

**BAM-1020 PM-COARSE
MANUAL ADDENDUM
FOR BX-COARSE SAMPLING KIT
BX-COARSE-9800 REV B**



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About this Document:

This manual addendum describes the hardware and software configurations used on the BAM-1020 particulate monitor when operated for PM-Coarse measurements in a dual-unit system. This information is meant to supplement the main BAM-1020 Operation Manual, Revision G or later, and the BX-965 Report Processor manual addendum for the expanded back panel options. In this document, the designator **PM_{10-2.5}** is used to represent "PM-Coarse". Coarse particulate includes the mass of all airborne particulate smaller than 10 microns in size, but not counting particles smaller than 2.5 microns. $PM_{10} - PM_{2.5} = PM_{10-2.5}$.

Technical Support

Should you still require support after consulting your printed documentation, we encourage you to contact one of our expert Technical Service representatives during normal business hours of 7:00 a.m. to 4:00 p.m. Pacific Standard Time, Monday through Friday. In addition, technical information and service bulletins are often posted on our website. Please contact us and obtain a Return Authorization (RA) tracking number before sending any equipment back to the factory. This allows us to track and schedule service work and expedite customer service.

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Model BAM-1020 PM_{10-2.5} U.S. EPA Equivalent Method

The Met One Instruments, Inc. Model BAM-1020 PM_{10-2.5} Measurement System is designated as an equivalent method for PM_{10-2.5} (PM-Coarse) monitoring in accordance with 40 CFR Part 53 by the United States Environmental Protection Agency as of June 15, 2009

Designation Number: **EQPM-0709-185**

The following conditions must be observed when a pair of BAM-1020 units are operated as a PM_{10-2.5} FEM continuous measurement system:

- One of the BAM-1020 units is configured as a PM_{2.5} FEM (EQPM-0308-170).
- The other unit is configurable as a PM_{2.5} FEM, but set to measure PM₁₀ by excluding the PM_{2.5} cyclone.
- The two monitors are collocated to within 1 and 4 meters apart.
- The units are equipped with the BX-COARSE sampling kit, which allows the two units to be directly connected together to provide concurrent sampling and reporting of the PM_{10-2.5} concentrations.
- Both units are operated in accordance with the PM-Coarse manual addendum (this document), revision 5-5 or later. The revision A and later manual supersedes all beta release revisions 5-5 and earlier.

1 The PM-Coarse Measurement Solution

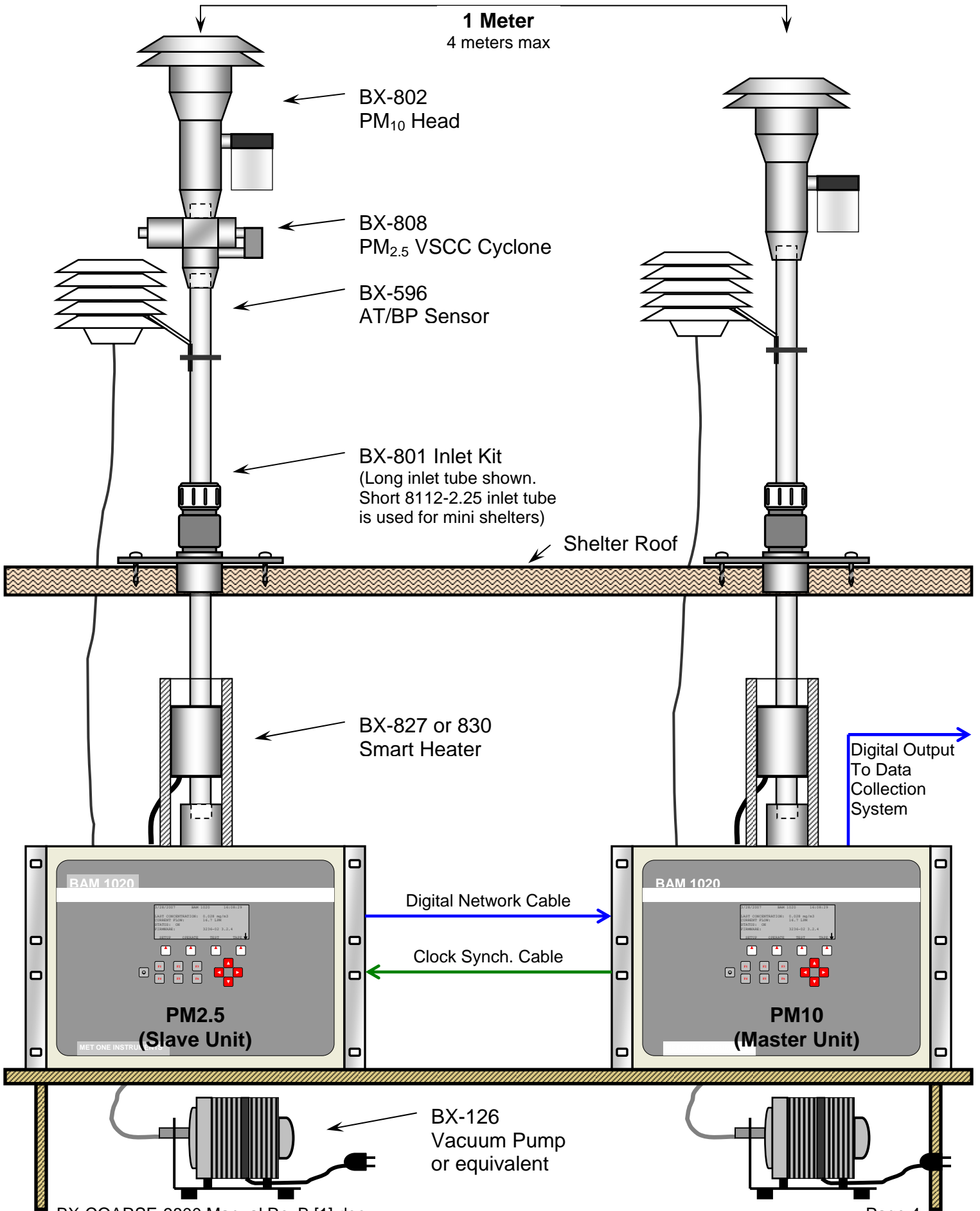
Met One Instruments, Inc. has developed a new PM_{10-2.5} (coarse) measurement solution based on BAM-1020 technology. The system allows the collection of EPA equivalent continuous measurements for PM₁₀, PM_{2.5}, and PM_{10-2.5} without the need for manual data calculations and correlation.

The coarse system is based on a pair of the latest revision BAM-1020 beta gauge particulate monitors which have been modified to operate in a Master/Slave configuration. One instrument measures, stores, and displays PM_{2.5} levels as if it were a stand-alone unit. This unit provides the concentrations to the Master unit through a dedicated serial network port. The Master unit measures PM₁₀ concentrations while collecting PM_{2.5} data from the Slave. The Master unit also calculates the PM_{10-2.5} concentrations, and stores and displays all three concentration values for each hour. The Master unit also synchronizes the clock timing between the two units and monitors both units for errors and alarms.

Data collection is accomplished by simply retrieving the digital data array from the Master unit, which contains all of the PM_{2.5}, PM₁₀, and PM_{10-2.5} data in a single file. Each unit has its normal 0-1 volt analog output available as well, although there is no analog output for the PM_{10-2.5} values.

