XGPS DashPro User Guide

Introduction

Thank you for purchasing the XGPS DashPro™ Bluetooth® GNSS Receiver from Dual Electronics powered by Swift Navigation's Skylark™ Precise Positioning Service.

The XGPS DashPro works with signals from satellite systems around the world to determine your precise location anywhere. The XGPS DashPro transmits your location via a Bluetooth connection to your phone or other device supporting the DashPro app. The precise location generated by the XGPS DashPro can then be used by any other location-based app on your mobile device.

You can connect the XGPS DashPro to many Android® and iOS® smartphones, tablets, and other computing devices that support apps.

XGPS DashPro Features

Power Button

Firmly press and hold the power button for a full second to turn the device on or off.

USB-C Connection Inlet

The USB-C connector is used for charging the XGPS DashPro or to connect directly to a mobile device for data communications rather than over Bluetooth.

LED Indicator

The LED indicator's color and characteristic (solid, flashing) define different states as outlined in the table below.

Color	Characteristic	Definition
Red	**Solid**	Battery charging in progress (red light will be OFF when battery is full)
	Blink 2 times, short break	Low battery (below 10%)
	Constant fast blink	Battery or charger fault; service required
Green	**Solid**	GNSS location fixed
	Fast blink	GNSS configuration in progress (receiver booting)
	Slow blink	GNSS fix lost

Color	Characteristic	Definition
Blue	**Solid**	At least 1 Bluetooth device connected
	Fast blink	iOS handshake in progress, unrecoverable error in bluetooth
	Slow blink 50% on (flashing 0.5 sec every second)	Trying to restore last bluetooth connection
	Slow blink 10% on (flashing 0.1 sec every second)	Bluetooth idle
Orange	**Solid or Slow blink**	Logging active, or firmware installation in progress

Charging the XGPS DashPro

The XGPS DashPro is charged via the USB-C connection inlet on the side of the device. To charge, connect the XGPS DashPro to the USB port on any computer, wall charger, or other power source using a USB-C cable. The solid red LED light indicates it is charging, as shown in the figure below.

Pairing the DashPro with Your Device

Pairing is the process of connecting two devices over Bluetooth and allowing them to communicate. The XGPS DashPro will automatically reconnect to the last device it was paired with.

Pairing the DashPro with Your Device for the First Time

Follow the steps below to pair the DashPro to your device for the first time.

1. Power on your DashPro by pressing and holding in the button for one second.
   The DashPro LED flashes blue, indicating that it is ready for pairing.
2. Access the Bluetooth settings menu on your mobile device.

   This is unique to the operating system and the device you are using to connect to the XGPS DashPro. Please see your device's instructions for detailed information about how to connect to a Bluetooth device.
3. When you are on the "Pair New Device" screen on your device (or your specific device equivalent), the XGPS DashPro appears in the list as "DashPro-[XXXXXX]" where "XXXXXX" is the last 6 digits of your XGPS DashPro's Bluetooth ID.
4. Click the DashPro-[XXXXXX] entry from the available list of Bluetooth devices.

Once your device is connected to the DashPro, your device will indicate it has paired successfully and is currently connected to the DashPro. Additionally, the LED light on the DashPro will now be solid blue and the DashPro app Status screen indicates that your device is now connected to the DashPro, displaying the same name as is shown on your connected device Bluetooth screen.

Pairing the DashPro with Your Device Subsequently

Once paired with your mobile device, the XGPS DashPro remains in your device's Previously Connected Devices records unless you remove it. Therefore, when you turn on your XGPS DashPro, your device will automatically connect with it again.

If your device does not automatically connect to the DashPro, you will need to access the Bluetooth setup screen of your device and simply select the DashPro from the list of available Bluetooth devices.

Accessing Skylark Corrections

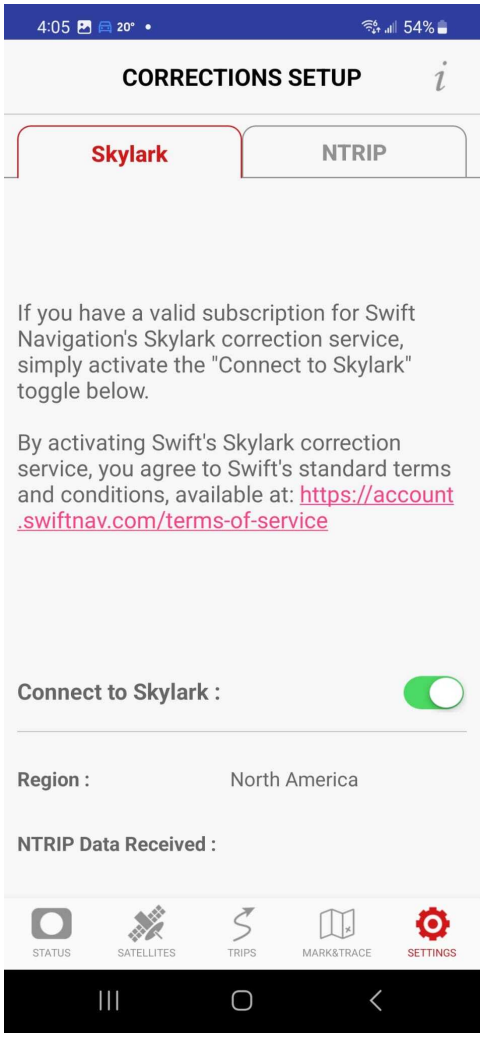
In order for your XGPS DashPro to provide the centimeter-level accuracy it is capable of, you must connect to and activate your Skylark subscription.

