

PROGRAMMABLE HEAD-MOUNT TRANSMITTER type TEHM

page 1 of 2



- output signal 4 ... 20 mA
- powered from current loop
- programmable measuring range
- programmable sensor type: Pt100, Ni100, J, K, N, S, R, B, T
- 2-wire RTD sensor connection arrangement
- internal or external thermocouple cold junction compensation
- for mounting in connection heads type MA

The transmitter TEHM is designed to convert resistance of temperature sensor or voltage of thermocouple sensor to standard current signal 4...20 mA.

Some transducer parameters such as sensor type, measuring range and method of thermocouple cold junction compensation, can be user modified to adapt them to the requirements of the measurement system.

The transmitter is programmed using a personal computer with USB port via **IF-2013U** interface which is also offered.

TEHM is dedicated for mounting inside connection heads type MA.

TECHNICAL DATA

Sensor type, measuring range	programmable, see Table 1
Maximum range, accuracy, thermal drift	see Table 1
Pt100 or Ni100 sensor connection arrangement	2-wire
Pt100 or Ni100 connection resistance (2 and 3-wire)	< 10 Ω (each wire)
Maximum resistance for 2-wire connection which can be corrected with software	0,00 ... 20,00 Ω (sum of both wires)
Bias current of Pt100 or Ni100 sensors	< 0,25mA
Compensation of thermocouple cold junction	internal or external, programmable
Maximum error of thermocouple cold junction internal compensation	± 1 °C
Temperature range of thermocouple cold junction external compensation	-50,0 ... 100,0 °C
Range of temperature offset	-10,0 ... 10,0 °C
Galvanic insulation between input and output terminals)	no
Output signal	4 ... 20 mA or 20 ... 4 mA, programmable
Linear region of output signal	3,8 ... 20,5 mA
Output signal delay after power on	ca. 5 s
Digital filter time constant (1st order filter))	selected: 0,2; 1; 2; 4; 8; 16; 32 s
Sensor failure indication	3,5 or 23 mA, programmable
Power supply (U _s)	8 ... 36 V DC / 24 mA (from current loop)
Output load resistance	$R_L[\Omega] < (U_s[V] - 8) / 0,023$
Ambient temperature	-20 ... +70 °C
Dimensions (diameter x height) / weight	25 x 14 mm / ca. 12 g

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 type **TEHM**

Table 1. Summary of sensor types, input signal ranges and accuracy

Sensor type	Measuring range [°C]	Minimal measuring range [°C] ⁽¹⁾	Accuracy - largest value ^{(2),(3)}	Thermal drift / 10°C - largest value ^{(2),(4)}
B PtRh30-PtRh6	400 ... 1800	200	0,2% or ±5°C	0,07% or ±1,5°C
J Fe-CuNi	-100 ... 1000	50	0,2% or ±1°C	0,07% or ±0,7°C
K NiCr-NiAl	-100 ... 1200	50		
N NiCrSi-NiSi	-100 ... 1300	100		
R PtRh13-Pt	0 ... 1600	200	0,2% or ±2°C	0,07% or ±1,5°C
S PtRh10-Pt	0 ... 1600	200		
T Cu-CuNi	-100 ... 230	50	0,2% or ±1°C	0,07% or ±0,7°C
Pt100	-100 ... 800	30	0,15% or ±0,2°C	0,05% or ±0,1°C
Ni100	-60 ... 180	30		
Voltage [mV]	-10 ... 65 mV	2 mV	0,2% or ±0,05mV	0,07% or ±0,03mV
Resistance [Ω]	60 ... 370 Ω	20 Ω	0,15% or ±0,1 Ω	0,05% or ±0,05 Ω

⁽¹⁾ Minimum difference between upper and lower range value.

⁽²⁾ Error values in [%] are relative to user-defined range.

⁽³⁾ The ambient temperature = 23 °C.

⁽⁴⁾ Thermal drift means that the error may change with the ambient temperature.

ORDERING CODE

(1) (2) (3) (4) (5) (6) (7) (8)

TEHM — 27 — / / — — — —

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| <p>(1) Model of transmitter</p> <p>(2) Sensor type</p> <p>(3) Lower range value</p> <p>(4) Upper range value</p> <p>(5) RTD connection wires resistance (both) or thermocouple cold junction compensation</p> <p>(6) Converting characteristic</p> <p>(7) Time constant of digital filter [s], selected</p> <p>(8) Alarm output signal</p> | <p>27 - 4 ... 20 mA output, without galvanic isolation</p> <p>Pt100, Ni100, B, J, K, N, S, R, T, mV, Ohm</p> <p>value in [°C], [mV] or [Ω] (default lowest value for selected sensor type)</p> <p>value in [°C], [mV] or [Ω] (default highest value for selected sensor type)</p> <p>value in [Ω] (default 0,00)</p> <p>I - internal (automatic), E(...)^(*) - external (user defined)</p> <p>N - normal (4 ...20 mA, 0 ... 10 V), R - reverse (20 ... 4 mA, 10 ... 0 V)</p> <p>0, 1, 2, 4, 8, 16, 32 (0 really means 0,2 s)</p> <p>H - high level (23 mA or 11,5 V), L - low level (3,5 mA or 0 V)</p> |
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^(*) Thermocouple cold junction temperature must be given in brackets.

Default values marked by under-scoring. Factory programmed in case of incomplete ordering code.

Example for order: TEHM-27-Pt100-0-150-(0,8)-N-2-L denotes Pt100 temperature transmitter for range 0 ... 150°C with 4 ... 20 mA signal output. The sensor is connected by two wires (sum of resistances of wires = 0,8 Ω); time constant = 0.5 s; in the case of sensor failure, output current is 3,5 mA.

TEHM-27-K-0-600-I-N-1-H denotes thermocouple K temperature transmitter for range 0 ... 600 °C with 4 ... 20 mA signal output. Internal cold junction compensation; time constant = 1 s; in the case of sensor failure, output current is 23 mA.