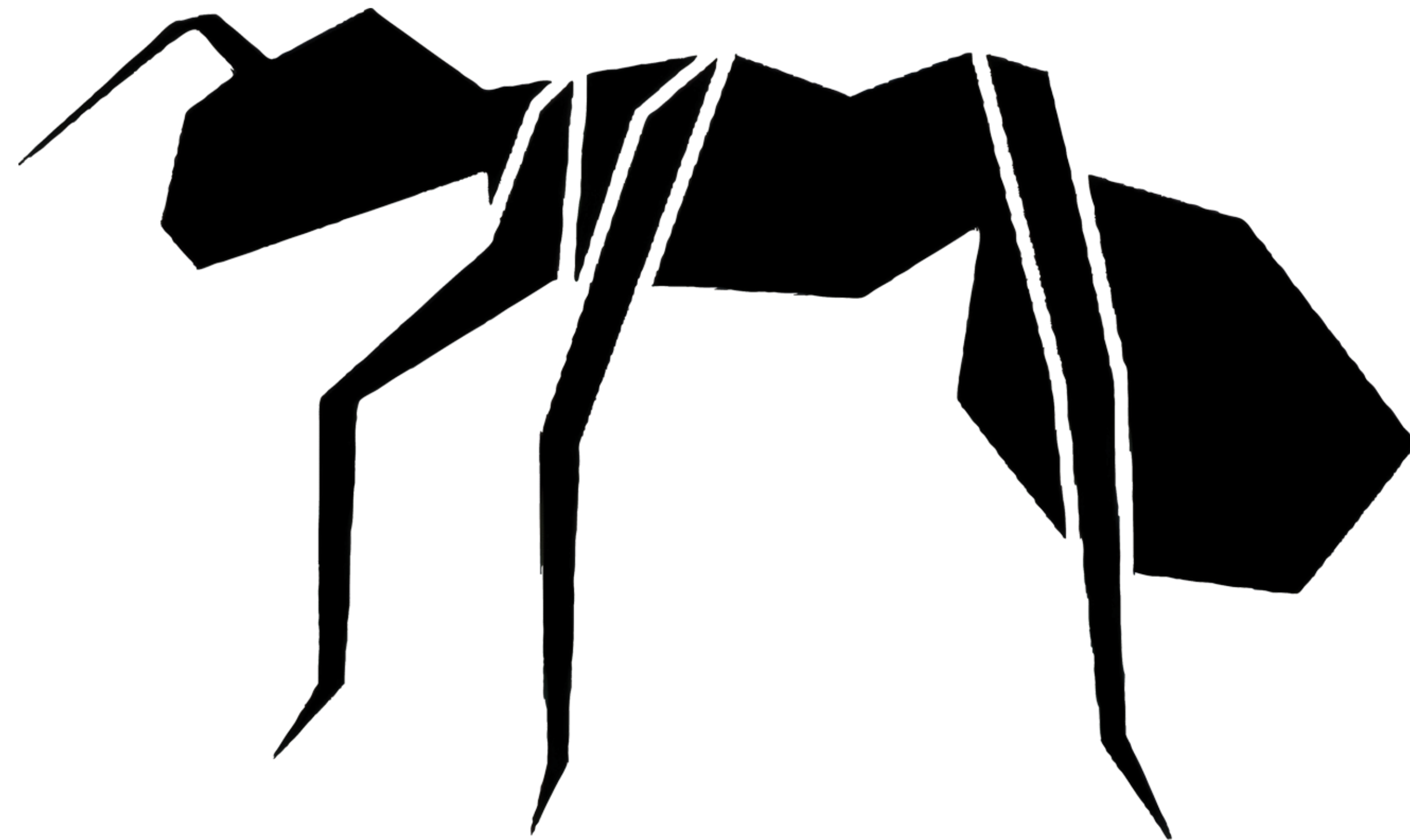


ANTS Robotics. System Electrical Architecture.

