

**Features**

- 1-channel isolated barrier
- Universal usage at different power supplies
- Input for NAMUR sensors or dry contacts
- Input frequency 1 mHz ... 5 kHz
- Current output 0/4 mA ... 20 mA
- Relay contact and transistor output
- Start-up override
- Line fault detection (LFD)
- Up to SIL 2 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.

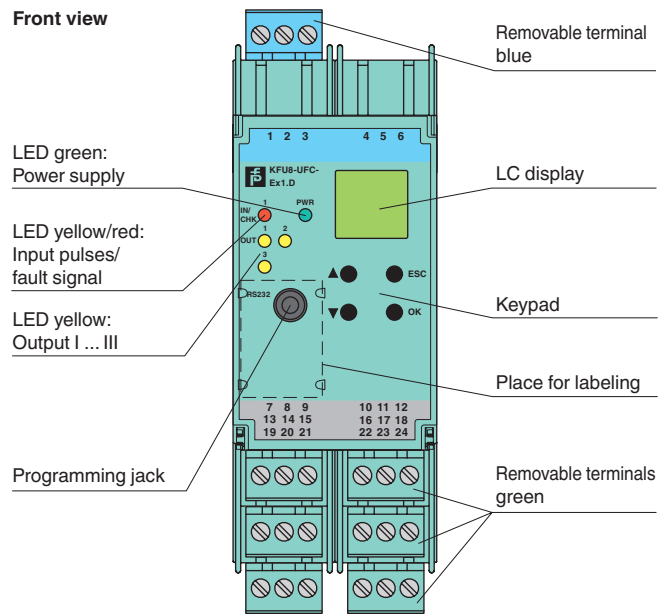
The functions of the switch outputs (2 relay outputs and 1 potential free transistor output) are easily adjustable [trip value display (min/max alarm), serially switched output, pulse divider output, error signal output].

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.

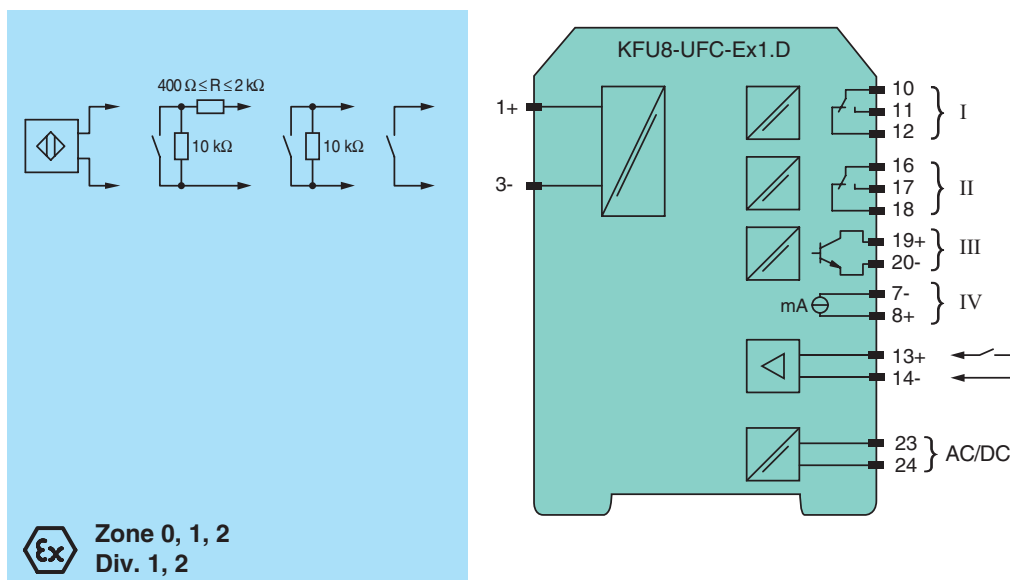
For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

