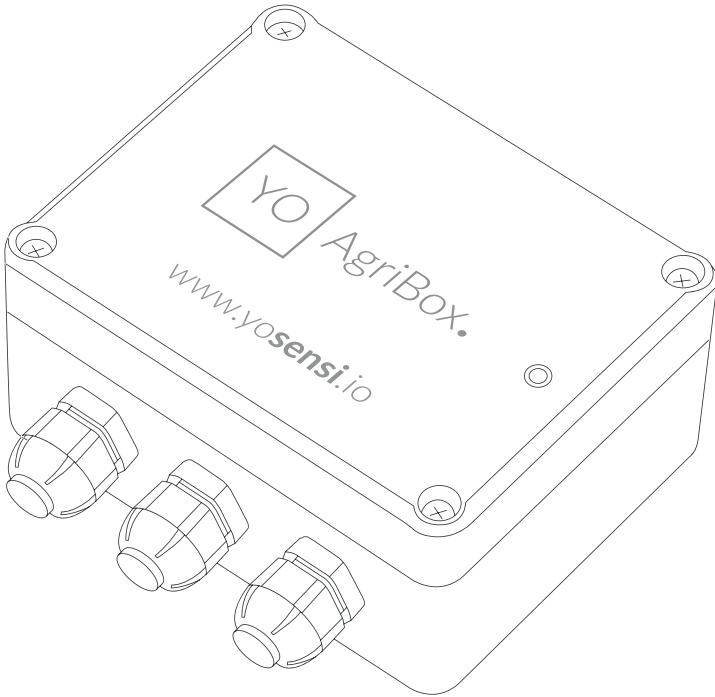




AgriBox.

Datasheet



Application

- YO AgriBox is a LoRaWAN device for measuring soil moisture at 3 points.
- Additionally, the device contains sensors that measure temperature and relative humidity inside the device.
- YO AgriBox makes it easy to plan and maintain optimum growing conditions for plants.

Components

- The device consists of a microcontroller, communication modules (LoRa, Bluetooth Low Energy), sensors and batteries.
- YO AgriBox is equipped with an enclosure made of ABS with IP67 protection class.
- The enclosure of the device has IP67 buffers for which measurement probes can be installed.
- No soil moisture probes are attached to the device. Our offer includes soil moisture sensors with 2 m wire lengths. It is possible to connect up to 3 soil moisture probes.
- The enclosure is designed to be easily mounted on the wall.
- YO AgriBox is equipped with a diode that indicates the operating status.

Operation of the device

- A LoRaWAN network is required for data transmission.
- The device does not require an external power supply.
- Place the device at the location for soil moisture measurement and configure/reconfigure the device via BLE.
- The device takes measurements at the interval specified in the configuration parameters.
- Yosensi can provide access to a mobile application as a part of a comprehensive solution, allowing the device to be configured and connected to the LoRaWAN network. Additionally, it offers a preview of the operating parameters via BLE.
- It is recommended that the device be added to the Yosensi Suite system, which allows for the easy management of the data transmitted by the devices.

Device configuration

Device settings	Measurement interval (of soil moisture) Calibration is required before connecting the sensor
Bluetooth Low Energy (BLE) settings	Transmission power Advertising frame interval
LoRaWAN settings	Operating mode selection (OTAA or ABP)

OTAA

- Device EUI
- Application EUI
- Application key
- Number of trials

ABP

- Device address
- Network session key
- Application session key

Advantages

- Production quality – made in the European Union by qualified engineers.
- As a complementary solution, Yosensi offers the purchase of soil moisture sensors. These sensors have a Polyurethane (PUR) wire and a waterproof sensor enclosure.
- The measuring probes can be completely buried and placed at different depths of soil.
- YO AgriBox is a wireless device that uses LoRaWAN technology.
- The device works based on the radio, so there is no need for additional wires.
- Very low power consumption.
- Depending on the version, the LoRa radio can operate in different regions (e.g., EU868, US915, AU915 etc.) adapted to different ISM frequency bands.
- Using Bluetooth Low Energy (BLE) provides:
 - Configuration convenience
 - Possibility of firmware update via OTA
 - Very low energy consumption
- Supported LoRaWAN connection over ABP or OTAA.
- Mobile application for convenient device configuration and network monitoring.
- Access to the Yosensi Suite system for configuring devices and managing infrastructure.

