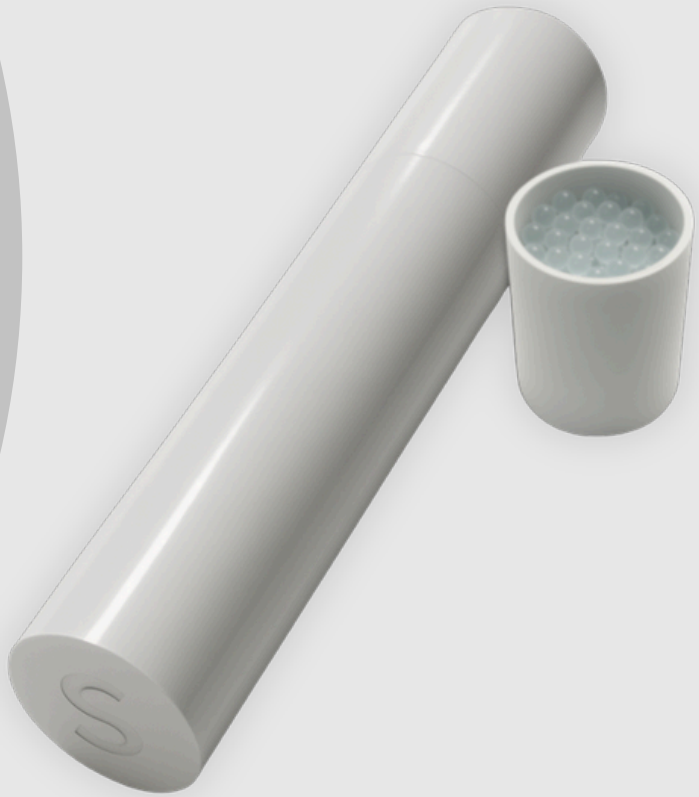
Operating manual

STB10



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DESCRIPTION

The Senstick STB10 is an advanced LoRaWAN temperature sensor designed for accurate and reliable monitoring in demanding environments. It measures both ambient temperature and a buffered “product-like” temperature using a glass-bead thermal mass, which helps simulate how real products heat up or cool down. This reduces false alarms and provides more realistic temperature readings, making it especially useful for cold chain, food storage, and HACCP applications.
The device is built for long-term autonomous use, operating for up to 7 years on a single 1.5V AA alkaline battery. It features a rugged IP67-rated housing, onboard data logging, and NFC configuration for quick and easy setup. Once installed, the STB10 works independently and continuously sends data over LoRaWAN, ensuring reliable monitoring with minimal maintenance in industrial, retail, HoReCa, and warehouse environments.

DATASHEET

Enclosure	
Weight	90g w/ batteries / 140 g with batteries
Dimensions	105mm x 25mm
Materials	UV stable plastic
IP rating	IP67

Acceleration	
Range	±2g to ±16g
Accuracy	±40mg

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

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 (All bands available)
Link Budget	137dB (SF7) to 151dB (SF12)
RF Transmit Power	14dBm (Region specific)

Data Logging	
Temperature	Device logs 40 days of data (at 60 min send period), 14 days (at 20 min send period), 10 days (at 15 min send period), or 7 days (at 10 min send period).

