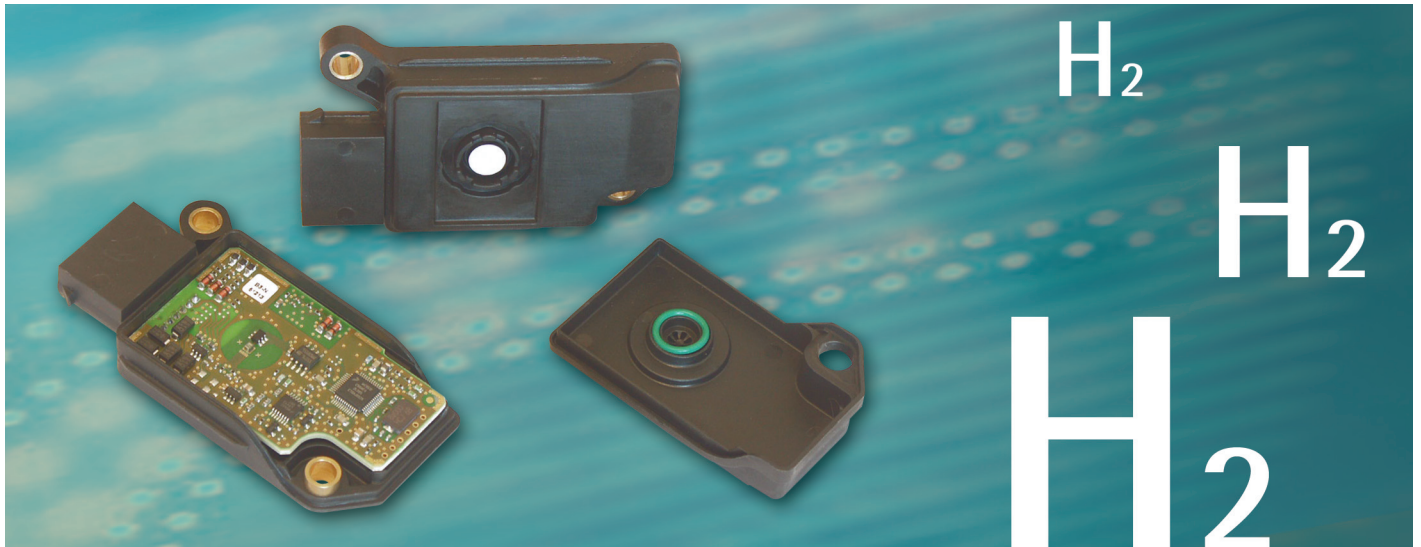


Hydrogen Safety Sensor



HSS-440

Fast and flexible

The AppliedSensor HSS-440 Hydrogen Safety Sensor is a highly selective, fast-responding sensor that enables the safe use of hydrogen gas. Based on advancements in Field Effect (FE) technology, the HSS-440 Hydrogen Safety Sensor offers reduced power consumption and increased packaging flexibility.

The HSS-440 is suitable for automotive hydrogen safety applications and offers CAN bus electrical interface with standard MQL six-pin connector. Self testing at start-up together with error handling assures high safety integrity during operation. Short start-up time enables intermittent mode of operation to minimize current drain.

Highly sensitive and selective

The HSS-440 incorporates a field-effect transistor with a catalytic metal gate stack as the gas-sensing layer. Hydrogen molecules interact with the gate thereby changing characteristics of the transistor. The sensor is fed by a constant current source and gives a voltage output proportional to the logarithm of the hydrogen concentration in the ambient.

AppliedSensor's unique design and careful processing of the gate stack result in superior sensor properties including high speed of response and excellent selectivity as well as a detection range that covers the lower explosion limit of hydrogen gas.

Low cross sensitivity

Unlike sensors that have severe cross sensitivity to a variety of combustible gases, AppliedSensor's FE technology ensures that the HSS-440 Hydrogen Safety Sensor is highly selective to hydrogen gas without interference from background gases or water vapor.

Key Benefits

- High sensitivity to hydrogen gas
- Low cross sensitivity
- Fast response time
- Low power consumption
- Long term stability and reliability
- Long lifetime

Applications

- Detection of hydrogen gas leaks in automotive cabin ceiling, under the hood of the engine compartment or beneath the trunk lid of hydrogen-powered vehicles
- Detection of hydrogen gas in and around hydrogen fueling stations

Hydrogen Safety Sensor

HSS-440 Specifications

| | |
|--------------------------------------|--|
| Target gas | Hydrogen |
| Concentration range | 0-4.4% H ₂ in air |
| Accuracy | +/- 3000ppm |
| Speed of response (t ₉₀) | <3s |
| Speed of recovery | <10s |
| Cross-sensitivity | No detection towards HC, H ₂ S, N ₂ , CO, CO ₂ , NO _x , H ₂ O Humidity influence, not detectable |
| Start-up time | 500 ms |
| Self test/Error handling | Developed in accordance to IEC 61508 (SIL2) |

Electrical

| | |
|----------------------|-----------------------|
| Supply voltage | 8.5-18.5V |
| Supply current | 75mA typical |
| Can Interface | Version 2.0 ISO 11898 |
| Programmable CAN ID | Yes |
| Connector | MQS 6-pin |
| ESD/Reverse polarity | Yes |

Environmental

| | |
|-----------------------------|------------------------------|
| Operation temperature range | -40 -> +125° C |
| Storage temperature range | -50 -> +125° C |
| Humidity | 5-95% including condensation |
| Pressure | 70-130 kPa |
| EMC | Automotive |
| ATEX | Zone 2 |
| Shock | Automotive |
| Vibration | Automotive |

Mechanical

| | |
|---------------------|--------------------------|
| Dimensions (LxWxH) | 85 x 45 x 15mm |
| Weight | 40g |
| Material | PBT +30% GF |
| Gas filter membrane | Pall SUPOR 450R, 0.45 µm |
| IP code | IP67 |

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