XTP Series Temperature Transmitter Probes

proSense®

The ProSense XTP series conveniently combines a precision RTD sensing element and transmitter electronics in a single stainless steel temperature transmitter probe. Offered in three preconfigured temperature measuring ranges, XTP series transmitter probes are ready to use right out of the box. Or, use our free ProSense XT-SOFT software to program the XTP transmitter probe with a custom measuring range and change other configuration parameters. Choose from several probe insertion lengths and process connections including male NPT threads, 3-A approved sanitary clean in place tri-clamp, or compression fitting allowing for adjustable insertion depth. An M12 quick-disconnect provides connection to the loop powered 4-20 mA output signal that provides a linear representation of measured temperature and is compatible with PLCs, SCADA systems, and digital panel meters.

XTP Series Units

Features

- RTD and transmitter electronics combined in a single stainless steel probe
- Ready to use with preconfigured temperature measuring ranges
- Free ProSense XT-SOFT software can be used to program custom measuring ranges and change other configuration parameters
- 30, 50, 100, 150, 160, 260, or 360mm probe insertion lengths
- Process connections include 1/4" or 1/2" male NPT threads, 3-A approved sanitary CIP tri-clamp, or compression fitting for adjustable insertion depth.
- 4-20 mA output
- M12 quick-disconnect electrical connection

(XTPS models)

ProSense XTP Series Temperature Transmitter Probes							
Part Number	**Preconfigured Measuring Range***	**Process Connection**	**Length**	**Thermowell (purchased separately)**	**Wt(lb)**	**Price**	**Drawing Link**
XTP-160-N40140F	-40 to 140°F (-40 to 60°C)	None, use compression fitting (CF06-25N purchased separately)	160mm (6.3")	RTDTW-06-010-50N CF06-25N	0.24		PDF
XTP-260-N40140F			260mm (10.24")	RTDTW-06-020-50N CF06-25N	0.34		PDF
XTP-360-N40140F			360mm (14.17")	RTDTW-06-030-50N CF06-25N	0.37		PDF
XTP25N-030-N40140F		1/4" Male NPT	30mm (1.18")	None	0.2		PDF
XTP25N-050-N40140F			50mm (1.97")		0.2		PDF
XTP25N-100-N40140F			100mm (3.94")		0.3		PDF
XTP25N-150-N40140F			150mm (5.91")		0.3		PDF
XTP50N-030-N40140F		1/2" Male NPT	30mm (1.18")		0.3		PDF
XTP50N-050-N40140F			50mm (1.97")		0.3		PDF
XTP50N-100-N40140F			100mm (3.94")	TW04-0x	0.4		PDF
XTP50N-150-N40140F			150mm (5.91")	TW06-0x	0.4		PDF
XTP-160-0300F	0 to 300°F (-17.8 to 148.9°C)	None, use compression fitting (CF06-25N purchased separately)	160mm (6.3")	RTDTW-06-010-50N CF06-25N	0.24		PDF
XTP-260-0300F			260mm (10.24")	RTDTW-06-020-50N CF06-25N	0.27		PDF
XTP-360-0300F			360mm (14.17")	RTDTW-06-030-50N CF06-25N	0.37		PDF
XTP25N-030-0300F		1/4" Male NPT	30mm (1.18")	None	0.2		PDF
XTP25N-050-0300F			50mm (1.97")		0.2		PDF
XTP25N-100-0300F			100mm (3.94")		0.3		PDF
XTP25N-150-0300F			150mm (5.91")		0.3		PDF
XTP50N-030-0300F		1/2" Male NPT	30mm (1.18")		0.3		PDF
XTP50N-050-0300F			50mm (1.97")		0.3		PDF
XTP50N-100-0300F			100mm (3.94")	TW04-0x	0.4		PDF
XTP50N-150-0300F			150mm (5.91")	TW06-0x	0.4		PDF

* Free ProSense XT-SOFT software can be used to program custom measuring ranges and change other configuration parameters. An XT-USB programming cable and XT-M12 adapter are also required and purchased separately.

