Features

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Relay contact output
- Fault relay contact output
- Line fault detection (LFD)
- Housing width 12.5 mm
- Up to SIL2 acc. to IEC 61508

Function

This isolated barrier is used for intrinsic safety applications. It transfers digital signals (NAMUR sensors/mechanical contacts) from a hazardous area to a safe area.
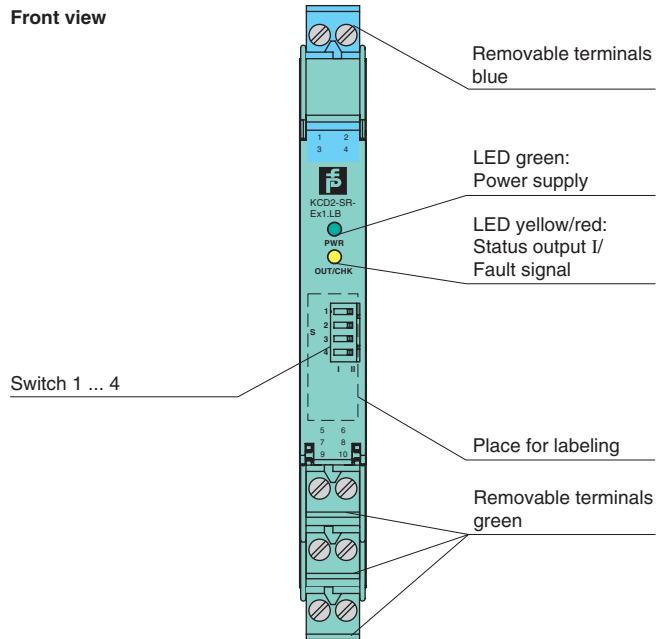
The proximity sensor or switch controls a form A normally open relay contact for the safe area load. The normal output state can be reversed using switch S1. Switch S2 allows output II to be switched between a signal output and an error message output. Switch S3 enables or disables line fault detection of the field circuit.

During an error condition, relays revert to their de-energized state and LEDs indicate the fault according to NAMUR NE44.

A unique collective error messaging feature is available when used with the Power Rail system.
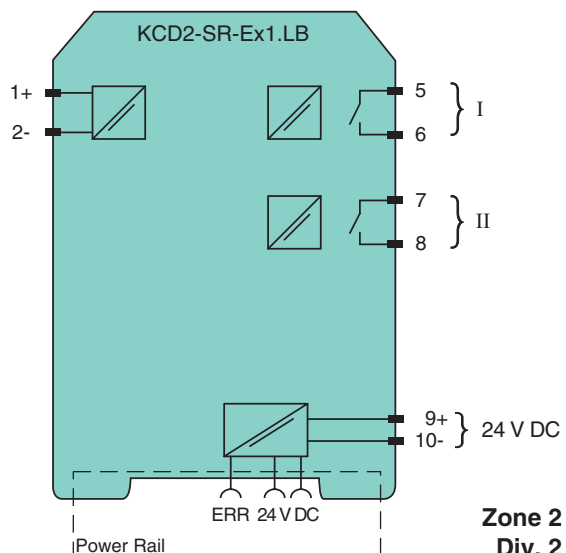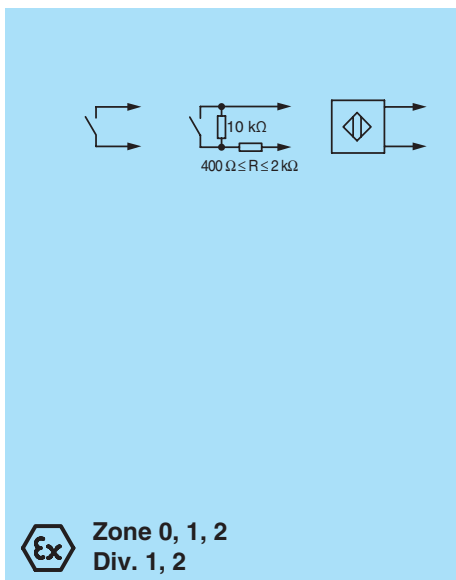
Due to its compact housing design and low heat dissipation, this device is useful for detecting positions, end stops, and switching states in space-critical applications.

