

SOP: Operation of Met One GT-321 Particle Counter

Approvals

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Date: 17OCT13

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Date: 18OCT13

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1. Purpose

- 1.1. Measure the number of airborne particulates per cubic foot using the Met One GT-321 particle counter.

2. Scope and Applicability

- 2.1. The Met One GT-321 particle counter measures airborne particles by drawing in ambient air using a vacuum pump and counting particles using a laser based diode sensor. This SOP covers normal operations including air sampling, battery recharging, and zero count testing.

3. Summary of Method

- 3.1. Place the unit in the area to be measured.
- 3.2. Attach the iso-kinetic probe.
- 3.3. Turn on power and press START; 10 samples are taken automatically and averaged.
- 3.4. Recharge the battery when "Low Battery" message is displayed.
- 3.5. Periodically test the unit for air leaks using a zero count test.

4. References

- 4.1. GT-321 Hand Held Particle Counter Operation Manual, GT-321-9800 Rev D.

5. Definitions

Iso-kinetic Constant movement or velocity

6. Precautions

- 6.1. The GT-321 unit contains no user serviceable parts. Do not open or attempt to change the internal battery pack.
- 6.2. Contains a Class I laser, considered not hazardous when properly operated. Repairs should be performed by manufacturer train service personnel only.

7. Responsibilities

- 7.1. It is the responsibility of the course instructor/lab assistant to ensure that this SOP is performed as described and to update the procedure when necessary.
- 7.2. It is the responsibility of the students/technician to follow the SOP as described and to inform the instructor about any deviations or problems that may occur while performing the procedure.

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8. Equipment and Materials

- 8.1. Met One GT-321 Particle Counter
- 8.2. Iso-kinetic probe
- 8.3. AC to DC converter module
- 8.4. Zero test filter

9. Procedure

9.1. *Air sampling:*

- 9.1.1. Place the MetOne unit on a bench or cart in the area to be measured with the inlet nozzle pointing upward. Battery or AC power source may be used.
- 9.1.2. Remove the rubber cap from the inlet nozzle on the top of the unit and attach the iso-kinetic probe. (The iso-kinetic probe helps reduce errors due to the aerodynamic properties of small particles.)
- 9.1.3. Turn on the power switch on the left side of the case. The LCD display should indicate 0.3u.
- 9.1.4. (Optional) Press the SELECT key to cycle through the particle sizes: 0.3u, 0.5u, 1.0u, 2.0u, and 5.0u. Stop when 0.3u is displayed.
- 9.1.5. Press the START/STOP button on the front of the unit. The internal vacuum pump will start running. The unit will automatically take 10 ambient air samples, one cubic foot per sample. After 9 seconds the first reading will appear on the display representing the number of particles that are larger than the size selected above. Additional readings will appear every 6 seconds for a total of 10 samples.
- 9.1.6. When all 10 samples are taken, the average is computed and displayed. This count represents the number of particles in one cubic foot of air. Record this value. (To determine the number of particles in one cubic meter, divide by 0.02832.)
- 9.1.7. Turn off the MetOne unit.

9.2. *Recharging the battery:*

- 9.2.1. When the battery needs recharging, the "Low Battery" message is displayed and the pump will not activate when the START button is pressed.
- 9.2.2. Turn off the unit and connect the AC to DC converter module.
- 9.2.3. Plug in the AC to DC converter module and charge the battery for 15 hours.

9.3. *Zero count test:*

- 9.3.1. Periodically test the Met One unit for air leaks. (Weekly is recommended.)
- 9.3.2. Remove the rubber cap from the inlet nozzle on the top of the unit and attach the zero test filter.
- 9.3.3. Turn on the power switch and press the START/STOP button as if air sampling.
- 9.3.4. The result of the 1 minute sampling should be zero. If it does not read zero, the unit may need to be repaired by the factory.

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10. Attachments

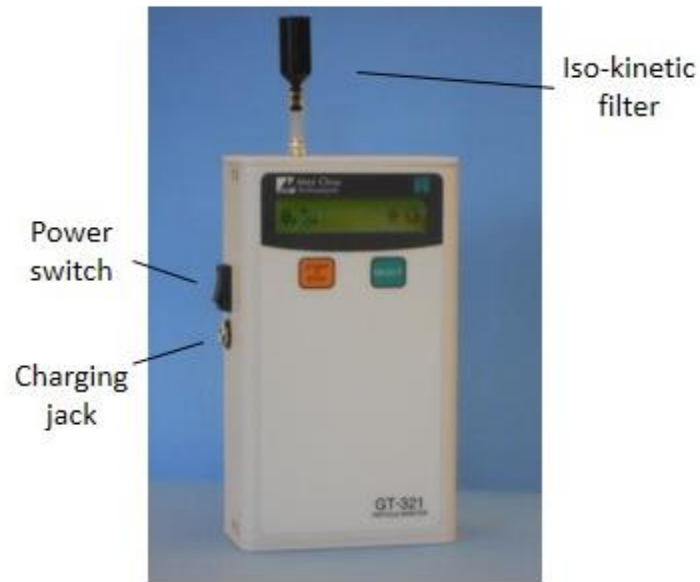


Figure 1. Met One GT-321 Particle Counter

11. History

<i>Revision Number</i>	<i>Effective Date</i>	<i>Preparer</i>	<i>Description of Change</i>
0	10/17/2013	John Buford	Initial release