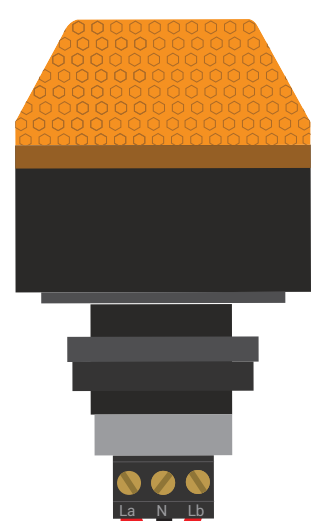


Communication



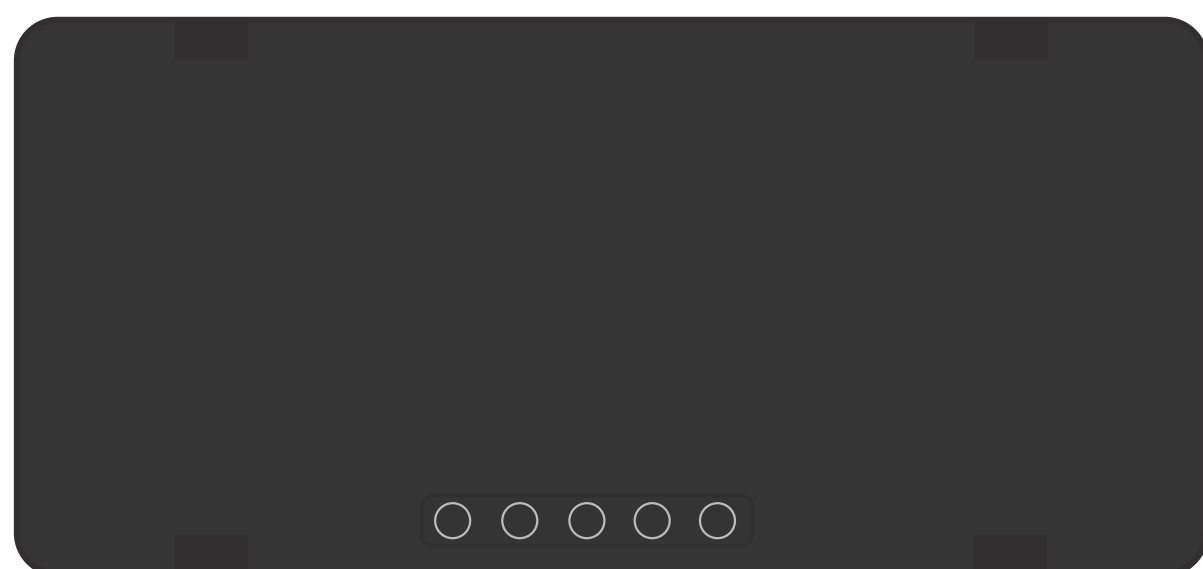
Robot Signal Light
855PB-B12ME522 shown

CAN Bus Wiring
Minimum 28 AWG
Typical 22 AWG

Robot Radio
VH-109

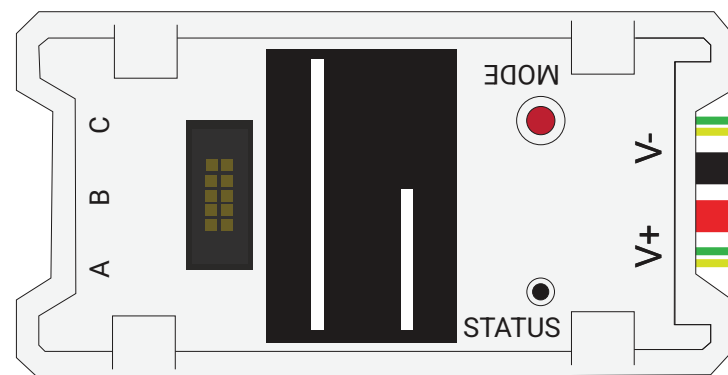
Downstream Power over Ethernet (PoE)
Disabled by default. Please check DIP Switches 1 and 2 to verify unless you want to have them on.

