ellona

WT1 LITE & ACCESSORIES

TECHNICAL DATA SHEET

Non-contractual image

FENCELINE ENVIRONMENTAL EMISSIONS MONITORING.

GENERAL FEATURES

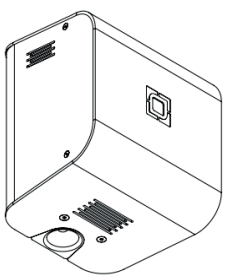
The WT1 LITE features simplified configurations, specifically designed to meet the needs of applications in contexts like smart cities or less demanding industrial environments. With its tailored functionalities, it serves as a versatile solution for in real-time capturing physical, chemical, and perceptual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

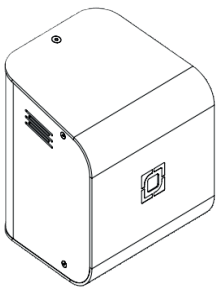
1. **Average / Data sending periods:** Every 10 seconds for real-time information updates
2. **Multisensor device:** Continuous collection of physical, chemical, and sensory data
3. **Alarm mode:** Customizable thresholds on all measurement channels
4. **Standalone design:** Ideal for automated pollution 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

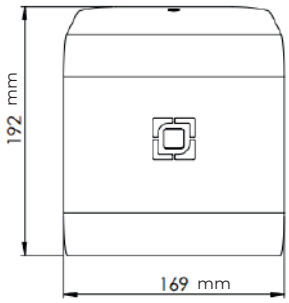
- **Operating Temperature:** -30°C/ +60°C
- **Operating Humidity:** <100% non condensing R.H
- **Atmospheric Pressure:** 500 to 1,500 mbar

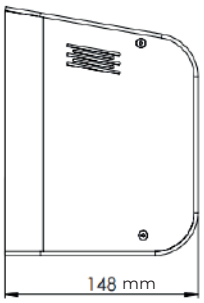
Ingress Protection ranging:
IP 65

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

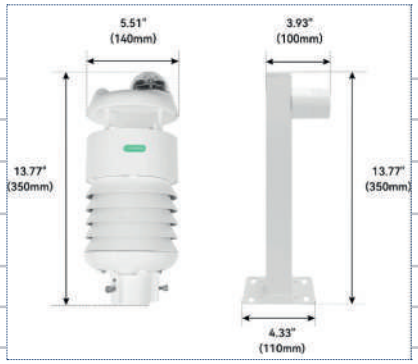
WEATHER SYSTEM

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

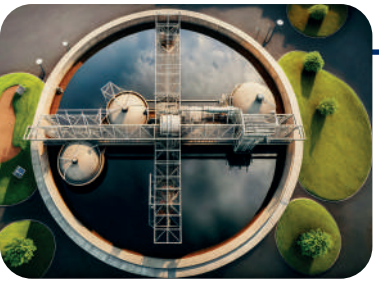
CONFIGURATIONS
Examples

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

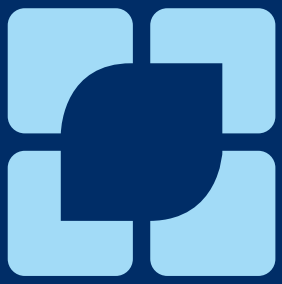
NH_3 / H_2S / RSH / VOCs / Odours / °C / %RH / hPa

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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