

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.

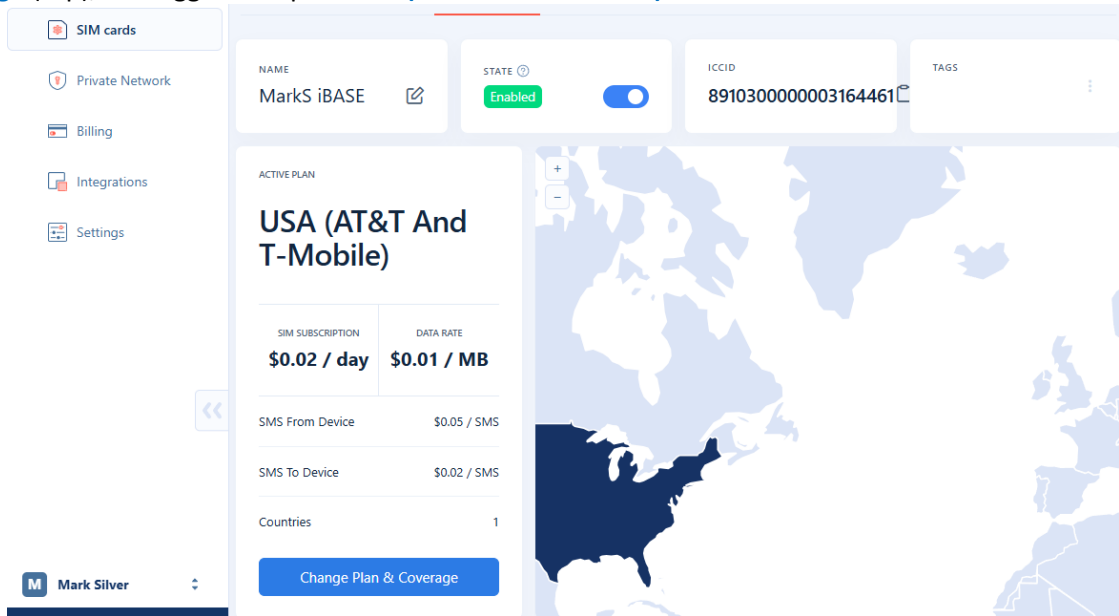
Filename:FAQ_StaticIPBase_r001.docx

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:

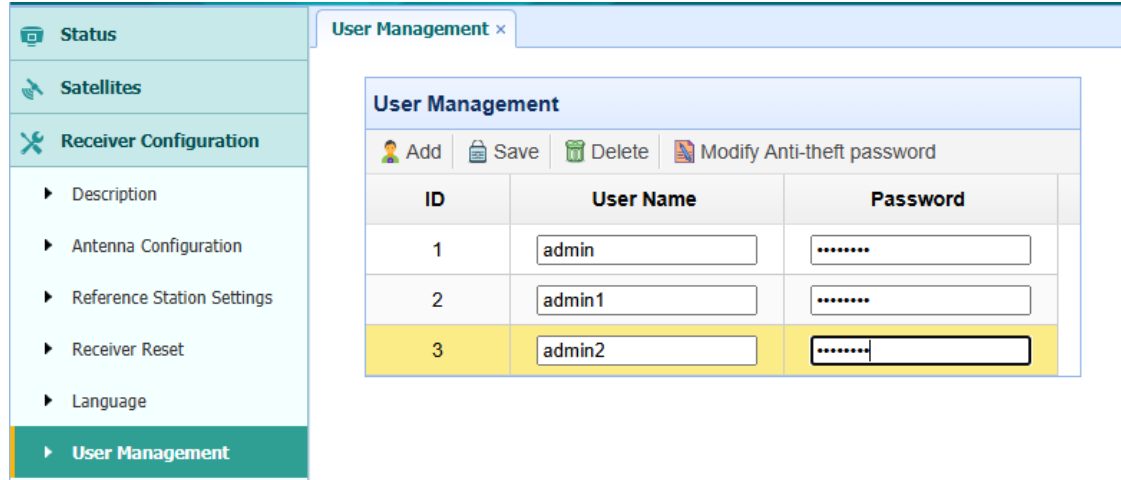
Wi-Fi ID:	GNSS-serialnumber
Wi-Fi Password:	12345678 (not typically needed)
Web address:	192.168.1.1

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:

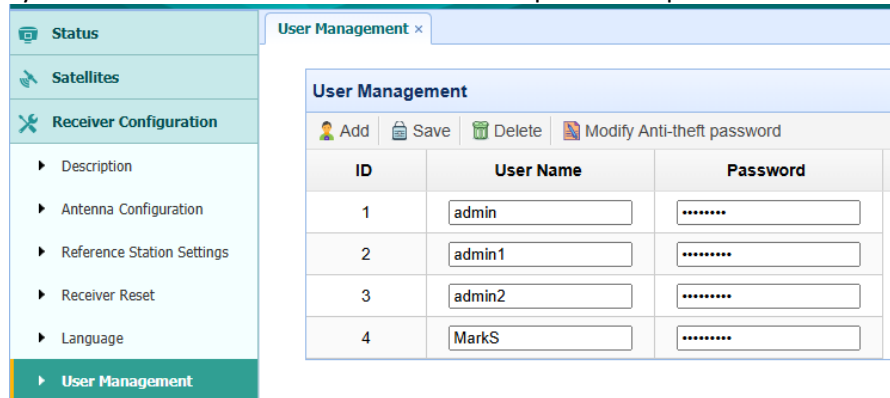


ID	User Name	Password
1	admin
2	admin1
3	admin2

3

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 **change** 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:



ID	User Name	Password
1	admin
2	admin1
3	admin2
4	MarkS

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

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.95	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	Unconnected 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	461.02500MHz	---	Settings

4

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**:

Type	Description	Output	Connection S	Modify
1	RTK Client	APIS1 huaca.cn	Logged In	Connect Disconnecting
2	TCP/UDP_Client1/NTRIP	192.168.3.18:991	Unconnected	Connect Disconnecting
3	TCP/UDP_Client2/NTRIP	192.168.3.18:991	Unconnected	Connect Disconnecting
4	TCP/UDP_Client3/NTRIP	192.168.3.18:991	Unconnected	Connect Disconnecting
5	TCP/UDP_Client4/NTRIP	192.168.3.18:991	Unconnected	Connect Disconnecting
6	TCP/UDP_Client5/NTRIP	192.168.3.18:991	Unconnected	Connect Disconnecting
7	TCP/UDP_Client6/NTRIP	192.168.3.18:991	Unconnected	Connect Disconnecting
8	TCP Server/NTRIP Caster	2101	Opened	Connect Disconnecting
9	TCP Server/NTRIP Caster	2102	Opened	Connect Disconnecting
10	TCP Server/NTRIP Caster	9903	Closed	Connect Disconnecting
11	TCP Server/NTRIP Caster	2103	Closed	Connect Disconnecting
12	Serial Port	9600	Differential Data:CHC516	Settings
13	Bluetooth	GNSS-3738992	GPGGA:5s,	Settings
14	Radio	461.150000MHz	---	Settings

5

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

TCP Server/NTRIP Caster

Auto connect: Connection Protocol: TCP

Port: 2103

Differential Data: CHC516 Raw Data: OFF

HCPPP Data: OFF

GPGGA: OFF GPGSV: OFF

GPRMC: OFF GPZDA: OFF

GPGST: OFF GPVTG: OFF

GPGSA: OFF GPPOS: OFF

Retransmit: RTK OFF

Confirm **Back**

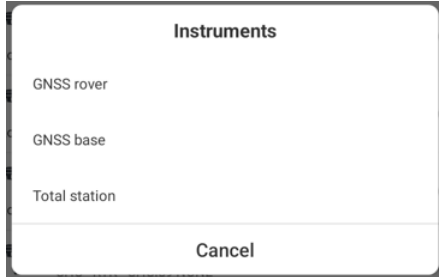
Make these settings:

- 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**

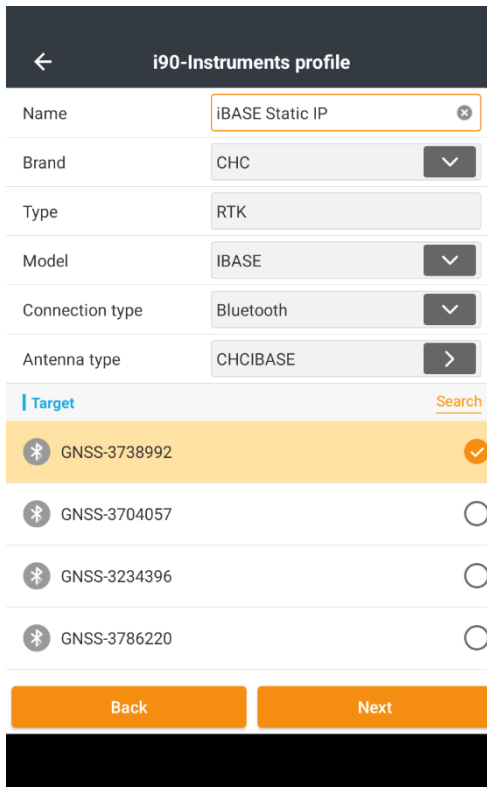
Click **Confirm**

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**:



A screenshot of the "i90-Instruments profile" configuration screen. The screen has a dark header with a back arrow and the title "i90-Instruments profile". Below the header are several fields for configuration:

- Name: iBASE Static IP
- Brand: CHC
- Type: RTK
- Model: IBASE
- Connection type: Bluetooth
- Antenna type: CHCIBASE

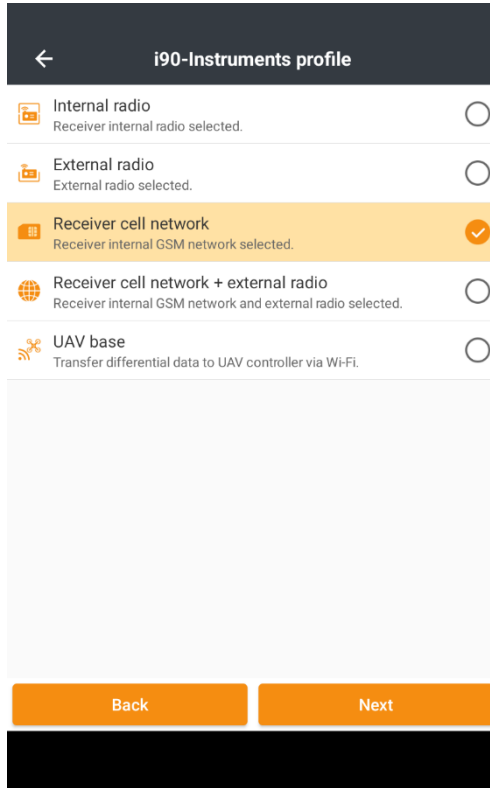
Below these fields is a "Target" section with a search bar. It lists four Bluetooth target devices:

- GNSS-3738992 (checked)
- GNSS-3704057
- GNSS-3234396
- GNSS-3786220

At the bottom of the screen are two orange buttons: "Back" and "Next".

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**:

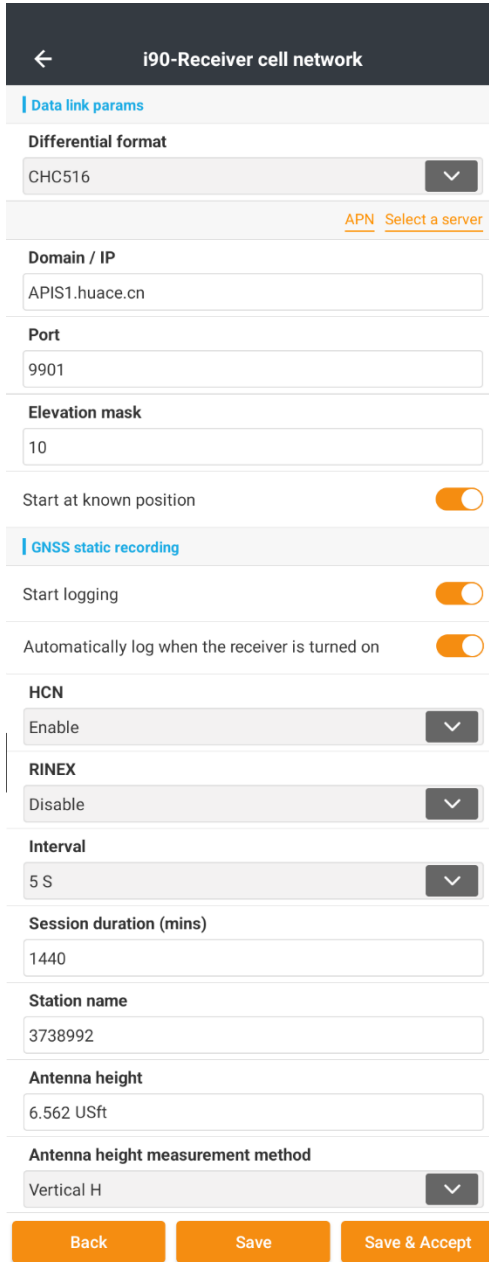


The screenshot shows a mobile application interface for configuring an i90-Instruments profile. The title bar at the top is dark grey with a back arrow on the left and the text 'i90-Instruments profile'. Below the title bar, there are five radio button options, each with an icon and a description. The 'Receiver cell network' option is highlighted in orange and has a checkmark in its radio button. At the bottom of the screen, there are two orange buttons labeled 'Back' and 'Next'.

Option	Description	Selected
Internal radio	Receiver internal radio selected.	<input type="radio"/>
External radio	External radio selected.	<input type="radio"/>
Receiver cell network	Receiver internal GSM network selected.	<input checked="" type="radio"/>
Receiver cell network + external radio	Receiver internal GSM network and external radio selected.	<input type="radio"/>
UAV base	Transfer differential data to UAV controller via Wi-Fi.	<input type="radio"/>

Check **Receiver cell network**.

Click **Next**:



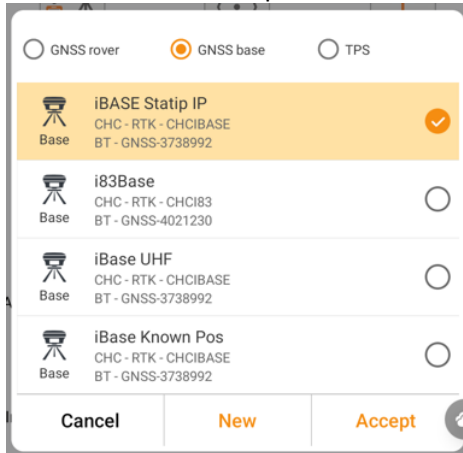
The screenshot shows the 'i90-Receiver cell network' settings screen. It is divided into several sections: 'Data link params' with a 'Differential format' dropdown set to 'CHC516' and an 'APN Select a server' link; 'Domain / IP' with a text field containing 'APIS1.huace.cn'; 'Port' with a text field containing '9901'; 'Elevation mask' with a text field containing '10'; a 'Start at known position' toggle switch that is turned on; 'GNSS static recording' with 'Start logging' and 'Automatically log when the receiver is turned on' toggle switches, both turned on; 'HCN' with an 'Enable' dropdown; 'RINEX' with a 'Disable' dropdown; 'Interval' with a '5 S' dropdown; 'Session duration (mins)' with a text field containing '1440'; 'Station name' with a text field containing '3738992'; 'Antenna height' with a text field containing '6.562 USft'; and 'Antenna height measurement method' with a 'Vertical H' dropdown. At the bottom are three orange buttons: 'Back', 'Save', and 'Save & Accept'.

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.

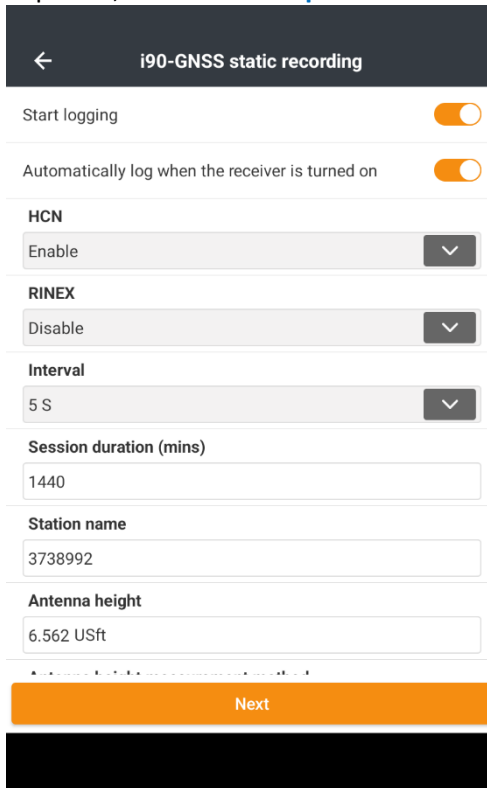
Click on **Save**.

Now use the new Instrument profile to start the Base:



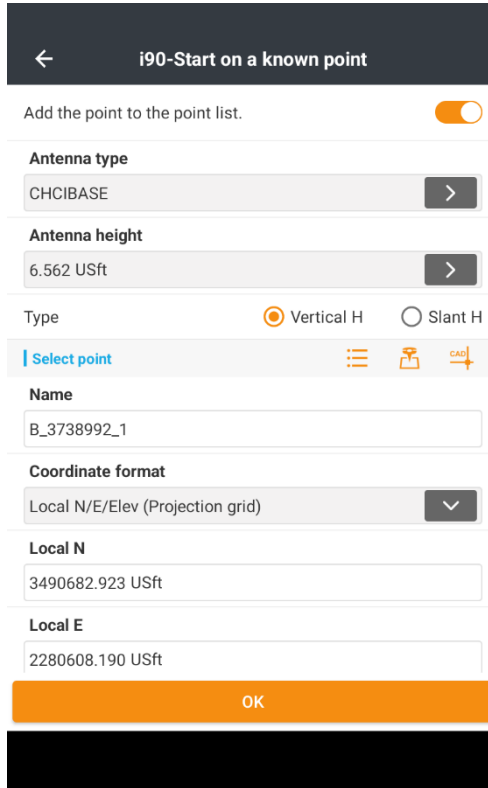
9

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



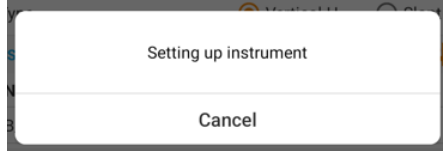
Check the observation recording options.

Then click **Next**.