XTP Series Temperature Transmitter Probes

Part Number	Preconfigured Measuring Range*	Process Connection	Length	Thermowell (purchased separately)	Wt(lb)	Price	Drawing Link
ProSense XTP Series Temperature Transmitter Probes							
XTP-160-0100C		None, use compression fitting (CF06-25N purchased separately)	160mm (6.3")	RTDTW-06-010-50N CF06-25N	0.25		PDF
XTP-260-0100C			260mm (10.24")	RTDTW-06-020-50N CF06-25N	0.34		PDF
XTP-360-0100C			360mm (14.17")	RTDTW-06-030-50N CF06-25N	0.37		PDF
XTP25N-030-0100C	0 to 100°C (32 to 212°F)	1/4" Male NPT	30mm (1.18")	None	0.2		PDF
XTP25N-050-0100C			50mm (1.97")		0.2		PDF
XTP25N-100-0100C			100mm (3.94")		0.3		PDF
XTP25N-150-0100C			150mm (5.91")		0.3		PDF
XTP50N-030-0100C		1/2" Male NPT	30mm (1.18")		0.3		PDF
XTP50N-050-0100C			50mm (1.97")		0.3		PDF
XTP50N-100-0100C			100mm (3.94")	TW04-0x	0.4		PDF
XTP50N-150-0100C			150mm (5.91")	TW06-0x	0.4		PDF
XTPS15-030-0300F	0 to 300°F (−17.8 to 148.9°C)	1-1/2" Sanitary CIP Tri-Clamp (3-A)	30mm (1.18")	None	0.45		PDF
XTPS15-050-0300F			50mm (1.97")		0.45		PDF
XTPS15-100-0300F			100mm (3.94")		0.47		PDF
XTPS15-150-0300F			150mm (5.91")		0.48		PDF

* Free ProSense XT-SOFT software can be used to program custom measuring ranges and change other configuration parameters. An XT-USB programming cable and XT-M12 adapter are also required and purchased separately.

Scan the QR Code above or click to view the XTP Series product insert.

prosense® XTP Series Temperature Transmitter Probes

ProSense XTP Series Temperature Transmitter Probes Specifications	
Operating Voltage	10 to 35 VDC
Electrical Connection	4-pin M12 quick disconnect
Probe Diameter	6mm (0.2")
Short-Circuit Protection	Yes
Reverse Polarity Protection	Yes
Electrical Protection	Protection Class III, Overvoltage category II, Pollution degree 2
Analog Output	4 to 20 mA (software configurable for 20 to 4 mA)
Maximum Load	608Ω @ 24VDC ($U_{powersupply}$ - 10V) / 0.023 A
Signal on Alarm (per NAMUR NE43)	Underranging: Linear drop to 3.8 mA Overranging: Linear rise to 20.5 mA Sensor break; Sensor short-circuit: ≥ 21.0 mA (21.5 mA output is guaranteed) or software configurable for ≤ 3.6 mA
Minimum Current Consumption	≤ 3.5 mA
Current Limit	≤ 23mA
Switch-on Delay	2s
Transmitter Response Time	≤ 3s
Pressure Rating	With or without NPT process connection** • 1450 psig (100bar) maximum With Sanitary Tri-clamp process connection • 232 psig (16bar) maximum
Altitude	Up to 6600ft (2000m) above mean sea level
Accuracy	0.25K + 0.002 |T|, |T| = Numerical value of the temperature in°C without regard to the leading sign.
Long-term Stability of Electronics	≤ 0.1 K / year or 0.05 % / year, % relates to the set span. The larger value applies.
Measuring Element	Pt100 class A as per IEC 60751
Measuring Range Limits	-58 to 302°F (-50 to 150°C), software configurable
Minimum Span	10K (18°F), software configurable
Minimum Installation Depth	30mm
Housing Material	Stainless steel (304)
Materials (wetted parts)	Stainless steel (316L) ; XTPS15 sanitary surface finish Ra ≤ 0.76 μm (30 μin)
Ambient Temperature	−40 to 185°F (−40 to 85°C)
Process Temperature	−58 to 302°F (−50 to 150°C)
Storage Temperature	−40 to 185°F (−40 to 85°C)
Shock Resistance and Vibration Resistance	4g / 2 to 150Hz as per IEC 60068-2-6
Climate Class	Per IEC 60654-1, Class C
EMC (Electromagnetic Compatibility)*	
IEC/EN 61000-4-2	ESD (electrostatic discharge) 6kV cont., 8kV air
IEC/EN 61000-4-3	Electromagnetic fields 0.08 to 2GHz, 10 V/m
IEC/EN 61000-4-4	Burst (fast transient) 2kV
IEC/EN 61000-4-5	Surge 0.5 kV sym.
IEC/EN 61000-4-6	Conducted RF 0.01 to 80MHz, 10V
Protection	IP66/67 or IP69K with appropriately rated cable
Certifications	cURus # E311366, CE, 3-A (XTPS15 models only)

