UNITED ELECTRIC CONTROLS

Excela™

Electronic switch

United Electric Controls is
ISO 9001:2015 certified

RoHS compliant

1 G W - B 04

Table of Contents

Building a Part Number

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

EXAMPLE: **1GSWLL P14 - M908**

Type: 1GSWLL

Model:

Options: Select any of available options for your switch

Specifications

Power Input/Switch Output				
Type	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 °F)	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 (-40 °C a 70 °C)
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	≤ 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	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: • Live process variable • Max/Min process values • Trip counter • Green & red LED light - indicating process status • Units of measure • Set point values - rise and fall settings • Fault messages and error codes

Rise and Fall Setpoints	User-configured, rise and fall settings can be separated by up to 100% of sensor operating range
Memory	Programming and data protected by non-volatile EEPROM
Effective Wiring Distance	2,000 feet (610 meters) at rated voltage
Vacuum	All pressure sensors withstand full vacuum with no calibration effects
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

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
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

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

Models

Pressure models

All models are 316L stainless steel wetted material with ½" NPT female process connection; piezo-resistive strain gage sensor with silicone oil fill.

Model	Adjustable Set Point Range [1]		Max Over Range Pressure [2]		Proof Pressure [3]		Display Resolution [4]			
	(psig)	(bar)	(psig)	(bar)	(psig	(bar)	("wc)	(bar)	(KPa)	(kg/cm²)
P06	-14.7 to 30	-1014 to 2068 mbar	45	3103 mbar	60	4137 mbar	831	2068 mbar	206,8	2,109
P08	-14.7 to 100	-1,0 to 6,89	150	10,3	200	13.8	2771	6,89	689	7,03
P10	0 to 5	0 to 344,7 mbar	7.5	517,1 mbar	10	689,5 mbar	138.5	344,7 mbar	34,47	0,352
P11	0 to 15	0 to 1034 mbar	22.5	1551 mbar	30	2068 mbar	415.5	1034 mbar	103,4	1,055
P12	0 to 30	0 to 2068 mbar	45	3103 mbar	60	4137 mbar	831	2068 mbar	206,8	2,109
P13	0 to 50	0 to 3447 mbar	75	5171 mbar	100	6895 mbar	1385	3447 mbar	344,7	3,515
P14	0 to 100	0 to 6,89	150	10,3	200	13,8	2771	6,89	689	7,03
P15	0 to 300	0 to 20,68	450	31,0	600	41,4	NA	20,7	2068	21,09
P16	0 to 500	0 to 34,47	750	51,7	1000	68,95	NA	34,47	3447	35,16
P17	0 to 1000	0 to 68,95	1500	103,4	2000	137,9	NA	68,95	6895	70,31
P18	0 to 3000	0 to 206,8	4500	310,3	6000	413,7	NA	206,8	20,68 MPa	210,9
P19	0 to 4500	0 to 310,3	6750	465,4	9000	620,5	NA	310,3	31,03 MPa	316,4
P20	0 to 6000	0 to 413,7	9000	620,5	12000	827,4	NA	413,7	41,37 MPa	421,8

Models

Differential pressure models												
All models are 316L stainless steel wetted material with (2) ¼" NPT male process connections; piezo-resistive strain gage sensor with silicone oil fill.												
Model	Adjustable Set Point Range [1]		Max Over Range Differential Pressure [2]		Proof Differential Pressure [3]		Max Working Pressure [5]		Display Resolution [4]			
	(psid)	(bar d)	(psid)	(bar d)	(psid)	(bar d)	(psig)	(bar)	("wcd)	(bar d)	(KPa d)	(kg/cm² d)
K10	0 to 5	0 to 344,7 mbar	7.5	517,1 mbar	10	689,5 mbar	50	3447 mbar	138.5	344,7 mbar	34,47	0,352
K11	0 to 50	0 to 3447 mbar	75	5171 mbar	100	6895 mbar	500	34,47	1385	3447 mbar	344,7	3,515
K12	0 to 100	0 to 6,89	150	10,3	200	13,8	1500	103,4	2771	6,89	689	7,03
K13	0 to 200	0 to 13,8	300	20,7	400	27,6	1500	103,4	NA	13,8	1379	14,06

