

AQMS Pro HQ Ver.2

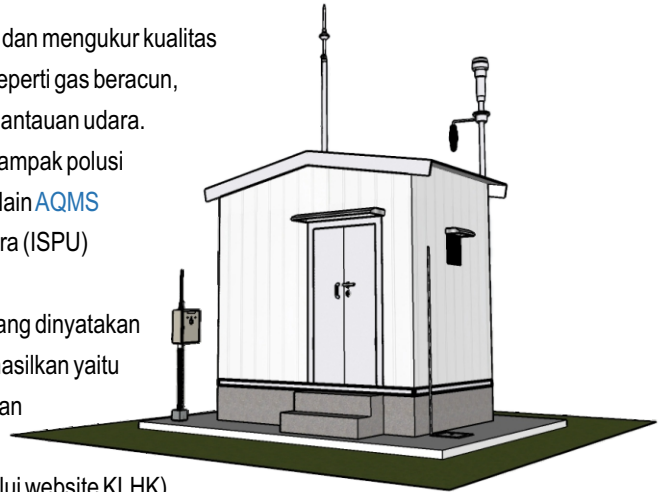
FIXED AIR QUALITY MONITORING SYSTEM

APA ITU AQMS?

AQMS (Air Quality Monitoring System) adalah sistem untuk memantau dan mengukur kualitas udara. Ini mencakup peralatan untuk memantau tingkat polusi udara, seperti gas beracun, partikulat, dan parameter cuaca yang mempengaruhi pengukuran pemantauan udara.

AQMS biasanya digunakan untuk memantau lingkungan dan menilai dampak polusi udara terhadap lingkungan dan kesehatan manusia, atau dengan kata lain **AQMS** dipasang untuk melihat perkembangan Indeks Standar Pencemar Udara (ISPU) dan Kualitas Udara.

Output dari sistem yang dibangun tersebut berupa hasil pemantauan yang dinyatakan dalam parameter pantau. Terdapat 7 (tujuh) parameter pantau yang dihasilkan yaitu SO_2 , NO_2 , CO, O₃, HC, PM10 dan PM2,5. Selanjutnya hasil pemantauan dilakukan pengolahan data menjadi Indeks Standar Pencemaran Udara (ISPU) untuk menjadi informasi bagi publik. (dapat diakses melalui website KLHK)



KOMPONEN-KOMPONEN PENDUKUNG

1. PERALATAN PEMANTAU (FIXED STATION)

UNIT INSTRUMENT :MODULE

a. Air Quality Sensor

FEATURES

- Monitors weather and air quality at the same time
- Aluminum alloy with teflon coating
- Compact design
- No moving parts
- Easy to install and dismount
- Compatible to multiple outputs
- Low power consumption
- Maintenance-free

GENERAL SPECIFICATIONS

▪ IP Class	IP66
▪ Dimensions(HxΦ)	Height 375 mm, Diameter 160 mm
▪ Weight	2.3kg
▪ Power	160mA@12V DC
▪ Digital outputs(RS-485)	Baud rate 9600(Default)
▪ Operating voltage	12 ... 30VDC
▪ Operating temperature	-40 ... +70°C
▪ Operating humidity	5% ... 100%RH
▪ Connector	4 Pin aerospace plug
▪ Cable	PUR 5m



a. Air Quality Sensor (Lanjutan)

PARAMETERS

Carbon Monoxide (CO)

Prinsip pengukuran	Electrochemical
Measurement range	0 – 1000ppm
Accuracy	±0.02ppm
Response time	<60s

Ozone (O₃)

Principle	Electrochemical
Measurement range	0 – 20ppm
Accuracy	±0.01ppm
Response time	<60s

Particulate Matter (PM10)

Principle	Light Scattering - OPC
Measurement range	0 – 1.000 µg/m ³
Accuracy	±10%

Hydro Carbon (HC)

Principle	Electrochemical
Measurement range	0 – 20ppm
Resolution	0,001 ppm
Response time	<60s

