ProSense® Temperature Transmitters - Head Mounted

XTH

Features - Non-programmable Models

- Sensor Types:
- Models for thermocouple Types J, K, or T
- Models for RTD Type Pt100 3-wire
- 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-N40140F-PT1	Pt100 RTD (to IEC 751) (a= 0.00385)	-40 to 140°F (-40 to 60°C)	1	0.09	
XTH-0100F-PT1		0 to 100°F (-17.8 to 37.8°C)	1	0.09	
XTH-0200F-PT1		0 to 200°F (-17.8 to 93.3°C)	1	0.09	
XTH-0300F-PT1		0 to 300°F (-17.8 to 148.9°C)	1	0.09	
XTH-0500F-PT1		0 to 500°F (-17.8 to 260°C)	1	0.09	
XTH-0100F-J	Type J thermocouple (to NIST Monograph 175, IEC584)	0 to 100°F (-17.8 to 37.8°C)	1	0.09	
XTH-0200F-J		0 to 200°F (-17.8 to 93.3°C)	1	0.09	
XTH-0300F-J		0 to 300°F (-17.8 to 148.9°C)	1	0.09	
XTH-0500F-J		0 to 500°F (-17.8 to 260°C)	1	0.09	
XTH-0800F-J		0 to 800°F (-17.8 to 426.7°C)	1	0.09	
XTH-01000F-J		0 to 1000°F (-17.8 to 537.8°C)	1	0.09	
XTH-0100F-K	Type K thermocouple (to NIST Monograph 175, IEC584)	0 to 100°F (-17.8 to 37.8°C)	1	0.09	
XTH-0200F-K		0 to 200°F (-17.8 to 93.3°C)	1	0.09	
XTH-0300F-K		0 to 300°F (-17.8 to 148.9°C)	1	0.09	
XTH-0500F-K		0 to 500°F (-17.8 to 260°C)	1	0.09	
XTH-0800F-K		0 to 800°F (-17.8 to 426.7°C)	1	0.09	
XTH-01000F-K		0 to 1000°F (-17.8 to 537.8°C)	1	0.09	
XTH-01500F-K		0 to 1500°F (-17.8 to 815.5°C)	1	0.09	
XTH-02000F-K		0 to 2000°F (-17.8 to 1093.3°C)	1	0.09	
XTH-N2000F-T	Type T thermocouple (to NIST Monograph 175, IEC584)	-200 to 0°F (-128.9 to -17.8°C)	1	0.09	
XTH-N100100F-T		-100 to 100°F (-73.3 to 37.8°C)	1	0.09	
XTH-0200F-T		0 to 200°F (-17.8 to 93.3°C)	1	0.09	

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

Features - Programmable Models

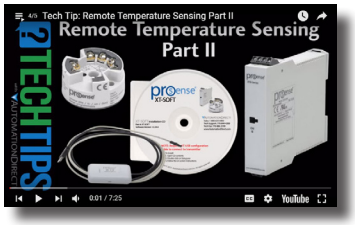
XTH-0-UNV

- Sensor Types:
- Thermocouple Types J, K, T, E, N, R, S, U, B, C, D, L
- RTD Types Pt100, Pt500, Pt1000, Pt50, Ni100, Ni500, Ni1000, Cu50, Cu100 (2, 3 or 4-wire)
- Linear Resistance 10 to 400 Ohms, 10 to 2000 Ohms (2, 3 or 4-wire)
- Millivolts -10 to 100 mV
- Measuring range configurable within the full range of the sensor type selected
- Selectable units of °F or °C
- Choose from internal or external cold junction compensation for thermocouple inputs
- Wire resistance compensation for 2-wire RTDs
- Transmitter is powered by 8-35 VDC and is reverse-polarity protected
- Output is linearized 2-wire current loop and can be configured for 4-20mA or 20-4mA
- Selectable up scale or down scale signal for sensor lead break or short circuit detection (NAMUR NE 43 fault response)
- Adjustable digital filter time constant to compensate for undesirable input fluctuations
- Mounts in ProSense connection head probes or any DIN Form B sensor head
- 2 kVAC isolation between input and output
- Quick and easy configuration with Free XT-SOFT software and XT-USB cable (purchased separately) – NO decade box, meters, or signal generators needed!

