

Installation Instructions for the Honeywell Low Temperature Passive Probes, LTP Series

32309593

Issue D

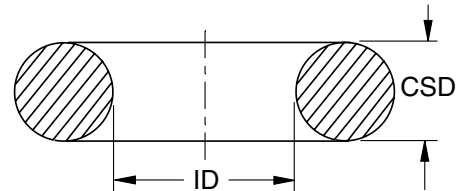
1.0 General Information

Honeywell's Low Temperature Passive Probes, LTP Series, is a modular range of temperature sensors specifically designed for potential use in transportation applications. The LTP Series features a durable, closed-tip design that maximizes reliability in harsh transportation applications while providing excellent response time. The sensor's thermistor sensing element effectively senses gases and liquids because of its enhanced sensitivity, accuracy and reliability.

2.0 Installation Information

- 2.1. Establish the sensor application environment in order to determine whether a sealing element, such as an O-ring, is needed, as well as a suitable material for the sealing element. See Table 1 for recommended O-ring sizes.
- 2.2. Fabricate the corresponding installation port:
 - 19 mm Hex: See Figure 3 for dimensions.
 - 22 mm Hex: See Figure 4 for dimensions.
- 2.3. Mount sensor. See Table 2 for torques.
 - 19 mm Hex: Use open-end wrench only.
 - 22 mm Hex: Use socket wrench or open-end wrench.
- 2.4. Connect sensor with mating connector given in Table 3.

Table 1. Recommended O-Ring Sizes



Thread	Inside Diameter, ID (mm)	Cross Section Diameter, CSD (mm)
M10 X 1,25	8,1 ±0,2	1.6 ±0,8
M12 X 1,5	9,3 ±0,2	1.6 ±0,8
M14 X 1,5	11,3 ±0,2	2,2 ±0,8
M16 X 1,5	13,3 ±0,2	2,2 ±0,8
M18 X 1,5	15,3 ±0,2	2,2 ±0,8
3/4-16-2A UNF (SAE 8)	16,36 ±0,2	2,21 ±0,8
G 1/4	10,77 ±0,2	2,62 ±0,8

Table 2. Operating and Environmental Specifications

Characteristic	Condition	Parameter
Sensing element	—	NTC thermistor
Sensed media capability	—	engine coolant, engine oil, fuel, air, hydraulic oil, water
Response time (T63.2%)	—	less than 15 s in stirred silicon oil temperature step 25 °C to 85 °C [77 °F to 185 °F]
Current	—	10 mA max. (self heating)
Insulation resistance	—	>10 MOhm at 250 Vdc, 25 °C [77 °F]
Accuracy	—	±0.8 °C, 25 °C to 100 °C (See Table 3.)
Operating temperature range	<ul style="list-style-type: none"> • continuous 500 hr at 150 °C • 500 thermal shocks from -40 °C to 150 °C • 100 thermal cycles from -40 °C to 150 °C 	-40 °C to 150 °C [-40 °F to 302 °F]
Storage temperature range	—	-40 °C to 150 °C [-40 °F to 302 °F]
Vibration	—	30 g sine, 10 Hz to 2000 Hz
Operating pressure	—	10 bar max.
Burst pressure	—	40 bar max.
Compliance	—	RoHS, REACH

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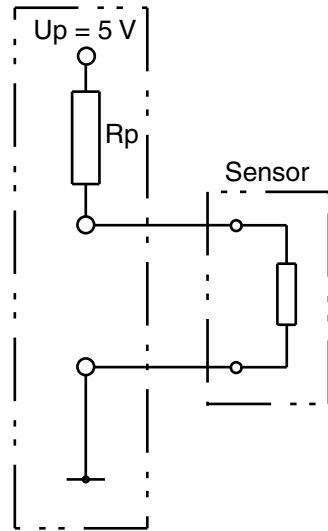
Table 3. Mechanical Specifications

