

SENSO8 LoRaWAN® ENV Sensor User Guide

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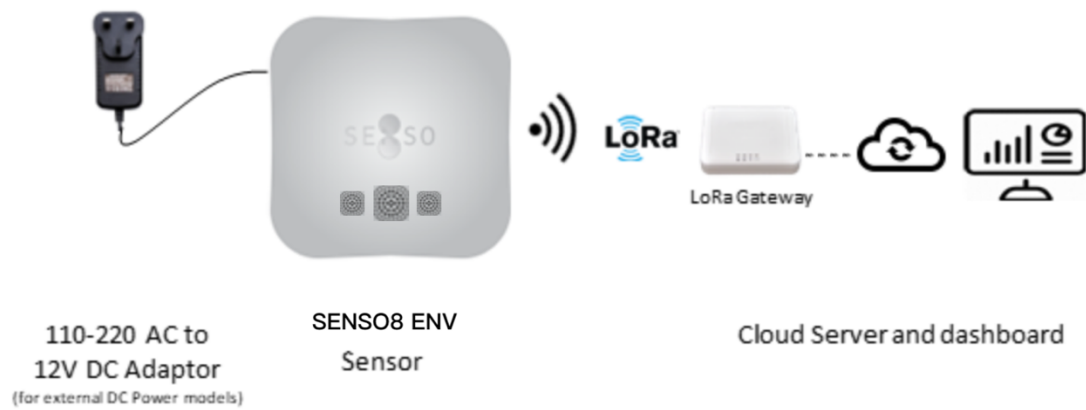
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1. Introduction

SENSO8 LoRaWAN® Indoor Environmental Sensor is a Low Power Wireless Environment Sensor. It monitors Ambient Temperature & Humidity, Carbon Dioxide, TVOC, Ambient Light and Motion. It collects the environmental data and uploads that to the LoRaWAN® server by a simple and open API.

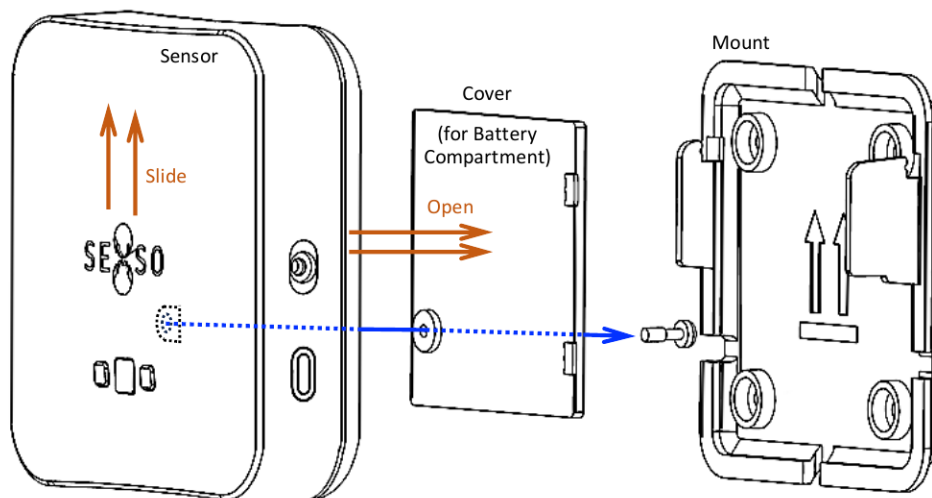
The user guide is applicable for the following Indoor Environmental Sensor models.

