

# AQBot™



## Industrial Grade Single Parameter Air Quality Monitor

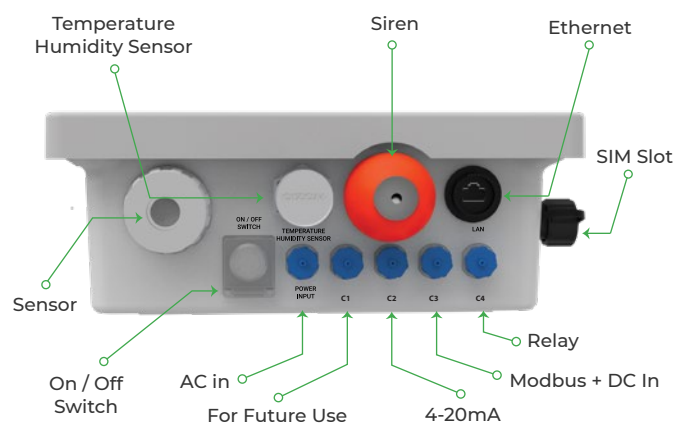


# About AQBot™













AQBot™ is an industrial grade single parameter air quality monitor with automation capabilities. AQBot™ Series offers a wide range of air quality parameters to choose from. AQBot™ product range consists of critical parameters and toxic gases like Total Volatile Organic Compounds (TVOC), Ammonia (NH<sub>3</sub>), Hydrogen Sulfide (H<sub>2</sub>S), Methane (CH<sub>4</sub>), Carbon Monoxide (CO), Formaldehyde (CH<sub>2</sub>O), Particulate Matter (PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, PM<sub>100</sub>), Ambient Noise. The AQBot™ series is designed for easy operation.

The AQBot™ enclosure houses robust electronics to last long in extreme industrial conditions. It offers industry-standard connectivity options in addition to multiple modes of wired and wireless communications. Using a wide range of communication capabilities, AQBot™ enables the Industrial Internet Of Things (IIoT) which is the backbone of Industrial Revolution 4.0. AQBot™ can easily integrate with existing building monitoring or plant control systems.



## Product Features

-  **Wide range of parameters:** Compatible with a wide range of parameters for gases, PM & Noise
-  **On-device display:** Built-in display to check on-site concentration and unit of measurement
-  **Real-time data:** Continuous monitoring and real-time data transfer at configurable intervals
-  **Data analytics software:** Advanced software to view data, analyze, integrate and create reports
-  **Built-in relay:** Built-in relay for automating external equipment and better process control
-  **Alerts and notifications:** Real-time alerts through software, siren, and strobe
-  **Compact:** Lightweight and compact, easily installed on any wall, pole, or structure
-  **Durable:** NEMA 4X certified industrial-grade enclosure made of composite polymers
-  **Wired comm.:** Industry-standard output signals like MODBUS, CANbus, RS-485, RS-232
-  **Wireless comm:** Wide range of wireless connectivity options like GSM/WiFi/LoRa
-  **Internal data storage:** In case of network losses, data is stored in internal memory
-  **Dedicated support:** Skilled support team to assist users in problem-solving

# AQBot Specifications

## GENERAL

Processor	Quad-Core ARM Cortex A-72
Memory	2GB RAM, 8GB eMMC ROM
Internal data storage	Up to 12 months
Device interface	On-device software, API, Display
Display specification	6 digit 7 Segment Display

## ELECTRICAL

Power supply	AC: 90VAC- 265VAC 50/60Hz
Power consumption	3.5 W (average)
Wiring connections	Pre-wired supplied with 2m cable

## GENERAL PERFORMANCE

Operation temperature	-20 to +60°C
Operation humidity	0 - 90%RH, non-condensing
Storage conditions	10 - 40°C
Net weight	2.8 kg
Dimensions	210mm (W) × 258mm (H) × 105mm (D)
Installation method	Wall mount / Pole mount
Housing	NEMA-4X Fire-retardant FRP enclosure
Weather protection	Weather Resistant IP66 Enclosure

## COMMUNICATION

Wireless communications	Global 2G/3G/4G, LoRa, LTE, NB-IoT, Sigfox, Wifi (Any one)
Wired communications	Ethernet, Modbus TCP, Modbus RTU, RS-485, CANbus (Any one)
Analog output	1 x 4~20mA Current Loop with 12-bit Resolution
Relay outputs	2 programmable relays, volt free relay contacts (1NO, 1 NC)
Beacon/sounder	Built-in, RED flashing light with alarm sounder 95db @ 1m

## SENSING

Target gas	Refer parameter table
Gas sample mode	Natural diffusion
Warm up time	1 hour (cold start) for gas monitoring
Response time (t <sub>90</sub> )	< 60 Seconds
Signal refresh rate	5 Seconds
Measuring range	Refer parameter table
Accuracy	<±5%FS (at 20±5°C/ 50±20%RH)
Sensor life	Refer parameter table

