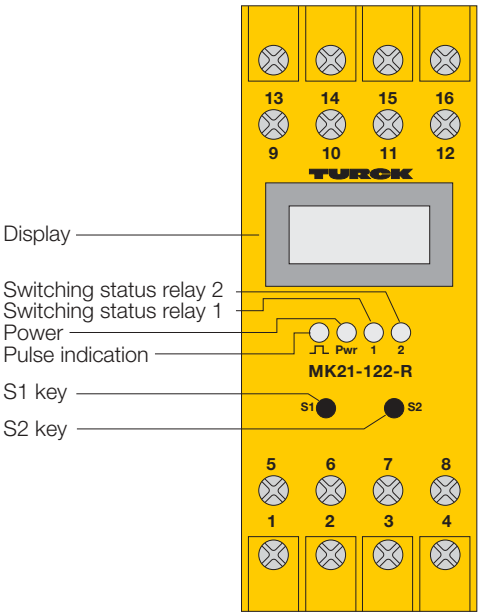


Rotational Speed Monitor MK21-122-R 1-channel

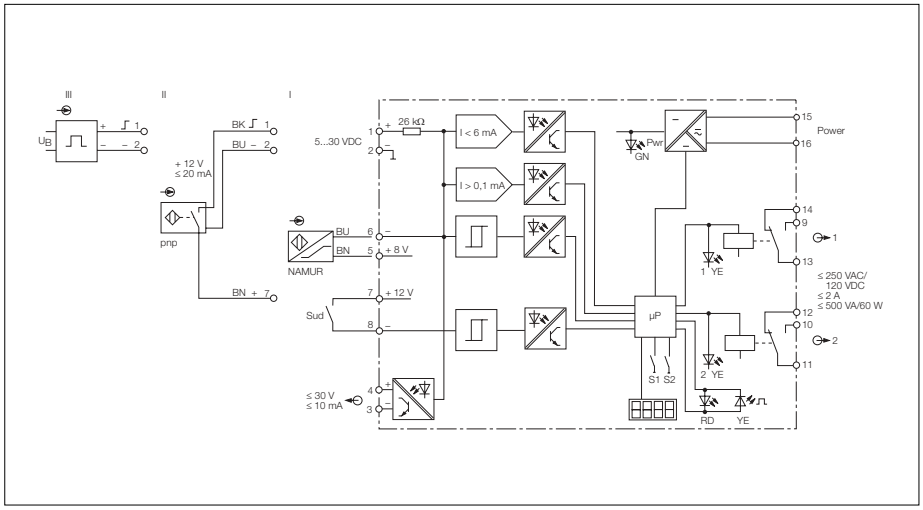
- **1-channel rotational speed monitor**
- **Overspeed and underspeed detection plus window function**
- **For use with sensors according to EN 60947-5-6 (NAMUR), 3-wire sensors and external signal sources with pulse levels 5...30 VDC**
- **Line monitoring of NAMUR sensors**
- **Potential-free pulse output**
- **Detection range 1 mHz...10 kHz (0.06...600 000 pulses/min^{-1})**
- **Simple menu-guided parameterisation**
- **Full galvanic isolation**
- **2 relay outputs, each with one SPDT contact**
- **Universal supply voltage (20...250 VUC)**

The MK21-122-R is a rotational speed monitor designed to monitor pulse sequences from rotating shafts on motors, gears, turbines etc., for overspeed and underspeed conditions. A display located on the front cover indicates the actual speed.

Sensors per EN 60947-5-6 (NAMUR), 3-wire sensors or external signal sources may be used for signal detection. When using NAMUR sensors, line monitoring for short-circuit and/or wire-break conditions maybe adjusted. If there is an error in the input circuit, the relays de-energise and the yellow pulse LED changes to red. 3-wire pnp sensors can be powered with 12 V (≤ 20 mA) by the rotational speed monitor. External signal sources must have a signal range from 5...30 VDC. The potential-free pulse output provides the input signal for additional processors.

To provide fast response times for applications with relatively low speed, the device operates on a digital pulse principle. High speed monitoring is based on a time window. In low-speed applications, the response time depends on the pulse period.

