
Configuring the BRx7 as a Base Using Local NTRIP for use with RTK Capable Drones

While there are multiple methods of configuring the Carlson BRx7 as a base for use with RTK capable drones, this document details a method to create a local NTRIP network, as this is a commonly supported connection method for drone controller software. It is notable, this method of setup *does not require internet connectivity*.

Requirements:

- BRx7 Base Receiver
- 5 Pin to Serial adaptor from the BRx7 kit
- USB To Serial adaptor cable (For example, the Trendnet TU-S9)
- RT5 tablet with SurvPC7 (or another other Windows 10 or 11 tablet)
- Autel Drone with drone controller (other drones may work as well)

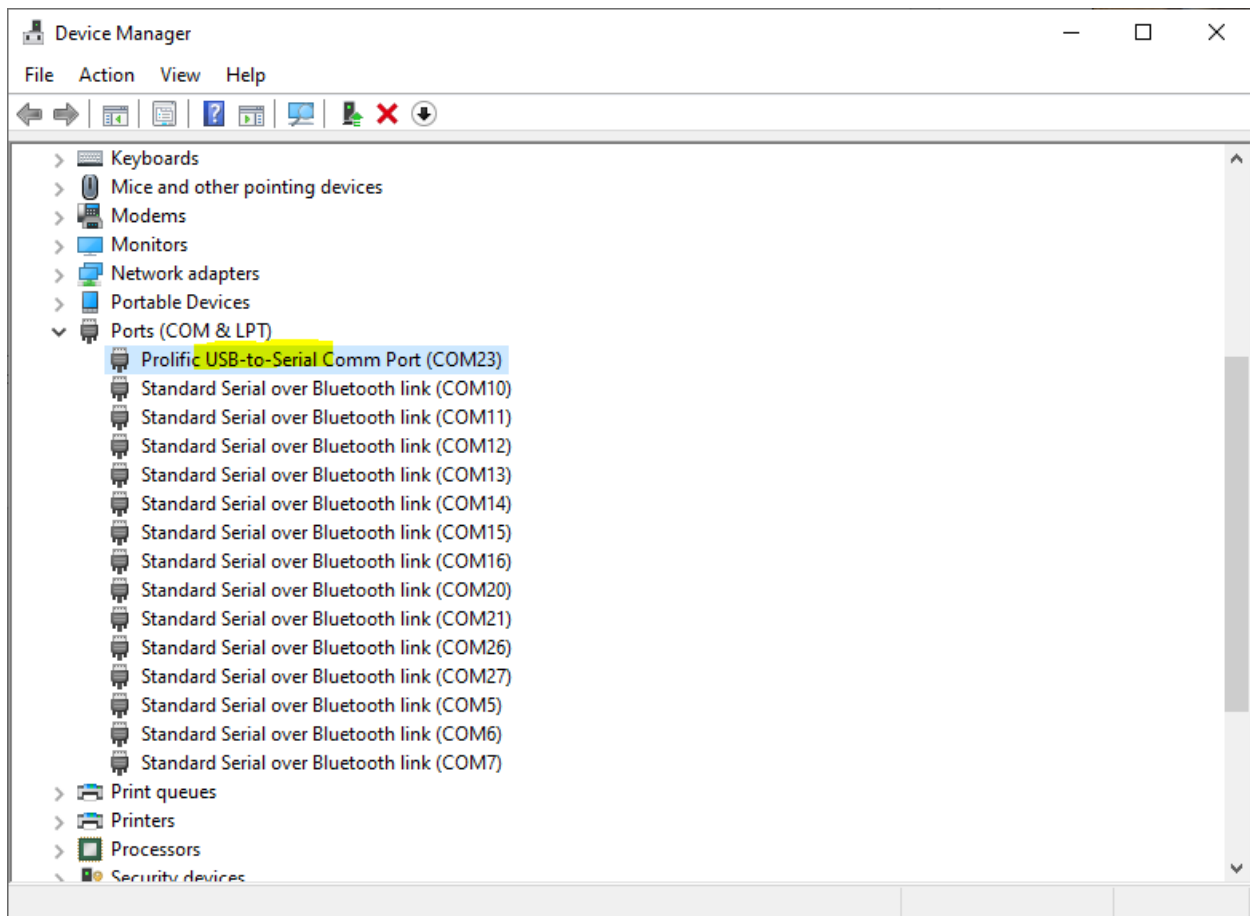
Step 1: Connect the BRx7 to the RT5

Plug the round five pin cable into the port of the BRx7. Plug the other end of the cable into your nine-pin serial port adaptor, and then plug the USB end of the adaptor into the data collector:



Step 2: Identify the Serial Port Number

The USB plugged into the tablet will create a virtual serial port. It is necessary to find the port number in order to proceed. After plugging the USB into the tablet, find the serial port by launching the device manager. Press the down arrow to expand the Ports (COM & LPT) category.



