



BAM 1020

Beta Attenuation Mass Monitor

The **BAM 1020** is a continuous particulate monitor which automatically measures and records airborne particulate concentration levels (in milligrams or micrograms per cubic meter) using the industry-proven principle of beta ray attenuation. Thousands of **BAM 1020** units are currently deployed worldwide, making the unit one of the most prolific air monitoring platforms in the world.

Designations

The **BAM 1020** was the first instrument to obtain U.S. EPA Federal Equivalent Method (FEM) designation for continuous PM_{2.5} monitoring, in addition to its longstanding EPA designation for PM₁₀ monitoring. The **BAM 1020** has also obtained the corresponding PM_{2.5} and PM₁₀ certifications in the European Union. Two **BAM 1020** units can also be operated together as an EPA designated PM_{10-2.5} coarse method. We supply complete sampling accessory kits for compliance with each designation.

Features

- US-EPA Equivalent Method for PM₁₀, PM_{2.5}, and PM_{10-2.5} monitoring
- Long term unattended remote operation
- Full remote Desk Top Control
- Expanded optional meteorological sensor interface
- Very low operating costs
- Fast and easy field audits
- Bench-top or rack-mount operation in mobile or stationary shelters



- Rugged, durable construction
- Highly accurate, reliable, and mechanically simple flow system
- Hourly filter advances minimize effects of semi-volatile compounds
- Advanced Smart Heater technology precisely controls sample relative humidity
- Integrated data logger
- Data retrieval through RS-232 or RS-485 serial ports

Advantages

Benchmark Technology

Beta attenuation mass monitors are indifferent to the chemical composition of the particulate matter whose mass density is being measured. As the name implies, beta attenuation mass monitors measure only mass. No assumptions concerning the physical or optical properties of the sampled particulate matter are necessary. Its sensitivity to diesel exhaust is no different than it is to road dust or salt spray. This translates into reliable mass measurement at any time, any place.

Solid Reliability

The **BAM 1020** has a field-proven record of reliability even in the most challenging environments and particulate concentrations.

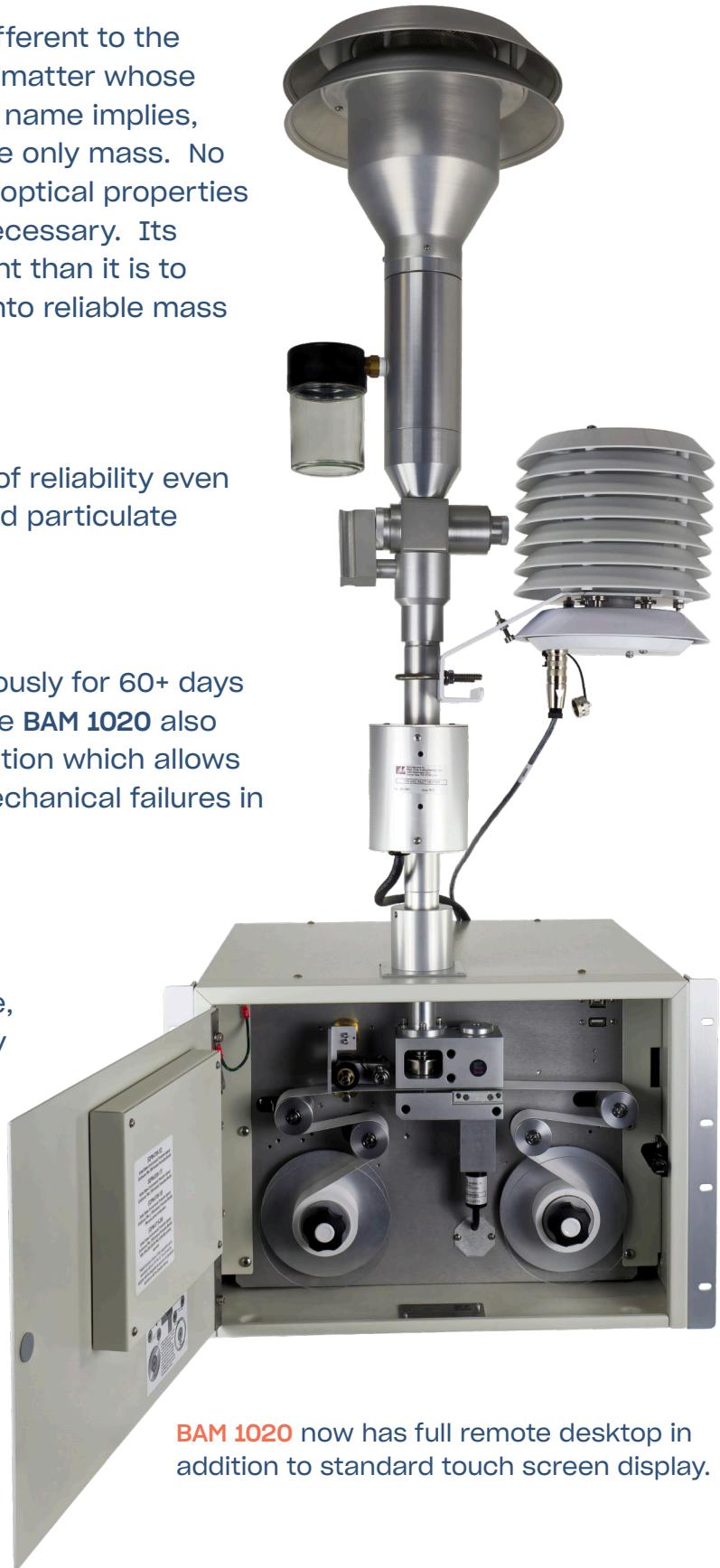
Low Maintenance

The **BAM 1020** is designed to run continuously for 60+ days between site visits and maintenance. The **BAM 1020** also contains a comprehensive self-test function which allows the unit to routinely test itself for any mechanical failures in the tape control system.

