

MOUNTING AND OPERATING INSTRUCTIONS



EB 8365 EN

Translation of original instructions



Type 4746 Electric or Pneumatic Limit Switch

Edition September 2020

CE EAC 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 Department (aftersaleservice@samsongroup.com).



Documents relating to the device, such as the mounting and operating instructions, are available on our website at www.samsongroup.com > **Service & Support** > **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 4746 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 other applications or conditions than 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 4746 Limit Switch is **not** suitable for the following applications:

- Use outside the limits defined during configuration 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 refers to individuals who are able to judge the work they are assigned to and recognize possible hazards 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, warning and caution notes in these mounting and operating instructions, especially for installation, start-up and service work.

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, warning 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 and regulations

Devices with a CE marking fulfill the following requirements:

- Type 4746: 2011/65/EU, 2015/863/EU
- Type 4746-0: 2011/65/EU, 2014/30/EU
- Type 4746-12: 2011/65/EU, 2014/30/EU, 2014/34/EU
- Type 4746-13: 2011/65/EU, 2014/30/EU, 2014/34/EU
- Type 4746-82: 2011/65/EU, 2014/30/EU, 2014/34/EU
- Type 4746-83: 2011/65/EU, 2014/30/EU, 2014/34/EU

The declarations of conformity are included at the back of these mounting and operating instructions.

Devices with an EAC marking fulfill the following requirements:

- Type 4746: TR CU 020/2011
- Type 4746-1: TR CU 012/2011; applicable GOST standards:
 - GOCT 31610.0-2014 (IEC 60079-0:2011)
 - GOCT 31610.11-2014 (IEC 60079-11:2011)

The EAC certificates are included at the back of these mounting and operating instructions.

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 ignition 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.

- 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: Electrical installations design, selection and erection
- Installation, operation or maintenance of the limit switch must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

1.2 Notes on possible personal injury

WARNING

Incorrect electrical connection will render the explosion protection unsafe.

- Adhere to the terminal assignment and observe correct polarity.
- Do not undo the enameled screws.
- Do not exceed the maximum permissible values (U_i , I_i , P_i , C_i , L_i) specified in the EC type examination certificates when interconnecting intrinsically safe electrical equipment.

Sudden loud noise when the limit contact switches.

The pneumatic limit switch may create a loud noise when the limit contact switches. This can cause hearing damage.


- Wear hearing protection when working near the valve.

Risk of personal injury through incorrect operation, use or installation as a result of information on the limit switch being illegible.

Over time, markings, labels and nameplates on the limit switch may become covered with dirt or become illegible in some other way. As a result, hazards may go unnoticed and the necessary instructions not followed. There is a risk of personal injury.

- Keep all relevant markings and inscriptions on the device in a constantly legible state.
- Contact SAMSON when nameplates or labels are damaged, missing or incorrect to renew them.

1.3 Warnings on the device

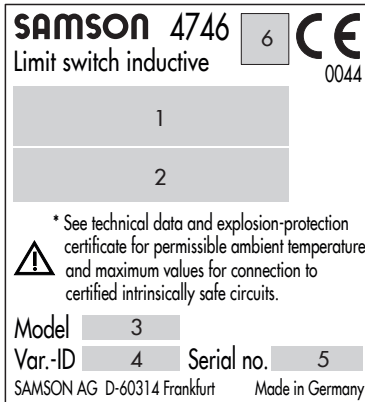
| Warning | Meaning of the warning |
|---|---|
|  | <p>Warning against sudden loud noise A loud noise may occur when the pneumatic limit contact switches. This can cause hearing damage.</p> |

2 Markings on the device

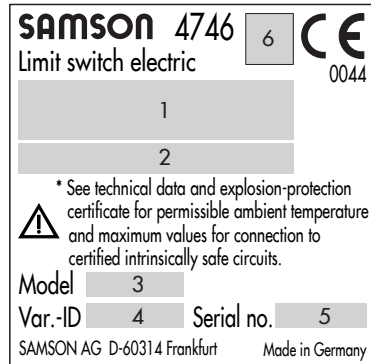
2.1 Nameplate

Examples

Explosion-protected version with inductive limit contacts



Explosion-protected version with electric limit contacts



- 1 Degree of protection
- 2 Maximum values of electric data
 - U_i Input voltage
 - I_i Input current
 - P_i Input power
 - C_i Inner capacitance
 - L_i Inner inductance
- 3 Model number
- 4 Configuration ID
- 5 Serial number
- 6 Data Matrix code (if applicable)

Markings on the device

2.2 Article code

| Limit switch (device index .07 or higher) | Type 4746- | x | x | x | x | x | x | x | 0 | x | x | x | x |
|---|------------|---|---|---|---|---|-----|---|---|---|---|---|---|
| Explosion protection | | | | | | | | | | | | | |
| Without | | 0 | | | | | | | | | | | |
| ATEX II 2G Ex ia IIC T6 Gb | | 1 | | | | | | | | | | | |
| CSA Ex ia IIC T6; Class I, Zone 0; Class I,II, Div.1, Groups A,B,C,D,E,F,G; Class I,II, Div.2, Groups A,B,C,D,E,F,G; | | 3 | | | | | | | | | | | |
| FM Class I, Zone 0 AEx ia IIC Class I,II,III; Div.1, Groups A,B,C,D,E,F,G Class I, Div.2, Groups A,B,C,D; Class II, Div.2 Groups F,G; Class III; | | | | | | | | | | | | | |
| ATEX II 3G Ex nA II T6 | | 8 | | | | | | | | | | | |
| Design | | | | | | | | | | | | | |
| Inductive | | | 2 | | | | 1/2 | | | | | | |
| Electric | | | 3 | | | | 2 | | | | | | |
| Pneumatic | | 0 | 4 | | | | 2 | | | | | | |
| Contacts | | | | | | | | | | | | | |
| Proximity switch SC3,5-N0-YE (NAMUR NC contact) ¹⁾ | | | 2 | 0 | 0 | | | 1 | 0 | | | | |
| Proximity switch SC3,5-N0-WH (NAMUR NC contact), larger hysteresis | | | 2 | 0 | 1 | | | 1 | 0 | | | | |
| Proximity switch SJ3,5-SN (NAMUR NC contact in safety circuit) | | | 2 | 1 | 0 | | | 1 | 0 | | | | |
| Proximity switch SJ3,5-S1N (NAMUR NO contact in safety circuit) | | | 2 | 1 | 1 | | | 1 | 0 | | | | |
| SAIA, electric microswitch XGK 3 (silver contacts) | | | 3 | 2 | 0 | | 2 | 1 | 0 | | | | |
| SAIA, electric microswitch XGK3-81 (gold-plated contacts) | | | 3 | 2 | 1 | | 2 | 1 | 0 | | | | |
| Pneumatic microswitch | | 0 | 4 | 4 | 0 | | 2 | 0 | | | | | |
| Proximity switch SB3,5-E2 (three-wire switch, NO contact) | | 0 | 2 | 8 | 1 | | 2 | 1 | 0 | | | | |
| Switching elements | | | | | | | | | | | | | |
| With one switching element | | | | | | | | 1 | | | | | |
| With two switching elements | | | | | | | | 2 | | | | | |
| Electrical connection | | | | | | | | | | | | | |
| Without | | 0 | 4 | 4 | 0 | | | 0 | | | | | |
| Plastic cable gland M20x1.5, black | | | | | | | | 1 | 0 | | | | |
| Pneumatic connections | | | | | | | | | | | | | |
| Without | | | | | | | | | 0 | | | | |
| ISO 221/1-G 1/8 | | 0 | 4 | 4 | 0 | | | 0 | 1 | | | | |
| 1/8 -27 NPT | | 0 | 4 | 4 | 0 | | | 0 | 2 | | | | |

| Limit switch (device index .07 or higher) | | Type 4746- | | | | | | | | 0 | x | x | x | x |
|---|---|------------|-----|---|--|--|--|--|--|---|---|---|---|---|
| Special versions | | | | | | | | | | | | | | |
| Without | | | | | | | | | | | | | | |
| CCC Ex | Ex ia IIC T4~T6 Gb | 1 | 2 | 2 | | | | | | | 0 | 0 | 0 | |
| CCC Ex | Ex ia IIC T4~T6 Gb; Ex ic IIC T4~T6 Gc; Ex nA IIC T4~T6 Gc | 8 | 2 | 2 | | | | | | | 0 | 1 | 0 | |
| EAC | 1Ex ia IIC T6...T4 Gb X | 1 | 2/3 | | | | | | | | 0 | 1 | 3 | |
| Compatibility with paint | | | | | | | | | | | | | | |
| Without | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 0 |
| Free of substances that impair paint adhesion | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 1 |

| Limit switch (device index .06 or lower) | | Type 4746- | | | | x | x | x | x |
|--|--|------------|--|--|--|---|---|---|---|
| Design | | | | | | | | | |
| Inductive, without explosion protection | | | | | | | | | |
| | | | | | | 1 | | | |
| Inductive, Ex ib IIC T6 | | | | | | | | | |
| | | | | | | 2 | | | |
| Electric | | | | | | | | | |
| | | | | | | 3 | | | |
| Pneumatic | | | | | | | | | |
| | | | | | | 4 | | | |
| Electrical connection/lever | | | | | | | | | |
| Without | | | | | | | | | |
| | | | | | | 0 | | | |
| Cable gland, lever I (device index .04 or higher without lever) | | | | | | | | | |
| | | | | | | 1 | | | |
| Cable gland, lever for positioner attachment | | | | | | | | | |
| | | | | | | 2 | | | |
| ½" USA cable gland, lever I | | | | | | | | | |
| | | | | | | 3 | | | |
| ½" USA cable gland, lever for positioner attachment | | | | | | | | | |
| | | | | | | 4 | | | |
| Contacts | | | | | | | | | |
| SJ3,5-N ²⁾ | | | | | | | | | |
| | | | | | | | | 0 | |
| SJ3,5-SN | | | | | | | | | |
| | | | | | | | | 1 | |
| SAIA - electric microswitch XGK 3 | | | | | | | | | |
| | | | | | | | | 2 | |
| Pneumatic microswitch with ISO 228/1-G ½ connecting thread | | | | | | | | | |
| | | | | | | | | 3 | |
| Pneumatic microswitch with ½-27 NPT connecting thread | | | | | | | | | |
| | | | | | | | | 4 | |
| SJ3,5-N ¹⁾ (white dot of paint), max. hysteresis with 100 mm lever = 0.6 mm | | | | | | | | | |
| | | | | | | | | 5 | |
| Microswitch (gold contacts) | | | | | | | | | |
| | | | | | | | | 6 | |
| SJ3,5-E2 with LED (three-wire switch) without explosion protection, NO contact | | | | | | | | | |
| | | | | | | 1 | | 8 | |
| SB3,5-E2 (three-wire switch) without explosion protection, NO contact | | | | | | | | | |
| | | | | | | 1 | | 9 | |
| Switching elements | | | | | | | | | |
| With one switching element | | | | | | | | | |
| | | | | | | | | | 1 |
| With two switching elements | | | | | | | | | |
| | | | | | | | | | 2 |

¹⁾ Type 4746-3200/3201 only with FM certification

²⁾ SJ3,5-N replaced by SC3,5-N0-YE and SC3,5-N0-WH since 2007

i Note

When replacing devices with index .00 to .03, a mounting kit with lever must also be ordered (see the 'Installation' section).

3 Design and principle of operation

The limit switches are attached to pneumatic control valves as well as to Type 4765 and Type 4763 Positioners.

These limit switches have either inductive, electric or pneumatic contacts. They issue a signal when the valve travel exceeds or falls below a limit, especially when a control valve has reached its final position. This signal is transmitted, e.g. to an alarm or indicating system.

The valve travel is transmitted either directly to the pin (1.1) and lever (1) of the limit switch by the plate (10) or by a coupling pin when a positioner is attached. The linear travel is converted into a rotary motion by the shaft (2).

3.1 Type 4746-x2 Inductive Limit Switch

In this version, the shaft (2) carries two switch cases (3) with adjustable metal tags (4.1) for non-contact activation of the integrated proximity switches (5). For the operation of inductive limit contacts (except for Type 4746-0281), appropriate switch amplifiers must be integrated into the output circuit.

The switching function and switching point are continuously adjustable using the adjustment screw (3.1).

3.2 Type 4746-x3 Electric Limit Switch

In this version, the shaft (2) carries two switch cases (3) with adjustable cam disks (4.2). Each cam disk activates an electric double-throw switch (7) over the roller (6.1), which is attached to the switch lever (6). The switching function and switching point are continuously adjustable using the adjustment screw (3.1).

3.3 Type 4746-04 Pneumatic Limit Switch

In this version, the shaft (2) carries two switch cases (3) with adjustable cam disks (4.2). Each cam disk activates a nozzle/flapper system in the pneumatic switch (8).

Whenever the cam disk (4.2) activates the switch lever (6) over the roller (6.1), the nozzle in the pneumatic switch (8) is opened and the supply air is switched from the microswitch (9) through to port A₁ or A₂.

The nozzle is closed in the pneumatic switch (8) and the supply air applied to the microswitch is cut off first when the cam disk has released the switch lever (6). As a result, pressure is no longer applied to port A₁ or A₂.

The switching function and switching point are continuously adjustable using the adjustment screw (3.1).

