

FRC Driver Station

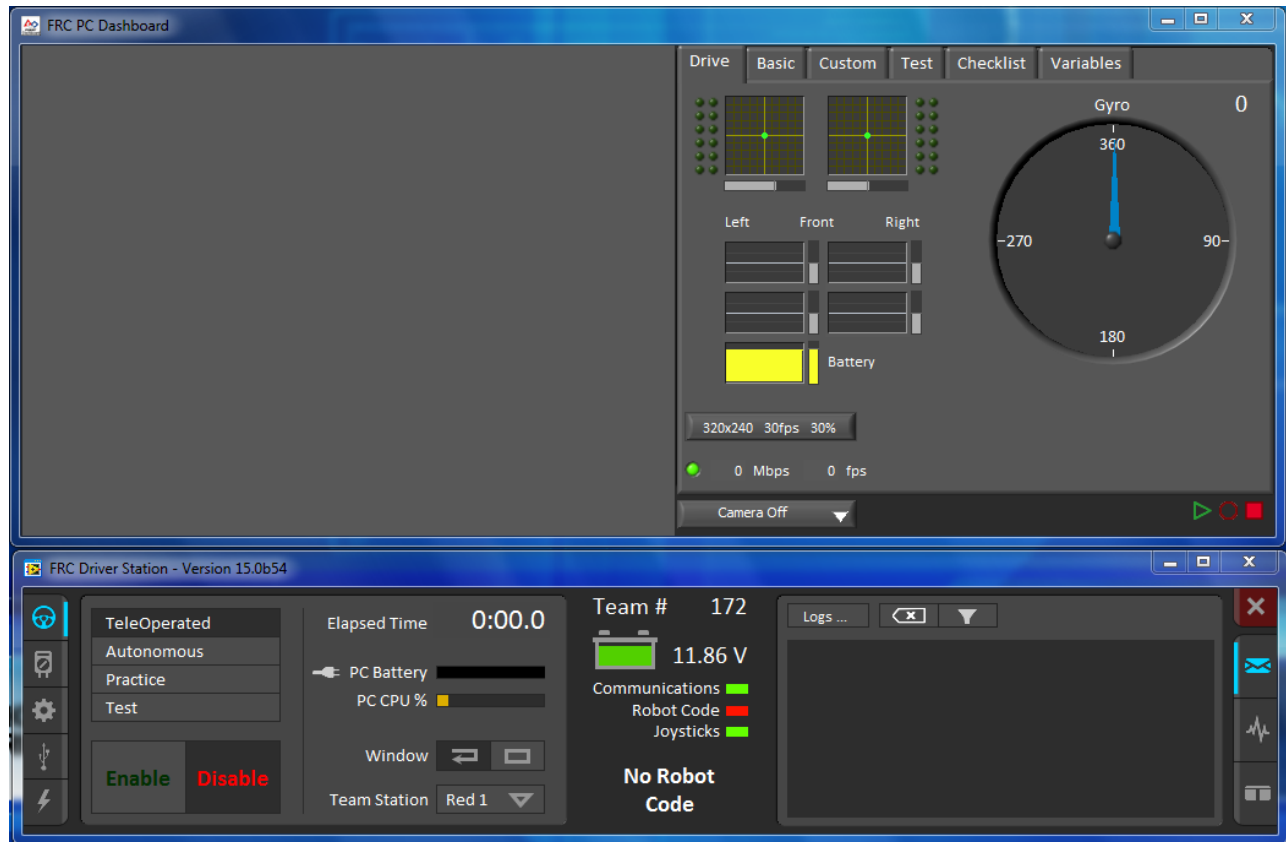
This document describes the driver station for the 2015 *FIRST* competition season. Read through it to learn about new features and functionalities introduced with this software-based driver station.

