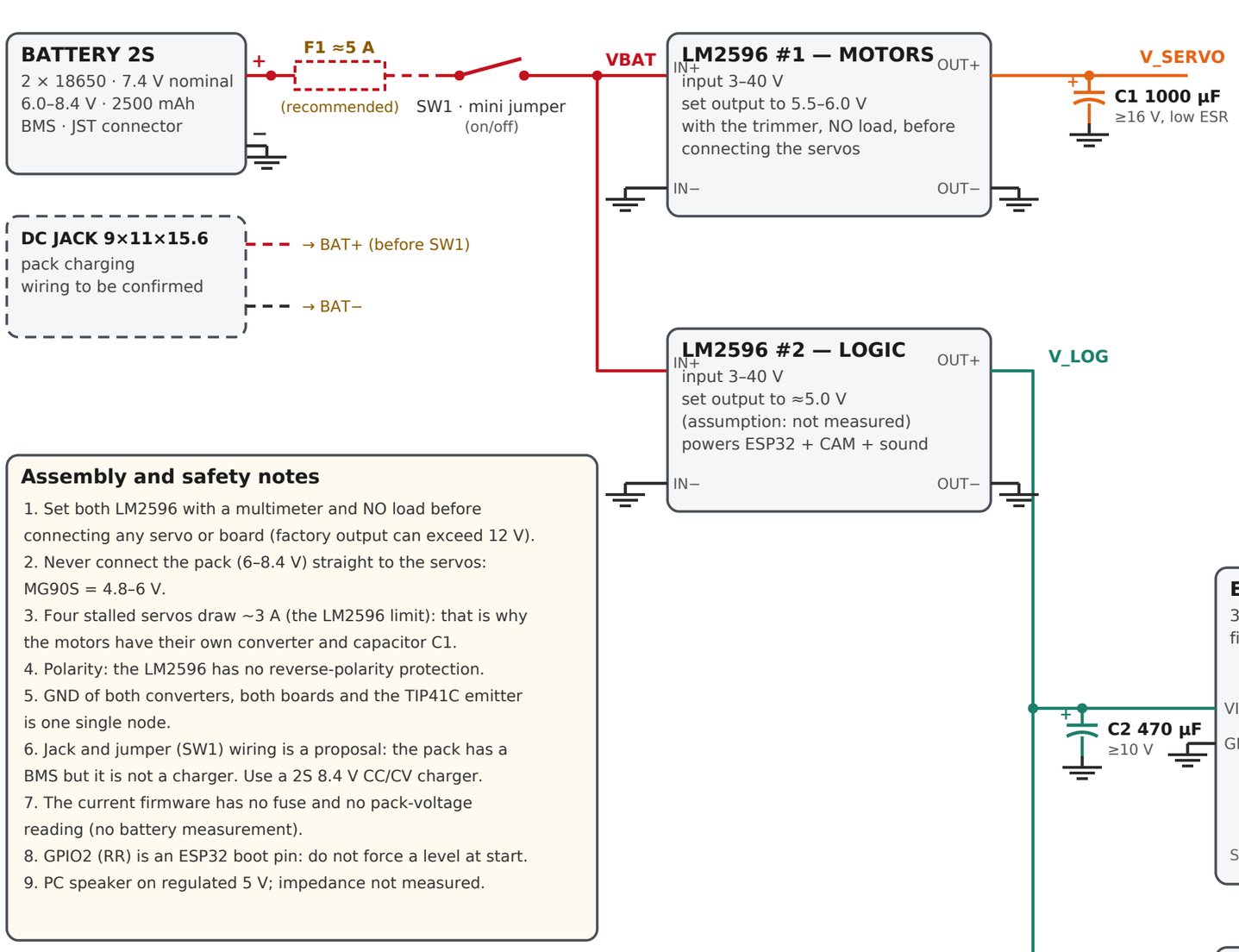
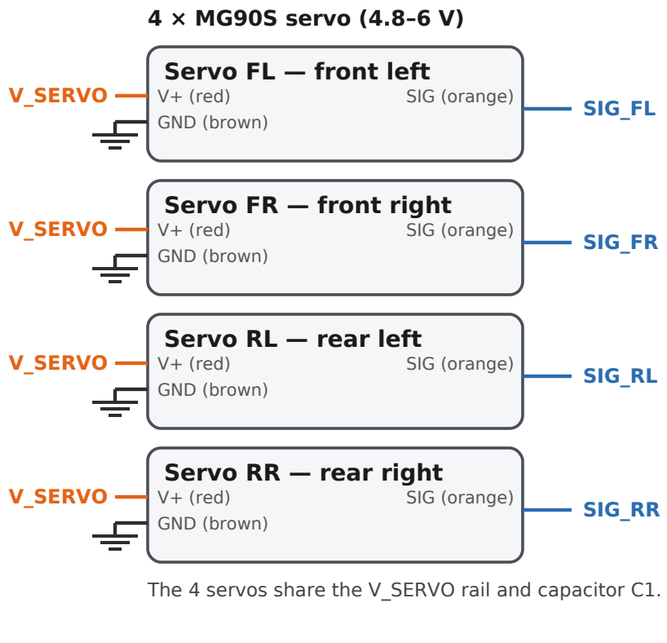
K9 "Tobias" MK5 — Electrical schematic

