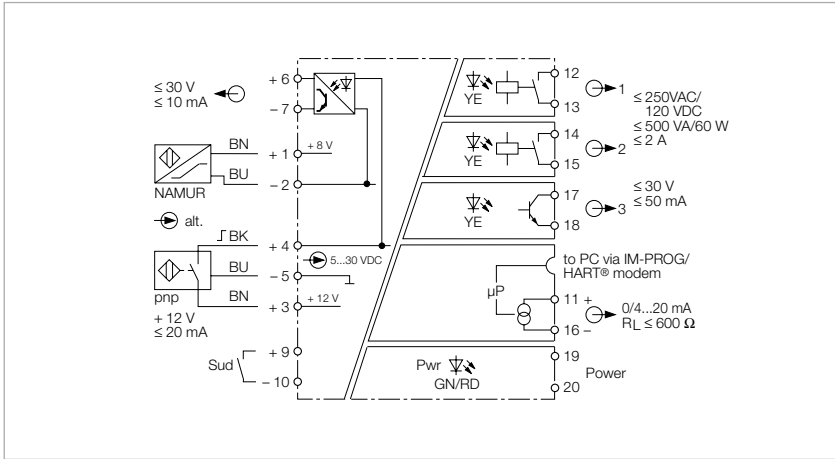


Rotation speed monitor, 1-channel



Features

- TR CU
- Monitors over and underrange of limit values and window limits
- Line monitoring
- Operating range 0.06 ... 600000 min⁻¹
- Connection of sensors acc. to EN 60947-5-6 (NAMUR), 3-wire sensors and external power supplies
- 2 relay outputs and one transistor output
- Current output 0/4...20 mA, reversible
- Pulse output
- Parametrized via PC (FDT / DTM), front-panel switch and HART®
- Complete galvanic isolation

The rotation speed monitor IM21-14-CDTRI analyses 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.

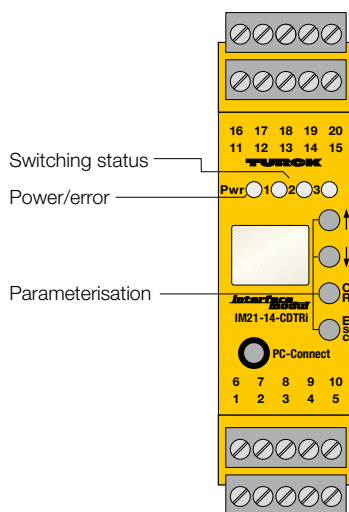
NAMUR sensors monitor the cables for wire-break and/or short-circuit depending on the setting. In the event of an input circuit error the relays drop out, the transistor is blocked and the Pwr LED changes to red.

The device can be configured and parametrized via PC (FDT/DTM); the appropriate TURCK-PROG III transmission cable is available from TURCK. A basic scope of parameters can be set via buttons and display on the front or remotely via the current interface and HART®.

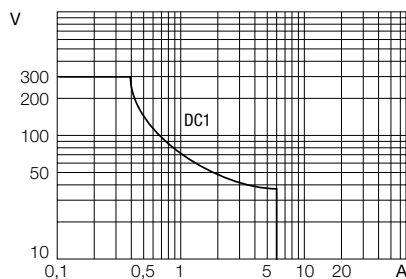
At each of the two relay outputs a predefined limit value can be monitored. The two relays also monitor overshoot/undershoot of window limits. The transistor output can also be used as a pulse divider. The measured value is permanently written to a ring buffer with space for 8000 values. The writing 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.

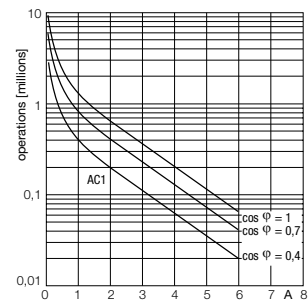
A switching hysteresis is defined by setting a switch-on and off point. A switch-off delay can also be set to avoid shut down due to sudden frequency hops.



Output relay – Load curve



Output relay – Electrical lifetime



Technical data

Type	IM21-14-CDTRI
Ident no.	7505650

Power supply

Nominal voltage	Universal voltage supply unit
Operating voltage range	20...250 VDC
Operating voltage range	20...250 VAC
Frequency	40...70 Hz
Power consumption	≤ 3 W

Inputs

No-load voltage	8.2 VDC
Short-circuit current	8.2 mA
Max. input frequency	600000 min ⁻¹
Pulse time	≥ 0.02 ms
Pulse stop	≥ 0.02 ms
Input resistance	1 kΩ
Cable resistance	≤ 50 Ω
Switch-on threshold:	1.55 mA
Switch-off threshold:	1.75 mA
Short-circuit threshold	≥ 6 mA
Wire breakage threshold	≤ 0.1 mA
Current	≤ 20 mA
0-signal	0...3 VDC
1-signal	5...30 VDC
Input resistance	26000 Ω

