# FAQ: Static IP Base

## DESCRIPTION

This FAQ describes how to setup and use a Static IP on a CHC / iGage Base.

It applies to: iBASE, i83, i93, i89, iG9, iG9a, iG8, iG8a.

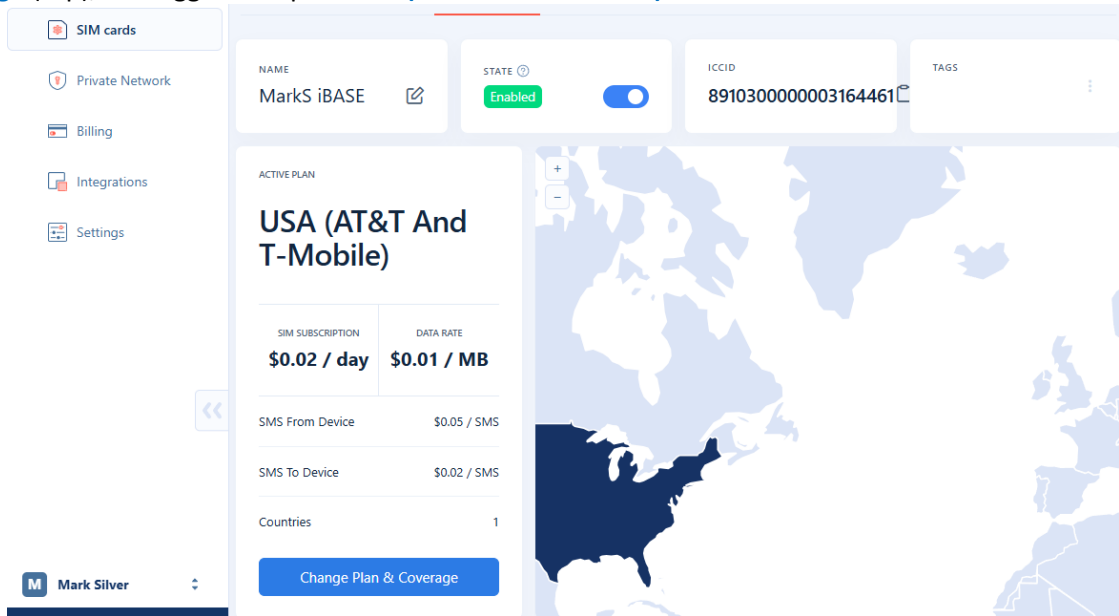## Static IP SIM Card

Obtain a static IP SIM card.

If you are using simbase, you can change the card to a Static IP:

Log in to simbase, click on **SIM cards** (left hand panel), click on the card to manage, click on **Plan & Coverage** (top), we suggest the plan **USA (AT&T And T-Mobile)**:



If the current plan involves **Verizon**, we recommend changing to the plan above.

After you change, even though the simbase interface will say the new plan is selected, it may take 10 minutes for it to be fully implemented. You will need to cycle the power on your receiver.

Click on **Overview** at the top:



If the current **IP** is **Dynamic**, click on **Assign Fixed IP**.

The **Assign A Public Fixed IP** dialog box will be displayed:



Leave the defaults, then click on **Assign Public IP**.

The IP will change to:



The change will take about 3 minutes. Then the card's public IP will be shown:



Write down the IP address. It may not be possible to determine from the receiver.

## Configure the receiver to have a DIP port

Login to the receiver from a PC using Wi-Fi. You may need these settings:
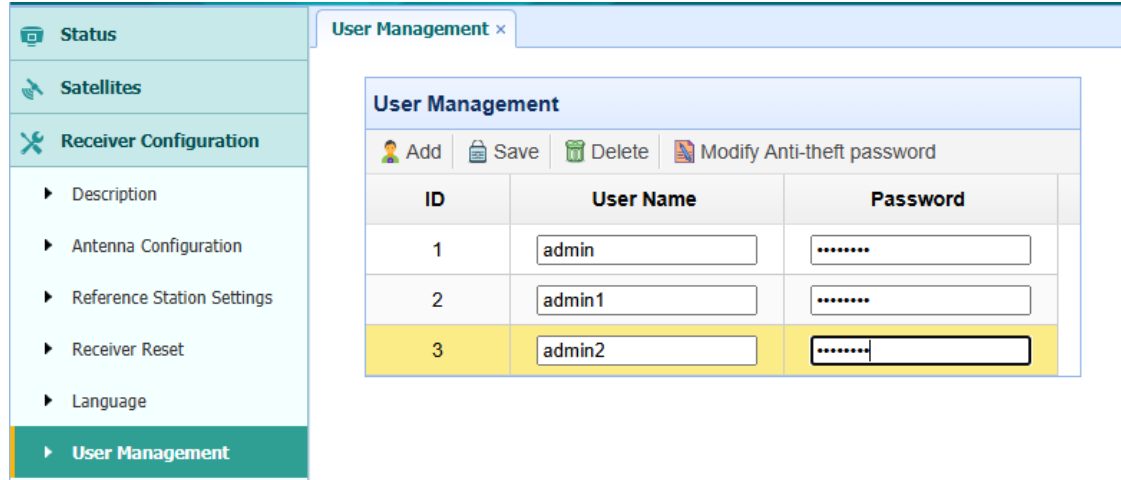
Wi-Fi ID: GNSS-serialnumber
Wi-Fi Password: 12345678 (not typically needed)
Web address: 192.168.1.1

Login User:                  admin
Login Password:              password

## Change the login password

IMPORTANT! When the receiver is connected to the internet with a static IP address; **anyone**, **anywhere** in the world can login and change the receiver parameters.

