Product Category:

GreenAir Sensor

PM, Temperature, Pressure, Altitude Sensing

SAS AUTOMATION PVT. LTD
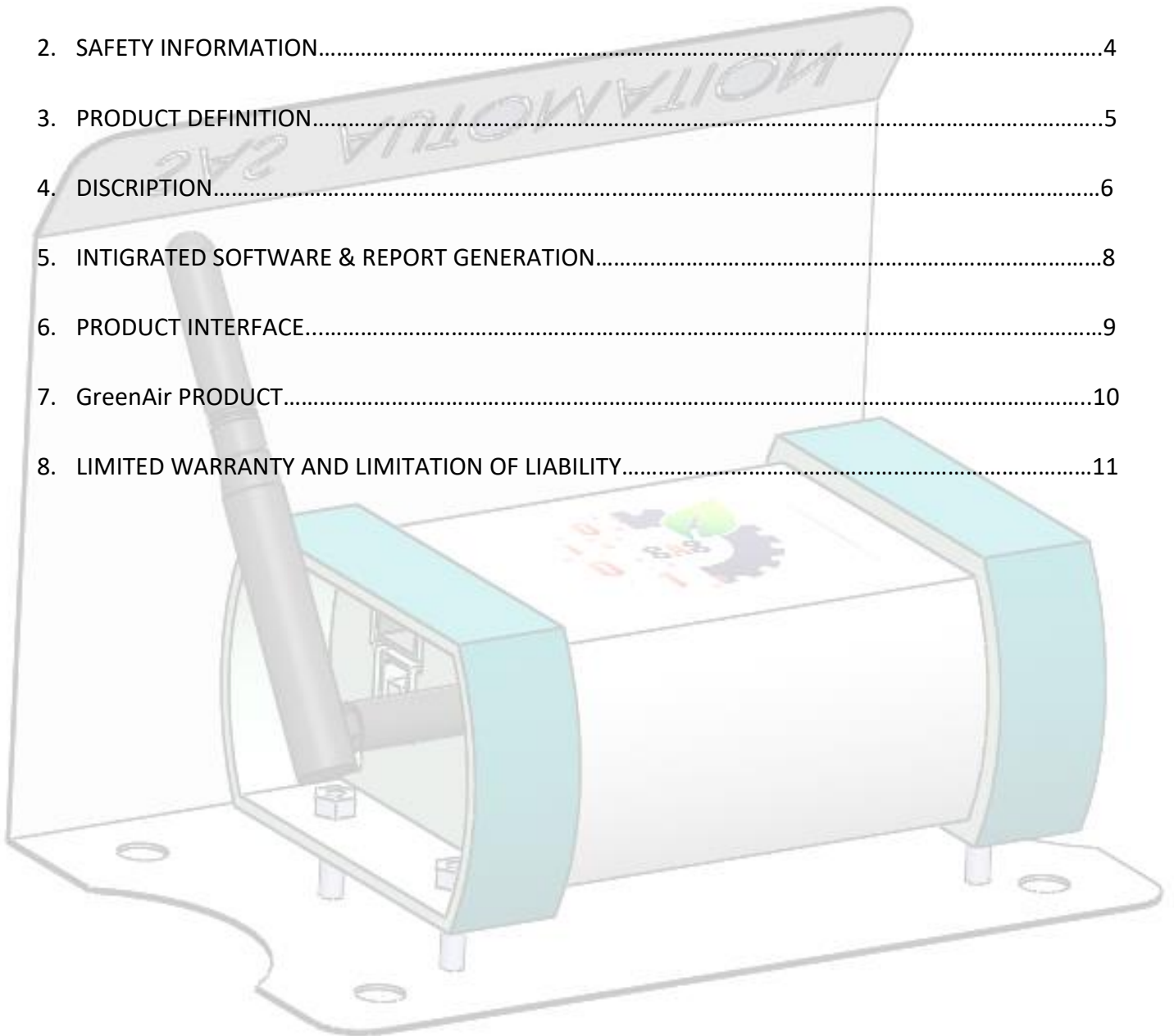
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1. Introduction:

In today's world, air pollution, climate change, its consequences are of a great concern. As the world's population is becoming increasingly urban, the cities are under pressure to remain livable. Emission of various poisonous gases from industries and vehiclesare not only hazardous for the terrestrial organism, but the marine life is also gettingadversely affected. Health problems arising due to poor air quality are in increase like stroke, heart diseases, lung cancer, respiratory diseases including asthma. As per WHO statics, millions of premature death cases are reported due to air pollution every year worldwide. Due to this, in recent years, the air quality of the cities has become one of the major causes of concern around the world. Thus, it is necessary to constantly monitor the air quality index of a city to make it smart and livable.

