

WT1 – V1.3

Technical Datasheet



Air
quality



Gases



Odors



Particles



Noises



Temperature



Humidity

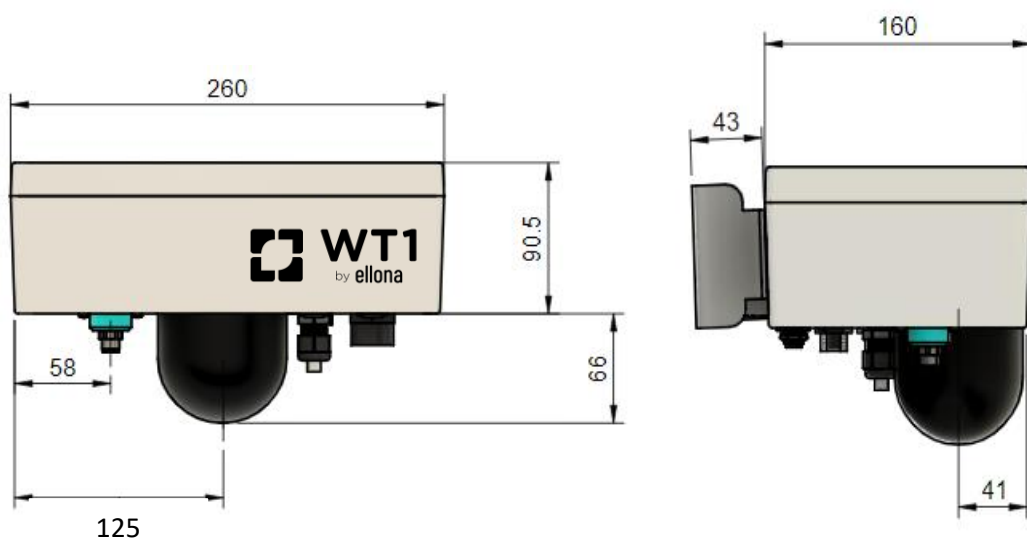


Pressure

General features

WT1 is the most comprehensive online outdoor monitoring system, including gas, odors, VOCs, fine particles, noise, temperature, relative humidity and atmospheric pressure.

- Multi-sensor device for continuous physical, chemical and perception data collection
- Alarm mode on all measurement channels (triggering thresholds)
- On-Off relay and 4-20mA switch for automatic triggering of processes
- Standalone instrument ideally suited to automated pollution control processes
- Cutting edge data acquisition and processing
- Real-time and historical dispersion plume
- Software on secured servers and online update (on-premises option)
- Odor data banks (musty, solvents, cigarette, sewage system, etc.)
- Subjective perception reporting via QR Code attached to each module



- Communication: Wi-Fi, Ethernet or LTE-M/GPRS⁽¹⁾
- Power: 12V DC input (100-240V AC – 12V DC power adapter included), Power over Ethernet or 12-V solar panel battery (option)
- Geolocation: Built-in GNSS (GPS, Galileo, Beidou, Glonass)
- Data logger: up to 2 years of data storage if connection loss
- Data frequency: from 1 data set every 10 seconds
- Installation: ≤ 2h hours

Options



Solar panel



Automated sample vacuum chamber



Sampling chamber



Protective shelter



All-in-one dryer



Soil & liquid sensors



Weather station



Calbox

Other options available on demand.

⁽¹⁾ Used as LTE-M fallback

Sensor combination

Standard:

- Odor card with 4 Metal Oxide Sensors (MOS) sensors
- Temperature
- Humidity
- Atmospheric Pressure
- Outdoor Air Quality

Optional:

- Up to 6 Electrochemical sensors: H₂S, NH₃, NO₂...⁽²⁾
- 1 double-band NDIR: CH₄ or CO₂
- 1 double-membrane PID or 1 optical sensor
- 1 optical particles sensor (PM 1-2.5-10)⁽³⁾
- Noise sensor
- Soil and liquid sensors on demand (4-20mA)⁽⁴⁾
- Other gases or measuring ranges on demand



