



MERTANI-AQMS

Air Quality Monitoring System



Regulasi :

- Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor P.14/MENLHK/SETJEN/KUM.1/7/2020

GET YOUR BETTER SOLUTION

MERTANI-AQMS

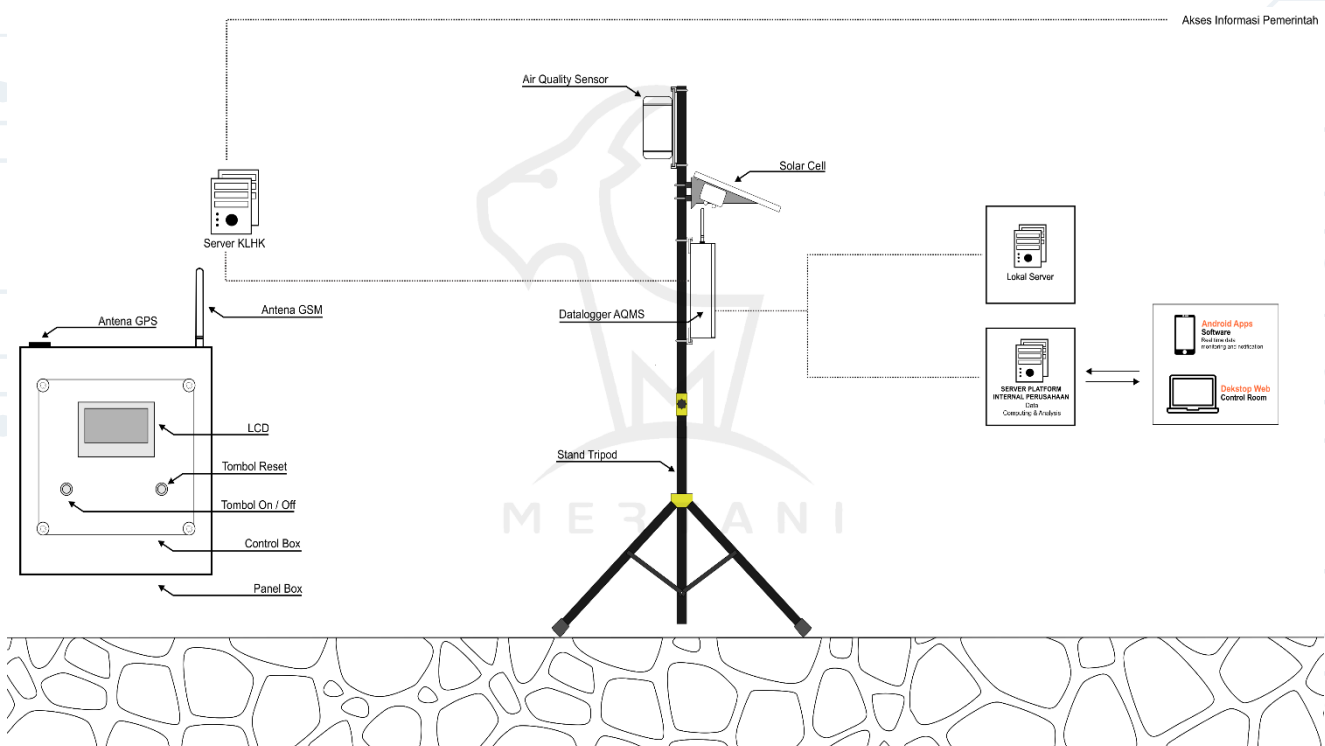
PEMANTAUAN KUALITAS UDARA

Merupakan alat untuk melakukan pemantauan terhadap kualitas udara secara online (dalam jaringan), realtime (terus-menerus), dan akurat. Garansi selama 1 tahun dan jaminan ketersediaan suku cadang selama 5 tahun.

AQMS terdiri dari Mertani Data Logger yang sudah berbasis Internet of Things (IoT) dan dapat terhubung dengan berbagai jenis sensor sekaligus. Kemudian dilengkapi dengan Air Quality Sensor.

Data akan terkirim secara otomatis ke sever BMKG untuk kemudian dilakukan pemantauan. Selain itu, data juga dikirim ke Dashboard PC and Android yang dapat digunakan untuk menampilkan data, melakukan analisis sederhana seperti mencari nilai maksimum, nilai minimum, mengurutkan berdasarkan waktu tertentu, menampilkan grafik visual, dan melakukan pengunduhan data.

