

Features

- 2-channel signal conditioner
- Universal usage at different power supplies
- Dry contact or NAMUR inputs
- Input frequency 1 mHz ... 1 kHz
- Current output 0/4 mA ... 20 mA
- Relay and transistor output
- Start-up override
- Configurable by **PACTware™** or keypad
- Line fault detection (LFD)

Function

This signal conditioner analyzes 2 digital signals (NAMUR sensor/mechanical contact) and functions as a rotation direction indicator, slip monitor, frequency monitor or synchronization monitor.

Each proximity sensor or switch controls a passive transistor output. The 2 relay outputs indicate if the input signal is above or below the trip value or the rotational direction.

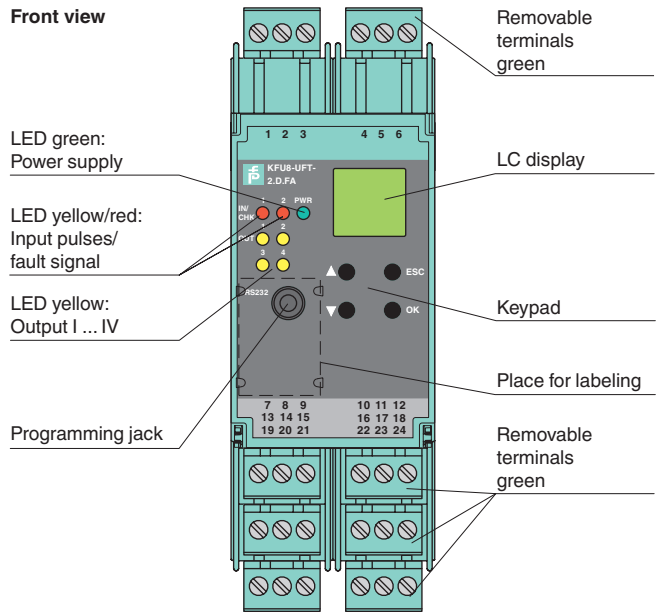
The analog output can be programmed to be proportional to the input frequency or slip differential.

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

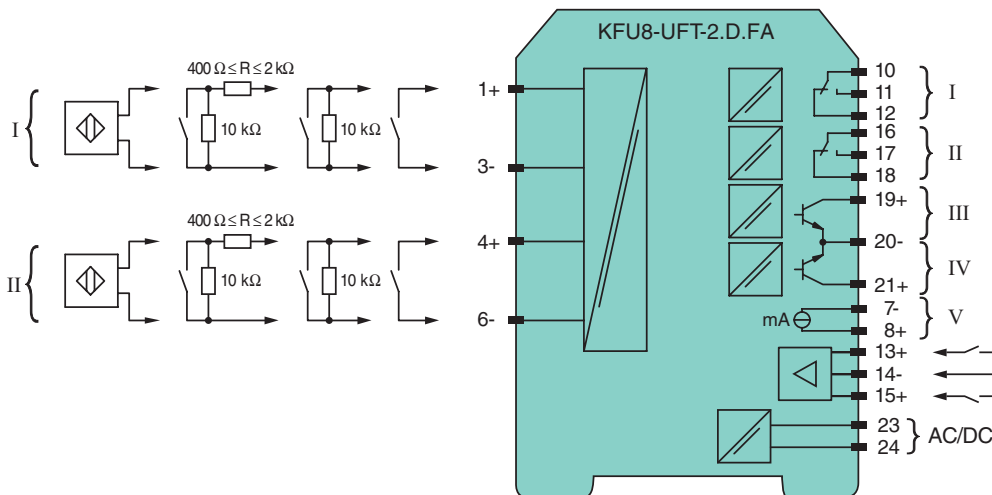
Line fault detection of the field current is indicated by a red LED.

