Odosense™

Odour Emissions Tracking Solution

Odosense™ is the real-time odour emission tracking solution. Odosense™ continuously detects, measures and monitors the odourful gaseous contaminants. Oizom Odour Monitoring Solution comprises of a network of e-noses (Odosense™) positioned on the periphery of the site. The solution incoporates Odour Atmospheric Dispersion Modelling for predicting odour impact on the surrounding area depending on meteorological conditions. With the help of meteorological data, Odosense™ can trace the odourant dispersion plume incited by conditions like wind speed and wind direction. Odosense™ is a fully solar-powered solution with wireless data transmission. This makes it an ideal choice for landfill sites, wastewater treatment facilities, fertilizers, paper-pulp industries and soil-treatment sites, etc.

Product Variants

Variant Name	Application	Parameter
Odosense Lite	STP	SO_2, H_2S, NH_3, Temperature, Humidity
Odosense Smart	Solid Waste	SO_2, H_2S, NH_3, CH_3SH, TVOC Temperature, Humidity
Odosense Pro	Industrial, ETP	SO_2, H_2S, NH_3, CH_3SH, TVOC, CH_2O, NO_2, Cl_2, Temperature, Humidity
External Modules	Optional	Ambient Noise, Wind-speed & direction (integrable with all the 3 variants)

STP / WWTP

Monitoring odour intensity in and around water treatment plants can help regulate odour emission by appropriate maintenance on time. It can avoid odour nuisance in the surrounding residential areas.

Landfill / Dumpyard

Diffusion of odorful gases from the landfills/dumpyard can create nuisance in the neighborhood. The odour level can be monitored to carry out precautionary steps for odour suppression.

ETP

Emissions of carcinogenic and other hazardous gases from the effluent treatment process can be monitored in

Industries

Odourful gaseous emission from industries like agro-chemical, pharmaceutical, paper-pulp, sugar, etc. can be monitored to

Product Features

Patent Pending Technology: Works on innovative e-breathing technology for higher data accuracy

Solar Powered: Capable of running independently on solar power

Retrofit Design: Plug and play design for ease of implementation

Compact: Light-weight and compact system installed at 12-15 feet (4-5 m) height

Ultimate Durability: Made of high-grade engineering-metal and composite polymers for long-lifecycle

Identity & Configuration: Each equipment carries its unique identity with geotagging through wireless configurable sensor

Weatherproof: Weather proof with its IP65 grade enclosure

Tamper Proof: Comes with an optional security system to avoid tampering

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

Real-Time Data: Continuous real-time-data transfer possible through various connectivity options

Network Agnostic: Supports a wide range of connectivity options like GSM / GPRS / WiFi / LoRa / NBIoT/ Ethernet
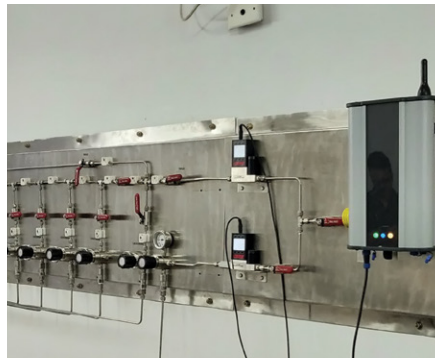
3-level Calibration: Can be calibrated by a third party nodal agency, reference station and on the spot calibration for ultimate precision

Levels of Calibration

Factory Calibration
The sensors are bump tested at Oizom factory to check their proper functioning for each parameter.

Lab Calibration
Laboratory calibration is done in a controlled environment for all parameters to compensate for cross-sensitivity and ensure higher data accuracy.
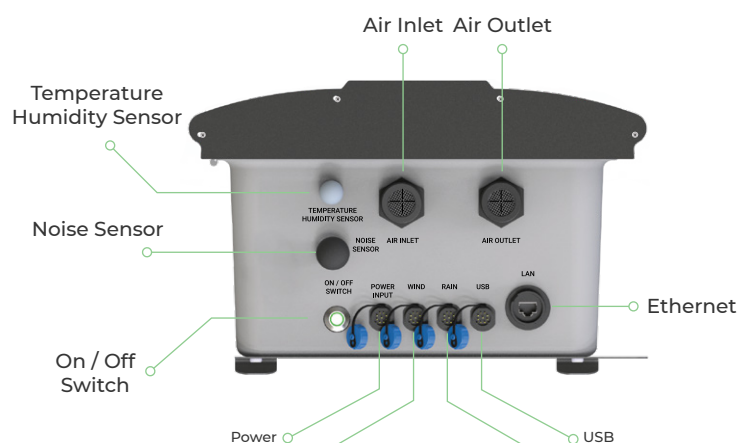
Collocation Calibration
The sensors are calibrated against a reference station before installation and their performance is tested in the ambient condition before final deployment.

General Specifications

Size	372 mm(H) x 321 mm(W) x 199 mm(D)
Weight	9.8 Kg
Material	Aluminum Magnesium Alloy, Mild-steel (With Powder Coating), FRP
Certifications	CE & FCC Certified, PTCRB Certified Communication Module

Air Inlet Air Outlet

Temperature Humidity Sensor

Noise Sensor

On / Off Switch

Ethernet

Power

USB

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

|	Connectivity Options	Specification
Wireless	GSM	Global 2G / 3G
	LORA	868 MHz, 915 MHz
	LTE	CAT-M1
	NB-Iot	CAT-NB1
	Sigfox	868 to 869 MHz, 902 to 928 MHz
	Wifi	802.11 b/g/n
Wired	Ethernet	10BaseT/100BaseTx
	Modbus	RS485 RTU

