

CERTIFICATE OF CONFORMITY



- HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
- Certificate No:** FM17US0111X
- Equipment:** HiC Series Modules
(Type Reference and Name) Galvanically Isolated Barrier
- Name of Listing Company:** Pepperl+Fuchs SE
- Address of Listing Company:** Lilienthalstrasse 200
68307 Mannheim
Germany
- The examination and test results are recorded in confidential report number:

3060181 dated 22nd August 2017
- FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM 3600:2022, FM 3810:2021, ANSI/ISA 60079-0:2013, ANSI/UL 60079-0:2020,
ANSI/UL 60079-7:2021, ANSI/ISA 60079-11:2018,
ANSI/ISA 60079-15:2017, ANSI/UL 60079-15:2020, ANSI/ISA 61010-1:2012
- If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
- This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

Certificate issued by:


J. E. Marquedant

VP, Manager - Electrical Systems

24 March 2022

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
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10. Equipment Ratings:

Modules HiC2081*, HiC2831*, HiC2832*, HiC2873*, HiC2877*

Provides Intrinsically Safe ia circuits for Class I, Zone 0, Group IIC in accordance with the control drawing shown below, Non-Sparking Class I Zone 2 hazardous Group IIC T4, provides intrinsically safe ia circuits for Zone 20 Group IIIC hazardous (classified) locations with an ambient temperature of -20°C to +60°C

Control Dawing	Models
116-0429	HiC2081*
116-0430	HiC2831* / HiC2832*
116-0431	HiC2873* / HiC2877*

Module HiC2871A*

Provides Intrinsically Safe ia circuits for Class I, Zone 0, Group IIC in accordance with the control drawing 116-0442, Increased Safety Class I Zone 2 hazardous Group IIC T4, provides intrinsically safe ia circuits for Zone 20 Group IIIC hazardous (classified) locations with an ambient temperature of -40°C to +70°C

Module HiC2883*

Provides Intrinsically Safe ia circuits for Class I, Zone 0, Group IIC in accordance with the control drawing 116-0442, Increased Safety and Protected Sparking Class I Zone 2 hazardous Group IIC T4, provides intrinsically safe ia circuits for Zone 20 Group IIIC hazardous (classified) locations with an ambient temperature of -40°C to +70°C;

11. The marking of the equipment shall include:

Modules HiC2081*, HiC2831*, HiC2832*, HiC2873*, HiC2877*

Class I, Zone 2, AEx nA [ia] IIC T4 Gc

Zone 20, [AEx ia] IIIC

Ta = -20°C to 60°C

When installed per control drawing (see table in section 10 for actual drawing number)

Module HiC2871A*

Class I, Zone 2, AEx ec [ia Ga] IIC T4 Gc

Zone 20, [AEx ia Da] IIIC

Ta = -40°C to 70°C

When installed per control drawing 116-0442

Module HiC2883*

Class I, Zone 2, AEx ec nC [ia Ga] IIC T4 Gc

Zone 20 [AEx ia Da] IIIC

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Ta = -40°C to 70°C

When installed per control drawing 116-0442

12. Description of Equipment:

General

The Universal Temperature Converter Type HiC2081* is an associated apparatus that transfers a signal from TC/mV, RTD (2, 3,4 wire) or potentiometer in a hazardous area to the safe area. The hazardous area circuit is galvanically isolated from the non-hazardous area circuit using a transformer and opto-couplers.

The isolated switch amplifier type HiC2831* and HiC2832* are an associated apparatus that transfers digital signals from the hazardous area to the safe area. The hazardous area circuit is galvanically isolated from the non-hazardous area circuit using a transformers.

The Digital-Output repeater types HiC2873* and HiC2877* are associated apparatus that are design to energize solenoid valves, alarms sounders, display or LED indicators in the hazardous area controlled by Safe Area control signals (in the form of switch contact, logic level or loop powered). The hazardous area circuit is galvanically isolated from the non-hazardous area circuit using a transformer.

The Digital-Output repeater types HiC2871A* and HiC2883* are associated apparatus designed to supply power to solenoids, LED, and audible alarms in the hazardous area controlled by Safe Area control signals (in the form of logic signal or loop powered). The hazardous area circuit is galvanically isolated from the non-hazardous area circuit using a transformer.

Construction - The HiC modules are housed in plastic housing made of Polycarbonate with IP20 degree of protection. The electrical contacts are by made two 20 pin plug in connectors.

Ratings – The HiC2081*, HiC2831*, HiC2832*, HiC2873* and HiC2877* have a Um of 253V and operate from a DC supply of up to 30 V. The HiC2871A* and HiC2883* have a Um of 60V and operate from a DC supply of up to 30 V.

Entity Parameters:

Model	Terminals	Uo (Vdc)	Io (mA)	Po (mW)	Co (µF)			Lo (mH)		
					IIC	IIB	IIA	IIC	IIB	IIA
HiC2081*	5a,5b;1a,1b	9	13.1	30	4.9	40	500	207	828	1657
HiC2831*	5a,5b	10.5	17.1	45	2.41	16.8	75	121.5	486.3	927.7
HiC2832*	5a,5b;1a,1b	10.5	17.1	45	2.41	16.8	75	121.5	486.3	927.7
HiC2871A*	5a,5b	26	110	715	0.099	0.77	2.6	2.9	11.7	23.5
HiC2873*	5a,5b	25.2	110	693	0.107	0.82	2.9	2.9	11.7	23.5
HiC2877*	5a,5b	25.2	93	586	0.107	0.82	2.9	4.1	16.4	32.8
HiC2883*	5a,5b	26	110	715	0.099	0.77	2.6	2.9	11.7	23.5

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HiC Series Galvanically Isolated Barrier

- HiC2081* Universal Temperature Converter
- HiC2831* Isolated Switch Amplifier
- HiC2832* Isolated Switch Amplifier
- HiC2871A* Solenoid Driver
- HiC2873* Solenoid Driver
- HiC2877* Solenoid Driver
- HiC2883* Solenoid Driver

13. **Specific Conditions of Use:**

1. When installed in a Class 1 Zone 2 installation, the equipment shall be mounted within a tool-secured enclosure which is capable of the Class 1 Zone 2 wiring methods in specified in the National Electrical Code (NFPA 70) The equipment shall be installed in an enclosure with a minimum ingress protection rating of IP54 unless the equipment is installed in a dry, clean, indoor location, the enclosure shall at minimum meets the requirement of IP4X.
2. For Zone installations, ensure protection of supply terminals against transient voltages exceeding 140% of the rated supply voltage.
3. HiC2871A* and HiC2883* module installations shall be protected to achieve a pollution degree of 2 or lower.

14. **Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. **Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.

16. **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
22 nd August 2017	Original Issue.
10 th November 2017	<u>Supplement 1:</u> Report Reference: – 3060181 dated 10 th November 2017. Description of the Change: correct typographical error in listing from nA to ec.
24 th March 2022	<u>Supplement 2:</u> Report Reference: – PR461670 dated 24 th March 2022. Description of the Change: <i>Entity Parameters</i> table added to Description section. Update the standards to FM3600:2022, FM3810:2021, ANSI/ISA 60079-7:2021,

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ANSI/ISA 60079-11:2018 and ANSI/ISA 60079-15:2017. For HiC2871A* and HiC2883* models, update the temperature range to -40C to 70C and standard edition to ANSI/UL 60079-0:2020 and ANSI/UL 60079-15:2020.

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