# Smart Temperature Transmitters

## TX13

- K, J, N, E, T, R, S Thermocouples and mV Inputs
- Pushbutton Configuration
- 56 Preprogrammed Ranges Ready-to-Use
- User Trim—Null Out Sensor Error
- Programmable Burnout with Sensor Fail Indicator
- Galvanically Isolated

The TX13 is a "smart" in-head transmitter that accepts thermocouple temperature sensors and converts sensor output over a configured range to a standard industrial (4 to 20 mA) transmission signal.

A simple pushbutton operation allows the user to select TC type, burnout direction, select fixed ranges and trim 4 and 20 mA points. The in head transmitter incorporates the latest digital technology to ensure accurate drift-free performance.

If required the desired range can be specified at the time of order, removing the need for user configuration. If the range is not specified then the transmitter will be shipped with the default range of 0 to 1000°C (32 to 1832°F) Type K.

## Specifications

**Isolation:** Tested to 250 Vdc
**Sensor Burnout:** Either up or down scale output
**Cold Junction:**
**Range:** -40 to 85°C (-40 to 185°F)
**Accuracy:** ±0.5°C (0.9°F)
**Tracking:** ±0.05°C/°C (0.9°F/°F)
**Stability:**
**Offset:** 0.1°C/°C (0.18°F/°F)
**Span:** 0.05°C/°C (0.18°F/°F)

## Output

**Output Type:** 2 wire, 4 to 20 mA current loop
**Output Range:** 4.0 to 20.0 mA
**Output Connection:** Screw terminal
**Maximum Output:** 21.5 mA (in high burnout condition)
**Minimum Output:** 3.8 mA (in low burnout condition)
**Accuracy:** (mA output/2000) or 5 uA (whichever is the greater)
**Loop Voltage Effect:** 0.2 uA/V
**Thermal Drift:** 1 uA/°C
**Maximum Output Load:** [(Vsupply-10)/20] kΩ (Example: 700 Ω @ 24V)
**Update Time:** 500 mS
**Response Time:** 1 second
**Start Up Time:** 4 seconds (1 out < 4 mA during start up)
**Warm-Up Time:** 1 minute to full accuracy
**Power Supply:** 10 to 30 Vdc

## Environmental

**Ambient Operating Range:** -40 to 85°C (-40 to 185°F)
**Ambient Storage Temperature:** -50 to 90°C (-58 to 194°F)
**Ambient Humidity Range:** 10 to 90% RH non-condensing

## Physical

**Dimensions:** 43 Dia x 21 mm H (1.7 x 0.8")
**Weight:** 31 g (0.07 lb) (encapsulated)



TX13 shown actual size.

### Approvals

**EMC - BS EN 61326: 1998:** Electrical equipment for measurement control and laboratory use
**ANNEX A:** Immunity test requirements for equipment intended for use in industrial locations
**ANNEX F:** Test configurations, operational conditions and performance criteria for transducers with integrated or remote signal conditioning
**IEC 61000-4-2:** Electrostatic discharge
**IEC 61000-4-3:** EM field
**IEC 61000-4-4:** Transient burst (output)
**IEC 61000-4-5:** Surge (output)
***Note:*** *Sensor input wires to be less than 3 m (10') to comply.*

**Specifications @ 20°C–Input**

| Sensor | Range °C (°F) | Accuracy |
|---|---|---|
| K | -200 to 1370 (-328 to 2498) | ±0.5°C (0.9°F) or ±0.1% whichever the greater |
| J | -100 to 1200 (-148 to 2192) | ±0.5°C (0.9°F) or ±0.1% whichever the greater |
| E | -100 to 1000 (-148 to 1832) | ±0.5°C (0.9°F) or ±0.1% whichever the greater |
| N | -180 to 1300 (-292 to 2372) | ±0.5°C (0.9°F) or ±0.1% whichever the greater |
| T | -100 to 400 (-148 to 752) | ±0.5°C (0.9°F) or ±0.1% whichever the greater |
| R | -10 to 1760 (14 to 3200) | ±0.5°C (0.9°F) or ±0.1% whichever the greater over range 800 to 1600 |
| S | -10 to 1760 (14 to 3200) | ±0.5°C (0.9°F) or ±0.1% whichever the greater over range 800 to 1600 |
| mV | -10 to 70 (14 to 158) | ±0.02% of full scale |

## To Order *Visit omega.com/tx13 for Pricing and Details*

| Model No. | Description |
|---|---|
| TX13 | Thermocouple/mV smart transmitter |
| TX2-100 | 2-conductor shielded cables, 30 m (100') |
| PSR-24S | Regulated power supply, 24 Vdc, 400 mA, screw terminal |
| PSR-24L | Regulated power supply, 24 Vdc, 400 mA, UL, stripped leads |
| PSR-24L-230 | Regulated power supply, 24 Vdc, 400 mA, stripped leads, 230 Vac input, CE |
| TX-SCALED | Scaling charge for factory set up of range (specify temperature range) |

*Comes complete with operator's manual.*
***Ordering Example: TX13,*** *thermocouple smart transmitter.*

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## OMEGA Engineering:

CF-000-RTD-2-60-1 NHXH-K-M KFH-3-120-C1-11L1M2R PX409-100GUSBH SMTC-15M WTJ-HD-72-S ITHX-SD-5 SHX-U-M MSS-04 P13R-005 PX309-030GI PX309-500GI USHX-K-M D8100 HPC-CH-S LC201-300 PX119-1KGI SMPW-E-F 1PT100KN1515CLA 5TC-TT-T-30-36 MSS-02 PX309-100G5V TT-T-30-SLE-500 MPJ-U-F OS136A-1-MA TC-K-NPT-U-72 HSRTD-3-100-A-40-E MTC-12-MC PX409-005GI PX835-005GI