ellona

SOURCE & FENCELINE
ENVIRONMENTAL EMISSIONS MONITORING.

GENERAL FEATURES

A versatile multisensor device excelling in comprehensive and continuous data collection, monitoring parameters ranging from gas levels and odours to VOCs, fine particles, and noise, providing an all-encompassing solution for seamlessly capturing physical, chemical, and perception metrics.

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 Automation features: On-off relay and 4-20 mA switch for automated triggering of processes or sampling

5 Standalone design: Ideal for automated pollution control processes

6 Cutting-edge software: Data acquisition and processing software platform

7 Dispersion plume tracking: Real-time and historical tracking of dispersion plumes
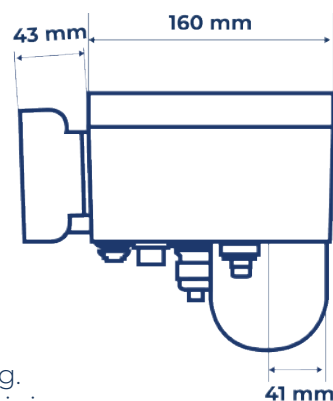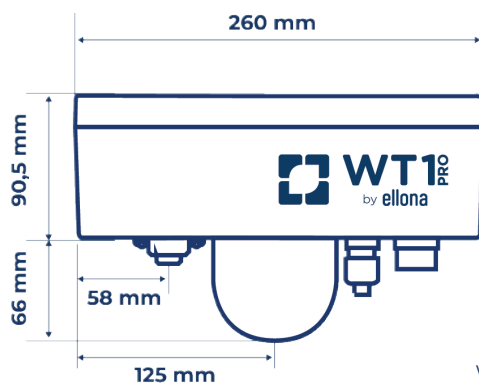
8 Software updates: Up-to-date with software hosted on secured servers and online update functionality

9 Odour data banks: Repository for odour identification and qualification

10 Subjective perception reporting: QR Code on each module for database adaptation, device training, and alarm threshold adjustment

+
Targeting surface & channeled sources

Fingerprinting, gas analysing, odour quantification under reference standards (EN 13725, ASTM 679)

- **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

WT1 PRO by ellona

260 mm
90,5 mm
66 mm
58 mm
125 mm

43 mm
160 mm
41 mm

Weight: 3 kg.
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
- 12 V DC power adapter included: Power over Ethernet, or 12 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

6   **Installation:**
Installation time under 2 hours / Delivered fully calibrated
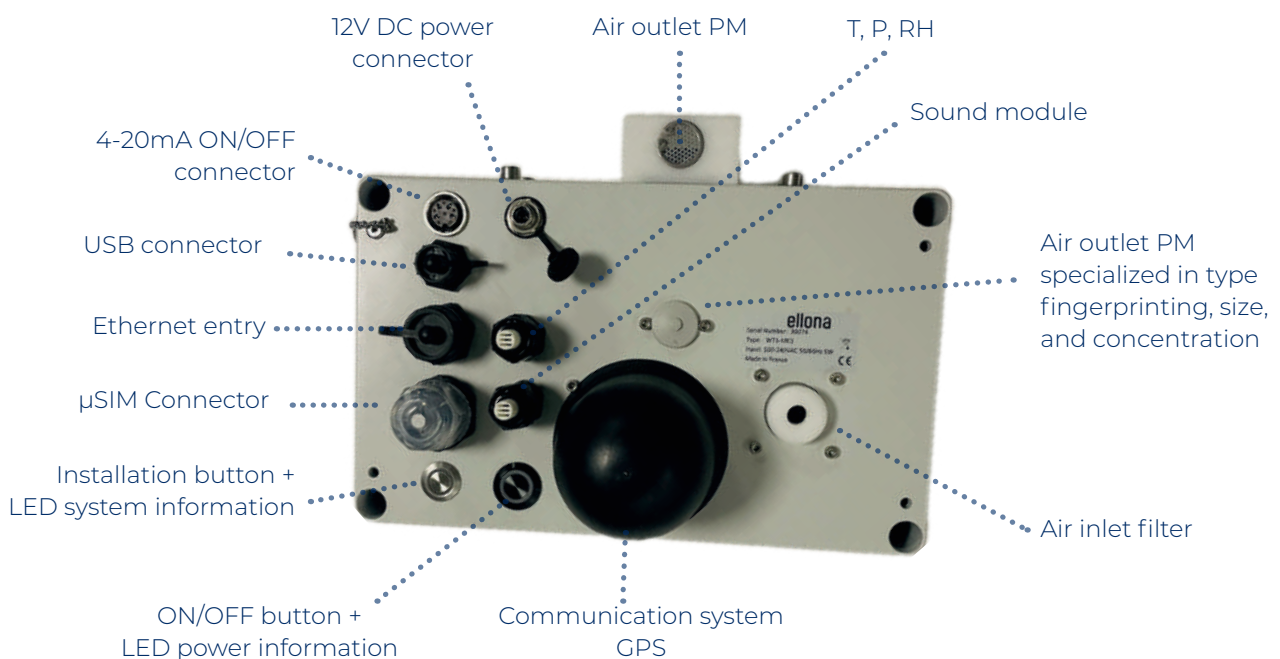
7   **Connectors:**
Option 1: Ethernet (RJ45 female)
Option 2: Micro USB
Option 3: 4-20 mA, 0-10 V, Lumberg
Option 4: External slot for SIM

