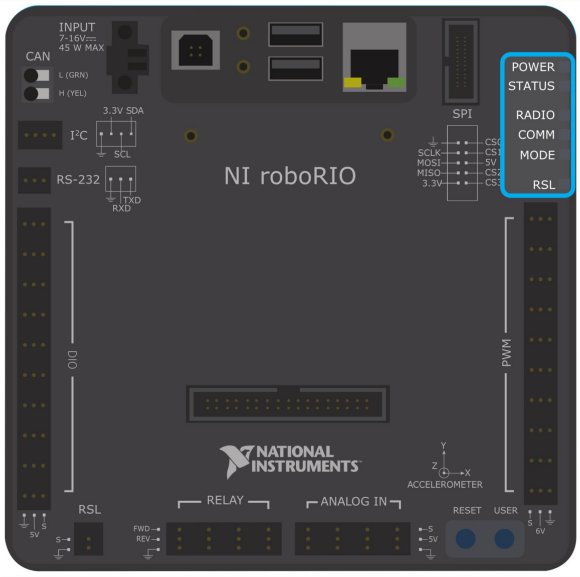
9076 Electrical Checklist

Go through this ENTIRE checklist before powering on the robot
Have 1 other person check over your work if its new and your team leader before powering on

CHECK (BEFORE TURNING ON)	Correct
There are no frays on the power wires	
There are no frays in the can wires and wires connected to the RoboRIO	
Power wires on PDH are associated with the correct colours (red to red, black to black)	
All breakers are in place	
There is no debris near any of the wires	
The correct breakers (sizes) are in place	
The wires are the correct gauges	
There is no battery return (test for it)	
There are no pulled out wires	
No parts of the wire are exposed	
No components are visibly damaged	
The CAN wires are associated correctly in the daisy chain (green to green, yellow to yellow)	
The daisy chain is connected correctly to the PDH and roboRIO	
The radio is connected via ethernet to the power over ethernet or radio power module correctly	
The red wire on the battery is connected to red and the black wire on the battery is connected to black	
The parts are secured to the robot	
The wires are secured to the robot (they are organized and not messy)	
The battery is secured to the robot	
Make sure there is no debris inside ANY of the ports (particularly those in the RoboRIO	

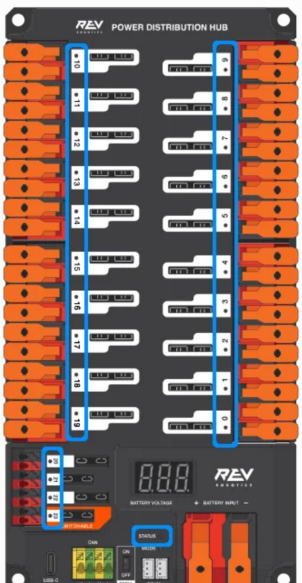
There is no exposed metal receiving power (could cause a short)	
CHECK (AFTER TURNING ON ROBOT)	**Correct**
The lights on the roboRIO turn on and are do not turn red (refer to information online for colours should anything unknown arise)	
The lights on the PDH turn on, there is no clicking noises ***If there are clicking noises and the number resets, turn off IMMEDIATELY, this means the robot is short circuiting***	
The lights on the radio are on and correct	
The lights for the motor controllers are on and correct (if they do not turn on, they are not properly connected or have short circuited, or both)	
The RSL (radio signal light) is on	

RoboRIO signal lights:



Power	Green	Power is good
	Amber	Brownout protection tripped, outputs disabled
	Red	Power fault, check user rails for short circuit
Status	On while the controller is booting, then should turn off	
	2 blinks	Software error, reimage roboRIO
	3 blinks	Safe Mode, restart roboRIO, reimage if not resolved
	4 blinks	Software crashed twice without rebooting, reboot roboRIO, reimage if not resolved
	Constant flash or stays solid on	Unrecoverable error
Radio	Not currently implemented	
Comm	Off	No Communication
	Red Solid	Communication with DS, but no user code running
	Red Blinking	E-stop triggered
	Green Solid	Good communications with DS
Mode	Off	Outputs disabled (robot in Disabled, brown-out, etc.)
	Orange	Autonomous Enabled
	Green	Teleop Enabled
	Red	Test Enabled

PDH signal light (also known as PDH):



PDH Status LED

LED Color	Status
Blue Solid	Device on but no communication established
Green Solid	Main Communication with roboRIO established
Magenta Blinking	Keep Alive Timeout
Solid Cyan	Secondary Heartbeat (Connected to REV Hardware Client)
Orange/Blue Blinking	Low Battery
Orange/Yellow Blinking	CAN Fault
Orange/Cyan Blinking	Hardware Fault
Orange/Red Blinking	Fail Safe
Orange/Magenta Blinking	Device Over Current

Channel LEDs

LED Color	Status
Off	Channel has voltage and is operating as expected
Red Solid	Channel has NO voltage and there is an active fault. Check for tripped or missing circuit breaker / fuse
Red Blinking	Sticky fault on the channel. Check for tripped circuit breaker / fuse.

Spark max motor controllers signal lights:

Operating Mode	Idle Mode	State	Color/Pattern	
Brushed	Brake	No Signal	Blue Blink	
		Valid Signal	Blue Solid	
	Coast	No Signal	Yellow Blink	
		Valid Signal	Yellow Solid	
Brushless	Brake	No Signal	Cyan Blink	
		Valid Signal	Cyan Solid	
	Coast	No Signal	Magenta Blink	
		Valid Signal	Magenta Solid	
Partial Forward	-	-	Green Blink	
Full Forward	-	-	Green Solid	

Partial Reverse	-	-	Red Blink	
Full Reverse	-	-	Red Solid	
Forward Limit	-	-	Green/White Blink	
Reverse Limit	-	-	Red/White Blink	
Firmware Update Mode	-	-	Dark (LED off)	
Fault Conditions				
12V Missing	-	-	Orange/Blue Slow Blink	
Brushless Encoder Error	-	-	Orange/Magenta Slow Blink	
Gate Driver Fault	-	-	Orange/Cyan Slow Blink	
CAN Fault	-	-	Orange/Yellow Slow Blink