- LRS30100-C000-11xx
- LRS30100-CV00-11xx
- LRS30100-CV00-00xx

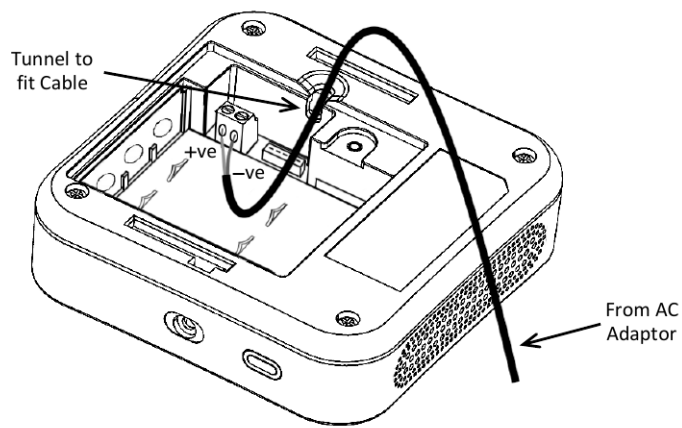


2. Sensor Setup

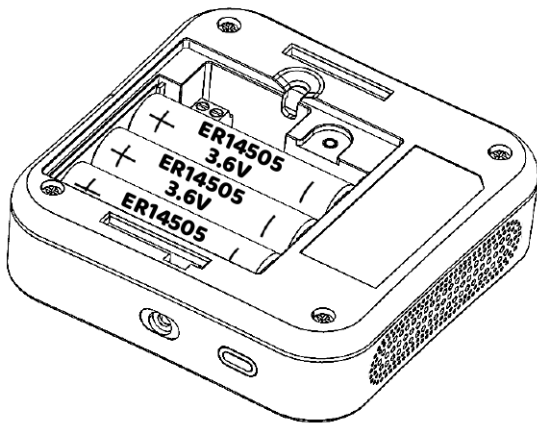
1. First of all, make sure the sensor is not powered.
2. Remove the sensor from the mount by sliding the sensor up. Unfasten the screw on the battery compartment cover and open it.



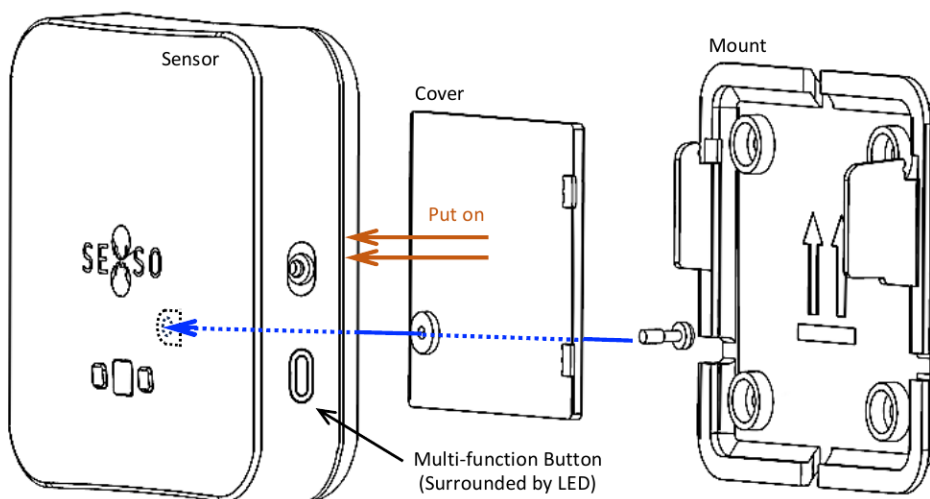
3. For the DC powered models, connect the wires of the AC adaptor to the terminal block on the bottom side of the sensor.



For the battery powered models, insert three new ER14505 Lithium batteries into the battery compartment. Use identical batteries and don't reuse any old battery. Align the polarity (+) and (-) of the batteries with the markings on the battery compartment.



4. Put on the cover and fasten the screw.



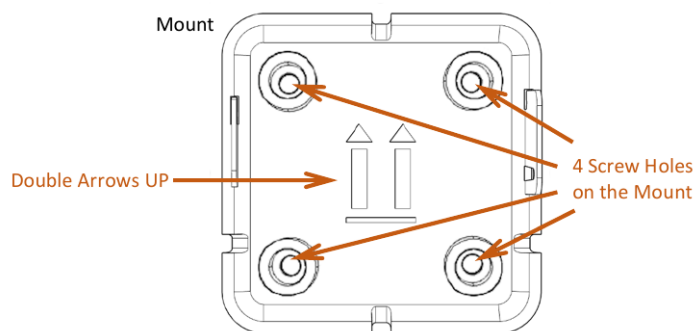
5. For the DC powered models, the LED indicator around the multi-function button will light up when the AC adaptor is plugged into the outlet.

