Excela™

ELECTRONIC SWITCH



UNITED ELECTRIC CONTROLS

RoHS compliant

ISO 9001 CERTIFIED COMPANY

APPROVALS

UE declarations and third-party issued Agency certifications are available for download at www.ueonline.com/prod_approval.

c UL us E518858 CE

SPECIFICATIONS

POWER INPUT/ SWITCH OUTPUT:

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

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

REPEATABILITY: 0.1% of full range span

AMBIENT OPERATING: -40°F to 160°F

TEMPERATURE RANGE: Display visibility temperature range 10°F (-12°C) to 158°F (70°C)

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)

DIAGNOSTICS: 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

ENCLOSURE AND COVER: Type 4X/IP66 certified epoxy-coated aluminum alloy 360

FACEPLATE: UV-resistant pressure sensitive keypad and display overlay

CONDUIT: 1/2" NPT female stainless steel fitting on left side and a plastic plug on right side field reversible

DISPLAY: Local 4 digit x 0.5" (12.7 mm) LCD providing the following information;

- •Process variable live process information
- •Max/Min process values
- •Trip counter
- • Green & red LED light - indicating process status
- • Unit of measure
- • Set point values - rise and fall settings
- • Fault messages and error codes

RISE & FALL SETPOINTS: User-configured, rise and fall settings can be separated by up to 99% of sensor operating range

MEMORY: Programming and data protected by non-volatile EEPROM

EFFECTIVE WIRING DISTANCE: 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[1] + Display Resolution					Maximum Over Range[2]	
P06	-14.7 to 30 psig	831.1" wc	2068 mbar	206.8 KPa	2.109 kg/cm2	**60 psig**	4137 mbar
P08	-14.7 to 100 psig	2770" wc	6895 mbar	689.5 KPa	7.031 kg/cm2	**200 psig**	13,8 bar
P10	0-5.00 psig	138.5 "wc	344,7 mbar	34.4 KPa	0.352 kg/cm2	**10 psig**	690 mbar
P11	0-15.00 psig	415.5 "wc	1034 mbar	103.4 KPa	1.055 kg/cm2	**30 psig**	2068 mbar
P12	0-30.00 psig	831.1 "wc	2068 mbar	206.8 KPa	2.109 kg/cm2	**60 psig**	4137 mbar
P13	0-50.00 psig	1385 "wc	3447 mbar	344.7 KPa	3.516 kg/cm2	**100 psig**	6895 mbar
P14	0-100.0 psig	2770 "wc	6895 mbar	689.5 KPa	7.031 kg/cm2	**200 psig**	13,8 bar
P15	0-300.0 psig	NA	20,68 bar	2068 KPa	21.09 kg/cm2	**600 psig**	41,4 bar
P16	0-500.0 psig	NA	34,47 bar	3447 KPa	35.16 kg/cm2	**1000 psig**	68,9 bar
P17	0-1000 psig	NA	68,95 bar	6895 KPa	70.31 kg/cm2	**2000 psig**	137,9 bar
P18	0-3000 psig	NA	206,8 bar	20.68 MPa	210.9 kg/cm2	**6000 psig**	413,7 bar
P19	0-4500 psig	NA	310,3 bar	31.03 MPa	316.4 kg/cm2	**9000 psig**	620,5 bar
P20	0-6000 psig	NA	413,7 bar	41.37 MPa	421.9 kg/cm2	**12000 psig**	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[1] + Display Resolution				
K10	0-5.00 psid	138.5 "wc	344,7 mbar	34.47 KPa	0.352 kg/cm2
K11	0-50.0 psid	1385 "wc	3447 mbar	344.7 KPa	3.516 kg/cm2
K12	0-100.0 psid	2770 "wc	6895 mbar	689.5 KPa	7.031 kg/cm2
K13	0-200.0 psid	NA	13,8 bar	1379 KPa	14.10 kg/cm2

Model	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.

