



H<sub>2</sub>O.  
Datasheet





## Application

- YO H<sub>2</sub>O is a device that operates on a LoRaWAN network and is used for flood detection.
- The device also transmits measurements of temperature and humidity, and sends information about its own position on x, y, z axes (using an in-built accelerometer).
- The device is designed to operate with a lithium battery with very low self-discharge.

## Components

- The device consists of a microcontroller (with Bluetooth Low Energy), communication modules (LoRa), sensors, battery, and measuring circuits.
- YO H<sub>2</sub>O is equipped with an enclosure made of acrylonitrile butadiene styrene (ABS) in the IP54 protection class.
- Spill-detection probes are placed in the enclosure of the device.
- The device is available in two mounting versions: vertical and horizontal.
- YO H<sub>2</sub>O is equipped with an RGB diode indicating its 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 in an area exposed to flooding and configured or reconfigured via BLE.

- The device takes measurements at the interval specified in the configuration parameters.
- Upon detection of a leak, the device immediately sends information to the system about the flooding risk. At the same time, the leak is indicated on the unit by a colour-changing LED.
- YO H<sub>2</sub>O transmits data over a distance of more than 3 km at 14 dBm in an open space with a medium density of buildings.
- Yosensi provides access to the Yosensi Configuration Web Tool as part of the Yosensi Management Platform comprehensive solution, allowing device configuration and firmware updates.
- It is recommended to add the device to the Yosensi Management Platform, which allows detailed and easy monitoring of the data transmitted by the devices.

## Device configuration

### LoRaWAN settings

Network type (private or public)  
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

### Bluetooth Low Energy (BLE) settings

Transmission power  
Advertising frame interval

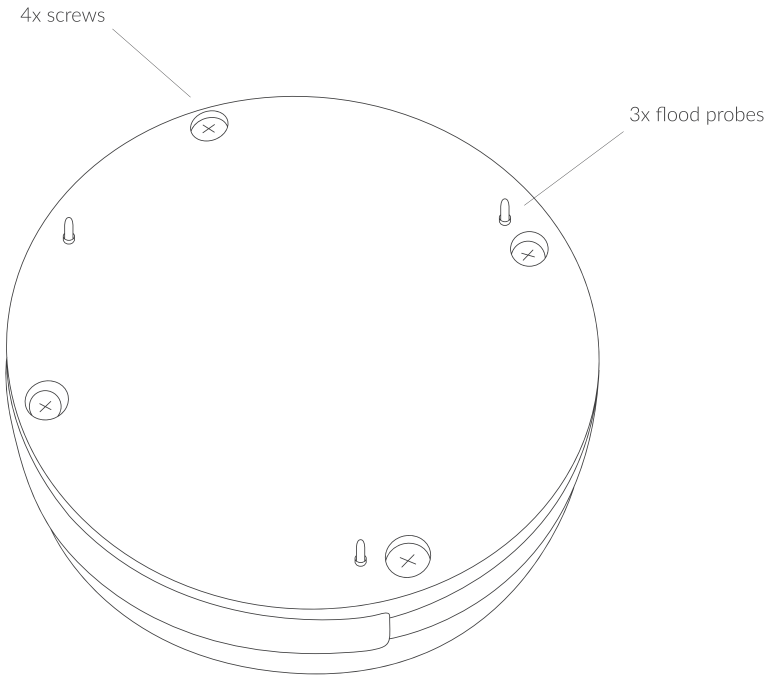
### Device settings

Measuring interval

## Advantages

- Production quality – made in the European Union by qualified engineers.
- YO H<sub>2</sub>O is a small, wireless device with an ergonomic shape operating in LoRaWAN technology.
- The device communicates wirelessly, so there is no need for additional cables.
- Low energy consumption.
- Instant detection of flooding.
- An LED indicates the detection of flooding or a change of position.
- Depending on the version, the LoRa radio can operate in different regions (e.g., EU868, US915, AU915, AS923) adapted to different ISM frequency bands.
- Using Bluetooth Low Energy (BLE) provides:
  - configuration convenience (in a user-friendly way via a JSON data exchange format),
  - possibility of firmware update via OTA,
  - very low energy consumption.
- Supported LoRaWAN network type: private or public and connection over ABP or OTAA.
- Access to the Yosensi Management Platform for device configuration, firmware updates and infrastructure management.

# Technical details



**Figure 1.** Bottom view of the device.

# Enclosure of the device

**Dimensions** | Diameter: 47 mm  
Height: 13 mm

**Colour**  
Choose from | Light grey  
Black

**Enclosure material** | Plastic - ABS

**Level of protection** | IP54

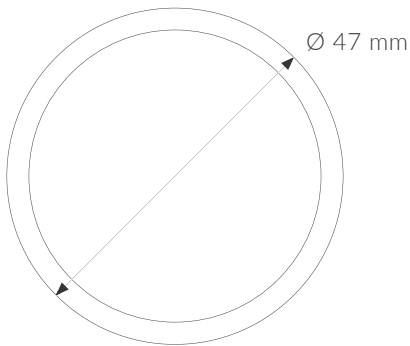


Figure 2. Dimensions of the device.

