

# Excela™

## ELECTRONIC SWITCH



## APPROVALS

UE declarations and third-party issued Agency certifications are available for download at [www.ueonline.com/prod\\_approval](http://www.ueonline.com/prod_approval).



## SPECIFICATIONS

Model	Input Type	Max Switch Ratings (SPDT)	Min. Load Requirement	Off State Leakage
1GSWLL	2-Wire 8-50 VDC discrete input powered @ 750 $\mu$ A (max)	8-50 VDC @ 100 mA	2.7 mA (3.0 mA at -40°C)	0.8 mA maximum

<b>POWER INPUT/ SWITCH OUTPUT:</b>	
<b>ACCURACY:</b>	0.5% of full range span, at room temperature
<b>REPEATABILITY:</b>	0.1% of full range span
<b>AMBIENT OPERATING:</b>	-40°F to 160°F
<b>TEMPERATURE RANGE:</b>	Display visibility temperature range 10°F (-12°C) to 158°F (70°C)
<b>LONG-TERM STABILITY:</b>	$\pm$ 0.25% of range/year maximum
<b>TEMPERATURE DRIFT:</b>	0.03% of full scale per °C (0.12% for the K10 range)
<b>SWITCH RESPONSE TIME:</b>	"Change-of-output" response $\leq$ 60 mS (16.7 Hz) (for detection of full step change and change of output state, delay feature off)
<b>DISPLAY RESPONSE TIME:</b>	400 mS (2.5 Hz)
<b>DIAGNOSTICS:</b>	Indicates error on LCD screen and switch shows tripped mode on PLC or DCS for: open or shorted sensor; plugged port; power supply out of range; over and underrange conditions; microprocessor faults/failure; keypad short; switch fault
<b>ENCLOSURE AND COVER:</b>	Type 4X/IP66 certified epoxy-coated aluminum alloy 360
<b>FACEPLATE:</b>	UV-resistant pressure sensitive keypad and display overlay
<b>CONDUIT:</b>	1/2" NPT female stainless steel fitting on left side and a plastic plug on right side field reversible
<b>DISPLAY:</b>	Local 4 digit x 0.5" (12.7 mm) LCD providing the following information; <ul style="list-style-type: none"> <li>• Process variable live process information</li> <li>• Max/Min process values</li> <li>• Trip counter</li> <li>• Green &amp; red LED light - indicating process status</li> <li>• Unit of measure</li> <li>• Set point values - rise and fall settings</li> <li>• Fault messages and error codes</li> </ul>
<b>RISE &amp; FALL SETPOINTS:</b>	User-configured, rise and fall settings can be separated by up to 99% of sensor operating range
<b>MEMORY:</b>	Programming and data protected by non-volatile EEPROM
<b>EFFECTIVE WIRING DISTANCE:</b>	2,000 feet (600 meters) at rated voltage

## SPECIFICATIONS (CONT.)

### **SENSORS:**

#### **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 fill  
Media temperature limits: -40 to 257°F (-40 to 125°C)

#### **DIFFERENTIAL PRESSURE**

316L stainless steel, welded diaphragms, 1/4" NPT (male) process connections, piezo-resistive strain gauge silicon element, silicone oil fill. Media temperature limits: -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 (high temp)

Media temperature limits:

- -328 to 1000°F, intermittent to 1100°F (-200 to 538°C, int. to 593°C) for TH and TC ranges
- -40 to 500°F (-40 to 260°C) for TR and TL ranges

### **VACUUM:**

All pressure sensors withstand deep vacuum with no calibration effects

### **EMI/RFI IMMUNITY:**

Compliance to CE EMC requirements: EN 61326, EN 61000-6-2, EN 61000-6-4 per FCC part 15 Class A

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

### **WEIGHT:**

1.5 – 2.0 lbs (0.7 - 0.9 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.

