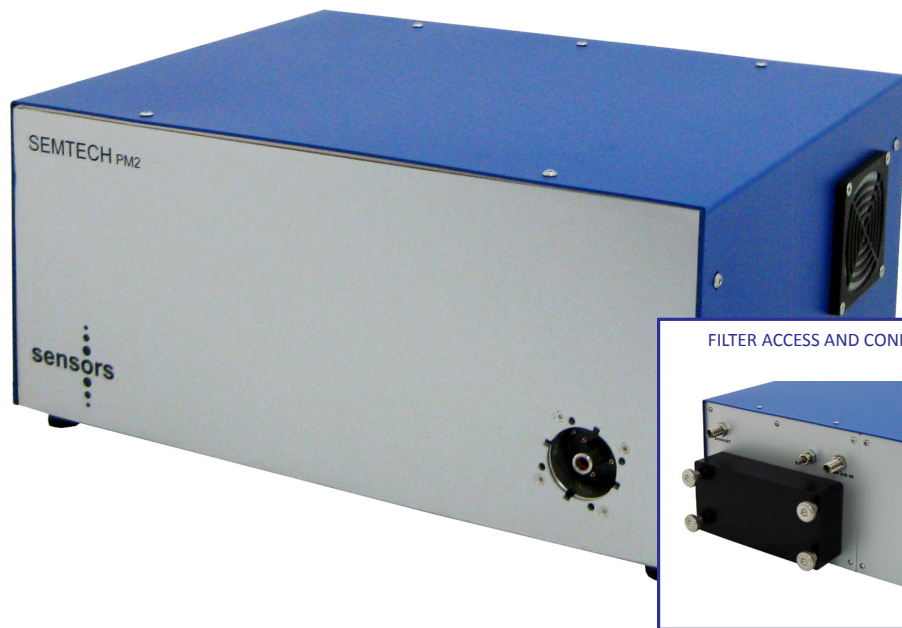


Emissions  
Measurement  
Solutions

# SEMTECH® PM2

## Particulate Matter Measurement



On Board  
Emissions  
Analyzers

Test Cell  
Emissions  
Analyzers

Emissions  
Testing  
Services

Environmental  
Applications

The **SEMTECH® PM2** is an on-board Particulate Matter (PM) measurement device that combines real-time and cumulative PM mass measurements. The real-time PM mass measurement is based on an ion mobility technique and the cumulative PM mass measurement is based on gravimetric method using industry standard 47 mm filter cartridges. The combination of the two techniques allows **SEMTECH® PM2** to meet US EPA's 40 CFR Part 1065 requirements for Heavy Duty In-use (HDIU) compliance testing applications as an alternative method. The **SEMTECH® PM2** is designed to measure particulate mass either as a stand-alone device, or in conjunction with the **SEMTECH® ECOSTAR** or **SEMTECH® LDV** product lines.

## SEMTECH® PM2

The PM2 analyzer utilizes an ejector dilution system. HEPA filtered dilution air flows into the diluter and is directed around the ejector nozzle at a high velocity. This causes a pressure drop which draws in the sample through the nozzle. The raw sample mixes with the dilution air resulting in a stable homogeneous diluted sample at a nominal constant dilution ratio of 15:1. Both the dilution flowrate and the sample flowrate are calibrated using traceable reference pressure and flow sensors.

For real-time PM mass measurement, a small fraction of the homogeneous diluted sample is passed through a Pegasor PPS-M electrical aerosol transducer, in which particulate matter is charged. As the charged particles exit the detection zone, their charge is measured with a sensitive electrometer. The electrometer signal is then converted to real-time PM mass concentration using a transfer function.

For cumulative PM mass measurement, the homogeneous diluted sample is directed through one of three filters. The pre- and post- filter weights provide cumulative PM mass, which is used to scale the real-time mass concentration and obtain accurate, time resolved PM mass measurement.

The PM 2 system includes sampling probe with heated line and a diffusion screen to eliminate particles smaller than 23 nanometers.

PM SPECIFICATIONS	
Power	12 VDC
Normal Operation (Base Module)	No heated line: 15 amps With 2m of heated line: 20-25 amps
Base Dimensions (LxWxH)	17.2 x 12.3 x 7.6 (in) 436 x 311 x 192 (mm)
Base Weight	19 kg (41 lbs)
Pump Dimensions (LxWxH)	17.2 x 12.3 x 7.0 (in) 436 x 311 x 177 (mm)
Pump Weight	10 kg (22 lbs)
Normal Operation (Pump Module)	With smaller pump: 20 amps
Storage Temperature	Dry -10 to 60 °C
Operating Environment	-10 to 45 °C ambient
Sample Flow Rate	≈ 5.0 l/min
Constant Dilution Ratio	10-20:1
PERFORMANCE SPECIFICATIONS	
Measurement Technique	Ion mobility & gravimetric PM
Particle size	Minimum: 23 nm (dependent on selected trap voltage) Maximum: 2.5 μm (dependent on measured particle size distribution)
Concentration	From 1 μg/m <sup>3</sup> to 250 mg/m <sup>3</sup>
Response Time	< 2.5 seconds
Maximum data rate	5 Hz (high speed internal averaging)