Odour Devices Installation Completion Report

for

SOHAR Port and Freezone Area

Client	**Sohar Industrial Port Company S.A.O.C. (SIPC)** PO Box 9, Postal Code 327, Sohar, Sultanate of Oman
For the attention of	**MR. MOHAMMED AMBOSAIDI** **MRS LAMYA AL JABRI** **MRS MARYAM KHALID**
Issue Date	**11TH SEP 2025**
Issued by	**(On-Transition)**
On-Transition Reference	**ENG-25-09-061**

SOHAR
PORT / FREEZONE

Table Of Contents

Document Record

On-Transition (Division of AMAN 1st Limited)

Report Number: ENG-25-09-061

For:

Sohar Industrial Port Company S.A.O.C. (SIPC)

Project:

Installation and Management of Odor Detection System for SOHAR Port and Freezone Area

Revision Control & Distribution

Rev	Issue Date	Description	Written/modified	Sign	Approved	Sign
0.0	11/09/25	Internal Issue	Hilal Al Mukhaini	*HM*	Jasim Al Farsi	*JF*
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1.1	Master	pdf File	AMAN 1st Limited (On-Transition) – File	11/09/25

Document Copy No _____1_____

1.0 Introduction

1.1 Executive Summary

This project aims to establish an Odor Detection and Management system for SOHAR port and Freezone area that will detect unexpected odors and their spread in all directions within the surrounding SOHAR Port and Freezone areas, which will help assess the status of ambient air quality in the area. The project is part of SOHAR Port and Freezone environmental enhancement program to improve the environmental management at SOHAR Port and Freezone.

1.2 Project Details

- **Contract No.:** SIPC 2024-029
- **Installation Period:** 30 July 2025 – 3rd August 2025
- **Contractor:** AMAN THE FIRST LLC (On-Transition)
- **Client Representative:** Mr. Mohammed Ambusaidi; Mrs. Lamya Al Jabri; Mrs. Maryam Khalid

1.3 Scope of Work

The purpose of this project is to implement an Odor Detection and Management System across SOHAR Port and Freezone to monitor and assess ambient air quality. The system will be capable of detecting unexpected odors and tracking their dispersion in all directions throughout the surrounding areas. This initiative is part of SOHAR Port and Freezone's broader environmental enhancement program, aiming to elevate environmental monitoring and management standards within the port and freezone area.

The Scope of Work includes the provision of services and equipment under the following model:

- The Customer's team tentatively identified different locations for the Odor Detection Devices ("Devices") based on their experience within the port.
- The Service Provider is expected to conduct a quick desk study reviewing the proposed locations and suggesting new locations based on the nature of the industries, infrastructure available around the proposed location, possible integration of the Devices assuring the quality of the data which will be received later.
- The Service Providers shall ensure that these locations are technically acceptable as per the

specification of the Devices and the desired outcome of their installation. Close and clear communication shall be performed by the Service Provider to the Customer in this regard.

- It is required to ensure that all Devices are positioned at the most optimal locations for the most optimal detection of odors.
- The Customer will be responsible for any civil works required to install the Devices but needs to be advised and detailed by the Service Provider for installing the Devices.
- The electrical supply for the Devices will be provided by the Customer, provided that; all required technical requirements and design is provided by the Service Provider.
- At this phase, the Service Provider shall advise on the possibility to install a single solar panel for electricity supply for the Devices, at locations where electricity is not available. The Service Provider acknowledges that the rates specified in C5, Schedule of prices applies in this case.
- The number of Devices for this year is limited to 15 only including the mobile Device, where every year the Customer might invest into more Devices. Therefore, a master plan shall be prepared by the Service Provider for long term plan considering the locations of the Devices.

1.4 Devices Installed

Device ID	Location	Type/Model	Serial No.	Installation Date	Status	Remarks
01130-WS	Sohar Port	WT1Lite	SN01130-WS	02/08/2025	Active	Fixed
01131	Sohar Port	WT1Lite	SN 01131	02/08/2025	Active	Fixed
01132	Sohar Port	WT1Lite	SN01132	01/08/2025	Active	Fixed
01133	Sohar Port	WT1Lite	SN01133	30/07/2025	Active	Fixed
01134	Sohar Port	WT1Lite	SN01134	02/08/2025	Active	Fixed
01135	Sohar Port	WT1Lite	SN01135	31/07/2025	Active	Fixed
01136	Sohar Port	WT1Lite	SN01136	01/08/2025	Active	Fixed
01137	Sohar Port	WT1Lite	SN01137	31/07/2025	Active	Fixed
01138	Sohar Port	WT1Lite	SN01138	01/08/2025	Active	Fixed

Device ID	Location	Type/Model	Serial No.	Installation Date	Status	Remarks
01139	Sohar Port	WT1Lite	SN01139	01/08/2025	Active	Fixed
01140	Sohar Port	WT1Lite	SN01140	02/08/2025	Active	Fixed
01141	Sohar Port	WT1Lite	SN01141	03/08/2025	Active	Fixed
01142	Sohar Port	WT1Lite	SN01142	03/08/2025	Active	Fixed
01143	Sohar Port	WT1Lite	SN01143	03/08/2025	Active	Fixed
01144	Sohar Port	WT1Lite	SN01144	31/08/2025	Active	Mobile

