

Dust

Specification Sheet

Cloud-connected portable dust monitoring solution

Aeroqual Ranger™ | Dust is a real-time, active-sampling monitor that provides simultaneous measurements of five particle fractions (PM₁, PM_{2.5}, PM₄, PM₁₀, TSP) in a connected, lightweight handheld solution with Cloud-based data visualizations.



More than just hardware

- Never lose data again: access data remotely and receive alerts to respond in real time
- More information for less effort: automatic calculations and visualizations for reports
- Zero-downtime on factory calibrations with exchangeable sensor heads
- An extremely lightweight handheld monitor with incredible battery life
- Suitable for diverse projects with support for 28 gas sensor heads and 15 compounds (optional)

What is it for?

- Occupational hygiene monitoring
- Personal exposure assessments
- Indoor air quality testing
- Ambient air quality monitoring
- Engineering control assessments
- Environmental impact assessments
- Measurement of multiple particle fractions:

PM₁

PM_{2.5}

PM₄

PM₁₀

TSP

Who is it for?

- **Air quality professionals** who need real-time defensible measurements
- **Environmental health and safety professionals** who need to demonstrate safe environments
- **Industrial hygienists** who need a portable device
- **Indoor air quality professionals**
- **Building certifiers**

Solution | Aeroqual Ranger™ | Dust

Active sampling technology

Ranger | Dust is a real-time, active sampling monitor that integrates a laser optical particle counter and particle binning. It samples, logs, and displays PM₁, PM_{2.5}, PM₄ (respirable), PM₁₀, TSP, temperature, and relative humidity. Mass calculations apply corrections using Kohler theory.

In addition, Ranger | Dust features an omnidirectional inlet designed for accurate sampling at any angle.

Hot-swap calibration

Returning your equipment to the factory for annual calibration is a thing of the past. Because Ranger's sensors are interchangeable, you benefit from perpetual zero-downtime factory calibrations. We'll send you a factory-calibrated sensor before the certificate on the old sensor head expires.

Remote data access

Ranger | Dust lets you see what's happening at the job site, even when you're not there. All logged data is backed up on Ranger Cloud, in real time, wherever Wi-Fi is available. Sign up to receive alerts and minimize loss of data.

Ranger Cloud

As soon as you synchronize your sampled data through Wi-Fi, you're already halfway done writing your report in Ranger Cloud. This browser-based software requires no costly IT installation and calculates time-weighted averages, generates advanced charts, and displays exposure summaries against OSHA and ACGIH.

Air Monitoring as a Service (AMaaS)

If you require dust monitoring for a long period, but prefer not to invest in ownership, try AMaaS. You can still get it all at a lower cost: the hardware, Ranger Cloud, and Hot-swap calibration.

A monitor as diverse as your projects

A flexible and cost-effective alternative to traditional gas monitors, the monitor base that's included in Ranger | Dust may be paired with gas sensors. Optionally choose from 28 gas sensors spanning 15 compounds.

Pays for itself in the first year

The efficiencies you gain with Ranger | Dust will transform into bottom line savings in the first year of ownership. Inquire about our cost/benefit spreadsheet, so you can be sure that replacing the old fleet is the right choice for your organization.

Specifications | Aeroqual Ranger™ | Dust

Measurement units	mg/m ³ , µg/m ³ , °C or °F
Reading functions	Instant, sensor state, color-coded AQI display (Cal/OSHA)
Sampling	Channels: PM ₁ , PM _{2.5} , PM ₄ , PM ₁₀ , TSP Method: Active Concentration range: 0 – 30.0 mg/m ³ Resolution: 0.1 µg/m ³ Minimum detectable, 50% eff: 0.3 µm Flow rate: 1l/min Measurement time: 1s
Field calibration	Types: Zero
Factory calibration	Frequency: Annual, recommended Standard: ISO 12103 Downtime: 0 days with Hot-swap
Environmental conditions and enclosure	Rating: IP20 Operational temperature: 0° to 40° C
Power	Charger: USB-C Battery life: 21h Battery type: Lithium Ion
Data storage	5 years on-board Unlimited on Ranger Cloud Log interval: 1 min (minimum)
Data download	Ranger Cloud
Software	Ranger Cloud
Connectivity	Wi-Fi
Physical characteristics	Size: 25.5 x 10.0 x 4.2 cm (10.03 x 3.93 x 1.65") Weight: 600g (21.16 oz)
EMC and Safety	IEC/EN 61326-1 EN 55011:2010 AS/NZS CISPR 11:2011 IEC/CISPR 11:Ed.5.1 FCC Part 15 IEC 61010-1:2010+A1:2016AU/NZ: AS 61010.1; Europe: EN 61010-1:2010 + A1:2019; Canada: CAN/CSA-C22.2 No. 61010-1-12 3rd Edition; USA: UL 61010-1 3rd Edition.

Specifications are subject to change without notice.

Ordering information

Step 1:

Start by electing to procure Ranger | Dust through AMaaS (as a service) or as a purchase.

Annual subscription	Purchase	Description
RGR PMX YR		Aeroqual Ranger™ with simultaneous multi fraction particulate sensor.
	RGR PMX	Aeroqual Ranger™ with simultaneous multi fraction particulate sensor.

