



LoRaWAN® Ethylene (C₂H₄) Sensor

MacSync LC₂H₄GS X1

LoRaWAN® ethylene gas monitoring sensor for real-time C₂H₄ concentration monitoring with long-range wireless connectivity and industrial-grade reliability.



Introduction

The MacSync LC2H4GS X1 is an industrial-grade LoRaWAN® Ethylene (C₂H₄) Gas Monitoring Sensor designed for continuous real-time monitoring of ethylene gas concentration across cold storage facilities, fruit ripening chambers, food processing plants, warehouses, agriculture supply chains, research laboratories, and industrial monitoring applications.

Built with advanced ethylene sensing technology and long-range LoRaWAN® connectivity, the device enables organizations to continuously monitor ripening conditions, detect abnormal gas accumulation, optimize storage environments, and improve product quality across distributed facilities.

Features

- Real-Time Ethylene (C₂H₄) Gas Monitoring
- 0–100 ppm Ethylene Detection Range
- Fast Response Time (<30 Seconds) for Continuous Monitoring
- Industrial-Grade Electrochemical Gas Sensor Element
- Built-In SO_x / NO_x / H₂S Interference Filtering
- Compatible with Public & Private LoRaWAN® Networks & Macnman MacTalk Protocol
- Designed for Industrial & Hazardous Environments

Key Advantages

- Designed for Fruit Ripening & Cold Storage Applications
- Helps Reduce Post-Harvest Spoilage & Product Losses
- Enables Faster Detection of Abnormal Ethylene Build-Up
- Reduces Manual Gas Inspection & Monitoring Requirements
- Designed for Harsh Agricultural & Industrial Deployments

Ethylene (C₂H₄) Measurement Specifications

| | |
|----------------------------------|--|
| Detection Range | 0 – 100 ppm |
| Maximum Detectable Concentration | 200 ppm |
| Sensitivity | 0.04 ± 0.012 µA/ppm |
| Filter Characteristics | Filtering SO _x / NO _x & H ₂ S |
| Measurement Resolution | 0.5 ppm |
| Repeatability | 1% of Output |
| Response Time (T90) | < 30 Seconds |
| Operating Temperature Range | -20°C ~ +50°C |
| Expected Sensor Life | 3 Years in Air |

Wireless Specifications

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|--------------------|---|
| 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 ,The Things Networks , MQTT, Orbiwise |

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 |

Device Configuration Parameters

| | |
|------------------------|---|
| Data Reporting Mode | Periodic / Event-based / Hybrid |
| Transmission Interval | Independent uplink interval for optimized power consumption |
| Threshold-Based Alerts | Configurable Ethylene Thresholds for Event-Triggered Transmission |
| Sampling Interval | Configurable data acquisition interval (e.g., 1 min to 24 hours) |

Power & Battery Performance

| | |
|--|--|
| Power Supply | Integrated Battery - 19,000 mAh |
| 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 years |
| 60-minute reporting interval | ~4+ years |

Physical & Environmental Specifications

Enclosure & Mechanical

| | |
|-------------------|------------------------|
| Material | Glass Filled Nylon |
| Protection Rating | IP65 |
| Dimensions | 165 mm X 62 mm X 43 mm |
| Weight | ~175 g |

Mounting & Installation

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|-----------------------------|--------------------------|
| Wall - Mounted Installation | Supported , With Clip |
| Pole - Mounted Installation | Supported , Without Clip |

Environmental Conditions

| | |
|-----------------------|-------------------------------|
| Operating Temperature | -40°C to +80°C |
| Operating Humidity | 0% to 95% RH (non-condensing) |

Regulatory Certifications & Compliance

| | |
|------------------------|----------------|
| Wireless Certification | WPC |
| Environmental | RoHS compliant |

What's in the Box?