Design and principle of operation

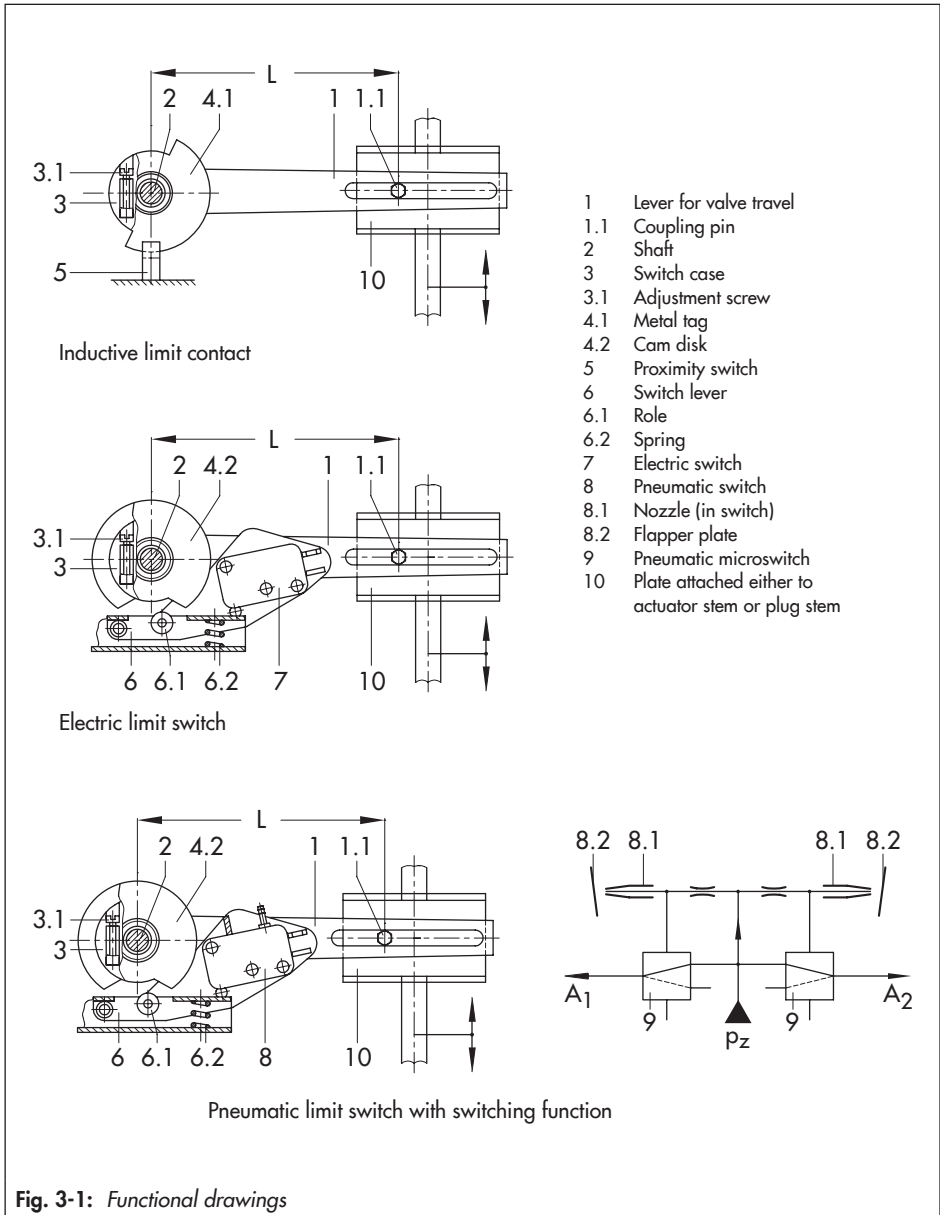



Fig. 3-1: Functional drawings

3.4 Technical data

Table 3-1: General data

| Inductive Limit Switch | Type 4746-x2 | | | Type 4746-0281 |
|---|---|----------------|----------------|---|
| Control circuit | Switching amplifier according to EN 60947-5-6 | | | Three-wire switch, operating voltage 10 to 30 V |
| Proximity switch | SC3,5-N0-YE ²⁾ SC3,5-N0-WH ²⁾ | SJ3,5-SN | SJ3,5-S1N | SB3,5-E2 |
| Permissible ambient temperature ¹⁾ | -20 to +100 °C | -20 to +100 °C | -20 to +100 °C | -20 to +70 °C |
| With metal cable gland | -40 to +100 °C | -50 to +100 °C | -40 to +100 °C | -25 to +70 °C |
| Switching function | NC contact | NC contact | Closing valve | Closing valve |
| Electrical connections | One M20x1.5 cable gland for 5.5 to 13 mm clamping range, screw terminals for 0.2 to 2.5 mm ² wire cross-sections | | | |
| Degree of protection | IP 65 | | | |
| Weight | Approx. 0.7 kg | | | |
| Type 4746-x3 Electric Limit Switch · Specifications apply to silver and gold-plated contacts | | | | |
| Switching element | Electric limit switch: changeover contact/SPDT (single-pole/double-throw type) | | | |
| Permissible load | AC voltage: 220 V, 6.9 A, DC voltage: 220 V, 0.25 A × 20 V, 6.9 A | | | |
| Permissible ambient temperature ¹⁾ | -20 to +85 °C | | | |
| With metal cable gland | -40 to +85 °C | | | |
| Electrical connections | One M20x1.5 cable gland for 5.5 to 13 mm clamping range, screw terminals for 0.2 to 2.5 mm ² wire cross-sections | | | |
| Degree of protection | IP 65 | | | |
| Weight | Approx. 0.7 kg | | | |
| Type 4746-04 Pneumatic Limit Switch | | | | |
| Switching element | Pneumatic limit contact with downstream pneumatic microswitch | | | |
| Supply air | Supply air 1.4 bar (20 psi), can be briefly overloaded up to 4 bar (60 psi) | | | |
| Air consumption | 0.04 m _n ³ /h | | | |
| Output | 0 or 1.4 bar (20 psi) | | | |
| Air capacity | One switch closed: 0.7 m _n ³ /h · Two switches closed: 1.0 m _n ³ /h | | | |
| Permissible ambient temperature | -20 to +60 °C | | | |
| Degree of protection | IP 54 | | | |
| Weight | Approx. 0.75 kg | | | |

Design and principle of operation

| Materials | |
|---|---|
| Enclosure and cover | Powder-coated aluminum |
| Lever and shaft | 1.4571 |
| Cable gland | M20x1.5, black polyamide |
| Attachment | |
| Travel range | |
| According to IEC 60534-6 | Lever I: 7.5 to 60 mm · Lever II: 60 to 180 mm |
| Attachment to Type 4763/4765 Positioner | Travel same as positioner |
| Conformity |  |

¹⁾ Observe the limits specified in the EC-type examination certificate.

²⁾ SJ3,5-N replaced by SC3,5-N0-YE and SC3,5-N0-WH since 2007

Table 3-2: Hysteresis (dead band)

| Type 4746 | -x2 | -x3 | -04 |
|----------------|-------------------------------|--------|---------|
| Lever length L | Hysteresis | | |
| 50 mm | 0.15 (0.25 ¹⁾) mm | 0.6 mm | 0.75 mm |
| 120 mm | 0.30 (0.55 ¹⁾) mm | 1.0 mm | 1.5 mm |

¹⁾ Special version

Table 3-3: Type 4746-1 with type of protection Ex ia (ATEX)

Maximum values for connection to certified intrinsically safe circuits







| Limit switch | Type 4746-12 | | | | | | | | Type 4746-13 | |
|------------------------------|--------------------------|-----|-------------------------------|-----|--------------------------|-----|---|-----|---------------------|------------------|
| | Inductive | | | | | | | | Electric | |
| Limit contacts | SC3,5-N0-YE 4746-1200 | | SJ3,5-N 4746-1200 (old) | | SC3,5-N0-WH 4746-1201 | | SJ3,5-SN 4746-1210 SJ3,5-S1N 4746-1211 | | Microswitch SPDT | |
| U _i | V | 16 | | 16 | | 16 | | 16 | | 45 |
| I _i | mA | 25 | 52 | 25 | 52 | 25 | 52 | 25 | 52 | – |
| P _i | mW | 64 | 169 | 64 | 169 | 64 | 169 | 64 | 169 | 2000 |
| C _i ¹⁾ | nF | 150 | | 50 | | 150 | | 30 | | Negligibly small |
| L _i ²⁾ | µH | 150 | | 250 | | 150 | | 100 | | |

| Limit switch | Type 4746-12 | | | | | | | | Type 4746-13 | |
|---------------------|---|-------------------------------|-----|------|--------------------------|------|---|------|---------------------|------------|
| | Inductive | | | | | | | | Electric | |
| Limit contacts | SC3,5-N0-YE 4746-1200 | SJ3,5-N 4746-1200 (old) | | | SC3,5-N0-WH 4746-1201 | | SJ3,5-SN 4746-1210 SJ3,5-S1N 4746-1211 | | Microswitch SPDT | |
| Temperature classes | Ambient temperature range according to EC-type examination certificate (technical data specified in above table additionally apply) | | | | | | | | | |
| T4 | °C | ≤100 | ≤75 | ≤100 | ≤89 | ≤100 | ≤89 | ≤100 | ≤89 | -45 to +80 |
| T5 | °C | ≤80 | ≤55 | ≤81 | ≤60 | ≤81 | ≤60 | ≤81 | ≤60 | -45 to +70 |
| T6 | °C | ≤65 | ≤40 | ≤66 | ≤45 | ≤66 | ≤45 | ≤66 | ≤45 | -45 to +60 |



1) Effective inner capacitance

2) Effective inner inductance

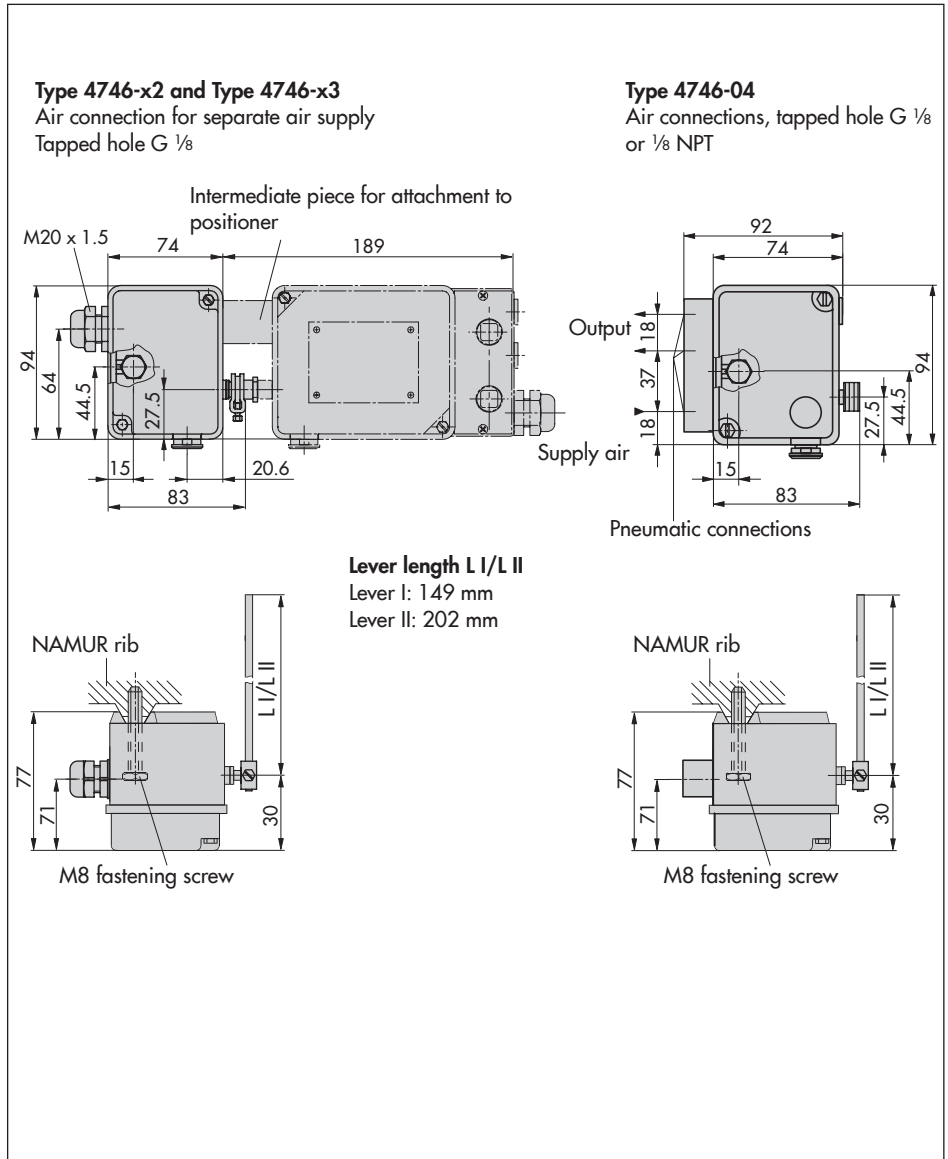
Table 3-4: Summary of explosion protection approvals

| Type | Certification | | | Type of protection | |
|---------|---|---------------------------------|-------------------------|--|-----------------------|
| 4746-1 |  | Number | RU C-DE.HA65.B.00615/20 | 1Ex ia IIC T6...T4 Gb X | |
| | | Date | 2020-06-08 | | |
| | | Valid until | 2025-05-13 | | |
| 4746 |  | Number | 13-KB4BO-0038 | Ex ia IIC T6/T5/T4 | |
| | | Date | 2013-01-31 | | |
| | | Valid until | 2022-01-31 | | |
| 4746 |  | Number | ZETC/24/2018 | II 2G Ex ia IIC T6 Gb | |
| | | Date | 2018-04-27 | | |
| | | Valid until | 2021-04-26 | | |
| 4746-12 |  | Number | 2021322307003671 | Ex ia IIC T4~T6 Gb | |
| | | Date | 2021-01-26 | | |
| | | Valid until | 2026-01-25 | | |
| 4746-12 |  | Number | A/P/HQ/MH/104/1793 | Ex ia IIC T4~T6 Gb Ex ic IIC T4~T6 Gc Ex nA IIC T4~T6 Gc | |
| | | Date | 2016-11-12 | | |
| | | Valid until | 2021-11-11 | | |
| 4746-1x |  | EC type examination certificate | Number | PTB 98 ATEX 2114 | II 2G Ex ia IIC T6 Gb |
| | | Date | 2020-02-04 | | |

Design and principle of operation

| Type | Certification | | Type of protection | |
|--------------------|---|-------------|--------------------|--|
| 4746-3 | CSA | Number | 1607226 | Ex ia IIC T6: Class I, Zone 0; Class I, II, Div. 1, Groups A, B, C, D, E, F, G; Class I, II, Div. 2, Groups A, B, C, D, E, F, G; |
| | | Date | 2005-09-16 | |
| 4746-32 4746-33 | FM | Number | 3020228 | Class I ,Zone 0 AEx ia IIC Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G Class I, Div. 2, Groups A, B, C, D; Class II, Div. 2 Groups F, G; Class III; |
| | | Date | 2015-10-12 | |
| 4746-8 | CCC Ex | Number | 2021322307003671 | Ex ia IIC T4~T6 Gb Ex ic IIC T4~T6 Gc Ex nA IIC T4~T6 Gc |
| | | Date | 2021-01-26 | |
| | | Valid until | 2026-01-25 | |
| | STCC | Number | ZETC/24/2018 | II 3G Ex nA II T6 Gc |
| | | Date | 2018-04-27 | |
| | | Valid until | 2021-04-26 | |
| 4746-82 |  Statement of conformity | Number | PTB 02 ATEX 2012 X | I 3G Ex nA II T6 |
| | | Date | 2002-04-05 | |
| 4746-83 |  Statement of conformity | Number | PTB 02 ATEX 2012 X | II 3G Ex nA II T6 |
| | | Date | 2002-04-05 | |

3.5 Dimensions in mm



4 Shipment and on-site transport

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

4.1 Accepting the delivered goods

After receiving the shipment, proceed as follows:

1. Check the scope of delivery. Check that the specifications on the nameplate of the limit switch match the specifications in the delivery note. See the 'Markings on the device' section for nameplate details.
2. Check the shipment for transportation damage. Report any damage to SAMSON and the forwarding agent (refer to delivery note).

4.2 Removing the packaging from the limit switch

Observe the following sequence:

- Do not remove the packaging until immediately before installation of the limit switch.
- Dispose and recycle the packaging in accordance with the local regulations.

4.3 Transporting the limit switch

- Pack the limit switch to protect it properly from the prevailing transport conditions.

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 the 'Design and principle of operation' section).

4.4 Storing the limit switch

! NOTICE

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

- *Observe the storage instructions.*
 - *Avoid long storage times.*
 - *Contact SAMSON in case of different storage conditions.*
-

! Note

We recommend regularly checking the prevailing storage conditions during long storage periods.

