





ONE SERIES PRESSURE AND TEMPERATURE HYBRID TRANSMITTER-SWITCH



- NAMUR standard and HART®-enabled smart transmitter 4-20 mA output + programmable switch for process monitoring, alarm and shutdown
- Display and keypad provide easy, fast and secure field programming while in service
- Switch-only models drop in to replace mechanical switches for cost-effective upgrades using existing wires
- Programmable set point and deadband provides accurate and fast cycling for rotating equipment
- Worldwide hazardous location approvals included:    



OVERVIEW

United Electric Controls (UE) is recognized for high-quality products with innovative product design, and the One Series carries this nearly 85-year tradition well beyond the electromechanical switches for which UE is known. UE's One Series line of pressure and temperature hybrid transmitter-switches set new standards for quality, reliability and versatility. Designed to meet the needs of harsh and hazardous applications, the One Series' advanced self-diagnostics and robust design provide the most reliable hybrid transmitter-switches for a variety of diverse industries and applications.

The One Series from UE provides explosion (flame)-proof, intrinsically safe and non-incendive models that monitor gage pressure, differential pressure or temperature. With a 4-20 mA analog output and up to two independently programmable switches and no moving parts, these versatile instruments can be used in a wide variety of control applications where mechanical switches weren't previously considered.

Featuring a solid-state design, UE's One Series is your best choice for tough applications with high cycle rates, severe shock and high vibration. For plant upgrades, there are a variety of power options ranging from 2-wire analog loop-powered, 2-wire discrete input powered and externally powered models that can switch up to 280 volts to the load.

With an integral digital display and 4-20 mA output, the One Series from UE can effectively do the job of three by replacing a switch, a gauge and a transmitter. Powerful yet easy to install, the One Series from UE features tamper-resistance, intuitive programming, and set-up that is fast and easy.

INNOVATIVE DESIGN

The One Series' award-winning design provides numerous advances in alarm & shutdown process monitoring technology.



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FEATURES

- Transmitter-only, switch-only and hybrid transmitter-switch models offer maximum versatility
- Digital process display – know what's happening in the process at a glance
- Programmable set point and deadband provides the most versatile, accurate and repeatable alarm and shutdown switching using the integral keypad or a HART® communicator
- Configurable IAW™ self-diagnostics provide piece of mind that the instrument is functioning properly by communicating with the control system using a dedicated discrete output
- Plugged Port Detection allows a means to detect a clogged sensor, avoiding potentially dangerous process conditions
- Max/Min memory – samples and stores the highest and lowest extreme process variables for process diagnostics and learning
- Nuisance trip filtering eliminates unwanted nuisance trips and unnecessary alarms
- Programmable trip delay – hold off the trip decision for tenths of seconds up to several minutes
- Trip counter – records trips for up to two relays for process diagnostics and learning
- 3-year warranty

POWER

Extremely low power consumption allows the One Series 2-Wire switch-only model (1XSW) to operate with no additional wiring or batteries. Power is obtained from the control system's discrete input, making it ideal for plant upgrades from mechanical switches, re-using the same wiring and control schemes. The One Series 2-Wire provides a drop-in replacement for mechanical switches and a fast, easy and cost-effective means for plant upgrades.

For direct switching applications, loop-powered hybrid transmitter-switch versions of the One Series can provide 2 independent solid-state relays and handle loads up to 280 volts while providing a field-scalable 4-20 mA analog output – a switch + gauge + transmitter function all-in-one instrument with only one process connection. This reduces installation cost, potential leak paths and maintenance.



PROGRAMMABILITY VIA KEYPAD AND SMART-HART® 7 (INCLUDED WITH 1XTX MODELS)

Transmitter-only and hybrid Transmitter-Switch One Series models now feature HART® 7 compatibility. Any function that can be controlled with the keypad can also be controlled with a HART® communicator. This feature makes it unnecessary to remove the enclosure cover to make programming changes or access the MAX/MIN values, especially important in explosive environments. All programming functions can be performed remotely.

The set point and deadband settings allow for 100% adjustability, providing highly repeatable trip and reset points for many different applications. This feature allows the One Series to be used for pump and compressor cycling applications where high cycle rates may shorten the life of mechanical controls. Temperature monitoring models can provide highly repeatable thermostatic control of heaters and chillers. New software features in the One Series allow trip points to be filtered, delayed and counted. Plugged Port Detection can utilize MAX/MIN process extremes data to provide a powerful yet simple tool for detecting clogged impulse lines, rendering these application challenges manageable by the instrument, with no special programming needed at the PLC.

SELF-DIAGNOSTICS

Mechanical switches have no self-diagnostic capabilities – they are blind instruments. All One Series models include UE's exclusive IAW™ (I Am Working) self-diagnostic system that detects faults before they become process monitoring problems. Detected faults are reported on the digital display while the set point switch will fail safe (change to the tripped state) and the 4-20 mA analog output will go to ≤ 3.6 mA to provide remote fault indication per the NAMUR standard. A separate IAW™ discrete output remains normally closed and will fail-safe-open if a fault is detected or if power is lost. By monitoring this output, the intelligent and configurable IAW™ diagnostics provide immediate remote indication that the One Series remains reliable and available to react to and report process conditions worthy of an alarm and/or shutdown.

APPLICATION VERSATILITY

For alarm and shutdown monitoring applications, there is no better choice than the One Series family of hybrid transmitter-switches from United Electric Controls. Measuring gage pressure, differential pressure or temperature, the extremely rugged and reliable One Series takes all of the guess-work out of monitoring process variables to prevent injury, loss and downtime.

With its large backlit* digital display, fully adjustable deadband and 100% solid-state design, the One Series is the obvious choice for plant upgrades and new construction projects. A built-in microprocessor includes digital repeatability and intelligent IAW™ self-diagnostics, offering plant operators an extremely reliable and smart process and capital equipment protection device.