Both selections include
Active-sampling laser particle counter (LPC) sensor: PM1.0/2.5/4.0/10 and TSP with integrated temperature and RH
Ranger monitor base
Calibration certificate
USB-C Power cord
USB-C Power charger

Step 2:

Add a Hot-swap so that you're never without a factory-calibrated sensor, plus Ranger Cloud to back up your data and access neatly-formatted visualizations.

Annual subscription	Description
HOT PMX	(Required) Hot-swap provides zero-downtime calibrations for the simultaneous multi fraction particulate sensor, by sending a factory-calibrated sensor before the old one's certificate expires.
DS PLUS	(Required) Cloud software to download sampled data, set up alerts to SMS and Email, and view automatic calculations and visualizations for reports.

Step 3:

Optionally include additional particulate sensors, useful when you want to keep extra factory-calibrated sensors on hand.

Purchase	Description
SH PMX	(Optional) Active-sampling laser scattering particle sensor: PM1.0/2.5/4.0/10 and TSP with integrated temperature and RH.

Ordering information

Step 4:

Optionally add gas Sensors, useful for diverse projects.

Purchase	Description
SH CD1	(Optional) Fan-sampling sensor using non-dispersive infrared method (NDIR): 0-2000 ppm CO ₂
SH CE1	(Optional) Fan-sampling sensor using non-dispersive infrared method (NDIR): 0-5000 ppm CO ₂
SH ECL1	(Optional) Fan-sampling gas sensitive electrochemical (GSE) sensor: 0-10 ppm Chlorine
SH CO1	(Optional) Fan-sampling gas sensitive semiconductor (GSS) sensor: 0-1000 ppm CO (leak detector)
SH ECM1	(Optional) Fan-sampling gas sensitive electrochemical (GSE) sensor: 0-25 ppm CO
SH ECN1	(Optional) Fan-sampling gas sensitive electrochemical (GSE) sensor: 0-100 ppm CO
SH EF1	(Optional) Fan-sampling gas sensitive electrochemical (GSE) sensor: 0-10 ppm Formaldehyde
SH EHS1	(Optional) Fan-sampling gas sensitive electrochemical (GSE) sensor: 0-10 ppm H ₂ S
SH EHT1	(Optional) Fan-sampling gas sensitive electrochemical (GSE) sensor: 0-100 ppm H ₂ S
SH ENG1	(Optional) Fan-sampling gas sensitive electrochemical (GSE) sensor: 0-100 ppm Ammonia
SH END1	(Optional) Fan-sampling gas sensitive electrochemical (GSE) sensor: 0-1 ppm NO ₂
SH ESO1	(Optional) Fan-sampling gas sensitive electrochemical (GSE) sensor: 0-10 ppm SO ₂
SH ESP1	(Optional) Fan-sampling gas sensitive electrochemical (GSE) sensor: 0-100 ppm SO ₂
SH HA1	(Optional) Fan-sampling gas sensitive semiconductor (GSS) sensor: 0-5000 ppm Hydrogen
SH MT1	(Optional) Fan-sampling gas sensitive semiconductor (GSS) sensor: 0-10,000 ppm Methane
SH NH1	(Optional) Fan-sampling gas sensitive semiconductor (GSS) sensor: 0-1000 ppm Ammonia
SH EOZ1	(Optional) Fan-sampling gas sensitive electrochemical (GSE) sensor: 0-10 ppm Ozone
SH EOZH1	(Optional) Fan-sampling gas sensitive electrochemical (GSE) sensor: 0-30 ppm Ozone
SH OZL	(Optional) Fan-sampling gas sensitive semiconductor (GSS) sensor: 0-0.5 ppm Ozone
SH OZU	(Optional) Fan-sampling gas sensitive semiconductor (GSS) sensor: 0-0.15 ppm Ozone
SH OZS	(Optional) Fan-sampling gas sensitive semiconductor (GSS) sensor: 0-0.05 ppm Ozone
SH PE1	(Optional) Fan-sampling gas sensitive semiconductor (GSS) sensor: 0-200 ppm Perchloroethylene
SH VM1	(Optional) Fan-sampling gas sensitive semiconductor (GSS) sensor: 0-25 ppm VOC
SH VP1	(Optional) Fan-sampling gas sensitive semiconductor (GSS) sensor: 0-500 ppm VOC
SH VOC1	(Optional) Fan-sampling sensor using photo ionization detection (PID) method: 0-30 ppm VOC
SH VOCH	(Optional) Fan-sampling sensor using photo ionization detection (PID) method: 0-2000 ppm VOC
SH VN1	(Optional) Fan-sampling gas sensitive semiconductor (GSS) sensor: 0-25 ppm NMHC

Ordering information

Step 5:

Optionally add accessories to expand the functionality and lifespan of your device.

Purchase	Description
AS R43	(Optional) Protective rubber boot for Ranger
AS R10	(Optional) Remote gas sensor kit
AS R13	(Optional) IP41 Remote gas sensor kit

Calibration options

No calibration options are necessary on Ranger | Dust. However, if you are ordering gas sensors, here are your calibration options for those.

Purchase	Annual subscription	Description
CAL R1		Factory sensor calibration GSS / GSE Ozone
CAL R2		Factory sensor calibration non-ozone GSS / GSE / PID / NDIR