

Bluetooth communication

1. Overview

This tutorial provides a step-by-step guide on connecting and configuring a Bluetooth module for your AESC. The goal is to enable wireless communication, allowing you to use the VESC Tool mobile app to configure motor parameters, monitor real-time data, and perform basic control—all without a physical USB cable.

2. Software Preparation

- Download VESC Tool: https://vesc-project.com/vesc_tool
- You can find the download tutorial here:



Figure 1: AESC configuration tutorial QR code

- Run the VESC Tool software

3. Hardware Preparation

3.1.Required Components

- AESC motor controller (e.g., AESC V4, AESC V6.7, AESC V4 Pro, AESC V6.7 Pro)
- BLDC motor (e.g., 5065, 6374, 63100)
- Li-ion battery pack/LiPo battery pack/DC power supply(e.g., 32V, 36V, 48V)
- Mobile phone(Android / iOS)
- Bluetooth module (e.g., Autoro BT Nano)

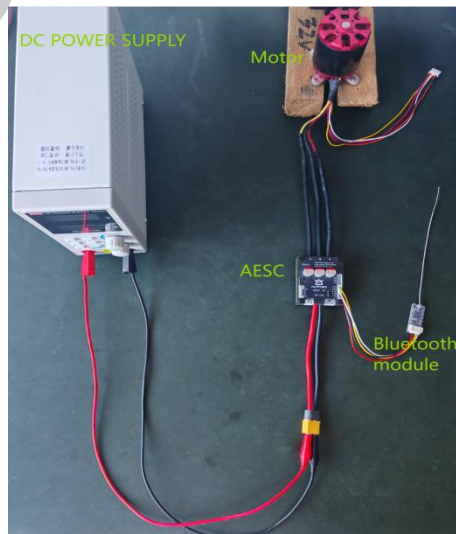


Figure 2: Overall hardware connection diagram

3.2.Hardware Connections

a. Power down everything

- Ensure all components are disconnected from power sources before making any connections. This is a critical safety precaution.

b. Connect motor to AESC

- Connect the three motor phase wires (A, B, C) to the AESC's phase outputs (A/B/C) . The order may be corrected later during software setup.

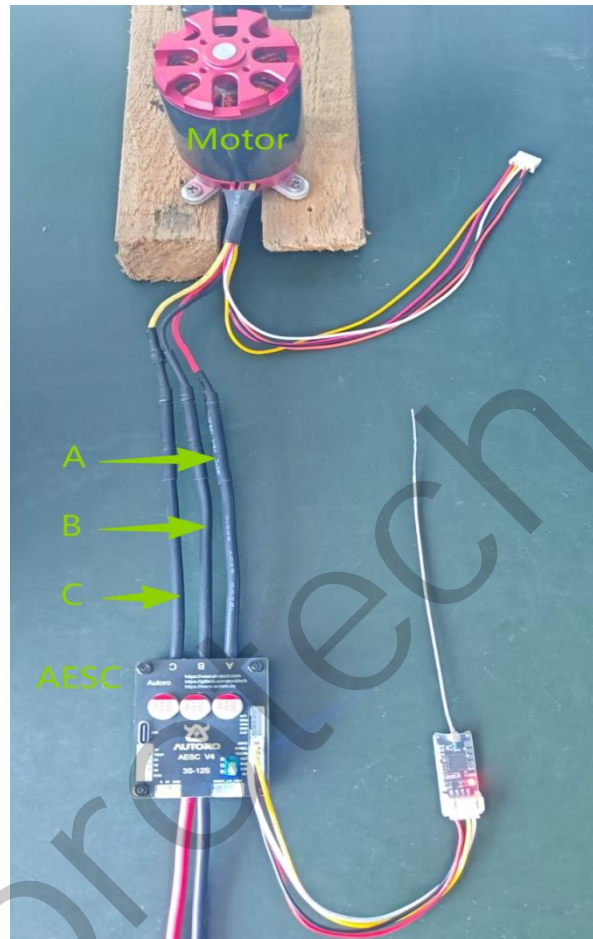


Figure 3: Motor phase wires connected to AESC terminals

c. Verify Power System Compatibility

- **Before connecting the battery**, it is **critical** to ensure your power source (battery) is compatible with both your AESC and your motor.
- **Voltage Check:** Confirm that your battery's **nominal voltage** and **fully-charged voltage** are within the **input voltage range** specified in your AESC's user manual. Exceeding the maximum voltage will permanently destroy the controller.
- **Current Check:** Ensure your battery can supply enough **continuous current** to meet the demands of your motor and AESC setup. The battery's current output (in Amps) should be greater than the **maximum current** you plan to draw.
- **Motor Compatibility:** The power system must be able to drive your specific motor at its required voltage and current.

d. Connect battery to AESC

- **Warning: Observe Polarity!** Connect the battery's **positive (+)** wire to the AESC's **polarity+** input and the **negative (-)** wire to the **polarity-** input. Reverse polarity will instantly destroy the controller.

