
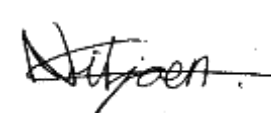




Mining And Surface Certification (Pty) Ltd

2015/021934/07

THIS CERTIFICATE IS ISSUED AS AN I.A. CERTIFICATE IN TERMS OF THE MINE HEALTH AND SAFETY ACT, ACT NO 29 OF 1996 (AND REGULATIONS), THE OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993) AND REGULATION 17 OF THE ELECTRICAL MACHINERY REGULATIONS

IA CERTIFICATE	MASC MS/23-8231X	Issue	0
Issue Date	17 May 2023	Expiry Date	23 July 2024
** Based on Certificate No	IECEx ULD 20.0012X	Issue / Variations / Amendment	1
Requested by	Pepperl+Fuchs (Pty) Ltd Zerwick Forum, 8 Glen Eagle Office Park Cnr Monument Rd and Braambos St, Glen Erasmia, Kempton Park 1619, South Africa		
Manufacturer	Pepperl+Fuchs SE Lilienthalstrasse 200, 68307 Mannheim Germany		
Description	The smart-current-driver HiD2038 is designed as associated apparatus to be installed in the non-hazardous area. The device is an "[Ex ia]" associated apparatus for zone 0, zone 20 or for group I. The voltage and current at the output terminals are limited to intrinsically safe levels. The hazardous area circuit is galvanically isolated from the non-hazardous area circuit by transformer. The HiD2038 is also designed as increased safety "Ex ec" equipment to be installed in a zone 2 gas area. The smart-current-driver HiD2038 has two channels. It repeats the input signal from a control system to drive SMART I/P converters, electrical valves, and positioners. Digital communication may be superimposed on the analogue values and may be transferred in both directions. The device is powered from nominal 24V dc. The devices can be directly connected to an appropriately certified termination-board.		
Equipment	Smart Current Driver	Type	HiD2038, HiD2038**
MARKING: Original marking as per certificate ** remains applicable. IA number must be added.	Type:	Smart Current Driver - HiD2038, HiD2038**	
	Ex Marking:	[Ex ia Ga] IIC [Ex ia Da] IIC Ex ia Ma] I Ex ec IIC T4 Gc -40°C to +70°C MASC MS/23-8231X (To be additionally marked on equipment) See Base Certificate ** (original marking must be applied)	
	IA Number:		
	Warnings:	See Base Certificate ** (original marking must be applied)	
Quality Assurance report (QAR) / Notification (QAN):	DE/PTB/QAR06.0008/18		
Quality Assurance report (QAR) / Notification (QAN) Expiry date:	23 July 2024		
Compliance:	The equipment as described above has been allocated the rating <u>Explosion Protected 'as above'</u> utilizing the SANS/IEC Standards: <ul style="list-style-type: none"> SANS (IEC) 60079-0: 2019 Equipment - General requirements SANS (IEC) 60079-7: 2019 Equipment protection by increased safety "e" SANS (IEC) 60079-11: 2012 Equipment protection by intrinsic safety "i" <i>Note: This certificate covers only the listed standards and does not imply compliance to any other standard, related or inferred. It is up to the manufacturer to ensure that the product complies to all relevant standards for the application.</i>		
Special conditions of safe use "X":	<ul style="list-style-type: none"> Refer to Annex A below for more details. 		
Conditions of manufacture:	<ul style="list-style-type: none"> Refer to Annex A below for more details. 		
			
	C. WELTHAGEN TECHNICAL SPECIALIST	N. VILOJEN TECHNICAL OFFICER	

This certificate covers all units sold as long as the QAR/QAN remains valid.
According to the relevant requirements of the MHS Act and the OHS Act, production units of explosion protected equipment are required to comply with third party quality assurance (an approved mark scheme or batch testing by an accredited test laboratory).

