



- 2-channel
- Control circuit EEx ia IIC
- Reversible mode of operation
- 1 signal output with 1 changeover contact per channel
- EMC acc. to NAMUR NE 21

24 V DC:

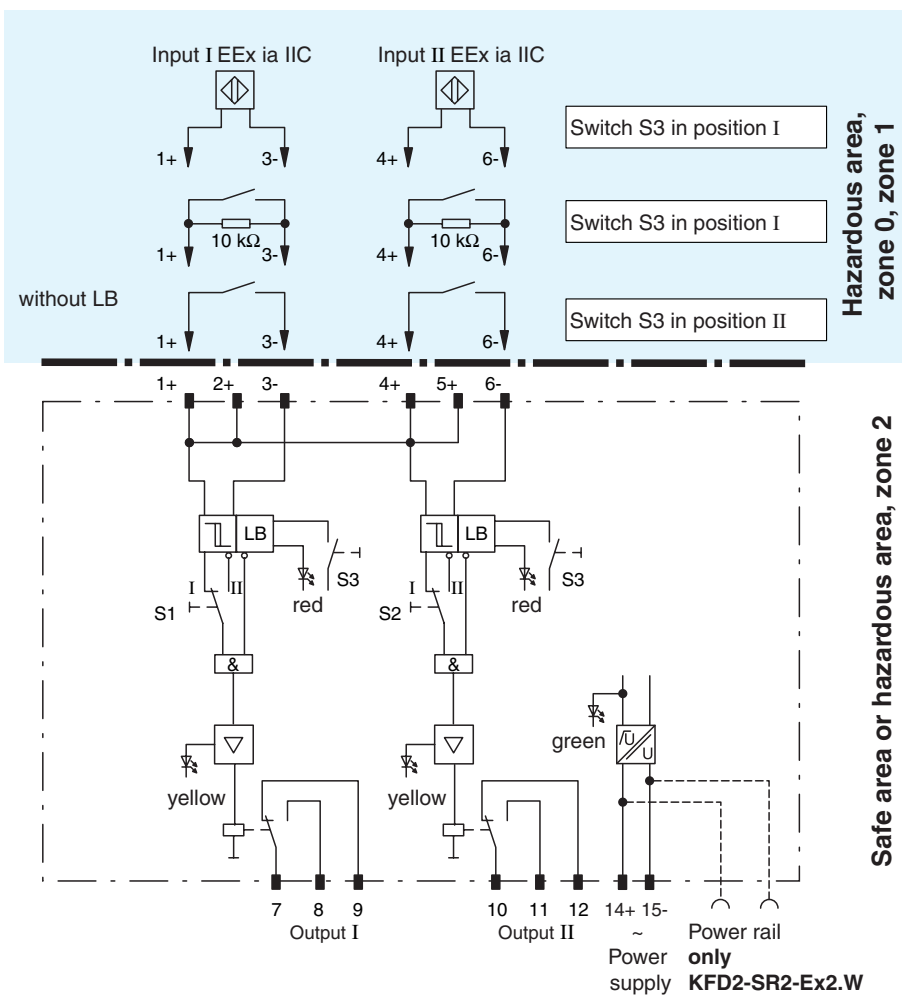
KFD2-SR2-Ex2.W

Replaces model KFD2-SR-Ex2

Function

The transformer isolated barrier transfers digital signals from the hazardous area. Sensors per DIN EN 60947-5-6 (NAMUR) and mechanical contacts may be used as alarms. The control circuit is monitored for lead breakage (LB). AC units have a low heat build-up due to voltage peak value generation. This switching technique has been patented. The input is safely isolated from the output and the power supply in accordance with DIN EN 50020. The output and power supply are safely isolated from each other in accordance with DIN VDE 0106 Section 101. The outputs and the power supply are galvanically isolated per DIN EN 50178 for a design isolation voltage of AC 253 V.

