operating manual

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Warnings!

- The device **is not suitable for children** and should not get into their hands.

- The packaging material consists **partly of plastic.** Please dispose of it correctly and keep out of the reach of children **(choking hazard)**

- Please only use **undamaged cables to operate** the device. Also make sure that the power adapter is in good condition.

- **Never open the device!** Any guarantee and security expire when the device is opened!

- The device is **not suitable for outdoor use!** Only use it indoors!

- Only use **cables with a length of less than 3 meters for the GPIO's, USB, pulse counter and analog interface!** For **LAN/POE** connection, do not use **cables longer than 100 meters.**

- Do not use the device in environments that exceed or fall below the maximum permissible operating temperatures.

- Do not cover the device and only use it in well-ventilated areas to ensure adequate cooling **(risk of fire)!**

- When using Wifi and Bluetooth, make sure that the device is installed in a place with good reception/transmission conditions to ensure proper function.

- When using accessories, make sure that they are suitable for the board.

- The board can be used either with Wifi or with an Ethernet connection. Simultaneous use is not possible. If you use the Ethernet connection, GPIO17 is blocked for other uses (see circuit diagram).

SecSelS
Secure Selfhosted Software
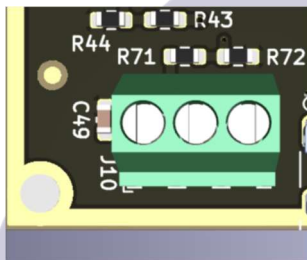
Technical specifications

Connections:

Power supply and data transfer:

1. USB-C connector (5V, min. 500mA)
2. LAN/POE IEEE 802.3.at Type 1, 44-57V(PSE), 37-57V(PD) 350ma
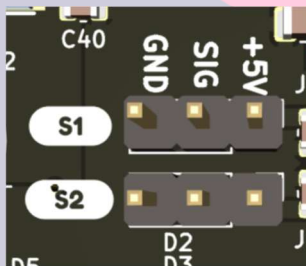3. 2xP1 port (RJ12) 5V, 250mA

All power supplies can be connected at the same time, but in such a case priority is given to the strongest supply (POE, then USB and P1).
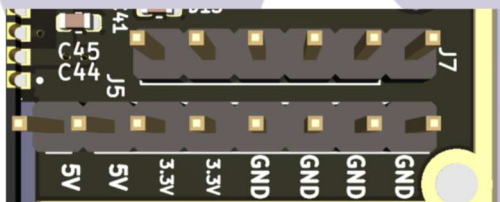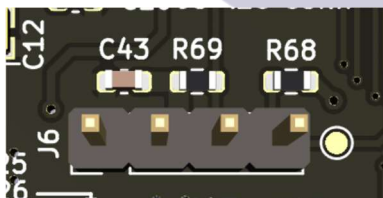
Data input:

1. analogue (5V)

