

Application Note

Low Temperature Passive Probes, LTP Series Engine Lubrication System

Background

Multiple sensors are used in many heavy duty transportation automotive systems to monitor temperature, gases, voltages/ currents, vacuum and torque, to name a few. Twenty years ago, the typical heavy duty application used approximately five sensors. Today, typically 50 sensors may be used to control many vehicle systems

Solution

Honeywell's Low Temperature Passive Probes, LTP Series, are a modular range of temperature sensors designed for potential use in transportation applications. The LTP Series feature a durable, closed-tip design that maximizes reliability in harsh applications. The sensor's thermistor sensing element effectively senses gases, liquids or solids because of its enhanced sensitivity, accuracy and reliability. Easy-to-install threaded mounting provides reliable operation in harsh environments. Numerous options—from mechanical and electrical interface—simplify installation, allow customers to meet their specific application needs, and facilitate backwards-compatibility with most existing applications.

TRANSPORTATION

Description: An engine lubrication system is a mechanical system of lubricating internal combustion engines in which a pump forces oil into the engine bearings. The engine lubrication system:

- Reduces friction between moving parts, which minimizes engine wear and the creation of heat
- Cools a variety of internal engine parts and removes some heat from the engine
- Removes dirt, abrasives and contaminants from inside the engine
- Assists with sealing of the combustion chamber by forming a film between the piston rings and the cylinder wall
- Absorbs shock loads between bearings and gears, thus cushioning and protecting engine parts while minimizing engine noise production
- Stores an adequate supply of oil for lubricating internal engine parts
- Minimizes corrosion of internal engine components system

Sensor: Engine Oil Temperature (EOT) sensor

Location: In most vehicles, the EOT sensor is located in the oil pan or oil sump of the engine

Function: The EOT sensor's signal is used by the ECU for calculating the specified coolant temperature and the continued coolant circulation time. Once the oil reaches its maximum temperature of approximately 105 °C [221 °F], the ECU triggers the warning light in the dashboard of the vehicle. The EOT sensor allows operators to stop the vehicle and switch off the engine if the temperature of the oil gets too high as a result of an over-heated engine.

Value to Customers

- Provides oil temperature control
- Helps prevent engine overheating
- Contributes to operator safety
- Helps extend engine life
- Helps improve engine efficiency

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LTP Series	Features
<p>Bosch Kompakt</p> 	<ul style="list-style-type: none">• Temperature range: -40 °C to 150 °C [-40 °F to 302 °F]• Response time [T63.2% of 25 °C to 85 °C step]: stirred silicon oil <15 s; stirred water <15 s; air flow 10 m/s <20 s• Accuracy:<ul style="list-style-type: none">- -40 °C to 25 °C [-40 °F to 77 °F]: ±2.5 °C- 25 °C to 100 °C [77 °F to 212 °F]: ±0.8 °C- 100 °C to 125 °C [212 °F to 257 °F]: ±2.0 °C- 125 °C to 150 °C [257 °F to 302 °F]: ±3.5 °C
<p>Delphi Metri-Pack 150 Series</p> 	<ul style="list-style-type: none">• Electrical interface: Bosch Kompakt, Delphi Metri-Pack 150 Series, AMP Seal 16, AMP Minitimer, AMP Superseal, and Deutsch DT04-2P
<p>AMP Seal 16</p> 	<ul style="list-style-type: none">• Probe length options: 20 mm to 50 mm (other lengths available upon request)
<p>AMP Minitimer</p> 	<ul style="list-style-type: none">• Mechanical fastening options: M10 to M18, 3/4 UNF, and G 1/4 (other threads available on request)
<p>AMP Superseal</p> 	<ul style="list-style-type: none">• Retainer ring with hex: provides complete location for socket wrench in axial and radial directions, enabling the operator to first locate the sensor inside the socket to freely and more easily install the sensor
<p>Deutsch DT04-2P</p> 	<ul style="list-style-type: none">• Insulation resistance between I/O pin and the sensor's housing: >10 MOhm at 250 Vdc, 25 °C [77 °F]• Ingress protection: IP67• Vibration: 30 g sine wave, 10 Hz to 2000 Hz• Mechanical shock: 50 g• Service pressure: 10 bar• Burst pressure: 40 bar
	<ul style="list-style-type: none">• Wire harness (with or without a connector) or other sensing elements (PTC or RTD) available upon request

Find out more

To learn more about Honeywell Sensing and Productivity Solutions' products, call **+1-815-235-6847** or **1-800-537-6945**, visit sensing.honeywell.com, or e-mail inquiries to info.sc@honeywell.com

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