Proven in use in literally thousands of diverse applications, UE's One Series is designed for harsh and hazardous location process monitoring with certificates available for intrinsically safe and explosion proof areas including cULus, ATEX and IECEx among others. See the Approvals and Ratings page for complete area classification details and temperature ratings.

Here are a few application examples:

- Pumps and compressors – start/stop, optimizing, shutdown, staging, fast PD pump switching
- Lubricating oil monitoring – seal oil pressure, sump temperature, bearing pressure, predictive maintenance
- Hydraulic oil pressure – high pressure monitoring, emergency shutdown, ram cycling
- Filter monitoring – automatic backwash, clog and change indication, proving flow
- Plant upgrades – power and wastewater plant upgrades, drop-in replacement for mechanical switches

* Backlighting included on 1XTX models



Pump Emergency Shutdown



Gas Compressor Protection

SPECIFICATIONS

Power input/ Switch capacity:

Model	Maximum Power Ratings / Output Signal	Set Point Switch Ratings (SPST)	IAW™ Switch Ratings (SPST)	Min. Load Requirement	Off State Leakage
1XSWLL	2-wire 7.8 – 50 VDC discrete input powered @ 0.75 mA	7.8 – 50 VDC @ 0.1 A MOSFET derate @ 1 mA per °C > 25°C	7.8 – 50 VDC @ 0.1 A MOSFET derate @ 1 mA per °C > 25°C	2.7 mA	0.8 mA
1XSWHL	2-wire 70 – 240 VAC & VDC @ 1 mA discrete input powered	70 – 240 VAC/VDC @ 0.1 A	7.8 – 50 VDC @ 0.1 A	6.0 mA	1 mA
1XSWHH	4-wire 70 – 240 VAC @ 6 mA external power supply	70 – 240 VAC @ 0.15 – 10 A	7.8 – 50 VDC @ 0.1 A	0.15 A	0.1 mA
1XTXSW	2-wire 20 – 40 VDC @ 21 mA / Loop powered 4-20 mA analog output with HART® version 7	SW1 & SW2: 0 – 280 VAC & VDC @ 0.3 A derate 8% per 10°C > 21°C	0 – 30 VDC @ 0.020 A MOSFET	0 mA	0.01 mA
1XTX00	2-wire 20 – 40 VDC @ 21 mA / Loop powered 4-20 mA analog output with HART® version 7	N/A	N/A	N/A	N/A

Accuracy: 0.5% of full range span, at room temperature

Repeatability: 0.1% of full range span

Approved ambient operating temperature range:

Model	Approved Ambient Operating Temperature Range	
	cULus (Division System)	cULus & ATEX (Zone System)
1XSWLL	-40°F (-40°C) TO 185°F (85°C)	-40°F (-40°C) TO 185°F (85°C)
1XSWHL	-40°F to 185°F (-40°C to 85°C)	-40°F to 185°F (-40°C to 85°C)
1XSWHH	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
1XTXSW	-40°F (-40°C) TO 185°F (85°C)	-40°F (-40°C) TO 185°F (85°C)
1XTX00	-40°F (-40°C) TO 185°F (85°C)	-40°F (-40°C) TO 185°F (85°C)
Display visibility temperature range: 10°F (-12°C) to 158°F (70°C) all models		

Long-term stability: ±0.25% of range/year maximum

Temperature drift: 0.03% of full scale per °C (0.12% for the K10 range)

Switch response time: ≤ 100 mS for detection of full step change and change of output state with Trip Delay and Filter turned off

Analog output response time: 250 mS maximum with FILTER set to OFF, pressure models only

Display response time: 400 mS (updated 2.5 times per second)

Filter (transient filtering to prevent nuisance trips): Programmable time constants for 0.25*, 0.5*, 1, and 2 seconds, default OFF

Trip Delay (switch decision delay): 0 to 999.9 seconds in 1/10th second increments

*Pressure Models Only



SPECIFICATIONS (CONTINUED)

Set 4 MA (scale the 4 mA output):

Programmable from -3 to 25% of the sensor's range, values are in the units of measure selected and are range dependent

Set 20 MA (scale the 20 mA output):

Programmable from 50 to 110% of the sensor's range, values are in the units of measure selected and are range dependent

IAW™ (I Am Working) Diagnostics:

Upon detecting a fault, the local display will show a fault code, the set point switch will change to the as-programmed tripped state, the normally-closed IAW™ Output switch will fail-safe-open and the NAMUR NE 43 standard 4-20 mA output will indicate ≤ 3.6 mA. See installation manual for a complete listing of detectable faults and codes.

Switch Control modes (N/A for 1XTX00):

Mode	Set Point Switch Action	IAW™ Output (on fault)
Open Rise	Normally closed, opens at set point on rising media and fault	Opens
Open Fall	Normally closed, opens at set point on falling media and fault	Opens
Close Rise	Normally open, closes at set point on rising media and fault	Opens
Close Fall	Normally open, closes at set point on falling media and fault	Opens
Open Out of Window	Normally closed, opens above set point high and below set point low and fault, closes below deadband high and above deadband low	Opens
Close Out of Window	Normally open, closes above set point high and below set point low and fault, opens below deadband high and above deadband low	Opens

Analog output (1XTX models only):

4-20 mA NAMUR NE 43 compliant and HART® version 7 compatible current output, 360 ohms max. at 24 VDC, field scalable 2:1 turn down. Faults are indicated at ≤ 3.6 mA. See installation manual for details.

Enclosure and cover:

Type 4X/IP66 certified epoxy-coated aluminum alloy 360 with tempered glass window. See Dimensional Drawings for more detail.