Autonomous Mobile Robot Revision B



ANTS ROBOTICS

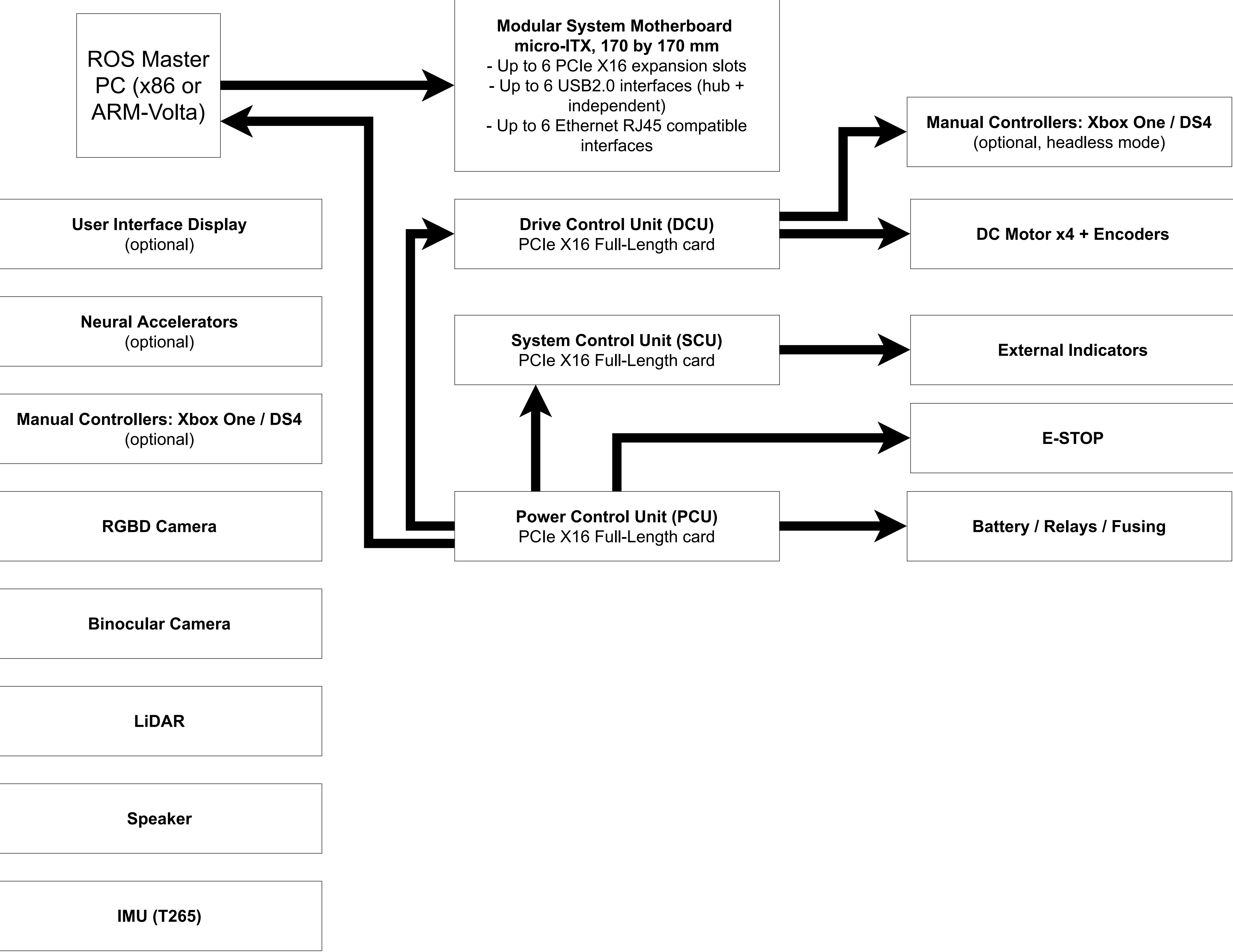
Revision History:

Revision A. - September 2019 - Developed by Dmitrii Gusev (Lead Electrical Engineer) & Ibrahim Helal (Lead Robotics Engineer)

