Frequency voltage current converter

KFU8-FSSP-1.D

- Limit frequency 40 kHz
- Voltage or current ouptput
- Incrementing output (Spacing factor 1 ... 9999)
- Multi-range power pack
- 2-, 3-, 4-wire and NAMUR sensors as well as rotary encoder connectable
- Auxiliary power output for sensors
- Connection via Power Rail
- Period measurement
- Display: Input in Hz or 1/min, output in V or mA
- adjustable updating of indication (0,001 ... 2,5 s)

Frequency voltage current converter40 kHz version

Function

The KFU8-FSSP-1.D frequency-voltage/current converter is a device for displaying and monitoring periodic signals, which occur in almost all areas of the automation and processing industry, i.e. frequencies in general and rotational speeds in particular.
Input pulses are evaluated according to the cycle method, i.e. by measurement of the periodicity, and are converted into a frequency or rotational speed by a µ controller. Depending on the measurement range value selected, the µ controller calculates a voltage or current value proportionate to the input frequency and exports this value via a digital-analog converter.
The following analogue signals are available for selection: 0 V ... 10 V, 2 V ... 10 V, 0 mA ... 20 mA, 4 mA ... 20 mA
The serially switched output provides the input frequency which can be subdivided by the adjustable factor (1 ... 9999).
Special consideration was given to the frequently occurring special case of rotational speed measurement during the development of the device. This makes it possible for the display and inputs to be either Hz or in min^{-1}.
In addition, in applications with signal encoders that return multiple pulses per revolution, it is possible to operate automatically at the actual speed of the drive by assigning the number (1 ... 1200).
The frequency/voltage/current converter is supplied with 115 VAC, 230 VAC or 24 VDC. When it is connected with alternating voltage it provides an unstabilised 24-VDC source of power for the signal encoder.
All commonly available two- three- or four-wire proximity switches and incremental encoders on the input galvanically separated by an optical coupler are accepted as a signal source. In addition, two terminals are reserved for connecting proximity switches or incremental encoders in accordance with DIN 19234 (NAMUR).
The input signal frequency in Hz or the speed in min^{-1} - or the output signal voltage in V or current in mA - appears in a 4-place 7-segment LED display on the front of the device. Parameters can be set with 4 buttons underneath the display.

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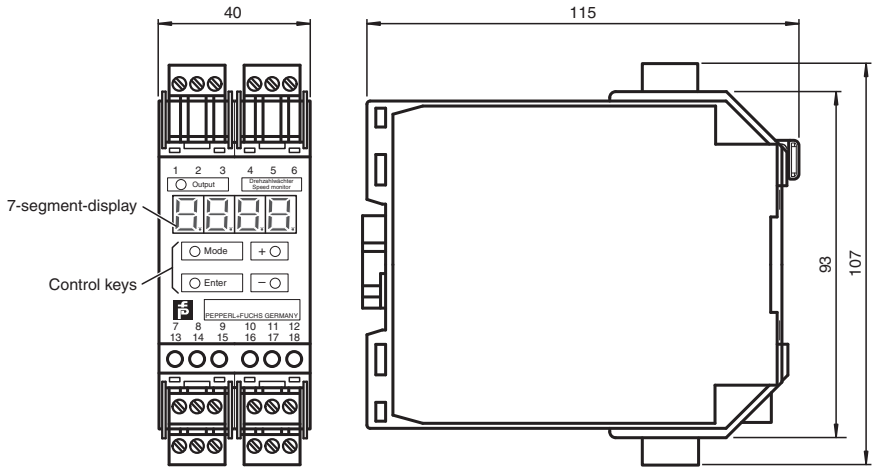
Dimensions



