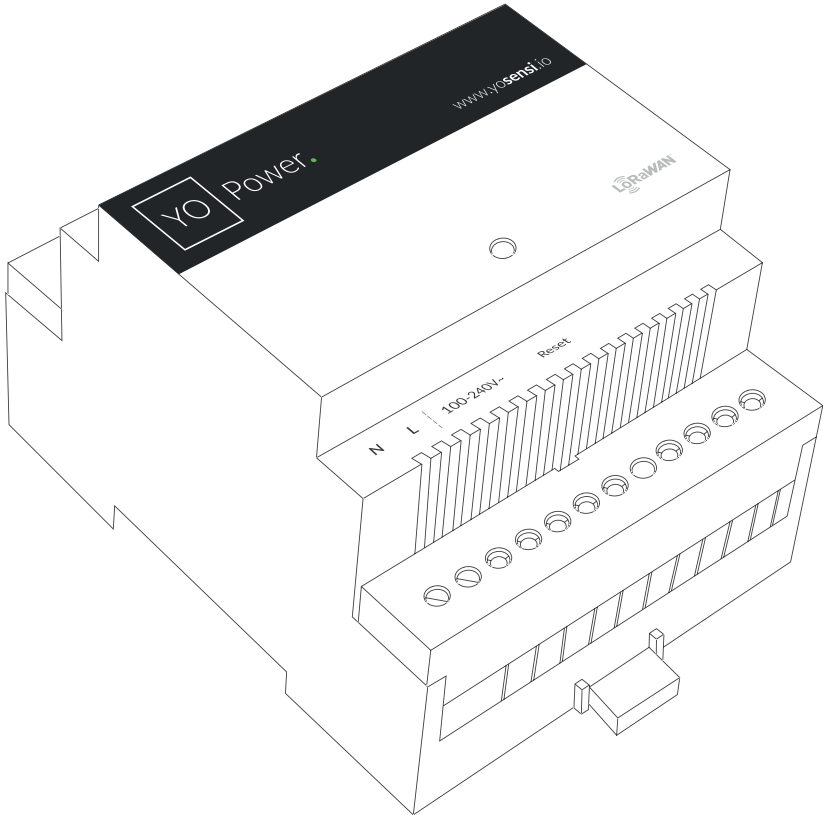




Power.
Datasheet



Application

- The YO Power measures AC flowing through devices connected to the electricity grid.
- With one YO Power it is possible to measure the current simultaneously (e.g., in two three-phase, six single-phase, one three-phase and three single-phase devices, etc.).
- By means of the application algorithm developed by the Yosensi Team, and despite the limitations of data transfer in the LoRaWAN network, it is possible to establish accurate mapping of current and power consumption.

Components

- The device consists of a microcontroller, communication modules (LoRa, Bluetooth Low Energy), sensors, power supply systems and measuring circuits.
- The YO Power device can be equipped with up to 6 current clamps. It is possible to connect current-rated clamps with current output from almost every manufacturer. Before connecting the current clamp, Yosensi will gladly verify whether the clamp is compatible with YO Power.
- The enclosure of the device is adapted for installation in power panels or automation cabinets on standard 35 mm DIN rails.
- The device is equipped with an RGBW diode that indicates the operating status of the device.
- On special request, the YO Power can be prepared in an IP67-rated protective enclosure.

Operation of the device

- A LoRaWAN network is required for data transmission.
- The device must be powered from the mains. Current clamps attached to the device should be placed around the electric wires through which current flows.
- Once connected, the individual clamp collects current consumption data for each phase.
- It is possible to configure or reconfigure device parameters at any time via BLE (e.g. the measurement interval).
- 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 the easy management of the data transmitted by the devices.

