



LoRaWAN® Optical Rain Sensor

MacSync LORS X1

Industrial LoRaWAN Optical Rain Sensor for real-time rain detection and precipitation monitoring with long-range wireless connectivity and ultra-low power operation.



Introduction

The MacSync LORS X1 is an industrial-grade LoRaWAN optical rain sensor designed for real-time rainfall detection and environmental monitoring applications. Using optical sensing technology, the device detects rain presence quickly and reliably without the mechanical wear associated with traditional rain sensors.

Built for outdoor deployments, the sensor combines long-range LoRaWAN connectivity with ultra-low power operation for reliable remote monitoring. It is ideal for smart agriculture, weather monitoring systems, smart cities, industrial automation, solar plants, and infrastructure monitoring applications.

Features

- Real-Time Rain Detection and Monitoring
- Optical Rain Sensing Technology
- Fast Rainfall Event Detection
- Industrial Grade Outdoor Sensor Design
- Wireless Deployment Without Complex Cabling
- LoRaWAN & Macnman MacTalk Protocol Support (Gateway-Free Device to Device Communication)
- Compatible with Public & Private LoRaWAN® Networks & Macnman MacTalk Protocol
- Optional Solar-Powered Variant

Key Advantages

- Helps Protect Equipment and Infrastructure from Rain Exposure
- Supports Smart Irrigation and Agriculture Automation
- Ideal for Solar Plant and Outdoor Asset Monitoring
- Supports Smart City and Environmental Monitoring Projects
- Enables Centralized Monitoring Across Multiple Locations

Optical Rain Sensor Measurement

Sensing Principle	Infrared Optical Refraction
Range	Equivalent 0–200 mm/h
Resolution	1 mm/h Equivalent
Accuracy	±5% (Typical)
Calibration	Factory Calibrated
Rain Classification	0 = No Rain, 1 = Drizzle, 2 = Moderate, 3 = Heavy
Ingress Protection (Sensor)	IP67

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 Macnman Maya App
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)
Cloud-Based	Cloud-Based Configuration via Macnman IoT Platform*
Status LED	1 x 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 Rain level threshold 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, Optional Solar Panel
Battery Type	Lithium Thionyl Chloride (Li-SOCl ₂)
Estimated Battery Life at 25 °C	
5-minute reporting interval	~1.5 years
15-minute reporting interval	~3 years
60-minute reporting interval	~5+ years

Physical & Environmental Specifications

Enclosure & Mechanical

Material	Glass Filled Nylon
Protection Rating	IP 65
Dimensions	152 mm X 62 mm X 43 mm
Weight	175 grams

Mounting & Installation

Wall-mounted installation	Yes , With Clip
Pole - mounted installation	Yes , Without Clip

Environmental Conditions

Operating Temperature	-20 °C to + 50°C
Operating Humidity	0% to 95% RH (non-condensing)

Regulatory Certifications & Compliance

Wireless Certification	WPC
Environmental	RoHS compliant

What's in the Box?

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

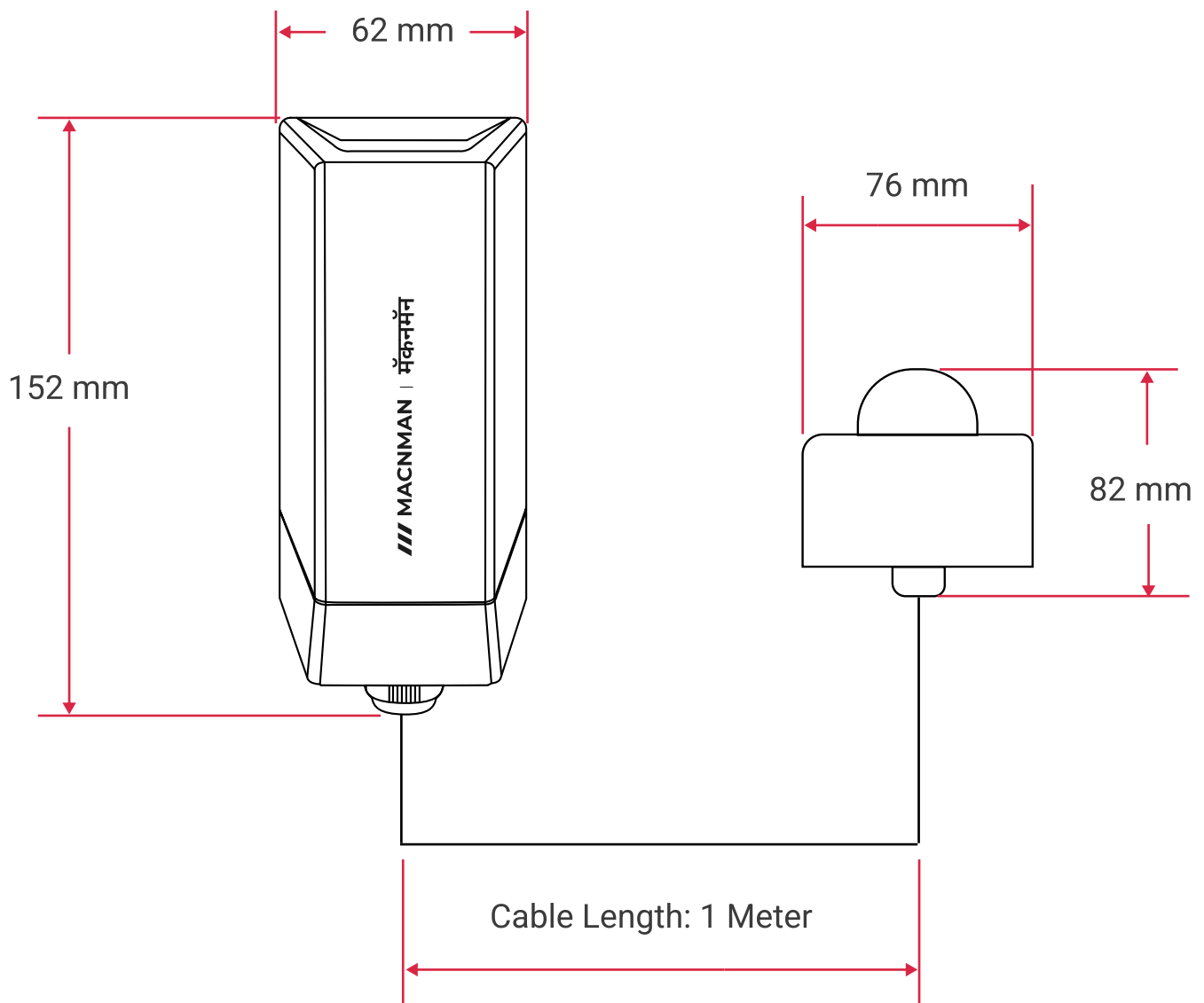
Models & Ordering Information

Variant Name	Power Source
MacSync LORS X1 BO	Integrated 19 Ah Lithium Battery
MacSync LORS X1 SO	20 W Solar Panel + 8000 mAh Battery

Notes

- Power operated models are only available with external probe option
- (*) Marked accessories need to be purchased separately.
- Battery life may vary depending on network conditions, transmission interval, ambient temperature, & device configuration.

Device Dimensions






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