Trimble R12 GNSS Receiver: Configuring the Receiver as an Internet Base for DJI Phantom 4 RTK

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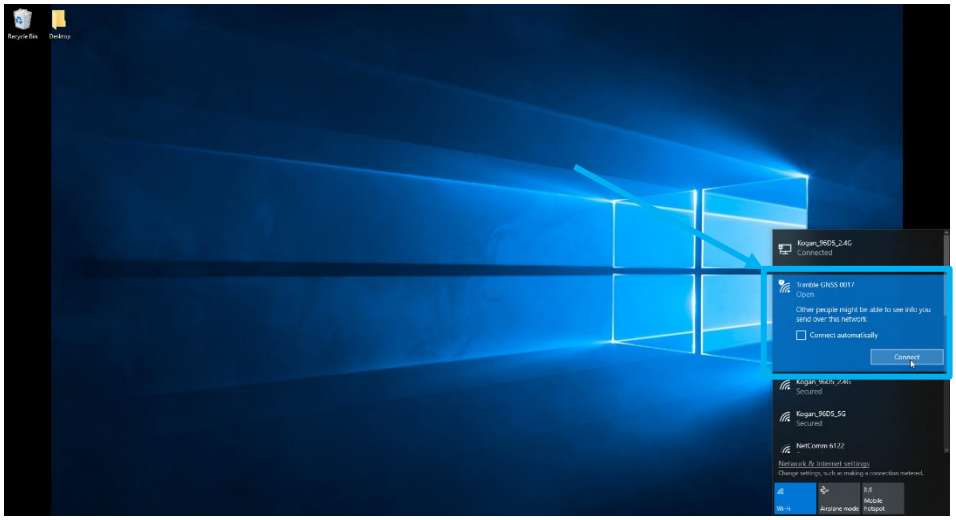
www.trimble.com

Contents

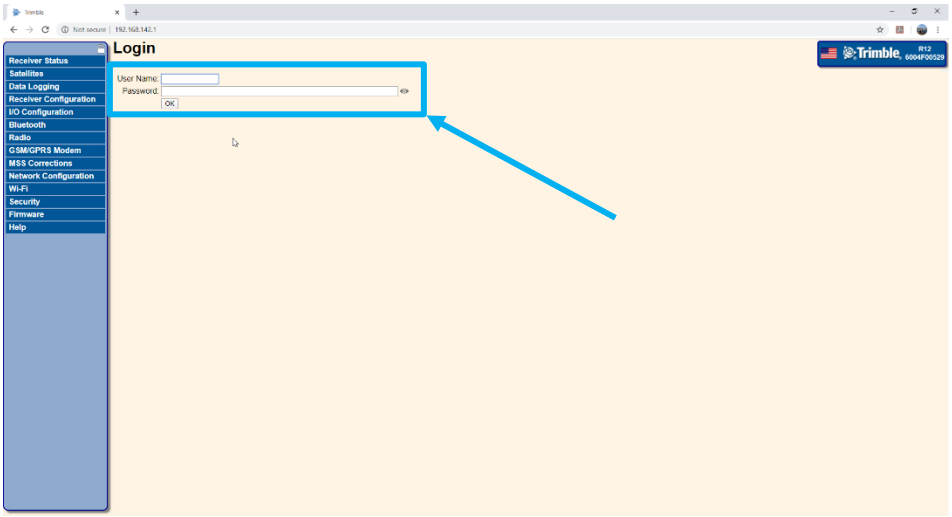
Configuring the R12 Receiver

Accessing the R12 Web User Interface (WebUI)

1. Turn on the receiver and connect to its Wi-Fi access point. The receiver Wi-Fi access point is named **Trimble GNSS xxxx**, xxxx being the last 4 digits of the receiver serial number. You won't require a password to connect.