Downstream PoE Devices must support PoE at the supply voltage provided to the radio.
Otherwise Damage will occur to them.



Radio Power
Minimum 22 AWG

Ethernet Cable
Connection to the RoboRIO connected to the port labeled "RIO"
Please refer to the latest Game Manual for specific rules on how to power this radio.



Spark MAX
Brushless/Brushed, CAN/PWM



Talon SRX
Brushed Only, CAN/PWM



Koors 40
Brushed Only, PWM Only

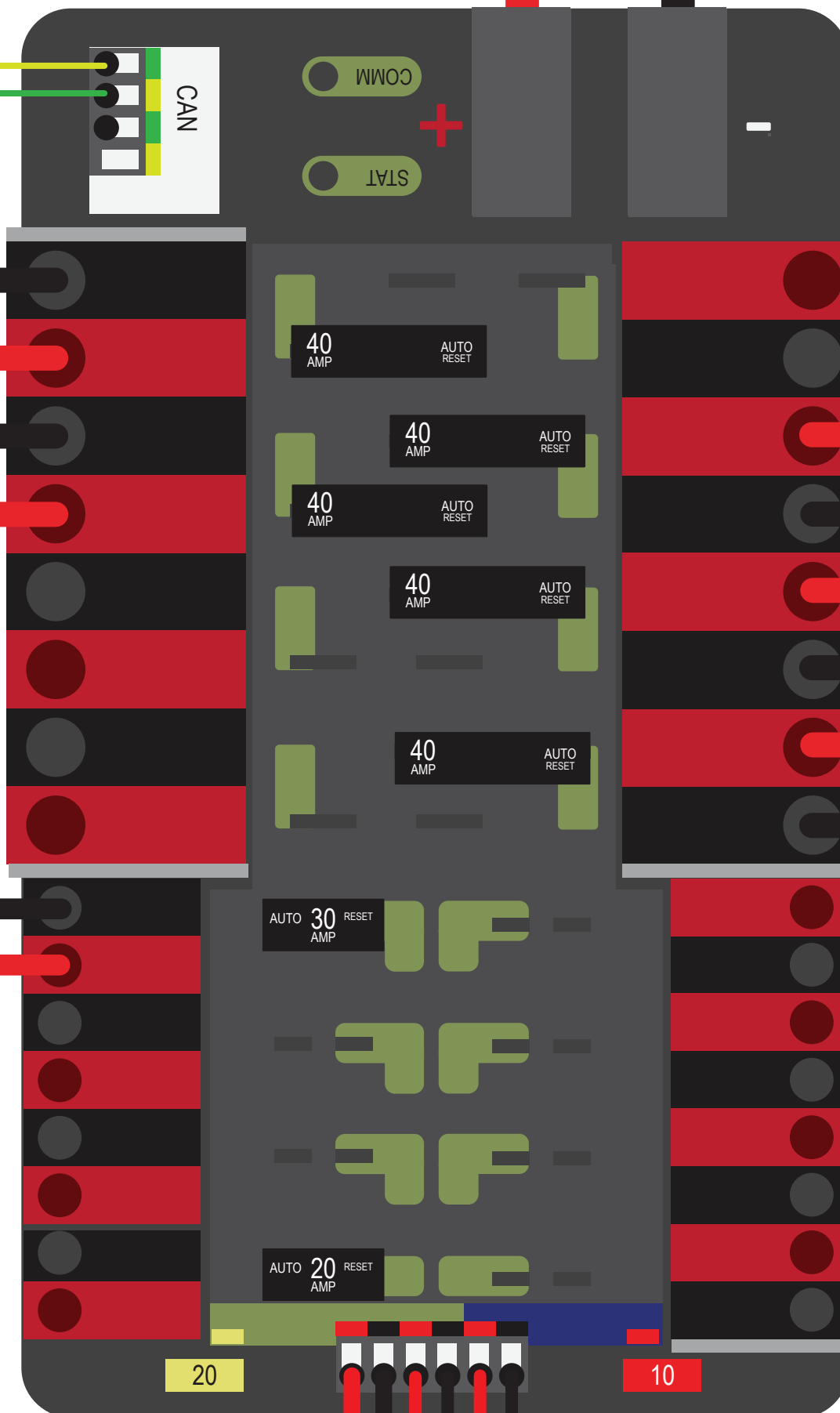
Discrete Motor Controllers
(CAN/PWM Controlled)

