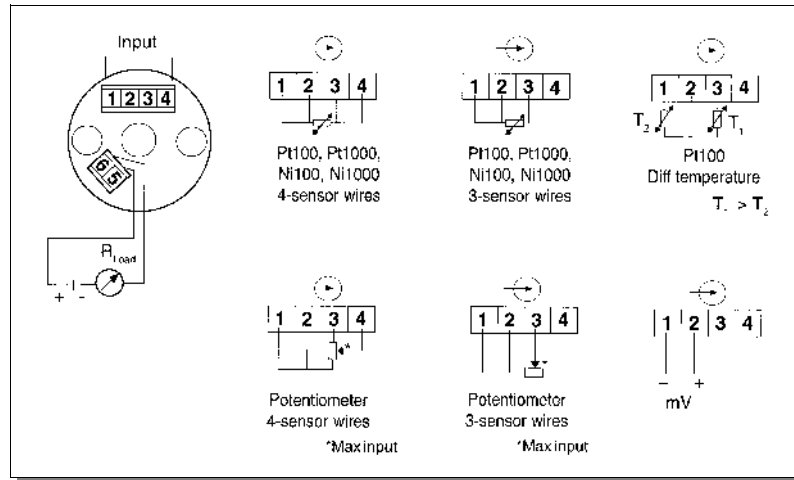
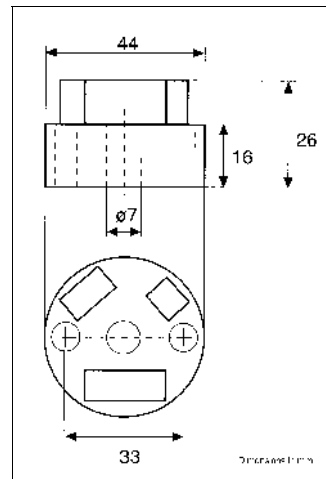


ELECTRICAL CONNECTIONS



MECHANICAL DIMENSIONS



IN-HEAD TRANSMITTER

2-wire; PC-configurable; RTD, T/C, mV, Potentiometer input



IP2105.09

Description

The MT102 2-wire temperature transmitter can be equipped with a variety of different temperature sensors including RTDs, T/C, mV and Potentiometer. Its small mechanical dimension allows mounting in B-size DIN heads. The transmitter can be configured using a personal computer and the Windows compatible SMART-2 communication software. Thermocouples which are not available in the standard configuration can be customer linearized with 8 set-points and the CJC can be adjusted with 4 set-points. A sensor/ line-break signal can be programmed to be up-scale or down-scale.

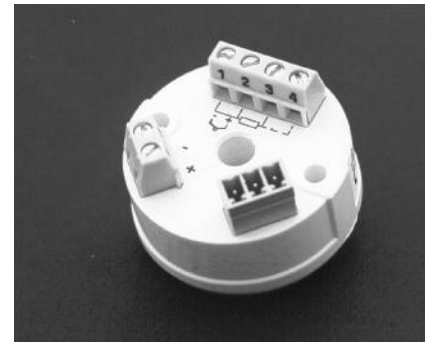
The transmitter can be configured to output a calibration signal for a defined time frame during commissioning.

- ✓ RTD, T/C, POTENTIOMETER, mV INPUT
- ✓ PC CONFIGURATION
- ✓ GALVANIC ISOLATION 1,500 VAC
- ✓ FITS STANDARD DIN B-HEADS
- ✓ OPTIONAL INTRINSICALLY SAFE VERSION
- ✓ NEEDS ONLY 6.5V FOR OPERATION

Technical Characteristics

The MT102 is build around a microprocessor core with a sophisticated program. Basic calibration data and set-up is stored in EEPROM to avoid any lost of data in case of power failure. The transmitter operates from 6.5...36 VDC and is protected against polarity reversal. It is equipped with a galvanic isolation of 1,500 VAC between input and output. Sensor error detection is programmable for different output values (down-scale or up-scale). The output signal of 4...20 mA can be reversed or specified for any window within the 4...20 mA range. For thermocouple operation a build-in cold junction compensation (CJC) can be activated or an external Pt100 sensor or thermostat can be attached.

The transmitter can be configured with the optional SMART-2 program and the included serial PC-cable.



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Specification

Max. cable resistance per wire.....25 W
 Sensor current.....nom. 0.4 mA

Linear resistance input:

Measurement range.....0 - 2000 W
 Min. measurement range.....10 W
 Max. cable resistance per wire.....25 W
 Sensor current.....nom. 0.4 mA

Voltage input:

Measurement range.....-10 - +500 mV
 Min. measurement range.....2 mV
 Input resistance.....> 10 MW

Sensor error detection (programmable):

down-scale.....3.5 mA
 up-scale.....21.6 mA

Output:

Current.....4 - 20 mA or 20 - 4 mA
 Resolution.....5 µA
 Min. signal.....3.8 mA
 Max. signal.....20.5 mA
 Instrument Calibration Signal.....4, 12, 20, 12, 4 ...mA
 (in 15 sec. intervals)