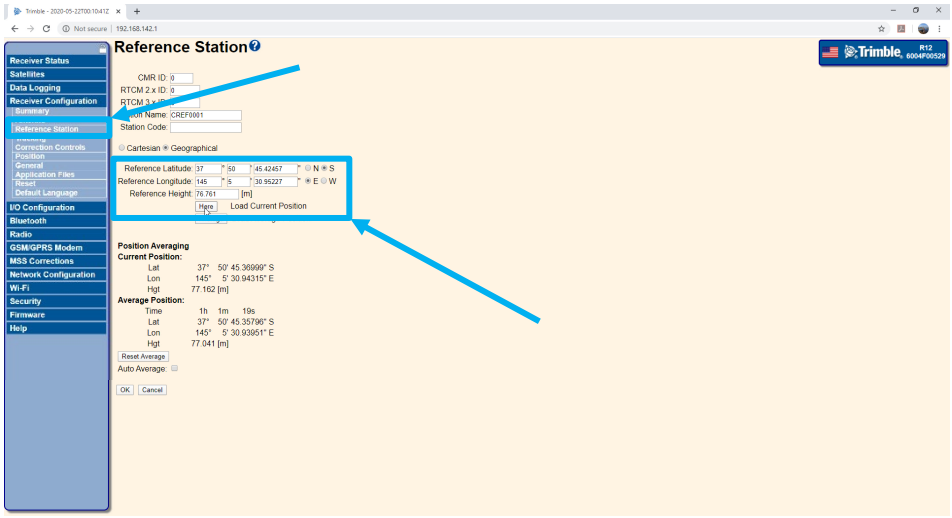


2. Once you are connected to the Wi-Fi network, open a web browser and go to **192.168.142.1**
3. The Trimble GNSS WebUI splash screen displays; enter your **User Name** and **Password**. If you don't know the login for your receiver contact your local Trimble Distribution Partner.
4. Click **OK.**



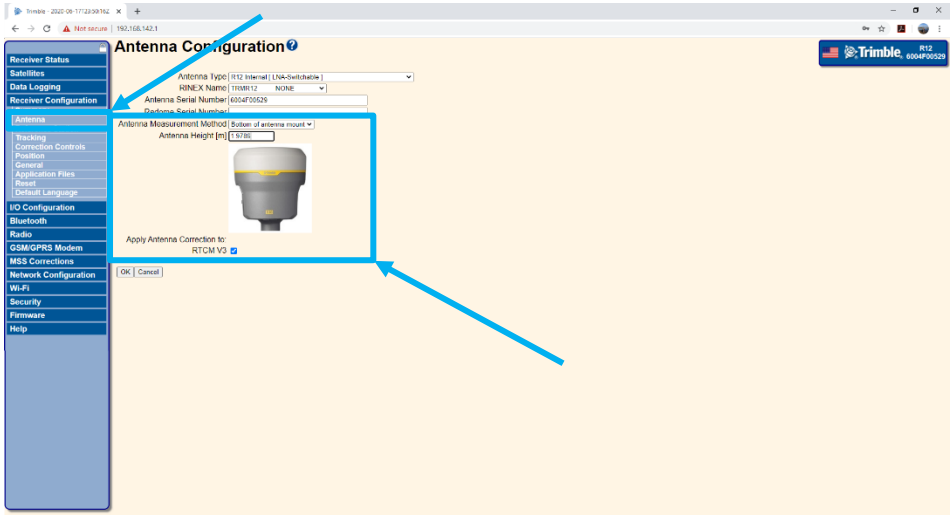
Setting the position of the base station

1. Open **Receiver Configuration > Reference Station** from the left side menu.
2. Click **Here** to update the reference position to the current location.
3. If you are setting the receiver over a known position, input the **Reference Latitude**, **Reference Longitude**, and **Reference Height**. Because you've already clicked **Here** you should only need to edit the decimal places.
4. Click **OK.**



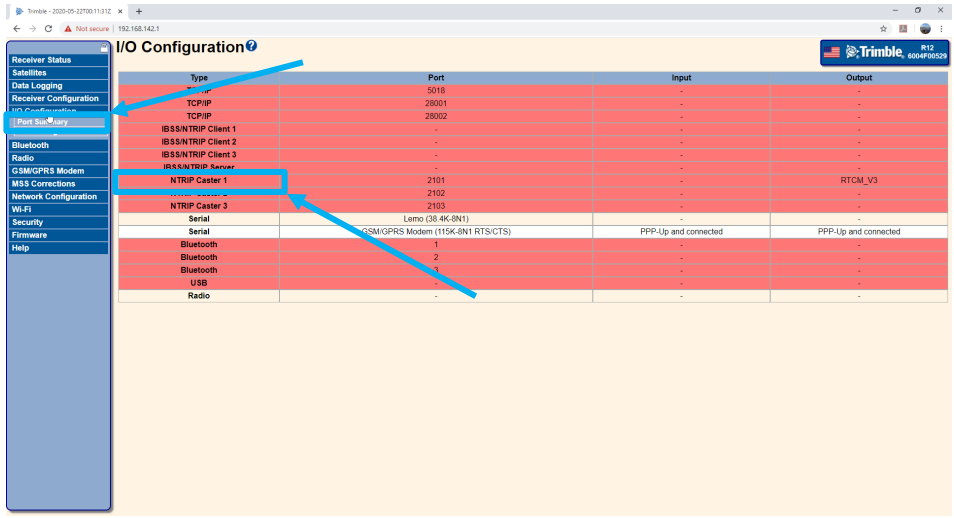
Setting the Antenna Configuration

1. Open **Receiver Configuration > Antenna.**
2. Define the **Antenna Measurement Method** you have used.
3. Define the **Antenna Height** you have measured.
4. Enable **Apply Antenna Corrections to: RTCM V3.**
5. Click **OK.**

