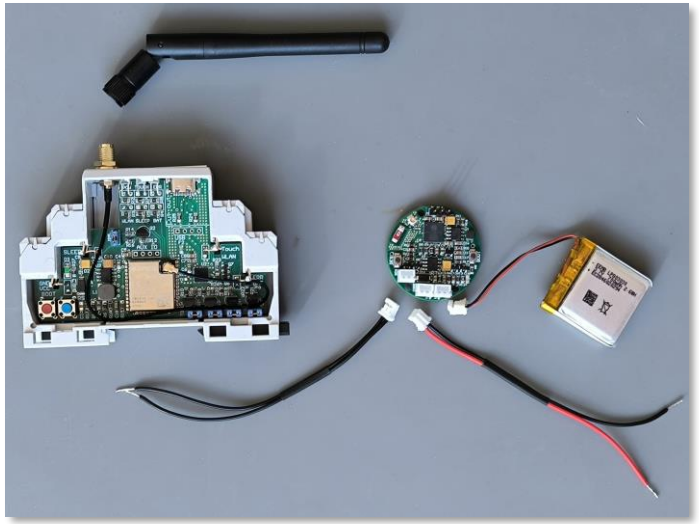
Quick Start Guide

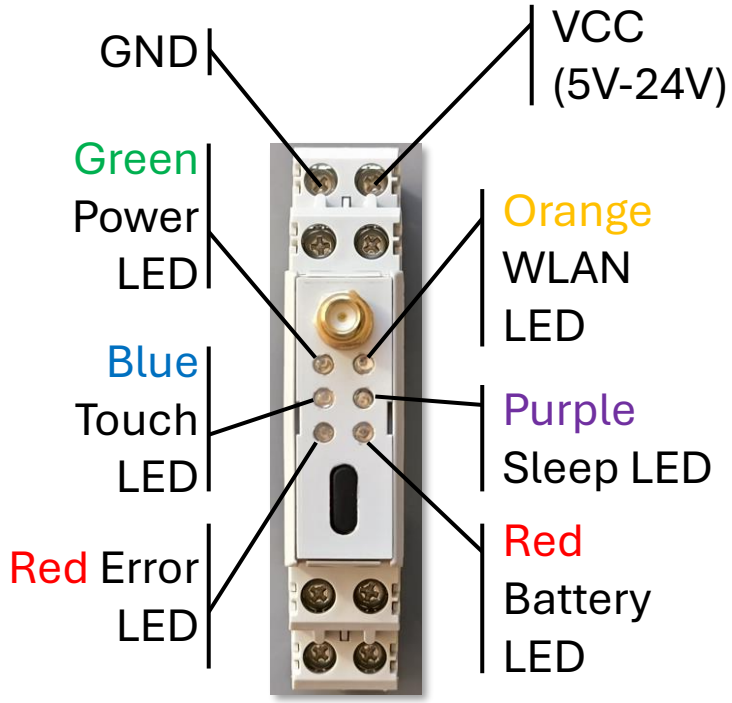


Required Parts

- Assembled **Basestation/Server PCB version 3.0**
- External **WLAN Antenna**
- Assembled **Client PCB version 2.0** (setup for on board antenna)
- **LiPo battery** with proper connector (JST PH2P BU). ATTENTION: the polarity on the connector is not normed, double check the polarity before you connect your own LiPo.
- **Two wires with a proper connector** (JST PH2P BU) to serve as sensor switch replacement

Basestation/Server Setup

- Mount the antenna to the Basestation/Server
- Connect a Power Supply to VCC (5-24V) and GND
- The green power LED should be on
- The orange WLAN LED is flashing, indicating that the server is looking for a client