Conduit:

3/4" NPT female aluminum casting; 2 openings

Electrical Characteristics:

MODEL	SWITCH STATE	
	VOLTAGE OPEN (MAX.)	VOLTAGE CLOSED (MAX.)
1XSWLL	7.8 – 50 VDC @ 750 microamps	4.7 VDC @ 0.1 A
1XSWHL	70 – 240 VAC/VDC @ 1 mA	14 VAC/VDC NOMINAL

SPECIFICATIONS (CONTINUED)

Display:

4 digit x 0.5" (12.7 mm) backlit* LCD provides the following information

Process variable	MAX/MIN process values
IAW™ (I Am Working) status	Units of measure
Switch status	Latch status
Set point values	Deadband values
Trip counts	Fault codes
Offset indication	* backlit on 1XTX models only

Set point & deadband:

Programmable over the sensor's entire range

Memory:

Programming and data protected by non-volatile FRAM

Effective transmission distance:

2,000 feet (610 meters) at rated voltage for 1XSW models

Sensors:

Gage Pressure – 316L stainless steel wetted parts, welded diaphragm, 1/2" NPT (female) process connection, micro-machined piezo-resistive strain gage silicon element, 0.25 ml silicone oil fill, maximum diaphragm displacement: 0.00053 inches.

Maximum media temperature: -40 to 257°F (-40 to 125°C)

Vacuum: All gage pressure sensors withstand deep vacuum with no calibration effects. For compound vacuum ranges, see page 8.

Differential Pressure - 316L stainless steel, welded diaphragms, 1/4" NPT (male) process connections, piezo-resistive strain gage silicon element, silicone oil fill.

Maximum media temperature: -40 to 257°F (-40 to 125°C)

Temperature – 316 stainless steel 0.25" OD sheath containing a 100 ohm 4-wire platinum RTD element available with epoxy fill (local low temp) or powder fill (remote high temp).

Media temperature limits:

-328 to 1000°F, intermittent to 1100°F (-200 to 538°C, int. to 593°C) for TH and TT ranges

-40 to 500°F (-40 to 260°C) for TR and TL ranges

EMI/RFI:

Compliance to CE EMC requirements: EN 61000-6-2, EN 61000-6-4

Emission:

EN 61000-6-4 Class A

Immunity:

EN 61000-4-2 Immunity to Electrostatic Discharge

EN 61000-4-3 Immunity to Continuous Radiated Disturbances

EN 61000-4-4 Immunity to Electrical Fast Transients

EN 61000-4-5 Immunity to Surges

EN 61000-4-6 Immunity to Continuous Conducted Disturbances

EN 61000-4-11 Immunity to Voltage Dips and Interruptions

Weight:

4.5 - 6.0 lbs (2.0 - 2.7 kg) depending on sensor. Add 1.9 lbs. (0.9 kg) for option M041

Shock:

per MIL-STD-810G method 516.6 – when device is subjected to 15 g (10 mSec) and 40 g (6 mSec); 3 drops/axis
Effects: less than +/- 0.40% of range

Vibration:

per IEC 61298-3 (field and pipeline applications with high vibration level, 10-1000 Hz range, 0.014" displacement peak amplitude, 5 g acceleration amplitude)
Effects: less than +/- 0.40% of range

IAW™ is a registered trademark of United Electric Controls Co. Specifications subject to change without notice

HOW TO ORDER

Build a part number by selecting the model, sensor and options from the tables below.

Example: 1XTXSWP15-M041

Model	Description	Zone			Division	
		0	1	2	1	2
1XSWLL (Replaces 2W2D, 2X2D, 2W4D, 2X4D)	<ul style="list-style-type: none"> 2-wire, discrete input powered switch for 24 and 48 VDC logic solver inputs Programmable set point switch rated at 7.8 - 50.0 VDC @ 0.1 A max. IAW™ health status fail-safe-open switch rated at 7.8 - 50.0 VDC @ 0.1 A wired separately to the logic solver 	0	•	•	0	•
1XSWHL (Replaces 2W3A and 2X3A)	<ul style="list-style-type: none"> 2-wire, discrete input powered switch for 110 and 230 VAC/VDC and 125 VDC logic solver inputs Programmable set point switch rated at 70 - 240 VAC/VDC @ 0.1 A IAW™ health status fail-safe-open switch rated at 7.8 - 50.0 VDC @ 0.1 A wired separately to the logic solver 		•	•	•	•
1XSWHH (Replaces 4W3A and 4X3A)	<ul style="list-style-type: none"> 4-wire, external powered 70 - 240 VAC Programmable set point rated at 70 - 240 VAC @ 0.15 - 10 A IAW™ health status fail-safe-open switch rated at 7.8 - 50.0 VDC @ 0.1 A wired separately to the logic solver 		•	•	•	•
1XTXSW (Replaces 2WLP, 2XLP, 8W2D, 8X2D)	<ul style="list-style-type: none"> Loop-powered 24 VDC HART® enabled smart transmitter Two programmable set point fail-safe solid state relays rated at 0 - 280 VAC/VDC @ 0.3 A IAW™ health status fail-safe-open switch rated at 0 - 30.0 VDC @ 0.020 A 		•	•	•	•
1XTX00 (Transmitter Only)	<ul style="list-style-type: none"> Loop-powered 24 VDC HART® enabled smart transmitter 		•	•	•	•
		0 - a safety barrier is required for intrinsically safe areas, Zone 0 and Div. 1 Ex ia				