Skematik



Penerapan

- Dapat diandalkan untuk melakukan pemantauan kualitas udara secara online dan terus-menerus, dimanapun, dan kapanpun
- Pemantauan kualitas udara sudah meliputi pengambilan data, pembacaan data, pengiriman data ke server secara otomatis, penampil data, dan fitur pengunduhan data

SPESIFIKASI

Data Logger

Data Logger

- Ultra-Low Power MCU based on Cortex M4+
- Input digital sensor RS485 (Modbus), I2C, RS232, Serial TTL, one wire. Under development: SDI12
- Main material ABS
- Operates from 2.7 V up to 5.5V
- Operational temperature 0°C to +85°C
- Weight 2 kg
- Internal memory 16 MB
- Extended industrial memory up to 256 MB
- Weather-resistant

Connectivity

- GSM (2G, 3G, and 4G)
- WiFi and Bluetooth Low Energy (BLE)
- LoRa 920-923 MHz
- GPS/ GLONASS/ GALILEO



Power

- Internal battery up to 49.500 mAh
- Solar panel 20-50 WP
- External power supply DC 4.1 V

Monitoring

- Realtime monitoring
- Data transmission interval (5 minutes, 10 minutes, 15 minutes, 30 minutes, 1 hour, 2 hours, and so on)

Numbers of Sensor Port

- 3 sensors (default)
- 10 sensors (extended)

LCD Touchscreen

- On site monitoring
- Interval and calibration setting
- Graphic or text display

Air Quality Sensor

Mechanical

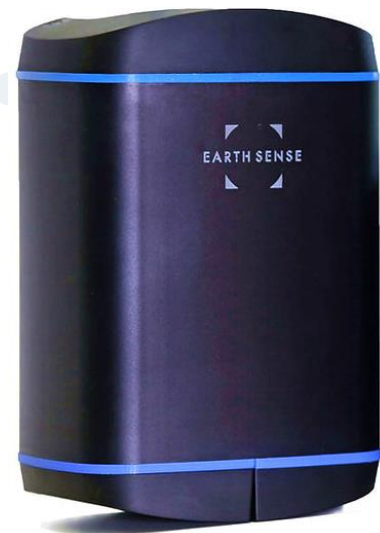
- Size 235mm (h) x 160mm (w) x 114mm (d)
- Weight 1750g - 2000g (dependent on cartridge)
- Operating Parameters
- Operating Range: -20°C to +45°C ambient.
- Relative Humidity range: 15 - 85% continuous*
*prolonged exposure outside of this range may irreparably damage the gas sensors.
- Construction Extruded aluminium body, hard anodised with ASA-PC end mouldings.
- Stainless steel mounting brackets for 80-140mm diameter poles.

Location Sensing

- High Sensitivity GNSS GPS, GLONASS, Galileo and Beidou module with internal active antenna.

Internal Storage

- 16GB SD Card Sufficient for 32 million measurement sets.



