



- 1-channel
- Control circuit EEx ia IIC
- Input frequency 1 mHz ... 5 kHz
- Analogue output 0/4 mA ... 20 mA
- Measuring range parameterisable
- 2 relay outputs
- 1 electronic output, isolated
- Startup override
- Restart inhibit
- Bounce filter
- Up to SIL2 acc. to IEC 61508

48 V AC ... 253 V AC/20 V DC ... 90 V DC  
**KFU8-UFC-Ex1.D**

**Function**

The frequency converter converts an input frequency into a frequency proportional current and offers at the same time the possibility to monitor the trip values.

The frequency values for the minimum (0 mA or 4 mA) and the maximum output current (20 mA) are freely parameterisable.

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

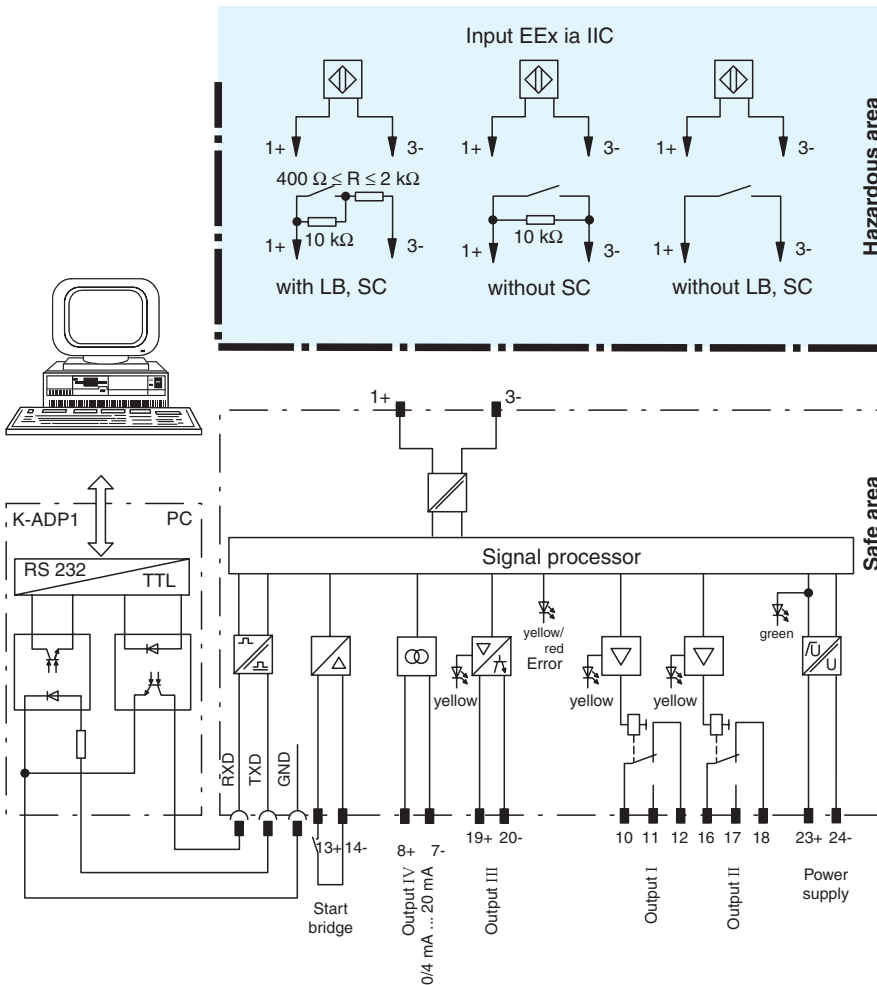
A start-up override that can be activated externally is integrated as well. The maximum input frequency is 5 kHz.

The input and output circuits are galvanically isolated.

The universal power supply allows the operation of the frequency converter at various supply voltages at the same terminals, without change-over or consideration of the polarity.

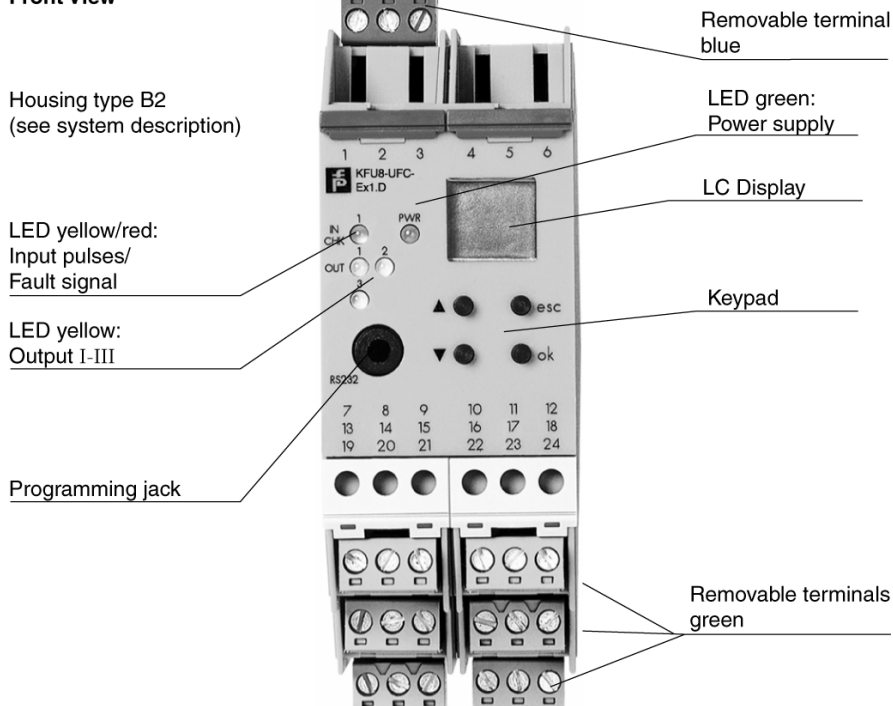
The device can be adjusted by means of the control panel or the software.

