

E-BAM
8-Point Justification for Equipment

0. **ITEM OF CONSIDERATION:** The Met One E-BAM is a portable, real-time beta attenuated monitor which is comparable to U.S. EPA methods for PM_{2.5} and PM₁₀, particulate measurements.

Met One Instruments, Inc.

Corporate Sales & Service: 1600 Washington Blvd., Grants Pass, OR 97526, Phone (541) 471-7111, Fax (541) 471-7116

Distribution & Service: 3206 Main Street, Suite 106, Rowlett, TX 75088, Phone (972) 412-4747, Fax (972) 412-4716

<http://www.metone.com> • metone@metone.com

1. **PROBLEM:** Accurate, portable, durable, and battery operated solar powered real-time ambient particulate monitors are needed for the acquisition of PM_{2.5} and PM₁₀ data for protection of human health and the environment. Situations exist where land or generator powered samplers are not effective due to the availability of land power during natural disasters, emergency responses and at remote monitoring locations. Gas powered generator exhaust has the potential to interfere with the particulate monitoring.

2. **JUSTIFICATION:** The use of the E-BAMs will allow EPA to accurately and effectively monitor PM_{2.5} and PM₁₀ during natural disasters, emergency responses and at remote monitoring locations. US Forestry Service uses this instrument extensively during forest fires to monitor particulate concentrations.

3. **SYSTEM CHARACTERISTICS.**

The E-BAM offers the following advanced features:

1. Accuracy and precision consistent with U.S. EPA requirements for Class III PM_{2.5} and PM₁₀ measurement.
2. Real-time, accurate results without correction factors, regardless of season or geographic location.
3. True ambient sampling provides accurate measurement of semi-volatile nitrates and organic compounds.
4. Lightweight, rugged construction is easily mounted on a tripod in minutes.
5. All-weather construction allows for true ambient sampling.
6. Operates on AC or DC power. Battery and Solar options available upon request.

4. **OPERATIONAL CONCEPT.** The ambient air particulate matter monitor will be used on field activities to acquire required particulate matter data to meet field objectives and data quality objectives in a timely manner.

5. **ORGANIZATIONAL CONCEPT.** USEPA ERT or ERT contractors will be responsible for deployment, use, and care of the E-Bam monitors.

6. **SUPPORT REQUIREMENTS.** After initial purchase, expendable supplies, yearly monitor calibration, additional equipment, and sampler repair/replacement may be purchased for routine ambient air particulate matter sampler operation.

7. **AVAILABILITY.** The E-BAM is available for purchase and shipment.

8. COST & PURCHASING.

Below prices are for one unit. Multiple unit discounts are available and shipping is extra.

Qty	Item#	Description	Price	Disc Price	Disc%	Extension
QUOTE: E-BAM PORTABLE PARTICULATE MONITOR						
	E-BAM	ENVIRONMENTAL BETA-ATTENUATION MASS MONITOR INTERNAL DATALOGGER TRIPOD AUTOMATIC ZERO AND SPAN, OPERATES WITH MMP OR AIR PLUS SOFTWARE SIMPLE INSTALLATION - NO TOOLS REQUIRED COMMUNICATIONS OPTIONS W/ VOLTAGE OUTPUT OR RS232 PM10 DICHOT SAMPLING HEAD POWER 12 VDC @ 30 WATTS OR AC WEATHERPROOF ENCLOSURE	9,650.00	8,685.00	10%	8,685.00
	BX-807	PM-2.5 SHARP CUT CYCLONE INLET ADAPTER	810.00	729.00	10%	729.00
	EX-121	E-BAM WEATHERPROOF POWER SUPPLY, 115V CONFIGURED	350.00	315.00	10%	315.00
OPTIONAL ACCESSORIES						
	EX-911	CELLULAR PHONE INTERFACE / E-BAM & E-SAMPLER	1,295.00	1,165.50	10%	1,165.50
	EX-034	SENSOR, WIND SPEED/DIRECTION FOR E-BAM/E-SAMPLER	599.00	539.10	10%	539.10
	EX-593	RH SENSOR ASSY FOR E-BAM/ESAMPLER	775.00	697.50	10%	697.50
	EX-503	E-BAM TRANSPORT CASE, BASIC KIT, FOAM FILLED PLASTIC	775.00			775.00
	EX-502	E-BAM TRANSPORT CASE FOR EXTRA SENSORS, FOAM FILLED PLASTIC	495.00			495.00
	550436	CASE, STANDARD TRIPOD	245.00			245.00
	730141	SOLAR POWER SYSTEM, E-BAM, PORTABLE, 369 WATTS - 5.5 MINIMUM PEAK SUN HOURS	5,200.00			5,200.00
CONSUMABLES FOR 1 YEAR						
	460130	FILTER TAPE - BAM & E-BAM	75.00			450.00
	9778	REPLACEMENT PUMP E-BAM (TYPICAL LIFETIME IS 6-9 MONTHS AT 100% DUTY CYCLE)	425.00			425.00

S T A N D A R D S P E C I F I C A T I O N S

E-BAM is a complete measurement system with the following standard components:

- 4 Channel Datalogger
- Internal DC Vacuum Pump
- Real-Time Concentration
- PM₁₀ Dichot Head
- Aluminum Tripod
- Ambient Temperature Sensor
- Volumetric Flow Control
- Weatherproof Enclosure
- Filter Temperature
- Filter RH
- Filter Pressure
- Calibration Membranes

Options and Accessories

- Flow Calibrator
- WINS Impactor
- PM_{2.5} Sharp-Cut Cyclone
- TSP Inlet, External AC Vacuum Pump
- Power Solar Panel Array, AC Power Supply
- Sensor inputs Wind Speed Sensor,
- Wind Direction Sensor, Ambient RH, Ambient Pressure
- Communications Transfer Module, Modem, Radio Modem
- Calibration: Zero Calibration Kit, Flow
- Calibration Kit

Standard Components

Range	0 -100 mg per cubic meter
Accuracy	2.5 µg in 24 hour period
Measurement Cycle	Standard @ 60 Minutes, actual sampling time 59 Minutes
Beta Source	C14, less than 75 microcurie, Half life of 5730 years
Detector	Scintillation probe
Analog Output	0-1V, 0-5V, 0-10V selectable, 12 bit accuracy
Filter Tape	Continuous glass fiber filter
Inlet	PM ₁₀ impactor type
Flow Rate:	16.7 liters per minute, adjustable
Flow accuracy	+/- 3% of reading, volumetric flow controlled
Sample Pump	Dual diaphragm type, internally mounted
Alarm Signals	Filter, flow, power and operation failure
Input Power	12 Volts DC @ 36 Watts , 25°C
Alarm Contact Closure	2 Amp @ 240 VAC
Operating Temperature	-30 Deg C to 40 Deg C

Options

BX-807	PM _{2.5} Sharp Cut Cyclone
390062	Battery, 12VDC 100A4,
390052	Battery Charger, 12 VDC @ 4 A / .3A hold AC adapter, 100-240 VAC in, 12VDC @ 6A,
591	Wind speed sensor
590	Wind direction sensor
592	Temperature sensor
593	Humidity sensor
MMF	MicroMet Plus Software

Consumables Part Number

Filter tape, roll	460130
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Respectfully submitted to the ERTG for consideration by: Duane Newell