



# **CRY3213**

## **NVH Measurement Microphone**

Engineered for rigorous automotive noise testing, delivering reliable acoustic measurements.

## Industry Challenges

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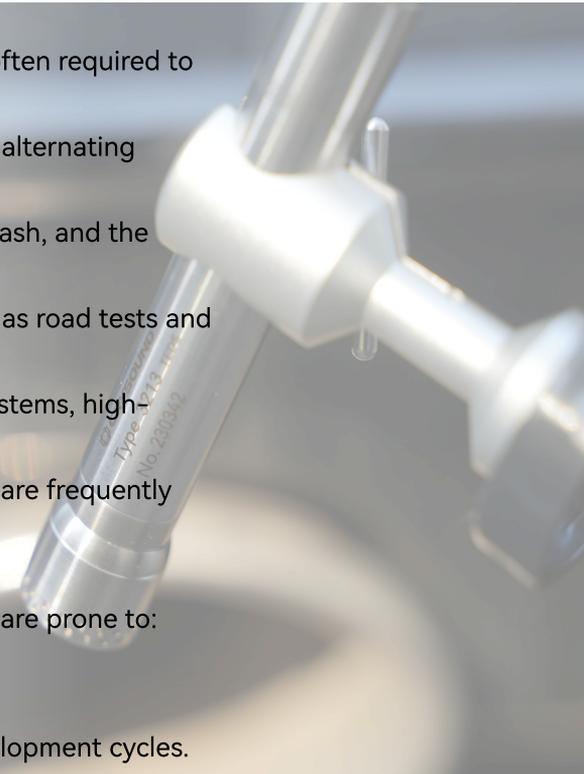
In full-vehicle and powertrain NVH testing, microphones are often required to operate continuously in environments far harsher than a lab:

- Severe temperature fluctuations: high and low temperatures alternating around the engine bay, underbody, and wheel area
- Humidity and contamination: condensation, rainwater, oil splash, and the ingress of dust and sand.
- Strong vibration and shock: harsh operating conditions such as road tests and durability testing.
- Complex electromagnetic environment: EMC from e-drive systems, high-voltage harnesses, and power electronics
- Distributed layout and drop risk: multi-channel systems that are frequently installed, removed, and reconfigured

In such demanding conditions, conventional lab microphones are prone to: Sensitivity drift, increased noise levels, or permanent failure.

Damage caused by water ingress, dust, or mechanical impact

Inconsistent test data, higher retest costs, and extended development cycles.



## Product Highlights

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The CRY3213 is a 1/2-inch free-field prepolarization measurement microphone specifically designed for automotive NVH testing applications, covering the full range of vehicle and powertrain acoustic measurements—from low-noise idle conditions to high sound pressure levels at high engine speeds.

### IP67 Protection Rating

Designed for reliable operation in humid, splash-prone, muddy, and dusty environments, the microphone remains unaffected by short-term immersion, making it well suited for rainy road tests as well as water exposure around wheels and chassis.

### Wide Operating Temperature Range of $-50^{\circ}\text{C}$ to $+125^{\circ}\text{C}$

Designed to withstand extreme operating conditions, including severe cold, high temperatures, and rapid temperature changes.

### Shock and Vibration Resistant

Suitable for installation on powertrain and vehicle body locations with severe vibration, significantly reducing the risk of failure caused by drops and vibration.

### Full Human Hearing Coverage

Meets human hearing frequency response and dynamic range requirements, ideal for high-precision acoustic testing.

## Specifications

Field Type	Free-field	Operating Temperature	-50°C - +125°C
Sensitivity(±2 dB)	50 mV/Pa, -26 dB re 1V/Pa	Protection Rating	IP67
Frequency Response	3.15 Hz-20 kHz ±2 dB	Power Supply	IEPE (2-20) mA, Typical: 4 mA
Dynamic Range(re.20uPa)	17 -136 dB	Output Impedance	< 50 Ω
Inherent Noise	17 dBA	Maximum Output Voltage	> 8.0 Vp
Dynamic range upper limit	136 dB (THD < 3%)	EMC Immunity Standard	GB/T 17626.6-2017 GB/T 17626.3-2023
Polarization Voltage	0 V (Pre-polarized)	Shock Resistant	1000 m/s <sup>2</sup>
Pressure Equalization Vent	Rear vented	Vibration Resistant	80 m/s <sup>2</sup>

## Industry Applications



### Extreme Environment Testing

The CRY3213 delivers stable performance in harsh environments, including extreme cold, sand and dust conditions, high-temperature chambers, and areas close to the engine.



### Noise Monitoring in Harsh Environments

Captures abnormal acoustic characteristics in high-temperature and highly contaminated environments.



### Abnormal Noise Detection and Elimination

Suitable for full-vehicle durability road testing, abnormal noise investigation, mounting system evaluation, and NVH testing, enabling the capture of intermittent noise events and characteristic frequency bands.



### Powertrain Noise Reduction

In high-temperature, high-vibration environments with oil and water exposure—such as engines, transmissions, and electric drive units—the CRY3213 delivers long-term stable performance, making it well suited for full-vehicle NVH calibration, structural optimization, and fault diagnosis.

## Multi-Layer Protective Design

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### Titanium Alloy Perforated Protective Grille

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The titanium alloy housing effectively protects against the ingress and impact of foreign objects such as gravel and mud.



### Built-in High-Acoustic-Transparency Dust Protection Mesh

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The front protective grille integrates a high-acoustic-transparency dust screen and is coated with IP67-rated protective layers, effectively preventing the ingress of moisture and oil contaminants.



### Full Waterproof Design

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At the power indicator, pressure-equalization vent, connectors, and other key areas, waterproof sealing techniques are applied to fully encapsulate and protect all potential water-ingress points.

## Application Cases

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In a powertrain noise reduction testing project at an automotive manufacturer, the 3213 NVH microphone was deployed in locations such as the engine compartment, where its wide operating temperature range ensured stable performance under high-temperature engine-bay conditions.



During a road test at an automotive manufacturer, the 3213 NVH microphone was deployed in locations such as the wheel arch. Its IP67 protection rating effectively resists water and mud splashes generated during driving, ensuring stable acquisition of driving noise data under complex road conditions.