1.5 Installation Procedure

Please find attached MOS_E-NOSE Installation at Appendix C

1.6 Health, Safety & Environment (HSE)

Please find attached JHA & HRA at Appendix D

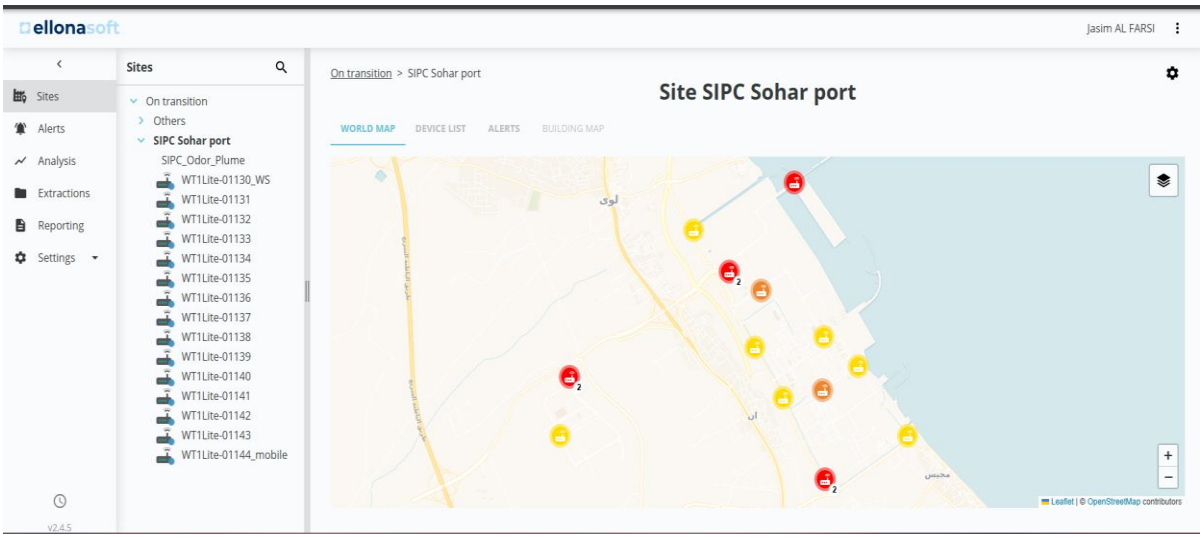
1.7 Challenges & Lessons Learnt:

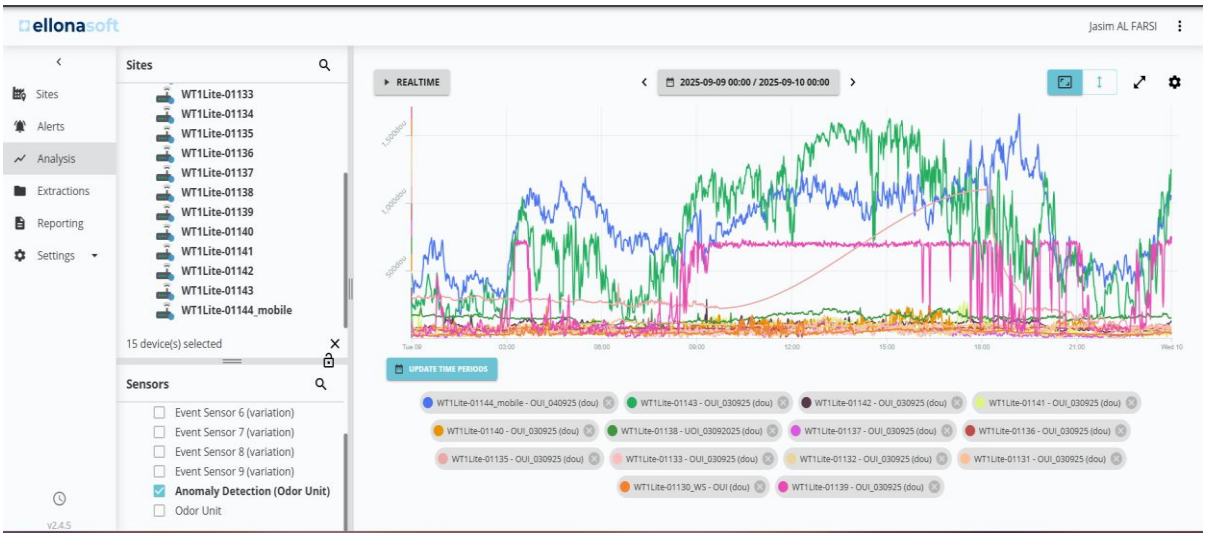
Below is a list of challenges that have been experienced during the installation process:

No.	Description	Solution/Lesson Learnt
1	The site supplied voltage to the lamppost was the main challenge during the installation process , as it was showing higher than 100-220 V which is the design specifications to power up the devices.	efforts to reduce the supplied voltage through the main source was not successful as that was found it might affect other electrical connections at the same lines. So, by using transforms to step down the voltage before passing to the devices and maintain the supplied voltage to devices between 100-220 V was alternative options that help resolve the situations and manage to power on all devices at site

1.8 Conclusion

The installation process of 14 fixed Devices and One Mobile Device was completed successfully, and system integration and data capturing was testing and Access credentials was shared with SIPC along with initial alert Modleing setting.





1.9 Appendices

- Appendix A: Site Photos of Installed devices
- Appendix B: Device Technical Datasheets
- Appendix C: Method of Statement of E-Nose Installation
- Appendix D: JHA & HRA

2.0 Appendices

Appendix A:

WT1 LITE DEVICE INSTALLATION PHOTOS

Device ID: 01130-WS

Device Installation Information	
Device ID	01130-WS
Installation Date	02/08/2025
Device Mounting Height	6m
Weather Station Mounting Height	6.5m
Power Supply	243V

Location	https://maps.app.goo.gl/WaL4DyNtWXqMecxW6?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

Device ID: 01131

Device Installation Information	
Device ID	01131
Installation Date	02/08/2025
Device Mounting Height	6m
Power Supply	244V

Location	https://maps.app.goo.gl/p9CxSUMc6MNbAFXh6?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

Device ID: 01132

Device Installation Information	
Device ID	01132
Installation Date	01/08/2025
Device Mounting Height	6m
Power Supply	133V

Location	https://maps.app.goo.gl/wTE1cWsxs9i95z2G9?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

Device ID: 01133

Device Installation Information	
Device ID	01133
Installation Date	30/07/2025
Device Mounting Height	6m
Power Supply	243V

Location	https://maps.app.goo.gl/Z5NbCT2tN1CSpdTq9?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

