Honeywell

Application Note Low Temperature Passive Probes, LTP Series Fuel 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 fuel temperature sensor senses the temperature of the fuel to determine how much fuel must be sent in so that the emissions and fuel economy are kept in control. Hot fuel is less dense than colder fuel which leads to differences in the amount of fuel sent in if the rate of fuel injection is kept the same. Leaner mixtures lead to loss in power and higher cylinder temperatures which lead to increase in emissions. The sensors usually operate in a closed feedback loop and thus regulate the fuel injection according to the emissions requirement. Accordingly they help to maintain a consistent air-fuel mixture.

Sensor: Fuel Temperature (FT) sensor

Location: The FT sensor is typically located near the high pressure pump on the inlet line.

Function: The FT sensor is designed to measure the temperature of the fuel and relay this information to the engine control unit (ECU). Regarding hot start situations: After stopping a hot engine, the combination of high engine bay temperatures and stationary fuel in the fuel system may cause fuel vaporization.

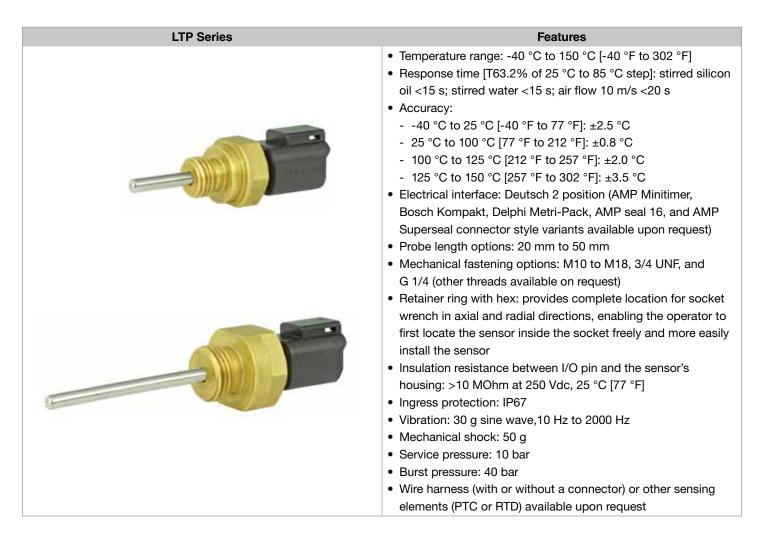
If an attempt to restart the engine is made before the fuel has cooled, the engine may not start and run satisfactorily until the fuel system has had time to circulate fresh fuel to the fuel rail. As the vaporized fuel is less dense, fuel injector pulse widths must be increased during hot restarts. The ECU applies corrections to the injector pulse widths based on the fuel temperature provided by the FT sensor. The FT sensor enables the engine to run at maximum efficiency based on temperature. An optimized combustion process reduces pollutants that are emitted via the exhaust system.

Value to Customers

- Helps maximize fuel efficiency
- Helps maximize engine performance
- Helps reduce operation costs

Application Note

Low Temperature Passive Probes, LTP Series Fuel System



Find out more

To learn more about Honeywell's sensing and control products, call **1-800-537-6945**, visit **sensing.honeywell.com**, or e-mail inquiries to **info.sc@honeywell.com**

Sensing and Control Honeywell 1985 Douglas Drive North Golden Valley, MN 55422 honeywell.com Warranty. Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. The foregoing is buyer's sole remedy and is in lieu of all warrantics, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.



009085-1-EN IL50 July 2015 Copyright © 2015 Honeywell International Inc. All rights reserved.