

(1) **EU-Type Examination Certificate**

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 2014/34/EU**



(3) **Certificate Number** TÜV 14 ATEX 153522 X **issue:** 00

(4) for the product: Multifunctional device (AI/AO and DI/DO isolated barrier) type HiC2441\* and HiD2441\*

(5) of the manufacturer: **Pepperl + Fuchs GmbH**

(6) Address: Lilienthalstrasse 200, 68307 Mannheim, Germany

Order number: 8000483143

Date of issue: 2018-10-17

(7) The design of this product and any acceptable variation thereto are specified in the schedule to this EU-Type Examination Certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH, Notified Body No. 0044, in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and the Council of 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 ATEX Assessment Report No. 18 203 219515.

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


**EN 60079-0:2012+A11:2013 EN 60079-11:2012**

except in respect of those requirements listed at item 18 of the schedule.

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

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

(12) The marking of the product shall include the following:

 I (M1) [Ex ia Ma] I  
II (1) G [Ex ia Ga] IIC  
II (1) D [Ex ia Da] IIIC

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the notified body

  
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(13) **SCHEDULE**

(14) **EU-Type Examination Certificate No. TÜV 14 ATEX 153522 X issue 00**

(15) Description of product

The Multifunctional device type HiC2441\* and HiD2441\* are single channel multifunction isolator that combine the functionalities of a standard AI/AO and DI/DO isolated barrier needed to set-up a standard separation between Hazardous Area and Safe Area.

The device provides a galvanic isolation and is transparent concerning the signal transfer in both directions without any software/hardware configuration.

There are two different housing sizes: the HiC2441\* housing is 12.7 mm wide (HiC series), while the HiD2441\* housing is 18 mm wide (HiD series).

The devices are equipped with two connectors, one is for circuitry related to intrinsic safety and the other is for circuitry not related to intrinsic safety.

The afore-mentioned modules are designed for use in the safe area and have intrinsic safe signal inputs in type of protection "ia" for explosion groups I, IIC, IIB, IIA and explosion group IIIC.

Type key:

The following variants are covered by this certificate:

HiC2441  
HiC2441Y\*  
HiD2441  
HiD2441Y\*

Technical data:

Permissible range of ambient temperature: -40 °C to +70 °C

**Electrical Data**

Power Supply  
(Connector SL1:  
pins 2a, 2b (+) and 1a,1b (-))

Rated Voltage Un: 24 Vdc nominal (19 to 30 V)  
Maximum Voltage Um: 250 Vac

Input / Output  
(Connector SL1:  
pins 8a (+) and 7a (-))

Rated Voltage Un: 30 V  
Maximum Voltage Um: 250 Vac

**Schedule to EU-Type Examination Certificate No. TÜV 14 ATEX 153522 X issue 00**

Input  
(Connector SL2  
pins 5a (+); 1b(-))

in Type of Protection Ex ia IIC

maximum values:  $U_o = 7.2$  V  
 $I_o = 0$  mA (or negligible)  
 $P_o = 0$  mW (or negligible)  
 $C_i = 5.7$  nF  
 $L_i = 0$   $\mu$ H (or negligible)  
 $U_i = 28$  V  
 $I_i = 115$  mA  
 Diode blocking barrier

|       | IIC          | IIB /IIC    | IIA          | I            |
|-------|--------------|-------------|--------------|--------------|
| $C_o$ | 13.5 $\mu$ F | 240 $\mu$ F | 1000 $\mu$ F | 1000 $\mu$ F |

Input / Output  
(Connector SL2  
pins 5a (+); 5b(-))

in Type of Protection Ex ia IIC

maximum values:  $U_o = 25.2$  V  
 $I_o = 110$  mA  
 $P_o = 693$  mW  
 $C_i = 5.7$  nF  
 $L_i = 0$   $\mu$ H (or negligible)  
 Linear characteristic

|           | IIC                  | IIB /IIC              | IIA                   | I                     |
|-----------|----------------------|-----------------------|-----------------------|-----------------------|
| $C_o$     | 0.101 $\mu$ F        | 0.81 $\mu$ F          | 2.89 $\mu$ F          | 4.79 $\mu$ F          |
| $L_o$     | 2.9 mH               | 11.7 mH               | 23.5 mH               | 38.5 mH               |
| $L_o/R_o$ | 51 $\mu$ H/ $\Omega$ | 204 $\mu$ H/ $\Omega$ | 408 $\mu$ H/ $\Omega$ | 674 $\mu$ H/ $\Omega$ |

Input / Output  
(Connector SL2  
pins 5a (+); 1a(-))

in Type of Protection Ex ia IIC

maximum values:  $U_o = 12.6$  V  
 $I_o = 13$  mA  
 $P_o = 41$  mW  
 $C_i = 5.7$  nF  
 $L_i = 0$   $\mu$ H (or negligible)  
 Linear characteristic

|           | IIC                   | IIB /IIC               | IIA                    | I                         |
|-----------|-----------------------|------------------------|------------------------|---------------------------|
| $C_o$     | 1.15 $\mu$ F          | 7.4 $\mu$ F            | 27 $\mu$ F             | 32 $\mu$ F                |
| $L_o$     | 217 mH                | 868 mH                 | < 1000 mH              | < 1000 mH                 |
| $L_o/R_o$ | 886 $\mu$ H/ $\Omega$ | 3547 $\mu$ H/ $\Omega$ | 7094 $\mu$ H/ $\Omega$ | < 10000 $\mu$ H/ $\Omega$ |

The above  $C_o$  and  $L_o$  parameters apply when one of the two conditions below is given:

- The total  $L_i$  of the external circuit (excluding the cable) is < 1% of the  $L_o$  value or
- The total  $C_i$  of the external circuit (excluding the cable) is < 1% of the  $C_o$  value.

The above  $C_o$  and  $L_o$  parameters are reduced to 50% when both of the two conditions below are given:

- the total  $L_i$  of the external circuit (excluding the cable) > 1% of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) > 1% of the  $C_o$  value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1  $\mu$ F for I, IIA, IIB and 600 nF for IIC.

**Schedule to EU-Type Examination Certificate No. TÜV 14 ATEX 153522 X issue 00**

(16) Drawings and documents are listed in the ATEX Assessment Report No. 18 203 219515

(17) Specific Conditions for Use

1. The device shall only be used with the designated termination boards.
2. The device must be installed and operated only in an environment of overvoltage category II (or better) according to IEC/EN 60664-1.
3. The device must be installed and operated only in a controlled environment that ensures a pollution degree 2 (or better) according to IEC/EN 60664-1.

(18) Essential Health and Safety Requirements

no additional ones

- End of Certificate -