To activate your Skylark subscription:

1. Select the Settings screen of the DashPro app by tapping the SETTINGS icon in the bottom menu.
2. Tap on the Corrections Setup button to access the Corrections Setup page.

   By default, the Skylark tab option should be displayed. If it is not, then select the Skylark tab.
3. To activate your subscription, simply select the “Connect to Skylark” option as seen on the screen below.

   Your subscription period will begin upon the first time you connect to Skylark.



Routing Your DashPro Location to Device Apps

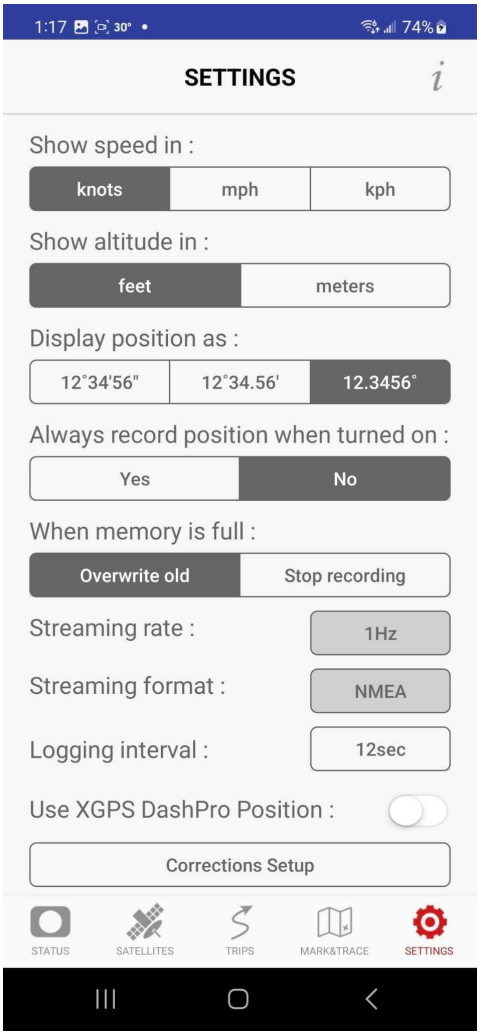
XGPS DashPro connects to Skylark – Swift Navigation's Precise Positioning Service – to provide location data whose precision far exceeds the one derived natively by phones, tablets, and other devices. Follow the steps below to ensure that your device is using the precise location generated by your XGPS DashPro.

NOTE: The steps may be different depending on your operating system and specific device.

For Android

As a prerequisite, confirm that you have access to the Developer Mode on your Android device. To do so, refer to your device's instructions and follow the procedure to access your Developer Mode options. Once you have access to Developer Mode, proceed with the steps below, assuming that your DashPro is on, your device is paired with it, and your DashPro app is on and confirms the pairing.

1. Access the DashPro app Settings screen as shown below.

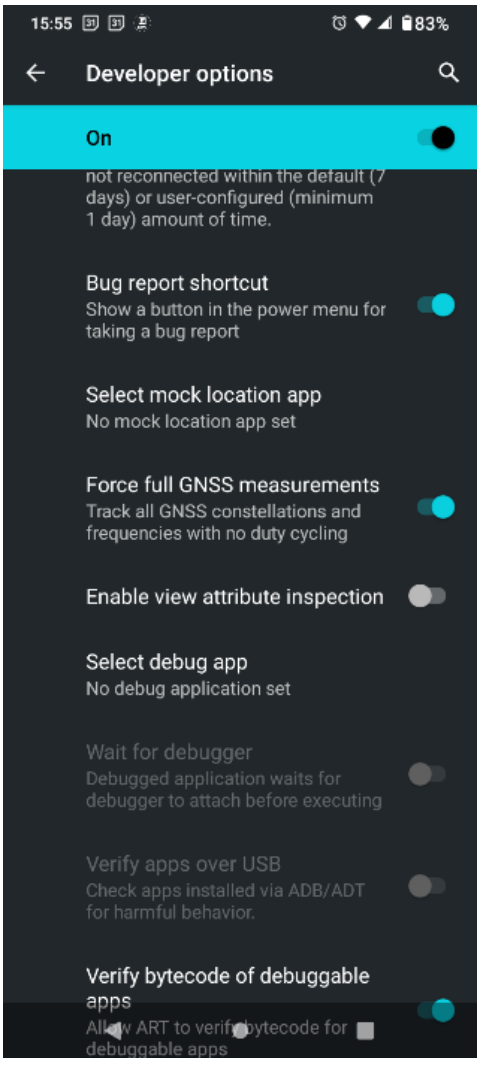


2. Select the Use XGPS DashPro Position option.

   The app immediately opens the Developer Options screen of your paired device.

