360.
Datasheet

YOSENSI.IO

LoRa Alliance Member

YO 360.

Application

- YO 360 measures temperature and humidity and sends information about its own position on the x, y and z axes (built-in accelerometer).
- Its small size, battery power supply and long data transmission range allow the device to be used in virtually any place.
- 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, and a battery.
- Depending on the installation needs, the device can be equipped with:
  – a mounting hole for hanging,
  – two dedicated mounting holes for a watch strap (can be ordered with the strap).
- The device is additionally equipped with a RESET button and a diode to indicate operating status.

Operation of the device

- A LoRaWAN network is necessary for data transmission.
- The device does not require an external power supply.
- Place YO 360 at the location with the parameters you want to measure and configure / reconfigure the device via BLE.
- The device takes measurements at the interval specified in the configuration parameters.
- YO 360 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 360 is a very small wireless device with an ergonomic shape operating on LoRaWAN technology.
- Depending on the version, the LoRa radio can operate in different regions (e.g., EU868, US915, AU915), adapted to different ISM frequency bands.
- The device is radio-based, so there is no need for additional cables.
- Low energy consumption.
- 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

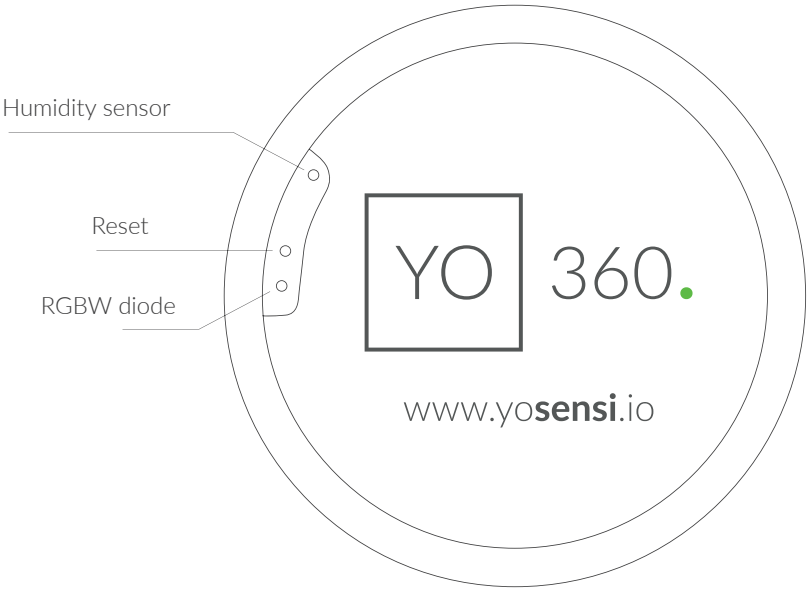


Figure 1. Top view of the device.

Enclosure of the device

Dimensions	Diameter: 47 mm Height: 13 mm
Colour Choose from	White Black

Installation Choose from	No handles One handle (mounting hole) Two oval handles Strap

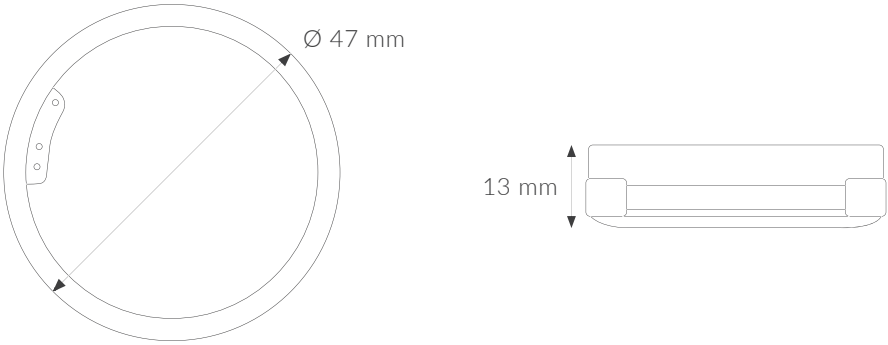


Figure 2. Dimensions of the device in no handles installation option.

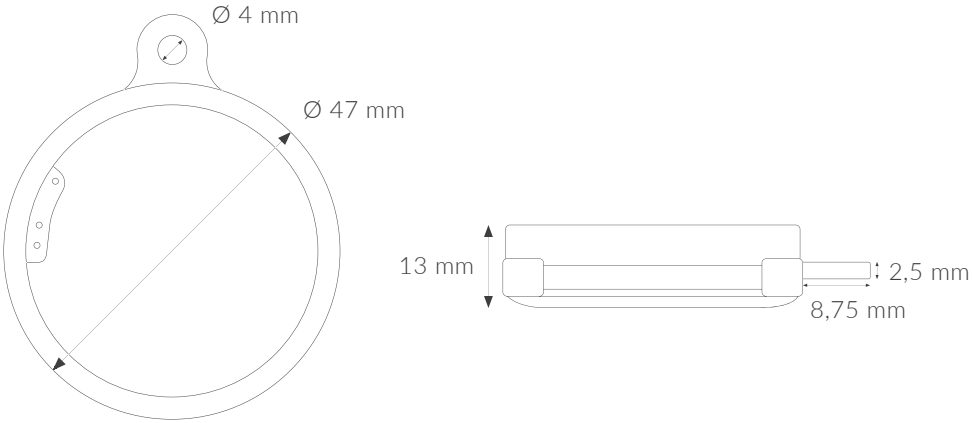


Figure 3. Dimensions of the device in one handle (mounting hole) installation option.

