➔ For Ex tb T6 only use cables and cable glands which are suitable for the temperature range from  $-55$  to  $+80$  °C.

## 6.4 Equipment for use in zone 2/22

In equipment operated according to type of protection Ex nA II (non-sparking equipment) according to EN 60079-15:2003, circuits may be connected, interrupted or switched while energized only during installation, maintenance or repair.

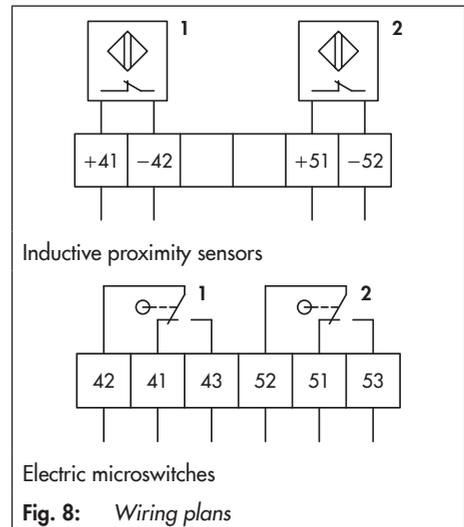
Equipment connected to energy-limited circuits with type of protection Ex nL (energy-limited equipment) according to

EN 60079-15:2003 may be switched under normal operating conditions.

## 6.5 Cable entry

The threaded connection for the terminal compartment is designed with an M20x1.5 or  $\frac{1}{2}$  NPT thread.

The screw terminals are designed for wire cross-sections of 0.2 to 2.5 mm<sup>2</sup>. Tighten the screws by 0.5 to 0.6 Nm.



## 6.6 Switching amplifier

The operation of the Type 4747-xxx01 Limit Switch with inductive NAMUR limit contacts requires switching amplifiers to be connected in the output circuit. To ensure the operating reliability of the limit switch, the amplifiers should comply with the limits of the output circuits conforming to EN 60947-5-6.

## **Electrical connections**

Observe the relevant regulations for installation in hazardous areas.

## 7 Operation

The limit switches attached to control valves are usually adjusted in such a way that a signal is issued when the final travel positions are reached. Optionally, the switching point can also be adjusted to any position within the travel range, e.g. if an intermediate position is to be indicated.

### 7.1 Adjusting the switching point

1. Unscrew enclosure cover off the device.
2. Move the valve to the switching position and turn the adjustment screw (1) until the metal tag (2) moves out of the magnetic field of the proximity sensor or until the cam of the cam disk (2) reaches the roller of the electric microswitch and the output signal changes.
3. Turn the adjustment screw by x turns in the opposite direction to compensate for the switching point shift due to temperature changes.

Switching point shift $\Delta T = 50 \text{ K}$	
Opening angle	Travel
$\leq 2^\circ$	$\leq 0.8 \text{ mm}$
Turns of the adjustment screw	
$x = 1/16$	$x = 1/16$

4. Move the valve away from the switching position and check whether the output signal changes.
5. Move the valve back to the switching position and check the switching point.

6. Mount the enclosure cover. Check the O-ring for damage and replace it, if necessary.
7. Unscrew the fastening screw (4) to lock the enclosure cover.

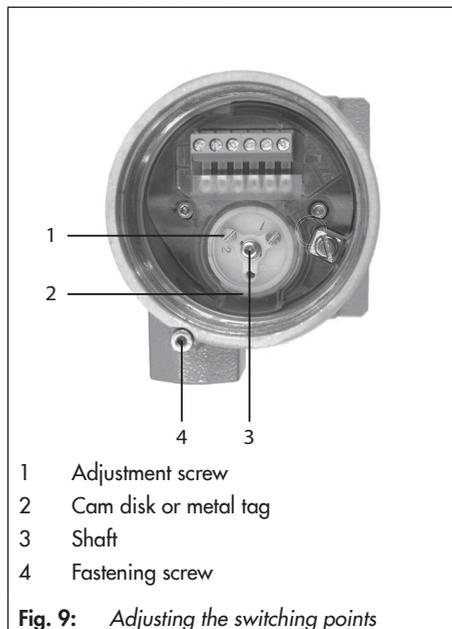


Fig. 9: Adjusting the switching points

#### **i** Note

The following applies when the **Type 4747-xxx 1x** (version with microswitches) is used:

If both contacts are to switch at the same time, the operating direction of the microswitch must be **clockwise**.

