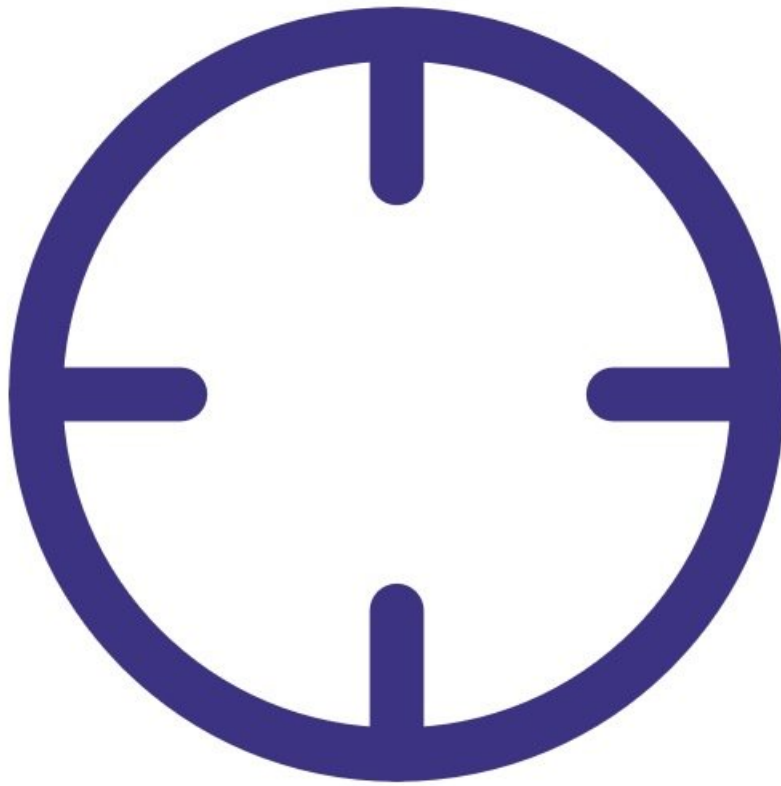




# Check zero using external filter

Written By: Tanya Taylor



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## INTRODUCTION

Use this procedure to check the zero baseline of your particle profiler.

The function of the zero filter is to remove particulate out of the air that's being drawn into the particle inlet.

This means all the air passing through the particle profiler should be free of particulates and particle readings should drop to 0 or close to 0 (within the range  $\pm 3 \mu\text{g}/\text{m}^3$ ).

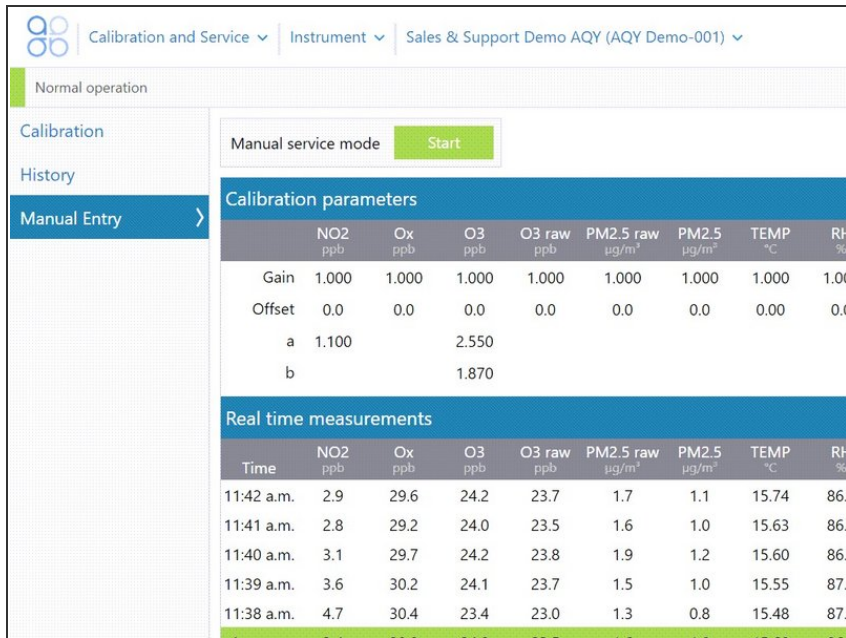
To understand how often you should perform this service activity, [click here](#).



### PARTS:

- [Zero filter and flow assembly](#) (1)
-

## Step 1 — Enter service mode



Manual service mode Start

Calibration parameters								
	NO2 ppb	Ox ppb	O3 ppb	O3 raw ppb	PM2.5 raw µg/m³	PM2.5 µg/m³	TEMP °C	RH %
Gain	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Offset	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0
a	1.100		2.550					
b			1.870					

Real time measurements								
Time	NO2 ppb	Ox ppb	O3 ppb	O3 raw ppb	PM2.5 raw µg/m³	PM2.5 µg/m³	TEMP °C	RH %
11:42 a.m.	2.9	29.6	24.2	23.7	1.7	1.1	15.74	86.1
11:41 a.m.	2.8	29.2	24.0	23.5	1.6	1.0	15.63	86.1
11:40 a.m.	3.1	29.7	24.2	23.8	1.9	1.2	15.60	86.1
11:39 a.m.	3.6	30.2	24.1	23.7	1.5	1.0	15.55	87.1
11:38 a.m.	4.7	30.4	23.4	23.0	1.3	0.8	15.48	87.1

- [Enter service mode](#) so any fluctuations in the data caused from this activity can be excluded from air quality reports.