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Overview

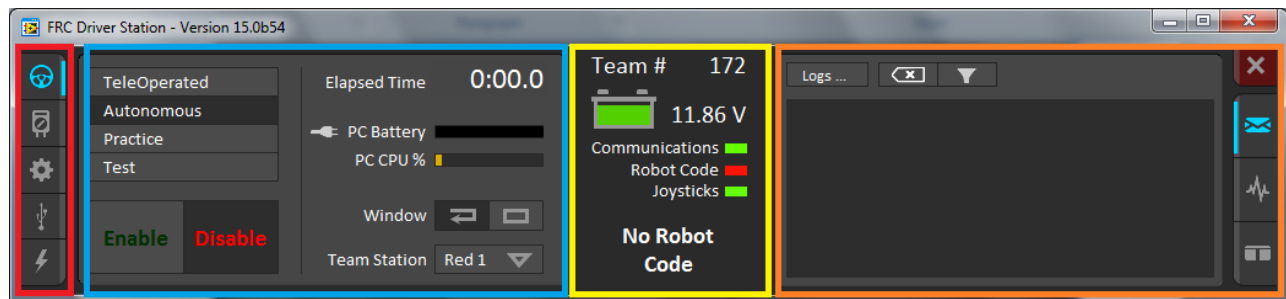
When you run the Driver Station Executable on a PC or start up your Classmate, you should see the following screens. These are the default Dashboard and Driver Station windows.



Default Screens: Dashboard (top) and Driver Station (bottom)

Main Viewing Areas

In the driver station window you can see four main areas. The four areas are outlined in colored boxes in the following image.



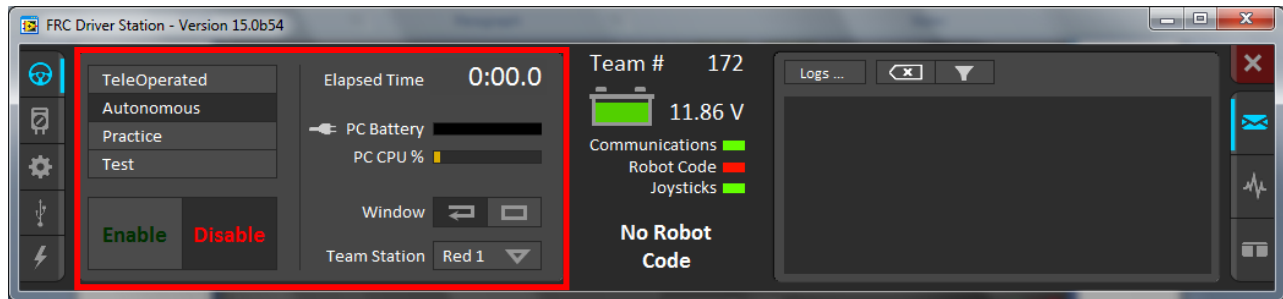
Driver Station: Main Areas

- **Main Display (Yellow Box)** – This area indicates for which team the driver station is configured. You can configure the team number on the Setup Page. This section of the driver station also gives you the battery voltage of the robot and has 3 LEDs that give you important information.

LED	Green	Red
Communications	The Driver Station is able to communicate with the DS Radio, Bridge, and roboRIO- FRC.	The Driver Station is unable to communicate with the DS Radio, and/or the Bridge, and/or the roboRIO- FRC.
Robot Code	The Driver Station is able to communicate with the Robot Code on the roboRIO-FRC.	The Driver Station is unable to communicate with the Robot Code on the roboRIO- FRC.
Joysticks	The Driver Station is able to communicate with the configured joysticks.	The Driver Station is unable to communicate with the configured joysticks.

- **Tab Selection (Red Box)** – These are the sub-categories of the driver station that you can access. The default page is the Operation page. Click the different tabs to access the different pages. The selected tab's text is highlighted blue so you know which page you are on.
- **Messages and Charts (Orange Box)** – This area shows Error messages from the robot's code and charts that can be used for troubleshooting.
- **Page Display (Blue Box)** – This area shows the information and options available for the page currently being viewed.

Operation Page



Operation Page

The Operation page, shown above, contains all information about the current operation of the robot. On the left hand side of the operation page you can choose the mode of your robot to be either Teleoperated, Autonomous, Practice, or Test. After you select a mode, you can enable it by clicking the Enable button. After the mode of the robot has been chosen and enabled, you can then disable it by clicking the Disable button. If the robot is connected to the Field Management System (FMS), then this section will display information from the FMS.

