OIZOM®
REDEFINING RESOURCES

Dustroid®

Real Time Dust Monitor

About Dustroid®

Dustroid® is an MCERTS-certified outdoor dust monitoring system designed to monitor dust levels in real time with high accuracy. It measures a wide range of particulate sizes, from 1 to 100 microns, including UFPM, SPM, RSPM, and TSP, along with noise. Dustroid® works on a laser-based optical particle counter principle, utilizing an active sampling method to measure particulate matter concentrations, thereby providing reliable data.

Integration with Envizom™ enables users to visualize data in real-time, set smart alerts, and even trigger 3rd-party dust mitigation systems. This makes Dustroid® not just a monitoring device but a proactive tool for air quality management. With a unique combination of accuracy, durability, and integration-ready features, Dustroid® is ideal for industries and locations where dust emissions are a concern, such as construction sites, mining areas, quarries, ports, and metal processing facilities.

Product Features

Heated Inlet
Dehumidifies the sample to nullify the effect of humidity for better accuracy.
(only available in Pro & Max variant)

Weather Resistant (IP66)
IP66 Grade (certified) enclosure for endurance against harsh weather conditions.

Retrofit Design
Designed for seamless integration and easy deployment in existing infrastructure

Over-The-Air Update
Automatically upgradeable from a central server without any onsite visit.

Compact
Lightweight and compact system that can be easily installed on a pole or wall.

Real-Time Data
Continuous monitoring and real-time data transfer at configurable intervals.

Internal Storage
Internal data storage capacity of up to 16 GB or 90 days.

Network Agnostic
Supports a wide range of connectivity options like GSM / GPRS / WiFi / LoRa / NBIoT / Ethernet / Modbus / Relay / Satellite.

Identity and Configuration (Geo-tagging)
Geo-tagging allows you to get the exact location of the device, consisting of latitude and longitude coordinates.

Supports High Dust Concentration
Measures up to 30,000 µg/m³ dust concentration to provide accurate dust data.

Key Benefits

Robust and Rugged
Robustly built enclosure to sustain extreme climatic conditions.

Multi-parameter Capability
Provision to add gases, and meteoro-logical to existing Dustroid® Units.

Noise & Vibration Monitoring
Critical applications can utilise Dustroid with Noise Sensor to understand decibel trends and vibration.

Easy to Install
Effortless installation with versatile mounting arrangements.

Accurate Data
Gives accurate readings in real-time to detect dust concentrations in ambient air.

Relay-Based Automation
Dust Suppression systems such as Mist Cannons can be activated based on data thresholds configured.

Dustroid® Usecases

Mining
Dustroid® ensures that effective alerts are deliver-able to the authorities and the triggers automate the dust suppression systems on time.

Construction
Dustroid® monitors dust at construction sites and alerts authorities when dust concentrations breach the threshold limit.

Industrial Monitoring
Dustroid® provides real-time data on dust emis-sions from industrial processes. Tracking PM levels helps industries maintain clean air and comply with regulations.

Open Pit Mining
Dustroid® helps open-pit mines to comprehensive-ly manage air quality, tackling dust at critical sites like drilling and blasting.

Dustroid® Variants

Variants	Applications	Parameters
Dustroid® Smart	Construction and Mining	PM_1, $PM_{2.5}$, PM_{10}, PM_{100} (TSP), Temperature, Humidity, Pressure
Dustroid® Pro *(with heated inlet)*	Quarrying, Sea Ports (for High Humidity Regions)	PM_1, $PM_{2.5}$, PM_{10}, PM_{100} (TSP), Temperature, Humidity, Pressure
Dustroid® Max *(with heated inlet)*	For Critical Applications	Advanced Industrial Dust Sensor, Light, UV, Noise, Temperature, Humidity, Pressure and Vibration

Parameters

Sensors		ID	Range	Resolution	Min. Detection	Working Principle	Expected Sensor Life
Particulate Matter (PM_1, $PM_{2.5}$, PM_{10}, PM_{100})		OZPM_1*	Upto 5000 µg/m³	0.1 µg/m³	1 µg/m³	Laser Scattering	18 Months
		OZPM_2	0- 30,000 mg/m³	1 µg/m³	1 µg/m³		2 years
Temperature		OZTEMP_1*	-40 to 125°C	0.01°C	-40 °C	Solid State Semiconductor Sensing	2 years
Humidity		OZHUM_1*	100% Rh	0.10% ppm	0.10% ppm		
Barometric Pressure		OZPRES_1*	300-1100 hPa	0.18 Pa	300 hPa		
Pyranometer Solar Radiation 300 - 1100 nm	Light Intensity	OZUV_1	Up to 100,000 Lux	1 Lux	1 Lux	Photoconductivity	2 years
	Visible Light		Upto 5000 Lux	0.1 Lux	0.1 Lux		
	Solar Radiation		0.1-100,000 uW/cm²	0.1 uW/cm²	0.1 uW/cm²		
	UV Index		0-12	-	-		
Noise		OZN_2*	Up to 140 dB	1 dB	0.5 dB	Capacitive	2 years

Note: Expected Sensor Life can vary, subject to actual concentration on-site. In the interest of continued product improvement, we reserve the right to change design features and specifications without prior notification.The data contained in this document is for guidance only, Oizom® accepts no liability for any consequential losses, injury or damage resulting from the use of this document or the information contained within.

External Modules

Anemometer
OZWSD_1*, OZWSD_2
Wind Speed: 0-40 m/s; 0-80 m/s
Wind Gust: 0-40 m/s
Wind Direction: 0-359°
Working Principle: Ultrasonic

Rain Gauge
OZRAIN_1, OZRAIN_2*
Resolution: 0.25 mm; 0.10 mm
Working Principle: Tipping Bucket

Vibration Sensors
PPV: +/- 2G
Range frequency: 0.5 - 250 Hz
Range velocity: ±50 mm/s (±2 in/s)
Working Principle: MEMS

**Indicates standard delivery timeline.*

NOTE: Vibration & Class I Noise sensors are available as optional features upon specific customer request.

Specifications

Mechanical

Size	360mm (H) x 328mm (W) x 200mm (D)
Weight	8 Kg (instrument weight)
Material	Aluminum Magnesium Alloy, Mild-steel (With Powder Coating), FRP
Certifications	CE, NEMA 4X, IP66, RoHS, MCERTS

Electrical

Avg. Power Consumption	up to 7 Watts; max 60 Watts (in case of heated inlet); [Actual consumption will vary upon the number of parameters]
Power Input Options	AC : External 110-240V AC, 50-60Hz DC : Uninterrupted 24V DC, 2 Ampere 100 Watt 24V Solar Panel
SMPS Specs	24V, 2Amps output UL-62368 & CAN/CSA C22.2 Certified
Battery Backup Time	Up to 24 Hours (Not available in Pro & Max variant)
Battery Specs	Lithium iron phosphate (LiFePO4) battery cell with rated voltage 12.8V Capacity

Technical

Processor	Quad Core ARM Cortex
Memory	2GB RAM / 16 GB eMMC ROM
Device Interface	On-device Software / API / Cloud Platform
Internal Data Storage	Upto 16 GB or 90 days

Environmental

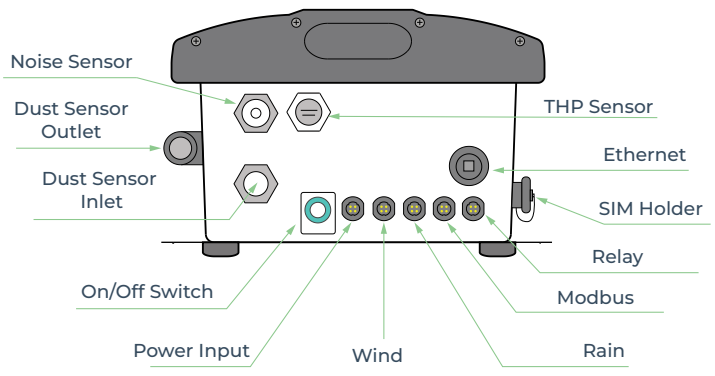
Operating Temperature	-20 °C to 60 °C
Operating Humidity	0-93% RH
Recommended Humidity	15-90% RH
Storage Conditions	10 - 40°C

Sensing

Dust Measurement Principle	Active Sampling with Sampling rate of 1 L / min
Warm up time	< 2 minutes for data stabilisation

Communication

Data Interval	2-30 minutes (configurable)
Data-push Protocol	HTTPS post request to host server
Data-pull	HTTPS request on device IP
Firmware Updates	Over-The-Air Firmware Update
Standby Connectivity	GSM (2G/3G/4G) for remote diagnosis, FOTA updates, and cloud calibration

