





ELECTRONIC PRESSURE AND TEMPERATURE SWITCHES



FEATURES

- Large digital gauge for status, process indication & diagnostic reporting
- 100% programmable set point & deadband for easy adjustment
- Solid-state design for high-vibration applications
- Explosion-proof, intrinsically safe and non-incendive models available for hazardous locations
- Suitable for SIL 1 & 2 safety systems
- Multiple approvals including:    



OVERVIEW

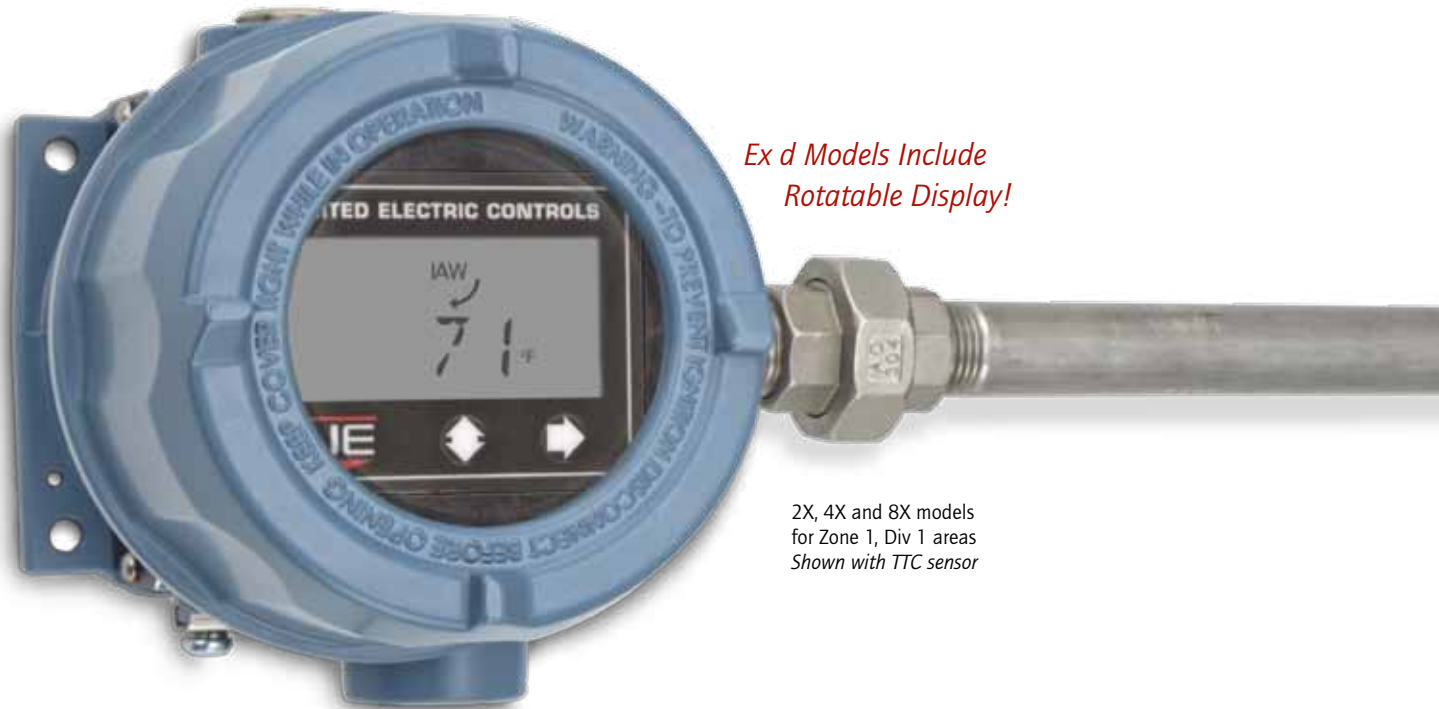
United Electric Controls (UE) is renowned for high-quality workmanship and product design, and the *One Series* carries this nearly 80-year tradition well beyond electromechanical switches. *UE's One Series* line of digital electronic pressure and temperature switches sets new standards for quality, 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 gauge pressure, differential pressure or temperature. With up to two fully adjustable set points and deadbands, available 4-20 mA analog output, and absolutely no moving parts, these versatile instruments can now be used in a wide variety of applications where 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, vibration and shock. For plant upgrades, there are a variety of power options ranging from 2-wire discrete and analog loop-powered models to 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
- Patented electronic IAW® self-diagnostics
- Min/Max process values memory
- 3-year warranty



*Ex d Models Include
Rotatable Display!*

2X, 4X and 8X models
for Zone 1, Div 1 areas
Shown with TTC sensor

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 solid-state relay switch – a switch + gauge + transmitter all in one.