Sensor	Pressure Operating Range ¹ + display resolution ⁴					Maximum Over Range ²		
Gage pressure, piezo-resistive strain gage, silicone oil fill, 316L stainless wetted materials, 1/2" NPT (female) process connection, displayed as shown.								
P06	-14.7 to 30 psig	831.1" wc	2068 mbar	206.8 KPa	2.109 kg/cm ²		60 psig	4137 mbar
P08	-14.7 to 100 psig	2770" wc	6895 mbar	689.5 KPa	7.031 kg/cm ²		200 psig	13,8 bar
P10	0-5.00 psig	138.5 "wc	344,7 mbar	34.47 KPa	0.352 kg/cm ²		10 psig	690 mbar
P11	0-15.00 psig	415.5 "wc	1034 mbar	103.4 KPa	1.055 kg/cm ²		30 psig	2068 mbar
P12	0-30.00 psig	831.1 "wc	2068 mbar	206.8 KPa	2.109 kg/cm ²		60 psig	4137 mbar
P13	0-50.00 psig	1385 "wc	3447 mbar	344.7 KPa	3.516 kg/cm ²		100 psig	6895 mbar
P14	0-100.0 psig	2770 "wc	6895 mbar	689.5 KPa	7.031 kg/cm ²		200 psig	13,8 bar
P15	0-300.0 psig	NA	20,68 bar	2068 KPa	21.09 kg/cm ²		600 psig	41,4 bar
P16	0-500.0 psig	NA	34,47 bar	3447 KPa	35.16 kg/cm ²		1000 psig	68,9 bar
P17	0-1000 psig	NA	68,95 bar	6.895 MPa	70.31 kg/cm ²		2000 psig	137,9 bar
P18	0-3000 psig	NA	206,8 bar	20.68 MPa	210.9 kg/cm ²		6000 psig	413,7 bar
P19	0-4500 psig	NA	310,3 bar	31.03 MPa	316.4 kg/cm ²		9000 psig	620,5 bar
P20	0-6000 psig	NA	413,7 bar	41.37 MPa	421.9 kg/cm ²		12000 psig	827,4 bar

HOW TO ORDER CONT.

Sensor	Pressure Operating Range ¹ + display resolution ⁴				
Differential pressure, piezo-resistive strain gage, silicone oil fill, 316L stainless wetted materials, 1/4" NPT (male) process connections, displayed as shown.					
K10	0-5.000 psid	138.5 "wc	344,7 mbar	34.47 KPa	0.352 kg/cm ²
K11	0-50.00 psid	1385 "wc	3447 mbar	344.7 KPa	3.516 kg/cm ²
K12	0-100.0 psid	2770 "wc	6895 mbar	689.5 KPa	7.031 kg/cm ²
K13	0-200.0 psid	NA	13,79 bar	1379 KPa	14.10 kg/cm ²

Sensor	Maximum Over Range ²		Maximum Working Pressure ³	
K10	10 psid	690 mbar	50 psig	3447 mbar
K11	100 psid	6895 mbar	500 psig	34,47 bar
K12	200 psid	13,8 bar	1500 psig	103,4 bar
K13	400 psid	27,6 bar	1500 psig	103,4 bar

1 - The pressure range that the sensor will perform within specified tolerances.

2 - The maximum pressure that can be applied without affecting sensor performance.

3 - The maximum pressure that can be applied to both ports simultaneously without affecting sensor performance. Pressure on the "H" sensor port must be ≥ pressure on the "L" sensor port.

4 - The sensor range tables above provide the display and set point decimal point resolution along with the units of measure and are specific for each range. IMPORTANT: When ordering option M201 or M202, please observe the decimal point resolution for the range specified and provide the set point and deadband settings with the same number of decimal places as found in these tables.

Sensor	Temperature Range	Description (see page 13 for sensor drawings)
Temperature – 4-wire RTD, 100 Ω platinum, DIN 0.00385, 0.25" OD sensor sheath, 316 stainless steel construction		
TL1	-40 to 450°F/-40 to 232°C (See page 11 fitting options)	Local (stem) mounted rigid to enclosure, 4" sheath length
TL2		Local (stem) mounted rigid to enclosure, 6" sheath length
TL3		Local (stem) mounted rigid to enclosure, 10" sheath length
TR1		Remote mounted, 2.5" sheath, 6' MI fixed extension length
TRC		Remote mounted, 2.5" sheath, 1' to 30' MI extension length MUST BE SPECIFIED. USE OPTION W074 ONLY.
TH1	-40 to 1000°F/-40 to 538°C (See page 11 fitting options)	Remote mounted, 2.5" sheath, 6' MI fixed extension length
THC		Remote mounted, 2.5" sheath, 1' to 30' MI extension length MUST BE SPECIFIED. USE OPTION W074 ONLY.
TC1 *	-300 to 200°F/-184 to 93°C (See page 11 fitting options)	Remote mounted, 2.5" sheath, 6' MI fixed extension length
TCC *		Remote mounted, 2.5" sheath, 1' to 30' MI extension length MUST BE SPECIFIED. USE OPTION W074 ONLY.
TTC	-40 to 900°F/-40 to 482°C (Example: TTC-NUN6-L 10.5)	Local (stem) spring-loaded mount, NUN connection lengths: 4" – 10" in 1" increments, variable sheath (L) length up to 60", BOTH MUST BE SPECIFIED. Refer to drawing on page 13. Thermowell required, see page 11.
Thermowells and fittings are shown on page 11. To order spares and replacement temperature sensor assemblies , provide the "TA#:" number from the product nameplate. Example: TA#: 62128723		

*Calibration certification is not available on the TC1 and TCC

OPTION CODES

M041 Dual Seal - Provides secondary process seal for all pressure models

M201 Factory programmable set point, deadband and switch mode for one switch (1XSW Models Only) (see M202 for information required)

M202 Factory programmable set point, deadband and switch mode for two relays (Model 1XTXSW Only)
(all 6 settings are required when ordering - see example below)

Relay	Set Point ¹	Deadband ¹	Relay Mode
SW1	040.3	001.5	OPEN ON FALL
SW2	050.0	005.0	CLOSE ON RISE

(For WINDOW modes, all 10 settings are required when ordering - see example below)

Relay	Set Point High ¹	Deadband High ¹	Set Point Low ¹	Deadband Low ¹	Relay Mode
SW1	60.00	12.00	18.50	10.25	OPEN WINDOW
SW2	30.50	06.25	09.00	04.75	CLOSE WINDOW

IMPORTANT: When ordering option M201 or M202, please observe the decimal point resolution for the range specified and provide the set point and deadband settings with the same number of decimal places as found in these tables.

