# proSense® Temperature Transmitters - Head Mounted

## Features - Non-programmable Models

**XTH**

- Sensor Types:
- Models for thermocouple Types J, K, or T
- Select from a variety of pre-configured measuring ranges
- Internal cold junction compensation for thermocouple input models
- Transmitter is powered by 8-35 VDC and is reverse- polarity protected
- Output is linearized 2-wire 4-20mA current loop

- Up scale signal for sensor lead break or short circuit detection (NAMUR NE 43 fault response)
- Mounts in ProSense connection head or any DIN Form B sensor head
- 2 kVAC isolation between input and output

| ProSense Head Mounted Temperature Transmitters | | | | | |
|---|---|---|---|---|---|
| **Part Number** | **Input Type** | **Fixed Measuring Range** | **Pcs/Pkg** | **Wt(lb)** | **Price** |
| XTH-0100F-J | Type J thermocouple (to NIST Monograph 175, IEC584) | 0 to 100°F (-17.8 to 37.8°C) | 1 | 0.09 | $88.00 |
| XTH-0200F-J | | 0 to 200°F (-17.8 to 93.3°C) | 1 | 0.09 | $88.00 |
| XTH-0300F-J | | 0 to 300°F (-17.8 to 148.9°C) | 1 | 0.09 | $88.00 |
| XTH-0500F-J | | 0 to 500°F (-17.8 to 260°C) | 1 | 0.09 | $88.00 |
| XTH-0800F-J | | 0 to 800°F (-17.8 to 426.7°C) | 1 | 0.09 | $88.00 |
| XTH-01000F-J | | 0 to 1000°F (-17.8 to 537.8°C) | 1 | 0.09 | $88.00 |
| XTH-0100F-K | Type K thermocouple (to NIST Monograph 175, IEC584) | 0 to 100°F (-17.8 to 37.8°C) | 1 | 0.09 | $88.00 |
| XTH-0200F-K | | 0 to 200°F (-17.8 to 93.3°C) | 1 | 0.09 | $88.00 |
| XTH-0300F-K | | 0 to 300°F (-17.8 to 148.9°C) | 1 | 0.09 | $88.00 |
| XTH-0500F-K | | 0 to 500°F (-17.8 to 260°C) | 1 | 0.09 | $88.00 |
| XTH-0800F-K | | 0 to 800°F (-17.8 to 426.7°C) | 1 | 0.09 | $88.00 |
| XTH-01000F-K | | 0 to 1000°F (-17.8 to 537.8°C) | 1 | 0.09 | $88.00 |
| XTH-01500F-K | | 0 to 1500°F (-17.8 to 815.5°C) | 1 | 0.09 | $88.00 |
| XTH-02000F-K | | 0 to 2000°F (-17.8 to 1093.3°C) | 1 | 0.09 | $88.00 |
| XTH-N2000F-T | Type T thermocouple (to NIST Monograph 175, IEC584) | -200 to 0°F (-128.9 to -17.8°C) | 1 | 0.09 | $88.00 |
| XTH-N100100F-T | | -100 to 100°F (-73.3 to 37.8°C) | 1 | 0.09 | $88.00 |
| XTH-0200F-T | | 0 to 200°F (-17.8 to 93.3°C) | 1 | 0.09 | $88.00 |

*Click on the thumbnail or go to https://www.automationdirect.com/VID-TE-0002 for a short video on DIN Rail Mounted Temperature Transmitters*

*Click on the thumbnail or go to https://www.automationdirect.com/VID-TE-0006 for a short video on Remote Temperature Sensing*

*Scan the QR Code above or click to view the Fixed Range XTH Series product insert.*

# proSense® Temperature Transmitters - Head Mounted

## ProSense Head Mounted Temperature Transmitters General Specifications

| | | XTH (J Series) | XTH (K Series) | XTH (T Series) |
|---|---|---|---|---|
| **Output** | *Output Signal* | 4-20 mA | | |
| | *Signal Transmission* | Output linear to temperature | | |
| | *Fault Signal* | Under ranging / Standard / 3.8 mA<br>Over ranging / Standard / 20.5 mA<br>Sensor break; sensor short circuit down scale / To NAMUR NE 43 / m3.6 mA (only applicable to XTH-0-UNV)<br>Sensor break; sensor short circuit up scale / To NAMUR NE 43 / M21.0 mA | | |
| | *Max. Load Impedance* | (Vpowersupply- 8V) / 0.025 A e.g. (24v-8V)/0.025A=640 Ω | | |
| | *Galvanic Isolation* | 2 kV AC (input/output) | | |
| | *Input Current Requirement* | ≤ 3.5 mA | | |
| | *Current Limit* | ≤ 25 mA | | |
| | *Switch on Delay* | 4 seconds (during power up output current = 3.8 mA) | | |
| | *Response Time* | 1 second | | |
| | *Digital Filter* | N/A | | |
| | *Power Supply* | 8 to 35 VDC, polarity protected | | |
| | *Allowable Ripple* | ≤ 5 V with power supply ≥ 13; Max. frequency = 1 kHz | | |
| **Accuracy** | *Reference Conditions* | Calibration temperature 73.4°F w 9°F (23°C w 5°C) | | |
| | *Maximum Measuring Error* | 0.9°F (0.5°C) or 0.08% | | |
| | *Influence of Power Supply* | ≤ w 0.01%/V deviation from 24 V | | |
| | *Load Influence* | ≤ w 0.02%/100 Ω | | |
| | *Long Term Stability* | ≤ 0.1 K / Year or m 0.05% / Year | | |
| **Installation** | *Orientation* | No restrictions | | |
| | *Location* | Connection head according to DIN 43 729 Form B | | |
| **Environmental** | *Ambient* | -40 to 185°F (-40 to 85°C) | | |
| | *Storage* | -40 to 212°F (-40 to 100°C) | | |
| | *Climate Class* | As per IEC 60 654-1, class C | | |
| | *Ingress Protection* | IP00 / IP66 installed in appropriate housing | | |
| | *Shock and Vibration* | 4g / 2 to 150 Hz as per IEC 60 068-2-6 | | |
| | *EMC Immunity* | See Table 2 | | |
| | *Moisture Condensation* | Allowable | | |
| **Construction** | *Materials* | Housing: Polycarbonate; Potting: Polyurethane | | |
| | *Terminals* | Cable up to max. 1.75 mm² (16 AWG), secure screws | | |
| **Approvals** | | CE, UL recognized (UL 3111-1), File # E311366, RoHS | | |

## Table 1 - Maximum Measuring Error XTH-0-UNV

| | Type | Measurement Accuracy* |
|---|---|---|
| **Thermocouple TC** | K, J, T, E, L, U<br>N, C, D<br>S, B, R | typ. 0.9°F (0.5°C) or 0.08%<br>typ. 1.8°F (1.0°C) or 0.08%<br>typ. 3.6°F (2.0°C) or 0.08% |
| | **Measurement Range** | **Measurement Accuracy*** |
| **Resistance Transmitter (Ω)** | 10 to 400 Ω<br>10 to 2000 Ω | ± 0.1 Ω or 0.08%<br>± 1.5 Ω or 0.12% |
| **Voltage Transmitters (mV)** | -10 to 100 mV | ± 20 µV or 0.08% |

## Table 2 - IEC Immunity

| | | | |
|---|---|---|---|
| **Discharge of Static Electricity** | IEC 61000-4-2 | 6 kV cont., 8 kV air | N/A |
| **Electromagnetic Fields** | IEC 61000-4-3 | 80 to 1000 Hz | 10 V/m |
| **Burst (Signal)** | IEC 61000-4-4 | 1 kV; 2 kV (B)** | N/A |
| **Transient Voltage** | IEC 61000-4-5 | 1 kV unsym. / 0.5 kV sym. | N/A |
| **HF Coupling** | IEC 61000-4-6 | 0.15 to 80 MHz | 10V |

*** self recovery*

*\* % is related to the adjusted measurement range. The value to be applied is the greater.*