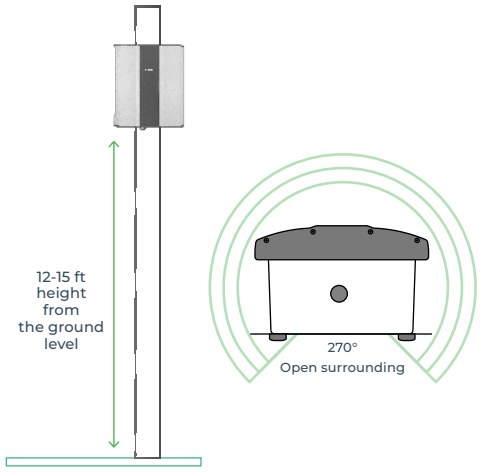


	Connectivity Options	Specification
Wireless	GSM	Global 2G / 3G / 4G
	LoRa	868 MHz / 915 MHz
	LTE	CAT-M1
	NB-IoT	CAT-NB1
	sigfox	868 to 869 MHz, 902 to 928 MHz
	Wi Fi	AP Mode and Station Mode
		Satellite
Wired	ETHERNET	Static / DHCP Configuration
	Modbus	RS485 RTU / TCP
	RELAY	2 Channel Relay Output

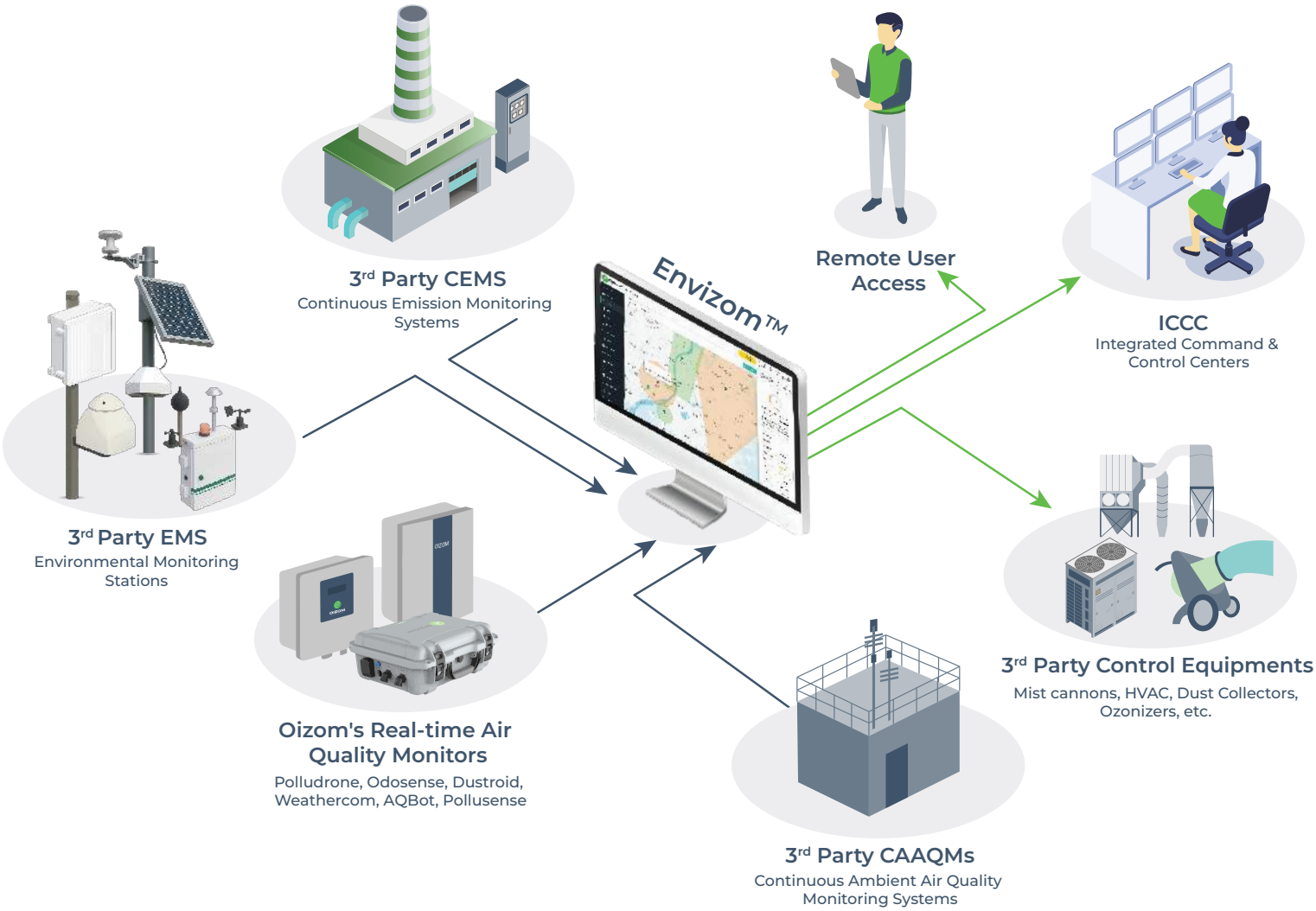
Functional Specifications

Proper location selection is critical for optimised data collection. It varies as per the purpose of the project. According to U.S. EPA QA handbook (Vol II, Section 6.0 Rev.1), the selection of locations should be based on monitoring purposes.