Device ID: 01134

Device Installation Information	
Device ID	01134
Installation Date	02/08/2025
Device Mounting Height	6m
Power Supply	131V

Location	https://maps.app.goo.gl/Y4wmmz3XvHS4RZup7?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

Device ID: 01135

Device Installation Information	
Device ID	01135
Installation Date	31/07/2025
Device Mounting Height	6m
Power Supply	131V

Location	https://maps.app.goo.gl/8HmdEYfCrpV3MRVF6?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

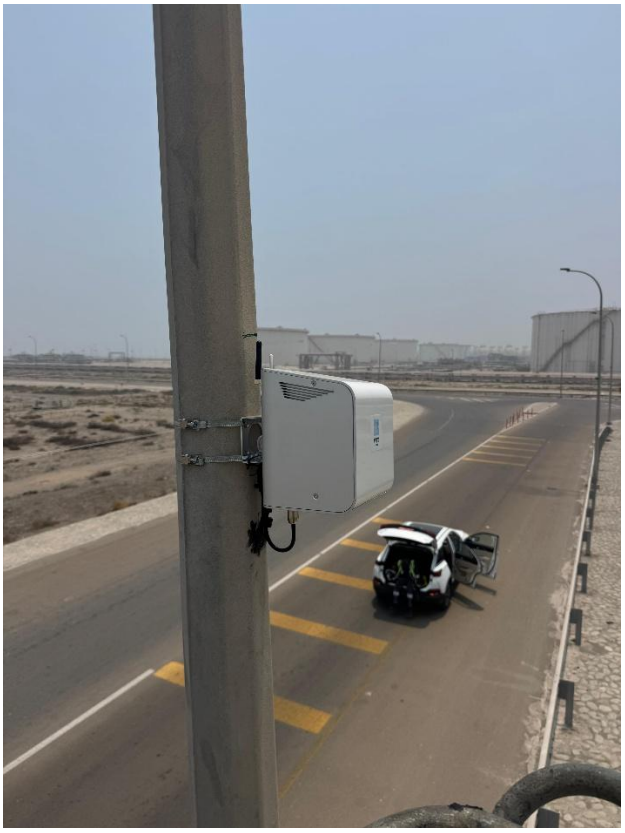
Device ID: 01136

Device Installation Information	
Device ID	01136
Installation Date	01/08/2025
Device Mounting Height	8.3m
Power Supply	236V

Location	https://maps.app.goo.gl/XbAE81zfGvb6kEEX8?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

Device ID: 01137



Device Installation Information	
Device ID	01137
Installation Date	31/07/2025
Device Mounting Height	6m
Power Supply	242V

Location	https://maps.app.goo.gl/QLRcLsSH8JXUCtyx7?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

Device ID: 01138

Device Installation Information	
Device ID	01138
Installation Date	01/08/2025
Device Mounting Height	6m
Power Supply	128V

Location	https://maps.app.goo.gl/VwqiQ5oNTnGNDdUZ7?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

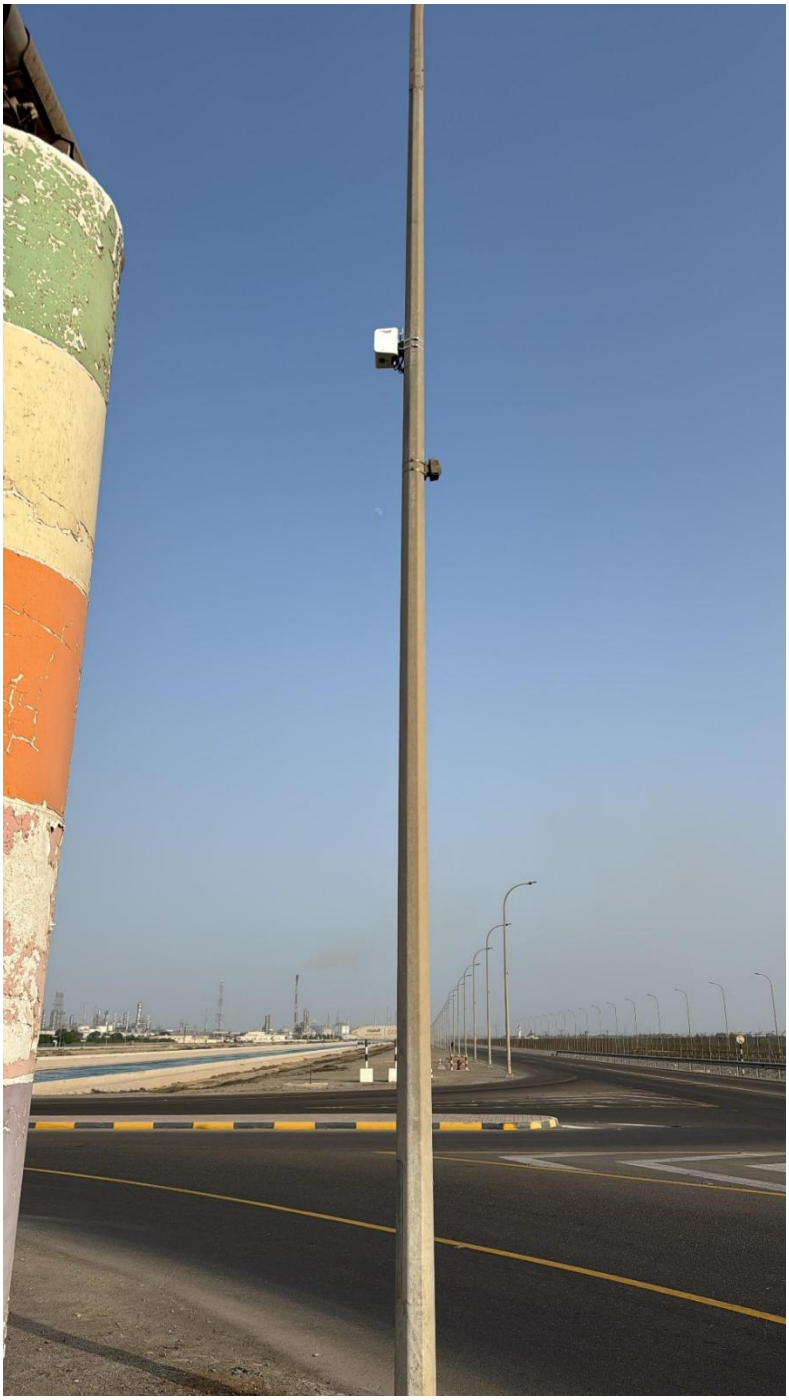
Device ID: 01139

Device Installation Information	
Device ID	01139
Installation Date	01/08/2025
Device Mounting Height	6m
Power Supply	138V

