

BAM-1020 PM-Coarse System

EPA Designated PM_{10-2.5} Continuous Method



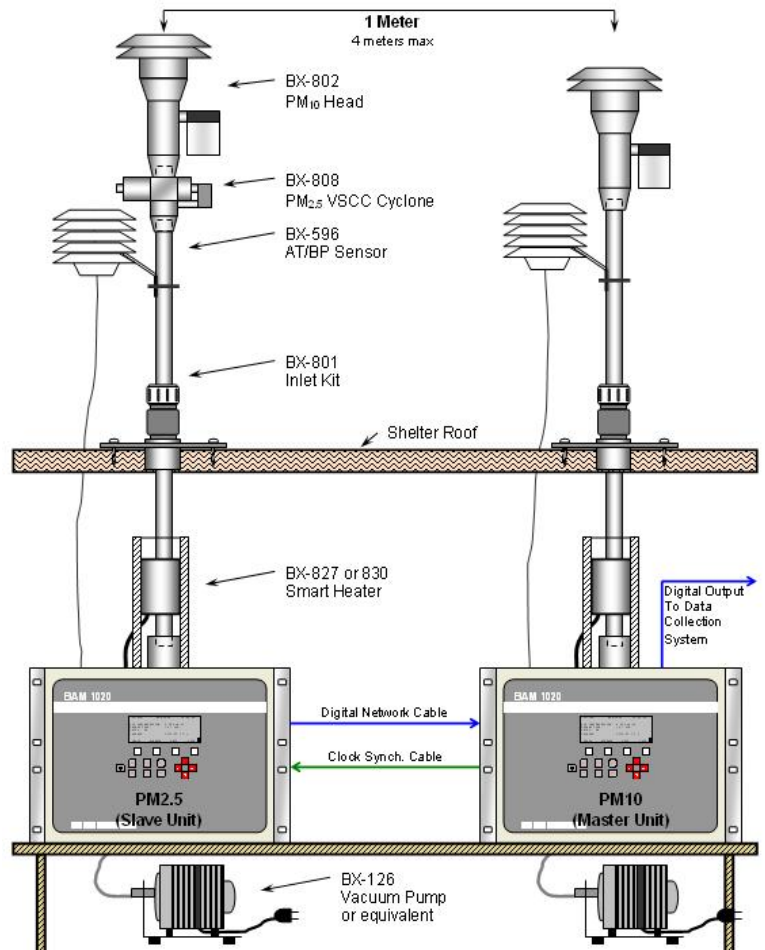
Met One Instruments, Inc.

One System, Two Monitors, Three Measurements

The Met One Instruments BAM-1020 PM_{10-2.5} (PM-Coarse) Measurement System provides continuous PM_{2.5}, PM₁₀ and PM_{10-2.5} particulate concentration measurements from a single fully integrated system.

Two full-function BAM-1020 beta attenuation particulate monitors are networked together in a master/slave configuration using special back panel connections and a serial network cable. Both units are the latest revision models, with the accuracy and detection limits required for the measurement.

- The first U.S. EPA designated method for PM_{10-2.5} continuous monitoring.
- Both units are identical except for the BGI VSCC cyclone on the PM_{2.5} inlet.
- The coarse firmware has a simple menu setting that determines which unit is the PM₁₀ master or PM_{2.5} slave in the system.
- Each unit has its own 16.7 lpm flow system, pump, and AT/BP sensor.
- The master unit synchronizes the slave clock automatically.
- PM₁₀ data and flow volumes are stored in both standard and actual conditions!
- Any errors or alarms in either unit are visible in the master data file.



Function

Each hour, the master unit measures the PM₁₀ concentration, collects the PM_{2.5} concentration from the other unit, and calculates the PM_{10-2.5} concentration. The master unit stores and displays all three concentrations in actual conditions, in addition to the PM₁₀ value in standard conditions. The master unit also synchronizes the clock timing between the two units, and monitors both units for errors. Any critical errors in either unit that would prevent the master from accurately calculating the coarse data will generate an alarm.

