

# prosense® Temperature Transmitters - Head Mounted



XTH

## Features - Non-programmable Models

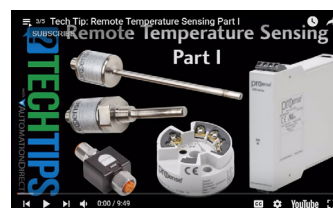
- Sensor Types:
- Models for thermocouple Types J, K, or T
- Select from a variety of pre-configured measuring ranges
- Internal cold junction compensation for thermocouple input models
- Transmitter is powered by 8-35 VDC and is reverse-polarity protected
- Output is linearized 2-wire 4-20mA current 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
<a href="#">XTH-0100F-J</a>	Type J thermocouple (to NIST Monograph 175, IEC584)	0 to 100°F (-17.8 to 37.8°C)	1	0.09	\$0d_o:
<a href="#">XTH-0200F-J</a>		0 to 200°F (-17.8 to 93.3°C)	1	0.09	\$0d_a:
<a href="#">XTH-0300F-J</a>		0 to 300°F (-17.8 to 148.9°C)	1	0.09	\$0d_d:
<a href="#">XTH-0500F-J</a>		0 to 500°F (-17.8 to 260°C)	1	0.09	\$;0d_f:
<a href="#">XTH-0800F-J</a>		0 to 800°F (-17.8 to 426.7°C)	1	0.09	\$0d_h:
<a href="#">XTH-01000F-J</a>		0 to 1000°F (-17.8 to 537.8°C)	1	0.09	\$-0d_l:
<a href="#">XTH-0100F-K</a>	Type K thermocouple (to NIST Monograph 175, IEC584)	0 to 100°F (-17.8 to 37.8°C)	1	0.09	\$0d_p:
<a href="#">XTH-0200F-K</a>		0 to 200°F (-17.8 to 93.3°C)	1	0.09	\$0d_b:
<a href="#">XTH-0300F-K</a>		0 to 300°F (-17.8 to 148.9°C)	1	0.09	\$0d_e:
<a href="#">XTH-0500F-K</a>		0 to 500°F (-17.8 to 260°C)	1	0.09	\$0d_g:
<a href="#">XTH-0800F-K</a>		0 to 800°F (-17.8 to 426.7°C)	1	0.09	\$-0d_i:
<a href="#">XTH-01000F-K</a>		0 to 1000°F (-17.8 to 537.8°C)	1	0.09	\$0d_n:
<a href="#">XTH-01500F-K</a>		0 to 1500°F (-17.8 to 815.5°C)	1	0.09	\$0d_q:
<a href="#">XTH-02000F-K</a>		0 to 2000°F (-17.8 to 1093.3°C)	1	0.09	\$0d_s:
<a href="#">XTH-N2000F-T</a>	Type T thermocouple (to NIST Monograph 175, IEC584)	-200 to 0°F (-128.9 to -17.8°C)	1	0.09	\$0d_k:
<a href="#">XTH-N100100F-T</a>		-100 to 100°F (-73.3 to 37.8°C)	1	0.09	\$-0d_j:
<a href="#">XTH-0200F-T</a>		0 to 200°F (-17.8 to 93.3°C)	1	0.09	\$0d_c:



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.