Characteristic	Parameter		
Storage temperature range	-40 °C to 150 °C [-40 °F to 302 °F]		
Probe tip static side load	80 N		
Electrical connector type: Bosch Kompakt 1.1a Series (2-way 1928404226) Delphi Metri-Pack 150 Series (12191170) AMP Seal 16 (767428-1) AMP Minitimer (2 position, 106462-1) AMP Superseal 1.5 Series 2P (282104-1) Deutsch DT04-2P (2 position)	Material tin-plated brass tin-plated brass gold-plated brass tin-plated brass tin-plated brass gold-plated brass	IP Rating IP67, IP69K IP67 IP67 IP64 IP67 IP67	Mating Connector Bosch Kompakt (1928403874) Delphi Metri-Pack (12162193) AMP Seal 16 (776427-1) Junior Power Timer (282189-1) AMP Superseal (282080-1) Deutsch DT06-2S
Mechanical connector thread size: M10 X 1,25 M12 X 1,5 M14 X 1,5 M16 X 1,5 M18 X 1,5 3/4-16-2A UNF (SAE 8) G 1/4	Standard ISO 261 ISO 261 ISO 261 ISO 261 ISO 261 ISO J1926-3 ISO 228-2	Torque 8 ±1 N m 15 ±1 N m 15 ±1 N m 20 ±1 N m 20 ±1 N m 20 ±1 N m 15 ±1 N m	

Table 4. Resistance vs Temperature Curve and Sensor Accuracy

Thermistor Curve	Temperature (°C)	Resistance (Ohm)			Temperature Tolerance (°C)
		Minimum	Nominal	Maximum	
NTC-1000 at 25 °C (3947 Beta 0 °C/100 °C)	-40	28141.68	33487.40	38833.11	±2.5
	25	964.88	1000.0	1035.12	±0.8
	100	67.63	69.24	70.86	±0.8
	150	17.75	19.31	20.87	±3.5
NTC-2057 at 25 °C (3520 Beta 0 °C/100 °C)	-40	41061.23	48032,75	55004.26	±2.5
	25	1993.09	2057.00	2120.91	±0.8
	100	183.7	187.53	191.37	±0.8
	150	52.59	56.57	60.55	±3.5
NTC-2252 at 25 °C (3947 Beta 0 °C/100 °C)	-40	63419.83	75491.04	87562.26	±2.5
	25	2172.92	2252.00	2331.08	±0.8
	100	149.32	152.90	156.47	±0.8
	150	36.89	41.70	46.51	±3.5
NTC-2795 at 25 °C (4073 Beta 0 °C/100 °C)	-40	85718.02	102530.35	119342.68	±2.5
	25	2694.40	2795.00	2895.6	±0.8
	100	173.36	177.62	181.88	±0.8
	150	43.07	46.95	50.83	±3.5

Figure 1. Schematic



Typical voltages:

Power supply: $U_p = +5 \pm 0.1$ Vdc (Depends on application system.)

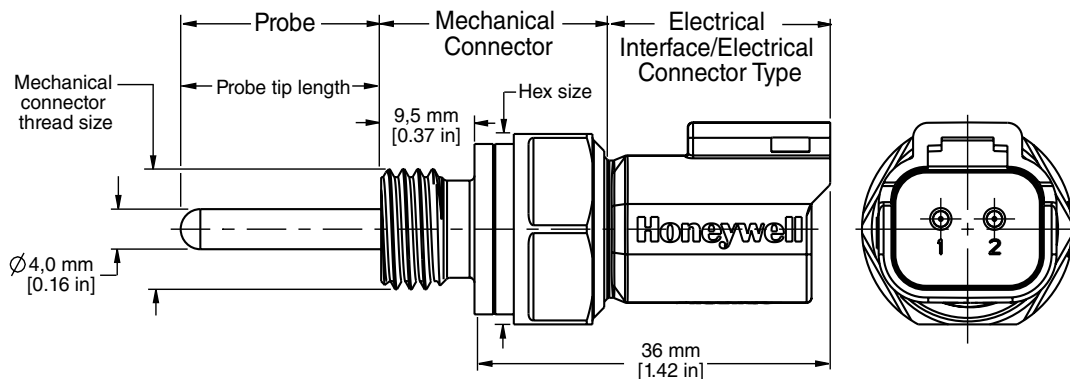
Typical resistance:

Pull-up: R_p = precision resistor ($\pm 0.1\%$ typical)

Notes:

1. Maximum current through the circuit: 10 mA
2. Self heating error needs to be considered and is additional to sensor basic accuracy

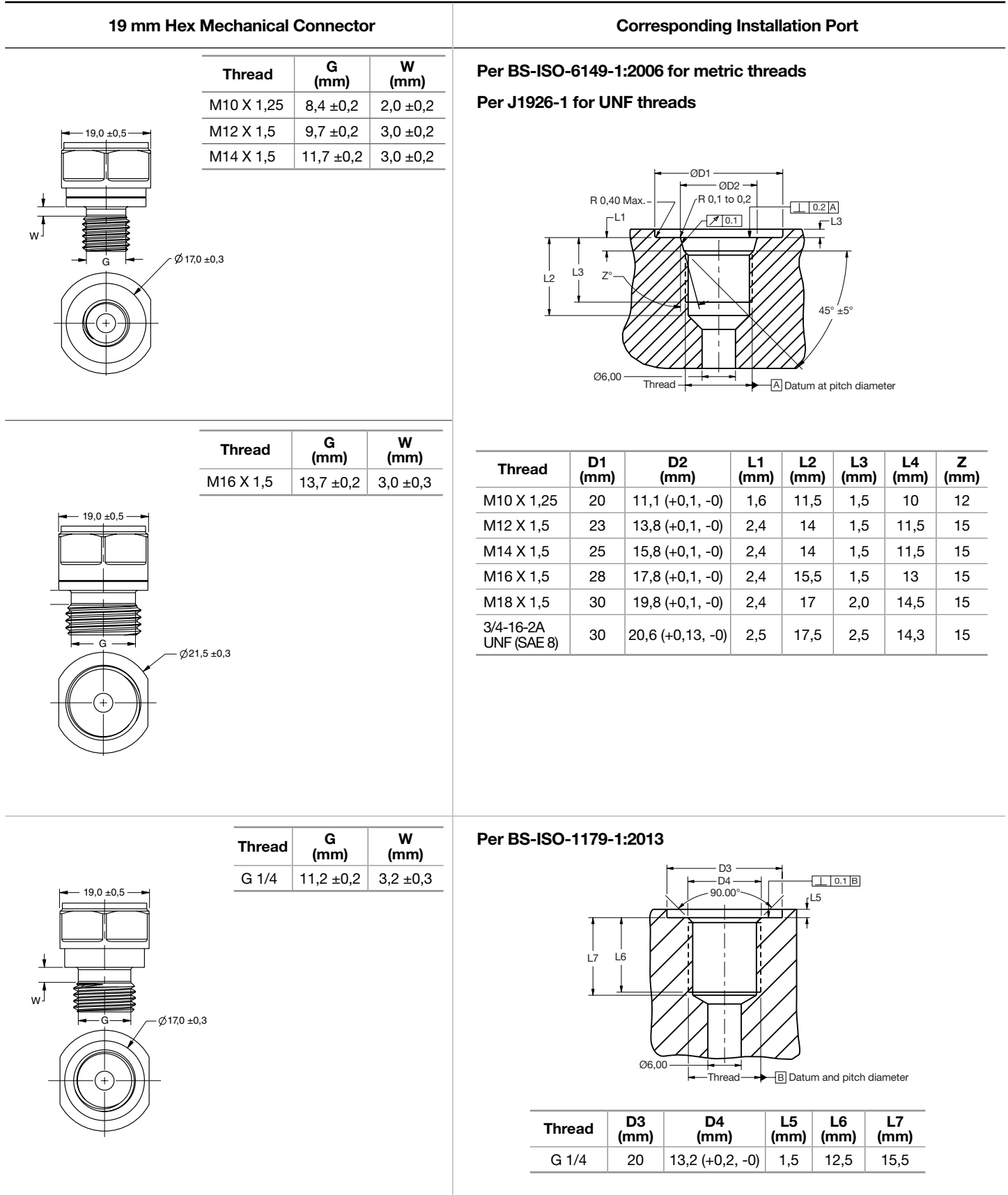