Maximum Flexibility

The BAM-1020 PM_{10-2.5} system can be separated into two stand-alone PM₁₀ or PM_{2.5} FEM monitors at any time! Only a second cyclone is needed to operate both units in the popular PM_{2.5} FEM configuration. All other accessories are already included in the BX-COARSE kit. This allows maximum flexibility should your coarse monitoring requirements change in the future. In addition, existing PM_{2.5} FEM BAM-1020s can be configured into a PM_{10-2.5} system by adding the BX-965 Report Processor back panels, network/clock cables, and the special PM-Coarse firmware. Contact Met One for details.

Data Collection

Simply retrieve the digital array from the master unit, which contains all of the PM_{2.5}, PM₁₀, and PM_{10-2.5} data in a single file. There is no analog output for PM_{10-2.5} value. The BAMs can be polled at any time without interruption. Flow statistics files must be downloaded from each unit individually if needed.

Channel							01	02	03	04	05	06
Sensor	PM10s	PM10	PM2.5	PMc	Qt10	Qt10s	WS	WD	BP	RH	delta	AT
Units	mg/m3	mg/m3	mg/m3	mg/m3	m3	m3	MPH	Deg	MMH	%	C	C
01:00	0.031	0.031	0.018	0.013	0.701	0.701	009.6	00212	00765	00017	007.2	018.7

Measurement Principle:	PM ₁₀ and PM _{2.5} ambient particulate concentration by beta attenuation. PM _{10-2.5} concentration by subtraction, with integral data validation.
U.S. EPA Designations:	PM ₁₀ FEM (EQPM-0798-122) PM _{2.5} FEM (EQPM-0308-170) PM _{10-2.5} FEM (EQPM-0709-185)
Accuracy:	Exceeds U.S. EPA Class III PM _{2.5} and PM _{10-2.5} FEM standards for additive and multiplicative bias.
Resolution:	1 µg/m ³ All concentration parameters.
PM_{10-2.5} Sensitivity (σ) 1h:	< 3.6 µg/m ³ .
PM_{10-2.5} Sensitivity (σ) 24h:	< 0.7 µg/m ³ .
Lower Detection Limit (2σ) 24h:	< 1.4 µg/m ³ .
Standard Range:	1000 µg/m ³
Optional Ranges:	2,000, 5,000, 10,000 mg/m ³
Measurement Cycle Time:	1 Hour total. 42 minute sample, 8 minute beta counts on both units.
Flow Rate:	16.7 lpm, actual flow control both units.
Operating Temperature:	0 to 50 degrees C.
Ambient Temperature:	-40 to +55 degrees C.
Ambient Relative Humidity:	0 to 90%, non-condensing.
Filter Tape:	Continuous glass fiber tape, 60 days/roll each unit.
Beta Source:	¹⁴ C (carbon-14) 60µCi (2.22 x 10 ⁶ Beq), half-life 5730 years, each unit.
Other Specifications:	See BAM-1020 data sheet.

Ordering Information

A single PM-Coarse BAM-1020 system order typically consists of two BAM-1020 units, two vacuum pumps (specify Medo or Gast), and one BX-COARSE accessory kit. The BX-COARSE kit contains all of the required accessories for both units to be operated for PM_{10-2.5} or PM_{2.5}, with the exception of only one VSCC cyclone:

- 2 BX-965 Report Processor Kits (special BAM-1020 back panels).
- 2 BX-802 PM₁₀ Inlets.
- 1 BX-808 BGI VSCC PM_{2.5} Cyclone.
- 2 BX-596 AT/BP Combo Sensors.
- 2 BX-302 Zero Filters.
- 2 BX-827 Smart Inlet Heaters (BX-830 for 230v).
- 2 BX-801 Inlet tube Kits (8' inlet tubes unless specified).
- 2 3236-6 Coarse firmware for BAM-1020 (required for both units).
- 1 400658 Serial Network Cable (1 required per coarse pair).
- 1 80327 Clock Synch Cable (1 required per coarse pair).
- 1 BX-COARSE-9800 PM-Coarse BAM Manual Addendum.



Optional BX-906 Dual-Unit Shelter