Device configuration

Device settings

Type of current clamp

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 Power offers automatically switchable measurement ranges: 2 A, 10 A, 50 A, 100 A., which results in even greater precision when measuring current.
- Each channel can measure current over different measuring ranges simultaneously.
- The YO Power has measurement inputs with specialised integrated circuits (e.g. specialised analog-to-digital converters) that ensure high measurement accuracy.
- It is possible to install current clamps without knowing the direction through which the current flows.
- Wireless communication eliminates the need for for additional wiring or conversion of existing installations.
- Low energy consumption.
- Depending on the version, the LoRa radio can operate in different regions (e.g., EU868, US915, AU915 etc.) adapted to different ISM frequency bands.
- The special algorithm and the data queue keep data on time.
- 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

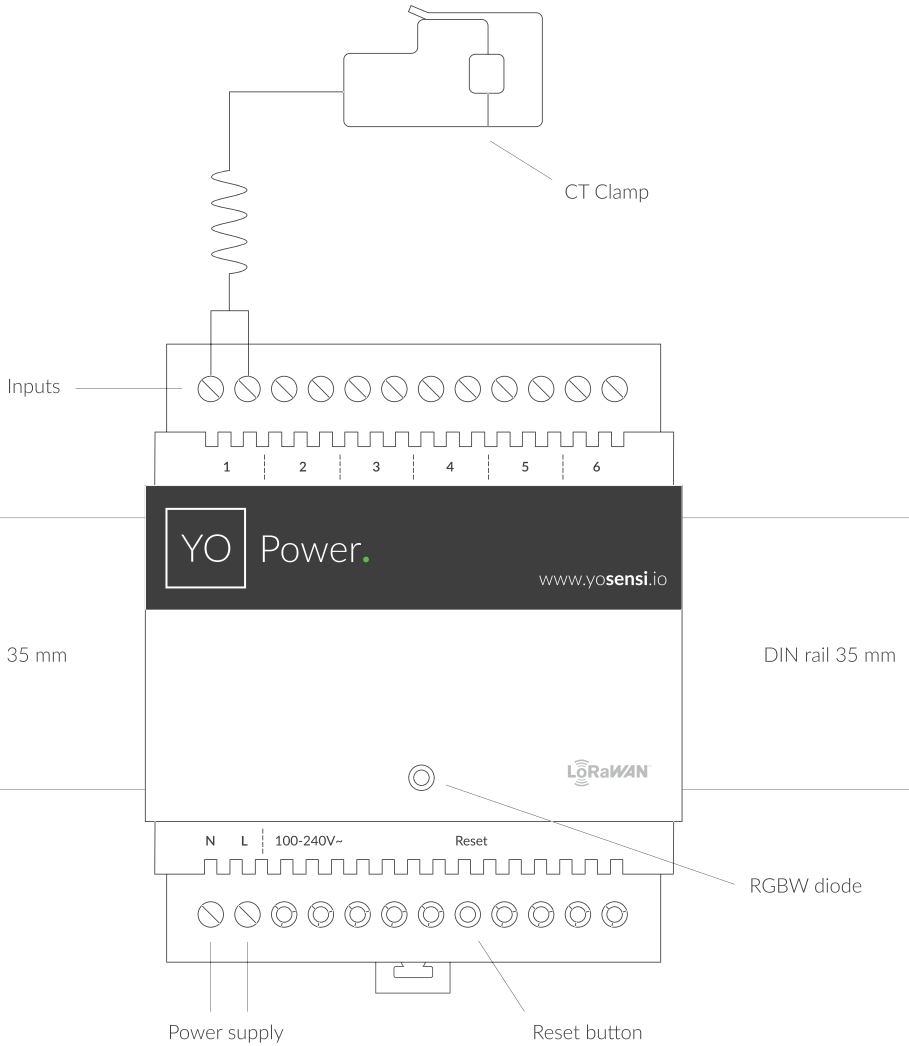


Figure 1. Top view of the device.