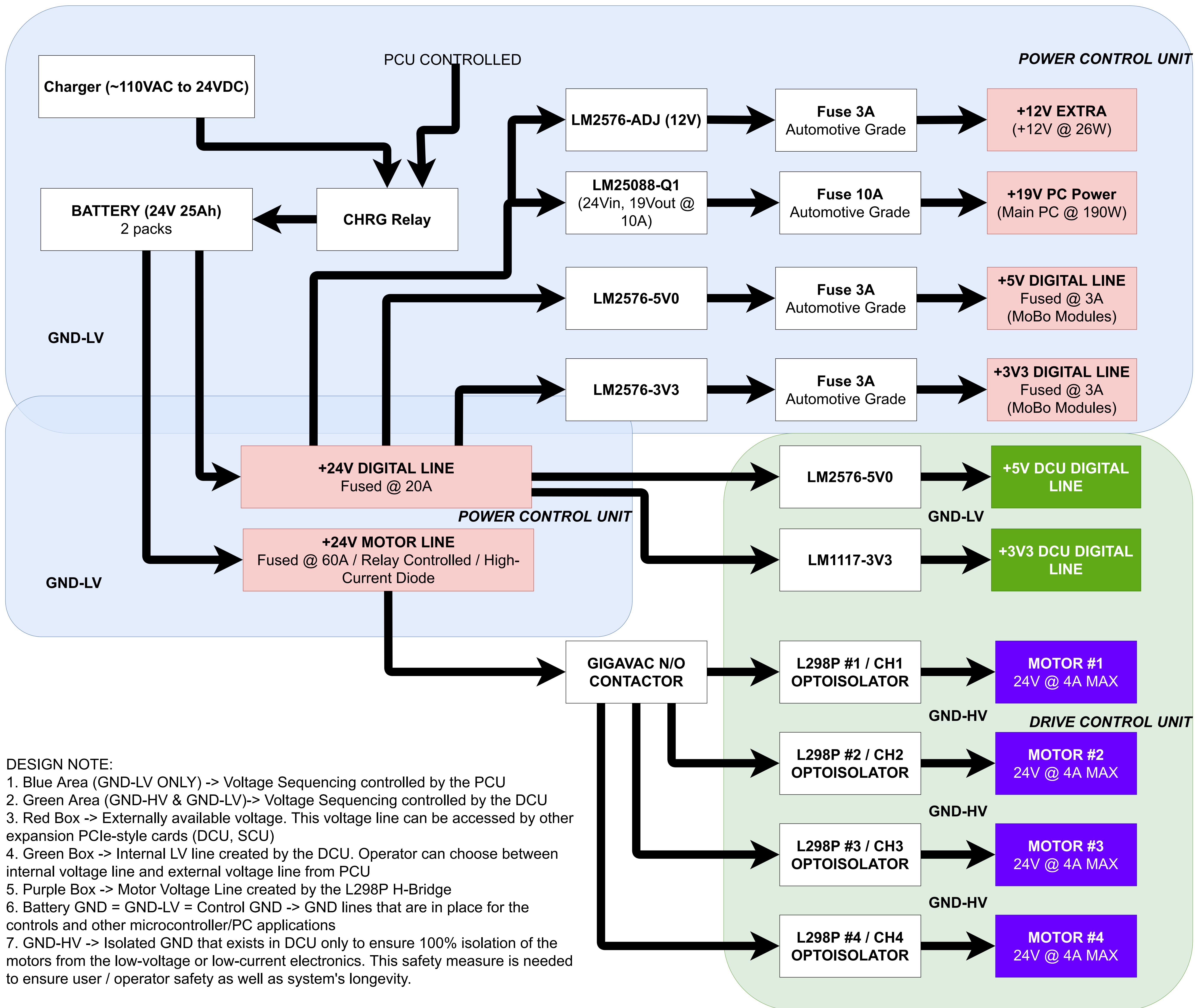
Revision B. - January 2021 - Developed by Dmitrii Gusev (Lead Electrical Engineer)

ANTS Robotics Electrical Architecture. GENERAL.
Original: Rev A. September 2019.
Rev B. January 2021.