Technical Data

Functional safety related parameters		
$MTTF_d$		100 a
Supply		
Rated voltage	U_r	200 ... 230 V AC ; 100 … 130 V AC; 50 Hz 20 VDC ... 30 VDC
Fusing		external fusing 4 A
Power consumption		AC: < 5 VA DC: < 5 W
Indicators/operating means		
Type		4-digit, 7-segment red display, 7 mm digit height
Display interval		0.002 ... 9999 Hz or 0.01 ... 9999 min^{-1}
Parameter assignment		keypad-driven menu
Input 1		
Connection		terminals 8-, 9+
Connectable sensor types		NAMUR sensors according to DIN EN 60947-5-6
Open loop voltage		8.2 V DC
Short-circuit current		6.5 mA
Switching point		1.2 ... 2.1 mA Switching hysteresis approx. 0.2 mA
Impedance		1.2 kOhm
Input 2		
Switching point		high: 16 ... 30 V DC; max.10 mA; $R_i \cong 3$ kOhm low: 0 ... 6 V DC
Connection		terminals 7+, 13- sensor supply terminals 14, 15 NPN/PNP input (galvanically isolated)
Connectable sensor types		2-, 3-, or 4-wire proximity switches and incremental rotary encoder
Sensor supply		19 ... 28 V DC non-stabilised; ≤ 30 mA short-circuit protected
Output		
Analog voltage output		0 ... 10 V DC; 2 ... 10 V DC; 30 mA max.; resolution: 12 mV; $R_i \geq 330\ \Omega$ (terminal 5+, 6-)
Analog current output		0 ... 20 mA; 4 ... 20 mA; resolution: 25 µA; $R_i \leq 600\ \Omega$ (terminal 4-, 5+)

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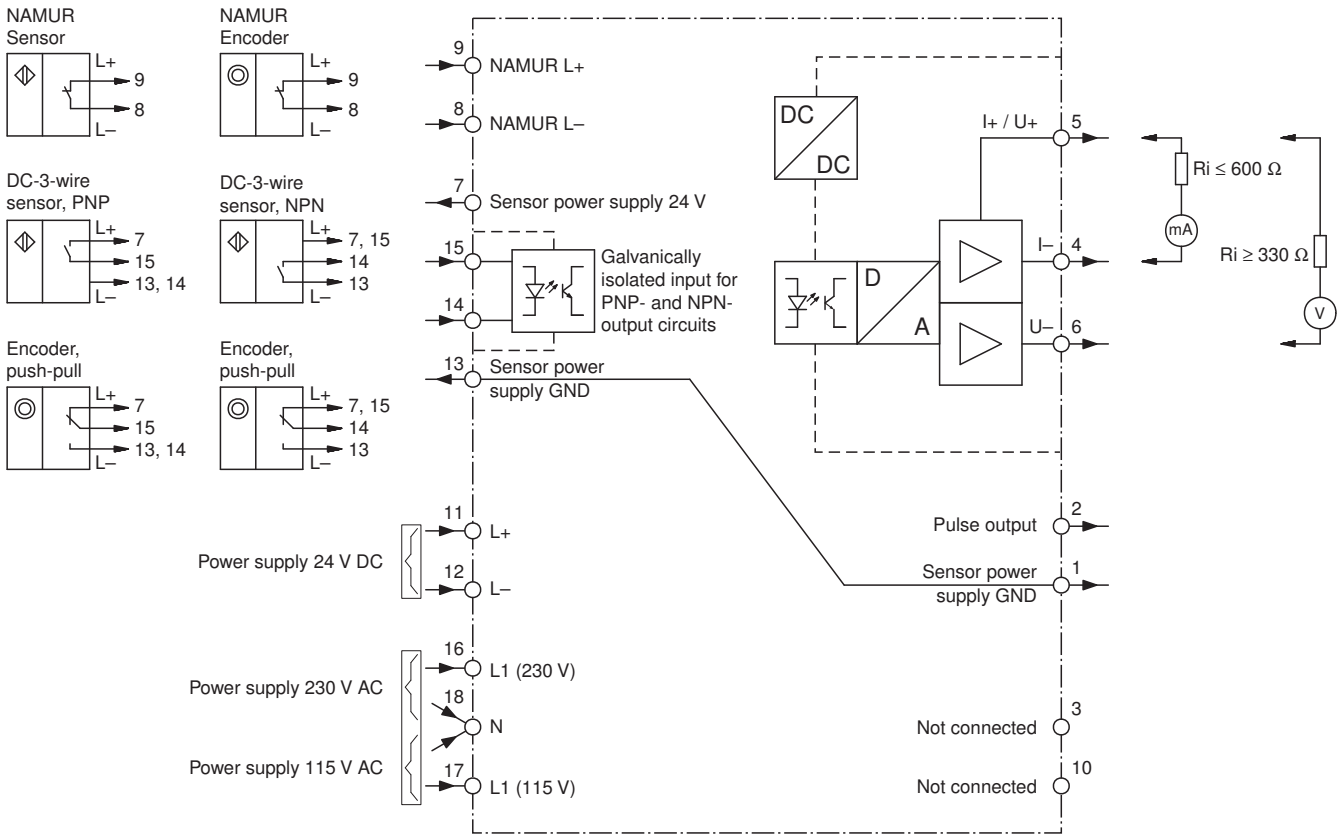
Technical Data

