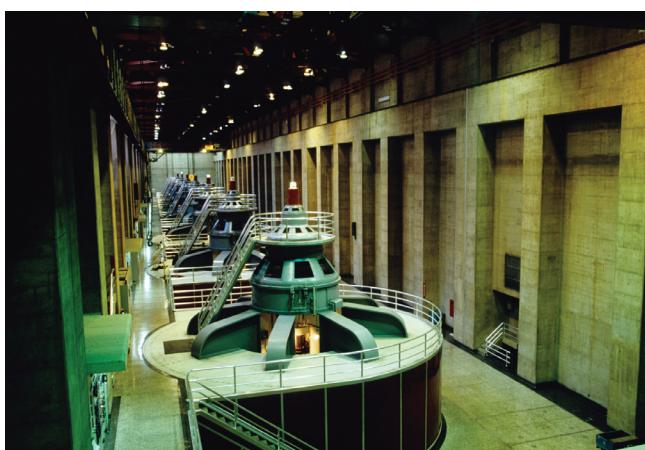


PRESSURE AND TEMPERATURE TRANSMITTER-SWITCHES



Benefits

- Industry standard 4-20 mA output + programmable switch for process monitoring and control
- Display and keypad provide easy, fast and secure field programming while in service; no handheld required
- 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 approvals included:    



OVERVIEW

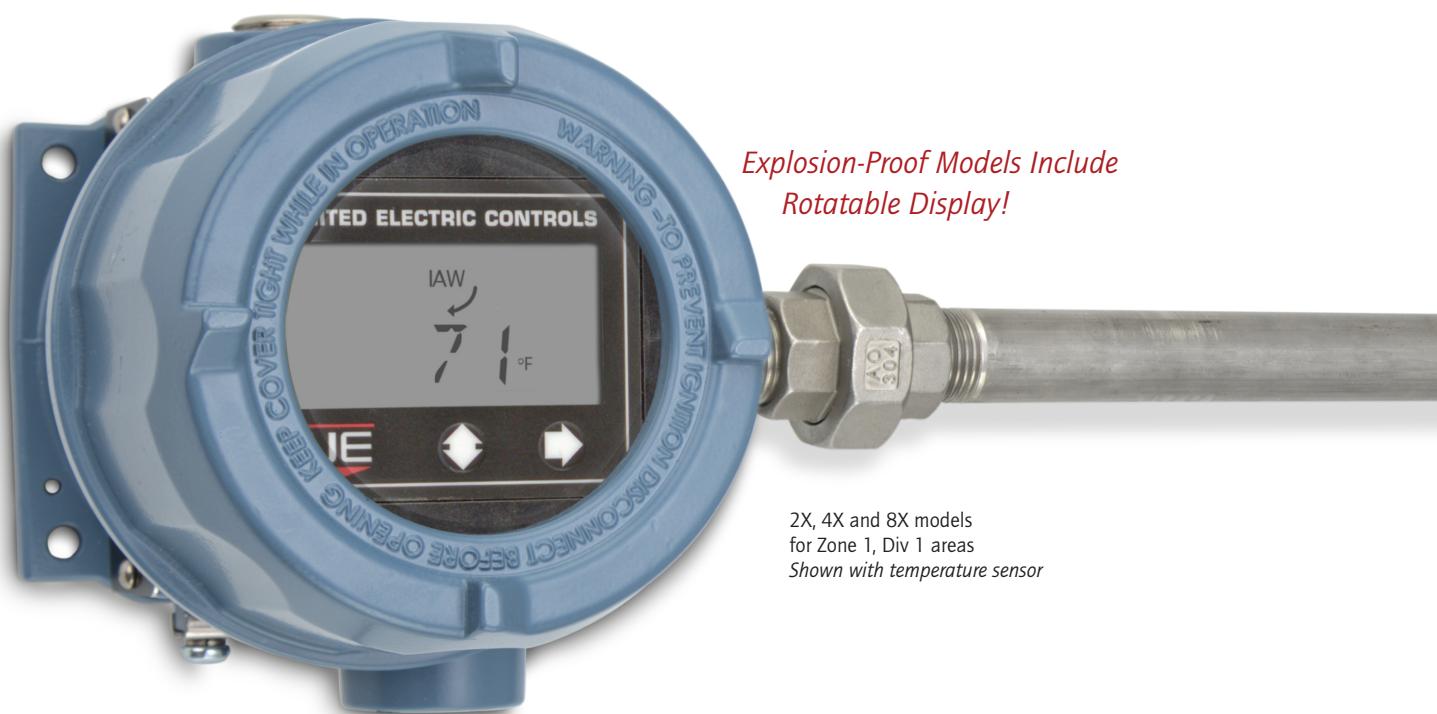
United Electric Controls (UE) is renowned for high-quality workmanship and product design, and the *One Series* carries this 80-year tradition well beyond electromechanical switches. UE's *One Series* line of digital electronic pressure and temperature transmitter-switches set new standards for quality, reliability and versatility. Designed to meet the needs of harsh and hazardous applications, the *One Series*' advanced self-diagnostics and digital electronics provide the most reliable switches for a variety of diverse industries.

The One Series from UE allows you to choose from explosion-proof, intrinsically safe and non-incendive models that monitor gage pressure, differential pressure or temperature. With the 4-20 mA analog output and up to two fully adjustable switches and absolutely 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, discrete input powered and externally powered models that can switch up to 280 VAC at 10 amperes 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 – 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.

FEATURES

- Digital process display
- Programmable set point and deadband
- Self-diagnostic solid-state digital electronics
- Plug port detection
- Nuisance trip filtering
- Configurable IAW® self-diagnostics
- Min/Max process values memory
- 3-year warranty



INNOVATIVE DESIGN

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

POWER

Extremely low power consumption allows the One Series 2-Wire electronic switch to operate with no additional wiring or batteries. Power is obtained from the control system's discrete or analog input, making it ideal for plant upgrades from mechanical switches while using the same wiring and control schemes. For direct switching applications, powered versions of the One Series can provide 2 independent solid-state relays or handle a load of up to 10 amperes. Loop-powered models feature field-scalable 4-20 mA analog output in addition to a programmable solid-state relay, providing a switch + gauge + transmitter function all in one instrument.

