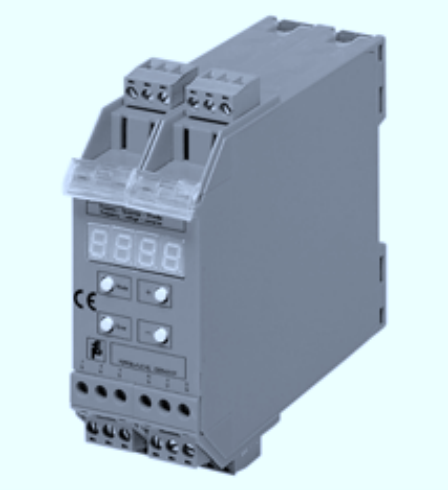


Model Number

KFU8-DW-1.D

Overspeed/Underspeed Monitor

Features

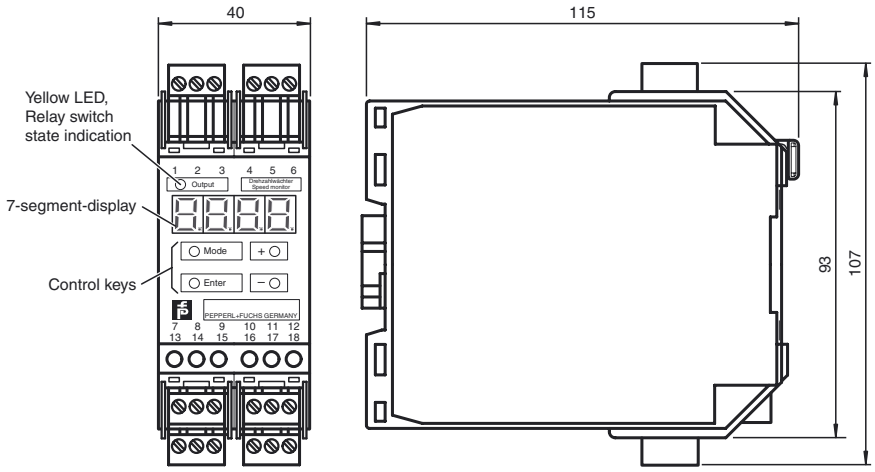
- Speed monitoring up to 40 kHz
- 1 pre-select value with relay output and LED indicator
- 2-, 3-, 4-wire and NAMUR sensors as well as rotary encoder connectable
- Start-up delay
- Menu driven operation via 4 front keys
- Period measurement
- Output signal can be inverted
- Display devices can be set between 0.1 ... 2.5 sec.