M270 Display units, degrees C for temperature models

M275 Display units, inches of water column

M276 Display units, bar or mbar

M277 Display units, kPa or MPa

M278 Display units, kg/cm²

M395 Flameproof compliance Ex d per Korea Occupational Safety and Health Agency (KOSHA)*

M406 Compliance per Russian Gosgortekhnadzor*

M444 Paper tag

M446 Stainless steel tag

M449 Mounting bracket for pipe or wall. Use part number 6361-704 if ordered separately. See page 12 for additional information.

M550 Oxygen service: Cleaned in accordance with ASTM G93

W073 1/2" NPT male compression fitting for use with all TL sensors, see page 11 for additional information

W074 1/2" NPT male union connector for use with all TR, TH and TC sensors

W081 Thermowell adapter - Adapts 3/8" Thermowell to 1/4" sensor sheath

W930 1/2" NPT male to G1/2 male adapter for use with gage pressure sensors P06-P20. Use part number 6361-762 if ordered separately.

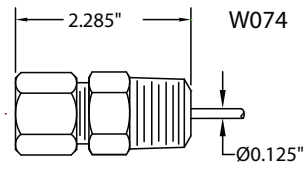
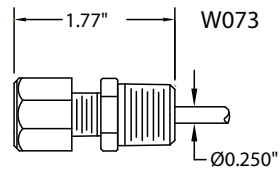
W932 1/4" NPT female to G1/2 male adapter for use with differential pressure sensors K10-K13. Use part number 6361-763 if ordered separately (2 required)

6361-752 Replacement cover assembly

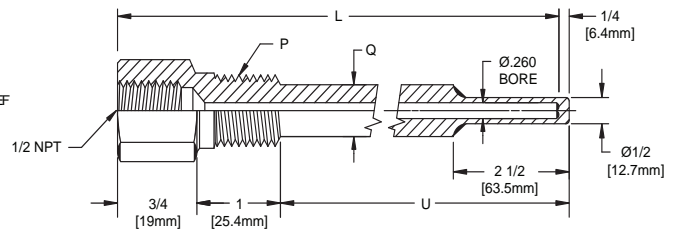
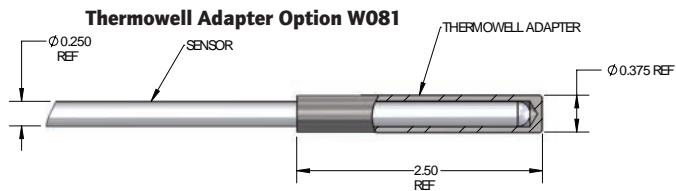
¹Note: Four digits must be entered for each set point and deadband. Please refer to the display resolution chart on pages 8 & 9 for the correct number of decimal places allowed for the sensor range and units of measure selected.

*Please call for availability

TEMPERATURE SENSORS AND FITTINGS COMPATIBILITY CHART



Model	W073 1/2" NPT compression fitting with ferrule to fit 0.25" sensor sheath	W074 1/2" NPT union connection to fit 0.125" sensor extension cable
1XSW, 1XTX	TLx	TRx, THx, TCx



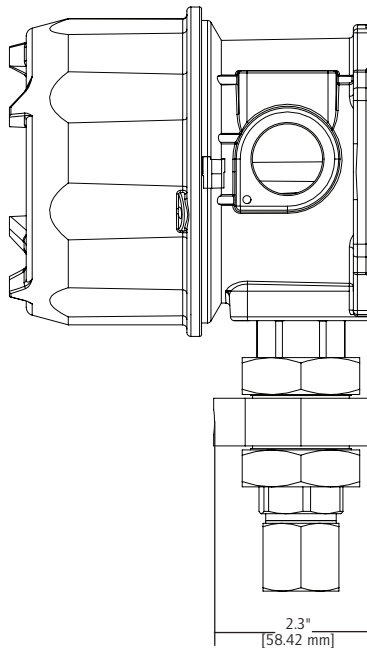
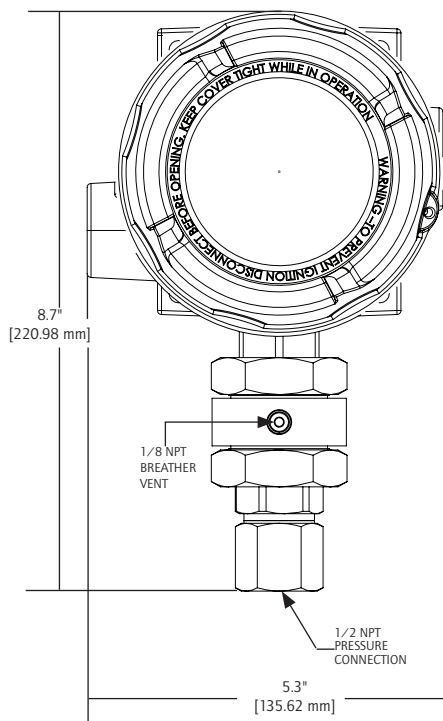
Fittings for Thermowells

