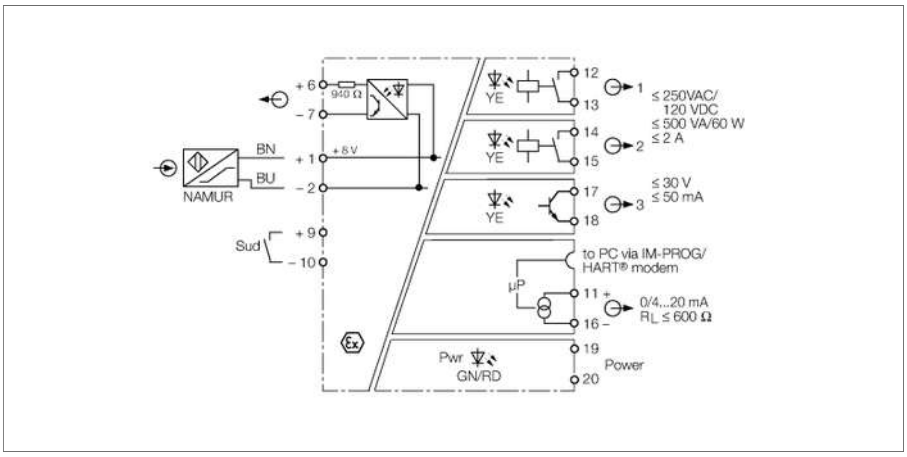
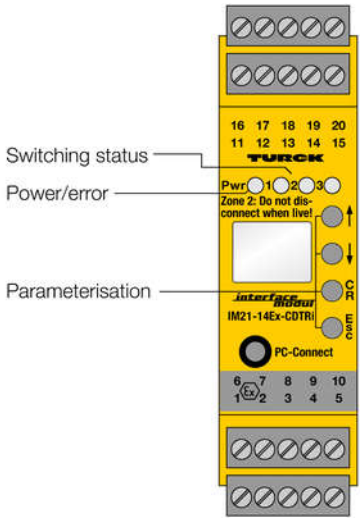
interface modul

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

TURCK
Industrial Automation





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. A display at the front indicates the current value.

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

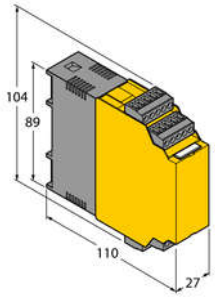
- **ATEX, IECEx, FM, NEPSI, TIIS, GOST**
- **Monitors over and underrange of limit values and window limits**
- **Operating range 0.06 … 600000 min^{-1}**
- **Pulse output Ex [ic Gc] II C/II B**
- **Parametrized via PC (FDT / DTM), front-panel switch or HART®**
- **Ring memory for up to 8000 measured values**
- **Display**
- **Complete galvanic isolation**

Edition • 2014-03-14T17:53:44+01:00

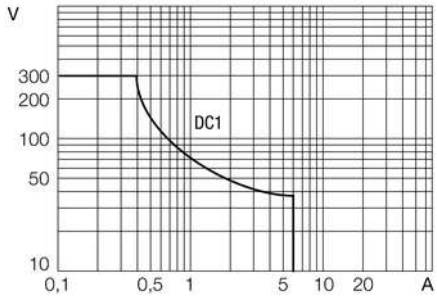
Rotation speed monitor
1-channel
IM21-14EX-CDTRI

Type code	IM21-14EX-CDTRI
Ident no.	7505651
Flammability class acc. to UL 94	V-0
Nominal voltage	Universal voltage supply unit
Operating voltage	20…250 VAC
Frequency	40…70 Hz
Operating voltage range	20…125 VDC
Power consumption	≤ 3 W
Monitoring range / setting range:	≤ 0.06…600000 min^{-1}
max. 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
Cable 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
Fault current	0 / 22 mA adjustable
Output circuits (digital)	2 x relays (NO)
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
Contact quality	AgNi, 3µ Au
Semicondutor output circuit(s)	
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
Voltage drop	≤ 2.5 V
Pulse output	
Voltage	≤ 30 V
Current	≤ 10 mA
Measuring accuracy	≤ 0.05 % of full scale
Reference temperature	23 °C
Temperature drift analogue output	0.0025 %/K
Galvanic isolation	
Test voltage	2.5 kV

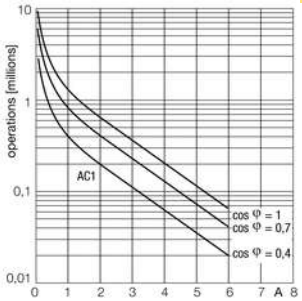
Dimensions



Load curve



Output relay electrical lifetime



Edition • 2014-03-14T17:53:44+01:00

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

Ex approval acc. to conformity certificate	IBExU 07 ATEX 1132
Application area	II (1) G, II (1) D
Protection type	[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
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
Rated voltage	250 V
Internal inductance/capacitance L_i/C_i	negligibly small
External inductance/capacitance L_o/C_o	

Ex ia	IIC				IIB			
L_o [mH]	100	5.0	1	0.01	100	5	1	0.01
C_o [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
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_o/C_o	

Ex ic	IIC				IIB			
L_o [mH]	100	5.0	1	0.01	100	5	1	0.01
C_o [µF]	0.765	1.2	1.8	5.4	4.0	6.6	9.4	39

MTTF	100 years acc. to SN 29500 (Ed. 99) 40 °C

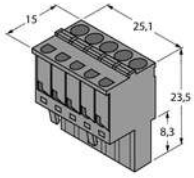
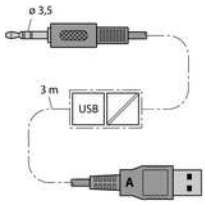
Indication	
Operational readiness	green
Pulse input	yellow
Error indication	red

Protection class	IP20
Ambient temperature	-25…+70 °C
Storage temperature	-40…+80°C
Relative humidity	≤ 95%
Dimensions	104 x 27 x 110 mm
Weight	249 g
Mounting instruction	For 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
Tightening torque	0.5 Nm

Edition • 2014-03-14T17:53:44+01:00

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

Accessories

Type code	Ident no.	Description	Dimension drawing
IM-CC-5X2BU/2BK	7504031	Cage clamp terminals for IM modules (Ex devices; width 27 mm): 2 blue/2 black, 5-pin	
IM-PROG III	7525111	The programming adapter IM-PROG III is used for parametrization of TURCK IM and IMB devices via FDT/DTM and for galvanic separation.	

Edition • 2014-03-14T17:53:44+01:00

 Hans Turck GmbH & Co.KG ● D-45472 Mülheim an der Ruhr ● Witzlebenstraße 7 ● Tel. 0208 4952-0 ● Fax 0208 4952-264 ● more@turck.com ● www.turck.com