



LoRaWAN® Weather Station

MacSync LWS X1

Industrial LoRaWAN Weather Station for real-time monitoring of wind speed & direction, temperature, humidity, atmospheric pressure with long-range wireless connectivity & ultra-low power performance.



Introduction

The MacSync LWS X1 is a LoRaWAN-based weather monitoring station designed for continuous outdoor environmental monitoring in industrial, agricultural, and smart city applications. The device combines multiple environmental sensors with long-range LoRaWAN connectivity for reliable real-time data collection across large deployment areas.

Built for harsh outdoor environments, the weather station supports ultra-low power operation, cloud integration, and industrial IoT platforms. It is ideal for smart agriculture, weather monitoring networks, industrial sites, environmental monitoring, solar farms, research stations, and smart infrastructure applications.

Features

- Measures Wind Speed, Wind Direction, Rainfall, Temperature, Humidity, and Atmospheric Pressure
- Industrial Grade Environmental Sensors
- Long-Range LoRaWAN® Wireless Connectivity
- Optional Solar-Powered Variant for Continuous Outdoor Operation
- Rugged IP-Rated Outdoor Enclosure
- Compatible with Public & Private LoRaWAN® Networks & Macman MacTalk Protocol
- Configurable Sampling and Transmission Intervals

Key Advantages

- Helps Monitor Real-Time Weather and Environmental Conditions
- Supports Smart Agriculture and Precision Farming Applications
- Improves Irrigation and Water Resource Planning
- Enables Early Detection of Extreme Weather Conditions
- Reduces Manual Weather Data Collection Efforts

Weather Sensor Measurement Specifications

Parameters	Range	Accuracy	Resolution
Ambient Temperature	-40°C to +85°C	±0.3°C @ 25°C	0.01°C
Relative Humidity	0% to 100% RH (NC)	±3% RH (@ 90% RH)	0.01% RH
Wind Speed	0–60 m/s	±(0.3 + 0.03V) m/s	0.01 m/s
Wind Direction	0°–359.9°	±3° (Speed < 10 m/s)	0.1°
Atmospheric Pressure	500–1100 hPa	±0.5 hPa @ 25°C	0.1 hPa

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)
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 Parameter 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 Weather Sensor Module)
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?

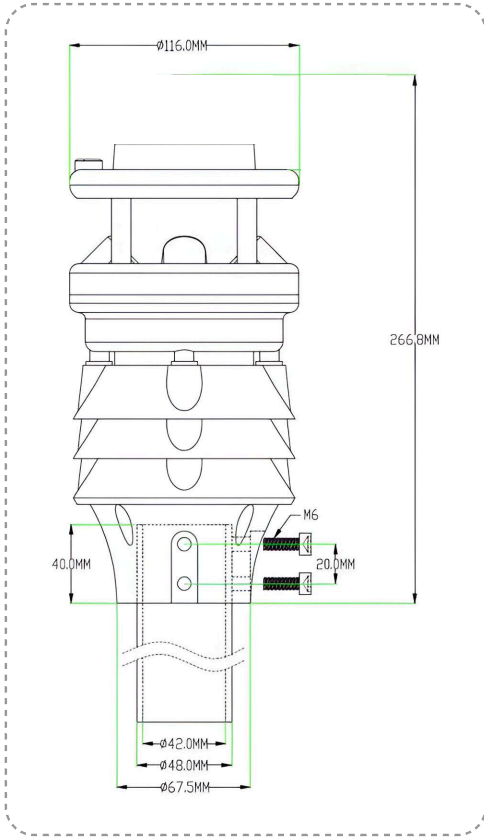
- MacSync LWS X1 Weather Station
- Mounting Clip
- User Manual
- Warranty Card
- IP68 Cable Extender *
- Mounting Screws
- Power Adapters *