ID	Parameter	Range	Resolution	Min. Det.	Working Principle	Sensor Life
OZNH3_1	Ammonia (NH <sub>3</sub> )	0-20 ppm	0.3 ppm	0.3 ppm	Electrochemical Sensing	2 Years
OZNH3_2		0-100 ppm	0.3 ppm	0.3 ppm		
OZNH3_3		0-1000 ppm	2 ppm	2 ppm		
OZCH4_1	Methane (CH <sub>4</sub> )	500-1500 ppm	1 ppm	500 ppm	Molecular Property Spectrometer (MPS)	2 Years
OZH2S_1	Hydrogen Sulfide (H <sub>2</sub> S)	0-10 ppm	0.001 ppm	0.01 ppm	Electrochemical Sensing	2 Years
OZH2S_2		0-50 ppm	0.05 ppm	0.05 ppm		
OZH2S_3		0-200 ppm	0.2 ppm	0.2 ppm		
OZH2S_4		0-2000 ppm	2 ppm	2 ppm		
OZTVOC_1	Total Volatile Organic Compounds (VOC)	0-40 ppm	0.001 ppm	0.005 ppm	Photo Ionization Detection (PID)	5000 Hours
OZTVOC_2		0-200 ppm	0.05 ppm	0.05 ppm		
OZPM_1	Particulate Matter (PM <sub>2.5</sub> )	Upto 5000 µg/m <sup>3</sup>	0.1 µg/m <sup>3</sup>	1 µg/m <sup>3</sup>	Optical Particle Counter	5000 Hours
OZPM_2	Particulate Matter (PM <sub>10</sub> )	Upto 5000 µg/m <sup>3</sup>				
OZPM_3	Particulate Matter (PM <sub>i</sub> )	Upto 5000 µg/m <sup>3</sup>				
OZPM_4	Particulate Matter (PM <sub>100</sub> )	Upto 30 mg/m <sup>3</sup>				
OZN_1	Noise	up to 140 dBA	1 dB	0.5 dB	Capacitive	2 Years
OZCI2_1	Chlorine (Cl <sub>2</sub> )	0-20 ppm	0.05 ppm	0.05 ppm	Electrochemical Sensing	2 Years
OZCI2_2		0-50 ppm	0.1 ppm	0.1 ppm		
OZHCL_1	Hydrogen Chloride (HCl)	0-50 ppm	0.5 ppm	0.5 ppm	Electrochemical Sensing	2 Years
OZHCL_2		0-100 ppm	1 ppm	1 ppm		
OZCH2O_1	Formaldehyde (CH <sub>2</sub> O)	0-10 ppm	0.05 ppm	0.05 ppm	Electrochemical Sensing	2 Years
OZCH2O_2		0-50 ppm	0.1 ppm	0.1 ppm		
OZCH3SH_1	Methyl Mercaptan (CH <sub>3</sub> SH)	0-10 ppm	0.1 ppm	0.1 ppm	Electrochemical Sensing	2 Years
OZSO2_1	Sulfur Dioxide (SO <sub>2</sub> )	0-20 ppm	0.001 ppm	0.01 ppm	Electrochemical Sensing	2 Years
OZSO2_2		0-100 ppm	0.2 ppm	0.2 ppm		
OZSO2_3		0-2000 ppm	5 ppm	5 ppm		
OZNO2_1	Nitrogen Dioxide (NO <sub>2</sub> )	0-20 ppm	0.001 ppm	0.01 ppm	Electrochemical Sensing	2 Years
OZNO2_2		0-100 ppm	0.2 ppm	0.2 ppm		
OZNO2_3		0-500 ppm	0.5 ppm	0.5 ppm		
OZCO_1	Carbon Monoxide (CO)	0-50 ppm	0.1 ppm	0.1 ppm	Electrochemical Sensing	2 Years
OZCO_2		0-100 ppm	0.1 ppm	0.1 ppm		
OZCO_3		0-1000 ppm	0.75 ppm	0.75 ppm		
OZNO_1	Nitric Oxide (NO)	0-20 ppm	0.001 ppm	0.01 ppm	Electrochemical Sensing	2 Years
OZNO_2		0-100 ppm	0.5 ppm	0.5 ppm		
OZCO2_1	Carbon Dioxide (CO <sub>2</sub> )	0-5000 ppm	1 ppm	400 ppm	NDIR	2 Years

# Key Benefits

- Quick sensing for threshold-based alerts
- Accurate data to detect ppb concentrations
- Robustly built for harsh industrial conditions
- Data integrations to match industry standards
- In-built relay operation for automation
- Data transmissions through multiple channels
- Real-time data display for keeping a check
- Siren and strobe for audio and visual alerts
- Effortless installations with versatile mounting arrangement

## AQBot™ Usecases



### Industrial Process Control

Ambient air pollution parameters like particulate matter, gases, and noise are often caused by various processes in the industries. Measuring these parameters using AQBot™ not only ensures continuous monitoring but also provides automating the operation of pollution control equipment to meet regulatory standards.



