

*Engineered for high-performance sensing in demanding fluid and gas environments*

## Description

The T450E is a temperature transmitter engineered to deliver accurate temperature data. It combines precision measurement with direct, fast-response temperature sensing in a single, compact stainless-steel enclosure. Designed for harsh industrial, energy, mobility and automation applications, the T450E delivers stable, drift resistant performance even in aggressive media with high cycle environments.



## What makes T450E Different?

- **Engineered Evolution:** Represents the next generation of compact temperature transmitters
- **Durable Construction:** Stainless steel body provides ability to perform in harsh and demanding environments
- **Wide Output Flexibility:** Available in CAN J1939, CANopen, and analog formats -ideal for modern platforms

## Applications

- Hydraulic and Pneumatic System
- Oil & Gas, BOP
- Data Acquisition System
- Heavy Mobile Equipment
- OEM Factory Automation
- Wellhead Tubing & Casing
- Fracking Trucks
- Natural Gas Compressors & Turbines
- Mobile Hydraulics
- Tank Monitoring



## General Specifications

| Parameter                | Specifications   |
|--------------------------|--|
| Temperature Range        | From -65°F to 300°F (-55°C to +150°C)                    |
| Probe Length (L2)        | 1.0"to 4.0" (custom lengths available)                   |
| Pressure Port Thread     | ¼" NPT, ¼" BSPP, SAE-4, SAE-6                            |
| Electrical Connector     | M12, Deutsch, DT04-4P, Packard/Metri-Pack, Cable Pigtail |
| Sealing Rating           | IP67/IP69 (depending on connector)                       |
| Material of Construction | 316 Stainless Steel                                      |
| Approvals                | ETL, CE, IECEx   |

## Technical Specifications

|  |  |
|--|--|
| Input:   | Excitation Voltage:<br>T455E: 8 to 30 VDC<br>T452E: 7 to 30 VDC<br>T454E: 4.5 to 5.5 VDC   |
| Supply Current:  | T455E: 22mA Max.<br>T452E: 10mA Max.<br>T455E: 22mA Max.   |
| Output:  | T455E: 4 - 20 mA<br>T452E: 1 - 5 VDC *<br>T454E: 0.5 - 4.5 VDC<br>* for special output voltage range consult factory for minimum excitation voltage  |
| Accuracy Temperature:                                  | ±1.2°F or 1% whichever is greater.   |
| Temperature:   | Process Temperature: Media: -65 to +300°F (-55 to +150°C).<br>Electronic Case / Ambient range: -40°C to +80°C  |
| Operating external Pressure:                           | 10 kpsi  |
| Enclosure:   | All welded 316L stainless steel. IP66 & IP67 and NEMA 4X rated.  |
| Material of Construction / Wetted material / Fittings: | 316 L stainless steel  |
| Sensors:   | PT1000 Temperature Sensor inside tube  |
| Shock:   | 50 g's, 11 mS, MIL-STD 202 Method 213, Cond. G   |
| Vibration:   | 10 g's, 10-500 Hz, MIL-STD 202, Method 204, Cond. A  |
| Approvals:   | Hazardous Location Approval's as below   |
| Intertek: ETL  | INTRINSIC SAFETY<br>Class I, Div 1, Groups A, B, C, and D<br>Ex ia IIC T4 Ga<br>Class I, Zone 0, AEx ia IIC T4 Ga<br>IS,<br>Class I, Div 1, Groups C, and D<br>Ex ia IIB T4 Ga<br>Class I, Zone 0, AEx ia IIB T4 Ga  |
| ATEX/IECEx:  | II 1 G<br>Ex ia IIC T4 Ga<br>-40°C ≤ Tamb ≤ +80°C<br>Ex ia IIB T4 Ga<br>-40°C ≤ Tamb ≤ +120°C<br>ETL:xxxxxxxxxxxxx,<br>IP66 & IP67<br>IECEx:xxxxxxxxxxxxx  |
| Compliance:  | CE, RoHS, REACH, NACE  |
| EMC: Electromagnetic Compatibility (EMC)               | IEC61326-1/EN 55011: CISPR 11/CISPR16<br>Conducted emission and radiated emission for class A limits<br>IEC/EN 61000-4-2: Electrostatic discharge (ESD) test<br>IEC/EN 61000-4-3: Radiated RF, EM field immunity<br>IEC/EN 61000-4-4: EFT(burst) test<br>IEC/EN 61000-4-5: Surge test<br>IEC/EN 61000-4-6: Conducted RF immunity |
| Weight:  | Approx. 430 gms  |

