Overview

This transmitter amplifies a signal from a RTD or linear resistance, and it turns the signal into a current which increases from 4 to 20 milliamperes as the temperature or input signal increases. This industry-standard 4-20mA signal travels thousands of feet over a pair of wires, ignoring electrical interference and bringing the temperature, accurately, into your computer or controller. Drawing power directly from the signal line, only 2 wires are needed for power and signal.

- RTD or Ohm input
- Accurate, Stable 4–20mA Output
- PC and field-programmable
- FM Approved Intrinsically Safe

Converts multiple inputs

Temperature measurement can be done with one of several RTD’s: 100 Ω, 1000 Ω platinum, 100 Ω nickel and 1000 Ω nickel.

Because amplification and conversion of the input signal is performed within a few feet of the sensor, electrical interference in noisy environments is eliminated. The transmitter can be mounted at the field location in a standard DIN form B head or on a DIN rail inside a local box.

Applications

- Single temperature measurement

Configuration

The TT518 is delivered configured to the customer’s specifications, including the transmitter’s measurement range and RTD type.

PC Programming

The TT518 transmitter can be configured via a standard PC using a programming kit. It can be configured before installation or while installed in the process - even in hazardous areas. Communication is 2-way, so set-up and serial/tag numbers can be retrieved from the transmitter.

Electrical Specifications

- Ambient temperature range: -40°C to +85°C
- Common Specifications
  - Supply voltage: 8 -30 VDC
  - Warm-up time: 5 min.
  - Communication interface: PC Interface/Loop Link
  - Signal/noise ratio: Min. 60 dB
  - Response time (programmable): 0.33 sec. to 60 sec.
  - Update time: 135 msec.
  - Calibration temperature: 20 to 28°C
  - Effect of supply voltage change: < 0.005% of span/VDC
  - EMC-Immunity influence: < ±0.5% of span
  - Vibration: IEC 600 68-2-6 Test FC
  - Lloyd’s specification no. 1: 4 g / 2 - 100 Hz
  - Max. wire size: AWG14 (1.5 mm²)
  - Air humidity: 0 - 95% RH
  - Dimensions: Ø1.73 x 0.84 in (Ø44 x 20.2mm)
  - Tightness (enclosure/terminal): IP 68 / IP00
**Inputs (common specifications)**

- **Weight:** 50g
- **Max. offset:** 50% of selected max. value
- **Cable resistance per wire (max.):** 10Ω
- **Sensor current:** >0.2mA, <0.4mA

**Effect of sensor cable resistance:**
(3-wire): < 0.002 Ω/Ω

**Basic accuracy:**
- PD/PF (Pt100/1000): <±0.3°C
- Linear Resistance: <±0.2Ω

**Temperature coefficient:**
- PD/PF (Pt100/1000): <±0.01°C/°C
- Linear Resistance: <±20mΩ/°C

**Current output:**
- Signal range: 4 - 20 mA
- Min. signal range: 16 mA
- Load resistance: < (Vsup. – 8) / 0.023 [Ω]
- Load stability: ± 0.01% of span / 100 Ω

**Sensor error detection:**
- Programmable: 3.5 - 23 mA, or no action
- Namur NE43 Downscale/Upscale: 3.5 mA/ 23 mA

**Approvals:**
- EMC: EN 61326-1
- ATEX.: KEMA 03ATEX1535
- FM: 2D5A7
- CSA: 1125003
- GOST R: Yes
- GOST Ex: Yes
- DNV Marine: Stand. F. Certification No. 2.4

**Input**
The input type is selected to be one of these types:
- RTD (3-wire): PT100, PT1000
- High level

**Output**
The 4-20 mA output follows the TT518 input configuration, reflecting the temperature and/or resistance. The unit is protected against polarity reversal. The output signal action can be reversed with respect to the input signal. Sensor and/or cable errors can be programmed to cause the output to go to a fixed value.