# 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

Battery CR2450 3 V

## Power consumption

Maximum: 110 mA DC (3 V DC)

## Measuring range

### Flood detection:

Measuring range: 0 – dry, 1 – flood detected

### Temperature:

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

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

### Relative humidity:

Measuring range: 0% to 100%

Accuracy:  $\pm 2\%$  (at 20% to 80% RH)

### Accelerometer:

Measuring range:  $\pm 180^{\circ}$  on x, y, z axes

Accuracy:  $\pm 0,1^{\circ}$  (at temperatures from -40°C to 85°C  
(-40°F to 185°F))

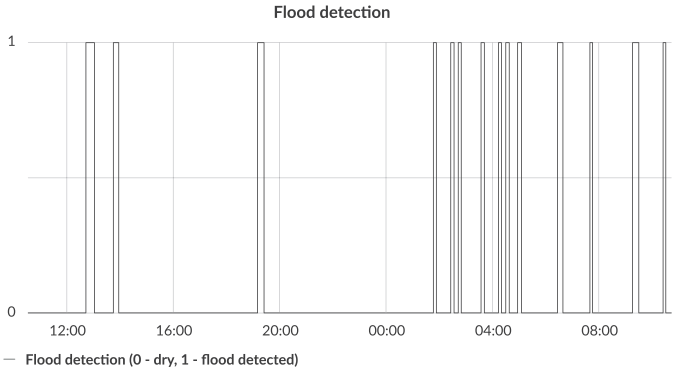
## General informations

RGBW diode signals flood detection

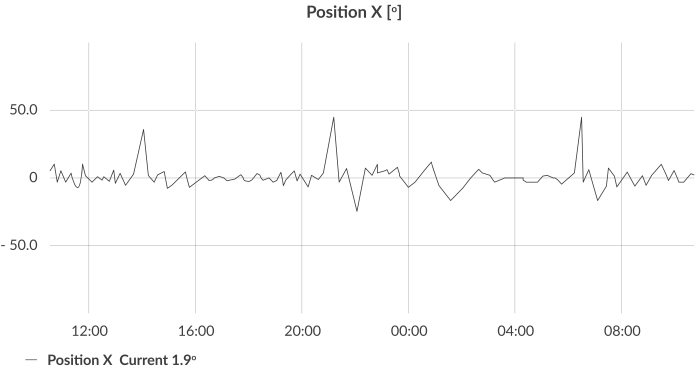
## Weight

18,6 g (without battery)

# Sample charts

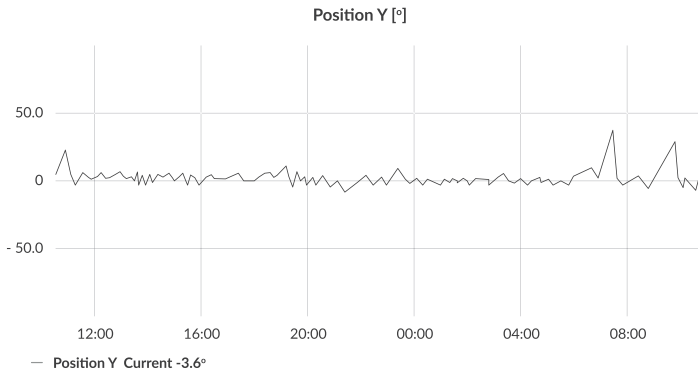


Example of a **flood detection** monitoring chart.

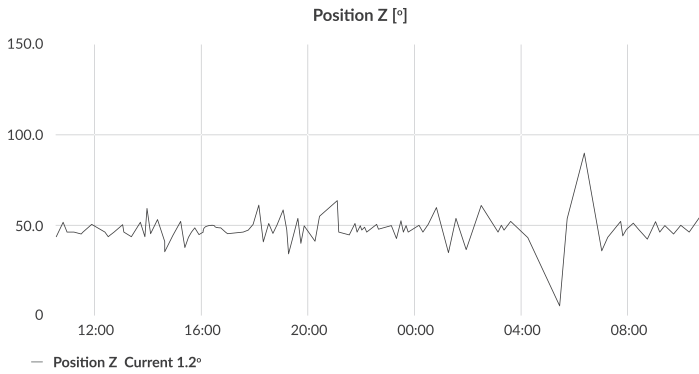


Example of an **X-axis accelerometer** chart.





Example of an **Y-axis accelerometer** chart.



Example of an **Z-axis accelerometer** chart.





# Revision history

Date	Version	Page(s)	Changes
August 2020	1	All	Initial version
February 2022	1.1	3, 4	Changes are related to the firmware and apply to devices working with firmware version 2.0.0 and above.

YOSENSI.IO

LoRa Alliance Member

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