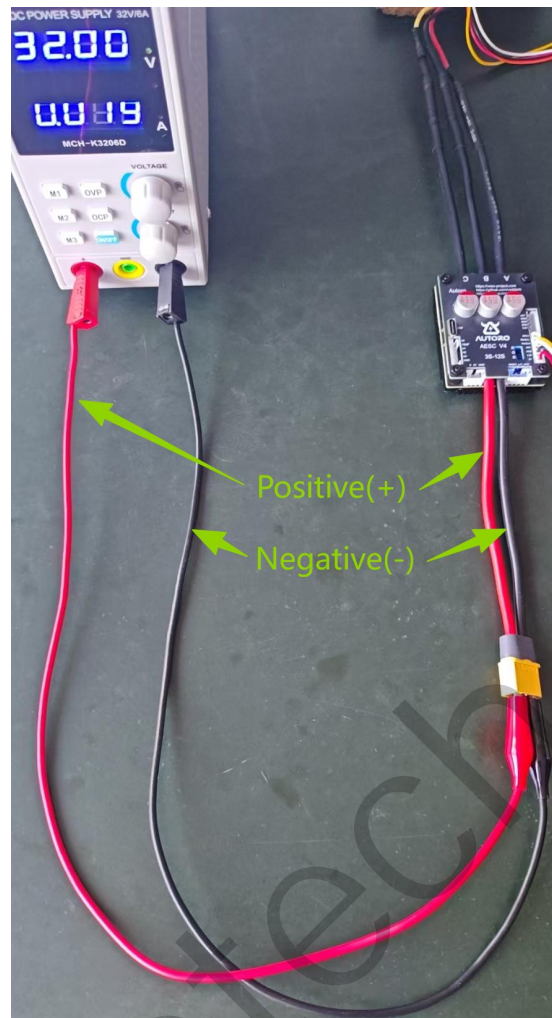


Figure 3: Correct power supply polarity connection

e. Connect Bluetooth module

Warning: ALWAYS verify the Bluetooth module's required input voltage (typically 3.3V or 5V) before connecting.

- Connect the module's **TX** pin to the AESC's **RX** pin.
- Connect the module's **RX** pin to the AESC's **TX** pin.
- Connect the module's **VCC** (or **3.3V**) pin to the AESC's **3.3V/5V** power output pin.
- Connect the module's **GND** pin to the AESC's **GND** pin.

3.3.Final connection check

- Visually double-check all connections for correctness and secureness, especially battery polarity.
- Ensure there are no loose wires or potential short circuits.

3.4.Apply power

- Once all connections are confirmed correct, connect the battery to power up the AESC.
- You should see status LEDs light up on both the **controller** and the **Bluetooth module** when powered on.

4. Bluetooth Communication

- a. Turn on the Bluetooth function on the mobile phone.