## 8 Servicing

---

### **i Note**

*The limit switch was checked by SAMSON before it left the factory.*

- The product warranty becomes void if service or repair work not described in these instructions is performed without prior agreement by SAMSON's After-sales Service.*
  - Only use original spare parts by SAMSON, which comply with the original specifications.*
- 

### 8.1 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 before putting it back into operation and the passing of the routine test is documented by attaching a mark of conformity to the device.

Inspection by a qualified inspector is not required if the manufacturer performs a routine test on the device before putting it back into operation and the passing of the routine test is documented by attaching a mark of conformity to the device.

- Retain testing and servicing documents as well as certificates issued by the manufacturer or inspector together with other safety-relevant documents for the device or plant.

Replace explosion-protected components only with original, routine-tested components by 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 operated inside hazardous areas, test the devices according to the specifications for servicing explosion-protected devices.

#### **Repair of flameproof gaps**

A repair of flameproof gaps is not permitted. If a corresponding gap is damaged, the device must be replaced.

## 8.2 Preparation for return shipment

Defective limit switches can be returned to SAMSON for repair.

Proceed as follows to return devices to SAMSON:

1. Put the control valve out of operation.  
See associated valve documentation.
2. Remove the limit switch (see Chapter 10).
3. Proceed as described on our website at [www.samsongroup.com](http://www.samsongroup.com) > Service > After-sales Service > Returning goods.

### 9 Malfunctions

Table 3 shows further troubleshooting.

**Table 3:** *Troubleshooting*

Description of fault	Tasks
The limit switch does not issue an electrical signal	<ul style="list-style-type: none"><li>➔ Check the electrical connection.</li><li>➔ Check attachment.</li></ul>
Actuator does not move.	<ul style="list-style-type: none"><li>➔ Check the attachment for possible blockage.</li><li>➔ Check the configuration of the mounting parts.</li></ul>
The limit switch does not function	<ul style="list-style-type: none"><li>➔ Contact SAMSON's After-sales Service.</li></ul>

## 9.1 Emergency action

Plant operators are responsible for emergency action to be taken in the plant.



**Tip**

*Emergency action in the event of valve failure is described in the associated valve documentation.*

## 10 Decommissioning and removal

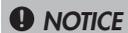


**DANGER**

**Risk of fatal injury due to ineffective explosion protection.**

*The explosion protection becomes ineffective when the limit switch cover is opened.*

*The following regulations apply to installation in hazardous areas: EN 60079-14 (VDE 0165, Part 1).*



**NOTICE**

**Disruption to the process.**

*Do not mount or service the limit switch while the process is running and only after isolating the plant by closing the shut-off valves.*

## 10.1 Decommissioning

To decommission the limit switch before removing it, proceed as follows:

1. Open the enclosure cover of the limit switch.
2. Disconnect the wires for the power supply.

## 10.2 Removing the limit switch

1. Remove the wires for the power supply from the limit switch.
2. To remove the limit switch, loosen the four fastening screws on the device.

## 10.3 Disposal



We are registered with the German national register for waste electric equipment (stiftung ear) as a producer of electrical and electronic equipment, WEEE reg. no.: DE 62194439

- ➔ Observe local, national and international refuse regulations.
- ➔ Do not dispose of components, lubricants and hazardous substances together with your other household waste.



**Tip**

*On request, we can appoint a service provider to dismantle and recycle the product.*

# 11 Appendix

## 11.1 After-sales service

Contact SAMSON's After-sales Service for support concerning service or repair work or when malfunctions or defects arise.

### E-mail address

You can reach our after-sales service at [aftersalesservice@samsongroup.com](mailto:aftersalesservice@samsongroup.com).

### Addresses of SAMSON AG and its subsidiaries

The addresses of SAMSON AG, its subsidiaries, representatives and service facilities worldwide can be found on our website ([www.samson.de](http://www.samson.de)) or in all SAMSON product catalogs.

