YO | Power.
Datasheet

YO Power.
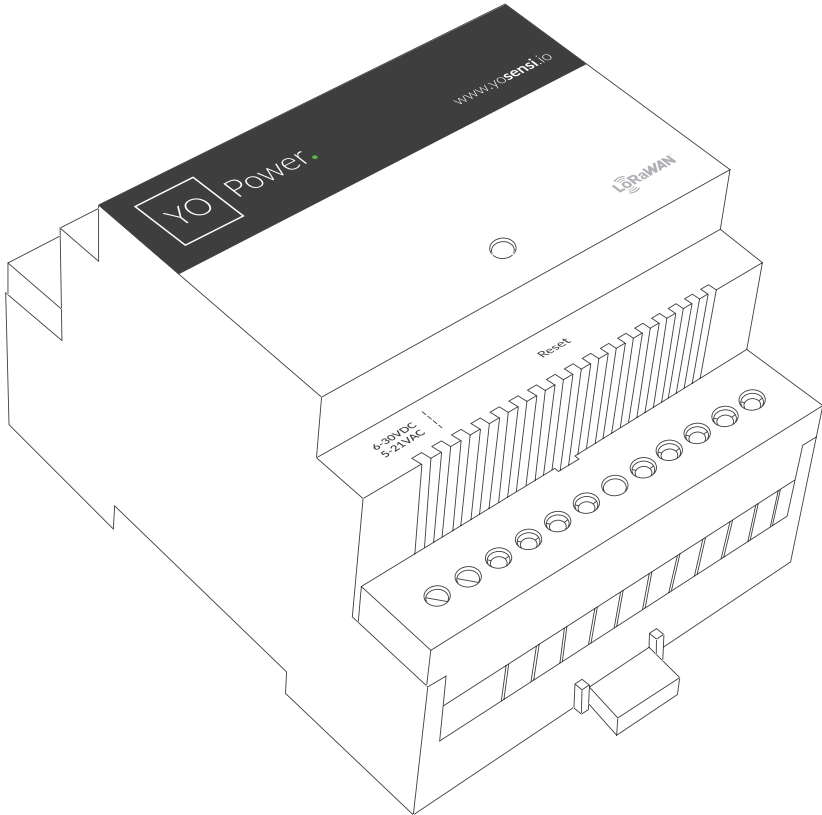
Application

- 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 an accurate mapping of current consumption.

Components

- The device consists of a microcontroller (with Bluetooth Low Energy), communication modules (LoRa), sensors, power supply systems and measuring circuits.

- The YO Power device can be equipped with up to 6 current clamps. The device is compatible with a range of current clamps that have specific measured current limits. The available options include current clamps with the following limits: 100 A, 160 A, 200 A, 400 A, 600 A, 800 A, and 1000A. These current clamps are sold separately and can be purchased based on your specific requirements.

- The enclosure of the device is adapted for installation in power panels or automation cabinets on standard 35 mm DIN rails.

- On special request, the YO Power can be prepared in an IP67-rated protective enclosure.

- The device is equipped with an RGBW diode that indicates the operating status of the device.

Operation of the device

- A LoRaWAN network is required for data transmission.

- The device must be powered from the power supply. 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 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	**ABP**
	• Device EUI	• Device address
	• Application EUI	• Network session key
	• Application key	• Application session key
	• Number of trials	
Bluetooth Low Energy (BLE) settings	Transmission power Advertising frame interval	
Current clamps settings	Type of current clamp	

Advantages

- Production quality – made in the European Union by qualified engineers.

- YO Power offers automatically switchable measurement ranges, 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 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, AS923 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 (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.
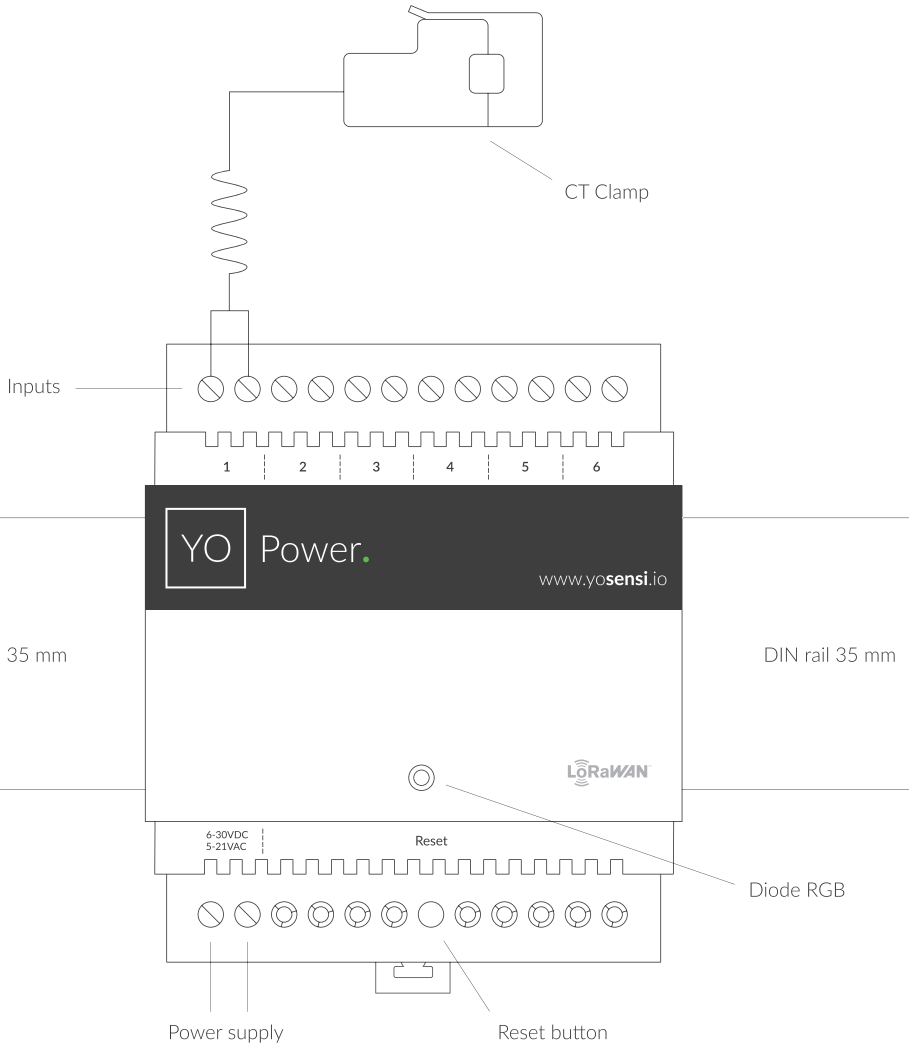
Technical details

