

[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 17 ATEX 0002X** Issue: **1**

[4] Product: **Solenoid Drivers**
Type: **KCD2-SLD-Ex1.* and KCD0-SD3-Ex1.***

[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 17CR021**

[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**
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 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 (1) G Ex nC ec [ia Ga] IIC T4 Gc

II (1) D [Ex ia Da] IIIC

I (M1) [Ex ia Ma] I

Date: 03.04.2017



PB.16.TC.1063

Ex-Agencija
Department of equipment certification
Approved by:

Stipo Đerek, dipl.ing.el.

[13]

SCHEDULE[14] **EU - TYPE EXAMINATION CERTIFICATE No.:** EXA 17 ATEX 0002X[15] **Description of product**

The Solenoid Drivers KCD2-SLD-Ex1.* and KCD0-SD3-Ex1* are associated apparatuses which can be installed in the non-hazardous area or in areas requiring category 3G equipment.

It is designed to supply power to the solenoids, LEDs and audible alarms located in a hazardous area. The device is controlled with a loop-powered signal or a logic signal.

Apparatus is housed in a plastic enclosure with polarized plug-in terminals or optional spring terminals for hazardous and non-hazardous area connections.

Type designations of the Solenoid Drivers are:

- KCD2-SLD-Ex1.1045*(.SP)*
- KCD2-SLD-Ex1.1245*(.SP)*
- KCD2-SLD-Ex1.1065*(.SP)*
- KCD0-SD3-Ex1.1045*(.SP)*
- KCD0-SD3-Ex1.1245*(.SP)*
- KCD0-SD3-Ex1.1065*(.SP)*

- “.SP” at the end is optional. It indicates Spring clamp terminals, without this option screw terminals are used
- The asterisks shown in the type code can be replaced by a combination of tokens, indicating different versions that have no influence on the approval.

Electrical data**Safe Area connections:**

KCD2-SLD-Ex1.1045*, KCD2-SLD-Ex1.1245*, KCD2-SLD-Ex1.1065*:

Power Supply:

Connection: 2 pole removable terminals (9+, 10-) or Power Rail (PR1[+], PR2[-])
Rated Voltage: 19...30 V DC
Maximum Voltage Um: 60 V

Input:

Connection: 2 pole removable terminals (5+, 6-)
Rated Voltage: 0...30 V DC
Maximum Voltage Um: 60 V

Fault relay:

Connection: 2 pole removable terminals (7, 8)
Contact load: 30 V DC 0.5A
Maximum Voltage Um: 60 V

Fault bus:

Connection: Power Rail (PR4)
Rated Voltage: 19...30 V DC
Maximum Voltage Um: 60 V

KCD0-SD3-Ex1.1045*, KCD0-SD3-Ex1.1245*, KCD0-SD3-Ex1.1065*:

Input:

Connection: 2 pole removable terminals (5+,6-)
 Rated Voltage: 0...30 V DC
 Maximum Voltage Um: 60 V

Hazardous Area connections:

Output:

Connection: 2 pole removable terminals (1+,2-)

KCD2-SLD-Ex1.1045*, KCD0-SD3-Ex1.1045*:

Maximum values: Uo = 26 V
 Io = 93 mA
 Po = 605 mW
 Ci = negligible
 Li = negligible

Group	IIC	IIB / IIIC	IIA	I
Co	99 nF	770 nF	2.6 μ F	4.5 μ F
Lo	4.1 mH	16.4 mH	32.8 mH	53.9 mH
Lo/Ro	59.1 μ H/Ohm	236.4 μ H/Ohm	472.9 μ H/Ohm	775.9 μ H/Ohm

KCD2-SLD-Ex1.1245*, KCD0-SD3-Ex1.1245*:

Maximum values: Uo = 26 V
 Io = 110 mA
 Po = 715 mW
 Ci = negligible
 Li = negligible

Group	IIC	IIB / IIIC	IIA	I
Co	99 nF	770 nF	2.6 μ F	4.5 μ F
Lo	2.9 mH	11.7 mH	23.5 mH	38.5 mH
Lo/Ro	49.3 μ H/Ohm	197.5 μ H/Ohm	395 μ H/Ohm	648 μ H/Ohm

KCD2-SLD-Ex1.1065*, KCD0-SD3-Ex1.1065*:

Maximum values: Uo = 17.3 V
 Io = 220 mA
 Po = 947 mW
 Ci = negligible
 Li = negligible

Group	IIC	IIB / IIIC	IIA	I
Co	353 nF	2.06 μ F	8.5 μ F	11.8 μ F
Lo	0.73 mH	2.9 mH	5.8 mH	9.6 mH
Lo/Ro	37.5 μ H/Ohm	150.3 μ H/Ohm	300.7 μ H/Ohm	493.3 μ H/Ohm

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.

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.

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

Rated data:

Tamb = -20 °C to +60 °C for KCD2-SLD-Ex1*

Tamb = -20 °C to +70 °C for KCD0-SD3-Ex1*

Ingress protection: IP20

[16] Confidential Report No. EXA 17CR021**[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 T100 and T101 with a voltage of ≥ 1500 VAC for 60 s or ≥ 1800 VAC for at least 1 s.

[17] Specific Conditions of UseRequirements for Installation in safe area:

- The device must be installed and operated only in an environment of overvoltage category II (or better) according to EN 60664-1.
- The device must be installed and operated only in a controlled environment that ensures a pollution degree 2 (or better) according to EN 60664-1.

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

- The device must be installed and operated only in an environment of overvoltage category II (or better) according to EN 60664-1.
- The device must be installed and operated only in a controlled environment that ensures a pollution degree 2 (or better) according to EN 60664-1.
- The device must be installed and operated only in surrounding enclosures that
 - o comply with the requirements for surrounding enclosures according to EN 60079-0,
 - o are rated with the degree of protection 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.
- Only use operating elements in the absence of a potentially explosive atmosphere.

[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	16-1346EX-00	-	20.02.2017
Schematics	16-1346EX-01	-	07.03.2017
Relevant Components	16-1346EX-02	-	07.03.2017
Component Set-Up	16-1346EX-03	-	20.12.2016
Component Set-Up	16-1346UL-03	-	01.02.2017
Mechanical Parts	16-1346EX-04	-	10.01.2017
Layouts, Multilayer	16-1346EX-05	-	20.12.2016
Layouts, Multilayer	16-1346UL-05	-	01.02.2017
Transformer	16-1346EX-06	-	10.01.2017
Instructions	16-1346EX-09	-	10.01.2017
Type Label	16-1346EX-10	-	10.01.2017