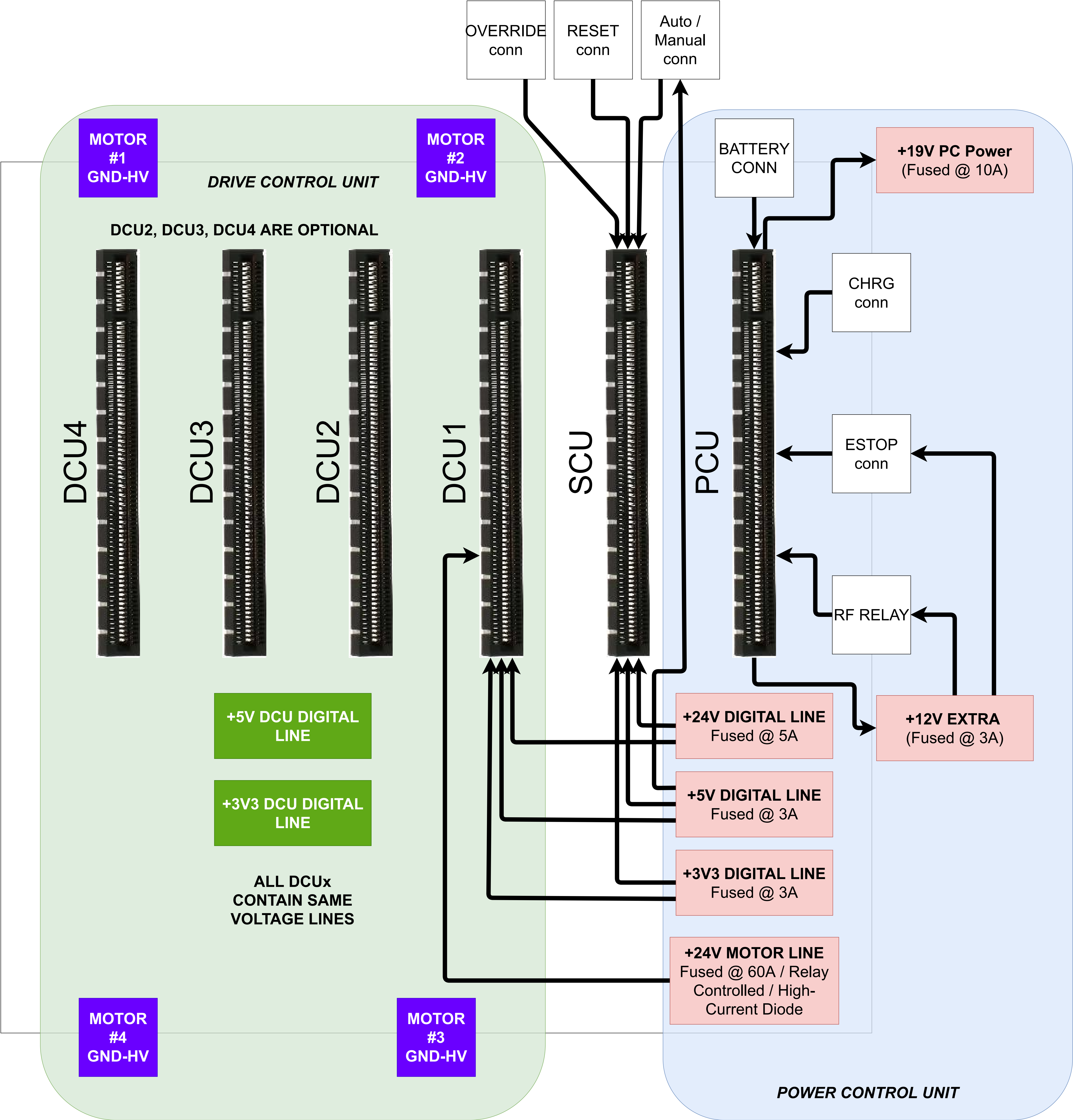
LAYER #1 (SOFTWARE ONLY) LAYER #2 (FIRMWARE / HARDWARE) LAYER #3 (HARDWARE)



