



LoRaWAN® CO₂ Monitoring Sensor

MacSync LC02 Xx

LoRaWAN® CO₂ monitoring sensor for real-time carbon dioxide detection and indoor air quality monitoring with long-range wireless connectivity.



Introduction

The MacSync LCO2 Xx is an industrial-grade LoRaWAN® CO₂ Monitoring Sensor designed for continuous real-time monitoring of carbon dioxide (CO₂) concentration across smart buildings, offices, schools, warehouses, HVAC systems, industrial facilities, indoor environments, and environmental monitoring applications.

Built with advanced CO₂ sensing technology and long-range LoRaWAN® connectivity, the device enables organizations to continuously monitor indoor air quality, optimize ventilation systems, improve occupant comfort, and support energy-efficient building management strategies. The sensor supports BLE-based local configuration, OTA firmware updates, public and private LoRaWAN® network compatibility making it ideal for smart infrastructure, green buildings, industrial IoT.

Features

- Real-Time CO₂ Concentration Monitoring
- High-Stability CO₂ Sensing Technology
- Configurable Threshold-Based CO₂ Alerts
- BLE-enabled configuration and diagnostics via mobile application
- Supports periodic, event-based, and threshold-based data transmission
- LoRaWAN & Macnman MacTalk Protocol Support (Gateway-Free Device to Device Communication)
- Quick Deployment with No Wiring Infrastructure Required
- Compatible with Public & Private LoRaWAN® Networks

Key Advantages

- Enables Real-Time Indoor Air Quality Visibility
- Supports Smart HVAC & Ventilation Optimization
- Helps Improve Occupant Comfort & Productivity
- Ideal for Offices, Schools & Commercial Buildings
- Supports Energy-Efficient Building Operations
- Enables Centralized Environmental Monitoring Across Facilities
- Supports ESG & Green Building Initiatives

CO₂ Gas Sensor Specifications

	Model X1	Model X2
Measurement Range	400 ppm ~ 2,000 ppm	400 ppm ~ 5,000 ppm
Accuracy	± (50 ppm + 5% of Reading)	± (50 ppm + 5% of Reading)
Repeatability	±10 ppm	±10 ppm
Response Time (T90)	≤ 60 Seconds	≤ 60 Seconds

Accuracy Drift	± (5 ppm + 0.5%) per Year	± (5 ppm + 0.5%) per Year
Sensor Technology	NDIR	NDIR
Calibration	Factory Calibrated	Factory Calibrated

Wireless Specifications

Wireless Protocols	LoRaWAN® (v1.0.4), Macnman MacTalk Protocol
Antenna	Internal high-efficiency antenna
Supported Bands	IN865 / RU864 / EU868 / US915 / AU915
Tx Power	23 dBm @ 865 MHz
Sensitivity	-137 dBm @ 300 bps
LoRaWAN® Class	Class A (Default), Configurable to Class C via Maya
Device Activation	OTAA
Supported LNS	Private LNS ,ChirpStack ,TTN , MQTT, Orbiwise, Netmore (Activity)

Device Management

Configuration Method	Via Macnman Maya Android App
Local Configuration	BLE-Based Local Configuration
Remote Configuration	Over-the-Air Configuration (Downlink Commands)
Status LED	1 × Internal Multi-Color LED

Server Data Reporting Options

Data Reporting Mode	Periodic / Event-based / Hybrid
Transmission Interval	Independent uplink interval for optimized power consumption
Threshold-Based Alerts	Configurable gas detection thresholds for event-triggered transmission
Sampling Interval	Configurable data acquisition interval (e.g., 1 min to 24 hours)

Power & Battery Performance

Power Supply	Integrated 19 Ah Lithium Battery
Battery Type	Lithium Thionyl Chloride (Li-SOCl ₂)
Estimated Battery Life at 25 °C	
5-minute reporting interval	~ 1 Year

15-minute reporting interval	~ 2.5 years
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60-minute reporting interval	~ 4 years +
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Physical & Environmental Specifications

Enclosure & Mechanical

Material	Glass Filled Nylon
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Protection Rating	IP65
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Dimensions	165 mm X 62 mm X 43 mm
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Weight	~175 g
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Mounting & Installation

Wall - Mounted	Supported
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Pole - Mounted	Supported
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Environmental Conditions

Operating Temperature	-40 °C to + 65°C
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Operating Humidity	0% to 95% RH (non-condensing)
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Regulatory Certifications & Compliance

Wireless Certification	WPC
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Environmental	RoHS Compliant
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What's in the Box?