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
Rated voltage	20 ... 90 V DC / 48 ... 253 V AC 50 ... 60 Hz
Rated current	approx. 130 mA
Power loss	2.2 W / 3.5 VA
Power consumption	2.5 W / 4 VA
Input	
Connection	input I: terminals 1+, 3- input II: terminals 4+, 6- input III: terminals 13+, 14- (control input 1) input IV: terminals 15+, 14- (control input 2)
Input I, II	2-wire sensor, sensor acc. to EN 60947-5-6 (NAMUR) or mechanical contact
Open circuit voltage/short-circuit current	8.2 V / 10 mA
Switching point/switching hysteresis	logic 1: > 2.5 mA ; logic 0: < 1.9 mA
Pulse duration	≥ 250 μs , overlap on direction of rotation signal: ≥ 125 μs
Input frequency	rotation direction monitoring 0.001 ... 1000 Hz slip monitoring 10 ... 1000 Hz
Lead monitoring	breakage I ≤ 0.15 mA; short-circuit I > 4 mA
Input III, IV	
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 output III: terminals 19+, 20- output IV: terminals 21+, 20- output V: terminals 7-, 8+
Output I, II	signal, relay
Contact loading	250 V AC / 2 A / $\cos \phi \geq 0.7$; 40 DC / 2 A
Mechanical life	5 x 10 ⁷ switching cycles
Energized/De-energized delay	approx. 20 ms / approx. 20 ms
Output III and IV	signal , electronic output, passive
Contact loading	40 V DC
Signal level	1-signal: (L+) -2.5 V (50 mA, short-circuit/overload proof) 0-signal: blocked output (off-state current ≤ 10 μA)
Output V	analog
Current range	0 ... 20 mA or 4 ... 20 mA
Open loop voltage	max. 24 V DC
Load	max. 650 Ω
Fault signal	downscale I ≤ 3.6 mA, upscale I ≥ 21.5 mA (acc. NAMUR NE43)
Programming interface	
Connection	programming socket
Interface	RS 232
Transfer characteristics	
Input I and II	
Measurement range	0.001 ... 1000 Hz
Resolution	slip monitoring: 1% frequency measurement: 0,1% of measured value; but >0.001Hz
Accuracy	slip monitoring: 1% frequency measurement: 0.5% of measured value; but >0.001Hz
Measuring time	frequency measurement: < 100 ms
Influence of ambient temperature	0.003 %/K (30 ppm)
Output I, II	
Response delay	≤ 200 ms
Output V	
Resolution	< 10 μA
Accuracy	< 30 μA
Influence of ambient temperature	0.005 %/K (50 ppm)
Electrical isolation	
Input I, II/other circuits	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Input III, IV/power supply	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Output I, II/other circuits	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Mutual output I, II, III	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Mutual output I, II, IV	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Output III, IV/power supply	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}

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Output III, IV/input III, IV	basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V _{eff}
Output III, IV/V	basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V _{eff}
Output V/power supply	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Interface/power supply	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Interface/output III, IV	basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V _{eff}
Directive conformity	
Electromagnetic compatibility	
Directive 2004/108/EC	EN 61326-1:2006
Low voltage	
Directive 2006/95/EC	EN 61010-1:2010
Conformity	
Electromagnetic compatibility	NE 21:2006
Protection degree	IEC 60529:2001
Input	EN 60947-5-6:2000
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
Mounting	on 35 mm DIN mounting rail acc. to EN 60715:2001
General information	
Supplementary information	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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Function

The device processes two input frequencies up to a max. of 1 kHz. The following functions are provided by the device:

- Frequency measurement with freely adjustable trip value monitoring for high and low alarm as well as for frequency-current-conversion (0/4 mA ... 20 mA)
- Slip monitoring: The slip is calculated from the two input frequencies at channel I and II. If the freely parameterisable trip value is exceeded, the respective output switches.
- Rotation direction signalling: The rotation direction is evaluated from the two input signals with the same frequency and a phase shift of 90°. The corresponding outputs switch according to the direction of rotation.
- The frequency monitoring can be used in combination with rotation direction signalling or slip monitoring.
- Synchronisation monitor: The synchronisation monitor compares the pulse counts of the two inputs. If the measured difference in the pulses is greater than the programmed value the corresponding outputs are switching.

The two electronic outputs serve to repeat the input signals.

Accessories

PACTware™

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