8   **Remote management:**
Bidirectional communications
Remote configuration and calibration

12V DC power connector   Air outlet PM   T, P, RH

4-20mA ON/OFF connector

Sound module

USB connector

Ethernet entry

µSIM Connector

Air outlet PM specialized in type fingerprinting, size, and concentration

Installation button + LED system information

ellona

ON/OFF button + LED power information

Communication system GPS

Air inlet filter

SENSORS COMBINATION

NATIVE FUNCTIONALITIES

- **Temperature**
- **Humidity**
- **Atmospheric pressure**

OPTIONS

Noise sensor

Gas sensors
Select up to 6 electrochemical gas sensors and 2 optical gas sensors (or 1 optical sensor + 1 PID)

Particulate Matter sensors
Several options are available

Odour function
quality / intensity
1 board with 4 MOX sensors

NATIVE SENSORS

Sensor	Measuring Range	LOD*	Accuracy	Resolution*	Lifespan**
1 Temperature	-40 to +85° C	/	± 1° C	0.1° C	3-5 years
2 Humidity	0 to 100 % RH	/	±3% RH	0.01% RH	3-5 years
3 Atmospheric pressure	300 to 1,100 hPa	/	±1 hPa	0.1 hPa	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

GASES (1/2)

Select up to:

6 Electrochemical sensors
2 Optical sensors

Or:

6 Electrochemical sensors
1 Optical sensor + **1** PID

LIFESPAN (contingent on the surrounding conditions):
> **Electrochemical sensors**: from 12 to 36 months
> **PID**: 10,000 hours
> **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_4 NDIR**	0 to 5%	0.01%	0.02% of FS range	Light hydrocarbons
3	CH_2O Formaldehyde	0 to 10 ppm	0.002 ppm	0.001 ppm	+3% H_2; +15% CO; +50% Ethanol, organic solvents
4	Cl_2	0 to 20 ppm	0.018 ppm	0.006 ppm	100% NO_2; -80% H_2S
● 5	CO	0 to 1,000 ppm	0.063 ppm	0.001 ppm	+10% H_2; -2% NO_2
6	CO_2 NDIR**	0 to 10,000 ppm	± 30 ppm	1 ppm	
7	EtO Ethylene Oxyde	0 to 10 ppm	0.005 ppm	0.001 ppm	+30% H_2; +50% CO; +60% EtOH
8	H_2	0 to 2,000 ppm	6 ppm	2 ppm	NO<40%; C_2H_4<25%
9	H_2	0 to 4,000 ppm	6 ppm	2 ppm	+70% CO
10	H_2	0 to 40,000 ppm	15 ppm	5 ppm	+60% CO
11	HCl	0 to 20 ppm	0.2 ppm	0.06 ppm	50% HBr, <200% H_2S; -30% NO_2; <25% Cl_2
12	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