Type: **1GSWLL**

Model: **P14** See pages 4 & 5

Options: **M908** See pages 5 & 6

Example: **1GSWLLP14-M908**

### Pressure Models

**Gauge pressure, piezo-resistive strain gage, silicone oil fill, 316L stainless wetted materials, 1/2" NPT (female) process connection, displayed as shown.**

Model	Pressure Operating Range <sup>1</sup> + Display Resolution					Maximum Over Range <sup>2</sup>	
<b>P06</b>	-14.7 to 30 psig	831.1" wc	2068 mbar	206.8 KPa	2.109 kg/cm <sup>2</sup>	<b>60 psig</b>	4137 mbar
<b>P08</b>	-14.7 to 100 psig	2770" wc	6895 mbar	689.5 KPa	7.031 kg/cm <sup>2</sup>	<b>200 psig</b>	13,8 bar
<b>P10</b>	0-5.00 psig	138.5 "wc	344,7 mbar	34.4 KPa	0.352 kg/cm <sup>2</sup>	<b>10 psig</b>	690 mbar
<b>P11</b>	0-15.00 psig	415.5 "wc	1034 mbar	103.4 KPa	1.055 kg/cm <sup>2</sup>	<b>30 psig</b>	2068 mbar
<b>P12</b>	0-30.00 psig	831.1 "wc	2068 mbar	206.8 KPa	2.109 kg/cm <sup>2</sup>	<b>60 psig</b>	4137 mbar
<b>P13</b>	0-50.00 psig	1385 "wc	3447 mbar	344.7 KPa	3.516 kg/cm <sup>2</sup>	<b>100 psig</b>	6895 mbar
<b>P14</b>	0-100.0 psig	2770 "wc	6895 mbar	689.5 KPa	7.031 kg/cm <sup>2</sup>	<b>200 psig</b>	13,8 bar
<b>P15</b>	0-300.0 psig	NA	20,68 bar	2068 KPa	21.09 kg/cm <sup>2</sup>	<b>600 psig</b>	41,4 bar
<b>P16</b>	0-500.0 psig	NA	34,47 bar	3447 KPa	35.16 kg/cm <sup>2</sup>	<b>1000 psig</b>	68,9 bar
<b>P17</b>	0-1000 psig	NA	68,95 bar	6895 KPa	70.31 kg/cm <sup>2</sup>	<b>2000 psig</b>	137,9 bar
<b>P18</b>	0-3000 psig	NA	206,8 bar	20.68 MPa	210.9 kg/cm <sup>2</sup>	<b>6000 psig</b>	413,7 bar
<b>P19</b>	0-4500 psig	NA	310,3 bar	31.03 MPa	316.4 kg/cm <sup>2</sup>	<b>9000 psig</b>	620,5 bar
<b>P20</b>	0-6000 psig	NA	413,7 bar	41.37 MPa	421.9 kg/cm <sup>2</sup>	<b>12000 psig</b>	827,4 bar

### Differential Pressure Models

**Differential pressure, piezo-resistive strain gage, silicone oil fill, 316L stainless wetted materials, 1/4" NPT (male) process connections, displayed as shown.**

Model	Pressure Operating Range <sup>1</sup> + Display Resolution				
<b>K10</b>	0-5.00 psid	138.5 "wc	344,7 mbar	34.47 KPa	0.352 kg/cm <sup>2</sup>
<b>K11</b>	0-50.0 psid	1385 "wc	3447 mbar	344.7 KPa	3.516 kg/cm <sup>2</sup>
<b>K12</b>	0-100.0 psid	2770 "wc	6895 mbar	689.5 KPa	7.031 kg/cm <sup>2</sup>
<b>K13</b>	0-200.0 psid	NA	13,8 bar	1379 KPa	14.10 kg/cm <sup>2</sup>

Model	Maximum Over Range <sup>2</sup>		Maximum Working Pressure <sup>3</sup>	
<b>K10</b>	10 psid	690 mbar	50 psig	3447 mbar
<b>K11</b>	100 psid	6895 mbar	500 psig	34,47 bar
<b>K12</b>	200 psid	13,8 bar	1500 psig	103,4 bar
<b>K13</b>	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.

## Temperature Models

Temperature – 4-wire RTD, 100 Ω platinum, DIN 0.00385, 0.25" OD sensor sheath, 316 stainless steel construction		
Model	Temperature Range	
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' fixed-length Teflon® extension with 6" sheath
TRC		Remote mounted, 6" sheath, 1' to 30' Teflon® extension length MUST BE SPECIFIED
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.
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.

