

Operating manual
SRM10



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DESCRIPTION

The Senstick SRM10 is a robust LoRaWAN rain meter designed for long-term, maintenance-free operation in demanding outdoor conditions. Built for precision and reliability, the SRM10 delivers accurate rainfall measurements to support smart agriculture, hydrology, and environmental monitoring applications. With its durable design and low-power consumption, the device operates autonomously for years without intervention.

DATASHEET

Enclosure	
Weight	500g
Dimensions	165 x 255mm
Materials	ABS Plastic (White)
IP rating	IP67

Operating conditions	
Temperature	-20°C to +60°C
Humidity	0 to 100% RH

Configuration	
Sending interval	Configuration via NFC and downlink
Data upload interval	Configuration via NFC and downlink
NFC configuration	Native Android App

Connectivity	
Wireless Technology	LoRaWAN® 1.0.3
Wireless Security	LoRaWAN® End-to-End encryption (AES-CTR), Data Integrity Protection (AES-CMAC)
LoRaWAN Device Type	Class A - End-device
Supported regions	US902–928, EU863–870, AS920-923, AU915–928, and others
Link Budget	137dB (SF7) to 151dB (SF12)
RF Transmit Power	14dBm (Region specific)

Power supply	
Battery type	1 x 1.5V AA Alkaline
Expected operation	<7 years (depending on sampling, signal, environment)

SENSORS

Temperature	
Configuration	0.2 mm per tip/pulse
Accuracy	±2%

PARTS AND BATTERIES

Senstick Rain Meter is parted into two separate devices: Senstick and Rain Bucket - both connected via cable.



The Senstick module serves as the central unit, housing the electronics, LoRaWAN communication module, and power supply. The device is powered by one standard AA 1.5V battery, which is inserted into the battery holder after removing the white cap (see illustration below).

⚠ Note: Batteries are not included with the device.

For best performance and extended operating life, it is recommended to use industrial-grade lithium AA batteries, as these provide superior reliability and a wider operating temperature range compared to standard alkaline batteries.



UNDERSTANDING ARCHITECTURE

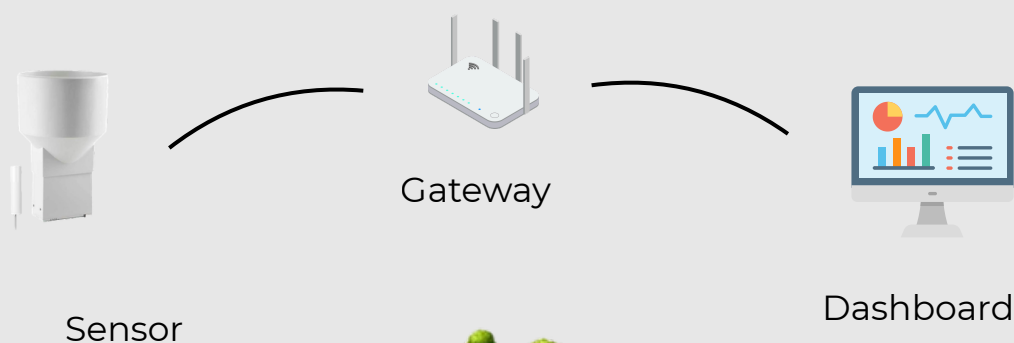
THE

LORAWAN

Senzemo sensors operate via LoRaWAN, meaning they collect environmental data and wirelessly transmit it to a nearby LoRa Gateway. The Gateway then forwards this data to a Senzemo Dashboard or your own custom platform, where it becomes available for analysis, visualization, or integration with third-party systems.

Senzemo devices are compatible with any LoRaWAN platform. For customers seeking a streamlined experience, we also offer complete end-to-end solutions - from data acquisition to visualization.

In case of any questions on this topic, please feel free to contact: support@senzemo.com



LoRaWAN PROTOCOL MANUAL

For detailed instructions on integrating Senstick with your LoRaWAN network, including sending downlink commands, decoding uplink payloads, and configuring network parameters, please refer to the complete LoRaWAN Protocol Manual below:

https://senzemo.com/wp-content/uploads/2024/06/Senstick_SRM10-HWv1.0_FWv1.3_LoRaWAN_Protocol_v1.0.pdf

DECODER:

By default, Senzemo provides a decoder compatible with The Things Network (TTN). However, with minimal adjustments, it can be adapted for use with other LoRaWAN servers such as AWS IoT Core, ChirpStack, Lorient, and others.

You can access the decoder at the following link:

<https://senzemo.com/wp-content/uploads/2024/06/Senstick-Ran-Meter-SRM10.txt>

In case of any support needed, please feel free to contact: support@senzemo.com

Breakdown of Payload

CurrentRain: Amount of rainfall in the last 15 minutes.

CurrentRainTotal: Total amount of rainfall since the most recent start of rain. For example, if it rains for 2 hours, this is the cumulative sum of CurrentRain during that period. This value resets as soon as no rainfall has been recorded in the past 15 minutes.