Apparatus in hazardous locations is subject to the following provisions as applicable, which shall be adhered to:
SANS 10086 requirements;
Any conditions mentioned in the above certificate;
Any relevant requirements of the MHS Act;
Any restrictions and conditions enforced by the chief inspector of mines, principal inspector (Group I equipment) or chief inspector of factories (Group II equipment).

This certificate may only be reproduced in full
The certificate is not transferable and remains the property of the issuing body.

IA CERTIFICATE: MASC MS/23-8231X

Equipment: Smart Current Driver

(Expiry date: 23 July 2024)

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ANNEX A

This document is based on and must be read in conjunction with certificate IECEx ULD 20.0012X.	
Description (According to Base Certificate) **	
"Refer to description in Base Certificate ** (and any applicable schedules/issues/variations)."	
Standard compliance	See Base Certificate **
Special conditions of safe use ("X")	<p>Requirements for Usage as Associated Apparatus:</p> <ul style="list-style-type: none">The device must be installed and operated only in an environment of overvoltage category II (or better) according to IEC 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 60664-1.When installed in a suitable enclosure, the surrounding air temperature of the equipment must be within the rated ambient temperature range taking into account factors such as heat generated by other equipment in the enclosure during operation. <p>Requirements for Equipment Protection Level Gc:</p> <ul style="list-style-type: none">The device must be installed and operated only in an environment of overvoltage category II (or better) according to IEC 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 60664-1.The device must be installed and operated only in surrounding enclosures that<ul style="list-style-type: none">comply with the requirements for surrounding enclosures according to IEC 60079-0,are rated with the degree of protection IP54 according to IEC 60529.Connection or disconnection of energized non-intrinsically safe circuits is only permitted in the absence of a potentially explosive atmosphere.The equipment shall be installed on a suitably certified P+F H-System termination board which incorporates an appropriate mechanical retaining system and transient protection not exceeding 140 % of the peak rated voltage value of the equipment.When installed in a suitable enclosure, the surrounding air temperature of the equipment must be within the rated ambient temperature range taking into account factors such as heat generated by other equipment in the enclosure during operation.
Conditions of manufacture	<ul style="list-style-type: none">None.
Conditions of Certification	<ul style="list-style-type: none">This IA Certificate covers all units sold from the date of this document to the expiry date of this certificate.As per ARP 0108 a maximum three yearly review is required on this IA Certificate (expiry is determined as per the QAR/QAN/QMS expiry date).The apparatus must be additionally marked with the MASC marking details above.This approval only covers the equipment as certified above and does not include any scheduled additions or variations / amendments / new issues to the certificate(s), made after the above date.The equipment does not need to be re-tested when used on the conditions and with such restrictions as prescribed by the certificate on which this IA Certificate is based and any other conditions in this IA Certificate.The certification on which this IA Certificate is based must remain valid.The extent of the requirements in the ARP 0108 (or regulations), SANS 10108 and any other applicable regulations on the certification of the equipment must remain unchanged.The Ex-quality assurance notification/report for the equipment must remain valid.
Conclusion:	<ul style="list-style-type: none">From the above and the selective examination of the documentation, nothing contrary to the requirements of the applicable standards was found, provided that the equipment / component is used as described in the above document / certificate and according to the MASC conditions below. A MASC IA certificate is issued based on the work done as per the Base Certificate **.The routine tests for production units according to the Base Certificate ** must be complied with (if applicable).

This document is issued based on Mining And Surface Certification's Standard Contract terms and conditions available on request.

While every endeavour is made to ensure that a test / assessment / inspection is representative and accurately performed, and that a report / certificate is accurate in the quoted results and conclusions drawn from the test / assessment / inspection, MASC or its directors/employees shall in no way be liable for any error made in carrying out the test / assessment or for any erroneous statement, whether in fact or in opinion, contained in a report / certificate issued pursuant to a test / assessment / inspection.

