Molex’s Road Noise Cancellation (RNC) Sensors, with A2B technology, convert vehicle chassis vibration into a signal that generates a cancellation soundwave, reducing road noise within the cabin.

**Features and Advantages**

- **Daisy-chained sensors**
  Eliminates heavy star-patterned cabling and noise, vibration and harshness (NVH) sound-dampening material.

- **IP6K9K NEMA Rating**
  Protects against water and dust ingress in harsh environments.

- **Low system latency**
  Delivers superior noise cancellation because the time between the sensor receiving the vibration and the module receiving the signal is extremely low.

- **Mated with 1X4 Mini50 Connector**
  Provides 50% space savings over traditional USCAR 0.64mm connectors. Ideal for interior transportation-vehicle environments. Delivers superior signal integrity performance.

- **Various mechanical housing configurations available**
  Offers flexibility for parallel or perpendicular positioning to the ground in order to enable mechanical mounting to a vehicle and allows a variety of connector orientations and terminal sizes.

- **4 to 8 sensors located on chassis frame**
  Captures vibration energy transfer from the suspension into the vehicle chassis at the earliest point for optimal cancellation timing.

- **Collaboration with Analog Device on accelerometer and A2B technology**
  Provides 50% space savings over a system at an overall lower cost.
# Road Noise Cancellation (RNC) Sensors

## Markets and Applications

**Automotive**
- In-cabin noise reduction

## Specifications

### ACCELEROMETER
- **Maximum Monitored Shock Load (max.):** 16g in all axes
- **Anticipated Sensory Frequency Range:** 20-500 Hz
- **Programmable Frequency Range:** 500 Hz to 4kHz
- **Low Latency:** 150µs maximum 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

### PHYSICAL
- **Operating Temperatures:** -40 to +115°C
- **Protection Classification:** IP6K9K per ISO 20653
- **Vibration Classification:** On-Vehicle Spring Mass
- **Chemical Resistance:** Exterior Body and Underbody
- **Mechanical Shock/Drop:** Pothole and Collision Rated

### ENVIRONMENTAL
- **Temperature Classification:** -40 to +115°C
- **Protection Classification:** IP6K9K (Dust and High-Pressure Spray) per ISO 20653

### HARNESSING EXPECTATIONS
- **2x Jacketed Unshielded Twisted Pairs for 100 Mbps Transmission (Twisted Pair Cable Types Must Comply with SAE-J3117 Standard and Open Alliance Specifications for Communication Channel 2.0 – Equivalent to 100BaseT1)**
- **Digitally Matched Differential Impedance:** 100 Ohms
- **Sensor Units Are “Daisy Chained” Together**

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