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

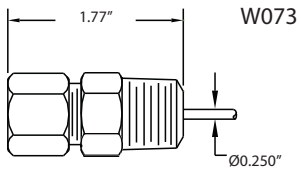
Option #	Description
M201	Factory programmed set point, specify Rise and Fall values Unit of measure can be changed in the field and are factory set in psi or degrees F, unless other option is specified. See options M270 to M278
M270	Display units, degrees C for temperature models
M275	Display units, 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)

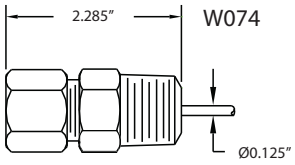
Additional Options

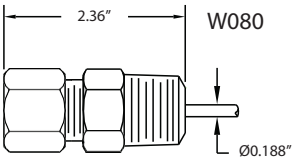
QC1	Calibration Certificate with product data
CC2	Certificate of product conformance-without product data
CRN	Canadian Registration certificate for pressure sensors
M319	Chemical seals for pressure sensors
HYDL	Hydrostatic Leak test performance certificate
USMCA	US-Mexico-Canada Agreement certificate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

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Temperature sensors and fittings compatibility chart



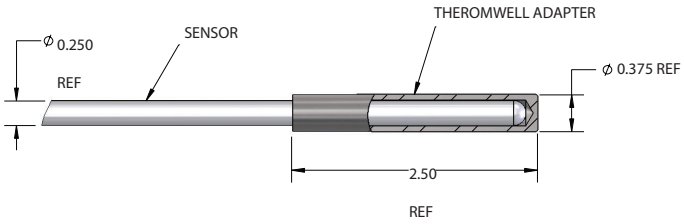


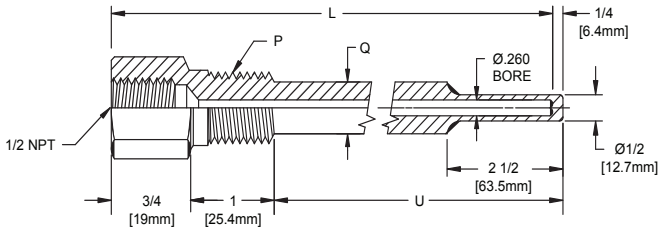


	W073*	W074*	W080*
	1/2″ NPT compression fitting with ferrule to fit 0.25″ sensor sheath	1/2″ NPT union connection to fit 0.125″ sensor extension cable	1/2″ NPT union connection to fit 0.188″ sensor extension cable
1GSWLL	TLx, TRx	THx, TCx	TRx

*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.

