

BAM 1022 PLUS

Real-Time Portable Beta Attenuation Mass Monitor

The **BAM 1022 PLUS** is a real-time portable EPA Class III FEM beta attenuation mass monitor which continuously measures the mass concentration of ambient particulate matter collected onto PTFE filter tape with time resolution of one-minute. With its new high-powered detection sensor technology, the **BAM 1022 PLUS** monitor is the most sensitive and accurate beta attenuation monitor available on the market.

With tightening EPA standards for $PM_{2.5}$, monitoring networks require monitors capable of detecting and quantifying lower levels of $PM_{2.5}$ in the ambient air. This necessitates monitoring technology with increased sensitivity, achieving lower limits of detection, namely the **BAM 1022 PLUS** from Met One Instruments Powered by Acoem.

The **BAM 1022 PLUS** has US-EPA designation for $PM_{2.5}$ (EQPM-1013-209) for which a dedicated hourly output channel is available. A second, real-time output channel is able to provide the user with continuous PM updates down to 1-minute time resolution.

Applications

The **BAM 1022 PLUS** is ideal for the following applications:

- Criteria-Grade Air Quality Surveillance Networks.
- Near-Roadside PM Monitoring.
- Rapid-Deployment Applications.
- Research and Development.



Features

- Continuous measurement of $PM_{2.5}$ that provides high accuracy, & minimal measurement artifacts.
- User-friendly touchscreen interface.
- Integrated lightweight weatherproof enclosure.
- Unsurpassed accuracy and performance, even under high ambient dew point operation.
- Advanced communications features allowing remote operation and cloud-based communication.
- Advanced diagnostics.
- Much higher sensitivity than all other commercially available beta attenuation mass monitors.
- Meteorological and other sensor inputs.

Specifications

- Measurement principle:** Beta Attenuation.
- US EPA designations:** EPA Class III Federal Equivalent Method (EQPM-1013-209). 0
- Measurement range:** - 10,000 $\mu\text{g}/\text{m}^3$.
- Accuracy:** Meets US-EPA Requirements for Class III $\text{PM}_{2.5}$ FEM.
- Measurement resolution:** 0.1 $\mu\text{g}/\text{m}^3$.
- Lower detection limit:** < 2.4 $\mu\text{g}/\text{m}^3$ (Hourly, 2σ) / < 0.5 $\mu\text{g}/\text{m}^3$ (24 Hour, 2σ).
- Sampling time:** Continuous Air Sampling with Hourly Tape Advance. Primary:
- Measurement cycles:** Automatic Hourly PM Measurement (Required for $\text{PM}_{2.5}$ FEM Operation).
Secondary (Conc RT): User Selectable Short-Term Averages (5 to 60 minutes).
- Sample flow rate:** 16.7 liters/minute.
- Flow accuracy:** $\pm 2.0\%$.
- Filter tape:** PTFE with polyester backing, 30 mm x 50 m roll.
Up to 4 months operation per roll with hourly tape advance.
- Maintenance interval:** 8 Weeks (minimum).
- Span check:** Manual Audits Performed with Zero and Span Foils (Included).
- Beta source:** ^{14}C (carbon-14), 100 μCi $\pm 20\ \mu\text{Ci}$ (< 3.7 MBq) Half-Life 5730 years.
- Detector type:** Photomultiplier tube with scintillator.
- Operating Temp Range:** -30° to $+50^\circ$ C.
- Operating humidity range:** 0 to 90% RH, non-condensing.
- User interface:** 4.3" graphical touch screen.
- Analog output:** Two channels; optically isolated; 0-1, 0-2.5, 0-5 VDC.
- Alarm contact closure:** 1 channel; dry NO contact; 1 A at 125 VAC or 60 VDC maximum.
- Serial interfaces:** 1 channel; full duplex RS-232, USB serial (Shared common serial output).
Baud rates 2400, 4800, 9600, 19200, 38400, 57600, 115200.
1 channel; half duplex RS-485. Baud rates 2400, 4800, 9600, 19200, 38400, 57600, 115200.
1 channel; Ethernet.
- Compatible software:** Comet™, Air Plus™, terminal programs such as HyperTerminal®.
- Data logger memory:** 22,528 records (2.6 years @ 1 record/hr.; 15.6 days @ 1 record/min).
- Unit dimensions:** 55.9 cm wide x 45.7 cm deep x 139.7cm high (22"w x 18"d x 55"h).
- Weight:** 38.6 kg (85 lbs) fully assembled.
- Power supply:** 100-240 VAC 50/60 Hz universal input; 12 VDC, 8.5 A output.
- Power consumption:** 115 VAC Setup: Approx. 300 W (incl. BAM 1022 PLUS, Inlet Heater, Pump, & Fans).
230 VAC Setup: Approx. 850 W (incl. BAM 1022 PLUS, Inlet Heater, Pump, & Fans).
- Approvals:** NRC, ISO 9001, ROHS, US-EPA.



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