



LoRaWAN® Soil EC Sensor

MacSync LSS X3

LoRaWAN® soil EC sensor for real-time soil salinity and conductivity monitoring with long-range wireless connectivity and precision agriculture intelligence.



Introduction

The MacSync LSS X3 is an industrial-grade LoRaWAN® Soil EC Sensor designed for continuous real-time monitoring of soil electrical conductivity (EC) across smart agriculture, greenhouse, irrigation, plantation, and precision farming applications. Built for harsh outdoor agricultural environments, the sensor enables farmers and agricultural teams to monitor soil salinity, nutrient concentration, and fertilizer effectiveness using long-range LoRaWAN® connectivity.

With rugged IP68 sensor construction, ultra-low power architecture, configurable threshold alerts, BLE-based configuration, and compatibility with public and private LoRaWAN® networks, the MacSync LSS X3 delivers scalable wireless soil intelligence for data-driven irrigation management, fertilizer optimization, and smart agriculture infrastructure.

Features

- Real-Time Soil Electrical Conductivity (EC) Monitoring
- Industrial-Grade Soil EC Sensing Technology
- High Stability Soil Salinity Measurement
- Corrosion-Resistant Agricultural Probe Design
- Configurable Threshold-Based Nutrient Alerts
- Compatible with Public & Private LoRaWAN® Networks & Macnman MacTalk Protocol
- Rugged IP68 Waterproof Soil Probe

Key Advantages

- Helps Improve Crop Productivity & Soil Health
- Enables Better Nutrient Management Across Farms
- Supports Smart Farming & Precision Agriculture Initiatives
- Enables Data-Driven Agricultural Decision Making
- Supports Greenhouse, Plantation & Horticulture Applications

EC Sensor Measurement Specifications

Range	0 – 10000 μ S/cm
Accuracy	\pm 3% F.S
Resolution	10 μ S/cm
Response Time (T90)	< 10 Second
Operating Temperature	-20°C to +60°C
Operating Pressure	0.9 – 1.1 atm
Ingress Protection (Sensor)	IP68

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 ,The Things Network , 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 EC 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	~2 years
15-minute reporting interval	~4 years
60-minute reporting interval	~6+ years

Physical & Environmental Specifications

Enclosure & Mechanical

Material	Glass Filled Nylon
Protection Rating	IP65
Dimensions	152 mm X 62 mm X 43 mm (Without Sensor Probe)
Weight	~175 g

Mounting & Installation

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 LSS X3 Sensor
- Mounting Clip
- User Manual
- Warranty Card
- IP68 Cable Extender *
- Mounting Screws
- Power Adapters *