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 rate 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 goes 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 SIS applications.



2W, 4W and 8W models
for Zone 2, Div 2 areas
Shown with gauge 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 has recently developed explosion-proof *One Series* models, extending this revolutionary switching technology to Zone 1 (Division 1) areas.

Here are just a few:

- 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 µA (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 µA (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)	185°F (85°C)	-40°F (-40°C)	140°F (60°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
- 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:** 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)

Model		Switch State (Max.)	
		Voltage Open	Voltage Closed
2W2D	2X2D	12-30 VDC @ 750 µA	4.7 VDC @ 40 mA
2W4D	2X4D	30-50 VDC @ 1mA	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 construction
- 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 	<ul style="list-style-type: none"> • 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 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. 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. 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). Media temperature: -300 to 1000°F (-184 to 538°C)</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	2
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	External powered by 90-130 VAC, 24-280 VAC, 10 A SSR switching	150 mA			✓		✓
4X3A01				✓	✓	✓	✓
8W2D42	External powered by 10-30 VDC, SW1 & SW2: 75-250 VAC, 1.5 A SSR, 4-20 mA output	SW1: 50 mA SW2: 50 mA			✓		✓
8X2D42				✓	✓	✓	✓
8W2D44	External powered by 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	External powered by 10-30 VDC, SW1 & SW2: 0-140 VAC/VDC, 0.6 A SSR, 4-20 mA output	SW1: 0 mA SW2: 0 mA			✓		✓
8X2D45				✓	✓	✓	✓

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.								
P10	0-5.00 psig	344,7 mbar	34.47 kPa	0.352 kg/cm ²	138.5 "wc		10 psig	690 mbar
P11	0-15.00 psig	1034 mbar	103.4 kPa	1.055 kg/cm ²	415.5 "wc		30 psig	2068 mbar
P12	0-30.00 psig	2068 mbar	206.8 kPa	2.109 kg/cm ²	831.1 "wc		60 psig	4137 mbar
P13	0-50.00 psig	3447 mbar	344.7 kPa	3.516 kg/cm ²	1385 "wc		100 psig	6895 mbar
P14	0-100.0 psig	6895 mbar	689.5 kPa	7.031 kg/cm ²	2770 "wc		200 psig	13,8 bar
P15	0-300.0 psig	20,68 bar	2068 kPa	21.09 kg/cm ²	NA		600 psig	41,4 bar
P16	0-500.0 psig	34,47 bar	3447 kPa	35.16 kg/cm ²	NA		1000 psig	68,9 bar
P17	0-1000 psig	68,95 bar	6895 kPa	70.31 kg/cm ²	NA		2000 psig	137,9 bar
P18	0-3000 psig	206,8 bar	20.68 mPa	210.9 kg/cm ²	NA		6000 psig	413,7 bar
P19	0-4500 psig	310,3 bar	31.03 mPa	316.4 kg/cm ²	NA		9000 psig	620,5 bar
P20*	0-6000 psig	413,7 bar	41.40 mPa	421.9 kg/cm ²	NA		12000 psig	827,4 bar

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

For bar, kPa and kg/cm², the option code must be specified (see pg. 10)

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.					
K11	0-50.0 psid	3447 mbar	344.7 kPa	3.516 kg/cm ²	138.5 "wc
K12	0-100.0 psid	6895 mbar	689.5 kPa	7.031 kg/cm ²	2770 "wc
K13	0-200.0 psid	13,8 bar	1379 kPa	14.10 kg/cm ²	NA

Sensor	Maximum Over Range ²		Maximum Working Pressure ³	
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.

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 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 models, except 2X3A and 4X3A)
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, 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, 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 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.
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		



OPTION CODES

QC1 Calibration certificate of conformance

HL1 Hazardous location certificate

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

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 (P10, P11 and K11 sensor ranges only)

M276 Display units, bar or mbar

M277 Display units, kPa or MPa

M278 Display units, kg/cm²

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 with this option. See page 9).

