



- 2-channel
- Control circuit EEx ia IIC
- Device installation permissible in zone 2
- Reversible mode of operation
- 1 active electronic output per channel
- EMC acc. to NAMUR NE 21
- LB/SC monitoring
- LB/SC collective error message via Power Rail
- Up to SIL2 acc. to IEC 61508

24 V DC
KFD2-ST2-Ex2

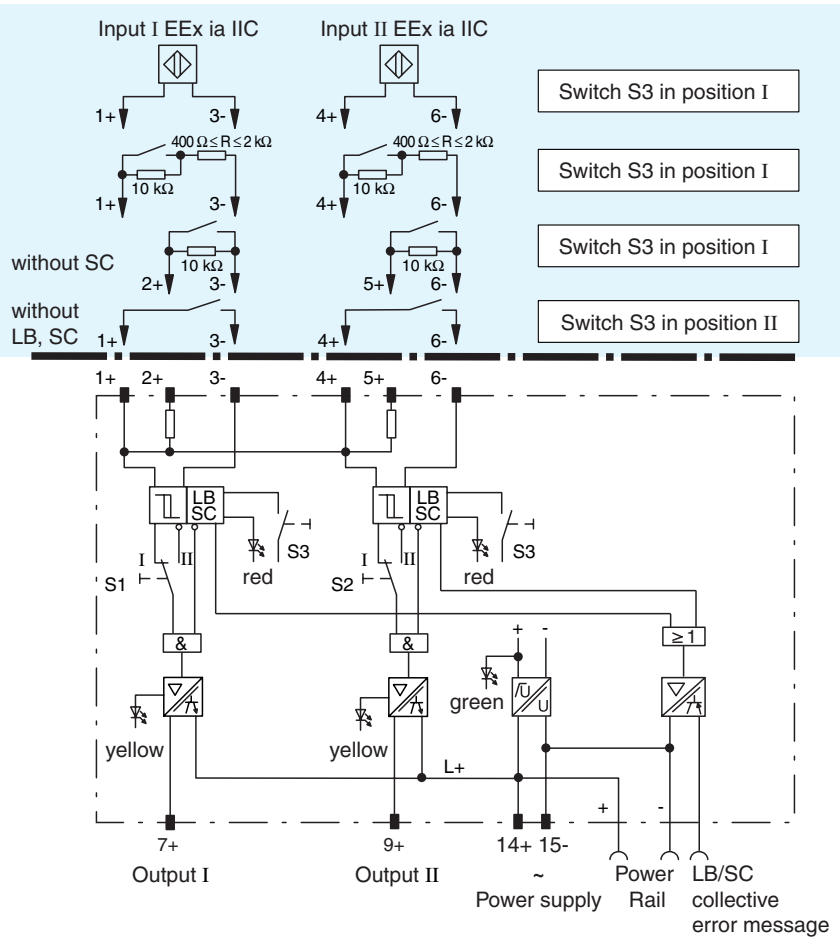
Function

The transformer isolated barrier transfers digital signals from the hazardous area. Sensors per EN 60947-5-6 (NAMUR) and mechanical contacts may be used as alarms. The control circuit monitored for lead breakage (LB) and short circuit (SC). The external faults are indicated according to NAMUR NE44 by a red flashing LED.

Additionally a LB/SC collective error message will be transferred via Power Rail to the power feed module.

The intrinsically safe inputs per EN 50020 are safely isolated from the output and the power supply. Both transistor outputs are galvanically connected to each other and the power supply.

Connection



Hazardous area

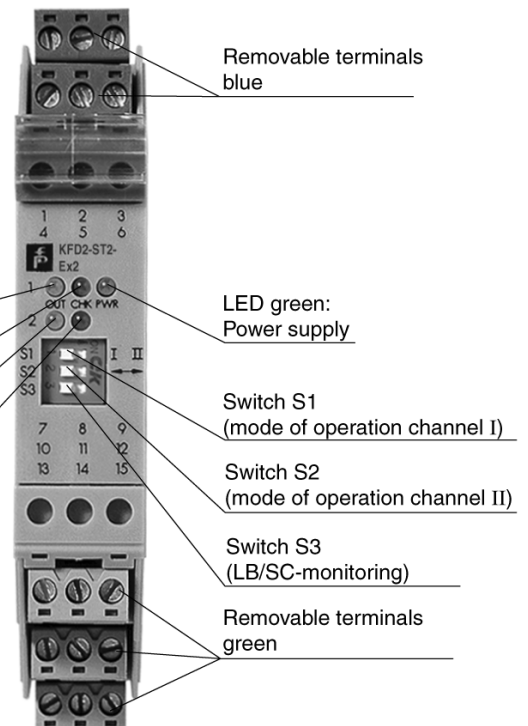
Safe area or hazardous area, zone 2

Composition

Front View

Housing type C
(see system description)