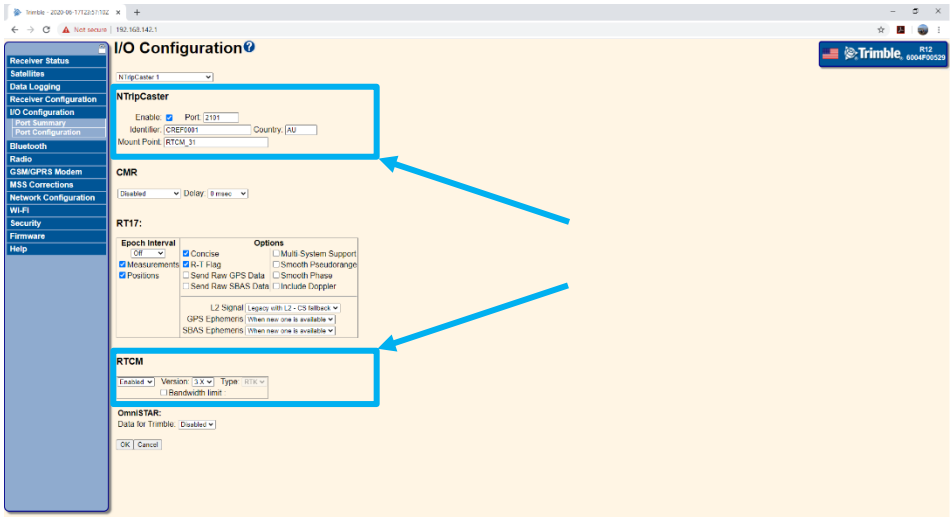


Setting NTRIP correction stream

1. Open **I/O Configuration > Port Summary** from the left side menu.
2. Select **NTRIP Caster 1** from the list; the Port Configuration screen displays.

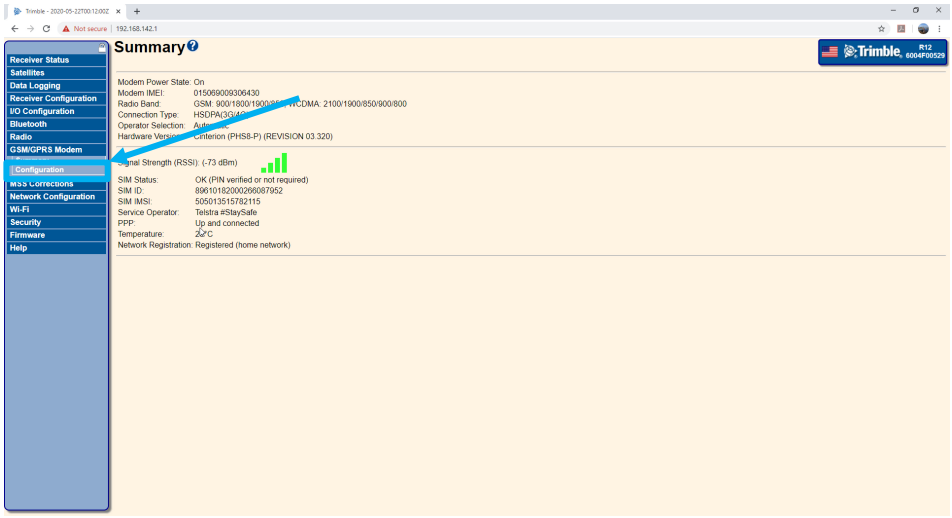


3. Select **Enable.**
4. Leave the **Port** as the default 2101.
5. Optionally, enter an **Identifier.**
6. Optionally, enter the **Country.**
7. Enter the **Mount Point**. This is required and should be something that easily identifies the receiver and correction, for example, RTCM_31.
8. In the **RTCM** section select **Enable** from the dropdown.
9. In the **RTCM** section select **Version: 3.x** from the dropdown.
10. Click **OK.**

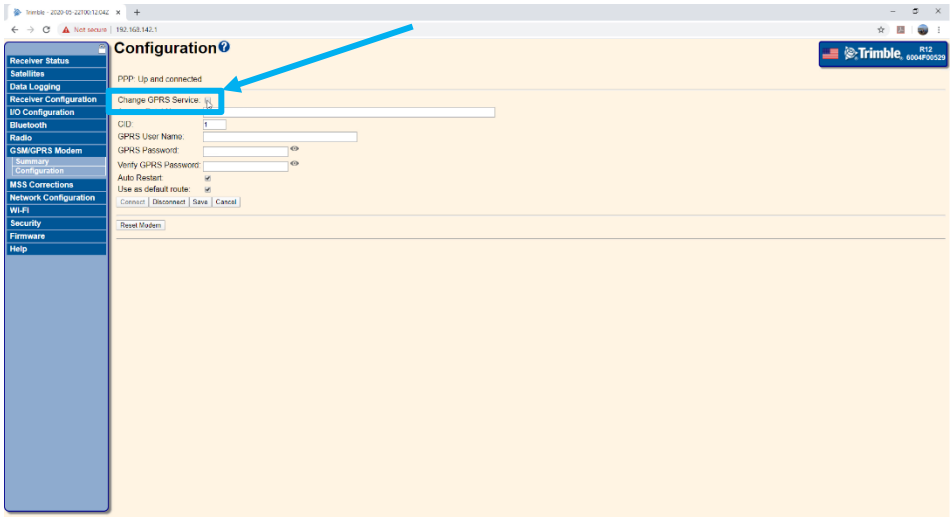


Connecting the receiver to the Internet

1. Insert a SIM card into the receiver. The SIM card must support a public IP address. See Notes.
2. Open **GSM/GPRS Modem > Configuration.**