Around the world, governments are building the smart cities to keep a check on these problems and provide a healthy life for its inhabitants. The Indian government is in the process to build 100 smart cities by 2050. These cities will utilize advanced communication network, WSNs, and intelligent system to solve future challenges and create new services. **SAS Automation Pvt. Ltd., Pune** has a forward-thinking commitment to applying innovative technology to improve the quality of air as an innovation-driven company. Looking at vision of Green automation and todays need regarding pollution issue which creates serious health issue and worst effect on livings, SAS Automation has introduced new sensor technology which measures pollution parameters and same can be monitored using wiredor wireless system and the analysis of the parameter to define the further live action.
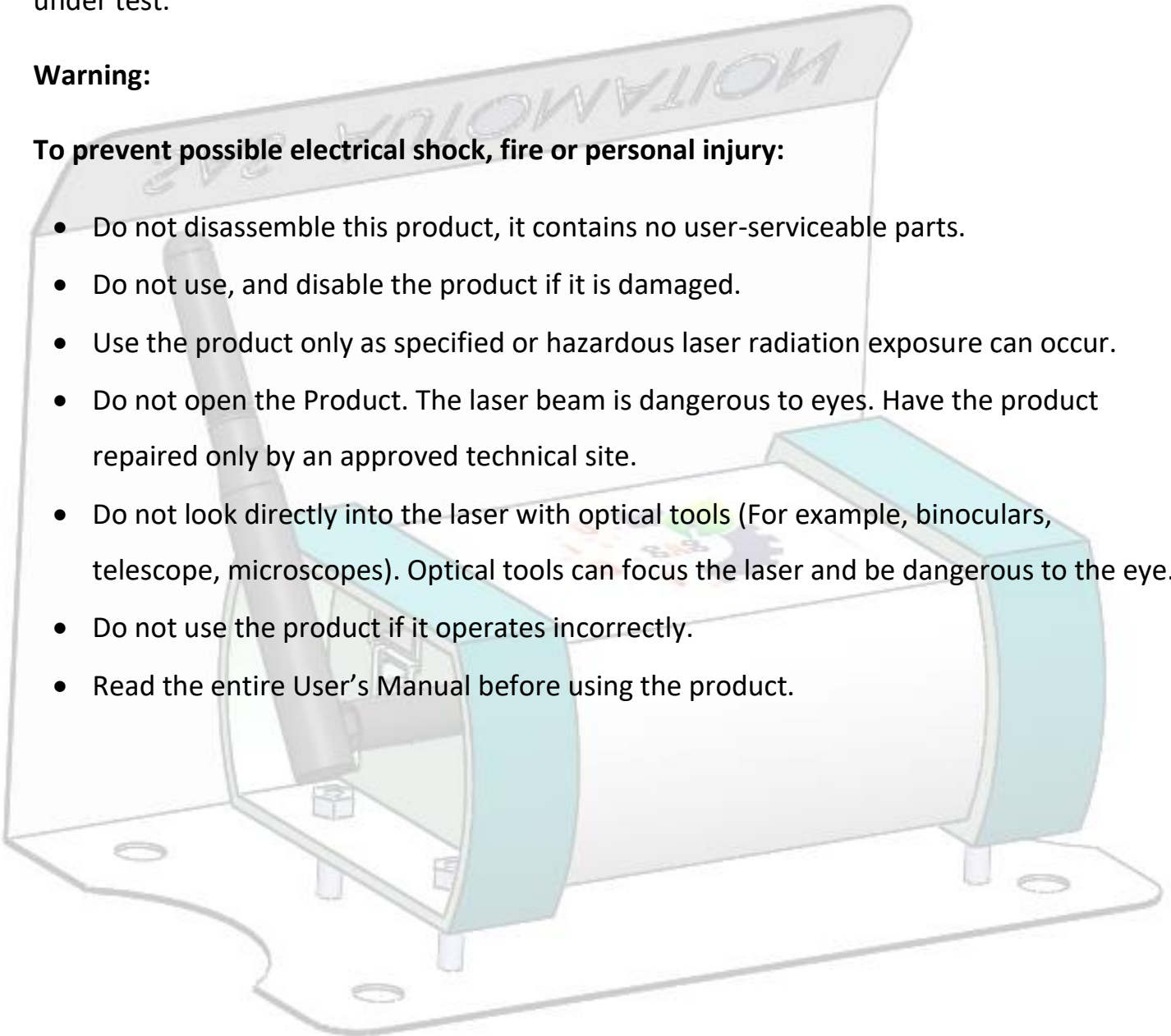
2. Safety Information:

A warning Identifies Conditions and procedures that are dangerous to users. A caution identifies conditions and procedures that can cause damage to the product or the equipment under test.