- MacSync LCO2 Sensor
- Mounting Clip
- User Manual
- Warranty Card
- IP68 Cable Extender *
- Mounting Screws
- Power Adapters *

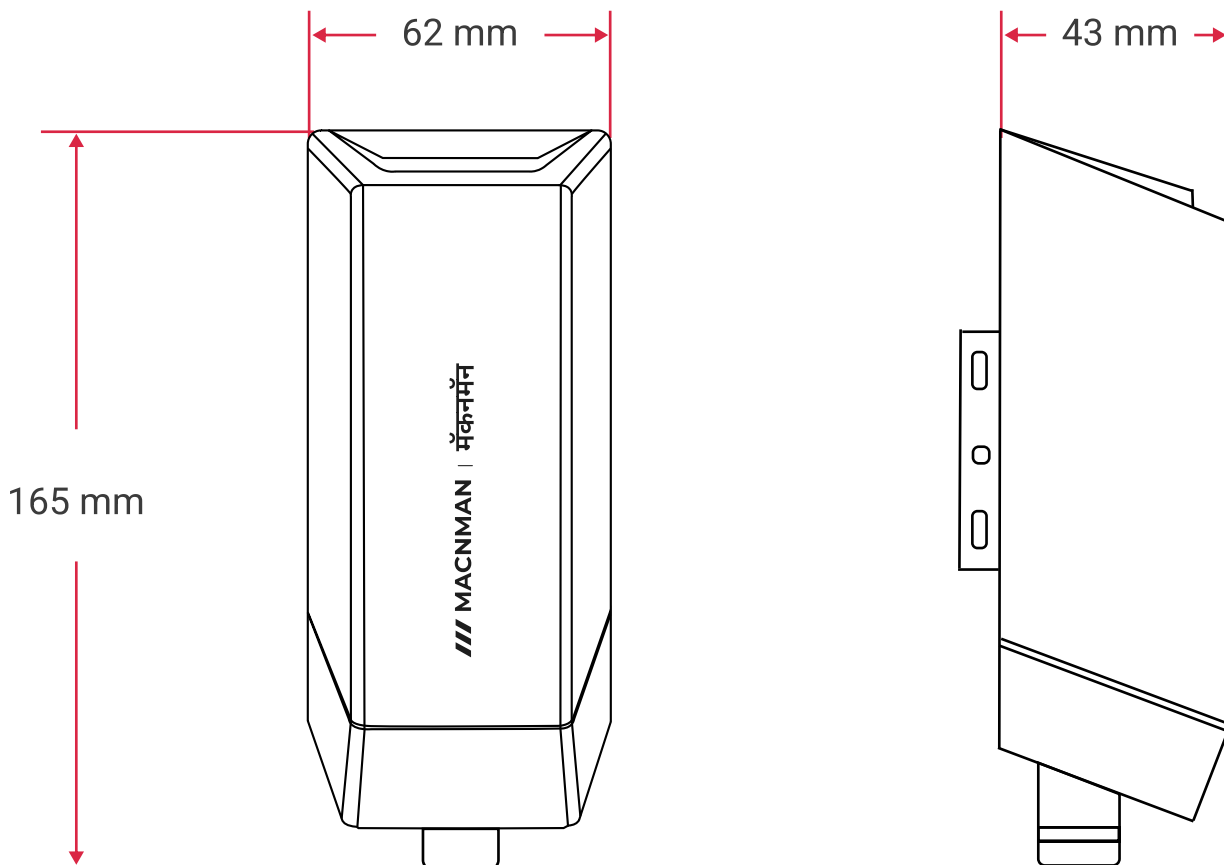
Models & Ordering Information

Variant Name	Power Source
MacSync LC02 X1 P0	External Power (9–36 V DC)
MacSync LC02 X1 B0	Integrated 19 Ah Lithium Battery
MacSync LC02 X2 P0	External Power (9–36 V DC)
MacSync LC02 X2 B0	Integrated 19 Ah Lithium Battery

Notes

- Power operated models are only available with external probe option
- (*) Marked accessories must be purchased separately
- Battery life is estimated under standard operating conditions

Device Dimensions






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Say Hello 🙌

-  www.macnman.com
-  info@macnman.com
-  +91 7972856163
-  Office -15, 635 1B, Bibwewadi, Pune,
Maharashtra 411037

Support Mails

-  chat@macnman.com
-  helpdesk@macnman.com
-  support@macnman.com

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