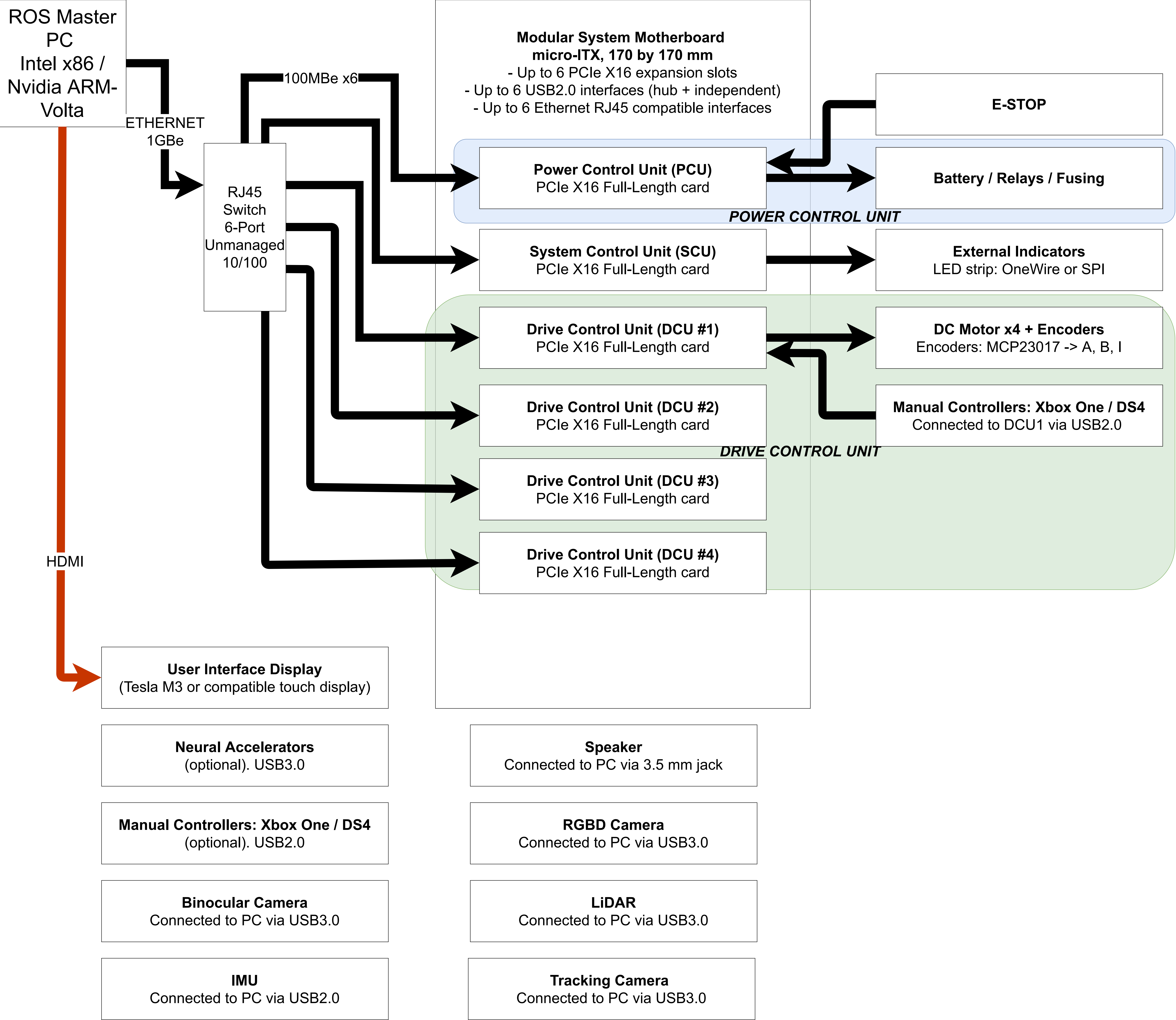
ANTS Robotics Electrical Architecture. Voltage Sequencing and Power Architecture.
Rev B. February 2021.



ANTS Robotics Electrical Architecture. Motherboard Voltage Layout.
Rev B. February 2021.