Connection



Composition

Front View

Housing type C (see system description)

LED yellow: Relay output I

LED red: LB channel I

LED yellow: Relay output II

LED red: LB channel II

Removable terminals blue

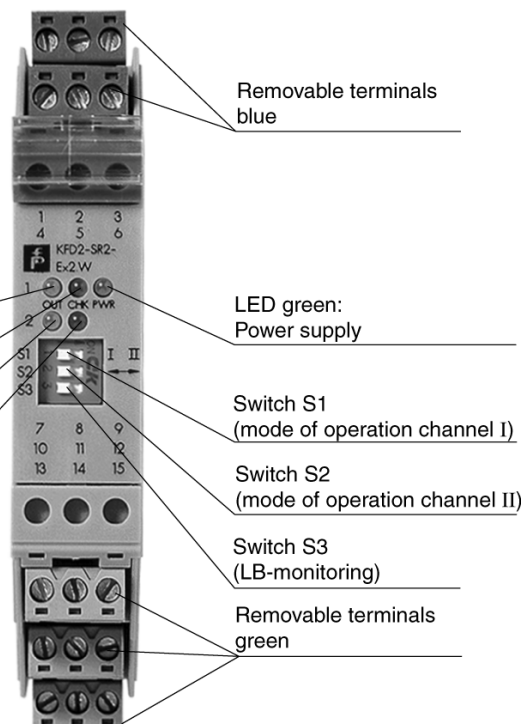
LED green: Power supply

Switch S1 (mode of operation channel I)

Switch S2 (mode of operation channel II)

Switch S3 (LB-monitoring)

Removable terminals green



Supply

Connection	Power Rail or terminals 14+, 15-
Rated voltage	20 ... 30 V DC
Ripple	≤ 10 %
Rated current	≤ 50 mA
Power loss	0,7 W
Power consumption	< 1,3 W

Input

Connection	terminals 1+, 3-; 4+, 6-
Rated values	acc. to IEC 60947-5-6 (NAMUR, DIN 19234), see system description for electrical data
Open circuit voltage/Short-circuit current	approx. 8 V DC / approx. 8 mA
Switching point/Switching hysteresis	1,2 ... 2,1 mA / approx. 0,2 mA
Pulse/Pause ratio	≥ 20 ms / ≥ 20 ms
Lead monitoring	breakage I ≤ 0,1 mA

Output

Connection	output I: terminals 7, 8, 9 ; output II: terminals 10, 11, 12
Output I and II	signal ; relay
Contact loading	253 V AC / 2 A / cos φ > 0.7; 40 V DC / 2 A resistive load;
Energised/De-energised delay	approx. 20 ms / approx. 20 ms
Mechanical life	10 ⁷ switching cycles

Transfer characteristics

Switching frequency	≤ 10 Hz
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Electrical isolation

Input/Output	safe electrical isolation acc. to EN 50020, voltage peak value 375 V
Input/power supply	safe electrical isolation acc. to EN 50020, voltage peak value 375 V
Output/power supply	safe isolation acc. to DIN VDE 0106, rated insulation voltage 253 V _{eff}
Output/Output	basic insulation acc. to DIN EN 50178, rated insulation voltage 253 V _{eff}

Directive conformity

Electromagnetic compatibility	standards
Directive 89/336/EC	acc. to EN 50081-2 / EN 50082-2

Standard conformity

Insulation coordination	acc. to DIN EN 50178
Electrical isolation	acc. to DIN EN 50178
Electromagnetic compatibility	acc. to EN 50081-2 / EN 50082-2, NAMUR NE 21
Climatic conditions	acc. to DIN IEC 721
Input	acc. to IEC 60947-5-6 (NAMUR, DIN 19234), see system description for electrical data

Ambient conditions

Ambient temperature	-20 ... 60 °C (253 ... 333 K)
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Mechanical specifications

Protection degree	IP20
Mass	approx. 150 g

Data for application in conjunction with hazardous areas

EC-Type Examination Certificate	PTB 00 ATEX 2080 ; for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection	⊕ II (1) G D [Ex ia] IIC [circuit(s) in zone 0/1/2]
Voltage U ₀	10,5 V
Current I ₀	13 mA
Power P ₀	34 mW

Supply

Safety maximum voltage U _m	253 V AC / 125 V DC (Attention! U _m is no rated voltage.)
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Type of protection [Ex ia and Ex ib]

Explosion group	IIA	IIB	IIC
External capacitance	75 μF	16,8 μF	2,41 μF
External inductance	1000 mH	840 mH	210 mH

Electrical isolation

Input/Output	safe electrical isolation acc. to EN 50020, voltage peak value 375 V
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Directive conformity

Directive 94/9 EC	EN 50014, EN 50020
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Entity parameter