Technical data

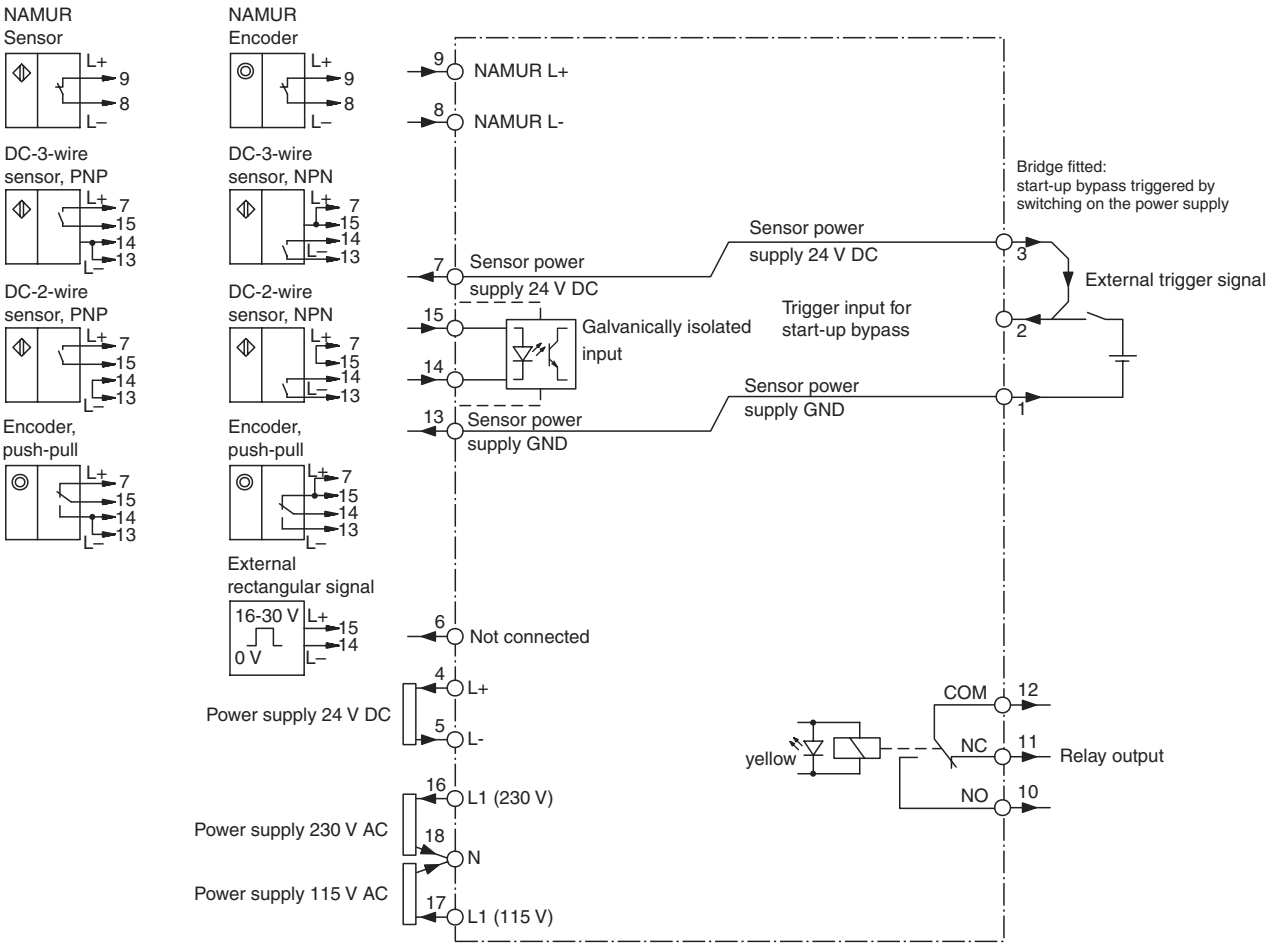
Functional safety related parameters	
$MTTF_d$	100 a
Supply	
Rated voltage	196 ... 250 V AC ; 98 ... 127 V AC; 47 ... 63 Hz 20.4 ... 28 V DC
Fusing	external fusing 4 A
Power consumption	AC: < 5 VA DC: < 5 W
Indicators/operating means	
Type	4-digit, 7-segment red display, 7 mm digit height
Display interval	0.002 ... 9999 Hz or 0.01 ... 9999 min^{-1}
Parameter assignment	keypad-driven menu
Switching state	LED yellow, 3 mm
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
Input frequency	0.002 ... 10000 Hz, pulse length/duration: ≥ 20µs
Impedance	1.2 kΩ
Input 2	
Switching point	high: 16 ... 30 V DC; max.10 mA due to integrated constant current sink; $R_i \cong 3$ kΩ low: 0 ... 6 V DC
Input frequency	0.002 ... 40000 Hz, pulse length/duration: ≥ 12µs
Connection	terminals 7+, 13- sensor supply terminals 14, 15 NPN/PNP input (galvanically isolated)
Connectable sensor types	Two, three, or four-wire proximity switch, incremental rotary encoder, or externally generated pulses 16 ... 30 V
Sensor supply	19 ... 28 V DC non-stabilised; ≤ 30 mA short-circuit protected
Input 3	
Start-up override	Triggering by external signal 16 ... 30 V or Place jumper between terminals 2/3 or by switching on supply voltage (terminal 2 and terminal 3 permanently bridged)
Jumpering time	0.1 ... 999.9 s (External trigger signal)
Output	
Relay	1 changeover contact NO, NC, COM
Sensor supply	24 V DC ± 10 %, 30 mA , short-circuit protected
Contact loading	250 V AC/2 A/ cos ϕ ≥ 0.7 40 V DC/2 A
Delay	≤ 20 ms (incl. calculation time)
Mechanical life	≥ 30.000.000 switching cycles
Transfer characteristics	
Changing interval	5 ms (Internal processing time)
Time delay before availability	≤ 400 ms
Measuring error	0 ... 40000 Hz: ≤ ±0,10% Display: ±1 digit
Timer function	ON-delay, OFF-delay, one shot, pulse extension
Time	0 ... 999.9 s ; Direction of action reversible
Standard conformity	
Electromagnetic compatibility	acc. to EN 50081-2 / EN 50082-2
Ambient conditions	
Ambient temperature	-25 ... 50 °C (-13 ... 122 °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	
Protection degree	IP20
Connection	coded, removable terminals , max. core cross-section 0.34 ... 2.5 mm^2
Construction type	modular terminal housing in Makrolon, System KF
Mounting	Snap onto 35 mm standard rail compliant with DIN EN 50022 or Screw fastening using slide-on straps in a 90 mm net

