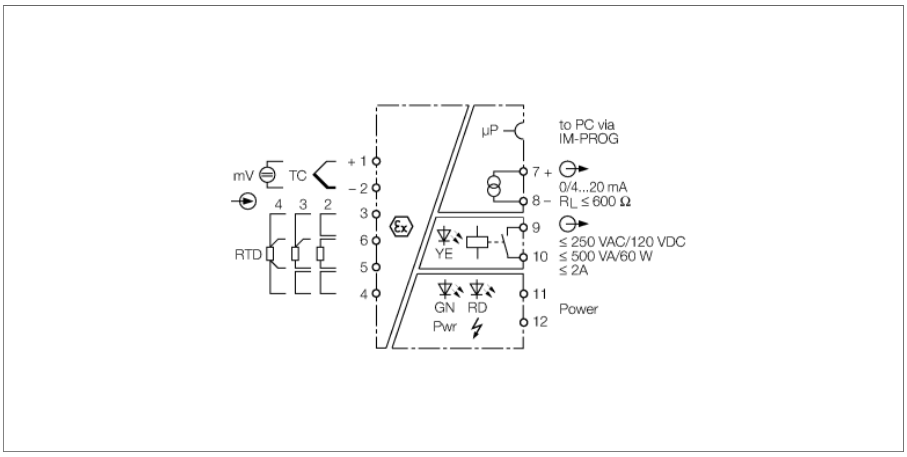
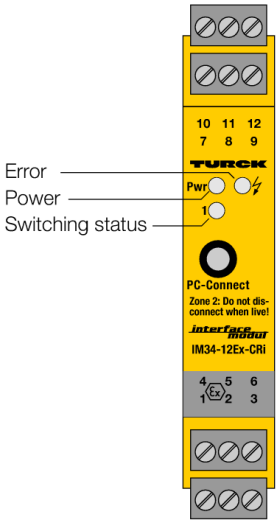
Temperature measuring amplifier
1-channel
IM34-12EX-CRI





The 1-channel Ex-area temperature measuring amplifier IM34-12EX-CRI is designed to evaluate the temperature-dependent changes of Ni100/Pt100 RTDs, thermocouples types B, E, J, K, L, N, R, S and T or low voltages in a range of -160…+160 mV and to output them as temperature-linear current signals 0/4…20 mA.

Alternatively, Ni100/Pt100 RTDs in 2, 3 or 4-wire technology can also be operated at the input circuit of the measuring amplifier. The Ni100/Pt100 input can either be used as external cold junction compensation for the thermocouple or as independent measuring input.

The device has an additional relay output to monitor over or undershoot of a limit value.

With the software tool Device Type Manager (DTM), the device can be configured and parameterised via PC. 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).

The following settings are available:

- Connection mode (2, 3 and 4-wire technology)
- Measuring range, start
- Measuring range, end
- Limit value
- Input circuit monitoring for wire-break
- Behaviour of the current output in case of errors in the input circuit: 0 or > 22 mA
- Internal or external cold junction compensation
- Output current (0/4…20 mA)
- Temperature (°C or °K)
- Mode (resistor, thermocouple, low voltage, line compensation)

The signals are transformed according to ITS 90/IEC 584 for thermocouples and according to IEC 751 for Pt100 RTDs and provided temperature linear at the current output.

- Input for Pt100/ Ni100 resistors, thermocouples and millivolt signals in 2, 3 or 4-wire technology
- Output circuit: 0/4…20 mA, limit value relay
- Parameterized via PC (FDT / DTM)
- Complete galvanic isolation
- Input reverse-polarity protected
- ATEX, IECEx, $_{c}FM_{us}$, UL, TR CU, INMETRO
- Installation in zone 2