Shipment and on-site transport

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 the 'Design and principle of operation' section).
- Do not place any objects on the limit switch.

5 Installation

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

5.1 Installation conditions

Work position

The work position for the limit switch is the front view onto the device cover seen from the position of operating personnel.

Plant operators must ensure that, after installation of the limit switch, the operating personnel can perform all necessary work safely and easily access the device from the work position.

Mounting orientation

The limit switch may be installed in any position.

5.2 Preparation for installation

Before mounting, make sure the following conditions are met:

- The limit switch is not damaged.

Proceed as follows:

- Lay out the necessary material and tools to have them ready during mounting.
- The required lever I or II (see Table 5-2) must be installed before the limit switch is mounted onto the control valve. To do so, slide the clamping plate (1.1) over the lever (1) and slip them onto the shaft (2) together. Tighten the fastening screw (1.2).
- Observe the hysteresis (see Table 5-1).

Table 5-1: *Hysteresis (dead band)*

| Type 4746 | -x2 | -x3 | -04 |
|----------------|-------------------------------|--------|---------|
| Lever length L | Hysteresis | | |
| 50 mm | 0.15 (0.25 ¹⁾) mm | 0.6 mm | 0.75 mm |
| 120 mm | 0.30 (0.55 ¹⁾) mm | 1.0 mm | 1.5 mm |

¹⁾ Special version

5.3 Mounting the limit switch

5.3.1 Attachment to valve with cast yoke

1. Attach the plate (10) to the valve's stem connector using two screws (10.1).
2. Attach the pin (11) to the plate (10) using two nuts (11.1).
→ Mount the pin (11) in such a way that the shortest possible lever length can be used.
3. Unscrew the cover of the limit switch. Attach the limit switch to the valve yoke using the mounting screw (12), washer (13) and O-ring (14).
Make sure that the pin (11) is inserted through the wire strap (1.3) of the lever (1).

5.3.2 Attachment to valve with rod-type yoke

1. Attach the plate (10) to the valve's stem connector using two screws (10.1).
2. Attach the pin (11) to the plate (10) using two nuts (11.1).
→ Mount the pin (11) in such a way that the shortest possible lever length can be used.
3. Fasten the support (15) and the rod clamping plate (16) loosely to the rod.
In the valve travel mid-position, move the support until the center of the plate (10) and the support (15) are aligned.
4. Fasten the rod clamping plate.

5. Attach the limit switch to the support using the mounting screw (12), washer (13) and O-ring (14). Make sure that the pin (11) is inserted through the wire strap (1.3) of the lever (1).
→ After attaching the limit switch, make sure that the vent plug of the housing cover faces downward when the valve is installed.

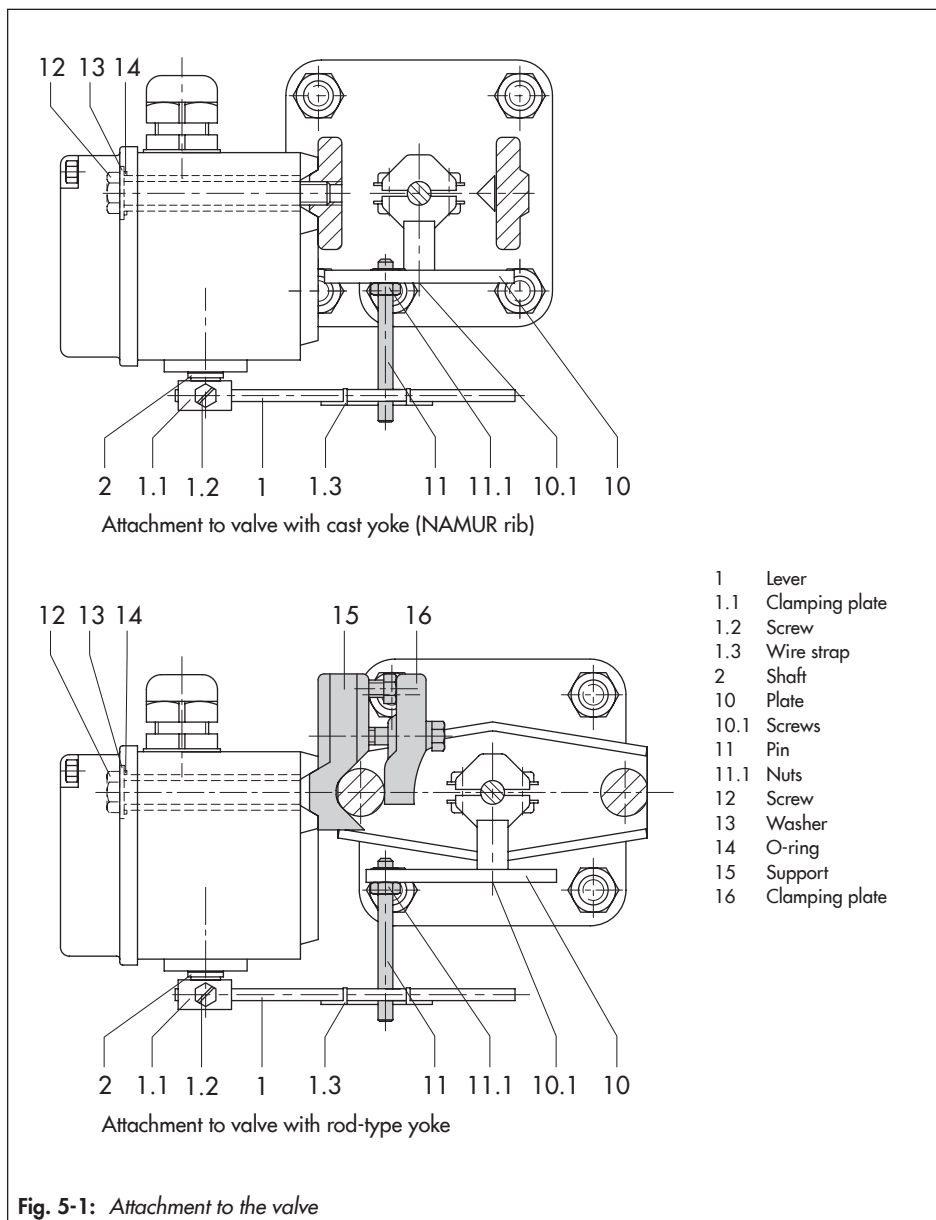


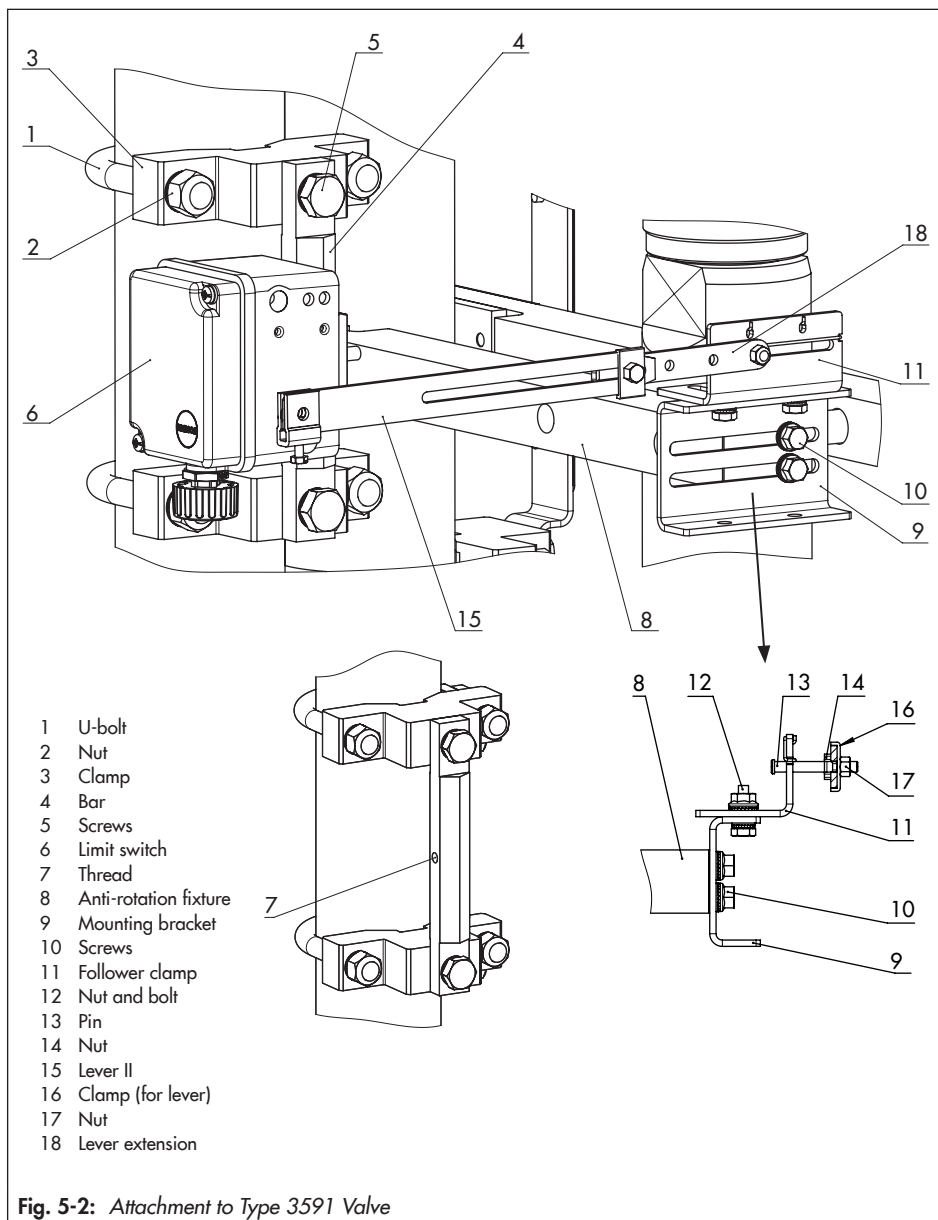
Fig. 5-1: Attachment to the valve

5.3.3 Attachment to Type 3591 Valve

- Use the supplied washers for all screw connections.
- 1. Fasten the U-bolt (1) using the clamp (3) and nuts (2) lightly onto the valve yoke.
- 2. Screw tight the bar (4) using the screws (5) onto the clamps (3).
- 3. Fasten the limit switch (6) onto the bar (4) as described in step 3 of section 5.3.1. Use the thread (7) in the bar.
- 4. Fasten the mounting bracket (9) using the screws (10) to the anti-rotation fixture (8) of the valve.
- 5. Screw the follower clamp (11) to the mounting bracket (9) using the nut and bolt (12).
- 6. Insert the pin (13) into the oblong hole of the follower clamp (11). Make sure that the pin is inserted through the wire strap of the follower clamp.
- 7. Screw the nut (14) onto the pin (13). Place the clamp (16) over the lever (15) of the limit switch (6).
- 8. Use the nut (17) to fasten the lever onto the lever extension (18).
- 9. Fasten the other end of the lever extension (18) to the follower clamp (11).
- 10. Perform alignment.

Additional points that apply concerning mounting:

- Perform the alignment in such a way that the lever (15), lever extension (18) and oblong hole of the follower clamp (11) are in line at half of the valve travel.
- After attaching the limit switch, make sure that the vent plug of the housing cover faces downward when the valve is installed.



5.3.4 Attachment on positioners

For attachment of the limit switch to the Type 4763 or Type 4765 Positioner according to Fig. 5-3, a short lever (1) and an intermediate piece (31) are required as accessories (order no. 1400-6710).

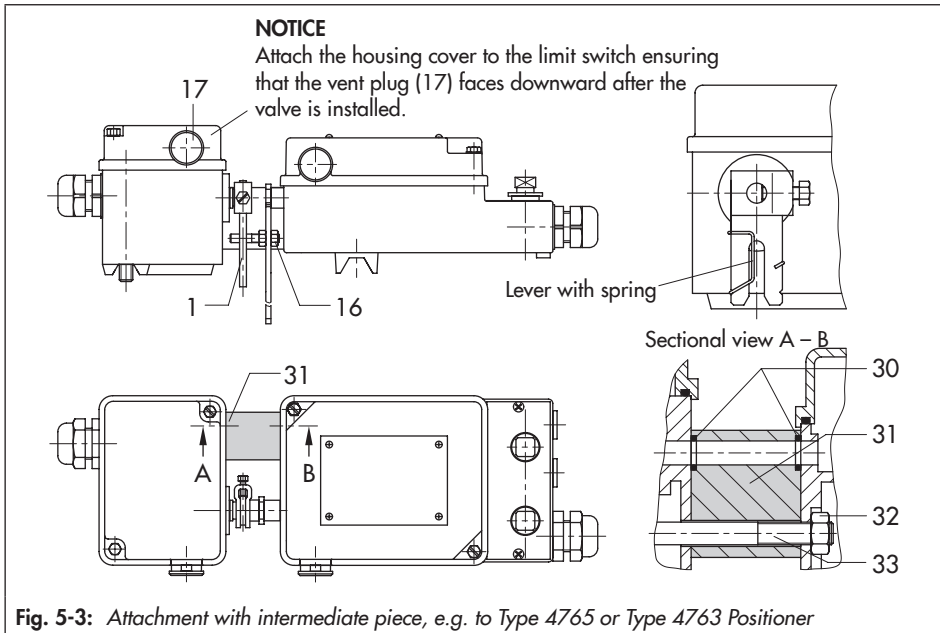
1. Insert one O-ring (30) into both the left and the right side of the intermediate piece (31).
2. Insert the two cap screws (33) through the limit switch and intermediate piece and place it onto the positioner.
3. Insert the nuts (32) into the positioner housing and screw tight the two cap screws (33).

Make sure that the short lever (1) slides over the pin (16) of the positioner.

4. Replace the vent plug (17) in the positioner housing with the screw plug included in the accessories (order no. 1400-6710).

In exchange, insert the vent plug into the housing of the limit switch. This ensures that the degree of protection of the limit switch corresponds to that of the positioner.

- To achieve degree of protection IP 65, a check valve (order no. 1790-7408) needs to be installed in the housing of the limit switch.



5.4 Electrical connections

⚠ DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- 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: Electrical installations design, selection and erection
- Installation, operation or maintenance of the limit switch must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

⚠ WARNING

Incorrect electrical connection will render the explosion protection unsafe.

- Adhere to the terminal assignment and observe correct polarity.
- Do not undo the enameled screws.
- Do not exceed the maximum permissible values (U_v , I_v , P_v , C_v , L_v) specified in the EC type examination certificates when interconnecting intrinsically safe electrical equipment.

Selecting cables and wires

- Observe the relevant clauses of EN 60079-14 for installation of intrinsically safe circuits. Clause 12.2.2.7

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

- Only use cables and wires which have a radial thickness of the insulation of a conductor for common insulating materials (e.g. polyethylene) 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.
- When two separate cables are used for connection, an additional cable gland can be installed.
- Seal cable entries left unused with screw plugs.
- Use metal cable glands when the limit switch is used at ambient temperatures below $-20\text{ }^{\circ}\text{C}$.

