[1] # EU – TYPE EXAMINATION CERTIFICATE

[2] Equipment or Protective Systems Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU.

[3] EU-Type Examination Certificate Number: **EXA 18 ATEX 0054X** Issue: **1**

[4] Product: **USB-barrier**

Type: **SK-PC-Z1D1-UU1-10-HS**

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

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

[7] This product 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 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II of the Directive.

The examination and test results are recorded in confidential Report No.: **EXA 18CR078**

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

EN 60079-0:2012 +A11:2013 **EN 60079-7:2015** **EN 60079-11:2012**

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 product is subject to Specific Conditions of Use specified in the schedule to this certificate.

[11] This EU-Type Examination Certificate relates only to the design, examination and test of the specified product in accordance with Annex III. Further requirements of the Directive apply to the manufacturing process and supply of this products. These are not covered by this certificate.

[12] The marking of the product shall include the following:

II 3(2) G Ex ec [ib Gb] IIC T4 Gc
II (2) D [Ex ib Db] IIIC

Date: 19.12.2018 PB.18.TC.1002

Ex-Agencija
Department of equipment certification
Approved by:

Damir Korunić, dipl.ing.el.

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[13] **SCHEDULE**

[14] **EU - TYPE EXAMINATION CERTIFICATE No.: EXA 18 ATEX 0054X**

[15] **Description of product**

The USB-barrier, model SK-PC-Z1D1-UU1-10-HS is designed as associated apparatus to be installed in the non-hazardous area or in areas requiring EPL Gc equipment (Zone 2). It acts as an interface between non intrinsically safe circuits and intrinsically safe circuits.
This device has intrinsic safe signal outputs in type of protection Ex ib for explosion group IIC and explosion group IIIC.
The input circuits consist of non-intrinsically safe power supply and non-intrinsically safe data interfaces. All non-IS signals are of type SELV or PELV with an Um of 60V.
The output circuits consist of intrinsically safe power supply and intrinsically safe data interfaces.
Apparatus is realized as two channel device.
Especially the USB-barrier is foreseen for connecting of a computing device to mouse or keyboard devices.

Electrical data

Apparatus is designed of two identical channels, intrinsically safe parameters of channel **USB1** equals intrinsically safe parameters of **USB2.** Only terminal connection numbers differ.

USB1

Non-intrinsically safe circuits:

All Non-IS signals listed below are Extra-low voltage supply system signals, type: SELV or PELV.

Power supply	KL1_1
Nominal voltage DC 5 V	
Nominal current 0,2 A	
max. voltage Um DC 60 V	
USB D-	KL1_2
USB D+	KL1_3
GND	KL1_4

Intrinsically safe circuits:

Power supply	SL1_1
USB D-	SL1_2
USB D+	SL1_3
GND	SL1_4

Values for each circuit

Voltage	Uo	DC	5,4 V
Current	Io		166 mA
Power	Po		600 mW

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For group IIC:

Capacitance	Co	44µF
Inductance	Lo	1mH

Trapezoidal output characteristic
The following table values of Lo and Co can be applied combined.
Cable length up to 20m is already considered (cable parameters according to EN 60079-25).

Co [µF]	30,7	25,03	24,03	19,7
Lo [µH]	2,6	3,3	3,5	4,5

For group IIB resp. IIIC:

Capacitance	Co	990µF
Inductance	Lo	6,8mH

Trapezoidal output characteristic
The following table values of Lo and Co can be applied combined.
Cable length up to 20m is already considered (cable parameters according to EN 60079-25).

Co [µF]	45,8	76,8	128,8	358,8
Lo [µH]	47,2	17,2	7,2	2,2

USB2

Non-intrinsically safe circuits:

All Non-IS signals listed below are Extra-low voltage supply system signals, type: SELV or PELV.

Power supply		KL2_1
	Nominal voltage	DC 5 V
	Nominal current	0,2 A
	max. voltage	Um DC 60 V
USB D-		KL2_2
USB D+		KL2_3
GND		KL2_4

Intrinsically safe circuits:

Power supply	SL2_1
USB D-	SL2_2
USB D+	SL2_3
GND	SL2_4

Values for each circuit

Voltage	Uo	DC	5,4 V
Current	Io		166 mA
Power	Po		600 mW

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For group IIC:

Capacitance	Co	44µF
Inductance	Lo	1mH

Trapezoidal output characteristic
The following table values of Lo and Co can be applied combined.
Cable length up to 20m is already considered (cable parameters according to EN 60079-25).

Co [µF]	30,7	25,03	24,03	19,7
Lo [µH]	2,6	3,3	3,5	4,5

For group IIB resp. IIIC:

Capacitance	Co	990µF
Inductance	Lo	6,8mH

Trapezoidal output characteristic
The following table values of Lo and Co can be applied combined.
Cable length up to 20m is already considered (cable parameters according to EN 60079-25).

Co [µF]	45,8	76,8	128,8	358,8
Lo [µH]	47,2	17,2	7,2	2,2

Rated data:

Ambient temperature range: -40 °C ≤ T_a ≤ +60 °C / +70 °C (installation condition dependent)

Ingress protection: IP20

The ambient temperature Ta of an USB-Module is specified in a distance perpendicular 50 mm away to the center of the USB-Module front side (see Instruction).

[16] Confidential Report No. EXA 18CR078

[16.1] Routine testing
No routine test required in relation to the standards associated with this certificate.

[17] Specific Conditions of Use

Installation in areas requiring category 3G / EPL Gc equipment:

- The device shall only be connected to SELV/PELV-circuits according to EN 60950 or EN 61010.
- The intrinsically safe circuits are connected to earth. Along the intrinsically safe circuits equipotential bonding must exist.
- The device must be installed and operated only in surrounding enclosures that
  - comply with the requirements for surrounding enclosures according to EN 60079-0,
  - are rated with the degree of protection of at least IP54 according to EN 60529.
- Connection or disconnection of energized non-intrinsically safe circuits is only permitted in the absence of a potentially explosive atmosphere.
- The device shall be mounted in horizontal position

Requirements for Installation in safe area:

- The device shall only be connected to SELV/PELV-circuits according to EN 60950 or EN 61010.
- The intrinsically safe circuits are connected to earth. Along the intrinsically safe circuits equipotential bonding must exist.
- The device shall be mounted in horizontal position.

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[18] Essential Health and Safety Requirements

Covered by the standards listed at item 9.

[19] Drawings and Documents

Title:	Drawing No.:	Rev. level:	Date:
Description, Calculations	16-1430EX-00	-	2018 Dec 05
Schematics	16-1430EX-01	-	2018 Sep 28
Relevant Components	16-1430EX-02	-	2018 Dec 05
Component Set-Ups	16-1430EX-03	-	2018 Sep 28
Layouts, Multilayer	16-1430EX-05	-	2018 Sep 28
Instructions / Datasheet	16-1430EX-09	-	2018 Dec 05
Type Label	16-1430EX-10	-	2018 Nov 16

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