



# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

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

Certificate No.: **IECEx EUT 20.0006X** Page 1 of 3 [Certificate history:](#)

Status: **Current** Issue No: 0

Date of Issue: 2020-05-25

Applicant: **ROTORK INSTRUMENTS ITALY srl**  
Via Portico 17  
24050  
Orio al Serio (BG)  
**Italy**

Equipment: **SOLDO™ Limit switch box series model SB (SIB)**

Optional accessory:

Type of Protection: **Intrinsic safety "ia", Dust tight "tb"**

Marking: Ex ia IIC T6...T4 Gb  
Ex ia IIIC T85°C...T95°C Db

*Applies when only already certified switches are included in the equipment*

**Or**

Ex ia IIC T4 Gb  
Ex ia IIIC T95°C Db

*Applies when simple switches are included in the equipment or when EoL monitor resistors are involved*

**Or**

Ex tb IIIC T95°C Db

*Applies when the equipment is powered without intrinsically safe associated apparatus*

Approved for issue on behalf of the IECEx  
Certification Body:

**Dionisio Bucchieri**

Position:

**Head of IECEx CB**

Signature:  
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
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Italy

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Certificate No.: **IECEX EUT 20.0006X**

Page 2 of 3

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Manufacturer: **Rotork Instruments Italy s.r.l.**  
Via Portico 17  
24050 Orio al Serio (BG)  
Italy  
**Italy**

Additional  
manufacturing  
locations:

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

#### STANDARDS :

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

**IEC 60079-0:2017** Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

**IEC 60079-11:2011** Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

**IEC 60079-31:2013** Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"  
Edition:2

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

#### TEST & ASSESSMENT REPORTS:

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

Test Report:

[IT/EUT/EXTR20.0006/00](#)

Quality Assessment Report:

[GB/ITS/QAR09.0004/06](#)



# IECEx Certificate of Conformity

Certificate No.: **IECEX EUT 20.0006X**

Page 3 of 3

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## **EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

The limit switch box SB (also named SIB) are electrical devices used to indicate the position, for example in valves and actuators, by means of electrical signal and visual indicator. These are mounted on actuator or manual valve with lever or gear. The enclosure of the equipment is realized in aluminium alloy and can be painted upon customer request. The cable entries are machined according metric ISO 965-1 thread (M20x1.5 or M25x1.5) or NPT thread (½" or ¾").

Details related to the equipment are reported in the annexed document.

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

- Each switch involved in the equipment has to be powered only by a single channel of certified intrinsically safe barrier. Where changeover contacts are included in switches, only one contact at time can be used and then no common electrical connection of two intrinsic safety barrier can be achieved.
- When the protection type "ia" is applied, intrinsically safe associated apparatus have to be powered by network circuits limited to overvoltage Category III.
- Potential electrostatic charging hazard – See instructions.

## **Annex:**

[Annex to CoC IECEx EUT 20.0006 X Issue N. 0.pdf](#)

**Annex to certificate: IECEx EUT 20.0006X Issue N. 0****Equipment description**

The limit switch box SB (also named SIB) are electrical devices used to indicate the position, for example in valves and actuators, by means of electrical signal and visual indicator. These are mounted on actuator or manual valve with lever or gear.

The enclosure of the equipment is realized in aluminium alloy and can be painted upon customer request. The cable entries are machined according metric ISO 965-1 thread (M20x1.5 or M25x1.5) or NPT thread ( $\frac{1}{2}$ " or  $\frac{3}{4}$ ").

The limit switch boxes can be mainly configured by the manufacturer with three Ex certified inductive switches or three simple contact SPDT (or 2 x DPDT) electromechanical or reed type.

Configuration with a lower number of switches can be realized. The limit switches are mounted on circuit board or dedicated support plate and are interfaced to the camshaft; this component intervenes mechanically (or electromagnetically) on the switch changing its state.

Some PCBs used in the above mentioned configurations can also include resistors used to draw a small quantity of current from the power supply lines allowing to identify remotely a potential wiring interruption (technique called End of Line monitoring).

When the equipment is marked according to the intrinsically safe requirements it can be powered up only by means of intrinsic safety barriers (associated apparatus).

In this case each switch has to be connected to an individual channel of intrinsic safety barrier and in case of presence of double throw contact (e.g. SPDT and DPDT switch) only one contact at time can be used and then the common connection of two intrinsically safe barriers is forbidden.

The input safety parameters comply with the ones of the certified devices installed inside the limit switch box; when only simple switches are installed these parameters are defined as follows:

$U_i$ : 30 V

$I_i$ : 100 mA

$P_i$ : 750 mW (limited to 650 mW when EoL resistors are involved)

$L_i \approx 0$   $\mu$ H

$C_i \approx 0$   $\mu$ F

The limit switch boxes can also be powered without intrinsically safe apparatus only for use in Zone 21 and in this case the protection type applied is "tb".

In this case the safety related parameters are not involved in the marking and these are substituted by the electrical ratings of the switches internally installed. As option the internal electric components can be protected by casting compound to further increase the resistance to moist. The device complies with IP66 rating according to the requirements of IEC 60079-0 and IEC 60529. For the intrinsically safe versions when already certified switches are included in the equipment, the ambient temperature range of the equipment is limited to the one indicated by the manufacturer of the switch. For all the equipment configurations the extended ambient temperature range is  $-20^{\circ}\text{C} \div +80^{\circ}\text{C}$ .



EPT.20.REL.01/56379

page 2 of 2

**Electrical parameters:**

Intrinsically safe type of protection:

- Box with simple switches:

Ui: 30 V; Ii: 100 mA; Pi: 750 mW; Ci $\approx$  0  $\mu$ F; Li $\approx$  0  $\mu$ H

- Box with simple switches and end of line monitoring resistors :

Ui: 30 V; Ii: 100 mA; Pi: 650 mW; Ci $\approx$  0  $\mu$ F; Li $\approx$  0  $\mu$ H

- Box with already certified switches:

According to the certificate of switches

Dust-tight type of protection:

U: 250 Vac; I: 1 A; P: 2.47 W

**Warning label**

- Do not open in a gas/dust explosive atmosphere
- Due to risk of static hazard the enclosure must be only cleaned with a damp cloth
- Do not open when energized
- For safety instruction refers to document "2047747" (*this warning applies to intrinsically safe type of protection*)
- For safety instruction refers to document "2047748" (*this warning applies to dust tight type of protection*)
- See instruction for field wiring

**Routine tests**

None