10

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**:

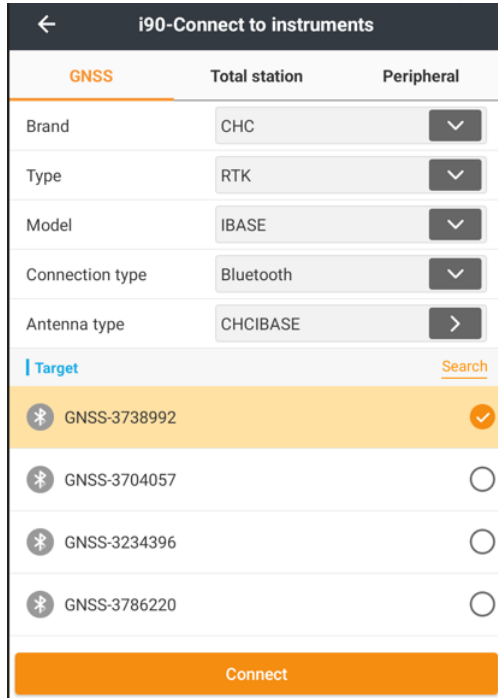
	Type	Description	Output	Connection Sta	Modify
1	RTK Client	APIS1.huace.cn:95	---	Logged In	Connect Disconnecting De
2	TCP/UDP_Client1/NTRIP Se	192.168.3.18:9900	---	Unconnected	Connect Disconnecting De
3	TCP/UDP_Client2/NTRIP Se	192.168.3.18:9901	---	Unconnected	Connect Disconnecting De
4	TCP/UDP_Client3/NTRIP 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	GPQGA.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.

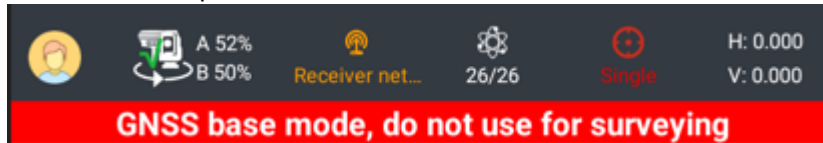
Check the Instrument info

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:

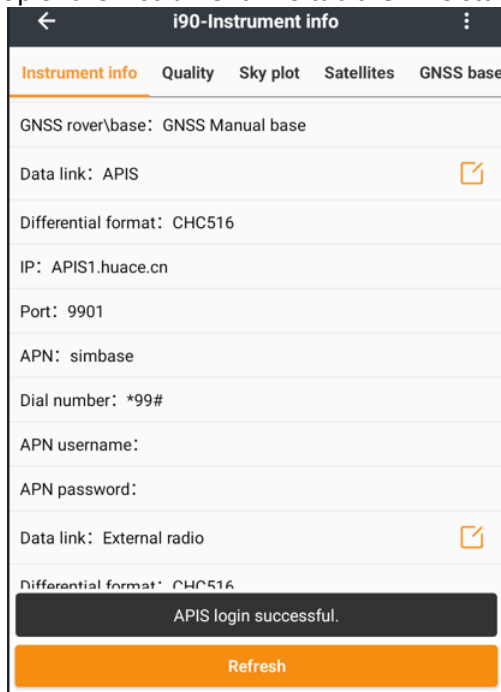


Notice that there is a red warning that the receiver you are connected to is a Base. Clearly you don't want to store points with a base instrument. Also notice that the **HRMS** and **VRMS** are reported as 0.000. This is normal.

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:

```
C:\Users\Owner>ping 89.117.153.225

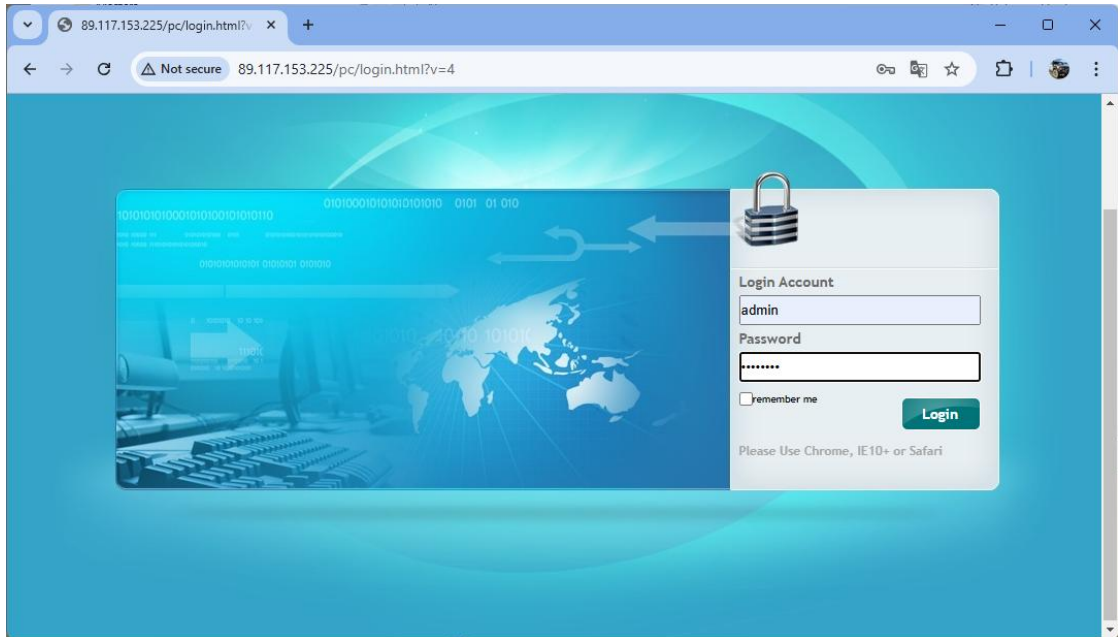
Pinging 89.117.153.225 with 32 bytes of data:
Reply from 89.117.153.225: bytes=32 time=805ms TTL=39
Reply from 89.117.153.225: bytes=32 time=754ms TTL=39
Reply from 89.117.153.225: bytes=32 time=796ms TTL=39
Reply from 89.117.153.225: bytes=32 time=1043ms TTL=39

Ping statistics for 89.117.153.225:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 754ms, Maximum = 1043ms, Average = 849ms

C:\Users\Owner>
```

