

BASIOX SENSOR

Model Series: BC-AQM-CO-NO2-PM10



Introduction – Air Quality Monitor

Breathe easily with our state-of-the-art Air Quality Monitor, designed to ensure a safe and healthy indoor environment for homes, offices, and commercial spaces. The device measures key air pollutants including PM10, NO₂, and CO, with a coverage range of up to 15 meters in open spaces. It also supports advanced optional features such as real-time virus detection and mold index monitoring, delivering comprehensive indoor air quality insights.

Environmental Sustainability

The Basiox AQM, which monitors T, RH, CO₂, PM10, PM1 & PM2.5, plays a significant role in environmental sustainability by enabling better monitoring and management of toxic gas emissions and indoor air quality. AQM sensors contribute significantly to environmental sustainability by facilitating emissions monitoring, enhancing energy efficiency, improving indoor air quality, and supporting data-driven strategies aimed at reducing greenhouse gas emissions. Their implementation is a proactive step toward a more sustainable future, helping communities and industries align with global carbon reduction goals.

Technical Features

- **Comprehensive Monitoring via Mobile and Web Applications:** Provides detailed, real-time information on gas concentrations and environmental conditions through both mobile and web interfaces.
- **Automated Alerts and Safety Notifications:** Delivers immediate alerts and safety recommendations to users when gas levels exceed predefined thresholds, enhancing safety and response times.
- **Historical Data Visualization:** Allows users to access historical sensor data with customizable graphical displays in hourly, daily, weekly, and monthly formats, facilitating trend analysis and environmental assessment.
- **Cloud-Based Data Storage and Integration:** Sensor data is securely stored in the cloud, ensuring easy access and seamless integration with other applications through Modbus RS485 or API-based protocols.
- **Inbuilt Memory Backup:** Equipped with onboard memory to prevent data loss during network outages, ensuring uninterrupted data logging and integrity.
- **Precision Calibration:** Each device undergoes span calibration to maintain accurate measurements and reliable performance over time.
- **Seamless Integration with Air Quality Control Systems:** Compatible with a wide range of air control systems, allowing for automated adjustments and improved air management based on real-time sensor data.

Applications

Environmental monitoring for individuals, government agencies, facility managers, and healthcare providers.

Technical Specifications – Model No: BC-AQM-CO-NO2-PM10

Parameter	
Power Supply	110 VAC to 230 VAC, 24VAC
Power Consumption	5 W
Operating Ambient Temperature	–10 °C to +50 °C
Enclosure Material	ABS Plastic
Mounting Method	Wall / Ceiling / Table
Dimensions	L150 × W150 × H30 mm
Communication	Wi-Fi / GSM 2G/3G/4G/5G/LTE / LoRa

Data Security

Layer	
Device / App	TLS-secured (AWS certificate)
Data over Network	AES encryption
Sensitive Data	Phone, email – protected

Gas and Particulate Sensors – Core Specifications

Carbon Monoxide (CO) Sensor

Attribute	
Sensor Type	Carbon Monoxide (CO)
Working Principle	Electrochemical detection
Measurement Range	0 – 100 ppm
Output Signal	60 ± 20 nA/ppm
Resolution	0.1 ppm
Baseline Range	± 0.5 ppm CO equivalent (in pure air)
Response Time (T90)	< 30 s
Repeatability	< ±3% CO equivalent

Particulate Matter (PM10) Sensor

Attribute	
Sensor Type	Particulate Matter (PM10)
Measurement Principle	Laser scattering with contamination-resistance technology (Optical)
Mass Concentration Range	0 – 1000 µg/m ³
Resolution	0.1 ppm
Particle Detection Size	PM10 (mass concentration), 01ppm
Minimum Sampling Interval	1 s (continuous mode)
Operating Temperature Range	+10 °C to +60 °C

Nitrogen Dioxide (NO₂) Sensor

Attribute	
Sensor Type	Nitrogen Dioxide (NO ₂)
Working principle	Electrochemical
Measurement Range	0 – 50 ppm
Resolution	0.1 ppm
Minimum detection range	0.1 ppm
Concentration Limit	0.1 ppm (1-hour average) for car parks

LoRaWAN Chipset Specification

Parameter	
Frequency	860 – 930 MHz
Chipset	Semtech (SX1262) + STM (STM32L)
Modulation	FSK and LoRa modulation
Antenna	External antenna
Operating Temperature Range	–40 °C to +85 °C
Dimension	10.0 mm × 8.0 mm × 1.6 mm
Interface Voltage (VIO)	3.3 VDC
Supply Voltage	2.2 – 3.6 V for VDD_MCU, VDD_RF, VDD_TCXO
Transmit Mode Current	118 mA @ 22 dBm setting
Transmit Power	Up to +21.5 dBm
Receive Mode Current	15.5 mA @ 125 kHz BW
Receiver Sensitivity	–135.5 dBm @ 1% PER, 125 kHz BW, SF = 12

Host Interface	I ² C / UART / USB / SPI
Compliance	RoHS
Technology	LPWA
Certifications	FCC / IC / CE / MIC / KC / NCC / ANATEL

Regulatory Compliance

Aspect	
Disposability	Dispose of the sensor in accordance with local electronic-waste disposal regulations to minimize environmental impact.
Certifications	CE, RoHS