GASES (2/2)

Select up to:

6 Electrochemical sensors
2 Optical sensors

Or:

6 Electrochemical sensors
1 Optical sensor + **1** PID

LIFESPAN (contingent on the surrounding conditions):
> Electrochemical sensors: from 12 to 36 months
> PID: 10,000 hours
> NDIR: from 5 to 7 years

● = The most frequently utilized gases

	Sensor Type	Measuring Range	LOD*	Resolution*	Main Interferences
13	H_2O_2 Peroxyde	0 to 100 ppm	0.1 ppm	0.03 ppm	+ 100% SO_2
● 14	H_2S	0 to 50 ppm	0.003 ppm	0.001 ppm	-30% NO_2; -25% Cl_2; +10% SO_2
15	NH_3	0 to 100 ppm	0.09 ppm	0.03 ppm	-20% SO_2
16	NO	0 to 250 ppm	0.011 ppm	0.001 ppm	+10% H_2S; +2% NO_2; + 3% SO_2
● 17	NO_2	0 to 5 ppm	0.003 ppm	0.001 ppm	+10% H_2S; +2% NO_2; + 3% SO_2
● 18	$NO_2 + O_3$	0 to 10 ppm	0.003 ppm	0.001 ppm	+100% Cl_2
19	N_2O NDIR**	0 to 1,000 ppm	50 ppm	20 ppm	+10% CO_2
20	O_2	0 to 30%	0.1%	0.1%	
21	PH_3	0 to 10 ppm	-	<0.1 ppm	<15% H_2S; <30% NO_2; <60% SO_2
● 22	RSH Tertiobutyl Mercaptan	0 to 14 ppm	0.1 ppm	0.03 ppm	
● 23	SO_2	0 to 50 ppm	0.008 ppm	0.001 ppm	-130% NO_2: -60% Cl_2; + 40% C_2H_4
24	VOC concentration	0 to 10 ppm	0.003 ppm	0.001 ppm	non-specific detection of compounds having an IP < 10.6 eV

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

OPTIONAL SENSORS (4/4)

PARTICLES

LIFESPAN: 3-5 years

You can request the addition of unlisted sensors as well (e.g. 24 classes from 0.3µm to 40µm)

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$_{10}$	0 to 10,000 µg/m³	1 µg/m³	0.5 µg/m³	±4 µg/m³
2 PM count	PM1, PM2.5, PM10 particles/cm³	1 particle	-	Linearity error <5%, Repeatability error <3%

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

ODOURS

MOX LIFESPAN: 3-10 years

1 board with **4** MOX Sensors

|	Principle	ELLONA virtual sensor	Training
Odour Detection	Source baseline odour variation with an upper threshold limit at 5 IOU	"ELLONA distance" Anomaly detection OIIL: Odour Intensity Index Level in real time	Sampling? NO Inputs? Source variation observation or QR code
Odour Intensity	Odour Quantification & EN 13725, ASTM 679	"IOU: Instrumental Odour Unit in real time"	Sampling? Olfactometry Sample Inputs? QR code + Dynamic Olfactometry
Source Identification	Source Fingerprinting	"Identification" Classifier & Trigger value	Sampling? Source Inputs? QR code + Dynamic Olfactometry

7

ALL-IN-ONE SYSTEM

DRYER

Comprehensive solution for monitoring air nuisances in channeled sources, seamlessly integrated with the WT1 PRO monitoring station to mitigate the impact of high humidity and enhance measurement reliability.

