Robonomics
Open Source Hardware

Energy Consumption Monitoring

Robo-EM-ESP32C6

Technical devics datasheet

Description

The device is designed for precise measurement and collection of statistics on energy consumption in electrical networks. It allows tracking the volume of electricity costs over different time periods, which is particularly useful for optimizing energy expenses.

Peculiarties

- **Multi-Protocol Support:** Depending on the firmware, the device can operate using Wi-Fi or Zigbee protocols, providing flexibility in choosing a communication system and integrating with various network solutions.

- **Installation:** The device is mounted in an electrical panel on a DIN rail, ensuring convenience and compactness of installation.

- **Current Transformer:** It comes with a non-invasive current transformer that can be installed without disconnecting the power conductors, minimizing installation time.

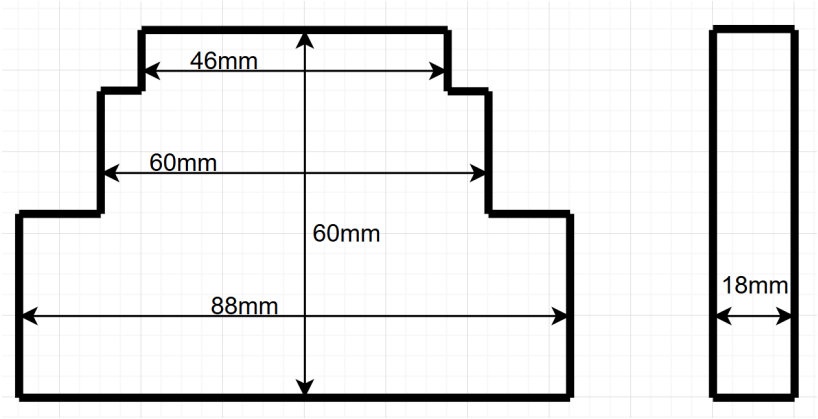
- **Parameter Measurement:** It allows measuring basic electrical parameters such as voltage, current, active and reactive power, providing a complete picture of energy consumption.

- **Data Collection and Analysis:** It collects statistics on energy consumption over different time periods, allowing analysis of energy expenses and identifying areas for optimization.

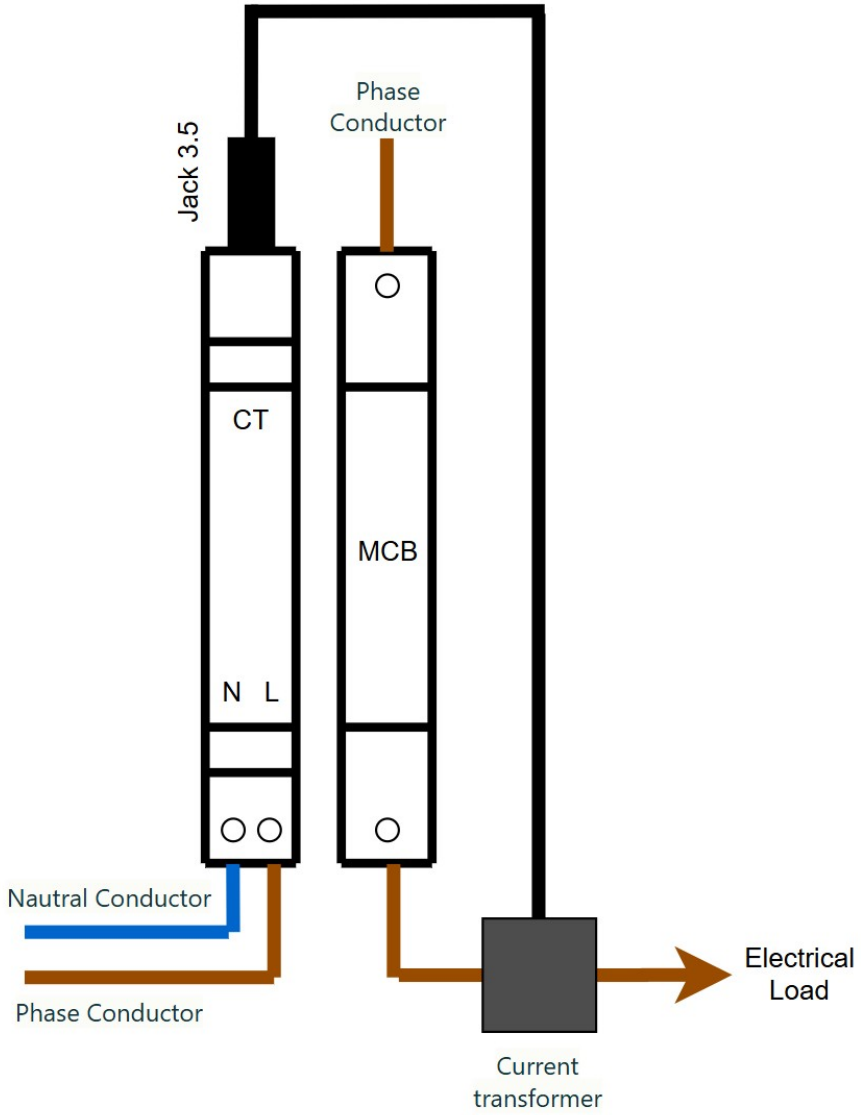
- **Built-in Temperature and Humidity Sensor:** It enables monitoring of the operating conditions by controlling the temperature and humidity of the environment. This ensures the ability to monitor the device's state and environment, which is crucial for ensuring reliable operation and durability.