Glass Beads
Laboratory grade - EU made 1,25 - 1,56 mm

SENSORS

Temperature Ambient	
Range	-40°C to +85°C
Accuracy	±0.2°C

Temperature Buffer	
Range	-40°C to +85°C
Accuracy (with buffer delay)	±0.2°C

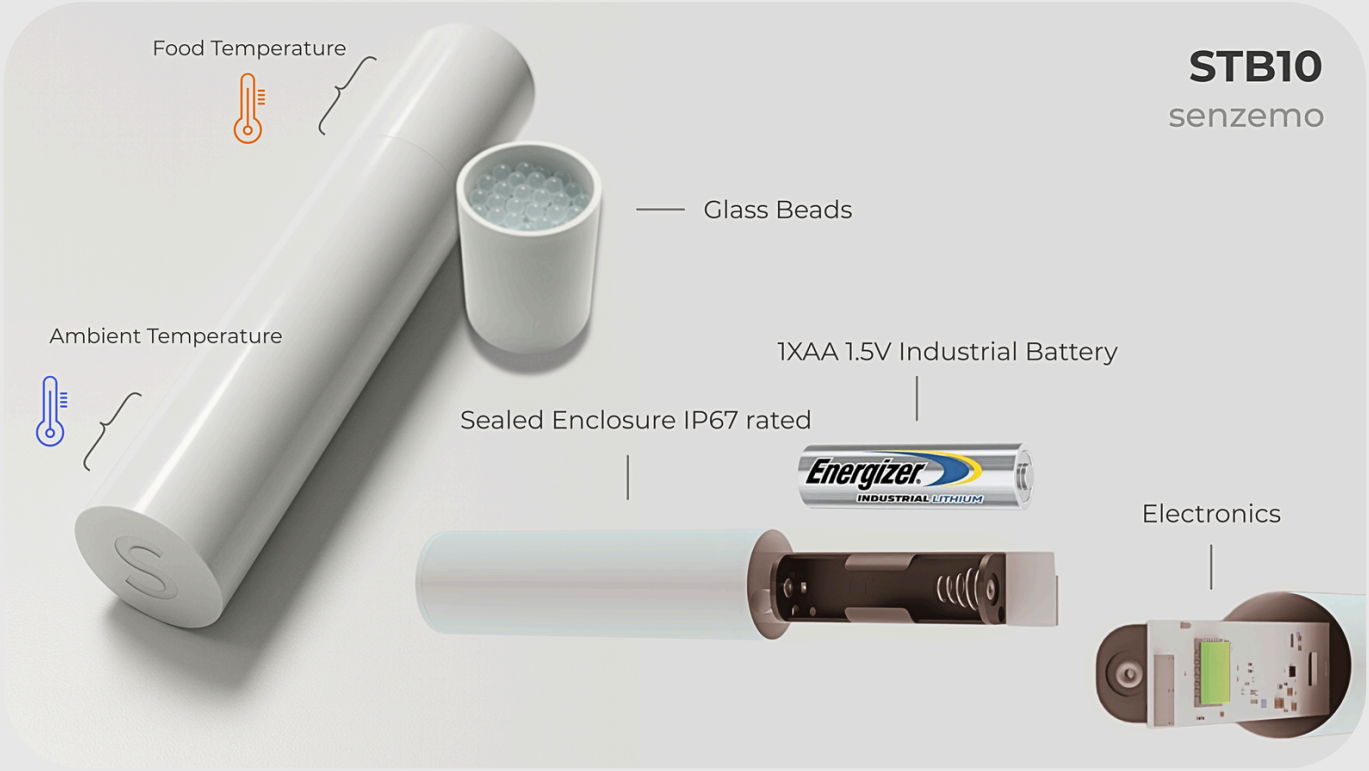
Acceleration	
Range	±2g to ±16g
Accuracy	±40mg

PARTS AND BATTERIES

Senstick is generally composed of three main components: a sensor module with a UV-stable plastic housing, an internal PCB (which accommodates the battery and electronics), and an integrated antenna for reliable long-range wireless communication.

The Senstick Barometric Pressure and Altitude STB10 operates using a single 1.5V AA alkaline battery, which is installed directly onto the PCB inside the enclosure. The device is engineered for long-term autonomous operation, offering an expected battery life of up to 7 years, depending on measurement intervals, signal conditions, and environmental factors. Batteries are not included by default.

For optimal performance, the use of high-quality industrial-grade batteries is recommended to ensure stable operation and extended lifetime across varying environmental conditions.