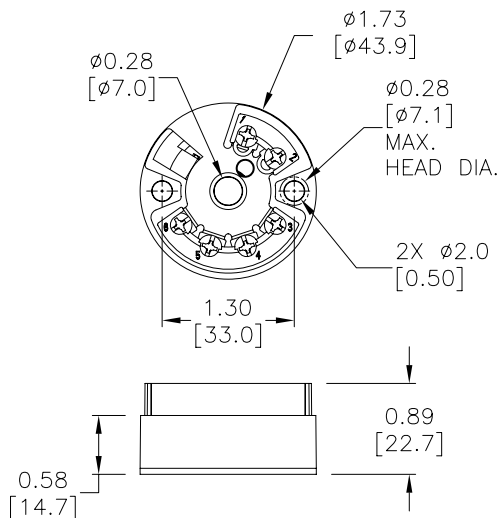# prosense® Temperature Transmitters - Head Mounted
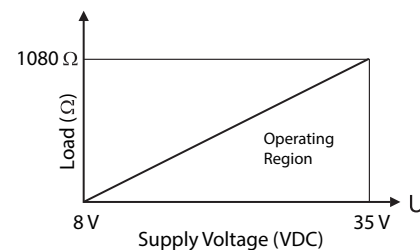
## Wiring

*XTH J, K & T - Thermocouple Input*
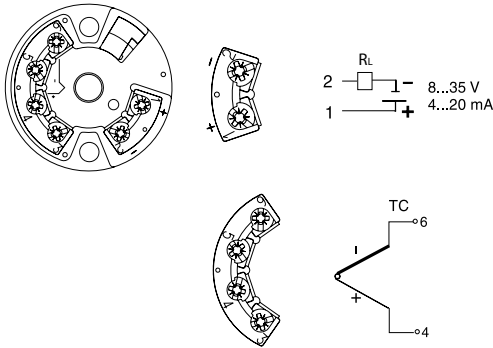


## Dimensions

*inches [mm]*



## Load Impedance



*RLmax = (Vpowersupply-8V) / 0.025A (current output)*
*e.g. (24V - 8V) / 0.025A = 640 Ω*

## Application

ProSense head mounted transmitters can be easily added in the field to a ProSense connection head probe. Just order a pre-assembled ProSense connection head probe and replace the internal terminal block with an XTH series transmitter and included mounting hardware.



*Pre-Assembled ProSense Connection Head Temperature Probe*

*XTH Series Transmitter*

# prosense® Temperature Transmitter Configuration Software

Quick and easy configuration with Free XT-SOFT and ProSense Field Device Configurator Software – NO decade box, meters, or signal generators needed!

## Overview

XT-SOFT PC software is a utility program that allows users to easily configure ProSense XTD-0-UNV, and XTP series temperature transmitters and ETS series digital temperature sensors.

ProSense Field Device Configurator is a utility program that allows users to easily configure, monitor, and retrieve diagnostic information from the ProSense XTH2 and XTD2 series temperature transmitters.

Download your free copy of XT-SOFT and ProSense Field Device Configurator at www.AutomationDirect.com and connect your transmitter to the PC through an XT-USB configuration cable (purchased separately). An XT-M12 adapter is also required when connecting to an XTP series transmitter.

XT-SOFT System Requirements:

• Windows 10, 11
• 1 USB 2.0 Port
• 128 MB hard disk space

ProSense Field Device Configurator System Requirements:

• Windows 10, 11
• 1 USB 2.0 Port
• 25 MB hard disk space
• Microsoft .Net Framework ≥4.8
• PDF Reader

prosense® XT-SOFT

## XTP Series Configuration Parameters (Requires XT-SOFT):

• Measuring unit (°C/°F)
• Measuring range limits  -50 to 150°C (-58 to 302°F)
• Fault condition reaction (≤ 3.6 mA or ≥ 21.0 mA)
• Output (4-20 mA or 20-4 mA)
• Filter (0 to 8s)
• Offset (-9.9 to +9.9 K)
• Measurement point identification/TAG
• Output simulation drives output to a fixed value