Location	https://maps.app.goo.gl/n3R5hCbQftjdhcpt8?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

Device ID: 01140



Device Installation Information	
Device ID	01140
Installation Date	02/08/2025
Device Mounting Height	6m
Power Supply	244V

Location	https://maps.app.goo.gl/efXdZ9qfW7y9r32y8?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

Device ID: 01141

Device Installation Information	
Device ID	01141
Installation Date	03/08/2025
Device Mounting Height	6m
Power Supply	241V

Location	https://maps.app.goo.gl/k5DGZGngGxYF24jQ8?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

Device ID: 01142

Device Installation Information	
Device ID	01142
Installation Date	03/08/2025
Device Mounting Height	6m
Power Supply	125V

Location	https://maps.app.goo.gl/1HLuzxugsQVUWVMs9?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

Device ID: 01143

Device Installation Information	
Device ID	01143
Installation Date	03/08/2025
Device Mounting Height	4.5m
Power Supply	245V

Location	https://maps.app.goo.gl/kyeM43KtbH5ndYaz7?g_st=iwb

WT1 LITE DEVICE INSTALLATION PHOTOS

Device ID: 01144

Device Installation Information	
Device ID	01144
Installation Date	31/08/2025
Power Supply	12V

Location	https://maps.app.goo.gl/seiGajTHbC6Q1rZAA

Appendix B:

ellona

WT1 LITE & ACCESSORIES

TECHNICAL DATA SHEET

Non-contractual image

FENCELINE ENVIRONMENTAL EMISSIONS MONITORING.

GENERAL FEATURES

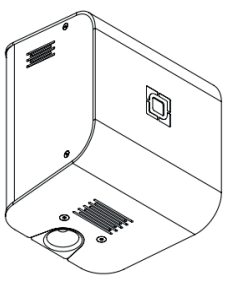
The WT1 LITE features simplified configurations, specifically designed to meet the needs of applications in contexts like smart cities or less demanding industrial environments. With its tailored functionalities, it serves as a versatile solution for in real-time capturing physical, chemical, and perceptual metrics in these specific environments.

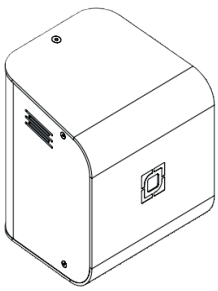
1. **Average / Data sending periods:** Every 10 seconds for real-time information updates
2. **Multisensor device:** Continuous collection of physical, chemical, and sensory data
3. **Alarm mode:** Customizable thresholds on all measurement channels
4. **Standalone design:** Ideal for automated pollution control processes
5. **Cutting-edge software:** Data acquisition and processing software platform
6. **Dispersion plume tracking:** Real-time and historical tracking of dispersion plumes
7. **Software updates:** Up-to-date with software hosted on secured servers and online update functionality
8. **Odour data banks:** Repository for odour identification and qualification
9. **Subjective perception reporting:** QR Code on each module for database adaptation, device training, and alarm threshold adjustment

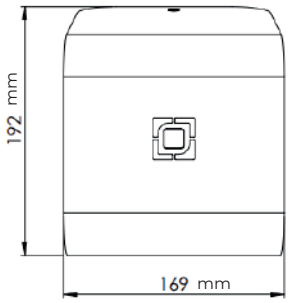
- **Operating Temperature:** -30°C/ +60°C
- **Operating Humidity:** <100% non condensing R.H
- **Atmospheric Pressure:** 500 to 1,500 mbar

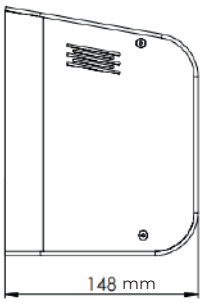
Ingress Protection ranging:
IP 65

Weight: 3kg
Enclosure: Aluminium









CONNECTIVITY & POWER

1. **Communication options:** Multi-Band 2G/3G/4G, Wi-Fi, Ethernet, Modbus RTU Slave, or recommended LTE-M/GPRS (used as LTE-M fallback)
2. **Power consumption:** between 4.5 W and 6 W
   Power options:
   - 100-240 V AC, 50-60 Hz
   - 5 V DC power adapter included: Power over Ethernet, or 5 V solar panel battery (optional accessory)
3. **Geolocation:**
   Built-in GNSS (GPS, Galileo, Beidou, Glonass)
4. **Data logging:**
   Data logger with up to 1 month of storage in case of connection loss
5. **Customizable settings:**
   Down to 1 data set every 10 seconds (depending on power options)
6. **Installation:**
   Installation time under 1 hour / Delivered fully calibrated
7. **Connectors:**
   Option 1: Ethernet (RJ45 female)
   Option 2: Micro USB
   Option 3: Slot for SIM
8. **Remote management:**
   Bidirectional communications
   Remote configuration and calibration

SENSORS COMBINATION

NATIVE FUNCTIONALITIES

- **Temperature**
- **Humidity**
- **Atmospheric pressure**
- **TVOC** (equivalent concentration)

OPTIONS

- **Noise sensor**
- **Gas sensors**
  Select up to 4 electrochemical gas sensors and 1 optical gas sensors
- **Particulate Matter sensors**
  Several options are available
- **Odour function**
  Quality / Intensity
  1 board with 4 MOX sensors