Enclosure of the device

Dimensions	Height: 90 mm Depth: 58 mm	Width: 71,2 mm (4 pole)
Colour	Light grey (RAL 7035)	
Installation	35 mm DIN rail standard	
Enclosure material	Polycarbonate	
Fire resistance class	UL94-VO	
Level of protection	IP20	

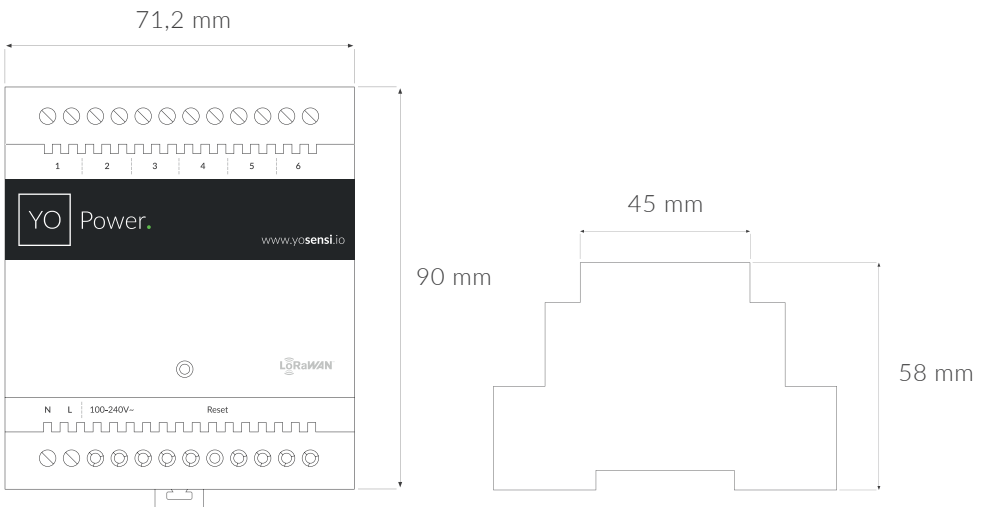


Figure 2. Dimensions of the device.

Current clamps

	model A	model B
Dimensions	Height: 57 mm Width: 32 mm Depth: 22 mm Cable length: 1 m	Height: 75.5 mm Width: 67,5 mm Depth: 24 mm Cable length: 1 m
Installation	for a cable with a maximum diameter of 13 mm	for a cable with a maximum diameter of 27 mm
Enclosure material	polycarbonate	
Maximum working voltage	660 V	720 V
Dielectric strength	6 kV AC 50 Hz 1min	3,5 kV AC 50 Hz 1min
Working temperature	25°C ~ 70°C (77°F ~ 158°F)	
Fire resistance class	UL94-VO	
Measuring range	0-100 A - accuracy $\pm 1\%$	0-100 A - accuracy $\pm 3\%$

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

100~240 V AC
50/60 Hz

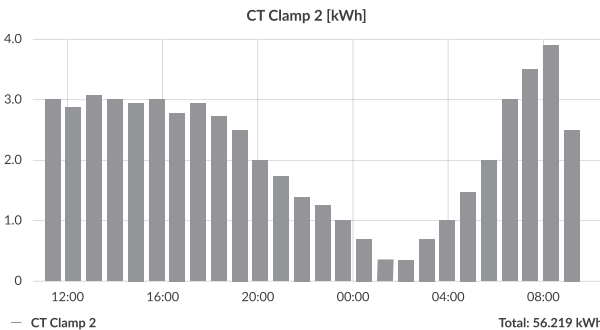
Weight

146 g

Sample charts



Example of **current consumption** for single phase.



Example of **energy consumption** for single phase.





Revision history

Date	Version	Page(s)	Changes
August 2020	1	All	Initial version
February 2021	2	1, 2, 3, 5, 6	<ol style="list-style-type: none">1. Removal of one of the diodes. Change of diode type to RGBW (in the text and the device outline).2. Removal of NFC communication option (in the text and the device outline).3. Added in "Components":<ul style="list-style-type: none">• The YO Power device can be equipped with up to 6 current clamps. It is possible to connect current-rated clamps with current output from almost every manufacturer. Before connecting the current clamp, Yosensi will gladly verify whether the clamp is compatible with YO Power.• On special request, the YO Power can be prepared in an IP67-rated protective enclosure.4. Added in "Advantages":<ul style="list-style-type: none">• YO Power offers automatically switchable measurement ranges: 2 A, 10 A, 50 A, 100 A., which results in even greater precision when measuring current.• Each channel can measure current over different measuring ranges simultaneously.

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