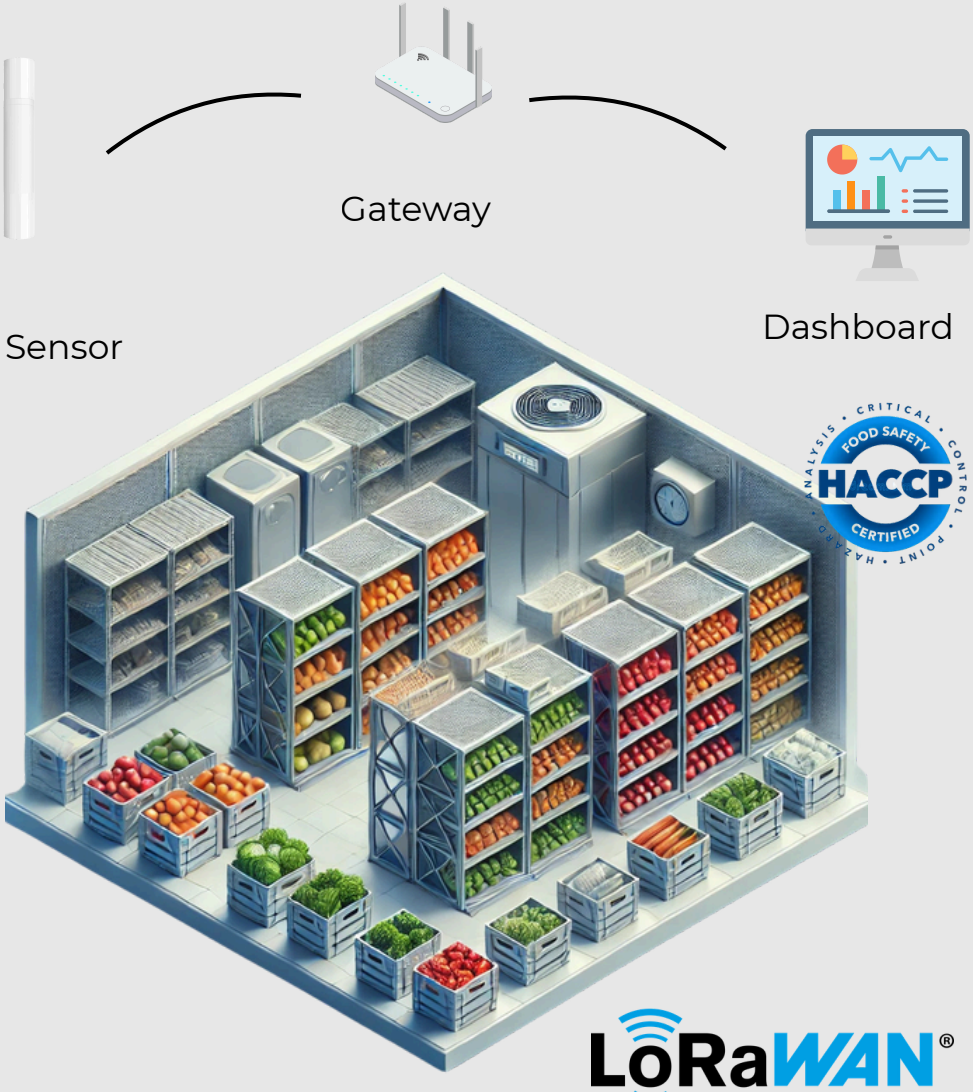


UNDERSTANDING THE LORAWAN ARCHITECTURE

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 the Senstick STB10 with your LoRaWAN network, including sending downlink commands, decoding uplink payloads, and configuring network parameters, please refer to the complete LoRaWAN Protocol Manual for this hardware version (HWv1.0) below:

Senzemo-STB10-HWv1.0_FWv1.0-LoRaWAN_Protocol_v1.0

DECODER:

By default, Senzemo provides a JavaScript decoder compatible with The Things Network (TTN). With minimal adjustments, this script can be adapted for use with other LoRaWAN network servers such as AWS IoT Core, ChirpStack, Loriot, and others. You can access the decoder for the STB10 model at the following link:

https://senzemo.com/wp-content/uploads/2025/10/STB10-TTN-Decoder-1.0.txt

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

Activity and Data Transmission

The factory settings of the Senstick STB10 are the following:

Measurement Interval: The sensor performs a measurement and transmits data every 15 minutes.

Adaptive Data Rate (ADR): ON. This allows the LoRaWAN network to automatically optimize the data rate based on signal quality (SNR), extending battery life.

Movement Detection: OFF (0). An internal accelerometer monitors for movement. If enabled, the device can send an immediate additional transmission and flag the event in the payload.
Packet Acknowledgment: Every 24th packet. To ensure the device remains connected without wasting energy on every message, the sensor requests an acknowledgment (ACK) from the network once every 24 transmissions.

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

Starts every minute (for immediate recovery).
Gradually extends to every hour.
Further extends to every 6 hours.
Finally, once every 24 hours until the connection is re-established.

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.

SENSTICK INSTALLATION ACCESSORIES

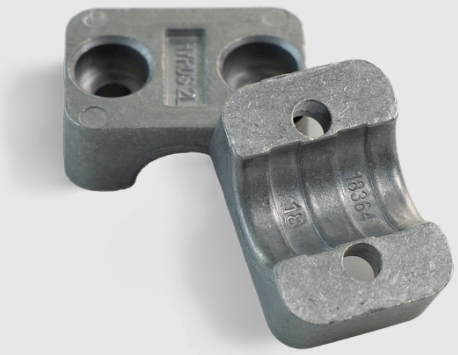
To ensure secure and stable mounting across a wide range of environments, the STB10 supports two primary mounting kits, available separately:

The **MPOM10** snap mounting kit is designed for quick and straightforward installation of the STB10 communication module on poles or flat surfaces. It enables the device to be easily clipped into place while maintaining the antenna in an upright position, ensuring optimal signal performance and reliable connectivity.

The **MALU10** aluminum mounting kit provides a robust, heavy-duty solution for more demanding industrial or outdoor deployments. It delivers a rigid and durable connection between the sensor module and the mounting structure, ensuring maximum stability and long-term reliability in harsh conditions.

Snap Mounting kit MPOM10:
(Also available with magnets)

ALU Mounting kit MALU10:



STB10 INSTALLATION INSTRUCTIONS

After registering the device and activating the batteries, follow these steps to install the STB10:

1. Orientation & Signal
Always mount the Senstick with the antenna (white cap) facing upwards and above ground level. In cooling units, place it near the door or openings for the best signal penetration.

2. Mounting Options
Zip Ties: Attach the module to racks, pipes, or poles.

MPOM Mount: Use the adapter for flat surfaces via:
- Double-sided tape (for easy sticking).
- Screws (for permanent fixing).

3. Sensor Placement
Place the device where it can best represent storage conditions. The internal glass-bead buffer will automatically simulate product temperature for HACCP compliance. Avoid placing the unit directly in front of cooling fans.