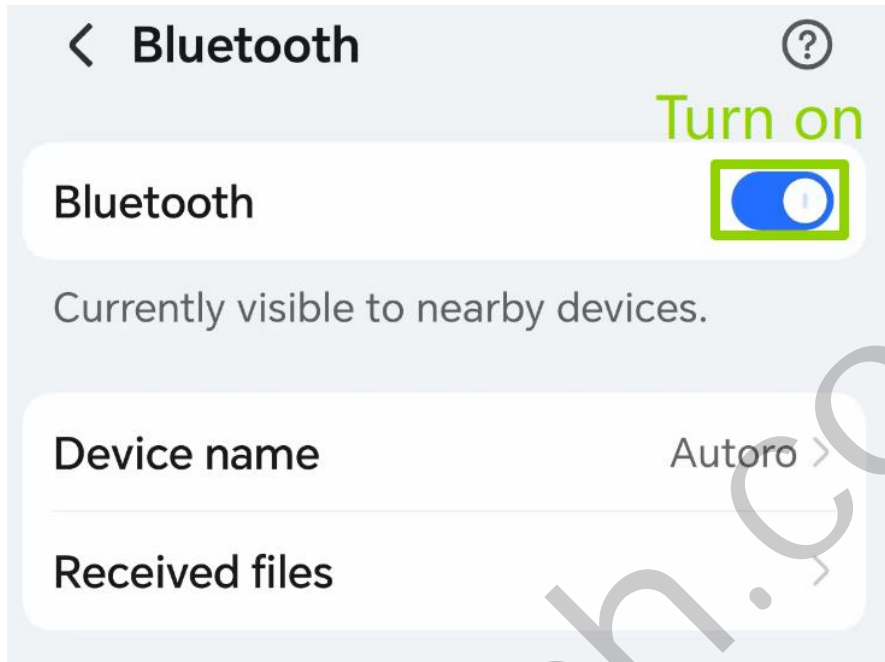


Figure 4: Turn on Bluetooth

- b. Run app and scan BLE.

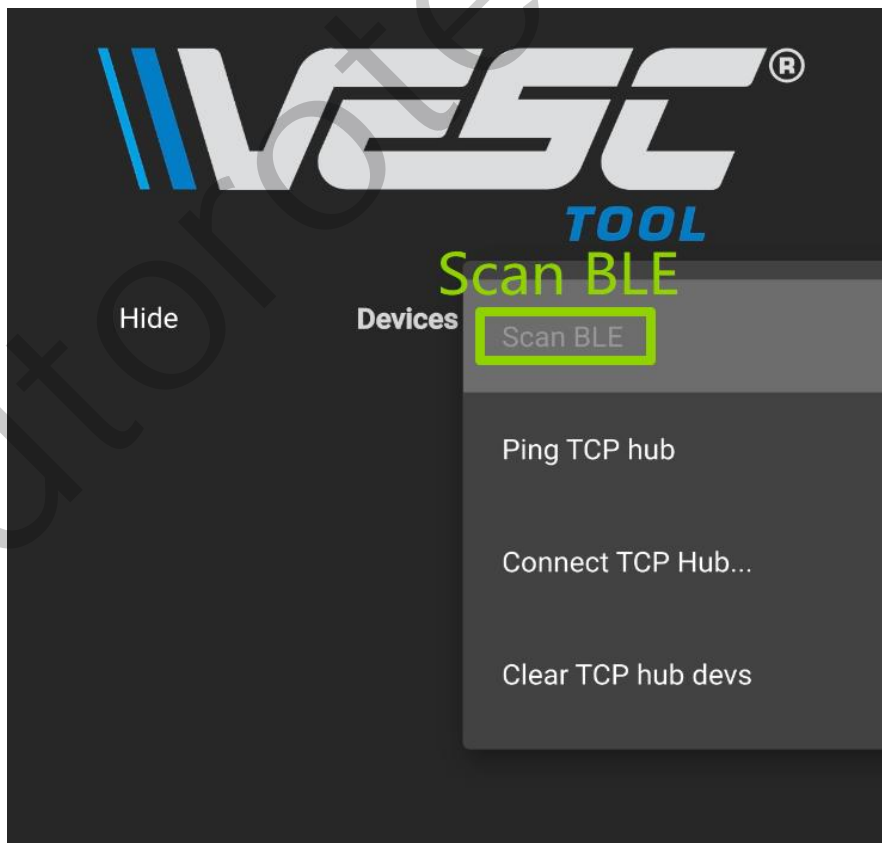


Figure 5: Scan BLE

c. Connect Bluetooth.

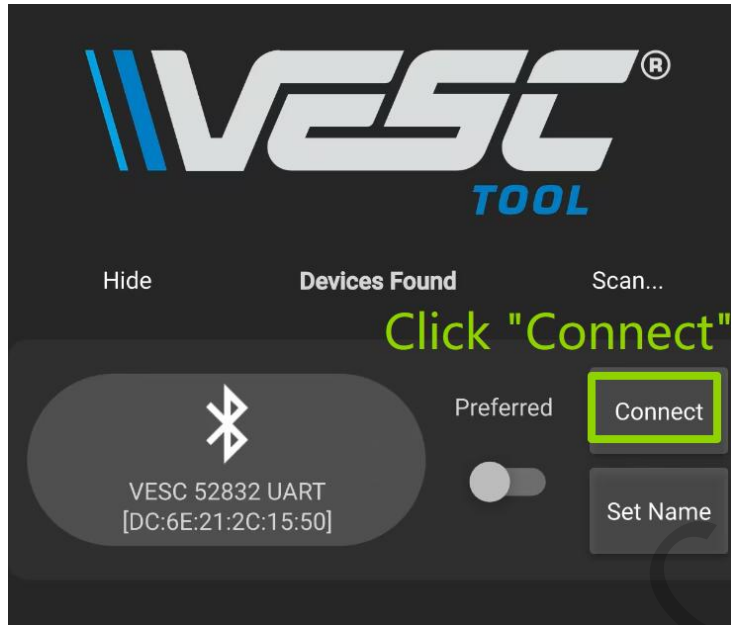


Figure 6: Connect

d. Bluetooth connected successfully.