# pro<sup>ense</sup> 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		
		Over ranging / Standard / 20.5 mA		
		Sensor break; sensor short circuit down scale / To NAMUR NE 43 / m3.6 mA (only applicable to XTH-0-UNV)		
	Max. Load Impedance	Sensor break; sensor short circuit up scale / To NAMUR NE 43 / M21.0 mA		
	Galvanic Isolation	(Vpowersupply- 8V) / 0.025 A e.g. (24v-8V)/0.025A=640 Ω		
	Input Current Requirement	2 kV AC (input/output)		
	Current Limit	≤ 3.5 mA		
	Switch on Delay	≤ 25 mA		
	Response Time	4 seconds (during power up output current = 3.8 mA)		
	Digital Filter	1 second		
	Power Supply	N/A		
Allowable Ripple	8 to 35 VDC, polarity protected			
Accuracy	Reference Conditions	≤ 5 V with power supply ≥ 13; Max. frequency = 1 kHz		
	Maximum Measuring Error	Calibration temperature 73.4°F w 9°F (23°C w 5°C)		
	Influence of Power Supply	0.9°F (0.5°C) or 0.08%		
	Load Influence	≤ w 0.01%/V deviation from 24 V		
	Long Term Stability	≤ w 0.02%/100 Ω		
		≤ 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	typ. 0.9°F (0.5°C) or 0.08%
	N, C, D	typ. 1.8°F (1.0°C) or 0.08%
	S, B, R	typ. 3.6°F (2.0°C) or 0.08%
	Measurement Range	Measurement Accuracy*
Resistance Transmitter (Ω)	10 to 400 Ω	± 0.1 Ω or 0.08%
	10 to 2000 Ω	± 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

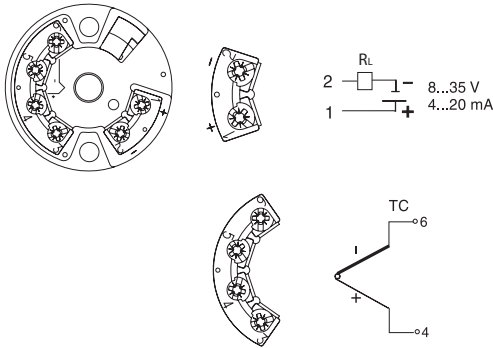
\*\* self recovery

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

# pro<sup>sense</sup> Temperature Transmitters - Head Mounted

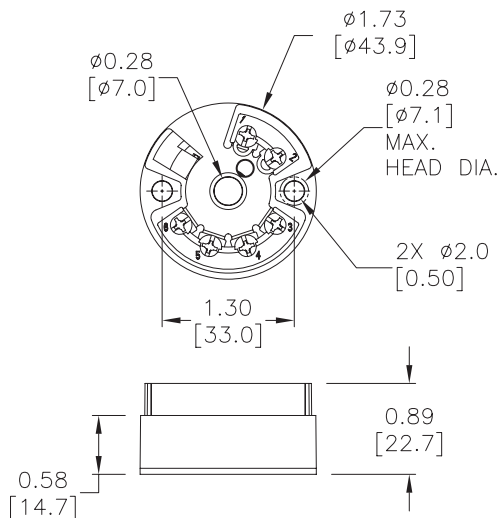
## Wiring

### XTH J, K & T - Thermocouple Input

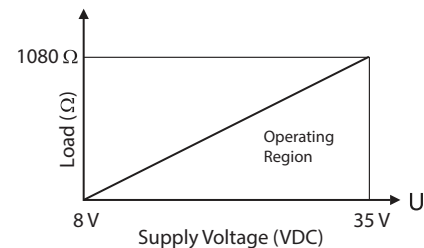


## Dimensions

inches [mm]