Thermowell UE Part #	Length (L) Inches	P (NPT)	Q	U	Local Temperature Sensors w/ 0.25" Sensor Sheath			Remote Temperature Sensors w/ 0.125" Diameter MI Cable
					TL1 (4")	TL2 (6")	TL3 (10")	
1S260L2.5-316	2.5	1/2	5/8	1	W073	W073	W073	W074
1S260 L4-316	4	1/2	5/8	2.5	NA	W073	W073	W074
1S260 L4.5-316	4.5	1/2	5/8	3	NA	W073	W073	W074
1S260 L5.5-316	5.5	1/2	5/8	4	NA	NA	W073	W074
1S260 L6-316	6	1/2	5/8	4.5	NA	NA	W073	W074
1S260 L6.5-316	6.5	1/2	5/8	5	NA	NA	W073	W074
1S260 L9-316	9	1/2	5/8	7.5	NA	NA	NA	W074
1S260 L9.5-316	9.5	1/2	5/8	8	NA	NA	NA	W074
1S260 L12-316	12	1/2	5/8	10.5	NA	NA	NA	W074
1S260 L15-316	15	1/2	5/8	13.5	NA	NA	NA	W074
1S260 L18-316	18	1/2	5/8	16.5	NA	NA	NA	W074
1S260 L24-316	24	1/2	5/8	22.5	NA	NA	NA	W074
2S260L2.5-316	2.5	3/4	3/4	1	W073	W073	W073	W074
2S260 L4-316	4	3/4	3/4	2.5	NA	W073	W073	W074
2S260 L6-316	6	3/4	3/4	4.5	NA	NA	W073	W074
2S260 L9-316	9	3/4	3/4	7.5	NA	NA	NA	W074
2S260 L12-316	12	3/4	3/4	10.5	NA	NA	NA	W074
2S260 L15-316	15	3/4	3/4	13.5	NA	NA	NA	W074
2S260 L18-316	18	3/4	3/4	16.5	NA	NA	NA	W074
2S260 L24-316	24	3/4	3/4	22.5	NA	NA	NA	W074

DIMENSIONAL DRAWINGS

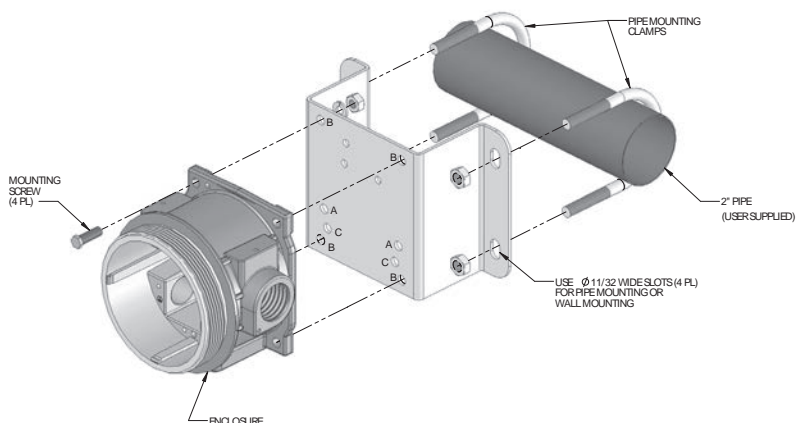
ENCLOSURE AND SENSOR DETAILS

Shown with Dual Seal option M041 and gage pressure sensor



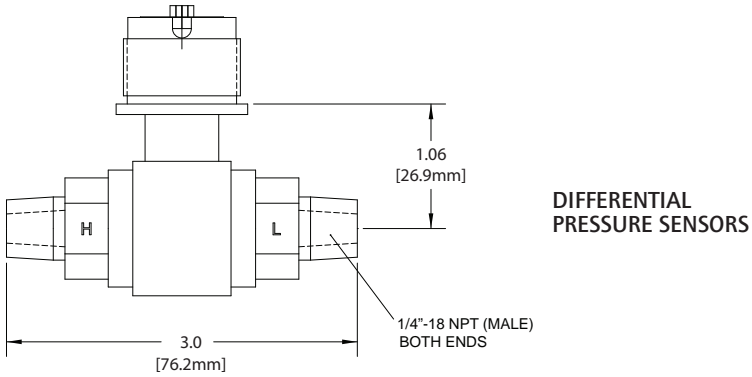
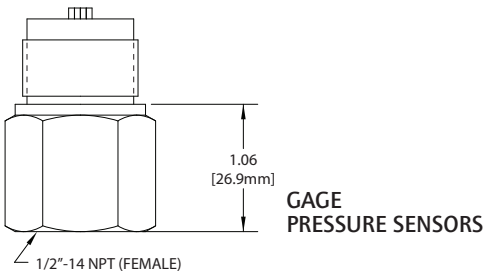
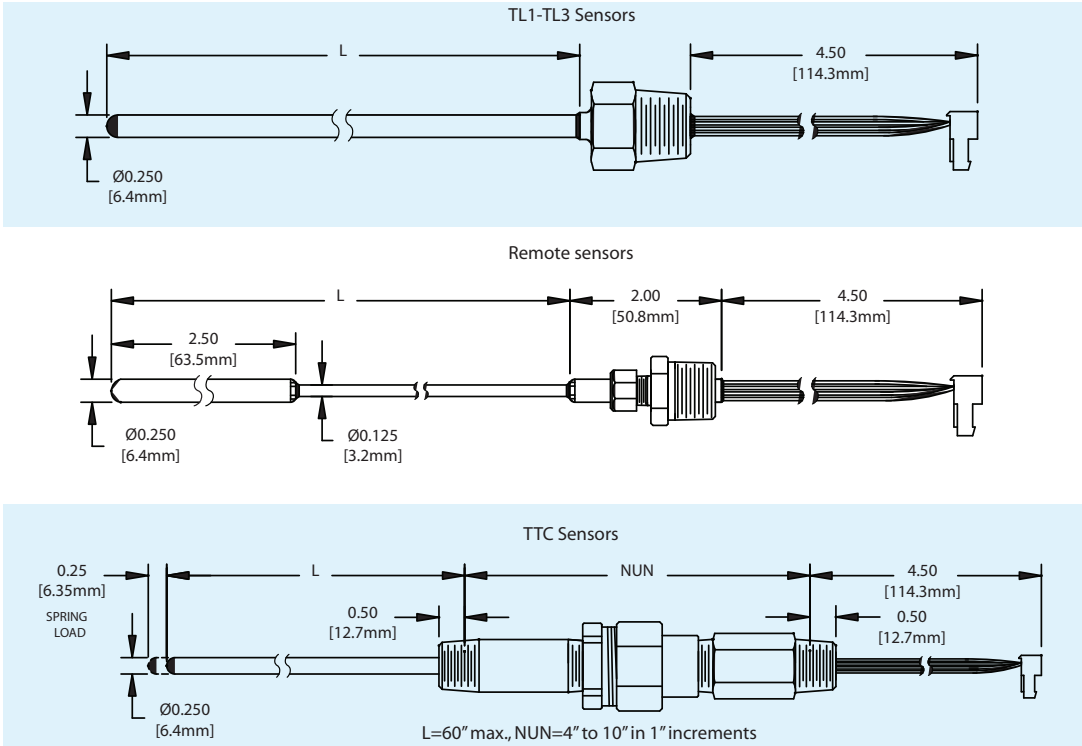
Wall or Pipe Mounting Bracket Option M449 or part #6361-704

