

Axion[™]R/S+PM+NH₃

Introducing the world's first Micro PEMS with PM and NH₃ sensing & measurement with remote monitoring capabilities

Global MRV is proud to introduce the Axion[™]R/S+PM+NH₃ Generation 4 with PM and NH₃ capabilities in the same compact package.

Global MRV continually improves Micro “Portable Emissions Measurement System” (PEMS) for real world driving emissions, providing real-time, real-world fixed and mobile, including marine emissions, engine, and performance analysis.

The Axion[™]R/S+PM+NH₃ measures mass-flow emissions of CO, CO₂, NO, HC, PM, and NH₃ in real time. The Axion[™]R/S+PM+NH₃ provides accurate and timely information for decision making. Large fleet data set collection is now possible due to the Axion[™]R/S+PM+NH₃ flexibility, minimal set-up time, and rapid deployment.

The Axion[™] series is powered by LabVIEW[®] based proprietary software which translates into cutting-edge vehicle emissions testing methodology.

The Axion[™] Micro PEMS passed a rigorous evaluation by the United States Environmental Protection Agency (USEPA) Environmental Technology Verification (ETV) Program, demonstrating that Global MRV continues to set the standard for continuous PEMS field-testing.

The Axion[™] reports data in “grams-per-second” and provides all data for calculating “grams-per-mile, gallon, kg”. Using a proprietary (and patented) flow calculation method, accurate PEMS flow data is provided. This reduces extraneous equipment. On-board engine information is captured with either vehicle or vessel OBD hardware and software or an Engine Sensor Array.

+PM Module: Particulate Matter (PM) is measured utilizing the process of a laser light scattering technique. The fully integrated PM module easily fits into the existing Axion[™]R/S footprint.

+NH₃ Module: Ammonia (NH₃) is measured utilizing the state-of-the-art Tunable Diode Laser Spectrometry (TDLS) approach. TDLS has virtually no cross-sensitivity with other gases and eliminates the need for a reference channel. The **+NH₃ Module** is highly selective, has a fast response and continuous sensor status monitoring.

Online, phone, and email support are included in the warranty with the purchase of every Axion[™]R/S+PM+NH₃.



Gas	Range	Accuracy	Repeatability	Noise	Resolution	Measurement and T90
HC Hexane	0 - 2000 ppm	±4 ppm abs or ±3% rel	±3ppm abs or ± 2% rel	2ppm abs or 0.8% rel	1 ppm	NDI R < 3.5
CO	0.00 - 10.00%	±0.02% abs or ±3% rel	±0.02% abs or ± 2% rel	0.01% abs or 0.8% rel	0.001 vol. %	NDI R < 3.5
CO ₂	0.00 - 16.00%	±0.3% abs or ±3% rel	±0.1% abs or ± 2% rel	0.1% abs or 0.8% rel	0.01 vol. %	NDI R < 3.5
NO	0 - 5000 ppm	±5 ppm abs or ±1% rel	±5 ppm abs. or ±1% rel	5 ppm abs or 1% rel	1 ppm	Electrochemical < 5s
O ₂	0.00 - 25.00%	±0.02% abs or ±1% rel	±0.02% abs or ±1% rel	0.02% abs or 1% rel	0.01 vol. %	Electrochemical < 6s
Optional Add-Ons to AxionRS						
PM	0.00 mg/m ³ to 250 g/m ³	±2% rel	<±0.2% of reading	<2µg/m ³	0.01 mg/m ³	Laser Scattering 2s
NH ₃	0 - 500 ppm	±2ppm abs or ±2% rel	±2ppm abs or ±2% rel	<2ppm abs or 2% rel	0.1 ppm	TDLS 2s

Dimensions: 21.7”L x 16.9”W x 8.5”H
(550mm x 430mm x 215mm)

Weight: 45lbs. (20.4kg)
Accessory Case: 30lbs. (13.6kg)

Power: 12-14VDC
Amperage: 5-8 Amperes

Gas Data Sampling Rate: 1 Hertz

Sample Flow: 20 liters/minute

System Computer: Windows 7 Embedded

User Interface: Push Button Power, keyboard and mouse

Data Output: Instantaneous Sub-module Display; 12-second delay for compiled results (standard configuration); Real-time graphical display; ASCII delimited text file easily loaded into Microsoft Excel

Measured Parameters: Time, Vehicle speed, RPM, Intake Air Temperature, Manifold Absolute Pressure and/or Mass Air Flow, HC, CO, NO, CO₂, O₂, PM, and NH₃

Additional Parameters: Grams of pollutant per second (g/s), Intake air flow, Exhaust air flow, Fuel consumption

Optimal Instrument Conditions:
5°C to 35°C (40°F to 95°F)
0-90% relative humidity (RH), non-condensing

Position Identification:
GPS

Emission Collection: Condensation bowls, probes, handles, and hoses.

Applicable Operational Engines: Axion has been successfully utilized in the

operation of lawn equipment, motorcycles, ATVs, passenger vehicles, trucks, construction equipment, marine vessels, semi-trucks, locomotives, operating in real world driving conditions.

Engine Information Acquisition: Light Duty ECU, Heavy Duty ECU, or Engine Sensor Array: Data Acquisition Box, Data Acquisition Box Cable, Manifold Absolute Pressure Transducer, Transducer Extension Cable, Thermistor, Piezoelectric Tachometer, Optical Tachometer, Inductive Tachometer

Driver's Aid

PM Module:
PM10, PM2.5

TDLS NH₃ (Ammonia) Module

Optional Modules:

- **Weather Station Module:**
 - Temperature, Humidity, Pressure