Figure 2. Sensor Overview



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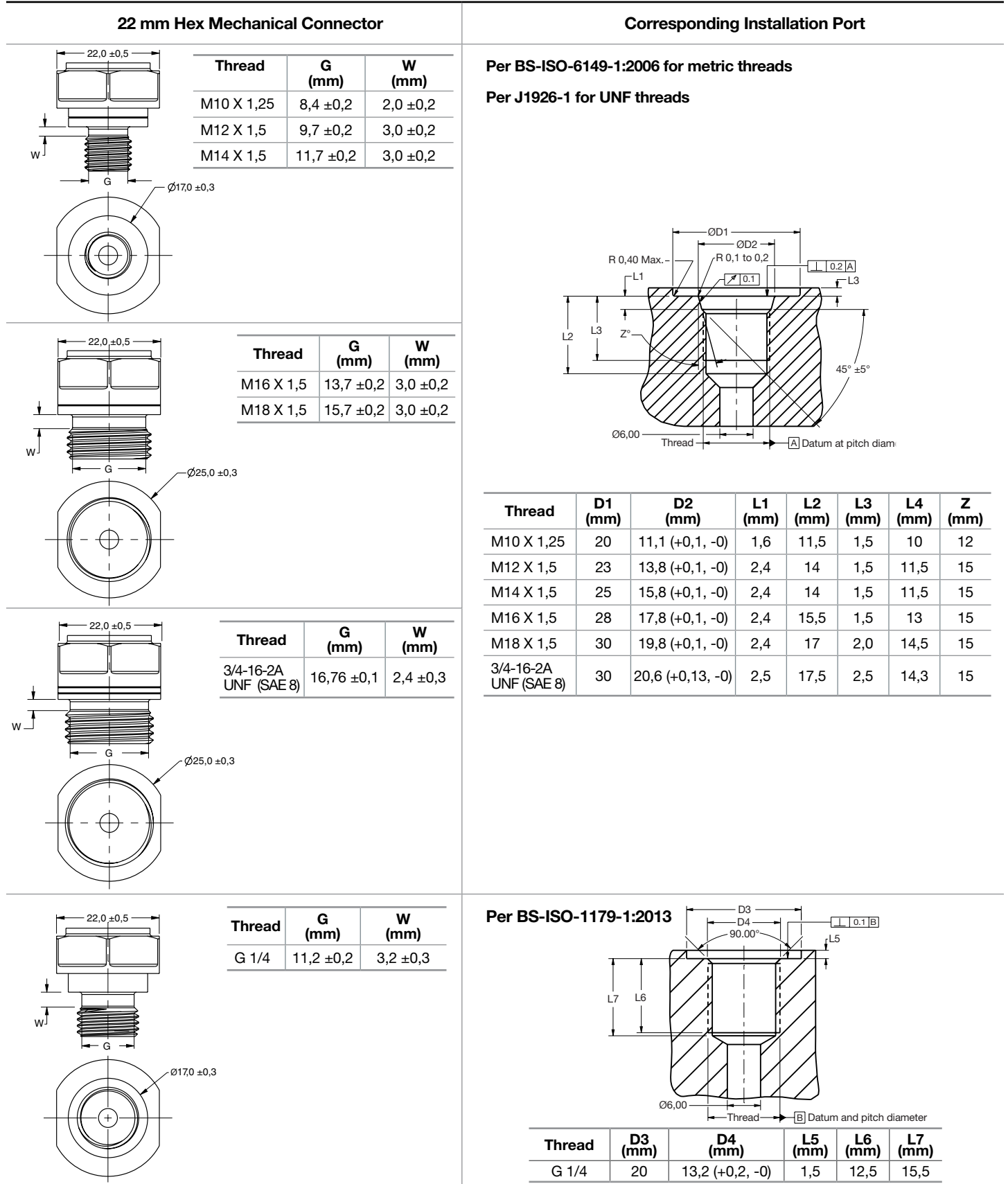
Figure 3. 19 mm Hex Mechanical Connector and Corresponding Installation Port Dimensions (For reference only: mm.)



