UK Type Examination Certificate CML 21UKEX2939 Issue 1

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 **Galvanically Isolated Barrier Type: HiC2025, HiC2025A and HiC2031**

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 IEC 60079-0:2018 EN 60079-11:2012

10 The equipment shall be marked with the following:

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

UKAS PRODUCT CERTIFICATION 8175

L A Brisk
Assistant Certification Manager

11 Description

The SMART Transmitter Power Supply HiC2025, HiC2025A and SMART Current Driver HiC2031 are, galvanically isolated, associated apparatus. The equipment's input circuit is isolated from the output circuit by transformer.

The voltage and current limitation for the input circuit is achieved with zener diodes and current limiting resistors.

All the equipment are mounted inside a plastic housing and equipped with two multipolar connectors type DIN 41612 B/3 (one is for circuitry related to intrinsic safety and the other is for circuitry not related to intrinsic safety), suitable for direct insertion into Pepperl+Fuchs's certified Termination Boards. HiC series.

The product names shall be supplemented by additional characters, indicating equipment variants that have no influence on the approval.

The SMART Transmitter Power Supply types HiC2025 HiC2025A and supplies 2-wire SMART transmitters in a hazardous area and can also be used with 2-wire SMART current sources. It transfers the analog input signal to the safe area as an isolated current value.

Bi-directional communication is supported for SMART transmitters that use current modulation to transmit data and voltage modulation to receive data. Selectable output of current source, sink mode, or voltage output is available via DIP switches.

The SMART Current Driver type HiC2031 repeats the input signal control system to drive HART I/P converters, valve actuators, and displays located in a hazardous area.

Digital signals are superimposed on the analog values at the field side or control side and are transferred bi-directionally.

Electrical characteristics

Non-intrinsically safe circuits

Um: 250 Vac

Power supply [connector SL1 pins: 2a,2b (+) and 1 a,/ b (-)]: Un: 24 Vdc (19 +30 Vdc)

Analog Input/Output [connector SL1 pins: 8a (+) and 7a (-)]: Un: up to 30 Vdc

Tamb.: from -40 °C up to +70 °C

Intrinsically safe circuits – equipment ***HiC2025*****

Connector SL2 pins	Uo	Io	Po	Gas Group	Co (µF)	Lo (mH)	Lo/Ro (µH/Ω)
5a(+); 5b(-)	25.2V	100 mA	630 mW	IIC	0.100	3.5	55
				IIB	0.81	14	222
				IIA	2.8	28	444
				I	4.14	46	743

Ci = 5.7nF; Li = negligible; Output characteristic: linear.

*Intrinsically safe circuits – equipment HiC2025***

Connector SL2 pins	Uo / Ui	Io / Ii	Po / Pi	Gas Group	Co (µF)	Lo (mH)	Lo/Ro (µH/Ω)
5a(+); 1b(-) 7a(-)	7.2V	100 mA	25 mW	IIC	13.49	3.5	27
				IIB	239	14	108
	30 V	128 mA	1 W	IIA	1000	28	216
				I	1000	46	356

Ci = 5.7nF; Li = negligible; Output characteristic: diodes blocking barrier.

*Intrinsically safe circuits – equipment **HiC2025A*****

Connector SL2 pins	Uo	Io	Po	Gas Group	Co (µF)	Lo (mH)	Lo/Ro (µH/Ω)
5a(+); 5b(-)	25.2V	93 mA	586 mW	IIC	0.100	4.1	61
				IIB	0.81	16.4	244
				IIA	2.8	32.8	488
				I	4.14	53.9	800

Ci = 5.7nF; Li = negligible; Output characteristic: linear.

Connector SL2 pins	Uo / Ui	Io / Ii	Po / Pi	Gas Group	Co (µF)	Lo (mH)	Lo/Ro (mH/Ω)
5a(+); 1b(-) 7a(-)	1	100 mA	25 mW	IIC	100	3.5	1.4
				IIB	1000	14	5.6
	30 V	128 mA	1 W	IIA	1000	28	11.2
				I	1000	46	18

Ci = 5.7nF; Li = negligible; Output characteristic: diodes blocking barrier.

*Intrinsically safe circuits – equipment **HiC2031*****

Connector SL2 pins	Uo	Io	Po	Gas Group	Co (µF)	Lo (mH)	Lo/Ro (µH/Ω)
5a(+); 5b(-)	25.2V	100 mA	630 mW	IIC	0.100	3.5	55
				IIB	0.81	14	222
				IIA	2.8	28	444
				I	4.14	46	743

Ci = 5.7nF; Li = negligible; Output characteristic: linear.

Note - External circuits with both inductance and capacitance

The above maximum Lo and Co parameters apply where:
- the total Ci of the external circuit *(excluding the cable)* is < 1% of the Co value or
- the total Li of the external circuit *(excluding the cable)* is < 1% of the Lo value.

The above Lo and Co parameters shall reduce to 50% when both of the two conditions below are given:
- the total Li of the external circuit *(excluding the cable)* > 1% of the Lo value and
- the total Ci of the external circuit (excluding the cable) > 1% of the Co value.

The reduced capacitance of the external circuit *(including cable)* shall not be greater than 1 uF for Groups I, IIA, IIB and 600 nF for Group IIC.

Variation 1
This variation introduces the following modifications:

i. Change of manufacturer name from Pepperl+Fuchs GmbH to Pepperl+Fuchs SE.
ii. Standard update to EN IEC 60079-0:2018
iii. New electrical schematic and PCB
iv. New maximum input power at connector SL2 pins 5a(+) versus 1b(-) and 7a(-)
v. Removed the alternative PCB with power supply fuse F2 with case SMD

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	17 Nov 2021	R14112AX/00	Prime Certificate issued.
1	24 Mar 2023	R16239A/00	Introduction of Variation 1

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

13 Conditions of Manufacture

The following conditions are required of the manufacturing process for compliance with the certification.

i. The Manufacturer shall carry out on the transformer T1, the Routine Tests for Infallible Transformers with an V applied voltage of 1500 applied between the input and output windings. The test voltage shall be applied for a period of at least 60 s. Alternatively, the test may be carried out at 1.2 times the test voltage, but with reduced duration of at least 1 s.

14 Specific Conditions of Use

None.

Certificate Annex

Certificate Number	**CML 21UKEX2939**
Equipment	**Galvanically Isolated Barrier Type: HiC2025, HiC2025A and HiC2031**
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 CESI 06 ATEX 017. In addition to the drawings listed on CESI 06 ATEX 017 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	17 Nov 2021	Additional Marking Requirements for UKCA

Issue 1

For drawings describing the equipment, refer to attached certificate CESI 06 ATEX 017.