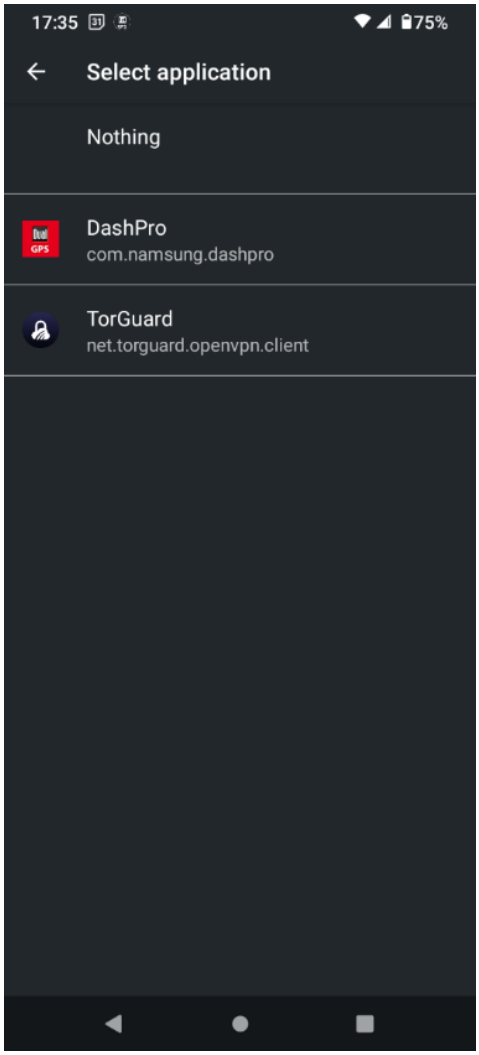
   Note: If Developer Options doesn't open and you cannot find the menu in Settings, you might need to first turn on Developer mode. This is usually done in Settings > About phone and tapping "Build number" seven times in quick succession. Exact process may vary slightly depending on the device and Android version. Please refer to your device's user manual if needed.

3. Scroll down to an option that mentions "mock location", such as "Select Mock Location App" as shown in the screenshot below.



4. Click the Mock Location option.

The Select Application screen opens, displaying one option for “Nothing” and any apps that would qualify to provide a mock location.



5. Select the DashPro app.

   The Select Application window closes, and the Developer Options screen reactivates, displaying the DashPro app as selected under the Mock Location option.

The apps on your device will now receive the DashPro location data as your device’s location data.

For iOS

As the DashPro is a certified Apple MFI (“Made For iPhone”) product, there is no need to set up anything on an iPhone or iPad. Once the DashPro is connected to your device, any app requiring a location will automatically use the location generated by the DashPro instead of the one natively derived by your iPhone or iPad.

The DashPro App

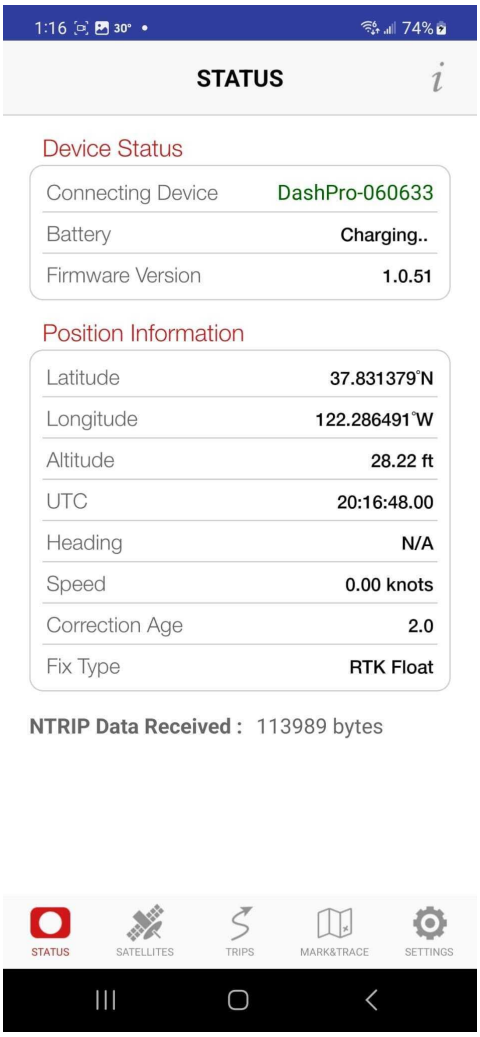
The DashPro app provides the ability to:

1. View the operation of your XGPS DashPro including the position generated and satellite tracking information.
2. Configure how your DashPro will operate.
3. Provide a precise location to other location apps on your device.
4. Connect to and receive Skylark corrections.

The various screens that are presented in the app and all of their features are defined in the subsections below.