Models & Ordering Information

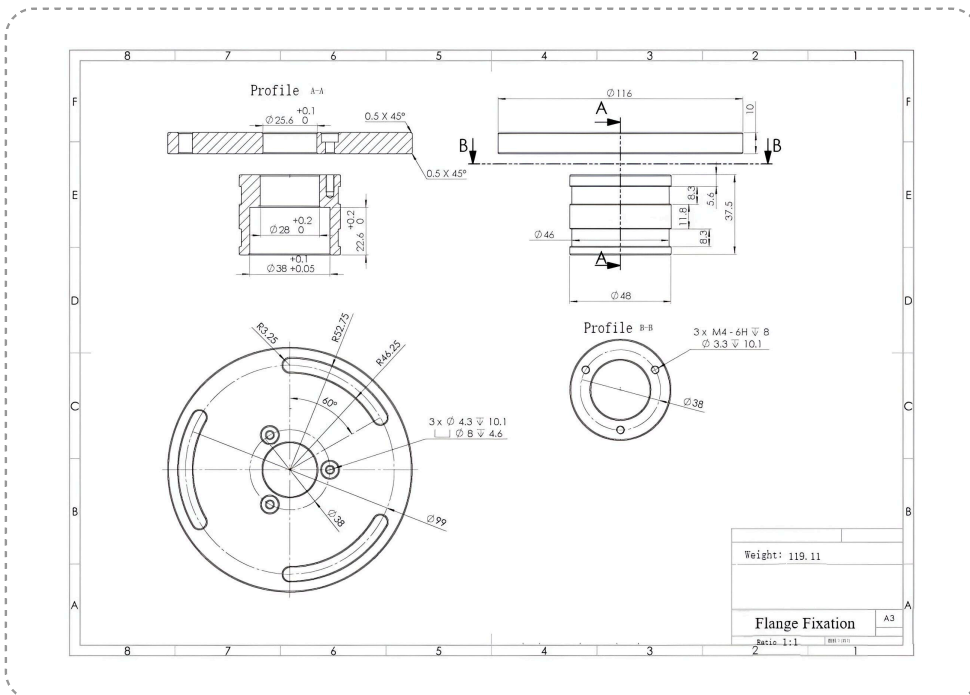
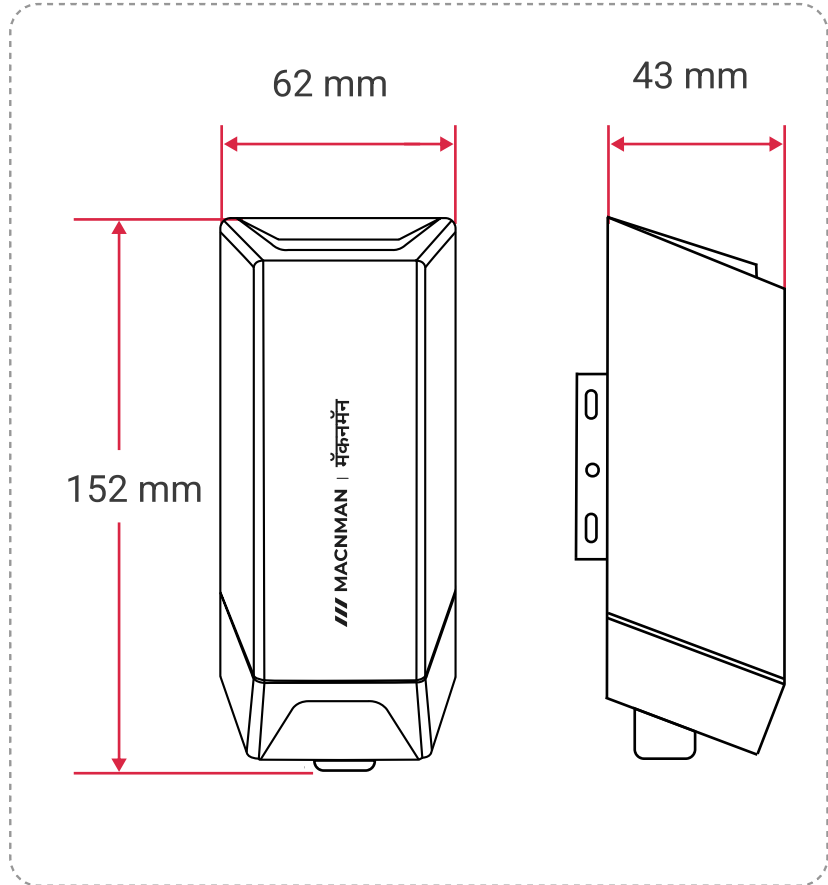
Variant Name	Power Source
MacSync LWS X1 B0	Integrated Battery - 19,000 mAh
MacSync LWS X1 S0	20 W Solar Panel + 8000 mAh Battery

Notes

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






External Weather Sensor Unit






Flange Mounting Plate

y to serve you. तुमची सेवा करण्याची संधी दिल्याबद्दल धन्यवाद. మీకు సేవ చేసే అ
के अवसर के लिए धन्यवाद भवतः सेवायाः अवसरस्य कृते धन्यवादः तमारी सेवा करवानी

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

This manual and all its contents are the intellectual property of Macnman Technologies Pvt. Ltd. and are protected under Indian copyright laws and applicable international conventions.

All trademarks, certifications, and logos mentioned in this document or related products are used with appropriate licensing. These may include, but are not limited to, certifications such as CE, FCC, RoHS, REACH, BQB, WEEE, and others. Ownership of trademarks, logos, and trade names remains with their respective owners. For instance, the Bluetooth® trademark and logo are the property of Bluetooth SIG, Inc. Other trademarks belong to their rightful proprietors.

Given the compact size of the module, the "®" symbol is omitted from Bluetooth-related trademarks in compliance with applicable regulations.

Macnman Technologies Pvt. Ltd. reserves the right to modify the content of this manual to align with advancements in technology. Updated versions may be released without prior notification. Unauthorized modification, reproduction, or use of part or all of this manual without written consent from Macnman Technologies Pvt. Ltd. is strictly prohibited. Legal action will be taken against violators in accordance with Indian law.

By using this manual, you agree to comply with the terms stated herein.