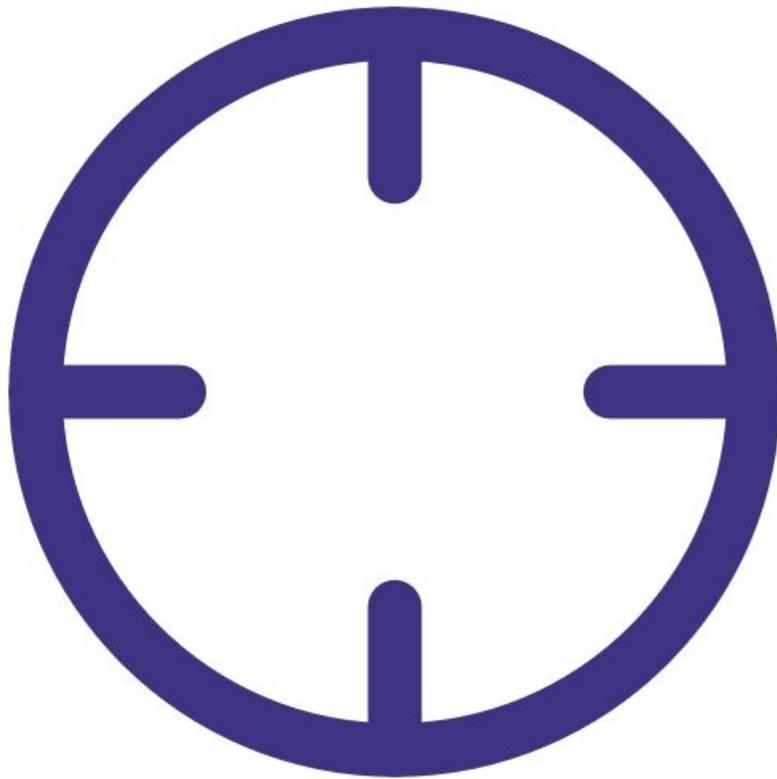




# Check laser and detector

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## INTRODUCTION

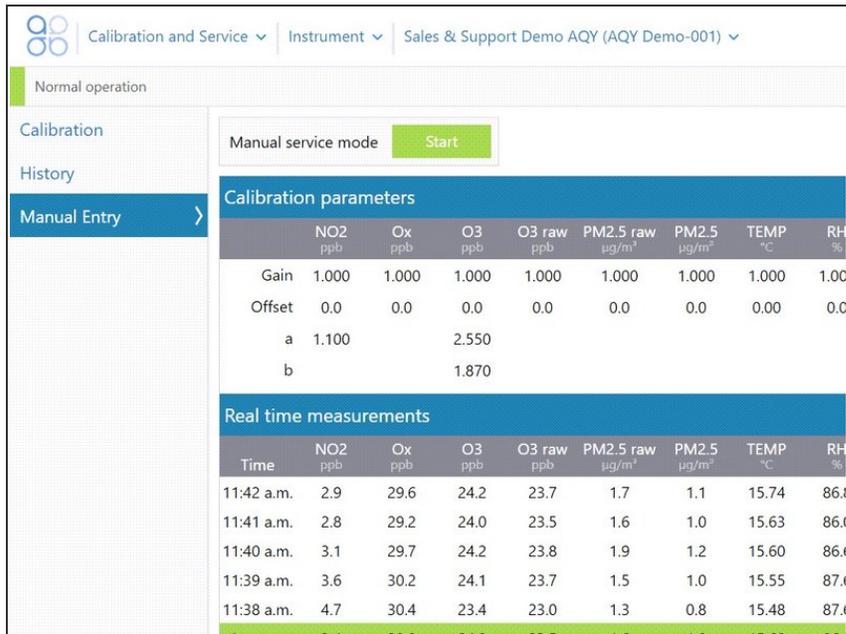
If you have an older monitor with an 80180 optical engine, you should check the operation of the engine's laser and light detector as part of your maintenance schedule.

The fibre span is a quick way to check the laser and detector are working correctly. The fiber span takes some of the laser light and redirects the light directly onto the detector. The particle concentration should read high while the fibre span is on.

Note: You don't need to do a fibre span check if you have an 82850 optical engine as it has an internal diagnostic check on the laser and light detector.

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

## Step 1 — Enter service mode



Normal operation

Calibration and Service | Instrument | Sales & Support Demo AQY (AQY Demo-001)

Manual service mode

Calibration parameters

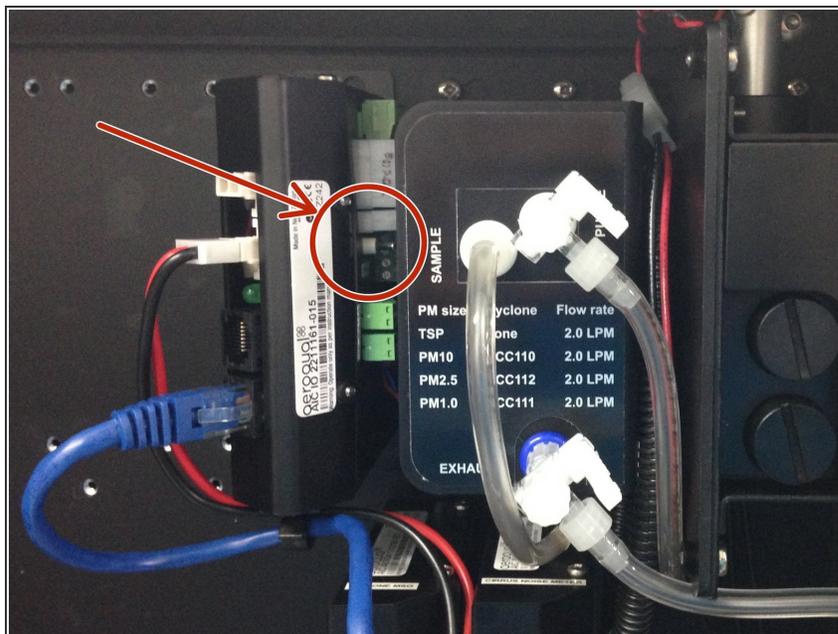
	NO2 ppb	Ox ppb	O3 ppb	O3 raw ppb	PM2.5 raw µg/m <sup>3</sup>	PM2.5 µg/m <sup>3</sup>	TEMP °C	RH %
Gain	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Offset	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0
a	1.100		2.550					
b			1.870					