All EMC measurements were performed with a turn down (TD) = 2:1. Maximum fluctuations during EMC - tests: < 1% of measuring span.
  Interference immunity to IEC/EN 61326 - series, requirements for industrial areas
  Interference emission to IEC/EN 61326 - series, electrical equipment Class B.

**Working pressure when using compression fitting should not exceed the fittings rated pressure.*

NOTE: RESPONSE TIME WILL BE SLOWER WHEN INSTALLED IN A THERMOWELL. BE SURE TO INSTALL THE PROBE SO THAT IT CONTACTS THE END OF THE THERMOWELL FOR FASTER RESPONSE. THERMAL COMPOUND MAY BE USED DEPENDING ON APPLICATION.

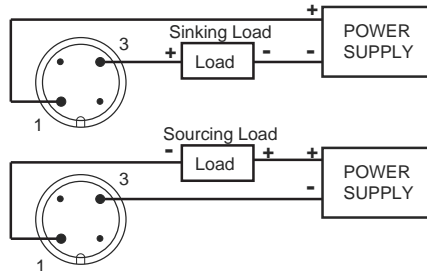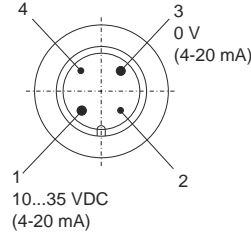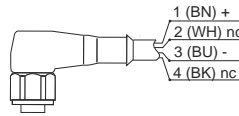NOTE: CHECK THE CHEMICAL COMPATIBILITY OF THE SENSOR'S WETTED PARTS WITH THE MEDIUM TO BE MEASURED.
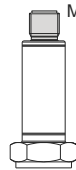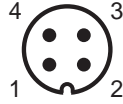
pro**s**ense® XTP Series Temperature Transmitter Probes
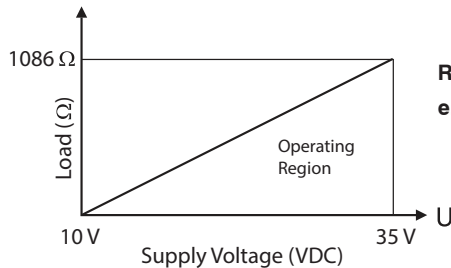
Wiring

Cable Assembly Wiring Colors:
Pin 1 - Brown
Pin 2 - White
Pin 3 - Blue
Pin 4 - Black

*Note: wiring colors are based on AutomationDirect CD12L and CD12M 4-pole cable assemblies.*

1 (BN) +
2 (WH) nc
3 (BU) -
4 (BK) nc

M12x1

4
3
0 V
(4-20 mA)
1
2
10...35 VDC
(4-20 mA)

NEED CABLES?
See Cables/Connectors in Wiring (WD) section

Sinking Load
+
POWER SUPPLY
3
+
Load
-
-
1

Sourcing Load
-
POWER SUPPLY
3
-
Load
+
+
1

Load Impedance

1086 Ω

Load (Ω)