Warning:

To prevent possible electrical shock, fire or personal injury:

- Do not disassemble this product, it contains no user-serviceable parts.

- Do not use, and disable the product if it is damaged.

- Use the product only as specified or hazardous laser radiation exposure can occur.

- Do not open the Product. The laser beam is dangerous to eyes. Have the product repaired only by an approved technical site.

- Do not look directly into the laser with optical tools (For example, binoculars, telescope, microscopes). Optical tools can focus the laser and be dangerous to the eye.

- Do not use the product if it operates incorrectly.

- Read the entire User's Manual before using the product.

3. **Product Definition:**

The green air sensor is capable of monitoring different sensing parameters such as temperature, humidity, atmospheric particulate matter (PM), altitude, Carbon dioxide, atmospheric pressure. With the new **GreenAir Sensor**, it expands its range of measurement of environment parameter by sensing solution. It helps to measure the indoor & outdoor air quality. Its measurement principle is based on laser scattering. PM2.5 refer to particulate matter with particle diameter up to 2.5 micron and is among the most dangerous air pollution.

Technical Data :

Average current consumption (1Hz data refresh rate)

   a. 3.1 µA at 1 Hz pressure and temperature

   b. 3.7 µA at 1 Hz humidity, pressure and temperature

   c. 0.09-12 mA for p/h/T/gas depending on operation mode

   d. 0.15 µA in sleep mode

   e. Operating range: -40-+85 °C, 0-100% r.H., 300-1100 hPa

   f. Response Time <1 sec

   g. Sensor to sensor deviations +/- 15%

   h. Power consumption <0.1 mA

   i. Individual humidity, pressure and gas sensors can be independently enabled/disabled