### Required specifications

Please submit the following details:

- Order number and position number in the order
- Type, serial number, firmware version, device version



## EU Konformitätserklärung / EU Declaration of Conformity / Déclaration UE de conformité

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller/  
This declaration of conformity is issued under the sole responsibility of the manufacturer/  
La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.  
Für das folgende Produkt / For the following product / Nous certifions que le produit

### Grenzsignalgeber / Limit Switch / Contact de position Typ/Type/Type 4747

wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt /  
the conformity with the relevant Union harmonisation legislation is declared with/  
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EMC 2014/30/EU	EN 61000-6-2:2005, EN 61000-6-3: 2007 +A1:2011, EN 61326-1:2013
LVD 2014/35/EU	EN 60730-1:2016, EN 61010-1:2010
RoHS 2011/65/EU	EN 50581:2012

Hersteller / Manufacturer / Fabricant:

SAMSON AKTIENGESELLSCHAFT  
Weismüllerstraße 3  
D-60314 Frankfurt am Main  
Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2017-07-29

Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.

Hanno Zager  
Leiter Qualitätssicherung/Head of Quality Management/  
Responsable de l'assurance de la qualité

Dirk Hoffmann  
Zentralabteilungsleiter/Head of Department/Chef du département  
Entwicklungsorganisation/Development Organization

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établi selon le certificat CE d'essais sur échantillons PTB 12 ATEX 2020 émis par:

Physikalisch Technische Bundesanstalt  
Bundesallee 100  
D-38116 Braunschweig  
Benannte Stelle/Notified Body/Organisme notifié 0102

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EMC 2014/30/EU	EN 61000-6-2:2005, EN 61000-6-3:2007 +A1:2011, EN 61326-1:2013
Explosion Protection 94/9/EC (bis/to 2016-04-19) Explosion Protection 2014/34/EU (ab/from 2016-04-20)	EN 60079-0:2009, EN 60079-11:2012, EN 60079-31:2009
RoHS 2011/65/EU	EN 50581:2012

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D-60314 Frankfurt am Main  
Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2017-07-29

Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.

Hanno Zager  
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Responsable de l'assurance de la qualité

Dirk Hoffmann  
Zentralabteilungsleiter/Head of Department/Chef du département  
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établi selon le certificat CE d'essais sur échantillons KIWA 16 ATEX 0052 X émis par:

KIWA Nederland B.V.  
Unit Kiwa ExVision  
Wilmersdorf 50  
7300 AC Apeldoorn

Benannte Stelle/Notified Body/Organisme notifié 0620

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the conformity with the relevant Union harmonisation legislation is declared with/  
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

EMC 2014/30/EU	EN 61000-6-2:2019, EN 61000-6-3:2007 +A1:2011, EN 61326-1:2013
Explosion Protection 2014/34/EU	EN 60079-0:2012+A11:2013, EN 60079-1:2014, 60079-31:2014
RoHS 2011/65/EU	EN 50581:2012

Hersteller / Manufacturer / Fabricant:

SAMSON AKTIENGESELLSCHAFT  
Weismüllerstraße 3  
D-60314 Frankfurt am Main  
Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2020-02-24

Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.

Dipl.-Ing. Jens Bieger  
Zentralabteilungsleiter/Head of Department/Chef du département  
Entwicklung Ventilanbaugeräte und Messtechnik  
Development Valve Attachments and Measurement Technologies

Dipl.-Ing. Silke Bianca Schäfer  
Total Quality Management/  
Management par la qualité totale

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entsprechend der EU-Baumusterprüfbescheinigung PTB 12 ATEX 2020 ausgestellt von der/  
according to the EU Type Examination PTB 12 ATEX 2020 issued by/  
établi selon le certificat CE d'essais sur échantillons PTB 12 ATEX 2020 émis par:

Physikalisch Technische Bundesanstalt  
Bundesallee 100  
D-38116 Braunschweig  
Benannte Stelle/Notified Body/Organisme notifié 0102

wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt/  
the conformity with the relevant Union harmonisation legislation is declared with/  
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

EMC 2014/30/EU

EN 61000-6-2:2005, EN 61000-6-3:2007  
+A1:2011, EN 61326-1:2013

Explosion Protection 94/9/EC (bis/to 2016-04-19)  
Explosion Protection 2014/34/EU (ab/from 2016-04-20)

EN 60079-0:2009, EN 60079-15:2010,  
EN 60079-31:2009

RoHS 2011/65/EU

EN 50581:2012

Hersteller / Manufacturer / Fabricant:

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Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2017-07-29

Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.