CT Clamp

Inputs

1   2   3   4   5   6

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DIN rail 35 mm

DIN rail 35 mm

6-30VDC
5-21VAC   Reset

LoRaWAN

Diode RGB

Power supply   Reset button

Figure 1. Top view of the device.

Enclosure of the device

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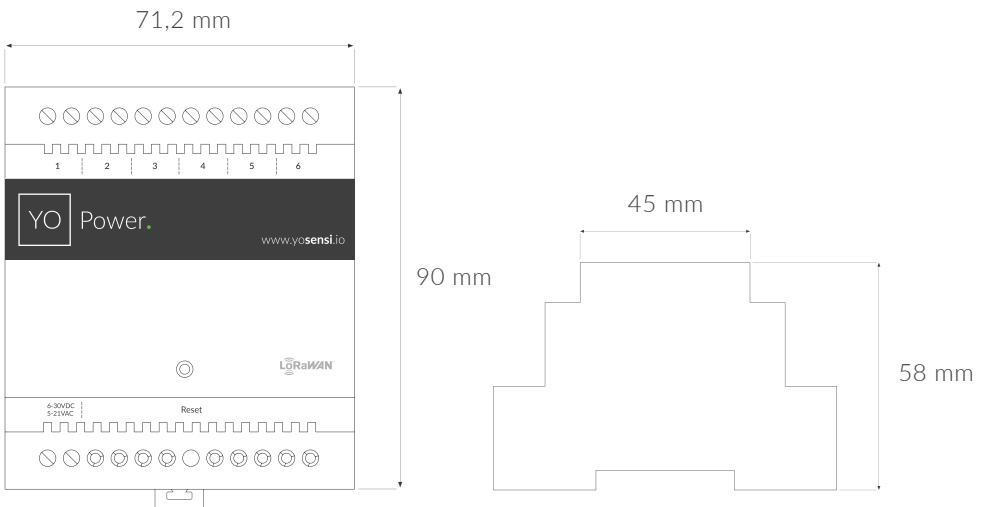
Figure 2. Dimensions of the device.

Parameters

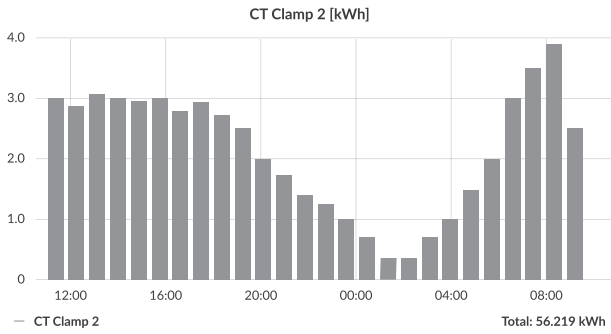|	
Tx Power	LoRa EU868: to +14 [dBm] LoRa US915, AU915, AS923: to +22 [dBm] Bluetooth Low Energy (BLE): -20 to +6 [dBm]
Power supply	6 - 30 V DC 5 - 21 V AC
Power consumption	Typical: 12 mA DC (12 V DC) Maximum: 120 mA DC (12 V DC)
Weight	146 g
Certificates	C E

Sample charts

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

CT Clamp 2 [kWh]

— CT Clamp 2   Total: 56.219 kWh

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	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": • 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": • 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.
December 2021	3	1, 5, 6, 7	Change of power supply from 100~240 V AC, 50/60 Hz to 6 - 30 V DC, 5 - 21 V AC
February 2022	3.1	3, 4	Changes are related to the firmware and apply to devices working with firmware version 2.0.0 and above.
June 2023	3.2	2	Addition of information on the limit values of current clamps compatible with the YO Power device.

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