   j. The product is RoHS compliant, halogen-free, MSL1

4. DESCRIPTION:

GreenAir Sensor
Model No: GA-100

The **GreenAir Sensor** is capable of monitoring different sensing parameters such as temperature, humidity, atmospheric particulate matter (PM), altitude, Carbon dioxide, atmospheric pressure.
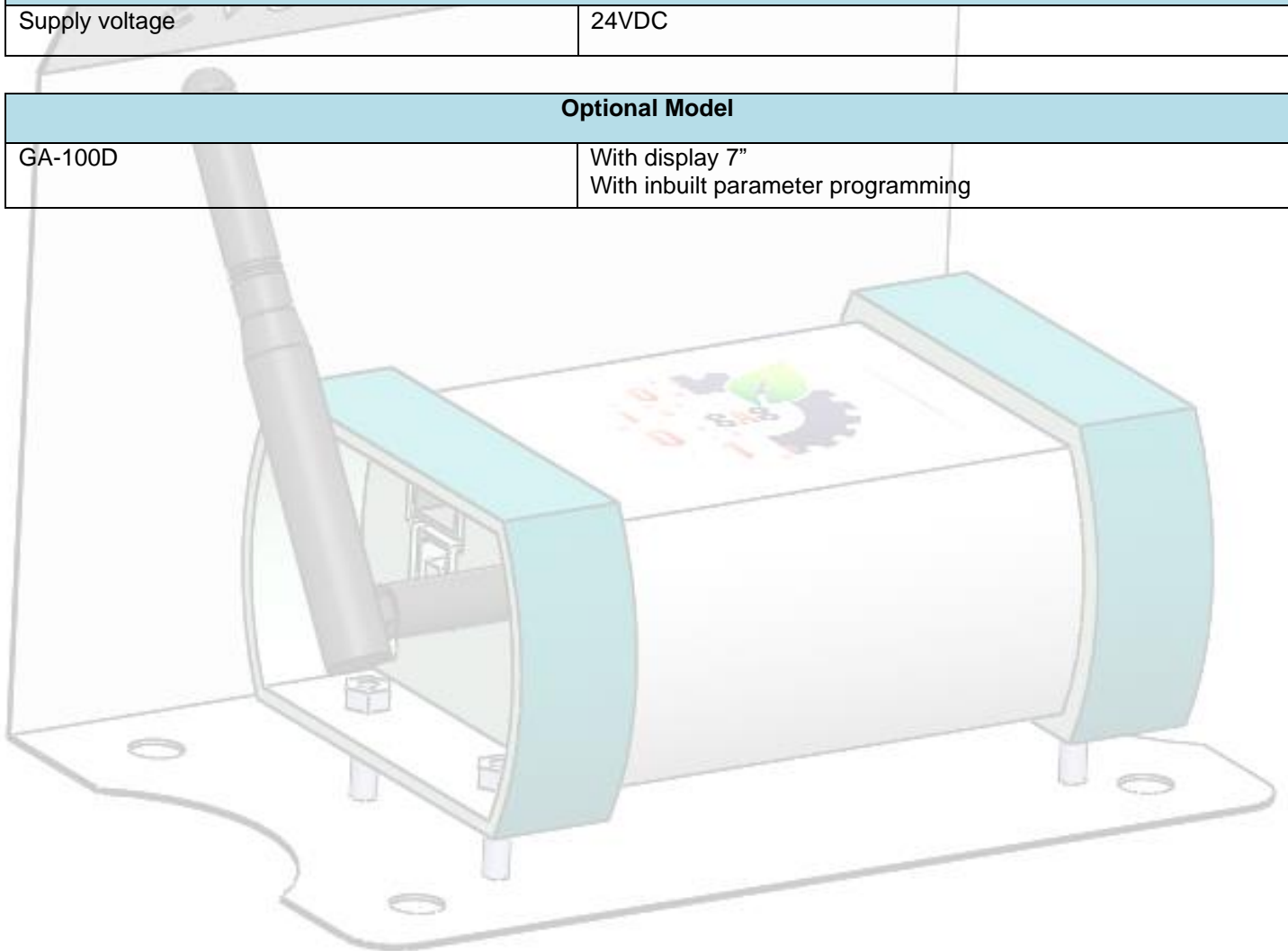
SENSOR SPECIFICATION:

Technical Data		
1.	Range of measurement	0.3~1.0; 1.0~2.5; 2.5~10 µm
2.	Mass Concentration precision	±10 µg/m3 @ 0 to 100 µg/m3 ±10 µg/m3 @ 100 to 1000 µg/m3
3.	Counting Efficiency	50% @ 0.3µm 98% @ >=0.5µm
4.	Mass Concentration resolution	1µg/m3
5.	Number of concentrations	PM0.5, PM1.0, PM2.5, PM4 and PM10
6.	Lower limit of detection	0.3 µm
7.	Effective range (PM2.5 standard)	0~500 µ g/m3
8.	Maximum consistency error	±10% @ 100~500 g/m3 ±10µ g/m3 @ 0 to 100 g/m3
9.	Standard volume	0.1 L
10.	Single response time	<1 second
11.	Total response time	≤10 second
12.	Interface Level	TTL Volt (V)
13.	Working Temperature range	-10~+60 °C
14.	Working Humidity range	0~99%
15.	Storage Temperature Range	-40~+80 °C
Parameters for gas sensor		
16.	Response time(r33−63%)	< 1 s (for new sensors)
Parameters for humidity sensor		
17.	Response time (r0−63%)	~8 s
18.	Accuracy tolerance	±3% r.H.
19.	Hysteresis:	±1.5% r.H.

Parameters for humidity sensor		
20.	RMS Noise	0.12 Pa, Equiv. to 1.7 cm
21.	Offset Temperature coefficient	±1.3 Pa/K, equiv. to ±10.9 cm at 1°C temp change

Communication Specifications	
Interface	Ethernet (TCP/IP Protocol)
Power Supply	
Supply voltage	24VDC