Release date: 2010-12-13 12:08 Date of issue: 2011-01-17 190149_ENG.xml

Dimensions



Electrical connection



Notes

Release date: 2010-12-13 12:08 Date of issue: 2011-01-17 190149_ENG.xml

Device description

The KFU8-DW-1.D Speed Monitor is a device for the **indication and monitoring of periodic signals**, which occur in almost all areas of automation and process technology, i. e. of frequencies in general and rotational speeds in special cases. The input signals are evaluated in accordance with the cycle method, i. e. by measurement of the period of oscillation and conversion into frequency or rotational speed by a very fast µ controller.

The frequently occurring special case of rotational speed measurement has been paid particular attention in the development of the device. Thus **indication** and **input** can be either in **Hz** or in **rpm**. It is also possible, in applications involving slow processes, in which the signal sensors **provide many pulses per revolution**, to operate automatically with the **actual rotational speed** of the drive by specifying the number of pulses per revolution.

The indication of the measured value is provided on a **4-digit, 7-segment LED display** on the front of the device, with **up to 3 places after the decimal point**.

The monitoring function is achieved on the basis of a **limit value**, whose upper and lower hysteresis value is freely selectable within the respective display range.
The **output signal** is generated by a relay with a changeover contact, when the hysteresis limits are violated. Thanks to a high switching capability, the relay output can **be used for the direct activation** of an actuating element or **as an input signal for a higher level control system**. Also, the switching status of the relay is indicated by means of a **yellow LED** on the front of the device.
A function block is connected in series with the relay, which **10 provides for various timer functions** and thus obviates the requirement for the subsequent addition of a timer relay. In addition to the **pull-in and drop-out delay, passing make contact and and pulse extension,** the **direction of operation of the relay**, i. e. monitoring of speed fluctuation about a nominal value, can also be selected.
The built-in **start-up override**, initiated when the power supply is switched on, or by an external signal, **prevents error signals** during the running up of the monitored system.

The speed monitor can be supplied with **115 V AC, 230 V AC or by a 24 V DC** supply and when connected to an alternating voltage it provides a **24 V DC source to supply the signal sensor**.