Real time measurements

Time	NO2 ppb	Ox ppb	O3 ppb	O3 raw ppb	PM2.5 raw µg/m <sup>3</sup>	PM2.5 µg/m <sup>3</sup>	TEMP °C	RH %
11:42 a.m.	2.9	29.6	24.2	23.7	1.7	1.1	15.74	86.0
11:41 a.m.	2.8	29.2	24.0	23.5	1.6	1.0	15.63	86.0
11:40 a.m.	3.1	29.7	24.2	23.8	1.9	1.2	15.60	86.0
11:39 a.m.	3.6	30.2	24.1	23.7	1.5	1.0	15.55	87.0
11:38 a.m.	4.7	30.4	23.4	23.0	1.3	0.8	15.48	87.0

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

## Step 2 — Turn on fiber span



- To check the health of the laser and light detector in your particle monitor, turn on the fiber span

switch on the side of the electronics module.

- Wait for 6 minutes.

### Step 3 — Check concentrations

The screenshot shows the 'Diagnostics and Advanced' app interface. A table displays real-time data for various parameters. The 'PM10 (µg/m³)' column is circled in red, showing a sharp increase from 0.06 to 1236.69 at 11:51 AM. Other parameters include H0 value (V), Laser current (mA), ADC (V), Optical bench temperature (°C), and Inlet.

Time	PM10 (µg/m³)	H0 value (V)	Laser current (mA)	ADC (V)	Optical bench temperature (°C)	Inlet
11:54 AM	1239.21	0.01	11.36	3.15	36.00	Sample
11:53 AM	1245.53	0.01	11.33	3.16	35.58	Sample
11:52 AM	1232.82	0.01	11.29	3.13	35.00	Sample
11:51 AM	1236.69	0.01	11.32	3.14	35.00	Sample
11:50 AM	687.54	0.01	11.33	1.75	34.91	Sample
11:49 AM	0.33	0.01	11.30	0.01	35.67	Sample
11:48 AM	0.01	0.01	11.29	0.01	35.18	Sample
11:47 AM	0.47	0.01	11.26	0.01	35.42	Sample
11:46 AM	0.19	0.01	11.29	0.01	35.00	Sample
11:45 AM	0.25	0.01	11.26	0.01	35.25	Sample
11:44 AM	0.47	0.01	11.23	0.01	35.18	Sample
11:43 AM	0.06	0.01	11.29	0.01	35.33	Sample
11:42 AM	0.19	0.01	11.24	0.01	35.18	Sample
11:41 AM	0.55	0.01	11.19	0.01	34.67	Sample
11:40 AM	0.27	0.01	11.17	0.01	34.36	Sample
11:39 AM	0.18	0.01	11.15	0.01	34.36	Sample
11:38 AM	0.14	0.01	11.19	0.01	34.25	Sample
11:37 AM	-0.10	0.01	11.19	0.01	34.27	Sample
11:36 AM	0.19	0.01	11.19	0.01	34.08	Sample
11:35 AM	0.32	0.01	11.16	0.01	33.91	Sample
11:34 AM	0.02	0.01	11.13	0.01	33.25	Sample
11:33 AM	0.06	0.01	11.13	0.01	33.00	Sample

- To view particle concentrations, open the **Diagnostics and Advanced** app and select **Diagnostics** from the side menu.
- During the fiber span, the particle concentration readings should increase significantly.
- If the numbers in the **PM µg/m3** column are going up significantly, the laser and detector are functioning correctly.
- Switch off the fiber span switch.

## Step 4 — Record in journal

Instrument ▾ Air Quality Monitor (AQM65 04082015-437) ▾

All journal types ▾

User entry | Cloud user · John Wagner

<p>1. Site Inspection:</p> <p>No new local emission sources Instrument in good condition No obstructions to monitoring equipment</p> <p>3. Equipment:</p> <p>Aeroqual Gas dilution calibrator: Aircal 1000 Aeroqual Ozone calibrator: AQM O3Cal Aeroqual Flow meter: AQM R7</p> <p>4. 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.</p> <p>6. Zero calibration All modules passed zero calibration, all modules were stable and all offsets were within acceptable limits.</p> <p>7. Span Calibration</p> <p>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</p> <p>8 Pack up. Next scheduled calibration 3 months from now. June 2017.</p>	<p>2. Instrument inspection:</p> <p>Cooling fan operational PM and gas inlet secure Instrument has been running at stable</p> <p>4 Gas cylinders:</p> <p>CO 1000 ppm in Air (expiry March) SO2 20 ppm in Air (expiry December) NO2 20 ppm in Air (expiry November)</p> <p>5. Open door and change gas inlet filter</p>
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- [Record this service activity in the monitor's journal.](#)
- [Exit service mode.](#)

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