M444 Paper tag

M446 Stainless steel tag

M449 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, see option M449, 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, see option M449

W073 1/2" NPT male compression fitting for use with all TL and TR sensors, see page 8 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

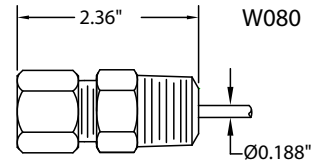
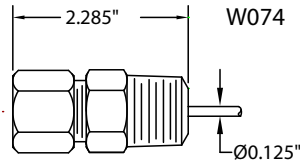
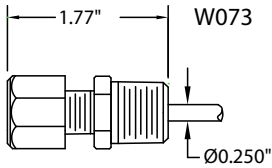
W080 1/2" NPT male union connector for use with TR1, TH1 and TC1 sensors for 2W3A, 2X3A, 4W3A and 4X3A models

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 (2 required)

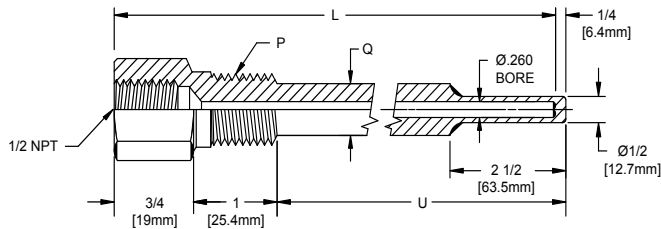
¹Note: Four numbers must be entered for each set point and deadband. Please refer to the display resolution chart on pages 8 & 9 for the correct number of decimal places allowed for the sensor range and units of measure selected.

TEMPERATURE SENSORS AND FITTINGS COMPATIBILITY CHART



Model (Table 1)	W073 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	W080 1/2" NPT union connection to fit 0.188" sensor extension cable
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	P (NPT)	Q	U	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
					TL1 (4")	TL2 (6")	TL3 (10")			
1S260 L4-316	4	1/2	5/8	2.5	NA	W073	W073	W073	W074	W080
1S260 L5.5-316	5.5	1/2	5/8	4	NA	NA	W073	W073	W074	W080
1S260 L6-316	6	1/2	5/8	4.5	NA	NA	W073	W073	W074	W080
1S260 L6.5-316	6.5	1/2	5/8	5	NA	NA	W073	W073	W074	W080
1S260 L9-316	9	1/2	5/8	7.5	NA	NA	NA	W074	W074	W080
1S260 L9.5-316	9.5	1/2	5/8	8	NA	NA	NA	W074	W074	W080
1S260 L12-316	12	1/2	5/8	10.5	NA	NA	NA	W074	W074	W080
1S260 L15-316	15	1/2	5/8	13.5	NA	NA	NA	W074	W074	W080
1S260 L18-316	18	1/2	5/8	16.5	NA	NA	NA	W074	W074	W080
1S260 L24-316	24	1/2	5/8	22.5	NA	NA	NA	W074	W074	W080
2S260 L4-316	4	3/4	3/4	2.5	NA	W073	W073	W073	W074	W080
2S260 L6-316	6	3/4	3/4	4.5	NA	NA	W073	W073	W074	W080
2S260 L9-316	9	3/4	3/4	7.5	NA	NA	NA	W074	W074	W080
2S260 L12-316	12	3/4	3/4	10.5	NA	NA	NA	W074	W074	W080
2S260 L15-316	15	3/4	3/4	13.5	NA	NA	NA	W074	W074	W080
2S260 L18-316	18	3/4	3/4	16.5	NA	NA	NA	W074	W074	W080
2S260 L24-316	24	3/4	3/4	22.5	NA	NA	NA	W074	W074	W080