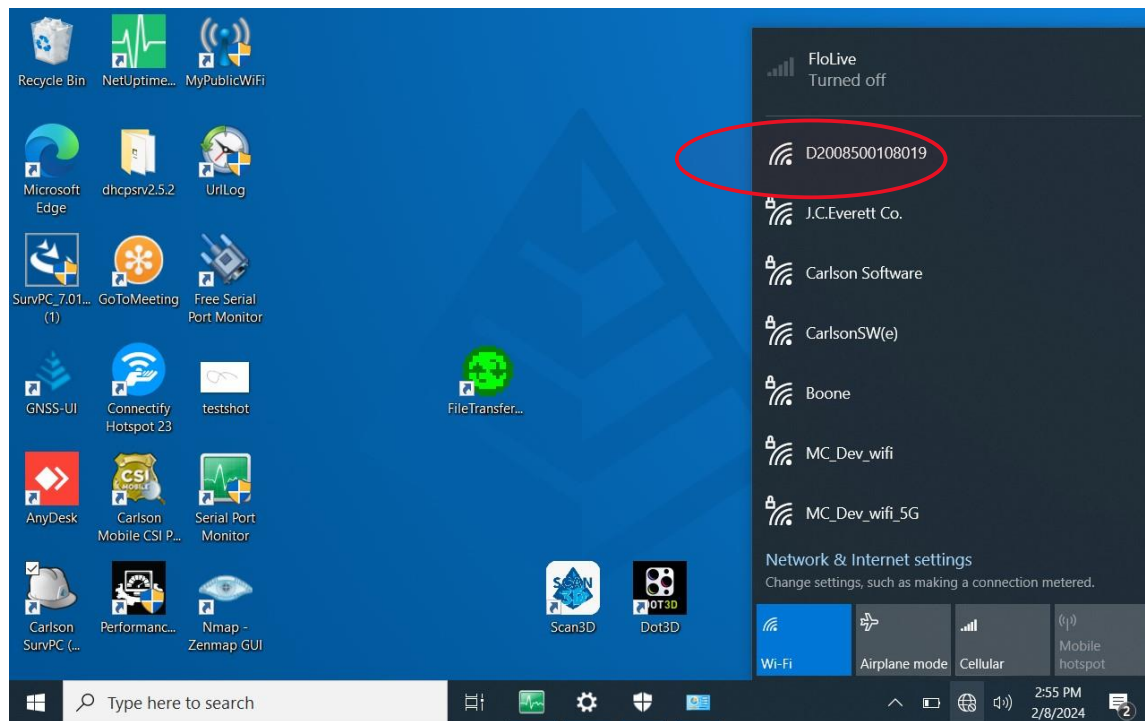
The port will usually say something like “USB-to-Serial”, as shown in the image. Here the port ID of interest is COM23.

Note: It may be required to install a driver for the USB-to-Serial adaptor. If you see a warning icon in the device manager, or if the serial port is not available, check the driver installation. Drivers are usually available on the manufacturer’s webpage for the adaptor. For the Trendnet TU-S9 in this example, the drivers are available here: https://www.trendnet.com/support/support-detail.asp?prod=265_TU-S9