2. Pulse sensors (5V)

3. GPIO header (5V and 3.3V) (see also GPIO positions)
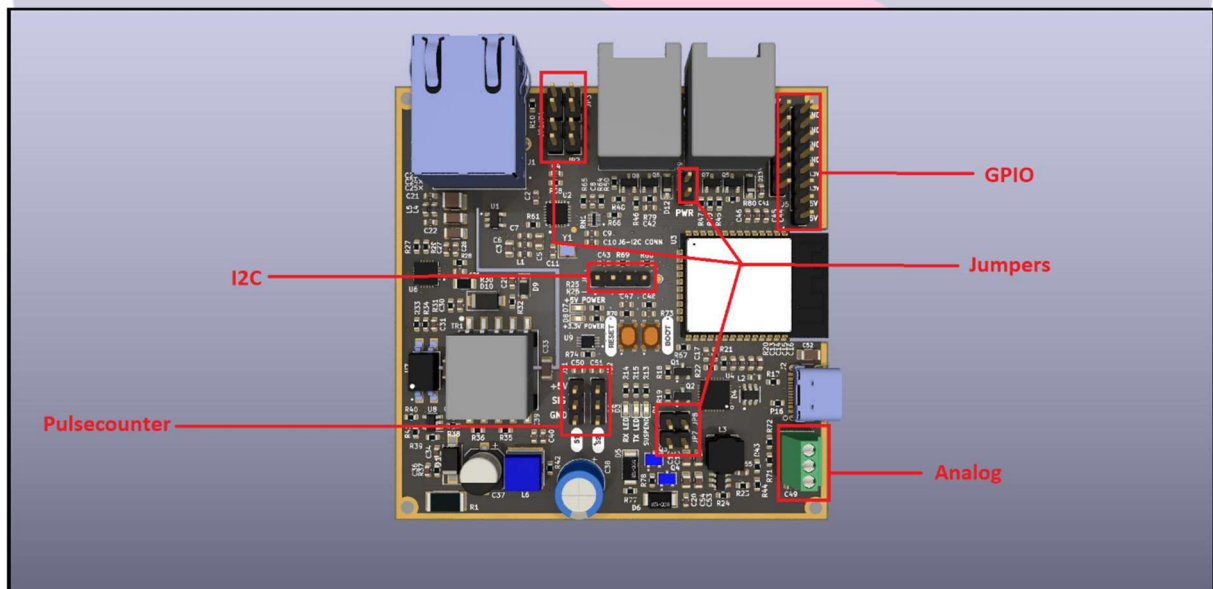

4. I2C headers (3.3V)

Radio technology:

1. Wifi (802.11 b/g/n HT20)
2. Bluetooth LE

Schematic representation:

1. ESP32 chip;
2. PSU;
3. LAN/POE;
4. USB to serial converter;
5. ethernet;
6. P1 ports;

GPIO positions:

5V, 3.3V + Ground

Header
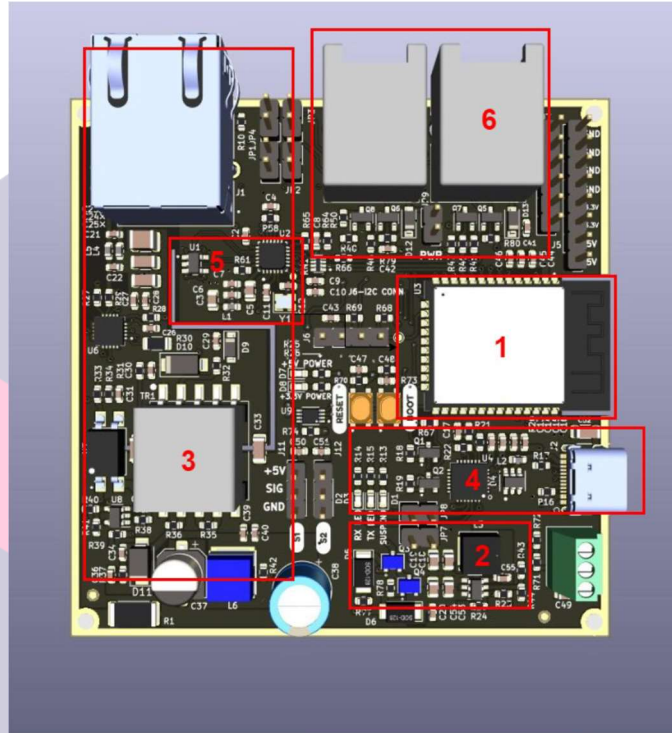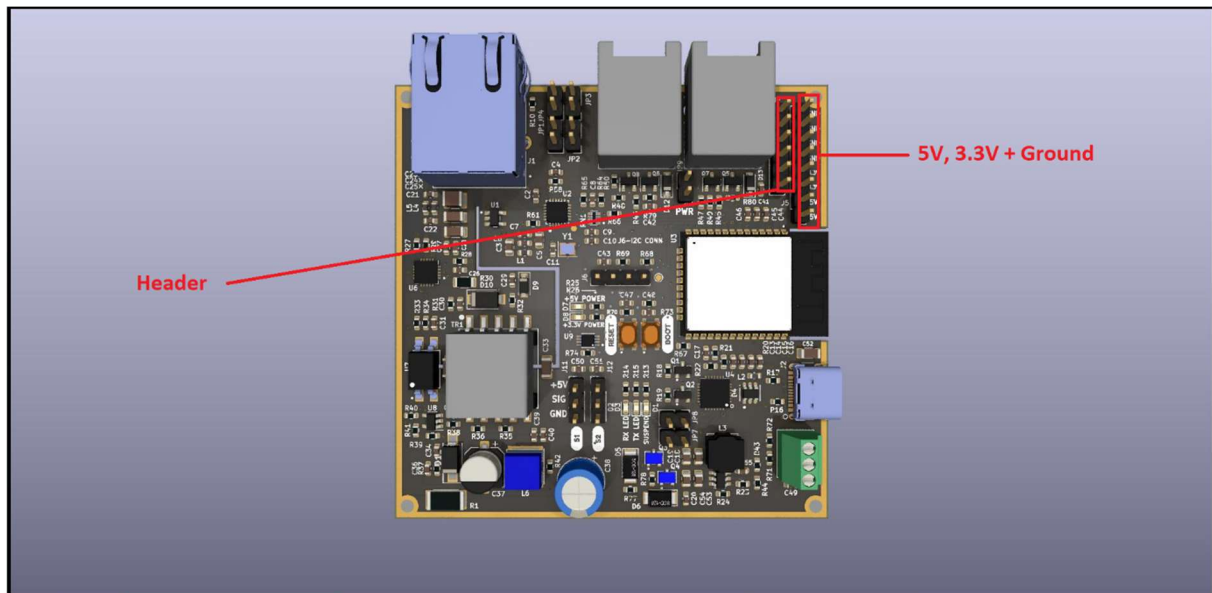
GPIOS

Front (P1 and Lan Ports)

J7
GPIO

Pin	GPIO
1	GPIO12
2	GPIO17
3	GPIO5
4	GPIO33
5	GPIO32
6	GPIO35

POWER CONNECTOR

J5
POWER

+5V +3.3V

1
2
3
4
5
6
7
8

GND

Front (P1 and Lan Ports)

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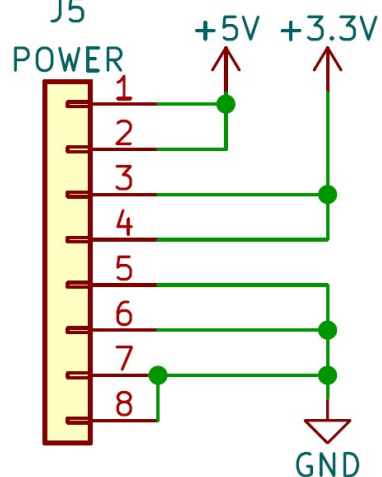
Circuit diagram:
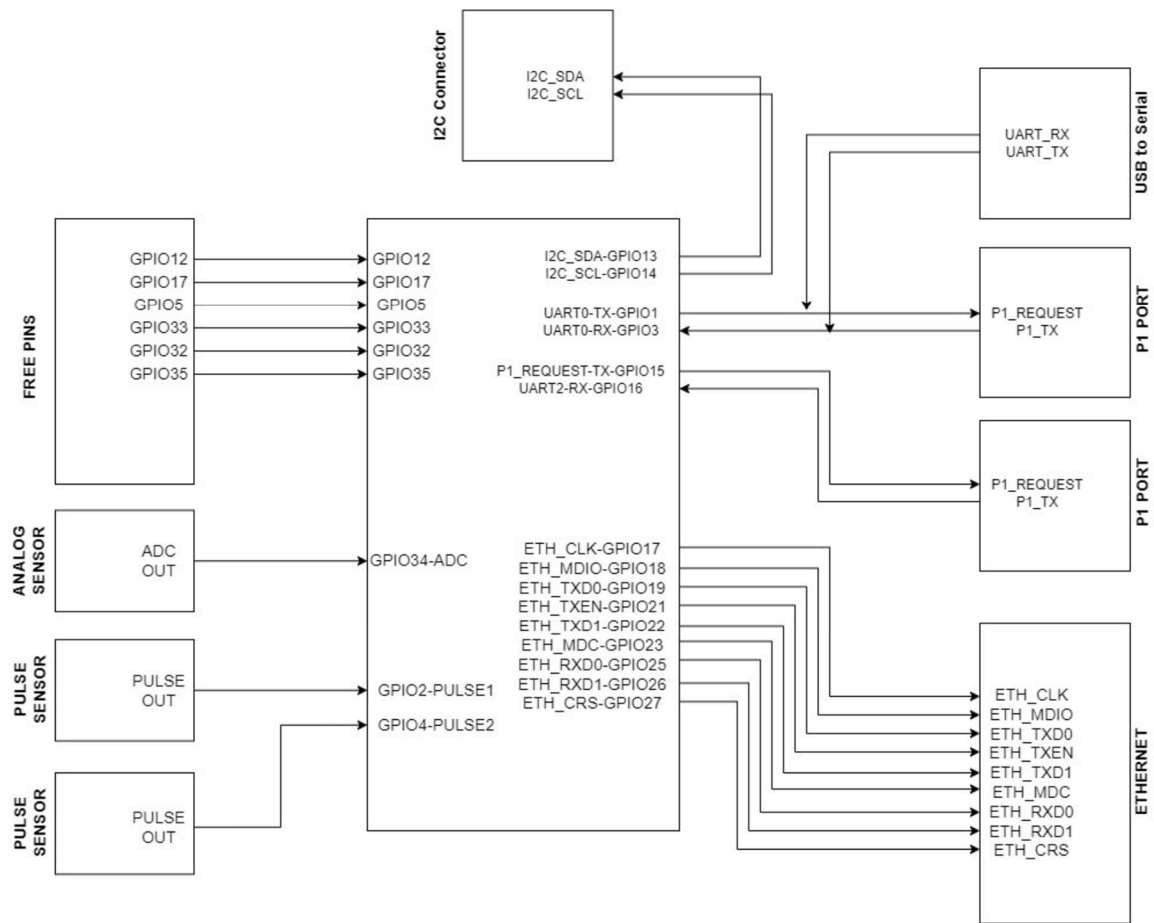
Jumpers
Positions

