

**Features**

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input for NAMUR sensors or dry contacts
- Input frequency 1 mHz ... 5 kHz
- Current output 0/4 mA ... 20 mA
- Relay and transistor output
- Start-up override
- Line fault detection (LFD)
- Up to SIL2 acc. to IEC 61508/IEC 61511

**Function**

This isolated barrier is used for intrinsic safety applications. The device is a universal frequency converter that changes a digital input signal into a proportional free adjustable 0/4 mA ... 20 mA analog output signal and functions as a switch amplifier and a trip alarm.

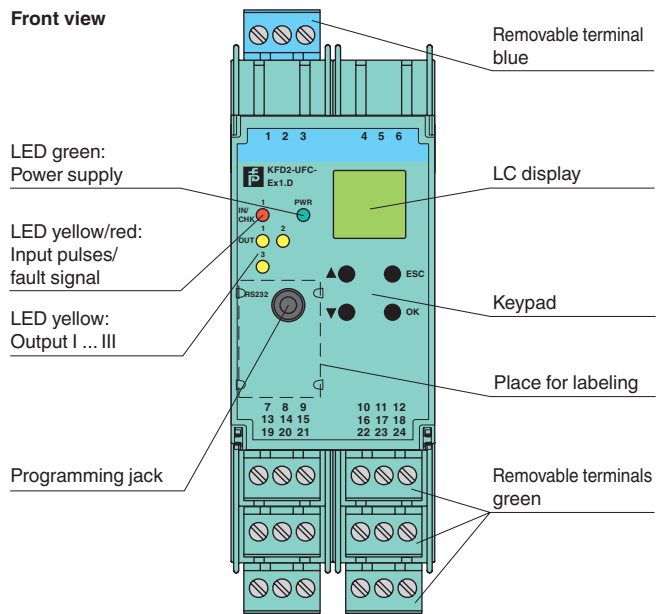
The functions of the switch outputs (2 relay outputs and 1 potential free transistor output) are easily adjustable [trip value display (min/max alarm), serially switched output, pulse divider output, error signal output].

The device is easily configured by the use of keypad or with the PACTware configuration software.

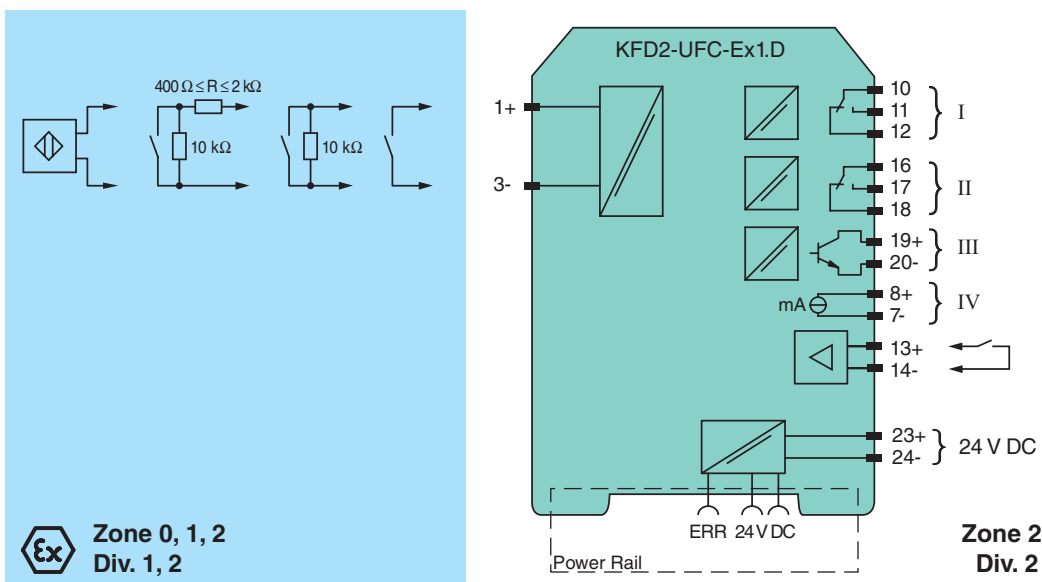
A fault is signaled by LEDs acc. to NAMUR NE44 and a separate collective error message output.

For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Assembly**



**Connection**



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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

