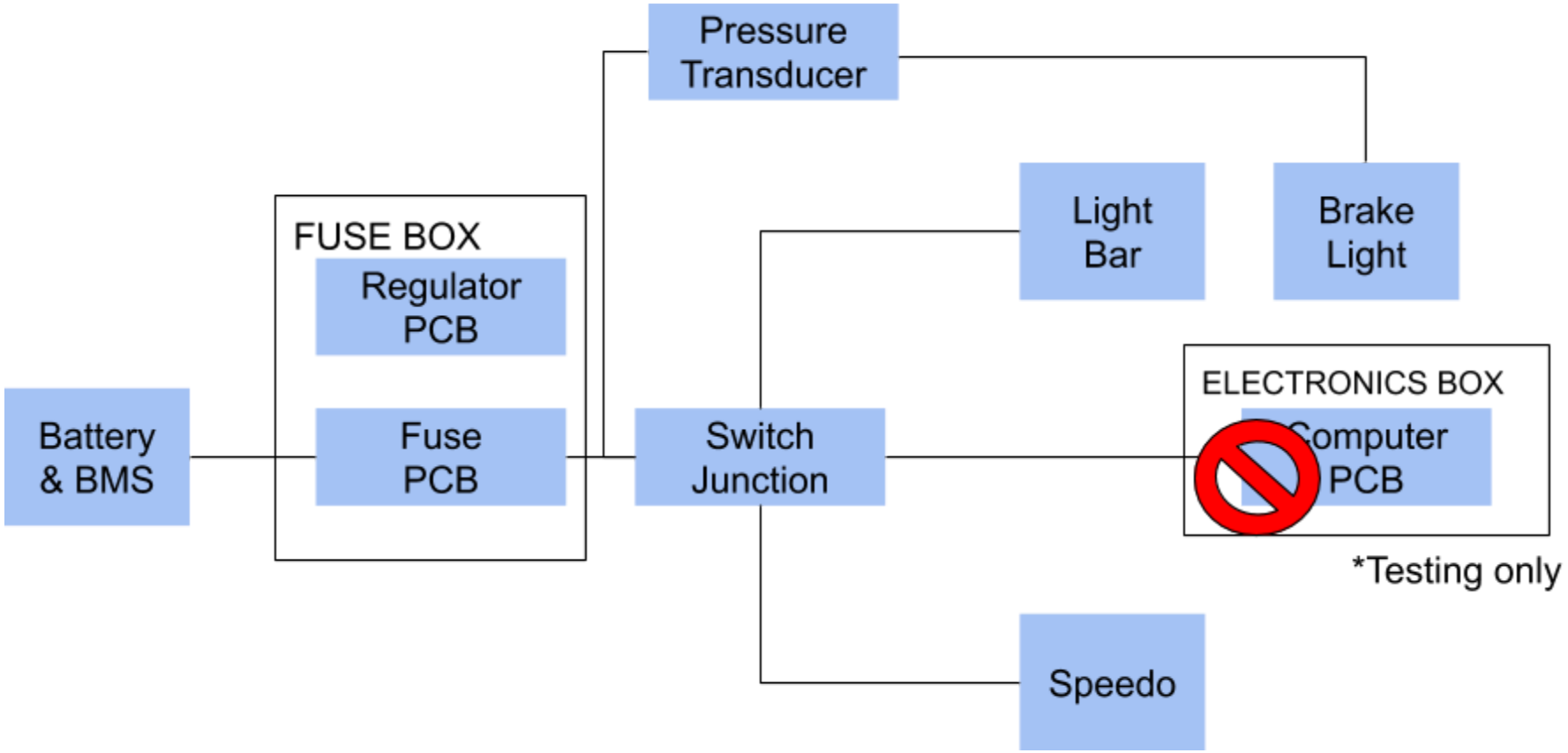
Electrical System Overview 2019



Electrical Features

- **Speedometer** displays speed, rpm, battery, light, and engine to driver
- **Lighting control** via Switch junction for overhead and pedal lights
- **Fuse Box** for short circuit and overcurrent protection
- **Voice Comms** from pit crew to driver via radio handset.
- Optional RF **data acquisition module** for non competition testing
- 12V 120Wh 10Ah **lead acid battery.**

Tech Inspection

Item #	Rule Section					Rule Excerpt
4	Article 10 - Electrical System	B.10.1 - Power Sources	B.10.1.1 - Batteries	B.10.1.1.3 - Non-Rechargeable Batteries	Batteries not recharged by an engine alternator shall only power safety appliances (brake light, reverse light, reverse alarm). Batteries not recharged by an engine alternator shall not power any control or actuation function in the drivetrain, steering, or suspension systems. Any battery used for safety appliances (brake light, reverse light, reverse alarm) shall have sufficient electrical capacity to last the entire length of the endurance event.	**No alternator therefore this guideline is followed by only powering brake light after proper short circuit and overcurrent protection through fusing. Electrical team considers instrument cluster a safety appliance as it provides critical safety info to the driver such as speed, engine rpm, and battery warning. E.G. a case where the speedometer would notify driver of a low battery to ensure brake light remains lit or when engine conditions are abnormal. Light bar is also justfiable for low light conditions.** **Vbatt = 12V 120Wh therefore 10Ah Ibrake = 650mA typical, Ispeedo = 450mA Conservative** **So typical max current draw during typical operation even when assuming brake was on for 100% of time is 1.1A** **Runtime = (10 Ah / 12.1 W) * 0.7 SF = 8.33 hours.**

8	Article 10 - Electrical System	B.10.2 - Wiring and Connectors	-	-	All vehicle wiring and connectors shall be cleanly and neatly installed. Wiring shall be routed away from sources of excessive heat, abrasion, chafing, and possible short circuit. Wiring shall be installed and routed such that it does not become a hazard to cockpit egress.	**Splitloom used to isolate wires from the elements and abrasion. Wiring harness secured and joined through zip ties, heatshrink, electrical tape. Connections made through crimped connectors or linesmans splice to ensure reliability**

26	Article 10 - Electrical System	B.10.7 - Communication Systems	-	-	Teams are permitted to use radio-frequency (RF) communications systems. Any team using RF systems shall comply with federal, state, and local regulations based on the location of the event. At no point may a team's RF systems cause harmful interference to the voice or data systems in service of competition officials or emergency responders.	**Compliant, Selected radio uses free, open bands to communicate with driver**

https://docs.google.com/document/d/12MSLyMIVQcZubtn_vvYEd0rTBAApoDCMKH1TxJviM4o/edit