\*Calibration certification is not available on TC1 and TCC

## Option Codes

Option #	Description
M201	Factory programmed set point, specify Rise and Fall values Unit of measure can be changed in the field and are factory set in psi or degrees F, unless other option is specified. See options M270 to M278
M270	Display units, degrees C for temperature models
M275	Display units, inches of water column – not available on all ranges, check sensor table
M276	Display units, bar or mbar - varies by sensor range, check sensor table
M277	Display units, kPa or MPa - varies by sensor range, check sensor table
M278	Display units, kg/cm2
M323	Excela protective cover with window for display (see drawing on page 8)
M444	Paper Tag
M446	Stainless Steel tag
M449	Mounting bracket for pipe or wall. Use part number 6361-704 if ordered separately.
M550	Oxygen cleaning service
M908	M20 x 1.5 316 stainless steel plug
W073	1/2" NPT male compression fitting for use with TL, TR and TH sensors, see page 6 for additional information
W074	1/2" NPT male union connector for use with all TH and TC sensor extensions
W080	1/2" NPT male union connector for use with TR sensor
W081	Thermowell adapter - Adapts 3/8" Thermowell to 1/4" sensor sheath (See page 6)
W930	1/2" NPT male to G1/2 male adapter for use with gauge 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 (1 or 2 may be required per application)

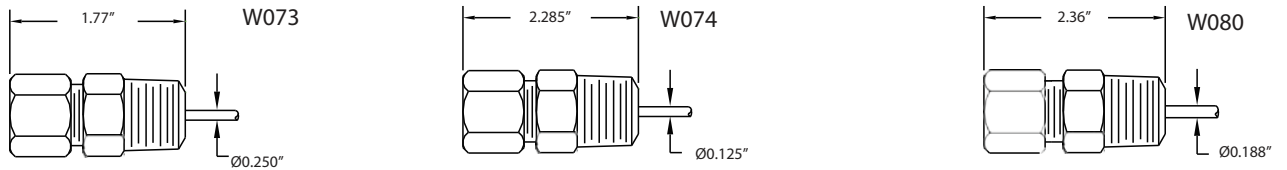
## Additional Options

QC1	Calibration Certificate with product data
CC2	Certificate of product conformance-without product data
CRN	Canadian Registration certificate for pressure sensors
M319	Chemical seals for pressure sensors
HYDL	Hydrostatic Leak test performance certificate
USMCA	US-Mexico-Canada Agreement certificate of origin
D02	Certificate of origin

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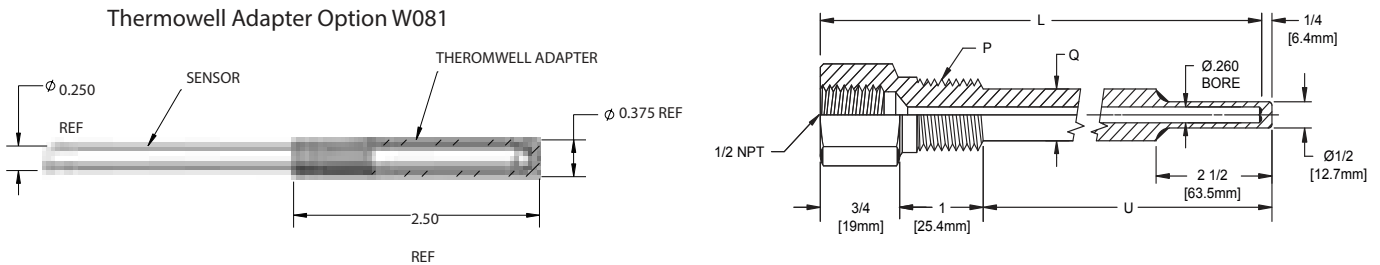


# Temperature sensors and fittings compatibility chart



	<b>W073*</b>	<b>W074*</b>	<b>W080*</b>
	1/2" NPT compression fitting with ferrule to fit 0.25" sensor sheath	1/2" NPT union connection to fit 0.125" sensor extension cable	1/2" NPT union connection to fit 0.188" sensor extension cable
<b>1GSWLL</b>	TLx, TRx	THx, TCx	TRx