You should change the login passwords immediately. From the **Receiver Configuration** > **User Management** menu:
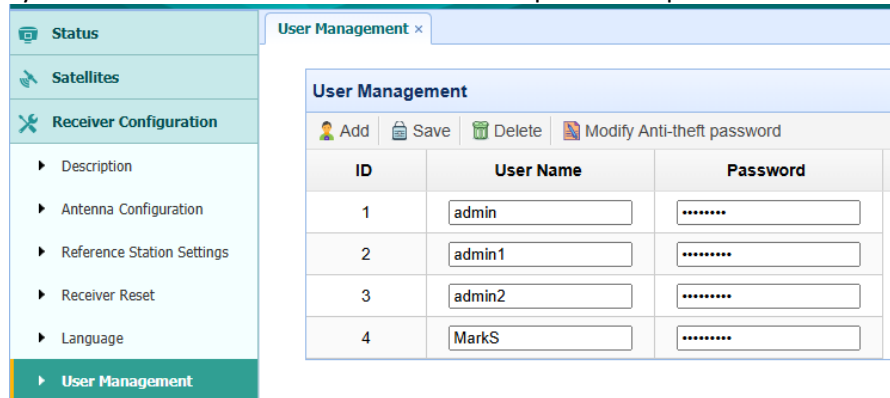


This menu may be a bit confusing. You can put the cursor on line 2 or 3 and delete the backup user/password with the **Delete** button. If you <u>change</u> a password, use the **Modify Anti-theft password button**., not the **Save** button. The **Save** button is used to save a new ID after clicking the **Add** button.

It is highly recommended to have at least one backup user and password:



Immediately after changing the password, make a label and affix it to the receiver with the new **User Name** and **Password**. <u>If you lock up a receiver by losing the password, it is very difficult to recover.</u>

## Configure both an NTRIP and a TCPIP / DIP Port

The following setup needs to be performed once. These settings are persistent until a factory reset is performed on the Base.

Connection to the Base will be possible by APIS, TCPIP / DIP and NTRIP when using this configuration. Multiple rovers could connect by TCP/IP, a drone controller could connect by Wi-Fi.

Having all three available allows connection flexibility.

First configure the NTRIP caster on port 2101. Click on **I/O Settings** > **I/O Settings**:



| | Type | Description | Output | Connection Sta | Modify |
|---|---|---|---|---|---|
| 1 | RTK Client | APIS1.huace.cn:99 | --- | Unconnected | Connect Disconnecting De |
| 2 | TCP/UDP_Client1/NTRIP Se | 192.168.3.18:9900 | --- | Unconnected | Connect Disconnecting De |
| 3 | TCP/UDP_Client2/NTRIP Se | 192.168.3.18:9901 | --- | Unconnected | Connect Disconnecting De |
| 4 | TCP/UDP_Client3/NTRIP Se | 192.168.3.18:9902 | --- | Unconnected | Connect Disconnecting De |
| 5 | TCP/UDP_Client4/NTRIP Se | 192.168.3.18:9903 | --- | Unconnected | Connect Disconnecting De |
| 6 | TCP/UDP_Client5/NTRIP Se | 192.168.3.18:9904 | --- | Unconnected | Connect Disconnecting De |
| 7 | TCP/UDP_Client6/NTRIP Se | 192.168.3.18:9905 | --- | Unconnected | Connect Disconnecting De |
| 8 | TCP Server/NTRIP Caster1 | 2101 | Differential Data:CHC516 | Opened | Connect Disconnecting De |
| 9 | TCP Server/NTRIP Caster2 | 2102 | --- | Opened | Connect Disconnecting De |
| 10 | TCP Server/NTRIP Caster3 | 9903 | --- | Closed | Connect Disconnecting De |
| 11 | TCP Server/NTRIP Caster4 | 2103 | --- | Opened | Connect Disconnecting De |
| 12 | Serial Port | 9600 | --- | --- | Settings |
| 13 | Bluetooth | GNSS-3738992 | GPGGA:5s, | --- | Settings |
| 14 | Radio | 461.025000MHz | --- | --- | Settings |

Click on the **Connect** button to the right of line **8 TCP Server/NTRIP Caster 1** (see the arrow above):



Make these settings:

| | |
|---|---|
| **Auto connect**: | **Checked** |
| **Connection Protocol**: | **NTRIP** |
| **User Name:** | **user** |
| **Password:** | **user** |
| **Port**: | **2101**  (or whatever you want) |
| **Mount Point**: | **RTCM32** |
| **Differential Data**: | **CHC516**  (this is compatible with all devices supporting RTCM3) |

set all other data types to **OFF**

Click **Confirm**

Next, configure a TCP/IP caster on port 2103. Click on **I/O Settings** > **I/O Settings**:



Click on the **Connect** button for row **11 TCP Server/NTRIP Caster** (see the arrow above):
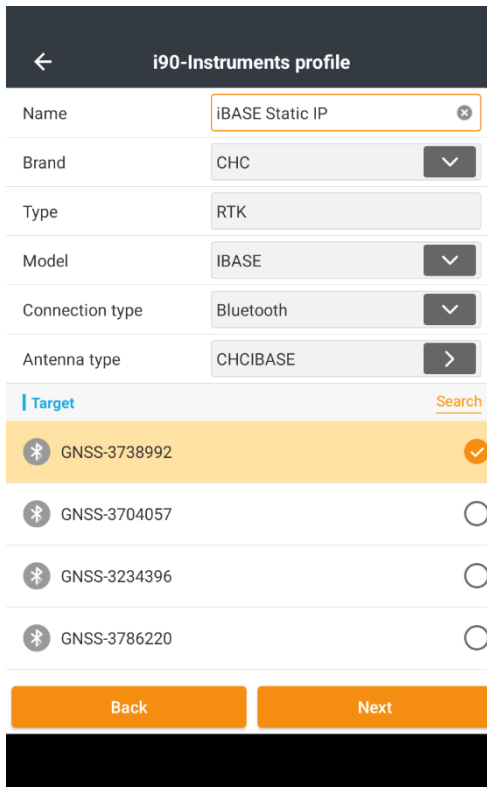


Make these settings:

| | |
|---|---|
| **Auto connect**: | **Checked** |
| **Connection Protocol**: | **TCP** |
| **Port**: | **2103** (or whatever you want) |
| **Differential Data**: | **CHC516** (this is compatible with all devices supporting RTCM3) |
| set all other data types to **OFF** | |

Click **Confirm**

## Configure an Instrument profile for the Base

From LandStar8, configure a Base **Instrument protocol**. On the **Config** (tab) click on **Instrument profile**, then **New**:
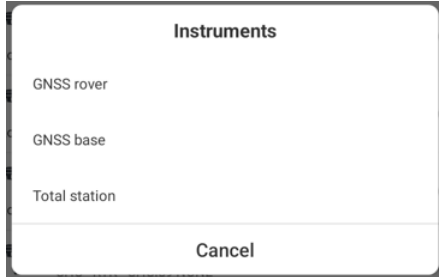


Then click on **GNSS base**:



Set the **Name** to **iBASE Static IP**, configure the **Brand**, set type to **RTK**, choose the correct model, **Connection type** = **Bluetooth**, choose the correct **Antenna type** and check the correct Bluetooth target device.
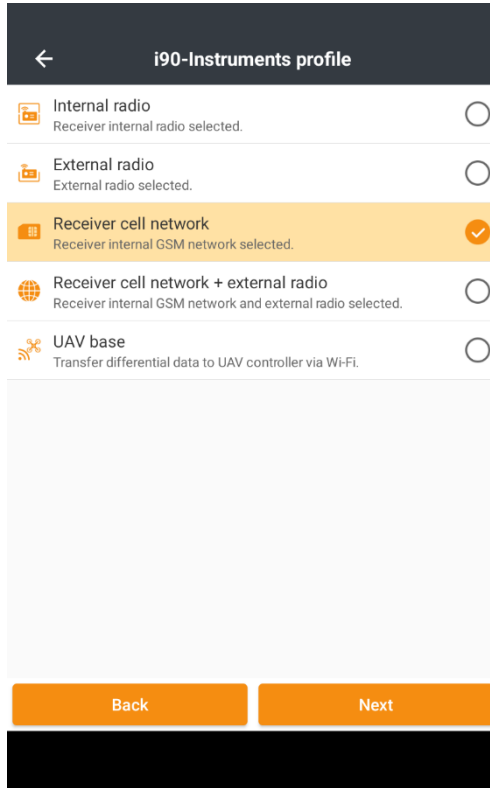
Click **Next**:

Check **Receiver cell network**.

Click **Next**:



Use the settings above as a guide.

If you have not set the **APN** correctly prior to this setup, click on the **APN** button and use the initialization option to reset the cell modem.
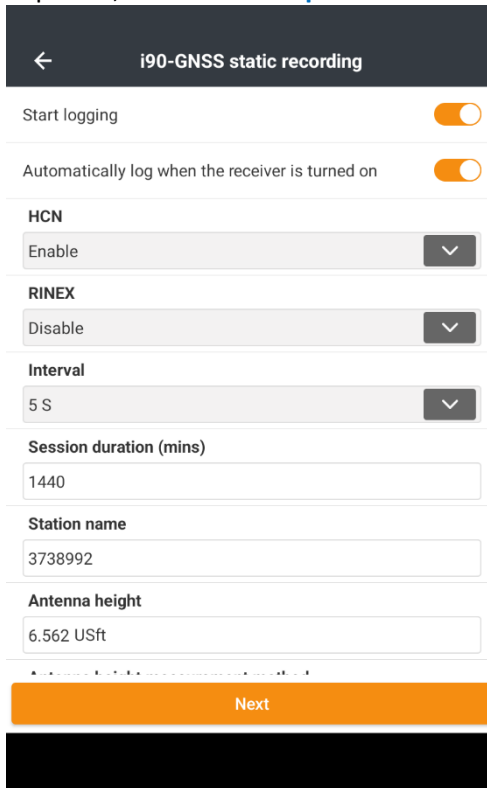
Click on **Save**.