MASC takes no responsibility for any non-conformances, exclusions, or any results / assessments / inspections not in compliance with the standards. By marking the equipment in accordance with the documentation / standard, the manufacturer / applicant attests on his own responsibility that the equipment / installation has been designed and constructed in accordance with the applicable requirements of the relevant standards and documentation, that the routine verifications / routine tests have been correctly completed and the equipment / installation complies with the documentation and standard(s).

This document is only for use and application in South Africa. It is issued based on National interpretations and accepted practices.

This document may only be reproduced in full.

This certificate is not transferable and remains the property of the issuing body.

This document will not be supported by MASC for certification purposes outside the borders of South Africa.

Mining And Surface Certification (Pty) Ltd Reg No: 2015/021934/07
Directors: Roelof Viljoen & Francois du Toit
Unit #5, Lelyta Park, 45 Jurg Avenue, Hennospark Ext 87, Centurion, 0157
P.O. Box 14344, Clubview, 0014
Tel: 012 653 2959 ♦ Fax: 086 605 8568
e-mail: info@masc-ex.co.za



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx ULD 20.0012X** Page 1 of 4 Certificate history:
Status: **Current** Issue No: 1 [Issue 0 \(2020-07-23\)](#)
Date of Issue: 2020-11-09
Applicant: **Pepperl+Fuchs SE**
Lilienthalstrasse 200
68307 Mannheim
Germany
Equipment: **Smart Current Driver - HiD2038, HiD2038****
Optional accessory:
Type of Protection: **Intrinsic Safety "ia", Increased Safety "ec"**
Marking: [Ex ia Ga] IIC
[Ex ia Da] IIIC
[Ex ia Ma] I
Ex ec IIC T4 Gc
-40°C to +70°C

Approved for issue on behalf of the IECEx
Certification Body:

Katy A. Holdredge

Position:

Senior Staff Engineer

Signature:
(for printed version)

Date:
(for printed version)

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 www.iecex.com or use of this QR Code.



Certificate issued by:

UL International DEMKO A/S
Borupvang 5A
DK-2750 Ballerup
Denmark





IECEx Certificate of Conformity

Certificate No.: **IECEx ULD 20.0012X**

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Date of issue: 2020-11-09

Issue No: 1

Manufacturer: **Pepperl+Fuchs SE**
Lilienthalstrasse 200
68307 Mannheim
Germany

Manufacturing locations: **Pepperl+Fuchs Asia Pte. Ltd**
18 Ayer Rajah Crescent
Singapore 139942
Singapore

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 equipment 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

[IEC 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

[IEC 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

[IEC 60079-7:2017](#) Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with 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:

[DK/ULD/ExTR20.0012/00](#)

Quality Assessment Report:

[DE/PTB/QAR06.0008/13](#)



IECEx Certificate of Conformity

Certificate No.: **IECEx ULD 20.0012X**

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Date of issue: 2020-11-09

Issue No: 1

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The smart-current-driver HiD2038 is designed as associated apparatus to be installed in the non-hazardous area. The device is an "[Ex ia]" associated apparatus for zone 0, zone 20 or for group I. The voltage and current at the output terminals are limited to intrinsically safe levels. The hazardous area circuit is galvanically isolated from the non-hazardous area circuit by transformer.

The HiD2038 is also designed as increased safety "Ex ec" equipment to be installed in a zone 2 gas area.

The smart-current-driver HiD2038 has two channels. It repeats the input signal from a control system to drive SMART I/P converters, electrical valves and positioners.

Digital communication may be superimposed on the analogue values and may be transferred in both directions.

The device is powered from nominal 24V dc.

The devices can be directly connected to an appropriately certified termination-board.

Please see Annex for additional information.

SPECIFIC CONDITIONS OF USE: YES as shown below:

Requirements for Usage as Associated Apparatus:

- The device must be installed and operated only in an environment of overvoltage category II (or better) according to IEC 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 60664-1.
- When installed in a suitable enclosure, the surrounding air temperature of the equipment must be within the rated ambient temperature range taking into account factors such as heat generated by other equipment in the enclosure during operation.