XTP Series

## XTH & XTD Configuration Parameters: (Requires XT-SOFT)

• Sensor Type:
• Thermocouple Types J, K, T, E, N, R, S, U, B, C, D, L
• RTD Types Pt100, Pt500, Pt1000, Pt50, Ni100, Ni120, Ni500, Ni1000
• Linear Resistance 10 to 400 Ohms, 10 to 2000 Ohms
• Millivolts -10 to 100 mV
• Wiring connection 2, 3, or 4-wire (RTD or Linear Resistance only)
• Measuring range start and end points
• Selectable units of °F or °C
• Choose from internal or external cold junction compensation (TC only)
• Wire resistance compensation (2-wire RTD or Linear Resistance only)
• Output action of 4-20 mA or 20-4 mA
• Selectable up scale or down scale signal for sensor lead break or short circuit detection (NAMUR NE43 fault response)
• Adjustable digital filter time constant to compensate for undesirable input fluctuations
• Zero point correction offset factor in °F or °C

XTH Series          XTD Series

# prosense® Temperature Transmitter Configuration Software

## XTH2 & XTD2 Configuration Parameters (Requires Field Device Configurator):

- Sensor Type:
- Thermocouple Types J, K, T, E, N, R, S, U, B, C, D, L
- RTD Types Pt100, Pt500, Pt1000, Pt50, Ni100, Ni120, Ni500, Ni1000
- Linear Resistance 10 to 400 Ohms, 10 to 2000 Ohms
- Millivolts -20 to 100 mV
- Wiring connection 2, 3, or 4-wire (RTD or Linear Resistance only)
- Measuring range start and end points
- Selectable units of °F, °C, K, Ohm and mV
- Choose from internal or external cold junction compensation (TC only)
- Wire resistance compensation (2-wire RTD or Linear Resistance only)
- Output action of 4-20 mA or 20-4 mA
- Selectable up scale or down scale signal for sensor lead break or short circuit detection (NAMUR NE43 fault response)
- Adjustable digital filter time constant to compensate for undesirable input fluctuations
- Zero point correction offset factor in °F or °C

XTH2 Series        XTD2 Series

## ETS Series Configuration Parameters (Requires XT-SOFT):

- Basic Settings:
- Measuring unit (°C/°F/K)
- Offset: Configure zero point: ±18°F (±10°C/K)
- Display - Measured value display
        Measured value display rotated 180° Set switch point display
        Set switch point display rotated 180° Display off
        Display off rotated 180°
- Damping: display value, output signal: 0 (no damping) to 40s (in increments of 1 second)
- DESINA® - PIN assignment of the M12 connector is in accordance with the guidelines of DESINA
- Settings for Switch Output:
- Switching characteristic - Window/NC contact
        Hysteresis/NC contact
        Window/NO contact
        Hysteresis/NO contact
        Analog output (if applicable)
- Switch point value: -57.1 to 302°F (-49.5 to 150°C) in increments of 0.18°F (0.1°C)
- Switch-back point value: -58 to 300°F (-50 to 149°C) in increments of 0.18°F (0.1°C)
- Switch point delay: 0 to 99s in increments of 0.1s
- Switch-back point delay: 0 to 99s in increments of 0.1s
- Settings for Analog Output (if applicable):
- Value for 4mA: -58 to 266°F (-50 to 130°C) Lower range value in increments of 0.18°F (0.1°C)
- Value for 20mA: -22 to 302°F (-30 to 150°C) Upper range value in increments of 0.18°F (0.1°C)
- Error current - Current value in event of error:
        Minimum = ≤ 3.6 mA
        Maximum = ≥ 21.0 mA
        HOLD = last value
- Settings for Service Functions:
- Locking code - Enter the locking code for enabling the device.
- Change locking code - Freely selectable code 1 to 9999. 0 = no locking
- Simulation output 1 or 2 - OFF: No simulation
        OPEN: Switch output open
        CLOSE: Switch output closed
        Simulation values for analog output in mA (3.5 / 4.0 / 8.0 / 12.0 / 16.0 / 20.0 / 21.7)