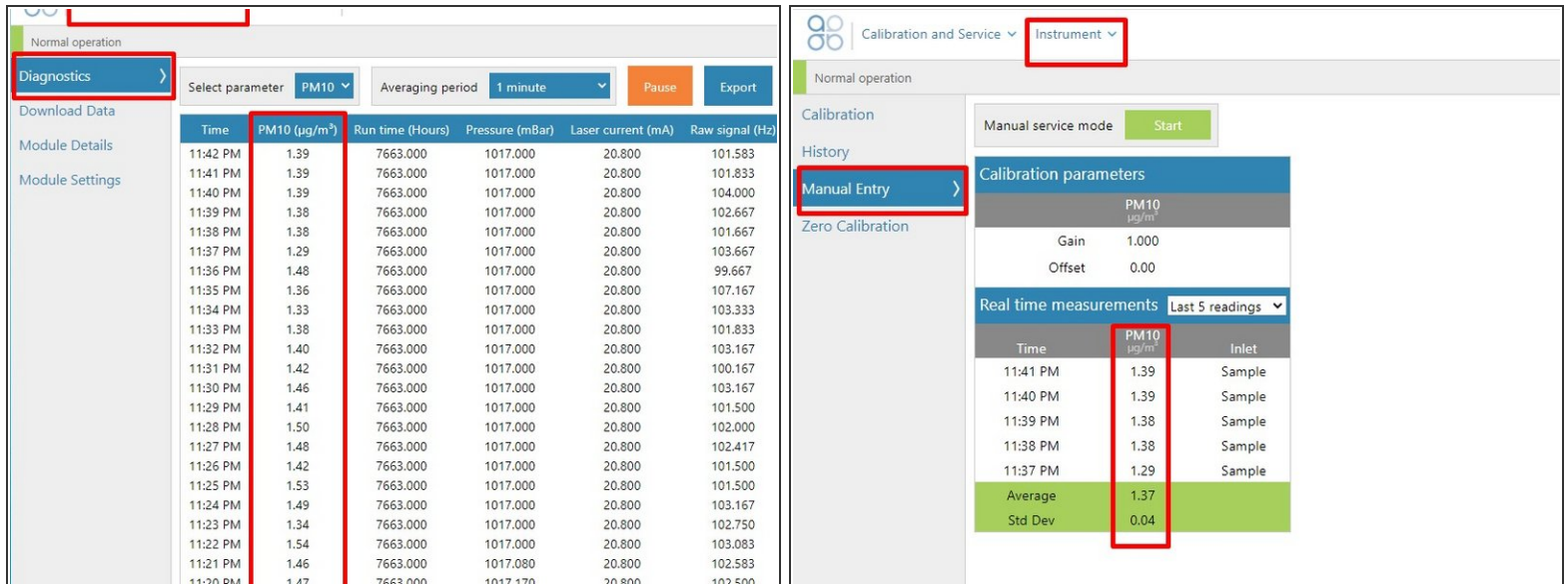
## Step 2 — Attach zero filter



**⚠ You must do this during normal sample mode, with 2.0 LPM sampling into the particle inlet.**

- Remove the TSP head from the top of your monitor's particle inlet.
- Attach the flow adaptor and zero filter.
- Leave the zero filter in place for 5 minutes.

## Step 3 — Check concentrations



**Left Screenshot: Diagnostics**

Normal operation

Select parameter: PM10 Averaging period: 1 minute [Pause] [Export]

Time	PM10 (µg/m³)	Run time (Hours)	Pressure (mBar)	Laser current (mA)	Raw signal (Hz)
11:42 PM	1.39	7663.000	1017.000	20.800	101.583
11:41 PM	1.39	7663.000	1017.000	20.800	101.833
11:40 PM	1.39	7663.000	1017.000	20.800	104.000
11:39 PM	1.38	7663.000	1017.000	20.800	102.667
11:38 PM	1.38	7663.000	1017.000	20.800	101.667
11:37 PM	1.29	7663.000	1017.000	20.800	103.667
11:36 PM	1.48	7663.000	1017.000	20.800	99.667
11:35 PM	1.36	7663.000	1017.000	20.800	107.167
11:34 PM	1.33	7663.000	1017.000	20.800	103.333
11:33 PM	1.38	7663.000	1017.000	20.800	101.833
11:32 PM	1.40	7663.000	1017.000	20.800	103.167
11:31 PM	1.42	7663.000	1017.000	20.800	100.167
11:30 PM	1.46	7663.000	1017.000	20.800	103.167
11:29 PM	1.41	7663.000	1017.000	20.800	101.500
11:28 PM	1.50	7663.000	1017.000	20.800	102.000
11:27 PM	1.48	7663.000	1017.000	20.800	102.417
11:26 PM	1.42	7663.000	1017.000	20.800	101.500
11:25 PM	1.53	7663.000	1017.000	20.800	101.500
11:24 PM	1.49	7663.000	1017.000	20.800	103.167
11:23 PM	1.34	7663.000	1017.000	20.800	102.750
11:22 PM	1.54	7663.000	1017.000	20.800	103.083
11:21 PM	1.46	7663.000	1017.080	20.800	102.583