Robot Operation Modes

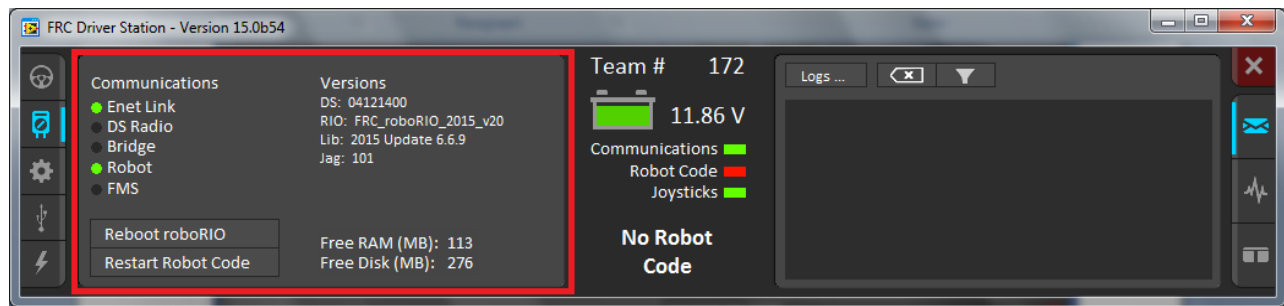
- Teleoperated – This tests the teleoperated sections of your robot code.
- Autonomous – This mode runs the robot's autonomous code.
- Practice – This mode can be configured on the Setup page and allows you to simulate a full game by running first the autonomous code and then enabling teleoperated mode.
- Test – This mode can be modified in the block diagram and setup in the Test Tab of the FRC Dashboard. For more information look at the Test Mode Tutorial.

Robot Run Information

Information pertaining to the run state of the robot is given on the right-hand side of the Operation page.

- Elapsed Time – This tells you how long the robot has been running once its mode has been enabled.
- PC Battery – The PC battery section indicates either how much charge is left in the battery of the driver station or if the PC is receiving AC power.
- PC CPU % – This indicates how much of the PC CPU is currently in use.
- Window Mode – Either locks the FRC Driver Station and Dashboard window in the lower left side of the screen or separates the Driver Station and Dashboard and allows them to move freely. The button on the left allows the window to move freely.
- Team Station – This allows you to choose either the Red team or Blue team and whether you are station 1, 2, or 3, on that team.

Diagnostics Page



Diagnostics Page: Sections

Above you can see that the diagnostics page has been selected. This page contains the diagnostic information for all the connections to the driver station.

Communications

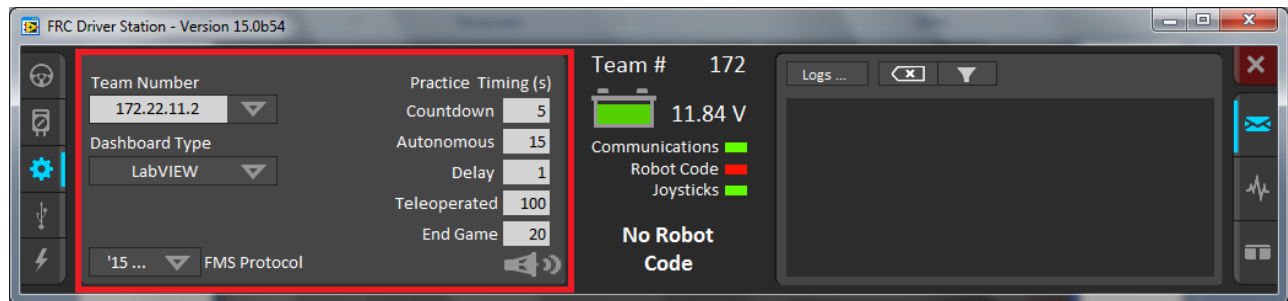
On the left side of the Diagnostics page you'll see the Communications section. This section allows you to see with what portions of your control system the driver station is able to communicate. If the driver station is able to communicate with the listed item, then the item's indicator lights up green. For troubleshooting communications issues, mouse over the item with which you are not able to communicate, and the driver station will provide troubleshooting tips in the Messages section.

Version Information

Versioning information for the driver station and roboRIO image can be seen in the Versions section on the right side of the Diagnostics page. This information is important for troubleshooting and maintenance of the robot to ensure that the roboRIO and driver station have the latest updates.

The Diagnostics Page also contains buttons to reboot the roboRIO and to restart the Robot Code as well as indicators which show how much free RAM and disk space are available.