NATIVE SENSORS

	Sensor Type	Measuring Range	Accuracy*	Resolution*	Lifespan**
1	Temperature	-40 to +85° C	± 1° C	0.1° C	3-5 years
2	Atmospheric pressure	300 to 1,100 hPa	±0.6 hPa	0.1 hPa	3-5 years
3	Humidity	0 to 100 % RH	±3 % RH	0.1 % RH	3-5 years
4	Total VOC concentration equivalent	0 to 1,000 ppm	1 ppm	0.1 ppm	3-5 years

** Precision Measurements in Controlled Laboratory Conditions: 50% RH, 20°C*
*** 12-month warranty included*

OPTIONAL SENSORS (1/4)

NOISE

LIFESPAN: 3-5 years*

Sensor	Measuring Range	LOD*	Accuracy	Resolution*
Noise equivalent level	30 to 120 dBA	/	1 dBA	0.1 dBA

** Precision Measurements in Controlled Laboratory Conditions: 50% RH, 20°C*
*** 12-month warranty included*

OPTIONAL SENSORS (2/4)

GASES (1/2)

Select up to:

4 Electrochemical sensors

1 Optical sensor

LIFESPAN (contingent on the surrounding conditions):
> Electrochemical sensors: from 12 to 36 months
> NDIR: from 5 to 7 years

● = The most frequently utilized gases

	Sensor Type	Measuring Range	LOD*	Resolution*	Main Interferences
1	**Alcohols**	0 to 200 ppm	0.009 ppm	0.001 ppm	+1% CO, hydrocarbons
2	**CH_2O** Formaldehyde	0 to 10 ppm	0.002 ppm	0.001 ppm	+3% H_2; +15% CO; +50% Ethanol, organic solvents
3	**Cl_2**	0 to 20 ppm	0.018 ppm	0.006 ppm	100% NO_2; -80% H_2S
● 4	**CO**	0 to 1,000 ppm	0.063 ppm	0.001 ppm	+10% H_2; -2% NO_2
5	**CO_2** NDIR**	0 to 5,000 ppm	±30 ppm	1 ppm	
6	**EtO** Ethylene Oxyde	0 to 10 ppm	0.005 ppm	0.001 ppm	+30% H_2; +50% CO; +60% EtOH
7	**H_2**	0 to 2,000 ppm	6 ppm	2 ppm	NO<40%; C_2H_4<25%
8	**H_2**	0 to 4,000 ppm	6 ppm	2 ppm	+70% CO
9	**H_2**	0 to 40,000 ppm	15 ppm	5 ppm	+60% CO
10	**HCl**	0 to 20 ppm	0.2 ppm	0.06 ppm	50% HBr, <200% H_2S; -30% NO_2; <25% Cl_2
11	**HCN**	0 to 100 ppm	0.129 ppm	0.043 ppm	+300% H_2; -180% NO_2; -12% Cl_2; +10% SO_2

** Precision Measurements in Controlled Laboratory Conditions: 50% RH, 20°C*
*** Non Dispersive Infrared Sensor*

OPTIONAL SENSORS (3/4)

GASES (2/2)

Select up to:

4 Electrochemical sensors

1 Optical sensor

LIFESPAN (contingent on the surrounding conditions):
> Electrochemical sensors: from 12 to 36 months
> NDIR: from 5 to 7 years

● = The most frequently utilized gases

	Sensor Type	Measuring Range	LOD*	Resolution*	Main Interferences
12	H_2O_2 Peroxyde	0 to 100 ppm	0.1 ppm	0.03 ppm	+ 100% SO_2
● 13	H_2S	0 to 50 ppm	0.003 ppm	0.001 ppm	-30% NO_2; -25% Cl_2; +10% SO_2
14	NH_3	0 to 100 ppm	0.09 ppm	0.03 ppm	-20% SO_2
15	NO	0 to 250 ppm	0.011 ppm	0.001 ppm	+10% H_2S; +2% NO_2; + 3% SO_2
● 16	NO_2	0 to 5 ppm	0.003 ppm	0.001 ppm	+10% H_2S; +2% NO_2; + 3% SO_2
● 17	$NO_2 + O_3$	0 to 10 ppm	0.003 ppm	0.001 ppm	+100% Cl_2
18	N_2O NDIR**	0 to 1,000 ppm	50 ppm	20 ppm	+10% CO_2
19	O_2	0 to 30%	0.1%	0.1%	
20	PH_3	0 to 10 ppm	-	<0.1 ppm	<15% H_2S; <30% NO_2; <60% SO_2
● 21	RSH Tertiobutyl Mercaptan	0 to 14 ppm	0.1 ppm	0.03 ppm	
● 22	SO_2	0 to 50 ppm	0.008 ppm	0.001 ppm	-130% NO_2: -60% Cl_2; + 40% C_2H_4

** Precision Measurements in Controlled Laboratory Conditions: 50% RH, 20°C ** Non dispersive infrared sensor*

OPTIONAL SENSORS (4/4)

PARTICLES

LIFESPAN: 3-5 years

	Sensor	Measuring Range	Resolution*	LOD (Limit of detection)	Typical Accuracy
1	**Particles Mass Concentration**				
	PM_1	0 to 1,000 µg/m³	1 µg/m³	0.5 µg/m³	±2 µg/m³
	$PM_{2.5}$	0 to 2,000 µg/m³	1 µg/m³	0.5 µg/m³	±3 µg/m³
	PM_4	0 to 2,000 µg/m³	1 µg/m³	0.5 µg/m³	±3 µg/m³
	PM_{10}	0 to 10,000 µg/m³	1 µg/m³	0.5 µg/m³	±4 µg/m³
2	**PM count**	PM0.5, PM1, PM2.5, PM4, PM10 particles/cm³	1 particle	-	Linearity error <5%, Repeatability error <3%