- **Integration with Smart Home Systems:** It easily connects to popular smart home systems like Home Assistant via the MQTT protocol, allowing integration of energy consumption data into the overall monitoring and automation system.

Dimensions



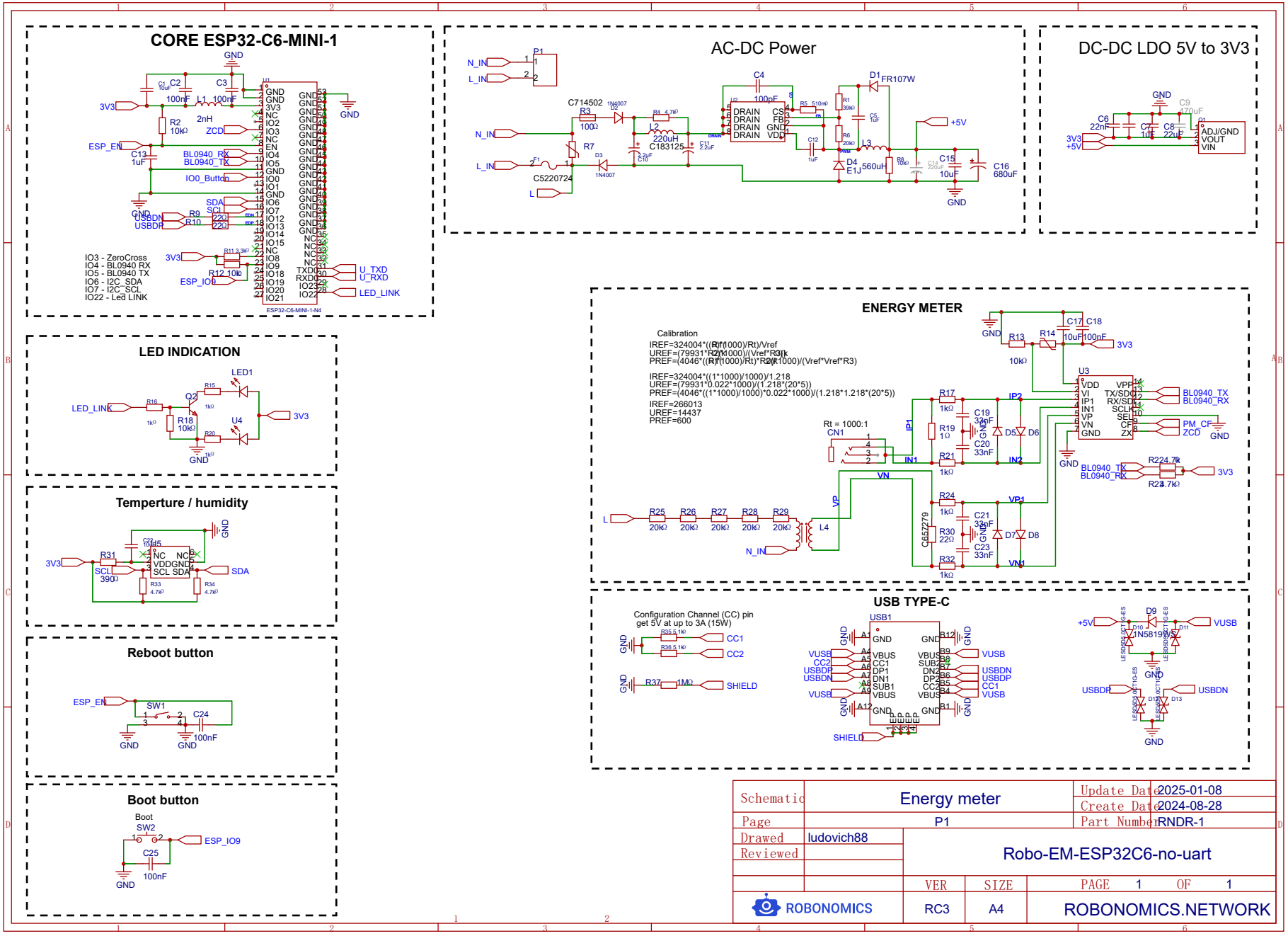
Device diagram and connection



Technical specifications

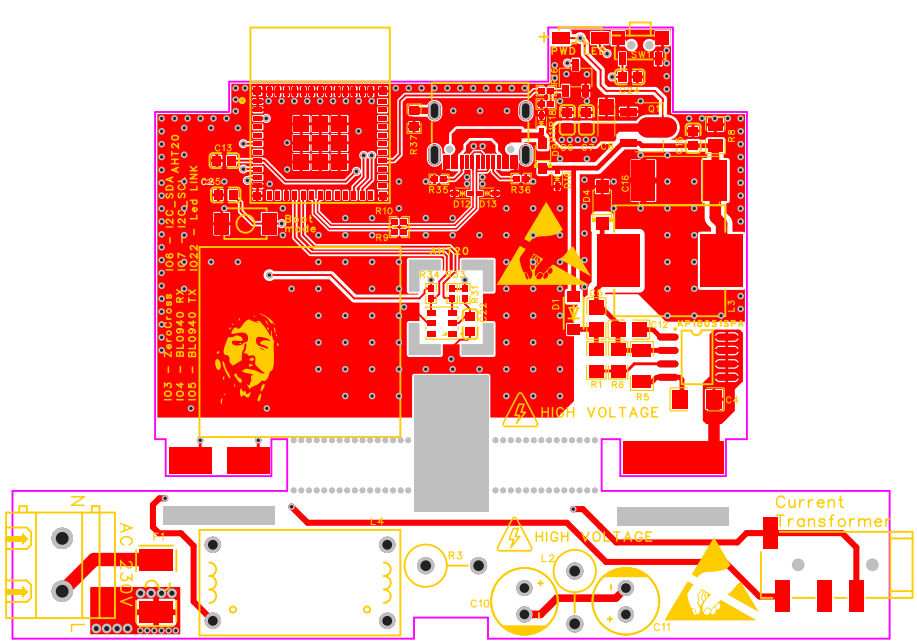
Network Connections	Wi-Fi (802.11 b/g/n/ax)
Wi-Fi Frequency Range	2.4 GHz
Supports protocols	IEEE 802.15.4 radio, Thread, Zigbee and Bluetooth 5 (LE).
RSSI (signal strength)	Есть
Working voltage	AC 100-240 В, 50/60 Гц
Energy consumption	< 3 W
Current transformer	OPCT10ATL 0-60A 1000/1
Measuring energy consumption	V, A, W, VA, Var, PF (COS φ)
CPU ESP32-C6	32-bit RISC-V single-core,Flash 4MB,SRAM 512KB,ROM 320KB
Update firmware	FOTA, USB-C on board
Factory firmware	Based Tasmota
Working Temperature	0°C…+50°C
Operating Humidity	up to 80% without condensation
Place of Installation	DIN rail electrical panel
Casing Material	Plastic
Dimensions	88×60×18 mm
Weight	58 g