Wind Direction

Principle	Ultrasonic
Measurement range	0 – 359.9°
Accuracy	±3°

Relative Humidity

Principle	Capacitive
Measurement range	0 – 100 %RH
Accuracy	±3%RH

Rainfall

Principle	Piezoelectrical/Photoelectrical
Measurement range	0 – 200/400 mm/h
Accuracy	±5%

Nitrogen Dioxide (NO₂)

Principle	Electrochemical
Measurement range	0 – 20ppm
Accuracy	±0.001ppm
Response time	<60s

Sulfur Dioxide (SO₂)

Principle	Electrochemical
Measurement range	0 – 100ppm
Accuracy	±0.002ppm
Response time	<60s

Particulate Matter (PM2.5)

Principle	Light Scattering - OPC
Measurement range	0 – 1.000 µg/m ³
Accuracy	±10%

Wind Speed

Principle	Ultrasonic
Measurement range	0 – 60m/s
Accuracy	±0.3 m/s or 3% of reading

Temperature

Principle	Diode voltage
Measurement range	-40 – +80 °C
Accuracy	±0.5°C

Air Pressure

Principle	Piezoresistor
Measurement range	10 – 1100 hPa
Accuracy	±0.5 hPa

Solar Radiation

Principle	Photoelectric
Spectral Range	300 – 2100 nm
Measurement range	0 – 2000 W/m ²
Accuracy	±5%

b. Data Logger Monitor

SPECIFICATION

- System Memory 4G DDR3 RAM
- Touch Panel Resistive
- OS (optional) Windows Embedded 7 or Windows 10 IoT Enterprise
- Ports 1xEthernet, 4xUSB, 2xRS232
- Protection Rating ·Waterproof Front Panel (IP65)



Data Logger

c. Pompa Parameter Gas

- Type Negative pressure
- Pumping Rate 15L/m
- Ultimate Vacuum 0.008 Mpa
- Noise <45 dB
- Motor Power 30 W
- Diaphragm Valve NBR
- Overload protection, Over temperature protection, Short circuit protection
- Weight 1.58 kg
- Dimension 192x100x135 mm



Pompa Parameter Gas

FASILITAS ZEROING / ZERO GAS GENERATOR

- Auto zero technology
- Automatically assess sensor performance

AIR QUALITY MONITORING SOFTWARE

- Web browser based, processing of sensor output to give reading, database storage on secure server
- Tables, graphs, data download, multi-user access, password controlled
- Able to update software remotely

SOFTWARE DATAACQUISITION SYSTEM

a. Fitur

- | | |
|----------------|------------------|
| ▪ User login | ▪ Indoor display |
| ▪ Data history | ▪ Real time |
| ▪ Reporting | ▪ Clock & Date |

b. Private Network Connection Manager

- Manage communication (connection) to Main Center
- Manage communication (connection) to sensory system
- Connection speed for local network: up to 100 Mbps
- Raw Data Acquisition From Sensors System
- Real time data collection from sensor and instrumentation hardware

c. Raw Data Transfer Protocol to Main Center

- Real time communication to Main Center using TCP/IP connection
- Connection status auto detection Signalling alert/alarm for specific status of the fixed station
- Connection speed for remote network: downloading up to 7.2 Mbps uploading up to 3.6 Mbps

d. Database Management

- Database contain real-time data gathered from sensory system
- Log file data for daily operation, use for maintenance

e. Operating System (OS)

- Linux based interface terbaru

f. Technology and User Interface

- user friendly

g. Communication

- Pengiriman data menggunakan ISP (Internet Service Provider) berlangganan
 - Open source untuk seluruh aplikasi
 - Menggunakan 2 bahasa (Indonesia-English)
 - Memiliki menu untuk melakukan export dari AQM ke media flashdisk ke dalam format CSV dan Excel dengan rentang waktu tertentu
 - Memiliki kemampuan untuk menyimpan dan mengirim ulang data yang belum terkirim ke server KLHK (auto resend), serta mampu menampilkan data data yang belum terkirim ke server
 - Memiliki menu untuk kalibrasi serta dapat menyimpan dan menampilkan data history kalibrasi
 - Memiliki menu untuk menampilkan flowrate / laju alir untuk parameter partikulat
 - Memiliki indikator pembacaan tekanan pompa untuk parameter gas
 - Tampilan AQM minimal menampilkan waktu, menu perubahan satuan parameter gas (ppm, ppb atau $\mu\text{g}/\text{m}^3$), data meteorologi, status dan log pengiriman data ke server KLHK (status dan log memudahkan validasi uji konektivitas)
 - Mampu menampilkan IP Public yang didapat ke tampilan utama
- Peringatan alarm apabila terdapa error pembacaan data sebaga verifikasi dan evaluasi data

