Signal converters - M1 series

M1MPT100 24-240V

- Temperature transmitter for temperatures from -100 up to +700°C
- Multifunction
- Signal type and measuring range preselection via DIP-switch
- Approved for temperature sensors Pt100 and Pt1000
- 2-wire, 3-wire and 4-wire sensors
- 3-way-isolation with secure isolation
- Zoomvoltage 24 to 240V AC/DC
- 1 output channel
- Width 12.5mm
- Industrial design

Technical data

1. Functions
Universal temperature transmitter for Pt100 and Pt1000 temperature sensors. 3-way isolation with secure isolation.

2. Mechanical design
Self-extinguishing plastic housing, IP rating IP40
Mounted on DIN-Rail TS 35 according to EN 50022
Mounting position: any
Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20
Tightening torque: max. 1Nm
Terminal capacity:
- 1 x 0.5 to 2.5mm² with/without multicore cable end
- 1 x 4mm² without multicore cable end
- 2 x 0.5 to 1.5mm² with/without multicore cable end
- 2 x 1.5mm² flexible without multicore cable end

3. Supplying circuit
Supply voltage:
- 24 to 240V AC/DC: terminals 7-8

Tolerance:
- 24 to 240V AC/DC: -15% to +5%

Rated frequency: 48 to 62Hz
Rated consumption: 3.0VA (1.5W)
Duration of operation: 100%
Overvoltage category: II
Surge voltage: 4kV AC, 50Hz

4. Measuring circuit
Measuring input: terminals 1 to 4
Sensor types: Pt100 or Pt1000
- 2-wire, 3-wire, 4-wire

(Selectable via internal DIP-switches)
Measuring range: -100°C to +700°C
Zero point: -100°C to +100°C
- preselection : -100°C, -50°C, 0°C o. +50°C
- zero adjustment: +0K to +50K

Measuring range: 50K to 600K
- range preselection: 50K, 100K, 200K oder 300K
- range adjustment (Span): 100% to 200%

Sensor current
- Pt100: 1mA
- Pt1000: 0.1mA

Line resistance per wire: max.10Ω
Sensor wire break detection: Yes (see output circuit)
Secure isolation by reinforced insulation acc. to DIN EN 61010 for voltages up to 300VAC/DC
Overvoltage category: II
Surge voltage: 2.5kV

5. Output circuit
Output signal: terminals 5-6
(Selectable via internal DIP-switches)

Current signals: 0 to 20mA
4 to 20mA
- Output voltage: max.10V (500Ω/20mA)
- Wire break detection: Yes, ≥22mA

Voltage signal: 0 to 10V
2 to 10V
0 to 5V
1 to 5V
- Output current: max.5mA (2kΩ/10V):
- Wire break detection: Yes, ≥11V

Residual ripple: <10mV$_{eff}$
Secure isolation by reinforced insulation acc. to DIN EN 61010 for voltages up to 300VAC/DC
Overvoltage category: II
Surge voltage: 2.5kV

6. Accuracy
Base accuracy: ±0.1°C
Response time: <50ms
Temperature influence: <0.01°C/K$_{Umg}$ + 0.02% /K of measuring range
Linearity: <0.2% of measuring range

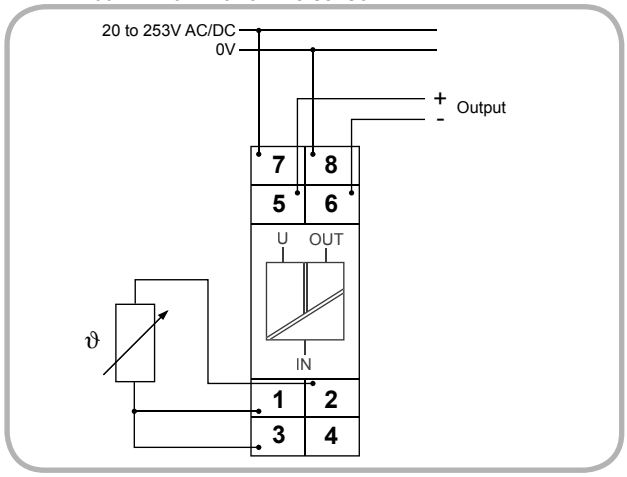
7. Ambient conditions
Ambient temperature: -10 to +60°C
Storage temperature: -35 to +85°C
Transport temperature: -35 to +85°C
Relative humidity: 15% to 85%
Pollution degree: 2

Functions

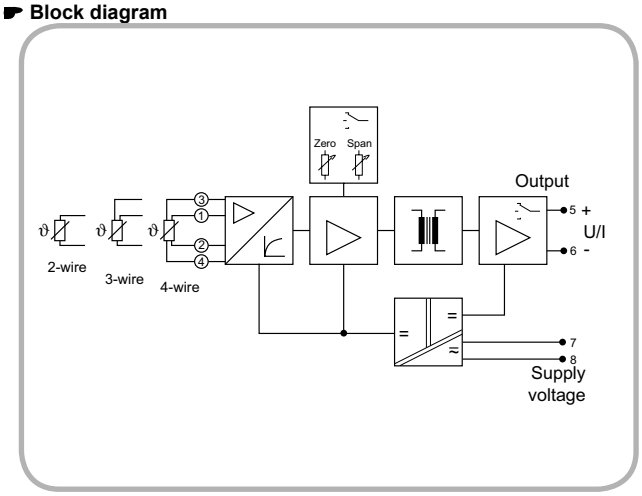
The Temperature Transmitter converts the Pt-sensor signal to 0/4...20 mA and 0...5/10 V standard signals. Input and output range can be set by using DIP switch. The Zero/Span Adjustment on the front allows a measuring range adjustment and the recalibration after a range selection.
The 3-way isolation guarantees reliable decoupling of the sensor circuit from the processing circuit and prevents linked measurement circuits from influencing each other. The Protective Separation with high isolation level provides protection for personnel and downstream devices against impermissibly high voltage.
The sensor signal is amplifiered, linearized, modulated and then electrically decoupled using a transformer. The isolated signal is then made available at the output, demodulated, filtered and amplified.

Connections

M1MPT100 24-240V with 3-wire-sensor



Block diagram



Dimensions