

Wireless Air Quality Sensor (WTS-AQ)

Air Quality Sensor

The Wireless Tunnel Air Quality Sensor combines air particle counting with volatile organic compounds, temperature and humidity in a single sensor.

Air Particle Count

Used to monitor the amount of dust particles in the air.

Detection of 5 different particle sizes from PM0.5 to PM10.

Air particle sensors are utilized during indoor air quality (IAQ) assessments for clean rooms and workplaces. The specific type of particles is not detected, but it identifies the quantity or mass of airborne particles. These air particles could be sourced from :

- Exhaust smoke
- Airborne dust particles
- Pollen

Volatile Organic Compounds

The sensor detects but does not differentiate between, various Metal Oxide (MOx) gases, displaying the value as a VOC Index.

Examples of these gases are :

- Acetone (eg. paints and glues)
- Toluene (eg. furniture)
- Ethanol (eg. perfume, cleaning fluids)
- Hydrogen Sulfide (eg. decaying food)
- Benzene (eg. Cigarette smoke)

The VOC Index is a logarithmic scale that is relative to the typical indoor gas composition over the past 24 hours. With a range of 0 to 500, the typical value for a normal environment being 100. Values greater than 100 indicate worsening air quality with a higher concentration of metal oxide gases over the past 24 hours. Values lower than 100 indicate improving air quality.



WTS-AQ - Technical Specification

Air Particle Sensor	Particle Mass Concentration Particle Number Concentration Typical Particle Size
Particle mass concentration range	PM 1.0 / 2.5 / 4 / 10 : 0 ~ 500 µg/m3
Mass concentration size range	PM1.0 : 0.3 to 1.0 µm PM2.5 : 0.3 to 2.5 µm PM4 : 0.3 to 4.0 µm PM10 : 0.3 to 10.0 µm
Mass concentration precision	* PM1 and PM2.5 0 to 100 µg/m3 : ±10 µg/m3 100 to 1000 µg/m3 : ±10 % measured value. * PM4 and PM10 0 to 100 µg/m3 : ±25 µg/m3 100 to 1000 µg/m3 : ±25% measured value.
Particle number concentration range	PM0.5/1/2.5/4/10 : 0 ~ 1500 #/cm3
Number concentration size range	PM0.5 : 0.3 to 0.5 µm PM1 : 0.3 to 1.0 µm PM2.5 : 0.3 to 2.5 µm PM4 : 0.3 to 4.0 µm PM10 : 0.3 to 10.0 µm
Typical Particle size	0.1 to 10 µm
VOC Index Sensor	Index of Air Quality VOC index, MOx based gas sensor
Range	0 to 500, with 100 as typical air quality < 100 = better air quality > 100 = worse air quality
Note	VOC Index visualizes VOC events on a logarithmic scale, and relative to typical indoor gas composition during the recent 24h. This means that level "typical" refers to the typical conditions of the environment with low and high VOC backgrounds. The scale does not represent absolute concentrations. VOC Index notifies end users or air treatment devices when air pollution changes.
Environmental	
Temperature	
Measurement Range	-40°C to +75°C -40°F to +167°F
Measurement Resolution	0.1°C increments 0.2°F increments
Measurement Accuracy	Typical : * ±0.3 from -40°C to +75°C * ±0.4 from -40°F to +167°F Maximum : * ±0.4 at -40°C and ±0.4 at +75°C * ±0.7 at -40°F and ±0.7 at +167°F
Humidity	
Measurement Range	0 to 100% Relative Humidity (RH)
Measurement Resolution	1%RH increments, 0.01%RH sensor reading
Measurement Accuracy	±2%RH @ 25°C
Gateway Sensor Count	16 (3+13)
Status Indication	LED indication for - Mode - Status - RSSI
Operating Environment	Temperature : Min. -35° C – Max.80° C Humidity: Min. 20% – Max. 80% (Non-Condensing)
LoRa (R) Radio Regional plans	- EU868 : 863-868Mhz Max TX Power +14dBm Duty Cycle 1% - US915: 903-915Mhz Max TX Power +17dBm - AS923 : 920-925Mhz Max TX Power +14dBm Duty Cycle 1% - KR920 (Korea) : 922-923Mhz Max TX Power +14dBm Duty Cycle 1% - IL917 (Israel) : 915-917Mhz Max TX Power +14dBm Duty Cycle 1%
Certification	FCC Part15C, CE EN300220-2
Power source	Requires external micro-USB 5V power source Optional 12V input (custom order)

WTS-AQ - Technical Drawing