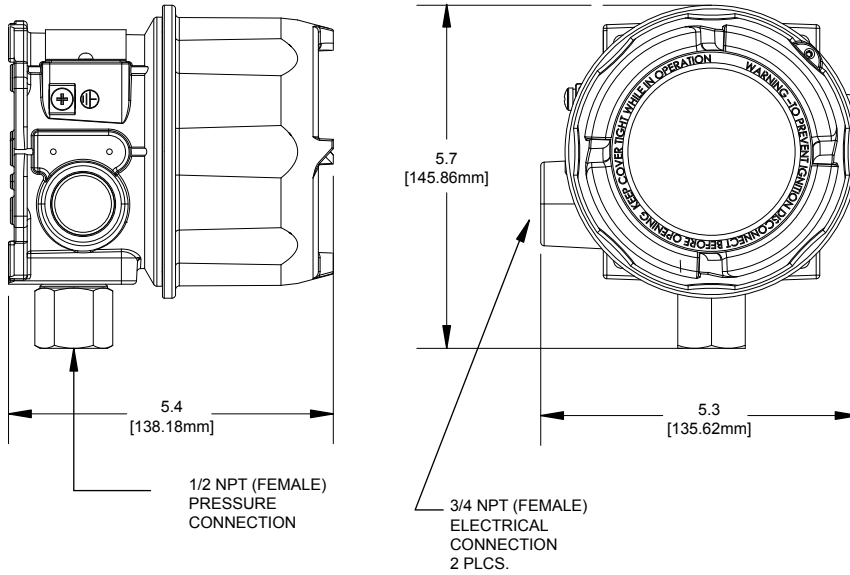
Note:

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

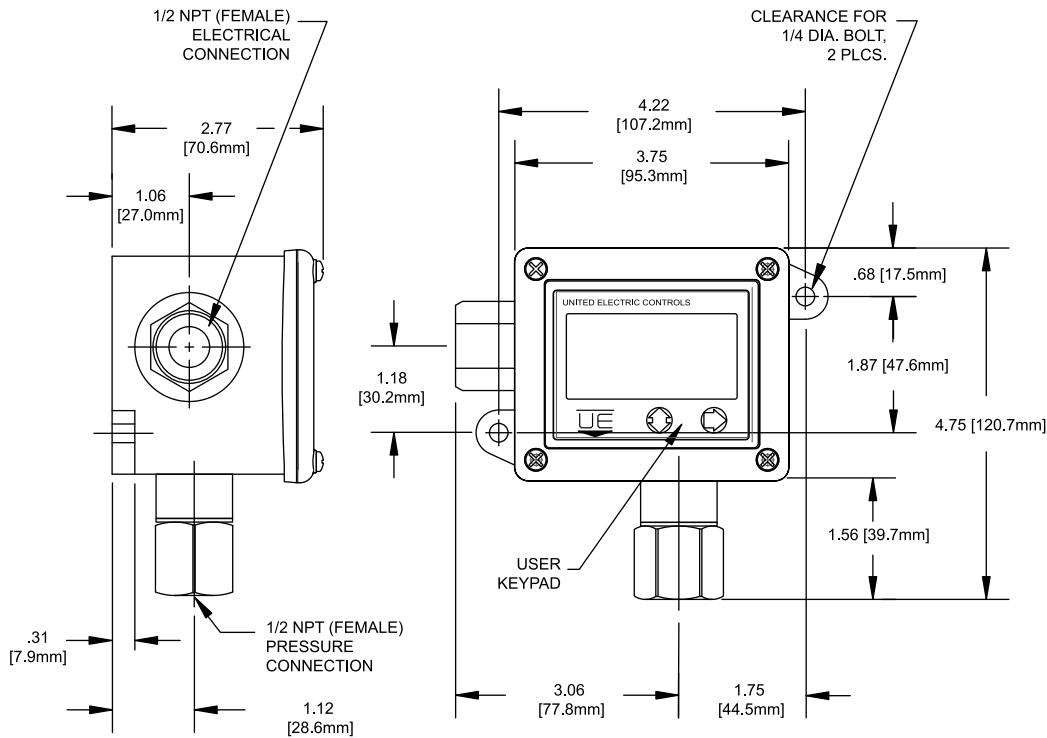
DIMENSIONAL DRAWINGS

ENCLOSURE AND SENSOR DETAILS

2X, 4X and 8X models
(Shown with gauge pressure sensor)