Note concerning equipment for use in zone 2:

In equipment operated according to type of protection Ex nA II (non-sparking equipment) according to EN 60079-15, 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 may be switched under normal operating conditions. The maximum permissible values specified in the statement of conformity or its addenda apply when interconnecting the

Installation

equipment with energy-limited circuits in type of protection Ex nL IIC.

Cable entry

→ The wires for the limit contacts must be routed through the cable gland on the housing and connected to the input terminals marked + and – as illustrated in Fig. 5-4 or according to the adhesive label on the inside of the cover.

5.4.1 Switching amplifier for Type 4746-x2

For operation of the inductive limit contacts, switching amplifiers in accordance with EN 60947-5-6 must be connected in the output circuit (not for Type 4746-0281). Observe the relevant regulations for installation in hazardous areas.

5.5 Pneumatic connection for Type 4746-04

⚠ DANGER

Sudden loud noise when the pneumatic limit contact switches.

→ Wear hearing protection when working near the valve.

The air connections are tapped holes with G 1/8 ISO 228 or 1/8-27 NPT thread. Customary fittings for metal tubing or plastic hoses can be used.

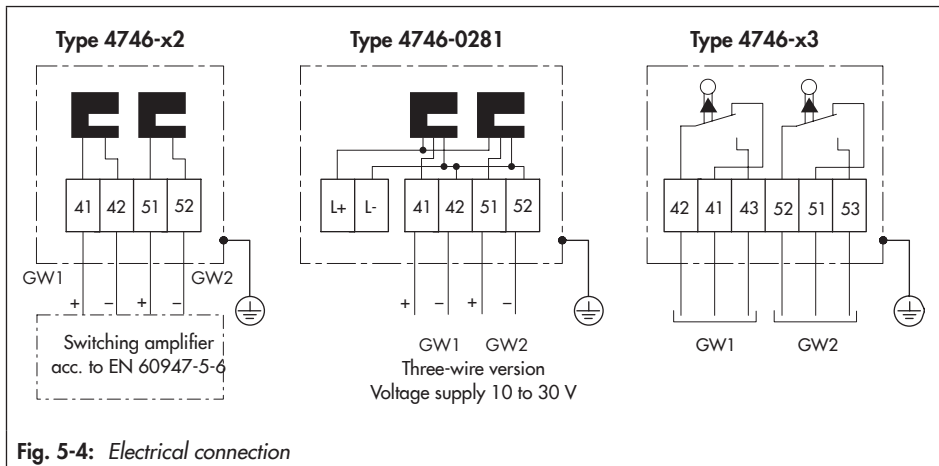


Fig. 5-4: Electrical connection

5.6 Mounting accessories

Table 5-2: Accessories for attachment according to IEC 60534-6

| Valve | Cast yoke (NAMUR rib) | | Rod-type yoke (18 to 32 mm rod diameter) | |
|--|--|-------------------------|---|---|
| | Travel | Up to 60 mm | Up to 180 mm | Up to 60 mm |
| Mounting kit order no. | 1400-6713 (lever I) | 1400-6714 (lever II) | 1400-6713 (lever I) plus 1400-5342 | 1400-6714 (lever II) plus 1400-5342 |
| Accessories for attachment to Types 4763 and 4765 Positioners | | | | |
| Mounting kit order no. | | 1400-6710 | | |
| Accessories for attachment to Type 3351 Valve | | | | |
| Valve size | DN 15 to 50 | | DN 65 to 100 | |
| Mounting kit order no. | 1400-6585 | | 1400-6586 | |
| Accessories for attachment to Type 3591 Valve with lever II | | | | |
| Mounting kit order no. | | 1402-0662 | | |
| Vent plug | | | | |
| Technical data | G ¼ connection, -50 to +80 °C, material 1.4404, degree of protection IP 65 | | | |
| Order no. | 1991-2110 | | | |

Table 5-3: Accessories for electrical connection for device index ≥ 0.6

| | | Order no. |
|------------------------|----------------------------|-----------|
| M20x1.5 cable gland | Black plastic, with washer | 8808-0180 |
| | Blue plastic, with washer | 8808-0181 |
| | Nickel-plated brass | 1890-4875 |
| Adapter M20x1.5 to NPT | Powder-coated aluminum | 0310-2149 |

Table 5-4: Accessories for electrical connection for device index < 0.6

| | | Order no. |
|---------------------|---------------|-----------|
| M20x1.5 cable gland | Black plastic | 8808-0178 |
| | Blue plastic | 8808-0179 |

6 Start-up

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

⚠ DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- *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: Electrical installations design, selection and erection*
- *Installation, operation or maintenance of the limit switch must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.*

⚠ DANGER

Sudden loud noise when the pneumatic limit contact switches.

- *Wear hearing protection when working near the valve.*

6.1 Adjusting the switching point

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.

The adjusted switch positions can be recorded on the supplied adhesive labels marked A, B and C and assigned to the corresponding switching elements.

6.1.1 Type 4746-x2

- Move the valve to the switching position and turn the adjustment screw (3.1, Fig. 6-1) until the metal tag (4.1, Fig. 6-1) reaches the switching point.
- Always move the valve to the end positions from the mid-position (50 %) on adjusting or checking the switching points.

i Note

The switching elements and the levers required to activate them react to temperature fluctuations. To ensure reliable switching, the switching hysteresis between the mechanical stop (e.g. plug in the seat) and the switching point of the limit switch must be larger than the shift of the switching point caused by a temperature change.

Start-up

Distance between switching points for 100 mm lever:

Contact SC3,5-N0-YE ≥ 2 mm,

Contact SJ3.5-SN ≥ 0.75 mm.

With other lever lengths, adjust the switching point to the changed lever length.

For example, if the lever length changes from 100 mm to 160 mm, the distance between the switching points is increased from 2.0 to 3.2 mm correspondingly.

Simplified adjustment of the inductive limit contacts:

Valve CLOSED:

Close the valve until the plug sits in the seat.

Valve OPEN:

Move the valve to the desired travel position, e.g. final position.

- Turn the adjustment screw (3.1) to slowly move the metal tag (4.1) towards the contact until the switching point is reached.
- Turn the adjustment screw in the opposite direction to achieve that the switching point reaches the stop:
contact SC3,5-N0-YE $\geq \frac{1}{6}$ turn and contact SJ3,5-SN $\geq \frac{1}{16}$ to $\frac{1}{10}$ turn.

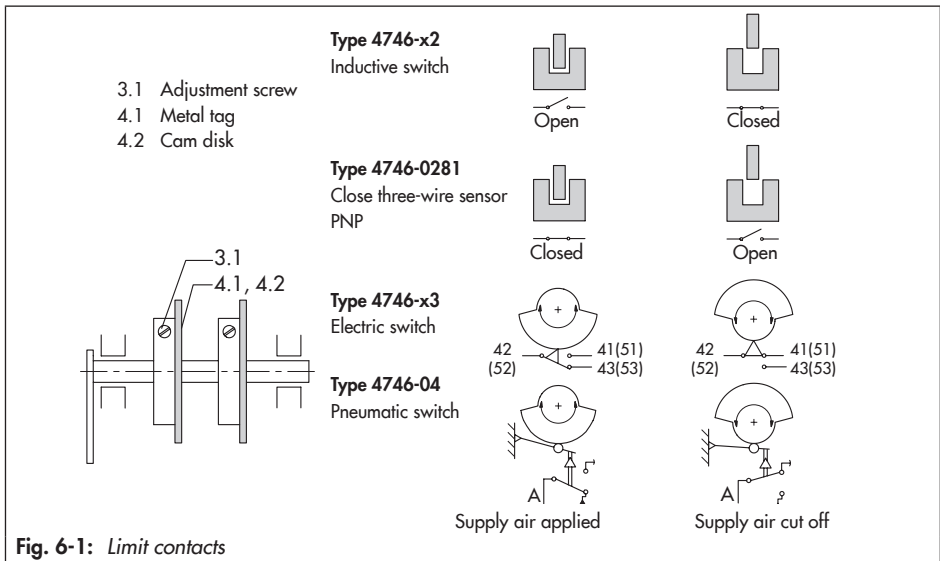


Fig. 6-1: Limit contacts

6.1.2 Type 4746-x3 and Type 4746-04

- For adjustment, the cam disk (4.2) must be positioned in such a way that its cam moves towards the roller (6.1, see the 'Design and principle of operation' section) in accordance with the direction of travel.
1. Move the valve to the desired switching position (e.g. final travel position "valve OPEN" or "valve CLOSED").
 2. Adjust the switch which is assigned to the upper or lower switching point.
 3. Turn the adjustment screw (3.1) until the cam of the cam disk (4.2) reaches the roller (6.1, see the 'Design and principle of operation' section) and the switch switches.
 4. To accurately check the switching point, move the valve slightly back and then move it to the switching position again.

7 Operation

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- *Installation, operation or maintenance of the limit switch must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.*
-

DANGER

Sudden loud noise when the pneumatic limit contact switches.

- *Wear hearing protection when working near the valve.*
-

The limit switch issues a signal when an adjusted limit is exceeded or not reached as soon as it is connected to the power supply.

8 Malfunction

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- *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: Electrical installations design, selection and erection*
- *Installation, operation or maintenance of the limit switch must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.*

DANGER

Sudden loud noise when the pneumatic limit contact switches.

- *Wear hearing protection when working near the valve.*

Proceed as follows in the event of a malfunction:

- Check attachment.
- Check the configuration of the mounting parts.
- Check power supply/electrical signal.
- Check the control valve to ensure it functions properly.

8.1 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.

9 Servicing

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

⚠ DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- 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: Electrical installations design, selection and erection
- Installation, operation or maintenance of the limit switch must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

⚠ DANGER

Sudden loud noise when the pneumatic limit contact switches.

- Wear hearing protection when working near the valve.

⚠ WARNING

Incorrect electrical connection will render the explosion protection unsafe.

- Adhere to the terminal assignment and observe correct polarity.

- Do not undo the enameled screws.
- Do not exceed the maximum permissible values (U_i , I_i , P_i , C_i , L_i) specified in the EC type examination certificates when interconnecting intrinsically safe electrical equipment.

ⓘ NOTICE

Process disruption.

- 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.

ⓘ NOTICE

Malfunction due to the use of unapproved accessories.

- Only use the accessories listed in the 'Installation' section to mount the limit switch.

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.

9.1 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.

Replace explosion-protected components only with original, routine-tested components by the manufacturer.

Devices that have already been used 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.

9.2 Maintenance and calibration

Interconnection with intrinsically safe circuits to check or calibrate the equipment inside or outside hazardous areas is to be performed only with intrinsically safe current/voltage calibrators and measuring instruments to rule out any damage to components relevant to explosion protection.

→ Observe the maximum permissible values specified in the certificates for intrinsically safe circuits.

9.3 Periodic inspection and testing of the limit switch

We recommend inspection and testing according to Table 9-1 at the minimum.

Table 9-1: *Recommended inspection and testing*

| Inspection and testing | Action to be taken in the event of a negative result |
|---|--|
| Check the markings, labels and nameplates on the limit switch for their readability and completeness. | Contact SAMSON when nameplates or labels are damaged, missing or incorrect to renew them. |
| | Clean any inscriptions that are covered with dirt and are illegible. |
| Check the limit switch to ensure it is mounted properly. | Tighten the any loose mounting screws. |
| Check the power lines. | Check electrical connection as described in the 'Installation' section. |
| | Tighten any loose cable glands. |
| | Make sure that the stranded wires are pushed into the terminals and tighten any loose screws on the the terminals. |
| | Renew damaged lines. |
| Check the pneumatic connection for Type 4746-04. | Tighten the male connectors of the screw fittings. |
| | Renew damaged hoses and pipes. |

10 Decommissioning

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- *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: Electrical installations design, selection and erection*
 - *Installation, operation or maintenance of the limit switch must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.*
-

DANGER

Sudden loud noise when the pneumatic limit contact switches.

- *Wear hearing protection when working near the valve.*
-

To decommission the limit switch, proceed as follows:

1. Disconnect and lock the air supply and power supply.
2. Unscrew the limit switch cover and disconnect the wires for the power supply.

11 Removal

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- *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: Electrical installations design, selection and erection*
 - *Installation, operation or maintenance of the limit switch must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.*
-

1. Put the limit switch out of operation (see the 'Decommissioning' section).
2. Disconnect the wires for the power supply from the limit switch.
3. To remove the limit switch, loosen the fastening screw on the limit switch.

12 Repairs

A defective limit switch must be repaired or replaced.

! NOTICE

Risk of damage to the limit switch due to incorrect service or repair work.

- Do not perform any repair work on your own.
 - Contact SAMSON's After-sales Service for repair work.
-

12.1 Returning devices to SAMSON

Defective limit switches can be returned to SAMSON for repair.

Proceed as follows to return devices to SAMSON:

1. Put the limit switch out of operation (see the 'Decommissioning' section).
2. Remove the limit switch (see the 'Removal' section).
3. Proceed as described on the Returning goods page of our website
 - ▶ www.samsongroup.com > Service & Support > After-sales Service > Returning goods

13 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.



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

14 Certificates

14.1 Certificates

The following certificates are included on the next pages:

- EU declarations of conformity for Type 4746, Type 4746-0, Type 4746-12, Type 4746-13, Type 4746-82 and Type 4746-83
- EAC certificates for Type 4746 and Type 4746-0
- EC type examination certificate (ATEX) for Type 4746-1
- Statement of conformity (ATEX) for Type 4746-82 and Type 4746-83

The certificates shown were up to date at the time of publishing. The latest certificates can be found on our website:

▶ www.samsongroup.com > Products & Applications > Product selector > Valve accessories > Type 4746



1/1

DC008
2019-11

DECLARATION UE DE CONFORMITE
EU DECLARATION OF CONFORMITY
EU KONFORMITÄTSEKTLÄRUNG

La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.
This declaration of conformity is issued under the sole responsibility of the manufacturer.
Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.

Nous certifions pour les produits suivants en exécution standard :
For the following products in standard execution:
Für die folgenden Produkte in Standard-Ausführung:

Type / type / Typ : 2371, 3249, 3252, 3310, 3331, 3347, 3349, 3351, 3710, 3711, 3776, 3777, 3812,
3963, 3964, 3967, 4708, 4746, 5090, Samstation

sont conformes à la législation applicable harmonisée de l'Union :
the conformity with the relevant Union harmonization legislation is declared with:
wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt:

RoHS 2011/65/EU, 2015/863/EU

EN50581:2012-09

Fabricant : SAMSON REGULATION S.A.S.
Manufacturer: 1, rue Jean Corona
Hersteller: 69520 Vaulx-en-Velin
France

Vaulx-en-Velin, le 26/11/19

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

SAMSON REGULATION S.A.S.

