



# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

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

Certificate No.: IECEx EUT 17.0033X

Issue No: 0

Certificate history:

[Issue No. 0 \(2017-12-20\)](#)

Status: **Current**

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Date of Issue: **2017-12-20**

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

Equipment: **SOLDO™ Limit switch box series SF and SS**  
*Optional accessory:*

Type of Protection: **Intrinsic safety "i", dust tight enclosure "t"**

Marking:

Ex ia IIC T6...T4 Ga

Ex ia IIIC T85°C...T120°C Da

*or*

Ex ib IIC T6...T4 Gb

Ex ib IIIC T85°C...T120°C Db

*or*

Ex tb IIIC T95°C...T120°C Db

*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.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](#).

Certificate issued by:

**Eurofins Product Testing Italy S.r.l.**  
Via Cuornè,  
n.21 - 10156 Torino  
Italy



Product Testing



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

Additional Manufacturing location(s):

**Fairchild Industrial Products Co.**

3920 West Point Blvd. Winston-Salem North Carolina 27103  
United States of America

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

**STANDARDS:**

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

<b>IEC 60079-0 : 2011</b> Edition:6.0	Explosive atmospheres - Part 0: General requirements
<b>IEC 60079-11 : 2011</b> Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
<b>IEC 60079-31 : 2013</b> Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

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

**TEST & ASSESSMENT REPORTS:**

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

Test Report:

[IT/EUT/ExTR17.0037/00](#)

Quality Assessment Report:

[GB/ITS/QAR09.0004/05](#)

[GB/SIR/QAR09.0003/06](#)



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## Schedule

### EQUIPMENT:

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

The limit switch box series SS, SF 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 can be realized in aluminium alloy (SF model) as well as stainless steel material (SS model) and can be painted upon customer request. The cable entries are machined according metric ISO 965-1 thread (M20x1.5 or M25x1.5), NPT thread ( $\frac{1}{2}$ " or  $\frac{3}{4}$ " ) or alternatively can be unthreaded.

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 have to be powered only by a single channel of certified intrinsic safety 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.
- SF enclosures are mainly made of aluminium material and then a proper installation have to be observed when placed in environment classified as Zone 0 and Zone 20 to avoid an ignition hazard due to impact or friction.
- When the protection type "ia" or "ib" is applied, intrinsic safety associated apparatus have to be powered by network circuits limited to overvoltage Category III

### Annex:

[Annex to CoC IECEX EUT 17.0033 X Issue N. 0.pdf](#)

**Annex to certificate: IECEX EUT 17.0033 X Issue N. 0 of 2017-12-20****Equipment description**

The limit switch box series SS, SF 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 can be realized in aluminium alloy (SF model) as well as stainless steel material (SS model) and can be painted upon customer request. The cable entries are machined according metric ISO 965-1 thread (M20x1.5 or M25x1.5), NPT thread ( $\frac{1}{2}$ " or  $\frac{3}{4}$ " ) or alternatively can be unthreaded.

The limit switch boxes can be mainly configured by the manufacturer according one of the following configurations:

## Configuration 1:

4x Ex certified inductive switches or simple contact SPDT (or 2 x DPDT) electromechanical or reed type

## Configuration 2:

2x Ex certified inductive switches or simple contact SPDT (or 1 x DPDT) electromechanical or reed type  
1x Ex certified transmitter and potentiometer mechanically connected to the internal camshaft

## Configuration 3:

1x Ex certified transmitter and potentiometer mechanically connected to the internal camshaft

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 associated apparatus and then allowing to identify remotely a potential wiring interruption (this technique is called End of Line monitoring).

When the equipment is marked according 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 parameter are defined as follows:

$U_i$ : 30 V       $I_i$ : 100 mA       $P_i$ : 750 mW       $L_i \approx 0$  uH       $C_i \approx 0$  uF

The limit switch boxes can also be used without their connection to the intrinsically safe apparatus only for use in Zone 21 and in this case the protection type is "tb" and EPL is "Db".

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.

The equipment can be manufactured with different of o-rings and gaskets materials that define the extension of the equipment ambient temperature ranges as follows:

EPDM gaskets:  $-50^{\circ}\text{C} \div +80^{\circ}\text{C}$ .

Silicone gaskets:  $-60^{\circ}\text{C} \div +105^{\circ}\text{C}$ .



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**Electrical parameters:**

Intrinsically safe mode of protection:

- Box with simple switches:

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

- Box with already certified devices:

According to the certificate of device

Dust-tight mode 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 "IOM00125" (*this warning applies to intrinsically safe type of protection*)
- For safety instruction refers to document "IOM00126" (*this warning applies to dust tight type of protection*)