Technical information

Dimension	600 x 600 x 300 mm
Weight	30 kg (66.14 lbs)
Power supply	220V - 50/60 Hz
IP protection	IP54
Air throughput	1.2 L/min
Temperature range	5°C / 50°C
Communication	Ethernet
Sample outlet dew point	adjustable from +2°C to +15°C
Temperature stability	within 0.1°C
Sampling probe	· Self-regulation up to 50°C · Replaceable PTFE tube · Adjustable length · Anti-frost mechanism
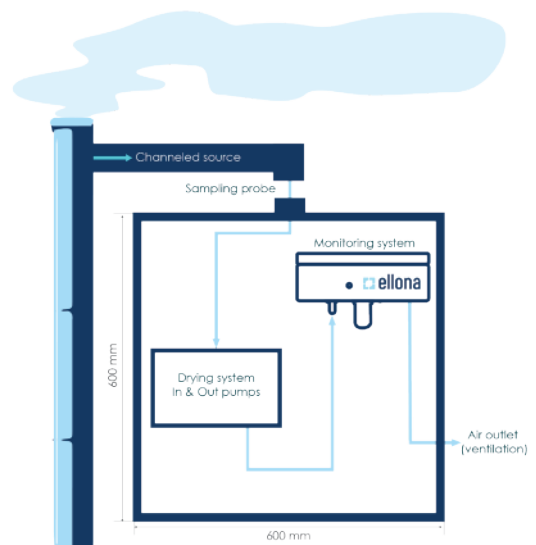
SAMPLING ACCESSORIES (1/4)

Air sampling involves collecting and analyzing air samples from specific locations or environments to evaluate the presence of contaminants, particles, odours, or gases. With the on/off relay and the 4-20 mA switch integrated into the WT1 PRO, seamlessly pairing it with diverse sampling devices becomes straightforward, providing flexibility and compatibility across various applications.

VACUUM CHAMBER   Olfactometry

The Vacuum Chambers, simple to operate, portable, and budget-friendly, serve as efficient air sample collection devices. They pull undiluted samples directly from stacks, ambient air, or other sampling devices like flux chambers or wind tunnels.

Information	
Versatile usage	> Cost-effective and portable air sample collection devices. > Pull undiluted samples from stack, ambient air, or other devices.
Integration with WT1 System	> Equipped with an external trigger for seamless connection to the WT1 system. > Enables sample acquisition in response to various conditions such as odour exceedance or changes in wind direction.
Adjustable Sampling Rate	Users can easily adjust the sampling rate using a small external knob for precise «time sampling.»
Multiple Sizes	Available in 10L, 25L, and 50L sizes to accommodate different sampling needs.
Streamlined Process	Auto-purge function creates positive pressure within the chamber, simplifying the process.
Powerful Sampling Pump	Built-in variable flow rate sampling pump capable of handling up to 12 lpm, even in negative pressure conditions.
Long Battery Life	> Equipped with 12V high-capacity rechargeable batteries. > Battery sustains the sampling pump for over 12 hours of continuous operation (approximately 75 samples).

ACCESSORIES

SAMPLING ACCESSORIES (2/4)

4WAYS SAMPLER [Chromatography]

> Portable automatic air sampler for easy programmable sampling.
> Real-time monitoring of temperature and humidity ensures data accuracy.
> Embedded software enables swift deployment in under five minutes.
> Versatile power options include mains or battery operation.
> External air inlet connectors enhance flexibility.
> Integrated circuit and 7-micron particulate air filter for user-friendly design.
> Applications range from occupational exposure verification to industrial hygiene measurements.
> User-friendly programming and monitoring through a color touch screen interface.
> Sequential sampling on up to four channels with independent programming.
> Data logging for quality control during sampling.
> Versatile applications include verifying occupational exposure, conducting industrial hygiene measurements, performing chamber test studies, and quantifying material emissions.

Technical information

Dimension	40.5 X 33 X 17 cm	**Power consumption**	65 W max
Weight	9kg (including battery)	**Flow rate range**	0-1,000 mL.min^{-1}
Operational conditions	2-40°C / 20-80% RH	**Flow rate accuracy**	± 1% of full scale
Storage conditions	-10°C +60°C / 0-85% RH	**Flow rate uncertainty**	± 0.3% of reading
Display touchscreen	5.7'' TFT display; resolution 320 X 240	**Nb of channels**	4 (selection by valve system)
Power supply	Input 100 - 240 V ±10% 1.8 A max 50-60 Hz Output 24 V 2.7 A max	**Sampling time**	Independently programmable on 4 channels
		Tube Type	Thermodesorption and/or solvent desorption
		Sample conditions	RH: 20-80% T: 2-40°C
Battery life	Lithium-Ion / Autonomy 8h		