ETS Series

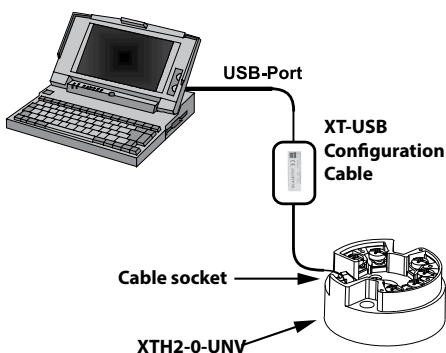# prosense® Temperature Transmitter Configuration Software
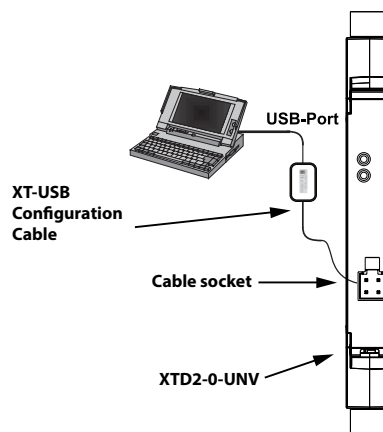
**prosense® XT-SOFT**

*XT-SOFT*　　　　*XT-USB*　　　　*XT-M12*

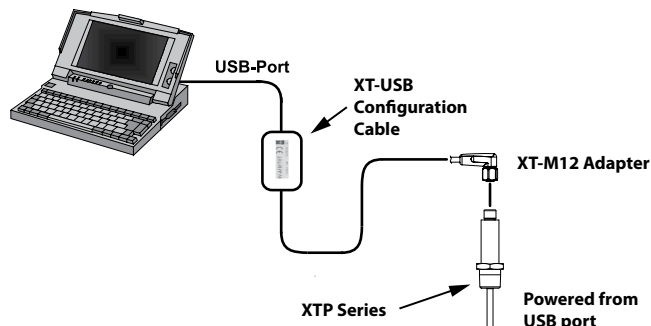| Part No. | Description | Pcs/Pkg | Wt(lb) | Price |
|---|---|---|---|---|
| **XT-SOFT** | ProSense configuration software, free download. For use with ProSense temperature transmitter XTP series, digital temperature sensor ETS series and models XTH-0-UNV, XTD-0-UNV. | 1 | N/A | Free Download |
| **Field Device Configurator** | ProSense configuration software, free download. For use with ProSense temperature transmitter series XTH2-0-UNV and XTD2-0-UNV. | 1 | N/A | Free Download |
| **XT-USB** | ProSense configuration cable, USB to keyed 4-pin male, 7.9 ft/2.4 m cable length. For use with XT-SOFT and Field Device Configurator software, ProSense temperature transmitter XTP series, digital temperature sensor ETS series and models XTH-0-UNV, XTD-0-UNV, XTH2-0-UNV, and XTD2-0-UNV. | 1 | 0.4 | $113.00 |
| **XT-M12** | ProSense adapter, keyed 4-pin female to 4-pin M12. For use with ProSense temperature transmitter XTP series and XT-USB cable. | 1 | 0.1 | $19.00 |

## Connection Examples

**XTH2-0-UNV Connection**
**(Requires Field Device Configurator)**

USB-Port

XT-USB Configuration Cable

Cable socket

XTH2-0-UNV

**XTD2-0-UNV Connection**
**(Requires Field Device Configurator)**

USB-Port

XT-USB Configuration Cable

Cable socket

XTD2-0-UNV

**XTP Series Connection (Requires XT-SOFT)**
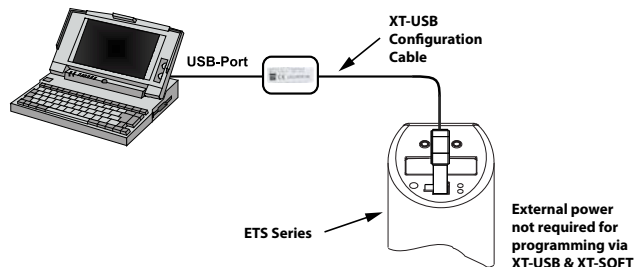
USB-Port

XT-USB Configuration Cable

XT-M12 Adapter

XTP Series

Powered from USB port

*Note: XT-SOFT version 1.27.13.0 or later required for use with the XTP series transmitters*

**ETS Series Connection (Requires XT-SOFT)**

XT-USB Configuration Cable

USB-Port

ETS Series

External power not required for programming via XT-USB & XT-SOFT

*Note: XT-SOFT version 1.27.15.0 or later required for use with the ETS Series.*

*Scan the QR Code or click to view the help file for the XT-SOFT software.*

*Scan the QR Code or click to view the help file for the ProSense Field Device Configurator software.*