Operating Region

10 V   35 V
Supply Voltage (VDC)

U

$RLmax = (V_{powersupply}-10V) / 0.023 A$ **(current output)**
e.g. $(24V - 10V) / 0.023A = 608Ω$

Maximum Flow Velocity Per insertion Length

v (ft/s)   v (m/s)

L (mm)

L (in)
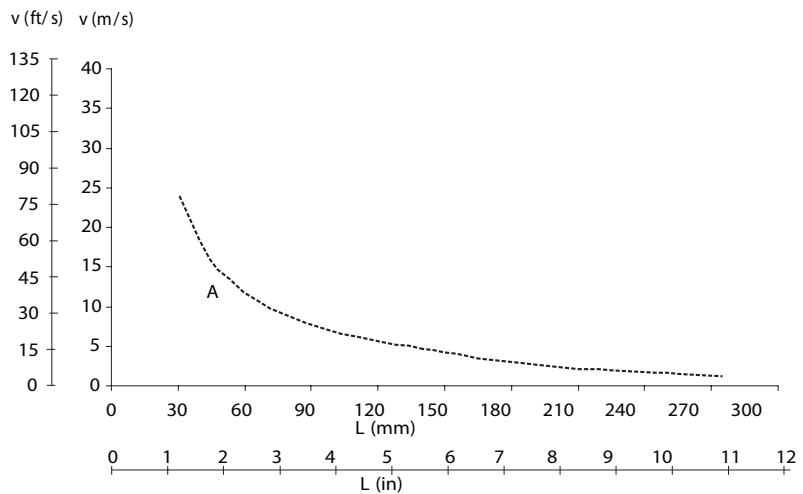
L   Insertion length, during flow
v   Flow velocity
A   Medium water at T = 50 °C (122 °F)

prosense® Temperature Transmitter Configuration Software

Quick and easy configuration with Free XT-SOFT 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. Download your free copy of XT-SOFT at 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.

System Requirements:

- Windows 10
- Windows 7 (32 and 64 bit)
- Windows Vista (64 bit)
- Windows XP
- 1 USB 2.0 Port
- 128 MB hard disk space

XTP Series Configuration Parameters:

- 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:

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 Line 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

ETS Series Configuration Parameters:

Basic Settings:
- Measuring unit (°C/°F/K)
- Offset: Configure zero point: ±18ºF (±10ºC/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

ETS Series

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 = $\leq$ 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)

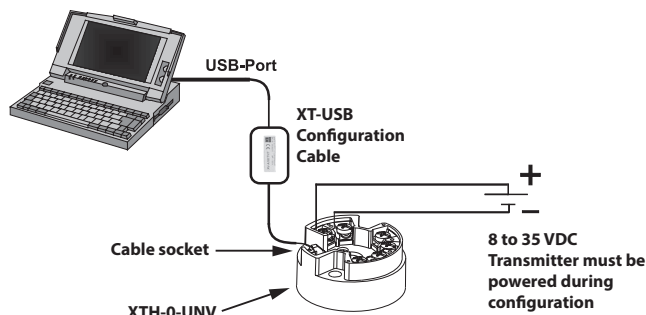# prosense® Temperature Transmitter Configuration Software