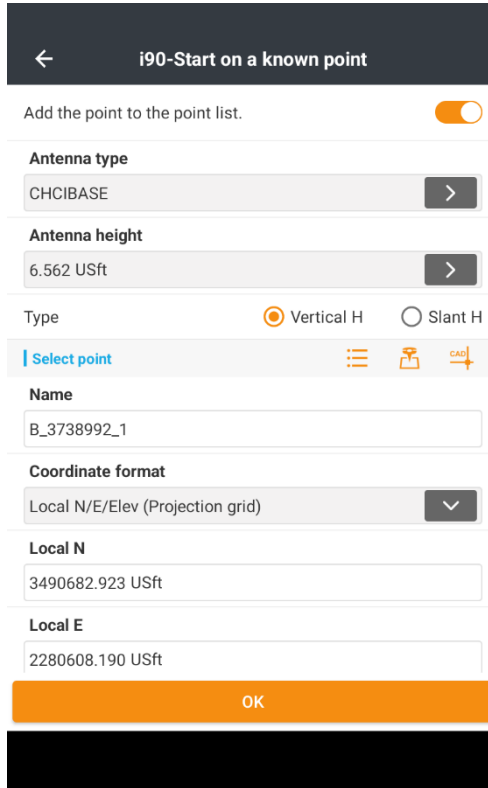Now use the new Instrument profile to start the Base:
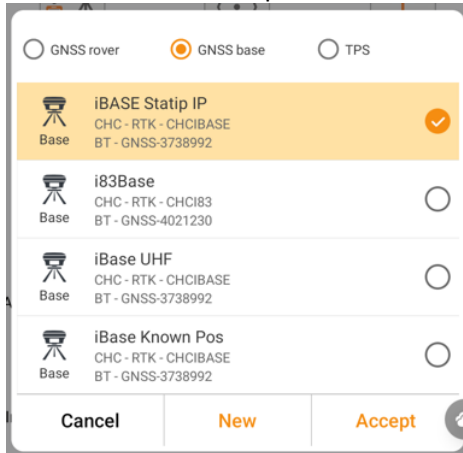


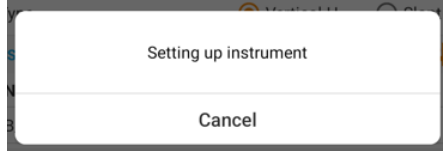Select the profile, then click **Accept**. The **Start on known position** dialog is shown:



Check the observation recording options.

Then click **Next**.

Load a known position, or read the GNSS receiver, then click **OK**.



After a few moments, the receiver will report success.

## Debugging the connection

There are lots of things you can do to verify that the Base is connected and sending out corrections.

## Check the network connection

From the web interface on the Base, click on **Network Setting** > **Description**:



Is the **Dialing Status** = **Connected**? Note that the **IP** is NOT the assigned Static IP. With some providers a CGNAT address (10.192.92.127) is mapped in the cell network to the real static IP.

Great **Signal Strength** is between -30 to -79 dBm, a Good signal would be -80 to -89 dBm, and anything -90 to -99 dBm is Average. If your signal is -100 to -120 dBm your signal is Poor.

## Check the APIS caster

Click on **I/O Settings** > **I/O Settings**:

| | Type | Description | Output | Connection Sta | Modify |
|---|---|---|---|---|---|
| 1 | RTK Client | APIS1.huace.cn:99 | --- | Logged In | Connect Disconnecting De |
| 2 | TCP/UDP_Client1/NTRIP Se | 192.168.3.18:9900 | --- | Unconnected | Connect Disconnecting De |
| 3 | TCP/UDP_Client2/NTRIP Se | 192.168.3.18:9901 | --- | Unconnected | Connect Disconnecting De |
| 4 | TCP/UDP_Client3/NTRIP Se | 192.168.3.18:9902 | --- | Unconnected | Connect Disconnecting De |
| 5 | TCP/UDP_Client4/NTRIP Se | 192.168.3.18:9903 | --- | Unconnected | Connect Disconnecting De |
| 6 | TCP/UDP_Client5/NTRIP Se | 192.168.3.18:9904 | --- | Unconnected | Connect Disconnecting De |
| 7 | TCP/UDP_Client6/NTRIP Se | 192.168.3.18:9905 | --- | Unconnected | Connect Disconnecting De |
| 8 | TCP Server/NTRIP Caster1 | 2101 | Differential Data:RTCM3.2 | Opened | Connect Disconnecting De |
| 9 | TCP Server/NTRIP Caster2 | 2102 | --- | Opened | Connect Disconnecting De |
| 10 | TCP Server/NTRIP Caster3 | 9903 | --- | Closed | Connect Disconnecting De |
| 11 | TCP Server/NTRIP Caster4 | 2103 | Differential Data:CHC516 | Opened | Connect Disconnecting De |
| 12 | Serial Port | 9600 | Differential Data:CHC516 | --- | Settings |
| 13 | Bluetooth | GNSS-3738992 | GPGGA:5s, | --- | Settings |
| 14 | Radio | 461.150000MHz | --- | --- | Settings |

Is row 1 green? If it is green as shown above, the receiver is successfully pushing corrections to the APIS server. It is safe to assume that the receiver is online.
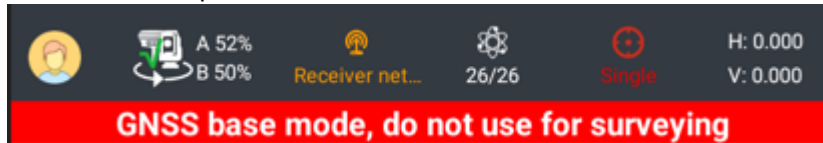
## Check the Instrument info

After you setup a Base, LandStar8 disconnects from the receiver to prevent you from mistakenly setting the base a Rover.

