

# Percept Road Noise Cancelling (RNC) Sensors >

As vehicle technology advances, drivers and passengers expect a quiet in-cabin experience, free from road-based noise pollution. A solution is now available for automotive manufacturers looking for a cost-effective, lightweight and compact method to address road noise.

## BUSINESS CHALLENGE

Electric and hybrid cars are increasingly popular as technology evolves. These cars are quieter than those with internal combustion engine (ICE) drivetrains, so their occupants perceive higher levels of road noise.

Humming, hypnotic road noise, which is low-frequency broadband sound, transmits from road surfaces into the vehicle through the tires, suspension and body components. Without internal combustion engines to mask it, road noise is more perceptible in electric vehicles. However, sound-dampening materials can be heavy and costly, while earlier active noise cancellation (ANC) systems, due to their complex wire harnesses and the material they carry, are less efficient and less economical than desired.

Additionally, automotive applications leave sensors and sound-dampening systems vulnerable to a variety of harsh environmental factors, like water, dust and rocks, which can damage the system.

## PRODUCT SOLUTION

Pioneering a new trend in the luxury and modern electric vehicle categories, Molex has created Percept Road Noise Cancelling (RNC) Sensors. These sensors utilize A2B technology paired with a sensing element that captures sound waves, enabling a reduction of the road-based noise an ICE would typically mask.

Percept RNC Sensors capture a sound wave as vehicle chassis vibration is detected and transfer it to the processing unit, which generates a cancellation wave form to the sound inside the vehicle while traveling on the road. Using A2B audio bus technology by Analog Devices, the sensors are connected through daisy-chained cabling, which eliminates the weight of heavy star-pattern or home-run wire harnessing and sound-dampening materials. The network technology minimizes the time between the sensor receiving the vibration excitation and the processing unit receiving the signal, which means the noise is cancelled more efficiently. Also, the sensors can measure road noise at slower speeds and be placed farther away from the sound source, while providing more network data channels as well.

Furthermore, the casings for the sensors were designed to resist the water, dust, debris and vibration of the harsh automotive environment. They carry an IP6K9K enclosure rating to protect the system, utilizing the space-saving Molex Sealed Mini50 Connector interface.

Various mechanical housing configurations offer flexibility for orienting the sensing element parallel or perpendicular to the ground, which allows for a variety of connector orientations and terminal sizes. Percept RNC Sensor assemblies can be configured with four to eight sensors, for additional design options.

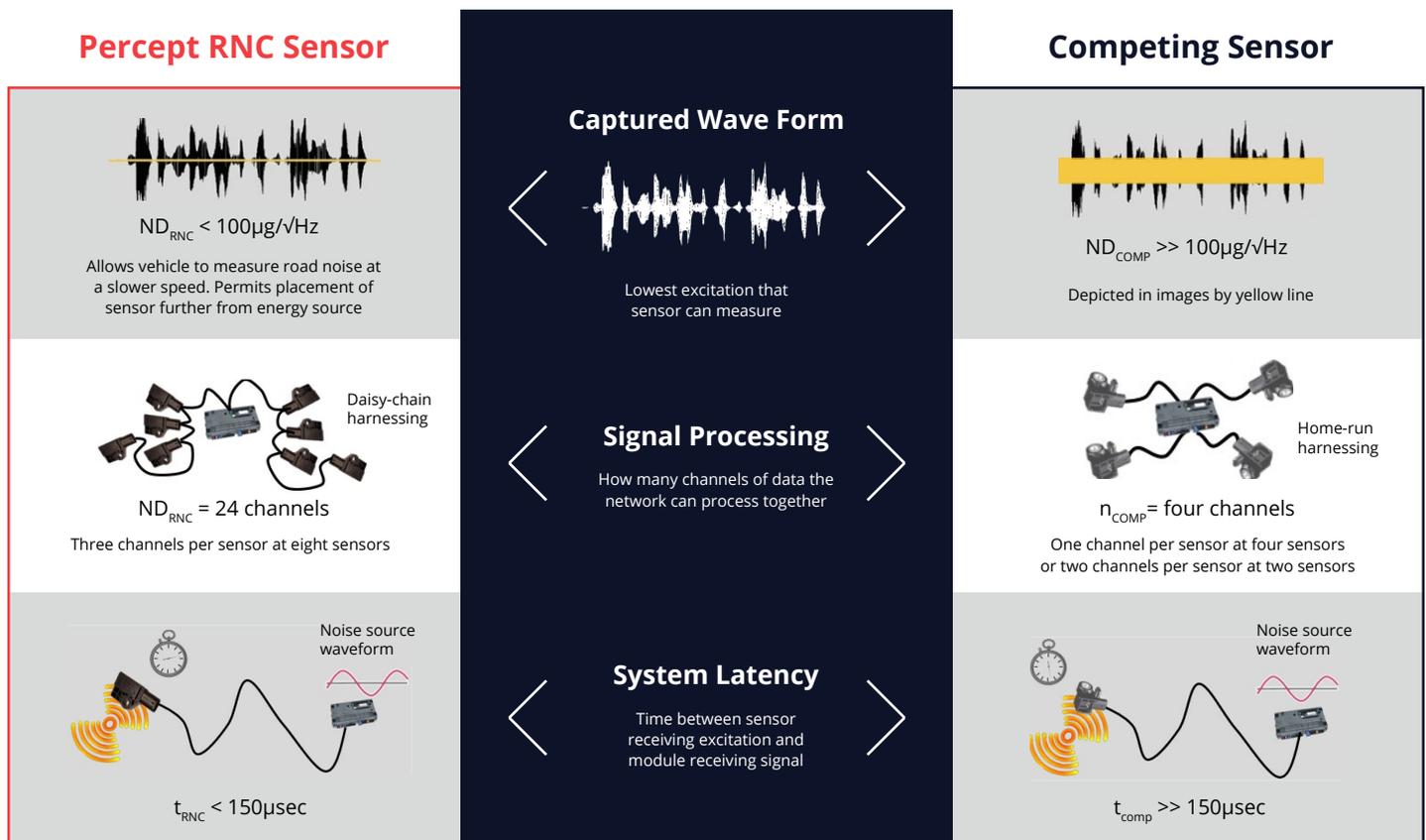


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## KEY BENEFITS

Percept RNC Sensors capture vibration energy from the suspension into the chassis early for optimal cancellation timing, at a lower cost than other noise cancellation systems.

- Daisy-chained sensors, eliminating the need for heavier materials
- Less time between the sensor receiving vibrations and sending signals to the module
- An IP6K9K enclosure, protecting the sensors from harsh automotive environments
- Up to 50% space savings with the Molex Sealed Mini50 Connector interface



By using Percept RNC Sensors, designers can enhance the driving experience by lessening the effects of road noise. The system's design makes this possible while improving efficiency, enhancing design flexibility, reducing weight, accelerating installation time and simplifying maintenance. Learn more about how Molex noise cancellation technology can transform vehicle design and improve driver comfort.

[www.molex.com](http://www.molex.com)