

CANcoder



LED Color	Brightness	CAN Bus	Magnet Field Strength
Off	Off		
Yellow/ Green	Bright		
Slow Red Blink	Bright	NO CAN Bus	
Rapid Red Blink	Dim	CAN bus never detected since boot	Magnet is out of range
Rapid Yellow Blink			Magnet not ideal
Rapid Green Blink			Magnet in range
Rapid Red Blink	Bright	CAN bus present	Magnet is out of range
Rapid Yellow Blink			Magnet not ideal
Rapid Green Blink			Magnet in range

Radio

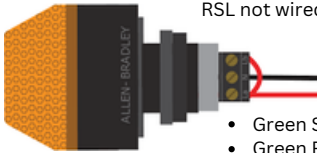
LED	Name
PWR	Power
SYS	System Status
2.4G	2.4GHz Radio
6G	6GHz Radio
RIO	RoboRIO Ethernet Link



- Solid Power, Sys Light OFF
 - Radio is powered on, currently booting
- Solid Power, Blinking SYS light (1 Hz)
 - Radio is powered on, unable to ping 10.xx.yy.4 (Field side IP)
- Solid Power, Blinking SYS light (20 Hz)
 - Radio is powered on, firmware is currently being flashed
- Solid Power, Solid SYS light
 - Radio is powered on, able to ping 10.xx.yy.4 (Field side IP)

RSL

- Solid ON - Robot On and Disabled
- Blinking - Robot On and Enabled
- Off - Robot Off, roboRIO not powered or RSL not wired properly



Limelight

- Green Slow - No target detected
- Green Fast - Target Detected
- Yellow - No Static IP Assigned

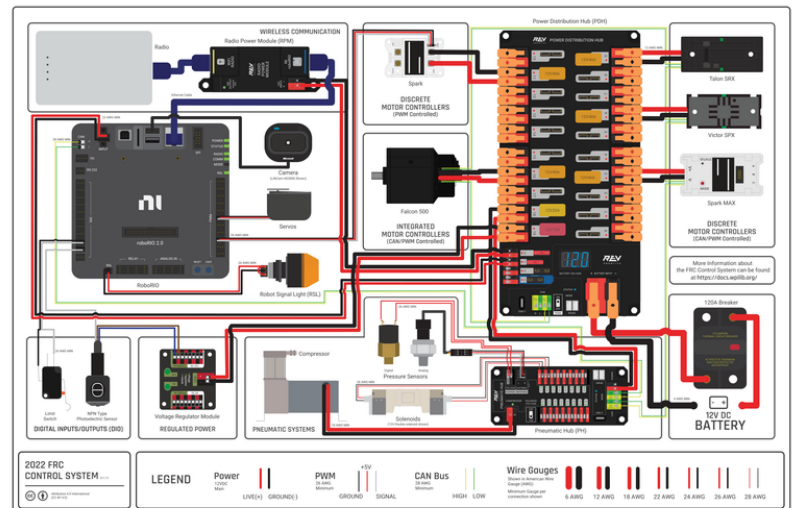
Pigeon 2.0

LED State	Cause	Possible Fix
LEDs Off	No Power	Provide 12V to Red/Black leads.
Blinking Alternating Red	Pigeon 2 does not have valid CAN.	Ensure good CAN Connections & robot controller is on.
Blinking Alternating Orange	Pigeon 2 detects CAN but does not see Phoenix running on the robot controller.	If Phoenix is running on the robot controller, ensure good connection between the controller and this device. Otherwise, deploy a robot program that uses Phoenix.
Blinking Simultaneous Orange	Pigeon 2 detects CAN and sees the robot is disabled. Phoenix is running in robot controller and Pigeon 2 has good CAN connection to robot controller.	
Blinking Alternating Green	Pigeon 2 detects CAN and sees the robot is enabled.	
Alternate Red/Orange	Damaged Hardware.	Contact CTRE.
Single LED alternates Green/Orange	Pigeon 2 in bootloader.	Field-upgrade device in Tuner X.