**Right Screenshot: Manual Entry**

Calibration and Service Instrument

Normal operation

Calibration History Manual Entry Zero Calibration

Manual service mode [Start]

Calibration parameters

PM10 µg/m³

Gain 1.000

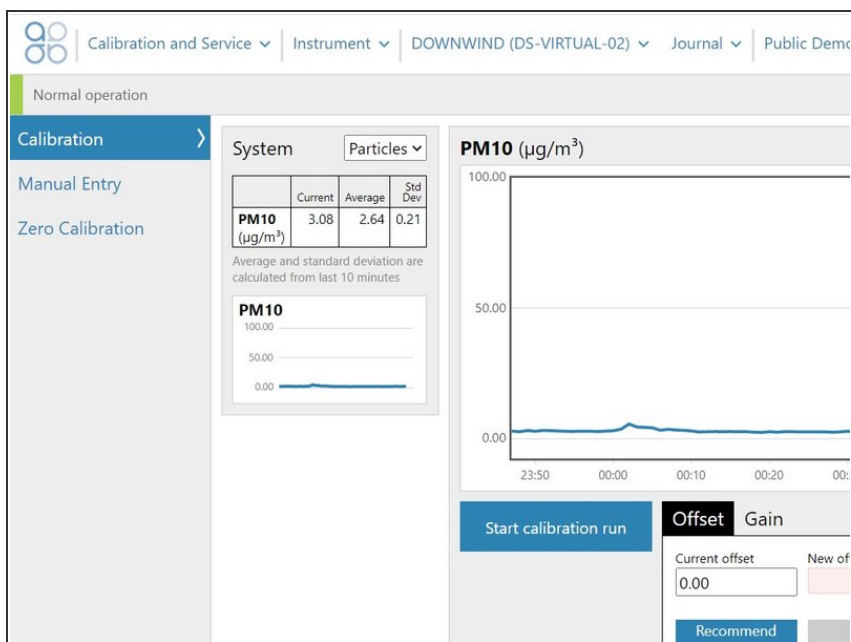
Offset 0.00

Real time measurements Last 5 readings

Time	PM10 µg/m³	Inlet
11:41 PM	1.39	Sample
11:40 PM	1.39	Sample
11:39 PM	1.38	Sample
11:38 PM	1.38	Sample
11:37 PM	1.29	Sample
Average	1.37	
Std Dev	0.04	

- To view particle concentrations, open the **Diagnostics and Advanced** app and select **Diagnostics** from the side menu.
- Alternatively, use the **Calibration and Service** app and select **Manual Entry** from the side menu.
- While the zero filter is attached, the **PM µg/m³** values for particle profiler channels should be 0 or close to 0 (between  $\pm 3$  µg/m³).

## Step 4 — Adjust offset



- If you're seeing particle matter concentrations larger than  $\pm 3$  µg/m<sup>3</sup>, check the offset value in the **Calibration and Service** app.
- If the offset isn't 0.000, [refer to this procedure to manually adjust it.](#)

## Step 5 — Record in journal

The screenshot shows the 'Journal' entry form for an 'Air Quality Monitor (AQM65 04082015-437)'. The form is titled 'User entry | Cloud user - John Wagner'. It contains several sections for recording inspection and calibration results:

- Site Inspection:** No new local emission sources, Instrument in good condition, No obstructions to monitoring equipment.
- Instrument inspection:** Cooling fan operational, PM and gas inlet secure, Instrument has been running at stable.
- Equipment:** Aeroqual Gas dilution calibrator: Aircal 1000, Aeroqual Ozone calibrator: AQM O3Cal, Aeroqual Flow meter: AQM R7.
- Gas cylinders:** CO 1000 ppm in Air (expiry March), SO2 20 ppm in Air (expiry December), NO2 20 ppm in Air (expiry November).
- Flow rate check:** Expected flow rate = 0.450 ml per min, Measured flow rate = 0.452 ml per min, Main inlet flow rate OK, individual module flow rates were not measured.
- Open door and change gas inlet filter.**
- Zero calibration:** All modules passed zero calibration, all modules were stable and all offsets were within acceptable limits.
- Span Calibration:** CO @ 10.00 ppm: Module response was 8.95 ppm gain adjustment to 1.15 pass, SO2 @ 0.2 ppm: Module response was 0.210 ppm gain adjustment to 0.92 pass, NO2 @ 0.2 ppm: Module response was 0.090 ppm gain adjustment to 2.10 pass (module may need replacing soon contact A).
- Pack up.** Next scheduled calibration 3 months from now. June 2017.

- [Record the results of this service activity in the monitor's journal.](#)
- [Exit service mode.](#)

For further support, contact [Technical Support](#).