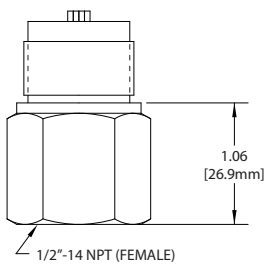
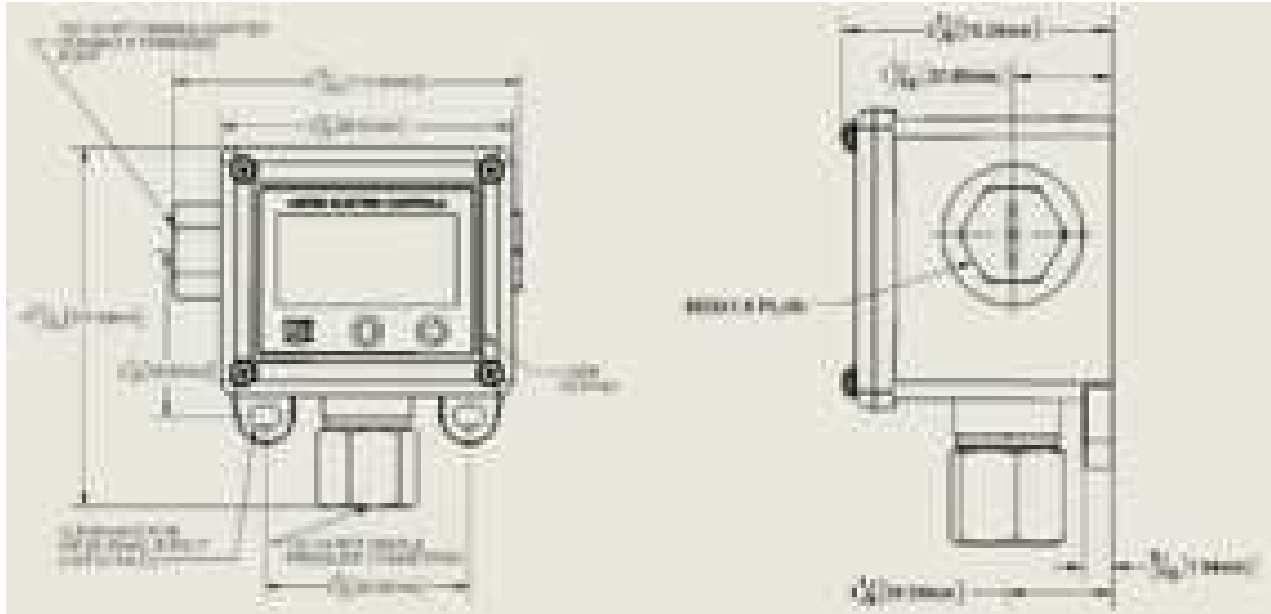
\*Note: The union connectors are rated to a maximum temperature of 500°F. Direct media contact with the union connectors above this limit is not recommended.



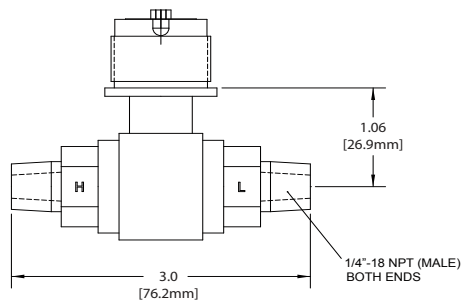
UE Part #	Length (L) Inches	P (NPT)	Q	U	TL1 (4")	TL2 (6")	Local Temperature	Remote Temperature	Remote Temperature
							Sensors w/ 0.25" Sensor Sheath <sup>1</sup>	Sensors with 0.25" Sensor Sheath	Sensors w/ 0.125" Diameter MI Cable <sup>1</sup>
							TL3 (10")	TR	TH & TC
<b>1S260L2.5-316</b>	2.5	1/2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