You can reconnect to the receiver by going to the **Config** (tab) then clicking on **Connect to instruments** to reconnect to the last receiver (the Base):
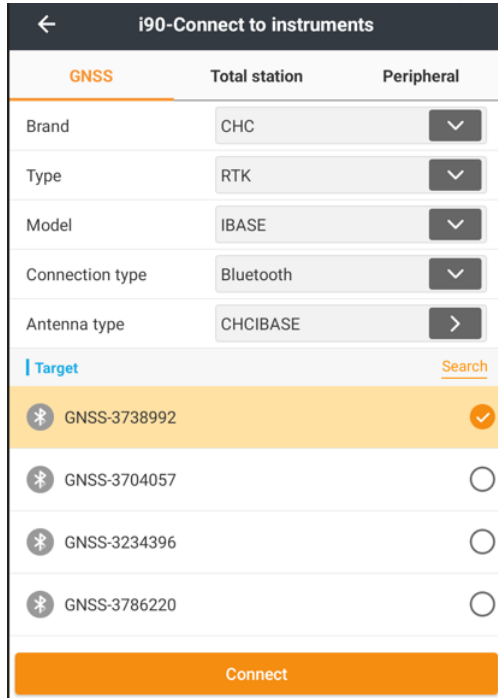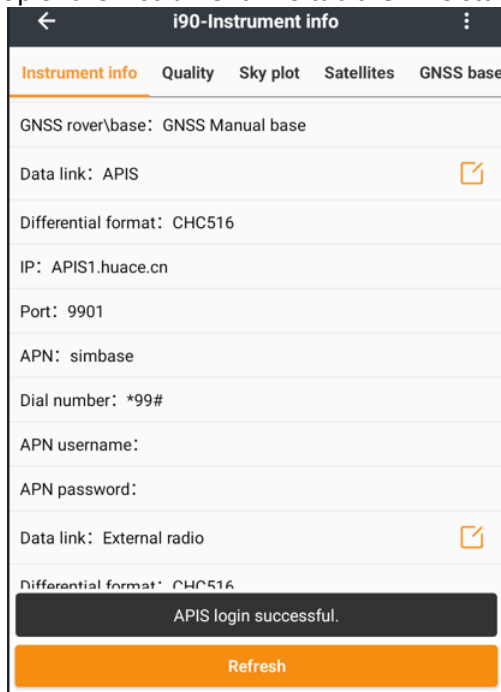


Click Connect. On the top of the main menu:



Notice that there is a red warning that the receiver you are connected to is a Base. Clearly you don't want to store points with a base instrument. Also notice that the **HRMS** and **VRMS** are reported as 0.000. This is normal.

Click on **Instrument info** button:

At the top of the Instrument info tab the APIS status will be shown:



Notice at the bottom the **APIS login successful** message is shown.

IMPORTANT NOTE: After you begin broadcasting corrections to APIS, it can take up to 1 minute for the APIS server to receive your Base receiver's serial number and create an APIS mount point for your Base. For this reason, after you successfully start an APIS base, wait a minute before you start the Rover.

## Ping your Base

You should be able to ping your base from any computer or cell phone in the world. Use the static IP assigned in the first step:

## Manage your Base remotely

You should be able to connect and log into your base remotely, via the static IP from any brower in the world:
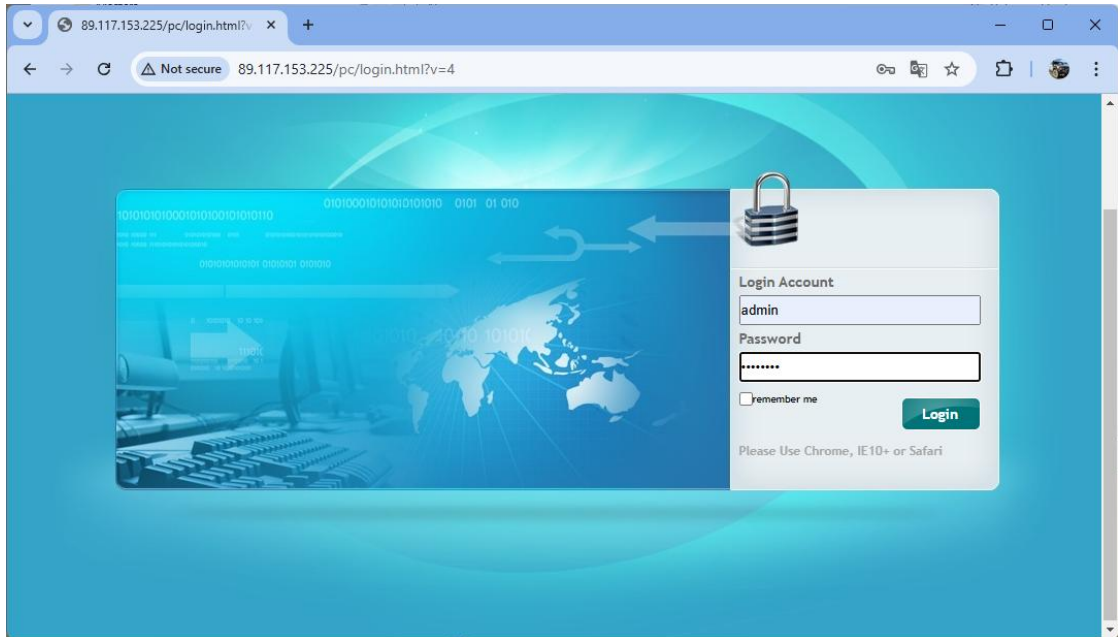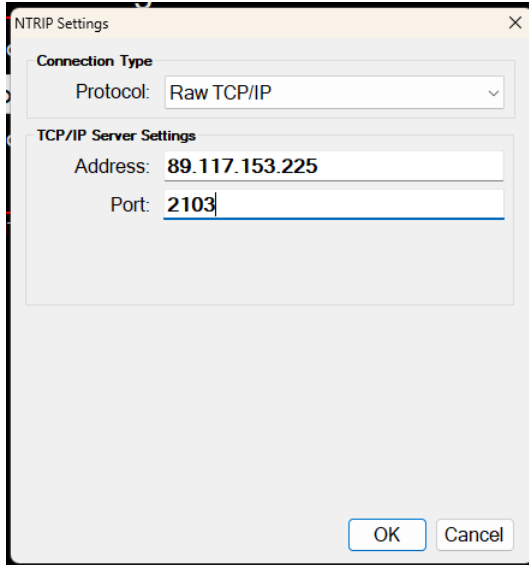


