



**smartsense**

Connect With Your Environment.

# SENSEES

Environment Quality Monitoring System

System  
Datasheet

# Highlights

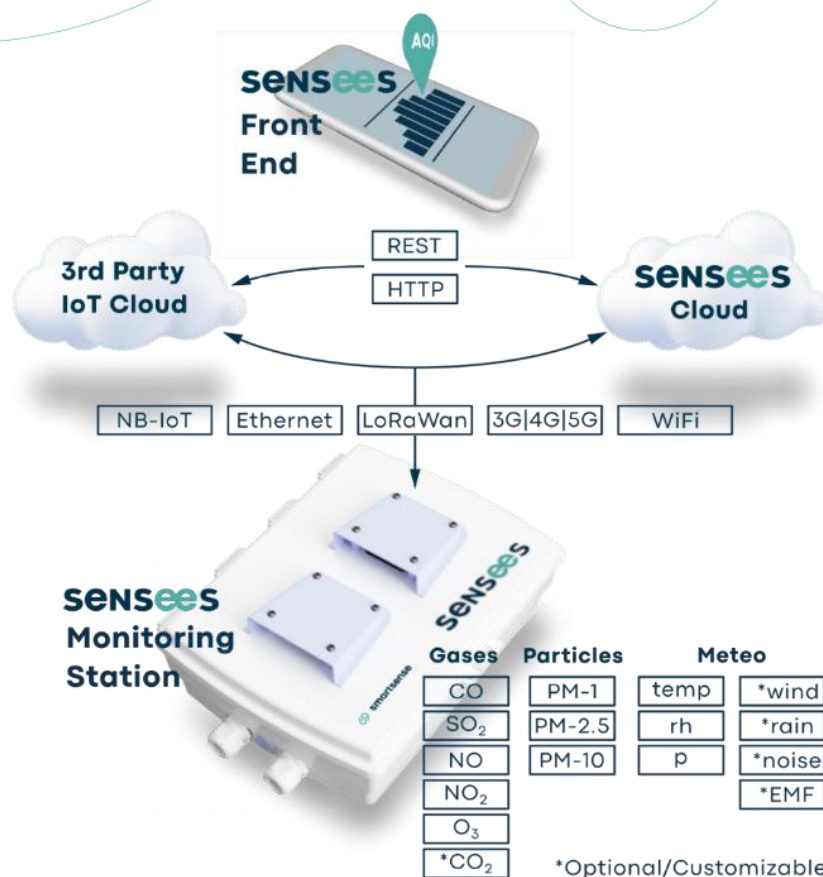
Modular air quality monitoring solution consisting of sensor unit(s), cloud and web & mobile applications.

Monitors all important air quality parameters, from humidity, temperature, and atmospheric pressure to presence of a number of gases and particles.

Expandable with many sensors to monitor all important environmental parameters.

Supports NB-IoT, LoRaWAN, 3G, 4G, 5G, WiFi, RS485 and Ethernet connection.

Data accuracy validated in [Smart Sense in-house lab](#) and through collaboration with [Andrija Štampar Teaching Institute of Public Health](#), dedicated to environmental protection and health ecology.



# Mechanical & Electrical Info



## Unit Casing

## Operating Environment

used as fixed sensor unit (e.g. mounted on the pole)

## Dimensions [mm]

369 x 297 x 140

## Weight

5 kg

## Power Requirements

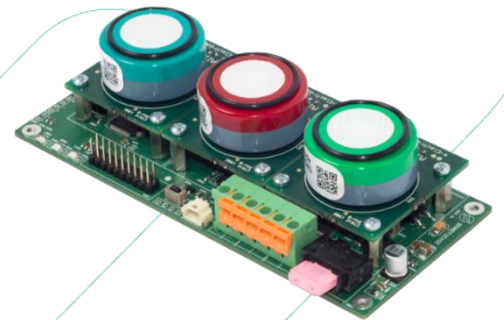
100 – 240 VAC 50/60 Hz,  
optional 12 VDC, 5W

## Compliance

ETSI EN 301 489-1:V1.9.2  
ETSI EN 301 489-17V2.2.1  
EN 61000-6-1:2007 (IEC 61000-6-1:2005)  
EN 61000-6-3:2007+A1:2011 (IEC 61000-6-3:2006+A1:2010)  
EN 61000-3-2:2014  
EN 61000-3-3:2013  
EN60950-1:2006+A1:2010+A11:2009+A12:2011+A2:2013 (IEC 60950  
1:2005+A1:2009+A2:2013 (mod.))  
EN 62311:2008 (IEC 62311:2007, mod.)

# Gas Sensors

Sensees Environment monitoring station is equipped with high sensitivity 4 electrode electrochemical gas sensors. Each sensor element is factory stabilized and additionally individually tested and calibrated for sensitivity and zero offset in Smart Sense In-House Lab and through collaboration with Andrija Stampar Teaching Institute of Public Health, individually. These correction constants are programmed into Smart Sense gas sensor module (GSMD) for every sensor.