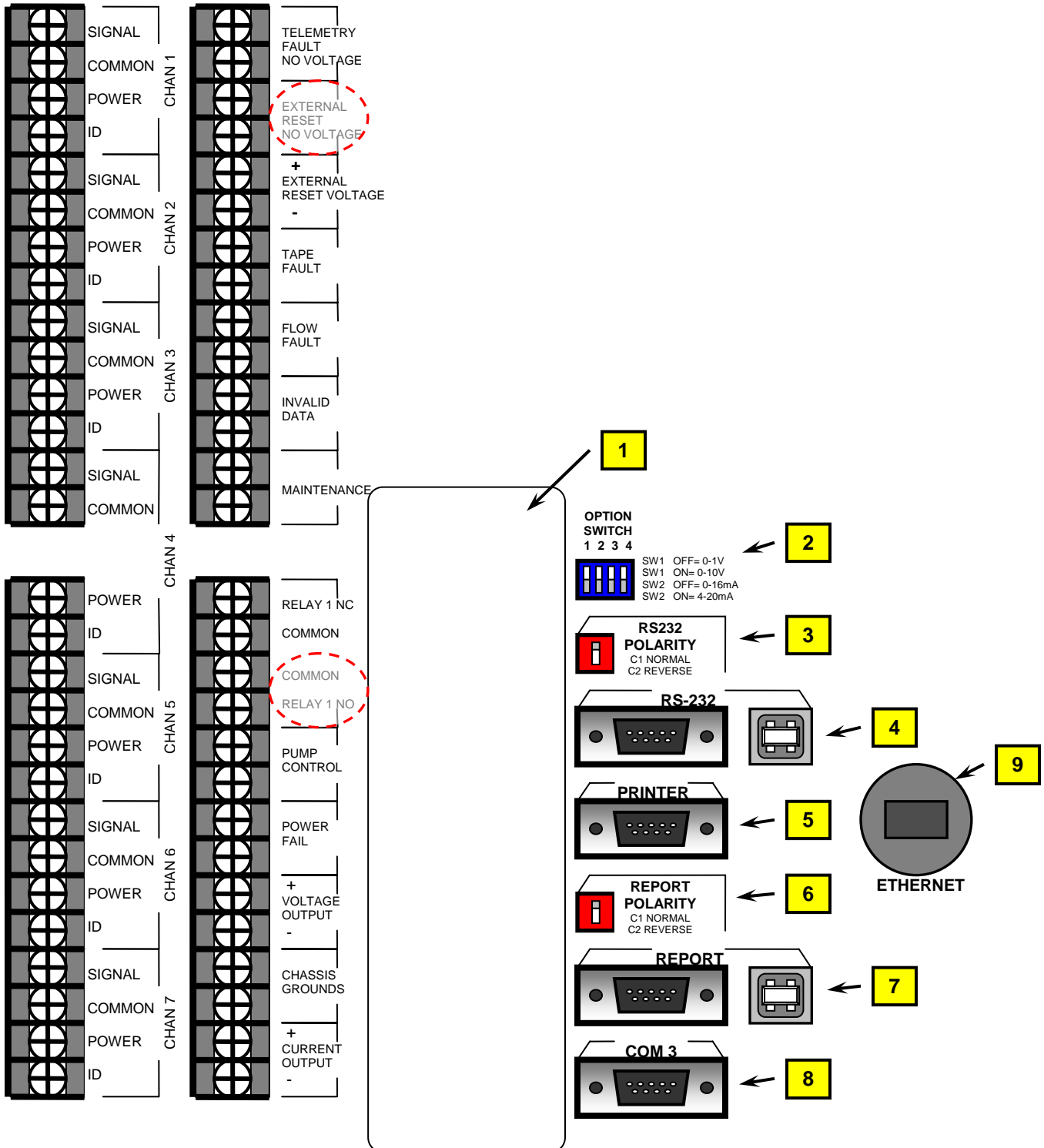
- Each unit has its own vacuum pump and performs its own actual (volumetric) flow control at 16.7 lpm just like a normal BAM-1020 configuration. Each unit has a BX-596 combination sensor for the measurement of ambient temperature and barometric pressure.
- The coarse PM₁₀, PM_{2.5}, and PM_{10-2.5} values are all reported in actual conditions as required by the EPA. However, the PM₁₀ unit can be set to also report the PM₁₀ concentration in standard conditions to meet the requirements for normal PM₁₀ reporting.
- The PM₁₀ unit uses a standard BX-802 EPA PM₁₀ inlet head only. The PM_{2.5} unit uses both a BX-802 PM₁₀ head and a BX-808 PM_{2.5} cyclone (BGI Inc. VSCC-A™).
- The inlets of the two units must be spaced no closer than one meter apart and no more than four meters apart. One meter spacing should be used when possible. The inlets must be the same height within one meter, but should be within 6 inches whenever possible. See Section 2 of the BAM-1020 manual for other BAM-1020 siting criteria.
- A weatherproof shelter or environmental enclosure is required for the BAMs, and is not included in the BX-COARSE kit. Met One can supply the optional BX-906 air conditioned dual-unit shelter if needed. Most users provide their own shelter arrangement.
- The serial network between the two units is connected by means of a single RS-232 serial network cable between the new COM3 ports of the two units. The cable is included.
- The clock synchronization is connected by means of a two conductor cable between the RELAY 1 output on the Master unit and the EXT RESET N.V. input on the Slave unit. The cable is included.