2. SHELTER/STASIUN PEMANTAUAN

a. Bangunan Shelter

- | | |
|-----------------|---|
| ▪ Jenis shelter | Shelter Single Room CKD |
| ▪ Jenis Lantai | Base Frame |
| ▪ Dimensi | Panjang 3 m x Lebar 2 m x Tinggi 2,75 m |
| ▪ Material | Pre painted galvanized |
| ▪ Pagar | Tipe BRC |
| | Material besi Galvanis |

b. Instalasi Listrik dan Penerangan

- | | |
|-------------------------|---|
| ▪ Kabel | ▪ Sensor otomatis untuk penerangan di luar shelter |
| ▪ Stop Kontak | ▪ Finishing (T Dus 3way, Pipa Conduit, Clamp Pipa, Sock Pipa, Flexible Conduit) |
| ▪ Saklar Ganda | |
| ▪ Fiting Lampu Tempel | |
| ▪ Lampu LED 220V 20Watt | |

c. Sambungan Listrik PLN 3500 Watt



d. Panel ACPDB

▪ Box Panel	400x600x200 mm, Finishing Cat Powder Coating	Lampu Indikator	LED
▪ MCB	1 Pole	Kabel Ground	1x16mm
▪ Arrseter	270V 20 KA, 2 Pole	Ground Stick	5/8 inch x 2 m
▪ Timer	220 V, 24 jam	Kabel	

e. Kursi dan Meja Kerja

- Meja : Bahan meja multiplex lapisan pvc, rangka kokoh dan kuat, Dimensi P 150 cm x L 70 cm x T 73 cm, Terdapat laci dokumen (2 susun kiri dan kanan), warna abu-abu
- Kursi Buffet (3 pintu) : dengan dudukan bantal
Dimensi P 150cm x L 40cm x T 50cm, bahan multiplex finishing hpl

f. Exhaust Fan

- Exhaust fan ukuran 10"
- Canopy menyesuaikan ukuran exhaust dan dilengkapi RAM nyamuk yang dapat dilepas dan dibersihkan
- Dilengkapi canopy dan filter udara

g. APAR (Alat Pemadam Api Ringan) + P3K dan Alat kebersihan

- Tabung pemadam kebakaran 3,5 kg, dry chemical powder
- 1 set P3K
- Alat kebersihan (Sapu, Alat Pel, Ember dan Kanebo)

h. 1 set electronical tool kit

i. Air Conditioning

- Low Watt, Capacity 1/2 PK, Auto On/Off (2 Unit)

j. Stabilizer

- 3000VA, Input Voltage 160V ~ 240V, Output Voltage 110V dan 220V

k. Penangkal Petir

- | | |
|--|--|
| ▪ 1 buah Split (Tombak) Atas "Kerucut" | ▪ BCC 50mm ² for splitzen + ACPDB + Plate bar + Control |
| ▪ 1 buah Split (Tombak) Bawah | ▪ kangkeng AC + base frame CKD |
| ▪ Kabel BC-25mm | ▪ Exothermix / cadweld (welding) |
| ▪ Resistensi kurang dari 5 Ω | ▪ Misiu |
| ▪ Busbar 300x100x10mm (Cu 10 batang) | ▪ Kabel Scun 50 |
| ▪ Cooper rod 5/8" , panjang 4m | ▪ Control box |
| ▪ Splitzen Cu 60" + pipa 1,5" (2m) + isolator | ▪ Pipa PVC 3" for control copper rod |
| ▪ BC 50mm ² for grounding perimeter + Grounding Plate + Control Box | ▪ Install grounding |

