

Frequency Current Converters with Limit Value



- 1-channel
- Input frequency 0.001 Hz ... 5 kHz
- Analogue output 0/4 mA ... 20 mA
- Measuring range parameterizable
- 2 relay outputs
- 1 electronic output, isolated
- Each output can be assigned individual parameters, such as a limiting value (high/low alarm), incrementing, pulse separator or error message output
- Start-up override
- Restart inhibit
- Lead breakage (LB) and short-circuit (SC) monitoring
- Bounce filter
- Parameterization via PC or control panel (optional)

48 ... 253 V AC / 20 ... 90 V DC

KFU8-UFC-Ex1

48 ... 253 V AC / 20 ... 90 V DC

KFU8-UFC-Ex1.D

(with control panel)

Function

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

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

Also the functions of the switch outputs (2 relay and 1 potential free transistor output) are freely adjustable [limit value indication (MAX- or MIN-alarm), serially switched output, pulse separator output, error signal output].

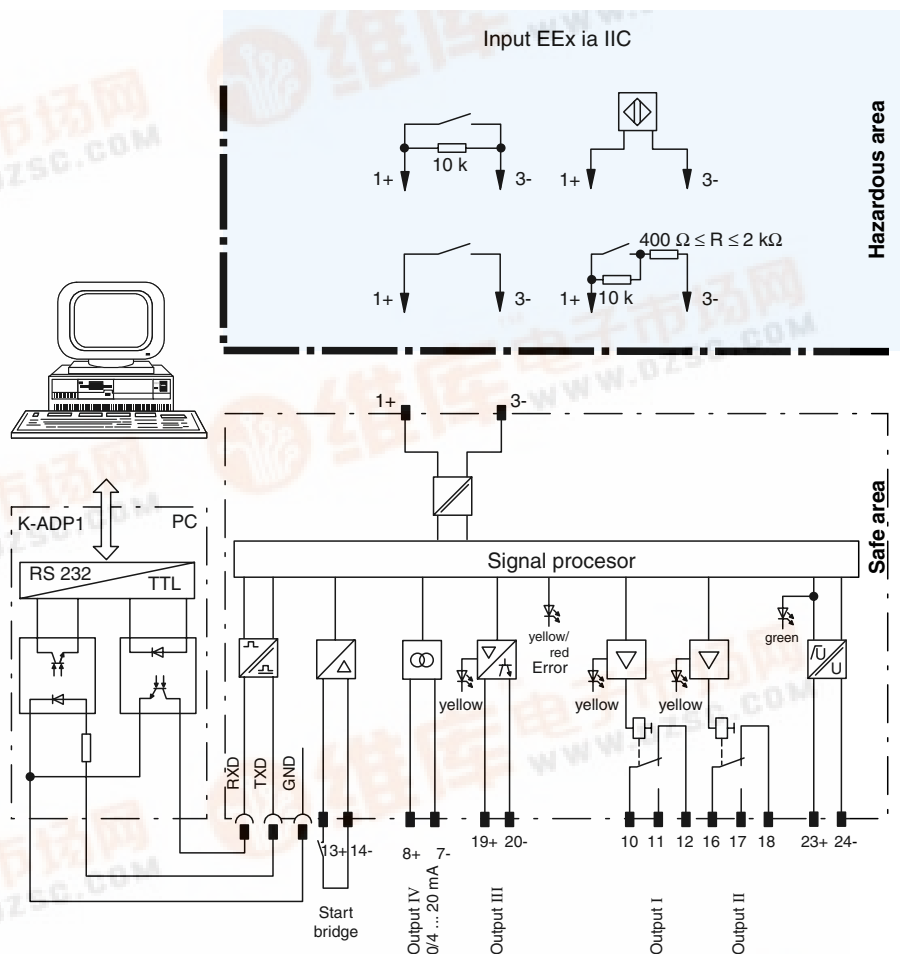
A start-up override that can be activated externally is integrated as well. The maximum input frequency is 5 kHz. Input and output currents are galvanically isolated.

The universal voltage power pack allows the operation of the KFU8-UFC-Ex1... at various supply voltages at the same terminals, without change-over or consideration of the polarity.