Assembly

Front view

Removable terminals blue

LED green: Power supply

LED yellow/red: Status output I/ Fault signal

Switch 1 ... 4

Place for labeling

Removable terminals green

Connection

$10\ k\Omega$

$400\ \Omega \leq R \leq 2\ k\Omega$

Zone 0, 1, 2
Div. 1, 2

KCD2-SR-Ex1.LB

1+
2-

5
6 } I

7
8 } II

9+
10- } 24 V DC

ERR   24 V DC

Power Rail

Zone 2
Div. 2

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General specifications	
Signal type	Digital input
Supply	
Connection	Power Rail or terminals 9+, 10-
Rated voltage	19 ... 30 V DC
Ripple	≤ 10 %
Rated current	≤ 30 mA
Power loss	≤ 500 mW
Power consumption	≤ 500 mW
Input	
Connection	terminals 1+, 2-
Rated values	acc. to EN 60947-5-6 (NAMUR)
Open circuit voltage/short-circuit current	approx. 10 V DC / approx. 8 mA
Switching point/switching hysteresis	1.2 ... 2.1 mA / approx. 0.2 mA
Line fault detection	breakage I ≤ 0.1 mA , short-circuit I ≥ 6.5 mA
Pulse/Pause ratio	≥ 20 ms / ≥ 20 ms
Output	
Connection	output I: terminals 5, 6 ; output II: terminals 7, 8
Output I	signal ; relay
Output II	signal or error message ; relay
Contact loading	253 V AC/2 A/cos φ > 0.7; 126.5 V AC/4 A/cos φ > 0.7; 30 V DC/2 A resistive load
Minimum switch current	2 mA / 24 V DC
Energized/De-energized delay	≤ 20 ms / ≤ 20 ms
Mechanical life	10^7 switching cycles
Transfer characteristics	
Switching frequency	≤ 10 Hz
Electrical isolation	
Output/power supply	reinforced insulation according to IEC 61140, rated insulation voltage 300 V_{eff}
Output/Output	reinforced insulation according to IEC 61140, rated insulation voltage 300 V_{eff}
Indicators/settings	
Labeling	space for labeling at the front
Directive conformity	
Electromagnetic compatibility	
Directive 2004/108/EC	EN 61326-1:2006
Low voltage	
Directive 2006/95/EC	EN 50178:1997
Conformity	
Electromagnetic compatibility	NE 21
Protection degree	IEC 60529
Protection against electric shock	IEC 61140
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	12.5 x 114 x 119 mm (0.5 x 4.5 x 4.7 in) , housing type A2
Data for application in connection with Ex-areas	
EC-Type Examination Certificate	BASEEFA 06 ATEX 0092 , for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection	⟨Ex⟩ II (1)GD [Ex ia] IIC; [Ex iaD] [circuit(s) in zone 0/1/2/20/21/22] ⟨Ex⟩ I (M1) [Ex ia] I
Input	Ex ia, Ex iaD
Voltage U_o	10.5 V
Current I_o	17.1 mA
Power P_o	45 mW (linear characteristic)
Supply	
Maximum safe voltage U_m	253 V AC (Attention! U_m is no rated voltage.)
Output I, II	
Maximum safe voltage U_m	253 V AC (Attention! U_m is no rated voltage.)
Contact loading	253 V AC/2 A/cos φ > 0.7; 126.5 V AC/4 A/cos φ > 0.7; 30 V DC/2 A resistive load
Statement of conformity	Pepperl+Fuchs
Group, category, type of protection, temperature classification	⟨Ex⟩ II 3G Ex nA nC IIC T4 X
Output I, II	
Contact loading	50 V AC/2 A/cos φ > 0.7; 30 V DC/2 A resistive load

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Electrical isolation	
Input/Output	safe galvanic isolation acc. to EN 50020, voltage peak value 375 V
Input/power supply	safe galvanic isolation acc. to EN 50020, voltage peak value 375 V
Directive conformity	
Directive 94/9/EC	EN 60079-0, EN 50020, IEC 61241-11, IEC 61241-0, EN 60079-26, EN 60079-15
International approvals	
FM approval	
Control drawing	16-533FM-12 (cFMus)
UL approval	
Control drawing	16-533FM-12 (cULus)
IECEx approval	IECEx BAS 06.0025
Approved for	[Ex ia] IIC , [Ex ia] I
General information	
Supplementary information	EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com.

Configuration
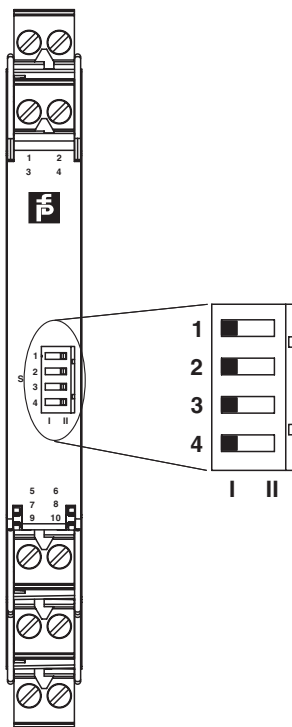
Switch position

S	Function		Position
1	Mode of operation Output I (relay) energized	with high input current	**I**
		with low input current	**II**
2	Assignment Output II (relay)	switching state like relay I	**I**
		fault signal output (de-energized if fault)	**II**
3	Line fault detection	ON	**I**
		OFF	**II**
4	no function		

Operating status

Control circuit	Input signal
Initiator high impedance/ contact opened	low input current
Initiator low impedance/ contact closed	high input current
Lead breakage, lead short-circuit	Line fault

Factory settings: switch 1, 2, 3 and 4 in position I

Accessories

Power feed module KFD2-EB2

The power feed module is used to supply the devices with 24 V DC via the Power Rail. The fuse-protected power feed module can supply up to 100 individual devices depending on the power consumption of the devices. A galvanically isolated mechanical contact uses the Power Rail to transmit collective error messages.

Power Rail UPR-03

The Power Rail UPR-03 is a complete unit consisting of the electrical inset and an aluminium profile rail 35 mm x 15 mm. To make electrical contact, the devices are simply engaged.

Profile Rail K-DUCT with Power Rail

The profile rail K-DUCT is an aluminum profile rail with Power Rail insert and two integral cable ducts for system and field cables. Due to this assembly no additional cable guides are necessary.

Attention

Power Rail and Profile Rail must not be fed via the device terminals of the individual devices!

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