

multiPM - Calibration

1- Zero point calibration

1- Tools you will need

- DFU filters

- 2- Ensure the unit is warmed up (> 1 hour operation). Put a zero air filter (e-g: 2 DFU filters connected in series) instead of the sample head on the PM sample inlet and measure the PM-free air. Wait until the measurement is stable. It can be observed in “Linsens”, in Setup/System Info/Service Interface



- Select in the user Interface the tab “Calibration/Calibration”, select “MultiPM”, and click on “Display”.
When the measurement is stable for more than 5 minutes, click on “Calibrate zero”

The screenshot displays the 'airpointer' Calibration interface. At the top, there are navigation tabs: Graph, Download, Stationbook, Overview, Calibration (selected), Setup, and Logout. Below the tabs, the 'Calibration' section is active, with sub-tabs for 'Valve Control' and 'Calibration'. A message states: 'New Selection Displayed data will be automatically refreshed for the next 25 minutes.' The group is set to 'MultiPM'.

Two graphs are shown:

- PM2.5 ($\mu\text{g}/\text{m}^3$)**: The graph shows a very low, stable reading. The Y-axis ranges from 0 to 500. The X-axis shows timestamps from 13:47 to 14:45. A 'Refresh graph' link is present.
- PM10 ($\mu\text{g}/\text{m}^3$)**: The graph shows a very low, stable reading. The Y-axis ranges from 200 to 500. The X-axis shows timestamps from 13:47 to 14:45. A 'Refresh graph' link is present.

Calibration settings for both PM2.5 and PM10 are shown on the right:

- Y-Axis**: Radio buttons for Default (selected), Auto, and Min. Input fields for Max: are present.
- 5 Min Avg:** 4.2 $\mu\text{g}/\text{m}^3$ (5) for PM2.5 and 7.8 $\mu\text{g}/\text{m}^3$ (5) for PM10.
- Span Gas Calibration**:
 - PM2.5 span gas setpoint: ($\mu\text{g}/\text{m}^3$) with 'Calibrate span' button.
 - PM10 span gas setpoint: ($\mu\text{g}/\text{m}^3$) with 'Calibrate span' button.
- Zero Gas Calibration**:
 - PM2.5 Zero Gas Setpoint: ($\mu\text{g}/\text{m}^3$) with 'Calibrate zero' button.
 - PM10 Zero Gas Setpoint: ($\mu\text{g}/\text{m}^3$) with 'Calibrate zero' button.

2- Measurement of known concentration

1- Tools you will need

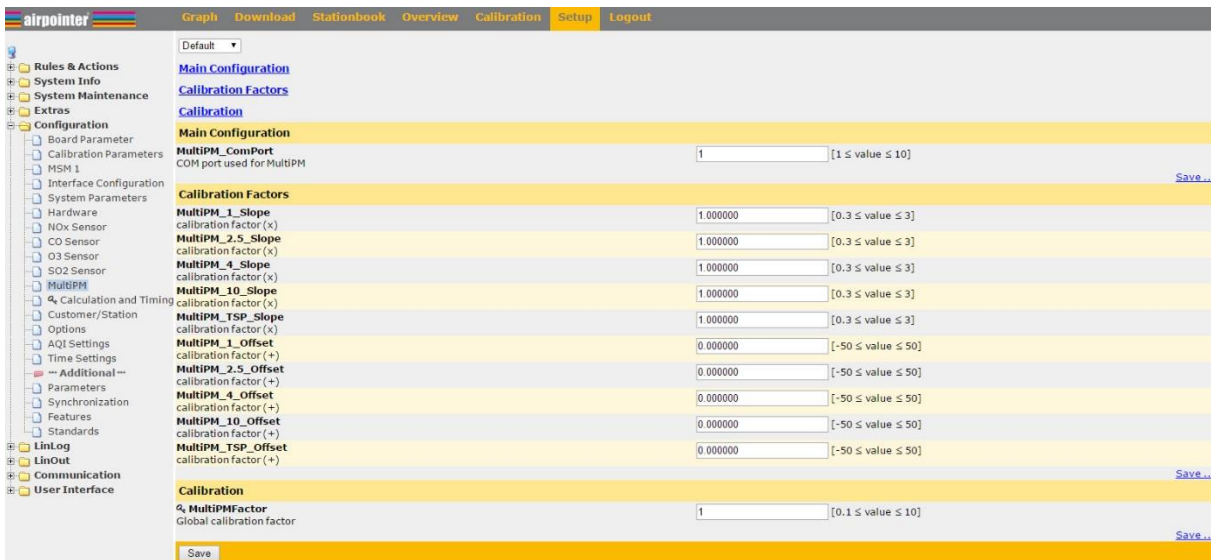
- a calibrated type-approved PM device

2- Install a calibrated type-approved monitor (MetOne BAM-1020, Grimm EDM180, Teledyne-API T640, etc.) beside the Airpointer. It will be used as a reference device. Perform a parallel measurement for a duration of 12 to 24 hours. Ideally, the PM concentration should vary and reach > 100µg/m³. The measurement can be observed in “Linsens”, in Setup/System Info/Service Interface

3- Calculate the new values of slopes as follows:

$$\text{Slope}(\text{new}) = \text{Slope}(\text{old}) * \text{measurement reference} / \text{measurement airpointer}$$

4- Select in “Setup/Configuration/MultiPM”, and under “Calibration Factors”, enter the new values in the respective boxes, and save the changes



NB: If you use a BAM as a reference device, you can calibrate the multiPM for both PM2.5 and PM10, but not simultaneously. If you want to calibrate other cut-offs, you can interpolate the slopes of PM2.5 and PM10 to estimate intermediate slopes. Keep in mind that the multiPM is an indicative measurement and therefore not as accurate as a type-approved device