Setup Page

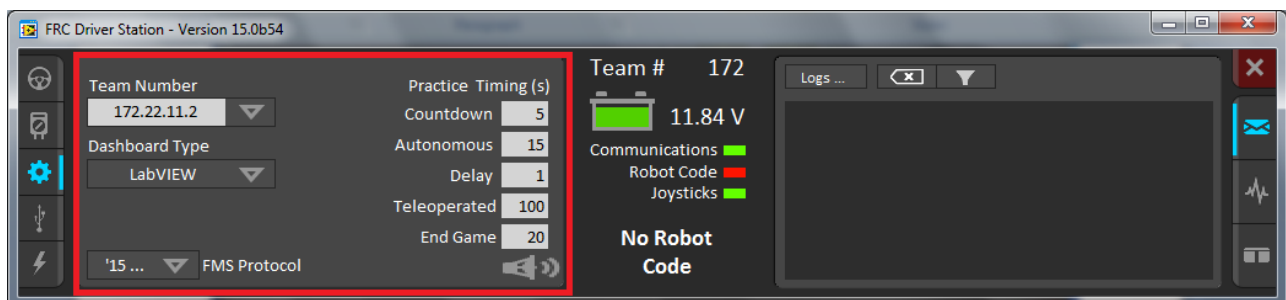


Setup Page

The Setup page is the third tab in the driver station. On this page you can configure the driver station for your team number, choose dashboard type, configure the practice round parameters, and choose your FMS protocol.

Configuring Team Number

Configuring the team number also configures the driver station to be 10.xx.xx.5 and the computer to be 10.xx.xx.6 automatically (where xx.xx is your team number). This is done by simply typing your team number into the Team Number text box. You'll know that the driver station is making these changes by looking in the top left corner where it says Team # xxxx. When it finishes configuring, it will list your team name in the top left corner. You can also use the drop down to select your roboRIO from the list. If you are connected to the roboRIO with USB, type the full IP address of the roboRIO into this box.



Setup Page: Team Number Configuring

Practice Round Parameters

On the right of the Setup page is the practice round settings. Here you can manipulate the parameters for when you run the robot in practice mode. A description of these options and what they change is listed below.

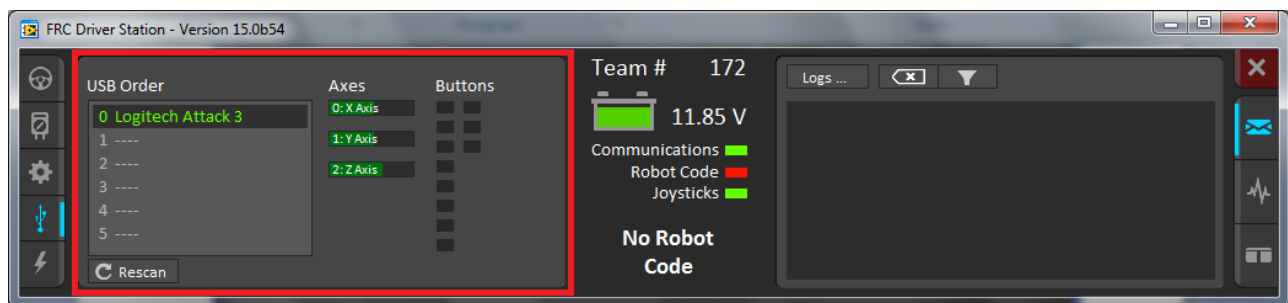
- **Countdown** – This field allows you to set how many seconds the driver station counts down before putting the robot in Autonomous mode.
- **Autonomous** – This field sets how long the driver station allows the robot to run in Autonomous mode.
- **Delay** – The delay setting configures how many seconds the driver station waits between disabling the Autonomous mode and enabling the Teleoperated mode.
- **Teleoperated** – This field sets how long the driver station allows your robot to run in

Teleoperated mode.

- **End Game** – The End Game setting specifies the number of seconds the robot will keep running at the end of the game.
- **Sound effects** – This button enables the driver station to play sounds during the practice round.