Joséphine SIGNOLES-FONTAINE
Responsable QSE



SAMSON

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

Elektrischer oder pneumatischer Grenzsignalgeber / Electric or Pneumatic Limit Switch / Contacts de position électriques ou pneumatiques Typ/Type/Type 4746

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 |
| 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



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

Elektrischer oder pneumatischer Grenzsignalgeber / Electric or Pneumatic Limit Switch / Contacts de position électriques ou pneumatiques Typ/Type/Type 4746-12, -13, -82, -83

entsprechend der EU-Baumusterprüfbescheinigung PTB 98 ATEX 2114 u. PTB 02 ATEX 2012 X
ausgestellt von der/ according to the EU Type Examination PTB 98 ATEX 2114 and PTB 02 ATEX
2012 X issued by/ établi selon le certificat CE d'essais sur échantillons PTB 98 ATEX 2114 et PTB 02
ATEX 2012 X 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 61000-6-2:2019, EN 61000-6-3:2007 +A1:2011, EN 61326-1:2013 |
| Explosion Protection 2014/34/EU | EN 60079-0:2018, EN 60079-11:2012, EN 60079-15:2010 |
| RoHS 2011/65/EU | EN 50581:2012 |

Hersteller / Manufacturer / Fabricant:

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

Frankfurt / Francfort, 2020-07-31

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

Dipl.-Ing. Gert Nahler
Zentralabteilungsleiter/Head of Department/Chef du département
Entwicklung Automation und Integrationstechnologien/
Development Automation and Integration Technologies

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

es_4746-12_-13_-82_-83_de_en_fr_auew05.pdf



СЕРТИФИКАТ СООТВЕТСТВИЯ

№ ЕАЭС RU C-DE.ЭА11.В.00042/19

Серия **RU** № **0121348**

ОРГАН ПО СЕРТИФИКАЦИИ Общества с ограниченной ответственностью «ТМС РУС». Место нахождения (адрес юридического лица): Российская Федерация, 127083, город Москва, улица Верхняя Масловка, дом 20, строение 2; адрес места осуществления деятельности: Российская Федерация, 127083, город Москва, улица Верхняя Масловка, дом 20, строение 2, помещения № 18, 28. Аттестат аккредитации № РОСС RU.0001.11ЭА11 от 02.07.2015. Номер телефона: +7 (495) 221-18-04; адрес электронной почты: info@tms-cs.ru.

ЗАЯВИТЕЛЬ Общество с ограниченной ответственностью «Самсон Контролс». Место нахождения (адрес юридического лица) и адрес места осуществления деятельности: Российская Федерация, 109544, город Москва, бульвар Энтузиастов, дом 2, этаж 5, комната 11. ОГРН 1037700041026. Номер телефона: +7 (495) 777-45-45; адрес электронной почты: samson@samson.ru.

ИЗГОТОВИТЕЛЬ «SAMSON AG Mess- und Regeltechnik». Место нахождения (адрес юридического лица) и адрес места осуществления деятельности по изготовлению продукции: Weismüllerstrasse 3, D-60314 Frankfurt am Main, Германия.

ПРОДУКЦИЯ Сигнализаторы конечных положений типов 3738, 3768, 3776, 4740, 4746, 4747. Изготовление в соответствии со стандартами, указанными в приложении к сертификату соответствия на бланке № 0676625. Серийный выпуск.

КОД ТН ВЭД ЕАЭС 9032 81 000 0

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ технических регламентов Таможенного союза «О безопасности низковольтного оборудования» (ТР ТС 004/2011); «Электромагнитная совместимость технических средств» (ТР ТС 020/2011).

СЕРТИФИКАТ СООТВЕТСТВИЯ ВЫДАН НА ОСНОВАНИИ протокола сертификационных испытаний № Г506-5422, Г506-5423 от 18.09.2019, выданных Испытательной лабораторией Ассоциации экспертов по сертификации и испытаниям продукции «Сертификационный центр НАСТХОЛ», аттестат аккредитации РОСС RU.0001.21Г506; протокола сертификационных испытаний № 190919-002-003-02/ИР от 17.10.2019, выданного испытательной лабораторией ООО «Иновационные решения», аттестат аккредитации РОСС RU.0001.21AB90; акта о результатах анализа состояния производства № 00052-А от 04.07.2019 органа по сертификации Общества с ограниченной ответственностью «ТМС РУС»; руководства по эксплуатации 4218-СКП-2019.РЭ. Схема сертификации – 1с

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ Стандарты, в результате применения которых на добровольной основе обеспечивается соответствие требованиям технических регламентов: ГОСТ 12.2.007-0-75 «Система стандартов безопасности труда. Изделия электротехнические. Общие требования безопасности»; раздел 8 ГОСТ 30804.6.2-2013 «Совместимость технических средств электромагнитная. Устойчивость к электромагнитным помехам. Технические средства, применяемых в промышленных зонах»; раздел 7 ГОСТ 30804.6.4-2013 «Совместимость техническое средств электромагнитная. Электромагнитный помехи от технических средств, применяемых в промышленных зонах». Назначенный срок службы – 15 лет. Назначенный срок хранения – 2 года. Условия хранения указаны в руководстве по эксплуатации 4218-СКП-2019.РЭ.

СРОК ДЕЙСТВИЯ С 18.10.2019 **ПО** 17.10.2024

ВКЛЮЧИТЕЛЬНО

Руководитель (уполномоченное

лицо) органа по сертификации

Эксперт (эксперт-аудитор)

(эксперты (эксперты-аудиторы))

Назарова
(подпись)

Хедоров
(подпись)



Назарова Лилия Юрьевна

(ф.и.о.)

М.П.

Хедоров Владимир Игоревич

(ф.и.о.)

ПРИЛОЖЕНИЕ

К СЕРТИФИКАТУ СООТВЕТСТВИЯ № ЕАЭС RU C-DE.ЭА11.В.00042/19

Серия **RU** № **0676625** Лист 1 из 1

Стандарты, в соответствии с которыми изготавливается продукция

| Обозначение стандарта | Наименование стандарта |
|--|--|
| IEC 60730-1:2013 / Cor. 1:2014 | Automatic electrical controls for household and similar use. Part 1. General requirements. Corrigendum 1 |
| IEC 60947-2:2016 / Cor. 1:2016 | Low-voltage switchgear and controlgear. Part 2: Circuit-breakers. Corrigendum 1 |
| IEC 60947-3:2008 | Low-voltage switchgear and controlgear. Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units |
| IEC 61008-1:2010 / Amd. 1:2012 / Cor. 1:2016 | Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs). Part 1. General rules. Amendment 1. Corrigendum 1 |
| IEC 61000-6-2:2016 | Electromagnetic compatibility (EMC). Part 6-2: Generic standards. Immunity for industrial environments |
| EN 61000-6-3:2007 + A1:2011 | Electromagnetic compatibility (EMC). Part 6-3: Generic standards. Emission standard for residential, commercial and light-industrial environments |
| IEC 61010-1:2010 | Safety requirements for electrical equipment for measurement, control, and laboratory use. Part 1: General requirements |
| EN 61326-1:2013 | Electrical equipment for measurement, control and laboratory use. EMC requirements. Part 1: General requirements |

Руководитель (уполномоченное лицо) органа по сертификации

Эксперт (эксперт-аудитор) (эксперты (эксперты-аудиторы))

Лилия Юрьевна
(подпись)

М.П.
(подпись)



Назарова Лилия Юрьевна

(ф.И.О.)

Ходоров Владимир Игоревич

(ф.И.О.)



СЕРТИФИКАТ СООТВЕТСТВИЯ

№ ЕАЭС RU C-DE.HA65.B.00615/20

Серия **RU** № **0249293**

ОРГАН ПО СЕРТИФИКАЦИИ продукция Общества с ограниченной ответственностью «ТехБезопасность». Адрес места нахождения юридического лица: 127486, Россия, город Москва, улица Дегуниязкая, дом 1, корпус 2, этаж 3, помещение 1, комната 19. Адреса мест осуществления деятельности в области авиационной техники: 105066, Россия, город Москва, улица Никитинская, дом 35, строение 64, комната 22 "в", 301668, Россия, Тульская область, город Новомосковский, улица Орджоникидзе, дом 8 пристроенное нежилое здание – пристройка к цеху № 3, 3 этаж, помещение 4 и помещение 10. Номер аттестата авиационной (регистрационный номер) RA.RU.11HA65. Дата внесения в реестр сведений об авиационных компаниях – 10.08.2018. Телефон: +74952081646, адрес электронной почты: teh-bez@inbox.ru.

ЗАЯВИТЕЛЬ

Общество с ограниченной ответственностью «Самсон Контролс». Основной государственный регистрационный номер 1037700041026. Место нахождения (адрес юридического лица) и адрес места осуществления деятельности: 109544, Россия, Москва, бульвар Энтузиастов, дом 2, этаж 5, комната 11. Телефон: +74957774545, адрес электронной почты: samson@samson.ru

ИЗГОТОВИТЕЛЬ

SAMSON AG Mess- und Regeltechnik. Место нахождения (адрес юридического лица) и адрес места осуществления деятельности по изготовлению продукции: Weismüllerstrasse 3, 60314 Frankfurt am Main, Германия.

ПРОДУКЦИЯ

Сигнализаторы конечных положений (конечные выключатели) типов 3776-1, 4744, 4746-1. Маркировки взрывозащиты и иные сведения о продукции, обеспечивающие ее идентификацию, приведены на листах 1, 2, 3, 4 приложения (бланки №№ 0750809, 0750810, 0750811, 0750812). Серийный выпуск.

КОД ТН ВЭД ЕАЭС 9032 81 000 0

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ Технического регламента Таможенного союза «О безопасности оборудования для работы во взрывоопасных средах» (ТР ТС 012/2011)

СЕРТИФИКАТ СООТВЕТСТВИЯ ВЫДАН НА ОСНОВАНИИ

Протокола испытаний № 0748-НИ-01 от 12.05.2020 года Испытательной лаборатории взрывозащищенного оборудования Общества с ограниченной ответственностью «ТЕХБЕЗОПАСНОСТЬ», аттестат аккредитации RA.RU.21HB54 от 26.03.2018. Акта анализа состояния производства № 0748-АСП от 11.02.2020. Технической документации изготовителя согласно листу 4 приложения (бланк № 0750812). Схема сертификации 1с.

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Стандарты и иные нормативные документы, применяемые при подтверждении соответствия, приведены на листе 5 приложения (бланк № 0750813). Условия хранения: от минус 60 °С до плюс 60 °С. Срок хранения – 24 месяца. Срок службы (годности) – 15 лет.

СРОК ДЕЙСТВИЯ С 08.06.2020 ПО 13.05.2025

ВКЛЮЧИТЕЛЬНО

Руководитель (уполномоченное лицо) органа по сертификации

(подпись)

Эксперт (эксперт-аудитор) (эксперты (эксперты-аудиторы))

(подпись)

Починарев Михаил Валерьевич

(ф.и.о.)

М.П.

Цимелев Антон Андреевич

(ф.и.о.)



ПРИЛОЖЕНИЕ

К СЕРТИФИКАТУ СООТВЕТСТВИЯ № ЕАЭС RU C-DE.НА65.B.00615/20

Серия **RU** № **0750809**

1. Описание конструкции и средств обеспечения взрывозащиты

Сигнализаторы конечных положений (конечные выключатели) типов 3776-1, 4744, 4746-1 предназначены для монтажа на пневматические и электрические регулирующие клапаны одностороннего и двойного действия.

Сигнализаторы конечных положений (конечные выключатели) типов 3776-1, 4744, 4746-1 выполнены в корпусе прямоугольной формы, изготовленного из алюминиевого сплава с содержанием магния менее 7,5% или пластмассы. В корпусе расположены элементы электронной схемы, пневматический усилитель и заземляющий зажим. Сигнализаторы конечных положений поставляются с индуктивными концевыми контактами, микровыключателями, могут комплектоваться соленоидными клапанами, которые предназначены для преобразования электрических входных сигналов в пневматический выходной сигнал, приведения в действие и управления пневматическими приводами.

Сигнализаторы конечных положений (конечные выключатели) типа 4744 выполнены в корпусе из полиэфир, усиленного стекловолокном, и содержат один или два микровыключателя. В сигнализаторах типа 4744 используют взрывозащищенные позиционные выключатели серии 8070/2 производства R.STAHL Schaltgeraete GmbH, Германия, имеющие отдельный сертификат соответствия требованиям ТР ТС 012/2011.

Вариозащищенность сигнализаторов конечных положений обеспечивается взрывозащитой вида «взрывонепроницаемая оболочка d» по ГОСТ IEC 60079-1-2011, взрывозащитой вида «e» по ГОСТ Р МЭК 60079-7-2012, защитой вида «искробезопасная электрическая цепь уровня «ia» по ГОСТ 31610.11-2014 (IEC 60079-11:2011) и выполнением их конструкции в соответствии с требованиями ГОСТ 31610.0-2014 (IEC 60079-0:2011).

2. Специальные условия применения (если в маркировке взрывозащиты указан знак «X»)

- 2.1. Соединение сигнализаторов исполнения Ex ia с аппаратурой, расположенной вне взрывоопасной зоны, должно осуществляться через барьеры искрозащиты, имеющие сертификат соответствия для подключения устройств, находящихся во взрывоопасных зонах помещений и наружных установок, где возможно образование взрывоопасной газовой смеси категории IIC; входные и выходные искробезопасные параметры сигнализаторов с учетом параметров соединительного кабеля должны соответствовать электрическим параметрам, указанным на барьере безопасности.
- 2.2. Запрещается эксплуатация сигнализаторов с механическими повреждениями;
- 2.3. Ремонт и техническое обслуживание сигнализаторов проводить по предоставленной производителем эксплуатационной документации.
- 2.4. При установке и техническом обслуживании сигнализаторов типа 3776-1 необходимо принимать меры для обеспечения безопасности от статических зарядов, которые могут образоваться на поверхности крышки, согласно инструкции. Прибор должен быть оснащен табличкой с предупреждающей надписью.

3. Спецификация и идентификация продукции

Маркировка взрывозащиты в зависимости от типов сигнализаторов приведена в таблице 1.

Таблица 1

| Наименование взрывозащитного электрооборудования | Маркировка взрывозащиты |
|--|--------------------------|
| Сигнализаторы конечных положений (конечные выключатели) типов 3776-1, 4746-1 | IEEx ia IIC T6...T4 Gb X |
| Сигнализаторы конечных положений (конечные выключатели) типа 4744 | IEEx d e IIC T6 Gb |

Подробное разъяснение к спецификационным кодам сигнализаторов конечных положений приводится в технической документации изготовителя.

4. Основные технические данные

- 4.1. Параметры сигнализаторов конечных положений типов 3776-1

Таблица 2

| | |
|--------------------------------|---|
| Модификации сигнализаторов | 3776-11... 3776-12... 3776-14... |
| Разъемы | контакты (+ 41/- 42), (+ 45/- 46) и (+51/-52) |
| Индуктивный сенсор | SC3,5...-N0; SJ3,5-SN; SJ3,5...-N... |
| Параметры искробезопасной цепи | Ui ≤ 16 В; Ii ≤ 52 мА; Pi ≤ 169 мВт |

Руководитель (уполномоченное лицо) органа по сертификации

(подпись)

Пономарев Михаил Валерьевич

(Ф.И.О.)

Эксперт (эксперт-аудитор) (эксперты (эксперты-аудиторы))

(подпись)

М.П. Шмелев Антон Андреевич

(Ф.И.О.)



