

# Charging Subsystem - Technical Documentation

This folder contains all necessary documentation, wiring diagrams, and CAD files to understand, assemble, and operate the charging subsystem for the AME 504 security drone. The materials are organized into the following folders:

## Assembly Instructions

This folder includes materials to assist with the physical assembly of the 4S1P battery pack and its integration with the charging system:

- **DIY Battery Assembly Manual (PDF)**  
Step-by-step guide for assembling the 4S1P battery pack, including soldering, wiring, and charge control setup with the iSDT 608AC charger.
- **Wiring Diagram (PDF)**  
Detailed schematic showing the connections between the battery pack, XT60 connector, Pogo Pin connectors, and iSDT 608AC charger for autonomous charging and SoC monitoring.
- **iSDT 608AC Charger Manual (PDF)**  
Official manual for the iSDT 608AC charger, including setup instructions and safety guidelines for use as both charger and BMS.

## CAD Files

This folder contains the 3D CAD models needed for manufacturing or modification of charging subsystem components:

- **STP Files for Pogo Pin Fixtures**  
Complete set of STEP files for the 2-pin and 5-pin Pogo Pin fixtures mounted on the docking station, suitable for 3D printing.
- **STP Files for Battery Mount**  
STEP file for the CAD battery mount used to secure the 4S1P battery pack on the drone, designed for integration with the airframe.

## Calculations and Specifications

This folder contains supporting documentation for the design and operation of the charging subsystem:

- **Battery Sizing Calculations (PDF)**  
Detailed calculations for sizing the 4S1P battery pack, including flight time estimates, thrust-to-weight ratios, and charging time, as referenced in Appendix C of the project report.
- **Samsung 50S 21700 Datasheet (PDF)**  
Manufacturer's datasheet for the Samsung 50S 21700 Li-Ion cells, including specifications for capacity (5000mAh), max discharge (25A), and safety guidelines.