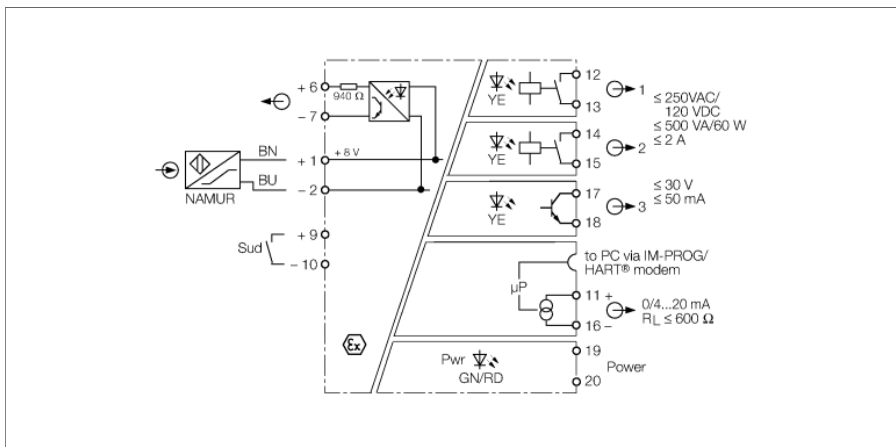


# Rotation speed monitor 1-channel IM21-14EX-CDTRI



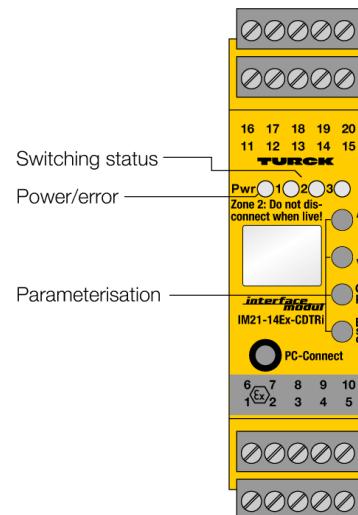
The rotation speed monitor IM21-14EX-CDTRI monitors frequencies, rotation speeds and pulse trains of rotating motor, gear or turbine parts according to over or undershoot of adjusted limit values. The current value is indicated on a display on the front of the device.

Intrinsically safe sensors acc. to EN 60947-5-6 (NAMUR) can be connected. Depending on the settings, the line is monitored for wire-break and/or short-circuit. In the event of an input circuit error the relays drop out, the transistor is blocked and the Pwr LED changes to red.

The device can be parametrized and configured via PC (FDT / DTM). For this, connect the device to the PC via the 3.5 mm jack on the front (the matching transmission cable IM-PROG III can be ordered separately from TURCK). In addition, a basic scope of parameters can be set via buttons and display on the front as well as via the HART® capable power interface

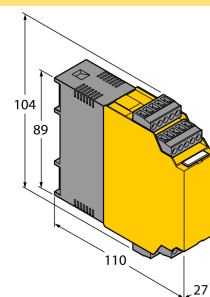
At each of the two relay outputs a predefined limit value can be monitored. The two relays also monitor overshoot/undershoot of window limits. The transistor output can also be used as a pulse divider. The measured value is permanently written to a ring buffer with space for 8000 values. The writing process is stopped with a predefined trigger event, like for example "excess of limit value". After that, the stored signal sequence can be read out.

A switching hysteresis is defined by setting a switch-on and off point. A switch-off delay can also be set to avoid shut down due to sudden frequency hops.

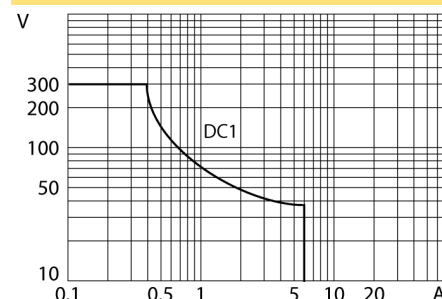


- Monitoring of limit values and ranges according to over and underrange
- Operating range 0.06...600,000 min<sup>-1</sup>
- Pulse output Ex [ic Gc] II C/II B
- Parameterized via PC (FDT/DTM), front-panel switch or HART
- Ring buffer for up to 8000 measured values
- Display
- Complete galvanic isolation
- Input reverse-polarity protected
- ATEX, IECEx, cFM<sub>us</sub>, TR CU, NEPSI, TIIS, Kosha
- Installation in zone 2

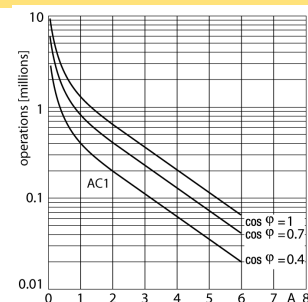
## Dimensions



## Output relay – Load curve



## Output relay – Electrical lifetime



|                         |                               |
|-------------------------|-------------------------------|
| Type                    | IM21-14EX-CDTRI               |
| ID                      | 7505651                       |
| Nominal voltage         | Universal voltage supply unit |
| Operating voltage       | 20...250 VAC                  |
| Frequency               | 40...70 Hz                    |
| Operating voltage $U_s$ | 20...125 VDC                  |
| Power consumption       | $\leq 3 \text{ W}$            |

