Troubleshooting the Control System

One of the key aspects of troubleshooting is understanding the most common issues that occur in a system. Once those problems, and their indicators, are defined -a flow has to be created. For example, a check engine light in a car indicates any number of issues. When a cars check engine light comes on, a mechanic pulls the codes from the car to narrow down the issue to a specific part of the engine. Even if the code leads to a specific part of the engine, like the transmission, it is not always indicative of the exact problem. However, there is a process flow. Each step narrows down the problem to a potential solution. Troubleshooting the REV Control system is no different!

> The status LED is the REV Control System equivalent to the check engine light mentioned in the example. *Visit the LED Blink Code section to understand what each code is and what it indicates.*

Many issues can be solved by systematic troubleshooting without needing to contact REV Support. Take a look at the troubleshooting tips below for help in determining the cause of the issue you are seeing. Should you need to contact us, describing the steps you've taken in detail will help us get you up and running quickly. The section is divided by general best practices, Control Hub (REV-31-1595) troubleshooting and Expansion Hub (REV-31-1153) troubleshooting.

General Best Practices

Before diving into common troubleshooting paths its important to understand the general guidelines, or best practices, for Control System Health.

- **Charge the Battery** - While a charged battery and phone are crucial to a healthy control system in general; it is also helpful to ensure batteries and phones are charged before a match.
- **Update** - The applications, firmware, and operating system have periodic updates to improve the control system. Keeping the control system up to date ensures the best

performance!

- **Isolate the Issue -** This is key to effective troubleshooting. Many issues can show the same symptom, so eliminating failure points one at a time is critical to finding the root cause.

> ⚠ DO NOT plug a battery charger into either the Control Hub or Expansion Hub. It will damage the Hub and cause eventual device failure

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Control Hub Troubleshooting

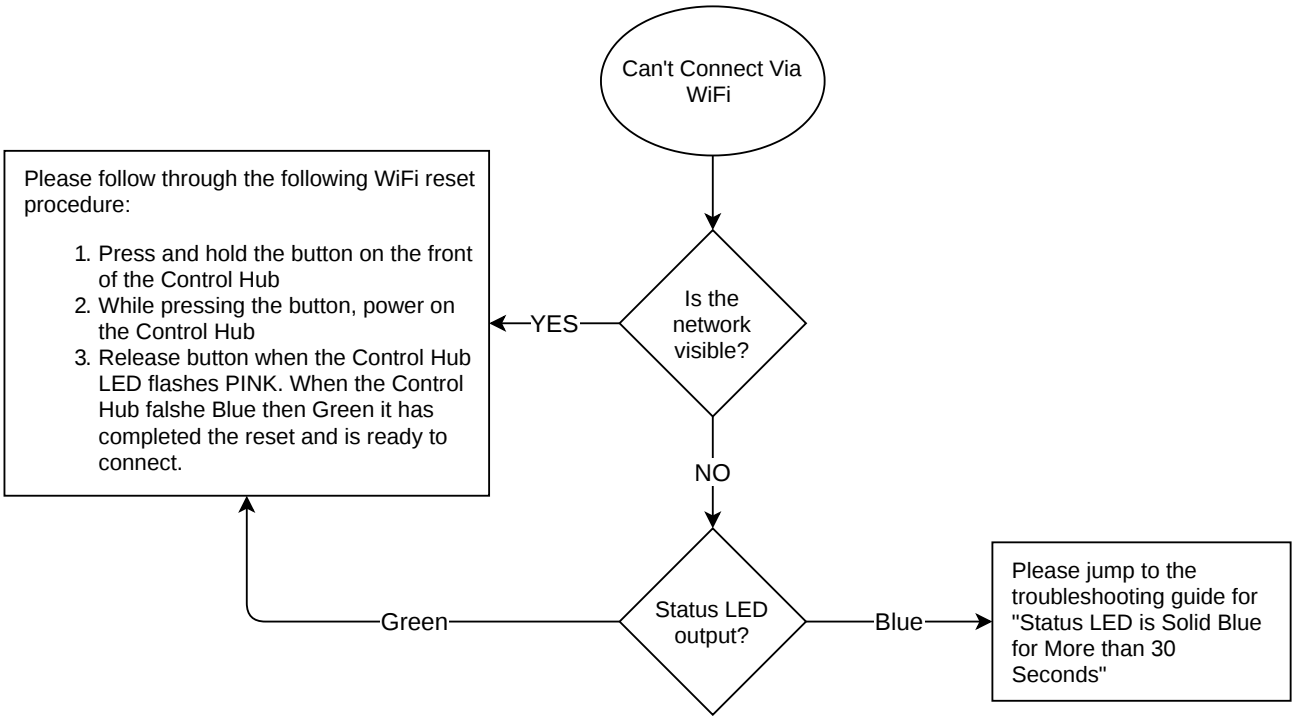
The following questions consider common indicators of issues seen in the Control Hub. Think about what the potential indicators your Hub is currently exhibiting and consider the following questions:

Is the Driver Station phone unable to connect to to the Control Hub WiFi?	Yes
Is the Driver Station connected to the WiFi but not showing a ping or any other signs of communication?	Yes
Has the Status LED been solid blue for longer than 30 seconds (after start up)?	Yes

Sometimes, its possible that you may have to try multiple routes when troubleshooting. Perhaps, at first, it seems like the only indicator is that the Driver Station wont connect to the Hub WiFi; but it becomes apparent that the Status LED has been solid blue the entire time since startup. In this guide, the process flow charts have been crafted to tie in to each other where indicators may overlap.

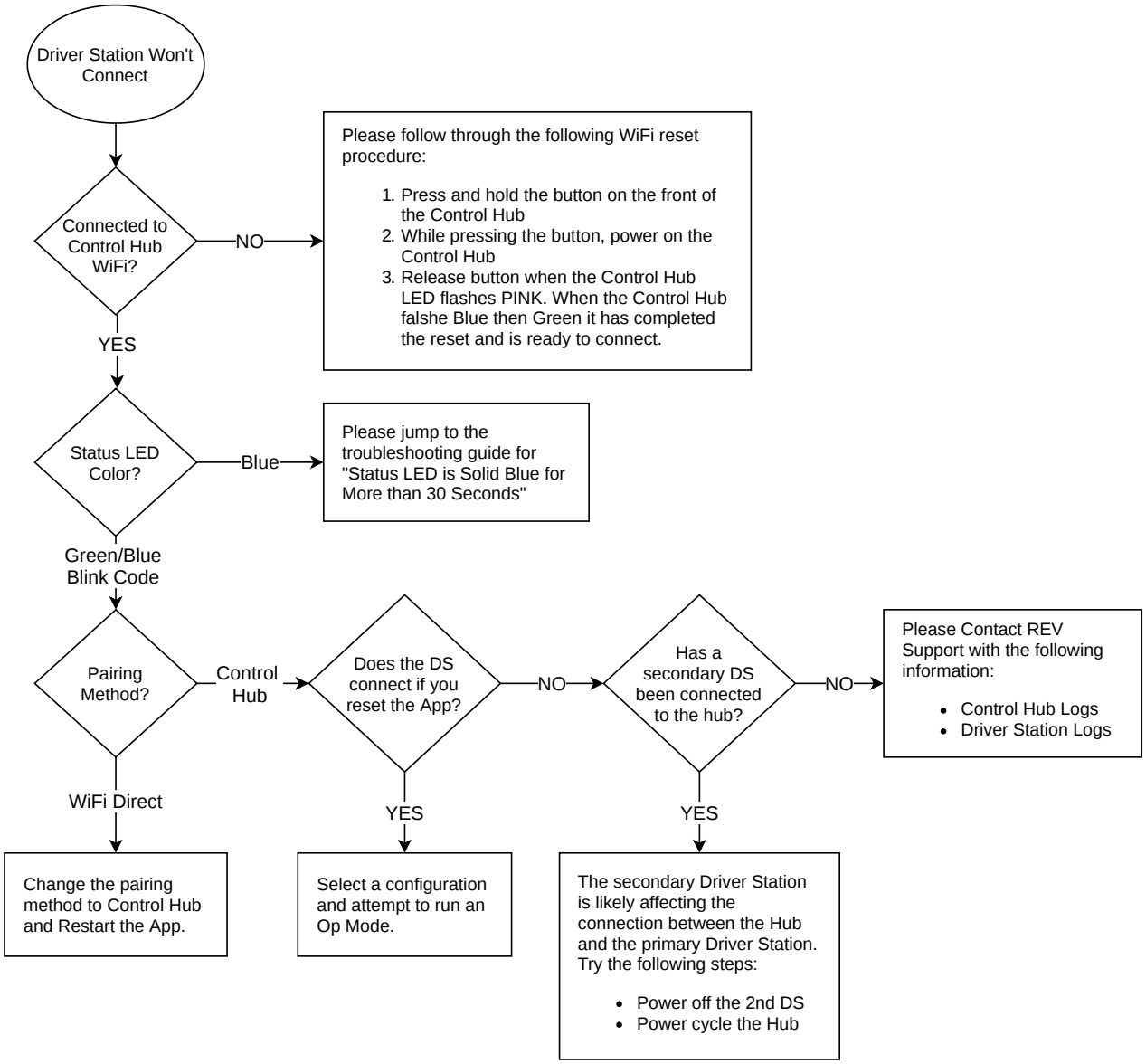
> ⓘ *If a path in this guide does not resolve the issue please contact REV Robotics Support at support@revrobotics.com*

