



# Mining And Surface Certification (Pty) Ltd

2015/021934/07



Certificate Number: MASC MS/17-0876  
Issue: 25 April 2017  
Expire: 25 April 2020  
Page: 1 of 3

## IA – CERTIFICATE (Review required by MASC as per ARP 0108)

IN TERMS OF REGULATION 21.17.2 OF THE MINERALS ACT (INCORPORATION THE MINE HEALTH AND SAFETY ACT) AND REGULATION 9 (1) OF THE ELECTRICAL MACHINERY REGULATIONS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT

Ex – Type Examination

Certificate number:

Equipment:

Serial No:

**MASC MS/17-0876**

Universal Temperature Module type KFD2-UT2-Ex\*-\*  
(See “Conditions of Certification”)

Requested by:

Address:

Pepperl+Fuchs (Pty) Ltd

1st fl Zerwick Forum

8 Glen Eagle Office Park

Cnr Monument Rd and Braambos St

Glen Erasmia, Kempton Park 1619

South Africa

Manufacturer:

Address:

Pepperl+Fuchs GmbH

Lilienthalstrasse 200

68307 Mannheim

Germany

### DESCRIPTION:

The Universal Temperature Module type KFD2-UT2-Ex\*.\* has been designed as single (Ex1) and dual (Ex2) channel associated apparatus to accept input from TC/mV, RTD (2, 3 or 4 wire) or Potentiometer in hazardous area and provide isolated analogue signal at the output in safe area.

The module is housed in a plastic case suitable for DIN rail mounting. Removable terminal blocks allow the connection of the external circuits.

#### Electrical data:

Supply circuit.....  $U_N = 20$  to  $30$  V d.c.  
(terminals 14 [+], 15 [-].  $I_N = 30$  mA  
 $P_N = 0.6$  W  
 $U_m = 250$  V a.c. resp.  $375$  V d.c

Output circuits  
KFD2-UT2-Ex1-\*  $I = 0/4$  to  $20$  mA  
(Terminals 7, 8, 9)  $U = 0/1$  to  $5$  V

**/I. KFD2-UT2-Ex2-\*...**

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Page 2 of 3

KFD2-UT2-Ex2-\*  
(Terminals 7, 8, 9  
and 10, 11, 12)

Input circuits

in type of protection "Intrinsic Safety"

KFD2-UT2-Ex1-\*  
(Terminals 1, 2, 3, 4)

Maximum values per circuit

$U_o = 9 \text{ V}$

$I_o = 22 \text{ mA}$

$P_o = 50 \text{ mW}$

KFD2-UT2-Ex2-\*  
(Terminals 1, 2, 3  
and 4, 5, 6)

Characteristic line: linear

Effective internal inductance: negligibly small

Effective internal capacitance: negligibly small

The max. permissible values of the outer reactance have to be taken from the following table. The mentioned values apply only on condition that simultaneous appearance of the outer inductance and capacitance does not to be considered (e.g. in case of lines).

| Ex ia   | IIC                | IIB                 | IIA                 | I                   |
|---|--------------------|---------------------|---------------------|---------------------|
| max. permissible external inductance                        | 68 mH              | 275 mH              | 550 mH              | 964 mH              |
| max. permissible external capacitance                       | 4.9 $\mu\text{F}$  | 40 $\mu\text{F}$    | 500 $\mu\text{F}$   | 226 F               |
| maximum permissible external inductance to resistance ratio | 695 $\mu\text{H}/$ | 2780 $\mu\text{H}/$ | 5561 $\mu\text{H}/$ | 9125 $\mu\text{H}/$ |

## MARKING:

TÜV marking remains applicable. The following MASC Certificate number (IA number) must be additionally applied to the equipment.

IA No: MASC MS/17-0876

## COMPLIANCE:

The equipment as described above and in MASC letter 17-0876 is hereby certified "Explosion Protected" [Ex ia Ga] IIC, [Ex ia Da] IIC, [Ex ia Ma] I and is suitable for use in hazardous locations as stated below and as tested, assessed and inspected in accordance with the relevant requirements of SANS / IEC Standards:

The evaluation was conducted according to the requirements of:

- i) SANS (IEC) 60079-0 : 2012 "Explosive atmospheres – Part 0: Equipment — General requirements"
- ii) SANS (IEC) 60079-11 : 2012 "Explosive atmospheres – Part 11: Equipment protection by intrinsic safety 'i'"

/ . Location...

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Directors: Roelof Viljoen & Francois du Toit

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Page 3 of 3

|                             |                                     |  |
|-----------------------------|-------------------------------------|--|
| Location                    | Zone *0, 1 & 2<br>Zone *20, 21 & 22 | Gas Surface / Mining (As Applicable)<br>Dust (As Applicable)   |
| Hazard Frequency            | ---                                 | Continuous as could occur under normal operating conditions in hazardous area (*Outputs only)  |
| Environment                 | Group I<br>Group IIC<br>Group IIIC  | Methane and Coal dust (As Applicable)<br>Propane to Hydrogen / Acetylene (As Applicable)<br>Dust (Metallic & non-metallic) (As Applicable) |
| Service/Ambient Temperature | -20°C to +60°C                      |  |

**The use of apparatus in hazardous locations is subject to the following provisions as applicable, which shall be adhered to:**

- i. SANS 10086 requirements;
- ii. Any conditions mentioned in the above document;
- iii. Codes of Practice enforced in terms of Regulations 21.17.2 of Minerals Act, by Chief Inspector of Mines;
- iv. Any restrictions and conditions enforced by Chief Inspectors of Mines, Principal Inspector (Group I equipment) of Chief Inspector of Factories (Group II equipment);
- v. Any relevant requirements of the MHS Act or the OHS Act.

## CONDITIONS OF MANUFACTURE:

- None

## SPECIAL CONDITIONS OF USE (X):

- None

## CONDITIONS OF CERTIFICATION:

1. This Certificate remains valid based on a three yearly review covered by an official MASC letter.
2. The apparatus must be additionally marked with the MASC marking details above.
3. 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.
4. The equipment does not need to be re-tested when used on the conditions and with such restrictions as prescribed by TÜV and in this approval.
5. The TÜV certification must remain valid.
6. The extent of the requirements in the ARP 0108 (or regulations) and SANS 10108 on the certification of the equipment must remain unchanged.
7. The Ex quality assurance notification/report for the equipment must remain valid.



**A. Koekemoer**  
**TECHNICAL SPECIALIST**



**F du Toit**  
**TECHNICAL SPECIALIST**

## Mining And Surface Certification

*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 is representative and accurately performed, and that a report is accurate in the quoted results and conclusions drawn from the test / assessment, MASC or its members/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 issued pursuant to a test / assessment.*

*MASC takes no responsibility for any non-conformances, exclusions or any results / assessments not in compliance with the standards. By marking the equipment in accordance with the documentation / standard, the manufacturer attests on his own responsibility that the equipment has been constructed in accordance with the applicable requirements of the relevant standards and that the routine verifications and routine tests have been successfully completed and the product 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 practises.*

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