## Product Configurator

|          |       |    |    |   |    |      |
|----------|-------|----|----|---|----|------|
| Example: | T455E | T6 | VZ | F | P4 | L2JA |
|----------|-------|----|----|---|----|------|

### Base Model

|       |                                   |
|-------|-----------------------------------|
| T455E | 4 - 20 mA Digital Amplifier, I.S. |
| T454E | 0.5-4.5V Ratiometric Output, I.S  |
| T452E | 1-5 VDC Digital Amplifier I.S.    |

### Electrical Connection

|       |  |
|-------|--|
| Blank | 1/2"-14 NPT Male conduit                               |
| T6    | M20 x 1.5 Male conduit                                 |
| T2    | 6 Pin Connector, SS Hermetic                           |
| T4    | M12 (4Pin) connector                                   |
| T5    | Standard DIN connector (DIN EN 175301-803, TYPE A)     |
| H3    | Watertight Gland, 1 Meter Cable (STD)                  |
| H4    | Subminiature DIN connector (DIN EN 175301-803, TYPE C) |
| T3    | 6 Pin Connector, Alum. Flange Mount                    |
| T7    | M8 (4 Pin) connector                                   |
| T8    | 4 Pin Connector, SS Hermetic                           |

### Temperature Unit

|    |            |
|----|------------|
| °F | Fahrenheit |
| °C | Celsius    |

### Temperature Range

|   | °C  | °F  |
|---|-----|-----|
| V | -55 | -65 |
| N | -50 | -60 |
| K | -40 | -40 |
| H | -30 | -20 |
| G | -20 | 0   |
| D | -10 | 20  |
| 0 | 0   | 32  |
| 1 | 10  | 50  |
| 2 | 20  | 70  |
| 3 | 30  | 85  |
| 4 | 40  | 100 |
| 5 | 50  | 120 |
| 6 | 60  | 140 |
| 7 | 70  | 160 |
| 8 | 80  | 180 |
| 9 | 90  | 200 |
| X | 100 | 210 |
| Y | 110 | 210 |
| Z | 120 | 250 |
| B | 130 | 260 |
| E | 140 | 280 |
| M | 150 | 300 |

### Custom Options

|      |  |
|------|--|
| Lx   | Custom <u>Probe Length</u> (Up to 4inches) [STD: 1inch]<br>Example: L2: 2in, L3: 3 in, L4: 4in   |
| Vx   | Custom <u>Voltage Outputs</u> Up to 11VDC. Consult Factory. Voltage options in Volts as below: V1=0.5-4.5, V2=0.5-5.5, V3=0-6, V4=0-10, V5=0-10, V6=1-11, V7=0-11, V8=0-5, V9=1-6, V10=0.2-10                    |
| A1   | <u>Accuracy</u> ±1.2°F or 1% whichever is greater, Add A1 for 0.5%   |
| Jxxx | CAN: Twisted Shielded Cable with 20-24 AWG Leads (in inches)<br>Analog: Jacketed/Shielded Cable with 18 AWG Leads (in inches)<br>(STD - 78 inch w/o Jxxx, Available on Conduit and gland electrical connections) |
| D4   | 4 Pin Deutsch Connector DT04-4P (for T-Analog)   |
| Z1   | Oxygen cleaning  |
| Qxx  | Special request (cunsult factory)<br>[-Q1: Basic Function/Ord Loc]   |

### Process Connection

|       |                          |
|-------|--------------------------|
| Blank | 1/4" NPT, Male           |
| P4    | 1/2" NPT, Male           |
| P10   | G 1/4, washer seal, Male |
| P11   | G 1/2, Washer seal, Male |