A major advantage of the Met One coarse solution is that *the two units can be separated and operated as stand-alone PM_{2.5} FEM or PM₁₀ FEM units at any time!* Only an additional VSCC cyclone would need to be procured to operate the coarse PM₁₀ unit as a PM_{2.5} FEM. All other required sampling accessories for both units are already included in the BX-COARSE kit. This makes the BAM-1020 coarse measurement system extremely flexible.



2 New Back Panel Connections

The BX-COARSE sampling kit includes the BX-965 Report Processor back panel option on both BAM units. It contains all of the same connections as the normal BAM-1020, with the addition of new connections for special data retrieval options. See Sections 8.3 and 10.2 of the BAM-1020 manual for descriptions of the standard terminal connections. The new connections for the BX-965 option are shown in the diagram and described below.



1. **Expansion Terminal:** This is a new terminal location which allows future access to extra analog input channels and relay channels. None of these terminal functions are supported by the BAM-1020 at this time. A cover plate is included.
2. **OPTION SWITCH:** This switch selects the analog output voltage or current loop range for the BAM-1020, and is unchanged in function from normal units.
3. **RS-232 POLARITY:** This switch changes the polarity of the TX and RX signals on the 9-pin “RS-232” serial port only, just like all normal BAM-1020 units. This is used for compatibility with certain serial cables. This switch does not affect the USB ports or any other serial port polarities.
4. **RS-232:** The classic 9-pin RS-232 two-way serial port has been retained to keep compatibility with certain customer’s existing data systems. See the BAM-1020 manual. The Report Processor back panel now contains an additional USB port, which allows a computer without an 9-pin RS-232 COM port to access data from the BAM. The port converts the BAM serial data to USB. Windows drivers are required to use the USB port, and are supplied on a CD with part number 80328. The communications settings on the computer will still have to be established just like before. See Section 9 of the BAM-1020 manual. **Note:** The USB ports on the BAM-1020 are serial converters only. The BAM will not recognize any USB peripheral devices such as flash memory drives, nor will the BAM be recognized as a flash storage device or drive by a PC.
5. **PRINTER:** This is the classic printer output port, just like on normal BAM-1020 units. It can still be used for diagnostic output or serial printer functions. See the BAM manual.
6. **REPORT POLARITY:** This switch functions just like the RS-232 polarity switch described above, except it affects the new “REPORT” serial port only. This switch does not affect the USB ports or any other serial port polarities.
7. **REPORT:** This is the new serial port interface which has been added to the BX-965 back panel of the BAM-1020 to support the new Report Processor functions. Data reports may be retrieved through this port at any time during the hour without being interrupted or delayed due to sample cycle functions. This is primarily used for application where the BAM must report 1 or 5 minute digital data values to a digital data collection system. The REPORT function also includes a USB port which allows a computer without an 9-pin RS-232 COM port to access data from the BAM. The port converts the BAM serial data to USB like the RS-232 USB port described above. Windows drivers are required to use the USB port, and are supplied on a CD with part number 80328. **Note:** The USB ports on the BAM are serial converters only. The BAM will not recognize any USB peripheral devices such as flash memory drives, nor will the BAM be recognized as a flash storage device or drive by a PC.
8. **COM 3:** This is the serial network connection for PM_{10-2.5} (PM-coarse) units only. In the coarse configuration, two BAM-1020 units are connected together with a serial cable through this port, and the units communicate together to make the measurement. The BAMs must be equipped with appropriate firmware for coarse functionality.
9. **ETHERNET:** This is an Ethernet port for network and TCP/IP applications. The Ethernet port is included on BAM-1020s equipped with the optional BX-965 Report Processor back panel, after March 2011. Older units and those without BX-965 have a hole plug in this position. Drivers for the port are included on the 80328 CD. See the BX-965-9800 Report Processor manual addendum for Ethernet port setup instructions.

