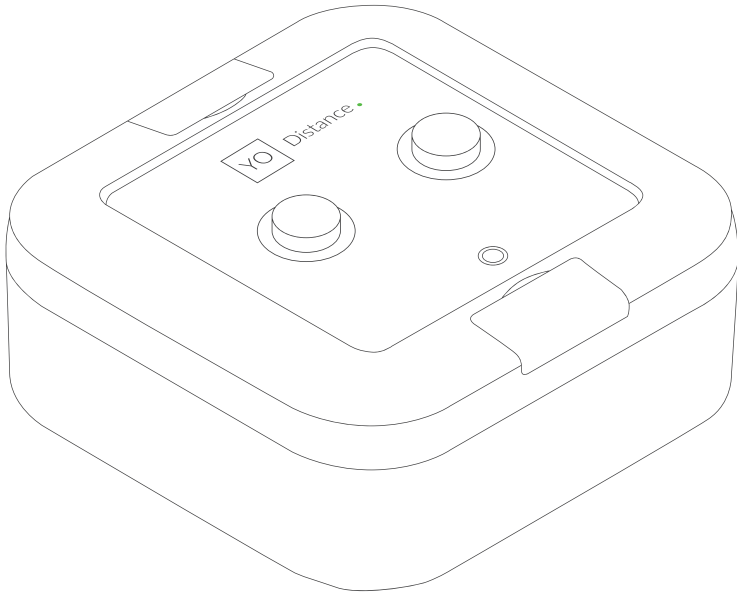




# Distance.

Datasheet





## Application

- YO Distance is a LoRaWAN device for ultrasonic distance measurement. One use case example is monitoring the water level in a remote tank.
- Additionally, the device contains sensors that measure temperature, relative humidity and an accelerometer (it sends information about its own position on the x, y, z axes).

## Components

- The device consists of a microcontroller, communication modules (LoRa, Bluetooth Low Energy), sensors and batteries.
- YO Distance is equipped with an enclosure made of ASA with IP67 protection class.
- The enclosure is designed to be easily mounted on the ceiling.
- YO Distance is equipped with an RGBW LED to indicate the operating status.

## Operation of the device

- A LoRaWAN network is required for data transmission.
- The device does not require an external power supply.
- The device should be placed at the location from which the distance is to be measured (e.g., at the sewer utility hole). The device must then be configured/reconfigured via BLE.

- The device takes measurements at the interval specified by 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 depending on the version of the device.
- It is recommended that the device be added to the Yosensi Suite system, which allows for easy management of the data transmitted by the devices.

## Device configuration

### Device settings

Measuring interval (of distance)