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Figure 4. 22 mm Hex Mechanical Connector and Corresponding Installation Port Dimensions (For reference only: mm.)

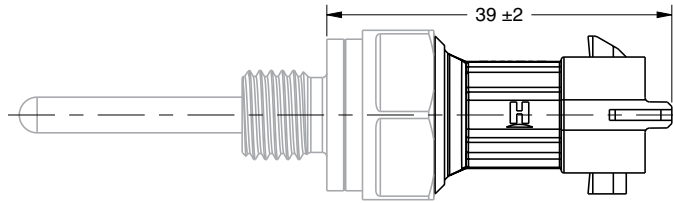


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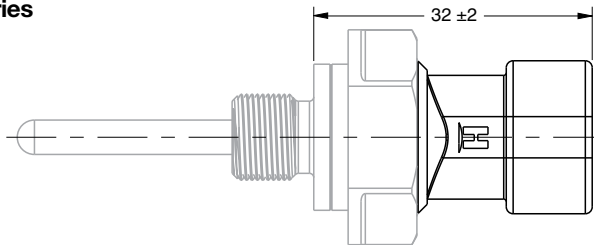
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Figure 5. Electrical Connector Type Dimensions (For reference only: mm.)

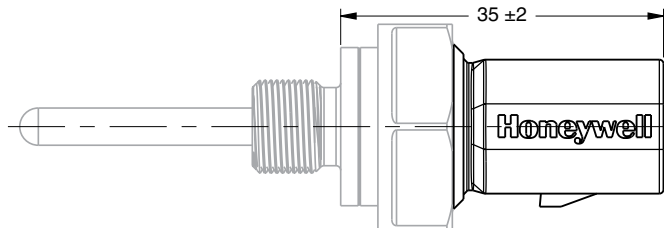
B: Bosch Kompact



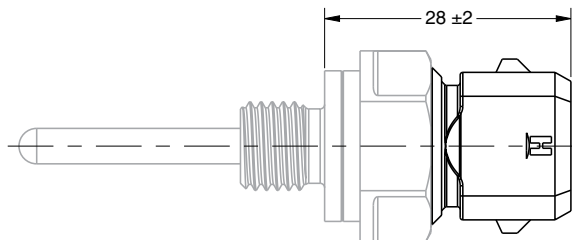
D: Delphi Metri-Pack 150 Series



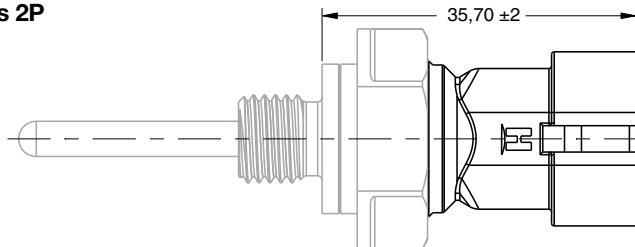
E: Amp Seal 16



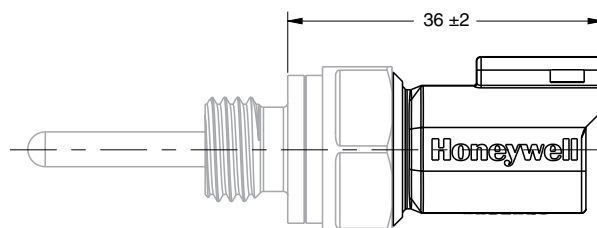
M: Amp Minitimer



S: Amp Super Seal 1.5 Series 2P



T: Deutsch DT04-2P



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▲ WARNING **PERSONAL INJURY**

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

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Internet: sensing.honeywell.com

Phone and Fax:

USA/Canada +1-800-537-6945

International +1-815-235-6847; +1-815-235-6545 Fax

Sensing and Productivity Solutions
Honeywell
1985 Douglas Drive North
Golden Valley, MN 55422
honeywell.com

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