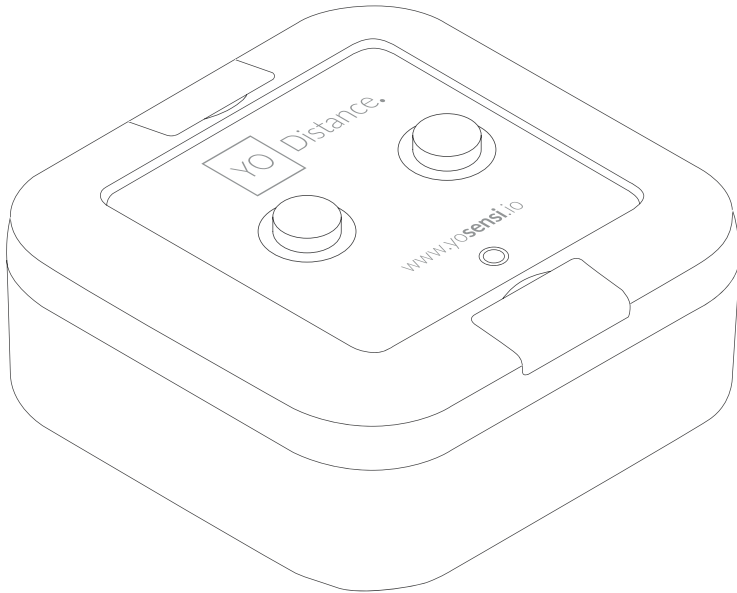




Distance.

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

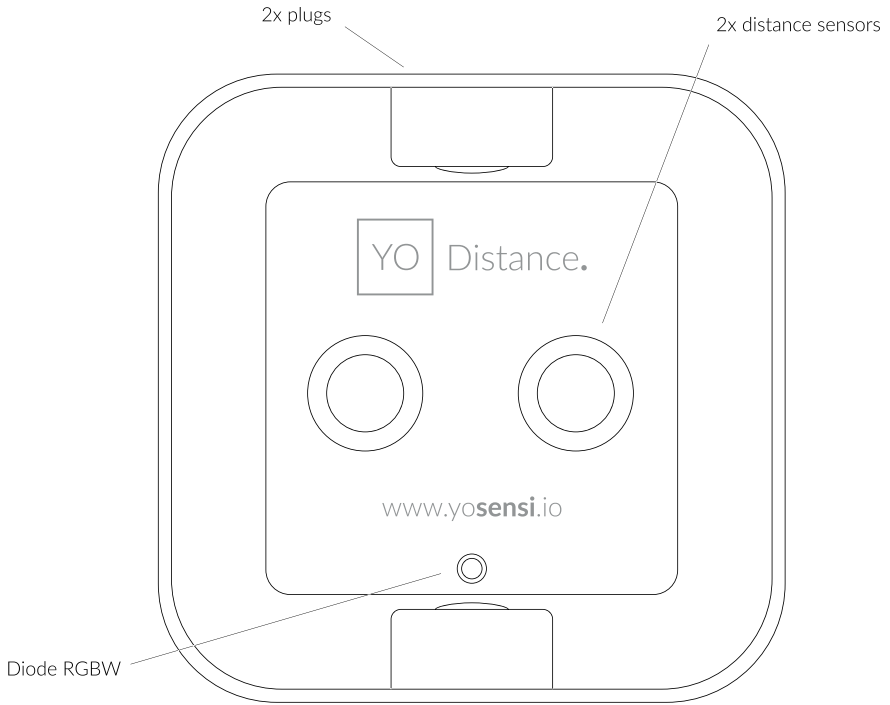


Figure 1. Bottom view of the device.

Enclosure of the device

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

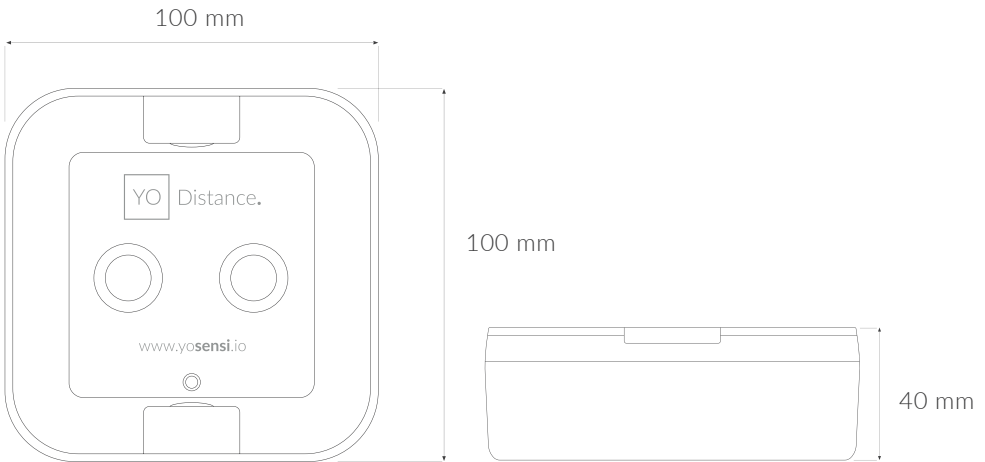


Figure 2. Dimensions of the device.

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

Revision history

Date	Version	Page(s)	Changes
January 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. A small green dot is positioned above the 'I' in '.IO'.

YOSENSI.IO

The LoRa Alliance Member logo features the LoRa logo (a stylized 'L' with three curved lines above it) followed by the text 'LoRa Alliance Member' in a sans-serif font.

LoRa Alliance Member

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