Thermowell Adapter Option W081

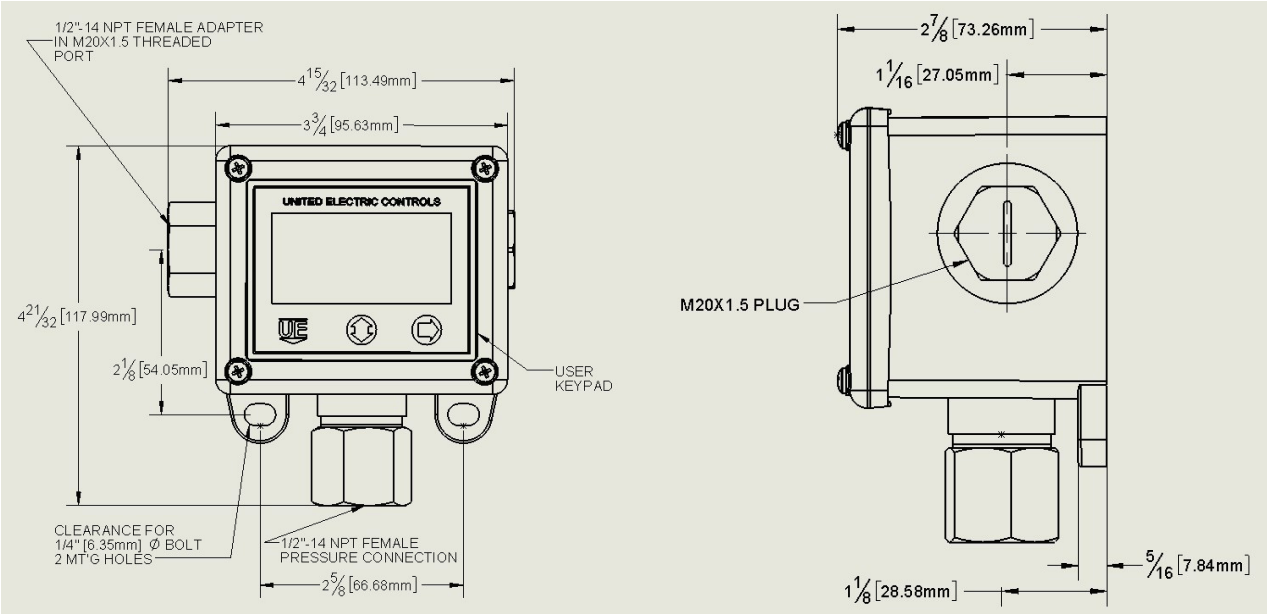


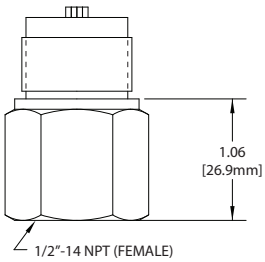


							Local Temperature Sensors w/ 0.25" Sensor Sheath[1]	Remote Temperature Sensors with 0.25" Sensor Sheath	Remote Temperature Sensors w/ 0.125" Diameter MI Cable[1]
UE Part #	**Length (L) Inches**	**P (NPT)**	**Q**	**U**	**TL1 (4")**	**TL2 (6")**	**TL3 (10")**	**TR**	**TH & TC**
1S260L2.5-316	2.5	1/2	5/8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