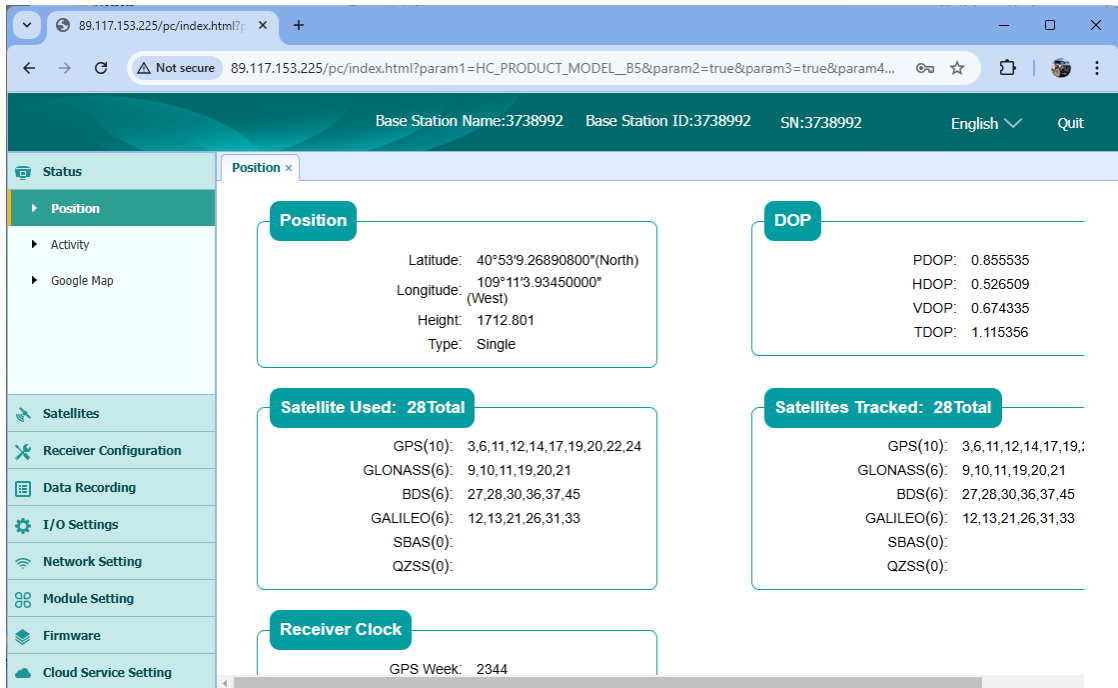
Manage your Base remotely

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



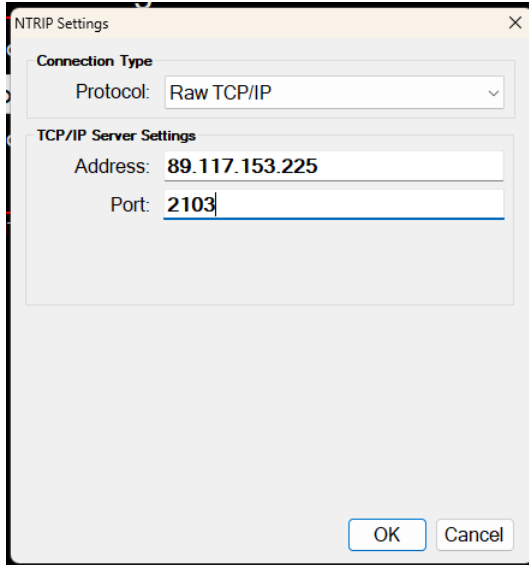
14

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

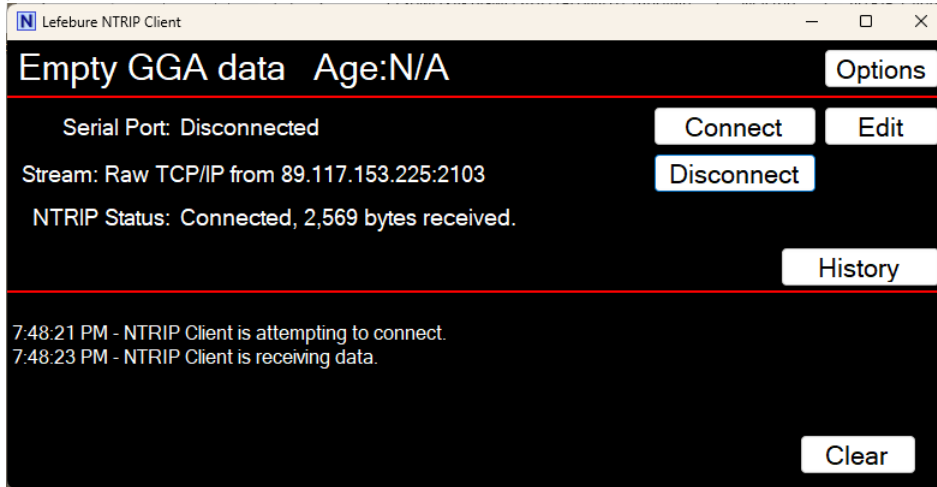
You can use a PC based NTRIP client (like the *LeFabure NTRIP Client*) to connect to your Base and receive a correction stream:



The screenshot shows the 'NTRIP Settings' dialog box. Under 'Connection Type', the 'Protocol' is set to 'Raw TCP/IP'. Under 'TCP/IP Server Settings', the 'Address' is '89.117.153.225' and the 'Port' is '2103'. 'OK' and 'Cancel' buttons are at the bottom.

15

Click OK, then Connect:



The screenshot shows the 'Lefabure NTRIP Client' window. It displays 'Empty GGA data Age:N/A' and 'Serial Port: Disconnected'. The 'Stream' is 'Raw TCP/IP from 89.117.153.225:2103' and 'NTRIP Status' is 'Connected, 2,569 bytes received.'. There are 'Connect', 'Disconnect', 'Edit', and 'Options' buttons. A 'History' section shows logs: '7:48:21 PM - NTRIP Client is attempting to connect.' and '7:48:23 PM - NTRIP Client is receiving data.'. A 'Clear' button is at the bottom right.