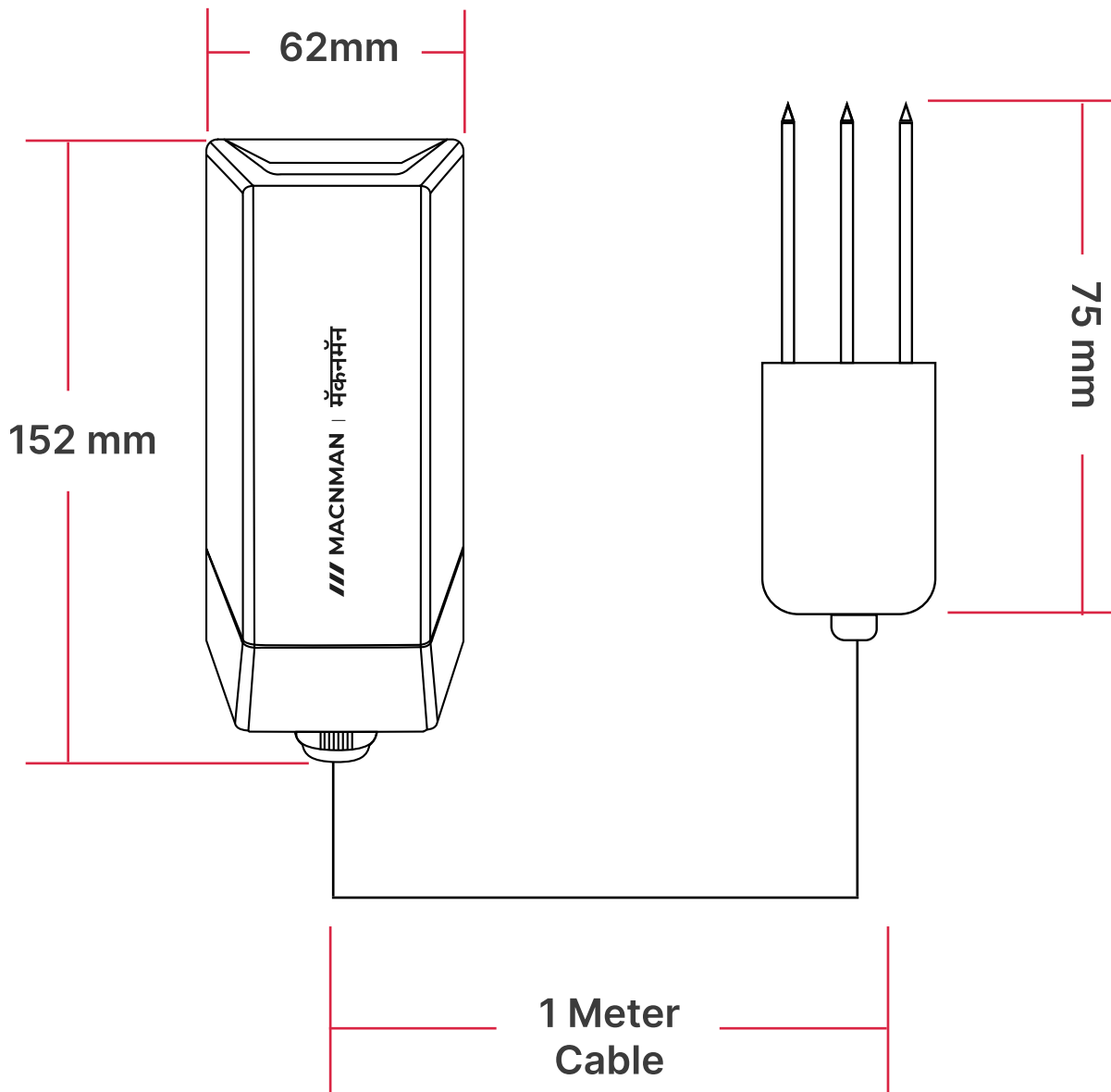
Models & Ordering Information

Variant Name	Power Source	SKU
MacSync LSS X3 BO	Integrated Battery - 19,000 mAh	836
MacSync LSS X3 SO	20 W Solar Panel with 8000 mAh Battery	837

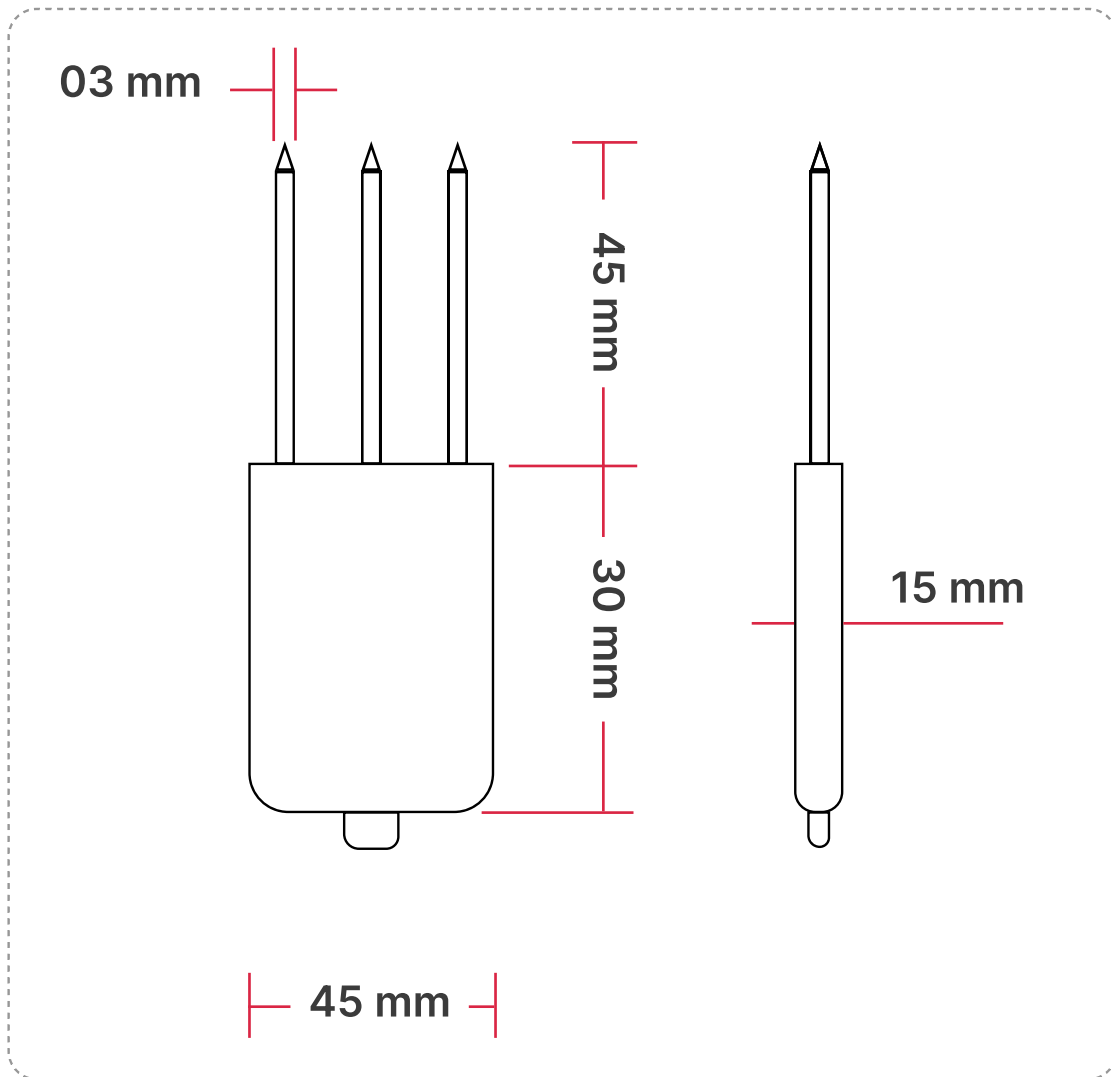
Notes

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

Device Dimensions



Device Dimensions






Sensor Probe

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के अवसर के लिए धन्यवाद भवतः सेवायाः अवसरस्य कृते धन्यवादः तमारी सेवा करवानी

Say Hello 🙌

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