WARNING: The One Series unit must be secured to a wall or pipe. *Do not use the sensor to support the instrument.* Contact UE Technical Support at 617-923-6977 or email at techsupport@ueonline.com.



DIMENSIONAL DRAWINGS (CONTINUED)

TEMPERATURE SENSORS



APPROVALS & RATINGS

Model	N. America	Europe	International
1XSWLL	cULus Listed UL: 50, 50E, 913, 1203 and 61010-1. ANSI/ISA 12.12.01, ISA 12.27.01. CSA C22.2: 25, 30, 157, 213, 94.01, 94.2 and 61010-1. CSA C22.2 / UL : 60079, -0, -1, -11, -15, -31.	EN 60079-0, EN 60079-1, EN 60079-11, EN 60079-15, EN 60079-31	IEC 60079-0, IEC 60079-1, IEC 60079-11, IEC 60079-15, IEC 60079-31
1XSWLL	CLASS I, DIVISION 1 GROUPS A, B, C & D; CLASS II, DIVISION 1, GROUPS E, F, G; CLASS III (Note: No gas group A with option M041) CLASS I, ZONE 1, AEx d IIC **T3/T5; Ex d IIC **T3/T5; CLASS I, ZONE 0, AEx ia IIC T4; Ex ia IIC T4 ; CLASS I, DIVISION 2, GROUPS A, B, C & D; CLASS II, DIVISION 2, GROUPS E, F, G; CLASS III (No gas group A with option M041) CLASS I, ZONE 2, GROUPS AEx nA IIC T4; Ex nA IIC T4; -40°C ≤ Tamb ≤ 85°C (-40°F ≤ Tamb ≤ 185°F) ENCLOSURE TYPE 4X, IP66 UL File: E226592	II 2 G Ex db IIC T5 Gb; II 2 D Ex tb IIIC T+90°C Db; IP66 II 1 G Ex ia IIC T4 Ga; II 1 D Ex ia IIIC T+135°C Da; -40°C ≤ Tamb ≤ 85°C (-40°F ≤ Tamb ≤ 185°F) DEMKO 09 ATEX 0813748X II 3 G Ex nA IIC T4 Gc; DEMKO 15 ATEX 1483 -40°C ≤ Tamb ≤ 85°C (-40°F ≤ Tamb ≤ 185°F)	Ex db IIC **T3/T5 Gb; Ex tb IIIC T+90°C Db; IP66 Ex ia IIC T4 Ga; Ex tb IIIC T+135°C Da; IECEX UL 08.0017X -40°C ≤ Tamb ≤ 85°C (-40°F ≤ Tamb ≤ 185°F)

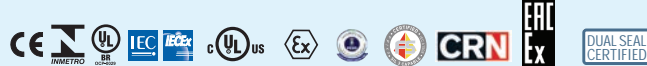
Model	N. America	Europe	International
1XTXSW, 1XTX00, 1XSWHL, 1XSWHH	cULus Listed UL: 50, 50E, 913, 1203 and 61010-1. ANSI/ISA 12.12.01, ISA 12.27.01. CSA C22.2: 25, 30, 213, 94.01, 94.2 and 61010-1. CSA C22.2 / UL : 60079, -0, -1, -15, -31.	EN 60079-0, EN 60079-1, EN 60079-15, EN 60079-31	IEC 60079-0, IEC 60079-1, IEC 60079-15, IEC 60079-31
1XTXSW, 1XTX00, 1XSWHL, 1XSWHH	CLASS I, DIVISION 1, GROUPS A, B, C & D; CLASS II, DIVISION 1, GROUPS E, F, G; CLASS III (Note: No gas group A with option M041) CLASS I, ZONE 1, AEx d IIC **T3/T5; Ex d IIC **T3/T5; CLASS I, DIVISION 2, GROUPS A, B, C & D; CLASS II, DIVISION 2, GROUPS E, F, G; CLASS III (No gas group A with option M041) CLASS I, ZONE 2, GROUPS AEx nA IIC T4; Ex nA IIC T4; -40°C ≤ Tamb ≤ 85°C (-40°F ≤ Tamb ≤ 185°F) ENCLOSURE TYPE 4X, IP66 UL File: E226592	II 2 G Ex db IIC **T3/T5 Gb; II 2 D Ex tb IIIC T+90°C Db; IP66 -40°C ≤ Tamb ≤ 85°C (-40°F ≤ Tamb ≤ 185°F) DEMKO 09 ATEX 0813748X II 3 G Ex nA IIC T4 Gc; DEMKO 15 ATEX 1483 -40°C ≤ Tamb ≤ 85°C (-40°F ≤ Tamb ≤ 185°F)	Ex db IIC **T3/T5 Gb; Ex tb IIIC T+135°C Db; IECEX UL 08.0017X -40°C ≤ Tamb ≤ 85°C (-40°F ≤ Tamb ≤ 185°F)

**T3 for pressure sensor ranges P06, P08, and P10-P16 only. T5 for all other models.
Specifications subject to change without notice.