Power

Avg. Power Consumption	Maximum 2.5 Watt
Power Input Options	External 110-230V AC 50-60Hz, 40Watt Monocrystal Solar Panel
SMPS Specs	24V, 2Amps output from either of the power inputs
Battery Backup Time	Up to 48 Hours
Battery Specs	Lithium iron phosphate (LiFePO4) battery cell with rated voltage 12.8V Capacity 6Ah

Environmental Performance

Operating Temperature	-20 °C to 60 °C (According to SASO test report)
Optimum Temperature	25 °C to 35 °C (According to SASO test report)
Operating Humidity	0-90% (According to SASO test report)
Weather Protection	IP65 (According to lab test)

Odour Atmospheric Dispersion Modelling
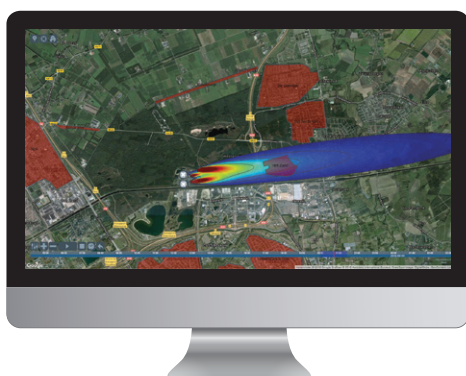
Odour Source Tracking & Complaint Management

Parameters

ID	Parameter	Range	Resolution	Min. Detection	Drift	Working Principle	Measurement Principle	Sample Rate	Expected Sensor Life
H_2S	Hydrogen Sulfide	0-100 ppm	10 ppb	10 ppb	< ±100 ppb / Year	Electrochemical	Active Sampling	325 mL per sample	2 years
NH_3	Ammonia	0-100 ppm	0.1 ppm	0.1 ppm	2% / Month				
CH_2O	Formaldehyde	0-10 ppm	50 ppb	50 ppb	2% / Month				
CH_3SH	Methyl Mercaptan	0-10 ppm	0.5 ppm	0.5 ppm	2% / Month				
NO_2	Nitrogen Dioxide	0-20 ppm	20 ppb	20 ppb	< ±20 ppb / Year				
SO_2	Sulfur Dioxide	0-20 ppm	20 ppb	20 ppb	< ±20 ppb / Year				
Cl_2	Chlorine	0-20 ppm	0.1 ppm	0.1 ppm	2% /Month				
TVOC	Total Volatile Organic Compounds	0-20 ppm	5 ppb	5 ppb	N.A.	PID			6 Months Filament Life
Noise	Ambient Noise	Upto 140 dB	1 dB	30 dB	2% / Year	Capacitance	Passive Monitoring	N.A.	3 years
Temp	Temperature	-20 °C to +85 °C	0.01 °C	-20 °C	N.A.	Solid State Semiconductor Sensing			
Hum	Humidity	100% Rh	0.1%	0.1%	N.A.				
Bmp	Barometric Pressure	300-1100 hPa	0.18 Pa	0.18 Pa	±1.0 hPa / Year				

External Modules
(optional)

Wind Sensor:
- Ultrasonic sensor

Functional Specification

Strategic Location Selection:
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 5-meter range from the unit or solar panel
Network Availability	Uninterrupted network connection

12-15 ft height From the Ground level

270°
Open surrounding
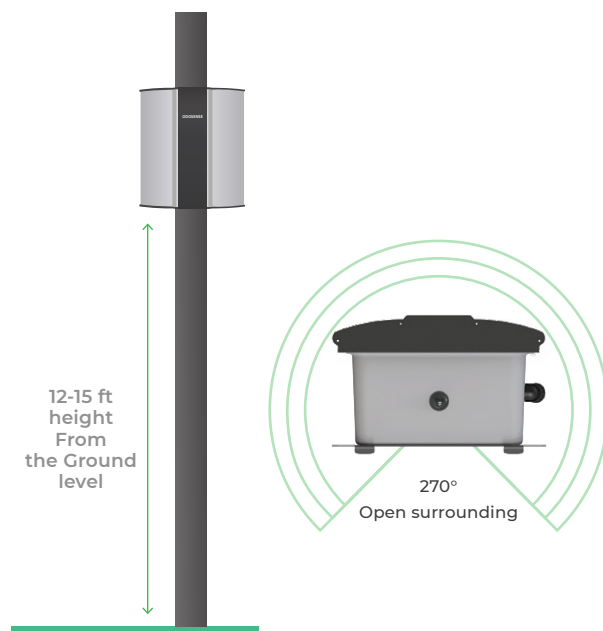
Operation:

When the device is powered on, the device intakes air samples at a predefined frequency through the air sampling system. Once the air sample is stabilized, the sensory system takes multiple readings during the sampling time and performs relevant data-processing. During this cycle time, the device flushes out old air sample and pulls in a fresh one. After each sampling, the data processing system sends the processed data to the central server using a built-in communication module

Maintenance:

Cleaning: Periodic cleaning is important to ensure optimum device performance. Monthly or quarterly regular maintenance activity has to be carried out depending upon the surrounding. The activity includes cleaning the dome for the light sensor, air inlet, and outlet mesh & general cleaning of the exterior.

Sensor Replacement: Every sensor has a limited life span. The sensor life depends on the average pollutant concentration in the area. The sensors need to be replaced once their performance starts to deteriorate and the system starts giving unstable data.

Spot-Calibration: The frequency of calibration is decided based on the atmospheric conditions and individual sensor drift (mentioned in the parameter table) to ensure data accuracy. Spot calibration can be performed using reference equipment which can be a recently calibrated Oizom device.

Diagnosis/Debugging: Power and network availability are the prime check in case of equipment failure. If the issue is still unresolved after remote diagnosis, on-site troubleshooting can be planned by an engineer.

OIZOM™
REDEFINING RESOURCES