Cant Connect to the Hub Via WiFi



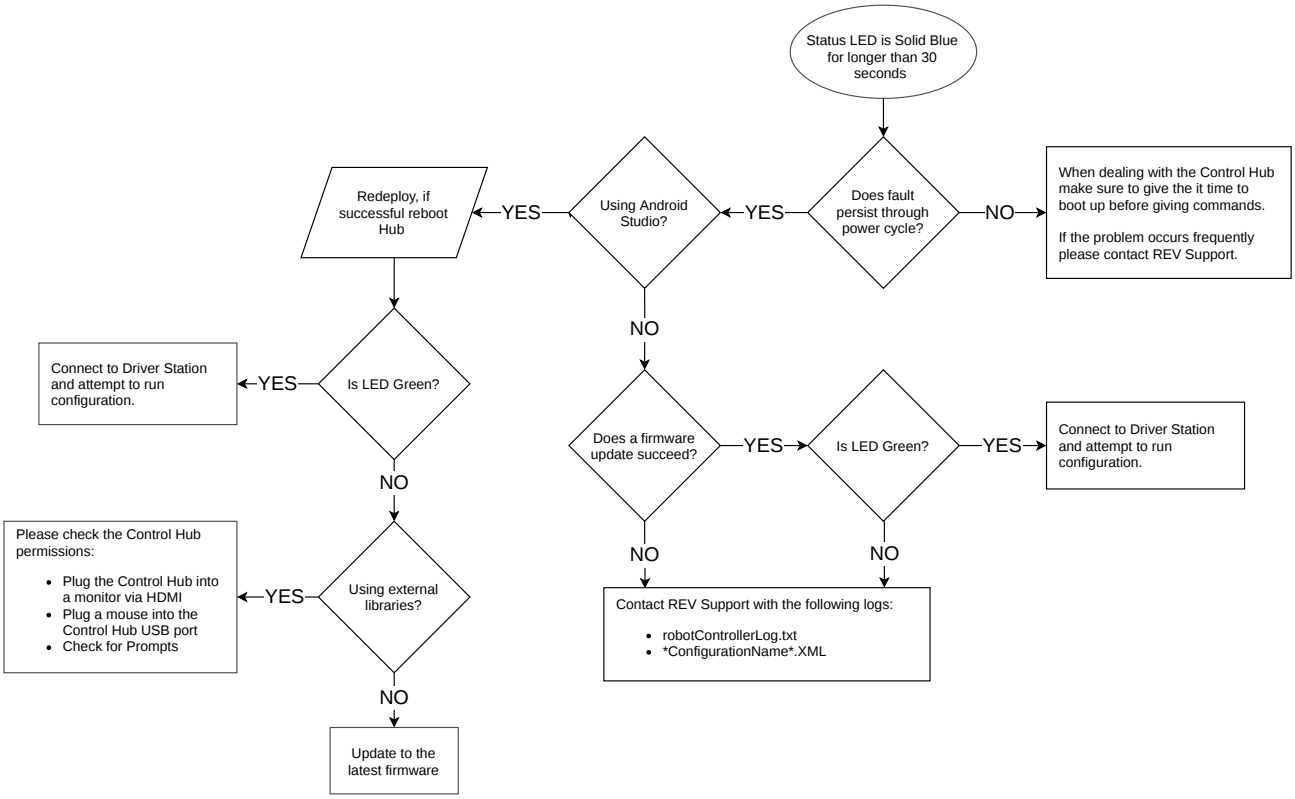
> The WiFi reset will down grade the WiFi connection to 2.4GHz. If you have an android device with 5GHz you may want to switch the WiFi Band in order to run on 5GHz. *Check out the Changing WiFi Channel Section to learn more about making this switch.*