PROGRAMMABILITY

The set point and deadband settings allow for 100% adjustability, providing highly repeatable trip and reset points for your application. This feature allows the One Series to be used in pump and compressor applications where high cycle rates may shorten the life of mechanical controls. Nuisance trips, switch delay, plugged port detection and process extremes are all easily programmable, making these application challenges manageable by the instrument, with no special programming needed for the PLC.

SELF-DIAGNOSTICS

Mechanical switches have no self-diagnostic capabilities – they are blind instruments. All One Series models include the patented IAW® (I Am Working) algorithm that can detect faults before they become process control problems. Detected faults are reported on the digital display while the switch will fail safe open and the 4-20 mA analog output saturates beyond 4 and 20 to provide remote fault indication. The intelligent and configurable IAW® diagnostics allow the SIL-2-suitable One Series to provide a significantly higher risk reduction factor than some safety transmitters in plant safety applications.



2W, 4W and 8W models
for Zone 2, Div 2 areas
Shown with compound range pressure sensor

APPLICATION VERSATILITY

For alarm and shutdown switching applications, there is no better choice than the *One Series* family of electronic switches from United Electric Controls. Measuring gauge 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 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 self-diagnostics, offering plant operators an extremely reliable and smart protection device.

Proven in use in literally thousands of diverse applications, UE's explosion-proof *One Series* models extend this revolutionary switching technology to Zone 1 (Division 1) areas.

Here are just a few applications:

- Pumps and compressors – start/stop, optimizing, shutdown, staging
- Lubricating oil monitoring – 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
- Safety systems – safety integrity levels 1 & 2, alarm and shutdown, local switching, fast response time
- Plant upgrades – power and wastewater plant upgrades, drop-in replacement for mechanical switches



Gas Compressor Protection



Pump Emergency Shutdown



Lubrication Oil Monitoring

SPECIFICATIONS

**Power input/
Switch output:**

| Model | Input Type (Range) | Max Switch Ratings (SPST) | Temperature Derating | Min. Load Requirement | Off State Leakage |
|------------------|--|--|---------------------------|-----------------------|-------------------|
| 2W2D00 2X2D00 | 2-Wire 24 VDC discrete input powered (12-30 VDC) @ 750 μ A (max) | 12-30 VDC @ 40 mA | NA | 2.3 mA | 0.75 mA maximum |
| 2W4D00 2X4D00 | 2-Wire 48 VDC discrete input powered (30-50 VDC) @ 750 μ A (max) | 30-50 VDC @ 40 mA | | 2.0 mA | 0.8 mA maximum |
| 2W3A00 2X3A00 | 2-Wire 120 V discrete input powered (90-130 VAC/VDC) @ 1 mA | 90-130 VAC/VDC @ 0.1 A | | 3.75 mA | 1.0 mA maximum |
| 2WLP41 2XLP41 | 2-Wire 24 VDC analog input loop powered (10-36 VDC) @ 4-20 mA | 0-140 VAC/VDC @ 0.6 A | 8% per 10°C above 21°C | 0 mA | 0.01 mA |
| 2WLP43 2XLP43 | 2-Wire 24 VDC analog input loop powered (10-36 VDC) @ 4-20 mA | 0-280 VAC/VDC @ 0.3 A | | | |
| 4W3A01 4X3A01 | 4-Wire 120 VAC external power supply (90-130 VAC) @ 15mA | 24-280 VAC @ 10 A | 1.8 A per 10°C above 38°C | 150 mA | 0.1 mA |
| 8W2D42 8X2D42 | 8-Wire 24 VDC external power supply (10-30 VDC) @ 30 mA | SW1: 75-250 VAC @ 1.5 A SW2: 75-250 VAC @ 1.5 A | 10% per 10°C above 21°C | 50mA | 5 mA |
| 8W2D44 8X2D44 | 8-wire 24 VDC external power supply (10-30 VDC) @ 30 mA | SW1: 75-250 VAC @ 1.5 A SW2: 0-140 VAC/VDC @ 0.6 A | | | |
| 8W2D45 8X2D45 | 8-wire 24 VDC external power supply (10-30 VDC) @ 30 mA | SW1: 0-140 VAC/VDC @ 0.6 A SW2: 0-140 VAC/VDC @ 0.6 A | 8% per 10°C above 21°C | 0 mA | 0.01 mA |

Accuracy:

0.5% of full range span, at room temperature

Repeatability:

0.1% of full range span

Ambient operating temperature range:

| | Approved Ambient Operating Temperature Range | | | |
|------|--|----------------------------|---------------|--------------|
| | cULus (Division System) | cULus & ATEX (Zone System) | | |
| 2W2D | -40°F (-40°C) | 176°F (80°C) | -40°F (-40°C) | 176°F (80°C) |
| 2W4D | NA | NA | NA | NA |
| 2WLP | -40°F (-40°C) | 176°F (80°C) | -40°F (-40°C) | 140°F (60°C) |
| 2W3A | -40°F (-40°C) | 185°F (85°C) | -40°F (-40°C) | 140°F (60°C) |
| 4W3A | -40°F (-40°C) | 158°F (70°C) | -40°F (-40°C) | 140°F (60°C) |
| 8W2D | -40°F (-40°C) | 176°F (80°C) | -40°F (-40°C) | 140°F (60°C) |
| 2X2D | -40°F (-40°C) | 185°F (85°C) | -40°F (-40°C) | 185°F (85°C) |
| 2X4D | -40°F (-40°C) | 185°F (85°C) | -40°F (-40°C) | 185°F (85°C) |
| 2XLP | -40°F (-40°C) | 176°F (80°C) | -40°F (-40°C) | 176°F (80°C) |
| 2X3A | -40°F (-40°C) | 185°F (85°C) | -40°F (-40°C) | 185°F (85°C) |
| 4X3A | -40°F (-40°C) | 158°F (70°C) | -40°F (-40°C) | 158°F (70°C) |
| 8X2D | -40°F (-40°C) | 176°F (80°C) | -40°F (-40°C) | 176°F (80°C) |