ProSense Head Mounted Temperature Transmitters

Part Number	Input Type	Programmable Measuring Range Limits	Min. Span	Pcs/ Pkg	Wt(lb)	Price
XTH-0-UNV	Pt100 RTD Pt500 RTD Pt1000 RTD (to IEC 751) a=0.00385)	-328 to 1562°F (-200 to 850°C) -328 to 482°F (-200 to 250°C) -328 to 482°F (-200 to 250°C)	18°F (10°C) 18°F (10°C) 18°F (10°C)	1	0.09	
	Ni100 RTD Ni500 RTD Ni1000 RTD (to DIN 43760) (a=0.006180)	-76 to 356°F (-60 to 180°C) -76 to 302°F (-60 to 150°C) -76 to 302°F (-60 to 150°C)	18°F (10°C) 18°F (10°C) 18°F (10°C)			
	Pt50 RTD Pt100 RTD (to GOST) (a=0.003911)	-328 to 2012°F (-200 to 1100°C) -328 to 1562°F (-200 to 850°C)	18°F (10°C) 18°F (10°C)			
	Cu50 RTD Cu100 RTD (to GOST) (a=0.004278)	-328 to 392°F (-200 to 200°C) -328 to 392°F (-200 to 200°C)	18°F (10°C) 18°F (10°C)			
	RTDs: • Connection type: 2-, 3-, or 4-wire connection • Software compensation of cable resistance possible in the 2 wire system (0-20Ω) • Sensor cable resistance max. 11Ω per cable in the 3 and 4 wire system • Sensor current: m0.6mA					
	Resistance Ω	10 to 400 Ω 10 to 2000 Ω	10 Ω 100 Ω			
	Thermocouples: Type B Type E Type J Type K Type N Type R Type S Type T (to NIST Monograph 175, IEC 584)	32 to 3308°F (0 to +1820°C) -328 to 1679°F (-200 to +915°C) -328 to 2192°F (-200 to +1200°C) -328 to 2501°F (-200 to +1372°C) -454 to 2372°F (-270 to +1300°C) 32 to 3214°F (0 to +1768°C) 32 to 3214°F (0 to +1768°C) -328 to 752°F (-200 to +400°C)	900°F (500°C) 90°F (50°C) 90°F (50°C) 90°F (50°C) 90°F (50°C) 900°F (500°C) 900°F (500°C) 90°F (50°C)			
	Thermocouples: Type C Type D (to ASTM E988)	32 to 4208°F (0 to +2320°C) 32 to 4523°F (0 to +2495°C)	900°F (500°C) 900°F (500°C)			
	Thermocouples: Type L Type U (to DIN 43710)	-328 to 1652°F (-200 to +900°C) -328 to 1112° (-200 to +600°C)	90°F (50°C) 90°F (50°C)			
	Thermocouples: • Internal cold junction (Pt100) or external programmable fixed value, 32 to 176°F (0 to 80°C) • Accuracy of cold junction: ± 1.8°F (1°C) • Sensor current: 30nA					
	Millivolt (mV)	-10 to 100 mV	5 mV			

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-0007 for a short video on using Universal Temperature Transmitters

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

ProSense® Temperature Transmitters - Head Mounted

ProSense Head Mounted Temperature Transmitters General Specifications						
		XTH (PT1 Series)	XTH (J Series)	XTH (K Series)	XTH (T Series)	XTH-0-UNV
Output	Output Signal	4-20 mA				4-20 mA, 20-4 mA programmable
	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) 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				0 to 8 seconds (programmable)
	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	0.36°F (0.2°C) or 0.08%	0.9°F (0.5°C) or 0.08%			See Table 1
	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*
Resistance Thermometer (RTD)	Pt100, Ni100 Pt500, Ni500 Pt1000, Ni1000	0.36°F (0.2°C) or 0.08% 0.9°F (0.5°C) or 0.20% 0.54°F (0.3°C) or 0.12%
Thermocouple TC	K, J, T, E, L, U N, C, D S, B, R	typ. 0.9°F (0.5°C) or 0.08% typ. 1.8°F (1.0°C) or 0.08% typ. 3.6°F (2.0°C) or 0.08%
	Measurement Range	Measurement Accuracy*
Resistance Transmitter (Ω)	10 to 400 Ω 10 to 2000 Ω	± 0.1 Ω or 0.08% ± 1.5 Ω or 0.12%
Voltage Transmitters (mV)	-10 to 100 mV	± 20 µV or 0.08%