Digital incrementing	≥ (U_b -3 V), 20 mA, short-circuit proof (Terminals 1-, 2+) with frequency division F_{in} /1 ... F_{in} /9999
Transfer characteristics	
Input frequency	≤ 40000 Hz, pulse pause/pulse length: ≥ 12 µs
Deviation	≤ 0.2 % of full-scale value
Changing interval	5 ms (Internal processing time)
Standard conformity	
Electromagnetic compatibility	acc. to EN 50081-2 / EN 50082-2
Ambient conditions	
Ambient temperature	-25 ... 40 °C (-13 ... 104 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Relative humidity	max. 80 %, not condensing
Altitude	0 ... 2000 m
Operating conditions	The device has only to be used in an indoor area.
Mechanical specifications	
Connection assembly	**Caution:** Please be aware that the device may only be connected to a switchable power supply. The switch or circuit breaker must be easy to reach and identified as the separator for the device.
Degree of protection	IP20
Connection	coded, removable terminals , max. core cross section 0.34 ... 2.5 mm²
Construction type	modular terminal housing in Makrolon, System KF For use in the switch cabinet/switch cabinet module
Mounting	snap-on to 35 mm standard rail or screw fixing

Connection



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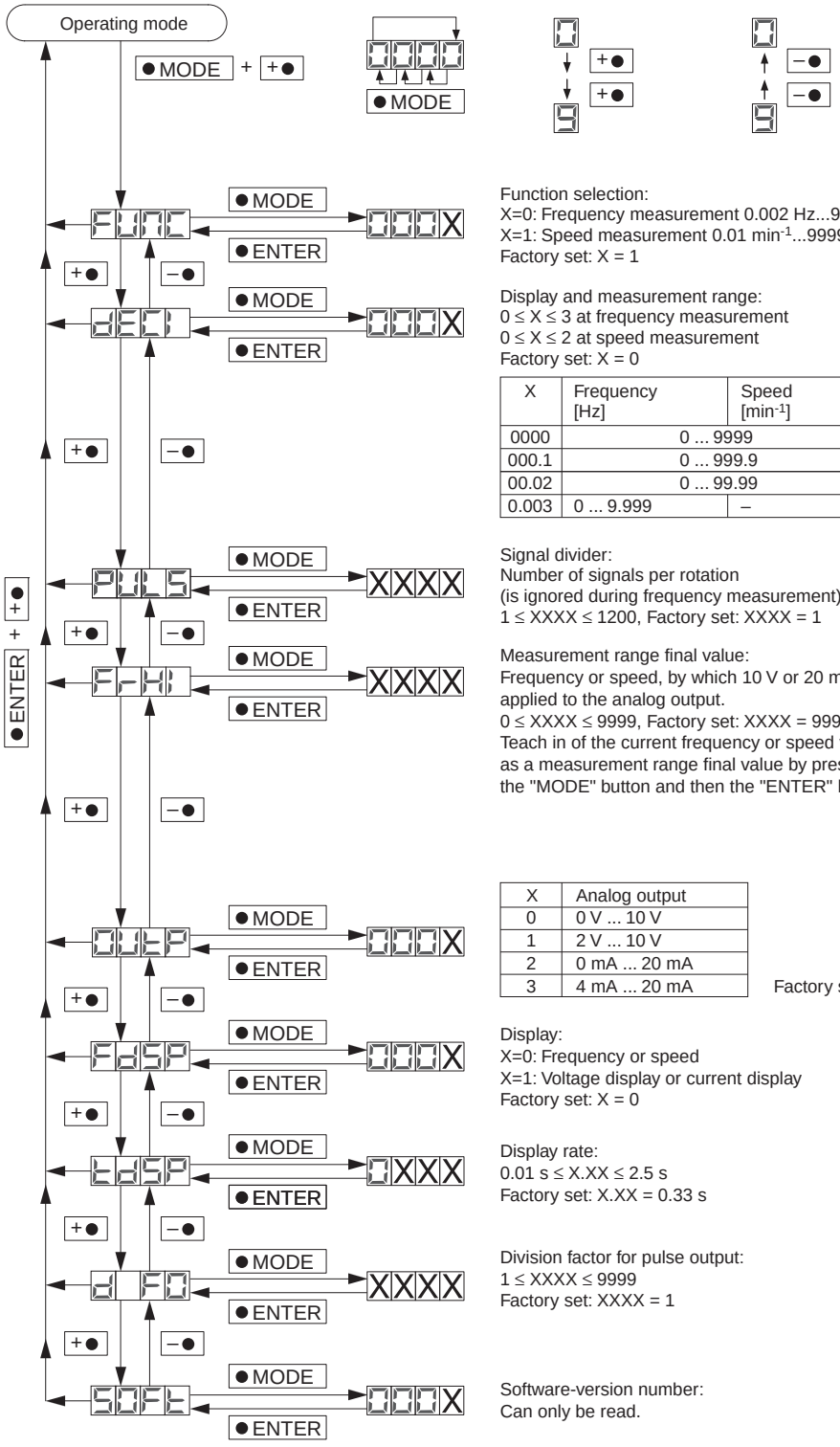