Display operating temperature range:

10°F (-12°C) 158°F (70°C)

SPECIFICATIONS (CONTINUED)

| | |
|-------------------------------------|---|
| 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: | "Change-of-output" response ≤ 60 mS (16.7 Hz) (for detection of full step change and change of output state, delay feature off) |
| Display response time: | 400 mS (2.5 Hz) |
| Transient filtering (Delay): | Programmable time constants between 250 mS and 2 seconds in 2X increments |
| Diagnostics (IAW®): | Open or shorted sensor; plugged port; power supply out of range; over and under-range conditions; microprocessor faults/failure; keypad short; switch fault |
| Output states: | Field selectable for 2-state or 3-state operation. Pulse rates vary by model. Fast and slow rates are selectable. See installation manual for details. |
| Control modes: | Field-configuration solid-state switch action with programmable manual reset |

| Mode | Action | Fault |
|-----------------|------------------------|-------|
| 2-state | | |
| Normally closed | Open on rising media | Open |
| Normally open | Close on rising media | Open |
| Normally closed | Open on falling media | Open |
| Normally open | Close on falling media | Open |
| 3-state | | |
| Normally closed | Pulse on rising media | Open |
| Normally closed | Pulse on falling media | Open |

Analog output:

4-20 mA output, 700 ohms max. at 24 VDC, Field scalable, 2:1 turn down. Various faults are indicated at 0, 3.5, 22 and 24 mA. See installation manual for details. (2WLP, 2XLP, 8W2D, 8X2D models only)

Electrical characteristics:
(2-wire models only)

| | | Switch State (Max.) | |
|-------|------|-----------------------|---------------------|
| Model | | Voltage Open | Voltage Closed |
| 2W2D | 2X2D | 12-30 VDC @ 750 µA | 4.7 VDC @ 40 mA |
| 2W4D | 2X4D | 30-50 VDC @ 1 mA | 5.0 VDC @ 40 mA |
| 2W3A | 2X3A | 90-130 VAC/VDC @ 1 mA | 13 VAC/VDC @ 100 mA |

Enclosure:

Type 4X/IP66 certified epoxy-coated aluminum alloy 360 for 2X, 4X and 8X models and alloy 380 for 2W, 4W and 8W.

Faceplate:

UV-resistant pressure sensitive keypad and display overlay

Cover:

Epoxy-coated aluminum with tempered glass insert (explosion-proof models only)

Conduit:

1/2" NPT female stainless steel fitting; 3/4" NPT female aluminum casting (explosion-proof models only)

SPECIFICATIONS (CONTINUED)

| | |
|--|---|
| Display: | <ul style="list-style-type: none"> Local 4 digit x 0.5" LCD IAW® (I Am Working) status Process variable Units of measure Switch status Latch status Set point value Deadband value Min/Max values Fault codes |
| Set point & deadband: | User-configured, 100% adjustable over entire sensor operating range |
| Memory: | Programming and data protected by non-volatile EEPROM |
| Effective transmission distance | 2,000 feet at rated voltage for 2W2D/2X2D, 2W4D/2X4D and 2W3A/2X3A |
| Sensors: | <p>Gauge Pressure – 316L stainless steel, welded diaphragm, 1/2" NPT (female) process connection, micro-machined piezo-resistive strain gauge silicon element, 0.25 ml silicone oil fill. Maximum media temperature: -40 to 257°F (-40 to 125°C)</p> <p>Differential Pressure - 316L stainless steel, welded diaphragms, 1/4" NPT (male) process connections, piezo-resistive strain gauge silicon element, silicone oil fill. Maximum media temperature: -40 to 257°F (-40 to 125°C)</p> <p>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).</p> <p>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</p> |
| Vacuum: | All pressure sensors withstand deep vacuum with no calibration effects. Vacuum ranges are not currently available. |
| EMI/RFI: | Compliance to CE EMC requirements: EN 55011, EN 61326, EN 61000-6-2 |
| Emission: | EN 55011 class A; Radiated emissions EN 61000-3-2 Harmonic Current Emissions |
| Immunity: | EN 61000-3-3 Immunity to Voltage Fluctuations and Flicker 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 61000-4-8 Immunity to Power Frequency Magnetic Field EN 61000-4-11 Immunity to Voltage Dips and Interruptions |
| Weight: | 2W, 4W, 8W: 1.5 - 1.9 lbs (0.7 - 0.9 kg) 2X, 4X, 8X: 4.5 - 6.0 lbs (2.0 - 2.7 kg) |
| 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 |