## Load Impedance

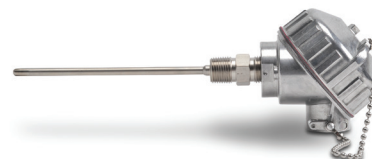


$$R_{Lmax} = (V_{powersupply} - 8V) / 0.025A \text{ (current output)}$$

e.g.  $(24V - 8V) / 0.025A = 640 \Omega$

## 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](http://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

## 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 ( $\leq 3.6$  mA or  $\geq 21.0$  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:  $\pm 18^{\circ}\text{F}$  ( $\pm 10^{\circ}\text{C/K}$ )
  - Display - Measured value display
    - Measured value display rotated 180°
    - Set switch point display
    - Set switch point display rotated 180°
    - 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  $302^{\circ}\text{F}$  ( $-49.5$  to  $150^{\circ}\text{C}$ ) in increments of  $0.18^{\circ}\text{F}$  ( $0.1^{\circ}\text{C}$ )
  - Switch-back point value:  $-58$  to  $300^{\circ}\text{F}$  ( $-50$  to  $149^{\circ}\text{C}$ ) in increments of  $0.18^{\circ}\text{F}$  ( $0.1^{\circ}\text{C}$ )
  - 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  $266^{\circ}\text{F}$  ( $-50$  to  $130^{\circ}\text{C}$ ) Lower range value in increments of  $0.18^{\circ}\text{F}$  ( $0.1^{\circ}\text{C}$ )
    - Value for 20mA:  $-22$  to  $302^{\circ}\text{F}$  ( $-30$  to  $150^{\circ}\text{C}$ ) Upper range value in increments of  $0.18^{\circ}\text{F}$  ( $0.1^{\circ}\text{C}$ )
  - Error current - Current value in event of error:
    - Minimum =  $\leq 3.6$  mA
    - Maximum =  $\geq 21.0$  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

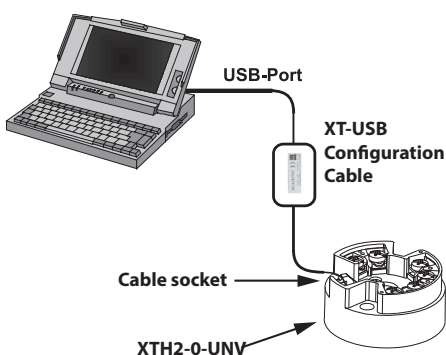


XT-M12

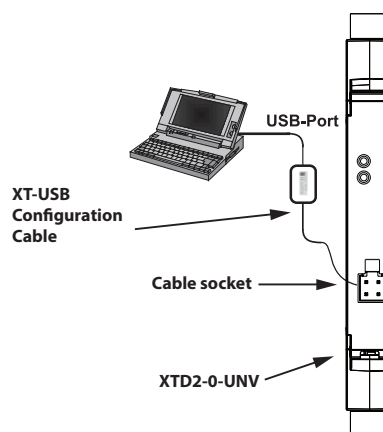
Part No.	Description	Pcs/Pkg	Wt(lb)	Price
<u>XT-SOFT</u>	ProSense configuration software, free download. For use with ProSense temperature transmitter XTP series, digital temperature sensor ETS series and models XTH-0-UNV, XTD-0-UNV.	1	N/A	Free Download
<b>Field Device Configurator</b>	ProSense configuration software, free download. For use with ProSense temperature transmitter series XTH2-0-UNV and XTD2-0-UNV.	1	N/A	Free Download
<u>XT-USB</u>	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	\$;004[c:
<u>XT-M12</u>	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	\$;1g[q:

## Connection Examples

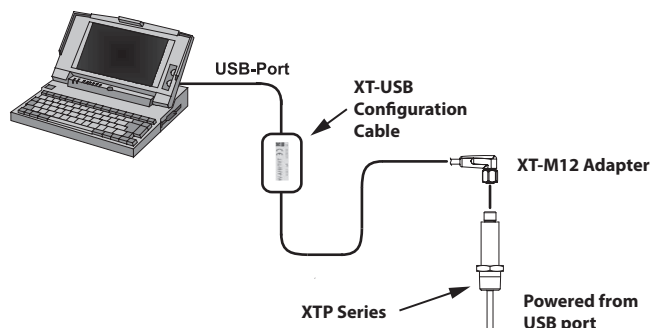
### XTH2-0-UNV Connection (Requires Field Device Configurator)



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

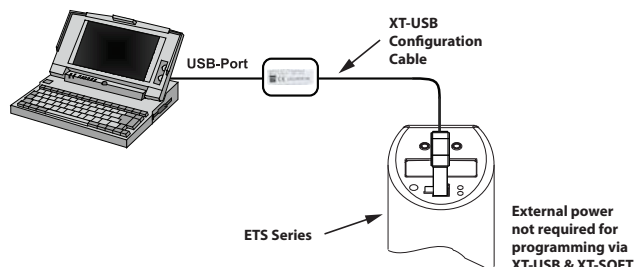


### XTP Series Connection (Requires XT-SOFT)



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

### ETS Series Connection (Requires 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.