

Emissions
Measurement
Solutions

SEMTECH[®] CPM: Continuous Particulate Measurement

On Board
Emissions
Analyzers

Test Cell
Emissions
Analyzers

Emissions
Testing
Services

Environmental
Applications



Sensors' SEMTECH CPM utilizes an ion mobility technique whereby clean air is ionized and mixed with the sample, charging the particles. As charged particles exit the sensor (Faraday cup) their charge is measured with a sensitive electrometer. Accordingly, the SEMTECH CPM is a real-time PM measurement system that can be configured to measure either PM Mass or PM Number concentrations. The module incorporates the Pegasor[®] PPS-M electrical aerosol detector transducer packaged into a system that can be employed as a standalone analyzer, or integrated with the SEMTECH MPS and PFS to provide a complete SEMTECH PM measurement solution for both real-world or laboratory applications. In the latter configuration, side handles lock together with those of the SEMTECH MPS and SEMTECH PFS and the sample ports connect through a manifold that minimizes pneumatic hoses and losses. Quick connect brackets on the rear of the unit provide cable management conduits as required. A full color touch screen enables system setup and a live view of data and system monitoring.

The SEMTECH CPM is comprised of the following key components:

- Pegasor® PPS-M transducer
- Internal pump and filtration for purge flow
- Pressure control and flow measurements for all critical flows
- Zero/Sampling isolation solenoid
- Temperature control (47°C)
- Communication (USB/Ethernet) and CAN with other ECOSTAR modules

Features:

- The SEMTECH CPM meets the preliminary requirements for US EPA Part 1065 and UN-ECE Reg. 49 compliance requirements for in-use testing, when integrated with SEMTECH MPS and PFS*.
- Configurable to measure either PM Mass or Number concentrations: The module may be calibrated to accurately measure either particle mass or number.
- Flow-through transducer design: The CPM is designed to extract a diluted aerosol sample from either a third party diluter, the MPS or a CVS sampling system. This results in improved performance (humidity effects, pulsation effects, etc.) and greatly reduces service intervals.



- Protection from contamination while not in operation: The CPM module is configured with a zero air solenoid to enable real-time zeroing as well as providing a stand-by feature.
- Power supply monitoring: Power can be either 12 VDC, 110 VAC or 220 VAC, with both current and voltage monitoring.
- Weatherproof construction: All components meet IP54 (NEMA standards).
- Shock resistance: The mechanical design has been optimized for resistance to shock and vibration, ensuring data acquisition in the most harsh environments.
- Design details:
 - EMI protection, including gaskets, filters
 - Stress relief for pneumatic connections
 - Channels for cable management
 - Standard Swagelok bulkhead connectors
 - Rugged Deutsch connectors for power and auxiliary connectors
 - Handles that lock to other SEMTECH ECOSTAR modules for stable system integration

Other features:

- Can be used for engine raw (needs dilution) and dilute applications
- Can be used for in-use measurements (with MPS)
- Automated zero
- Built-in purge
- Protection from contamination when not in measurement mode

** Participating in JRC PM Pilot program and seeking alternative system approval for US EPA Part 1065*

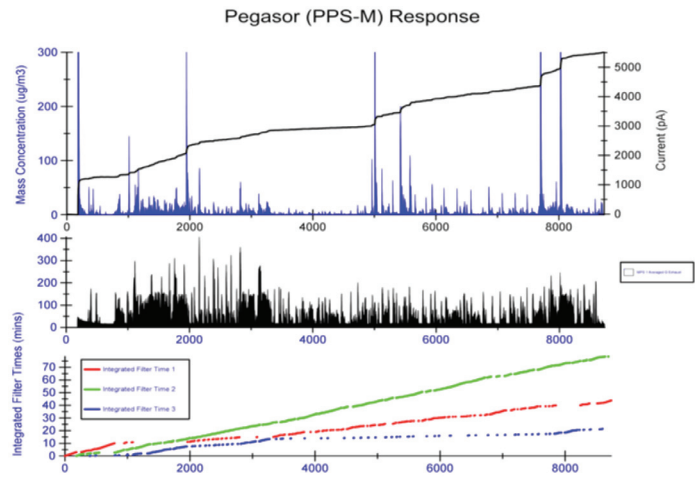
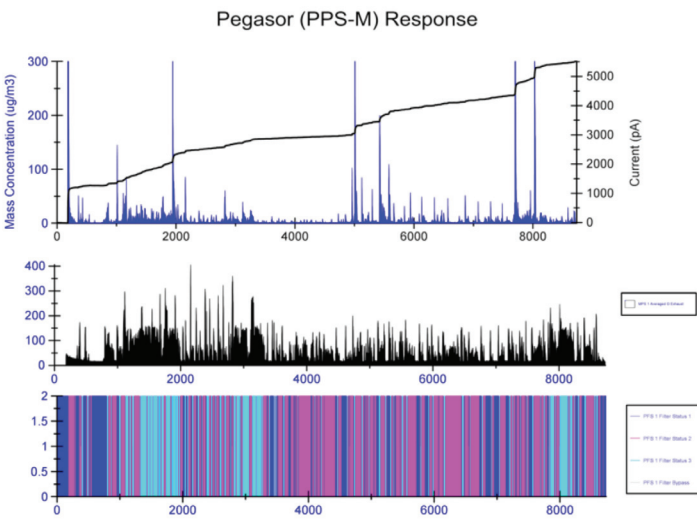
The Technology

The core technology is based upon the Pegasor® PPS-M particle sensor which measures the electrical charge carried by particles. Ionized air is used to charge the particles; particle charge is relative to particle size. The electrical current escaping from the sensor with the charged particles is measured and gives a fast, real-time measurement of the particle concentration.

User Support



As with all SEMTECH products, the SEMTECH ECOSTAR modules come with a wide range of customer support, including WebEx and a customer portal with tips, forums and more.



SEMTECH ECOSTAR CPM provides fast and accurate real-time, cumulative particle mass measurements under all driving conditions.

SEMTECH® CPM: Continuous Particulate Measurement



Specification:

• Regulations:	1065 and reg. 49 compliant
• Measurement technique:	Ion Mobility
• Minimum size:	From 23nm (dependent on selected trap voltage)
• Maximum size:	2.5µm (dependent on measured particle size distribution)
• Concentration:	From 1µg to 250mg/m ³
• Response time:	<0.3s
• Maximum data rate:	10Hz (high speed internal averaging)
• Operating temperature:	0 to 50°C
• Operating humidity:	0 to 90% RH
• Communications:	Ethernet, USB
• Dimensions:	44.5cm x 43cm x 19cm (17.5" x 17" x 7.5")
• Weight:	20kg (44lbs)
• Power:	12 VDC, 110/220 VAC
• Power consumption:	< 250W

NOTE: Specifications are subject to change without notice. While due caution has been exercised in the production of this document, possible errors and omissions may occur.

R 05/2013