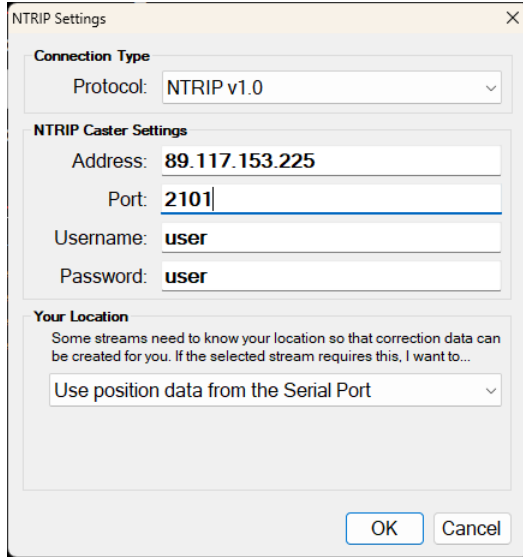
Now, if you log in to the I/O Settings page of the web interface on the Base and refresh:

11	TCP Server/NTRIP Caster4	2103	Differential Data:CHC516	Connected	Connect	Disconnecting	De
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The green bar indicates that the connection is active.

Connecting from a NTRIP client for testing

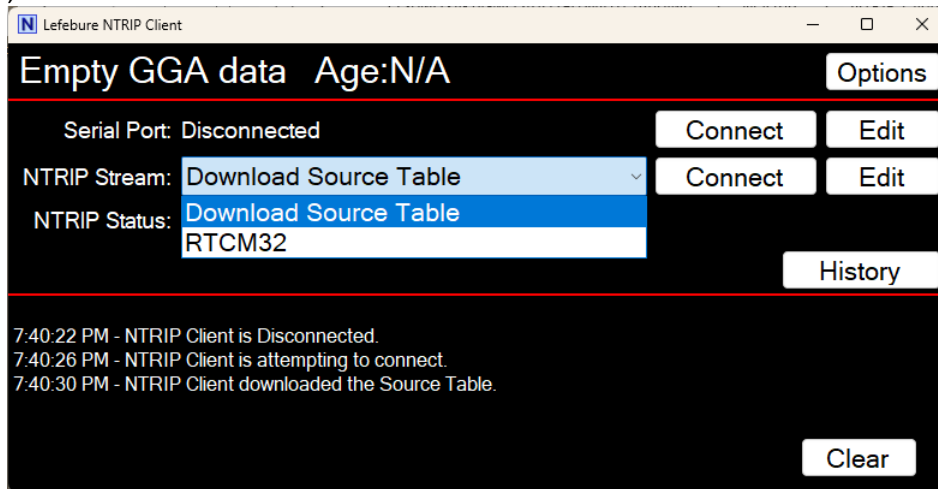
You can use a PC based NTRIP client (like the *LeFabure NTRIP Client*) to connect to your Base and receive a correction stream:



The screenshot shows the 'NTRIP Settings' dialog box. It has three main sections: 'Connection Type' with a dropdown menu set to 'NTRIP v1.0'; 'NTRIP Caster Settings' with fields for 'Address' (89.117.153.225), 'Port' (2101), 'Username' (user), and 'Password' (user); and 'Your Location' with a dropdown menu set to 'Use position data from the Serial Port'. At the bottom are 'OK' and 'Cancel' buttons.

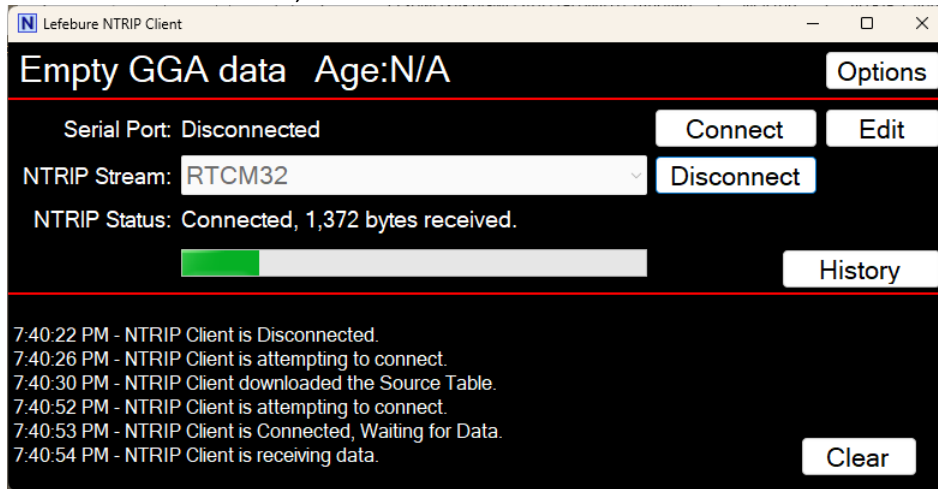
16

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



The screenshot shows the 'Lefabure NTRIP Client' interface. At the top, it says 'Empty GGA data Age:N/A' and has an 'Options' button. Below that, there are three rows of controls: 'Serial Port: Disconnected' with 'Connect' and 'Edit' buttons; 'NTRIP Stream: Download Source Table' with 'Connect' and 'Edit' buttons; and 'NTRIP Status: Download Source Table RTCM32' with a 'History' button. At the bottom, there is a 'Clear' button and a log of events: '7:40:22 PM - NTRIP Client is Disconnected.', '7:40:26 PM - NTRIP Client is attempting to connect.', and '7:40:30 PM - NTRIP Client downloaded the Source Table.'

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



You should see bytes being received.