The CTRE System was the original complement to the new, RoboRIO-based control system debuted in 2015. It was superseded by the newer REV System in 2022.

The original CTRE complement however are still legal and available for use in FRC, and how it is wired against other FRC components is shown in this diagram.

Power Distribution Panel

This CAN Bus is configured to end on the PDP (TERM RES set to "ON").

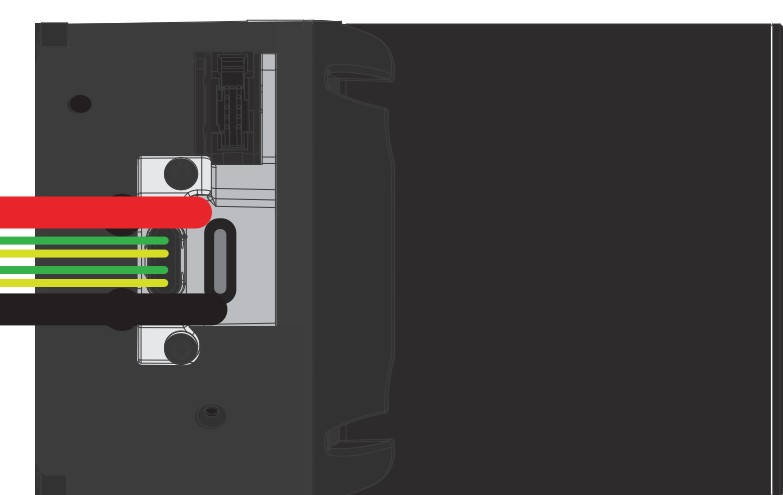


120A Breaker
CB285-120 shown



12V Battery
Refer to latest Game Manual for specific rules and examples

Main Power



Neo Vortex (Spark FLEX)
Modular Brushless, CAN/PWM

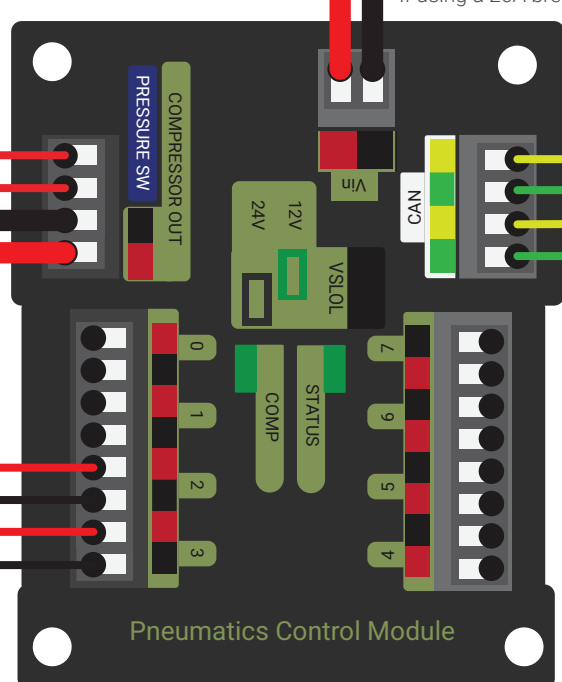


Kraken X44 (Talon FX)
Integrated Brushless, CAN/PWM



Kraken X60 (Talon FX)
Integrated Brushless, CAN/PWM

Integrated/Modular Motor Controllers
(CAN/PWM Controlled)