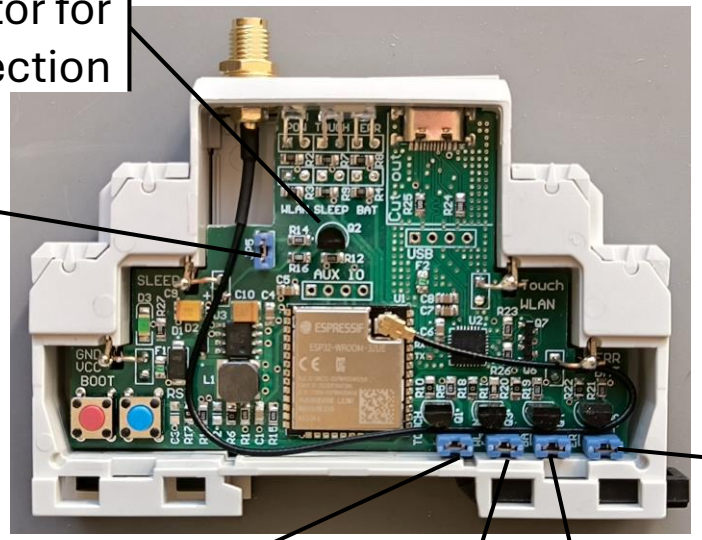
Sensor/Client Setup

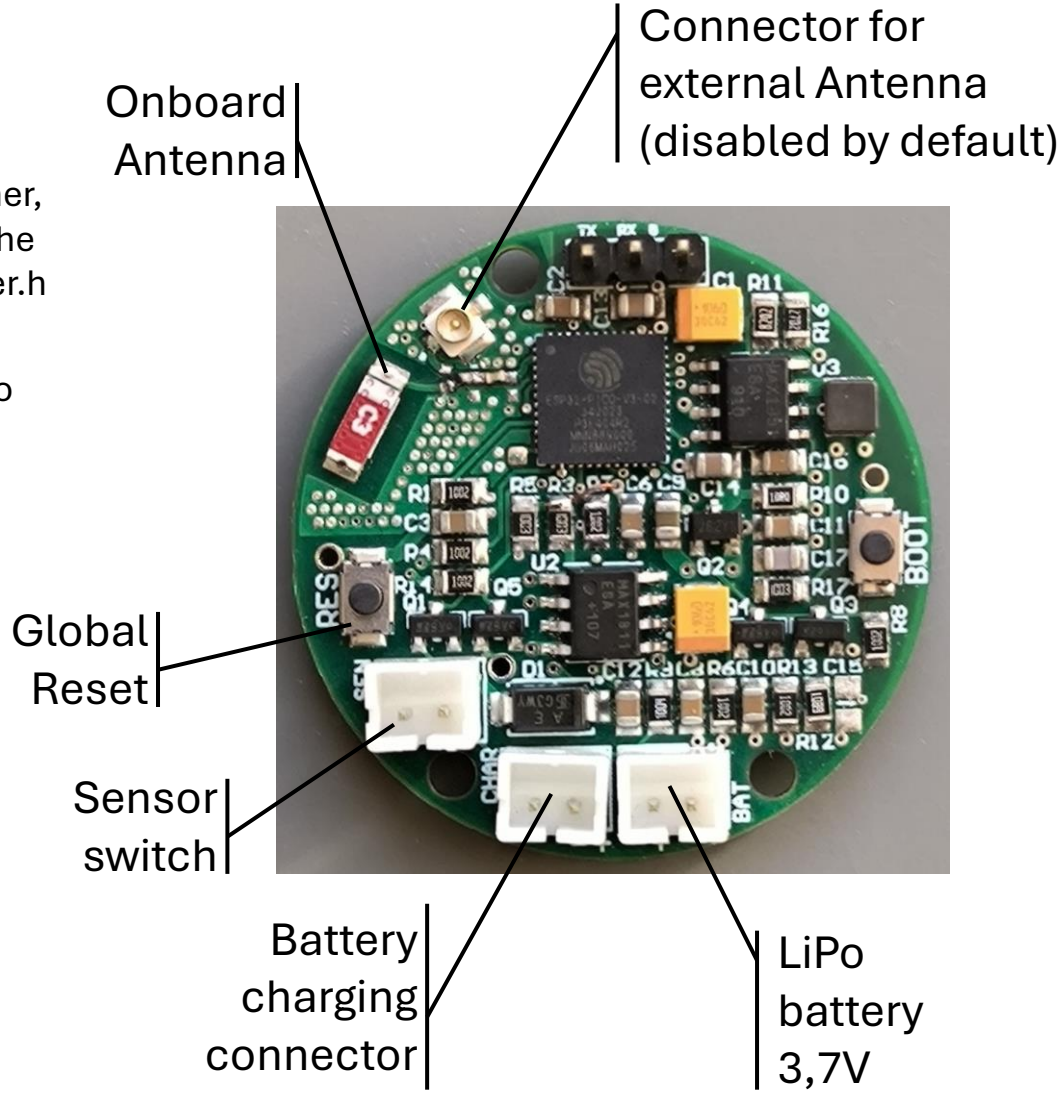
- Connect the Sensor cable to the “SEN” socket on the round Sensor PCB and make a short circuit between the to wires of the sensor cable (the sensor is normally closed, NC).
- Connect the battery to the “BAT” socket on the round Sensor PCB.
- Now the RGB LED on the back of the Sensor PCB should start fading from 0% to 100% in white (if not, open the sensor wires for a short moment, indicating a wake up).
- After reaching 100%, the white LED also flashes, indicating the search for a Basestation.

Quick Start Guide (continued)

Operation

- After a short period of time the Basestation and the Sensor should find each other, indicated by a steady orange LED on the server and a steady white RGB LED on the Sensor (if the sensor LED is not steady white, look up the colors at the 3D-Header.h for more information)
- Now, you can simulate a sensor touch by opening the Sensor cable connected to the “SEN” socket. When the sensor is open, the RGB LED is blue as well as the Touch LED at the Basestation.





