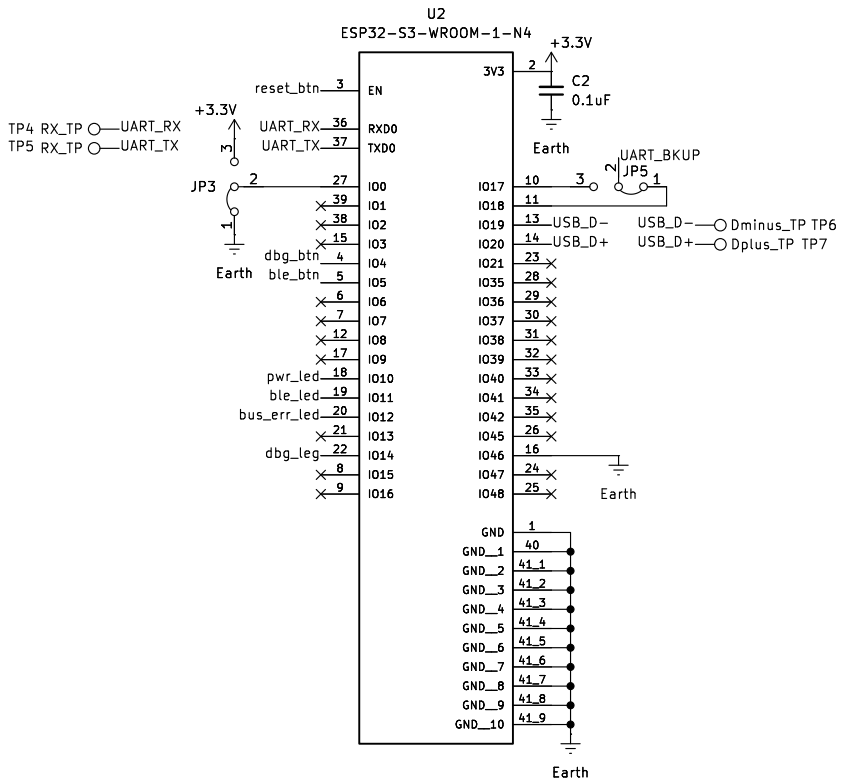
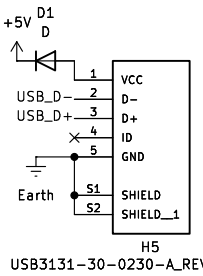
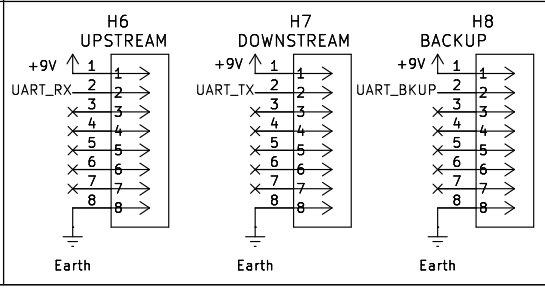
ESP32 Module:
This microcontroller includes the bluetooth controller and antenna.



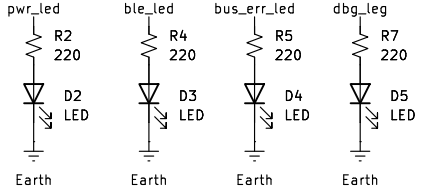
Micro-USB Connector:
This header can be used to communicate with an external device for programming. When jumper 1 is used to pull GPIO0 low, files can be written directly to flash or SRAM.



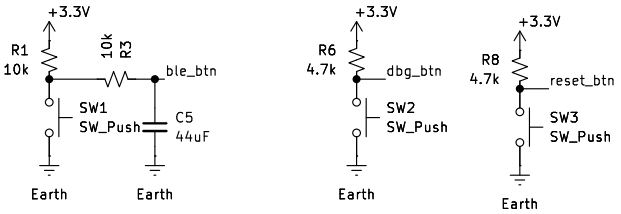
UART Bus Headers:
Unregulated power from the battery, common ground, and UART communication is relayed through these headers.



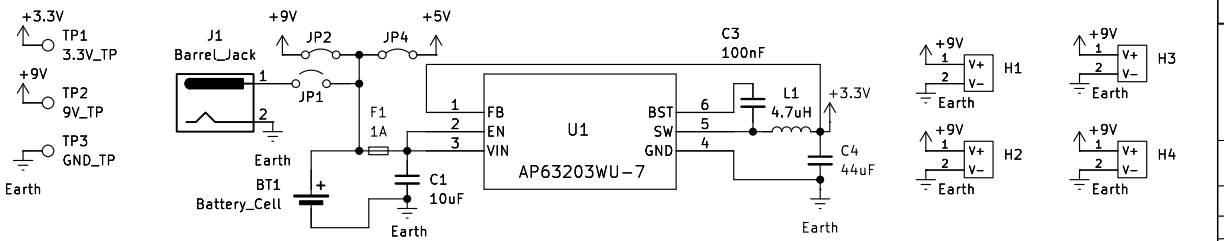
Status Lights:
Four status lights are provided for easy operation.
The green Power-On LED triggers when the ESP32 is succesfully powered on and running.
The blue Bluetooth Status LED will be solidly lit when a bluetooth connection with a remote is established, flashing when bluetooth is active but no remote paired, and off when bluetooth is not enabled.
The red Bus Error LED will light up when the system recieves a malformed message packet, or does not recieve any packets at all in a given time frame. This indicator allows simple identification of a faulty node in the bus network.
The yellow Debug LED's function can be defined in software to assist in debugging.



Control Buttons:
Two buttons are provided for debugging purposes, being the reset and debug buttons. Pressing the reset button will pull the ESP32's ENABLE pin low, rebooting the microcontroller. The function of the debug button can be controlled in software.
The BLE button is intended for use by an end-operator, and features an RC filter to avoid accidental triggering. This button allows a user to enable or disable the bluetooth radio to conserve power when it is not needed, while still keeping the system functional to relay messages over the UART bus.



3.3V Power Regulator:
9V input will be fed from the onboard battery pack, with an optional barrel jack for testing purposes. 4 high-current JST headers are provided for sending power to motor systems.



No battery disconnect jumper is provided as the battery itself can be disconnected from it's header.

Neel Garde – Team 210

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Title: EGR314 Subsystem A3

Size: A4	Date: 2026-03-08	**Rev: 1**
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