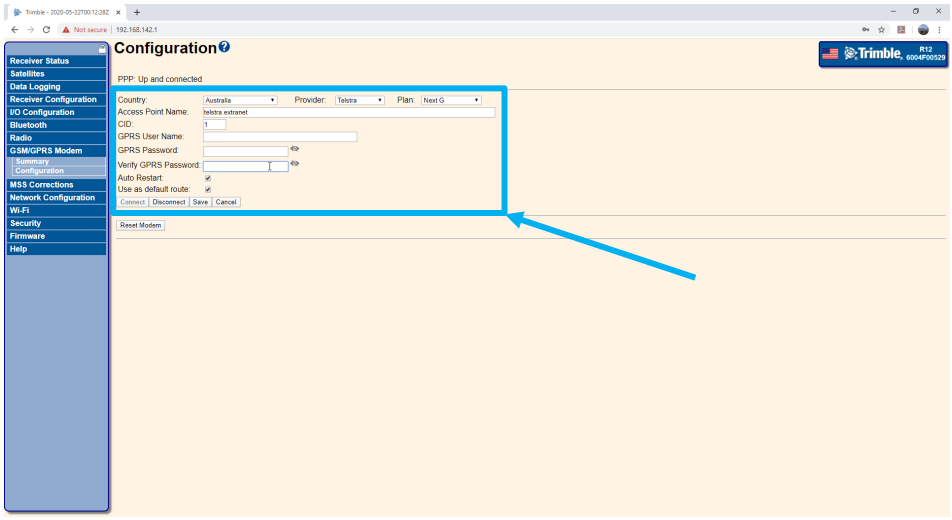


3. Select **Change GPRS Service.**



4. Select **Country:** Australia
5. Select **Provider:** Telstra
6. Select **Plan:** Next G
7. Define **Access Point Name:** telstra.extranet
8. Define **CID:** 1
9. Leave **GPRS User Name:**
10. Leave **GPRS Password:**
11. Enable **Auto Restart**
12. Enable **Use as default route**
13. Click **Save.**

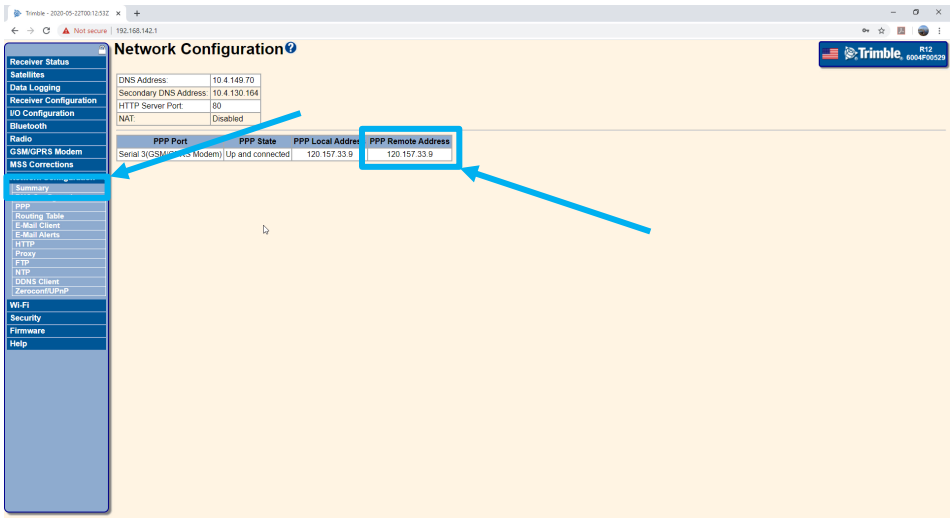
Note: The configuration here differs for each country. This example is prepared for the Telstra network in Australia.