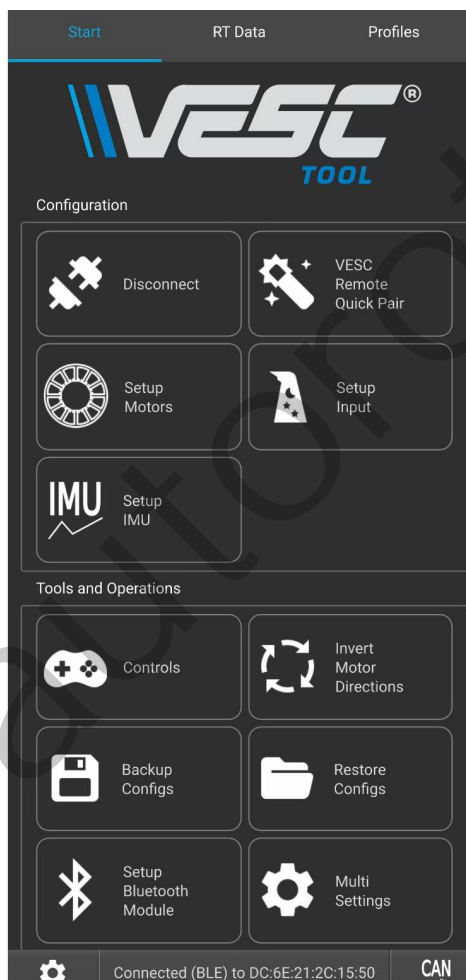


Figure 7: VESC Tool

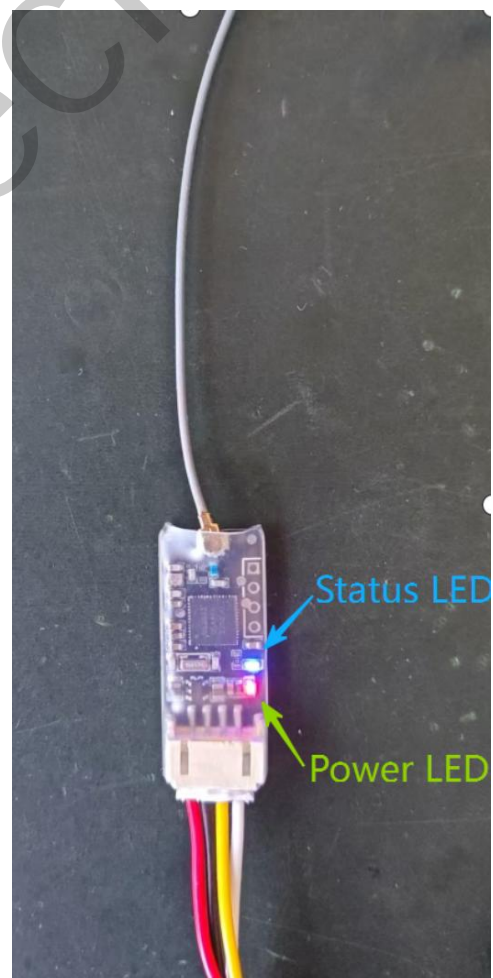


Figure 8: Power LED and status LED

e. Function introduction.