Outputs

Load resistance, current output	≤ 0.6 kΩ
Output current	0/4...20 mA
Output circuits (digital)	2 x relays (NO)
Switching frequency	≤ 10 Hz
Relay switching voltage	≤ 250 VAC/120 VDC
Switching current per output	≤ 2 A
Switching capacity per output	≤ 500 VA/60 W
Fault current	0 / 22 mA adjustable
Contact quality	AgNi, 3μ Au
Output circuits (digital)	1 x transistor (potential-free, short-circuit proof)
Switching voltage	≤ 30 VDC
Switching current per output	≤ 50 mA
Switching frequency	≤ 10000 Hz
Voltage drop	≤ 2.5 V
Voltage	≤ 30 V
Current	≤ 10 mA

Response characteristic

Measuring accuracy	≤ 0.05 % of full scale
Reference temperature	23 °C
Temperature drift analogue output	0.0025 %/K

Indication

Operational readiness	green
Pulse input	yellow
Error indication	red

Environmental Conditions

Ambient temperature	-25...+70 °C
Storage temperature	-40...+80 °C
Relative humidity	≤ 95 %
Test voltage	2.5 kV

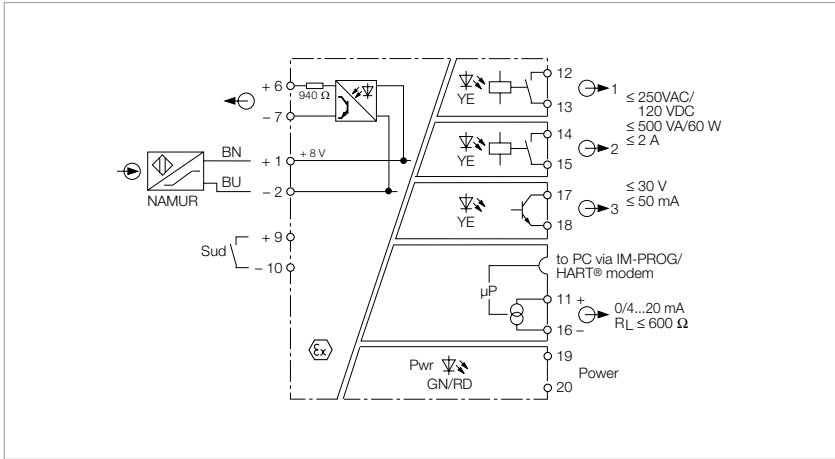
Mechanical data

Tightening torque	0.5 Nm
Electrical connection	4 x 5-pin removable terminal blocks, reverse polarity protected, screw connection
Terminal cross-section	1 x 2.5 mm ² / 2 x 1.5 mm ²
Housing material	Polycarbonate/ABS
Mounting instruction	for DIN rail / panel
Protection class	IP20
Flammability class acc. to UL 94	V-0
Dimensions	27 x 104 x 110 mm

Approval | Certification

TR CU

Rotation speed monitor, 1-channel



Features

- ATEX, IECEx, cFM_{US}, TR CU, NEPSI, TIIS
- Installation in zone 2
- Monitors over and underrange of limit values and window limits
- Operating range 0.06 ... 600000 min⁻¹
- Control of sensors acc. to EN 60947-5-6 (NAMUR)
- 2 x relay outputs and 1 x transistor output
- Current output 0/4...20 mA reversible
- Pulse output Ex nL II C/II B
- Parametrized via PC (FDT / DTM), front-panel switch or HART®
- Complete galvanic isolation

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.

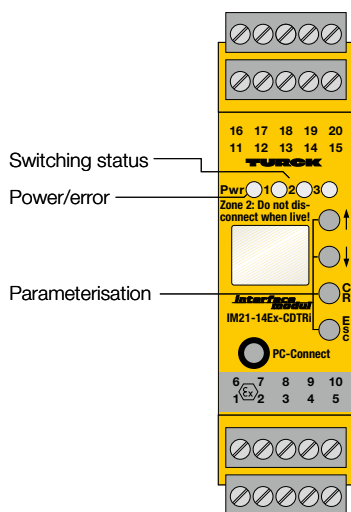
Intrinsically safe sensors acc. to EN 60947-5-6 (NAMUR) can be connected. The line is monitored for wire-break and/or short-circuit depending on the setting. In the event of an input circuit error the relays drop out, the transistor is blocked and the Pwr LED changes to red.

The device can be configured and parametrized via PC (FDT/DTM); the appropriate TURCK-PROG III transmission cable is available from TURCK. A basic scope of parameters can be set via buttons and display on the front or remotely via the current interface and HART®.

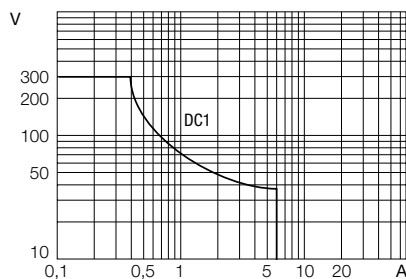
At each of the two relay outputs a predefined limit value can be monitored. The two relays also monitor overshoot/undershoot of window limits. The transistor output can also be used as a pulse divider. The measured value is permanently written to a ring buffer with space for 8000 values. The writing 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.