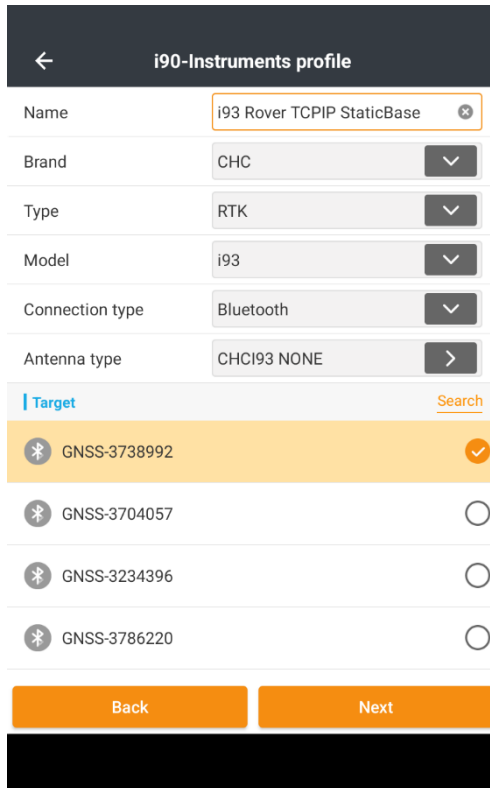
Now, if you log in to the I/O Settings page of the web interface on the Base and refresh:

8	TCP Server/NTRIP Caster1	2101	Differential Data:CHC516	Connected	Connect	Disconnecting	De
---	--------------------------	------	--------------------------	-----------	---------	---------------	----

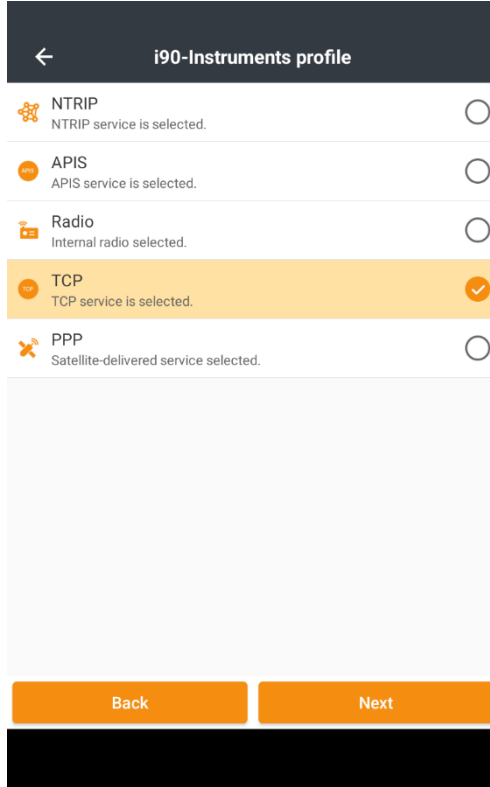
Port 2101 (the NTRIP port) will be green.

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**.



← i90-Instruments profile

- NTRIP
NTRIP service is selected.
- APIS
APIS service is selected.
- Radio
Internal radio selected.
- TCP**
TCP service is selected.
- PPP
Satellite-delivered service selected.

Back Next

Choose **TCP**. Click **Next**.



← i90-TCP

Data link params

Network
PDA network

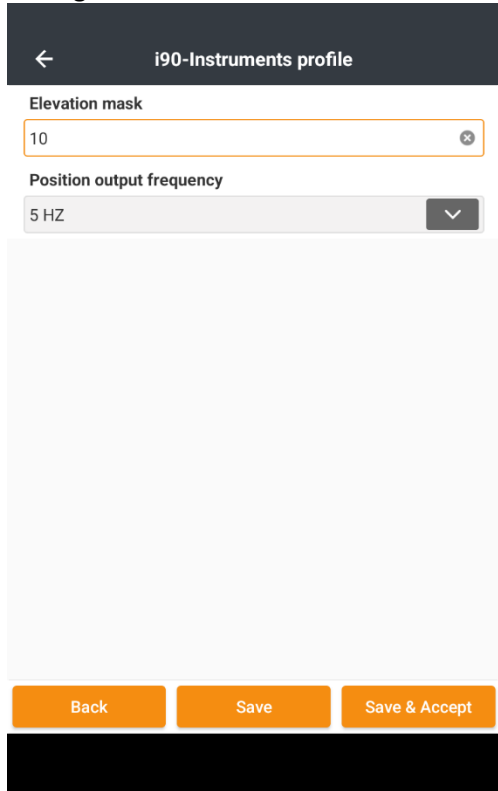
[Select a server](#)

Domain / IP
89.117.153.225

Port
2103

Back Next

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



← i90-Instruments profile

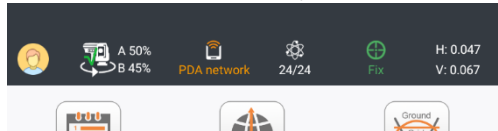
Elevation mask
10

Position output frequency
5 HZ

Back Save Save & Accept

19

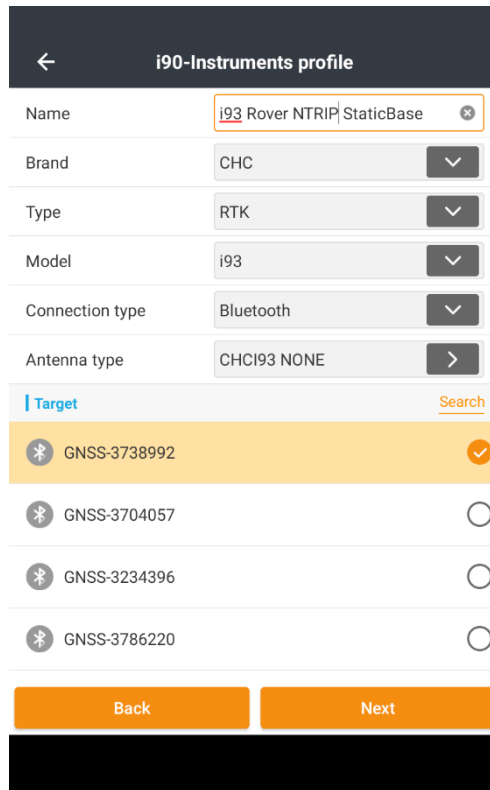
Set a reasonable **Elevation mask**, and **Position output frequency**. Click **Save and Accept**.