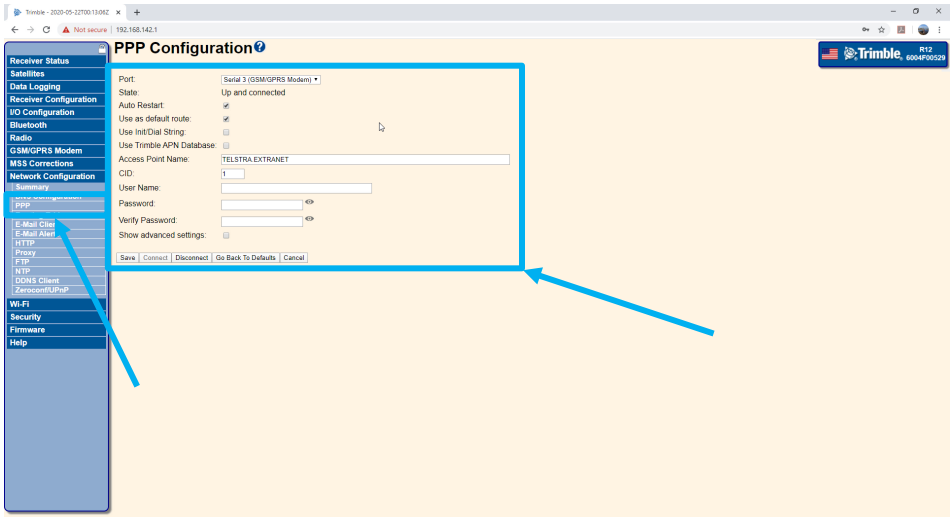
Determining the IP address of the receiver

1. Open **Network Configuration > Summary.**
2. The **PPP Remote Address** is the IP address you need to use to connect to for NTRIP corrections.

Note: On the Telstra network, if you have an IP address that is in the 10.xx.xx.x range it indicates that you're still on the Telstra private network. You must restart the receiver to trigger connection with a WAN IP address.
The PPP Remote Address is dynamic and will change with each connection to the network.



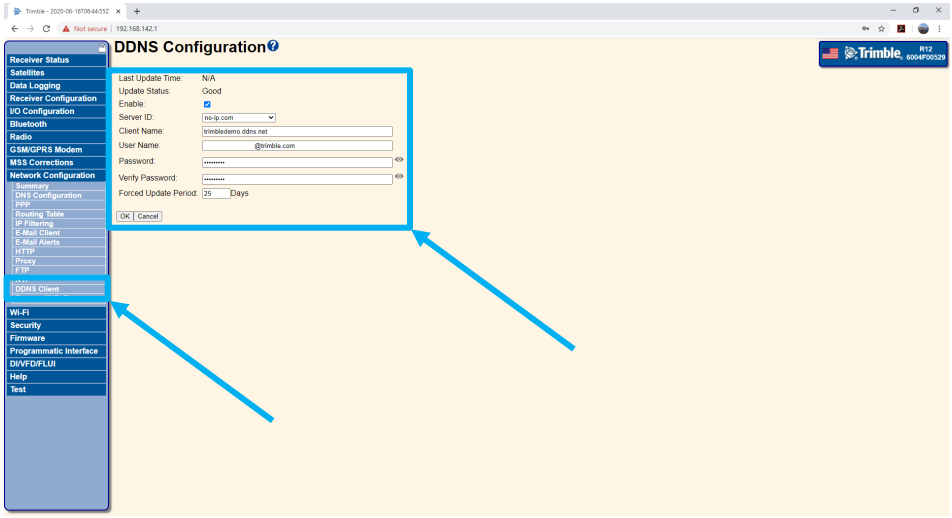
3. Open **Network Configuration > PPP** to check the settings are correct.
4. **Port:** Serial 3 (GSM/GPRS Modem)
5. Enable **Auto Restart**
6. Enable **Use as default route**
7. **Access Point Name:** telstra.extranet
8. **CID**: 1
9. **User Name:**
10. **Password:**
11. Click **Save**



Optional: Setting up a DDNS Client to use a static IP address

A DDNS Client is a service that allows you to forward a dynamic IP address through a DDNS server so that you have a static IP address for you to access. This is beneficial if you're using NTRIP over WAN often; it means you won't need to keep checking the PPP Remote Address in the WebUI, or update the configuration on the drone. Many Trimble receivers have DDNS providers embedded as part of the firmware. You'll see the list of options under the Server ID.