### 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

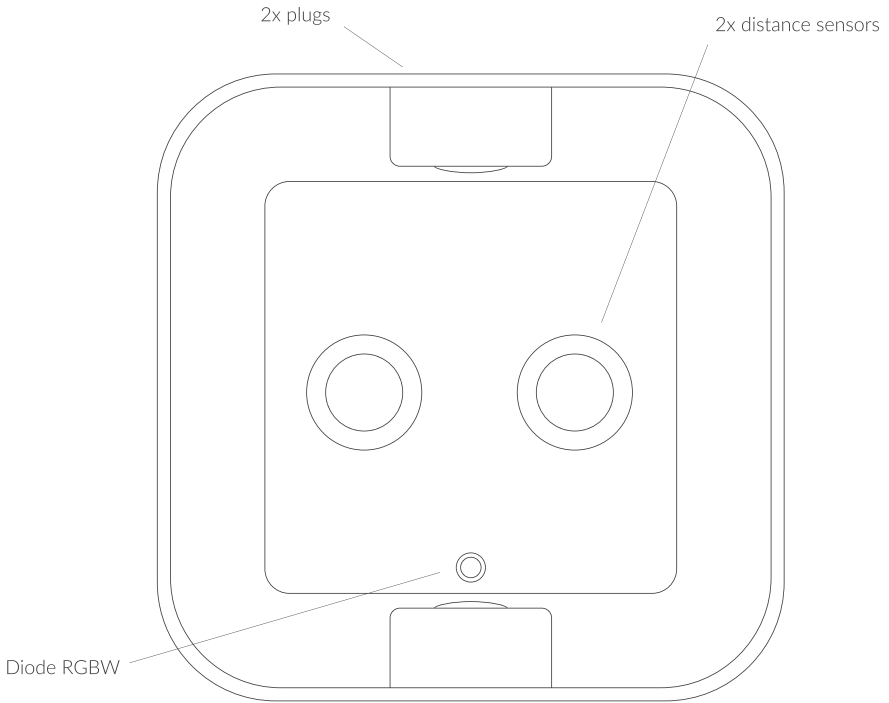
#### ABP

- Device address
- Network session key
- Application session key

## Advantages

- Production quality – made in the European Union by qualified engineers.
- YO Distance is a wireless device that uses LoRaWAN technology.
- The device transmits wirelessly, so it can be used in remote locations.
- The enclosure is adapted for use in wet environments, such as monitoring fill levels of water tanks.
- YO Distance is equipped with an accelerometer that determines whether the device is installed and measuring distance accurately.
- Low energy consumption.
- Depending on the version, the LoRa radio can operate in different regions, e.g. in EU868, US915, AU915 etc., adapted to different ISM frequency bands.
- Using Bluetooth Low Energy (BLE) provides:
  - Configuration convenience
  - Live preview of the data collected
  - Possibility of firmware update via OTA
  - Very low energy consumption
  - Wide range
- 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.** Bottom view of the device.

## Enclosure of the device

<b>Dimensions</b>	Height: 40 mm      Width: 100 mm Depth: 100 mm
<b>Colour</b>	Light grey
<b>Mounting method</b>	Horizontal, e.g., on the tank ceiling or lid
<b>Casing material</b>	ASA
<b>International Protection Rating</b>	IP67

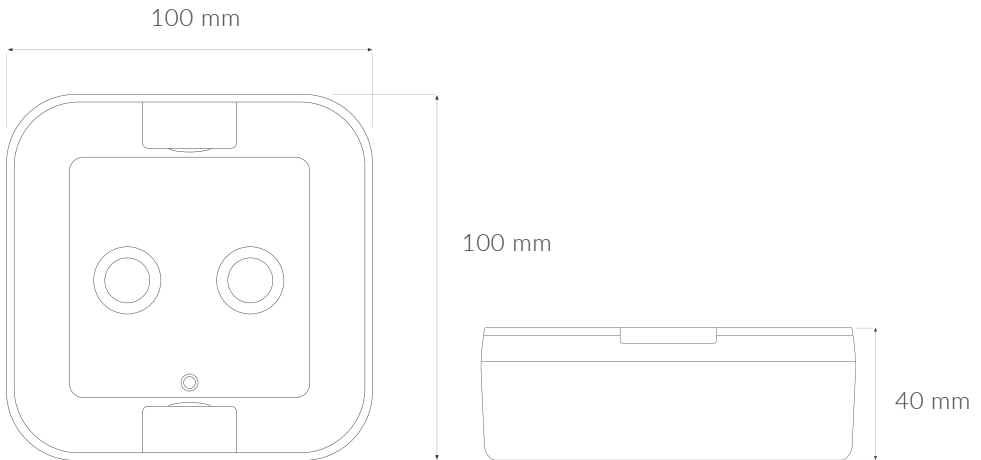


Figure 2. Dimensions of the device.

# 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

### Distance:

Measuring range from flat surfaces (cardboard surface measuring 50 cm x 60 cm): 3 cm to 420 cm  
Blind distance: from 0 cm to 3 cm

### Temperature:

Measurement range: from -40°C to 125°C (-40°F to 257°F)  
Accuracy:  $\pm 0.2^\circ\text{C}$  (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%)

### Accelerometer:

Measurement range:  $\pm 180^\circ$  on the x, y, and z axes  
Accuracy:  $\pm 0.1^\circ$  (in temperatures from -40°C to 85°C)  
(-40°F to 185°F)

## Weight





Without batteries: 176 g  
With batteries: 246 g

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 stylized world map where the continents are filled with intricate white and grey circuit board patterns.

YOSENSI.IO

LoRa Alliance Member

## Contact us

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