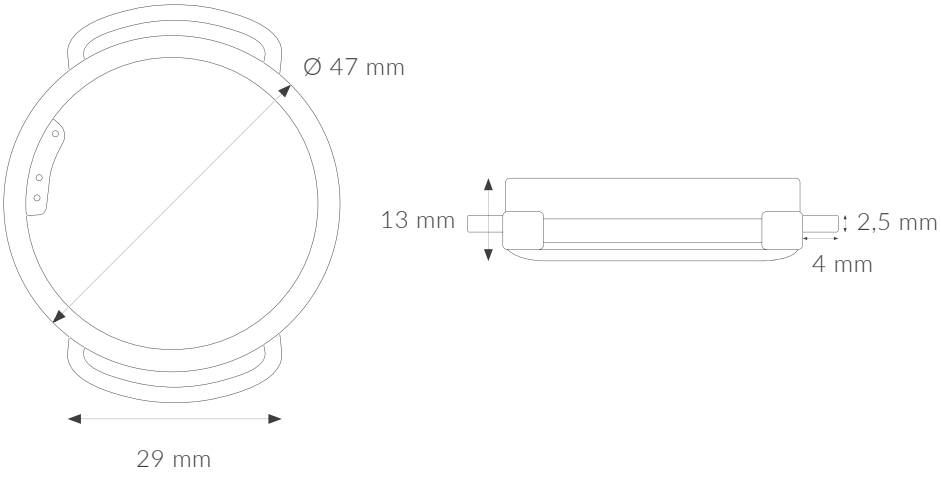


Figure 4. Dimensions of the device in two oval handles installation option.

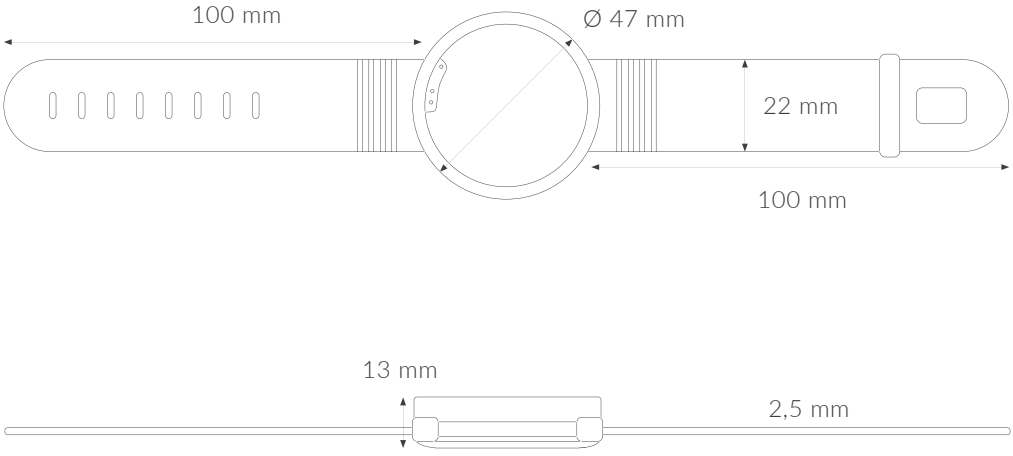


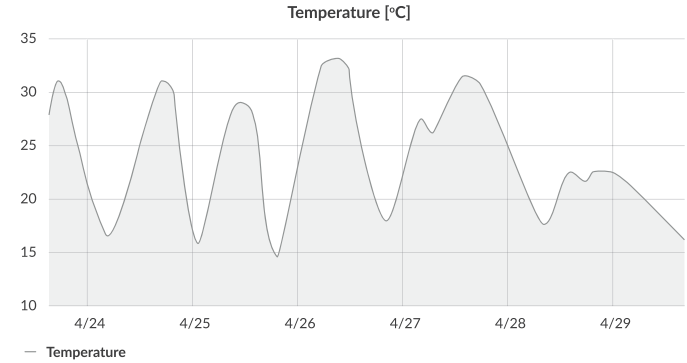
Figure 5. Dimensions of the device in strap installation option.