Note this connection will be relatively slow and it will be an insecure http: connection, but it will be fully functional:
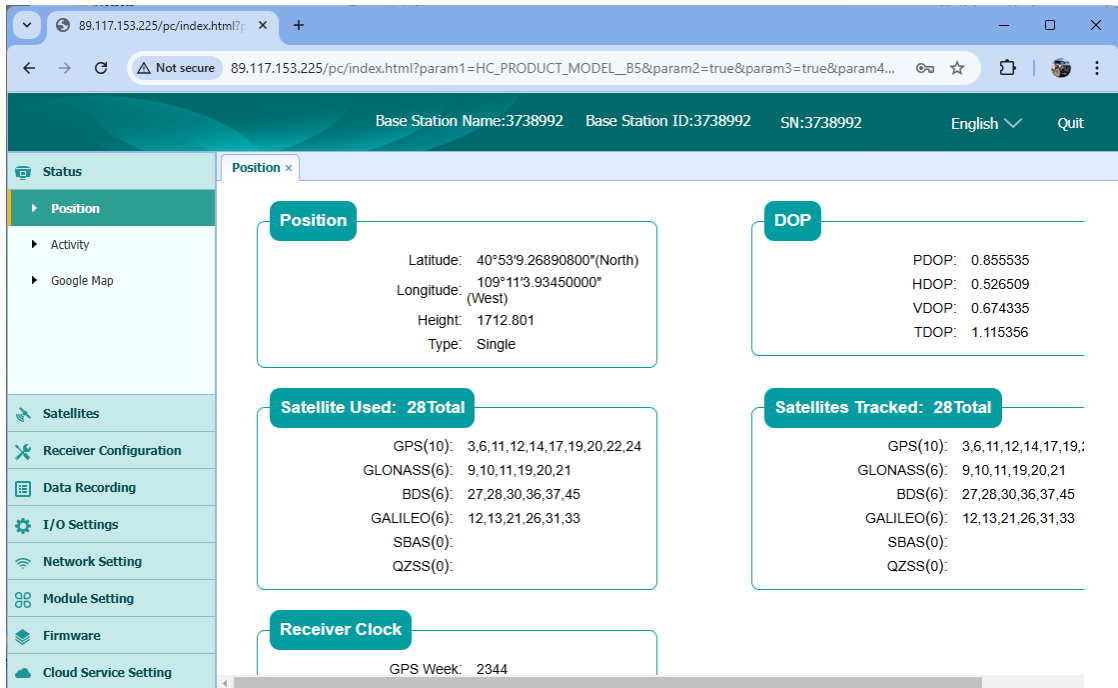
## Connecting from a TCP/IP DIP client for testing

You can use a PC based NTRIP client (like the *LeFabure NTRIP Client*) to connect to your Base and receive a correction stream:



Click OK, then Connect:



Now, if you log in to the I/O Settings page of the web interface on the Base and refresh:

| 11 | TCP Server/NTRIP Caster4 | 2103 | Differential Data:CHC516 | Connected | Connect | Disconnecting | De |

The green bar indicates that the connection is active.

## Connecting from a NTRIP client for testing

You can use a PC based NTRIP client (like the *LeFabure NTRIP Client*) to connect to your Base and receive a correction stream:



Click OK, then select Download Source Table and click Connect:

Select the **RTCM32** Mount Point, then click on **Connect**:
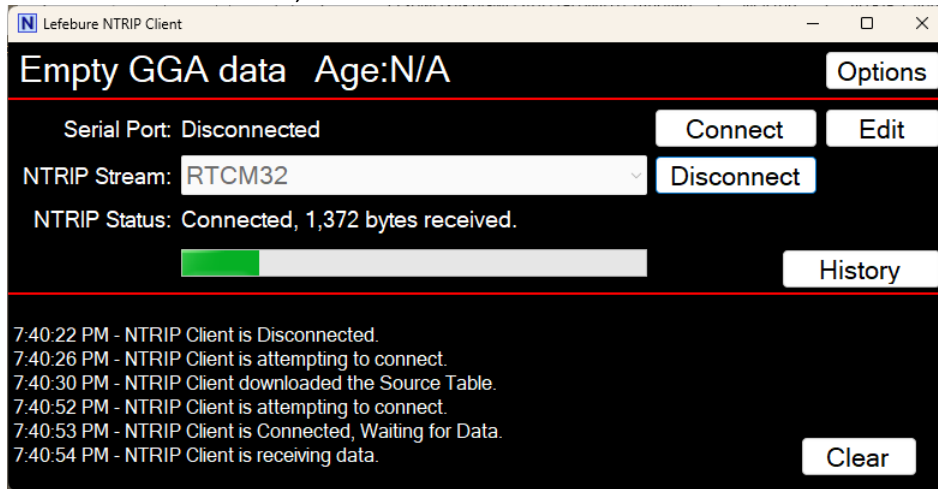


You should see bytes being received.

