UK Type Examination Certificate CML 21UKEX2891X Issue 0

United Kingdom Conformity Assessment

1 Product or Protective System Intended for use in Potentially Explosive Atmospheres UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

2 Equipment **Solenoid Drivers KCD2-SLD-Ex1.* and KCD0-SD3-Ex1.***

3 Manufacturer **Pepperl+Fuchs SE**

4 Address **Lilienthalstrasse 200**
68307 Mannheim
Germany

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 Eurofins E&E CML Limited, Newport Business Park, New Port Road, Ellesmere Port, CH65 4LZ, United Kingdom, Approved Body Number 2503, in accordance with Regulation 43 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations.

The examination and test results are recorded in the confidential reports listed in Section 12.

7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to specific conditions of use (affecting correct installation or safe use). These are specified in Section 14.

8 This UK Type Examination certificate relates only to the design and construction of the specified equipment. Further requirements of the Regulations apply to the manufacturing process and supply of the product. These are not covered by this certificate.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:

EN 60079-0:2018 EN 60079-7:2015 EN 60079-11:2012

EN 60079-15:2010

10 The equipment shall be marked with the following:

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

P. Shaw
Certification Officer

11 Description

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 U_m:	60 V

Input:

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

Fault relay:

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

Fault bus:

Connection: Power Rail (PR4)

Rated Voltage: 19...30 V DC

Maximum Voltage U_m: 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 U_m: 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 µF	4.5 µF
Lo	4.1 mH	16.4 mH	32.8 mH	53.9 mH
Lo/Ro	59.1 µH/Ohm	236.4 µH/Ohm	472.9 µH/Ohm	775.9 µH/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 µF	4.5 µF
Lo	2.9 mH	11.7 mH	23.5 mH	38.5 mH
Lo/Ro	49.3 µH/Ohm	197.5 µH/Ohm	395 µH/Ohm	648 µH/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 µF	8.5 µF	11.8 µF
Lo	0.73 mH	2.9 mH	5.8 mH	9.6 mH
Lo/Ro	37.5 µH/Ohm	150.3 µH/Ohm	300.7 µH/Ohm	493.3 µH/Ohm

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

- The total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
- The total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

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

- the total L_i of the external circuit (excluding the cable) > 1% of the L_o value and
- the total C_i of the external circuit (excluding the cable) > 1% of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for I, IIA, IIB, IIIC 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*

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	18 Nov 2021	R14112AI/00	Prime Certificate issued.

Note: Drawings that describe the equipment are listed or referred to in the Annex.

13 Conditions of Manufacture

The manufacturer shall carry out the following routine test:

1. Routine test for infallible transformer: Dielectric strength test between input and output windings of transformers T100 and T101 with a voltage of 2>1500 VAC for 60 s or 2> 1800 VAC for at least 1 s.

14 Specific Conditions of Use

Requirements for Installation in safe area:

1. The device must be installed and operated only in an environment of overvoltage category II (or better) according to EN 60664-1.
2. 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 3G/EPL Gc equipment:

1. The device must be installed and operated only in an environment of overvoltage category II (or better) according to EN 60664-1.
2. 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.
3. 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 IP54 according to EN 60529.
4. Connection or disconnection of energized non-intrinsically safe circuits is only permitted in the absence of a potentially explosive atmosphere.
5. Only use operating elements in the absence of a potentially explosive atmosphere

Certificate Annex

Certificate Number	**CML 21UKEX2891X**
Equipment	**Solenoid Drivers KCD2-SLD-Ex1.* and KCD0-SD3-Ex1.***
Manufacturer	**Pepperl+Fuchs SE**

The following documents describe the equipment defined in this certificate:

Issue 0

For drawings describing the equipment, refer to attached certificate EXA 17ATEX0002X. In addition to the drawings listed on EXA 17ATEX0002X, the following drawings include the additional marking required for this UK Type Examination certification:

Drawing No	Sheets	Rev	Approved date	Title
16-1555CM-10	1 to 2	0	18 Nov 2021	Additional Marking Requirements for UKCA