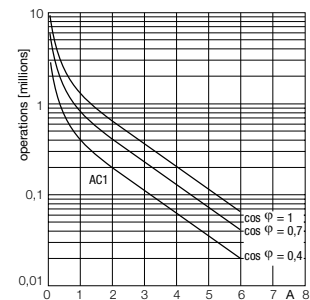
A switching hysteresis is defined by setting a switch-on and off point. A switch-off delay can also be set to avoid shut down due to sudden frequency hops.



Output relay – Load curve



Output relay – Electrical lifetime



Technical data

Type	IM21-14EX-CDTRI
Ident no.	7505651

Power supply

Nominal voltage	Universal voltage supply unit
Operating voltage range	20...125 VDC
Operating voltage range	20...250 VAC
Frequency	40...70 Hz
Power consumption	≤ 3 W

Inputs

No-load voltage	8.2 VDC
Short-circuit current	8.2 mA
Max. input frequency	600000 min ⁻¹
Pulse time	≥ 0.02 ms
Pulse stop	≥ 0.02 ms
Input resistance	1 kΩ
Cable resistance	≤ 50 Ω
Switch-on threshold:	1.55 mA
Switch-off threshold:	1.75 mA
Short-circuit threshold	≥ 6 mA
Wire breakage threshold	≤ 0.1 mA

Outputs

Load resistance, current output	≤ 0.6 kΩ
Output current	0/4...20 mA
Output circuits (digital)	2 x relays (NO)
Switching frequency	≤ 10 Hz
Relay switching voltage	≤ 250 VAC/120 VDC
Switching current per output	≤ 2 A
Switching capacity per output	≤ 500 VA/60 W
Fault current	0 / 22 mA adjustable
Contact quality	AgNi, 3μ Au
Output circuits (digital)	1 x transistor (potential-free, short-circuit proof)
Switching voltage	≤ 30 VDC
Switching current per output	≤ 50 mA
Switching frequency	≤ 10000 Hz
Voltage drop	≤ 2.5 V
Voltage	≤ 30 V
Current	≤ 10 mA

Response characteristic

Measuring accuracy	≤ 0.05 % of full scale
Reference temperature	23 °C
Temperature drift analogue output	0.0025 %/K

Approvals and declarations

Ex approval acc. to conformity certificate	IBExU 07 ATEX 1132
Device designation	⊕ II (1) G, II (1) D [Ex ia Ga] IIC, [Ex ia Da] IIIC
Max. values:	Terminal connection: 1+2 / 6+7 / 9+10
Max. output voltage U _o	≤ 9.6 V
Max. output current I _o	≤ 10.7 mA
Max. output power P _o	≤ 25 mW
Internal resistance R _i	900 Ω

Rated voltage	250 V
Characteristic	linear
Max. values:	Terminal connection: 6+7
Max. input voltage U _i	≤ 20 V
Max. input current I _i	≤ 21.3 mA
Max. input power P _i	≤ 400 mW
Internal inductance/capacitance L _i /C _i	negligibly small

External inductance/capacitance L_i/C_i

Ex ia	IIC			IIB		
L _i [mH]	100	5.0	1	100	5	1
C _i [μF]	0.51	0.84	1.2	2.7	4.4	6.3

Ex approval acc. to conformity certificate	IBExU 07 ATEX B010 X
Application area	II 3 G
Protection type	Ex nA nC [ic Gc] IIC/IIB T4 Gc
Max. values:	Terminal connection: 1+2 / 6+7 / 9+10

Max. output voltage U _o	≤ 9.6 V
Max. output current I _o	≤ 10.7 mA
Max. output power P _o	≤ 25 mW
Internal resistance R _i	900 Ω
Characteristic	linear
Max. values:	Terminal connection: 6+7

Max. input voltage U _i	≤ 20 V
Max. input current I _i	≤ 21.3 mA
Max. input power P _i	≤ 400 mW
Internal inductance/capacitance L _i /C _i	negligibly small

External inductance/capacitance L_i/C_i

Ex ic	IIC			IIB		
L _i [mH]	100	5.0	1	100	5	1
C _i [μF]	0.765	1.2	1.8	4.0	6.6	9.4

Indication

Operational readiness	green
Pulse input	yellow
Error indication	red

Environmental Conditions

Ambient temperature	-25...+70 °C
Storage temperature	-40...+80 °C
Relative humidity	≤ 95 %
Test voltage	2.5 kV

Mechanical data

Tightening torque	0.5 Nm
Electrical connection	4 x 5-pin removable terminal blocks, reverse polarity protected, screw connection
Terminal cross-section	1 x 2.5 mm ² / 2 x 1.5 mm ²
Housing material	Polycarbonate/ABS
Mounting instruction	for DIN rail / panel
Protection class	IP20
Flammability class acc. to UL 94	V-0
Dimensions	27 x 104 x 110 mm

Approval | Certification

ATEX, IECEx, cFM_{us}, TR CU, NEPSI, TIIS