Enclosure material	Plastic - ABS
Level of protection Choose from	IP40

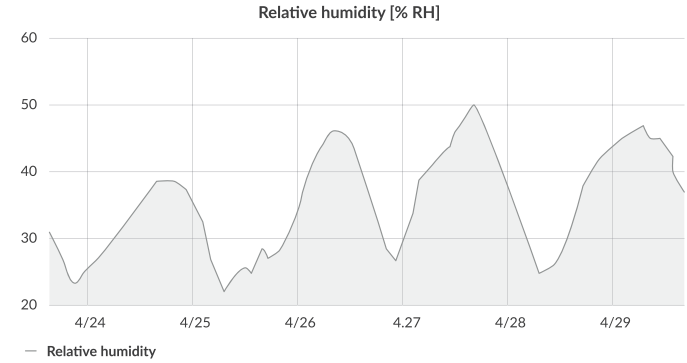
Parameters

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	**Temperature** Measuring range: -40°C to 125°C (-40°F to 257°F) Accuracy: ±0,2°C (32,36°F) (at temperatures between 5°C to 60°C (41°F to 140°F)) **Relative humidity** Measuring range: 0% to 100% Accuracy: ±2% (at 20% to 80% relative humidity) **Accelerometer** Measuring range: ±180° on x, y and z axes Accuracy: ±0,1° (at temperatures between -40°C to 85°C (-40°F to 185°F))
Weight	18,6 g (without battery)

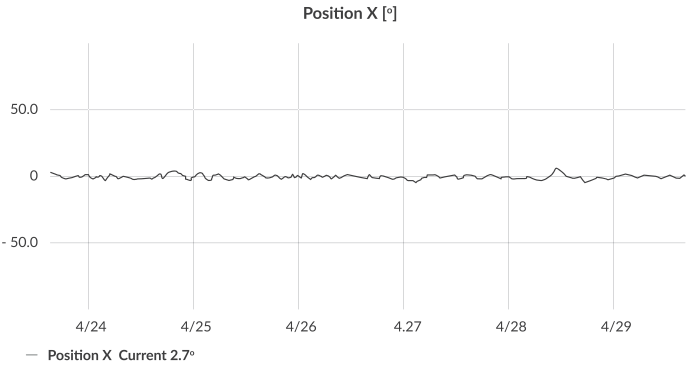
Sample charts



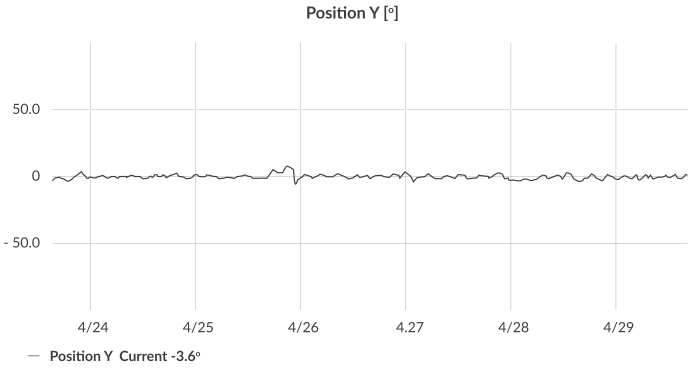
Example of a **temperature** monitoring chart.



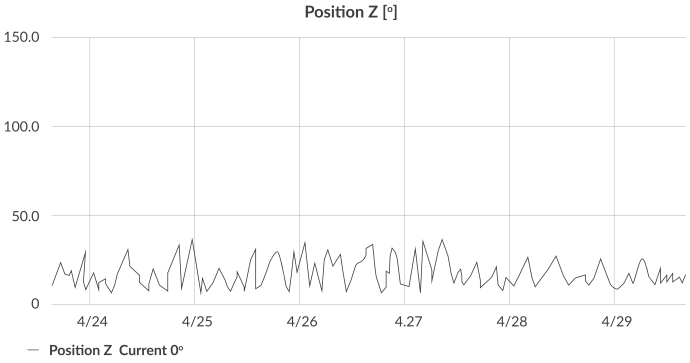
Example of a **relative humidity** monitoring chart.



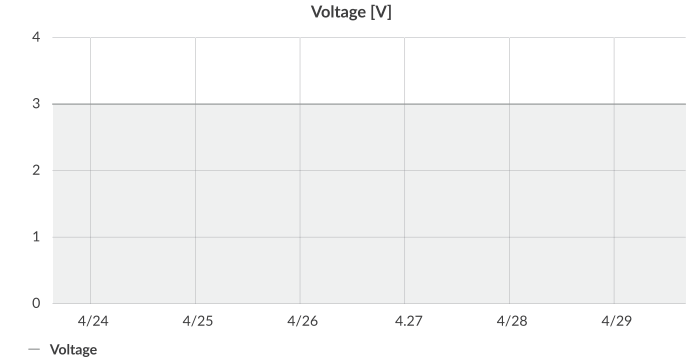
Example of an **X-axis accelerometer** chart.



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



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



Example of **battery voltage** 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.

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