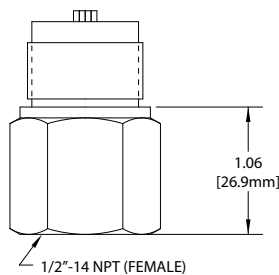
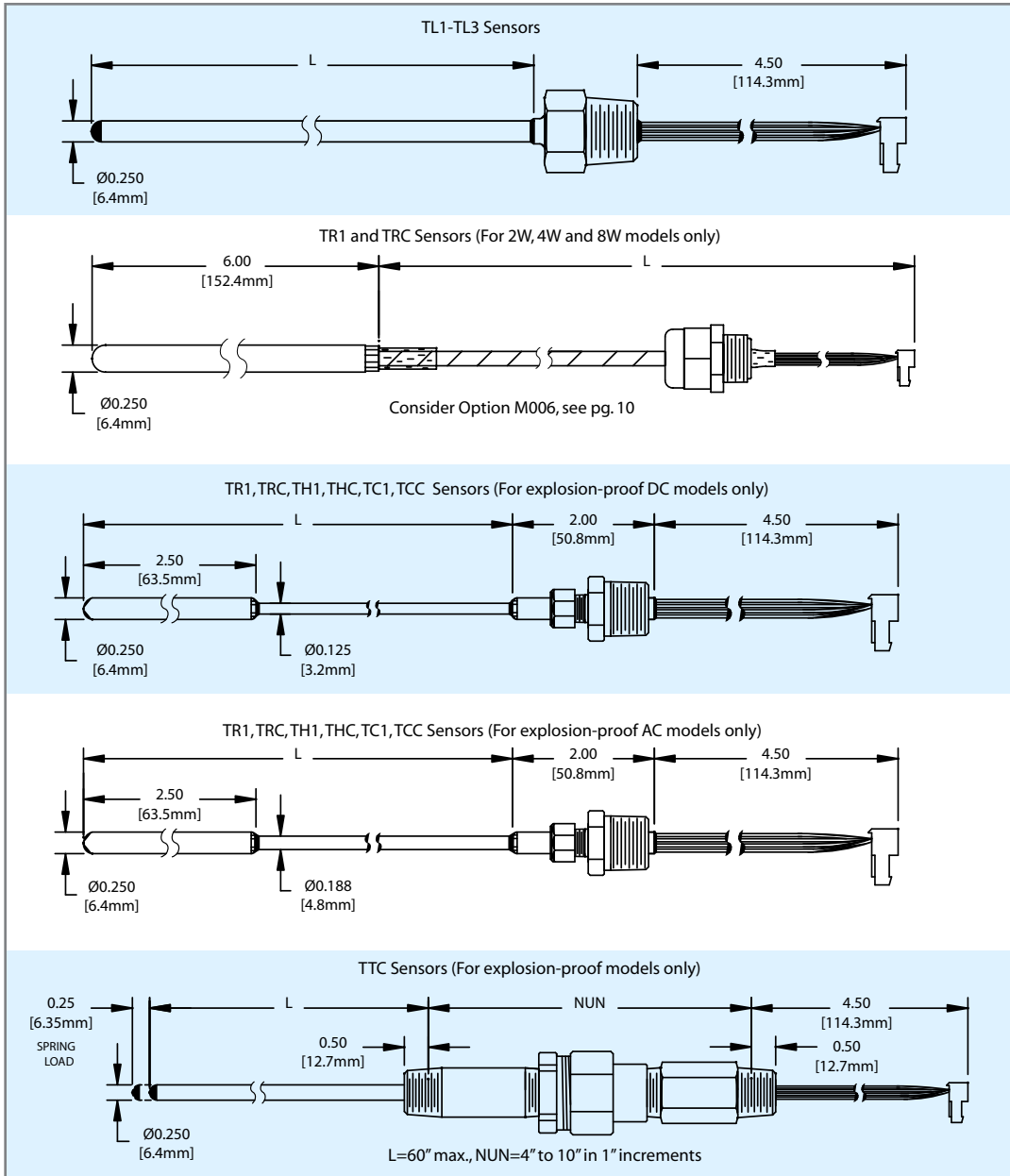


2W, 4W and 8W models
(Single conduit shown with gauge pressure sensor)

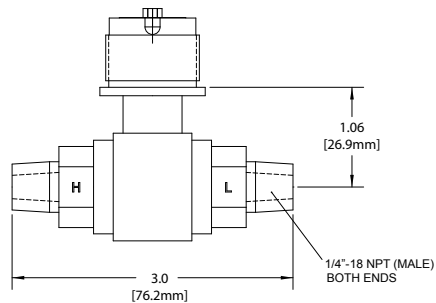


DIMENSIONAL DRAWINGS (CONTINUED)