For the battery powered models, press the multi-function button to power on the sensor.

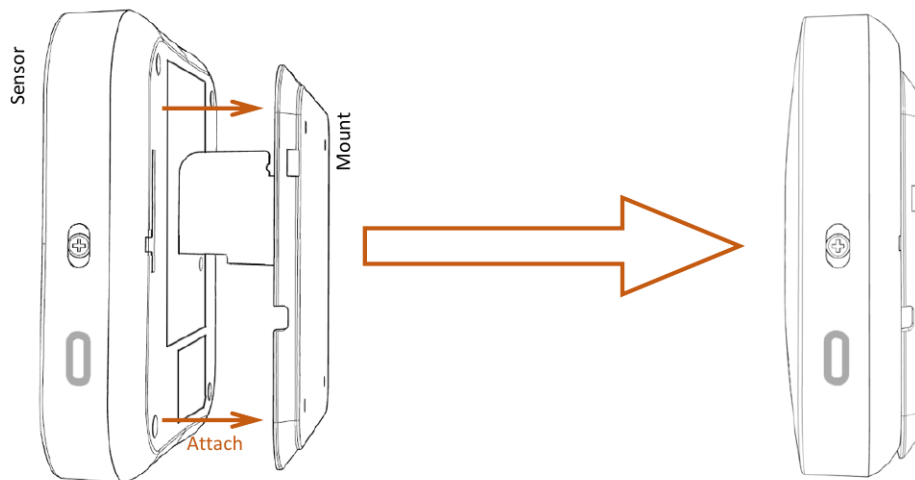
6. After powering on, the sensor will send a data report. Check the server backend or dashboard to make sure the connection has been established, and the data can be successfully uploaded.

3. Installation

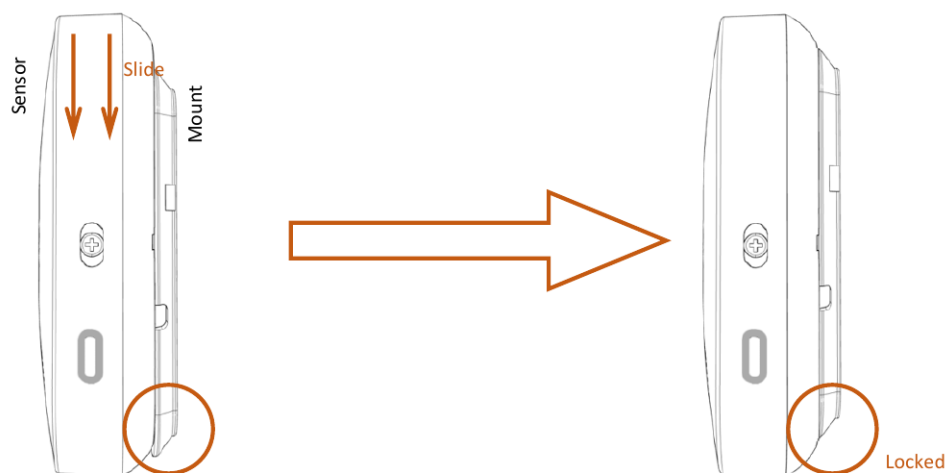
1. Perform a site survey and make sure the LoRaWAN® network has a good coverage. The sensor is intended for installing on interior walls or ceilings of buildings. Avoid exposing the sensor to direct sunlight.
2. Hang the mount of the sensor (at least 1 meter above ground and the double arrows pointed upwards) on the wall by 4 screws.