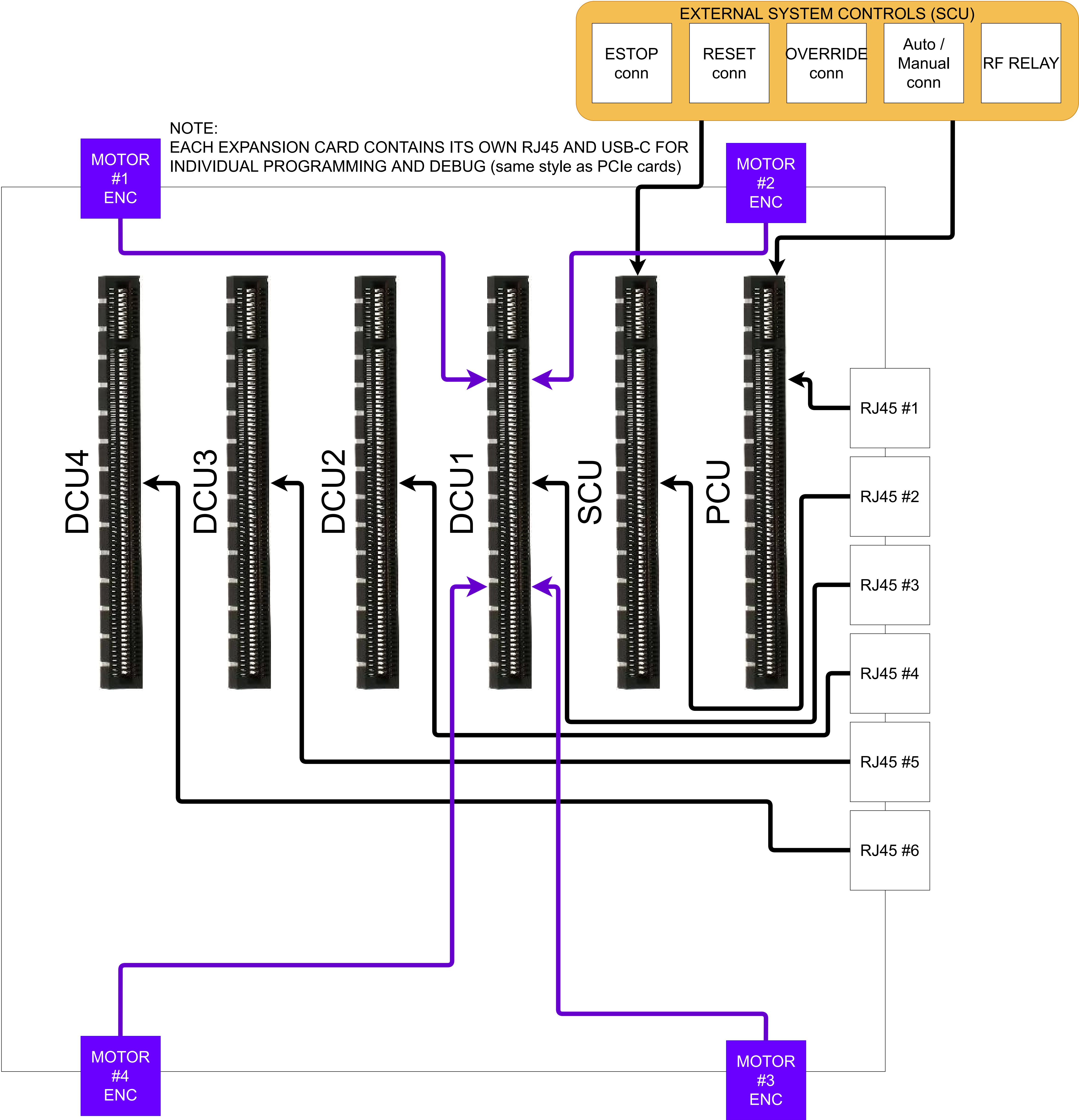


ANTS Robotics Electrical Architecture. Overall Digital Layout.
Rev B. January 2021.