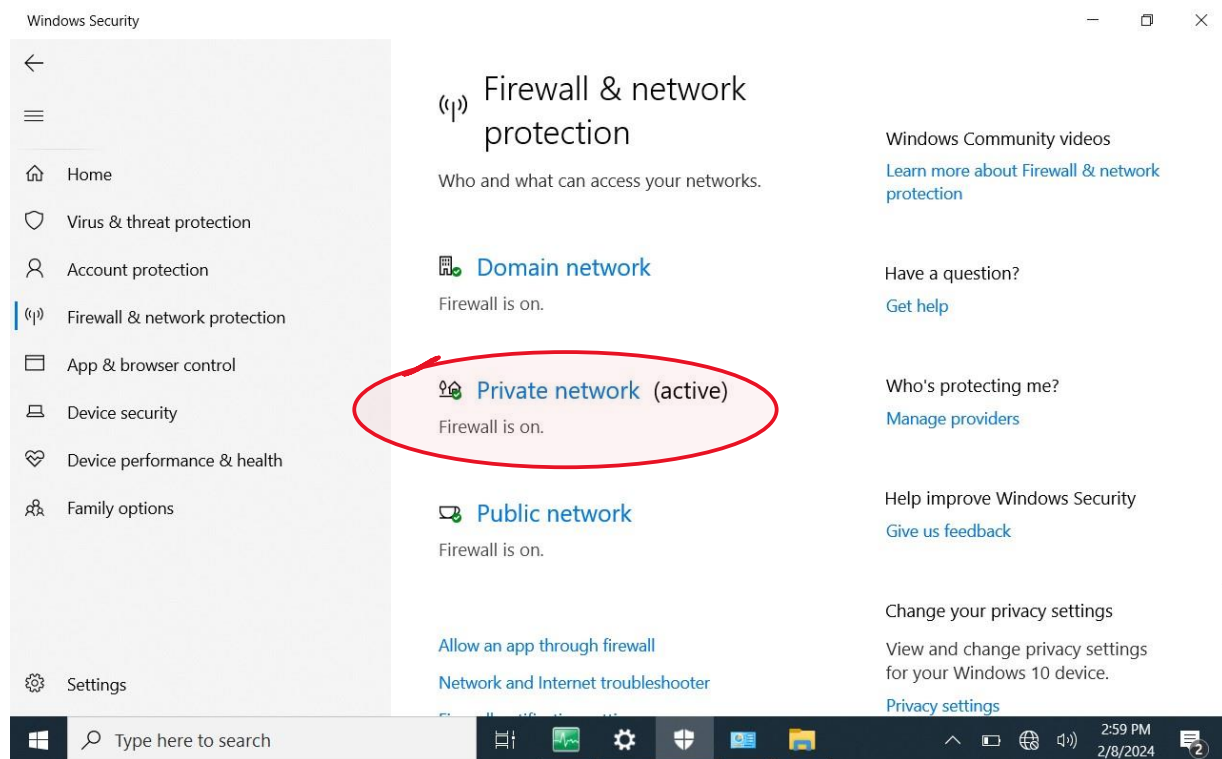
Step 3: Connect the controllers to the BRx7 Wifi

It is necessary to get the drone controller and the base receiver tablet on the same Wifi network, although *internet connectivity is not required*. This can be achieved using a phone hotspot, or another portable router. An easy way to achieve this without any extra hardware is to utilize the built in Wifi hotspot of the BRx7 receiver.

Power on the BRx7 receiver. On the RT5 tablet, press the Wifi icon in the windows toolbox and connect to the BRx7 Wifi Hotspot. If prompted to choose between public and private connection, choose private.



It may be necessary to disable the Windows Defender Firewall to allow connection through the hotspot. To do this, type “Firewall” in the windows search bar, and tap “Firewall & Network Protection” to open settings. Tap on the public or private connections option (whichever you are using) and disable the firewall. Alternatively, you can make an allowance in the firewall for SurvPC.



