



H₂O.
Datasheet





Application

- YO H₂O 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).

Components

- The device consists of a microcontroller, communication modules (LoRa, Bluetooth Low Energy), sensors, battery and measuring circuits.
- YO H₂O 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 H₂O 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 H₂O transmits data over a distance of more than 3 km at 14 dBm in an open space with a medium density of buildings.
- 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 easy management of the data transmitted by the devices.

Device configuration

Device settings

Measuring interval

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 H₂O 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. 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

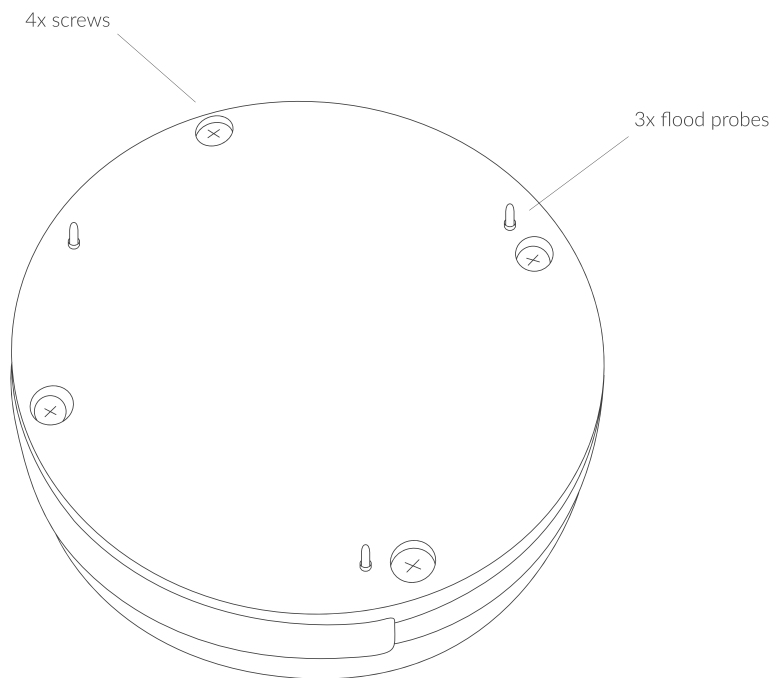


Figure 1. Bottom view of the device.

Enclosure of the device

Dimensions | Diameter: 47 mm
Height: 13 mm

Colour
Choose from | Light grey
Black

Enclosure material | Plastic - ABS

Level of protection | IP54

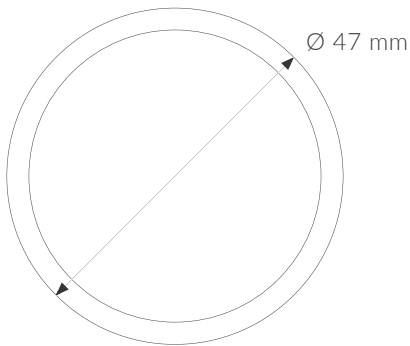


Figure 2. Dimensions of the device.

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

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)

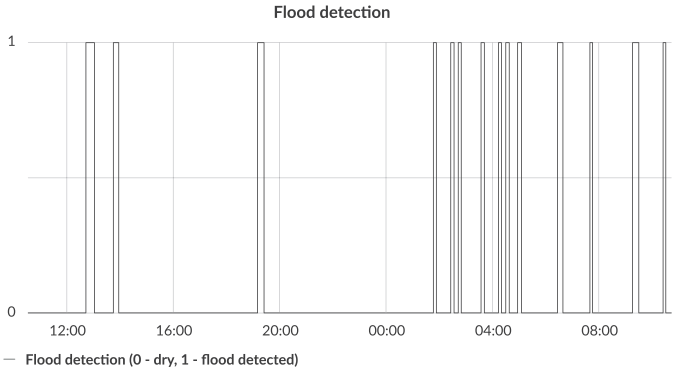
Accelerometer:

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))

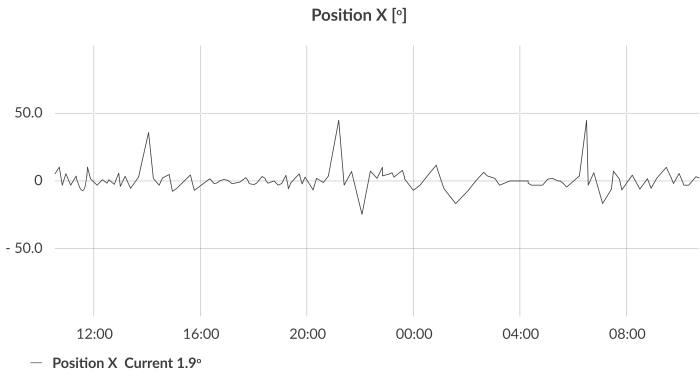
General informations

RGBW diode signals flood detection
Weight: 25 g (with battery)

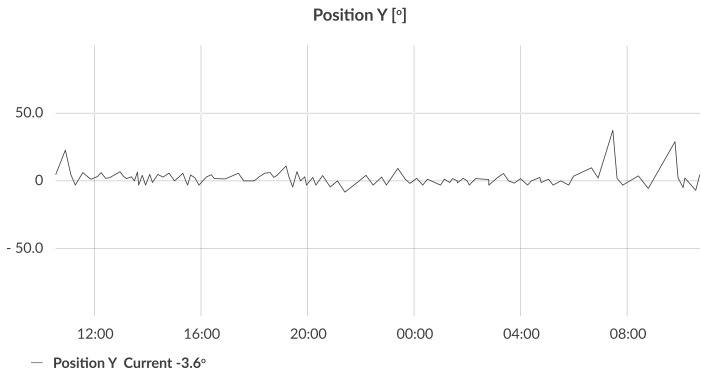
Sample charts



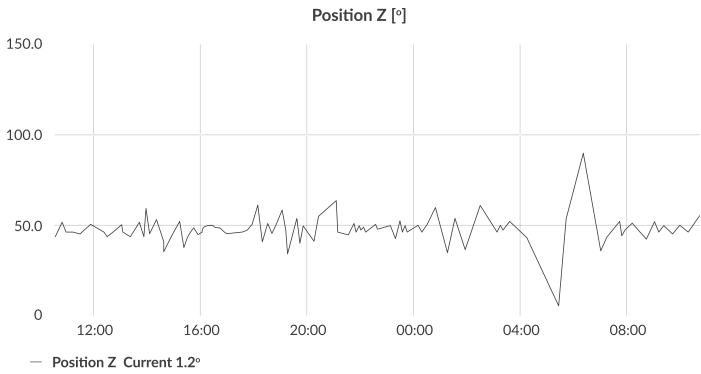
Example of a **flood detection** monitoring chart.



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





The logo for YOSSENSI.IO is enclosed in a thin black rectangular border. The text 'YOSENSI' is in a bold, black, sans-serif font, and '.IO' is in a lighter weight of the same font. A small green dot is positioned above the 'I' in '.IO'.

YOSENSI.IO

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

LoRa Alliance Member

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