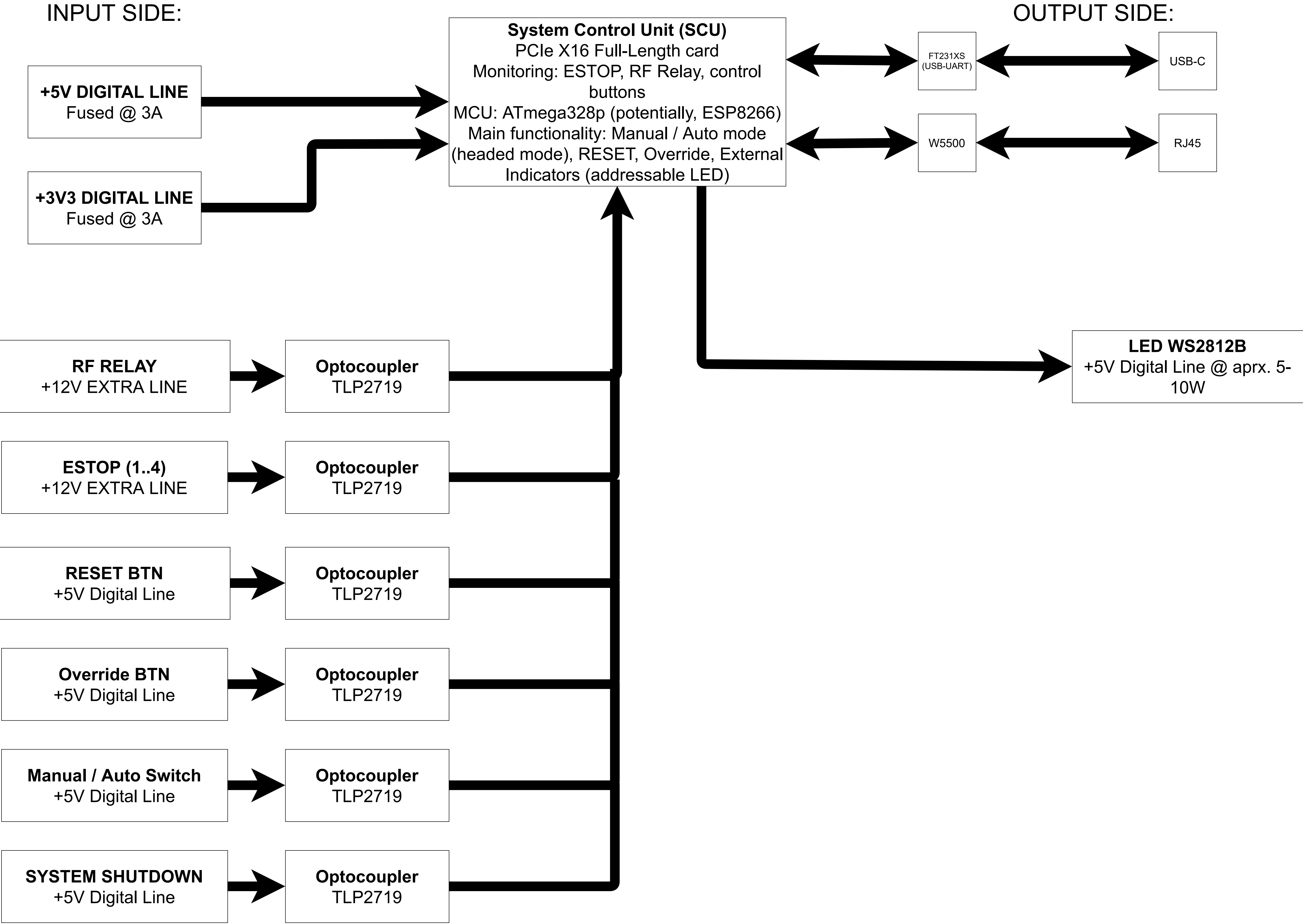


ANTS Robotics Electrical Architecture. Motherboard Digital Layout..

Rev B. February 2021.



