DIY Guide: onocoy Miner with ESP32 and UM980 GPS Module

🔧 Deployment Requirements

Power supply: USB-C adapter and cable, permanently connected

Internet connection: online 24/7

Antenna placement: Unobstructed 360° view of the sky

Mounting: Stable and vibration-free antenna installation

Requirements: Basic soldering skills – the GPS module is sensitive!

🧰 Required Hardware

ESP32 WROOM (with external WiFi antenna)

UM980 GPS module

4010 fan

🧰 Required Tools & Materials

ESD-safe soldering station (fine tip)

Side cutters

Wire stripper

Wire in 4 colors (e.g. black, red, yellow, blue)

Double-sided 3M tape

M3 thread cutter (optional, if the lid is to be screwed), 2 x M3 screws and screwdriver

🧠 Step 1: Prepare Firmware

Before connecting the components, flash the ESP32 with the correct firmware.

You will need:

- Firmware file: [ESP32 NTRIP duo.bin](#)

THANKS TO for the firmware: https://github.com/incarvr6/esp32-ntrip-DUO

Using ESPHome Web Flasher:

1. Open: https://web.esphome.io/

2. Connect the ESP32 to your PC via USB (hold the 'Boot' button while plugging in)

3. Click 'Connect' and choose the COM port (if no COM port appears, install a driver. A pop-up will provide links. Alternatively, go to the 'ESP32' folder, unpack the driver archive, and right-click on silabser.inf → 'Install'.)

4. In the popup: Select the .bin file

5. Click 'Install'

After flashing: Disconnect and reconnect the USB cable. After about 20 seconds, a new WiFi network named 'ESP32-...' should appear.

🔬 Step 2: Configure the UM980 GPS Module

1. Install the driver from the 'GPS MODULE / Driver' folder

2. Connect the UM980 to your Windows PC via USB

3. Copy the 'GPS MODULE' folder to your desktop

4. Open Device Manager → Note the COM port (CH340)

5. Open terminal in the folder (Right-click → 'Open in Terminal')

6. Run the flashing command:

.\nmeaConf.exe COM5 UM980_RTCM3_OUT.txt

(Replace COM5 with your actual COM port, e.g., COM3, COM4, etc.)

Done!

🛠️ Step 3: Prepare the Enclosure (optional, if lid is not screwed)

Carefully cut threads into both enclosure holes using the M3 thread cutter.

🛠️ Step 4: Assembly & Wiring

1. Attach double-sided tape to ESP32, fan, and UM980

2. Cut 4 wires (each in a different color) to 6 cm, strip both ends, twist, and lightly tin them

3. Wiring according to the following diagram:

4010 Fan:

ESP32 3V → Fan + (red)

ESP32 GND → Fan – (black)

UM980 GPS Module:

ESP32 TX → UM980 RX (yellow)

ESP32 RX → UM980 TX (blue)

ESP32 5V → UM980 VCC (red)

ESP32 GND → UM980 GND (black)

☑️ Step 5: Power-up

1. Close the enclosure

2. Connect the antennas

3. Plug in power → The device will start automatically

4. Now you can begin with the software setup. Follow the instructions at device setup.pdf