



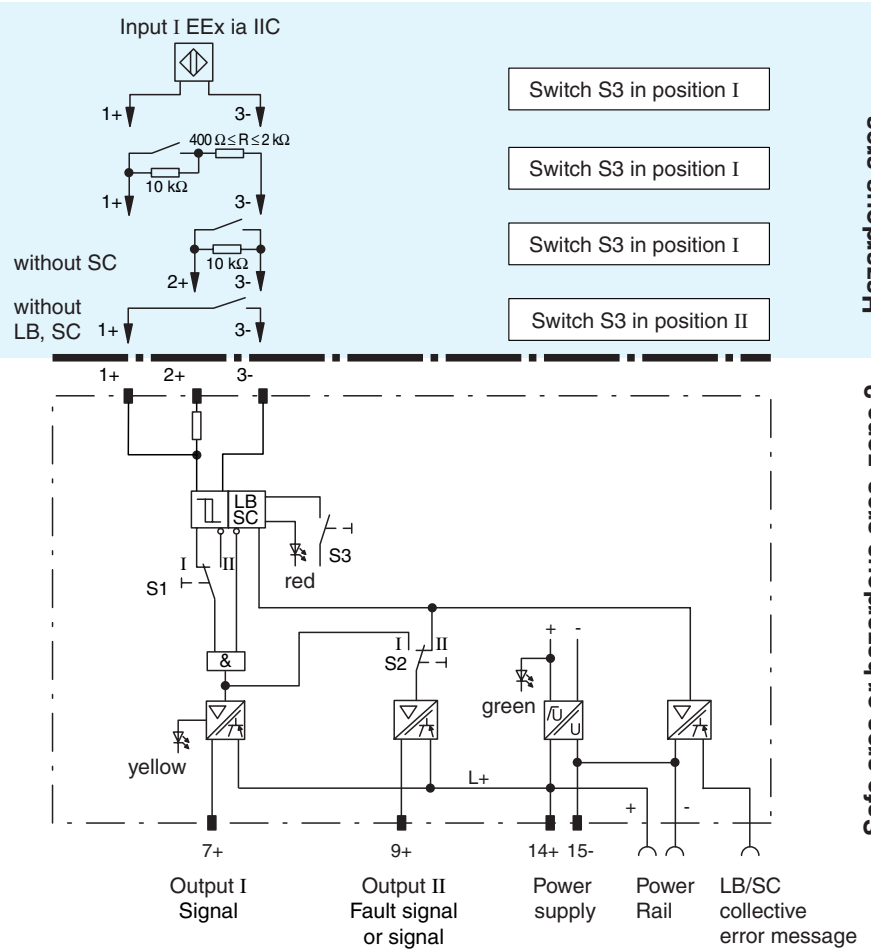
- 1-channel
- Control circuit EEx ia IIC
- Device installation permissible in zone 2
- Reversible mode of operation
- Output I: signal output (active electronic output)  
Output II: either signal output or error message (active electronic output)
- EMC acc. to NAMUR NE 21
- LB/SC monitoring
- LB/SC collective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

24 V DC  
KFD2-ST2-Ex1.LB

**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. Control circuits are 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. With the S2 switch the output II will be assigned alternatively to the input signal or the fault signal. The intrinsically safe input is per EN 50020 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 output

LED red: LB/SC

Switch S2 (Output selection II)

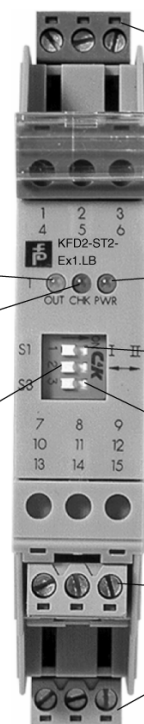
Removable terminal blue

LED green: Power supply

Switch S1 (mode of operation)

Switch S3 (LB/SC-monitoring)

Removable terminals green



Release date 2005-07-08 11:03 Date of issue 2005-12-05 109560\_ENG.xml

<b>Supply</b>	
Connection	Power Rail or terminals 14+, 15-
Rated voltage	20 ... 30 V DC
Ripple	≤ 10 %
Rated current	≤ 50 mA
<b>Input</b>	
Connection	terminals 1+, 2+, 3-
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
<b>Output</b>	
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
<b>Transfer characteristics</b>	
Switching frequency	≤ 5 kHz
<b>Electrical isolation</b>	
Output/power supply	not available , common pole terminal 14+
Output/output	not available , common pole terminal 14+
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 89/336/EC	EN 61326, EN 50081-2
<b>Conformity</b>	
Electromagnetic compatibility	NE 21
Protection degree	IEC 60529
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (253 ... 333 K)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 150 g
Dimensions	20 x 118 x 115 mm (0.8 x 4.6 x 4.5 in)
<b>Data for application in conjunction with hazardous areas</b>	
EC-Type Examination Certificate	PTB 00 ATEX 2035 , for additional certificates see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a>
Group, category, type of protection	⊕ II (1) G D [EEx ia] IIC [circuit(s) in zone 0/1/2]
Input	EEx ia IIC
Voltage U <sub>0</sub>	10.5 V
Current I <sub>0</sub>	13 mA
Power P <sub>0</sub>	34 mW (linear characteristic)
<b>Supply</b>	
Safety maximum voltage U <sub>m</sub>	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 mH    740 mH    200 mH
<b>Output</b>	
Safety maximum voltage U <sub>m</sub>	40 V DC (Attention! The rated voltage can be lower.)
Statement of conformity	TÜV 99 ATEX 1499 X , observe statement of conformity
Group, category, type of protection, temperature classification	⊕ II 3 G EEx nA II T4 [device in zone 2]
<b>Electrical isolation</b>	
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
<b>Directive conformity</b>	
Directive 94/9 EC	EN 50014, EN 50020, EN 50021
<b>Entity parameter</b>	
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	

Release date 2005-07-08 11:03 Date of issue 2005-12-05 109560\_ENG.xml

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 $\mu F$	3.82 $\mu F$	10.18 $\mu F$
Max. external inductance $L_a$		84.8 mH	254.4 mH	678.4 mH
<b>Safety parameter</b>				
UL control drawing		E 106378		
CSA control drawing		LR 36087-19/LR 36087-22		
Control drawing		No. 116-0047		
Connection		terminals 1, 3; 2, 3; 4, 6; 5, 6		
<b>Input I</b>				
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 $\mu F$	7.9 $\mu F$	21.3 $\mu F$
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](http://www.pepperl-fuchs.com).

### 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!**