Temperature models					
All models include a 4-wire, 100 Ω platinum RTD/DIN 0.00385 with 0.25" OD, 316 stainless steel sheath					
Model	Adjustable Set Point Range [1]		Max Over Range Temperature [2]		Sensor Description
	°F	°C	°F	°C	
TL1	-40 to 450	-40 to 232	495	257	Local (stem) mounted rigid to enclosure, 4" (101.6 mm) sheath length
TL2					Local (stem) mounted rigid to enclosure, 6" (152.4 mm) sheath length
TL3					Local (stem) mounted rigid to enclosure, 10" (254 mm) sheath length
TR1					Remote mounted, 6' (1.8 m) fixed-length Teflon® extension with 6" (152.4 mm) sheath
TRC					Remote mounted, 1 to 30' (0.3 to 9.1 m) Teflon extension (SPECIFY LENGTH) with 6" (152.4 mm) sheath
TH1	-40 to 1000	-40 to 538	1100	593	Remote mounted, 6' (1.8 m) fixed-length MI extension with 2.5" (63.5 mm) sheath
THC					Remote mounted, 1 to 30' (0.3 to 9.1 m) MI extension (SPECIFY LENGTH) with 2.5" (63.5 mm) sheath
TC1*	-300 to 200	-184 to 93	220	105	Remote mounted, 6' (1.8 m) fixed-length MI extension with 2.5" (63.5 mm) sheath
TCC*					Remote mounted, 1 to 30' (0.3 to 9.1 m) MI extension (SPECIFY LENGTH) with 2.5" (63.5 mm) sheath

*Calibration certificate is not available for these models.
[1] The upper and lower limits between which the set point can be fully (100%) adjusted.
[2] The pressure, differential pressure or temperature value that models will operate up to before indicating an over range pressure, differential pressure or temperature has been reached, and executing the safe shutdown feature.
[3] The maximum pressure or differential pressure to which a sensor may be occasionally subjected which causes no permanent damage to the sensor.
[4] The resolution of the display for set point value and decimal place for standard (psig, psid) and optional ('wc, "wcd, bar, bar d, KPa, KPa d, kg/cm², kg/cm² d) units of measure. Please note units of measure exceptions in the range tables above.
[5] The maximum pressure that may be applied to both the low and high side process ports simultaneously. Differential pressure between the low and high side process ports should not exceed the differential over range pressure.

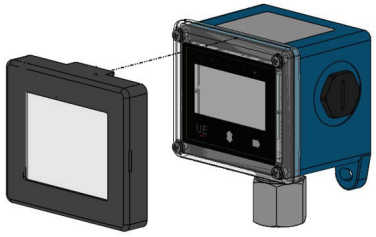
Options

Options Codes

Options #	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
M319	Diaphragm seals (consult factory)
M323	Excela protective cover with window for display
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
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
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)

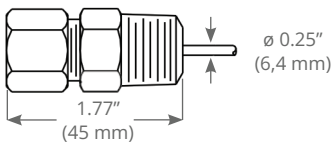
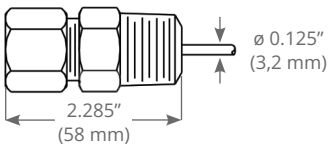
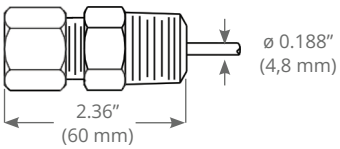
Certification Options

Options #	Description
QC1	Calibration Certificate with product data
CC2	Certificate of product conformance-without specific product data
HYDL	Hydrostatic Leak test performance certificate
USMCA	US-Mexico-Canada Agreement certificate of origin
DO2	Certificate of origin



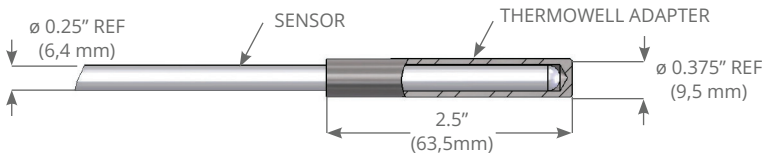
Excela Protective Display Cover (M323)