Driver Station Won't Connect



> *Need help getting the Log Files to send to REV Support? See Downloading Log File for more information.*

Status LED is Solid Blue for Longer than 30 Seconds



> *Need help getting the Log Files to send to REV Support? See Downloading Log File for more information.*

Expansion Hub Troubleshooting

The following sections, "Common Indicators and their Solution Steps," provides common indicators of issues seen in the Expansion Hub. Think about what the potential indicators your Hub is currently exhibiting and consider the following questions:

- Did you perform a firmware update before the Hub began to have issues?
- What is the behavior of the Status LED on the Expansion Hub?
- Is the Driver Station showing an error message 'Cant find the Expansion Hub Portal"?
- Did the Robot Controller app open when you plugged in the RC phone and gave power to the Hub?
- Are you experiencing issues with communication between a primary and secondary Hub?

> *If a path in this guide does not resolve the issue please contact REV Robotics Support at support@revrobotics.com*

Common Indicators and their Solution Steps

- The firmware update failed and the Hub is unresponsive
  - Try a Firmware Update
- The LED on the Expansion Hub is not lighting up
  - Try a Firmware Update
  - The LED is still not lighting up
- The Hub is not being recognized or communicating with the phones
  - Try doing the Hub Startup Procedure
- There are issues seeing a secondary Hub
  - Try doing the Hub Startup Procedure
  - There are still issues seeing the secondary Hub

Firmware Update

1. Install the REV Hub Interface Software (www.revrobotics.com/software)
   You may need FTDI Drivers depending on the version of Windows you are running: http://www.ftdichip.com/Drivers/VCP.htm
2. Plug your Expansion Hub into your computer
3. Boot the REV Hub Interface Software
4. Select Firmware tab then click the Choose .bin file button
    1. Select the version of the firmware you want to install (hint it comes with the latest and greatest version)
5. Let the firmware install
6. After install is finished, select Connect on the REV Interface Software.
    1. Hub should read connected and have a Green Light showing connection

USB Serial Converter Check

1. Plug your Expansion Hub into a Windows PC
2. Open the Device Manager in Settings
3. Click the arrow next to Universal Serial Bus Controllers

4. Find USB Serial Converter under the menu
5. If this is not present there maybe a larger issue with your hub. Email support@revrobotics.com with details of the steps you have taken so far,and any order numbers for the Expansion Hub (if you have them)

> If you are using a Mac you can use System Information in Lion or later (or System Profiler in Snow Leopard and earlier versions of Mac OS) in Spotlight (press ⌘ and Space). The program is in /Applications/Utilities and is the tool to see the connected USB devices and other hardware details.

Hub Startup Procedures

1. Unplug the USB from your RC phone
2. Power off the main robot switch (turn off 12V power from the Expansion Hub(s))
3. Wait a few seconds
4. Turn on the Main Robot Switch (supply 12V power to the Expansion Hub(s))
5. On your RC phone, press the square button and the swipe to close the FTC RC app
6. Plug your RC phone into the USB-- the FTC app should automatically open
    1. If the app doesn't automatically open you do not have a good connection from the Expansion Hub to the Phone. Check your cables first, followed by the micro and mini USB connections.
    2. Consider using some form of strain relief (like the REV USB Retention Mount or one of the many 3d printable options available on places like Thingiverse) to keep the USB-mini port from being damaged.

> *If the issues persists after applying the Retention Mount try running through the Firmware Update procedure.*

Persistent inability to see a secondary Hub

1. See the Expansion Hub Guide (www.revrobotics.com/resources)
2. Rerun through the configuration and addressing steps in the guide
    1. Make sure the leader hub is addressed as 2 and the follower hub is addressed as 3.

3. Connect the two Hubs to each other has described in the Expansion Hub Guide
4. Install the REV Hub Interface Software on a PC if not already done
5. Plug the Leader Hub into the Computer with the REV Hub Interface Software installed.
6. Press Connect
7. The DC Motor page should split in two with 8 total motor controls available if both are functioning properly.
    1. Also, you can look at the LEDs on the Hubs. They should be solid Green with occasional blue blinking.