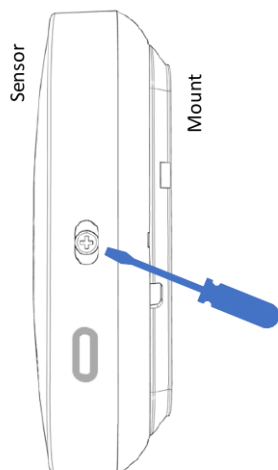
3. Attach the sensor to the mount in the proper orientation as follows.



4. Slide the sensor down until there is a click sound.



5. Secure the sensor and the mount by a screw.



6. Power on the sensor.

- For DC powered models, the sensor will be powered on automatically after plugging the AC adaptor to the wall outlet.
- For the battery powered models, the sensor will be powered on after pressing the multi-function button.

7. Once the sensor is powered on, it will publish a data report to the LoRaWAN® server. Check the server backend or dashboard to make sure the connection has been established, and the data can be uploaded successfully.

4. Operating Instruction

Power On

- For the DC powered models, the sensor will be powered on automatically when the AC adaptor is plugged to the wall outlet; or
- For the battery powered models, the sensor will be powered on after pressing the multi-

function button.

- The LED indicator will light up and the sensor will upload a data message to the LoRaWAN® server.

Power Off

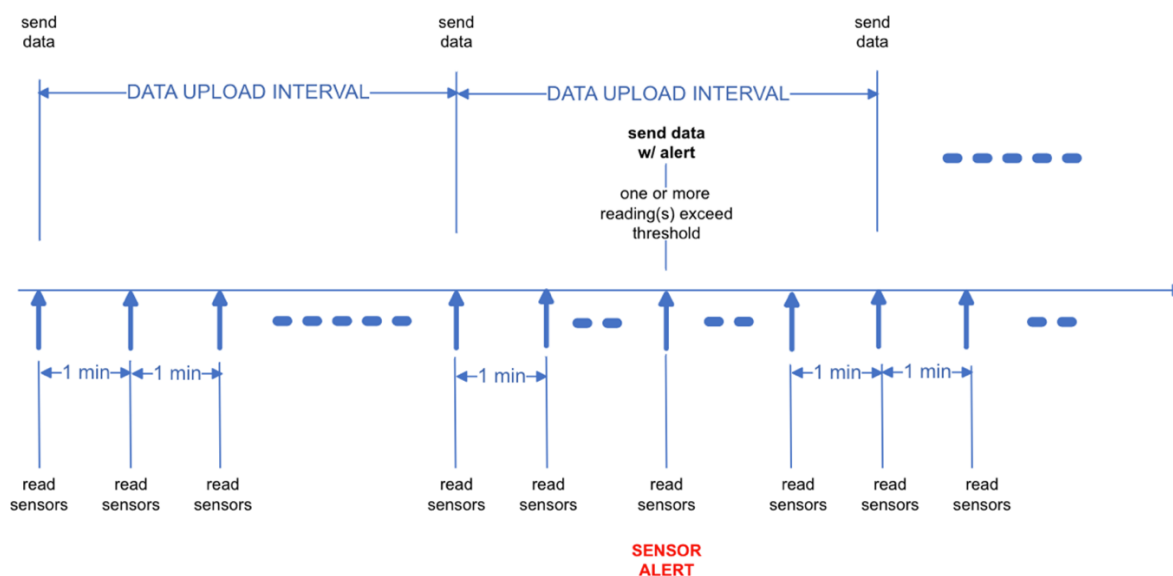
- After pressing and holding the multi-function button for 5 seconds, the LED indicator will flash 3 times to indicate that the sensor is powered down.

Report Latest Data

- When the sensor is powered on and the multi-function button is pressed, the LED indicator will flash once. The sensor will upload the latest data to the LoRaWAN® server.

5. Sensor Operation

The Indoor Environment Sensor performs background measurement every minute. If any reading (except ambient light intensity and motion) exceeds the corresponding threshold, the sensor will send an alert uplink data to the network server immediately with the corresponding alert. After that, the sensor will go back to sleep mode. When the data upload interval is reached, the sensor will send an uplink data with the latest reading.



For the temperature and humidity monitoring, the Indoor Environmental Sensor also supports Adaptive Reporting mode. Instead of sending data periodically, the sensor will send an uplink data ("T/H Change" event) to the network server when the change of a reading exceeds the preset values (Temperature Delta or Humidity Delta). If the changes in reading do not exceed the values over a period of time (Maximum Silent Time), the sensor will also send out an uplink data to the network server.

6. Configurable Sensor Settings

The following settings are configurable via the downlink commands. The details of the data payload format can be found in “SENSO8 LoRaWAN® Indoor Environmental Sensor Data Payload Format Document”.

Setting	Default Value	Unit
Data Upload Interval (minimum: 3)	10	minute
High Temperature Threshold	30	°C
Low Temperature Threshold	18	°C
High Humidity Threshold (0-100)	80	%
Low Humidity Threshold (0-100)	40	%
CO ₂ High Threshold (0-5000)	1500	ppm
TVOC High Threshold (0-2000)	1000	µg/m ³
Maximum Silent Time (0-1440)	60	minute
Temperature Delta (0-100)	0	°C
Humidity Delta (0-100)	0	%
Adaptive Report Mode Enable (1 or 0)	0	disable
Number of Redundant Payload (for Adaptive Reporting Mode, 0-5)	0	–

7. LED Indicator

7.1. Device Status

Event	LED Pattern	Description
Powered On	LED on	The sensor is powered on. The first data is uploaded. In OTAA mode, the LED will stay on until the sensor joined the LoRaWAN® network.
Powered Off	LED flashes 3 times	The sensor is powered off.
Report Latest Data	LED on	The sensor is uploading the data when the multi-function button is pressed.

7.2. Error Status

By default, the Indoor Environmental Sensor is configured for the OTAA activation mode. If it

cannot join the LoRaWAN® network in 3 minutes after powering up, the LED indicator will be flashed for 2 minutes.

8. CO2 Calibration

The CO2 sensor features an Automatic Baseline Correction (ABC) algorithm that runs with an 8-day cycle. To achieve full correction, the sensor must be placed in fresh air (400 ppm) at least once during each 8-day period for up to three consecutive 8-day periods.

9. Recommended Sensor Operating Lifetime

T/H	CO2	TVOC
-	5 years	-

10. Troubleshooting Guide

Symptom	Fix
The LoRaWAN® network server cannot receive data from the sensor.	Check the configuration (activation mode, frequency plan, device info and all security keys) of the sensor and also the corresponding device record on the LoRaWAN® server. If there is any mis-match, the data cannot be sent to the LoRaWAN® network server.
The sensor cannot be configured via downlink command.	Check the downlink command is sent as the CONFIRMED downlink message.
The alert is not cleared when the reading is returned to the normal level.	<p>For each alert, there is a hysteresis setting in order to prevent the alert from triggering repetitively when the reading fluctuates around the threshold.</p> <p><i>Example:</i></p> <p>If the high temperature threshold is 30, it will trigger an alert when the temperature is higher than 30 °C. The alert will be cleared when the temperature falls below 29 °C (hysteresis is 1) rather than 29.9 °C.</p>

11. Warning and Personal Injury

Do not apply this product to safety protection devices or emergency shutdown devices, nor in any other applications that may result in personal injury due to product malfunction, unless explicitly authorized. Please refer to the product datasheet and user guide before installation,

processing, use or maintenance of the product. Failure to comply with the recommendations may result in death and serious bodily harm. The company shall not be held liable for any damages resulting in personal injury or death. All the claims against the company managers and employees, agents, distributor and subsidiaries are hereby disclaimed, including all the costs and compensation costs, legal fees etc.

12. Revision History

Revision	Description	Date
1.0	Initial release.	10 May 2025
2.0	First release on docs.senso8.com	Oct 2026