

Application Note

Low Temperature Passive Probes, LTP Series Haldex Coupling 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: A Haldex coupling system is an electronically controlled multi-plate clutch. On the 4MOTION permanent four-wheel drive system, it enables the propulsive power to be distributed variably between the front and rear wheels. Its continuous adjustment is performed by a control unit that takes slip, handling conditions, and drive torque into account.

Sensor: Oil temperature (OT) sensor

Location: The Haldex coupling temperature sensor is typically installed near the regulating valve in the Haldex control module housing and is immersed in hydraulic fluid.

Function: The OT senses the momentary hydraulic fluid temperature and sends this information to the Haldex control module. When regulating valve operation in a Haldex coupling system, a signal from the OT sensor is used to adapt to the changing viscosity of the hydraulic fluid. When regulating clutch operation, if the hydraulic fluid temperature exceeds 100 °C [212 °F], the clutch is released. If the temperature of the hydraulic fluid drops below 100 °C [212 °F], the clutch is pressurized.

Value to Customers

- Optimizes fluid temperature
- Contributes to operator safety
- Helps maximize system life
- Helps maximize drive efficiency
- Helps reduce operation costs

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LTP Series	Features
Bosch Kompact 	<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• Electrical interface: Bosch Kompact, Delphi Metri-Pack 150 Series, AMP Seal 16, AMP Minitimer, AMP Superseal, and Deutsch DT04-2P
Delphi Metri-Pack 150 Series 	<ul style="list-style-type: none">• Probe length options: 20 mm to 50 mm (other lengths available upon request)• Mechanical fastening options: M10 to M18, 3/4 UNF, and G 1/4 (other threads available on request)• 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
AMP Seal 16 	<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
AMP Minitimer 	<ul style="list-style-type: none">• Wire harness (with or without a connector) or other sensing elements (PTC or RTD) available upon request
AMP Superseal 	
Deutsch DT04-2P 	

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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