Sensor	CO	SO2	NO	NO2	O3
Range [ppb]	10 000	12 000	6 800	16 000	19 000
Type	electrochemical				
Lower Detectable Limit	1 ppb				
Resolution	0.1 ppb				
Temperature Range [°C]	-30 - +50	-30 - +50	-30 - +40	-30 - +40	-30 - +40
Humidity Range [% RH]	15 - 90	15 - 90	15 - 85	15 - 85	15 - 85

# Suspended Particles Sensors

Sensees Environment unit is equipped with optical particle monitor for detecting particulate matter of following diameters:

- PM1 (1  $\mu\text{m}$ )
- PM2.5 (2.5  $\mu\text{m}$ )
- PM10 (10  $\mu\text{m}$ )

Sensor	PM1	PM2.5	PM10
Range [ $\mu\text{g}/\text{m}^3$ ]	500	2 000	5 000
Lower Detectable Limit		1 $\mu\text{g}/\text{m}^3$	
Resolution		0.1 $\mu\text{g}/\text{m}^3$	
Correlation Coefficient		> 0.9	
Particle Range		0.38 – 17	
Temperature Range		-10 - +50 °C	
Humidity Range		0 – 90 %RH	

# Basic Atmosphere Sensor

Sensees Environment monitoring station is equipped with basic atmosphere sensor to measure atmospheric temperature, relative humidity and barometric pressure. It is mounted inside waterproof casing which serves as rain and solar radiation shield.

Sensor characteristics are high sensitivity, excellent stability, fast response time, and, due to low consumption, long service life.



Sensor	Temperature	Humidity	Pressure
Range	-40 - +60 °C	0 – 100 %RH	100 – 1100 hPa
Resolution	0.1 °C	0.5 %RH	0.1 hPa
Accuracy	±0.5 °C	±3 %RH	±1 hPa
Operating Temperature Range	-40 - +80 °C		

# Additional Meteo Sensors

Optionally, Sensees Environment unit can be equipped with additional sensors for:

- wind speed and direction
- noise
- precipitation
- solar radiation
- UV radiation
- lighting intensity



Sensor	Wind Speed	Wind Direction	Noise	Precipitation
Range	0 – 40 m/s	0 – 100 %RH	30 – 130 dB	0 – 1 000 mm/hr

# Network

Sensees Environment monitoring station implements 2G/3G/LTE, NB-IoT and Wi-Fi for wireless communication options. It also supports RS485 wired interface.

SMS is used as additional channel for alarming and configuration.

Advanced network manager monitors network status and selects the best connection method.

## Network Interfaces

### LTE

Five-Band LTE-FDD B1/B3/B7/B8/B20  
Quad-Band LTE-TDD B38/B39/B40/B41  
Tri-Band UMTS/HSDPA/HSPA+ B1/B5/B8  
Dual-Band TD-SCDMA B34/B39  
EVDO/CDMA BC0  
Quad-Band GSM/GPRS/EDGE B2/B3/B5/B8  
GPRS multi-slot class 33  
EDGE multi-slot class 33

### 5G

Sub-6G:  
n1, n2, n3, n5, n7, n8, n12, n20, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79

### NB-IoT

LTE Cat NB1, Multi Region, LTE bands: 1, 2, 3, 4, 5, 8, 12, 13, 18, 20, 26, 28, Class 3 (23 dBm), 62.5 kb/s UL, 27.2 kb/s DL

### LTE Cat M1

LTE Cat M1, Multi Region, LTE bands: 1, 2, 3, 4, 5, 8, 12, 13, 18, 20, 26, 28, Class 3 (23 dBm), 375 kb/s UL, 300 kb/s DL

### LoRaWAN

433/868 MHz, Class A

### GPS / Location

CELL assistant Location (No GPS)  
A-GPS: MS-Based, MS-Assisted  
Stand-alone GPS  
QUALCOMM XTRA GPS mode

### Wi-Fi

IEEE 802.11 b/g/n  
Frequency: 2.4 GHz – 2.484 GHz



# Sensees Cloud & Applications

## WEB AND MOBILE APPLICATION

- ☞ Flexible and extendable software platform
- ☞ Real-time data
- ☞ Color-coded Air Quality Index
- ☞ Graphical and numerical overview of measurement data
- ☞ Location management of monitoring stations
- ☞ Data history – for specifically defined period
- ☞ User profile, Operation mode & Rules management
- ☞ Multilayer user interface for easy and powerful visualizations
- ☞ Integrated 3rd party air quality modeling data for wider geographics scale analysis
- ☞ High resolution local air quality model to fill gaps between measuring stations
- ☞ Air quality predictions for proactive planning



iOS & Android app!