Union Connector Options

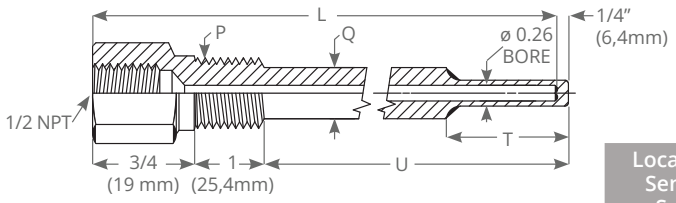
W073	W074	W080
		
1/2" NPT compression fitting with ferrule to fit 0.25" sensor sheath	1/2" NPT union connection to fit 0.125" sensor extension cable	1/2" NPT union connection to fit 0.188" sensor extension cable
TLx, TRx	THx, TCx	TRx

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

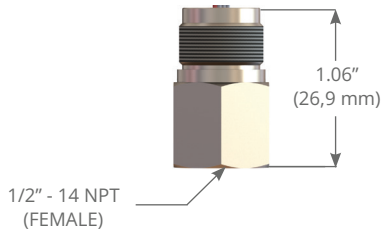


Thermowells

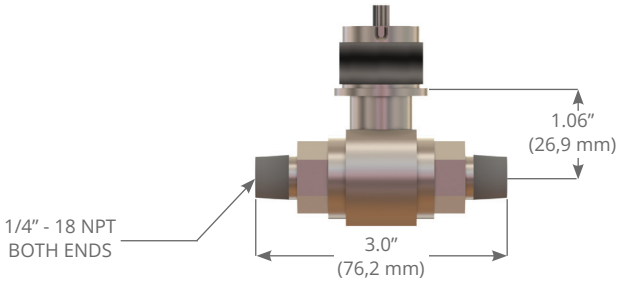


U Part #	(L) (In)	(P) (NPT)	(Q)	(U)	(T)	TL1 (4")	TL2 (6")	Local Temperature Sensors w/ 0.25" Sensor Sheath TL3 (10")	Remote Temperature Sensors with 0.25" Sensor Sheath TR	Remote Temperature Sensors w/ 0.125" Diameter MI Cable TH &TC
1S260L2.5-316	2.5	1/2	-	1	-	W073	W073	W073	W073	W074
1S260 L4-316	4	1/2	-	2.5	-	NA	W073	W073	W073	W074
1S260 L4.5-316	45	1/2	5/8	3	2 1/2	NA	W073	W073	W073	W074
1S260 L5.5-316	5.5	1/2	5/8	4	2 1/2	NA	NA	W073	W080	W074
1S260 L6-316	6	1/2	5/8	4.5	2 1/2	NA	NA	W073	W080	W074
1S260 L6.5-316	6.5	1/2	5/8	5	2 1/2	NA	NA	W073	W080	W074
1S260 L9-316	9	1/2	5/8	7.5	2 1/2	NA	NA	NA	W080	W074
1S260 L9.5-316	9.5	1/2	5/8	8	2 1/2	NA	NA	NA	W080	W074
1S260 L12-316	12	1/2	5/8	10.5	2 1/2	NA	NA	NA	W080	W074
1S260 L15-316	15	1/2	5/8	13.5	2 1/2	NA	NA	NA	W080	W074
1S260 L18-316	18	1/2	5/8	16.5	2 1/2	NA	NA	NA	W080	W074
1S260 L24-316	24	1/2	5/8	22.5	2 1/2	NA	NA	NA	W080	W074
2S260L2.5-316	2.5	3/4	3/4	1	2 1/2	W073	W073	W073	W073	W074
2S260 L4-316	4	3/4	3/4	2.5	2 1/2	NA	W073	W073	W073	W074
2S260 L6-316	6	3/4	3/4	4.5	2 1/2	NA	NA	W073	W080	W074
2S260 L9-316	9	3/4	3/4	7.5	2 1/2	NA	NA	NA	W080	W074
2S260 L12-316	12	3/4	3/4	10.5	2 1/2	NA	NA	NA	W080	W074
2S260 L15-316	15	3/4	3/4	13.5	2 1/2	NA	NA	NA	W080	W074
2S260 L18-316	18	3/4	3/4	16.5	2 1/2	NA	NA	NA	W080	W074
2S260 L24-316	24	3/4	3/4	22.5	2 1/2	NA	NA	NA	W080	W074

