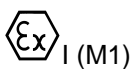
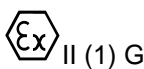


**UK Type Examination Certificate CML 21UKEX2825X Issue 0****United Kingdom Conformity Assessment**

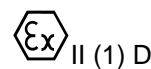
- 1 Product or Protective System Intended for use in Potentially Explosive Atmospheres UKSI 2016:1107 (as amended) – Schedule 3A, Part 1
- 2 Equipment **Multifunctional Device (AI/AO and DI/DO isolated barrier) type HiC2441\* and HiD2441\***
- 3 Manufacturer **Pepperl+Fuchs SE**
- 4 Address **Lilienthalstrasse  
200  
68307 Mannheim  
Germany**
- 5 The equipment is specified in the description of this certificate and the documents to which it refers.
- 6 Eurofins E&E CML Limited, Newport Business Park, New Port Road, Ellesmere Port, CH65 4LZ, United Kingdom, Approved Body Number 2503, in accordance with Regulation 43 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations.  
  
The examination and test results are recorded in the confidential reports listed in Section 12.
- 7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to specific conditions of use (affecting correct installation or safe use). These are specified in Section 14.
- 8 This UK Type Examination certificate relates only to the design and construction of the specified equipment. Further requirements of the Regulations apply to the manufacturing process and supply of the product. These are not covered by this certificate.
- 9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:  
  
EN 60079-0:2018                      EN 60079-11:2012
- 10 The equipment shall be marked with the following:



[Ex ia Ma] I



[Ex ia Ga] IIC



[Ex ia Da] IIIC



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## 11 Description

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, 11B, 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 SL 1:  
pins 2a, 2b (+) and 1a,1b (-))

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

Input/ Output  
(Connector SL 1:  
pins 8a (+) and 7a (-))

Rated Voltage Un: 30 V  
Maximum Voltage Um:

# Certificate Annex



**Certificate Number** CML 21UKEX2825X  
**Equipment** Multifunctional Device (AI/AO and DI/DO isolated barrier) type HiC2441\* and HiD2441\*  
**Manufacturer** Pepperl+Fuchs SE

Input (connector SL2 pins 5a (+0; 1b(-))

in Type of Protection Ex ia IIC  
 maximum values:  $U_o = 7.2 \text{ V}$   
 $I_o = 0 \text{ mA (or negligible)}$   
 $P_o = 0 \text{ mW (or negligible)}$   
 $C_i = 5.7 \text{ nF}$   
 $L_i = 0 \text{ } \mu\text{H (or negligible)}$   
 $U_i = 28 \text{ V}$   
 $I_i = 115 \text{ mA}$   
 Diode blocking barrier

	IIC	IIB/IIIC	IIA	I
Co	13.5 $\mu\text{F}$	240 $\mu\text{F}$	1000 $\mu\text{F}$	1000 $\mu\text{F}$

Input (connector SL2 pins 5a (+0; 5b(-))

in Type of Protection Ex ia IIC  
 maximum values:  $U_o = 25.2 \text{ V}$   
 $I_o = 110 \text{ mA}$   
 $P_o = 693 \text{ mW}$   
 $C_i = 5.7 \text{ nF}$   
 $L_i = 0 \text{ H (or negligible)}$   
 Linear characteristic

	IIC	IIB/IIIC	IIA	I
Co	0.101 $\mu\text{F}$	0.81 $\mu\text{F}$	2.89 $\mu\text{F}$	4.79 $\mu\text{F}$
Lo	2.9 mH	11.7 $\mu\text{F}$	23.5 $\mu\text{F}$	38.5 $\mu\text{F}$
Lo/Ro	51 $\mu\text{H}/\Omega$	204 $\mu\text{H}/\Omega$	408 $\mu\text{H}/\Omega$	674 $\mu\text{H}/\Omega$

Input (connector SL2 pins 5a (+0; 1a(-))

In type of protection Ex ia IIC  
 maximum values:  $U_o = 12.6 \text{ V}$   
 $I_o = 13 \text{ mA}$   
 $P_o = 41 \text{ mW}$   
 $C_i = 5.7 \text{ nF}$   
 $L_i = 0 \text{ } \mu\text{H (or negligible)}$   
 Linear characteristic

	IIC	IIB/IIIC	IIA	I
Co	1.15 $\mu\text{F}$	7.4 $\mu\text{F}$	27 $\mu\text{F}$	23 $\mu\text{F}$
Lo	217 mH	868 mH	<1000 mH	<1000 mH
Lo/Ro	886 $\mu\text{H}/\Omega$	3547 $\mu\text{H}/\Omega$	7094 $\mu\text{H}/\Omega$	< 10000 $\mu\text{H}/\Omega$

# Certificate Annex



**Certificate Number** CML 21UKEX2825X  
**Equipment** Multifunctional Device (AI/AO and DI/DO isolated barrier) type HiC2441\* and HiD2441\*  
**Manufacturer** Pepperl+Fuchs SE

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  $\mu\text{F}$  for I, IIA, IIB and 600 nF for IIC.

## 12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	12 August 2021	R14112AG/00	Prime Certificate issued.

Note: Drawings that describe the equipment are listed or referred to in the Annex.

## 13 Conditions of Manufacture

The routine test for transformer T1 is carried out with 1800 V for 1s between primary and secondary winding.

## 14 Specific Conditions of Use

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

## Certificate Annex

**Certificate Number** CML 21UKEX2825X  
**Equipment** Multifunctional Device (AI/AO and DI/DO isolated barrier)  
type HiC2441\* and HiD2441\*  
**Manufacturer** Pepperl+Fuchs SE



The following documents describe the equipment defined in this certificate:

### Issue 0

For drawings describing the equipment, refer to attached certificate TUV 14ATEX153522X Issue 0. In addition to the drawings listed on TUV 14ATEX153522X Issue 0 , the following drawings include the additional marking required for this UK Type Examination certification:

Drawing No	Sheets	Rev	Approved date	Title
16-1555CM-10	1 to 2	0	12 August 2021	Additional Marking Requirements for UKCA