** Precision Measurements in Controlled Laboratory Conditions: 50% RH, 20°C*

ODOURS

MOX LIFESPAN: 3-5 years

1 board with **4 MOX Sensors**

	Principle	ELLONA virtual sensor	Training
Odour Detection	Relative odour event in Indoor environment (baseline monitoring)	"ELLONA distance" Anomaly detection OIIL: Odour Intensity Index Level in real time	Sampling? No Inputs? Ambiant exposition to event or QR code surveys
Odour Intensity	Odour Quantification Event detection	"IOU: Instrumental Odour Unit in real time"	Sampling? No Inputs? Ambiant exposition to event or QR code surveys
Source Identification	Event Fingerprinting	"Identification" Classifier & Trigger value	Sampling? No Inputs? Ambiant exposition to event or QR code surveys

ACCESSORIES

POWER PACKS

SOLAR PANEL

The robust 12-volts high-efficiency mono & poly-crystalline silicone solar cell module is waterproof and specifically engineered for prolonged outdoor use in any environment. This photovoltaic panel ensures the device's complete autonomy from the power grid, enabling installation without the need for civil works or in remote locations.

Solar panel kit contents

A photovoltaic panel with varying capacities (10W/ 20W/ 60W/ 80W /120W), tailored to concentration needs. We provide a specific solar panel based on the local sunshine rate
A sturdy panel support
Batteries from 7.5 Ah to 120 Ah capacity

Technical information

Output	Size (mm)	Weight (Kg)	Pmax (W)	Vmp (V)	Imp (A)	Voc (V)	Isc (A)
10	355 X 255 X 34	1.4	10	17	0.59	22	0.66
20	455 X 380 X 34	2.2	10	17	1.18	22	1.32
60	685 x 670 x 35	6.0	60	17.2	3.49	21.6	3.97
80	815 x 670 x 35	7.8	80	17.2	4.65	21.6	5.00
120	1250 x 670 x 35	12.0	120	17.2	6.98	21.6	7.93

ACCESSORIES

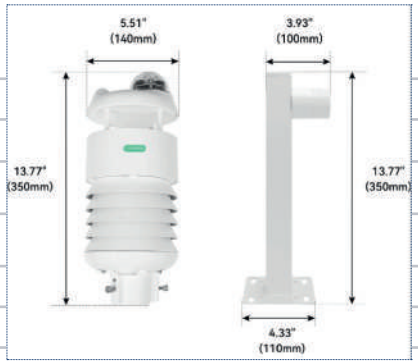
WEATHER SYSTEM

7-in-1 Ambient Weather Station, high-precision sensors for temperature, humidity, barometric pressure, light, precipitation (rain), wind speed, and wind direction.
The weather station offered by Ellona is an all-in-one weather monitoring system using the RS485 Modbus protocol, designed to continuously measure various atmospheric conditions, including air temperature, relative humidity, barometric pressure, light intensity, precipitation (optical), wind speed, and wind direction (ultrasonic). It offers high resolution and accuracy with a rugged and aesthetic housing.

Key features:

> **All-in-one weather station:** This weather monitoring system is designed to continuously measure various atmospheric conditions, including air temperature, relative humidity, barometric pressure, light intensity, precipitation intensity, wind speed, and wind direction.
> **RS485 compatibility:** The output signal is RS485 with the standard Modbus-RTU communication protocol, allowing modification of the communication address and baud rate, as well as other features. RS485 communication supports distances of up to 1200 meters and enables secondary development for a wide range of applications.
> **Built-in electronic compass:** An integrated magnetometer facilitates installation. The electronic compass can also be disabled, allowing manual orientation of the sensor to the north.
> **Built-in heater:** Integrated heaters can be activated to cope with extreme weather conditions.
> **Integrated design:** Ultrasonic wind speed and direction sensors without moving parts.
> **Accurate measurement:** Radiation shields are integrated to ensure precise ambient measurements.

Technical specifications



Power supply	12V~ 24V (0.42W)		
Heating power supply	24V (21W)		
Support protocols	RS485 (MODBUS-RTU)		
IP rating	IP66		
Working temperature	-40°C ~ + 85°C (-104°F ~ + 185°F)		
Working Humidity	0 à 100 %RH (non-condensing)		
Weight	1,551 kg (3,42 lb)		
Measurement parameter	**Measurement range**	**Measurement accuracy**	**Resolution**
Air temperature	-40~85°C	±0.1°C	0.01°C
Air humidity	0~100%RH	±1.5%RH	0.01%RH
Barometric pressure	300~1,250 hPa	±50Pa	10 Pa
Wind speed	0~60 m/s standard range 0~75m/s extended range Up to 80 m/s withstand range	±0.3m/s(≤10m/s); ±3% (10m/s ~ 50m/s) ±5% (>50m/s)	0.1m/s
Direction of the wind	0~360° (@-40°C~60°C)	±3.0°	0.1°
Light intensity	0~188,000 Lux	5% * reading	5 Lux
Rain intensity	0~200mm/h	±10%	0.2mm/0.02mm

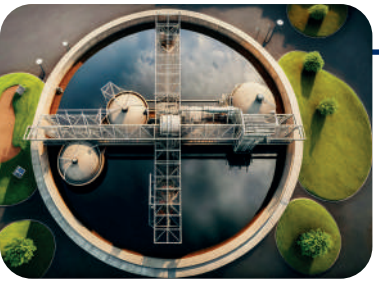
CONFIGURATIONS
Examples

CONSTRUCTION SITE

CO / NO / NO_2 / PM / Noise/ °C / %RH / hPa

WASTE COMPOSTING CENTER

NH_3 / H_2S / RSH / PM / Odours / °C / %RH / hPa



WASTE WATER TREATMENT PLANTS

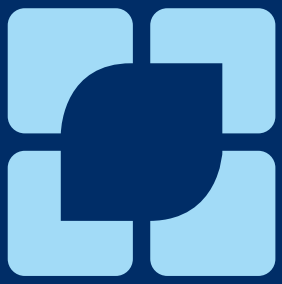
NH_3 / H_2S / RSH / VOCs / Odours / °C / %RH / hPa