|                                |                           |
|--------------------------------|---------------------------|
| Monitoring range/Setting range | 0.06...600,000 rpm        |
| Max. input frequency           | 600000 min <sup>-1</sup>  |
| Pulse time                     | $\geq 0.02 \text{ ms}$    |
| Pulse pause                    | $\geq 0.02 \text{ ms}$    |
| NAMUR input                    |                           |
| NAMUR                          | EN 60947-5-6              |
| No-load voltage                | 8.2 VDC                   |
| Short-circuit current          | 8.2 mA                    |
| Input resistance               | 1 k $\Omega$              |
| Cable resistance               | $\leq 50 \text{ } \Omega$ |
| Switch-on threshold            | 1.75 mA                   |
| Switch-off threshold           | 1.55 mA                   |
| Wire breakage threshold        | $\leq 0.06 \text{ mA}$    |
| Short-circuit threshold        | $\geq 6.4 \text{ mA}$     |

|                                |                                              |
|--------------------------------|----------------------------------------------|
| Output circuits                |                                              |
| Output current                 | 0/4...20 mA                                  |
| Load resistance current output | $\leq 0.6 \text{ k}\Omega$                   |
| Fault current                  | 0 / 22 mA adjustable                         |
| Output circuits (digital)      | 2 x relays (NO)                              |
| Output switching voltage relay | $\leq 30 \text{ VDC} / \leq 250 \text{ VAC}$ |
| Switching current per output   | $\leq 2 \text{ A}$                           |
| Switching capacity per output  | $\leq 500 \text{ VA/60 W}$                   |
| Switching frequency            | $\leq 10 \text{ Hz}$                         |

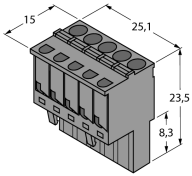
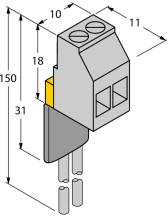
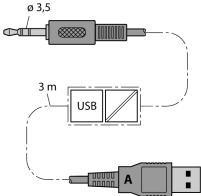
|                               |                                                      |
|-------------------------------|------------------------------------------------------|
| Semiconductor output circuits |                                                      |
| Output circuits (digital)     | 1 x transistor (potential-free, short-circuit proof) |
| Switching voltage             | $\leq 30 \text{ VDC}$                                |
| Switching current per output  | $\leq 0.05 \text{ A}$                                |
| Switching frequency           | $\leq 10000 \text{ Hz}$                              |
| Voltage drop                  | $\leq 2.5 \text{ V}$                                 |
| Feed-forward pulse output     |                                                      |
| Voltage                       | $\leq 30 \text{ V}$                                  |
| Current                       | $\leq 10 \text{ mA}$                                 |

|                                                                        |                                      |
|------------------------------------------------------------------------|--------------------------------------|
| Response characteristic                                                |                                      |
| Measuring accuracy (including linearity, hysteresis and repeatability) | $\leq 0.05 \text{ \% of full scale}$ |
| Reference temperature                                                  | 23 °C                                |
| Temperature drift analog output                                        | 0.0025 %/K                           |

|                    |            |
|--------------------|------------|
| Galvanic isolation |            |
| Test voltage       | 2.5 kV RMS |

|                                            |                                                                                                              |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Important note                             | For Ex-applications the values specified in the corresponding Ex certificates (ATEX, IECEx, UL, etc.) apply. |
| Ex approval acc. to conformity certificate | IBExU 07 ATEX 1132                                                                                           |
| Application area                           | II (1) G, II (1) D                                                                                           |
| Ignition protection category               | [Ex ia Ga] IIC , [Ex ia Da] IIIC                                                                             |
| Ex approval acc. to conformity certificate | IBExU 07 ATEX B010 X                                                                                         |
| Application area                           | II 3 G                                                                                                       |
| Ignition protection type                   | Ex nA nC [ic Gc] IIC/IIB T4 Gc                                                                               |
| Characteristic                             | linear                                                                                                       |
| <b>Displays/Operating elements</b>         |                                                                                                              |
| Operational readiness                      | Green                                                                                                        |
| Pulse input                                | Yellow                                                                                                       |
| Error indication                           | red                                                                                                          |
| <b>Mechanical data</b>                     |                                                                                                              |
| Protection class                           | IP20                                                                                                         |
| Flammability class acc. to UL 94           | V-0                                                                                                          |
| Ambient temperature                        | -25...+70 °C                                                                                                 |
|                                            | -25 ... +60 °C für FM                                                                                        |
| Storage temperature                        | -40...+80 °C                                                                                                 |
| Dimensions                                 | 104 x 27 x 110 mm                                                                                            |
| Weight                                     | 244 g                                                                                                        |
| Mounting instructions                      | DIN rail (NS35) or panel                                                                                     |
| Housing material                           | Plastic, Polycarbonate/ABS                                                                                   |
| Electrical connection                      | 4 × 5-pin removable terminal blocks, reverse polarity protected, screw terminal                              |
| Terminal cross-section                     | 1 × 2.5 mm <sup>2</sup> /2 × 1.5 mm <sup>2</sup>                                                             |
| Tightening torque                          | 0.5 Nm                                                                                                       |

Accessories

| Type code             | Ident-No. |                                                                                                                                                                                                                                                                                                   | Dimension drawing                                                                    |
|-----------------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| IM-CC-5X2BU/2BK       | 7504031   | Cage clamp terminals for IM modules (Ex-devices with 27 mm overall width); includes: 2 pcs. 5-pin blue terminals and 2 pcs. 5-pin black terminals.                                                                                                                                                |   |
| WM1 WIDER-STANDSMODUL | 0912101   | The resistor module WM1 meets the requirements for line monitoring between a mechanical contact and a TURCK signal processor. The input circuit of the signal processor is designed for sensors acc. to EN60947-5-6 (NAMUR) and equipped with a wire-break and short-circuit monitoring function. |   |
| IM-PROG III           | 7525111   | USB-compatible programming adapter for the FDT/DTM-based parametrization of HART-capable Turck devices; galvanic separation between the device to be parametrized and the PC                                                                                                                      |  |