TotalRain: Total amount of rainfall measured since the sensor was configured.

ACTIVITY AND DATA TRANSMISSION

The factory settings of the Senstick SRM10 are the following:

Measurement interval: 15 minutes

The sensor performs a measurement and sends data every 15 minutes

Adaptive Data Rate: ON

ADR automatically adjusts the data rate based on signal quality and network conditions. This helps optimize battery usage and ensures reliable communication.

Movement detection: ON

The sensor monitors for movement events. If movement is detected, the device can trigger an additional data transmission and flag the event in its payload.

Packet Acknowledgment: Every 24th packet

Every 24th LoRaWAN uplink message requests an acknowledgment (ACK) from the network.

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Every 24th LoRaWAN uplink message requests an acknowledgment (ACK) from the network.

If the device does not receive an ACK, it will automatically attempt to rejoin the network.

The retry process follows a backoff strategy:

- Rejoin attempts start every minute,
- then gradually extend to every hour,
- then every 6 hours,
- and finally, once per 24 hours until the connection is re-established.

This approach ensures network stability while preserving battery life.

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Configuration

The Senstick parameters, from the previous topic, can be configured by either the Senstick Android App or via Downlink (look at the protocol manual from the page 7)

To download the app, visit Google Play Store:
https://play.google.com/store/apps/details?id=org.se.senstick&pcampaignid=web_share



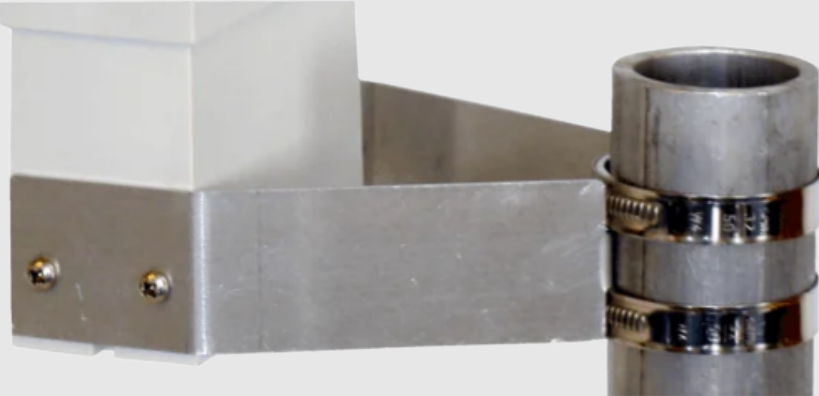
Please note that the user must follow the rules of LoRaWAN standards, which include limitations on sending rates, packet acknowledgment, and adaptive data rates.

Senzemo does not take responsibility for network issues, battery drain, or connectivity problems resulting from user-modified settings that violate LoRaWAN specifications or best practices.

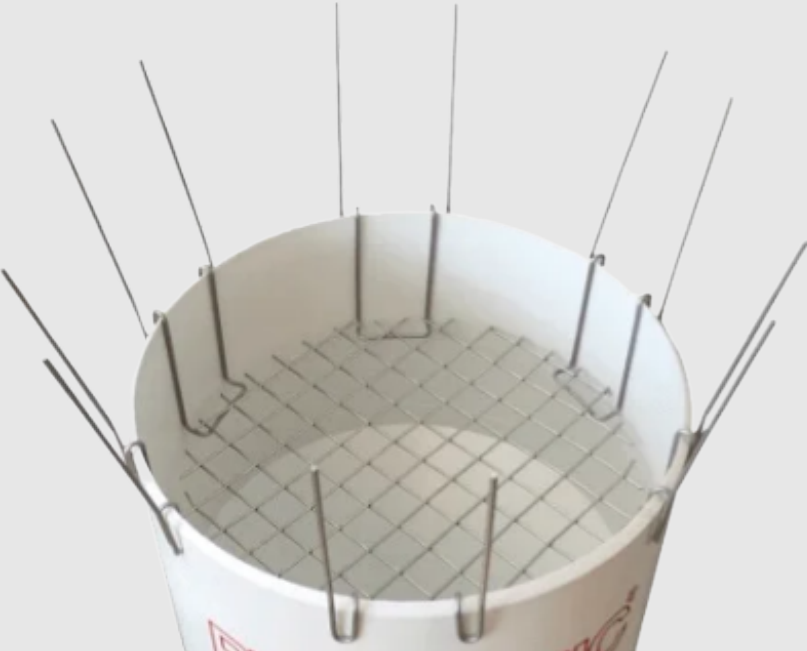
SRM10 INSTALLATION ACCESSORIES

SRM10 comes with the following accessories included:

Mounting kit:



Bird + Leaf protector:



SRM10 INSTALLATION INSTRUCTIONS

Installation instructions

After registering and inserting the batteries, the user can proceed with the installation of the SRM10.

Install the Senstick module using a zip tie (or similar fastener) to the side of the SRM10 or to the nearest suitable pole/object.

Please see some real use case examples below:



