Robot Building Transition

From FLL to FTC

FIRST LEGO LEAGUE

FIRST TECH CHALLENGE

WATTEVER (#16296)

Control Hub

WATTEVER (#16296)

What is a Control Hub

The Control Hub is the new hub released by REV for the 2019-2020 season.

- It's unique feature is that, it is a Expansion hub and robot controller in one unit. So when using Control Hub, you only need 1 phone as the driver controller.
- It works with all programing clients that FIRST has provided us.
- On Android Studio, it will only work with SDK 5.0 or above;
- We can't test DC motors and servos using the REV interface app, but with the expansion hub you can do that.

Comparing of Expansion Hub and Control Hub

1. The one BIG advantage the Control hub has over the Expansion hub is that you don't need RC phone which gives more space on your robot.
2. There is no hassle of pairing the RC phone with the Control hub

Comparing of Expansion Hub and Control Hub

3. The USB connection on the expansion hub is currently most vulnerable connection as compared to Control hub.

Other than that, the amount of pins and sockets are the same; as well as the design and size of the hub. Bottom line, there is no technical advantage of using Control hub over the Expansion hub.

North Texas Pilot Program

Teams in North Texas can apply to a pilot program in which they can get a Control Hub for a discounted price ($175.00), and it will be legal for the team that has the Control hub. Outside the pilot program, you can still buy the Control hub but you need to pay the full price ($300.00). Contact Patrick R. Michaud (patrick.michaud@utdallas.edu) for additional information.

How to enroll in the pilot program

1. Go to the Submittable web site using the below link to apply for the pilot program
   (https://usfirst.submittable.com/submit/69f974f8-05f7-4a31-9d3f-51787e71bb53/2019-2020-first-tech-challenge-control-hub-pilot)

2. You will get a reply mail, mentioning that the application is under review, as mentioned below

Thank you for submitting your application to participate in the 2019-2020 FIRST Tech Challenge Control Hub pilot.
If your application meets the eligibility criteria, you will receive an email with the coupon code that is necessary to receive the discounted price. Instructions on how to use the coupon code will be included in the email. Please allow 48 hours to receive a response.

3. Once you are approved, you will get a confirmation mail with a coupon code and detail steps on how to purchase the Control Hub at reduced price.

# How to Connect the Driver station to the Control hub

Since Control hub acts like a robot control phone, the connecting process is roughly the same. The detail steps of connection the Control hub can be found at

http://www.revrobotics.com/content/docs/REV-31-1595-GS.pdf

1. Power on the Control Hub, by plugging the 12V Slim Battery into the orange XT30 connector labeled "BATTERY" on the Control Hub.

Silm Battery
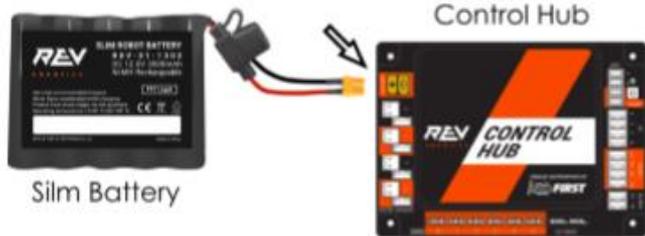
Control Hub

2. The Control Hub is ready to pair with the Kindle Fire when the LED turns green. Note: the light blinks blue every ~5 seconds to indicate that the control hub is healthy.
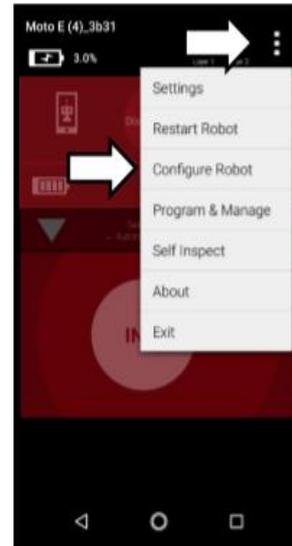
~5 Seconds

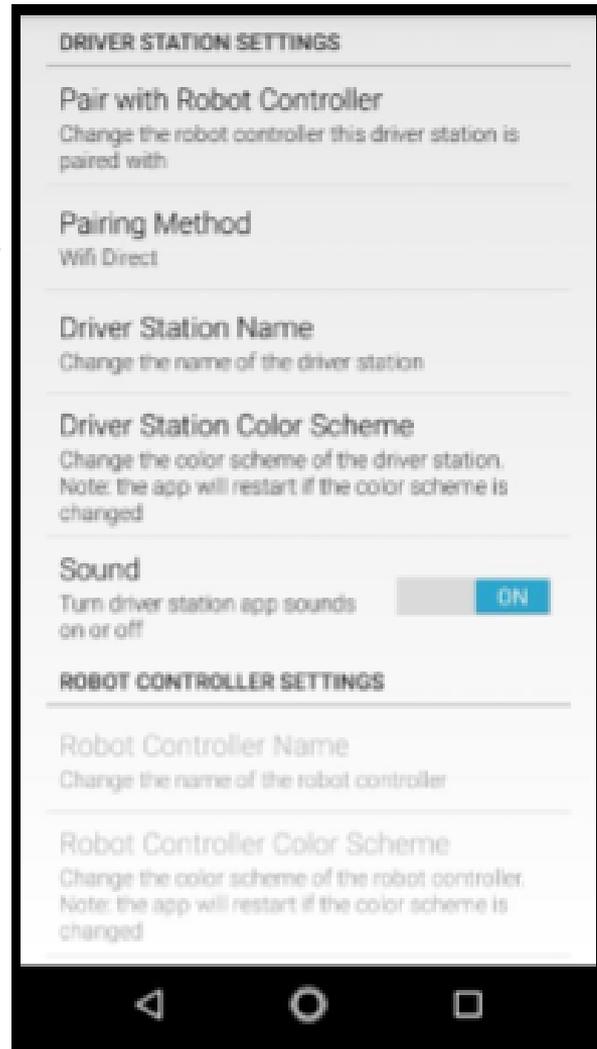3. Power on your Android Device by holding down the power button.

4. Open the Driver Station application from the HOME Screen.

5. On the Driver Station page, open the menu from the top right corner, then select "Settings".

6. Select, "Pairing Method"

DRIVER STATION SETTINGS

Pair with Robot Controller
Change the robot controller this driver station is paired with

Pairing Method
Wifi Direct

Driver Station Name
Change the name of the driver station

Driver Station Color Scheme
Change the color scheme of the driver station. Note: the app will restart if the color scheme is changed

Sound
Turn driver station app sounds on or off   `ON`

ROBOT CONTROLLER SETTINGS

Robot Controller Name
Change the name of the robot controller

Robot Controller Color Scheme
Change the color scheme of the robot controller. Note: the app will restart if the color scheme is changed

7. Select, "Control Hub"

DRIVER STATION SETTINGS

Pair with Robot Controller
Change the robot controller this driver station is paired with

Pairing Method
Control Hub

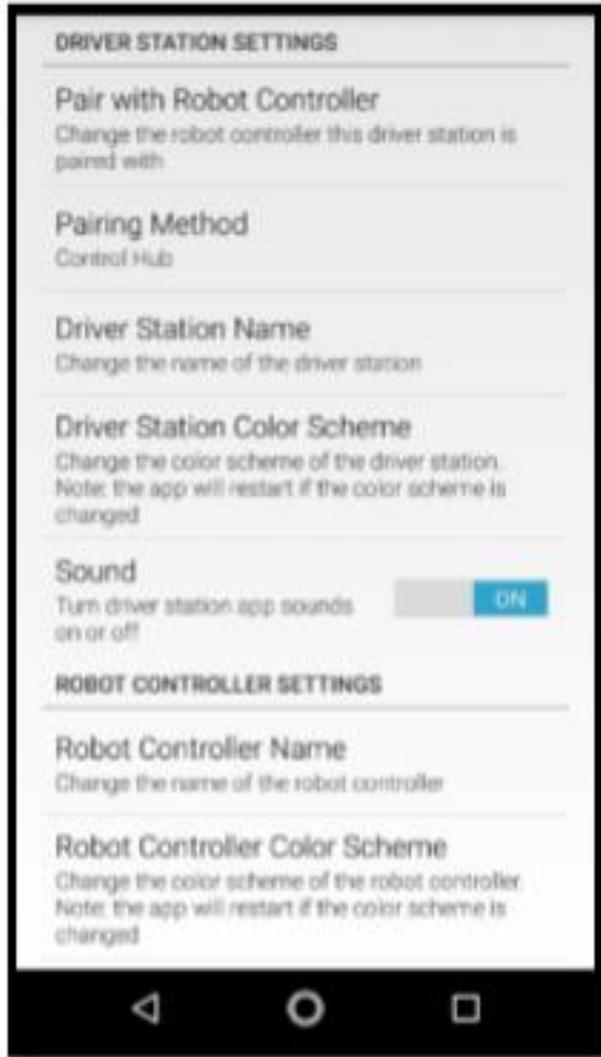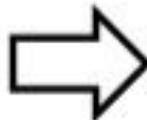**Pairing Method**

Wifi Direct ○

Control Hub ⦿

Cancel

ROBOT CONTROLLER SETTINGS

Robot Controller Name
Change the name of the robot controller

Robot Controller Color Scheme
Change the color scheme of the robot controller
Note: the app will restart if the color scheme is changed

8. Select, "Pair with Robot Controller".

DRIVER STATION SETTINGS

Pair with Robot Controller
Change the robot controller this driver station is paired with

Pairing Method
Control Hub

Driver Station Name
Change the name of the driver station

Driver Station Color Scheme
Change the color scheme of the driver station. Note: the app will restart if the color scheme is changed

Sound
Turn driver station app sounds on or off   ON

ROBOT CONTROLLER SETTINGS

Robot Controller Name
Change the name of the robot controller

Robot Controller Color Scheme
Change the color scheme of the robot controller. Note: the app will restart if the color scheme is changed

9. Select "Wifi Settings"

Wireless access point pairing is used to pair a driver station with a robot controller running on a Control Hub (use WifiDirect to pair with other robot controllers).

Each Control Hub robot controller hosts its own Wifi network named with the name of the robot controller (default password: "password"). Click the button below to use the system Wifi Settings of your driver station to select the network of the robot controller you want to pair with.
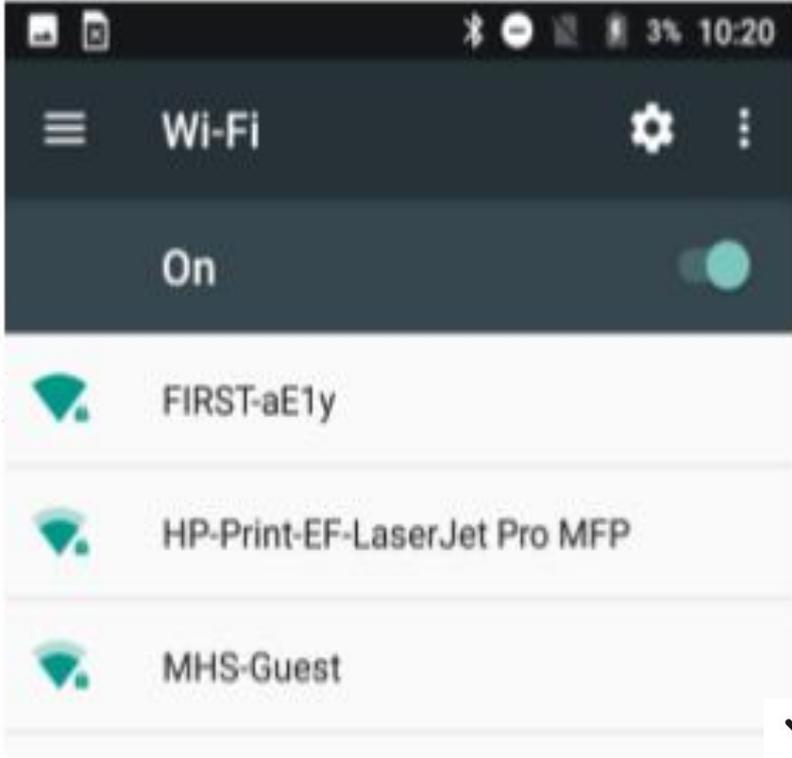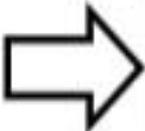
Current Robot Controller:

None
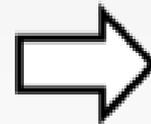
Wifi Settings

10. Select the name of the Wifi network that matches the name of the network printed on your control hub. This should start with "FIRST-".

11. Enter the password to the Wifi network in the password field. This defaults to "password". Press "CONNECT".
12. After pressing connect, press the back arrow at the bottom of the display until you return to the main driver station screen.
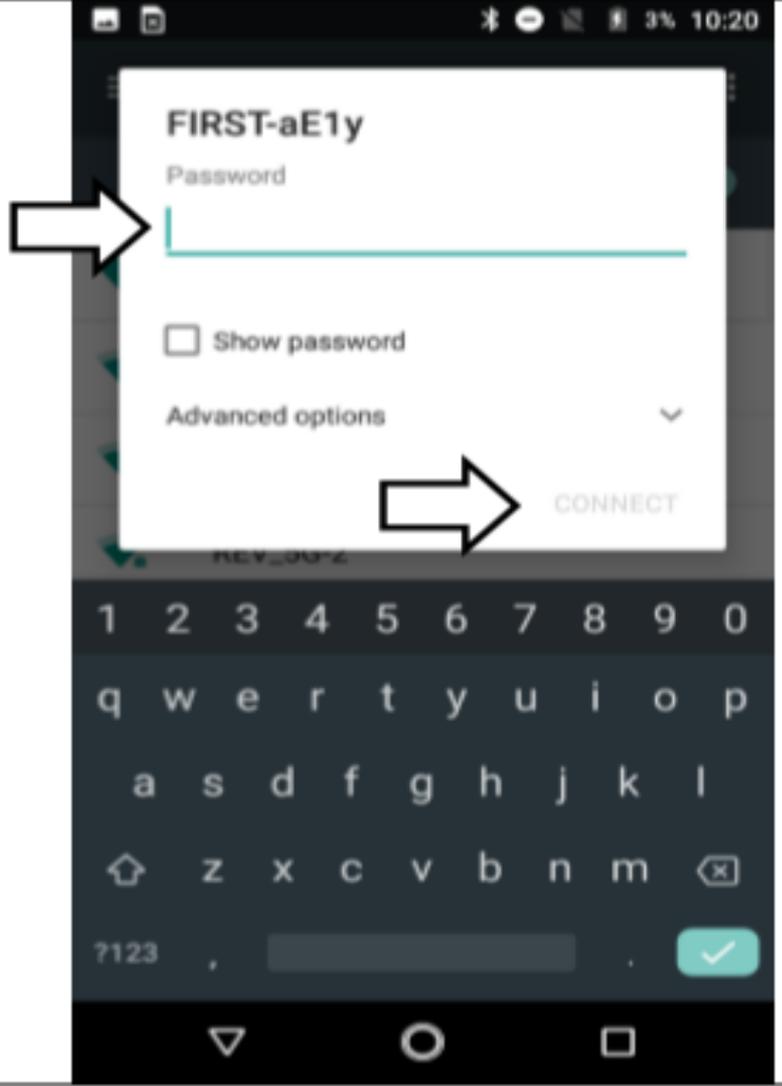
13. After a couple of seconds, the Driver Station page will indicate the network name, a ping time, and battery voltage.
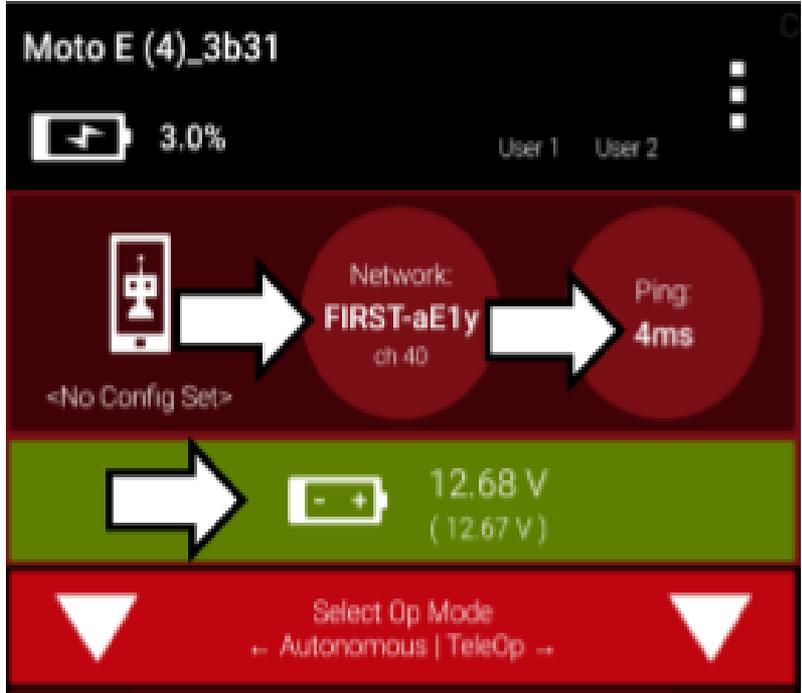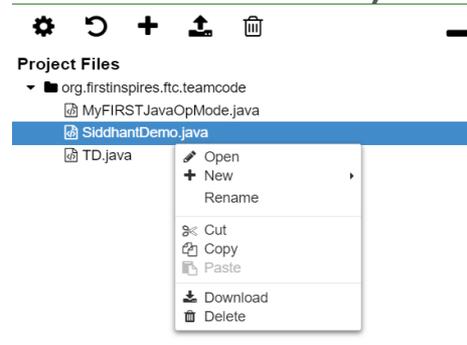

Your Driver Station is now paired with your Control Hub!

Porting Code from Expansion Hub to Control Hub

Step 1: On the expansion hub left click on the code you want to send over. It should look like this:

Then click on download, next you will be asked to where to place the file in your computer. Complete that and then disconnect from the expansion hub and connect to the control hub. (Note these same steps are applicable to folders inside of the java program.)

Porting Code from Expansion Hub to Control Hub

Step 2: Now that you are on the control hub, there should be a button in the top left that looks like this ⚙ ↺ ✚ ⬆ 🗑   click it and it should look like this

SiddhantDemo.java

It should show the name of the code, and end with.java. Select the code file from your folders and it should be in the java program now.

Q & A