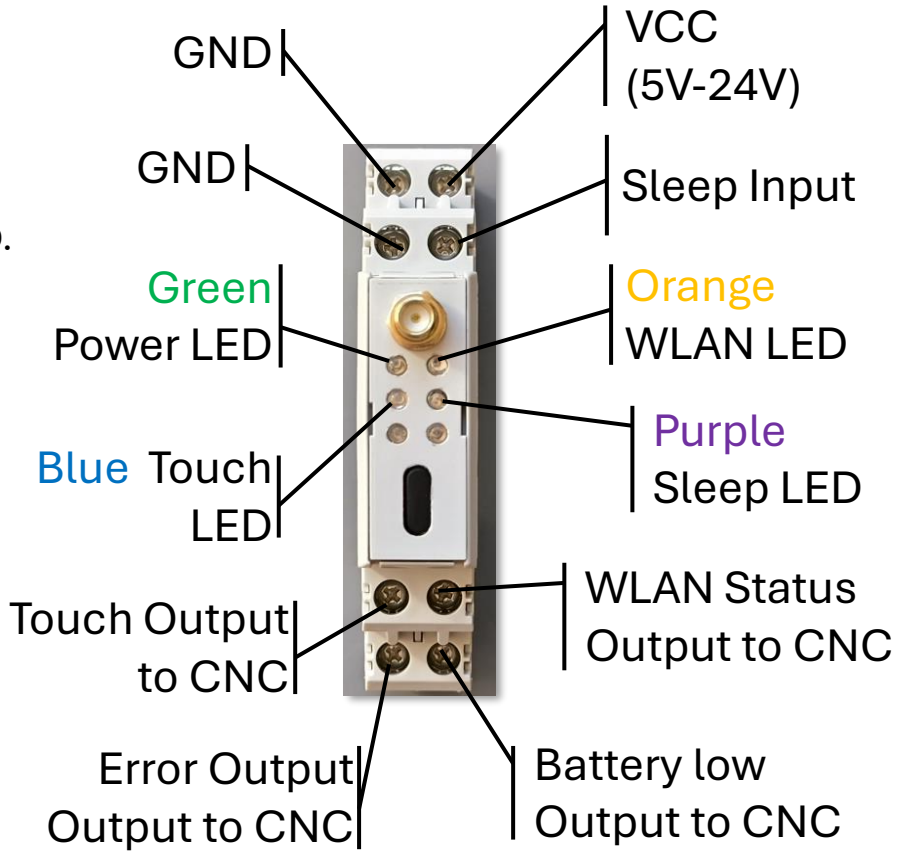
Possible Next Steps

Sending the Sensor asleep and waking up

- Precondition: the sensor and Basestation are up and running (steady orange LED at Basestation) and steady white LED on the sensor. If the sensor LED is blue, make a short circuit at the “SEN” wires to indicate that currently no workpiece is touched.
- For sending the Sensor asleep connect the Sleep input of the Basestation to GND and watch the purple LED on the Basestation, while the white RBG LED of the Sensor is fading from 100% down to 0%. Sensor is now asleep and Power consumption is at a minimum.
- The Basestation will go back the searching for a Sensor, indicated by a flashing orange LED.
- Now you can wake up the Sensor by opening the Sensor wire for a short moment and the startup will take place again.

Watch the Electrical Outputs of the Basestation

- Before you connect the Basestation to your CNC controller watch the electrical Output the Basestation.
- Make a short circuit by connecting/bridging all 4 Jumpers in the Basestation at the bottom right corner (if not already the case). That sets all 4 outputs to “normal” mode instead of “open collector” mode.
- Connect a multimeter to the “TOUCH” output of the Basestation (use GND as reference).
- Start up the system and bring it into normal operation (Basestation LEDs green and steady orange and Sensor is steady white).
- Now open the “SEN” wires and watch the blue LEDs while the Voltage of the multimeter should change from 0 to VCC (supply voltage you connected to Basestation) or the other way around, depending on the polarity.



Possible Next Steps (continued)

Watch the Electrical Outputs of the Basestation (continued)

- The output polarity of all 4 outputs depends on the settings in 3D-Header.h (SERVER_WLAN_OUT_POLARITY, SERVER_TOUCH_OUT_POLARITY, SERVER_ERROR_OUT_POLARITY, SERVER_BAT_ALM_OUT_POLARITY)

Watching the Debug Outputs

- Assuming that the initial software on the Basestation and on the Sensor is compiled with "#define DEBUG" in the 3D-Header.h you will be able to watch all stuff going on, on the Basestation and on the Sensor by a UART viewer.
- On the Basestation, just connect a USB cable from the Basestation to a computer and setup a UART viewer to the correct USB port with setting up the BAUD rate to 9600 (can be changed by BAUD_RATE in 3D-Header.h). Possible UART viewers are e.g. the Arduino IDE or simply use PuTTY.
- For the Sensor/Client it is a bit more complicated, because due to space limitations there is no USB-UART converter on board. You need an external USB to UART converter. I use this one, but there are hundreds around. Connect the GND and TD and RX pins between the Sensor PCB and the external USB-UART converter. When connecting, do not forget to cross the pins, RX of the Sensor must be connected to TX of the converter etc.
- Neither the Basestation nor the Sensor/Client hardware can be powered by the UART or USB, that means you have to connect the normal power supply (e.g. Lipo for the Sensor).
- Now watch one or both serial/UART outputs and make yourself familiar with what is going on. It can be helpful to reset both hardware to see the startup.

USB Connector for programming and UART debugging

UART Connector for programming and UART debugging