PORTS

CO / NO / NO_2 / SO_2 / VOCs / Odours / Noise / °C / %RH / hPa

AIRPORTS

CO / NO / NO_2 / VOCs / Odours / Noise / °C / %RH / hPa



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Appendix C:

TRANSITION

Method Statement for Installation of E-Nose on Lamppost Using Man-Lift

Project Title	Installation of E-Nose Sensors on SIPC Lampposts		
Location	SIPC PORT & FREE ZONE		
Prepared By	**Jasim Al Farsi**	**Date**	**16/7/2025**

Scope of Work	This method statement covers safe installation of Electronic Nose (E-Nose) devices which is on existing lampposts using a man-lift. The E-Nose is designed to detect and monitor air quality & Odors.
Roles & Responsibilities	➢ Site Supervisor – Oversee installation and ensure safety ➢ Safety Officer - Monitor compliance with safety standards ➢ Technician - Perform installation and testing ➢ Man-lift Operator - Operate the lift in a safe and controlled manner
Tools and Equipment	➢ E-Nose units ➢ Mobile Man-lift (e.g., boom lift or scissor lift) ➢ Harness and fall arrest system ➢ Hand tools (screwdrivers, drill, spanners, etc.) ➢ Power drill and bits ➢ Cable ties / clamps ➢ Weatherproof enclosure ➢ Voltage detector (for electrical safety) ➢ Personal Protective Equipment (PPE) ➢ Barricade Tapes, Warning signs ➢ First Aid Kid
Safety Precautions	➢ Conduct toolbox talk before work. ➢ All workers must wear PPE: hard hats, gloves, reflective vests, safety boots, and harnesses. ➢ Man-lift must be operated by trained and certified personnel only. ➢ Work area to be cordoned off to prevent 3rd Party access. ➢ Weather conditions must be suitable (no rain, high wind, etc.) ➢ Check for overhead electrical cables and maintain safe distance.

TRANSITION

Method Statement for Installation of E-Nose on Lamppost Using Man-Lift

Work Procedure	**Preparation** ➢ Obtain necessary permits (e.g., work at height permit). ➢ Verify location and position of lampposts to receive E-Nose. ➢ Check the E-Nose devices and tools for readiness. ➢ Inspect man-lift for safety and operational condition. ➢ Establish an exclusion zone around the work area. **Installation Steps** ➢ Position man-lift securely on stable ground. ➢ Operator and technician board the man-lift with harnesses connected to anchor points. ➢ Lift the technician to the mounting height on the lamppost. ➢ De-energize the lamppost if necessary (if working near electrical connections). ➢ Mount the E-Nose using brackets, clamps, or screws based on design. ➢ Connect power/data cable. ➢ Secure cables with UV-resistant cable ties or conduits. ➢ Test the unit for power and connectivity (LEDs, signal). ➢ Lower the man-lift and confirm data transmission on the monitoring system. ➢ Repeat the process for remaining lampposts. **Completion** ➢ Clean up the worksite. ➢ Remove all equipment and barricades. ➢ Sign off installation checklist and commissioning report.
Emergency Procedures	➢ In case of fall, initiate rescue protocol immediately. ➢ For electric shock or injury, stop work and contact emergency services. ➢ Have a first aid kit and trained personnel on site.
Environmental Considerations	➢ Avoid unnecessary idling of man-lift engine. ➢ Prevent dropping tools or parts from height. ➢ Ensure no waste or packaging is left at the site.

Appendix D:

Job Hazard Analysis (JHA)

Project Title	E-Nose Installation on Lampposts	**Location**	SIPC Port & Free Zone
Conducted By	Jithin/Jhovin/Hilal/Maryam	**Date**	15th July 2025
Job Description	Installing air-quality monitoring E-Nose units on existing lampposts using a mobile elevated work platform (MEWP/man-lift)		

- **Step-by-Step JHA Table**

Job Step	Potential Hazards	Risk	Control Measures
1. Site Preparation and Arrival	- Vehicle movement - Poor visibility - 3rd Party interference	- Collision with people or property - Equipment damage	- Park in designated areas - Use spotters if needed - Wear high-visibility vests - Secure work zone with cones/barriers
2. Equipment Inspection (Man-lift, Tools)	- Mechanical failure - Faulty tools	- Injury from malfunction - Work delay	- Daily checklist and pre-use inspection - Replace defective equipment - Only trained personnel to operate
3. Unloading and Handling E-Nose Device	- Manual handling injuries - Dropping equipment	- Strains, sprains - Impact injuries	- Use correct lifting technique - Lift with two people if required - Use lifting platform
4. Setting Up Man-Lift	- Unstable surface - Overhead cables - Unauthorized access	- Tip-over - Electrocution	- Set up on level surface - Conduct site hazard check - Barricade area and post signs - Maintain clearance from power lines (if Any)
5. Accessing Lamppost (Elevating Technician)	- Fall from height - Falling tools - High winds	- Serious injury or fatality	- Use fall protection (harness with lanyard) - Secure tools with lanyards - Monitor wind speed - Limit number of personnel on platform

ON TRANSITION

Job Hazard Analysis (JHA)

Job Step	Potential Hazards	Risk	Control Measures
6. Installing E-Nose on Lamppost	- Electric shock (if near wiring) - Striking head/hands - Improper mounting - Falling tools	- Electrical burns - Cuts, abrasions - Equipment failure - Serious injury	- Isolate power if applicable - Use insulated tools - Use Proper PPE - Follow Device Manual Instructions - Use fall protection (with lanyard)
7. Cable Routing and Connection	- Tripping hazard - Incorrect connections - Tool slipping	- Falls - Device malfunction - Minor injuries	- Use secure routing paths and conduit - Test before powering up - Keep cables away from footpaths if applicable
8. Testing Device / Final Checks	- Device not functioning - Exposure to elements	- Repeat work - Damage to device	- Perform function test at onsite - Ensure weatherproofing (IP-rated enclosure)
9. Lowering Man-lift and Site Clean-up	- Equipment in path - 3rd Party interference - Improper storage	- Trip hazard - Delays or rework	- Clear tools and debris - Store tools properly - Sign off with site supervisor

