2022 FRC CONTROL SYSTEM DIAGRAM

Commisioned for WPILib and Team 3161

Layout by Stefen Acepcion

This diagram aims to show how the FRC Control System is wired in its basic form, with fundamental components and configurations.

The new 2022 FRC Control System Hardware are not a mandatory transition from its predessessor hardware.

For more information regarding this control system and its changes, please visit **https://docs.wpilib.org/**

IMPORTANT NOTES FOR PRINTING

Document is optimised for a 24 x 36 inch poster, optimally print in that size, it may be printed in smaller or larger size provided its aspect ratio is the same

Including this page when printing is not nessesary, this page serves as an instruction and attribution page only.

Optimally print in colour, Document is optimized for CMYK environments

WIRELESS COMMUNICATION

Radio

Radio Power Module (RPM)

WIFI RADIO

NI roboRIO

Ethernet Cable

Power Distribution Hub (PDH)

POWER DISTRIBUTION HUB

12 AWG MIN

Talon SRX

12V40A

Spark

DISCRETE MOTOR CONTROLLERS
(PWM Controlled)

Victor SPX

Camera
(LifeCam HD3000 Shown)

Servos

Falcon 500

INTEGRATED MOTOR CONTROLLERS
(CAN/PWM Controlled)

12V40A

12V40A

12V40A

12V40A

12V20A

Spark MAX

DISCRETE MOTOR CONTROLLERS
(CAN/PWM Controlled)

22 AWG MIN

CAN H L

28 AWG MIN

PC

RS-232

SPI

POWER
STATUS

RADIO
COMM
MODE

RSL

DIO

PWM

RELAY   ANALOG IN

RESET   USER

roboRIO 2.0

RoboRIO

RSL

26 AWG MIN

Robot Signal Light (RSL)

26 AWG MIN

18 AWG MIN

12.0

BATTERY VOLTAGE

+ BATTERY INPUT −

REV

STATUS

CAN

USB-C   H L   ON OFF   RS485
              TERM

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

120A Breaker

120 AMPERE
THERMAL CIRCUIT BREAKER

42 VOLTS DC MAXIMUM
IGNITION PROTECTED
WATERPROOF

6 AWG MIN

− +

12V DC BATTERY

26 AWG MIN

Compressor

Digital   Analog
Pressure Sensors

28 AWG MIN

Solenoids
(12V Double solenoid shown)

18 AWG RECOMMENDED

PRESSURE SENSOR   DIGITAL   ANALOG

REV PNEUMATIC HUB

COMPRESSOR   SOLENOID VOLTAGE

24V   12V

STATUS   MODE

USB-C   CAN   RS485   POWER

Pneumatic Hub (PH)

26 AWG MIN

Limit
Switch

NPN Type
Photoelectric Sensor

DIGITAL INPUTS/OUTPUTS (DIO)

12V 2A   12V 500mA

12V

5V

5V 500mA   5V 2A

Voltage Regulator Module

REGULATED POWER

PNEUMATIC SYSTEMS

2022 FRC CONTROL SYSTEM V.1.00

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LEGEND

Power
12VDC
Main

LIVE(+)   GROUND(−)

PWM
26 AWG
Minimum

+5V

GROUND   SIGNAL

CAN Bus
28 AWG
Minimum

HIGH   LOW

Wire Gauges
Shown in American Wire
Gauge (AWG)

Minimum Gauge per
connection shown

6 AWG   12 AWG   18 AWG   22 AWG   24 AWG   26 AWG   28 AWG