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

Table 2 - IEC Immunity

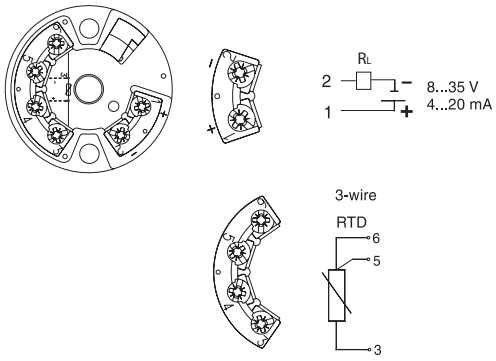
Discharge of Static Electricity	IEC 61000-4-2	6 kV cont., 8 kV air	N/A
Electromagnetic Fields	IEC 61000-4-3	80 to 1000 Hz	10 V/m
Burst (Signal)	IEC 61000-4-4	1 kV; 2 kV (B)**	N/A
Transient Voltage	IEC 61000-4-5	1 kV unsym. / 0.5 kV sym.	N/A
HF Coupling	IEC 61000-4-6	0.15 to 80 MHz	10V

*** self recovery*

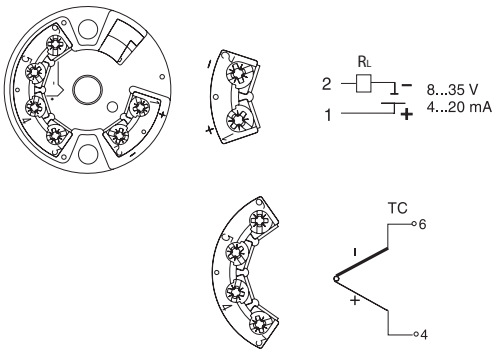
ProSense® Temperature Transmitters - Head Mounted