Certification number	J.I.3002773
FM control drawing	No. 116-0035
Suitable for installation in division 2	yes
Connection	terminals 1, 3; 2, 3; 4, 6; 5, 6
Input I	
Voltage V _{OC}	12,9 V
Current I _t	19,8 mA

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Explosion group	A&B	C&E	D, F&G
Max. external capacitance C _a	1,273 µF	3,82 µF	10,18 µF
Max. external inductance L _a	84,8 mH	254,4 mH	678,4 mH
Safety parameter			
UL control drawing	E 106378		
CSA control drawing	LR 36087-13		
Control drawing	No. 116-0047		
Connection	terminals 1, 3; 2, 3; 4, 6; 5, 6		
Input I			
Safety parameter	12,6 V / 650 Ohm		
Voltage V _{OC}	12,9 V		
Current I _{SC}	19,8 mA		
Explosion group	A&B	C&E	D, F&G
Max. external capacitance C _a	1,273 µF	3,82 µF	10,18 µF
Max. external inductance L _a	84,88 mH	298,7 mH	744,4 mH

Notes

Customs tariff number 8536 5019 000

Available approvals for the worldwide use

Country	Testing institut	Approval number	Note
Australia	MDA		
Australia	SA		
Canada	CSA	LR 36087-13	
China	NEPSI	GYJ 97 116	
Germany	TÜV	TÜV 99 ATEX 1499X	for installation of devices in zone 2
England	BASEEFA	Ex 96D2393	
Japan	TIIS		
Korea	KROS		
Korea	KISCO		
Poland	KDB	KDB 99.222W	
Russia	ISZWE		
Switzerland	SEV		
Czech Rep.	FTZU		
Ungarn	BKI		
USA	FM		
USA	UL		

The available approvals are continuously expanded

Desired specimen are available on request or via WWW.Pepper-Fuchs.com

Housing type C



Operating manual KF-System

Application

- These devices are used in MSR technology for the galvanic isolation of MSR signals such as for example 20mA and 10V unit signals, or additionally for the adjustment or standardization of signals. Devices which have intrinsically safe control circuits, serve for operating intrinsically safe field devices within hazardous areas. The data sheets of the manufacturer should be observed.
- The devices of the KF-Systems are not suited for the isolation of signals in power engineering, unless it is specially noted in the respective

data sheet.

- The laws or directives for the use or the planned purpose should be observed.

Commissioning, installation

- The devices are designed according to the protection class IP20 and have to be protected against adverse environmental conditions such as for example water splashing or dirt beyond grime accumulation level 2.
- The devices have to be installed out of the hazardous area! Only the circuits which are marked to be intrinsically safe may be lead in the hazardous area.
- For connecting intrinsically safe field devices with the intrinsically safe circuitry of the related devices of the KF-Systems, the respective peak values of the field device and of the related device with regard to the explosion protection should be considered (verification of intrinsic safety). The EC-certificates of conformity or the EC-Prototype test label should be observed. Especially important is the observance of the included "Special terms".
- When using the intrinsically safe circuitry in the hazardous area dust "D" only specially certificated field devices may be connected.

Commissioning, Installation within zone 2

- The devices are to be installed in switch or junction boxes in the protection class IP54 or higher.
- The devices can be installed within zone 2. Only circuits that are marked to be intrinsically safe can be used in zone 1 or zone 0, depending on the ignition protection class. The installation of the intrinsically safe circuits is to be conducted in accordance with the relevant installation directions..
- For connecting intrinsically safe field devices with the intrinsically safe circuitry of the related devices of the KF-Systems, the respective peak values of the field device and of the related device with regard to the explosion protection should be considered. The EG-certificate of conformity or EG-Prototype test label should be observed.
- For operation within zone 2 the conformity information of the certification centres or the declarations of conformity of the manufacturers should be considered additionally. Especially important is the observance of the included "Special terms".
- When using the intrinsically safe circuitry in the hazardous area dust "D" only specially certificated field devices may be connected.

Repair and Maintenance

- The transmission of the devices is stable over long time periods, a regular adjustment or similar is not necessary. Also otherwise, maintenance is not required.

Fault Elimination

- Devices, which are suited for operation in hazardous areas may not be modified. Device repairs may only be conducted by specially trained and certified personnel.

Isolation Coordinates for units with Ex certification according to EN 50020

The devices are rate for installation in accumulation level 2, according to DIN EN 50178.