

ATTACHMENT A – Met One BAM-1020

PM_{2.5} Continuous FEM - Questionnaire on Setup, Operations, and Data Reporting

Please respond to this questionnaire for those sites where there is an established relationship between a collocated FRM and continuous FEM. Note: we are not asking for information associated with pre-FEM versions of continuous monitors. One response per agency should be sufficient. Please circle or enter information as appropriate to address each question.

A - General Information:

<p>Monitoring Agency:</p>		<p>Make and Model of Method:</p>	<ol style="list-style-type: none"> 1. Met One BAM 1020 2. Other? Please list.
<p>Contact Name(s) for Continuous FEMs:</p>		<p>Was the monitor upgraded to FEM or purchased as FEM?</p>	<ol style="list-style-type: none"> 1. Upgraded monitor 2. Purchased as a new FEM
<p>Email:</p>		<p>How many sites in your network have a collocated FRM/continuous FEM?</p>	
<p>Phone:</p>		<p>Please list the AQS site ID's for collocated sites with at least a three months of data; a separate table or list can be provided.</p>	<p>i.e., State, County, Site, and POC XX-XXX-XXXX-X</p>

B - Questions on Set up of the continuous FEM at the Station:

#	Question	Response	Notes
B1	What type of housing is the monitor located in?	<ol style="list-style-type: none"> 1. Conventional HVAC controlled sample station with room for other instruments. 2. Small modular shelter with dedicated HVAC 3. Small modular shelter with heating only 4. Other – please explain 	
B2	For HVAC controlled shelters, what are the temperature set-points?	<ul style="list-style-type: none"> • During winter months? • During summer months? 	Running a shelter too cool in warm humid environments may lead to condensation in the sample manifold for gas instruments. If this happens you may also have condensation on the filter tape which would inappropriately show up as mass and bias readings high.
B3	If available, please identify the shelter temperature normal operating range (note: not the acceptance range of the monitors, but rather the high and low temperatures your shelters typically operates at throughout the day)	<ul style="list-style-type: none"> • During winter months? High - Low - • During summer months? High - Low - 	
B4	Is the section of downtube located in the shelter insulated?	<ol style="list-style-type: none"> 1. With a sleeve of foam pipe insulation 2. With fiberglass insulation 3. With other type of insulation 4. Is not insulated - please identify approximate length of exposed downtube inside shelter that is not insulated 	If applicable, please estimate the thickness of the insulation in inches.
B5	Does the downtube installation appear to be in the vertical plane relative to the monitor? i.e., is the downtube straight up and down?		

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B6	Are there any concerns about the inlet meeting siting criteria that might explain potential data quality issues?		
B7	Is the BAM monitor appear to be wired as grounded?		Proper grounding includes ensuring the screws attached to the downtube have penetrated the anodized aluminum, the chassis is wired to ground and the ground wire is connect to an earth ground.
B8	Please confirm that the BAM downtube is confirmed as grounded by using a multimeter?		This may require scratching off a section of the anodized aluminum on the outside of the downtube and using a multi-meter to confirm ground. A good ground with show a small and steady amount of resistance. See section 9.5.10 of SOP
B9	For upgraded Met One BAM 1020's: <ul style="list-style-type: none"> Was the temperature/ pressure sensor upgraded to the BX-596? Model # should be available on bottom side of temperature gill screen. Using a VSCC and not a SCC? 	<ul style="list-style-type: none"> Confirmed using BX-596: <ul style="list-style-type: none"> Yes No Confirmed using VSCC: <ul style="list-style-type: none"> Yes No 	
B10	Do you use a Uninterruptable power supply (UPS) to mitigate data loss during power outages? (Note: not required)	<ol style="list-style-type: none"> Neither Both pump and monitor Just monitor (not advised as lack of air flow can cause an issue with the mass flow controller) 	
B11			

Comment [tdh1]: Need to confirm

C - Questions on Monitor Set-up:

#	Question	Response	Notes
C1	Which version of Firmware is operating on the FEM?		Version 3.2.4 or later is valid for FEM. Current Version is 3.6.3
C2	Is the internal monitor clock set to local standard time year round?	If not, please explain?	
C3	<p>Are there any deviations to the following set-up information:</p> <ul style="list-style-type: none"> • RS-232: Set to "9600" • BAM SAMPLE set to "42 minutes" with "8 minute" count time • CONC TYPE set to "ACTUAL" • FLOW TYPE set to "ACTUAL" • Flow rate set to "16.7" lpm • MET SAMPLE: set to "5 minutes" • RANGE: set to "1.000 mg". • Conc units set to "ug/m3" (micrograms) • COUNT TIME set to "8 minutes" • FLOW TYPE set to "ACTUAL" • STD TEMP set to 25 C • RH control set to "YES" • RH setpoint at "35%" • Delta-T control set to "NO" • Delta-T Set Point set to "99" 	List any deviations here	
C4	What is the "OFFSET" set to:		Typically set to -0.015 mg
C5	What is the result from the 72 hour zero test?		
C6	If available, take the standard		A relatively low standard deviation

	deviation of the 72 hour zero test and report here.		tells us that the site and monitor are stable. (e.g., < 2.4 ug/m3)
C7	What is the value entered in the monitor for "BKGD" (background)? Should be same number as listed above; however, please confirm.		Please enter exactly what is programmed in the monitor. Also, ensure sign (+/-) is included.
C8	Has the RH sensor ever had a calibration adjustment since being received?		The RH sensor does not normally drift out of specifications. Typically this RH sensor either works well or it is off significantly. Because the heating of the unit normally takes place, the RH sensor may appear to be reading low when in fact it is working correctly. Options to resolve include removing RH probe and verifying with second RH sensor in a zip-lock type bag or turning off unit overnight so heating does not influence RH verification.

D - Questions on Monitor Operation and Maintenance:

#	Question	Response	Notes
D1	How often have leak check tests been conducted?	<ol style="list-style-type: none"> 1. Monthly 2. Every two weeks 3. Other 	Please answer as candidly as possible.
D2	What is the maximum acceptable leak check your agency uses?	Ideally < 0.4 lpm; no greater than 1.0 lpm	
D2	How often have flow rate test been conducted?	<ol style="list-style-type: none"> 1. Monthly 2. Every two weeks 3. Other 	

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D3	How often are the nozzle and vane cleaned	<ol style="list-style-type: none"> 1. Monthly 2. Every two weeks 3. Other 	
D4	How often is the RH sensor checked for comparability with an external RH sensor?		
D5	During periods of high RH can you confirm that your smart heater is functioning by cycling on?	<ol style="list-style-type: none"> 1. Yes 2. Too dry to know 	
D6	Is the flow through your system adequate (~16.7 lpm) when the pump is on.		This may be especially important to confirm for high altitude stations
D7			

E - Questions on Data Transfer and Reporting:

#	Question	Response	Notes
E1	Is the telemetry on your FEM using analog or digital connectivity?	<ol style="list-style-type: none"> 1. Digital 2. Analog 	
E2	What channels from your FEM are you logging on your central data system?		
E3	Please confirm that at least three hours of data reported to an external data system (i.e., AIRNow or AQS) match the three hours recorded in the internal memory of the instrument. Note: some central data systems run at end hour and then report at start hour.		Ultimately, you need to check that the data associated with an hour in the instrument matches that of AIRNow or AQS. These data systems use the start hour to represent the time period. E.g., hour 23 is the hour from 11 pm to midnight on local standard time; hour 00 is from midnight to 1 am.
E4	Analog question - Please confirm that		Data can be offset if analog

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	the data are not offset as recorded in your data system.		outputs are used. i.e., 0 to 1 volt = -0.015 mg/m ³ – 0.985 mg/m ³
E5	Analog question - Please confirm that data recorded at full scale (i.e., 1 volt, which is associated with 985 when using the -0.015 offset in analog) are screened.		Your data system should catch these and not report as real data. The BAM may go to full scale when there is an error code.
E6			

