Programmable Transmitters w/ HART® Protocol

Overview
Models TT521 and TT531 are programmable transmitters designed for process control and other applications. Both models use HART® communication protocol and are PC programmable to accept a signal from a thermocouple, a Resistance Temperature Detector (RTD), or a millivolt signal. Model TT521 transmitter can be mounted at the field location in a standard DIN form B head or on a DIN rail inside a local box (with an AC807 Minco DIN rail adapter). Model TT531 can be mounted vertically or horizontally on a DIN rail.

- T/C, RTD, or mV input
- HART® Communication Protocol
- PC and field-programmable
- Galvanically isolated
- FM Approved Intrinsically Safe
- Single temperature measurement
- Difference temperature measurement
- Average temperature measurement

HART® Communication
By way of 2-wire HART® communication between the process computer and the TT521 or TT531, the transmitter is programmable, readable, and controllable.

- Up to 15 transmitters can be controlled in a multidrop system. (Parallel connection of all transmitters on 2 wires).
- Set-up, configuration and control can be done from a central monitoring room.

When each transmitter is connected to a 2-wire cable, a standard 4-20 mA signal can be used at the same time as the HART® communication.

Specifications

Common Specifications:
Supply voltage: 8.0 - 30 VDC

Communication interface: HART® and PC interface
Temperature coefficient: < ±0.005% of span/ °C
Effect of supply voltage change: < 0.005% of span/ VDC
Max. wire size: AWG14 (1.5 mm²)
Air humidity: 0 - 95% RH
Dimensions:
TT521: Ø1.73 x 0.84 in (Ø44 x 20.2mm)
TT531: 4.29 x 0.93 x 4.09 in (109 x 23.5 x 104mm)
Tightness (enclosure/terminal):
TT521: IP 68 / IP00
TT531: IP50 / IP20
Weight:
TT521: 50 g
TT531: 145 g

AC205817 USB Loop Link Programmer:
TT521 and TT531 transmitters are preconfigured for ease of use. The AC205817 USB Loop Link Programmer allows the user to reconfigure the transmitter using free, Windows-based software.

TC Input:
Minimum measurement range:
Type E, J, K, T: ±0.5°C
Max. offset: 50% of selected max. value
Basic accuracy:
Type E, J, K, T: ± 0.025 °C / °Amb
Cold junction compensation (CJC): ±1.0°C
Temperature coefficient:
Type E, J, K, T: ≤ ±0.1°C
Sensor error detection: yes

RTD-input:

<table>
<thead>
<tr>
<th>RTD type</th>
<th>Minimum value</th>
<th>Maximum value</th>
<th>Minimum span.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD (Pt100)</td>
<td>-200°C</td>
<td>+850°C</td>
<td>25°C</td>
</tr>
<tr>
<td>PF (Pt1000)</td>
<td>-200°C</td>
<td>+850°C</td>
<td>25°C</td>
</tr>
</tbody>
</table>

Basic accuracy PD/PF (Pt100/1000): ≤ ±0.1°C
Temperature coefficient: ≤ ±0.005°C / °C

Current output:
Signal range: 4 - 20 mA
Load resistance: < (Vsup. - 8) / 0.023 [Ω]

Intrinsic Safety data: FM Approved Intrinsically Safe for Class 1, Div. 1, Groups A-D, Entity Approval (pending)

Specifications subject to change
### Specifications and order options

<table>
<thead>
<tr>
<th>Model Number:</th>
<th>TT521 PD(-25/200)C1Y = Sample part number</th>
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<tbody>
<tr>
<td>TT521</td>
<td>Temperature Transmitter with HART® Protocol</td>
</tr>
<tr>
<td>TT531</td>
<td>DIN Rail Temperature Transmitter with HART® Protocol</td>
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</tbody>
</table>

#### Sensor Type:
- **PD** = 100Ω Platinum RTD (0.00385)
- **PF** = 1000Ω Platinum RTD (0.00385)
- **E** = Type E Thermocouple
- **J** = Type J Thermocouple
- **K** = Type K Thermocouple
- **T** = Type T Thermocouple

#### Temperature Range:
Specify temperature range in either °C or °F. For example, -25° to +200°C = 4 to 20 mA.

#### Temperature Units:
- **C** = Celsius
- **F** = Fahrenheit

#### Calibration:
- **1** = Nominal
- **2** = Matched to sensor ±0.75% span
For other calibration options, contact Minco

#### Sensor Leads:
- **Y** = 2-lead RTD (or thermocouple)
- **Z** = 3-lead RTD
- **X** = 4-lead RTD

### Dimensions in inches (mm)

- 1.30 (33.0)
- 0.255 (6.48) DIA.
- 1.74 (44.2)
- 0.93 (23.5)
- 4.29 (109.0)
- 3.54 (90.0)

### Wiring Diagrams

#### RTD to 4...20 mA

#### TC to 4...20 mA

#### HART® Multidrop Wiring Diagram

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Specifications subject to change