3 Coarse System Hardware Setup

The two BAM-1020 units used for the PM_{10-2.5} configuration must be set up and connected as follows. Consult the BAM-1020 manual as needed. The BX-COARSE kit comes with the following items needed for the setup:

Part	Qty	Description
80327	1	Clock Synchronization Cable, 2-Cond, 10'
400658	1	Serial Cable, F/F DB-9, Null, 6', Coarse Network Cable (same as the BAM data cables)
BX-965	2	Report Processor Back Panel Kits, (Factory installed onto the two BAMs)
3236-6	2	Coarse Firmware for BAM-1020 (Factory Installed into the BAMs)
BX-COARSE-9800	1	PM-Coarse Manual Addendum

In addition, the BX-COARSE kit includes all of the standard BAM-1020 PM_{2.5} FEM accessories for both units, with the exception of only including one VSCC PM_{2.5} cyclone:

Part	Qty	Description
BX-802	2	PM10 Inlets, EPA Style
BX-808	1	PM2.5 Very Sharp Cut Cyclone, BGI Inc. VSCC-A (one per BX-COARSE kit)
BX-596	2	Ambient Temperature and Barometric Pressure Combo Sensors (one per BAM)
BX-302	2	Zero Filter Calibration Kits.
BX-827	2	Smart Inlet Heater Kits (BX-830 used for 230V applications)
BX-801	2	BAM-1020 Inlet Kits, with roof flange, 8' inlet tube standard, custom length available.

Note: The two Medo or Gast vacuum pumps for the BAM-1020s are handled as a separate line item on Met One sales orders, not as part of the coarse sampling kit.

1. Configure your shelter or weatherproof enclosure for the two BAMs as described in the BAM-1020 manual. The inlet tubes of the two BAM-1020 units should be spaced one meter apart when possible. The optional Met One BX-906 dual-unit mini shelter is available if needed, and only requires two short inlet tubes (part 8112-2.25) for setup. The mini shelters do not use the standard 8-foot inlets that come with the coarse kit.
2. Install the BAM units and their sampling accessories as described in the BAM-1020 manual. Both units must be configured as a PM_{2.5} FEM units, with the exception that the PM₁₀ master unit will not have a BX-808 VSCC cyclone in the inlet stack. It does not matter which unit is the PM₁₀ master, since you will tell each BAM which function it has in the coarse system.
3. Connect the 80327 Clock Synchronization Cable between the two BAM units as shown in the table below. The terminals are located on the back panel of each BAM. The cable is a simple two-conductor pair which may be extended if needed:

80327 Clock Synch Cable Connection	
BAM Master PM10	BAM Slave PM2.5
RELAY 1 NO	EXT RESET N.V.
RELAY 1 COM	EXT RESET N.V.

Note: Never connect any other clock synch signal (such as from a separate datalogger) to the PM_{2.5} slave unit while it is configured as part of a coarse system! The master BAM and the datalogger will fight over the slave clock reset functions, causing improper

function and alarms. However, the PM₁₀ master BAM may be connected to an external clock synch signal from a datalogger. Timing is very critical in the coarse configuration.

4. Connect the 400658 serial network cable between the “COM 3” ports on the back panel of the two BAM-1020 units. This is the same kind of female-female null serial cable that is supplied with each BAM for serial data retrieval. If it is too short, it can be extended with a normal 9-pin serial cable. Only pins 2, 3, and 5 are used (TX, RX, Ground).
5. Use a length of green/yellow grounding wire (supplied with the BAMs) and connect the CHASSIS terminals of each BAM unit to a common earth ground point, such as a copper ground rod if possible. This is important to minimize potential measurement discrepancies between the two units. The BAMs are also chassis grounded through the power cord safety ground.

4 Coarse Firmware Menus, Setups, and Test Options

All BAM-1020 units used for the PM_{10-2.5} configuration must have special firmware installed. The special coarse firmware is part number is **3236-6**. The 3236-2, -5, and -7 firmware versions are not compatible with the dual-unit coarse system. Beta release coarse BAMs used revision V3.3 of the firmware. Production release coarse units after July 2009 use revision V3.5.0 and later of the 3236-6 firmware.