<b>General specifications</b>		
Signal type		Digital Input
<b>Supply</b>		
Connection		terminals 23+, 24- or power feed module/Power Rail
Rated voltage	$U_n$	20 ... 30 V DC
Rated current	$I_n$	approx. 100 mA
Power loss/power consumption		$\leq 2 \text{ W} / 2.2 \text{ W}$
<b>Input</b>		
Connection		Input I: intrinsically safe: terminals 1+, 3- Input II: non-intrinsically safe: terminals 13+, 14-
Input I		sensor acc. to EN 60947-5-6 (NAMUR) or mechanical contact
Pulse duration		$> 50 \mu\text{s}$
Input frequency		0.001 ... 5000 Hz
Lead monitoring		breakage $I \leq 0.15 \text{ mA}$ ; short-circuit $I > 6.5 \text{ mA}$
Input II		startup override: 1 ... 1000 s, adjustable in steps of 1 s
Active/Passive		$I > 4 \text{ mA}$ (for min. 100 ms) / $I < 1.5 \text{ mA}$
Open circuit voltage/short-circuit current		18 V / 5 mA
<b>Output</b>		
Connection		output I: terminals 10, 11, 12 output II: terminals 16, 17, 18 output III: terminals 19+, 20- output IV: terminals 8+, 7-
Output I, II		signal, relay
Contact loading		250 V AC / 2 A / $\cos \phi \geq 0.7$ ; 40 V DC / 2 A
Mechanical life		$5 \times 10^7$ switching cycles
Energized/De-energized delay		approx. 20 ms / approx. 20 ms
Output III		electronic output, passive
Contact loading		40 V DC
Signal level		1-signal: (L+) - 2.5 V (50 mA, short-circuit/overload proof) 0-signal: switched off (off-state current $\leq 10 \mu\text{A}$ )
Output IV		analog
Current range		0 ... 20 mA or 4 ... 20 mA
Open loop voltage		$\leq 24 \text{ V DC}$
Load		$\leq 650 \Omega$
Fault signal		downscale $I \leq 3.6 \text{ mA}$ , upscale $\geq 21.5 \text{ mA}$ (acc. NAMUR NE43)
Collective error message		Power Rail
<b>Transfer characteristics</b>		
Input I		
Measurement range		0.001 ... 5000 Hz
Resolution		0.1 % of the measurement value , $\geq 0.001 \text{ Hz}$
Accuracy		0.1 % of the measurement value , $> 0.001 \text{ Hz}$
Measuring time		$< 100 \text{ ms}$
Influence of ambient temperature		0.003 %/K (30 ppm)
Output I, II		
Response delay		$\leq 200 \text{ ms}$
Output IV		
Resolution		$< 10 \mu\text{A}$
Accuracy		$< 20 \mu\text{A}$
Influence of ambient temperature		0.005 %/K (50 ppm)
<b>Electrical isolation</b>		
Input I/other circuits		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Output I, II/other circuits		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Mutual output I, II, III		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Output III/power supply and collective error		basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V <sub>eff</sub>
Output III/start-up override		basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V <sub>eff</sub>
Output III/IV		basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V <sub>eff</sub>
Output IV/power supply and collective error		functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Start-up override/power supply and collective error		functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Interface/power supply and collective error		functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Interface/output III		basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V <sub>eff</sub>
<b>Directive conformity</b>		

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<b>Electromagnetic compatibility</b>		
Directive 2004/108/EC		EN 61326-1:2006
<b>Low voltage</b>		
Directive 2006/95/EC		EN 61010-1:2010
<b>Conformity</b>		
Electromagnetic compatibility		NE 21:2006
Degree of protection		IEC 60529:2001
Input		EN 60947-5-6:2000
<b>Ambient conditions</b>		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>		
Degree of protection		IP20
Mass		300 g
Dimensions		40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in) , housing type C3
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
<b>Data for application in connection with Ex-areas</b>		
EC-Type Examination Certificate		TÜV 99 ATEX 1471 , for additional certificates see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a>
Group, category, type of protection		⊕ II (1)GD, I (M1) [Ex ia] IIC, [Ex iaD], [Ex ia] I (-20 °C ≤ T <sub>amb</sub> ≤ 60 °C)
<b>Supply</b>		
Maximum safe voltage	U <sub>m</sub>	40 V DC (Attention! U <sub>m</sub> is no rated voltage.)
<b>Input I</b>		terminals 1+, 3- Ex ia IIC, Ex iaD
Voltage	U <sub>o</sub>	10.1 V
Current	I <sub>o</sub>	13.5 mA
Power	P <sub>o</sub>	34 mW (linear characteristic)
<b>Input II</b>		terminals 13+, 14- non-intrinsically safe
Maximum safe voltage	U <sub>m</sub>	40 V (Attention! The rated voltage can be lower.)
<b>Output I, II</b>		terminals 10, 11, 12; 16, 17, 18 non-intrinsically safe
Maximum safe voltage	U <sub>m</sub>	253 V (Attention! The rated voltage can be lower.)
Contact loading		253 V AC/2 A/cos φ > 0.7; 40 V DC/2 A resistive load (TÜV 99 ATEX 1471)
<b>Output III</b>		terminals 19+, 20- non-intrinsically safe
Maximum safe voltage	U <sub>m</sub> U <sub>m</sub>	40 V (Attention! U <sub>m</sub> is no rated voltage.)
<b>Output IV</b>		terminals 8+, 7- non-intrinsically safe
Maximum safe voltage	U <sub>m</sub>	40 V DC (Attention! U <sub>m</sub> is no rated voltage.)
<b>Interface</b>		RS 232
Maximum safe voltage	U <sub>m</sub>	40 V (Attention! U <sub>m</sub> is no rated voltage.)
<b>Statement of conformity</b>		TÜV 02 ATEX 1885 X
Group, category, type of protection, temperature class		⊕ II 3G Ex nA nC IIC T4
<b>Output I, II</b>		
Contact loading		50 V AC/2 A/cos φ > 0.7; 40 V DC/1 A resistive load
<b>Electrical isolation</b>		
Input I/other circuits		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
<b>Directive conformity</b>		
Directive 94/9/EC		EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010 , EN 60079-26:2007
<b>International approvals</b>		
<b>FM approval</b>		
Control drawing		16-538FM-12
<b>General information</b>		
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 <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

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## 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 150 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.



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

### PACT<sup>ware</sup>™

Device-specific drivers (DTM)

### Adapter K-ADP1

Programming adapter for parameterisation via the serial RS 232 interface of a PC/Notebook

For programming, please use the new version of adapter K-ADP1 (part no. 181953, connector length 14mm). When using the previous version K-ADP1 (connector length 18 mm) the plug is exposed by approx. 3 mm. The function is not affected.

### Adapter K-ADP-USB

Programming adapter for parameterisation via the serial USB interface of a PC/Notebook