Preferred Mounting	Pole / Wall (preferably 270° open surrounding)
Installation Height	12-15 feet (4-5 meters)
Direction	As per maximum direct sunlight exposure
Power Availability	Constant AC / DC supply within a 2-meter range from the unit or solar panel
Network Availability	Uninterrupted network connection



Solution Architecture



Envizom™

Data Visualisation and Analytics Platform

Envizom™ is Oizom's Environmental visualisation & analytics platform, built to turn complex air quality data into actionable insights. Providing remote visibility & control, it consolidates data from multiple sites, parameters, & devices into a single, intuitive dashboard. Our Environmental Data Interpretation Engine, powered by Artificial Intelligence & Machine Learning algorithms, provides accurate, real-time data, helps identify pollution sources, & understands directional trends. From city-wide comparisons to site-specific trends, smart multi-dimensional analytics enable comparisons across locations, parameters, & time spans. Envizom™ uses secure servers for data storage and on-premise storage is also supported.

Envizom's modules empower users to make informed decisions and implement effective strategies to mitigate air quality issues on time. Envizom™ offers an automation feature based on user-defined thresholds to trigger mist cannons for dust control.

Envizom™ Capabilities

- Wind & Pollution Rose Charts
- Smart Alerts
- Easy to Integrate APIs
- Process Automation
- Advanced Analytics
- Automated Reports

Privacy First Platform

Data Privacy

The data shared with the client uses an encryption server through Secure Socket layers. Envizom™ also uses AES encryption for connection that adds to data safety.

Data Ownership

Envizom™ creates a secure and encrypted password combination for the user login. Oizom® ensures 100% privacy of the data and doesn't share without relevant permissions.

Data Transparency

Data collected from Oizom® equipment runs through the Environment Data Interpretation Engine. It processes various algorithms and eliminates environmental impact interferences on the sensors.

SANS | OWASP | IEC 62443-4-1 | Security Tested | 100w Cybersecurity Practices | TCM SECURITY

Case Studies

Ensuring Workers' Safety by Dust Monitoring at the Red Sea Airport

To safeguard workers and improve site readiness during sandstorms, the Red Sea Development luxury project installed Oizom's Dustroid® Smart at its airport site. The system enables real-time dust monitoring and early warnings for safety measures.

Saudi Arabia | Dustroid Smart | Airports

Monitoring Air Pollutants in Umnugobi Province, Mongolia

Oizom® installed Dustroid® Smart in Mongolia's Umnugobi province to monitor harmful dust and pollutant levels. The solution helps protect miners and the surrounding environment in challenging climatic conditions.

Mongolia | Dustroid Smart | Mining

Optimizing Dust Control at BHP Spence with Advanced Dust Monitoring

BHP Spence installed Dustroid® Max at the mining site for real-time monitoring of high-concentration particulate levels. This helped improve dust management, boost operational efficiency, and create a safer, healthier environment.

Chile | Dustroid Max | Mining

Case Studies

Real-Time Dust Monitoring at Seco Tools India for Safer Work Environment

Seco Tools India Pvt. Ltd. deployed Dustroid® to monitor real-time dust emissions at their facility. They selected this solution to meet regulatory standards, improve workplace safety, and access continuous air quality insights.

India | Dustroid Smart | Manufacturing Industry

Construction Company in Florida Maintaining Environmental Responsibility with Dustroid®

A well-known construction company in South Florida installed Oizom's Dustroid® to manage dust levels across their construction sites. This move supports their goal to uphold environmental responsibility.

