

The rotation speed monitor IM21-14EX-CDTRI monitors pulse sequences, rotation speed and pulse trains of rotating motor, gear or turbine parts for over and under-range of programmed limit values. A display integrated in the front cover indicates the current value.

The switching status of the corresponding output relay i.e. transistor is indicated by a yellow LED and operational readiness by a green LED. Input pulses are shown on the display. For signal detection intrinsically safe sensors acc. to EN 60947-5-6 (NAMUR) can be used. The line is monitored according to wire-break and/or short-circuit depending on the setting. In case of input circuit errors the relays are de-energized, the transistor is inhibited and the Power-LED (Pwr) changes to red. The input pulse signal is transmitted to the potential-free pulse output and from there to further processing units.

In order to achieve short response times, low frequencies are monitored according to the principle of period duration measurement and high frequencies are monitored with a time window. In case of low frequencies the response time depends only on the period duration of the signal. The device is programmed with four push buttons. The parameters are shown on the display.

Each of the three outputs can be programmed for *overspeed* or *underspeed* control. Moreover a *window function* can be programmed, combining both functions over and underspeed control of both relay outputs. The transistor output can also be used as pulse divider. Up to 8000 measuring points can be saved to a ring buffer. To stop the writing process a highly defined trigger event is needed, like for example the exceedance of a limit value. After that the stored signal sequence can be read out.

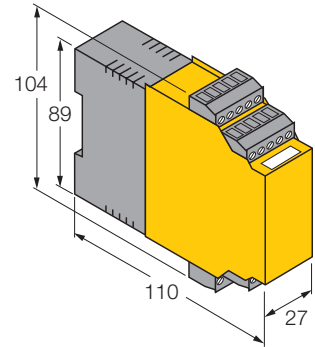
The switching hysteresis is defined by programming the switch-on and switch-off point. Additionally, output cut-off due to sudden frequency changes can be avoided if a switch-off delay is programmed for each output. Select the interlocking function to avoid accidental switch-on of the output. The outputs are operated in NO mode; in "good-condition" the corresponding output is in switched state.

Rotation speed and limit value settings are displayed in Hz. The display and the settings can be adjusted to the required measuring unit by setting a time base and the number of pulses per rotation. For example, if min^{-1} is the selected unit, the time base has to be set to 60.

- **Rotational speed monitor**
- **Selectable line monitoring for wire-break/short-circuit (ON/OFF mode)**
- **Galvanic isolation of input circuits, output circuits and supply voltage**
- **Rotation speed monitoring for over/underspeed and window function**
- **Operating range 0.06...600000/min**
- **Activation of sensors acc. to EN60947-5-6 (NAMUR)**
- **Connection of 3-wire sensors and external voltage supply 5 ... 30VDC**
- **2 relay and 1 transistor outputs**
- **Pulse divider**
- **Current output 0/4...20 mA reversible**
- **Intrinsically safe pulse output**
- **Analog output adjustable with faults in the input circuit**
- **FDT/DTM with diagnostic function**
- **HART**
- **Ring buffer for storing of the measured values**
- **Removable terminal blocks**
- **Universal operating voltage (20...250VAC/ 20...125VDC)**
- **Galvanic isolation of input circuits to output circuits and supply voltage**

rotational speed monitor
1-channel
IM21-14EX-CDTRI

Type	IM21-14EX-CDTRI
Ident-No.	7505651
Nominal voltage	Universal voltage supply unit
Operational voltage range:	20 ... 250 VAC
Frequency	≥ 40 ... ≤ 70 Hz
Operational voltage range:	20 ... 125 VDC
Power consumption	≤ 3 W
Monitoring range / setting range:	≤ 0.06...600000 min ⁻¹
Input frequency	600000 min ⁻¹
Pulse time	≥ 0.02 ms
Pulse stop	≥ 0.02 ms
NAMUR	EN-60947-5-6
No-load voltage	8.2 VDC
Short-circuit current	8.2 mA
Input resistance	1 kΩ
Output resistance	≤ 50 Ω
Switch-on threshold:	1.55 mA
Switch-off threshold:	1.75 mA
Wire breakage threshold	≤ 0.1 mA
Short-circuit threshold	≥ 6 mA
Output current	0/4...20 mA
Load resistance current output	≤ 0.6 kΩ
Output circuits (digital)	2 x relay (normally open)
Relay switching voltage	≤ 250 VAC/120 VDC
Switching current per output	≤ 2 A
Switching capacity per output	≤ 500 VA/60 W
Switching frequency	≤ 10 Hz
Voltage drop	≤ 2.5 V
Contact quality	AgNi, 3μ Au
Semiconductor output circuit(s)	1 x transistor (potential-free, short-circuit protected)
Output circuits (digital)	1 x transistor (potential-free, short-circuit protected)
Switching voltage	≤ 30 VDC
Switching current per output	≤ 50 mA
Switching frequency	≤ 10000 Hz
Test voltage	2.5 kV
Constant voltage supply	250 V



Ex approval acc. to conformity certificate	
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Application area	II (1) GD
Max.output voltage U _o	≤ 9.6 V
Max. output current I _o	≤ 10.7 mA
Max. output power P _o	≤ 25 mW
External inductance/capacitance L _o /C _o	

	EEx ia IIC	EEx ia IIB
Lo [mH]	100 5 1 0.01	100 5 1 0.01
Co [μF]	0.51 0.84 1.2 3.6	2.7 4.4 6.3 26

Ex approval acc. to conformity certificate	IBExU 07 ATEX B010 X
Application area	II 3 G

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Indication

Operational readiness	green
Pulse input	yellow
Error indication	red

Degree of protection

Ambient temperature	IP20
Ambient temperature	-25 ...+ 70 °C
Housing length	104 mm
Housing width	27 mm
Housing height	110 mm
Weight	212 g
Mounting instruction	Mounting on DIN rail or mounting panel
Housing material	polycarbonate/ABS
Electrical connection	4 x 5-pole removable terminal blocks, reverse polarity protected, screw connection
Terminal cross-section	1 x 2.5 mm ² / 2 x 1.5 mm ²