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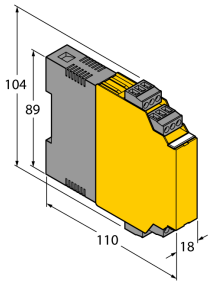
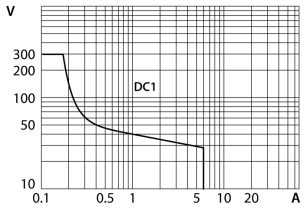
Type	IM34-12EX-CRI
ID	7506632
Operating voltage	20…250 VAC
Frequency	40…70 Hz
Operating voltage U_B	20…125 VDC
Power consumption	≤ 3 W
Input circuits	Intrinsically safe acc. to EN 60079 Thermocouple Pt100 Ni100 mV signals
Pt100	(IEC 751), 2, 3 and 4-wire technology
Ni100	(DIN 43760), 2, 3 and 4-wire technology
Probe current	≤ 0.2 mA
Thermocouples	B, E, J, K, N, R, S, T (ITS 90/IEC 584), L (DIN 43710)
Voltage input	-0.160…+0.160 VDC
Output circuits	
Output current	0/4…20 mA
Load resistance current output	≤ 0.6 kΩ
Fault current	0 / 22 mA adjustable
Output circuits (digital)	1 x relay (NO)
Output switching voltage relay	≤ 30 VDC / ≤ 250 VAC
Switching current per output	≤ 2 A
Switching capacity per output	≤ 500 VA/60 W
Switching frequency	≤ 10 Hz
Output	Adjustable output mode
Response characteristic	
Rise time (10…90 %)	≤ 1000 ms
Fall time (90…10 %)	≤ 1000 ms
Reference temperature	23 °C
Measuring accuracy current output (including linearity, hysteresis and repeatability)	± 5 µA
Temperature drift analog output	0.0025 %/K
Measuring accuracy RTD input (including linearity, hysteresis and repeatability)	± 50 mΩ
Temperature drift RTD input	± 3 mΩ/K
Measuring accuracy TC input (including linearity, hysteresis and repeatability)	± 15 µV
Temperature drift TC input	± 3.2 µV/K (of 320 mV)
Cold junction compensation error	2-wire < 100mΩ after line compensation 3-wire < 100mΩ with asymmetrical wiring 4-wire < 50mΩ with cold junction compensation < 2 K with IM-3-CJT < 1K
Galvanic isolation	
Test voltage	2.5 kV RMS

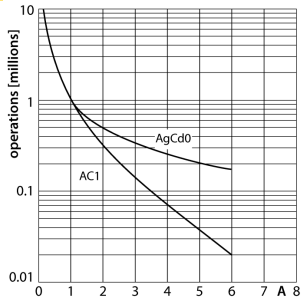
Dimensions



Output relay – Load curve



Output relay – Electrical lifetime



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Important note	For Ex-applications the values specified in the corresponding Ex certificates (ATEX, IECEx, UL, etc.) apply.
Ex approval acc. to conformity certificate	TÜV 02 ATEX 1898
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	TÜV 06 ATEX 552978 X
Application area	II 3 G
Ignition protection type	Ex nA nC [ic Gc] IIC T4
Characteristic	linear

Displays/Operating elements	
Operational readiness	Green
Switching state	Yellow

Mechanical data	
Protection class	IP20
Flammability class acc. to UL 94	V-0
Ambient temperature	-25…+70 °C
	-25 ... +60 °C für UL, FM
Storage temperature	-40…+80 °C
Dimensions	104 x 18 x 110 mm
Weight	164 g
Mounting instructions	DIN rail (NS35) or panel
Housing material	Plastic, Polycarbonate/ABS
Electrical connection	4 × 3-pin removable terminal blocks, reverse polarity protected, screw terminal
Terminal cross-section	1 × 2.5 mm²/2 × 1.5 mm²
Tightening torque	0.5 Nm

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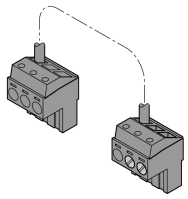
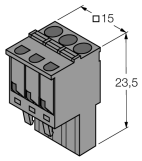
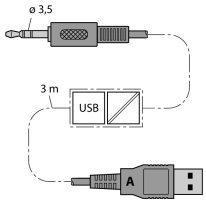
Accessories

Type code	Ident no.		Dimension drawing
IM-3-CJT	6900524	Cold junction compensation module for IM 34 temperature measuring amplifiers, width 18 mm	
IM-CC-3X2BU/2BK	6900475	Cage clamp terminals for IM modules (Ex-devices with 18 mm overall width); includes: 2 pcs. 3-pin blue terminals and 2 pcs. 3-pin black terminals.	
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	

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