ПРИЛОЖЕНИЕ

К СЕРТИФИКАТУ СООТВЕТСТВИЯ № ЕАЭС RU C-DE.HA65.B.00615/20

Серия **RU** № **0750810**

| | | | |
|---|--|----------|---------------|
| Допустимые диапазоны температур окружающей среды для температурного класса: T6 T5 T4 | минус 45 °C ≤ Ta ≤ +45 °C минус 45 °C ≤ Ta ≤ +60 °C минус 45 °C ≤ Ta ≤ +80 °C | | |
| Параметры искробезопасной цепи | Ui ≤ 16 В; Ii ≤ 25 мА; Pi ≤ 64 мВт | | |
| Допустимые диапазоны температур окружающей среды для температурного класса: T6 T5 T4 | минус 45 °C ≤ Ta ≤ +65 °C минус 45 °C ≤ Ta ≤ +80 °C минус 45 °C ≤ Ta ≤ +100 °C | | |
| Параметры Ci и Li в зависимости от типа сенсора | SC3,5...-N0 | SJ3,5-SN | SJ3,5...-N... |
| Li | 150 мкГн | 100 мкГн | 250 мкГн |
| Ci | 150 нФ | 30 нФ | 50 нФ |

Таблица 3

| | | | |
|---|--|----------------|--|
| Модификации сигнализаторов | 3776-17... | | |
| Разъемы | контакты (+41/-42) и (+51/-52) | | |
| Индуктивный сенсор | NJ2-V3-N...; NCN3-F24-N4... | | |
| Параметры искробезопасной цепи | Ui ≤ 16 В; Ii ≤ 52 мА; Pi ≤ 169 мВт | | |
| Допустимые диапазоны температур окружающей среды для температурного класса: T6 T5 T4 | минус 45 °C ≤ Ta ≤ +55 °C минус 45 °C ≤ Ta ≤ +70 °C минус 45 °C ≤ Ta ≤ +85 °C | | |
| Параметры искробезопасной цепи | Ui ≤ 16 В; Ii ≤ 25 мА; Pi ≤ 64 мВт | | |
| Допустимые диапазоны температур окружающей среды для температурного класса: T6 T5 T4 | минус 45 °C ≤ Ta ≤ +70 °C минус 45 °C ≤ Ta ≤ +80 °C минус 45 °C ≤ Ta ≤ +100 °C | | |
| Параметры Ci и Li в зависимости от типа сенсора | NJ2-V3-N... | NCN3-F24-N4... | |
| Li | 50 мкГн | 100 мкГн | |
| Ci | 40 нФ | 100 нФ | |

Таблица 4

| | | | |
|---|---|--|--|
| Модификации сигнализаторов | 3776-15...; 3776-16... | | |
| Разъемы для подключения микровыключателей | контакты (41, 42, 43), (44, 45, 46) и (51, 52, 53) | | |
| Параметры искробезопасной цепи | Ui ≤ 45 В; Pi ≤ 2 Вт | | |
| Li | пренебрежимо малы | | |
| Ci | пренебрежимо малы | | |
| Допустимые диапазоны температур окружающей среды для температурного класса: T6 T5 T4 | минус 45 °C ≤ Ta ≤ +60 °C минус 45 °C ≤ Ta ≤ +70 °C минус 45 °C ≤ Ta ≤ +80 °C | | |

Руководитель (уполномоченное лицо) органа по сертификации

(подпись)

М.П.

Пономарев Михаил Валерьевич

(Ф.И.О.)

Эксперт (эксперт-аудитор) (эксперты (эксперты-аудиторы))

(подпись)

Шмелев Антон Андреевич

(Ф.И.О.)



ПРИЛОЖЕНИЕ

К СЕРТИФИКАТУ СООТВЕТСТВИЯ № ЕАЭС RU C-DE.HA65.B.00615/20

Серия **RU** № **0750811**

4.2. Параметры соленоидного клапана для сигнализаторов типа 3776-1

Таблица 5

| | | | | | |
|---|----------------------------------|--------|--------|--------|-------|
| Разъемы | контакты (+ 81/- 82) и (+83/-84) | | | | |
| Номинальное напряжение U_N | 6 В | | 12 В | | 24 В |
| $U_i \leq$ | 25 В | 27 В | 28 В | 30 В | 32 В |
| $I_i \leq$ | 150 мА | 125 мА | 115 мА | 100 мА | 85 мА |
| L_i C_i | пренебрежимо малы | | | | |
| Примечание: максимально допустимая мощность рассеяния P_i в исполнении 6 В составляет 250 мВт. | | | | | |
| Допустимые диапазоны температур окружающей среды для температурного класса: | | | | | |
| T6 | минус 45 °C ≤ Ta ≤ +60 °C | | | | |
| T5 | минус 45 °C ≤ Ta ≤ +70 °C | | | | |
| T4 | минус 45 °C ≤ Ta ≤ +80 °C | | | | |
| Степень защиты оболочки по ГОСТ 14254-2015 | IP54/IP65 | | | | |

4.3. Параметры сигнализаторов конечных положений типов 4746-1

Таблица 6

| | | | |
|---|---|----------|---------------|
| Модификации сигнализаторов | 4746-12 .. | | |
| Разъемы | контакты (+ 41/- 42) и (+51/-52) | | |
| Индуктивный сенсор | SC3.5...-N0; SJ3.5-SN; SJ3.5...-N... | | |
| Параметры искробезопасной цепи | $U_i \leq 16 В$; $I_i \leq 52 мА$; $P_i \leq 169 мВт$ | | |
| Допустимые диапазоны температур окружающей среды для температурного класса: | | | |
| T6 | минус 45 °C ≤ Ta ≤ +45 °C | | |
| T5 | минус 45 °C ≤ Ta ≤ +60 °C | | |
| T4 | минус 45 °C ≤ Ta ≤ +80 °C | | |
| Параметры искробезопасной цепи | $U_i \leq 16 В$; $I_i \leq 25 мА$; $P_i \leq 64 мВт$ | | |
| Допустимые диапазоны температур окружающей среды для температурного класса: | | | |
| T6 | минус 45 °C ≤ Ta ≤ +65 °C | | |
| T5 | минус 45 °C ≤ Ta ≤ +80 °C | | |
| T4 | минус 45 °C ≤ Ta ≤ +100 °C | | |
| Параметры C_i и L_i в зависимости от типа сенсора | SC3.5...-N0 | SJ3.5-SN | SJ3.5...-N... |
| L_i | 150 мкГн | 100 мкГн | 250 мкГн |
| C_i | 150 нФ | 30 нФ | 50 нФ |

Таблица 7

| | | |
|---|--------------------------------------|--|
| Модификации сигнализаторов | 4746-13 .. | |
| Разъемы для подключения микровыключателей | контакты (41, 42, 43) и (51, 52, 53) | |
| Параметры искробезопасной цепи | $U_i \leq 45 В$; $P_i \leq 2 Вт$ | |
| L_i C_i | пренебрежимо малы | |
| Допустимые диапазоны температур окружающей среды для температурного класса: | | |
| T6 | минус 45 °C ≤ Ta ≤ +60 °C | |
| T5 | минус 45 °C ≤ Ta ≤ +70 °C | |
| T4 | минус 45 °C ≤ Ta ≤ +80 °C | |

Руководитель (уполномоченное лицо) органа по сертификации

(подпись)

Эксперт (эксперт-аудитор) (эксперты (эксперты-аудиторы))

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Полномарев Михаил Валерьевич

(ф.и.о.)

М.П.

Шмелев Антон Андреевич

(ф.и.о.)



ПРИЛОЖЕНИЕ

К СЕРТИФИКАТУ СООТВЕТСТВИЯ № ЕАЭС RU C-DE.HA65.B.00615/20

Серия **RU** № **0750812**

- 4.4. Сигнализаторы конечных положений типа 4744
 - нагрузочная способность контактов реле, В/А:
 постоянный ток 125/4
 переменный ток 500/4
 - степень защиты оболочки по ГОСТ 14254-2015, не ниже IP65
 - температура окружающей среды, °С от минус 55 до +55 (I_к - 4 А), +60 (I_к - 2 А)
 4.5. Габаритные размеры, масса сигнализаторов см. техническую документацию изготовителя

5. Техническая документация изготовителя

- 5.1. Инструкции по монтажу и эксплуатации на сигнализаторы конечных положений (конечные выключатели) типа 3776-1 № ЕВ 3776 RU (июнь 2014), типа 4744 № ЕВ 8367 RU (апрель 2004), типа 4746-1 № ЕВ 8365 RU (ноябрь 2007)
 5.2. Паспорта №№ 4218-3776-001-2020.ПС, 4218-3776-002-2020.ПС, 4218-4744-001-2020.ПС, 4218-4744-002-2020.ПС, 4218-4746-001-2020.ПС, 4218-4746-002-2020.ПС
 5.3. Сертификат соответствия требованиям ТР ТС 012/2011 № TC RU C-DE.AA87.B.00619
 5.4. Чертежи №№ 1000104685, 1000104698, 1050-0380 S, 1050-0455 S, 1050-0625 R, 1000104712, 1000104823, 1000104708, 1000104710, 1000104776, 1050-1981.

При внесении изготовителем или организацией, проводящей эксплуатацию оборудования, в конструкцию и (или) техническую документацию, подтверждающую соответствие оборудования и (или) Ех-компонента требованиям ТР ТС 012/2011, изменений, влияющих на показатели взрывобезопасности оборудования, изготовитель или организация, проводящая эксплуатацию оборудования, должны предоставить в орган по сертификации описание изменений, техническую документацию (чертежи средств обеспечения взрывозащиты) с внесенными изменениями и образец для проведения дополнительных испытаний, если орган по сертификации посчитает недостаточным проведение только экспертизы технической документация с внесенными изменениями для принятия решения о соответствии оборудования и (или) Ех-компонента ТР ТС 012/2011 с внесенными изменениями.

Руководитель (уполномоченное
лицо) органа по сертификации

(подпись)



Пономарев Михаил Валерьевич

(Ф.И.О.)

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Эксперт (эксперт-аудитор)
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(подпись)

ПРИЛОЖЕНИЕ

К СЕРТИФИКАТУ СООТВЕТСТВИЯ № ЕАЭС RU C-DE.HA65.B.00615/20

Серия **RU** № **0750813**

Стандарты и иные нормативные документы, применяемые при подтверждении соответствия

| Обозначение стандарта, нормативного документа | Наименование стандарта, нормативного документа | Раздел (пункт, подпункт) стандарта, нормативного документа |
|---|--|--|
| ГОСТ 31610.0-2014 (IEC 60079-0:2011) | Взрывоопасные среды. Часть 0. Оборудование. Общие требования. | Стандарт в целом |
| ГОСТ IEC 60079-1-2011 | Взрывоопасные среды. Часть 1. Оборудование с видом взрывозащиты «взрывонепроницаемые оболочки «d»». | Стандарт в целом |
| ГОСТ Р МЭК 60079-7-2012 | Взрывоопасные среды. Часть 7. Оборудование. Повышенная защита вида «e». | Стандарт в целом |
| ГОСТ 31610.11-2014 (IEC 60079-11:2011) | Взрывоопасные среды. Часть 11. Оборудование с видом взрывозащиты «искробезопасная электрическая цепь «i»». | Стандарт в целом |

Руководитель (уполномоченное лицо) органа по сертификации

(подпись)

Пономарев Михаил Валерьевич

(Ф.И.О.)

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(подпись)

М.П.

Щмелев Антон Андреевич

(Ф.И.О.)





(1) **EU-TYPE EXAMINATION CERTIFICATE**
(Translation)

- (2) Equipment or Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 2014/34/EU**
(3) EU-Type Examination Certificate Number:

PTB 98 ATEX 2114

Issue: 1

- (4) Product: Limit transducer, type 4746-12 and 4746-13
(5) Manufacturer: Samson AG
(6) Address: Weismüllerstraße 3, 60314 Frankfurt am Main, Germany
(7) This product and any acceptable variation thereto is 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 17 of the 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 the confidential Test Report PTB Ex 19-29116.
(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN IEC 60079-0:2018 **EN 60079-11:2012**
(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 in accordance to the Directive 2014/34/EU. 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 ia IIC T6 Gb

Konformitätsbewertungsstelle: Sektor Explosionsschutz Braunschweig, February 4, 2020
On behalf of PTB:

Dr.-Ing. F. Lienesch
Direktor und Professor



ZSE001e c

sheet 1/3

EU-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

(13)

SCHEDULE

(14) **EU-Type Examination Certificate Number PTB 98 ATEX 2114, Issue: 1**

(15) Description of Product

The limit transducers of types 4746-12 and 4746-13 are used to convert mechanical actuating variables into electrical signals. Depending on the variant they are provided with limit contacts of different designs. The limit transducers are mounted onto pneumatic, electrical or hydraulic positioners which are applied inside and outside of the hazardous area.

The limit transducers of types 4746-12 and 4746-13 are passive two-terminal elements which may be connected to certified intrinsically safe circuits, unless the permissible maximum values U_i , I_i and P_i are exceeded.

Electrical data

Inductive limit contact
Type 4746-12...
(terminals 41/42 or 51/52)

type of protection Intrinsic Safety Ex ia IIC
only for connection to a certified intrinsically safe circuit

Maximum values per contact:

| | SC3,5-N0-YE | | SC3,5-N0-WH | | SJ3,5-SN | | SJ3,5-S1N | |
|--|-------------|-----|-------------|-----|----------|-----|-----------|-----|
| U_i in V | 16 | | 16 | | 16 | | 16 | |
| I_i in mA | 25 | 52 | 25 | 52 | 25 | 52 | 25 | 52 |
| P_i in mW | 64 | 169 | 64 | 169 | 64 | 169 | 64 | 169 |
| C_i in nF | 150 | | 150 | | 30 | | 30 | |
| L_i in μ H | 150 | | 150 | | 100 | | 100 | |
| Permissible ambient temperature range depending on temperature class | | | | | | | | |
| T4 in °C | ≤100 | ≤75 | ≤100 | ≤89 | ≤100 | ≤89 | ≤100 | ≤89 |
| T5 in °C | ≤80 | ≤55 | ≤81 | ≤60 | ≤81 | ≤60 | ≤81 | ≤60 |
| T6 in °C | ≤65 | ≤40 | ≤66 | ≤45 | ≤66 | ≤45 | ≤66 | ≤45 |

sheet 2/3

EU-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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SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 98 ATEX 2114, Issue: 1

Electrical micro-switch
Type 4746-13...
(terminals 41/42/43 or 51/52/53)

type of protection Intrinsic Safety Ex ia IIC
only for connection to a certified intrinsically
safe circuit

Maximum values per switch:

$$U_i = 45 \text{ V}$$

$$P_i = 2 \text{ W}$$

The effective internal capacitances and
inductances are negligibly low.