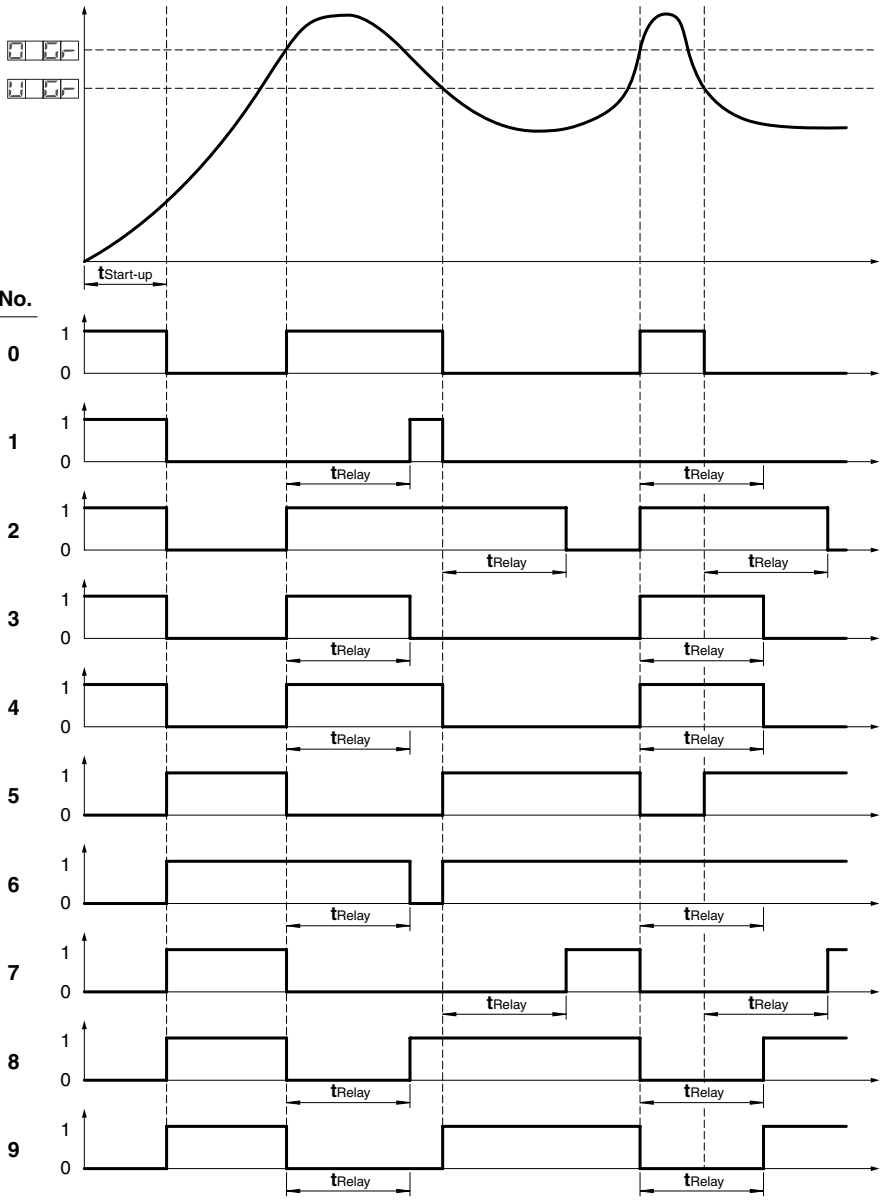
All current **two, three and four-wire proximity switches** and incremental **encoders** can be accepted as the signal sensor.In addition, two terminals are reserved for the connection of **proximity switches in accordance with DIN 19234 (NAMUR)**.

Terminal assignment

T. 1: Signal sensor supply GND
T. 2: Trigger input for start-up override
T. 3: Signal sensor supply +24 V DC
T. 4: Power supply + 24 V DC
T. 5: Power supply GND
T. 6: Not connected.
T. 7: Signal sensor supply +24 V DC
T. 8: NAMUR input L-
T. 9: NAMUR input L+
T. 10: Relay make contact, NO
T. 11: Relay break contact, NC
T. 12: Relay root, COM
T. 13: Signal sensor supply GND
T. 14: Signal sensor NPN input
T. 15: Signal sensor PNP input
T. 16: Power supply L1, 230 V AC
T. 17: Power supply L1, 115 V AC
T. 18: Power supply N