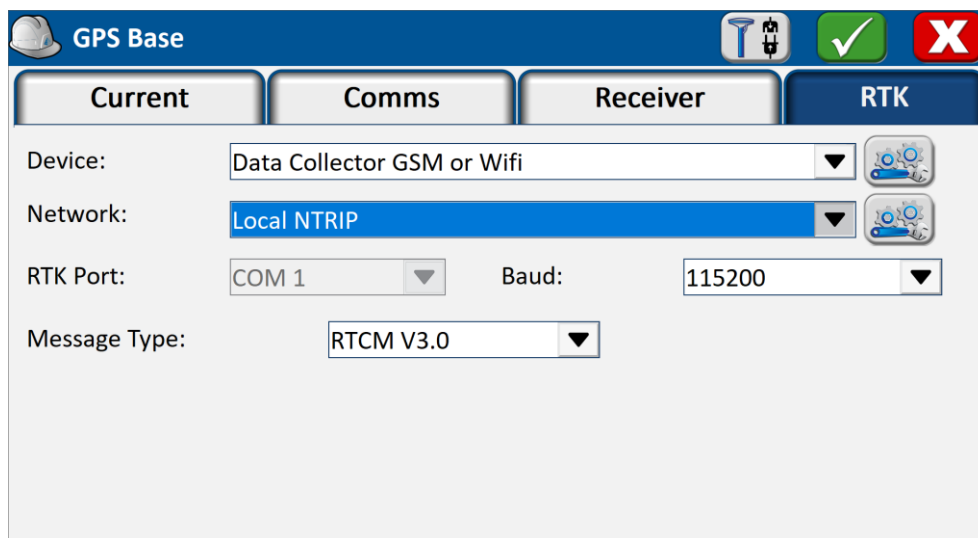
Step 4: Configure base output in SurvPC

Launch Carlson SurvPC and press Equip->GPS Base

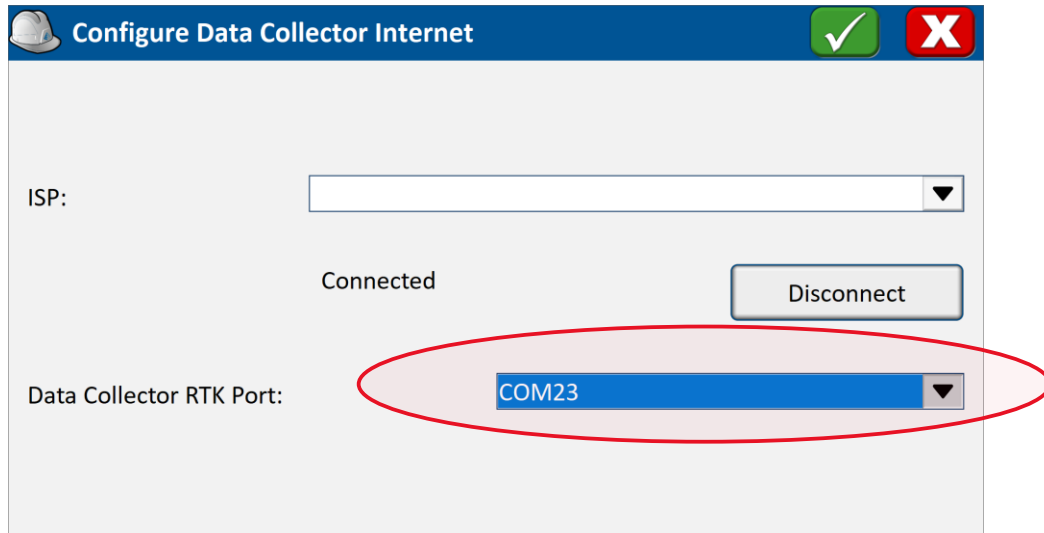


On the current tab, choose the Carlson BRx7, then use the comms tab to connect to the receiver over **Bluetooth**.

Select the RTK Tab and set the device to **Data Collector GSM Or Wifi**, and the Network to **Local NTRIP** as shown. The RTK port list on this screen describes the port on the BRx7 which will be broadcasting corrections, and is grayed out to COM1, which is the only valid option. The baud rate can be left at 115200, and the message type set as desired.



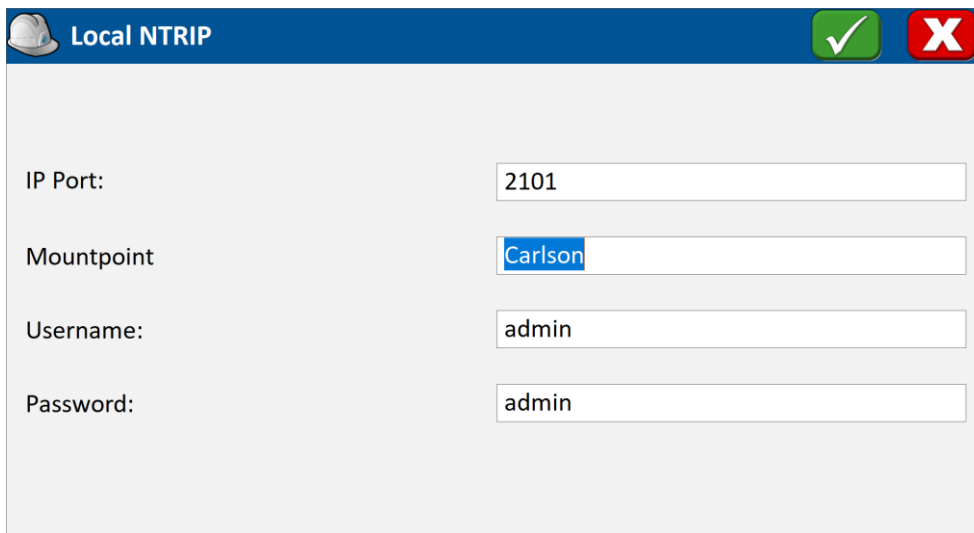
Next Press the gear icon to the right of the device selection. Here, select the COM port discovered in Step 2 of this guide. This option defines the port where the corrections will be coming into the data collector.



The screenshot shows a window titled "Configure Data Collector Internet" with a green checkmark and a red X icon in the top right. The window contains the following elements:

- ISP: A dropdown menu.
- Connected: A status indicator.
- Disconnect: A button.
- Data Collector RTK Port: A dropdown menu with "COM23" selected. This dropdown is circled in red.

Press OK to save this setting and return to the RTK tab. Now press the gear icon to the right of the Network selection box.