4WAYS Sampler Kit contents		
	4WAYS sampler and integrated battery	Teflon sampling line
	Protection foam	Quick start guide
	AC adapter & cable	Certificate of inspection
	DNPH tubes SeP Pak WATERS© adaptators	USB stick with instruction manual
	Mounted particle filter with strainer	Internal sampling pump
	Quick connectors	

SAMPLING ACCESSORIES (3/4)

SAMPLING FLOW CHAMBER

Olfactometry

Dedicated to olfactometry and gaseous emissions sampling, this flow chamber is an indispensable tool for capturing diffuse sources of gaseous compounds and odours. Unlike point sources concentrated at a single spot, area emission sources release odours or gaseous compounds from surfaces. These sources, often composed of solid or liquid clusters, require specialized equipment - a flow chamber - for effective sampling.

Flow Chamber Design:
> The flow chamber, affixed directly to the emitting surface, captures escaping gaseous emissions
> Inert gas is introduced within the chamber to promote air movement, facilitating odor generation.
> Sampling is achieved without modifying the emitting surface, making the process efficient.

Operational Features:
> Equipped with two valves seamlessly connected to the WT1 PRO system.
> Floating buoys aid in sampling gaseous emissions from liquid surfaces.
> Crafted from high-quality stainless steel, treated with silico steel to minimize absorption.
> Fully compliant with strict criteria established by the US Environmental Protection Agency (EPA).

Versatility in Applications:
The flow chamber finds application in various scenarios, including composting windrows, wastewater treatment sites, retention basins, waste spreading simulations, sanitary landfill sites, and areas with contaminated soils, among other potential use cases.

Technical information

Instrument	Flow chamber
Material	Stainless steel
Diameter	16 inches (0.406 m)
Weight	7.32 lb (3.32 kg)
Material thickness	0.0516 in (1.31 mm)
Height	14 inches (0.360 m)
Volume	3.401 in³ (0.0557 m³)

ACCESSORIES

SAMPLING ACCESSORIES (4/4)

SILCOCAN CANISTER

Chromatography

SilcoCan Canisters offer an unparalleled solution for inert sampling, excelling in versatility, precision, and storage stability.

Versatile, precise and reliable:
> Ideal choice for inert sampling, suitable for both VOCs and reactive sulfur compounds.
> Siltek-treated surfaces ensure excellent storage stability for sulfur VOCs in varying conditions. Siltek treatment creates an inert layer on the interior surface, suitable for both inactive and reactive compounds.
> Crafted from stainless steel for collecting whole air samples, providing flexibility for various applications.
> Siltek treatment creates an inert layer on the interior surface, suitable for both inactive and reactive compounds.
> Capable of sampling and storing highly active components at low concentrations without loss.
> High-quality metal-to-metal seal valves with metal diaphragms prevent sample adsorption, ensuring precision.

Time-Integrated sampling:
> Essential for obtaining more representative samples.
> Uses a flow restrictor for even sample collection over a specific time period.
> Provides an average or time-weighted average (TWA) sample.
> Preferred for typical exposure concentrations, especially in settings with high variability.

Remote operation and protection:
> Sampling process conveniently initiated remotely using the On/Off relay feature of the WT1 PRO.
> Incorporates a holder connecting the handle and base seamlessly, ensuring weld-free construction for comprehensive protection of the canister, tube stub, and valve.

Technical information

Height	21.6 cm
Diameter	13.3 cm
Weight	1.02 kg
Can volume	1 liter
Nb of ports	3-port configuration

ACCESSORIES

MAINTENANCE ACCESSORY

CALBOX

The Calbox serves as an on-site calibration box designed for electrochemical sensors, facilitating the calibration and re-calibration of the WT1 PRO's sensors using specific gas standards.