Optional Model	
GA-100D	With display 7" With inbuilt parameter programming

5. Integrated Software & Report Generation:
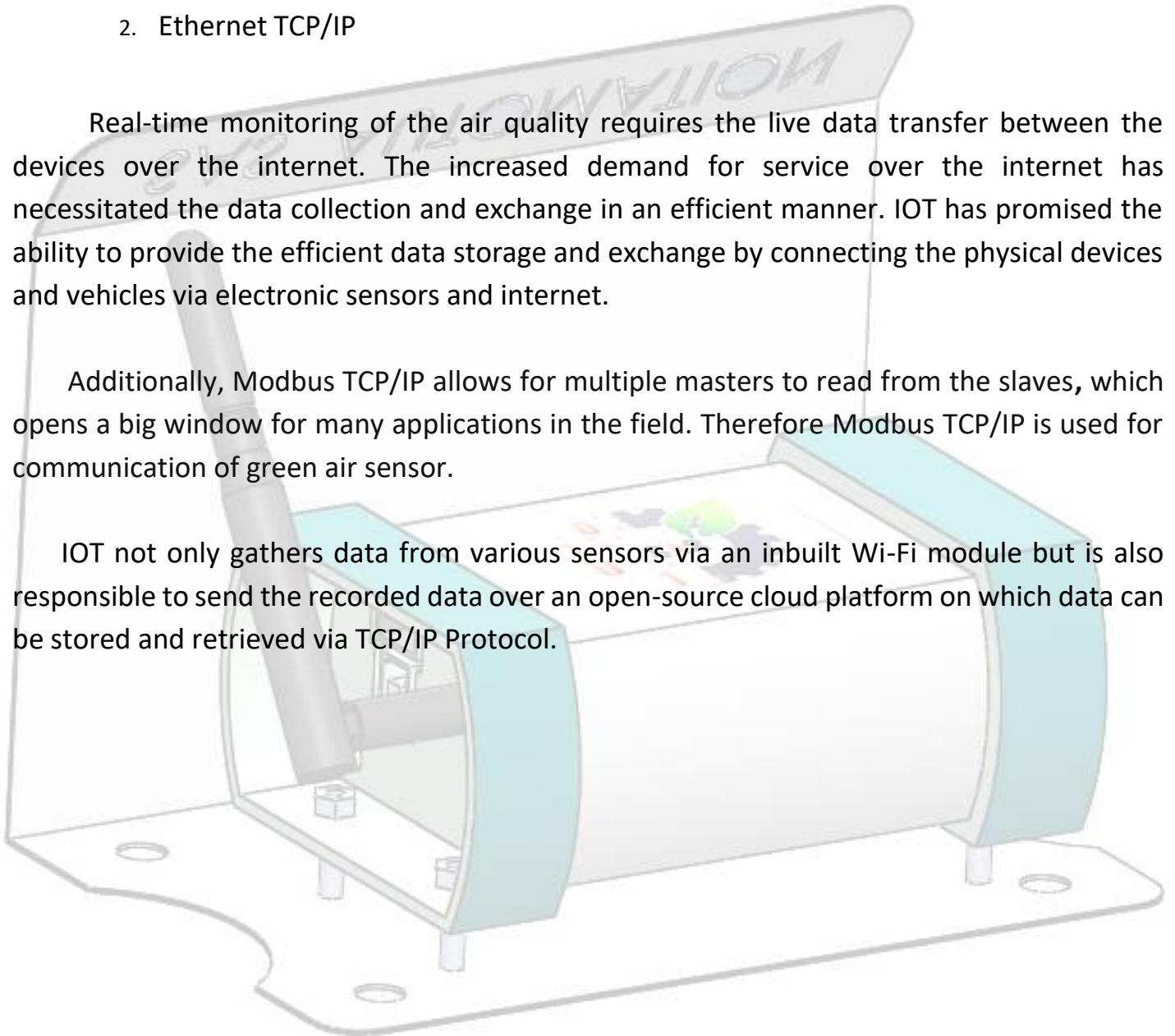
6. Product Interface:

The communication interfacing is done by using following two modes:

1. IOT
2. Ethernet TCP/IP

Real-time monitoring of the air quality requires the live data transfer between the devices over the internet. The increased demand for service over the internet has necessitated the data collection and exchange in an efficient manner. IOT has promised the ability to provide the efficient data storage and exchange by connecting the physical devices and vehicles via electronic sensors and internet.

Additionally, Modbus TCP/IP allows for multiple masters to read from the slaves, which opens a big window for many applications in the field. Therefore Modbus TCP/IP is used for communication of green air sensor.