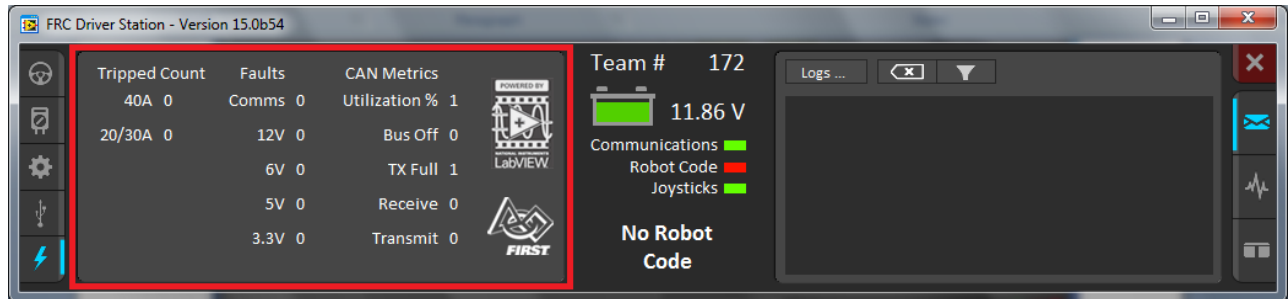
USB Settings Page

The USB Settings page is the fourth tab in the driver station. This section shows which devices have been connected via USB to the driver station and their connection status. On this page you can set up your joysticks for controlling the robot. If a joystick has been plugged in, it will light up green when you operate one of the buttons. Up to four joysticks can be connected to the driver station at one time. To know which position a joystick is currently assigned, press a button on the joystick and see which text lights up green. To configure which joystick is assigned to a numeric index you can click on the joystick's name and drag it to a different position.



USB Settings Page

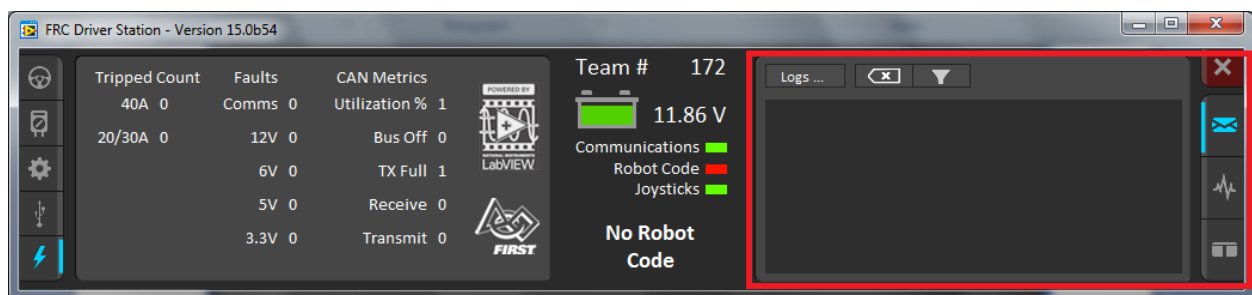
Power & CAN Page



Power & CAN Page

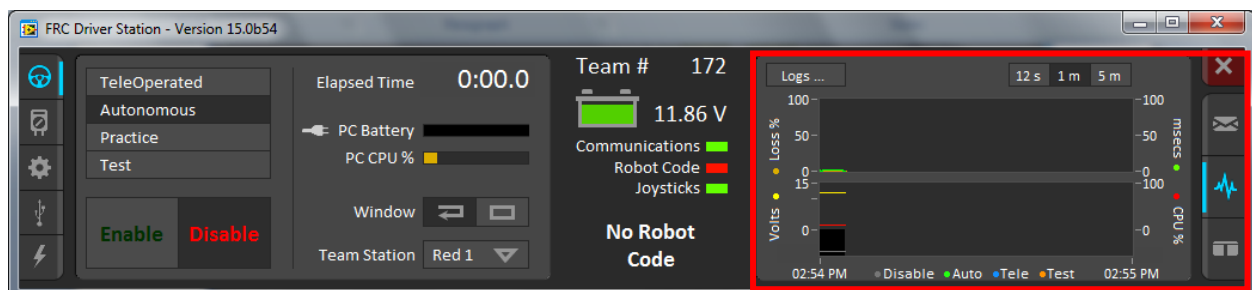
The Power and CAN page is the fifth tab in the driver station. On this page you monitor the status of your fuses, power faults, and CAN Metrics.

Messages & Charts Page



Messages Section

This section shows the messages and charts page. You can use the buttons on the right to view the message section, the charts section, or both. The message section displays error messages from the robot's code. These errors are logged on the roboRIO, and you can view this log by clicking the Logs button. You can clear the messages in the Messages window by clicking the Clear Errors button. The charts page displays information that can be used to debug robot behavior. It has charts for battery voltage, lost packets, loop time, and CPU usage. You can also select how much history the charts have (either 12 seconds, 1 minute, or 5 minutes).



Charts Section