TT508/TT518 Programmable Temperature Transmitter

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 TT508/TT518 is delivered configured to the customer's specifications, including the transmitter's measurement range and RTD type.

PC Programming

The TT508/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.

Specifications

Ambient temperature range: -40°C to +85°C

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 mm^2)

Air humidity: 0 - 95% RH

Dimensions: ∅1.73 x 0.84 in (∅44 x 20.2mm)

Tightness (enclosure/terminal): IP 68 / IP00

Weight: 50g

▼= STANDARD OPTIONS

Specifications subject to change

Inputs (common specifications)

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

Input:

Type	Minimum Value	Maximum Value	Minimum Span
PD (Pt100)	-200°C	+850°C	25°C
PF (Pt1000)	-200°C	+850°C	25°C
Linear Res.	0 Ω	10000 Ω	30 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 (2 or 3-wire): PT100, PT1000

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.

Specification and order options:

TT518	Model Number: TT518 Approvals, fits .236" Probe Max TT508 No Approvals, fits .250" Probe Max
PD	Sensor Type: PD = 100 Ω Platinum RTD (0.00385) PF = 1000 Ω Platinum RTD (0.00385)
(-25/200)	Ranging: Specify temperature range in either °C or °F. For example, -25° to +200°C = 4 to 20 mA.
C	Display Units: C = Celsius F = Fahrenheit
1	Calibration: 1 = Nominal 2 = Matched to sensor ±0.75% of span For other calibration options, contact Minco
Z	Sensor Leads: (3 Lead Recommended) Y = 2-lead RTD (Supplied with jumper wire to connect terminals 3 and 4) Z = 3-lead RTD
TT518PD(-25/200)C1Z : Sample part number	

Note: TT508 does not carry any external approvals, but does allow a .250" probe to pass through its center hole

TT509/TT519 Programmable Temperature Transmitter

Overview

This transmitter amplifies a signal from a thermocouple, 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.

- Thermocouple or Voltage Input
- Accurate, Stable 4–20mA Output
- PC and field-programmable
- Galvanically Isolated

Converts multiple inputs

Temperature measurement can be done with multiple thermocouple types, which boast high operating temperature ranges.

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 TT509/TT519 is delivered configured to the customer's specifications, including the transmitter's measurement range and thermocouple type.

PC programming

The TT509/TT519 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.

Specifications

Ambient temperature range: -40°C to +85°C

Supply voltage: 7.2 -30 VDC

Warm-up time: 5 min.

Communication interface: PC Interface/Loop Link

Signal/noise ratio: Min. 60 dB

Response time (programmable): 1 sec. to 60 sec.

Update time: 440 msec.

Calibration temperature: 20 to 28°C

Effect of supply voltage change: < 0.005% of span/ VDC

EMC-Immunity influence: < ±0.5% of span

Electrical Isolation, test/operation: 1.5kVAC/50VAC

Vibration: IEC 600 68-2-6 Test FC

Lloyd's specification no. 1: 4 g / 2 - 100 Hz

Max. wire size: AWG14 (1.5 mm^2)

Air humidity: 0 - 95% RH

Dimensions: ∅1.73 x 0.84 in (∅44 x 20.2mm)

Tightness (enclosure/terminal): IP 68 / IP00

Weight: 50g

▼= STANDARD OPTIONS

Specifications subject to change

Inputs (common specifications)

Max. offset: 50% of selected max. value

Input:

Type	Minimum Value	Maximum Value	Minimum Span
E	-100°C	+1000°C	50°C
J	-100°C	+1200°C	50°C
K	-180°C	+1372°C	50°C
T	-200°C	+400°C	50°C
B	+400°C	+1820°C	100°C
N	-180°C	+1300°C	50°C
R	-50°C	+1760°C	100°C
S	-50°C	+1760°C	100°C

Basic accuracy:

TC type E, J, K, L, N, T: <±1°C
TC type B, R, S: <±2°C
Voltage: ≤±10uV

Temperature coefficient:

TC type E, J, K, T: <±0.05°C/°C
TC type B, N, R, S: <±0.2°C/°C
Voltage: <±1uV/°C
Cold Junction Compensation: <±1°C

Current output:

Signal range: 4 - 20 mA
Min. signal range: 16 mA
Load resistance : < (Vsup. – 7.2) / 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 06ATEX0062
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:

- Type E, J, K, T, B, N, R, S Thermocouple
- Voltage Input

Output

The 4-20 mA output follows the TT519 input configuration, reflecting the temperature. 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.

Specification and order options:

TT519	Model Number: TT519 Approvals, fits .236" Probe Max TT509 No Approvals, fits .250" Probe Max
K	Sensor Type: E=Type E Thermocouple J=Type J Thermocouple K=Type K Thermocouple T=Type T Thermocouple B=Type B Thermocouple N=Type N Thermocouple R=Type R Thermocouple S=Type S Thermocouple V = Voltage Input
(-25/200)	Ranging: Specify temperature range in either °C or °F. For example, -25° to +200°C = 4 to 20 mA.
C	Display Units: C = Celsius F = Fahrenheit MV = Millivolts
1	Calibration: 1 = Nominal
Y	Sensor Leads: Y = 2-lead
TT519K(-25/200)C1Y: Sample part number	

Note: TT509 does not carry any external approvals, but does allow a .250‴ probe to pass through its center hole

INSTRUMENTS

▼= ***STANDARD OPTIONS***

Specifications subject to change