Jumper Configuration Methods

The device is based on an ESP32 chip. To ensure accurate reading of measurements, the P1 ports are built to communicate with the ESP32's internal hardware UART. However, since this only has a limited number of these hardware UART interfaces, USB and the second P1 port share a hardware UART. Since both ports cannot communicate with the 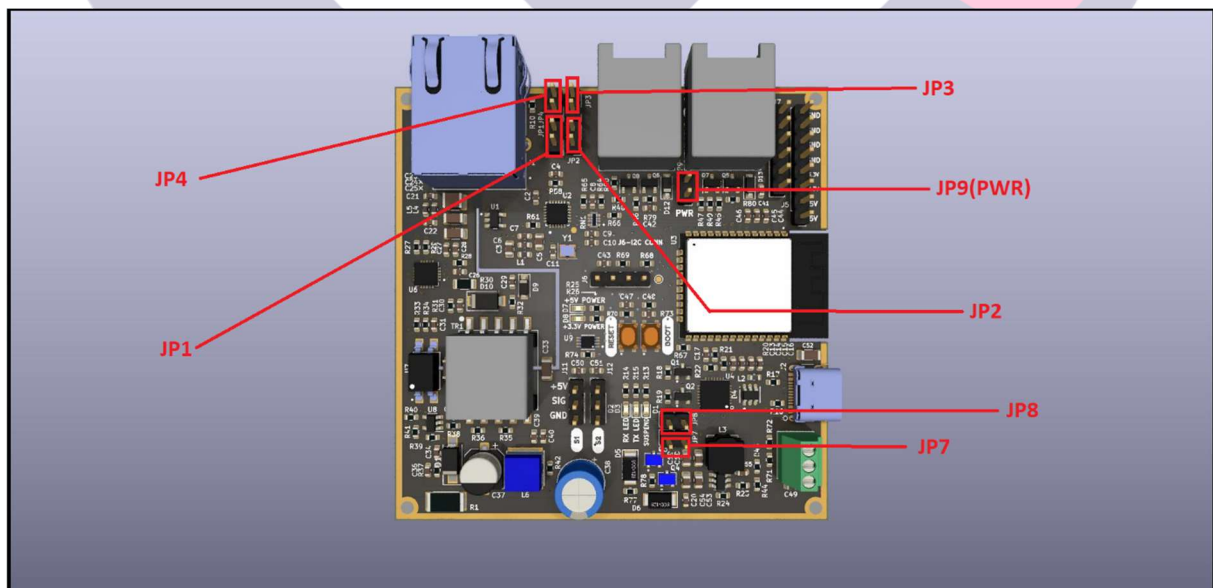hardware UART at the same time, you must decide which port or operating mode you want to use. In any configuration, power supply via the USB port is always possible! The jumpers only establish the data communication for the USB or the second P1 connection to the ESP32. The USB programming mode is required, for example, when:

1. The board is to be programmed via the USB connection (software is to be installed)
2. Logs or other data are to be transported via the USB port.