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HOW TO ORDER

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

| Model | Description | Min. Load | Zone | | Division | |
|--------|---|--------------------------|------|----|----------|----|
| | | | 0 | 1 | 2 | 1 |
| 2W2D00 | 2-wire discrete input powered, 12-30 VDC, 40 mA switch (24 VDC 2-Wire) | 2.3 mA | ✓* | ✓* | ✓ | ✓* |
| 2X2D00 | | | | ✓ | ✓ | ✓ |
| 2W4D00 | 2-wire discrete input powered, 30-50 VDC, 40 mA switch (48 VDC 2-Wire) | 2.0 mA | | | | |
| 2X4D00 | | | | ✓ | ✓ | ✓ |
| 2W3A00 | 2-wire discrete input powered, 90-130 VAC or VDC, 100 mA switch (115 VAC 2-Wire) | 3.75 mA | | | ✓ | ✓ |
| 2X3A00 | | | | ✓ | ✓ | ✓ |
| 2WLP41 | 2-wire loop-powered or 24V external powered, 4-20 mA output, 0-140 VAC/VDC, 0.6 A SSR switching | 0 mA | | | ✓ | ✓ |
| 2XLP41 | | | | ✓ | ✓ | ✓ |
| 2WLP43 | 2-wire loop-powered or 24V external powered, 4-20 mA output, 0-280 VAC/VDC, 0.3 A SSR switching | 0 mA | | | ✓ | ✓ |
| 2XLP43 | | | | ✓ | ✓ | ✓ |
| 4W3A01 | Supply voltage – 90-130 VAC, 24-280 VAC, 10 A SSR switching | 150 mA | | | ✓ | ✓ |
| 4X3A01 | | | | ✓ | ✓ | ✓ |
| 8W2D42 | Supply voltage – 10-30 VDC, SW1 & SW2: 75-250 VAC, 1.5 A SSR, 4-20 mA output | SW1: 50 mA SW2: 50 mA | | | ✓ | ✓ |
| 8X2D42 | | | | ✓ | ✓ | ✓ |
| 8W2D44 | Supply voltage – 10-30 VDC, SW1: 75-250 VAC, 1.5 A SSR, SW2: 0-140 VAC/VDC, 0.6 A SSR, 4-20 mA output | SW1: 50 mA SW2: 0 mA | | | ✓ | ✓ |
| 8X2D44 | | | | ✓ | ✓ | ✓ |
| 8W2D45 | Supply voltage – 10-30 VDC, SW1 & SW2: 0-140 VAC/VDC, 0.6 A SSR, 4-20 mA output | SW1: 0 mA SW2: 0 mA | | | ✓ | ✓ |
| 8X2D45 | | | | ✓ | ✓ | ✓ |

* Suitable safety barrier required

| Sensor | Pressure Operating Range ¹ + display resolution | | | | | Maximum Over Range ² | |
|--|--|-----------|------------|-----------|--------------------------|---------------------------------|-----------|
| Gauge 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 | 34.4 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 | 6895 KPa | 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 |

* (P20 range available on 2X, 4X and 8X models only)

HOW TO ORDER CONT.

| Sensor | Pressure Operating Range ¹ + display resolution | | | | |
|--|--|-----------|------------|-----------|--------------------------|
| Differential pressure, piezo-resistive strain gage, silicone oil fill, 316L stainless wetted materials, 1/4" NPT (male) process connections, displayed as shown. | | | | | |
| K10 | 0-5.00 psid | 138.5 "wc | 344.7 mbar | 34.47 KPa | 0.352 kg/cm ² |
| K11 | 0-50.0 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 | 13.8 bar | 1379 KPa | 14.10 kg/cm ² |

| Sensor | Maximum Over Range ² | Maximum Working Pressure ³ |
|--------|---------------------------------|---------------------------------------|
| K10 | 10 psid | 690 mbar |
| K11 | 100 psid | 6895 mbar |
| K12 | 200 psid | 13.8 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 \geq pressure on the "L" sensor port.

| 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, 6" sheath, 6' fixed-length Teflon® extension (2.5" sheath and MI extension for explosion-proof and ATEX models) |
| TRC* | | Remote mounted, 6" sheath, 1' to 30' in 1' increments variable Teflon® extension length MUST BE SPECIFIED. Consider Option M006. (2.5" sheath and MI extension for explosion-proof and ATEX models) |
| 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, 2W2D, 2X2D, 2W4D, 2X4D, 2WLP, 2XLP, 8W2D and 8X2D models only, 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, 2W2D, 2X2D, 2W4D, 2X4D, 2WLP, 2XLP, 8W2D & 8X2D models only, 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, available on 2X, 4X and 8X models only. Refer to drawing on page 13. Thermowell required, see page 11. |
| TU1 | -300 to 200°F/-184 to 93°C | User-supplied sensor for explosion-proof models only must be a 3-wire or 4-wire RTD, 100 Ω platinum, DIN 0.00385 (response curve for RTD). Choose range expected for the application. See below to order replacement sensors. No sensor is included with TU1 - TU3 ranges. For 2X3A and 4X3A models with remote sensors, extension length must be limited to 6'. |
| TU2 | -40 to 450°F/-40 to 232°C | |
| TU3 | -40 to 1000°F/-40 to 538°C | |
| Thermowells and fittings are shown on page 11. To order spares and replacement temperature sensor assemblies, available only on explosion-proof models , provide the "TA#" number from the product nameplate. Example: TA#: 62128723 | | |

*Custom extension lengths are not available with 2X3A or 4X3A models.

**OPTION CODES**

M006 Add armor to temperature sensor Teflon® extension (2W, 4W, 8W, TR1 and TRC models only)

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

M201 Factory programmed set point, deadband and switch mode

(all 3 settings are required at time of ordering - see example below)

| Set Point ¹ | Deadband ¹ | Switch Mode |
|------------------------|-----------------------|--------------|
| 40.00 | 25.00 | Open on rise |

M202 Factory programmed set point, deadband and switch mode for two switches

(all 6 settings are required at time of ordering - see example below)

| Switch | Set Point ¹ | Deadband ¹ | Switch Mode |
|--------|------------------------|-----------------------|---------------|
| 1 | 040.3 | 001.5 | Open on fall |
| 2 | 050.0 | 005.0 | Close on rise |

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) for 2X, 4X & 8X models only

M406 Compliance per Russian Gosgortekhnadzor (N/A on 2W4D)

M419 ATEX approval (2W2D, 2W3A, 2WLP and 8W2D models only. N/A on 2W4D and 4W3A. Standard on explosion-proof models. 2.5" sheath and MI extension for TR1 and TRC (N/A on 2W3A) with this option. See page 9).