l. CCTV

- 4 kamera (1 indoor dan 3 outdoor 360°)
2 MP HD output up to 1080p resolution full time color, OSD menu 3D DNR true WDR , up to 620 dB
up to 20 m white light distance ip 67 up to coax 4 in 1 video output (switchkable TVI/AHD/DCI/CVBS)
- Turbo HD DVR (Digital Video Recording) + monitor
- Angle CCTV Outdoor wide
- Harddisk 1TB

m. Backup Battery

- Modifikasi
- 8 x Baterai 62 Volt / 7,2 AH
- Minimal tahan 4 jam

n. Uninterruptible Power Supply (UPS)

- Smart UPS Capacity 4000VA/2000W
- Dapat dihubungkan dengan baterai eksternal

o. Tangga Aluminium Multipurpose

- Bahan Aluminium lipat 4
- Panjang tangga minimal 4 meter

q. Silica Gel

- Silikat (SiO₃) sintesis berbentuk butiran warna biru sebanyak 3 Kg untuk tiap stasiun

3. MAIN CENTER

a. Workstation / PC Type All in One

- Prosesor Intel core i7
- Ram 4 GB DDR3
- SSD 1 TB
- Orbit Internet Modem
- Layar 20 inch
- Integrated VGA, Wifi
- OS Windows 10 SL, Team Viewer

b. Color Printer

- Print speed Up to 9.0 ipm (black) and 4.8 ipm (colour)
- Print Capacity Up to 4,500 pages (black) and 7,500 pages (colour)
- Input Capacity Up to 50 sheets of Plain Paper (75g/m²)
- Interface USB 2.0

c. Indoor Display

- Smart TV 60 Inch + Bracket
- Ultra HD 4K LED Panel
- Motion Rate 60 Technology
- Mobile Screen Mirroring Technology
- Built-In Wi-Fi & Ethernet Connectivity
- Full Web Browser
- Wide Color Enhancer
- Smart TV Interface
- ConnectShare Movie
- DTS Studio Sound

d. Mini PC

- Processor Intel Celeron Processor J4005 (4M Cache, 2.00 GHz)
- RAM 4GB DDR4
- Storage 500 GB HDD
- Connection GBe NIC, Wifi, Bluetooth
- Operating System Win 10

e Laptop

Processor Onboard	Intel® Core™ i7-1355U, 10C (2P + 8E)/12T, P-core 1.7/5.0GHz, E-core 1.2/3.7GHz, 12MB
Display	13.3" 2.8K (2880x1800) OLED 400nits Anti-reflection/ Anti-fingerprint, 100% DCI-P3, DisplayHDR™ True Black 500, Dolby® Vision™, Eyesafe®, Glass, Touch + 12" WQXGA (2560x1600) Colorful E Ink 100nits Anti-glare/Anti-reflection/ Anti-fingerprint, 12Hz, Glass, Touch
Memori Standar	16GB Soldered LPDDR5x-6400
Hard Disk	1TB SSD M.2 2280 PCIe® 4.0x4 NVMe®
Tipe Grafis	Integrated Intel® Iris® Xe Graphics
Keyboard	Backlit, English
Camera	FHD 1080p with Privacy Shutter
Audio	Stereo speakers, 2W x2, Dolby® Atmos®, SmartAMP
Wireless Network	Wi-Fi® 6E, 11ax 2x2 + BT5.1
Interfaces	1x Headphone / microphone combo jack (3.5mm) 2x Thunderbolt™ 4 / USB4® 40Gbps (support data transfer, Power Delivery 3.0 and DisplayPort™ 1.4)
Sistem Operasi	Windows 11 Home + Office Home & Student 2021
Batery	Integrated 56Wh
Power Adapter	65W USB-C® Slim (2-pin, Wall-mount)
Dimensi	297 x 219 x 15.8-17.7 mm (11.69 x 8.62 x 0.62-0.70 inches)
Berat	1.35kg