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

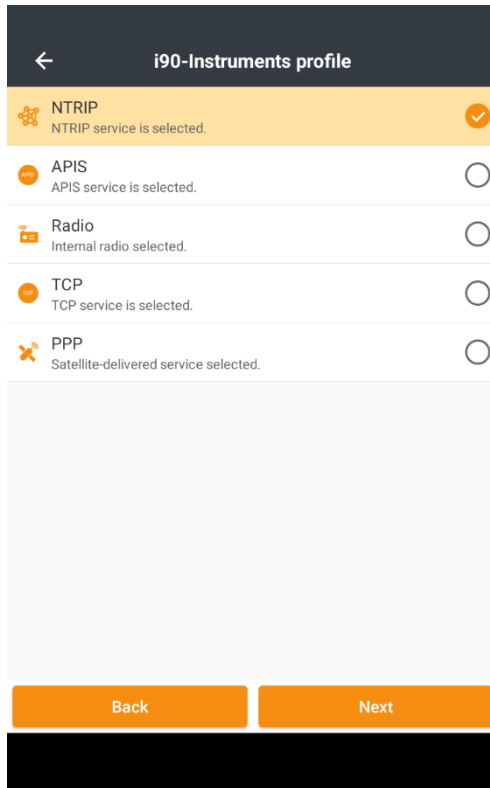
Create a new Rover **Instrument Profile**:



i90-Instruments profile	
Name	i93 Rover NTRIP StaticBase
Brand	CHC
Type	RTK
Model	i93
Connection type	Bluetooth
Antenna type	CHCI93 NONE
Target Search	
<input checked="" type="checkbox"/> GNSS-3738992	<input checked="" type="checkbox"/>
<input type="checkbox"/> GNSS-3704057	<input type="checkbox"/>
<input type="checkbox"/> GNSS-3234396	<input type="checkbox"/>
<input type="checkbox"/> GNSS-3786220	<input type="checkbox"/>
Back Next	

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

Click **Next**.

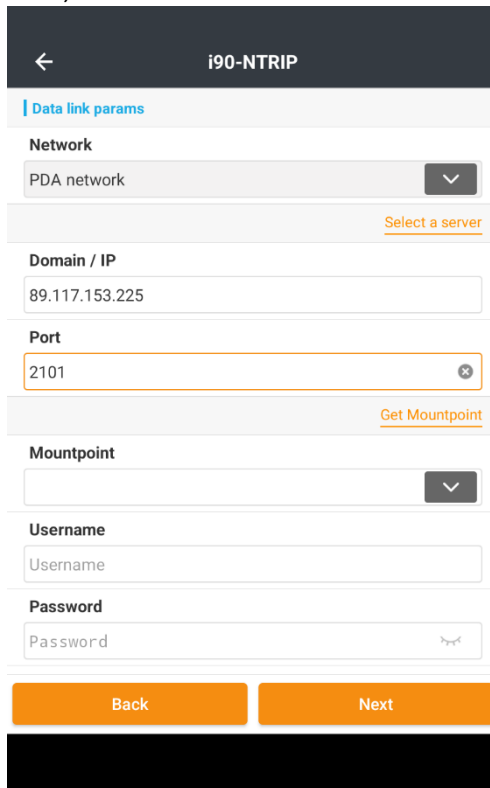


← i90-Instruments profile

- NTRIP
NTRIP service is selected.
- APIS
APIS service is selected.
- Radio
Internal radio selected.
- TCP
TCP service is selected.
- PPP
Satellite-delivered service selected.

Back Next

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



← i90-NTRIP

Data link params

Network
PDA network

Select a server

Domain / IP
89.117.153.225

Port
2101

Get Mountpoint

Mountpoint

Username
Username

Password
Password

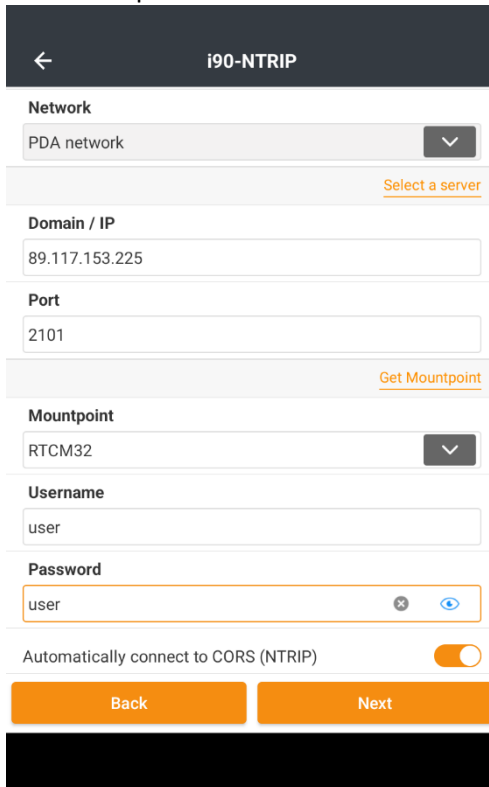
Back Next

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:



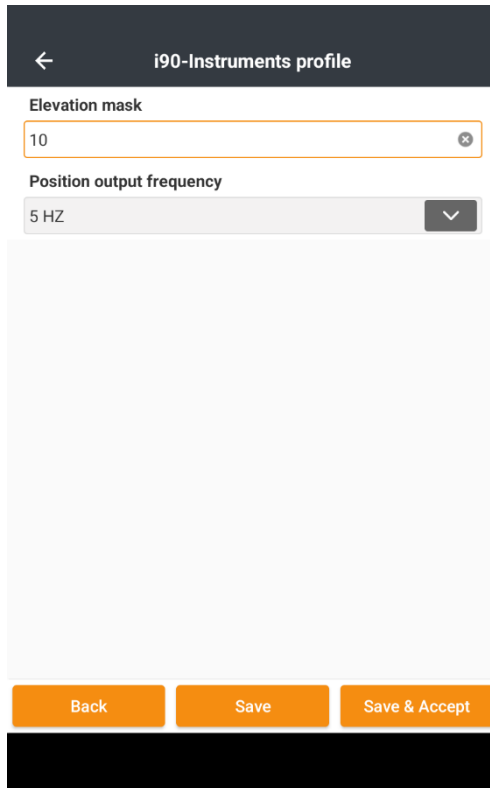
Click on the mountpoint **RTCM32**.



A screenshot of the "i90-NTRIP" configuration screen. The screen has a dark header with a back arrow and the title "i90-NTRIP". Below the header are several sections:

- Network:** A dropdown menu set to "PDA network" with a "Select a server" link below it.
- Domain / IP:** A text input field containing "89.117.153.225".
- Port:** A text input field containing "2101".
- Get Mountpoint:** A link to click.
- Mountpoint:** A dropdown menu set to "RTCM32".
- Username:** A text input field containing "user".
- Password:** A text input field containing "user" with a toggle to show/hide the password.
- Automatically connect to CORS (NTRIP):** A toggle switch that is currently turned on.
- Navigation:** Two orange buttons labeled "Back" and "Next".

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**.