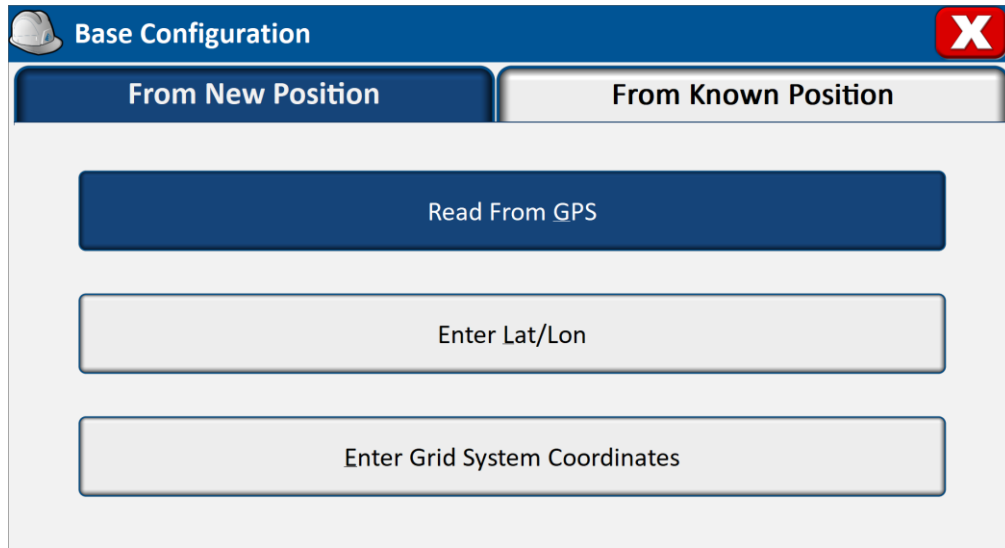


The screenshot shows a window titled "Local NTRIP" with a green checkmark and a red X icon in the top right. The window contains the following fields:

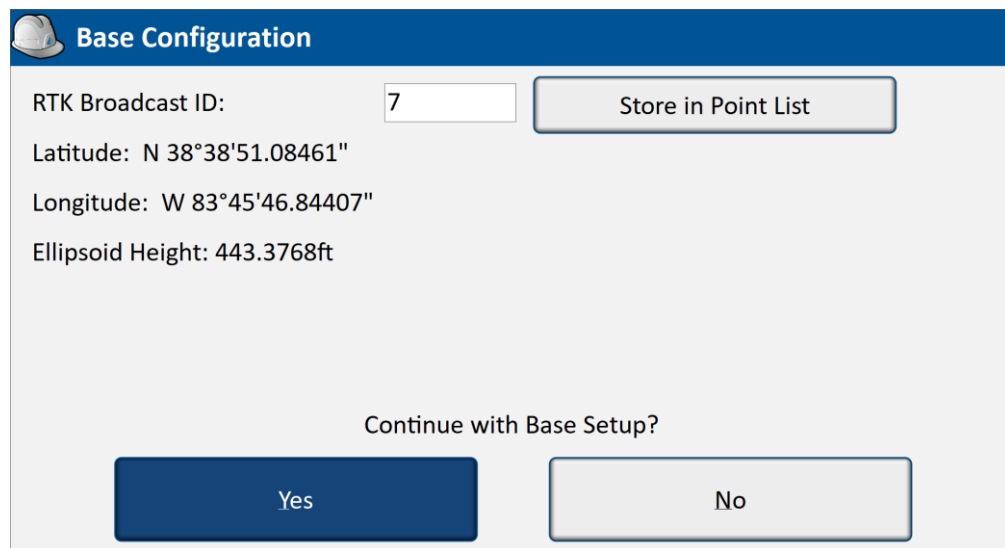
- IP Port: 2101
- Mountpoint: Carlson
- Username: admin
- Password: admin

This screen defines the IP port, Mount point name, username and password for your local ntrip server. All options on this screen are completely customizable, but for simplicity, leave them at the default values, and press the green check to save the settings.

Back on the RTK tab, press the green check to continue base configuration. On the base configuration screen, choose your desired base setup method and proceed to set the base position.

The image shows a software dialog box titled "Base Configuration" with a blue header bar containing a hard hat icon and a red close button. Below the header are two tabs: "From New Position" (active) and "From Known Position". Under the "From New Position" tab, there are three large buttons stacked vertically: "Read From GPS" (dark blue), "Enter Lat/Lon" (light gray), and "Enter Grid System Coordinates" (light gray).

Configure your base broadcast ID and base position, and press YES to finalize base setup.