- MacSync LC2H4GS X1 Sensor
- Mounting Clip
- User Manual
- Warranty Card
- IP68 Cable Extender *
- Mounting Screws
- Power Adapters *

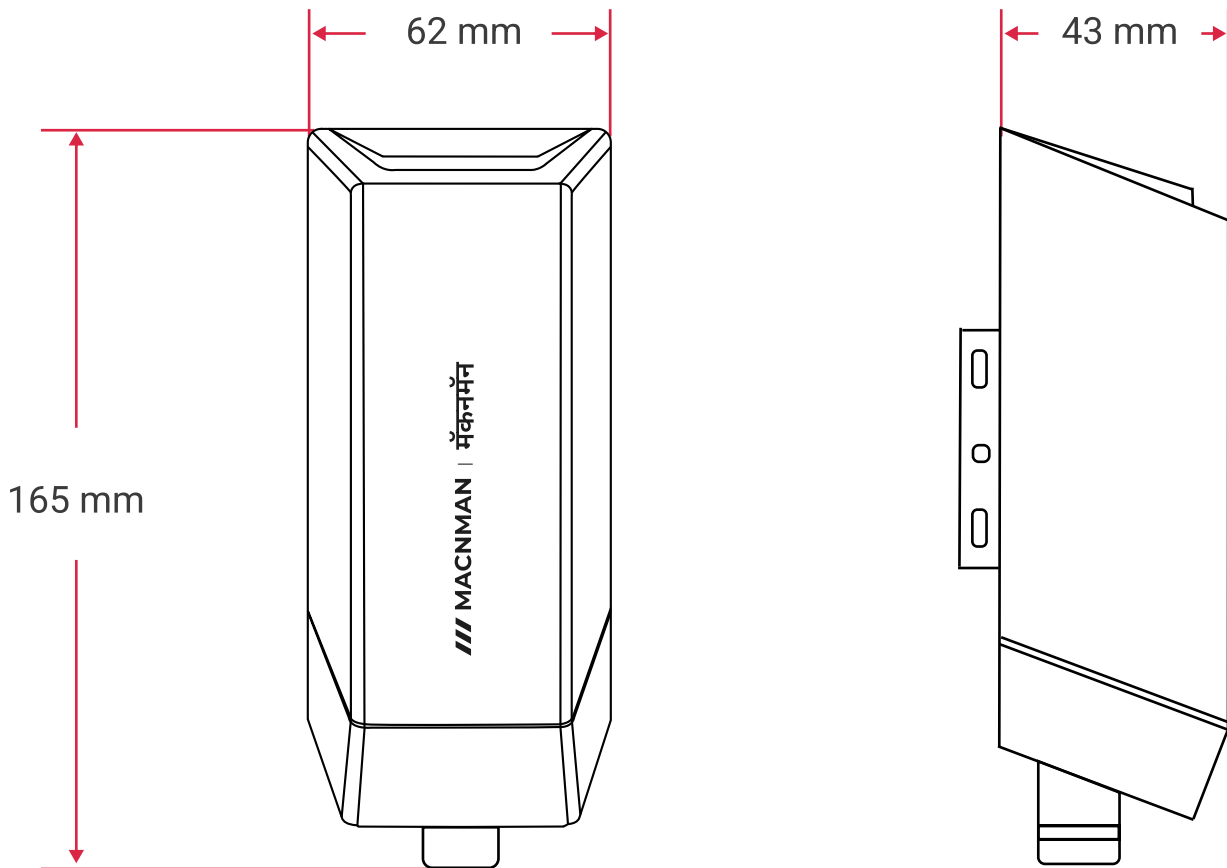
Models & Ordering Information

| Variant Name | Power Source |
|-----------------------|---------------------------------|
| MacSync LC2H4GS X1 PO | External Power (9–36 V DC) |
| MacSync LC2H4GS X1 BO | Integrated Battery - 19,000 mAh |

Notes

- Power-operated variants require external DC power input & external sensor probe
- (*) Marked accessories must be purchased separately

Device Dimensions






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