Understanding Different PM Calibration Methods In The Dashboard

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The dashboard supports several calibration modes. Each one fundamentally changes how your PM2.5 values are calculated.

1. Raw Data

- No calibration is applied.
- The monitor reports the unadjusted PM2.5 values.

2. EPA Formula

- The correction formula developed by the U.S. Environmental Protection Agency (EPA) is applied.
- Find the formula here: AirGradient Documentation – Calibration Algorithms

3. Custom Calibration(via Raw PM2.5)

- A custom calibration directly adjusts the raw PM2.5 concentration values:

  $PM_{2.5\ (calib)} = PM_{2.5\ raw} \times \text{scaling factor} + \text{offset}$
- If the scaling factor and offset were determined with a local reference instrument, the EPA formula does not apply.

4. Custom Calibration (via PM Count)

- A custom calibration uses the raw particle count (PM count) rather than the raw PM2.5 concentration.

$$PM_{2.5\ (calib)} = PM\ Count_{raw} \times scaling\ factor + offset$$

At very low concentrations, PM count data often provides better resolution (since raw PM2.5 may already read 0; see Low Readings from PMS5003).

Note: If the scaling factor and offset were determined with a local reference instrument, the EPA formula does not apply.

5. Factory Calibration

- Calibration factors calculated at the factory via co-location with a reference instrument.

6. Special Formulas by Specific Batch

- Some Plantower sensor batches show systematic differences in raw readings at lower PM levels. In these cases, special correction formulas are applied to compensate.
- It is recommended to also apply the EPA formula on top, unless you have a reliable local reference for a custom calibration.

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