

# Percept Sensors

Percept Sensors from Molex comprise a sensor family targeted for the transportation industry, using accelerometers and microphones to support safety, automated driving, road noise cancelling and machine health.

## FEATURES AND ADVANTAGES

Enables the sensor to be placed where needed, protecting against water and dust ingress in harsh environments such as adjacent to the tire

IP6K9K rating

Allows for a cleaner signal, leading to improved system efficiency

Superior packaging design

Features high sensitivity to energy sources, allowing sensor placement farther from the energy source if required

Low noise density excitation

Offers flexibility for parallel or perpendicular sensor positioning relative to the ground to enable mechanical mounting to a vehicle and permit a variety of connector orientations and terminal sizes

Various mechanical housing configurations available

Reduces the harness weight of the vehicle and eliminates heavy star-pattern cabling

Daisy-chained sensor design

Permits low latency and results in less time between the sensor receiving vibrations and the module receiving a notification signal

A2B digital communication protocol

|                               |                                      |
|-------------------------------|--------------------------------------|
| Communication Protocol        | A2B                                  |
| Protection Rating             | IP6K9K                               |
| Distortion                    | Max. Monitored Shock Load - +/- 16 g |
| Monitored Frequency Bandwidth | 4000 Hz                              |
| Noise Floor                   | <70 ug/√Hz                           |
| Direction                     | Omnidirectional                      |
| Operating Temperature         | -40 to +115°C                        |

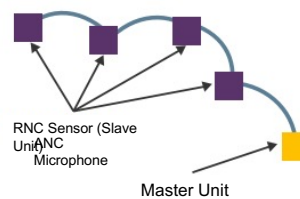
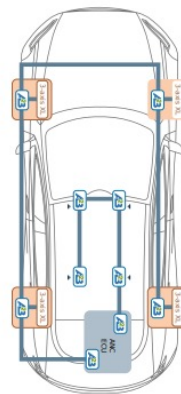


Provides 50% space savings compared with USCAR 0.64mm connectors

Designed with our USCAR 0.50mm Mini50 connectors or Molex DuraClik for high-vibration and high-temperature design requirements

Captures vibration energy transfer from the suspension into the vehicle chassis at the earliest perceptible time

Enabling optimal timing of corrective action



"Daisy Chain" Harnessing

Up to 9 sensors in chain,



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## MARKETS AND APPLICATIONS

### Automotive and Commercial Vehicles

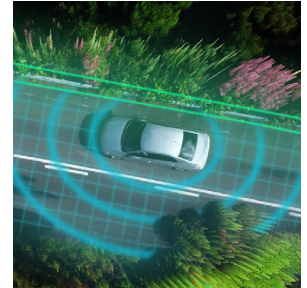
In-cabin noise reduction  
Active noise cancellation  
Safety systems  
Autonomous vehicles  
Advanced driver-assistance systems (ADAS)  
Fleet and commercial vehicle monitoring  
Off-highway and construction vehicles  
Commercial aviation  
Train and locomotive monitoring  
Condition-based monitoring  
Vehicle diagnostics  
Automated parking sensors  
Incident reporting systems  
Security systems



Advanced Driver-Assistance  
Systems (ADAS)



Safety Systems



Autonomous Vehicles

## SPECIFICATIONS

### ROAD NOISE CANCELLATION (RNC) SENSORS

#### Accelerometer

Maximum Monitored Shock Load: 16 g in all axes  
Anticipated Sensory Frequency Range: 200 to 500 Hz  
Programmable Frequency Range: 500 Hz to 4kHz  
Low Latency: 150μ max. at 2kHz bandwidth  
Low Noise:  
    <100μg/√Hz for x- and y-axes  
    <150μg/√Hz for z-axis  
Digital Output: Up to 14 Gbps

#### Mechanical

Installation Force into Vehicle position (max.): 25N  
Retention Force Prior to Nut-and-Screw Fastening: >15N  
Axial Pull Force After Fastening (min.): 350N  
Retained in Place by M6 Screw and Nut  
Torque Value of Screw and Nut: 20 ± 2N\*m

#### Environmental

Operating Temperatures: 40 to +115 °C  
Protection Classification: IP6K9K  
(dust and high-pressure spray) per ISO 20653  
Vibration Classification: On-vehicle spring mass  
Chemical Resistance: Exterior body and underbody  
Mechanical Shock/Drop: Pothole and collision rated

#### Harnessing Expectations

2x jacketed unshielded twisted pairs for  
100 Mbps transmission  
Twisted pair cable types must comply with  
SAE-J3117 standard and the Open Alliance  
Specification for Communication Channel 2.0 =  
equivalent to 100BaseT1  
Digital Matched Differential Impedance: 100 Ohms  
Sensor units are daisy-chained together

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