Most of the user interface screens and menus are the same as the normal PM_{2.5} FEM series of firmware, and are described in detail in the BAM-1020 manual. Only the new and different menu items and test functions unique to the coarse system are described below.

SETUP > SAMPLE Menu Settings:

The SETUP > SAMPLE menu has been changed as shown to add a new OPERATION parameter, which can be set to **BAM 1020**, **COARSE PM2.5** or **COARSE PM10**. The operation setting will also appear in the Settings Configuration data file of the BAM.

		SETUP SAMPLE	
OPERATION	COARSE PM10		
RS232	38400 8N1	BAM SAMPLE	042 MIN
STATION #	01	MET SAMPLE	60 MIN
RANGE	1.000 mg	OFFSET	-0.015 mg
CONC UNITS	ug/m3	COUNT TIME	8 MIN
	SAVE		EXIT

The SETUP > SAMPLE screen

OPERATION	Function
BAM 1020	The unit operates as a standard BAM-1020 PM ₁₀ or PM _{2.5} stand-alone unit. Use this setting for all applications except for PM _{10-2.5} .
COARSE PM10	Sets the unit as a the PM ₁₀ Master unit for a PM _{10-2.5} measurement system. This unit will measure and store PM ₁₀ concentrations at standard conditions (PM _{10s}) and actual conditions (PM ₁₀), retrieve and store the PM _{2.5} measurement from the slave unit, and calculate and store the PM _{10-2.5} measurement. This unit will also initiate clock synchronization each hour.
COARSE PM2.5	Sets the unit as the PM _{2.5} Slave unit for a PM _{10-2.5} measurement system. This unit will measure and store PM _{2.5} concentrations at actual conditions, and report these concentrations to the master unit.

In addition, the following settings must be verified in the SETUP menus of both BAMs used in the coarse configuration. Except for the OPERATION setting, these are the same as the PM_{2.5} FEM settings:

Menu	Setting	PM10 Master	PM2.5 Slave
SETUP > SAMPLE	OPERATION	COARSE PM10	COARSE PM2.5
	BAM SAMPLE	42 MIN	42 MIN
	COUNT TIME	8 MIN	8 MIN
SETUP > CALIBRATE	CONC TYPE	ACTUAL	ACTUAL
	FLOW TYPE	ACTUAL	ACTUAL
	STD TEMP	25C	25C
	HEATER	AUTO	AUTO
SETUP > HEATER	RH Control	YES	YES
	RH Setpoint	35%	35%

The Main Menu Screen:

The main top menu screen of the BAM-1020 will also change to reflect the OPERATION setting of that particular unit.

Following is the main top menu screen with the OPERATION parameter set to **COARSE PM2.5** (slave unit). Only the PM_{2.5} concentration will be shown on this unit, and the screen looks like the normal BAM-1020 top menu screen:

```
07/30/2009      COARSE PM2.5      09:21:18
LAST CONCENTRATION: 0.020 mg/m3
CURRENT FLOW:      16.7 LPM
STATUS: ON
FIRMWARE: 3236-06 V3.5.0
SETUP   OPERATE   TEST    TAPE   ▼
```

Following is the main top menu screen with the OPERATION parameter set to **COARSE PM10** (master unit). This unit will display the it's own measured PM₁₀ concentration in both standard and actual conditions. The unit will also display the PM_{2.5} concentration from the slave unit in actual conditions, and calculate and display the PM_{10-2.5} concentration in actual conditions. The flow value is displayed in actual conditions and is for the PM₁₀ unit only:

```
07/30/2009      COARSE PM10      09:21:18
  PM10:  0.050 mg/m3 (STANDARD)
  PM10:  0.050 mg/m3 (ACTUAL)
  PM2.5:  0.020 mg/m3
  COARSE:  0.030 mg/m3
  FLOW:    16.7 LPM
  STATUS:  SAMPLING
  SETUP   OPERATE   TEST    TAPE   ▼
```

Note: The Coarse PM₁₀ master unit simultaneously reports both EPA standard (flow volume normalized to 760 mmHg and 25 degrees C) and actual PM₁₀ concentrations. This allows the user to obtain normal EPA standard PM₁₀ concentration data from the unit, while also making the coarse measurement where all parameters must be in actual conditions. The FLOW TYPE and CONC TYPE of both units in the coarse system must be set to ACTUAL!