USA | Dustroid Smart | Construction

World's Largest Gold Mine Chooses Oizom's Dustroid® for Dust Monitoring

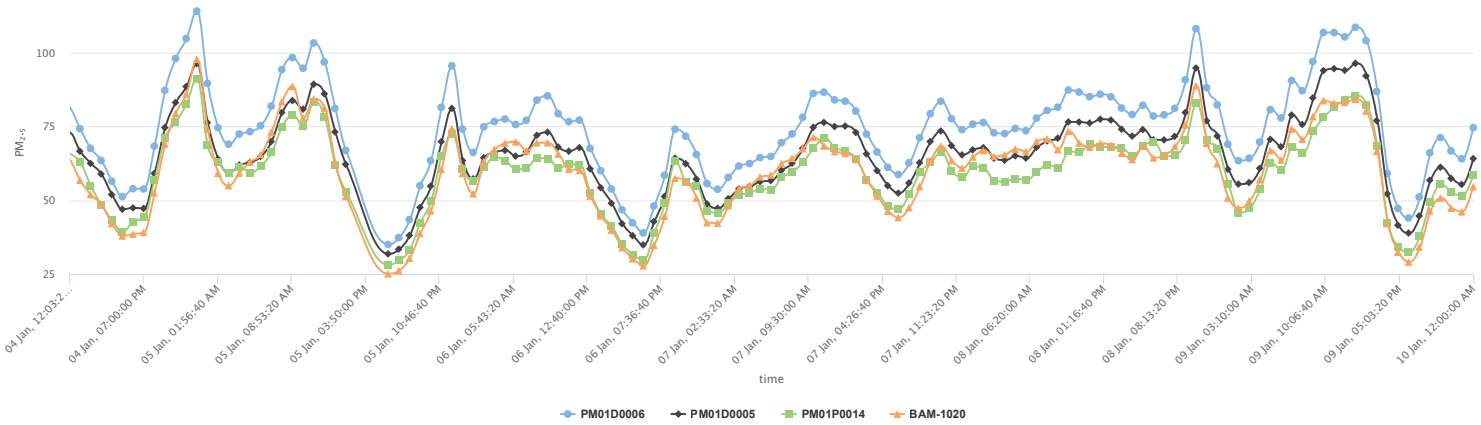
The Guinness World Record holder for the deepest and richest gold mine adopted Oizom's Dustroid® to improve worker safety and reduce environmental impact from mining operations.

South Africa | Dustroid Smart | Mining

Data and Calibration

Collocation Calibration

The monitors are operated adjacent to a custom-built reference station, housing reference grade analyzer [Beta Attenuation Monitor (BAM-1020 for PM)], using U.S. EPA-designated Federal Equivalent Method (FEM). The devices' data is analyzed for 72 hrs with collocation calibration to ensure accurate data quality. Dustroid demonstrates data accuracy even at the lowest dust concentrations, with an R^2>0.85.



About Oizom®

Leader in sensor based air quality monitoring

Monitors designed for easy and quick setup

Low powered solutions for multiple applications

Oizom® is an environmental company that offers accurate air quality monitoring solutions designed to deliver air quality insights for better decision-making. Using our patented e-breathing technology, we measure key environmental parameters including air quality, noise, odour, weather, radiation, etc. Our AI-enabled data analytics platform can derive various actionable insights and predict data for authorities, communities, and industries.

With a strong focus on data accuracy and reliability, our devices are powered by advanced technology and smart algorithms. From fixed installations to portable monitors, Oizom® offers scalable solutions that fit a wide range of applications, including construction, mining, industrial safety, smart infrastructure, and environmental compliance. Over the past decade, Oizom® has deployed over 3,500 environmental monitoring devices across 90+ major cities, helping track the environmental health of over 250 million people through a strong partner network in 80+ countries.

Other Oizom® Products

Odosense®
Odour Monitoring System

Odosense® monitors various odourful and toxic gases and provides insight into odour dispersion.

AQBot™
Single Parameter Air Quality Monitor

AQBot™ is an industrial-grade single-parameter air quality monitor with automation capabilities.

Weathercom®
Automatic Weather Station

Weathercom® is an automatic weather station designed to measure various meteorological parameters.

Polludrone®
Ambient Air Quality Monitoring

Polludrone® is an ambient air quality monitor that measures particulate matter, gases, and weather parameters.

Pollusense™
Portable Air Quality Monitor

Pollusense™ is a portable air quality monitor that measures multiple toxic gases and particulates.

OIZOM®
REDEFINING RESOURCES

Trusted by
80+ Countries

Solutions Installed in
90+ Cities

Total Devices Installed
3500+

Total Population Covered
250 million+

Oizom Customers

AECON · CODELCO · SWECO · ENGIE · Richards Bay Minerals · DANGOTE · Red Sea Global · TATA STEEL · JCB · WSP · Seco · TANGEDCO · IMERYS · MAHAMAYA · LECHLER · CHEMTEX

CERTS · NABCB · TÜV INDIA · ISO 9001:2015 · ISO 14001 · MAKE IN INDIA

Changing the way Industries monitor air quality

Get in touch

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