Features

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Input frequency 1 mHz ... 5 kHz
- Current output 0/4 mA ... 20 mA
- Relay and transistor output
- Start-up override
- Configurable by **PACT***ware*™ or ke ypad
- Line fault detection (LFD)
- Up to SIL2 acc. to IEC 61508

Function

This isolated barrier is used for intrinsic safety applications. It is a universal frequency converter that changes a digital input (NAMUR sensor/mechanical contact) into a proportional free adjustable 0/4 mA ... 20 mA analog output and functions as a switch amplifier and a trip alarm.

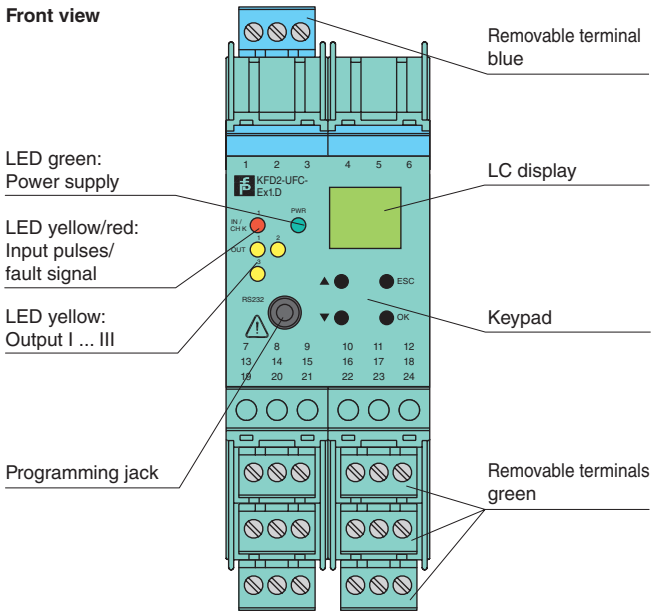
Also the functions of the switch outputs (2 relay outputs and 1 potential free transistor output) are easily adjustable [trip value display (min/max alarm), serially switched output, pulse divider output, error signal output].

The unit is easily programmed by the use of a keypad located on the front of the unit or with the **PACT***ware*™ configuration software.

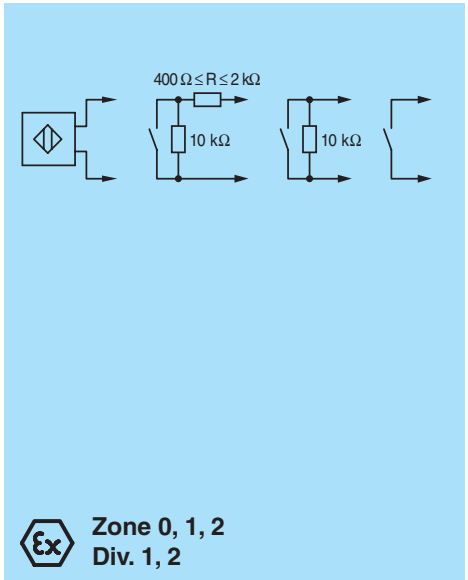
Line fault detection of the field circuit is indicated by a red LED and through the collective error output via Power Rail.

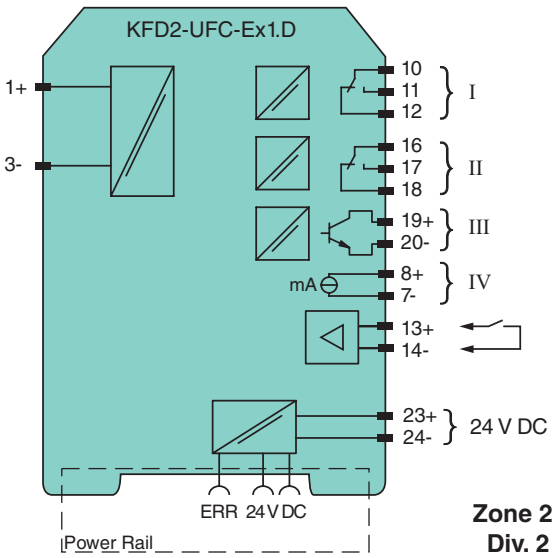
For additional information, refer to the manual and www.pepperl-fuchs.com.