Figure 9: Start screen

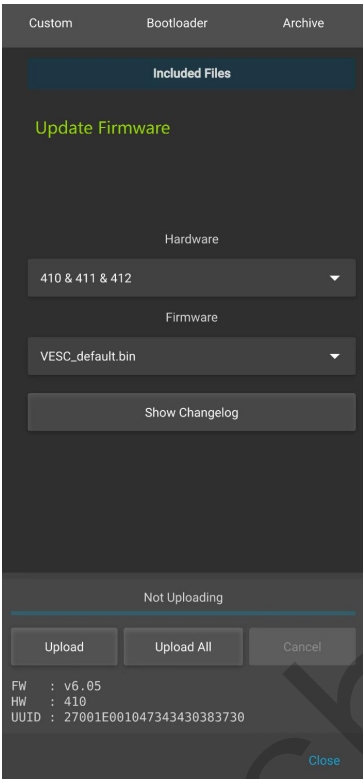


Figure 10: Update firmware



Figure 11: Real-time data

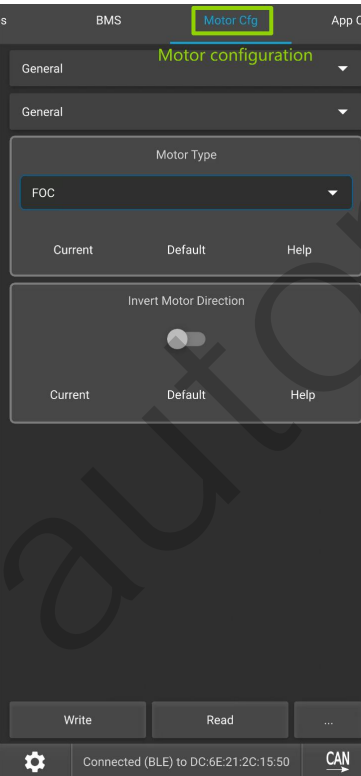


Figure 12: Motor configuration

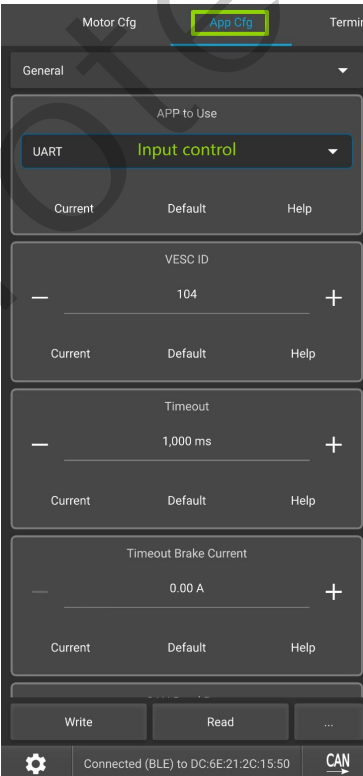


Figure 13: APP configuration

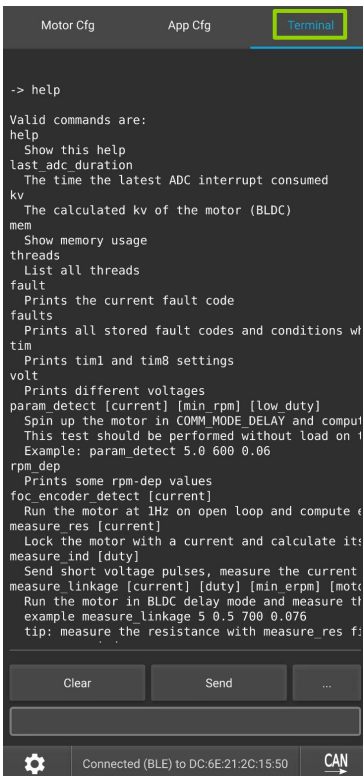


Figure 14: Terminal

5. Troubleshooting

5.1. Bluetooth Module Not Discoverable

- **Problem:** The phone cannot scan or find the Bluetooth module during pairing.
- **Solution:**
 - Ensure the Bluetooth module is properly powered (correct voltage).
 - Verify secure pin connections (**TX→RX, RX→TX, GND**).
 - Confirm the module is in discoverable/pairing mode (check indicator light status).
 - Restart the phone's Bluetooth or reboot the phone.

5.2. VESC Tool Connection Issues

- **Problem:** VESC Tool fails to connect or disconnects immediately after connection.
- **Solution:**
 - Check serial wiring between the module and VESC (**TX/RX** must be cross-connected).
 - Ensure stable power supply to the AESC motor controller.

5.3. Motor Control Failure

- **Problem:** The motor does not respond to control commands via VESC Tool.
- **Solution:**
 - Check firm connection of motor three-phase wires to the AESC.
 - Validate motor parameter configuration in VESC Tool and ensure successful motor detection/calibration.
 - Confirm the AESC's power voltage is sufficient to drive the motor.

5.4. Unstable Bluetooth Connection

- **Problem:** The Bluetooth connection is unstable and frequently drops.
- **Solution:**
 - Ensure the distance between module and device is within 15 meters and avoid obstructions.
 - Check for strong 2.4GHz wireless interference (e.g., multiple Wi-Fi routers).

6. Contact & Support

For technical support, contact : Autoro.service@hotmail.com

Website : <https://www.autorotech.com>