Schematic diagram of device

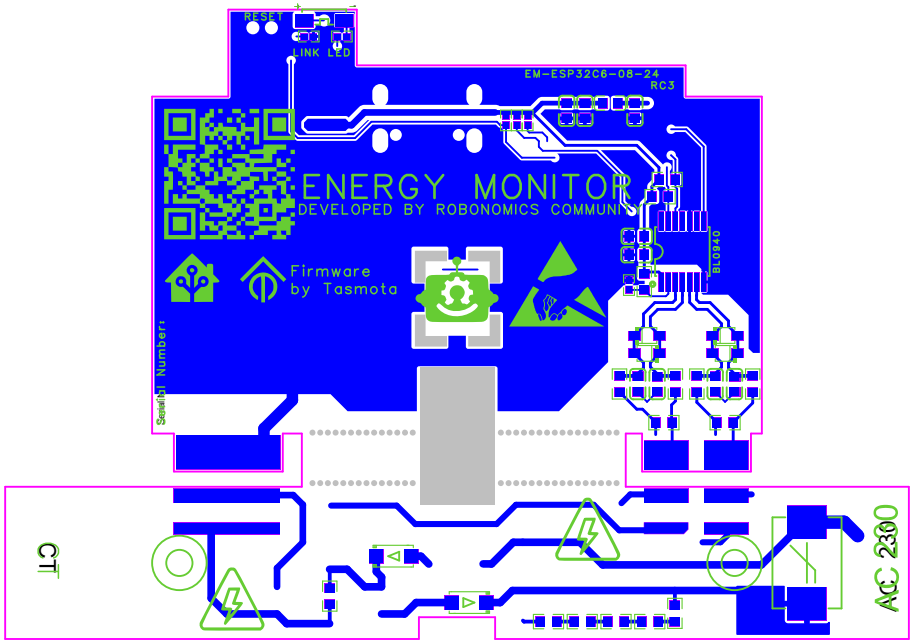


PCB diagram

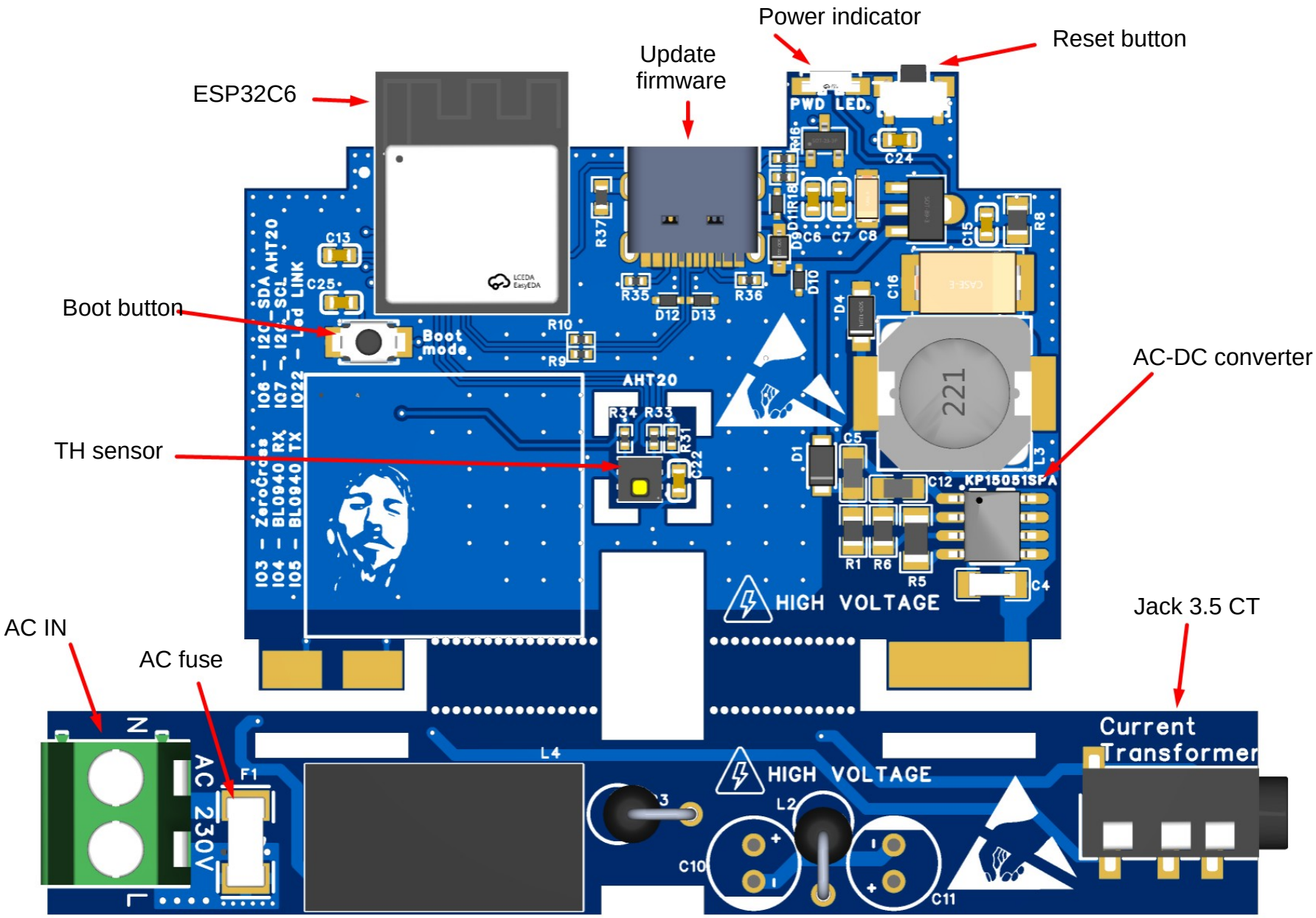
Top layer



Bottom layer



3D diagram top side



3D diagram bottom side