IOT not only gathers data from various sensors via an inbuilt Wi-Fi module but is also responsible to send the recorded data over an open-source cloud platform on which data can be stored and retrieved via TCP/IP Protocol.
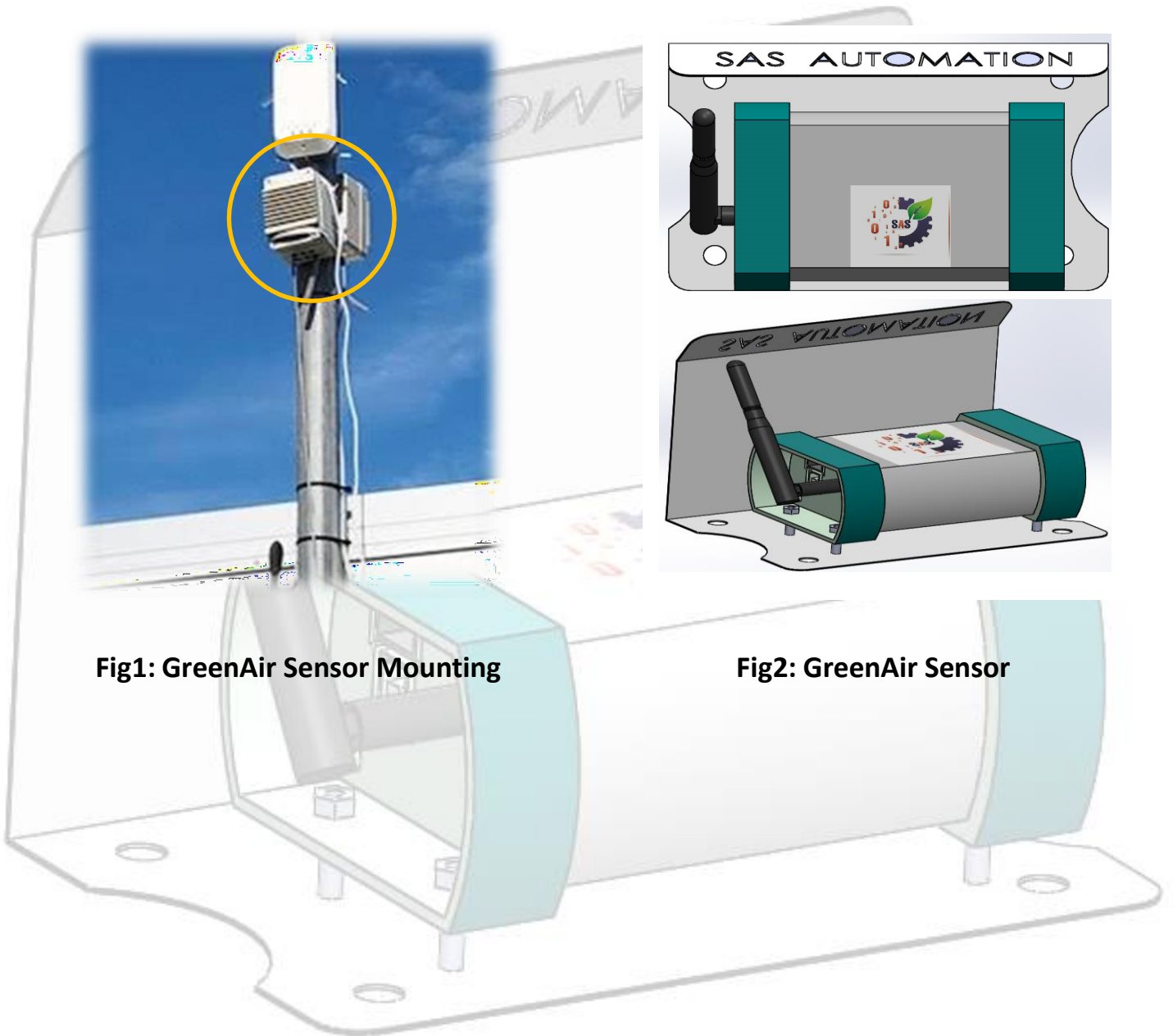
7. GreenAir Product

Fig1: GreenAir Sensor Mounting

Fig2: GreenAir Sensor

8. Limited warranty and limitation of liability:

Each **GreenAir Sensor** product is warranted to be free from defeats in material and workmanship under normal use and service. The warranty period is one year and begins on the date of shipment. Parts, product repairs, and services are warranted for 90 days. This warranty extends only to the original buyer or end-user customer of a **GreenAir Sensor** authorized reseller, and does not apply to fuses, disposable batteries, or to any product.