2024

GRYDSENSE ENVIRONMENTAL SENSOR

TECHNICAL SPECIFICATION

Revision History

Sl #	Change Description	Version	Date
1	Initial Draft	0.6	21st Oct, 2021
2	Added Compliance Statements	1.5	22nd Dec, 2022
3	Added Mounting Arrangement	2.0	10th Apr, 2024

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Overview

GrydSense IAQ (Indoor Air Quality) sensor is worlds most advanced indoor air quality sensor combining multiple air quality sensors into one compact product. The Sensor collects data to help corporate real estate professionals to measure and analyse air quality at various places inside the building.

Being smallest sensor, it has various sensing parameters engineered into a compact product. The sensor only transmits binary sensor information on wireless Bluetooth mesh network or on a POE based IP network using industry standard Modbus TCP protocol.

GrydSense IAQ sensor includes the following sensing elements,

1) CO2
2) PM1
3) PM4
4) PM2.5
5) PM10
6) Temperature
7) Humidity
8) TVOC
9) Pressure
10) Noise (both decibels and Frequency for white noise)
11) IAQ
12) Carbon monoxide (optional)
13) Nitrogen Dioxide (optional)

Models Available

The sensor is available in two versions,

1) Bluetooth 5.1 wireless mesh protocol with 12 volts DC powered sensor, transmits the occupancy IAQ sensor parameters at configured intervals to the wireless receiver.
2) POE with Modbus TCP protocol. Each sensor parameter is available on different Modbus registers and could be read out using the Modbus TCP protocol

Model Codes

1. GRYD-IAQ-WL-WH – Bluetooth Wireless based IAQ sensor (white colour)
2. GRYD-IAQ-POE-WH – POE based Modbus TCP sensor (white colour)

Aggregator

Sensors transmit the data to the aggregator via wireless. Aggregator transmits the data to the gateway via ethernet.

Vortex Gateway

Gateway collects data from several sensors via aggregator and transmits the data to the GrydSpace cloud in a secured way. Gateway comes with Ethernet / Wi-Fi / Cellular back link which could be used independent of any corporate IT network.