Operational mechanism: Utilizing a dual-channel precision gas flow regulator, the Calbox achieves a broad range of programmable flow rates and concentrations, accommodating both single and multiple gas sensors. Powered by a rechargeable battery, the Calbox is controllable through a PC laptop with a Windows user interface. Through the user-friendly interface on the ELLONASOFT platform, it seamlessly takes command of the WT1 PRO, streamlining the calibration process and automatically updating sensor parameters. Gas levels are continually updated during each calibration run.

Technical information

Dimension	538 x 406 x 211 mm
Weight with 4 bottles 34 liters	9.8kg. (0.5kg/Bottle)
Power supply	11.2V 5200 mAh Li-po battery. (Power on and charge level indicator) - Delivered with universal charger 11,1V/700mA
Dilution Air Circuit	Built-in Rotary Pump with replaceable Dust Filter and replaceable VOC Purifying Filter
Calibration gas circuit	4 way selector with 1 regulator/pressure regulator 500ml/min per lane.
Thermal Stabilization time at power on	7 min at 25°C
Battery autonomy	about 6 hours
Recharge time	5h with the supplied charger
Operating temperature range	-5°C +45°C
Storage temperature	-15°C +55°C

Maintenance	to be scheduled once a year
Communications Interface	USB 2.0 Prisoner Cable 1m
User Interface	On PC/Windows10 · Creating/editing/executing Calibration Sequences. · Handling TEDLAR bags (Filling/Emptying). · Establishing a bidirectional interface with the data processing platform, providing access rights to the devices requiring calibration. · Automatically updating calibration coefficients for the sensors. · Managing standard gas consumption with automatic updates. · Signaling functional parameters with alarms for low levels (battery voltage, gas pressure, etc.). · Notifying maintenance periodicity for the Calbox.
Calibratable sensors	CO, NO, NO_2, O_3, NH_3, H_2S, ETO, SO_2, O_2, LC_2, CH_2O, CO_2, PID with iso-butylene, Mercaptans and Alcohols

Physical contents	1 battery charger	1 manual
	1 filter	Calbox certificate
	1 tube adapter (to screw onto WT1 air inlet)	1 USB stick with Calbox software
	4 Tygon lines with flow regulators	USB cable
	1 Tygon hose with a manual valve	

ACCESSORIES

WEATHER SYSTEM (1/2)

WEATHER STATION

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
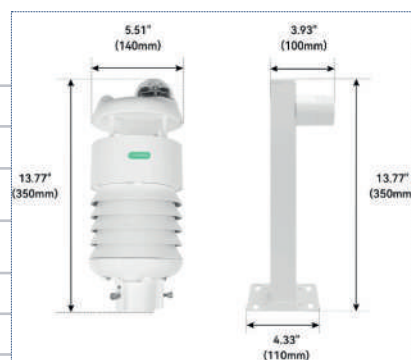
WEATHER SYSTEM (2/2)

ANENOMETER

Perfectly designed for logging average wind speed and direction, this wind sensor comes equipped with an integrated datalogger. Self-powered by a battery and photovoltaic cell, it is offered in both OEM version or as a complete package including cable, mounting bracket, and clamp.

Technical information

Output format	ASCII TTL 3V
Information provided	Instantaneous speed, instantaneous angle
Refreshing data	Up to 1 Hz
Wind module sensitivity	0.25 m/s
Wind module resolution	Up to 0.05 m/s
Wind module dynamics	0.12 to 40 m/s
Direction sensitivity	± 1.5°
Resolution direction	Up to 1
Power supply	Power supply by WT1
Autonomy	480 h in total darkness, autonomous from 50 W/m
Operational temperature	-15°C (excluding frost) to +55°C
Connection support	3 conductors Tx / Rx / Vref
Weight	240 g

PROTECTIVE SHELTER

Technical information

Dimension	30.5 X 34 X 23 cm (H, L, Depth)
Material	Aluminium
Weight	2.6 kg

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. Our metal shelter includes connectors to fix the solar panel.