SPESIFIKASI

Estimated Accuracy, Range and Limits of Detection

Measure	Estimated Accuracy		Range		Limits of Detection	
	$\mu\text{g}/\text{m}^3$ mg/m^3	ppb ppm	$\mu\text{g}/\text{m}^3$ mg/m^3	ppb ppm	$\mu\text{g}/\text{m}^3$ mg/m^3	ppb ppm
Nitrogen dioxide (NO ₂)	10 $\mu\text{g}/\text{m}^3$	5.2 ppbV	0 - 20,000 $\mu\text{g}/\text{m}^3$ ^c	0 - 10,000 ppbV ^c	1.5 $\mu\text{g}/\text{m}^3$	0.78 ppbV
Nitric oxide (NO)	10 $\mu\text{g}/\text{m}^3$	8 ppbV	0 - 6,000 $\mu\text{g}/\text{m}^3$ ^c	0 - 5,000 ppbV ^c	1.5 $\mu\text{g}/\text{m}^3$	1.20 ppbV
Ozone (O ₃)	15 $\mu\text{g}/\text{m}^3$	7.5 ppbV	0 - 15,000 $\mu\text{g}/\text{m}^3$ ^c	0 - 7,500 ppbV ^c	1.5 $\mu\text{g}/\text{m}^3$	0.75 ppbV
Particulate Matter (PM ₁)	5 $\mu\text{g}/\text{m}^3$		0 - 20,000 $\mu\text{g}/\text{m}^3$ ^c		0.2 $\mu\text{g}/\text{m}^3$	
Particulate Matter (PM _{2.5})	5 $\mu\text{g}/\text{m}^3$		0 - 20,000 $\mu\text{g}/\text{m}^3$ ^c		1.3 $\mu\text{g}/\text{m}^3$	
Particulate Matter (PM ₁₀)	5 $\mu\text{g}/\text{m}^3$		0 - 20,000 $\mu\text{g}/\text{m}^3$ ^c		1.4 $\mu\text{g}/\text{m}^3$	
Carbon monoxide (CO)	0.3 mg/m^3	0.3 ppmV	0 - 40 mg/m^3 ^c	0 - 35 ppmV ^c	0.03 mg/m^3	0.02 ppmV
Sulphur dioxide (SO ₂)	20 $\mu\text{g}/\text{m}^3$	7.6 ppbV	0 - 6,500 $\mu\text{g}/\text{m}^3$ ^c	0 - 2,500 ppbV ^c	1.5 $\mu\text{g}/\text{m}^3$	0.57 ppbV
Hydrogen sulphide (H ₂ S)	5 $\mu\text{g}/\text{m}^3$	3.6 ppbV	0 - 1,500 $\mu\text{g}/\text{m}^3$ ^c	0 - 1,000 ppbV ^c	1.5 $\mu\text{g}/\text{m}^3$	1.08 ppbV
Carbon dioxide (CO ₂) (optional)	30 ppmV		0 - 5,000 ppm		-	
Total Organic Volatile Compounds (TVOCs) (optional)	-		0 - 15,000 ppbV ^c		1 ppbV	
Pressure	1.2 hPa		300 - 1,100 hPa		-	
Temperature	5°C ^a		-20°C - 45°C ambient		-	
Relative Humidity	5% ^a		15 - 85% continuous* *prolonged exposure outside of this range may irreparably damage the gas sensors.		-	

Electrical

- Power Inputs 12-32V DC (~13.8V for cars and LCV, ~27.6V for HGV) or solar powered applications (~18-20V)
- IP Rated Zephyr® Monitor IP64
- IP Rated Power Supply Unit
- (Optional) IP67
- IP Rated Power Supply Unit
- (Indoor use only) IP2X
- Solar Panel (Optional)
- 50WP output
- Bracket, mount and straps included
- Dimensions: 530mm (h) x 670mm (w) x 250mm (d)
- Weight: 5.5kg
- Power Draw Max: 19W at 19V
- Nominal: ~ 0.2W at 19V
- Internal Battery Li-Ion ~55 Whr. Charged by MPPT battery charging controller to maximise solar panel output.
- Increase battery capacity option available
- Battery Run Time Normal mode: 3 days, 17 hours with 1 standard cartridge
- Low Power/Winter Mode: 7 days, 18 hours with a standard cartridge

Data Handling

- Web Services Infrastructure Data infrastructure is hosted in the cloud to give high service availability, resilience. and regional selection
- Communication Technologies
Wi-Fi (802.11 b/g/n 2.4GHz)
Bluetooth (2.4GHz v4.2 BR/EDR + BLE compliant)
GSM
2G
4G (NB-IoT and LTE Cat-M1)*RS232*, RS485**Optional

Default Sensing Program

- Normal Mode
Sample Rate:* 1 minute Upload Rate:* 15 minutes
- Low Power/Winter Mode
Sample Rate:* 1 minute Upload Rate:* 60 minutes

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Solar Panel

- Solar panel 20 WP~50WP/ Maximum Power (Pmax) 20W, Current at Pmax (Imp) 1.11 A/sheet
- Type Cell Poly-crystalline/Mono-crystalline, Voltage at Pmax (Vmp) 18 V/sheet
- Short circuit current (Isc 1.24 A/sheet, Opencircuit voltage (Voc) 21.24 V/sheet, Solar cell mounting bracket included
- MPPT 600-kHz NMOS-NMOS Synchronous Buck Li-ion Chemistries 4.1V with Thermal Shutdown



Data Collection Method

