GEODAQ

RADAQ AQ2 Datasheet

Air Quality and Dust Measurement

AUTOMATED MONITORING SOLUTIONS

www.geodaq.com

The AQ2 is a digital air quality monitoring device using an all-in-one laser-based sensor platform designed for high-accuracy particulate and gas phase analysis. The AQ2 module provides continuous, unattended outdoor air quality measurements ideal for site perimeter monitoring where real-time action levels are extremely helpful. The AQ2 provides high-fidelity PM1, PM2.5, PM4 and PM10 monitoring alongside VOC, NOx, humidity, and temperature.

AQ2 Air Quality Module

The AQ2 is part of the **RADAQ Remote Automated Data Acquisition** family of sensor modules, providing distributed field monitoring capabilities for integration with the **GCM8** remote monitoring system. The AQ2 uses an integrated environmental sensor platform that combines particulate matter, gas-phase, humidity, and temperature sensing in a compact digital module.

The AQ2 provides factory-calibrated measurements including **PM1.0, PM2.5, PM4, PM10, VOC index, NOx index, relative humidity, and temperature**. The AQ2 uses an internal "air curtain" (Sheath-flow) to protect the laser and optics. This prevents the "dust-coating" effect that causes measurement drift, ensuring site data remains accurate over time for projects with a long duration. For particulate monitoring, the AQ2 uses laser-based optical particle sensing to report multiple particulate size fractions, including **PM1.0, PM2.5, PM4, and PM10**. These measurements provide useful visibility into changing dust and airborne particulate conditions at construction sites, demolition areas, material handling operations, and other active work zones.

Beyond simple dust monitoring, the AQ2 reports VOC and NOx index values alongside ambient relative humidity and temperature. These additional parameters provide an enhanced air quality

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signature of the job site. This allows our analysis software to distinguish between inert site-generated dust, combustion-based diesel emissions, regional wildfire smoke, and neighboring industrial activity, ensuring that environmental alerts are only triggered by events within the site's control.

When connected to the **GCM8 remote monitoring system**, AQ2 measurements can be collected continuously and transmitted to a secure cloud platform for remote access, documentation, and action-level review. This allows project teams to monitor site conditions in near real time and respond more quickly when particulate or air quality levels change rapidly or exceed threshold levels.

Remote Automated Monitoring

GCM8 Dynamic Monitoring Module

The GCM8 Dynamic Monitoring Module is a remotely controlled, automated data acquisition system with integrated 4G LTE cellular communications and multi-channel, high-speed sensor inputs. Each GCM8 can interface with multiple RADAQ modules for simultaneous monitoring of vibration, noise, and air quality. The GCM8 enclosure is rated NEMA 6P / IP68 and measures 6 in. × 8 in. × 4 in. Air quality monitoring can be added using the AQ2 Module, which supports measurement of particulate matter, VOCs, NOx, humidity, and temperature. One tri-axial geophone may be mounted internally within the GCM8 enclosure, or up to three tri-axial velocity sensors may be connected externally to monitor multiple vibration locations. Precision noise monitoring can be added by connecting the ST500 Module. Both the ST500 and AQ2 connect to the GCM8 using waterproof cable assemblies with removable circular connectors.

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Our remote monitoring station integrates vibration, noise, and air quality monitoring with a battery and solar power system. The station is a self-contained unit designed for continuous, unattended monitoring at active construction sites. It operates 24 hours per day, 7 days per week, continuously measuring construction vibration, noise, and air quality conditions while transmitting results to a secure cloud server. Project teams can remotely access the data for compliance tracking, documentation, and timely review of site conditions. The robust, standalone design allows the station to be placed where monitoring is needed while minimizing installation time, site disruption, and maintenance requirements.

AQ2 Remote Monitoring Station

Performance Specifications

Parameter	Specification
Particle Size Range	PM1.0, PM2.5, PM4.0, PM10
Mass Concentration Range	0 to 1,000 µg/m³
Mass Precision (PM1 / PM2.5)	±5 µg/m³ AND 5% m.v. (0–100 µg/m³) ±10 % m.v. (100–1000 µg/m³)
Mass Precision (PM4 / PM10)	±25 µg/m³ (0–100 µg/m³) ±25 % m.v. (100–1000 µg/m³)
Sensor Lifetime	>10 years (Continuous 24h operation)
VOC Index	1 to 500 VOC Index points
NOx Index	1 to 500 NOx Index points
Response Time (τ63)	<10 seconds
Temperature Accuracy	±0.45 °C (Typical)
Humidity Accuracy	±4.5 %RH (Typical)
Operating Temperature Range	-10 °C to +50 °C
Technology	Sheath-flow (Antifouling) Design
Calibration	Factory calibrated; Factory-Verified Precision and Reference Alignment
Self-Diagnostics	Real-time fan speed and laser health monitoring

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