The version KFU8-UFC-Ex1.D can be adjusted by means of the control surface and by means of the software, the version KFU8-UFC-Ex1 only by means

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KFU8-UFC-Ex1**



Aufbau

Front View

Housing type B2
(see system description)

LED yellow/red:
Input pulses/
Fault signal

LED yellow:
Output I-III

programming jack

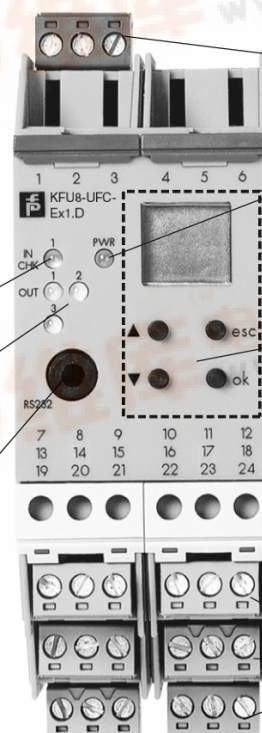
Removable terminal
blue

LED green:
Power supply

Control panel

Keypad

Removable terminals
green



Power supply

Connection type	terminals 23, 24
Rated operational voltage U_e	20 ... 90 V DC / 48 ... 253 V AC
Safety maximum voltage U_m	253 V AC
Power loss/Power consumption	≤ 2 W; 2.5 VA / 2.2 W; 3 VA

Input (not intrinsically safe)

Connection type	terminals 13+, 14-
Function	start-up override; 1 ... 1000 s, adjustable in steps of 1 s
Quiescent voltage/Short-circuit current	18 V / 5 mA
Active/Passive	$I > 4$ mA (for min. 100 ms) / $I < 1.5$ mA

Input (intrinsically safe)

Connection type	terminals 1+, 3-
Nominal data	in accordance with IEC 60947-5-6 (NAMUR, DIN 19234); see system description for electrical data
Input pulse length/Input pulse interval	≥ 50 μ s / ≥ 50 μ s
Lead monitoring	breakage $I \leq 0.15$ mA; short-circuit $I > 6.5$ mA

Details of certificate of conformity

Certification number	TÜV 99 ATEX 1471
Group, category, ignition protection method	 II (1) G D [Ex ia] IIC
Voltage U_o	10.1 V
Current I_o	13 mA
Power P_o	34 mW

Allowable circuit values**Ignition protection class, category [Ex ia]**

Explosion group	IIA	IIB	IIC
External capacitance	93 μ F	19.4 μ F	2.87 μ F
External inductance	1000 mH	730 mH	195 mH
Category, ignition protection method	II (1) G [Ex ia] IIC		

Output (not intrinsically safe)

Connection type	output I: terminals 10, 11, 12; output II: terminals 16, 17, 18; output III: terminals 19+, 20-; output IV: terminals 8+, 7-
Output I and II	signal, relay
Contact loading	250 V AC / 2 A / $\cos \varphi \geq 0.7$; 40 V DC / 2 A
Mechanical life	5×10^7 switchings
Pull-in/Drop-out delay	approx. 20 ms / approx. 20 ms
Output III	electronic output, passive
Safety maximum voltage U_m	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 μ A)
Output IV	analogue
Current range	0 ... 20 mA or 4 ... 20 mA
Quiescent voltage	≤ 24 V DC
Load	≤ 650 Ohm
Fault signal	Power Rail, output IV: downscale $I \leq 3.6$ mA, upscale ≥ 22 mA (accord. to NAMUR NE 43)

Transfer characteristics

Measurement range f_n	0.001 ... 5 kHz
Resolution	frequency measurement: 0.1 %; current output: < 10 μ A
Duration of measurement/Response delay	≥ 100 ms / ≤ 200 ms
Deviation	frequency measurement: 0.1 % of final value; current output: < 10 μ A
Temperature	frequency measurement: 0.003 % / °C (30 ppm); current output: 0.005 % / °C (50 ppm)
Linearization	frequency measurement: 0,025 % current output: 0,006 % / °C (60 ppm)

Galvanic isolation

Input/Other circuits	safe galvanic isolation acc. to DIN EN 50020, voltage peak value 375 V
Output I/Mains and reset	safely isolated in accordance with DIN VDE 0106 Part 101, design isolation voltage 253 V _{eff}
Output I, II/Other circuits	safely isolated in accordance with DIN VDE 0106 Part 101, design isolation voltage 253 V _{eff}
Mutual output I, II, III	safely isolated in accordance with DIN VDE 0106 Part 101, design isolation voltage 253 V _{eff}
Output III, IV/Mains	safely isolated in accordance with DIN VDE 0106 Part 101, design isolation voltage 253 V _{eff}
Output III/IV/Start-up override	function insulation acc. to DIN EN 50178, design isolation voltage 253 V _{eff}
Start-up override/Mains and collective error	safely isolated in accordance with DIN VDE 0106 Part 101, design isolation voltage 253 V _{eff}
Interface/Mains/Output III	safely isolated in accordance with DIN VDE 0106 Part 101, design isolation voltage 253 V _{eff}

Ambient conditions

-20 ... 60 °C (253 ... 333 K)



Standard conformity

Explosion protection	accord. to EN 50014 / EN 50020
Input	according to DIN EN 60947-5-6
Coordination of insulation	accord. to DIN EN 50178
Galvanic isolation	accord. to DIN EN 50178
Climatic conditions	accord. to DIN IEC 721
Electromagnetic compatibility	accord. to EN 50081-2 / EN 50082-2

Mechanical specifications

Mass	300 g
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