EMC-data:

Emission.....EN 50 081
 Immunity.....EN 50 082

EEx data:

U_{max.in}.....30 VDC
 I_{max.in}.....100 mA
 P_{max}.....0.9 W
 L_{eq}.....appr. 0 mH
 C_{eq}.....appr. 0 µF
 Approvals.....EEx ia IIC T4-T6
 Applicable in zone

Max. ambient temperature for T4.....85°C
 Max. ambient temperature for T5.....65°C
 Max. ambient temperature for T6.....50°C

T/C input:			
Type	Range	Min. span	Norm
AE	-10...+1000 °C	100 °C	JIS C1604-1981
B	0...+1800 °C	200 °C	IEC 584
E	-200...+1000 °C	50 °C	IEC 584
J	-200...+1200 °C	50 °C	IEC 584
K	-200...+1350 °C	50 °C	IEC 584
L	-200...+900 °C	50 °C	DIN 43710
N	0...+1300 °C	50 °C	IEC 584
R	-50...+1750 °C	50 °C	IEC 584
S	-50...+1750 °C	50 °C	IEC 584
T	-200...+400 °C	50 °C	IEC 584
U	-200...+600 °C	50 °C	DIN 43710
custom	customer specific linearization (up to 8 setpoints)		

Input impedance.....> 10 MW
 Max. cable resistance per wire.....500 W

MT102

RTD Input:		
Pt100	-200...+1000 °C	min. span 10 °C
Pt1000	-200...+200 °C	min. span 10 °C
Pt custom	Pt10 - Pt1000 with a=0.00385	
Ni100	-60...+250 °C	min. span 10 °C
Ni1000	-60...+150 °C	min. span 10 °C
Lin.R	0...2000 Ohm	min. span 10 Ohm

Common specification:

Supply voltage DC
 Standard.....6.5 - 36V
 Ex-Version.....8.0 - 30V
 Isolation voltage.....1,500 VAC/ 1min.
 Warm-up time.....5min.
 Measuring time.....approx. 1.5s
 Communication interface.....proprietary
 Output load.....R_{Load} = (U-6.5)/0.02
 Temperature influence
 max. of ±0.25°C/ 25°C or ±0.25%/25°C⁽¹⁾⁽³⁾
 max. of ±0.5°F/ 50°F or ±0.28%/50°F⁽¹⁾⁽³⁾
 Temperature influence CJC (T/C input)⁽⁴⁾
 ±0.5°C/ 25°C / ±1.0°F/ 50°F⁽¹⁾⁽³⁾

Linearity error

resistance input, mV.....0.1%⁽¹⁾
 T/C.....0.2%⁽¹⁾

Calibration inaccuracy

RTD...max. of ±0.2°C / ±0.4°F or ±0.1%⁽¹⁾
 Potentiometer...max. of ±0.1W or ±0.1%⁽¹⁾
 mV, T/C.....max. of 20 µV or ±0.1%⁽¹⁾

Cold junction compensation (CJC).....±0.5°C/ ±0.9°F
 Sensor wire resistance effect.....negligible⁽²⁾
 Output load effect.....negligible
 Supply voltage effect.....negligible

RFI influence
 (0.15 to 1,000MHz, 10V or V/m).....0.1%⁽¹⁾ (typ.)
 Long-term stability.....0.1%/year⁽¹⁾

Max. wire size.....1.5 mm², AWG16
 Operating temperature.....-40...+85°C
 Humidity.....0 - 95% RH
 Dimensions.....Ø 44 x 26 mm
 Mounting.....DIN B-head or larger
 Tightness (enclosure/terminal).....IP 50/ IP 10
 Material/ Flammability (UL).PC + ABS/V0, Polyamide/V2
 Weight.....50 g

(1) of input span

(2) with equal wire resistance (3-wire connection)

(3) If zero-deflection > 100% of input span:
 add 0.125% of input span/
 25°C or 0.14% of input span/50°F per 100% zero-
 deflection

(4) reference temperature 23°C/ 73°F
 Subject to change without notice

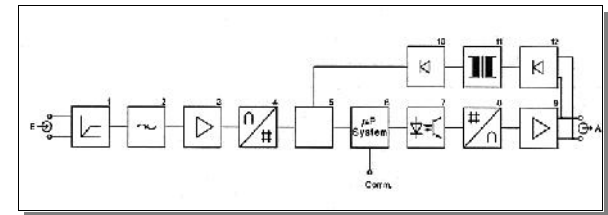
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MT102

BLOCK DIAGRAM

- 1 Input conditioning
- 2 Filter
- 3 Pre-amplifier
- 4 A/D-converter
- 5 Logic control
- 6 µP-system
- 7 Optocoupler
- 8 D/A-converter
- 9 Output amplifier
- 10 Rectifier
- 11 Electric isolation
- 12 Rectifier
- E Input
- A Output
- Comm PC communication port



PROGRAMMING

The optional SMART-2 software allows for easy programming of all parameters of the MT102 transmitter.