### Leakage Detection

Leakages in the industry can cause unfortunate accidents and cause a potential risk to the health of the workers. Continuous monitoring of ambient air in industrial premises ensures in-time anomaly detection like gas leakages, a sudden rise of PM, noise levels or harmful gases. Alerts & alarms generated can assist in immediate actions.



### Indoor Air Quality Monitoring

AQBot™ is an ideal choice to continuously monitor specific air quality parameters in an enclosed industrial facility. Often it is important to monitor these parameters to ensure a safe environment. The data is used for various applications like compliance, safety, reporting, data logging, automation, etc.



### EHS monitoring

By continuous monitoring of critical air quality parameters like VOC, H<sub>2</sub>S, NH<sub>3</sub>, etc. in an industrial work environment, precautionary steps can be taken for the health and safety of workers to comply with regulatory acts like OSHA. Additionally, EHS managers can continuously track and mitigate any potential hazards.



# Industrial Applications



## Paper And Pulp Industry

**H<sub>2</sub>S** - Lime kiln and evaporator

**TVOC** - Chemical pulping, bleaching and evaporator

**CO<sub>2</sub>** - Fuel combustion, lime kiln

**CH<sub>3</sub>SH** - Digester, black liquor storage, recovery boiler



## Textile Industry

**NO** - Sizing process

**TVOC** - High temperature ovens - drying and coating

**Cl<sub>2</sub>** - Bleaching process

**PM** - Cotton handling process and boiler



## Leather Industry

**H<sub>2</sub>S & NH<sub>3</sub>** - Beamhouse, unhairing and liming process

**TVOC** - Finishing operations - drying

**PM** - Storage and handling of powdered chemicals

**Cl<sub>2</sub>** - Pickling process



## Fisheries Industry

**H<sub>2</sub>S** - Bacteriological and enzymatic decay

**NO** - Cooking and drying - fishmeal industry

**TVOC** - Direct and indirect fried dryers

**NH<sub>3</sub>** - Fish rotting



## Cement Industry

**CO** - Kilns in clinker process

**NO<sub>2</sub>** - Rotary kiln and vertical shaft kiln, clinker

**CO<sub>2</sub>** - Limestone decarbonization and fuel combustion

**PM** - Packaging and ash handling system



## Thermal Power Plants

**CO** - Fuel combustion in boiler

**NO** - Natural gas/oil/coal based fuel combustion

**CO<sub>2</sub>** - Boiler fuel combustion

**PM** - Ash extraction plant



## Food And Beverages Industry

**Cl<sub>2</sub>** - In various disinfecting activities

**NH<sub>3</sub>** - Refrigeration and cooling systems

**CO<sub>2</sub>** - Carbonation and fermentation processes



## Mining Industry

**SO<sub>2</sub> & NO<sub>2</sub>** - Extraction including blasting & crushing

**CH<sub>4</sub>** - Material destruction and natural disintegration

**PM** - Drilling, blasting and transportation



## Wastewater Treatment Plants

**CH<sub>4</sub> & CH<sub>3</sub>SH** - Sludge storage and anaerobic digestion

**Cl<sub>2</sub>** - Chlorination before outlet discharge



## Meat Processing Plants

**H<sub>2</sub>S** - Storage & ETP

**CH<sub>4</sub> & CH<sub>3</sub>SH** - By product, storage & ETP



## Dairy Industry

**NH<sub>3</sub>** - Manure storage and application

**CH<sub>4</sub>** - Manure in housing and enteric fermentation



## All Industries

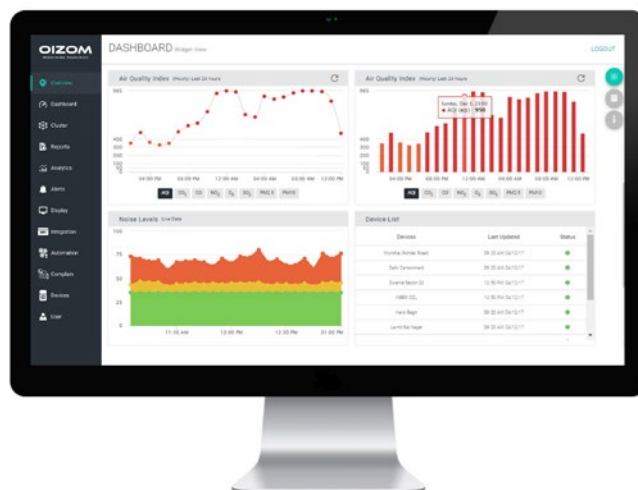
**Noise** - In every operation including rotary mechanical components

*\*This is an indicative list.*

*Speak to our representative for your exact requirement.*

# Data Visualization Software

An on-device data software enables users to access the data, configure networks and sensors without any dependency on the internet. Users can also connect their smart devices to the AQBot™ and view real-time data, perform on-site calibration, change network configuration (i.e. GSM/Wifi/Ethernet/MODBUS), and change sensor configuration (enable/disable any sensor data).