- **PPE Required**
  - Safety helmet
  - High-visibility vest
  - Safety boots
  - Gloves
  - Fall arrest harness & lanyards
  - Eye protection (if drilling or cutting)

- **Emergency Procedures**
  - Nearest clinic/hospital:
  - Emergency contact:
  - First aid kit on-site
  - Fire extinguisher in man-lift/vehicle

- **JHA Approval Signatures**

Name	Jasim Al Farsi
Position	MD
Sign	
Date	16/7/2025

Odors Devices Installation Risk Assessment

REF. NO. 2025/07-0110	**TITLE: E-Nose Installation - General Risk Assessment**
	Assessment team : Jithin CV, Hilal, Maryam, Jhovin

JOB / Activity STEPS	**HAZARD**		**INTERIM RISK with out control measures**			**Prevention Measures**	**Mitigation Measures**	**RESIDUAL RISK**		
Description	**Hazard Description and Effect**	**People at Risk**	**Hazard Severity**	**Likelihood of Occurrence**	**Risk Rating**	**To reduce Likelihood**	**To reduce Severity**	**Hazard Severity**	**Likelihood of Occurrence**	**Risk Rating**
Preparation of Equipment and Site Arrival of Crew and Lifting Equipment	Fall from height - Serious injury or fatality Man-lift tipping or mechanical failure - Injury or death Equipment malfunction - Delays / minor injury	Operator, Technician	**5**	**4**		□ Toolbox talk before work □Follow work-at-height procedures □Daily equipment inspection □Check and test all equipment before use	□ Use full-body harness with fall arrest □ Certified man-lift operator □Daily equipment inspection □Use on level ground only □Operate within lift limits □Avoid working in strong winds □Use tools as per manufacturer's instructions	**2**	**3**	**L**
Device Installation & Handling tools at height	Electrical shock from lamppost Burns or electrocution Falling tools or materials Injury Poor weather (rain, wind) Manual handling (lifting E-Nose units) Back injury, strain Slips, instability, electrical risk	All	**4**	**3**		□Use insulated tools and voltage tester □Establish exclusion zone □Monitor weather forecasts	□Isolate electrical supply before work □Follow lock-out/tag-out (LOTO) procedures □Secure tools with tethers □Wear hard hats □Suspend work during poor conditions □Use assistance or lifting aids if required	**2**	**1**	**L**
Man-lift equipment Movement	Collision with pedestrians or vehicles Minor to serious injuries	All	**3**	**3**		□Set up warning signs and barricades	□Assign flagman if near traffic □Work during off-peak hours	**3**	**2**	**L**

Approved by : Jasim Al Farsi (MD)	**SIGNATURE:**	**REVIEW DATE: 17/7/2025** **Next review: 16/01/2026**
ISSUE No.: 2025/07-0110	**ORIGINAL DATE OF ASSESSMENT: 16/7/2025**	

		Rating System	1	2	3	4	5
		Hazard Severity	**Negligible** - Injury not requiring absence from work	**Slight** - Minor Injury requiring first aid treatment	**Moderate** - Injury leading to a lost time accident	**High** - Involving a single death or serious injury	**Very High** - Multiple Deaths
		Likelihood of Occurrence	**Very Unlikely**- A freak combination would be required for an incident to result	**Unlikely** - A rare combination of factors would be required for an incident to result	**Possible** - Could happen when additional factors are present but otherwise unlikely to occur	**Likely** - Not certain to happen but an additional factor may result in an accident	**Very Likely**- Almost inevitable that an incident would result

			Hazard Severity				
			1	2	3	4	5
Likelihood of Occurrence	1		LOW	LOW	LOW	LOW	LOW
	2		LOW	LOW	LOW	MEDIUM	MEDIUM
	3		LOW	LOW	MEDIUM	MEDIUM	HIGH
	4		LOW	MEDIUM	MEDIUM	HIGH	HIGH
	5		MEDIUM	MEDIUM	HIGH	HIGH	HIGH

LOW RISK As low as reasonably practicable (ALARP): May be acceptable. However, review task to see if risk can be reduced further

MEDIUM RISK Task should only proceed with appropriate management authorisation after consultation with specialist team. Where possible the task should be redefined to take account of the hazards involved or the risk should be reduced before starting.

HIGH RISK Task must not proceed. It should be redefined or further control measures put in place to reduce risk.The controls should be re-assessed for adequacy prior to task commencement.

Hierarchy of Risk Controls

In planning to control hazards, consider action in accordance with the steps below in the order in which they are listed. This approach should be adopted even if all specific legislative requirements have been complied with as legislation generally sets minimum standards.

Elimination	Can the hazard be removed completely? This is the most effective method, e.g. provide socket outlet at point of use eliminating need for trailing cable
Substitution	Is there a safer alternative? E.g. solvent with a higher flash point, a substance which is 'harmful' to replace one which is 'very toxic'
Reduction	Can the risk be reduced at source? E.g. machine with a lower noise level, low voltage tools.

The above methods deal with the hazard itself and are therefore more effective than the following measures, which does nothing with the hazard other than try to control it.

Enclosure	Can the hazard be enclosed or contained? E.g. guard on dangerous part of machine, noise reducing enclosure around a machine.
Remove Person	Can people be kept away from the hazard? E.g. barrier around excavation, sound proofed room in noisy area
Reduce Contact	Can the hazard be diluted or time of contact or quantity be reduced? E.g. rota system for persons in area, noisy machine only used for part of the day.
Personal Protection	Can something be provided to the person to lessen the injury effect of accidents or try to make the person aware of the hazard? E.g. helmets, ear defenders, gloves.

Note: Personal Protective Equipment on its own is the least effective means of controlling hazards and must be considered as a last resort.