ADDITIONAL PRODUCTS FROM UE

One Series Safety Transmitter - Pressure and Temperature Transmitter-Switch

- Improve Availability with reduced nuisance trips
- Improve Uptime with safety diagnostics
- Improve Safety with SRO to ensure safety function
- Lower Inventory - a transmitter, switch and gauge in one
- Simplify Complex Safety Systems with SFF = 98.8%
- Reduce Migration Costs with backward and forward compatibility



12 Series – Electro-Mechanical Pressure and Temperature Switch

- Compact, cylindrical 316 stainless steel design
- Hermetically sealed micro-switch
- Explosion Proof
- Snap-acting belleville spring mechanism for maximum vibration resistance and set point stability
- Pressure ranges 1 to 12,500 psi;
DP working pressure ranges 0 to 2500 psid;
temperature ranges -130 to 650°F
- Dual seal compliance to ANSI/ISA 12.27.01



120 Series – Electro-Mechanical Pressure and Temperature Switch

- Explosion-proof line of pressure, differential pressure, and temperature models with wide selection of ranges, sensors and pressure connections
- Div. 1, Zone 1 certified for hazardous locations
- Single or dual switch outputs
- Welded stainless steel diaphragm pressure sensor
- Internal or external set point adjustment



TX200 Series HART® & ASIC Pressure Transmitter

- Smart TX200H offers HART 7 communication and 4-20 mA output
- TX200H 10:1 range turndown helps reduce inventory
- ASIC based TX200 offers 4-20 mA output or 1-5 VDC or 0-10 VDC output
- Rugged 316 stainless steel construction, welded and hermetically sealed
- Wide variety of process connections available for pressure ranges from 0 to 15 psi up to 0 to 25,000 psi



Temperature Sensors

Rugged RTDs and thermocouples for process and energy applications, available with Nema 4X and explosion-proof heads to match heat-trace, turbine, combustion, and stack-emission applications



RECOMMENDED PRACTICES AND WARNINGS

United Electric Controls Company recommends careful consideration of the following factors when specifying and installing UE pressure and temperature units. Before installing a unit, the Installation and Maintenance instructions provided with unit must be read and understood.

- To avoid damaging unit, proof pressure and maximum temperature limits stated in literature and on nameplates must never be exceeded, even by surges in the system. Operation of the unit up to maximum pressure or temperature is acceptable on a limited basis (e.g., start-up, testing) but continuous operation must be restricted to the designated adjustable range. Excessive cycling at maximum pressure or temperature limits could reduce sensor life.
- A back-up unit is necessary for applications where damage to a primary unit could endanger life, limb or property. A high or low limit switch is necessary for applications where a dangerous runaway condition could result.
- The adjustable range must be selected so that incorrect, inadvertent or malicious setting at any range point cannot result in an unsafe system condition.
- Install unit where shock, vibration and ambient temperature fluctuations will not damage unit or affect operation. When applicable, orient unit so that moisture does not enter the enclosure via the electrical connection. When appropriate, this entry point should be sealed to prevent moisture entry.
- Unit must not be altered or modified after shipment. Consult UE if modification is necessary.
- Monitor operation to observe warning signs of possible damage to unit, such as drift in set point or faulty display. Check unit immediately.
- Preventative maintenance and periodic testing is necessary for critical applications where damage could endanger property or personnel.
- Electrical ratings stated in literature and on nameplate must not be exceeded. Overload on a switch can cause damage, even on the first cycle. Wire unit according to local and national electrical codes, using wire size recommended in installation sheet.
- Do not mount unit in ambient temp. exceeding published limits.

LIMITED WARRANTY

Seller warrants that the product hereby purchased is, upon delivery, free from defects in material and workmanship and that any such product which is found to be defective in such workmanship or material will be repaired or replaced by Seller (Ex-works, Factory, Watertown, Massachusetts. INCOTERMS); provided, however, that this warranty applies only to equipment found to be so defective within a period of 36 months from the date of manufacture by the Seller. Seller shall not be obligated under this warranty for alleged defects which examination discloses are due to tampering, misuse, neglect, improper storage, and in any case where products are disassembled by anyone other than authorized Seller's representatives. EXCEPT FOR THE LIMITED WARRANTY OF REPAIR AND REPLACEMENT STATED ABOVE, SELLER DISCLAIMS ALL WARRANTIES WHATSOEVER WITH RESPECT TO THE PRODUCT, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF SELLER'S LIABILITY

SELLER'S LIABILITY TO BUYER FOR ANY LOSS OR CLAIM, INCLUDING LIABILITY INCURRED IN CONNECTION WITH (I) BREACH OF ANY WARRANTY WHATSOEVER, EXPRESSED OR IMPLIED, (II) A BREACH OF CONTRACT, (III) A NEGLIGENT ACT OR ACTS (OR NEGLIGENT FAILURE TO ACT) COMMITTED BY SELLER, OR (IV) AN ACT FOR WHICH STRICT LIABILITY WILL BE INPUTTED TO SELLER, IS LIMITED TO THE "LIMITED WARRANTY" OF REPAIR AND/OR REPLACEMENT AS SO STATED IN OUR WARRANTY OF PRODUCT. IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL OR OTHER DAMAGES OF A LIKE GENERAL NATURE, INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS OR PRODUCTION, OR LOSS OR EXPENSES OF ANY NATURE INCURRED BY THE BUYER OR ANY THIRD PARTY.

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