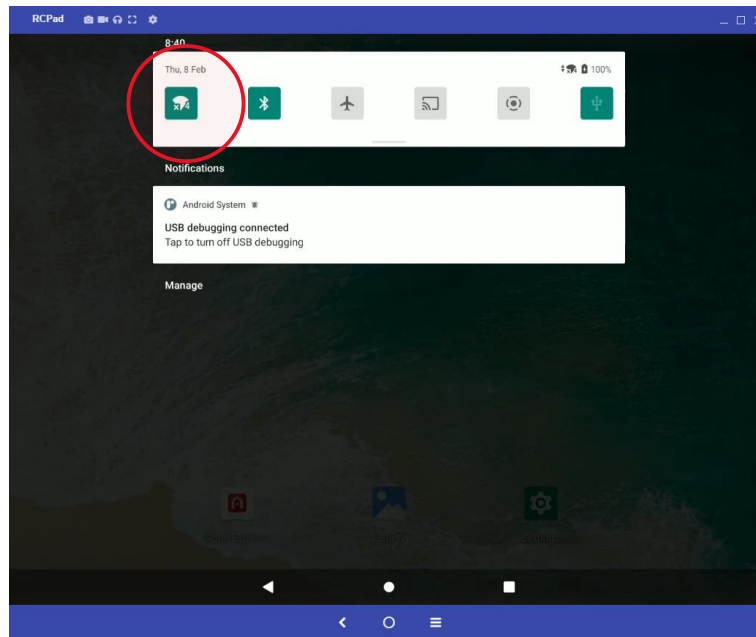
The image shows the same "Base Configuration" dialog box, but now with input fields. The "From New Position" tab is still active. The "RTK Broadcast ID" field contains the number "7". To its right is a "Store in Point List" button. Below this, the "Latitude" is displayed as "N 38°38'51.08461\"", the "Longitude" as "W 83°45'46.84407\"", and the "Ellipsoid Height" as "443.3768ft". At the bottom, the question "Continue with Base Setup?" is followed by two buttons: "Yes" (dark blue) and "No" (light gray).

The Local NTRIP server will be broadcasting automatically. The IP port will be detected automatically, and the port, mountpoint, username, password, and RTK message type will be as configured. A fluctuating, non-zero, value on the latency field is an indicator that the base is broadcasting. Base configuration is now complete and the base controller should be left in this screen. **Note that exiting this screen will end the base broadcast.**

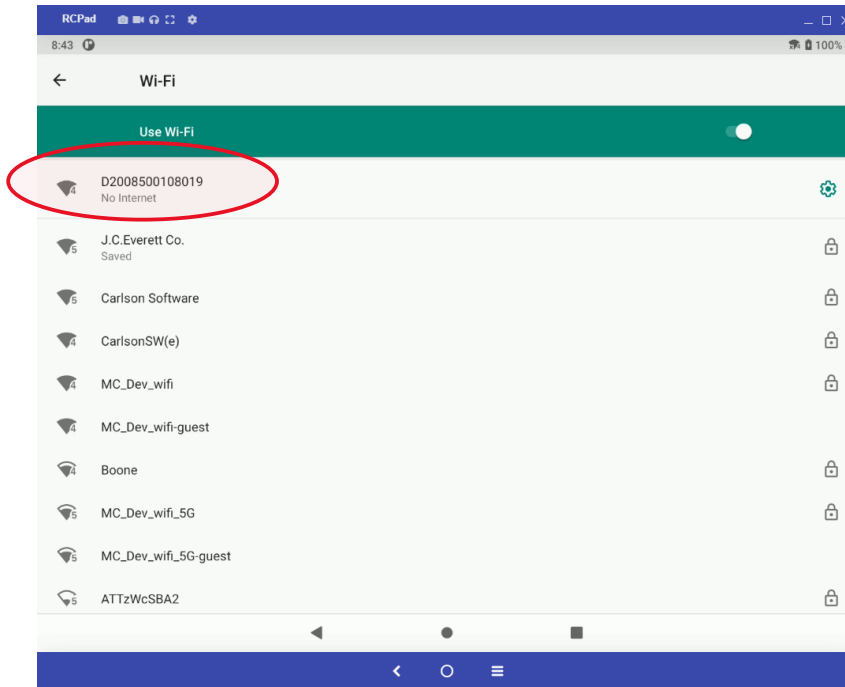
 Local NTRIP 	
IP Address:	192.168.010.005
IP Port:	2101
Mountpoint	Carlson
Username:	admin
Password:	admin
RTK Message Type:	RTCM V3.2
Latency:	0.4
Rovers Connected:	0

Step 5: Configure the drone controller to the BRx7 Wifi Hotspot

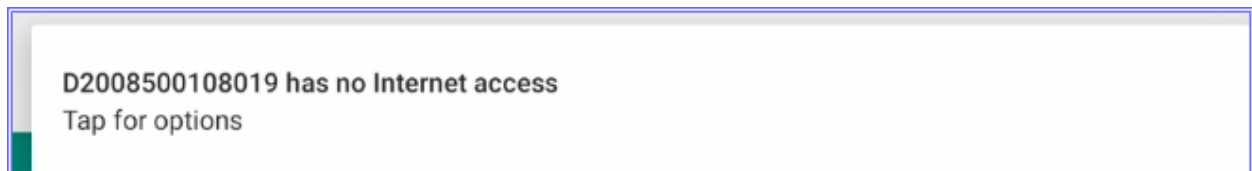
Power on the Autel Drone Controller and the Autel drone. Swipe down from the top of the screen to access the Wifi configuration.