Release date: 2010-12-13 12:08 Date of issue: 2011-01-17 190149_ENG.xml

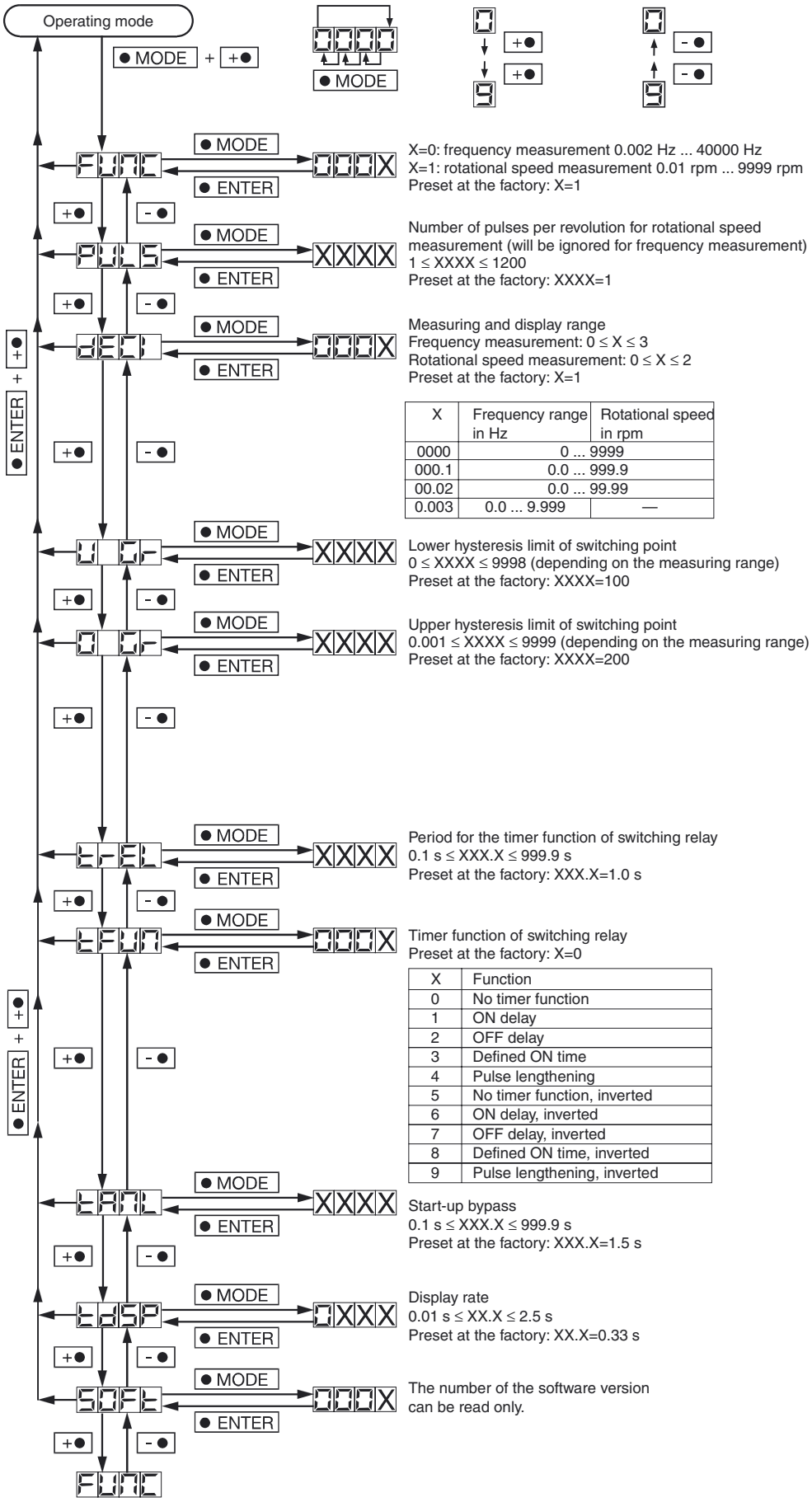
Timer functions, reversal of operating direction of the output relay



Function	No.
No timer function	0
ON delay	1
OFF delay	2
Defined ON time	3
Pulse lengthening	4
No timer function, inverted	5
ON delay, inverted	6
OFF delay, inverted	7
Defined ON time, inverted	8
Pulse lengthening, inverted	9

Release date: 2010-12-13 12:08 Date of issue: 2011-01-17 190149_ENG.xml

Operating principle



X	Frequency range in Hz	Rotational speed in rpm
0000	0 ... 9999	
000.1	0.0 ... 999.9	
00.02	0.0 ... 99.99	
0.003	0.0 ... 9.999	—

X	Function
0	No timer function
1	ON delay
2	OFF delay
3	Defined ON time
4	Pulse lengthening
5	No timer function, inverted
6	ON delay, inverted
7	OFF delay, inverted
8	Defined ON time, inverted
9	Pulse lengthening, inverted

Release date: 2010-12-13 12:08 Date of issue: 2011-01-17 190149_ENG.xml