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. (2X, 4X, and 8X models only)

M454 Mounting adapter plate kit 62169-40 (use to match JIC form bolt pattern on 2W, 4W and 8W models only)

M550 Oxygen cleaning service

M905 1/2" NPT female conduit added to right wall of enclosure for 2W2D, 2W3A, 2W4D and 4W3A models only

M906 1/2" NPT female conduit moved to bottom wall of enclosure for 2W2D, 2W3A, 2W4D and 4W3A models only, approvals N/A, not available with differential pressure (K) sensors

M907 1/2" NPT female conduit moved from right to top wall of enclosure for 2WLP and 8W2D models only, approvals N/A.

W073 1/2" NPT male compression fitting for use with TL and TR sensors, see page 9 and 11 (table 1) for additional information

W074 1/2" NPT male union connector for use with all TR, TH and TC sensors for 2W2D, 2X2D, 2W4D, 2WLP, 2XLP, 8W2D and 8X2D models

W080 1/2" NPT male union connector for use with TR1, TH1 and TC1 sensors for 2W3A, 2X3A, 4W3A and 4X3A models

W081 Thermowell adapter - Adapts 3/8" Thermowell to 1/4" sensor sheath (See page 11)

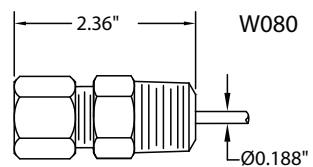
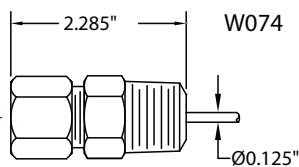
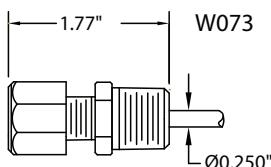
W930 1/2" NPT male to G1/2 male adapter for use with gauge pressure sensors P10-P20. Use part number 6361-762 if ordered separately.

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 **(1 or 2 may be required per application)**

6361-752 Replacement cover assembly for 2X, 4X and 8X models only

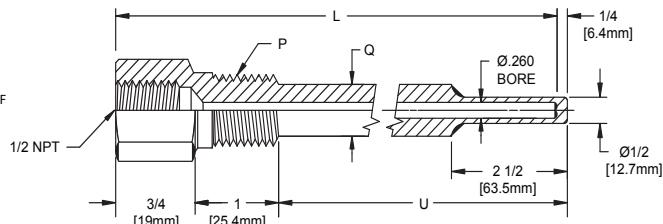
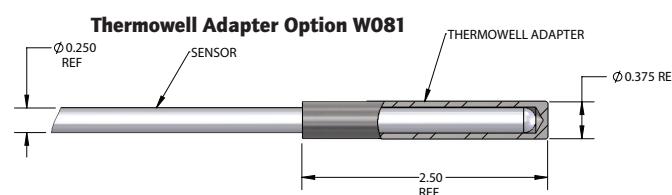
1 Note: Four numbers must be entered for each set point and deadband. Please refer to the display resolution chart on pages 8 & 9 for the correct number of decimal places allowed for the sensor range and units of measure selected.

TEMPERATURE SENSORS AND FITTINGS COMPATIBILITY CHART



| Model (Table 1) | W073 | W074 | W080 |
|--|----------|---------------|---------------|
| 2W2D, 2W4D, 2WLP, 8W2D | TLx, TRx | TRx, THx, TCx | NA |
| 2W2D, 2WLP, 8W2D (w/ ATEX option - M419) | TLx | TRx, THx, TCx | NA |
| 2W3A, 4W3A | TLx, TRx | TRx | TH1, TC1 |
| 2W3A (w/ ATEX option - M419) | TLx | NA | TR1, TH1, TC1 |
| 2X2D, 2X4D, 2XLP, 8X2D | TLx | TRx, THx, TCx | NA |
| 2X3A, 4X3A | TLx | NA | TR1, TH1, TC1 |

*The sensor extension is mineral insulated (MI) when ATEX option M419 is specified.



Fittings for Thermowells (Table 2)