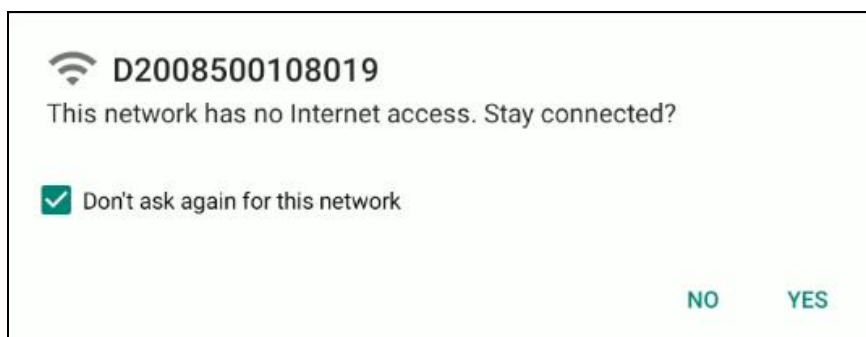
Tap and briefly hold the Wifi icon to enter setup. Select the BRx7 Wifi Hotspot and press connect. It is OK if it says “No Internet”.



A popup will appear as follows—tap it:

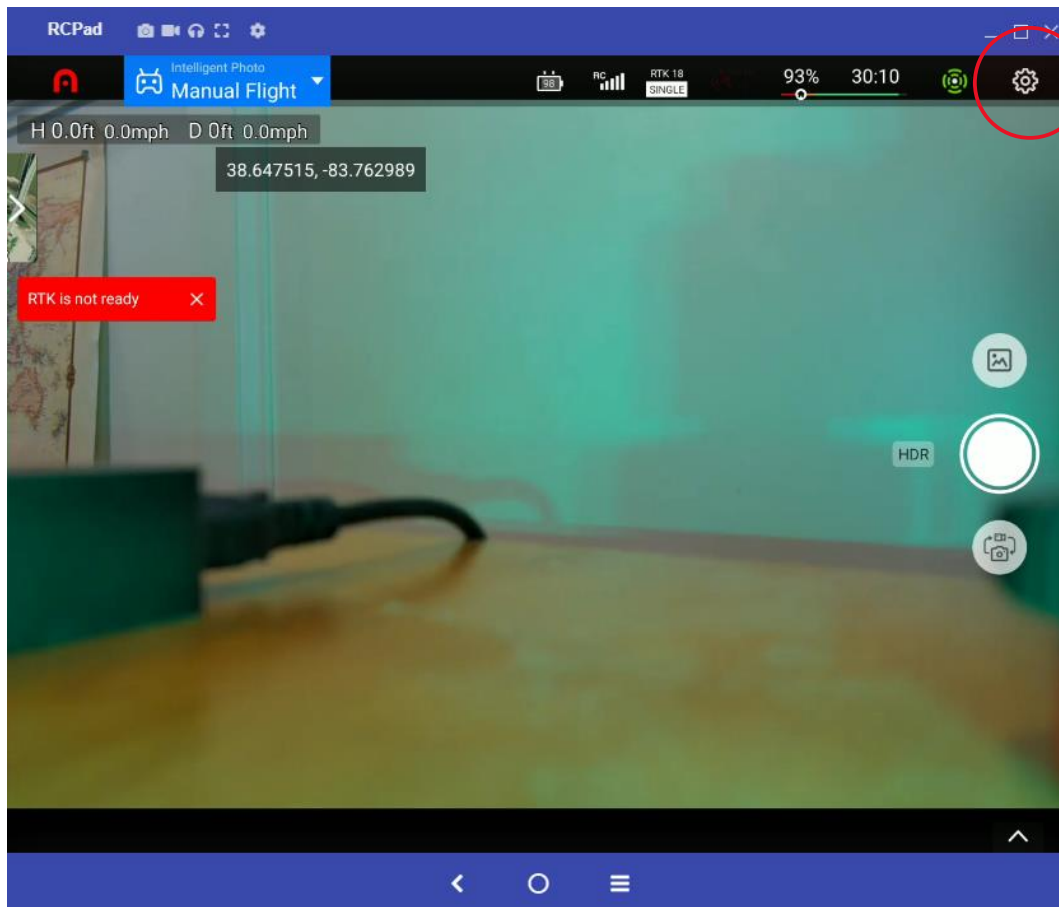


On the following screen, enable the “Do not ask again for this network” option, and choose YES to the prompt to stay connected:

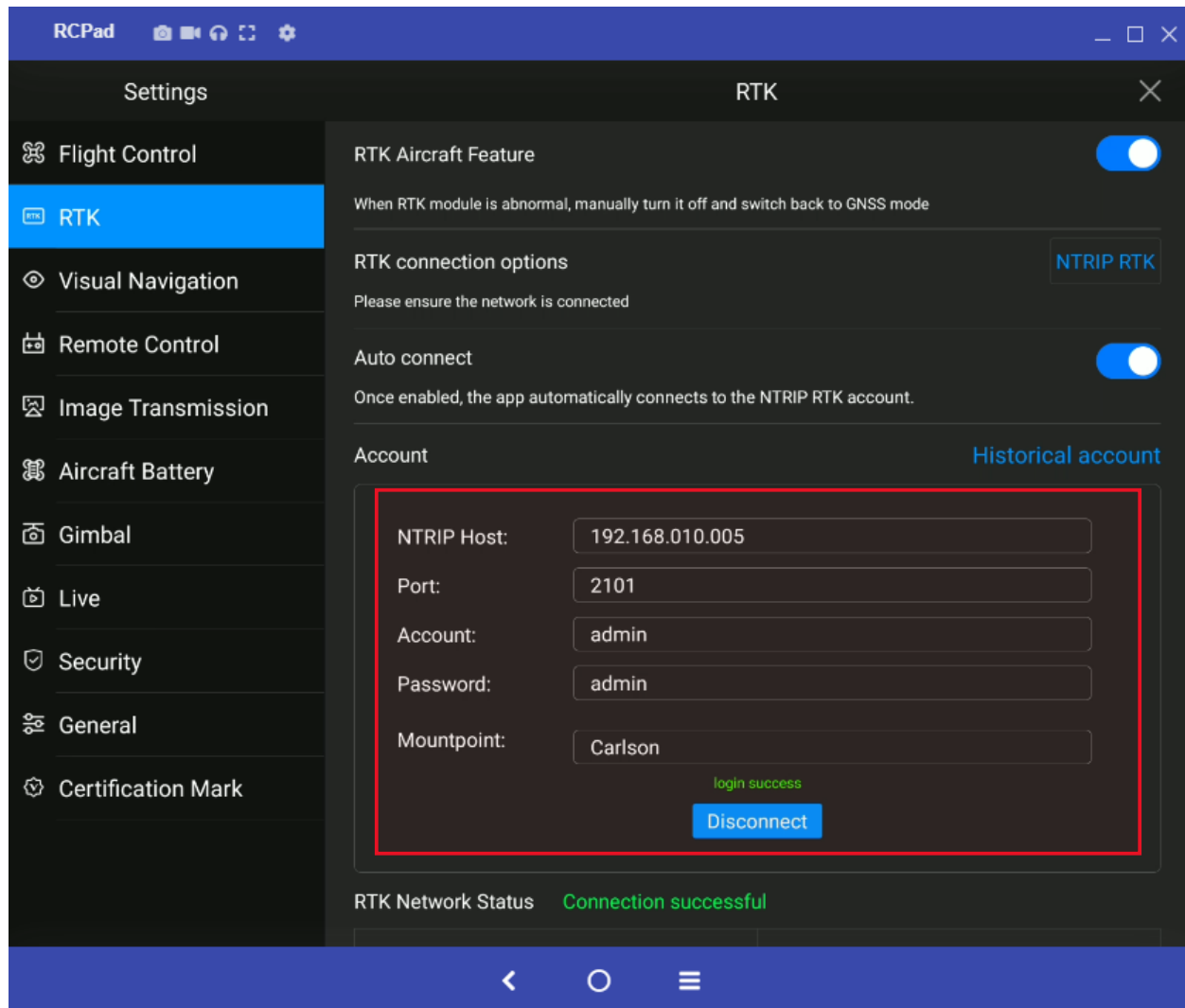


Step 6: Configure the drone for RTK

Back on the Android home screen of the drone controller, launch the Autel Explorer, then chose “Camera”. Next, choose the gear icon in the upper right corner.



On the settings screen, choose the RTK tab on the left. Note that the drone will need to be powered on and connected to the controller for this option to appear.



Enter the NTRIP connection settings exactly as they appear on the screen of your base controller (Step 4), and press Login to connect. Note that these settings are case sensitive. The Autel Drone is now receiving RTK corrections from the Carlson BRx7.

Failure to connect at this step may indicate that the connection is being blocked by the firewall. Please revisit Step 3 of this guide to confirm that the firewall is disabled.