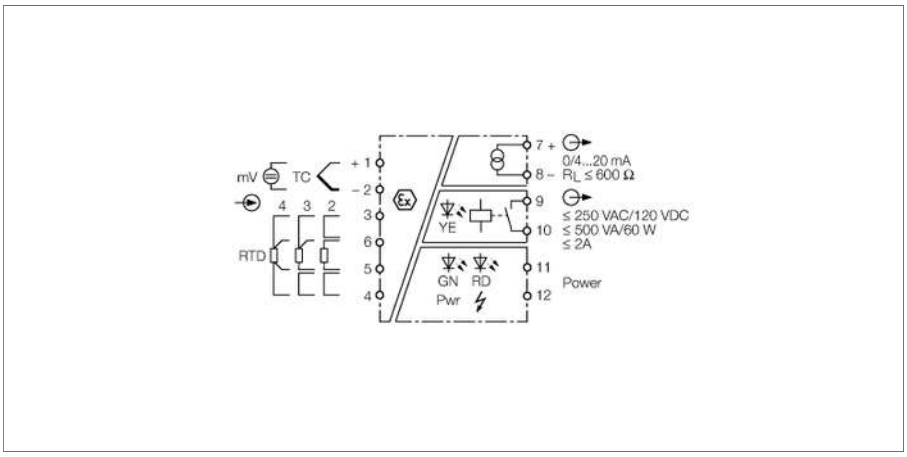
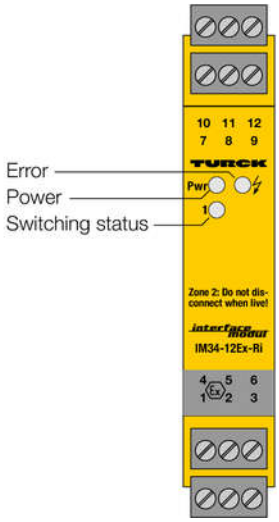
Temperature measuring amplifier
1-channel
IM34-12EX-RI





The 1-channel Ex-area temperature measuring amplifier IM34-12EX-RI 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 -100…+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 underrange of a limit value.

The measuring range, limit value and the device functions are set via rotary coding switches or rather slide switches.

The following settings are available:

- Type of probe
- Connection of the Ni100/Pt100 resistor in 2, 3 or 4-wire technology
- Measuring range, lower limit -100…- 1 °C in 1-K steps, 0…990 °C in 10-K steps
- Limit value
- Measuring range upper limit 0…1990 °C in 10-K steps
- Input circuit monitoring for wire-break
- Current output behaviour in the event of input circuit errors: 0 or > 22 mA
- Internal or external cold junction compensation
- Relay output mode

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

- **ATEX, IECEx, cFMus, UL, TR CU, INMETRO, CCOE**
- **Installation in zone 2**
- **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**
- **Upper and lower limit adjustable via rotary coding switch**
- **Complete galvanic isolation**

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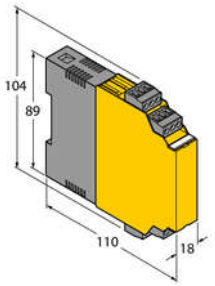
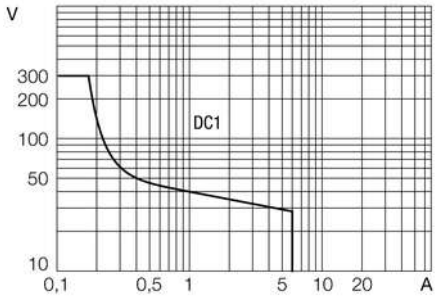
Type code	IM34-12EX-RI
Ident no.	7506631
Nominal voltage	Universal voltage supply unit
Operating voltage	20…250 VAC
Frequency	40…70 Hz
Operating voltage range	20…125 VDC
Power consumption	≤ 3 W
Input circuits	intrinsically safe acc. to EN 60079 thermocouple Ni100 Pt100 mV signals
Pt100	(IEC 751), 2, 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 relays (NO)
Relay switching voltage	≤ 250 VAC/30 VDC
Switching current per output	≤ 2 A
Switching capacity per output	≤ 500 VA/60 W
Switching frequency	≤ 10 Hz
Contact quality	AgNi, 3µ Au
Output	adjustable output mode
Rise time (10-90%)	≤ 1000 ms
Dropout time (90…10%)	≤ 1000 ms
Reference temperature	23 °C
Accuracy current output	± 5 µA
Temperature drift analog output	0.0025 %/K
Temperature drift RTD input	± 3 mΩ/K
Temperature drift TC input	3.2 µV / K (of 320mV)
Accuracy RTD input	± 50 mΩ
Accuracy TC input	± 15 µV
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

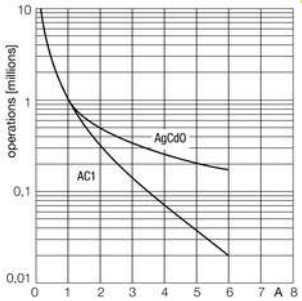
Dimensions



Output relay – Load curve



Output relay – Electrical lifetime



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Important note	For safety applications the values specified in the safety manual or the relevant 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 ;
Max. values:	Terminal connection: 1…6
Max. output voltage U_o	≤ 5 V
Max. output current I_o	≤ 2.5 mA
Max. output power P_o	≤ 3 mW
Characteristic	linear
Internal inductance/capacitance L_i/C_i	negligibly small
External inductance/capacitance L_o/C_o	

Ex ia	IIC	IIB
Lo [mH]	100	100
Co [µF]	2	9,1

Ex approval acc. to conformity certificate	TÜV 06 ATEX 552978 X
Application area	II 3 G
Protection type	Ex nA nC [ic Gc] IIC T4
Max. values:	Terminal connection: 1…6
Max.output voltage U_o	≤ 5 V
Max. output current I_o	≤ 2.5 mA
Max. output power P_o	≤ 3 mW
Characteristic	linear
Internal inductance/capacitance L_i/C_i	negligibly small
External inductance/capacitance L_o/C_o	

Ex ic	IIC	IIB
Lo [mH]	100	100
Co [µF]	3.6	18

Indication	
Switching state	yellow

IP Rating	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	157 g
Mounting instruction	for DIN rail / panel
Housing material	polycarbonate/ABS
Electrical connection	4 x 3-pin 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

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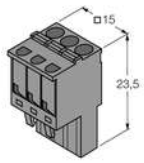
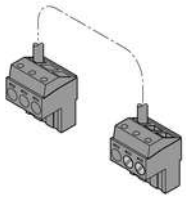
Accessories

Type code	Ident no.	Description	Design
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-3-CJT	6900524	Cold junction compensation module for IM 34 temperature measuring amplifiers, width 18 mm	

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