

BASIOX COMBINED SENSOR

Methanethiol/Nitrogen dioxide/Carbon monoxide/Oxygen/Methane Sensor

Model Series: BC-COMBO4-WPXXX



INTRODUCTION

CH₃SH/NO₂/O₂/CO/CH₄

- **Methanethiol (CH₃SH)**, also known as methyl mercaptan, is a colorless gas with a strong, unpleasant odor like rotten cabbage or garlic.
- **Nitrogen dioxide (NO₂)** is a reddish-brown gas with a characteristic sharp, biting odor. It is one of several nitrogen oxides (NO_x) and plays a significant role in atmospheric chemistry.
- **Carbon Monoxide (CO)** is a colorless, odorless, and tasteless gas that is highly toxic to humans and animals. It is produced by the incomplete combustion of carbon-containing fuels such as gasoline, natural gas, oil, coal, and wood. Common sources of CO include vehicle exhaust, gas appliances, and industrial processes.
- **Oxygen (O₂)** is a colorless, odorless gas that is essential for life on Earth. It makes up about 21% of the Earth's atmosphere and is the third most abundant element in the universe.
- **Methane (CH₄)** is a colorless, odorless gas that is the simplest hydrocarbon and a significant component of natural gas.

ENVIRONMENTAL SUSTAINABILITY

The Basiox combined gas sensor, which monitors CH₃SH, NO₂, CO, O₂ & CH₄, plays a significant role in environmental sustainability by enabling better monitoring and management of carbon dioxide emissions and indoor / outdoor air quality. Combined gas 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 OF MODEL NO: BC-COMBO4-WP-XXX

WORKING PRINCIPLE	CH3SH, NO2, CH4: Solid Polymer Electrolytic O2/CO: Electrochemical
MEASUREMENT RANGE	CO: 0 - 5000 ppm O2: 0-25% CH3SH, NO2 & CH4: 0-10 ppm
MINIMUM DETECTION RANGE	CO: 1 ppm O2: 0.5% CH3SH: 20 ppm NO2 & CH4: 0.05 ppm
RESOLUTION	CO: 1 ppm O2: 0.1% CH3SH: 0.1 ppm NO2 & CH4: 0.25 ppm

CONNECTIVITY	
DATA INTERVAL	5 to 60 minutes- configurable
DATA-PULL	HTTPS request on device IP
DATA-PUSH PROTOCOL	HTTPS post request to host-server

DATA SECURITY

DEVICE/APP	HTTPS Protocol
DATA OVER THE NETWORK	TLS Secured- AWS Certificate
SENSITIVE DATA: PHONE, EMAIL	AES Encryption

DEVICE FEATURES

CALIBRATION & VALIDATION	Span calibration and mid-point validation
DISPLAY TYPE	WebApp/Mobile App
DEVICE INTERFACE	On-device Software/API
SOFTWARE CAPABILITY	SartHHM Cloud Platform (in-house on AWS server) and on premise
DIMENSIONS	L210 x W145 x D90 (Weatherproof Enclosure)
DEVICE SUPPLY VOLTAGE	110 V to 240 V AC /DC 1Amp. Preferably 12 V DC 1 Amp, AC /DC 1Amp.
POWER CONSUMPTION	5 Watt/hour- 3.6 KW/month
OPERATING AMBIENT TEMPERATURE	-20 °C to 60 °C
OPERATING HUMIDITY	-0-95% RH
BODY MATERIAL	ABS Plastic
MOUNTING METHOD	Wall
ENCLOSURE	UV-Resistant ASA UL94HB with Silicone Gasket / Color: Off White
DEVICE/APP	HTTPS Protocol
DATA OVER THE NETWORK	TLS Secured- AWS Certificate
DATA STORAGE	Inbuilt memory backup, up to 24h
COMMUNICATION	4-20 mA/ LoRaWAN / ModBus RTU/ WiFi

LoRaWAN CHIPSET SPECIFICATION

FREQUENCY	860-930 MHz
CHIPSET	Semtech (SX1262) + STM (STM32L)
MODULATION	FSK and LoRa Modulation
ANTENNA	External Antenna
OPERATING TEMP. RANGE	-40°C to +85°C
DIMENSION	10.0mm X 8.0mm X1.6mm
INTERFACE VOLTAGE (VDC for VIO)	3.3 VDC
SUPPLY VOLTAGE	2.2V - 3.6V for VDD_MCU, VDD_RF, VDD_TCXO
TRANSMIT MODE CURRENT	118mA @22dBm setting
TRANSMIT POWER	Up to +21.5dBm
RECEIVE MODE CURRENT	15.5mA @125kHz BW
RECEIVER SENSITIVITY	-135.5dBm @1% per 125kHz BW, SF=12
HOST INTERFACE	I2C / UART / USB / SPI
COMPLIANCE	RoHS
TECHNOLOGY	LPWA
CERTIFICATIONS	FCC / IC / CE / MIC / KC / NCC / ANATEL

REGULATORY COMPLIANCE

CERTIFICATIONS	CE, RoHS
DISPOSABILITY	Dispose of the sensor in accordance with local electronic waste disposal regulations to minimize environmental impact.