REV Robotics Motor Controllers

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

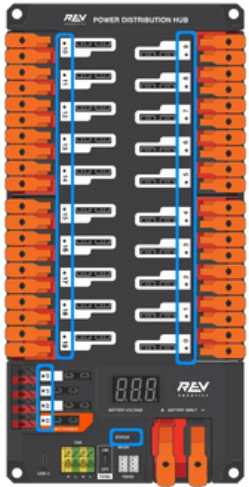
Full Control System



Compressor LED's Solenoid LED's

LED Color	Status	LED Color	Status
Green Solid	Compressor On	Green Solid	Solenoid On
Black Solid	Compressor Off	Black Solid	Solenoid Off

LED Color	Status
Blue Solid	Device on, no comms
Green Solid	Good
Magenta Blinking	Keep Alive Timeout
Solid Cyan	REV HW Client Power
Orange/Blue Blinking	Hardware Fault
Orange/Yellow Blinking	CAN Fault
Orange/Red Blinking	Fail Safe
Orange/Magenta Blinking	Device Over Current
Orange/Green Blinking	Orange/Green Blinking

PDH	Channel LED	Status
	Off	Good
	Red Solid	Active Fault, No Power
	Red Blinking	Sticky Fault

LED Color	Status
Blue Solid	Device on, no comms
Green Solid	Good
Magenta Blinking	Keep Alive Timeout
Solid Cyan	REV HW Client Power
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

Strip Lengths
 Weidmuller - 8mm
 Main Power - 3/4"
 High Current - 1/2"

Power	Green	Power is good
	Amber	Brownout, outputs disabled
	Red	Power fault
Status	On while booting, then off	
	2 blinks	Software error, reimage
	3 or 4 blinks	restart RIO, reimage if not fixed
	Constant flash or stays on	Unrecoverable error
Radio	Not currently implemented	
Comm	Off	No Communication
	Red Solid	comms but no code
	Red Blinking	E-stop triggered
	Green Solid	good
Mode	Off	outputs disabled
	Orange	Auton Enabled
	Green	Teleop Enabled
	Red	Test Enabled
RSL	matches RSL status lights	

CANivore

LED Name	Behavior	Blink Style	Description
STAT	Red	Double-Blink <small>(Note 2)</small>	Device powered through V+/V-, but USB not plugged in .
	Red	Fast-Strobe <small>(Note 3)</small>	USB plugged in, but no USB communication (USB not enumerated or USB suspended)
	Orange	Double-Blink if V+/V- is not powered <small>(Note 2)</small>	Good USB connection, CAN streaming is disabled
	Green	Fast-Strobe if V+/V- is powered <small>(Note 3)</small>	Good USB connection, CAN streaming is enabled
	Green / Orange	TIP: Use this to confirm the V+/V- wiring!	CANivore is in Bootloader . Most likely device was unplugged during field-upgrade <small>(Note 4)</small> . Use Phoenix Tuner to field upgrade latest CRF firmware file. Alternatively, if CANivore already has application firmware, disconnect all power sources, then re-connect to cold-boot device.
	Orange / Red		CANivore has hardware damage

CTRE Motor Controllers

LEDs	Colors	Motor Controller State
Both	Blinking Green	Forward throttle
Both	Blinking Red	Reverse throttle
None	None	No Power
LEDs Alternate	Off/Orange	CAN bus detected, disabled
LEDs Alternate	Off/Slow Red	CAN bus/PWM is not detected
LEDs Alternate	Off/Fast Red	Fault Detected
LEDs Alternate	Red/Orange	Damaged Hardware
LEDs Strobe towards (M-)	Off/Red	Forward Limit Switch/Forward Soft Limit
LEDs Strobe towards (M+)	Off/Red	Reverse Limit Switch/Reverse Soft Limit
LED1 Only (closest to M+/V+)	Green/Orange	In Boot-loader
LEDs Strobe towards (M+)	Off/Orange	Thermal Fault/Shutdown (Talon FX)

Wi-Fi	Green	Blink <small>(Note 1)</small>	Wi-Fi is enabled or ESP32 custom application is allowed to use Wi-Fi
	Off		Wi-Fi is disabled

BT (Bluetooth)	Green	Blink <small>(Note 1)</small>	Bluetooth is enabled or ESP32 custom application is allowed to use Bluetooth
	Off		Bluetooth is disabled

CAN (CAN bus)	Solid Red	LED is never off.	Voltage too low for CAN bus. CAN communication may not be reliable
	Red	Double-Blink if termination is disabled <small>(Note 2)</small>	No CAN communication
	Orange	Fast-Strobe if termination is enabled. <small>(Note 3)</small>	Reserved for CAN 2.0b legacy mode
	Green	TIP: Use this to confirm termination setting!	CAN FD active

- Note 1:** "Blink" means LED transitions between on and off slowly at a fixed rate.
- Note 2:** "Double-Blink" means LED transitions between on and off twice, then pauses.
- Note 3:** "Fast-Strobe" means LED spends very little time off. It will appear excited or mostly-on.
- Note 4:** If using USB features, ensure proper signal path between CANivore USB connector and the root USB controller (including all the hubs and data/power connections in between).

Suggestions? Email rylee@broncbotz.org
 or message me on the CSA Slack!