# DIMENSIONAL DRAWINGS

Model 1GSWLL  
Enclosure and Sensor Details



**GAUGE**  
Pressure Sensors



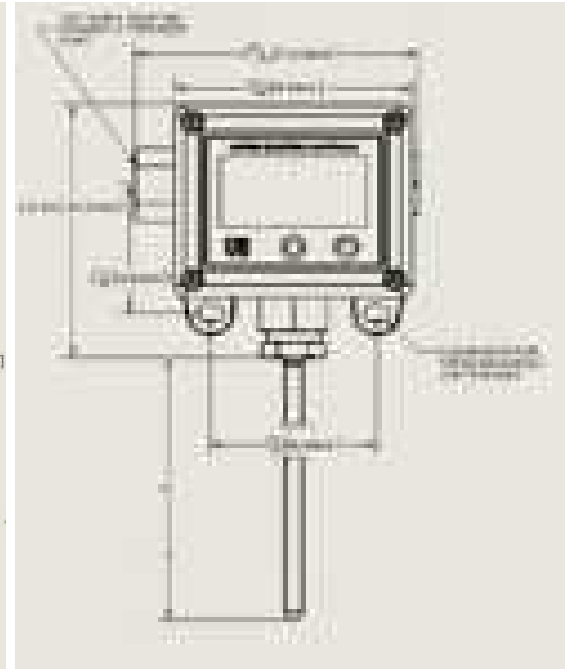
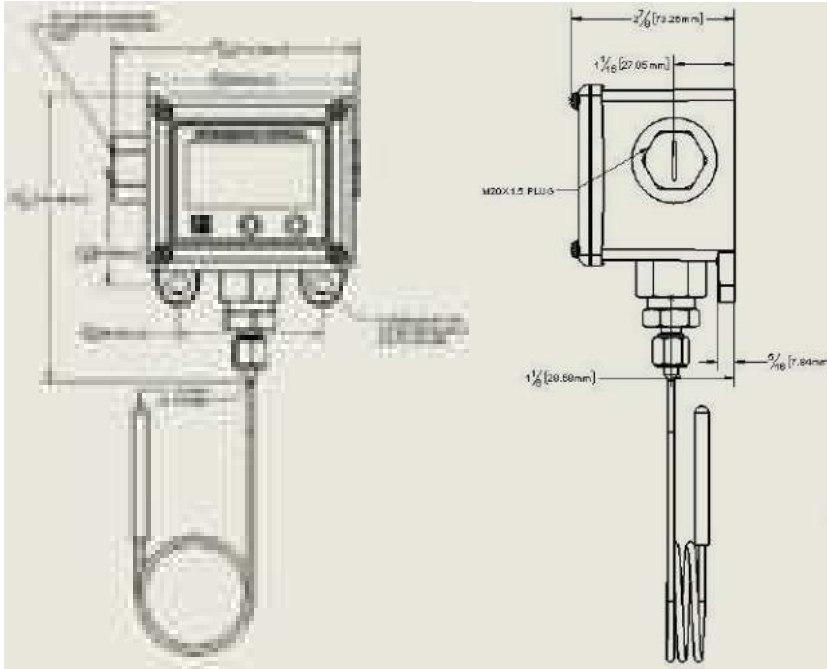
**DIFFERENTIAL**  
Pressure Sensors

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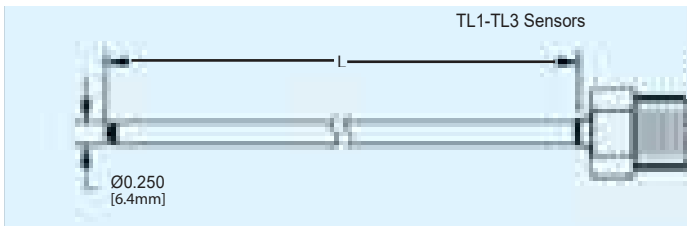


Model 1GSWLL  
Temperature Remote Sensors, TR, TH, TC

Model 1GSWLL  
Temperature Local Sensor TL



TEMPERATURE Sensors



Model	Length
TL1	4"
TL2	6"
TL3	10"

TR1 and TRC sensors



Accessory



**Excela Protective Display Cover**



## ADDITIONAL PRODUCTS FROM UE

### One Series Safety Transmitter for Division 1 (Zone 1)

- Improve Uptime with safety diagnostics
- Meet regulatory requirements with SIL2 IEC 61508 certification
- High-capacity solid-state safety relay



### Vanguard Gas Detector – Toxic and Combustible Gas Detector

- WirelessHART Communication
- 5+ year battery life
- Heavy duty design with Class 1, Div 1 & 2 hazardous location approvals



### One Series for Division 1 & 2 (Zone 0, 1, 2)

- HART® 7 communications
- Drop-in replacement for mechanical switches using the 2-wire.



### 400 Series

- One, two or three switch outputs may be separated up to 100% of range
- Epoxy-coated enclosure, designed to meet enclosure type 4X requirements
- Choice of reference dial or multi-turn hex screw for set point adjustment



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