**Connection**



**Composition**

**Front View**



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<b>Supply</b>	
Connection	terminals 23, 24
Rated voltage	20 ... 90 V DC / 48 ... 253 V AC
Power loss/power consumption	≤ 2 W ; 2.5 VA / 2.2 W ; 3 VA
<b>Input</b>	
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
<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 DC / 2 A
Mechanical life	5 x 10 <sup>7</sup> 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 circuit voltage	≤ 24 V DC
Load	≤ 650 Ω
Fault signal	downscale I ≤ 3.6 mA , upscale ≥ 21.5 mA (acc. NAMUR NE43)
<b>Transfer characteristics</b>	
Input I	
Measuring 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 %/°C (30 ppm)
Output I, II	
Response delay	≤ 200 ms
Output IV	
Resolution	≤ 10 μA
Accuracy	< 20 μA
Influence of ambient temperature	0.005 %/°C (50 ppm)
<b>Electrical isolation</b>	
Output I, II/other circuits	reinforced insulation acc. to IEC 61140, rated insulation voltage 300 V <sub>rms</sub>
Mutual output I, II, III	reinforced insulation acc. to IEC 61140, rated insulation voltage 300 V <sub>rms</sub>
Output III, IV/power supply	reinforced insulation acc. to IEC 61140, rated insulation voltage 300 V <sub>rms</sub>
Output III/IV/start-up override	functional insulation acc. to EN 50178, rated insulation voltage 300 V <sub>rms</sub>
Start-up override/power supply	reinforced insulation acc. to IEC 61140, rated insulation voltage 300 V <sub>rms</sub>
Interface/power supply	reinforced insulation acc. to IEC 61140, rated insulation voltage 300 V <sub>rms</sub>
Interface/output III	functional insulation acc. to EN 50178, rated insulation voltage 300 V <sub>rms</sub>
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 89/336/EEC	EN 61326, EN 50081-2, EN 50082-2
Low voltage	
Directive 73/23/EEC	EN 50178
<b>Conformity</b>	
Insulation coordination	EN 50178
Electrical isolation	EN 50178
Electromagnetic compatibility	NE 21
Protection degree	IEC 60529
Protection against electric shock	IEC 61140

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Input	EN 60947-5-6
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (253 ... 333 K)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	300 g
Dimensions	40 x 100 x 115 mm (1.6 x 3.9 x 4.5 in)
<b>Data for application in conjunction with hazardous areas</b>	
EC-Type Examination Certificate	TÜV 99 ATEX 1471 , for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection	Ⓔ II (1)GD [EEx ia] IIC [circuit(s) in zone 0/1/2]
<b>Supply</b>	
Safety maximum voltage $U_m$	253 V AC / 125 V DC (Attention! $U_m$ is no rated voltage.)
<b>Input I</b>	
terminals	1+, 3- EEx ia IIC
Voltage $U_o$	10.1 V
Current $I_o$	13 mA
Power $P_o$	34 mW (linear characteristic)
<b>Input II</b>	
terminals	13+, 14- non-intrinsically safe
Safety maximum voltage $U_m$	40 V DC (Attention! $U_m$ is no rated voltage.)
<b>Output I, II</b>	
terminals	10, 11, 12; 16, 17, 18 non-intrinsically safe
Safety maximum voltage $U_m$	253 V AC / 40 V DC (Attention! $U_m$ is no rated voltage.)
Contact loading	253 V AC/2 A/cos $\phi > 0.7$ ; 40 V DC/2 A resistive load (TÜV 99 ATEX 1471) 50 V AC/2 A/cos $\phi > 0.7$ ; 40 V DC/2 A resistive load (TÜV 02 ATEX 1885 X)
<b>Output III</b>	
terminals	19+, 20- non-intrinsically safe
Safety maximum voltage $U_m$	40 V DC (Attention! $U_m$ is no rated voltage.)
<b>Output IV</b>	
terminals	8+, 7- non-intrinsically safe
Safety maximum voltage $U_m$	40 V DC (Attention! $U_m$ is no rated voltage.)
<b>Interface</b>	
terminals	RS 232
Safety maximum voltage $U_m$	40 V DC (Attention! $U_m$ is no rated voltage.)
<b>Electrical isolation</b>	
Input/other circuits	safe electrical isolation acc. to EN 50020, voltage peak value 375 V
<b>Directive conformity</b>	
Directive 94/9/EC	acc. to EN 50014 / EN 50020

**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.

**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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