Technical details

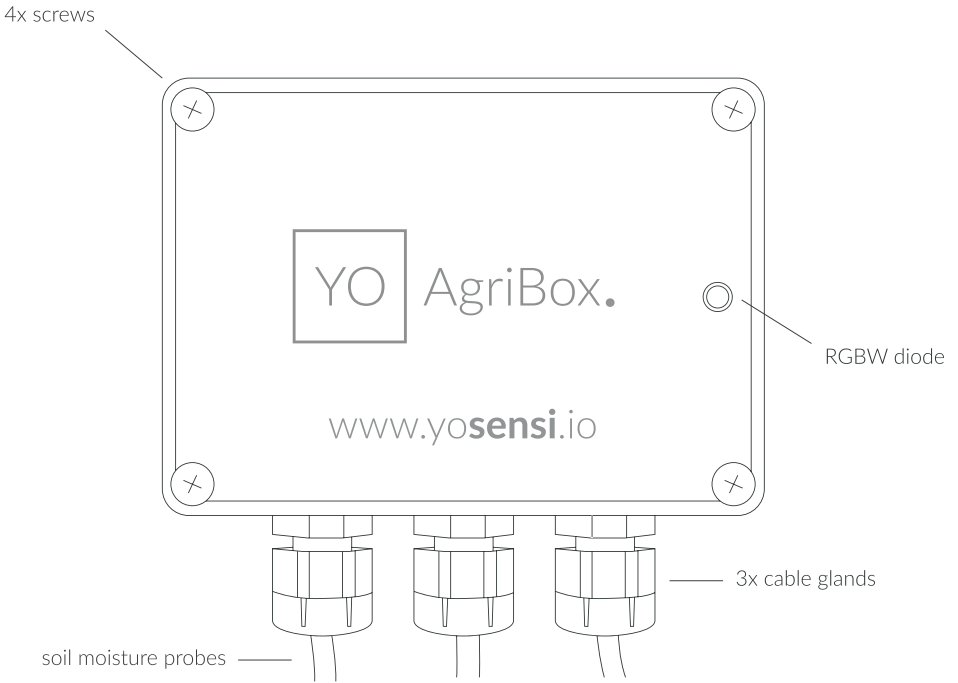


Figure 1. Top view of the device.

Enclosure of the device

Dimensions	Height: 42 mm Depth: 64 mm	Width: 88 mm
Colour	Light grey	
Installation Choose from	Horizontal Vertical (can be screwed to the wall)	
Enclosure material	ABS	
Level of protection	IP67	

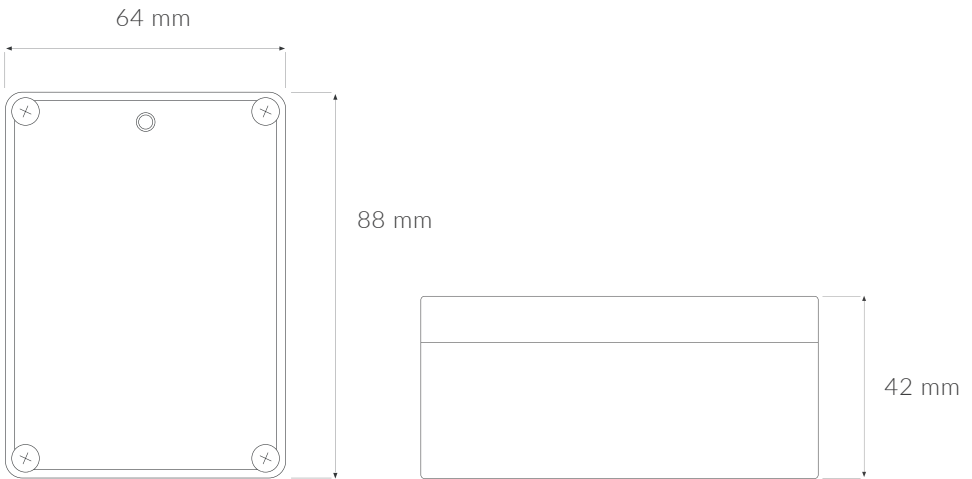


Figure 2. Dimensions of the device.

Parameters

Tx Power

LoRa EU868: to +14 [dBm]
LoRa US915, AU915, AS923: to +22 [dBm]
Bluetooth Low Energy (BLE): -20 to +6 [dBm]

Power supply

3 × AA battery

Measuring range

Volumetric water content:

Measurement range: from 0% to 100%

Temperature:

Measurement range: from -40°C to 125°C (-40°F to 257°F)

Accuracy: $\pm 0,2^{\circ}\text{C}$ (32.36°F) (in temperatures from 5°C to 60°C (41°F to 140°F))

Relative humidity:

Measurement range: from 0% to 100%

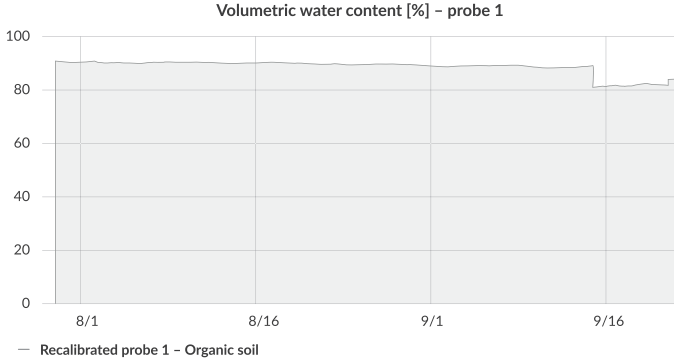
Accuracy: $\pm 2\%$ (relative humidity from 20% to 80%)

Weight

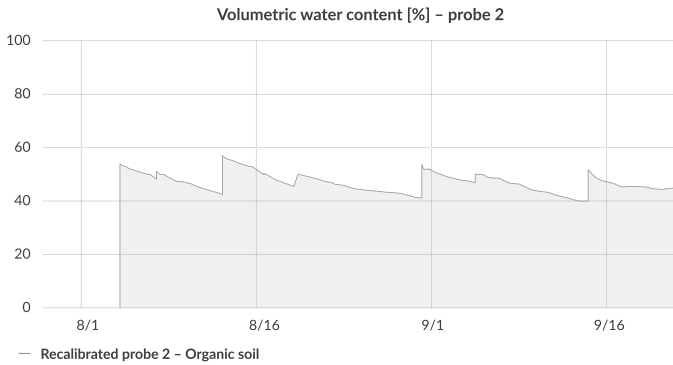
Without batteries: 134 g

With batteries: 204 g

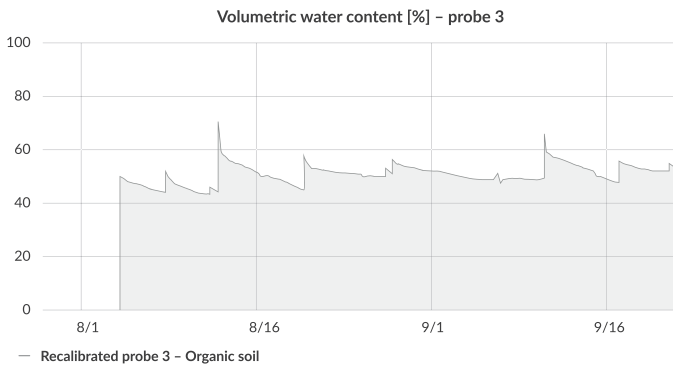
Sample charts



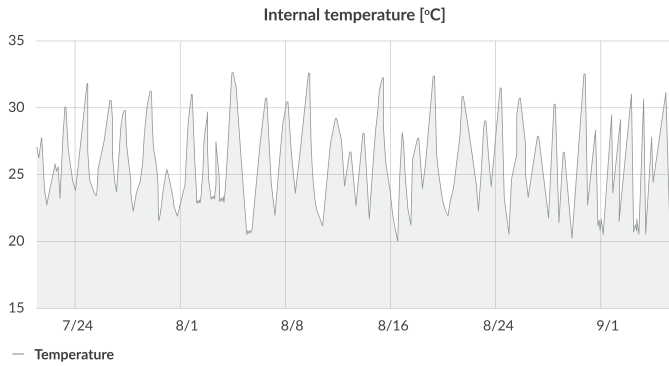
Example of an **volumetric water content** measurement chart for channel one.



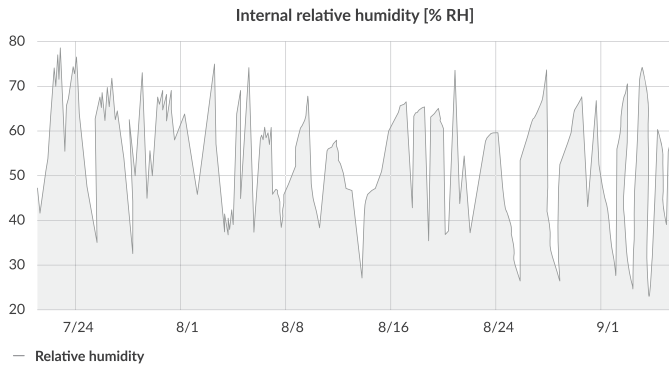
Example of an **volumetric water content** measurement chart for channel two.



Example of an **volumetric water content** measurement chart for channel three.



Example of an **internal temperature** measurement chart.



Example of an **internal relative humidity** measurement chart.

Revision history





Date	Version	Page(s)	Changes
September 2021	1	All	Initial version

The logo for YOSSENSI.IO is enclosed in a thin black rectangular border. The text 'YOSENSI' is in a bold, uppercase, sans-serif font, followed by '.IO' in a smaller, regular, uppercase, sans-serif font. The background of the entire page is a light gray circuit board pattern overlaid on a world map.

YOSENSI.IO

LoRa Alliance Member

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