

## PRODUCT SPECIFICATION SHEET

# MODULAIR™-PM

MODULAIR™-PM provides real-time estimates of particulate matter concentrations (PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>) and particle size distribution using a novel combination of multiple light scattering-based particle sensors (patent pending). Each unit is internet connected and paired with the QuantAQ Cloud™ to provide real-time data visualization and data access, team management tools, and fleet-wide sensor health diagnostics. MODULAIR™-PM is designed to be used indoors or outdoors and is easily deployed as a standalone unit or as part of a distributed air quality sensor network.



## AIR QUALITY MEASUREMENTS

PARAMETER	RANGE	ACCURACY
PM <sub>1</sub> , PM <sub>2.5</sub> , PM <sub>10</sub>	0 to 2,000 µgm <sup>-3</sup>	See page 2.
Particle size distribution	0.35 to 40.0 µm (24 bins)	Not yet determined
Temperature	-40 to 85 °C	±0.2°C
Relative Humidity	0 to 100 %	±2 %

## POWER & COMMUNICATION

PARAMETER	DETAILS
Power	5V, 2A (supply); 250 mA avg. consumption
Communication	LTE (North America), 3G,2G (Worldwide)
Data	Web interface (quant-aq.com) Programmatic access (QuantAQ API) Local storage (µSD card)

## FEATURES

- ✓ 2+ years on-board data storage
- ✓ Full access to raw particle sensor data
- ✓ No user-intervention or maintenance required
- ✓ 1min time resolution (cloud), 5s (on-board)

## OPERATING SPECIFICATIONS

PARAMETER	DETAILS
Weatherproof rating	IP68
Operating temperature	-20 to 50 °C
Operating humidity	5 to 95 %, non-condensing
Dimensions	6.59" x 6.59" x 5.11"
Weight	4 lbs (1.8 kg)

Contact [sales@quant-aq.com](mailto:sales@quant-aq.com) for more information.

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### MEASUREMENT ERROR<sup>1</sup>

Time Interval	PM <sub>1</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>
5min	R2 = 0.875		
	CV <sub>MAE</sub> = 0.30	N/A	N/A
	MAE = 2.9 µgm <sup>-3</sup>		
1h	R2 = 0.899	R2 = 0.936	R2 = 0.810
	CV <sub>MAE</sub> = 0.29	CV <sub>MAE</sub> = 0.14	CV <sub>MAE</sub> = 0.32
	MAE = 2.8 µgm <sup>-3</sup>	MAE = 1.3 µgm <sup>-3</sup>	MAE = 7.6 µgm <sup>-3</sup>
24h	R2 = 0.919	R2 = 0.967	R2 = 0.874
	CV <sub>MAE</sub> = 0.26	CV <sub>MAE</sub> = 0.12	CV <sub>MAE</sub> = 0.31
	MAE = 2.4 µgm <sup>-3</sup>	MAE = 1.2 µgm <sup>-3</sup>	MAE = 7.6 µgm <sup>-3</sup>

<sup>1</sup>All statistics were determined via co-location experiments with research and/or regulatory-grade instruments such as the TSI SMPS or Teledyne T640 in environments across the United States. 5min data was not available for PM<sub>2.5</sub> and PM<sub>10</sub>. The coefficient of determination (R2) describes how well the MODULAIR-PM predicts the desired outcome. The mean absolute error (MAE) describes the measure of error between the observed and predicted values. The coefficient of variation of the mean absolute error (CV<sub>MAE</sub>) can be thought of as a 'percent error' as a function of the MAE. This table was last updated in April of 2021.

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