Now, if you log in to the I/O Settings page of the web interface on the Base and refresh:

| 8 | TCP Server/NTRIP Caster1 | 2101 | Differential Data:CHC516 | Connected | Connect | Disconnecting | De |
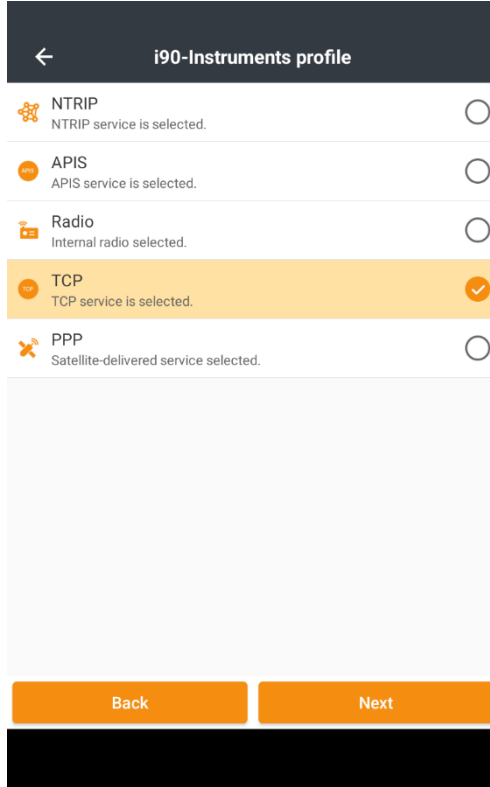
Port 2101 (the NTRIP port) will be green.

## Connecting a TCP/IP DIP Rover with LandStar8
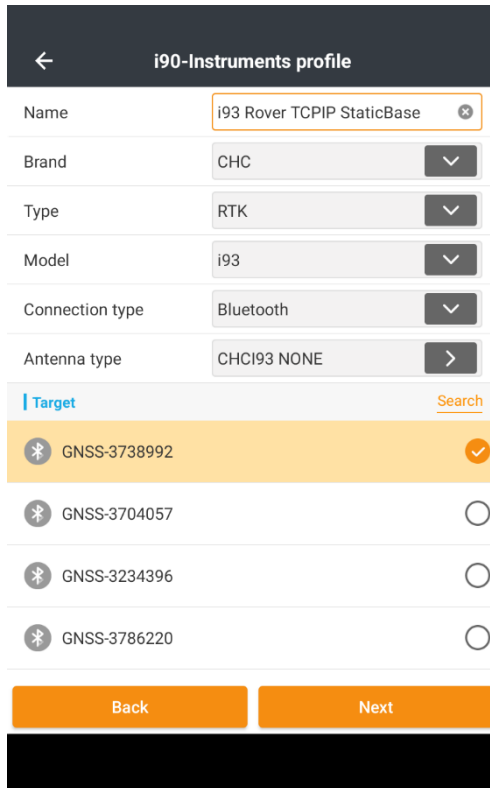
Create a new Rover Instrument Profile:

Use a reasonable **Name**, set the **Brand**, **Type**, **Model**, Connection type and **Antenna type** to match your instrument. Click **Next**.



Choose **TCP**. Click **Next**.
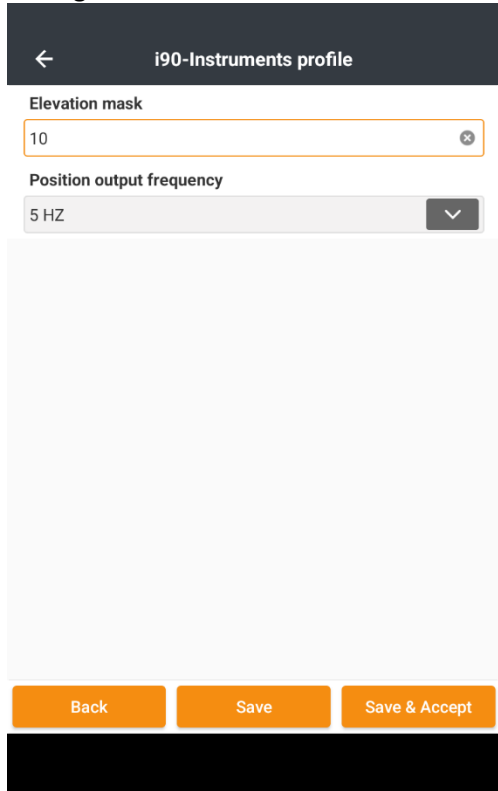
Enter the assigned static **IP** and the **Port** we chose for TCPIP operation **2103**. Click Next.
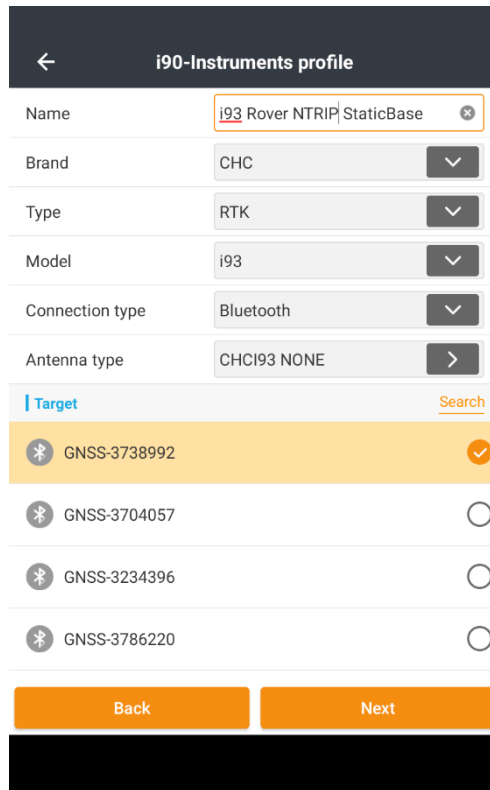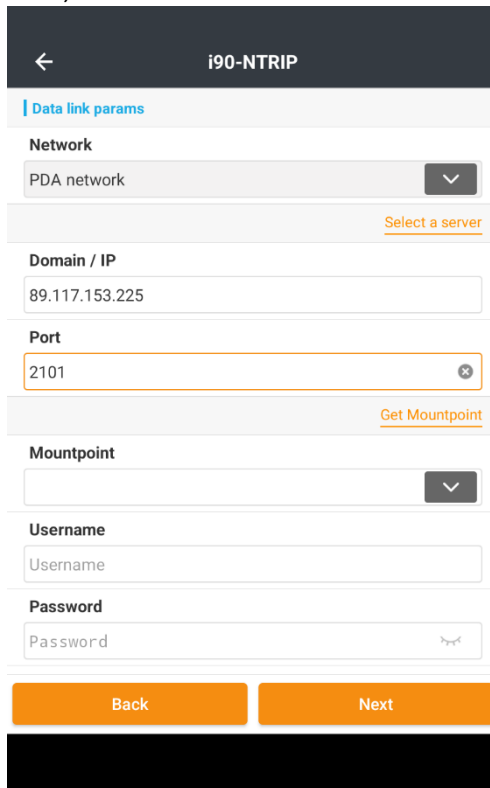