## Data and Calibration

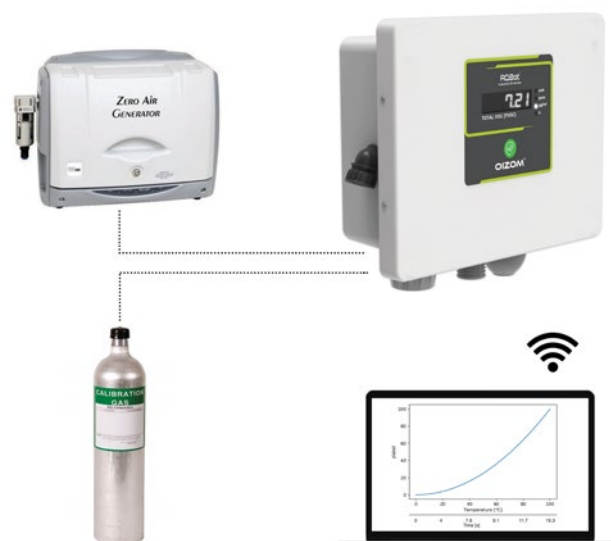
### 1 FACTORY CALIBRATION

Factory calibration is performed by the sensor manufacturing partners. All individual sensors are kept under lab conditions and calibrated with zero air and with calibration gas. This process ensures that all the sensors are functioning as per the requirement.



### 2 LABORATORY CALIBRATION

In laboratory calibration, assembled AQBot™ devices are calibrated with pure air and NIST traceable calibration gases. In a clean and controlled laboratory setting, zero and span calibration is performed in order to determine the sensor offset or gain error if any. The PM sensors are collocated against a reference system- Met One BAM 1020. Every AQBot™ is dispatched with a calibration certificate generated by a NABL/ISO IEC 17025 accredited laboratory.



### 3 ON-SITE CALIBRATION

Using a zero air cylinder or a generator, users can now calibrate the AQBot™ at their premises without the need to de-install the unit. The calibration module in the on-device data visualization software allows the user to apply drift to any change in the sensor readings.

# About Oizom®



Trusted by  
**50 Countries**



Solutions Installed in  
**65 Cities**



Total Devices Installed  
**1000+**



Total Population Covered  
**200 million+**

Oizom® is an environmental IoT company offering data-driven environmental solutions for better decision-making. With our sensor-based hardware, we monitor various environmental parameters like air quality, noise, odour, radiation, weather conditions, etc. Our data analytics platform derives many actionable insights for authorities, communities, and industries. Oizom® strives to play an essential role in a sustainable future through smart environmental solutions and data science.

Oizom® has years of experience in stimulating innovation by creating groundbreaking technology for environmental monitoring. With an IoT-based development approach, Oizom® has been able to successfully unlock multiple solutions, catering to various industries.

## Other Oizom® Products



### **POLLUDRONE®**

Ambient Air Quality Monitoring

Polludrone® – an integrated air monitoring systems is ideal for real-time ambient air quality monitoring for urban and industrial applications.



### **ODOSENSE®**

Odour Monitoring System

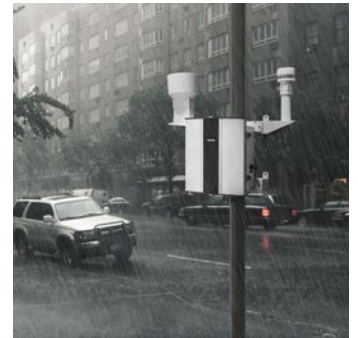
Odosense® monitors various odourful and toxic gases in the environment and provides insight into odour dispersion.



### **DUSTROID®**

Real-time Dust Monitor

Dustroid® is an online particulate monitoring system to measure a wide spectrum of particulate matter sizes.



### **WEATHERCOM®**

Weather Monitoring Station

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





# ACCURATE AND AFFORDABLE AIR QUALITY MONITORING SOLUTIONS



Leaders in sensor based  
air quality monitoring



Plug and play monitors  
for hassle free setup



Low powered solutions  
for multiple applications

## Global Presence



Accurate Air Quality Monitoring And Advanced Data Analytics



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