- LED yellow: Transistor outputs I
- LED red: LB/SC channel I
- LED yellow: Transistor output II
- LED red: LB/SC 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/SC-monitoring)

Removable terminals green

Supply	
Connection	Power Rail or terminals 14+, 15-
Rated voltage	20 ... 30 V DC
Ripple	≤ 10 %
Rated current	≤ 50 mA
Input	
Connection	terminals 1+, 2+, 3-; 4+, 5+, 6-
Rated values	acc. to EN 60947-5-6 (NAMUR), 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
Lead monitoring	breakage I ≤ 0.1 mA , short-circuit I > 6 mA
Output	
Connection	output I: terminals 7+ ; output II: terminals 9+
Collective error message	Power Rail
Signal level	1-signal: (L+) - 3.5 V (100 mA, short-circuit proof) 0-signal: switched off (off-state current ≤ 10 μA)
Output I	signal ; electronic output, active
Output II	lead breakage ; electronic output, active
Transfer characteristics	
Switching frequency	≤ 5 kHz
Electrical isolation	
Output/power supply	not available , common pole terminal 14+
Output/output	not available , common pole terminal 14+
Directive conformity	
Electromagnetic compatibility	
Directive 89/336/EC	EN 61326
Conformity	
Electromagnetic compatibility	NE 21
Protection degree	IEC 60529
Ambient conditions	
Ambient temperature	-20 ... 60 °C (253 ... 333 K)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 118 x 115 mm (0.8 x 4.6 x 4.5 in)
Data for application in conjunction with hazardous areas	
EC-Type Examination Certificate	PTB 00 ATEX 2035 , for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection	⊕ II (1)GD [EEx ia] IIC [circuit(s) in zone 0/1/2]
Input	EEx ia IIC
Voltage U _o	10.5 V
Current I _o	13 mA
Power P _o	34 mW (linear characteristic)
Supply	
Safety maximum voltage U _m	40 V DC (Attention! The rated voltage can be lower.)
Type of protection [EEx ia and EEx ib]	
Explosion group	IIA IIB IIC
External capacitance	75 μF 16.8 μF 2.4 μF
External inductance	1000 μH 740 μH 200 μH
Output	
Safety maximum voltage U _m	40 V DC (Attention! The rated voltage can be lower.)
Statement of conformity	
Group, category, type of protection, temperature classification	⊕ II 3G EEx nA II T4 [device in zone 2]
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
Directive conformity	
Directive 94/9 EC	EN 50014, EN 50020, EN 50021
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	

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Voltage	V_{OC}	12.9 V		
Current	I_t	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		84.8 mH	254.4 mH	678.4 mH
Safety parameter				
CSA control drawing		LR 36087-19/LR 36087-22		
Control drawing		No. 116-0047		
Connection		terminals 1, 3; 2, 3; 4, 6; 5, 6		
Input I				
Voltage	V_{OC}	10.5 V		
Current	I_{SC}	13 mA		
Explosion group		A&B	C&E	D, F&G
Max. external capacitance C_a		2.66 μF	7.9 μF	21.3 μF
Max. external inductance L_a		192 mH	671 mH	1000 mH

Supplementary information

EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity and instructions have to be observed. For information see www.pepperl-fuchs.com.

Notes

Lead breakage monitoring

The output is cut-off when the current in the control circuit is $J < 0,1$ mA (per lead breakage monitoring). In the case of an error, a fault signal is switched on the Power Rail (UPR-03). The power feed module evaluates and passes on the fault signal by means of a potentially free contact.

Accessories

Power Rail PR-03

Power Rail UPR-03

Power feed module KFD2-EB2...

Using Power Rail PR-03 or UPR-03 the devices are supplied with 24 V DC by means of the power feed modules. If no Power Rails are used, power supply of the individual devices is possible directly via their device terminals.

Each power feed module is used for fusing and monitoring groups with up to 100 individual devices. The Power Rail PR-03 is an inset component for the DIN rail. The Power Rail UPR-03 is a complete unit consisting of the electrical inset and an aluminium profile rail 35 mm x 15 mm x 2000 mm. To make electrical contact, the devices are simply engaged.

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