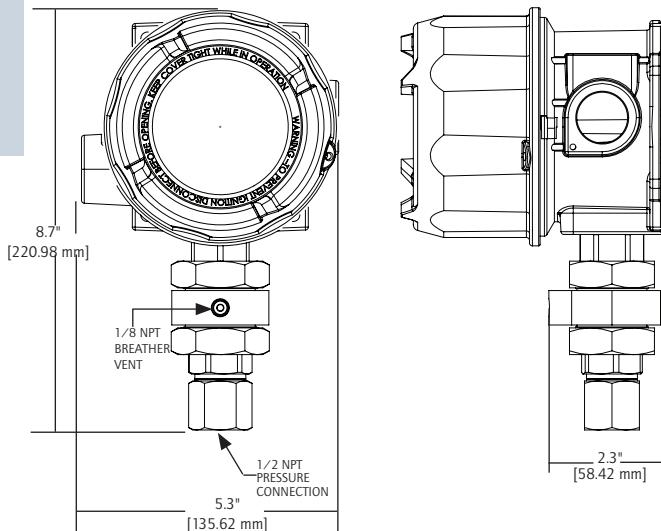
| Thermowell UE Part # | Length (L) Inches | Local Temperature Sensors w/ 0.25" Sensor Sheath ¹ | | | | Remote Temperature Sensors w/ Teflon® Cable | Remote Temperature Sensors w/ 0.125" Diameter MI Cable ¹ | Remote Temperature Sensors w/ 0.188" Diameter MI Cable ¹ | |
|-------------------------|----------------------|--|-----|------|----------|--|---|---|------|
| | | P (NPT) | Q | U | TL1 (4") | TL2 (6") | TL3 (10") | | |
| 1S260L2.5-316 | 2.5 | 1/2 | 5/8 | 1 | W073 | W073 | W073 | W073 | W074 |
| 1S260 L4-316 | 4 | 1/2 | 5/8 | 2.5 | NA | W073 | W073 | W073 | W074 |
| 1S260 L4.5-316 | 4.5 | 1/2 | 5/8 | 3 | NA | W073 | W073 | W073 | W074 |
| 1S260 L5.5-316 | 5.5 | 1/2 | 5/8 | 4 | NA | NA | W073 | W074 | W080 |
| 1S260 L6-316 | 6 | 1/2 | 5/8 | 4.5 | NA | NA | W073 | W074 | W080 |
| 1S260 L6.5-316 | 6.5 | 1/2 | 5/8 | 5 | NA | NA | W073 | W074 | W080 |
| 1S260 L9-316 | 9 | 1/2 | 5/8 | 7.5 | NA | NA | NA | W074 | W074 |
| 1S260 L9.5-316 | 9.5 | 1/2 | 5/8 | 8 | NA | NA | NA | W074 | W074 |
| 1S260 L12-316 | 12 | 1/2 | 5/8 | 10.5 | NA | NA | NA | W074 | W074 |
| 1S260 L15-316 | 15 | 1/2 | 5/8 | 13.5 | NA | NA | NA | W074 | W074 |
| 1S260 L18-316 | 18 | 1/2 | 5/8 | 16.5 | NA | NA | NA | W074 | W074 |
| 1S260 L24-316 | 24 | 1/2 | 5/8 | 22.5 | NA | NA | NA | W074 | W080 |
| 2S260L2.5-316 | 2.5 | 3/4 | 3/4 | 1 | W073 | W073 | W073 | W073 | W074 |
| 2S260 L4-316 | 4 | 3/4 | 3/4 | 2.5 | NA | W073 | W073 | W073 | W074 |
| 2S260 L6-316 | 6 | 3/4 | 3/4 | 4.5 | NA | NA | W073 | W074 | W080 |
| 2S260 L9-316 | 9 | 3/4 | 3/4 | 7.5 | NA | NA | W074 | W074 | W080 |
| 2S260 L12-316 | 12 | 3/4 | 3/4 | 10.5 | NA | NA | W074 | W074 | W080 |
| 2S260 L15-316 | 15 | 3/4 | 3/4 | 13.5 | NA | NA | W074 | W074 | W080 |
| 2S260 L18-316 | 18 | 3/4 | 3/4 | 16.5 | NA | NA | W074 | W074 | W080 |
| 2S260 L24-316 | 24 | 3/4 | 3/4 | 22.5 | NA | NA | W074 | W074 | W080 |

Note: Reference (Table 1) to determine sensor sheath diameter or the diameter of the MI cable by model

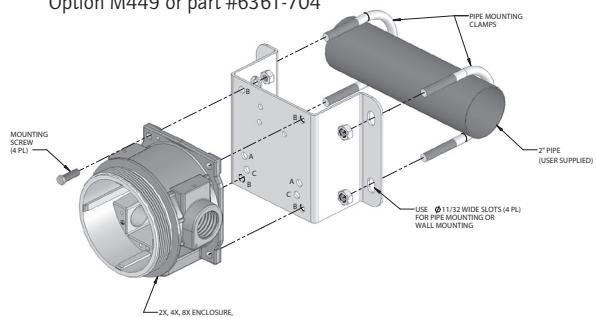
DIMENSIONAL DRAWINGS

ENCLOSURE AND SENSOR DETAILS

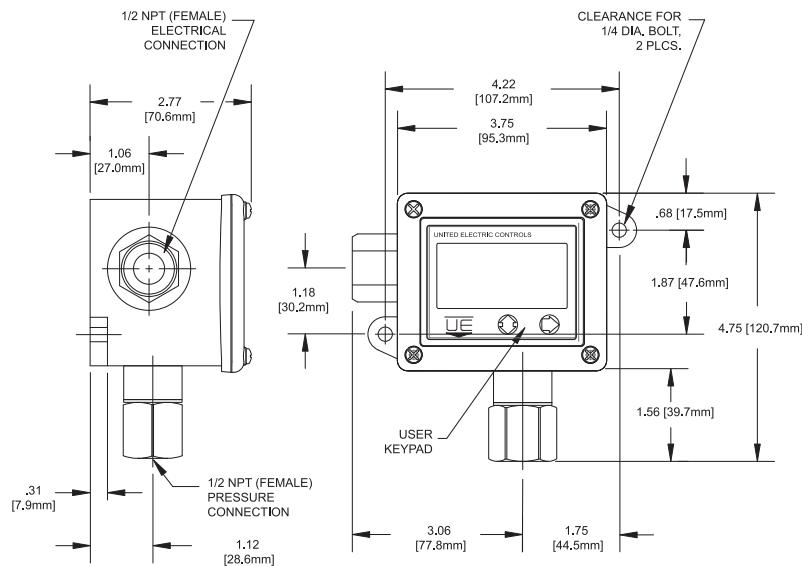
2X, 4X and 8X Models (shown with Dual Seal option M041 and gage pressure sensor)



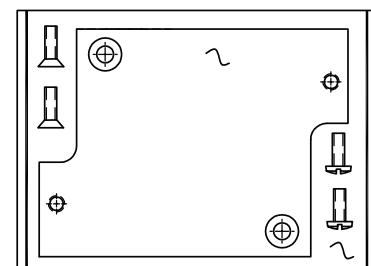
*** Wall or Pipe Mounting Bracket**
Option M449 or part #6361-704



2W, 4W and 8W models
(Single conduit shown with gauge pressure sensor)