Hanno Zager  
Leiter Qualitätssicherung/Head of Quality Management/  
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Dirk Hoffmann  
Zentralabteilungsleiter/Head of Department/Chef du département  
Entwicklungsorganisation/Development Organization



## (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 12 ATEX 2020**

- (4) Equipment: Limit Switch, type 4747-110.. / -810..
- (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 test report PTB Ex 13-22146.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
**EN 60079-0:2009 EN 60079-11:2012 EN 60079-15:2010 EN 60079-31:2009**
- (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:

**see (15) description**

Zertifizierungssektor Explosionschutz  
On behalf of PTB:

Dr.-Ing. U. Johannsmeyer  
Direktor und Professor



Braunschweig, April 26, 2013

ZSEx10100e.dotm

sheet 1/3

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.

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(13)

## SCHEDULE

(14)

### EC-TYPE-EXAMINATION CERTIFICATE PTB 12 ATEX 2020

(15) Description of equipment

The limit switches of types 4747-110.. and 4747-810.. are mounted onto single or double acting control valves. Electrical signals are triggered for further conditioning with the response of inductive limit contacts. Two inductive limit contacts can be connected to external analyzing units as a maximum.

The equipment is intended for installation inside or outside of the hazardous area.

All types of equipment are mounted into certified enclosures which meet the requirements to equipment protected by enclosure according to EN 60079-31:2009.

The marking of the types of switches reads as follows:

Type 4747-110..

 II 2 G Ex ia IIC T6 Gb and  
 II 2 D Ex ia IIIC T85 °C Db IP66 and  
 II 2 D Ex tb IIIC T85 °C Db IP66

Type 4747-810..

 II 3 G Ex ic IIC T6 Gc and  
 II 3 G Ex nAc II T6 Gc and  
 II 3 D Ex tc IIIC T85 °C Dc IP66

#### Electrical data

For relationship between type of protection, types of equipment, types of sensors and electrical maximum values, reference is made to the following tables:

#### **Ex ia IIC/IIIC and Ex ic IIC**

type of equipment	4747-11001		4747-11007		4747-11008	
type of sensor	NCB2-V3-NO		NJ2-V3-N		NJ2-V3-N-0,21M	
Maximum values:						
U <sub>i</sub>	16 V	16 V	16 V	16 V	16 V	16 V
I <sub>i</sub>	25 mA	52 mA	25 mA	52 mA	25 mA	52 mA
P <sub>i</sub>	64 mW	169 mW	64 mW	169 mW	64 mW	169 mW
C <sub>i</sub>	100 nF		40 nF			
L <sub>i</sub>	100 µH		50 µH			

sheet 2/3

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**Ex nA II or Ex tb IIIC or Ex tc IIIC**

type of equipment	4747-81001	4747-81007	4747-81008
type of sensor	NCB2-V3-NO	NJ2-V3-N	NJ2-V3-N-0,21M
$U_N$	8 V		

For relationship between types of protection, electrical and thermal maximum values and the temperature class, reference is made to the following table:

Ex ia IIIC or Ex ic IIIC	temperature class	permissible ambient temperature range
16 V, 25 mA, 64 mW	T4	$\leq 80\text{ °C}$
	T5	$-55\text{ °C} \leq T_a \leq 80\text{ °C}$
	T6	$\leq 65\text{ °C}$
16 V, 52 mA, 169 mW	T4	$\leq 80\text{ °C}$
	T5	$-55\text{ °C} \leq T_a \leq 60\text{ °C}$
	T6	$\leq 45\text{ °C}$
<b>Ex ia IIIC</b>		$-25\text{ °C} \leq T_a \leq 80\text{ °C}$
<b>Ex nA II</b> $U_N = 8\text{ V}$	T4	$\leq 80\text{ °C}$
	T5	$-55\text{ °C} \leq T_a \leq 80\text{ °C}$
	T6	$\leq 75\text{ °C}$
<b>Ex tb IIIC or Ex tc IIIC</b>		$-55\text{ °C} \leq T_a \leq 80\text{ °C}$