The Network Test Screen:

After the two units are set up, enter the TEST > NETWORK screen on the PM₁₀ master unit and test the connection between the two BAMs as shown below. This screen allows the digital communication link between the PM₁₀ master and PM_{2.5} slave unit to be automatically tested, and will only appear as an option in the TEST menu if the OPERATION parameter is set to COARSE PM10. The PM₁₀ Master unit will send a modbus command to the Slave unit and wait for a response. If no response after 10 seconds then the communications link is down. Check the serial network cable between the COM 3 ports of the two BAMs. If a different cable

is used instead of the one supplied by Met One, then try adding a null modem converter. If the status indicates “OK” then the link between the two BAMs is working correctly.

```

TESTING PM10 TO PM2.5 NETWORK

STATUS: WAITING...

EXIT
    
```

The TEST > NETWORK Screen

Status	Description
WAITING...	Waiting for response from PM _{2.5} slave unit.
FAILED	No response from PM _{2.5} unit after 10 sec. Check the cable connections between the COM 3 ports.
OK	Response with the PM _{2.5} unit is OK! Communication between the two units is established.

The INTERFACE Test Screen:

You can test the clock synchronization function between the two BAMs after the synch cable is connected as described above. Enter the TEST > INTERFACE screen on both units. This screen has been changed to add the RELAY 1 output. Use the left/right arrow keys to select RELAY 1 on the PM₁₀ Master unit, then use the up/down arrow keys to force the relay output ON and OFF. The EXTERNAL RESET field on the PM_{2.5} slave unit should change ON and OFF in response, if the clock synch cable is connected correctly. This must be working correctly for proper coarse operation!

If this test function is not working correctly, make sure the clock synchronization cable is connected to the correct terminals on both units, and make sure the RESET POLARITY setting in the SETUP > INTERFACE menu on the PM_{2.5} slave unit is set to NORM, not INV.

```

TEST INTERFACE
<--- INPUTS --->
TELEMETRY FAULT: OFF EXTERNAL RESET: OFF
<--- RELAYS --->
TAPE FAULT: OFF FLOW FAULT: OFF
INVALID DATA: OFF MAINT: OFF
RELAY 1: OFF RELAY 2: OFF
EXIT
    
```

The TEST > INTERFACE screen

5 Data Storage and Retrieval

Serial data retrieval from the BAM-1020 PM_{10-2.5} configuration is virtually unchanged from other versions of the unit. See Section 9 of the BAM-1020 manual. The data reports that are different are text files **1** (Current Day Data file), **2** (All Data file), and **3** (New Data file), as well as comma-separated data files **6-2** (CSV All Data), **6-3** (CSV New Data), and **6-4** (CSV Last Data). These have been modified to include the PM₁₀, PM_{10s}, PM_{2.5} and PM_{10-2.5} concentration values into the array, if the unit OPERATION setting is set to "COARSE PM10". Note: The PM_{10-2.5} (coarse) values are labeled "PM_c" in the data headers to save space.

If the unit OPERATION setting is set to "COARSE PM2.5" or "BAM-1020", then only a single concentration value is available for each hour, just like the normal BAM-1020 data files. The flow volume value is always for that particular unit only.

The data files are also accessible through the USB port on the new back panel of PM_{10-2.5} BAM-1020 units. You will need to install some simple USB drivers on the computer (typically a laptop) before data can be retrieved. Follow the instructions document on the included CD-ROM 80328. Once the USB drivers are installed, data files can be retrieved from the BAM-1020 USB port using the same commands as through the serial port. A normal "type B" USB cable is required.

Setting the Master Unit to Report Both Standard and Actual PM₁₀ Values:

As described in the OPERATION mode setup section above, the PM₁₀ master unit measures both standard and actual PM₁₀ concentrations at the same time. You can select whether the standard PM₁₀ concentration (PM_{10s}) and standard flow volume (Qt_{10s}) appear in the digital data array or not. Enter the SETUP > REPORT menu. There is a new field labeled "REPORT STANDARD PM10" that can be set to YES or NO. Set it to YES unless you need the data array to be as small as possible. If set to NO, the PM_{10s} and Qt_{10s} values will not be reported. However, the unit always makes both calculations whether they are both reported or not.