USB programming mode

In order **to program the chip** (or establish data communication of the chip via the USB port), please make sure that the **jumpers JP7 and JP8 are placed. <u>JP2 and JP4 must not be set here!</u> This corresponds to the factory setting.** This mode can be used in combination with the P1 passthrough. **(See image)**
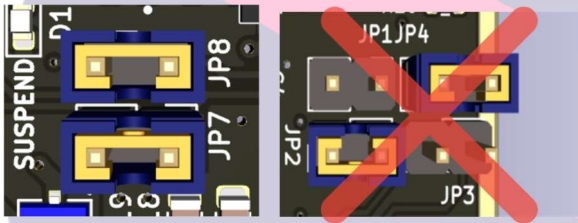
Dual P1 mode

If **you want to use the second P1 port (together with the first P1 port) instead,** for example to read a second P1 meter, **then please set** the jumpers **JP2 and JP4. <u>JP7, JP8 and JP9(PWR) must not be set in this configuration! Otherwise you could damage the device and its connected devices! (See image)</u>**
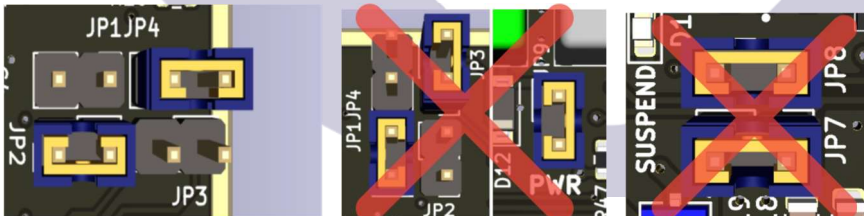
P1 passthrough mode

It is also possible to pass on the data and voltage from the first P1 port to the second P1 port. So you can let other devices communicate directly with the first P1 port and supply them with power. Be careful not to cascade too many devices that need to be powered from the first P1 port, otherwise there will not be enough voltage to operate all devices. **If you want to pass the first P1 port through to the second** , please set the jumpers **JP1 and JP3, as well as the JP9(PWR)** jumper near the second P1 port. Remember that with this configuration you are applying supply voltage to the second P1 port! If you do not need a supply voltage on this port, simply leave the JP9(PWR) jumper unplugged. **The jumpers JP4 and JP2 must not be set in this configuration!** The jumpers JP7 and JP8 may be set here. This means that the USB connection can still be used for programming.
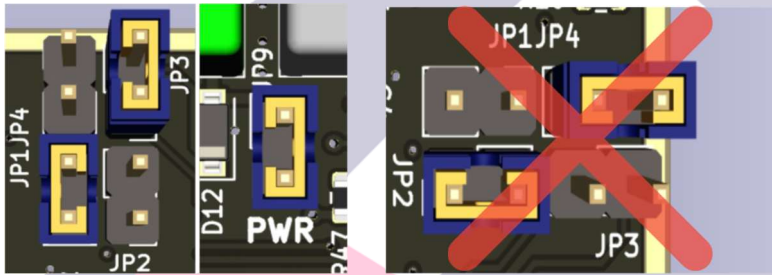
First steps

Determining the area of application

The SecSi Energy Monitor was developed to read the data from the P1 port of compatible meters and to process them in any number of smart home systems (including the SecSi Smart Home from SecSelS.com). This even allows actions to be linked to energy consumption if desired, thereby automatically saving energy. The design of the chip makes it extremely versatile, and with the right accessories, any type of meter can be read or your own implemented. In principle, the SecSi Energy Monitor is **compatible with all Arduino-compatible sensors and actuators!** Since there are practically unlimited possibilities for using the chip at home and in industry, we will limit ourselves to the standard application here and describe the installation using a Luxembourg smart meter as an example.

Programming

There are two versions of this board. You can order your board with or without software. If you ordered your board with software and optional accessories, you can skip this step. Even if software is already pre-installed on the board, but you want to change the purpose or add more accessories, you are free to do so at any time:

1.) Select the software that is right for your purpose. In the case of the Luxembourg smart meter, we rely on ESP-Home.
   a. For installation and examples with ESP-Home, please consult our Github account

2.) Connect the SecSi Energy Monitor to your PC and install the software according to the software manufacturer's instructions

3.) For use with accessories and extensions, please see the instructions there.

Connection

Once your board is programmed, connect it in the intended configuration. For the Luxembourg P1 meter, simply connect the two RJ12 ports to the respective meter. In the case of connection to the P1 port, you no longer need to connect a separate power supply unless you use an accessory. Make sure to connect the correct meter to the port preconfigured by the software, otherwise the data cannot be decrypted. Also make sure to connect the accessories with the correct preconfigured pins. In the case of a board with pre-installed software, we will inform you of these ports or connect the device if you wish.

Support:

If you have problems with the installation, please contact us:

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Certifications:

CE