(16) Test report PTB Ex13-22146

(17) Special conditions for safe use  
none

(18) Essential health and safety requirements  
Met by compliance with the standards mentioned above.

Zertifizierungssektor Explosionschutz  
On behalf of PTB:



Dr.-Ing. U. Johannsmeyer  
Direktor und Professor



Braunschweig, April 26, 2013

sheet 3/3

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.

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## 1 EU – Type Examination Certificate

2 Equipment or Protective System Intended for use in Potentially Explosive Atmospheres  
**Directive 2014/34/EU**

3 EU – Type Examination Certificate Number: **KIWA 16ATEX0052 X Issue: 1**

4 Product: **Limit Switch Type 4747**

5 Manufacturer: **SAMSON AKTIENGESELLSCHAFT**

6 Address: **Weismüllerstraße 3, 60314 Frankfurt  
 Germany**

7 This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Kiwa Nederland B.V., Notified Body number 0620 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.  
 The examination and test results are recorded in confidential ATEX Assessment Report No. 160800974.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
**EN 60079-0 : 2012 + A11 : 2013 EN 60079-1 : 2014 EN 60079-31 : 2014**

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU – Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:



**II 2 G Ex db IIC T6...T4 Gb  
 II 2 D Ex tb IIIC T80 °C Db**

Kiwa Nederland B.V.  
 Unit Kiwa ExVision  
 Wilmersdorf 50  
 P.O. Box 137  
 7300 AC Apeldoorn  
 The Netherlands  
 Tel. +31 88 998 34 93  
 Fax +31 88 998 36 85  
 ExVision@kiwa.nl  
 www.kiwaexvision.com

Kiwa Nederland B.V.

Pieter van Breugel  
 Certification Officer

Issue date:

18 October 2018

First issue:

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This certificate shall, as far as applicable, be revised before the date of cessation of presumption of conformity of (one of) the included standards above as communicated in the Official Journal of the European Union.

© Integral publication of this certificate in its entirety and without any change is allowed.



13 **SCHEDULE**

14 **EU – Type Examination Certificate KIWA 16ATEX0052 X Issue No. 1**

15.1 **Description of Product**

The Limit Switch Type 4747 is intended for the attachment to linear or rotary valves. It is equipped either with electric or inductive switching elements and gives a limit signal when a set limit value is exceeded or reached.

The limit switch enclosure is provided with a threaded cover and can be of aluminium or stainless steel.

Ambient temperature range for Ex tb: -55 °C to +65 °C

Ambient temperature range for Ex d: -55 °C to +65 °C for T6

-55 °C to +80 °C for T5

-55 °C to +85 °C for T4

The limit switch enclosure provides a degree of protection of IP66 in accordance with EN 60529.

Type designation

4747-abcd

a: Approvals

210 (Explosion proof ATEX)

b: Design / switching elements

01 to 10 (inductive sensor)

11 to 18 (micro switch)

31 (reed switch)

51 or 52 (switch type SJ2)

53 to 55 (switch type SJ3,5)

56 to 58 (switch type SC3,5)

c: Number of switching elements

1 or 2

d: Field wiring entry

1 (M20x1,5)

2 (NPT 1/2")

15.2 **Electrical Data**

Power supply: max. 250 V - 4 W

15.3 **Instructions**

The instructions provided with the product shall be followed in detail to assure safe operation.

16 **ATEX Assessment Report Number**

No. 160800974.