Permissible ambient temperature range
depending on temperature class:

$$T_6 = -45 \text{ °C} \dots 60 \text{ °C}$$

$$T_5 = -45 \text{ °C} \dots 70 \text{ °C}$$

$$T_4 = -45 \text{ °C} \dots 80 \text{ °C}$$

Changes with respect to previous editions

- Adaption of the test specification to the currently applicable state of standards
- Update of the type labels and the marking
- Replacement of the DIN rail terminals from Weidmüller by print terminals from Phoenix
- Update of the list of currently applicable documents
- Adaption of the operating instructions manual respecting the changes carried out

(16) Test Report PTB Ex19-29116

(17) Specific conditions of use

(18) Essential health and safety requirements

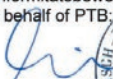
Met by compliance with the aforementioned standards.

According to Article 41 of Directive 2014/34/EU, EC-type examination certificates which have been issued according to Directive 94/9/EC prior to the date of coming into force of Directive 2014/34/EU (April 20, 2016) may be considered as if they were issued already in compliance with Directive 2014/34/EU. By permission of the European Commission supplements to such EC-type examination certificates and new issues of such certificates may continue to hold the original certificate number issued before April 20, 2016.

Konformitätsbewertungsstelle, Sektor Explosionsschutz

Braunschweig, February 4, 2020

On behalf of PTB:


Dr.-Ing. F. Lieneisch
Direktor und Professor



sheet 3/3

EU-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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T R A N S L A T I O N
A D D E N D U M No.: 1

in compliance with Directive 94/9/EC Annex III Clause 6
to the EC Type Examination Certificate PTB 98 ATEX 2114

Equipment: Model 4746-12.. and 4746-13.. Limit Switches

Marking:  II 2 G EEx ia IIC T6

Manufacturer: SAMSON AG

Address: Weismüllerstr. 3, D-60314 Frankfurt, Germany

Description of the additions and modifications

The model description code has been changed. The old and the new designation code numbers are shown in the table below:

| Old | New |
|-----------|------------|
| 4746-2... | 4746-12... |
| 4746-3... | 4746-13... |

In future, also the Model SJ-3.5 Slot-type Proximity Switches manufactured by Pepperl & Fuchs approved under the Ex Type Examination Certificate PTB 99 ATEX 2219 X may be used.

The preceding models of the same name approved under the Certificate of Conformity PTB No. Ex-95.D-2195 X are permitted to be used until 20 June 2002.

The results laid down in this test report refer exclusively to the test object and the technical documentation submitted. Test reports without signature and seal are invalid. This test report may be reproduced unaltered only. Extracts or amendments shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

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Ptb08-4746.doc

Addendum No. 1 to the Ex Type Examination Certificate PTB 98 ATEX 2114

Electrical data

Models 4746-12..1/..2 with inductive proximity switch

Inductive proximity switch
(terminals 41/42 and 51/52)

Type of Protection: Intrinsic Safety EEx ia IIC
only for connection to a certified intrinsically safe circuit

Maximum values

$U_i = 16 \text{ V}$
 $I_i = 52 \text{ mA}$
 $P_i = 169 \text{ mW}$
 or
 $U_i = 16 \text{ V}$
 $I_i = 25 \text{ mA}$
 $P_i = 64 \text{ mW}$

 $C_i = 50 \text{ nF}$
 $L_i = 250 \text{ }\mu\text{H}$

The correlation between temperature classification, permissible ambient temperature ranges, maximum short-circuit currents and power for evaluating instruments is shown in the table below:

| Temperature class | Permissible ambient temperature range | I_o / P_o |
|-------------------|---------------------------------------|--------------|
| T6 | -45 °C ... 45 °C | 52 mA/169 mW |
| T5 | -45 °C ... 60 °C | |
| T4 | -45 °C ... 80 °C | |
| T6 | -45 °C ... 60 °C | 25 mA/64 mW |
| T5 | -45 °C ... 80 °C | |
| T4 | -45 °C ... 100 °C | |

All the other electrical data and other data apply also to this Addendum No. 1.

Test report: **PTB EX 03-23049**

Zertifizierungsstelle Explosionsschutz

Braunschweig, 7 March 2003

By order

(Signature) (Seal)
Dr. Ing. U. Johannmeyer
Regierungsdirektor

The results laid down in this test report refer exclusively to the test object and the technical documentation submitted. Test reports without signature and seal are invalid. This test report may be reproduced unaltered only. Extracts or amendments shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

Physikalisch-Technische Bundesanstalt – Bundesallee 100 - D 38116 Braunschweig

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[Federal logo]

TRANSLATION

(1) EC TYPE EXAMINATION CERTIFICATE

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



- (3) EC Type Examination Certificate Number

PTB 98 ATEX 2114

- (4) Equipment: Model 4746-2 and 4746-3 Limit Switches
(5) Manufacturer: SAMSON AG
(6) Address: Weismüllerstr. 3, D-60314 Frankfurt
(7) This equipment and any acceptable variations thereof is specified in the schedule to this certificate and the documents referred to therein.
(8) The Physikalisch-Technische Bundesanstalt, certified body number 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 specified in Annex II to the Directive.

The examination and test results are recorded in confidential report: **PTB Ex 98-28184**.

- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with
EN 50014: 1997 **EN 50020: 1994**
(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) According to the Directive 94/9/EX, this EX TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.
(12) The marking of the equipment shall include the following:



II 2 G EEx ia IIC T6

Zertifizierungsstelle Explosionsschutz
By order

Braunschweig, 03.09.1998

(Signature)

(Seal)

The results laid down in this test report refer exclusively to the test object and the technical documentation submitted. Test reports without signature and seal are invalid. This test report may be reproduced unaltered only. Extracts or amendments shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

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Ptb08-4746.doc

Schedule

(13)

(14) EC TYPE EXAMINATION CERTIFICATE No. PTB 98 ATEX 2114

(15) Description of Equipment

The Model 4746-2 and 4746-3... Limit Switches serve for converting mechanical manipulated variables into electrical signals. Depending on the version, they are equipped with various types of limit contacts. They are intended for attachment to pneumatic, electrical or hydraulic actuators installed inside and outside of hazardous areas.

The Model 4746-2...and 4746-3... Limit Switches are passive two-terminal networks that may be connected to all certified intrinsically safe circuits, provided the permissible maximum values of U_i , I_i and P_i are not exceeded.

Electrical connection is made by means of plugs and sockets or cable entries.

The relation between temperature classification and the permissible maximum ambient temperature range is specified in the table below:

| Temperature class | Ambient temperature range |
|-------------------|---------------------------|
| T6 | -45 °C ... +60 °C |
| T5 | -45 °C ... +70 °C |
| T4 | -45 °C ... +80 °C |

Electrical data

Contact circuits Type of protection: Intrinsic safety EEx ia IIC only for connection to a certified intrinsically safe circuits

(Terminals 41/42 Models 4746-2.0., Model 4746-2.1., Model 4746-2.5. with inductive proximity switch.

Maximum values: U_i = 16 V
 I_i = 52 mA
 P_i = 169 mW

Effective internal capacitance: C_i = 60 nF
 Effective internal inductance: L_i = 250 µH

(Terminals 41/42/43 and 51/52/53 Model 4746-3.2, Model 4746-3.6 with electric micros witch

The results laid down in this test report refer exclusively to the test object and the technical documentation submitted. Test reports without signature and seal are invalid. This test report may be reproduced unaltered only. Extracts or amendments shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

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Ptb08-4746.doc

Maximum values:

$$\begin{aligned}U_i &= 45 \text{ V} \\P_i &= 2 \text{ W}\end{aligned}$$

The effective internal capacitances and inductances are negligible.

(16) **Report PTB Ex 98-28184**

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

Not applicable

(18) **Essential Health and Safety Requirements**

In compliance with standards

Zertifizierungsstelle Explosionsschutz
By order

Braunschweig, 03.09.98

(Signature) (seal)

Dr. Ing. U. Johannsmeyer
Regierungsdirektor

The results laid down in this test report refer exclusively to the test object and the technical documentation submitted. Test reports without signature and seal are invalid. This test report may be reproduced unaltered only. Extracts or amendments shall require the prior approval of the Physikalisch-Technische Bundesanstalt.



TRANSLATION

Statement of Conformity



- (1)
- (2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres – **Directive 94/9/EC**
- (3) EC Type Examination Certificate Number
PTB 02 ATEX 2012 X
- (4) Equipment: Model 4746-8 . . . Limit Switch
- (5) Manufacturer: SAMSON AG Mess- und Regeltechnik
- (6) Address: Weismüllerstr. 3, 60314 Frankfurt am Main, Germany
- (7) The equipment and any acceptable variation thereof are specified in the schedule to this certificate and the documents referred to therein.
- (8) The Physikalisch-Technische Bundesanstalt, notified body number 0102 according to Article 9 of the Council Directive 94/9/ 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 specified in Annex II to the Directive.

The examination and test results are recorded in confidential report: **PTB Ex 02-21299**
- (9) The essential health and safety requirements are satisfied by compliance with
EN 50021: 1999
- (10) If the sign “X” is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use as specified in the schedule to this certificate.
- (11) In compliance with the Directive 94/9/EC this Statement of Conformity relates only to the design and construction of the equipment specified. Further requirements of this Directive apply to manufacture and marketing of this equipment.
- (12) The marking of the equipment shall include the following:



II 3 G EEx nA II T6

Zertifizierungsstelle Explosionsschutz
By order

Braunschweig, 05.April 2002

(Signature) (Seal)
Dr. Ing. U. Klausmeyer
Regierungsdirektor

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Physikalisch-Technische Bundesanstalt., Bundesallee 100, D-38116 Braunschweig

Ptb08Ex n.doc

Schedule

(13)

(14) **Statement of Conformity PTB 02 ATEX 2012 X**

(15) **Description of Equipment**

The Model 4746-8 . . . Limit Switch servers for converting mechanical manipulated variables into electrical signals. It is intended for attachment to pneumatic, electrical or hydraulic actuators.

The device is intended for use inside and outside of Category 3 hazardous locations.

The correlation between temperature classification and permissible ambient temperature ranges is shown in the table below:

| Temperature class | Ambient temperature range |
|-------------------|---------------------------|
| T5 | -45°C . . . +70°C |
| T6 | -45°C . . . +60°C |
| T4 | -45°C . . . +80°C |

Electrical data

Versions:

- With inductive proximity switch
Contact circuit (terminals 41/42, 51/52) Type of protection EEx nA II
- a.) With electrical proximity switch
Contact circuit (terminals 41/42/43, 44/45/46, 51/52/53) Type of protection EEx nA II

(16) **Test report PTB Ex 02-21299**

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

The Modell 4746-8 . . . Limit Switch shall be installed in an enclosure providing at least Degree of Protection IP 54 in compliance with IEC Publication 60529:1989.

The wiring shall be connected in such a manner that the connection facility is not subjected to pull an twisting.

Schedule to the Statement of Conformity PTB 02 ATEX 2012 X

(18) **Basic health and safety requirements**

Are satisfied by compliance with the standard specified..

Zertifizierungsstelle Explosionsschutz

Braunschweig, 05.April 2002

By order

(Signature) (seal)

Dr. Ing. U. Klausmeyer
Regierungsdirektor

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Ptb08Ex n.doc

Installation Manual for apparatus certified by CSA for use in hazardous locations.

Electrical rating of intrinsically safe apparatus and apparatus for installation in hazardous locations.

Table 1: Maximum values of limit switches circuit

| | U_i or V_{max} | I_i or I_{max} | P_i or P_{max} | C_i | L_i |
|-------------------|--------------------|--------------------|--------------------|-------|-------------|
| inductive | 16V | 25/52mA | 64/169mW | 60nF | 250 μ H |
| electrical | 28V | 115mA | 2 W | 0 nF | 0 μ H |

U_0 or $V_{oc} \leq U_i$ or V_{max} / I_0 or $I_{oc} \leq I_i$ or I_{max} / $P_0 \leq P_i$ or P_{max} ; $C_a \geq C_i$ and $L_a \geq L_i$

Table 2: CSA - certified barrier parameters of electrical limit switch circuits

| Barrier | Supply barrier | | Evaluation barrier | |
|------------|----------------|------------------|--------------------|--------------|
| | V_{max} | R_{min} | V_{max} | |
| electrical | $\leq 28V$ | $\geq 280\Omega$ | $\leq 28V$ | Diode Return |

Table 3: The correlation between temperature classification and permissible ambient temperature ranges is shown in the table below:

| Temperature class | Permissible ambient temperature range |
|-------------------|---------------------------------------|
| T6 | - 45°C ... 60°C |
| T5 | - 45°C ... 70°C |
| T4 | - 45°C ... 80°C |

Table 4: For the Model 4746 – 3 Limit Switch the correlation between temperature classification, permissible ambient temperature ranges and maximum short-circuit current is shown in the table below:

| Temperature class | Permissible ambient temperature range | Maximum short-circuit current |
|-------------------|---------------------------------------|-------------------------------|
| T6 | - 45°C ... 45°C | 52mA |
| T5 | - 45°C ... 60°C | |
| T4 | - 45°C ... 75°C | |
| T6 | - 45°C ... 60°C | 25mA |
| T5 | - 45°C ... 80°C | |
| T4 | - 45°C ... 80°C | |

Intrinsically safe if installed as specified in manufacturer's installation manual.

CSA - certified for hazardous locations

Ex ia IIC T6; Class I, Zone 0

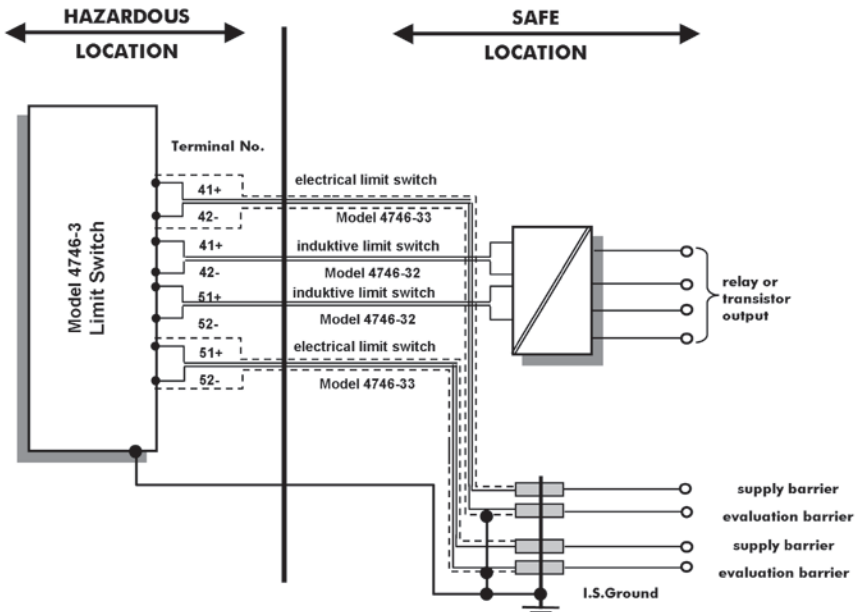
Class I; Groups A, B, C, D

Class II; Groups E, F + G; Class III

Type 3 or 4 Enclosure

Notes:

- 1.) The apparatus may be installed in intrinsically safe circuits only when used in conjunction with the CSA certified apparatus. For maximum values of U_i or V_{max} ; I_i or I_{max} ; P_i or P_{max} ; C_i and L_i of the various apparatus see Table 1.
- 2.) The apparatus may be installed in intrinsically safe circuits only when used in conjunction with the CSA certified intrinsically safe barrier. For barrier selection see Table 2.
- 3.) The installation shall be in accordance with the C. E. C. Part 1.
- 4.) Each pair of I.S. wires shall be protected by a shield that is grounded at the I.S. Ground. The shield shall extend as close to the terminals as possible.
- 5.) Use only supply wires suitable for 5°C above ambient temperature.