Wiring

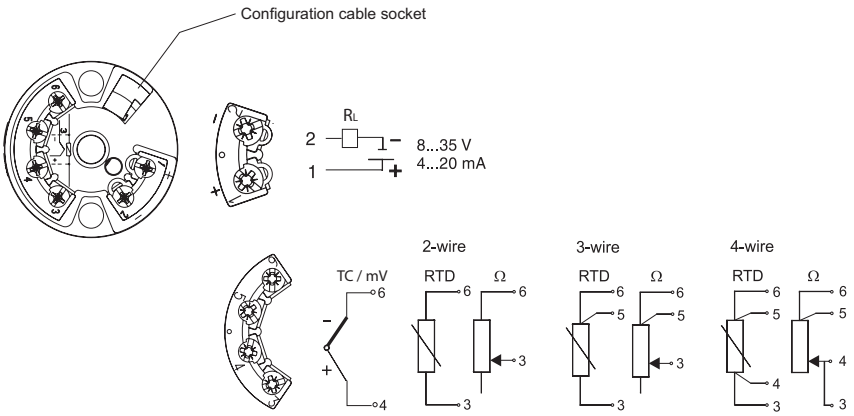
XTH PT1 - RTD Input



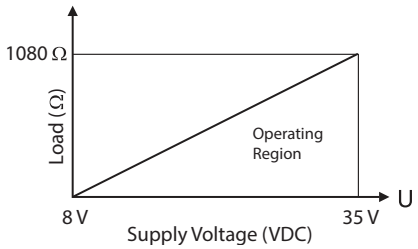
XTH J, K & T - Thermocouple Input



XTH-0-UNV



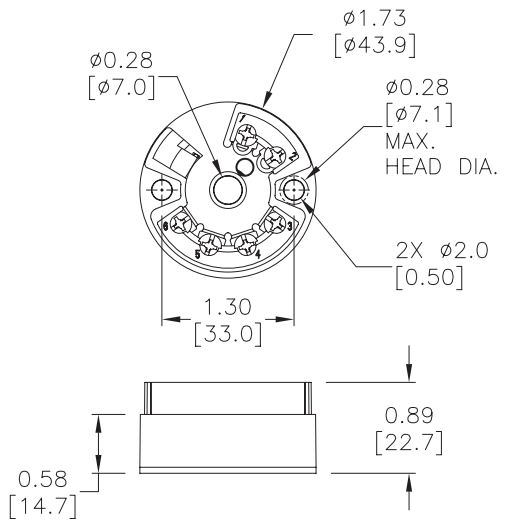
Load Impedance



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

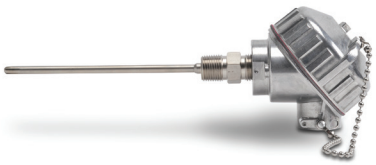
Dimensions

inches [mm]



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 XTH-0-UNV, 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 XT-SOFT

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 (≤ 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

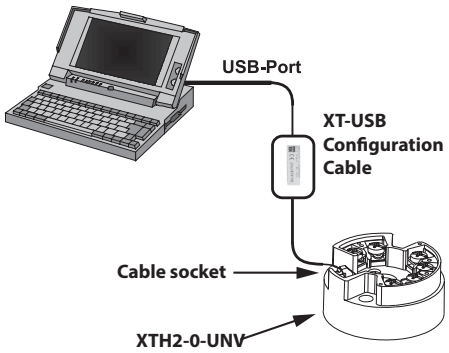
ProSense® Temperature Transmitter Configuration Software

XT-SOFT *XT-USB* *XT-M12*

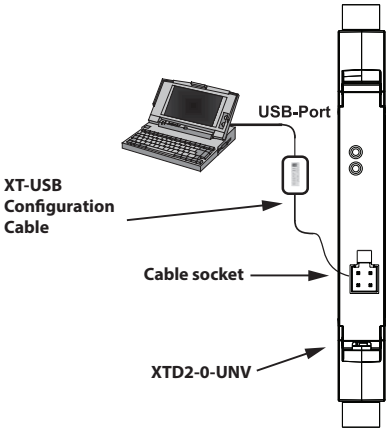
Part No.	Description	Pcs/Pkg	Wt(lb)	Price
XT-SOFT	ProSense configuration software, free download. For use with ProSense temperature transmitter XTP series, digital temperature sensor ETS series and models XTH-0-UNV, XTD-0-UNV.	1	N/A	Free Download
Field Device Configurator	ProSense configuration software, 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	
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	

Connection Examples

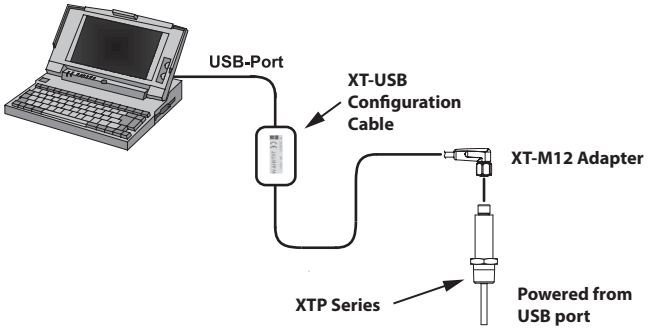
XTH2-0-UNV Connection (Requires Field Device Configurator)



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

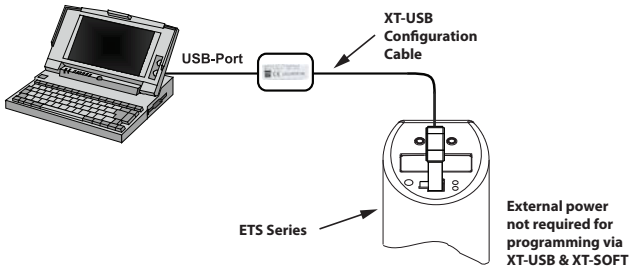


XTP Series Connection (Requires XT-SOFT)



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.