**Assembly**



**SIL 2**

**Connection**



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

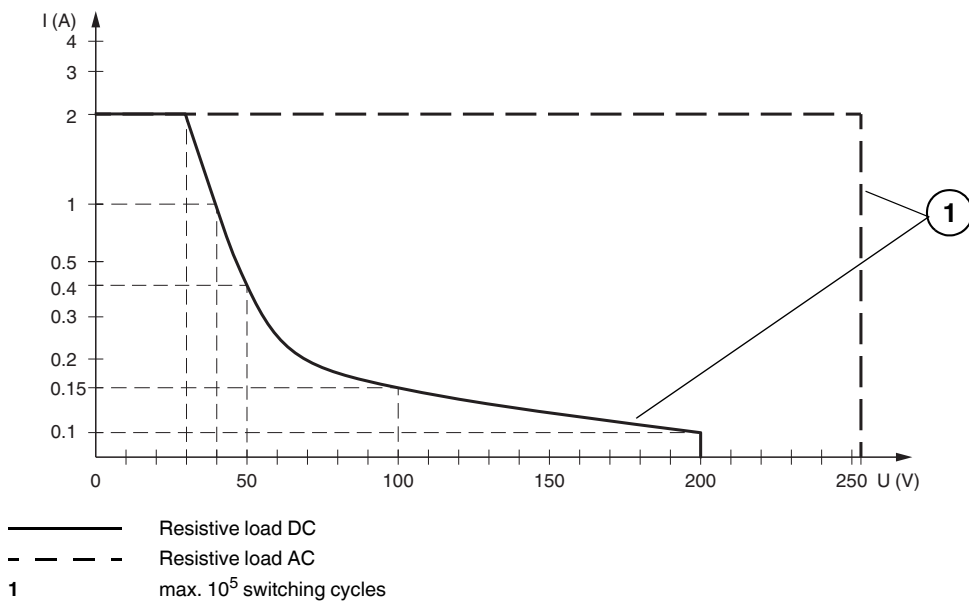
<b>General specifications</b>	
Signal type	Digital Input
<b>Functional safety related parameters</b>	
Safety Integrity Level (SIL)	SIL 2
<b>Supply</b>	
Connection	terminals 23, 24
Rated voltage $U_r$	20 ... 90 V DC / 48 ... 253 V AC 50 ... 60 Hz
Power dissipation/power consumption	$\leq 2$ W ; 2.5 VA / 2.2 W ; 3 VA
<b>Interface</b>	
Programming interface	programming socket
<b>Input</b>	
Connection side	field side
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
Line fault detection	breakage I $\leq 0.15$ mA; short-circuit I $> 6.5$ mA
Input II	startup override: 1 ... 1000 s, adjustable in steps of 1 s
Active/Passive	I $> 4$ mA (for min. 100 ms) / I $< 1.5$ mA
Open circuit voltage/short-circuit current	18 V / 5 mA
<b>Output</b>	
Connection side	control side
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	$\leq 24$ V DC
Load	$\leq 650 \Omega$
Fault signal	downscale I $\leq 3.6$ mA , upscale $\geq 21.5$ mA (acc. NAMUR NE43)
<b>Transfer characteristics</b>	
Input I	
Measurement range	0.001 ... 5000 Hz
Resolution	0.1 % of the measurement value , $\geq 0.001$ Hz
Accuracy	0.1 % of the measurement value , $> 0.001$ Hz
Measuring time	$< 100$ ms
Influence of ambient temperature	0.003 %/K (30 ppm)
Output I, II	
Response delay	$\leq 200$ ms
Output IV	
Resolution	$< 10 \mu\text{A}$
Accuracy	$< 20 \mu\text{A}$
Influence of ambient temperature	0.005 %/K (50 ppm)
<b>Galvanic 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	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 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	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Start-up override/power supply	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Interface/power supply	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Interface/output III	basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V <sub>eff</sub>

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<b>Indicators/settings</b>		
Display elements		LEDs , display
Control elements		Control panel
Configuration		via operating buttons via PACTware
Labeling		space for labeling at the front
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
Low voltage		
Directive 2014/35/EU		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
Connection		screw terminals
Mass		300 g
Dimensions		40 x 119 x 115 mm (1.6 x 4.7 x 4.5 inch) , housing type C3
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
<b>Data for application in connection with hazardous areas</b>		
EU-Type Examination Certificate		TÜV 99 ATEX 1471
Marking		⊕ II (1)G [Ex ia Ga] IIC ⊕ II (1)D [Ex ia Da] IIIC ⊕ I (M1) [Ex ia Ma] I
<b>Supply</b>		
Maximum safe voltage	U <sub>m</sub>	253 V AC / 125 V DC (Attention! U <sub>m</sub> is no rated voltage.)
<b>Input I</b>		
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>		
Maximum safe voltage	U <sub>m</sub>	40 V (Attention! The rated voltage can be lower.)
<b>Output I, II</b>		
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>		
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>		
Maximum safe voltage	U <sub>m</sub>	40 V DC (Attention! U <sub>m</sub> is no rated voltage.)
<b>Interface</b>		
Maximum safe voltage	U <sub>m</sub>	40 V (Attention! U <sub>m</sub> is no rated voltage.)
<b>Galvanic 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 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
<b>International approvals</b>		
<b>FM approval</b>		
Control drawing		16-538FM-12
<b>IECEX approval</b>		
Approved for		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
<b>General information</b>		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com.

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**Maximum Switching Power of Output Contacts**



**Accessories**

**PACT<sub>ware</sub>™**

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

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