Odosense®

Odour Monitoring & Analysis 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, WWTP	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 real-time and preventive actions can be taken immediately.

Industries

Odourful gaseous emission from industries like agro-chemical, pharmaceutical, paper-pulp, sugar, etc. can be monitored to make data-driven measures for minimizing their fatal effect.

Powered by

e-Breathing™ Technology

Product Features

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

Solar Powered with Battery Backup: Compatible to charge internal battery using solar power

Retrofit Design: Plug and play design for ease of implementation

Compact: Light-weight and compact system that can be 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

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

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 / Modbus

On-device Calibration: On-site device calibration capability using on-device calibration software

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 performed for Baseline Correction & Span-Calibration for all the 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	360mm (H) x 328mm (W) x 200mm (D)
Weight	7.2 Kg (instrument weight)
Material	Aluminum Magnesium Alloy, Mild-steel (With Powder Coating), FRP
Certifications	CE & FCC Certified, PTCRB Certified Communication Module

THP Sensor

Air Inlet

Air Outlet

Ethernet

SIM Holder

Relay Output

Modbus / Flood

Rain Sensor

On/Off Switch

Power

Wind Speed
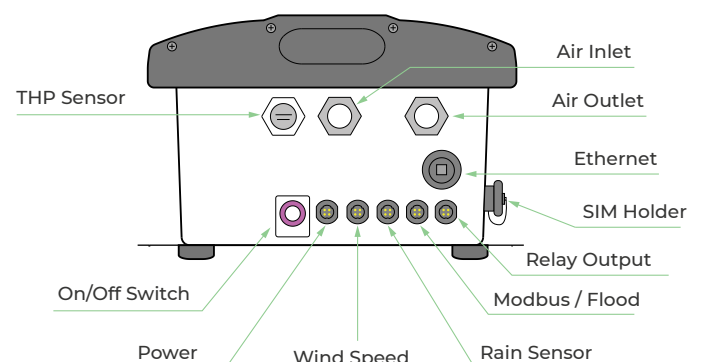
Communication

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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
Battery Specs	Lithium iron phosphate (LiFePO4) battery cell with rated voltage 12.8V Capacity 6Ah

Technical Specification

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

	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
	Wifi	AP Mode and Station Mode
Wired	Ethernet	Static / DHCP Configuration
	Modbus	RS485 RTU / TCP
	Relay Output	2 Channel

Odour Atmospheric Dispersion Modelling
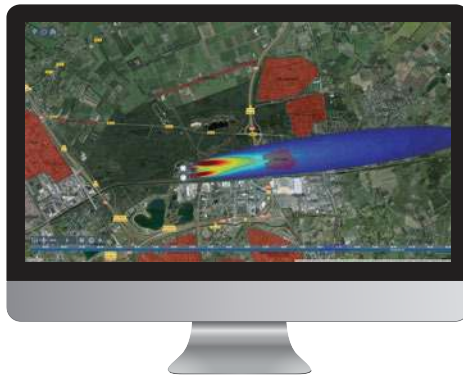
Odour Source Tracking & Complaint Management

Parameters

ID	Parameter	Range	Resolution	Min. Detection	Drift	Working Principle	Measurement Principle	Sample Rate	Expected Sensor Life
OZH2S_1	Hydrogen Sulfide (H_2S)	0-10 ppm	0.001 ppm	0.1 ppm	±100 ppb / Year	Electrochemical	Active Sampling	325 mL per sample	2 years
OZNH3_1	Ammonia (NH_3)	0-20 ppm	0.3 ppm	0.3 ppm	< 2% / Month				
OZCH2O_1	Formaldehyde (CH_2O)	0-10 ppm	0.05 ppm	0.05 ppm	< 2% / Month				
OZCH3SH_1	Methyl Mercaptan (CH_3SH)	0-10 ppm	0.1 ppm	0.1 ppm	< 2% / Month				
OZNO2_1	Nitrogen Dioxide (NO_2)	0-20 ppm	0.001 ppm	0.01 ppm	±20 ppb / Year				
OZSO2_1	Sulfur Dioxide (SO_2)	0-20 ppm	0.001 ppm	0.01 ppm	±20 ppb / Year				
OZCL2_1	Chlorine (Cl_2)	0-20 ppm	0.05 ppm	0.05 ppm	< 2% /Month				
OZHCL_2	Hydrogen Chloride (HCl)	0-100 ppm	1 ppm	1 ppm	< 2%/month				
OZTVOC_1	Total Volatile Organic Compounds (TVOC)	0-40 ppm	0.001 ppm	0.005 ppm	N.A.	PID			5000 hours
OZCH4_1	Methane (CH_4)	500-1500 ppm	1 ppm	500 ppm	N.A.	Molecular Property Spectrometer			
OZN_1	Ambient Noise	Upto 140 dB	1 dB	0.5 dB	N.A.	Capacitance	Passive Monitoring	N.A.	2 years
OZTEMP_1	Temperature	-40 °C to 125 °C	0.01°C	-40°C	N.A.	Solid State Semiconductor Sensing			
OZHUM_1	Humidity	100% Rh	0.1%	0.1%	N.A.				
OZPRES_1	Barometric Pressure	300-1100 hPa	0.18 Pa	300 hPa	N.A.				

External Modules (optional)

Wind Sensor

- Ultrasonic sensor
- 360°, 0-40 m/s

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 2-meter range from the unit or solar panel
Network Availability	Uninterrupted network connection

12-15 ft height From the Ground level

270° Open surrounding
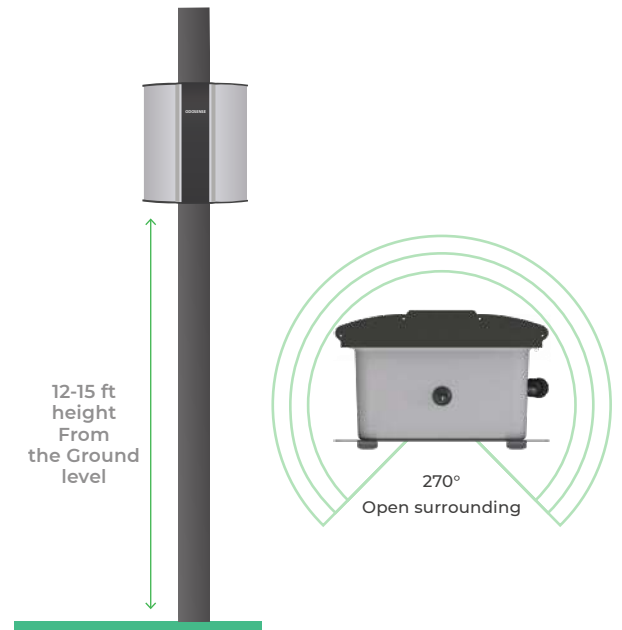
Operation

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.

Accurate Air Quality Monitoring And Advanced Data Analytics