

Objective:

Design an electronics system for a thrust stand to measure parameters such as current, voltage, RPM, temperature, and thrust data for a brushless motor. Use an ESP32 MCU for control and data logging. The power supply should be connected through a battery ranging from 4S to 6S LiPo battery.

The signal interface through the MCU should be there in ESC.

Requirements:

1. **Battery Voltage:** Up to 60V
2. **Current Rating:** Up to 60A
3. **Thrust Data:** Up to 5 KG (HX711 pressure sensor with Load Cell)
4. **RPM Range Capability:** Up to 100,000 RPM (IR photo diode sensor)
5. **Current Sensor:** Must support up to 60A (ACS 712 module)
6. **Temperature Sensor:** Up to 150 °C

Part Selection:

Select parts that best fit the above parameters. Use an ESP32 MCU for control and data logging.

Deliverables:

1. **Architecture/Block Diagram:**
 - Create a block diagram showing the overall system architecture.
 - Include the battery, ESP32 MCU, pressure sensor, voltage sensor, current sensor, RPM sensor, temperature sensor, display, and data logging components. (You are free to select any sensor which can provide the requested data and is possible to interface with ESP32.)
2. **Schematic Design:**
 - Develop a schematic design illustrating the interconnections between the ESP32 MCU and the various sensors and components.
 - Ensure all connections are clear and labelled appropriately.
 - Submit the schematic in **PDF** version.
3. **PCB Layout Design:**
 - Design a PCB layout to connect all the components on a single board.

Deadline: 24 hours.

Note: - Submit whatever you can do in the given timeline.