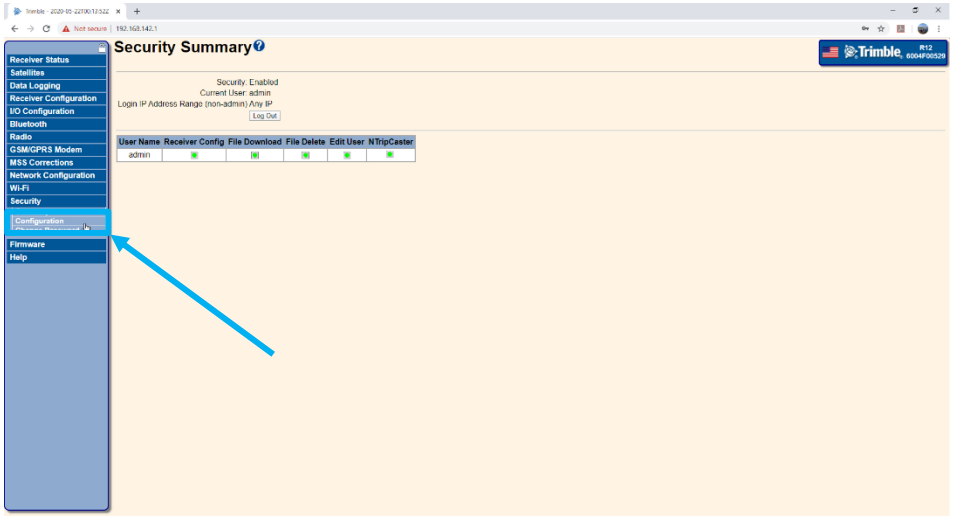
1. Open **Network Configuration > DDNS Client.**
2. Select **Enable.**
3. Select the **Server ID.**
4. Fill out the required fields for your selected **Server ID.**
5. Click **OK**



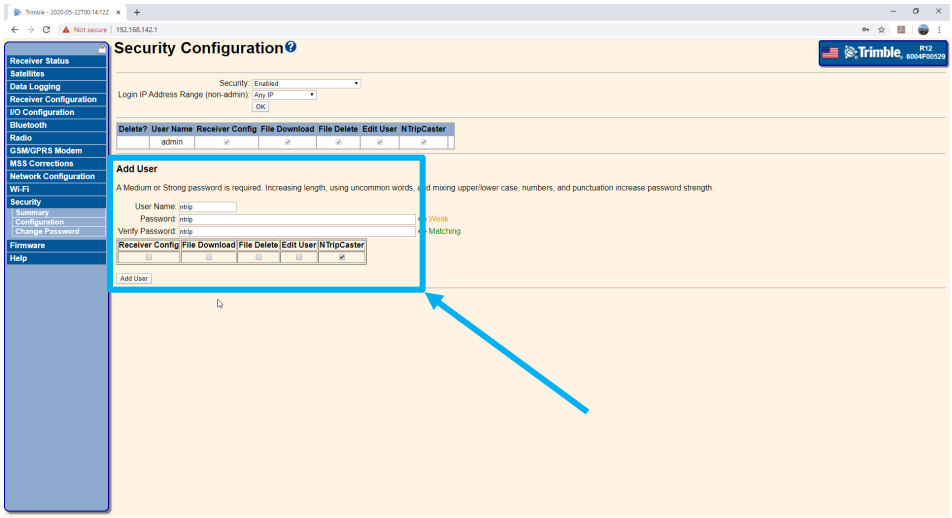
Optional: Creating a new NTRIP-only user login

To make it easier to access the NTRIP correction stream in the field you may want to create a login to the receiver that only allows NTRIP corrections, and is a lot easier to type in and configure on the drone.