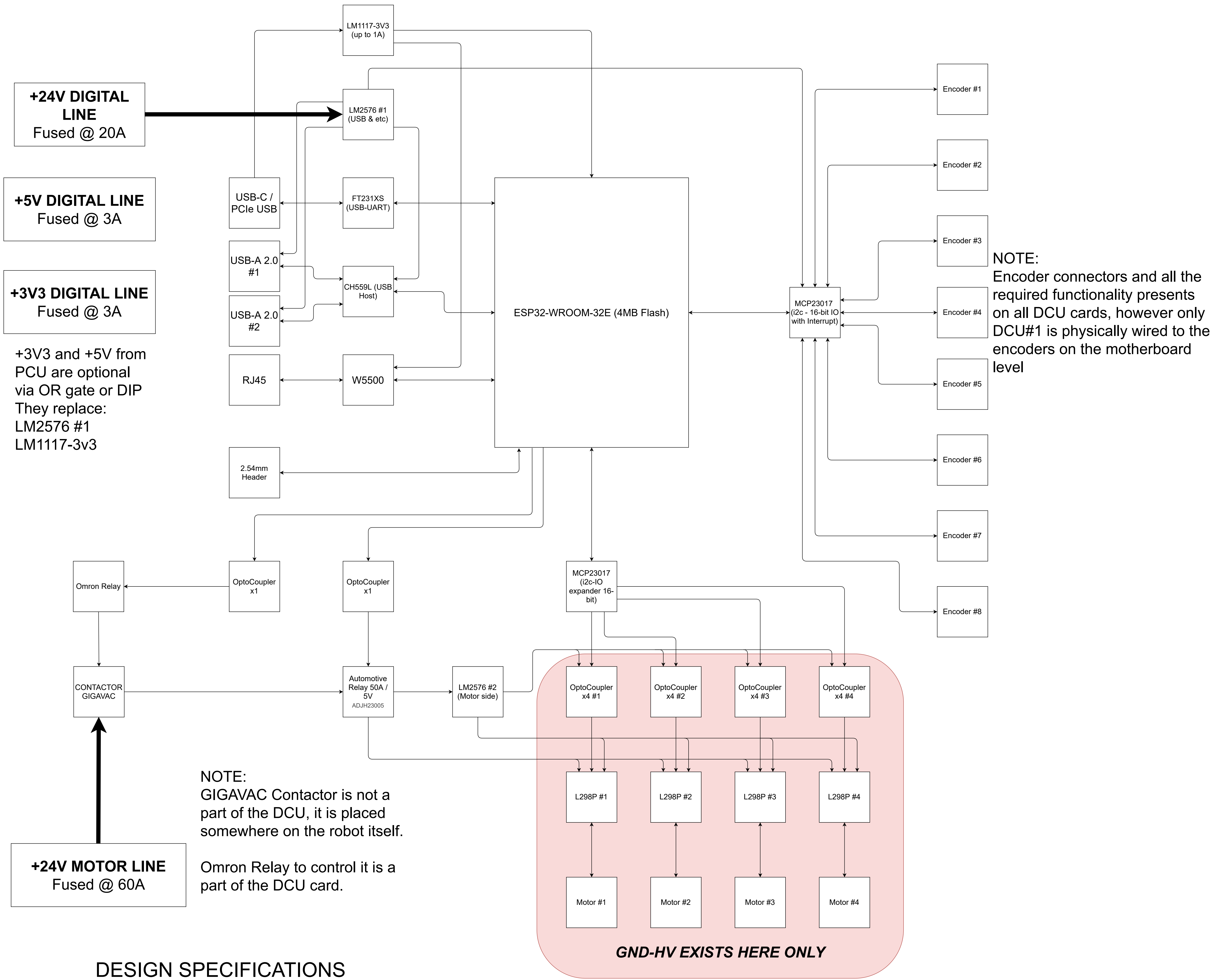
ANTS Robotics Electrical Architecture. System Control Unit (SCU).
Original: Rev A. September 2019.
Rev B. February 2021.



ANTS Robotics Electrical Architecture. Drive Control Unit (DCU).

Original: Rev A. September 2019.

Rev B. February 2021.



DESIGN SPECIFICATIONS

1. Supports between 12V and 36V input, nominal voltage @ 24V
2. ESP32 can be powered originally only via USB-C or PCIe, power via 24V is possible if jumper applied
3. ESP32 and LV systems have separate ground GND_LV
4. HV systems have separate ground GND_HV
5. GND-LV and GND-HV are not connected together except for the L298P side via 5 mOhm shunt resistor or via low power fuse to ensure gnd isolation
6. Powering Sequence: ESP32 (Type-C) -> 5V_LOW (on-board circuits that require 5V with digital signals) -> 5V_HIGH (on-board circuits that require high-power 5V) & 24V Main power to Motors