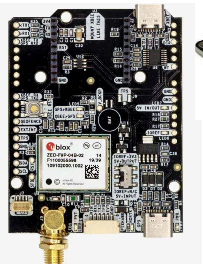
how to configure the rover correctly to send the messages to the ESP32 for its location

Thursday, January 15, 2026 3:26 PM

Tx 1 -> esp32RX
RX1 -> esp32TX



Required

1. **ESP32**
2. **UART connection to ZED-F9P**
3. **Common ground**
4. **Button input**
5. **Power**

Power Connection

- ZED-F9P UART: **3.3 V logic**
- ESP32 UART: **3.3 V logic**

ZED-F9P TX1 → ESP32 GPIO16 (RX2)

ZED-F9P RX1 → ESP32 GPIO17 (TX2) [optional]

ZED-F9P GND → ESP32 GND

The ZED-F9P **streams data continuously**:

- NAV-PVT at 1–10 Hz
- Always flowing when powered

```
loop:
  read UART
  parse NAV-PVT
  store latest lat/lon/fixType

  if button pressed:
    if fixType == FIXED:
      collect N samples
      average
      save "cut point"
    else:
      ignore or warn
```

NON NEGOTIABLES THAT WE WORK WITH

Fact 1: Yes, the rover must be powered

There is no "sleep and wake for RTK."

Why:

- RTK requires continuous satellite tracking
- Carrier phase history must be maintained
- RTCM corrections must be continuously applied

Fact 2: The base must also remain powered

- Base power loss = RTCM loss
- RTCM loss = rover drops to FLOAT
- Recovery requires clean sky time

Base power must be stable.

Fact 3: Button does NOT wake the rover

The button:

- Does not wake GNSS
- Does not request a fix
- Does not ask for data

It only says:

"If conditions are good right now, log."

Fact 4: You cannot "force" FIX

SO THE BUTTON:

Option A: Simple GPIO momentary button (recommended first)

What it is

- Physical momentary push button
- One GPIO + GND
- Internal pull up enabled

How it behaves

- Button press triggers a "log attempt"

Option B: Button + LED feedback

What it is

- Button plus one status LED

Behavior

- LED solid = FIX ready
- LED blinking = waiting for FIX

- Button press only logs when LED solid

Option C: Software “button” (serial or wireless)

What it is

- ESP32 receives a command over:
- Serial
- BLE
- WiFi

Option D: Sensor driven “button” (future)

What it is

- Logging triggered by:
- Force sensor threshold
- Limit switch
- Motor current spike