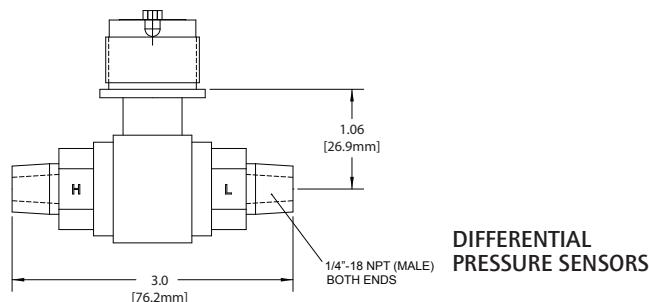
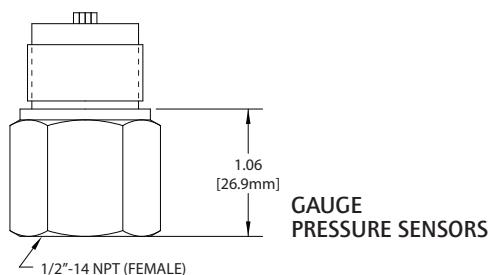
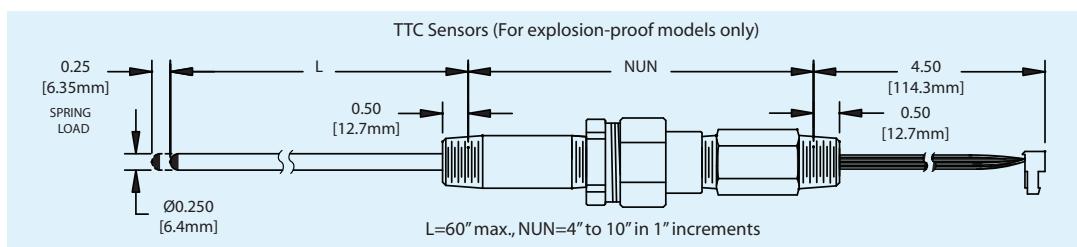
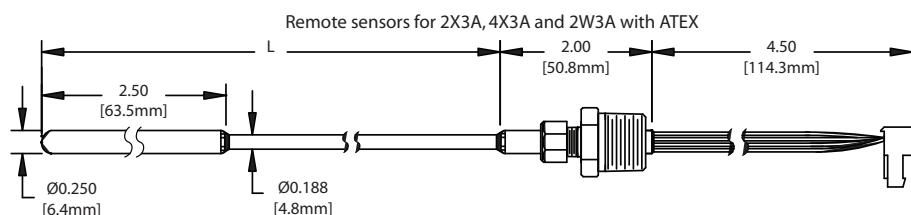
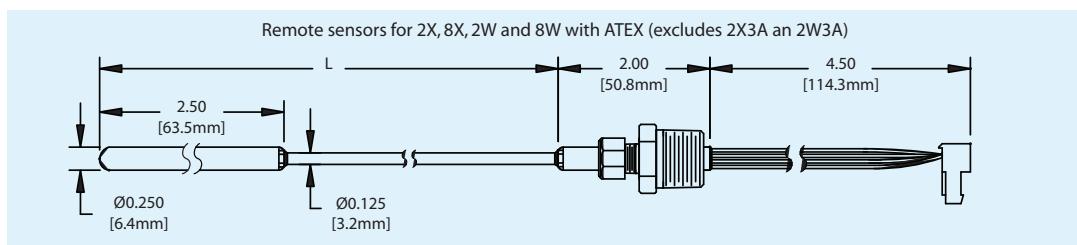
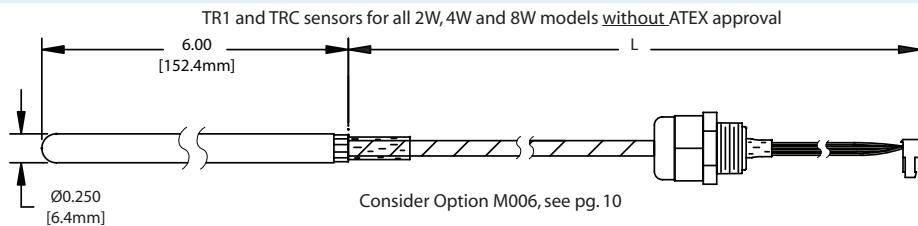
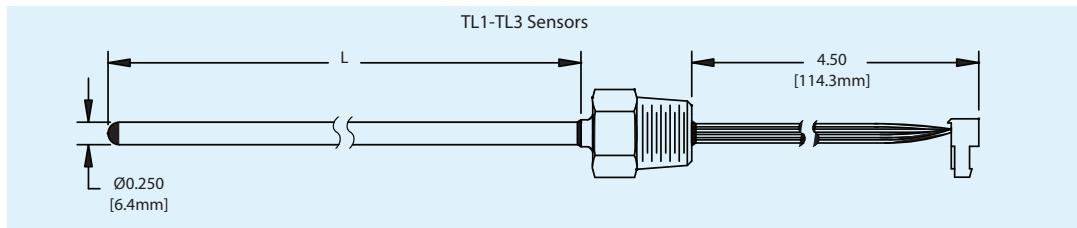
***Adapter Plate Mounting Kit**
Option M454 or part #62169-40