⁽²⁾ Refer to the gas sensor list on page 6

⁽³⁾ To be chosen from a list of 2 PM sensors: 1 specialized in size and concentration or 1 specialized in type fingerprinting. This last one is for construction sites only and on demand

⁽⁴⁾ Refer to the lists on pages 7-9

Measured Parameters

Type of sensor	Measuring range	Accuracy	Resolution	LOD
Temperature	-30 °C to +60 °C	±1	0.1	0.1 °C
Atmospheric pressure	300 to 1,100 hPa	0.25 %	1 hPa	1hPa
Humidity	0 to 100 % RH	3 %	1%	1%
Equivalent noise level	30 dBA to 120 dBA	pending	0.1 dBA	1 dBA
Mass concentration of particles (PM1-2.5-10)	0 to 1000 µg/m ³ ⁽⁵⁾	< 5 % ⁽⁶⁾	0.1 µg/m ³	< 0.1 µg/m ³ ⁽⁵⁾
CO ₂ concentration	400 to 10,000 pp ⁽⁷⁾	20 ppm +3 %	1 ppm	20 ppm
CH ₄ concentration	0 to 5 % vol	≤5 %	0.2% of FS range	0.10%
PID - VOC concentration (equivalent of isobutylene)	0 to 20 ppm	≤5%	≤10 ppb	5 ppb
	0 to 200 ppm		≤100 ppb	50 ppb
Odor card with MOX sensors	-			
Electrochemical sensor board	Gas table page 6			

⁽⁵⁾ Arizona dust A1 equivalent

⁽⁶⁾ Linearity error

⁽⁷⁾ Autocalibration: minimum value seen during the last 8 days

List of gas sensors

Ref	Gas	Measuring Range	Resolution ⁽⁸⁾	LOD ⁽⁸⁾	Interference
510-0034	NH ₃	150 ppm	0.030 ppm	0.090 ppm	-10% H ₂ S; -30% SO ₂ ; -7.5% NO ₂
510-0044	H ₂ S	50 ppm	0.005 ppm	0.015 ppm	-20% NO ₂ ; -25% Cl ₂ ; +10% SO ₂
510-0045	H ₂ S	13 ppm	0.003 ppm	0.009 ppm	-30% NO ₂ ; -25% Cl ₂ ; +10% SO ₂
510-0046	H ₂ S	10000 ppm	2 ppm	6 ppm	-20% NO ₂ ; -15% Cl ₂ ; +20% SO ₂
510-0091	RSH (mercaptan)	150 ppm	0.030 ppm	0.1 ppm	Filter capacity ~200 ppm x h H ₂ S; +200% Isopropanol
510-0036	NO ₂	50 ppm	0.010 ppm	0.030 ppm	-80% H ₂ S; +75% Cl ₂ ; +5% NO, - 5% SO ₂ ; -5% CO
510-0040	NO ₂ +O ₃	15 ppm	0.003 ppm	0.009 ppm	+100% Cl ₂
510-0057	SO ₂	38 ppm	0.008 ppm	0.025 ppm	-130% NO ₂ ; -60% Cl ₂ ; +40% C ₂ H ₄
510-0038	NO	38 ppm	0.008 ppm	0.025 ppm	+10% H ₂ S; +2% NO ₂ ; +3% SO ₂
510-0053	CO	286 ppm	0.057 ppm	0.171 ppm	+20% H ₂ ; +5% NO ₂
510-0020	CO ₂	5000 ppm	1 ppm	5 ppm	none
510-0030	O ₂	0.01-30%	1000%	10000%	none
510-0059	Cl ₂	30 ppm	0.006 ppm	0.018 ppm	-40% H ₂ S; -2.5% SO ₂ ; +100% NO ₂
510-0055	HCl, (HBr)	150 ppm	0.030 ppm	0.090 ppm	+250% H ₂ S; -150% NO ₂ ; -20% Cl ₂
510-0032	CH ₂ O	3 ppm	0.001 ppm	0.002 ppm	+3% H ₂ ; +10% CO; <1% Ethanol
510-0047	EtO	8 ppm	0.002 ppm	0.005 ppm	+30% H ₂ ; +50% CO; +60% EtOH
510-0051	Alcohols	15 ppm	0.003 ppm	0.009 ppm	+1% CO, hydrocarbons
50-0049	PH ₃	15 ppm	0.003 ppm	0.009 ppm	+20% H ₂ S; -30% NO ₂ ; +25% SO ₂ ; +50% SiH ₄
510-0042	HCN	214 ppm	0.043 ppm	0.129 ppm	+300% H ₂ ; -180% NO ₂ ; -12% Cl ₂ ; +10% SO ₂
510-0061	H ₂	2000 ppm	2 ppm	6 ppm	<40% NO; <25% C ₂ H ₄
510-0062	H ₂	4000 ppm	2 ppm	6 ppm	70% CO
510-0063	H ₂	40000 ppm	5 ppm	15 ppm	60% CO