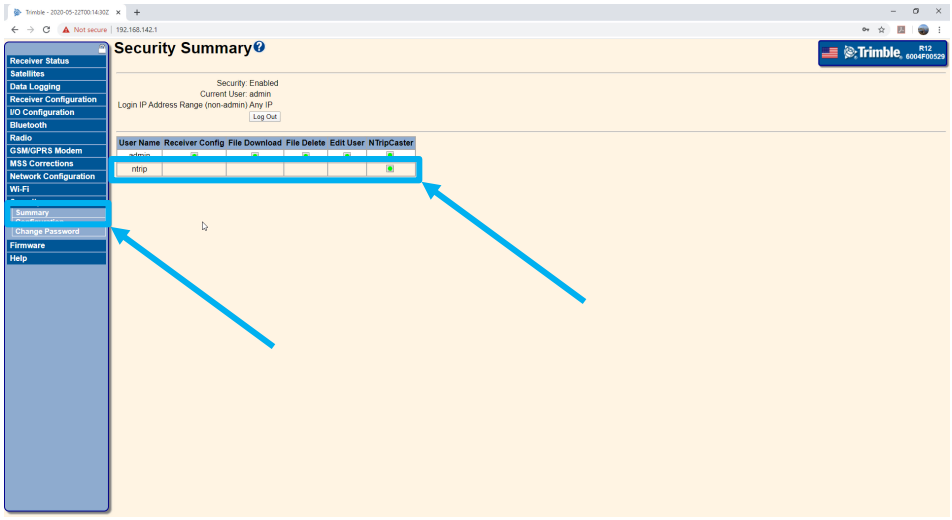
1. Open **Security > Configuration.**



2. Define a **User Name.**
3. Define a **Password.**
4. Enable **NtripCaster.**
5. Select **Add User.**



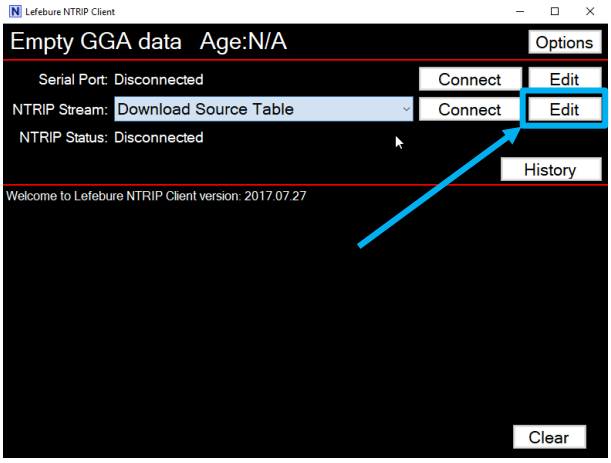
6. You can now see your new login listed in the **Security> Summary** page.



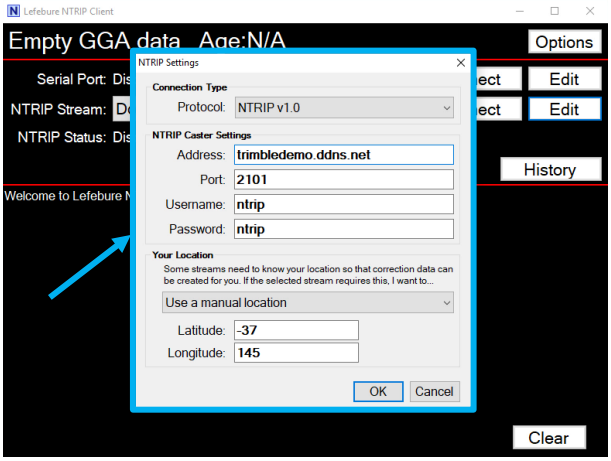
Optional: Testing your NTRIP correction stream

Before heading out in the field you might want to test your new NTRIP correction stream. There are some pieces of software that allow you to do this quite quickly. Lefebure NTRIP Client in one option, it can be downloaded here

1. Open **NTRIPClient.**
2. In the **NTRIP Stream** row click **Edit.**

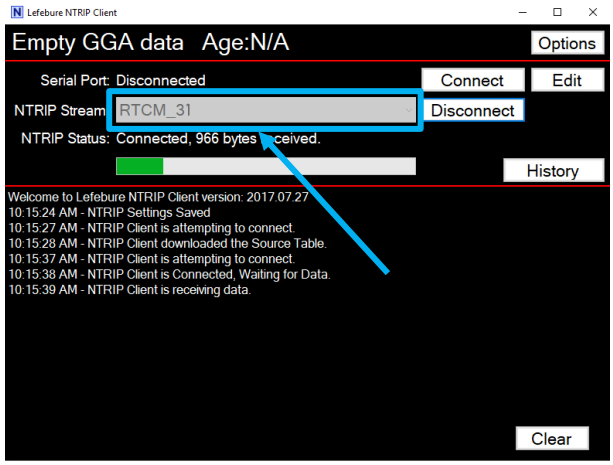


3. **Address:** This will either be your PPP Remote Address, or your DDNS domain.
4. **Port:** 2101
5. **Username:** your defined username
6. **Password:** your defined password
7. Change the **Your location** setting to **Use a Manual Location**
8. **Latitude / Longitude:**
9. Click **OK.**



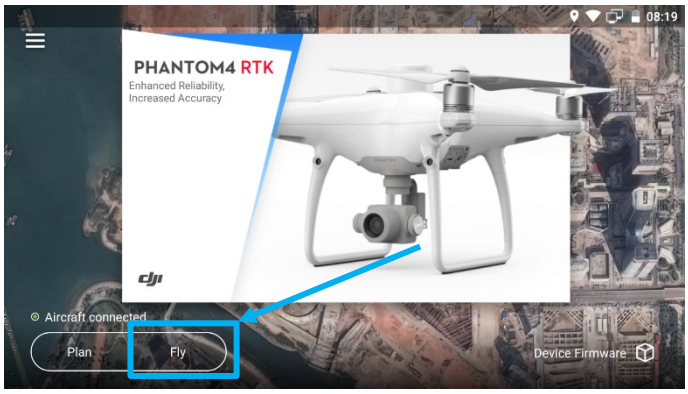
10. Select **Download Source Table** from the **NTRIP Stream** dropdown if it isn't already selected.
11. Click **Connect.**

12. You should now have the Mount Point **RTCM_31** in the **NTRIP Stream** dropdown.
13. Select **RTCM_31** from the dropdown and click **Connect**. You should connect to the NTRIP stream and start receiving a correction stream.

