[1] # EC – TYPE EXAMINATION CERTIFICATE

[2] Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

[3] EC-Type Examination Certificate Number: **EXA 16 ATEX 0001X** Issue: **1**

[4] Equipment or Protective System **Isolated Switch Amplifier**

Type: **KFD2-SR3-Ex2.2S***

[5] Manufacturer: **Pepperl + Fuchs GmbH**

[6] Address: **Lilienthalstrasse 200, 68307 Mannheim, Germany**

[7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

[8] Ex-Agencija, Notified Body number 2465 according to Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment or protective system intended for use in potentially explosive atmospheres given in Annex II of the Directive.

The examination and test results are recorded in confidential report number: **EXA 16CR011**

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012 +A11:2013 **EN 60079-11:2012** **EN 60079-15:2010**

except in respect of those requirements listed at item 18 of the Schedule.

[10] If the sign 'X' is placed after the certificate number, it indicates that the equipment or protective system is subject to specific conditions for safe use specified in the schedule to this certificate.

[11] This EC-Type Examination Certificate relates only to the design, examination and test of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

[12] The marking of the equipment or protective system shall include the following:

II 3 (1) G Ex nA nC [ia Ga] IIC T4 Gc
II (1) D [Ex ia Da] IIIC
I (M1) [Ex ia Ma] I

Date: 03.03.2016.

PB.15.TC.1134/RS

Prepared:

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AGENCIJA ZA PROSTORE UGROŽENE EKSPLOZIVNOM ATMOSFEROM SVETA NEDELJA 3

Ex-Agencija
Department of equipment certification
Approved:

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[13] **SCHEDULE**

[14] **EC - TYPE EXAMINATION CERTIFICATE No.: EXA 16 ATEX 0001X**

[15] **Description of Equipment or Protective System**

The isolated switch amplifier KFD2-SR3-Ex2.2S* is an associated apparatus which is also suitable for installation in areas requiring category 3G equipment.
It transfers digital signals from the hazardous area to the safe area. Via switches the mode of operation can be reversed and the line fault detection can be switched off.
The switch amplifier is suitable for mounting on 35mm DIN mounting rail. Power supply is provided via power rail or using removable terminals on the narrow side of the barrier. The area of application for the amplifier is limited to closed (locked) electrical locations.

Asterisk * is additional marking, that is not relevant for explosion protection.

Non-intrinsically safe circuits:

Maximum Voltage Um: 250V AC

Power supply (terminals 14+,15- or PR1[+], PR2[-]):

Rated Voltage Un: 19...30V DC

Fault Signal (fault bus) (PR4):

Rated Voltage Un: 30V DC

Relay Outputs (terminals 7, 8, 9 and 10, 11, 12):

Contact loading: 48 V AC resp. 40V DC, I ≤ 1A

Intrinsically safe circuits (terminals 1+, 2+, 3- and 4+, 5+, 6-):

U_O = 10.5 V
I_O = 17.1 mA
P_O = 45 mW (linear characteristic)
C_i = negligible
L_i = negligible

The capacitance and either the inductance of the load connected to the intrinsically safe input terminals must not exceed the following values:

Group	IIC	IIB	IIA	I
Capacitance (Co)	2.41 µF	16.8 µF	75 µF	95 µF
Inductance (Lo) or Lo/Ro	121.5 mH 0.79 mH/Ω	486.3 mH 3.16 mH/Ω	972.7 mH 6.33 mH/Ω	1000 mH 10.39 mH/Ω

The above parameters for capacitance and inductance apply when one of the two conditions below is met:
- 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.

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The above parameters for capacitance and inductance are reduced to 50% when both of the two conditions below are met:
- 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.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for I, IIA, IIB and 600nF for IIC.

Rated data: Tamb = -20°C to +60°C

[15.1] Documentation

Title:	Drawing No.:	Rev. level:	Date:
Description, Calculations, (9 pages)	16-1224EX-00	-	28.09.2015
Schematics, (2 pages)	16-1224EX-01	-	28.09.2015
Relevant Components (7 pages)	16-1224EX-02	-	28.09.2015
Component Set-Up (2 pages)	16-1224EX-03	-	28.09.2015
Mechanical Parts (2 pages)	16-1224EX-04	-	28.09.2015
Layouts, Multilayer (4 pages)	16-1224EX-05	-	28.09.2015
Transformer (2 pages)	16-1224EX-06	-	28.09.2015
Instructions (2 pages)	16-1224EX-09	-	28.09.2015
Type Label (1 page)	16-1224EX-10	-	28.09.2015
Test report (2 pages)	16-1224EX-13	-	28.09.2015

[16] Confidential Report No. EXA 16CR011

[16.1] Routine testing

The manufacturer shall carry out the following routine test:

Routine test for infallible transformer: Dielectric strength test between input and output windings of transformers T1 and T2 with a voltage of ≥1500 VAC for 60 s or ≥ 1800 VAC for at least 1 s.

[17] Specific Conditions for Safe Use 'X'

The equipment may be installed and operated outside hazardous area or in areas requiring category 3G equipment. When installed in areas requiring category 3G equipment, the equipment shall comply the following:

- The equipment shall only be used in an area of not more than pollution degree 2, as defined in EN 60664-1.
- The equipment shall be installed in an enclosure that provides a degree of protection not less than IP 54 in accordance with EN 60079-15 and EN 60079-0.

[18] Essential Health and Safety Requirements

Covered by the standards listed at item 9.

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