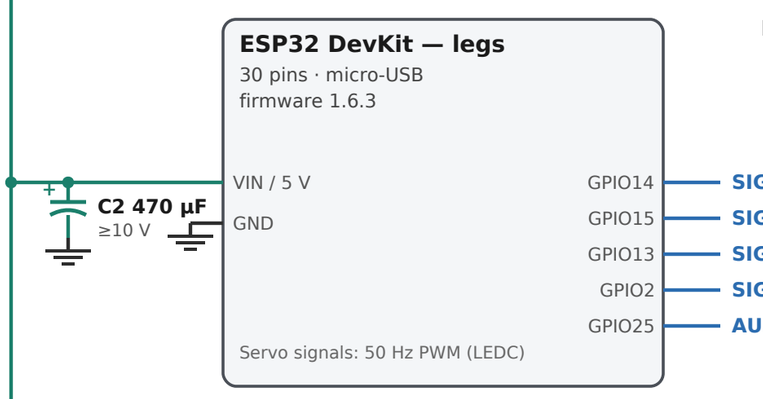
2S 18650 pack → 2 LM2596 converters (motors and logic) → 4 × MG90S, ESP32 DevKit (legs), ESP32-CAM and the speaker circuit (GPIO25)

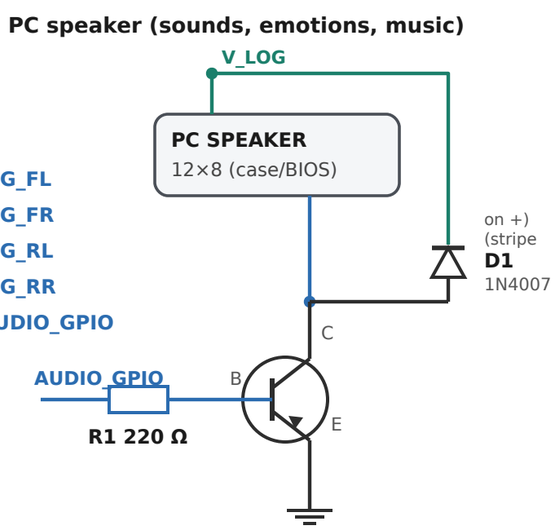
All GNDs are the same node (common GND of both converters). Equal net names are connected together. Dashed line = proposal / connection to be confirmed on the robot.





The 4 servos share the V_SERVO rail and capacitor C1.





Assembly and safety notes

1. Set both LM2596 with a multimeter and NO load before connecting any servo or board (factory output can exceed 12 V).
2. Never connect the pack (6–8.4 V) straight to the servos: MG90S = 4.8–6 V.
3. Four stalled servos draw ~3 A (the LM2596 limit): that is why the motors have their own converter and capacitor C1.
4. Polarity: the LM2596 has no reverse-polarity protection.
5. GND of both converters, both boards and the TIP41C emitter is one single node.
6. Jack and jumper (SW1) wiring is a proposal: the pack has a BMS but it is not a charger. Use a 2S 8.4 V CC/CV charger.
7. The current firmware has no fuse and no pack-voltage reading (no battery measurement).
8. GPIO2 (RR) is an ESP32 boot pin: do not force a level at start.
9. PC speaker on regulated 5 V; impedance not measured.

Legend

- VBAT (pack, 6.0–8.4 V)
- V_SERVO (≈5.5–6.0 V, motors)
- V_LOG (≈5 V, logic and sound)
- signals (GPIO)
- – – – proposal / to be confirmed
- ⏚ = common GND

Reference: objects of the model MK5/Blender/MK5_ATUAL.blend (wires, LM1/LM2, CAP_*, Q1_TIP41C, R1_base_220R, D1_1N4007) and docs/AUDIO.md, docs/BATTERY.md.

Legs firmware pins (k9v2-1_firmware/src/main.cpp): FL=14, FR=15, RL=13, RR=2; sound: GPIO25 (LEDC channel 6).

Documentation schematic: not a PCB design. Confirm values and connections on the real hardware before powering up.