Version: Model 4746-33 Electrical Limit Switch. Supply and evaluation barrier CSA- certified.

Revisions Control Number: 1 May 05

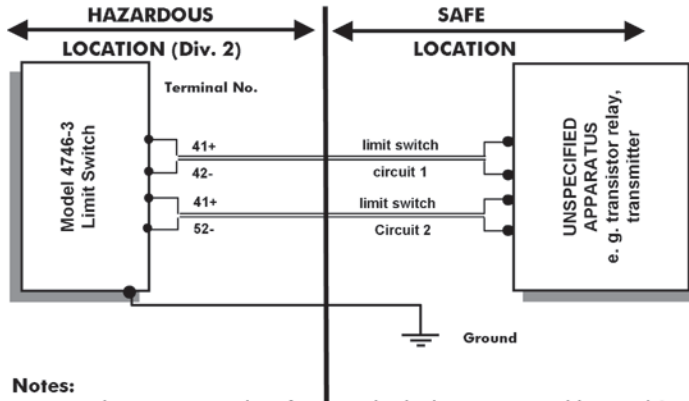
Addendum to EB 8365 EN

CSA- certified for hazardous locations

Class I; Div. 2, Groups A, B, C, D

Class II; Div. 2, Groups E, F + G; Class III

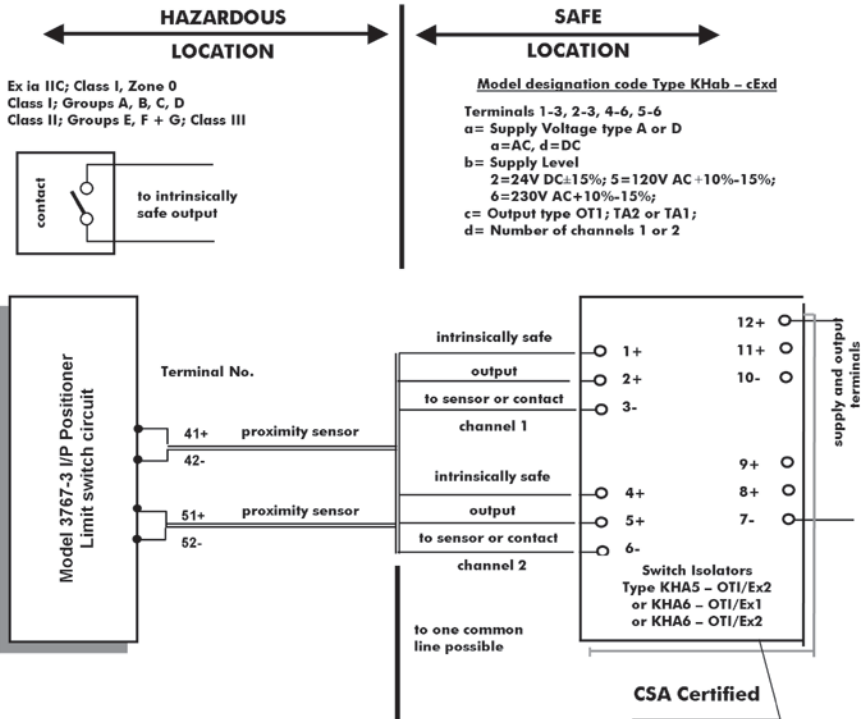
Type 3 Enclosure



Notes:

- 1.) For the maximum values for the individual circuits see Table 1 and 2.
- 2.) Cable entry M 20 x 1.5 metal conduit according to drawing No. 1050-0539 T and 1050-0540 T

Installation drawing Control Relay KHA5-OTI/Ex2, KHA6-OTI/Ex1 or KHA6-OTI/Ex2 with Model SJ-b-N Proximity Sensors



The total series inductance and shunt capacitance of shield wiring shall be restricted to the following maximum values

maximum capacitance of each inductive sensor 30nF
maximum inductance of each inductive sensor 100µH

System parameters

| Control Relay Terminal No. | Groups | L [mH] | C [µF] | V _{OC} [V] | I _{SC} [mA] | V _{max} [V] | R _{min} [Ω] |
|----------------------------|---------|--------|--------|---------------------|----------------------|----------------------|----------------------|
| 1-3; 2-3 4-6; 5-6 | A + B | 84.88 | 1.273 | ↑ | ↑ | ↑ | ↑ |
| | C + D | 298.7 | 3.82 | 12.6 | 19.8 | 12.6 | 650 |
| | E, F, G | 744.4 | 10.18 | ↓ | ↓ | ↓ | ↓ |

Division 2 wiring method shall be in accordance to the Canadian Electrical Code Part 1.

Revisions Control Number: 1 May 05

Addendum to EB 8365 EN

Installation Manual for apparatus approved by FM for use in hazardous locations.

Electrical rating of intrinsically safe apparatus and apparatus for installation in hazardous locations.

Table 1: Maximum values

| | U_i or V_{max} | I_i or I_{max} | P_i or P_{max} | C_i | L_i |
|---|---|---|---|----------------------|----------------------|
| Limit switches (inductive) Type SJ3,5... | 16 V | 25/52 mA | 64/169 mW | 60 nF | 250 µH |
| Limit switches (inductive) Type SC3,5... | 16 V | 25 mA | 34 mW | 150 nF | 150 µH |
| Limit switches (electrical) | 28 V | 115 mA | 2 W | 0 nF | 0 µH |

Notes: U_0 or V_{0c} or $V_t \leq U_i$ or V_{max} / I_0 or I_{0c} or $I_t \leq I_i$ or I_{max}
 P_0 or $P_{max} \leq P_i$ or P_{max}

Table 2: FM - approved barrier parameters of electrical limit switch circuits

| Barrier | Supply barrier | | | | Evaluation barrier | | |
|------------------------------------|-----------------------|------------------------|-----------------------|------------------------|---------------------------|------------------------|-----------------------|
| | V_{0c} | R_{min} | I_{0c} | P_{max} | V_{0c} | R_{min} | I_{0c} |
| Limit switches (electrical) | ≤ 28 V | ≥ 98 Ω | ≤ 115 mA | ≤ 2 W | ≤ 28 V | # | 0 mA |

Table 3: The correlation between temperature classification and permissible ambient temperature ranges is shown in the table below:

| Temperature class | Permissible ambient temperature range |
|--------------------------|--|
| T6 | - 45 °C ... 60 °C |
| T5 | - 45 °C ... 70 °C |
| T4 | - 45 °C ... 80 °C |

Table 4: For the Model 4746 – 32 Limit Switch with type SJ3,5... sensors the correlation between temperature classification, permissible ambient temperature ranges and maximum short- circuit current is shown in the table below:

| Temperature class | Permissible ambient temperature range | Maximum short-circuit current |
|-------------------|---------------------------------------|-------------------------------|
| T6 | - 45 °C ... 45 °C | 52mA |
| T5 | - 45 °C ... 60 °C | |
| T4 | - 45 °C ... 75 °C | |
| T6 | - 45 °C ... 60 °C | 25mA |
| T5 | - 45 °C ... 80 °C | |
| T4 | - 45 °C ... 80 °C | |

Table 4: For the Model 4746 – 32 Limit Switch with type SC3,5... sensors the correlation between temperature classification, permissible ambient temperature ranges and maximum short- circuit current is shown in the table below:

| Temperature class | Permissible ambient temperature range | Maximum short-circuit current |
|-------------------|---------------------------------------|-------------------------------|
| T6 | - 45 °C ... 55 °C | 25mA |
| T5 | - 45 °C ... 67 °C | |
| T4 | - 45 °C ... 80 °C | |

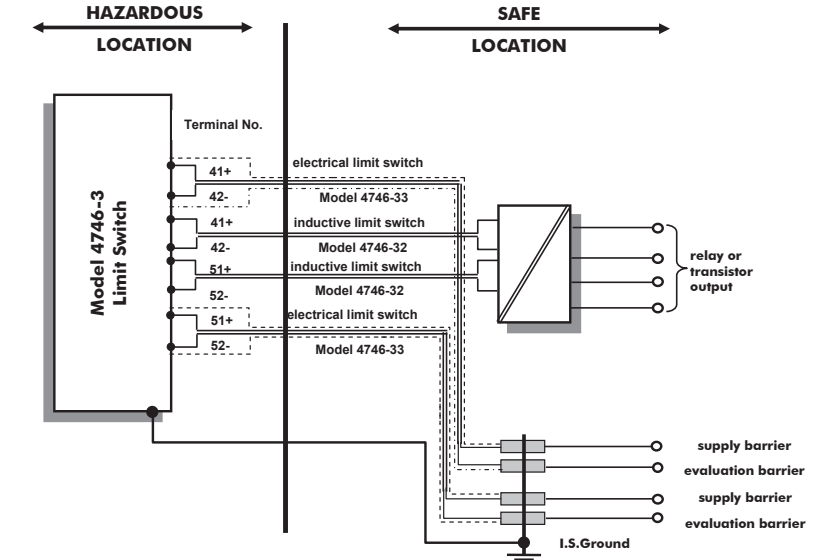
**Intrinsically safe if installed as specified in manufacturer’s installation manual.
FM - approved for hazardous locations**

**Class I, Zone 0 A Ex ia IIC T6,
Class I, II, III, Division 1, Groups A, B, C, D, E, F + G**

NEMA 3R

Notes:

- 1.) The apparatus may be installed in intrinsically safe circuits only when used in conjunction with the FM approved apparatus.
For maximum values of U_i or V_{max} ; I_i or I_{max} ; P_i or P_{max} ; C_i and L_i of the various apparatus see Table 1.
- 2.) The apparatus may be installed in intrinsically safe circuits only when used in conjunction with the FM approved intrinsically safe barrier.
For barrier selection see Table 2.
- 3.) The installation shall be in accordance with the National Electrical Code ANSI/NFPA 70 and ANSI/ISA RP 12.06.01.
- 4.) Safety Barrier shall be FM-Approved. Each pair of I.S. wires shall be protected by a shield that is grounded at the I.S. Ground. The shield shall extend as close to the terminals as possible.
- 5.) Use only supply wires suitable for 5°C above ambient temperature.



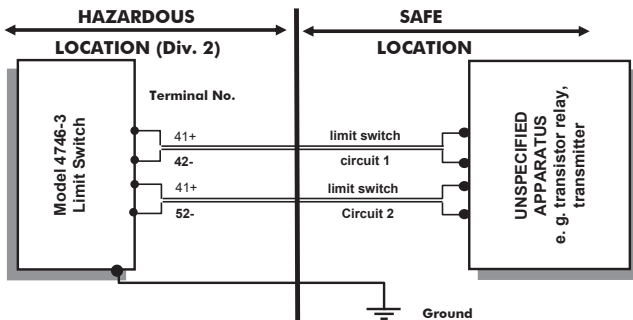
Version: Model 4746-33 Electrical Limit Switch. Supply and evaluation barrier FM approved.

Cable entry M 20 x 1.5 or metal conduit according to drawing No. 1050 - 0539 T or 1050 - 0540 T

FM- approved for hazardous locations

Class I, Division 2, Groups A, B, C, D
Class II Division 2, Groups F + G, Class III

NEMA 3R



Revisions Control Number: 2 September 2015

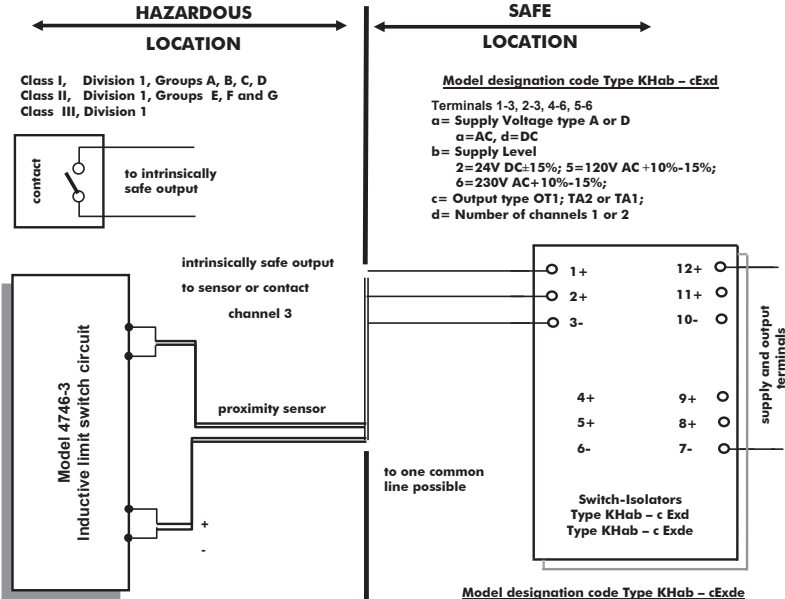
Addendum to EB 8365 EN

Notes:

- 1.) For the maximum values for the individual circuits see Table 1 and 2.
- 2.) Cable entry M 20 x 1.5 metal conduit according to drawing No. 1050-0539 T and 1050-0540 T
- 3.) The installation shall be in accordance with the National Electrical Code ANSI/NFPA 70

Installation drawing Control Relay Hab – cEx de with Model SJ-b-N

Proximity Sensors



maximum capacitance of each inductive sensor 60nF
maximum inductance of each inductive sensor 250µH

The total series inductance and shunt capacitance of shield wiring shall be restricted to the following maximum values

| Control Relay Terminal No. | Groups | L [mH] | C [µF] | VOC [V] | ISC [mA] |
|----------------------------|---------|----------|----------|----------------|----------------|
| 1-3; 2-3 4-6; 5-6 | A + B | 84,8 | 1,27 | ↑ 12,9 ↓ | ↑ 19,8 ↓ |
| | C + E | 299 | 3,82 | | |
| | D, F, G | 744 | 10,2 | | |

Model designation code Type KHab – cExde

- a= Supply Voltage type A or D
a=AC, d=DC
b= Supply Level
2= 24V DC±15%; 5= 120V AC +10%-15%;
6= 230V AC+10%-15%;
c= Output type RTA/; RW1/; SS1/; SS2/; RS1/;
SR/; ST- or SOT
d= Number of channels 1 or 2
e= Power rail designation, P, 2S.P or GS.P
(includes Model KHD2-EB-PB Power Feed Module) or Blank

Revisions Control Number: 2 September 2015

Addendum to EB 8365 EN

15 Annex

15.1 After-sales service

Contact our after-sales service for support concerning service or repair work or when malfunctions or defects arise.

You can reach our after-sales service at 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.samsongroup.com) or in all SAMSON product catalogs.

Required specifications

Please submit the following details:

- Order number and position number in the order
- Model number, configuration ID, serial number

EB 8365 EN



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