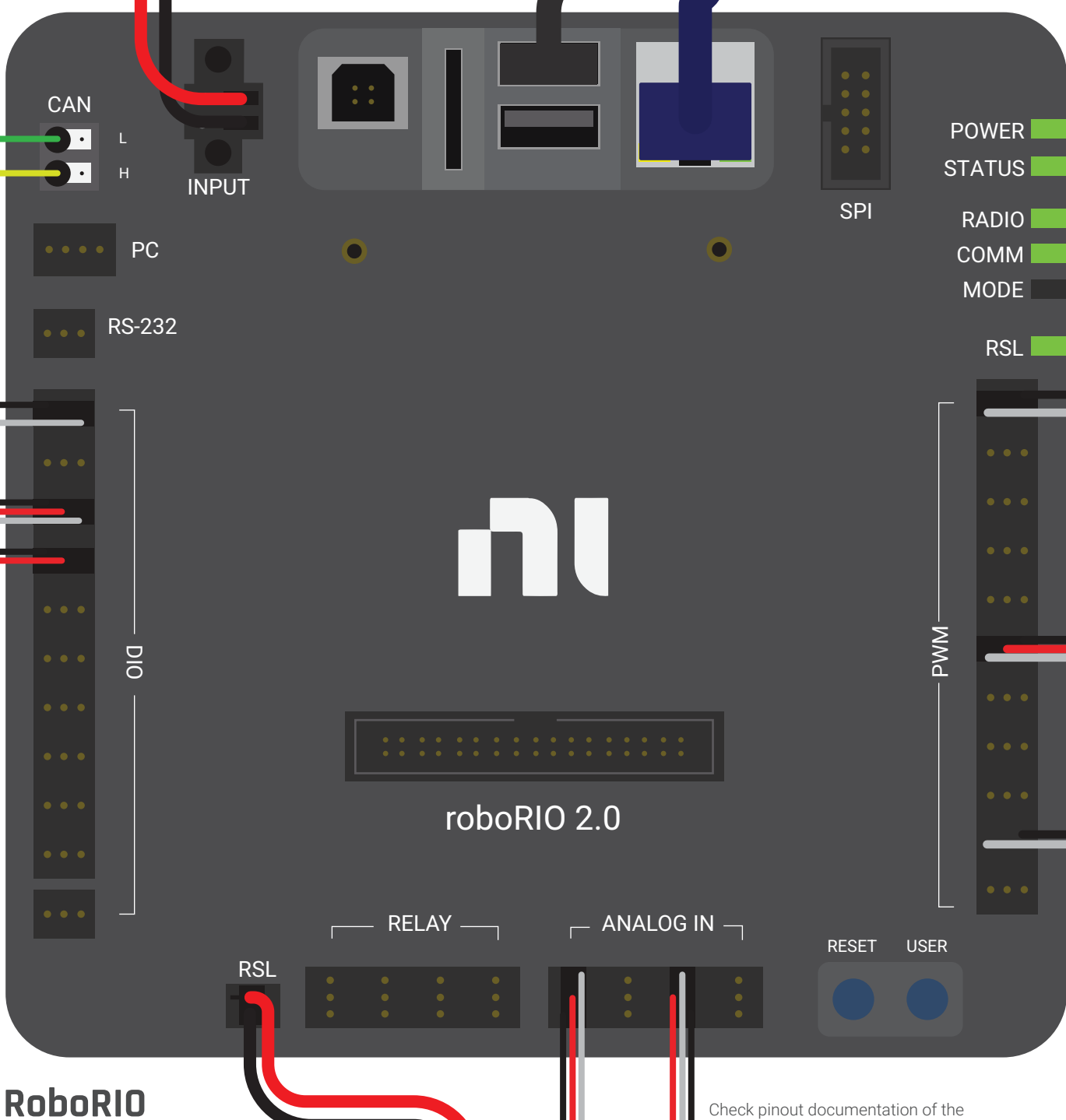
Pneumatics Control Module

RSL Wire 18 AWG Typical
22 AWG Minimum

CAN wires should be a twisted pair with a twist per 1 inch or denser.