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

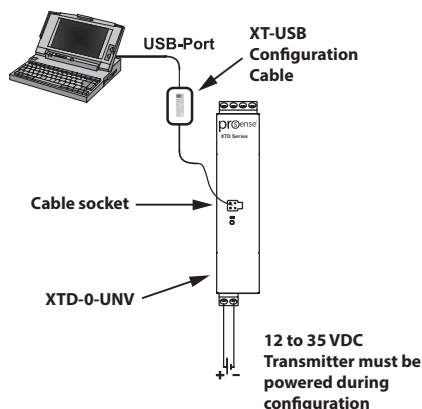| Part No.	Description	Pcs/Pkg	Wt(lb)	Price
XT-SOFT	ProSense configuration software, CD or free download. For use with ProSense temperature transmitter XTP series, digital temperature sensor ETS series and models XTH-0-UNV, XTD-0-UNV.	1	0.1	
XT-USB	ProSense configuration cable, USB to keyed 4-pin male, 7.9 ft/2.4 m cable length. For use with XT-SOFT configuration software, ProSense temperature transmitter XTP series, digital temperature sensor ETS series and models XTH-0-UNV, XTD-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
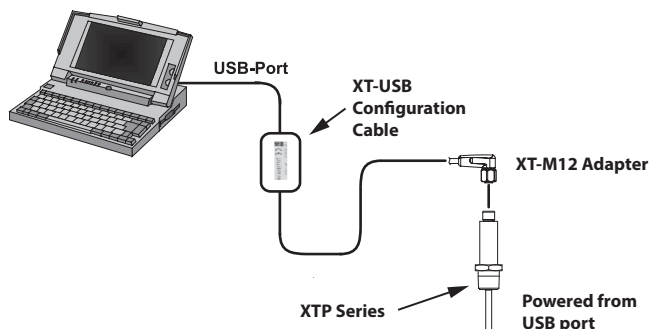
XTH-0-UNV Connection

XT-SOFT PC configuration software

USB-Port

XT-USB Configuration Cable

Cable socket

XTH-0-UNV

8 to 35 VDC Transmitter must be powered during configuration

XTD-0-UNV Connection

XT-SOFT PC configuration software

USB-Port

XT-USB Configuration Cable

Cable socket

XTD-0-UNV

12 to 35 VDC Transmitter must be powered during configuration

XTP Series Connection

USB-Port

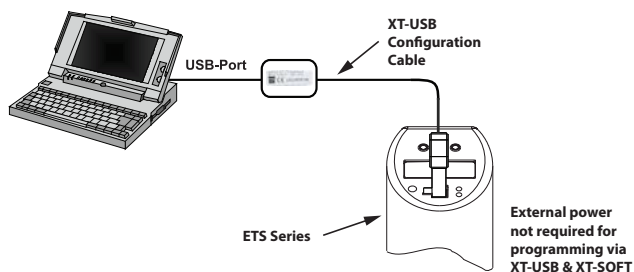XT-USB Configuration Cable

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

USB-Port

XT-USB Configuration Cable

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.

prosense® Thermowells for RTD Probes and Transmitters with M12 Cable Connector

Overview

- All thermowells are pre-built stock items
- Thermowells for ProSense RTD and transmitter probes with M12 cable connector
- All wetted parts are 316 stainless steel
- 600°F (315°C) temperature and 232 psi (16 bar) pressure rating
- CF06-25N or CF10-50N fitting required to mount probes in thermowell
- 3-year warranty

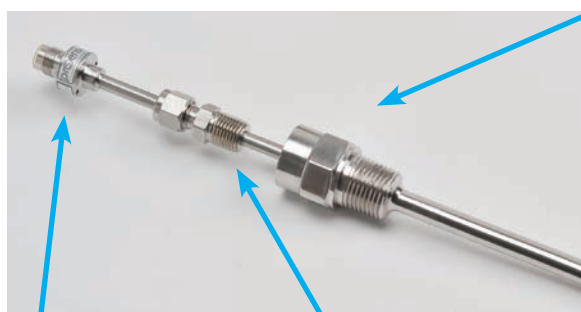| Thermowells for RTD and Transmitter Probes with M12 Cable Connector											
Part Number	Pcs/ Pkg	Wt(lb)	Price	I.D.	Overall Length	Male Process Threads	Female Probe Threads	Wetted Material	Temperature/ Pressure Rating	Use With	
RTDTW-06-010-50N	1	0.10			113mm (4.4")					XTP-160-N40140F XTP-160-0300F XTP-160-0100C RTD0100-06-010-H CF06-25N	
RTDTW-06-020-50N	1	0.20		7 mm (0.28")	213mm (8.4")		1/4" NPT			XTP-260-N40140F XTP-260-0300F XTP-260-0100C RTD0100-06-020-H CF06-25N	
RTDTW-06-030-50N	1	0.30			313mm (12.3")	1/2" NPT		316 SS	600°F (315°C) max; 232 psi (16 bar) max	XTP-360-N40140F XTP-360-0300F XTP-360-0100C RTD0100-06-030-H CF06-25N	
RTDTW-10-010-50N	1	0.10		11 mm (0.43")	92mm (3.62")		1/2" NPT			RTD0100-10-010-H CF10-50N	
RTDTW-10-030-50N	1	0.22			292mm (11.48")					CF10-50N	