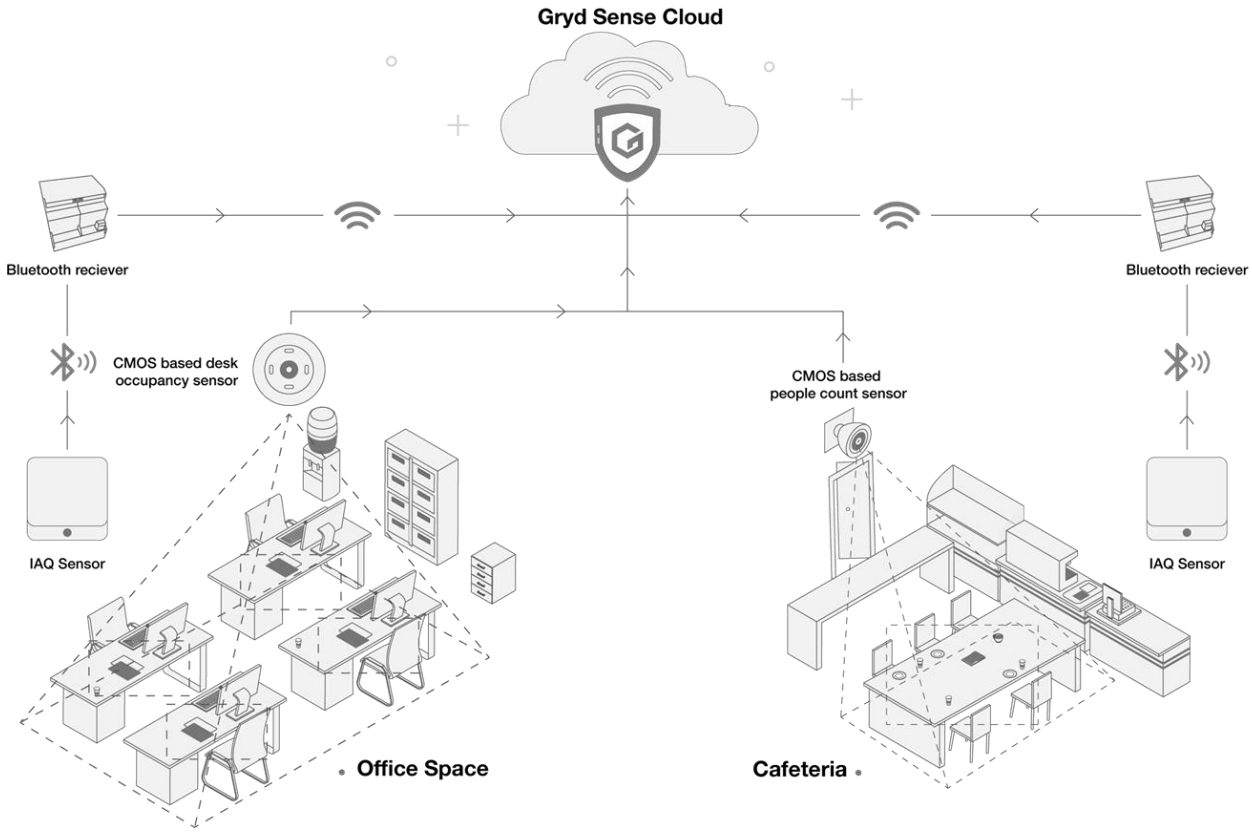
Environment

- Temperature: 0^{o} to 40^{o}
- For semi-indoor use only

Sensor Features Supported

Sensor	Features
Temperature	Accuracy - ±0.2 °C Fully pre-calibrated
Humidity	Accuracy - ±2 %RH Fully pre-calibrated
CO2	NDIR Technology Dual-channel detection for superior stability Measurement range - 400 ppm – 10.000 ppm Accuracy - ±30 ppm Fully pre-calibrated and linearized
PM1, 4, 2.5 and 10	Advanced particle size binning Superior accuracy in mass-concentration sensing Fully pre-calibrated
tVOC	Siloxane resistant Auto compensated with temperature sensor
Pressure	260 to 1260 hPa absolute pressure range
Noise	−38 dBV sensitivity (differential) ±1 dB sensitivity tolerance Extended frequency response from 50 Hz to 20 kHz
Carbon Monoxide (Optional)	Limit 10,000 ppm Resolution – 0.5 ppm Response time – 0 to 400 ppm in < 25 seconds
Nitrogen Dioxide (Optional)	Limit 100 ppm Resolution - 0.02 Response time – 0 – 10 ppm in < 50 seconds

System Architecture



Installation

Wireless Sensor

Wireless Sensor would need a Wireless receiver to GRYD Wireless receiver to pair and receiver sensor data and transmit the same to the GrydSense cloud or third-party applications. The sensor is powered with a 12 V DC power supply which is provided along with the IAQ sensor.

Wireless Receiver Setup

Sensor setup is available as a service by GrydSense.

Receiver Placement

The receiver should be placed in the centre of the workspace where sensors are installed. The receiver should not be place above the ceiling or near metal HVAC ducts. The receiver should be installed facing the work area.

Radio

- 2.4 GHz ISM band
- Bluetooth 5.1 Mesh protocol

Deployment

- Recommended one sensor for every 2000 - 2500 sq. ft
- One sensor per conference room
- Recommended deployment height is 4 – 6 feet from ground

Power Requirement

- 12-15 V DC power
- Consumption: 3 watts max

Environment

Operating

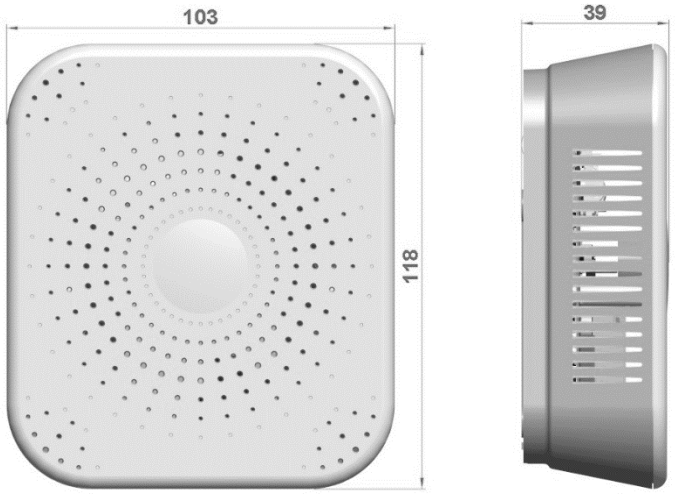
- Temperature: 0 degrees C to 50 degrees C
- Humidity: max 90% non-condensing

Storage and transportation

- Temperature: -10 degrees C to +60 degrees C

Mechanical Dimensions

All measurements are in mm



Mounting Arrangement