The main robot CAN loop must start with the RoboRIO.
The use of the discrete I2C/PC port may induce system lockups. Please refer to WPILib docs for possible workarounds.

DIO Wiring
Minimum 28 AWG
Typical 22 AWG



RoboRIO

USB Camera
C270 Shown

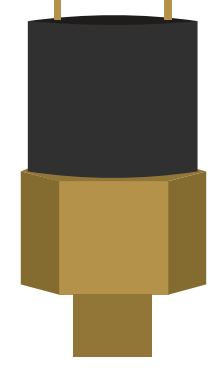
Servo
Generic shown

LED Strip
Generic WS2812B shown

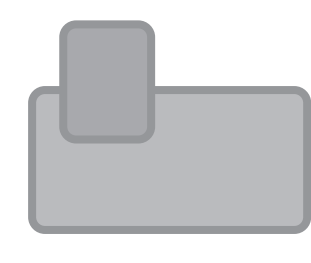
PWM Control



Solenoid Valve
SMC SY3240-6LZ shown



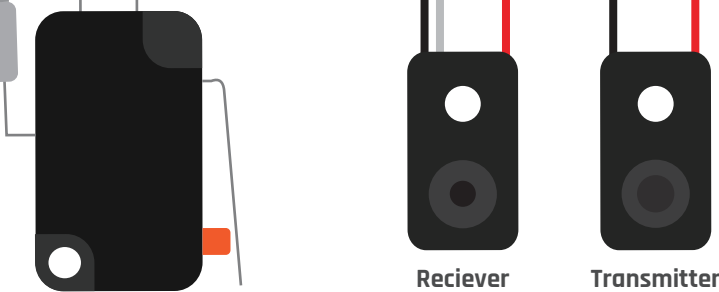
Pressure Sensor
am-2006 shown



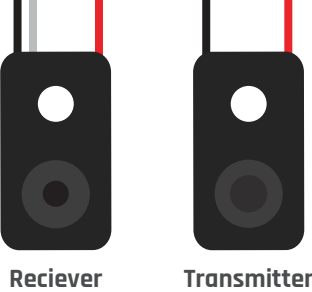
On-board Compressor
Refer to latest Game Manual for specific rules

Pneumatic Systems

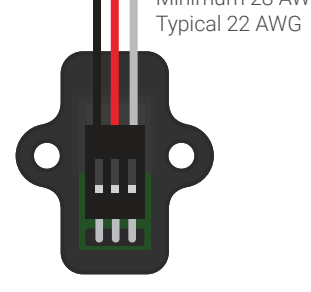
Digital Input/Output



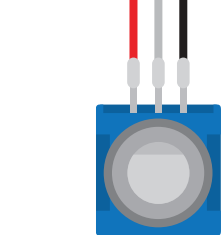
Limit Switch
Generic Switch shown



IR Break
2168 Sensor shown



Analog Encoder
TTB-0040 shown



Potentiometer
Generic shown

Analog Input

FRC CONTROL SYSTEM - CTRE

V.3.20.CR

TEAM 3161



Power

12V DC
Main



LIVE (+)



(-) GND

PWM

26 AWG
Minimum



GND



SIG

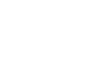
+5V

CAN

28 AWG
Minimum



HI



LO

Wires

American Wire Gauge (AWG)

Minimum Gauge per connection type shown.



6 AWG



12 AWG



14 AWG



18 AWG



22 AWG



26 AWG



28 AWG

Always practice proper safety precautions and practices when working with electrical systems.

More Information about the FRC Control System can be found at <https://docs.wpilib.org>

KEEP IN MIND