Status Screen

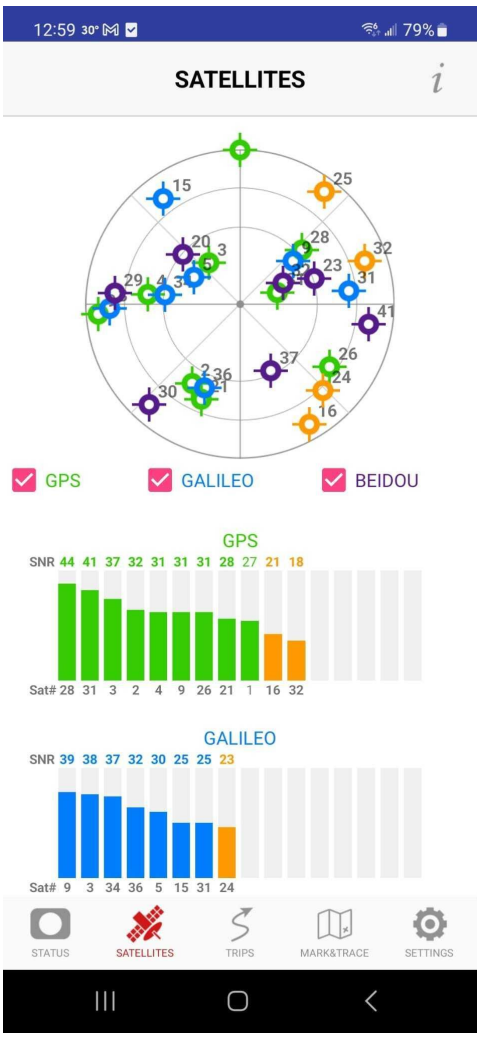
The Status screen is your DashPro's dashboard and provides details of the operation of your DashPro.

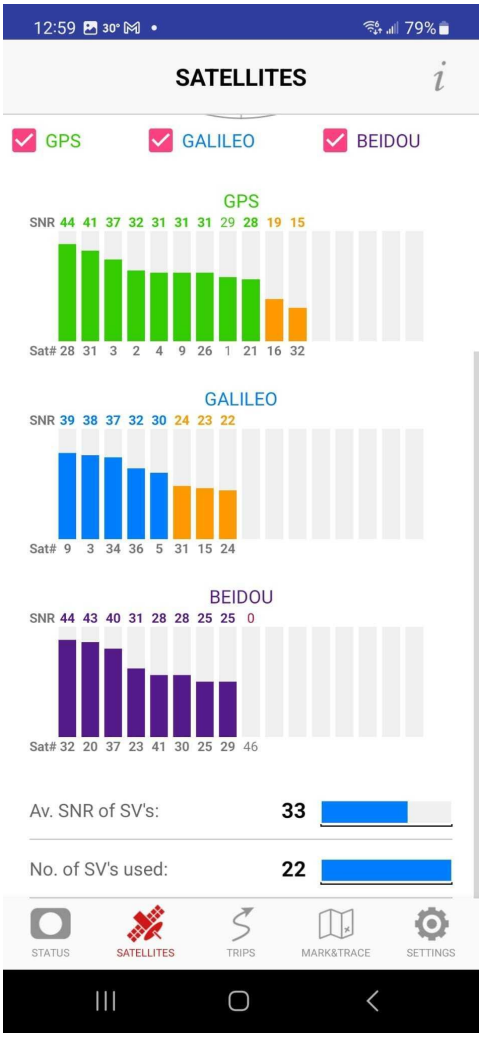


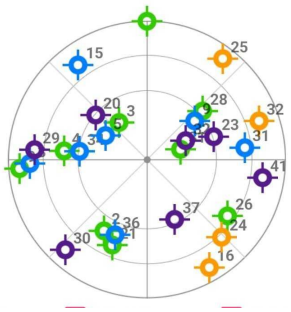
Status Screen Section	Status Screen Field	Description
Device Status	**Connecting Device**	The DashPro connected to your device (and a blinking green dot indicating that said DashPro is currently connected).
	Battery	The charge left on the connected DashPro
	Firmware Version	The DashPro's current firmware version.
Position Information	**Latitude**	The latitude of your DashPro's current location.
	Longitude	The longitude of your DashPro's current location.
	Altitude	The altitude of your DashPro's current location.
	UTC	The current Universal Coordinated Time as it is registering on the DashPro.
	Heading	The degree in which the DashPro is currently moving.
	Speed	The speed at which the DashPro is currently moving. NOTE: Without location corrections, your DashPro's position readings, reflected here in Heading and Speed, can result in minor fluctuations based on the lesser position readings and differences in the connected satellites.
	Correction Age	The maximum time (in seconds) since correction data was received.
	Fix Type	The following fix types are available, and the DashPro attempts to achieve the best possible fix type automatically when it is running. ● No Fix ● SPP Fix ● SBAS ● RTK Float ● RTK Fixed ● DR (Dead Reckoning)
NTRIP Data Received		Data received from the NTRIP corrections provider in bytes.

Satellites Screen

The Satellites screen displays all satellites that the DashPro is tracking and used in the location solution. Below are the different elements of the screen with their descriptions.