Configuration



Function selection:
X=0: Frequency measurement 0.002 Hz...9999 Hz
X=1: Speed measurement 0.01 min^{-1}...9999 min^{-1}
Factory set: X = 1

Display and measurement range:
0 ≤ X ≤ 3 at frequency measurement
0 ≤ X ≤ 2 at speed measurement
Factory set: X = 0

X	Frequency [Hz]	Speed [min^{-1}]
0000	0 ... 9999	
000.1	0 ... 999.9	
00.02	0 ... 99.99	
0.003	0 ... 9.999	–

Signal divider:
Number of signals per rotation
(is ignored during frequency measurement)
1 ≤ XXXX ≤ 1200, Factory set: XXXX = 1

Measurement range final value:
Frequency or speed, by which 10 V or 20 mA are applied to the analog output.
0 ≤ XXXX ≤ 9999, Factory set: XXXX = 9999
Teach in of the current frequency or speed value as a measurement range final value by pressing the "MODE" button and then the "ENTER" button.

X	Analog output
0	0 V ... 10 V
1	2 V ... 10 V
2	0 mA ... 20 mA
3	4 mA ... 20 mA

Factory set: X = 0

Display:
X=0: Frequency or speed
X=1: Voltage display or current display
Factory set: X = 0

Display rate:
0.01 s ≤ X.XX ≤ 2.5 s
Factory set: X.XX = 0.33 s

Division factor for pulse output:
1 ≤ XXXX ≤ 9999
Factory set: XXXX = 1

Software-version number:
Can only be read.

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