Solar Panel Kit contents

A photovoltaic panel with varying capacities (60W/ 80W /120W), tailored to concentration needs. We provide a specific solar panel based on the local sunshine rate	A voltage controller that safeguards the battery by suspending the WT1 PRO power supply when the voltage at the battery terminals is too low. This protection prevents damage to the battery's lifespan when the charge level falls below a certain threshold.
A sturdy panel support	
Batteries of 60Ah and 110Ah capacity	A waterproof case with a power capacity of 12V/60A

Technical information							
Output	Size (mm)	Weight (Kg)	Pmax (W)	Vmp (V)	Imp (A)	Voc (V)	Isc (A)
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

SOIL SENSORS

Technical information

Parameters	Humidity / Temperature	Electrical Conductivity	pH	NPK*
Measuring range	H: 0%-100% T: -40°C, +80°C	0-10,000 μs/cm	3-9 pH	0-1,999 mg/kg
Accuracy	H: +3% (5%-95%, 25°C)	10 μs.cm	+0.3 pH	+2% FS
Power Supply	12-30 V DC	12-30V DC	12-30V DC	12-30V DC
Long-term stability	H: <1%/year T: <0.1°C /year	<1%/year	<5%/year	<5%/year
Working temperature	-40°C, +80°C	-40°C, +80°C	0°C, +55°C	5°C, +45°C
Working humidity	0% - 100%	0% - 100%	5% - 95%	5% - 95%
Response time	<1s	<1s	<1s	<1s
Output signal	4-20mA, 0-5V, RS 485	4-20mA, 0-5V, RS 485	4-20mA, 0-5V, RS 485	4-20mA, 0-5V, RS 485
Resolution	H: 0.1% T: 0.1°C	1μs/cm	0.1 pH	1mg/kg (mg/l)
Protection grade	IP68	IP68	IP68	IP68

(N) Nitrogen, (P) Phosphorus, (K) Potassium

ACCESSORIES

LIQUID SENSORS

Technical information

Parameters	Dissolved Oxygen / Temperature
Measuring range	0-20.mg/L, 1-100°C
Accuracy	Dissolved oxygen: ±0.02mg/L, temperature: ±0.3°C
Power Supply	DC 5V, DC 12V, DC 24V
Stability	≥ 0.1mg.L 24h
Temperature compensation	0-100°C
Ambient temperature	0-60°C
Input impedance	≥ 1 X 1,012 Ω
Output signal	4-20mA, RS485 (MODBUS)
Protection grade	IP68
485 Interface	Support IoT (MODBUS Protocol Part compatible)
Pipe thread	Upper and lower 3/4 piper thread
Cable length	Standard 5 meters
MODBUS-RTU	Baud rate 9600 (default)
	Device number 1 (default)
	Data bit 8 bits
	Parity none
	Stop bit 1 bit

Parameters	Turbidity sensor
Measuring range	0-100 / 0-1,000/ 0-4,000 NTU
Accuracy	±5% or ±3NTU ±3% or ± 2NTU
Power Supply	12-24V DC
Power consumption	<0.15W
Revolving power	0.1 NTU
Output signal	RS 485 / 4-20mA
Working temperature	0-50°C
Repeatability	0.5%
Installation method	Immersion installation
Light source	860nm

Parameters	Electrical Conductivity
Measuring range	0-5 mS/cm ±0.1% 0-6 mS/cm ±0.1%
Connection with cable	Titanium MicroSubconn BH-4M with 4 contacts
Power Supply	12V DC
Output signal	0-5V CC
Power consumption	20mA
Depth	Down to 6,000m

Parameters	pH
Measuring range	0-14
Connection with cable	Titanium MicroSubconn BH-4M
Power Supply	9-30 V
Output signal	0-5V
Signal resolution	0.003 pH
Accuracy	0.005 pH
Protection cage	yes
Depth	Down to 1,200m

CONFIGURATIONS
Examples

CONSTRUCTION SITE

CO / NO / NO$_2$ / PM / Noise/ °C / %RH / hPa

WASTE COMPOSTING CENTER

NH$_3$ / H$_2$S / RSH / PM / Odours / °C / %RH / hPa

WASTE WATER TREATMENT PLANTS

NH$_3$ / H$_2$S / 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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