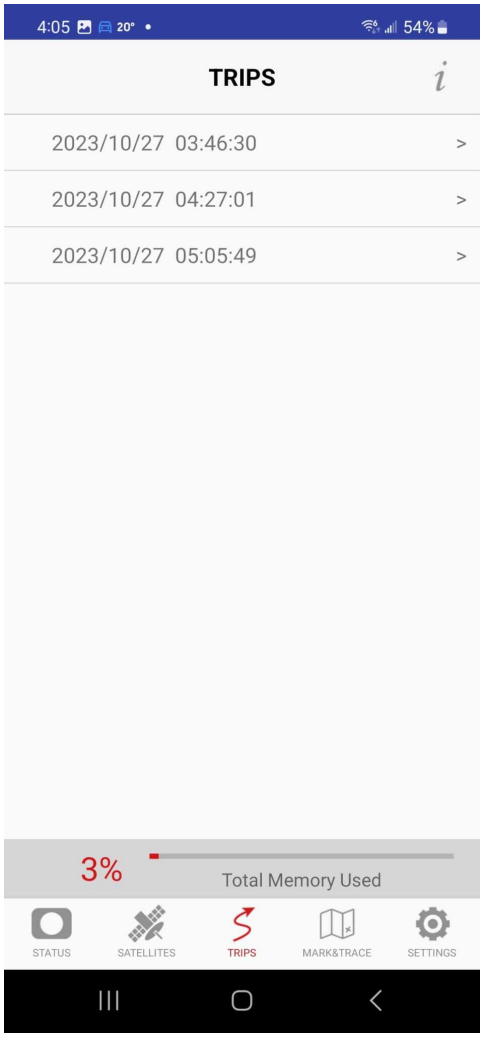


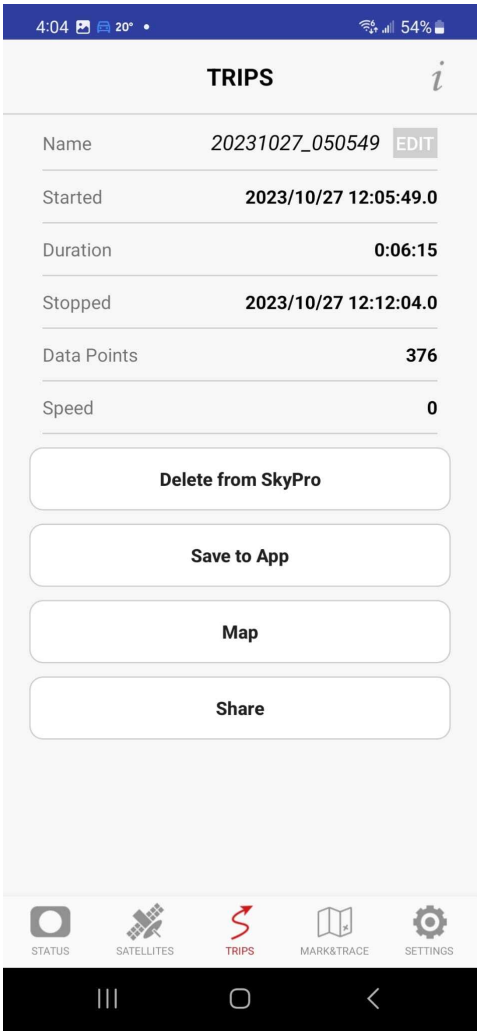


View	Description
 Satellite Sky Plot	Displays the location of each tracked satellite in the sky for each selected constellation – GPS, Galileo, and Beidou. ● Green: GPS ● Blue: Galileo ● Purple: Beidou
	Selects which GNSS constellation that will be displayed on the sky plot as well as the satellite signal strength display. To hide or display any of the constellation information, toggle its checkbox.
	Displays each satellite being tracked and used within the position solution along with the signal strength of each. ● Green: GPS satellite used for the position solution ● Blue: Galileo satellite used for the position solution ● Purple: Beidou satellite used for the position solution ● Orange: Satellite being tracked but is not used for the position solution
	Av. SNR of SV's: The average signal strength of all satellites used in the position solution. No. of SV's used: The number of all satellites used in the position solution.

Trips Screen

The trips screen allows you to manage any logged data (or trips) that have been stored on the XGPS DashPro.





Included on the Trips screen are:

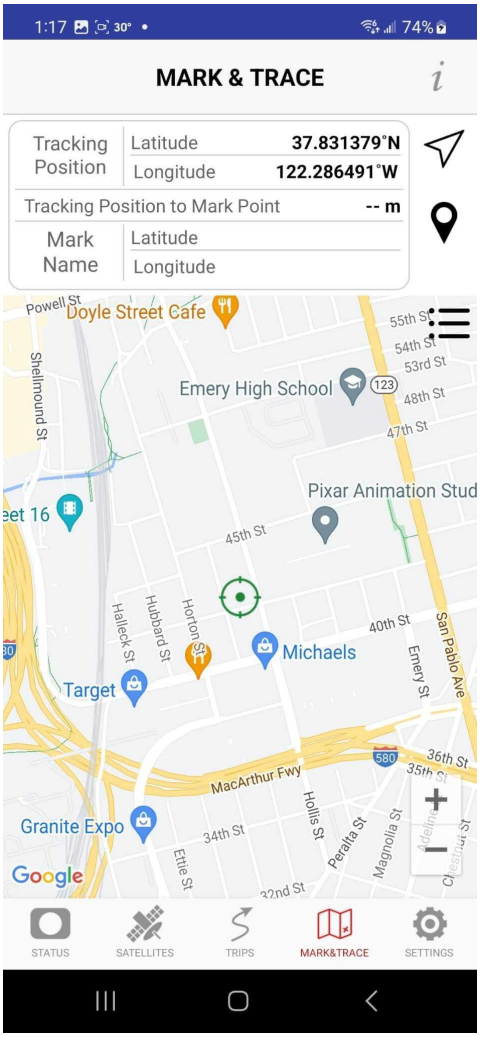
1. A list of all the trip files that are on your XGPS DashPro with the date that the file was stored and the length of the trip in hours, minutes, and seconds.
2. The storage capacity used on the XGPS DashPro as a percentage.

When a trip file is selected, additional file management functions are made available.

The following table provides details of each of the available file management functions.

View	Description
Name	The name of the trip file. By default, it will be the date and time of the start of the trip file. Select EDIT to change the name of the file.
Started	The date and time that the trip file started logging.
Duration	The total duration of the trip file in hours, minutes, and seconds.
Stopped	The date and time that the trip file stopped logging.
Data Points	The total number of individual positions contained within the trip file.
Speed	The average speed of all recorded points within the trip file.
Delete from DashPro	This will delete the selected trip file from the XGPS DashPro.
Save to App	This will copy the trip file and store it on your mobile device.
Map	Will display the trip file on the map in the trips page.
Share	This can be used to send the trip file to other people.

Mark & Trace Screen



Screen Elements

The following table provides details of each of the functions and features available on the DashPro app's Mark & Trace screen.

Screen Element	Definition
Tracking Position: Latitude	The latitude of the DashPro's current location.
Tracking Position: Longitude	The longitude of the DashPro's current location.

Screen Element	Definition
Tracking Position to Mark Point	The distance between the DashPro's current location and a selected mark point.
Mark Name: Latitude	The latitude of a selected mark point's location.
Mark Name: Longitude	The longitude of a selected mark point's location.

To Create a Mark Point

Follow the steps below to mark a place on the Mark & Trace map (meaning, to create a mark point).

1. Click the black Map Pinpoint button.

   A target icon opens in the middle of the map.

2. Drag the map to the precise point you want to mark.
3. Press the black Mark icon (down-arrow over a tray).

   A Position Name dialog box opens, requesting the name of this marked point.

4. Enter the desired mark name and click OK.

That mark point and its name are now saved to the app.

Accessing Your Marked Points

Follow the steps below to view your saved positions and jump to a selected one.

1. Click the menu icon in the top-right of the map.

   The list of saved positions opens, and to the left of the menu icon appears a share icon.

2. Click the desired saved position from the list of saved positions.

The map immediately centers on the selected saved position.

Determining the Distance from a Marked Point to Your Current Position

Follow the steps below to determine the distance from a marked point to your current position.

1. Activate a marked point by clicking on it or selecting it from the marked points menu.

   The marked point's name appears above the marked point.

2. Click the marked point name.

A red line appears between your current position and the selected marked point. The marked point's name, latitude and longitude appear in the table above the map, along with the "crow flies" distance from your current position to the marked point in the "Tracking Point to Mark Point" field.

Deleting a Marked Point

Follow the steps below to delete a marked point.

1. Activate a marked point by clicking on it or selecting it from the marked points menu.

   The marked point's name appears above the marked point.

2. Click and hold the marked point name.

   A dialog box opens, asking you whether you want to delete the marked point.

3. Click OK to delete the marked point or click Cancel to keep the marked point.

Sharing Your Saved Positions

Follow the steps below to share your saved positions in a CSV file.

1. Click the menu icon in the top-right of the map.

   The list of saved positions opens, and to the left of the menu icon appears a share icon.

2. Click the share icon.

   A Share dialog box opens.

3. Select the desired method via which you will share the CSV file of your saved positions from the icons listed at the bottom of the window.

Follow the typical method of sharing a file via the method you selected. For example, if you selected an email app, simply proceed with sending an email to your desired recipient with the CSV file, which has been attached to the open email.

Viewing a Saved Position in Google Maps

Follow the steps below to view a saved position in Google Maps.

1. Click on a saved position marker or select a desired saved position from the list.

   The map centers on the selected saved position, and at the bottom-right of the map, a directions icon (blue right-turn arrow) and Google Maps icon also display.

2. Click the Google Maps icon.

Google Maps opens on your device, displaying the saved location.

Displaying Directions to a Saved Position in Google Maps

Follow the steps below to view a saved position in Google Maps.

