AxionRS

Data is the lifeblood of vehicle improvement and emissions reduction.

GlobalMRV continues to offer the best, compact volume data collection PEMS in the business with our Axion™R/S.

GlobalMRV continually improves "Portable Emissions Measurement System" (PEMS), In-use or integrated PEMS (iPEMS), and miniature PEMS (mini-PEMS) to obtain the data volumes necessary for real-world driving emissions (RDE) and to influence and improve internal combustion engine (ICE) performance. This mass data collection is critical to providing real-time, real-world fixed and mobile, emissions, engine, and performance analyses for more informed decision-making.

The Axion™R/S measures mass-flow emissions of CO, CO_2, NO, and HC in real-time. The Axion™R/S provides accurate and timely information for decision-making. Large fleet data set collection is now possible due to the Axion™R/S's flexibility, minimal set-up time, and rapid deployment.

The Axion™ series is powered by LabVIEW©-based proprietary software and, with the CAN output option, easily integrates with engine calibration software such as INCA from ETAS. The Axion™ series provides municipalities, researchers, and OEMs with a fully comprehensive data package for measurement verification and predictive analysis.

Redesigned to include:

- Electromagnetic Interference (EMI) Protection from external devices that may cause erroneous readings
- Multiple USB connections for integration with external devices and additional vehicle data collection products
- Remote data collection, analysis, and storage in real-time for increased security from data loss
- PM and PN Capabilities
- Multi-point calibrations for more accurate range testing

The Axion™ miniPEMS passed a rigorous evaluation by the United States Environmental Protection Agency (USEPA) Environmental Technology Verification (ETV) Program, demonstrating that GlobalMRV 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, and kg". Using a proprietary (and patented) flow calculation method, accurate PEMS flow data is provided. Our calculation method reduces the need for extraneous equipment. On-board engine information is captured with either vehicle/vessel OBD hardware and software or an Engine Sensor Array.

+PM Module: (Additional Option) The fully integrated PM module easily fits into the existing Axion™R/S footprint. See the Axion™R/S+PM datasheet for more specifications.

+NH3 Module: (Additional Option) The fully integrated Ammonia (NH_3) module easily fits into the existing Axion™R/S footprint. See the Axion™R/S+PM+NH_3 datasheet for more specifications.

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

Gas	Range	Accuracy	Repeatability	Noise	Resolution	Measurement and T90
HC Propane	0 - 4000 ppm 4k to 10kppm 10k to 30kppm	±8 ppm abs or ±3% rel ±5% rel ±10% rel	±6ppm abs or ± 2% rel ±3% rel ±5% rel	4ppm abs or 0.8% rel	1 ppm	NDIR < 3.5 sec
CO	0.00 - 10.00% 10.01 to 15.0%	±0.02% abs or ±3% rel ±5% rel	±0.02% abs or ± 2% rel ±3% rel	0.01% abs or 0.8% rel	0.001 vol. %	NDIR < 3.5 sec
CO 2	0.00 - 16.00% 16.01% to 20%	±0.3% abs or ±3% rel ±5% rel	±0.1% abs or ± 2% rel ±3% rel	0.1% abs or 0.8% rel 2% rel	0.01 vol. %	NDIR < 3.5sec
NO	0 - 5000 ppm	±15 ppm abs or ±3% rel	±2% rel	5 ppm abs or 1% rel	1 ppm	Electrochemical < 5s
O2	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 Select Devices						
NO	0 – 3000 ppm	±2ppm abs or ±2% rel	±2ppm abs or ±2% rel	<2ppm abs or 2% rel	0.1 ppm	UVRAS < 3 sec
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
PM and PN						
		PM and PN		**PM**		**PM**
Operating Principle		Laser Scattering		Laser Scattering		Laser Scattering
Measurement Range		0~30,000μg/m³ (0~30mg/m3)		0~50,000μg/m³ 0~50mg/m³ Maximum display 1000mg/m³		0 - 250,000μg/m³ (0-2,500mg/m3)
Output Channels		PM1.0, PM2.5, PM4.25(optional), PM10 and TSP		PM2.5, PM10 and TSP		PM2.5, PM10 and TSP
Resolution		1 μg/m³ (0.001 mg/m³)		1 μg/m³ (0.001 mg/m³)		1 μg/m³ (0.001 mg/m³)
Working Condition		-30°C ~ 70°C,0-95%RH (non-condensing)		-30°C ~ 70°C,0-95%RH (non-condensing)		0-55°C (32°-131°F)
Particle Measurement Results						
PM1.0 [ug/m3]		Yes		No		Optional
PM2.5 [ug/m3]		Yes		Yes		Optional
PM10.0 [ug/m3]		Yes		Yes		Yes
TPS [ug/m3]		Yes		Yes		Optional
0.3um [ct/L]		Yes		No		No
0.5um [ct/L]		Yes		No		No
1.0um [ct/L]		Yes		No		No
2.5um [ct/L]		Yes		No		No
5.0um [ct/L]		Yes		No		No
10.0um [ct/L]		Yes		No		No
Global MRV Compatibility Matrix						
Axion R/S		Yes		Yes		No
Axion R/S+		Yes		Yes		Yes
Axion R/S+ NH3		Yes		Yes		Yes
Axion GO		Yes		Yes		No
Backpack		Yes		Yes		No
Firefly		Yes		Yes		No
Rack or Cabinet		Yes		Yes		Yes
SCS		Yes		Yes		No

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

Weight: 37lbs. (16.8kg)

Accessory Case: 30lbs. (13.6kg)

Power: 12-14VDC

Amperage: 4-6 Amperes

Data Reporting Rate: 1 Hertz

Sample Flow: 10 liters/min

System Computer: Windows 10 Embedded

User Interface: Push Button Power, keyboard, and mouse

Data Output:

Data Reported: Real-time DAQ, aligned results, test configuration (vehicle, engine, fuel, DAQs), aggregate test results (bags)

Reporting Formats: Software UI, .txt Files, CAN Broadcasts, PEMSNet

Measured Parameters: Geolocation (GPS), Vehicle Performance/Operation (OBD/ECU, Sensor Array), engine exhaust gaseous constituents, ambient conditions

Additional Parameters: Grams of pollutant per second (g/s), Intake air flow, Exhaust air flow, Fuel consumption (not all inclusive)

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

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, and locomotives operating in real-world driving conditions.

Engine Information Acquisition:

Vehicle Communication Protocols (J1979 OBDII, J1587, J1939, and as requested)

Engine Sensor Array: Manifold Absolute Pressure Transducer, Thermistor, Piezoelectric Tachometer, Optical Tachometer, Inductive Tachometer

Driver’s Aid

Optional Modules:

- CAN output
- PM Module:
  - PM10, PM2.5
- Particle Number Module
- TDLS NH_3 (Ammonia) Module
- Ambient Sensor
  - Temperature
  - Humidity
  - Pressure