Set a reasonable **Elevation mask**, and **Position output frequency**. Click **Save and Accept**.
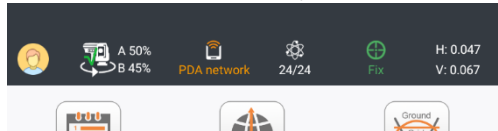


The Rover should connect and configure the receiver and then connect to the base via the public Static IP address.

## Connecting a NTRIP Rover with LandStar8

Create a new Rover **Instrument Profile**:



Use a reasonable **Name**, set the **Brand**, **Type**, **Model**, **Connection type** and **Antenna type** to match your instrument.
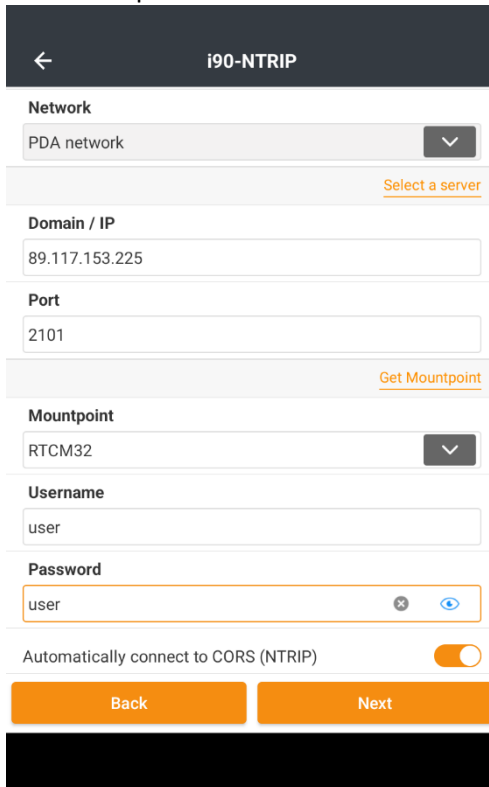
Click **Next**.

Select **NTRIP**, then click **Next**.

The Network can be **PDA network** or **Receiver network**. Enter the public static **IP** and the **NTRIP port 2101**.

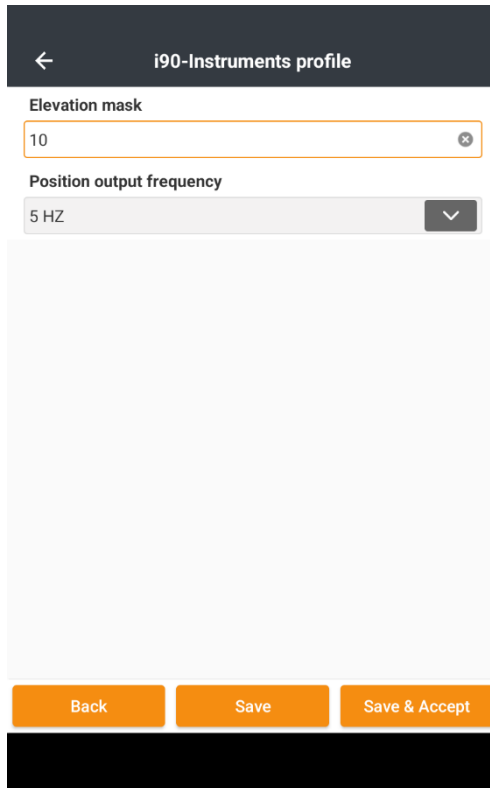Click **Get Mountpoint**, after a moment the **Base mountpoint** list will be shown:



Click on the mountpoint **RTCM32**.

Fill in the **Username** = **user** and **Password** = **user** (we set these on the Base configuration.) Click

Enter a reasonable **Elevation mask** and **Position output frequency**, then click **Save&Accept**.

LandStar8 will connect to the Base and the Rover should **FIX**.