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Temperature transmitter

# TCH-21xx -TC

## Instruction Manual


Version 22.05

**1. Safety rules**

- read the Instructin Manual before using the transmitter
- check the connections before power on
- ensure environmental conditions according to specification

**2. Description**

TCH temperature transmitter with 4-20mA output works with thermocouple temperature sensors (TC) **J, K, N, S, R, B** acc. to EN 60584-1.

It converts voltage of thermocouple to standard current signal 4...20mA and derives power from the current loop.

The output signal is a linear function of a sensor temperature.

The transmitter has a plastic enclosure suitable for mounting in type BA connection head or another with mounting holes space of 33mm.

**3. Specification**

| ordering code | measuring range (°C) | thermocouples |
|---|---|---|
| **TCH-2130-** _ | 0 ... 200 | J, K |
| **TCH-2135-** _ | 0 ... 300 | J, K |
| **TCH-2140-** _ | 0 ... 400 | J, K |
| **TCH-2145-** _ | 0 ... 500 | J, K, N |
| **TCH-2150-** _ | 0 ... 600 | J, K, N |
| **TCH-2155-** _ | 0 ... 700 | J, K, N |
| **TCH-2160-** _ | 0 ... 800 | J, K, N |
| **TCH-2165-** _ | 0 ... 1000 | K, N |
| **TCH-2170-** _ | 0 ... 1200 | K, N |
| **TCH-2175-** _ | 300 ... 1400 | S, R, B |
| **TCH-2180-** _ | 300 ... 1600 | S, R, B |
| **TCH-2100-** _ | other according to customer's requirements | |

**Input:**

- temperature sensor ..... TC acc. to EN 60584-1

**Accuracy** (for ambient temperature 23°C□5°C)**:** ..... □0,15% of measuring range□

- temperature drift ..... □0,02% of measuring range/°C

**Sensor bias current** ..... ca. 0,0055mA

**Minimum range value** (URV-LRV) ..... 100°C

**Time constant** ..... 100 ms

**Output:**

**Range** ..... 4-20mA, 2-wire

**Sensor failure indication:**

- sensor circuit opened ..... ca. 24mA

**Power supply (Vs)** ..... 12...36VDC / 25mA

**Load resistance** ..... Ro[□] < (Vs-12)/0,022

**Output signal limit** ..... ca. 24mA

**Protection** ..... against reverse polarity

**General:**

**Ambient temperature:** ..... -20°C...+70°C

**Housing** ..... Ø43 x 29 (70g)

- mounting ..... 2 screws M4, 33mm space

- case material ..... self-extinguishing Noryl

- filling ..... silicone rubber

**Case ingress protection** ..... IP40 (terminals ... IP00)

**Relative humidity:** ..... ..... 0 - 90% RH without condensation

**Electromagnetic compatibility (EMC):** ..... industrial environment

- resistance ..... acc. to EN 61000-6-2:2002(U)

- emissivity ..... acc. to EN 61000-6-4:2002(U)

**4. Installation and connection**

- the sensor wires should be inserted through the central hole
- the transmitter should be mounted in a sensor head with two screws M4
- connect the sensor wires to two **INPUT** terminals with plus and minus polarity
- connect the current loop cables to the two **OUT** terminals with plus and minus polarity
- after correct installation, the transmitter is ready to work,
- the transmitter does not require periodic maintenance.

**Transmitter adjustment**

The transmitter is calibrated for lower and upper range values: Tmin and Tmax.

You can fine the transmitter via multi-turn potentiometer knobs **ZERO** and **SPAN** (see figure).