1. Click on a saved position marker or select a desired saved position from the list.

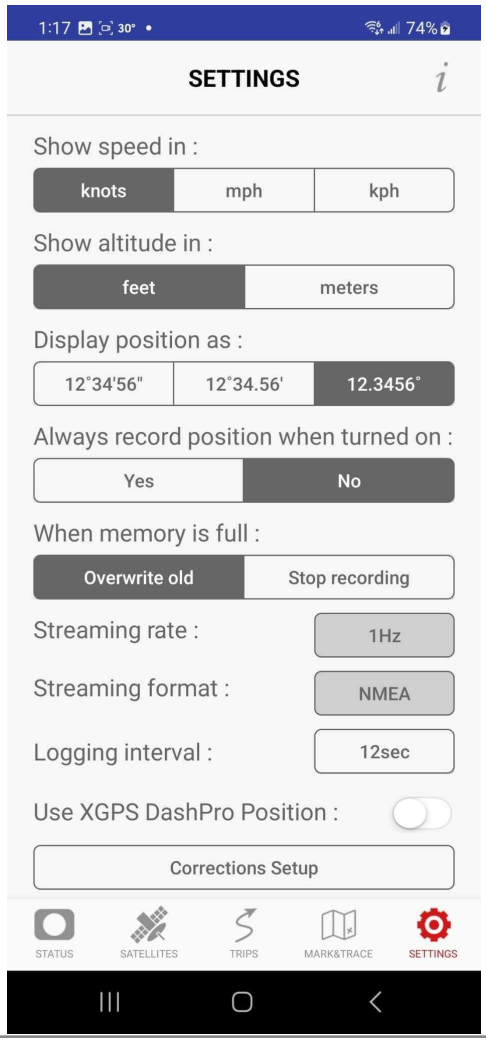
The map centers on the selected saved position, and at the bottom-right of the map, a directions icon (blue right-turn arrow) and Google Maps icon also display.

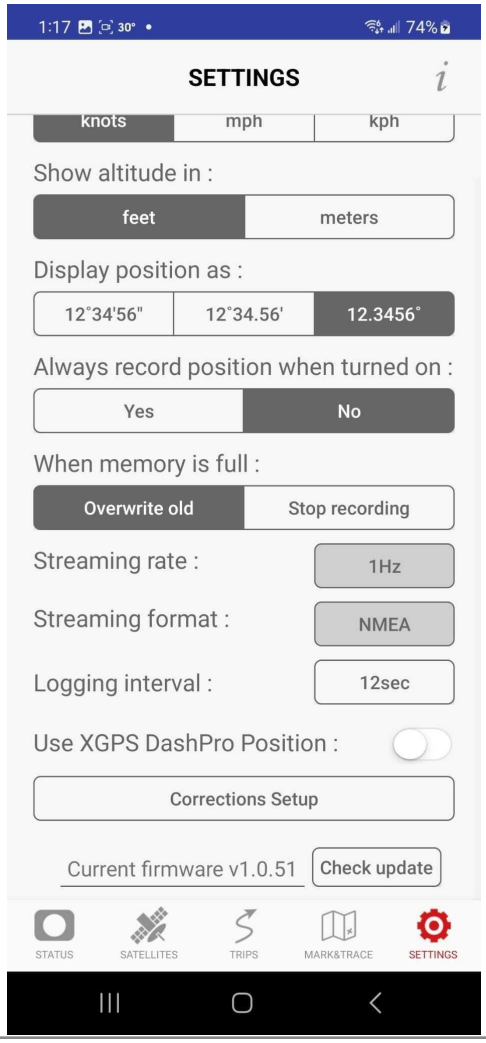
2. Click the directions icon.

Google Maps opens on your device, showing where you are currently located (according to your DashPro's position) and directions to the saved position you selected.

Settings App Screen

The Setup screen enables you to configure how information is displayed within the app as well as to configure operating settings of the XGPS DashPro itself.





The different settings displayed in the above screenshots are defined in the table below.

Setup Screen Element	Definition
Show speed in	Display speed values in knots, miles per hour (mph), or kilometers per hour (kph).
Show altitude in	Display altitude values in feet or meters.
Display position as	Display latitudinal and longitudinal values in one of the following three formats: 1. Degrees, Minutes, Seconds (DD°MM'SS") 2. Degrees, Decimal Minutes (DD°MM.MM') 3. Decimal Degrees (DD.DDDD°)
Always record position when turned on	Select Yes or No to indicate whether the DashPro should automatically start logging data when it is switched on.
When memory is full	Determines what the DashPro will do with logged data once memory is full, overwrite the old log data, or stop recording data.
Streaming rate	The rate at which position data is output.
Streaming format	The format of output data.
Logging interval	The rate at which data will be logged, from every 0.1 to every 20 seconds.
Use XGPS DashPro Position **(available on Android only)**	A switch that toggles whether applications on the device connected to the DashPro are receiving the DashPro location data.
Corrections Setup	A button that opens the Corrections Setup screen addressed below
Current firmware	The firmware version currently installed on your DashPro. Click the "Check update" button to update the firmware on your DashPro if there is a newer firmware version.