***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 cULus Listed UL50, 913, 1604 ANSI/ISA 12.12.01 CSA22.2/UL60079-0, -11, -15 CSA 22.2 No. 14, 157, 213, E79-0 | Europe (select option M419) EN 60079-0, 11, 15, 26 EN 60529 EMC Directive: refer to page 7 | International IECEx Scheme IEC 60079-0, -11, -26 | Russia (select option M406) Gosgortekhnadzor GOST R 51330.0, .1, .10, .14 GOST R 12.2.007.0-75 | Korea (select option M395) Korean Occupational Safety and Health Agency Complies to Korean article 34 Industrial Safety and Health Law |
|--|--|---|--|--|--|
| 2W2D Intrinsically Safe "ia" when used with a safety barrier | Class I, Div 1, Groups A, B, C & D Class II, Div 1, Groups E, F & G Class III Class I, Zone 0 AEx ia IIC T4 Class I, Zone 0 Ex ia IIC T4 (When installed per Dwg. A-62174-19) | II 1 G Ex ia IIC T4 II 1 D Ex ia IIIC T135°C (When installed per Dwg. A-62174-20) DEMKO 14 ATEX 1107977X | Ex ia IIC T4 Ex ia IIIC T135°C (When installed per Dwg. A-62174-20) IECEx UL 14.0013X | 0ExiaIIC5 IP66 Tamb = -40°C to +85°C ROSS US.GB05. B04260 | N/A |
| 2W2D Intrinsically Safe "ic" | Class I, Div 2, Groups A, B, C & D Class II, Div 2, Groups E, F & G Class III Class I, Zone 2 AEx ic IIC T4 Class I, Zone 2 Ex ic IIC T4 | II 3 G Ex ic IIC T4 DEMKO 14 ATEX 1300X | Ex ic IIC T4 IECEx UL 14.0013X | 0ExicIIC5 IP66 Tamb = -40°C to +85°C ROSS US.GB05. B04260 | N/A |
| 2W3A Non-incendive | Class I, Div 2, Groups A, B, C & D Class II, Div 2, Groups F & G Class III Class I, Zone 2, AEx nC IIC T5 Class I, Zone 2, Ex nL IIC T5 | II 3 G Ex nL IIC T5 II 3 D IIIC T90°C, IP66 DEMKO 08 ATEX 0726838X | N/A | 0ExnIIC5 Tamb = -40°C to +85°C ROSS US.GB05. B04260 | N/A |
| 2W4D | N/A | N/A | N/A | N/A | N/A |
| 2WLP Non-incendive | Class I, Div 2, Groups A, B, C & D Class II, Div 2, Groups F & G Class III Class I, Zone 2, AEx nC IIC T4 Class I, Zone 2, Ex nL IIC T4 | II 3 G Ex nL IIC T4 II 3 D IIIC T110°C, IP66 DEMKO 08 ATEX 0726838X | N/A | 0ExnIIC4 Tamb = -40°C to +60°C ROSS US.GB05. B04260 | N/A |
| 4W3A Non-incendive | Class I, Div 2, Groups A, B, C & D Class II, Div 2, Groups F & G Class III Class I, Zone 2, AEx nC IIC T4 Class I, Zone 2, Ex nL IIC T4 | N/A | N/A | 2ExnCIIC4 Tamb = -40°C to +60°C ROSS US.GB05. B04260 | N/A |
| 8W2D Non-incendive | Class I, Div 2, Groups A, B, C & D Class II, Div 2, Groups F & G Class III Class I, Zone 2, AEx nC IIC T4 Class I, Zone 2, Ex nL IIC T4 | II 3 G Ex nL IIC T4 II 3 D IIIC T110°C, IP66 DEMKO 08 ATEX 0726838X | N/A | 0ExnIIC4 Tamb = -40°C to +60°C ROSS US.GB05. B04260 | N/A |
| Model | N. America cULus Listed UL50, 50E, 1203, CSA/UL 61010-1, CSA/UL 60079-0, -1 CSA C22.2 No.25, 30 | Europe EN 60079-0, 1, 31 EN 60529 | International IECEx Scheme IEC 60079-0, 1, 31 | Russia (select option M406) Gosgortekhnadzor GOST R 51330.0, .1, .10, .14 | Korea (select option M395) Korean Occupational Safety and Health Agency Complies to Korean article 34 Industrial Safety and Health Law |
| 2X2D, 2X3A, 2X4D 2XLP, 4X3A, 8X2D Explosion-Proof/ Flameproof | Class I, Div 1, Groups A, B, C & D Class II, Div 1, Groups E, F & G Class III Class I, Zone 1, AEx d IIC T3/T5** Class I, Zone 1, Ex d IIC T3/T5** Enclosure Type 4X, IP66 | II 2 G Ex d IIC T3/T5 ** Gb II 2 D Ex tb IIIC T+90°C Db, IP66 DEMKO 09 ATEX 0813748X Rev. 0 | Ex d IIC T3/T5** Ex tb IIIC T90°C Db, IP66 IECEx UL 08.0017X | 1 ExdIIC T3/T5** 2X2D and 2X3A: Tamb = -40°C to +85°C 2XLP and 8X2D: Tamb = -40°C to +80°C 4X3A: Tamb = -40°C to +70°C ROSS US.GB05. B04260 | Ex d IIC T5/T3** 2X2D, 2X3A and 2X4D Tamb = -40°C to +85°C 2XLP and 8X2D: Tamb = -40°C to +80°C 4X3A: Tamb = -40°C to +75°C 11-AV4B0-0363, -0364, -0365, -0366, -0367, -0374 |
| 2X2D, 2X3A, 2X4D 2XLP, 4X3A, 8X2D Explosion-Proof/ Flameproof | Dual Seal (Select option M041) Per ANSI/ISA 12.27.01 for US and accepted by Canada Class I, Div 1, Groups B, C & D Class II, Div 1, Groups E, F & G Class III Class I, Zone 1, AEx d IIC T3/T5** Class I, Zone 1, Ex d IIC T3/T5** Enclosure Type 4X, IP66 | N/A | N/A | N/A | N/A |

**T3 for pressure sensor ranges 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

- Dual seal compliant to ANSI/ISA 12.27.01
- Compact, cylindrical 316 stainless steel enclosure
- Hermetically-sealed SPDT or DPDT switch output
- Explosion-proof
- Snap-acting belleville spring mechanism to enhance vibration resistance and set point stability
- Pressure ranges to 12,500 psi; DP working pressure ranges to 2500 psid; temperature ranges to 650°F

**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
- UL, cUL, ATEX 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.

UE specifications subject to change without notice.

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