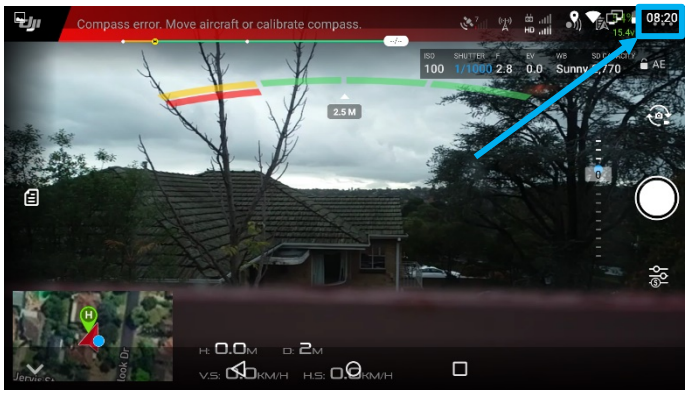


Configuring the DJI Phantom 4 RTK

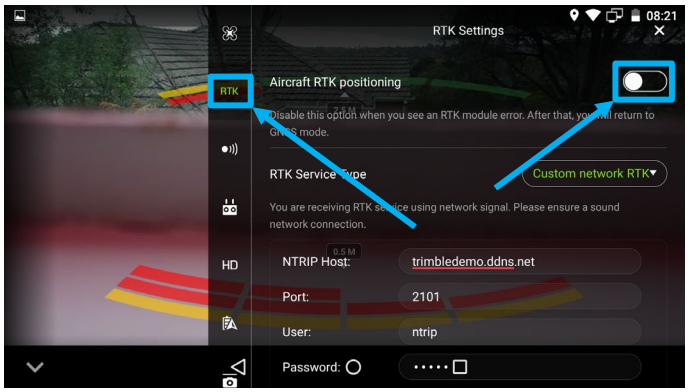
1. Make sure your DJI controller can access the Internet. This can either be through a SIM card in the controller, or through a Wi-Fi hotspot.
2. Open the DJI GS RTK app.
3. Click **Fly.**



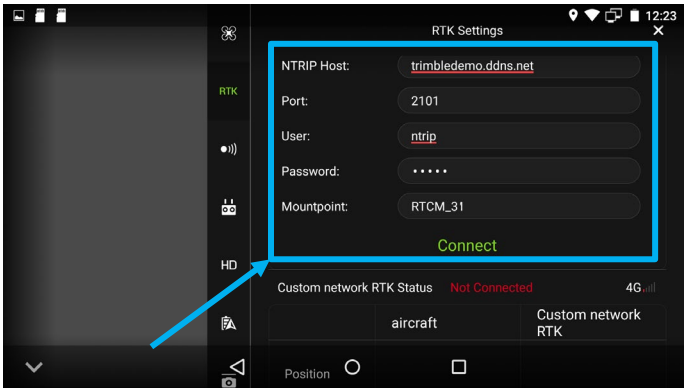
4. Click the Settings menu ••• from the top ribbon.



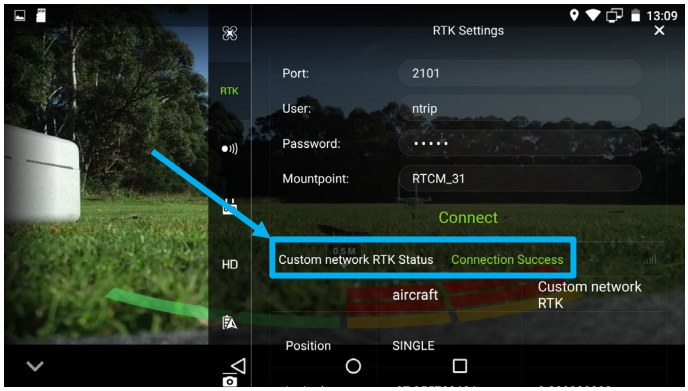
5. Select **RTK** menu.
6. Switch on the **Aircraft RTK positioning.**



1. **NTRIP Host:** This is either the PPP Remote Address, or your DDNS domain.
2. **Port:** 2101
3. **User:** ntrip
4. **Password:** ntrip
5. **Mountpoint:** RTCM_31
6. Click **Connect.**



7. The **Custom Network RTK Status** should show **Connection Success**.



You're now ready to fly with the RTK corrections from your Trimble R12 GNSS receiver—Happy Flying!

Notes

Although this document refers to the Trimble R12 GNSS receiver throughout, the workflow described is also suitable for the Trimble R10-2 and R10 GNSS receivers.

In researching cellular network provider requirements for this document, the links below were used. These are specific to the Telstra network in Australia, but they may be of some benefit as a starting point for discussing the same requirements in other regions.

https://support.netcommwireless.com/sites/default/files/Telstra-SIM-Card-Data-Codes-v1.0.pdf

https://support.netcommwireless.com/sites/default/files/Accessing-a-device-behind-a-router-on-Telstra-Mobile-Broadband-v1.0.pdf

If you require more information about configuring your Trimble R12 GNSS receiver for this workflow in your region, contact your local Trimble Distribution Partner.