13 **SCHEDULE**

14 **EU – Type Examination Certificate KIWA 16ATEX0052 X Issue No. 1**

17 **Specific Conditions of Use**

- For the applicable ambient temperature range, refer to section 15.1;
- The flameproof joints are not intended to be repaired;
- For EPL Db: The equipment shall be installed and maintained such that hazards caused by electrostatic discharge are excluded;
- Heat resisting cables and cable glands, suitable for a temperature of at least 20 K higher than the max. ambient temperature shall be used.

18 **Essential Health and Safety Requirements**

All relevant Essential Health and Safety Requirements are covered by the standards listed at section 9.

19 **Drawings and Documents**

As listed in ATEX Assessment Report No. 160800974.

>





# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEX Scheme visit [www.ieceex.com](http://www.ieceex.com)

Certificate No.: IECEX KIWA 16.0026X Issue No: 0 Certificate history:  
Issue No. 0 (2018-10-18)

Status: Current Page 1 of 4

Date of Issue: 2018-10-18

Applicant: SAMSON AKTIENGESELLSCHAFT  
Weismüllerstraße 3  
60314 Frankfurt  
Germany

Equipment: Limit switch, type 4747  
Optional accessory:

Type of Protection: Ex d, Ex t

Marking: Ex db IIC T6...T4 Gb  
Ex tb IIC T80 °C Db

Approved for issue on behalf of the IECEX  
Certification Body:

Pieter van Breugel

Position:

Certification Officer

Signature:  
(for printed version)

  
18 October 2018

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEX Website.

Certificate issued by:

Kiwa Nederland B.V. (Unit Kiwa ExVision)  
Wilmersdorf 50  
7327 AC Apeldoorn  
P.O. Box 137  
The Netherlands





# IECEx Certificate of Conformity

Certificate No: IECEX KIWA 16.0026X Issue No: 0  
Date of Issue: 2018-10-18 Page 2 of 4  
Manufacturer: SAMSON AKTIENGESELLSCHAFT  
Weismüllerstraße 3  
60314 Frankfurt  
Germany

**Additional Manufacturing location(s):**

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

**STANDARDS:**

The apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

*This Certificate does not indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

**TEST & ASSESSMENT REPORTS:**

*A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in*

Test Report:

NL/KIWA/EX/16.0022/00

Quality Assessment Report:

DE/TUN/QAR06.0011/08



# IECEX Certificate of Conformity

Certificate No: IECEX KIWA 16.0026X

Issue No: 0

Date of Issue: 2018-10-18

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Schedule

## EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

The Limit Switch type 4747 is intended for the attachment to linear or rotary valves. It is equipped either with electric or inductive switching elements and gives a limit signal when a set limit value is exceeded or reached.  
The limit switch enclosure is provided with a threaded cover and can be of aluminium or stainless steel.

Ambient temperature range for Ex tb: -55 °C to +65 °C  
Ambient temperature range for Ex d: -55 °C to +65 °C for T6  
-55 °C to +80 °C for T5  
-55 °C to +85 °C for T4

The limit switch enclosure provides a degree of protection of IP66 in accordance with IEC 60529.

## Electrical data

Power supply: max. 250 V - 4 W

**SPECIFIC CONDITIONS OF USE: YES as shown below:**

- For the applicable ambient temperature range, refer to the Equipment section above;
- The flameproof joints are not intended to be repaired;
- for EPL Db: The equipment shall be installed and maintained such that hazards caused by electrostatic discharge are excluded;
- Heat resisting cables and cable glands, suitable for a temperature of at least 20 K higher than the max. ambient temperature shall be used.



# IECEx Certificate of Conformity

Certificate No: IECEX KIWA 16.0026X

Issue No: 0

Date of Issue: 2018-10-18

Page 4 of 4

**Additional information:**

Type designation

4747-abcd

- a: Approvals
  - 211 (Explosion proof IECEx)
- b: Design / switching elements
  - 01 to 10 (inductive sensor)
  - 11 to 18 (micro switch)
  - 31 (reed switch)
  - 51 or 52 (switch type SJ2)
  - 53 to 55 (switch type SJ3,5)
  - 56 to 58 (switch type SC3,5)
- c: Number of switching elements
  - 1 or 2
- d: Field wiring entry
  - 1 (M20x1,5)
  - 2 (NPT 1/2")







**EB 4747 EN**



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