Pressure Sensors



Gauge Pressure Sensors

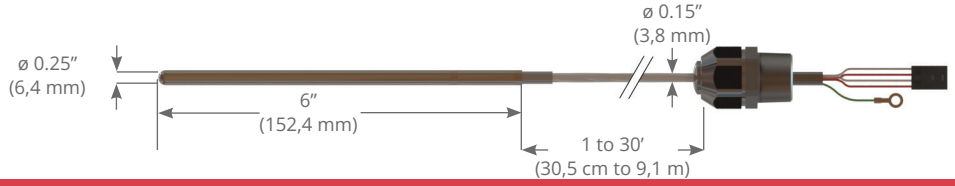


Differential Pressure Sensors

Temperature Sensors

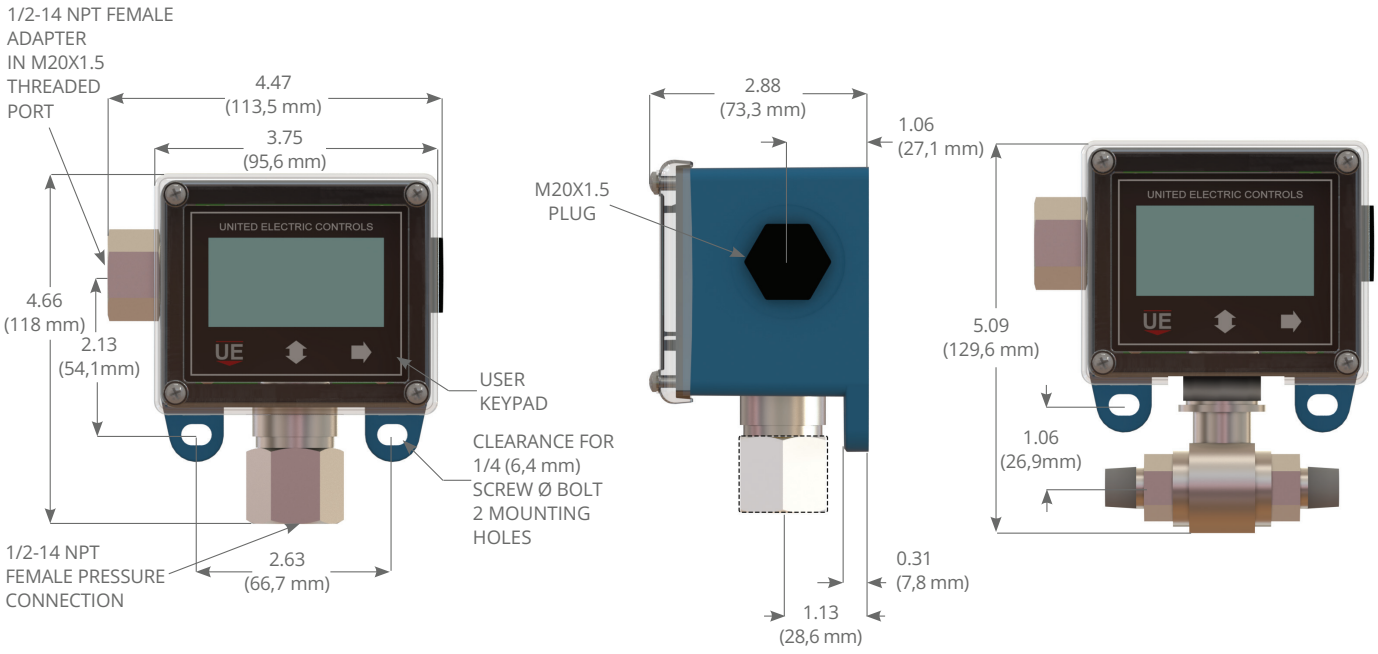
TL1 to TL3

TR1 and TRC

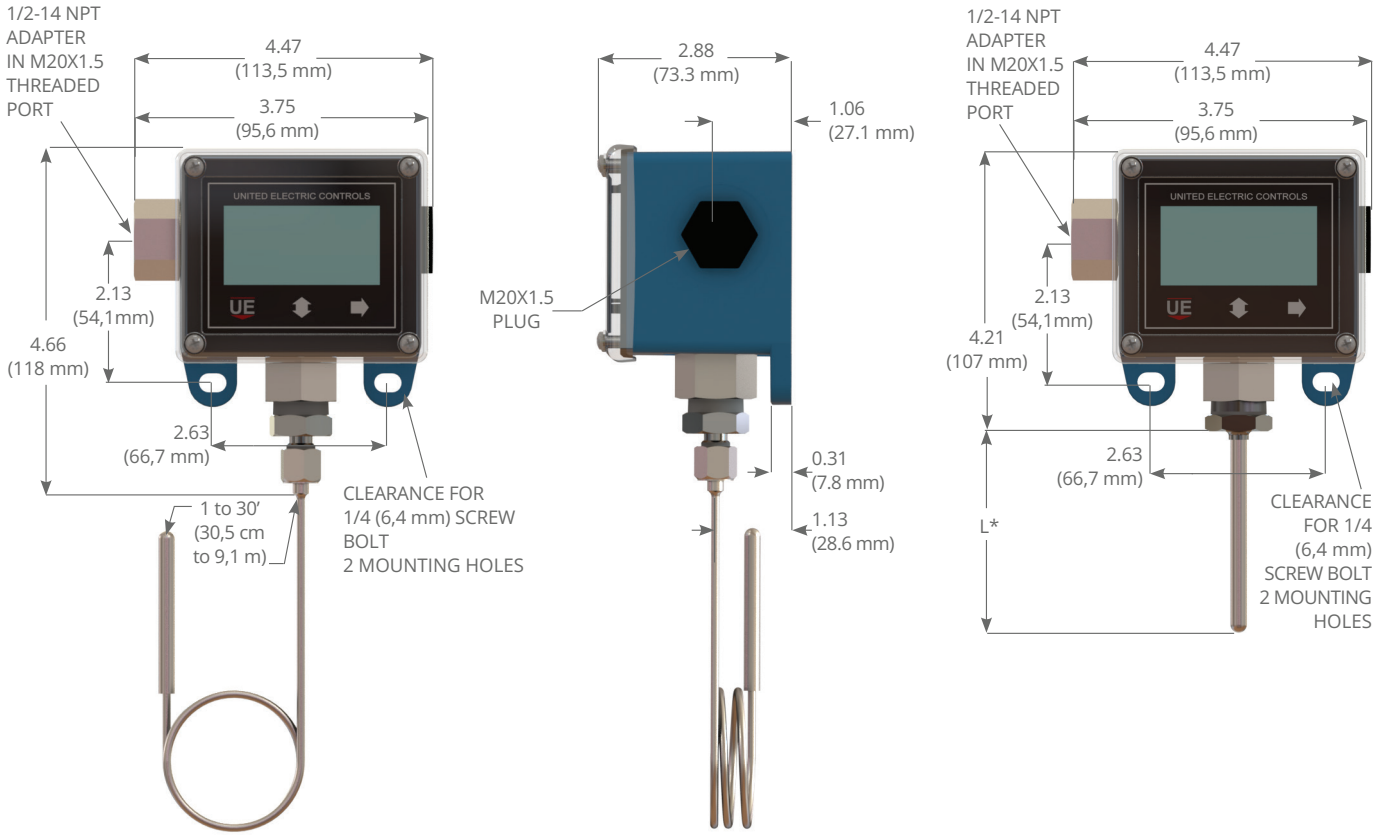


Model	Length
TL1	4"
TL2	6"
TL3	10"

Dimensional drawings (in inches)



Model 1GSWLL Enclosure and Sensor Details



Model 1GSWLL Enclosure and Sensor Details

* L: see Temperature Models table (page 4)

Certifications

	Region	Agency	Classification
	North America	UL	Pressure Switch: UL E518858, V1S7 Certificate #: E518858-2021-01-29 UL 61010-1 CAN/CSA C22.2 No. 61010-1-12
	Europe	ATEX	Pressure Equipment Directive (PED) (2014/68/EU) Compliant to PED UL 508, UL 61010 Products rated lower than 7.5 psi are outside the scope of the PED Low Voltage Directive (LVD) (2014/35/EU) UEC compliant to LVD EN 61058-1, EN 61010-1 Products rated lower than 50 VAC and 75 VDC are outside of the scope of the LVD The Low Voltage Directive does not apply to products for use in hazardous locations

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.

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