

BASIOX CH4 SENSOR

Methane Sensor

Model Series: BC-CH4-XXX



INTRODUCTION

Methane (CH₄) is a colorless, odorless gas that is the simplest hydrocarbon and a significant component of natural gas.

- **Chemical Structure:** Methane consists of one carbon atom bonded to four hydrogen atoms. Its molecular formula is CH₄.
- **Natural Sources:** Methane is produced naturally through the anaerobic decomposition of organic matter in wetlands, termites, and the digestive systems of ruminant animals like cows.
- **Human Activities:** Significant amounts of methane are released through activities such as natural gas extraction, coal mining, and agriculture (especially livestock farming and rice paddies).
- **Environmental Impact:** Methane is a potent greenhouse gas, with a global warming potential many times greater than that of carbon dioxide (CO₂) over a 20-year period. It contributes to climate change and atmospheric warming.
- **Uses:** Methane is used as a fuel for heating, electricity generation, and as a feedstock in the production of chemicals like methanol and hydrogen.
- **Safety:** Methane is highly flammable and can form explosive mixtures with air. It is also a major component of biogas, which can be harnessed as a renewable energy source.

ENVIRONMENTAL SUSTAINABILITY

The Basiox CO₂ sensor, which monitors carbon dioxide (CO₂), plays a significant role in environmental sustainability by enabling better monitoring and management of carbon dioxide emissions and indoor air quality. CO₂ 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-CH4-XXX

WORKING PRINCIPLE	Solid Polymer Electrolytic
MEASUREMENT RANGE	0 - 10 ppm
MINIMUM DETECTION RANGE	0.05 ppm
RESOLUTION	0.25 ppm

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

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	SarHHM Cloud Platform (in-house on AWS server) and on premise
DIMENSIONS	85(W)*85(D)*25(H) mm
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
ENCLOSURE	ABS Plastic
MOUNTING METHOD	Wall
COMMUNICATION	4-20 mA/ LoRaWAN /ModBus RTU/ WiFi
DATA STORAGE	Inbuilt memory backup, up to 24h
DEVICE/APP	HTTPS Protocol
DATA OVER THE NETWORK	TLS Secured- AWS Certificate

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.