📋 *NOTE: CHECK THE CHEMICAL COMPATIBILITY OF THE THERMOWELL'S WETTED PARTS WITH THE MEDIUM TO BE MEASURED.*

📋 *NOTE: RESPONSE TIME WILL BE SLOWER WHEN INSTALLED IN A THERMOWELL. BE SURE TO INSTALL THE PROBE SO THAT IT CONTACTS THE END OF THE THERMOWELL FOR FASTER RESPONSE.. THERMAL COMPOUND MAY BE USED DEPENDING ON APPLICATION*

Probe & Thermowell Assembly Example

RTDTW Series Thermowell

Note: Once tightened compression fitting cannot be re-adjusted

RTD0100 Series or XTP Series Probe

CF06-25N or CF10-50N Compression Fitting

Thermowells for RTD Probes and Transmitters with M12 Cable Connector

prosense®

Dimensions

inches [mm]

RTDTW-06 Series

1/4" NPT FEMALE

1/2" NPT MALE

L1

Ø9.0
[Ø0.35]
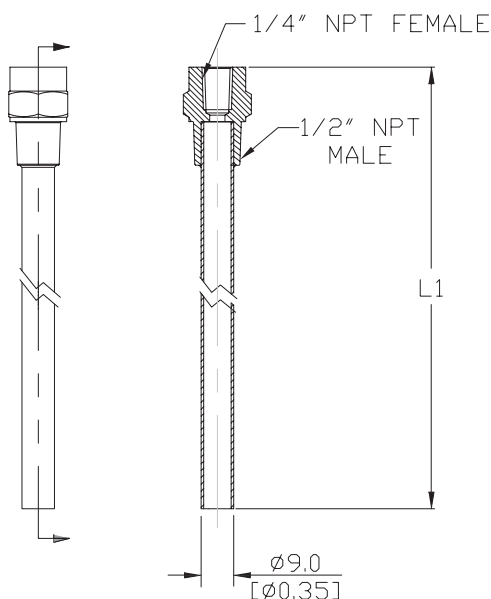
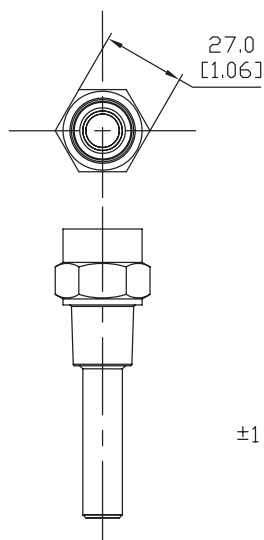| Part Number	L1
RTDTW-06-010-50N	113mm [4.4]
RTDTW-06-020-50N	213mm [8.4]
RTDTW-06-030-50N	313mm [12.3]

Torque threads to 40 lb-ft [54.23 Nm]*

* Torque values are for reference. Actual torque required for a proper seal of NPT threads is influenced by tolerance, sealant, lubricant, etc.

Dimensions

inches [mm]

RTDTW-10 Series

27.0
[1.06]

Ø1/2" NPT FEMALE

[Ø1/2"] NPT

L1
+1/-2
[+.03/-.07]

L2
±1 [.03]

Ø13.0
[Ø0.51]

Part Number	L1	L2
RTDTW-10-010-50N	92mm [3.62]	70mm [2.75]
RTDTW-10-030-50N	292mm [11.48]	270mm [10.6]

Torque threads to 40 lb-ft [54.23 Nm]*