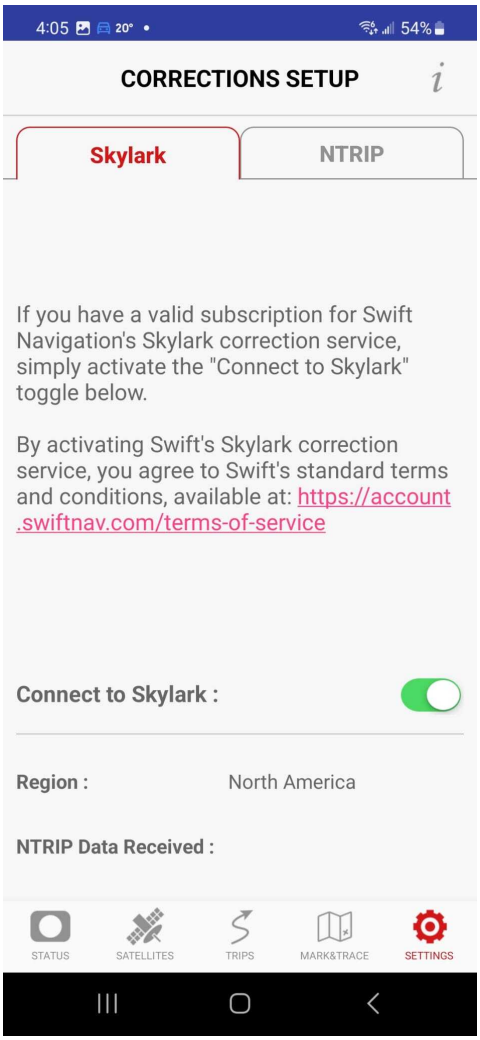
Corrections Setup Screen

The Corrections Setup screen is where you will configure your precision positioning correction service including activating your Skylark subscription. It comprises two tabs, the Skylark tab and NTRIP tab, both of which are addressed in the following subsections.

Corrections Setup: Skylark

If you have an existing Skylark subscription for your XGPS DashPro, to activate your subscription, simply select the “Connect to Skylark” option as seen in the screen below.

Your subscription period will begin upon the first time you connect to Skylark.

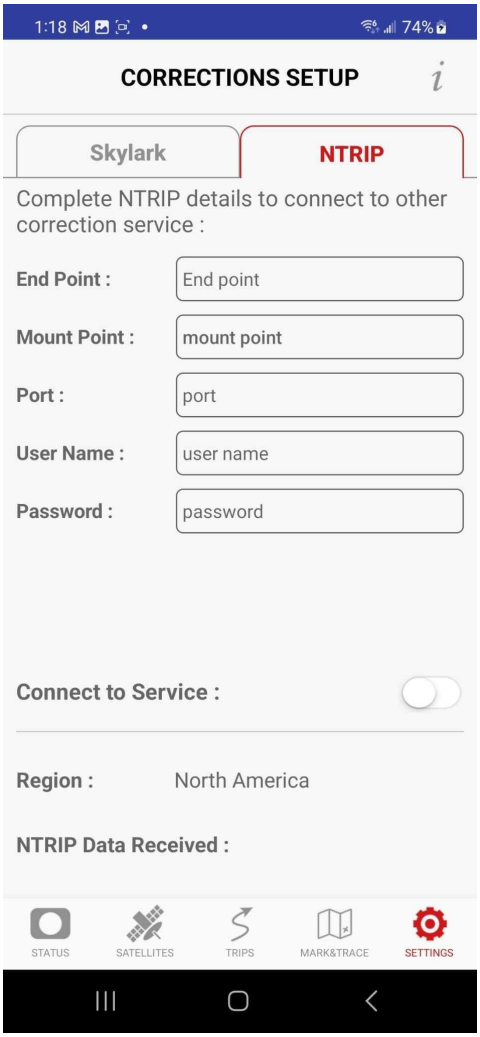


Corrections Setup: NTRIP

The DashPro app includes a generic NTRIP client. This can be used to connect to any other NTRIP-based correction service including Skylark and Skylark RTK from Swift Navigation.

After all required fields are completed, simply select “Connect to Service” to connect to the corrections provider.

You will know the connection is successful if you see data being received as shown by the NTRIP Data Received display.



The following table provides details of each of the NTRIP client fields.

Setup Screen Element	Definition
End Point	This is a URL address that points to the NTRIP caster of the corrections service provider. This will be provided to you by the corrections service provider.
Mount Point	The NTRIP Mount Point is sometimes known as a “stream” and identifies the type of data that will be delivered. The DashPro app will automatically provide a list of available mount points provided by the service provider after the End Point is entered.
Port	This is a communication port number of the NTRIP caster.
User Name	NTRIP uses a standard set of user name and password credentials to access the service. This is the username that has been provided or that has been created when creating a corrections service account.
Password	NTRIP uses a standard set of user name and password credentials to access the service. This is the password that has been provided or that has been created when creating a corrections service account.

Information Screen

The DashPro Information Screen is visible by pressing the *"i"* button at the top-right of any screen, and brings up the description and the current version of the app installed on your device.