Assembly



Connection





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General specifications	
Signal type	Digital input
Supply	
Connection	terminals 23+, 24- or power feed module/Power Rail
Rated voltage	20 ... 30 V DC
Rated current	approx. 100 mA
Power loss/power consumption	≤ 2 W / 2.2 W
Input	
Connection	Input I: intrinsically safe: terminals 1+, 3- Input II: non-intrinsically safe: terminals 13+, 14-
Input I	acc. to EN 60947-5-6 (NAMUR), see system description for electrical data
Pulse duration	> 50 µs
Input frequency	0.001 ... 5000 Hz
Lead monitoring	breakage I ≤ 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
Output	
Connection	output I: terminals 10, 11, 12 output II: terminals 16, 17, 18 outout III: terminasl 19+, 20- output IV: terminals 8+, 7-
Collective error message	Power Rail
Output I, II	signal, relay
Contact loading	250 V AC / 2 A / cos ϕ ≥ 0.7 ; 40 V DC / 2 A
Mechanical life	5 x 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 ≤ 10 µA)
Output IV	analog
Current range	0 ... 20 mA or 4 ... 20 mA
Open loop voltage	≤ 24 V DC
Load	≤ 650 Ω
Fault signal	downscale I ≤ 3.6 mA , upscale ≥ 21.5 mA (acc. NAMUR NE43)
Transfer characteristics	
Input I	
Measurement range	0.001 ... 5000 Hz
Resolution	0.1 % of the measurement value , ≥ 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	≤ 200 ms
Output IV	
Resolution	< 10 µA
Accuracy	< 20 µA
Influence of ambient temperature	0.005 %/K (50 ppm)
Electrical isolation	
Output I, II/other circuits	reinforced insulation according to IEC 61140, rated insulation voltage 300 V_{eff}
Mutual output I, II, III	reinforced insulation according to IEC 61140, rated insulation voltage 300 V_{eff}
Output III/power supply and collective error	basic insulation according to IEC 62103, rated insulation voltage 50 V_{eff}
Output III/start-up override	Basic insulation according to IEC 61140, rated insulation voltage 50 V_{eff}
Output III/IV	basic insulation according to IEC 62103, rated insulation voltage 50 V_{eff}
Output IV/power supply and collective error	functional insulation acc. to IEC 62103, rated insulation voltage 50 V_{eff}
Start-up override/power supply and collective error	functional insulation acc. to IEC 62103, rated insulation voltage 50 V_{eff}
Interface/power supply and collective error	functional insulation acc. to IEC 62103, rated insulation voltage 50 V_{eff}
Interface/output III	basic insulation according to IEC 62103, rated insulation voltage 50 V_{eff}
Directive conformity	
Electromagnetic compatibility	

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Directive 2004/108/EC	EN 61326-1:2006
Low voltage	
Directive 2006/95/EC	EN 50178:1997
Conformity	
Insulation coordination	IEC 62103
Electrical isolation	IEC 62103
Electromagnetic compatibility	NE 21
Protection degree	IEC 60529
Protection against electric shock	IEC 61140
Input	EN 60947-5-6
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in) , housing type C3
Data for application in connection with Ex-areas	
EC-Type Examination Certificate	TÜV 99 ATEX 1471 , for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection	⟨Ex⟩ II (1)GD, I (M1) [Ex ia] IIC, [Ex iaD], [Ex ia] I (-20 °C ≤ T_{amb} ≤ 60 °C)
Supply	
Maximum safe voltage U_m	40 V DC (Attention! U_m is no rated voltage.)
Input I	terminals 1+, 3- Ex ia IIC, Ex iaD
Voltage U_o	10.1 V
Current I_o	13.5 mA
Power P_o	34 mW (linear characteristic)
Input II	terminals 13+, 14- non-intrinsically safe
Maximum safe voltageU_m	40 V (Attention! The rated voltage can be lower.)
Output I, II	terminals 10, 11, 12; 16, 17, 18 non-intrinsically safe
Maximum safe voltage U_m	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)
Output III	terminals 19+, 20- non-intrinsically safe
Maximum safe voltageU_m U_m	40 V (Attention! U_m is no rated voltage.)
Output IV	terminals 8+, 7- non-intrinsically safe
Maximum safe voltage U_m	40 V DC (Attention! U_m is no rated voltage.)
Interface	RS 232
Maximum safe voltage U_m	40 V (Attention! U_m is no rated voltage.)
Statement of conformity	TÜV 02 ATEX 1885 X , observe statement of conformity
Group, category, type of protection, temperature classification	⟨Ex⟩ II 3G Ex nA nC IIC T4
Output I, II	
Contact loading	50 V AC/2 A/cos ϕ > 0.7; 40 V DC/1 A resistive load
Electrical isolation	
Input I/other circuits	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity	
Directive 94/9/EC	EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2005, EN 60079-26:2007, EN 61241-0:2006, EN 61241-11:2006
International approvals	
FM approval	
Control drawing	16-538FM-12
General information	
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 www.pepperl-fuchs.com.

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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 100 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.

Attention

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

PACT*ware*™

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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