This list is not exhaustive. Other gas sensors or ranges available on demand

⁽⁸⁾ ppm resolution under laboratory conditions: RH 50% and T 20°C

List of soil sensors

Parameters	Humidity / Temperature	Electrical Conductivity	pH	NPK ⁽⁹⁾
Ref Soil sensor	510-0156	510-0155	510-0154	510-0153
Measuring range	H: 0% - 100% T: -40°C – 80+°C	0 – 10000us/cm	3 – 9 pH	0 – 1999 mg/kg
Accuracy	H: + 3% (5% - 95%, 25°C) T: +0.5°C (25°C)	10 us/cm	+0.3 pH	+2% FS
Power supply	12 – 30V 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, RS485	4 – 20mA, 0 – 5V, RS485	4 – 20mA, 0 – 5V, RS485	4 – 20mA, 0 – 5V, RS485
Resolution	H: 0.1% T: 0.1°C	1us/cm	0.1 pH	1mg/kg (mg/l)
Protection grade	IP68	IP68	IP68	IP68

⁽⁹⁾ Nitrogen (N), phosphorus (P) and potassium (K)

List of liquid sensors

Parameters	Dissolved Oxygen / Temperature
Ref Liquid sensor	510-0151
Measuring range	0 ~ 20.0 mg/L, 1-100°C
Accuracy	Dissolved oxygen: ±0.02mg/L, temperature: ± 0.3°C
Power supply	DC 5V, DC 12, DC 24V
Stability	≥0.1mg/L 24H
Temperature compensation	0 ~ 100°C
Ambient temperature	0 ~ 60°C
Input impedance	≥ 1 x 10 ¹² 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 5meter
MODBUS-RTU	Baud rate 9600 (default)
	Device number 1 (default)
	Data bit 8 bits
	Parity none
	Stop bit 1 bit

Parameters	Turbidity sensor
Ref Liquid sensor	510-0150
Measuring range	0-100/0-1000 0-4000NTU
Measurement accuracy	± 5% or ± 3NTU ± 3% or ± 2NTU
Power supply	12 – 24V DC
Power consumption	<0.15W
Resolving power	0.1NTU
Output signal	RS485/4-20mA
Working temperature	0 – 50°C
Repeatability	0.5%
Installation method	Immersion installation
Light source	860nm

List of liquid sensors

Parameters	Electrical Conductivity
Ref Liquid sensor	510-0157
Measuring range	0-5 mS/cm $\pm 0.1\%$, 0-6 mS/cm $\pm 0.1\%$ (others on demand)
Connection with cable	Titanium MicroSubconn BH-4M with 4 contacts
Power supply	12V DC (others on demand)
Output signal	0-5V CC
Power consumption	20mA
Depth	Down to 6000m

Parameters	pH
Ref Liquid sensor	510-0152
Measuring range	0-14
Connection with cable	Titanium Subconn BH-4M
Power supply	9-30V
Output signal	0-5V
Signal resolution	0.003 pH
Accuracy	0.005 pH
Protection cage	Yes
Depth	Down to 1200m