Device parameterisation is accomplished with two push buttons. The settings are indicated via the display. Both relay outputs can be programmed separately for either overspeed or underspeed detection or a window function as a combination of both. The switching hysteresis is defined by the adjustable switch ON and OFF points. Further it is possible to adjust a separate switch-off time for each output to prevent the device from shutting down due to sudden short-term changes of the frequency.



Rotational Speed Monitor MK21-122-R

An adjustable latching function prevents the output relay from re-energizing.

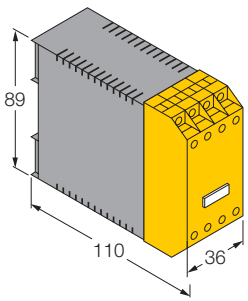
The relays operate in the normally open mode; i.e. the relay is energised if the speed is within the acceptable range.

Output 2 may also be used exclusively as an alarm output. The relay will then only de-energise if there is an input circuit error or a power failure.

In the underspeed monitoring mode, it is further possible to adjust a start-up time delay (AU-time) during which the output relay is constantly energised. Consequently underspeed indications are inhibited during system start-up. There are two options: either the start-up time delay is immediately disabled upon an overrange of the set-point or the adjusted start-up time delay is simply a time value without a setpoint. The start-up time delay is activated by linking terminals 7 and 8 or by applying power to the device after the terminals have been linked.

The actual speed and the limit value settings are displayed in Hz. By adjusting a time basis and programming the number of pulses per rotation, it is possible to adjust all settings and the display to the required measuring unit. Suppose, the display should be in min^{-1} instead of Hz, the time-based factor adjustment would be 60.

For low speed conditions, it is possible to adjust an input delay during which unwanted signals (e.g. due to contact bouncing) are not evaluated.



Type	MK21-122-R
Ident-no.	7543055
Supply voltage U_B	20...250 VUC
Line frequency (AC)	40...70 Hz
Power consumption	≤ 2.5 W
Galvanic isolation	between input circuit, output circuit and supply voltage for 250 V_{rms}, test voltage 2.5 kV_{rms}
Rotational speed monitoring	overspeed/underspeed
Monitoring range/adjustable range	0.06...600 000 min^{-1} (digitally adjustable)
Input frequency	≤ 1 200 000 min^{-1} (20 kHz)
Pulse duration	≥ 0.02 ms
Pulse pause	≥ 0.02 ms
Start-up time delay	0…1000 s (adjustable)
Input circuits	
NAMUR input	to EN 60947-5-6, (NAMUR)
– Operating values	U_0 = 8.2 V; I_k = 8.2 mA
– Switching threshold	1.55 mA
– Switching hysteresis	0.2 mA
– Wire-break threshold	≤ 0.1 mA
– Short-circuit threshold	≥ 6 mA
3-wire sensor	
– Voltage	12 V
– Current (sensor no-load current)	≤ 20 mA
External signal source	
– 0-Signal	0...3 V
– 1-Signal	5...30 V
– Input resistance	26 kΩ
Output circuits	two relays
Relay output	2 SPDT contacts
– Switching voltage	≤ 250 V
– Switching current	≤ 2 A
– Switching capacity	≤ 500 VA/60 W
– Switching frequency	≤ 5 Hz
– Contact material	Ag-alloy + 3 µm Au
Pulse output	
– External voltage	< 30 V
– Current	≤ 10 mA
LED indications	
Power	green
Switching status	2 x yellow
Pulse indication (dual colour LED)	yellow – error: red
Display	LCD-Display (four digits)
Housing	16-pole, 36 mm wide, Polycarbonate/ABS flammability class V-0 per UL 94
Mounting	panel mounting or snap-on clamps for top-hat rail (DIN 50022)
Connection	screw terminals with self-lifting pressure plates
Connection profile	≤ 2 x 2.5 mm^2 or 2 x 1.5 mm^2 with wire sleeves
Protection degree (IEC 60529/EN 60529)	IP20
Temperature range	-25…+60 °C

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