

### Delphi Hydrocarbon Sensor

The Delphi Hydrocarbon Sensor is an advanced and durable sensing technology that dynamically measures the percentage of hydrocarbons present in a volume of air. It helps enable new powertrain technologies, such as hybrid architectures, turbo charging, and direct injection, to effectively purge a carbon canister to meet stringent evaporative emissions standards.

The sensor can be used on the purge circuit of the canister to optimize purging in "low purge" conditions, or on the "fresh air" side of the canister (air inlet) to signal the release of hydrocarbons into the atmosphere and initiate purging.

#### ▶ Benefits

- Helps prevent engine "stumble" due to hydrocarbon rich purge flow
- "Feed Forward" information allows maximized canister purging in low purge architectures
- Minimizes purge when the carbon canister is clean, resulting in lower dust ingestion
- Helps eliminate the need for high cost, pressurized fuel tanks
- Can be used as an input device for "maintenance mode" in hybrid vehicles when installed on the "fresh air" side of the carbon canister
- Offers low power consumption:
  - <50 mA at 12 V<sub>DC</sub> (0.6 W)
- Provides maintenance free lifetime operation

#### ▶ Typical Applications

The Delphi Hydrocarbon Sensor is designed for use with any gasoline engine fuel system. It is especially useful in low purge applications, such as hybrid architectures, turbo charging, and direct injection.

#### ▶ Availability

The Delphi Hydrocarbon Sensor is being developed for production in 2013. Engineering samples will be available for vehicle manufacturers in Q4 2011. Contact Delphi for further information.

#### ▶ Specifications

Operating temperature	-40°C to 85°C
Measuring range	0% to 100% HC concentration
Response time	~50 ms
Accuracy	2% to 3% (with butane)
Cross sensitivity (humidity)	~3% (at 50°C and 99% relative humidity)
Integrated temperature	Sensor for temperature compensation
Power consumption	<50 mA at 2 V <sub>DC</sub> (0.6 W)



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**▶ Performance Advantages**

The Delphi Hydrocarbon Sensor helps enable optimized regeneration of the evaporative emissions canister's carbon bed in low purge conditions, such as with hybrid vehicle applications. It also helps enable optimized regeneration of the carbon bed when minimal purge volume is desirable, such as in high dust environment situations. The Delphi Hydrocarbon Sensor is maintenance free and designed for the life of the vehicle. It can be used with non-pressurized fuel tanks on hybrid vehicle applications to help provide significant vehicle cost savings for the manufacturer.

**▶ The Delphi Advantage**

Delphi is one of the world's leading manufacturers of evaporative emissions canisters, producing millions annually and providing customers with products that offer world class quality and performance. Delphi offers the benefits of more than 35 years' experience, and the in-depth knowledge of evaporative emissions canister design and market requirements. Delphi offers low cost evaporative emissions canister manufacturing in North America, Asia and Europe. Delphi has full engineering capabilities in North America and Europe to help manufacturers meet evolving evaporative emissions criteria.

As a global leader in engine management systems technology, Delphi can help manufacturers around the world meet emissions requirements, improve fuel economy and enhance performance. Delphi is a source for high value solutions and our systems expertise is built into every product. Delphi's flexible engineering approach encourages collaboration. And, Delphi has a thorough understanding of markets around the world and a global network of resources.