TEMPERATURE SENSORS



GAUGE PRESSURE SENSORS



DIFFERENTIAL PRESSURE SENSORS



APPROVALS & RATINGS

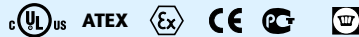
Model	N. America	Europe	Australia	Russia
	UL Listed, cUL Certified UL50, 508, 913, 1604 & 60079-15; CSA No. E79-0, E79-11, E60079-15, C22.2 No. 14, 157 & 213 File#E226592	(select option M419) (ATEX Directive 94/9/EC) EN 60079-0, 60079-15, 50281-1-1, 50020	IECEx Scheme	(select option M406) Gosgortekhnadzor GOST R 51330.0, 5.1330.1, 51330.10, and 51330.14
2W2D Intrinsically safe when used with a safety barrier (option M036)	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 T5 Class I, Zone 0, Ex ia IIC T5 Per UE drawing # A-62174-19	II 1 G EEx ia IIC T5 II 1 D T+90°C, IP66 T _{AMB} = -40°C to +60°C Per UE drawing # A-62174-20 Cert# DEMKO 03 ATEX 0322281X	N/A	OExIIICT5 T _{AMB} = -40°C to +85°C Cert# ROSS US.GB05. Bo2993
2W2D 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 nC IIC T5	II 3 G EEx nL IIC T5 II 3 D T+90°C, IP66 T _{AMB} = -40°C to +60°C Cert# DEMKO 03 ATEX 0322281X	N/A	ExnIIICT5 T _{AMB} = -40°C to +85°C Cert# ROSS US.GB05. Bo2993
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 nC IIC T5	II 3 G Ex nL IIC T5 II 3 D T+90°C, IP66 T _{AMB} = -40°C to +60°C Cert# DEMKO 08 ATEX 0726838X	N/A	ExnIIICT5 T _{AMB} = -40°C to +85°C Cert# ROSS US.GB05. Bo2993
2W4D	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 nC IIC T4	II 3 G Ex nL IIC T4 II 3 D T+110°C, IP66 T _{AMB} = -40°C to +60°C Cert# DEMKO 08 ATEX 0726838X	N/A	ExnIIICT4 T _{AMB} = -40°C to +80°C Cert# ROSS US.GB05. Bo2993
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 nC IIC T4	N/A	N/A	2ExnCIICT4 T _{AMB} = -40°C to +70°C Cert# ROSS US.GB05. Bo2993
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 nC IIC T4	II 3 G Ex nL IIC T4 II 3 D T+110°C, IP66 T _{AMB} = -40°C TO +60°C Cert# DEMKO 08 ATEX 0726838X	N/A	ExnIIICT4 T _{AMB} = -40°C to +80°C Cert# ROSS US.GB05. Bo2993
Model	N. America	Europe	Australia	Russia
	UL Listed, cUL Certified UL 50, 50E, 1203, UL/CSA 61010-1, 60079-0, 60079-1, CSA C22.2 No. 25,30 File#E226592	(ATEX Directive 94/9/EC) EN 60079-0, 60079-1, 61241-0, 61241-1	IECEx Scheme IEC 60079-0, 60079-1	(select option M406) Gosgortekhnadzor
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 nC IIC T3/T5** Class I, Zone 1 Ex nC IIC T5	II 2 G Ex d IIC T3/T5** II 2 D Ex tD A21 IP66 T+90°C Cert# DEMKO 09 ATEX 0813748X	Ex d IIC T3/ T5** Cert# IECEx UL 08.0017X	1ExdIICT3/T5** 2X2D, 2X3A and 2X4D: -40°C ≤ T _{AMB} ≤ +85°C 2XLP + 8X2D: -40°C ≤ T _{AMB} ≤ +80°C 4X3A: -40°C ≤ T _{AMB} ≤ +70°C

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

ADDITIONAL PRODUCTS FROM UE

Spectra 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



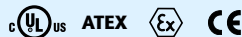
120 Series – Electro-Mechanical Pressure and Temperature Switch

- 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 – Pressure Transmitters

- Welded, hermetically-sealed, 316 stainless steel construction
- Ranges 0 to 15 psi up to 0 to 40,000 psi
- Choice of field adjustable or fixed range models
- 4-20 mA, 1-5 VDC, or 0-10 VDC output



117 Series – Electro-Mechanical Pressure and Temperature Switch

- Single switch for corrosive and hazardous division 2 locations
- Compact pressure, differential pressure and temperature models
- Hermetically-sealed SPDT and DPDT switch output
- Epoxy-coated, weather-tight design houses stainless steel internal construction
- Convenient terminal block wiring



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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