CODEL

A Forbes Marshall Company

Dustroid - Ambient Dust Monitor

Real-time Ambient Dust Monitoring

Monitoring Solutions

ISO 9001:2015 Quality Certification

ISO 14001:2015 Environmental Certification

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Dustroid

Dustroid is an Online Particulate Monitoring system to measure the concentration of dust particles in the ambient air. It is capable of monitoring various particulate size ranging from 1 micron to 100 microns such as Ultrafine Suspended Particulate Matter (UFPM), Suspended Particulate Matter (SPM), Respiratory Suspended Particulate Matter (RSPM) and Total Suspended Particulates (TSP). It works on Active Sampling method to count particulate matters using a highly accurate laser beam.

CODEL International was formed in 1982 primarily for its design and manufacture of carbon monoxidemonitors for process control applications. Since then environmental protection and increasing regulation in this sector has moved our focus to producing world class emissions monitoring analysers.

Today our monitoring systems are supplied throughout the world to a wide range of industries including glass production, cement, power generation, pharmaceuticals and biomass.

Features and Benefits

- Over-The-Air Update
- Ultimate durability and weather resistant
- Light-weight and compact system
- On-device calibration and Real-time data
- Plug and play design for ease of implementation
- Heated Inlet to dehumidify the sample for better accuracy

Typical Applications

- Smart Cities
- University Campuses
- Anaerobic Digester Plants
- Motorways
- Water Treatment Plants
- Quarries
- Landfill Sites
- Energy from Waste Plants

Functional Specification

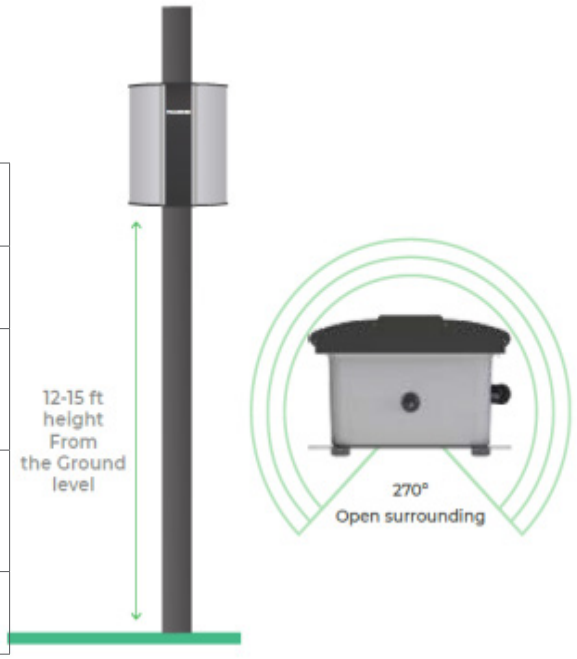
Dustroid

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

- Real-time air quality public reporting
- Research monitoring
- Trends monitoring
- Compliance monitoring
- Emergency episode monitoring

Installation

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



Technical Specifications

Processor	Quad Core ARM Cortex
Memory	2GB RAM / 8GB eMMC ROM
Device Interface	On-device Software / API
Operating Temperature	-20 °C to 60 °C
Operating Humidity	0-95% RH

Communication

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

Power

Avg. Power Consumption	5 Watt (Actual consumption depends upon the number of parameters)
Power Input Options	External 110-230V AC 50-60Hz, 40Watt Monocrystal Solar Panel
SMPS Specs	24V, 2Amps output UL-62368 & CAN/CSA C22.2 Certified
Battery Backup Time	12 Hours (not available in Pro variant)
Battery Specs	Lithium iron phosphate (LiFePO4) battery cell with rated voltage 12.8V Capacity 6Ah

Parameters

ID	Parameter	Range	Resolution	Min Detection	Error	Working Principle	Measurement Principle	Flow Rate	Expected Sensor Life
PM1	Ultra-fine Particulate Matters with size less than 1µ	0-5000 µg/m3	0.1 µg/m3	1 µg/m3	Up to ± 10%	Optical Particle Counter	Continuous Flow Active Monitoring	1 L / min	1.5 years
PM2.5	Suspended Particulate Matters with size less than 2.5µ								
PM10	Suspended Particulate Matters with size less than 10µ								
PM100	Total Suspended Particulates (TSP)	0-30000 µg/m3							
Temp	Temperature	-40 °C to +125 °C	0.01 °C	-40 °C	N.A	Solid State Semiconductor Sensing	Passive Monitoring	N.A	3 Years
Hum	Humidity	Up to 100% Rh	0.1 %	0.1 %	N.A				
Bmp	Barometric Pressure	300-1100 hPa	0.18 Pa	300 hPa	±1.0 hPa / Year				

Parameters

ID	Parameter	Range	Resolution	Min Detection	Working Principle	Expected Sensor Life
Ws	Wind Speed	0-40 m/s	0.1 m/s	0.1 m/s	Ultrasonic	3 years
Wd	Wind Direction	0-359°	1°	1°		
Rm	Rainfall Monitoring	N.A	0.5 mm	0.5 mm	Tipping Bucket	
Noise	Ambient Noise	Up to 140 dB	1 dB	30 dB	Capacitance	

CODEL

A Forbes Marshall Company

CODEL International LTD
Unit 4
Station Road
Bakewell, Derbyshire
DE45 1GE

Tel : +44 (0)1629 814351
Fax : +44 (0)1629 566307
Web : www.codel.co.uk
email : Sales@codel.co.uk

Distributor

Monitoring Solutions

www.codel.co.uk

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