The following is an example of the digital text file report for the current day from the PM₁₀ master unit in a coarse system. The unit is set to report the standard concentrations and flow volumes:

```
Report for 10/04/2008 - Day 277 > BAM 1020 < Station ID: 1
```

Channel	01	02	03	04	05	06
Sensor	WS	no	WS	RH	WS	AT
Units	KPH	V	MPS	%	KPH	C
01:00 -----	0.031	0.031	0.018	0.013	0.701	0.701
02:00 -----	0.040	0.040	0.019	0.021	0.701	0.701
03:00 -----	0.037	0.037	0.016	0.021	0.700	0.700
04:00 -----	0.039	0.039	0.012	0.027	0.701	0.701
05:00 -----	0.044	0.044	0.021	0.023	0.701	0.701
06:00 -----	0.053	0.053	0.028	0.025	0.701	0.701

The .csv comma-separated data files are affected in the same way. Again, the standard PM_{10s} concentration and Qt_{10s} standard flow volume only appears if the REPORT STANDARD PM10 setting is set to YES. Following is an example of the .csv output from a coarse master unit:

```
Time, PM10s, PM10(ug/m3), PM2.5(ug/m3), PMc(ug/m3), Qt10(m3), Qt10s(m3), WS(MPS), WD(DEG), BP(mm) RH(%), DELTA(C),
AT(C),E,U,M,I,L,R,N,F,D,C,T
08/31/08 10:00, 00085, 00085, 00033, 00052, 0.701, 0.701, 5.2, 280, 760, 32, 8.6, 25.2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
```

The following table defines the data values that appear in the comma-separated digital data array:

Value	Description
PM10s	Standard PM ₁₀ concentration for normal EPA PM ₁₀ FEM reporting only. Only appears if selected.
PM10	Actual PM ₁₀ concentration for PM _{10-2.5} coarse calculation.
PM2.5	Actual PM _{2.5} concentration for PM _{10-2.5} coarse calculation and for EPA PM _{2.5} FEM reporting.
PMc	Actual PM _{10-2.5} coarse concentration. Equals PM ₁₀ - PM _{2.5} .
Qt10	PM ₁₀ flow volume in actual conditions for PM _{10-2.5} coarse calculation.
Qt10s	PM ₁₀ flow volume in standard conditions for EPA PM ₁₀ FEM reporting only. Only appears if selected.
Chan 01	Sensor input channel 1. Usually not used.
Chan 02	Sensor input channel 2. Usually not used.
Chan 03	Sensor input channel 3. Usually not used.
Chan 04	Sensor input channel 4. Often set to log filter RH.
Chan 05	Sensor input channel 5. Usually not used.
Chan 06	Sensor input channel 6. Used for Ambient Temperature.
Alarm Bits	Twelve alarm bits, 0 (no alarm) or 1 (alarm) for each alarm parameter.

Alarms and Errors in the Coarse System:

The PM₁₀ master BAM-1020 unit must wait until the end of the sample hour before it can collect the PM_{2.5} concentration from the slave unit and calculate the PM_{10-2.5} coarse value. If the master unit cannot obtain the data from the slave unit, the master unit will generate an “I” or “Internal CPU” alarm in its error log, and in the data log for that hour. This can mean that the network or clock synchronization systems did not work, or that the PM_{2.5} slave unit encountered a critical error which prevented it from supplying a valid data value to the master.

Each unit maintains its own separate digital error log (File 7, “Display Last 100 Errors”) which can only be downloaded from that particular unit. However, when set for the coarse configuration, **the error codes or alarm bits in the master PM₁₀ unit’s hourly data array represent alarms from either the PM₁₀ unit or the PM_{2.5} unit.** An alarm in either unit can set the alarm bit in the master unit data record. You may need to investigate which unit actually encountered the problem. This feature only applies to the coarse system. When operated as stand-alone units, each BAM only includes its own alarms in the data array.

None of the PM_{2.5} slave unit’s flow statistics files, data log, or settings files can be downloaded or viewed through the PM₁₀ master unit, so a separate direct download from the slave unit would be required if these files are needed.