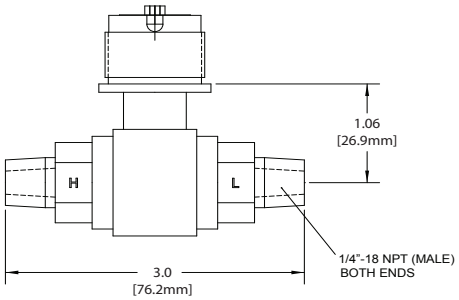
DIMENSIONAL DRAWINGS

Model 1GSWLL
Enclosure and Sensor Details





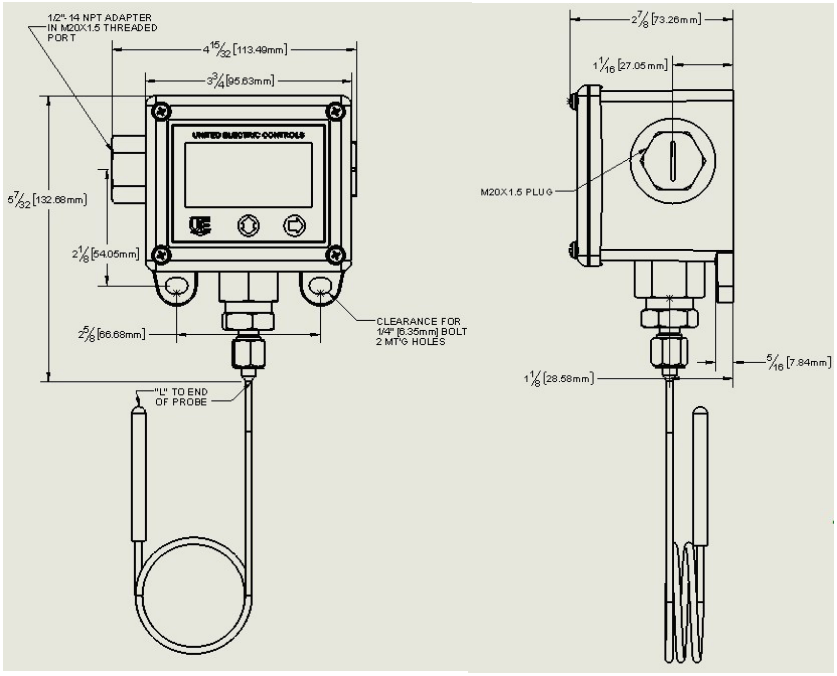
GAUGE
Pressure Sensors



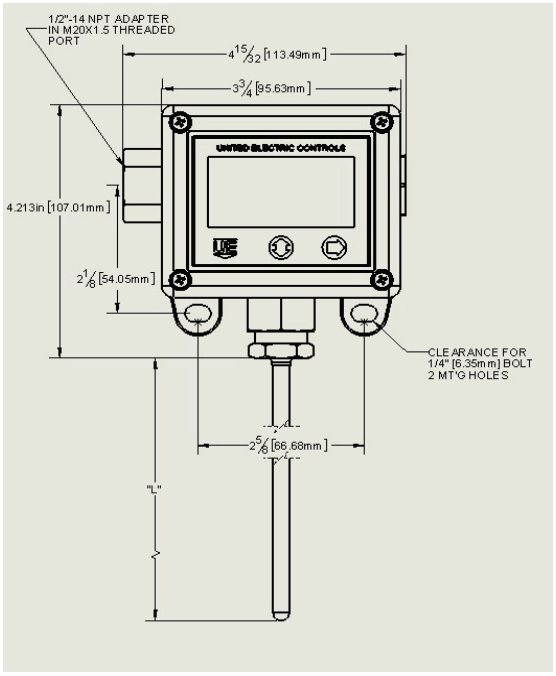
DIFFERENTIAL
Pressure Sensors

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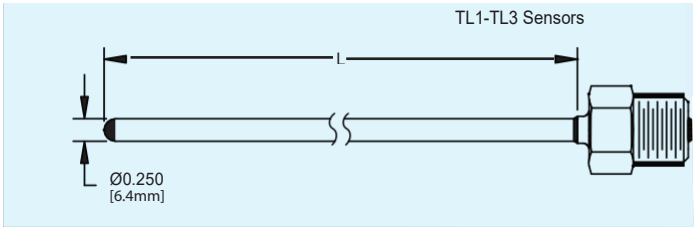
Model 1GSWLL
Temperature Remote Sensors, TR, TH, TC



Model 1GSWLL
Temperature Local Sensor TL

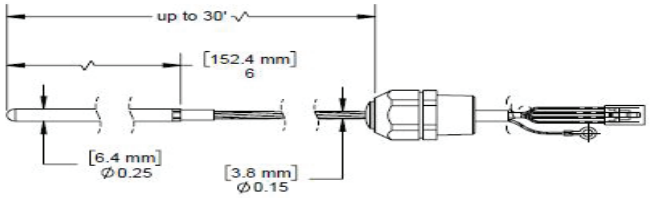


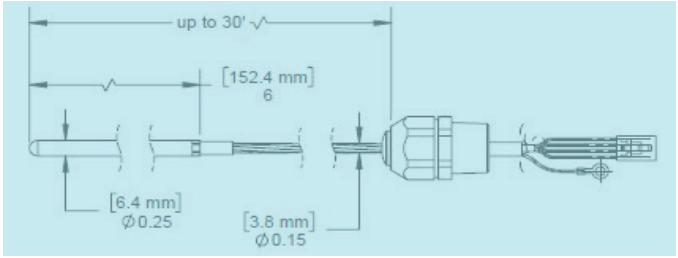
TEMPERATURE Sensors



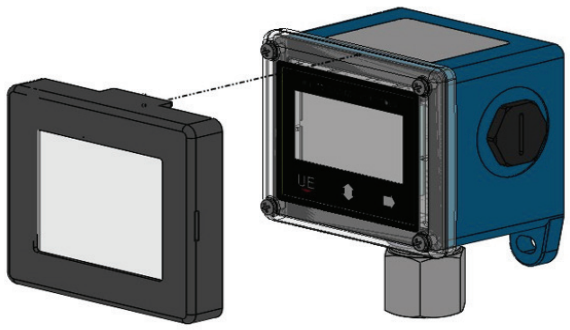
Model	Length
TL1	4"
TL2	6"
TL3	10"

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



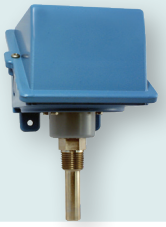
One Series for Division 1 & 2 (Zone 0, 1, 2)

- 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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