Continuous Improvement

The **BAM 1020** has benefited from continuous improvement. Over time, functionality, performance, and reliability have advanced. The latest generation of **BAM 1020** incorporates a new generation of microprocessor and advanced electronics allowing remote operation, enhanced communications, and unsurpassed flexibility.

The **BAM 1020** is directly compatible with our COMET™ Cloud data service.



BAM 1020 now has full remote desktop in addition to standard touch screen display.

BAM 1020 Accessories and Configurations

The BAM 1020 must be configured with certain accessories in order to operate as a regulatory-grade measurement device.

US-EPA PM₁₀ Equivalent Method (EQPM-0798-122)

BX-801 Sample Inlet System w/ Support Braces
BX-802 PM₁₀ Inlet
BX-598 Digital Temperature Sensor or **BX-597A** Digital T, BP, RH Sensor
BX-302 Valve plus HEPA filter or **BX-305** Valve Only
BX-827 (120 V) or **BX-830** (230 V) "Smart" Inlet Heater System



US-EPA PM_{2.5} Equivalent Method (EQPM-0308-170)

BX-801 Sample Inlet System w/ Support Braces
BX-802 PM₁₀ Inlet
BX-808 "VSCC" PM_{2.5} Cyclone
BX-597A Digital T, BP, RH Sensor
BX-302 Valve plus HEPA filter
BX-827 (120 V) or **BX-830** (230 V) "Smart" Inlet Heater System

US-EPA PM_{2.5} Equivalent Method (EQPM-0715-266)

BX-801 Sample Inlet System w/ Support Braces
BX-802 PM₁₀ Inlet
BX-809 URG PM_{2.5} Cyclone
BX-597A Digital T, BP, RH Sensor
BX-302 Valve plus HEPA filter
BX-827 (120 V) or **BX-830** (230 V) "Smart" Inlet Heater System

US-EPA PM_{10-2.5} Equivalent Method (EQPM-0709-185) (Requires 2 BAM 1020 Units)

BX-801 Sample Inlet System w/ Support Braces (2 Needed)
BX-802 PM₁₀ Inlet (2 Needed)
BX-808 "VSCC" PM_{2.5} Cyclone
BX-597A Digital T, BP, RH Combination Sensor (2 Needed)
BX-302 Valve plus HEPA filter
BX-827 (120 V) or **BX-830** (230 V) "Smart" Inlet Heater System (2 Needed)

Specifications

Measurement principle: Beta Attenuation

US EPA designations: US-EPA PM₁₀ Equivalent Method: EQPM-0798-122

US-EPA Class III PM_{2.5} Equivalent Method: EQPM-0308-170 & EQPM-0715-266

US-EPA PM_{10-2.5} Equivalent Method: EQPM-0709-185

Range: 0 - 10 mg/m³ (0 - 10,000 µg/m³)

Analog Ranges: 0 - 0.1, 0.2, 0.5, 1, 2, 5, 10 mg/m³ (others available)

Accuracy: Exceeds all US-EPA designation requirements for PM₁₀, PM_{2.5}, and PM_{10-2.5}

Measurement resolution: 0.1 µg/m³

Lower detection limit (1 hour): < 4.8 µg/m³ (< 4.0 µg/m³ typical)

Lower detection limit (24 hour): < 1 µg/m³

Measurement cycle time: 1 Hour (others available)

Flow rate: 16.67 liters/minute, actual flow

Filter tape: Continuous glass fiber filter, 30mm x 25m roll, 70+ day operation/roll (P/N 460180)

Span check: Manual (Automatic optional)

Beta source: ¹⁴C (carbon-14), 60 µCi ±15 µCi (< 2.22 X 10⁶ Beq), Half-Life 5730 years

Beta detector type: Photomultiplier tube with scintillator

Operating temp. range: 0° to +50° C

Operating humidity range: 0 to 90% RH, non-condensing

Humidity control: Actively controlled inlet heater module, 10% – 99% RH setpoint

Approvals: US-EPA, MCERTS, CE, TUV

User interface: Korea Graphic color touch screen display

Analog output: 2 channels, voltage range 0-1 VDC, 0-2.5 VDC, 0-5 VDC

Serial interface: RS-232 2-way serial ports for PC or modem communications, Ethernet, USB

Contact closure specification: 1 channel, dry, Normally Open contact 12 VDC 0.5 A

Alarm contact closures: Data Error, Tape Fault, Flow Error, Power Failure, Maintenance

Compatible software: Air Plus™, COMET™, HyperTerminal®

Error reporting: User-configurable; available through serial port, display, and relay outputs 14,000

Memory: records (1.5 years at 1 record per hour)

Power supply: 100-240 VAC 50/60 Hz universal input

Weight: 19 kg (42 lbs) without external accessories

Unit dimensions: 43.2 cm wide x 46.7 cm deep x 36.2 cm high (17" W x 18" D x 14.25" H)

Supplied Accessories

- Operation Manual and Quick Setup Guide
- Span Membrane
- Internal Flow Sensor and Flow Controller
- Internal Filter Temperature, Pressure, and Relative Humidity Sensors

- Serial Data Cable and Modular Power Cable
- Pump Control Cable and Air Tubing
- Rack Mounting Brackets and Hardware
- COMET™ Data Collection Software
- One Roll of 460180 Glass Fiber Filter Tape



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