Requirements for Equipment Protection Level Gc:

- The device must be installed and operated only in an environment of overvoltage category II (or better) according to IEC 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 60664-1.
- The device must be installed and operated only in surrounding enclosures that
 - comply with the requirements for surrounding enclosures according to IEC 60079-0,
 - are rated with the degree of protection IP54 according to IEC 60529.
- Connection or disconnection of energized non-intrinsically safe circuits is only permitted in the absence of a potentially explosive atmosphere.
- The equipment shall be installed on a suitably certified P+F H-System termination board which incorporates an appropriate mechanical retaining system and transient protection not exceeding 140 % of the peak rated voltage value of the equipment.
- When installed in a suitable enclosure, the surrounding air temperature of the equipment must be within the rated ambient temperature range taking into account factors such as heat generated by other equipment in the enclosure during operation.



IECEx Certificate of Conformity

Certificate No.: **IECEx ULD 20.0012X**

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Date of issue: 2020-11-09

Issue No: 1

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Issue 1: Updates Applicant and Manufacturer to Pepperl+Fuchs SE, Mannheim and additional manufacturing location to Singapore. Updates QAR to DE/PTB/QAR06.0008/13. No ExTR revision for this update.

Annex:

[Annex to ULD 20.0012X Issue 1.pdf](#)



IECEx Certificate of Conformity

Certificate No.: IECEx ULD 20.0012X

Issue No.: 1

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TYPE DESIGNATION

The product name is HiD2038**:

- The asterisks shown in the type code can be omitted or replaced by a combination of tokens, indicating different versions that have no influence on the approval.
- The appropriate type name is shown on the type label.

PARAMETERS RELATING TO THE SAFETY

Supply: 19 to 30VDC, \leq 64 mA

Inputs/Outputs: 4 to 20 mA

Intrinsically safe specifications:

Um : 250 V

Output:

Connection:	Connector SL2 pins: 5a(+),5b(-),7a(+) and/or 1a(+),1b(-),3b(+)
	Maximum values: Uo = 25.2 V Io = 93 mA Po = 585.3 mW Ci = 1.05 nF Li = 0 Linear characteristic

The maximum permissible external capacitances, inductances and L/R:

Group	I	IIA	IIB / IIIC	IIC
Maximum external capacity Co	4.790 μ F	2.890 μ F	0.818 μ F	0.1059 μ F
Maximum external inductivity Lo	54.06 mH	32.95 mH	16.47 mH	4.11 mH
Maximum external ratio Lo/Ro	797.3 μ H/Ohm	485.9 μ H/Ohm	242.9 μ H/Ohm	60.7 μ H/Ohm

Note:

The above parameters apply when one of the two conditions below is given:

- The total Li of the external circuit (excluding the cable) is $<$ 1% of the Lo value or
- The total Ci of the external circuit (excluding the cable) is $<$ 1% of the Co value.

The above parameters are reduced 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 μ F for I, IIA, IIB / IIIC and 600nF for IIC.



IECEX Certificate of Conformity

Certificate No.: IECEX ULD 20.0012X

Issue No.: 1

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ROUTINE EXAMINATIONS AND TESTS

Each piece of equipment defined above has to have successfully passed; before delivery:

- In accordance with clause 11.2 of the IEC 60079-11 standard, a dielectric strength test on each infallible transformer relied upon for Intrinsic Safety.

The protective transformers used in the associated apparatus are to be subjected to an alternating current potential as indicated in the following table for at least 60s. Alternatively, the test may be carried out at 1.2 times the test voltage, but with a reduced duration of at least 1s.

The applied voltage shall remain constant during the test. The current flowing during the test shall not increase above that which is expected from the design of the circuit and shall not exceed 5mA r.m.s. at any time.

During these tests, there shall be no breakdown of insulation between windings

Where applied	RMS test voltage
Between input and output windings (T101, T201 = Pins 9,10 to Pins 1,2,3,4)	1500V