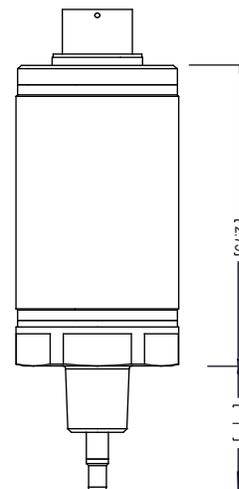
## Technical Drawing

### Wiring Connections:

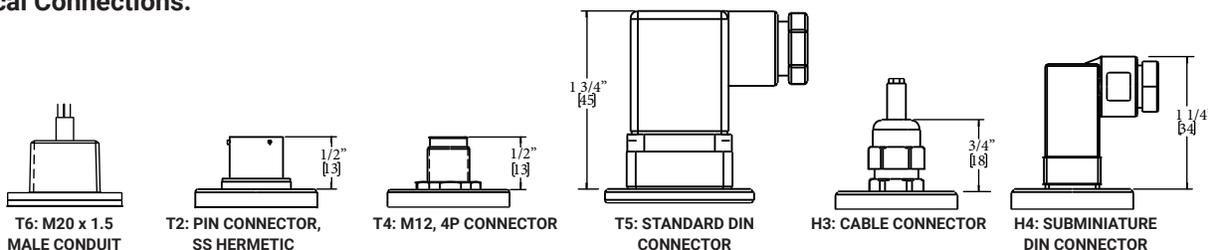
| JACKETED/SHIELDED CABLE WIRE CONNECTIONS |              |              |              |                 |
|--|--------------|--------------|--------------|-----------------|
| MODEL #                                  | RED          | BLACK        | GREEN        | WHITE           |
| T455E                                    | + EXCITATION | - EXCITATION | EARTH GROUND | NOT INCLUDED    |
| T452E                                    | + EXCITATION | - EXCITATION | EARTH GROUND | VOLTAGE O/P     |
| T454E                                    | + EXCITATION | - EXCITATION | EARTH GROUND | RATIOMETRIC O/P |

| ENTITY PARAMETERS (supply and signal barriers combined) - IIB |       |                       |                  |                         |      |        |
|---|-------|-----------------------|------------------|-------------------------|------|--------|
| TYPE  | MODEL | SUPPLY/SIGNAL BARRIER |                  | TEMPERATURE TRANSMITTER |      |        |
|   |       | Vmax (Ui)             | I <sub>max</sub> | Ci                      | Li   | Pi max |
| Current Output  | T455E | 28 VDC                | 93 mA            | 160.584 nF              | 0 μH | 651 mW |
| Voltage Output  | T452E | 28 VDC                | 93 mA            | 188.184 nF              | 0 μH | 651 mW |
| Ratiometric Output  | T454E | 20VDC                 | 93 mA            | 167.520 nF              | 0 μH | 465 mW |

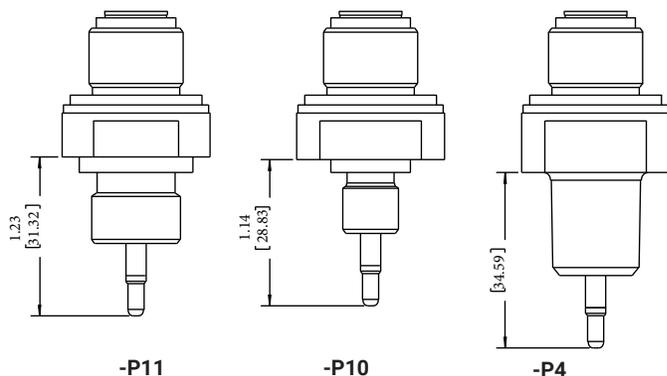
| ENTITY PARAMETERS (supply and signal barriers combined) - IIC |       |                       |                  |                         |      |        |
|---|-------|-----------------------|------------------|-------------------------|------|--------|
| TYPE  | MODEL | SUPPLY/SIGNAL BARRIER |                  | TEMPERATURE TRANSMITTER |      |        |
|   |       | Vmax (Ui)             | I <sub>max</sub> | Ci                      | Li   | Pi max |
| Current Output  | T455E | 28 VDC                | 65 mA            | 28.584 nF               | 0 μH | 455 mW |
| Voltage Output  | T452E | 28 VDC                | 65 mA            | 56.184 nF               | 0 μH | 455 mW |
| Ratiometric Output  | T454E | 20VDC                 | 92 mA            | 47.520 nF               | 0 μH | 465 mW |



### Electrical Connections:



### Process Connections:



\* 1" probe shown for reference