

Setup guide

For Emlid RS2 / RS2+ / RS3 with MALÅ Controller App

Introduction

This document provides instructions on configuring the Emlid Reach RS2 / RS2+ / RS3 for use with the MALÅ Controller App, via Bluetooth connection.

The following four typical scenarios are defined and described in this guide:

- Single Emlid RS2 / RS2+ / RS3 unit without any RTK correction
- Single Emlid RS2 / RS2+ / RS3 unit using SIM card for RTK correction
- Single Emlid RS2 / RS2+ / RS3 unit using hotspot on mobile for RTK correction
- Two Emlid RS2 / RS2+ / RS3 units used as base-rover set-up

Note: This guide only covers the setup of Emlid Reach RS2 / RS2+ / RS3 units using Android devices.

You will require a mobile phone or tablet to set up and run the Emlid RS2 / RS2+ / RS3 GNSS antenna. Download the *Emlid Flow* app from Google Play or App Store to your mobile device. More information on GNSS measurements with Emlid RS2 / RS2+ / RS3 units is available at <https://emlid.com/support/reach-rs2/> and <https://emlid.com/reachrs3/>

Note: The Emlid unit needs to be paired with the mobile device where you have MALÅ Controller App installed. Use the Bluetooth option on your mobile device and pin-code 123456.

Preparing the Emlid RS2 / RS2+ /RS3

Start your Emlid unit by pressing and holding the start button. When started, wait until the battery indicators (nr 1 in the picture to the right) becomes solid. This takes approximately 60 seconds.

Make sure that the Wi-Fi indicator (nr 2 in the picture) is white. This indicates that the Emlid hotspot is active.

Note: If the Wi-Fi indicator is blue the Emlid unit is connected to a Wi-Fi hotspot. Connect to the same Wi-Fi network with your mobile device or move the Emlid unit away from the Wi-Fi network (to disconnect from the network). Then restart the Emlid unit and make sure the Wi-Fi indicator is white.



Connecting the Emlid Flow app to the Emlid unit

Make sure you have disconnected your phone or tablet from any Wi-Fi network.

Open the Wi-Fi settings on your phone or tablet and connect to the Wi-Fi network created by your Emlid unit. This is called *reach:xx:xx* Use the password *emlidreach* to connect.

Note: If the Emlid is connected to a Wi-Fi network, you can connect your mobile device to the same network and proceed as below.

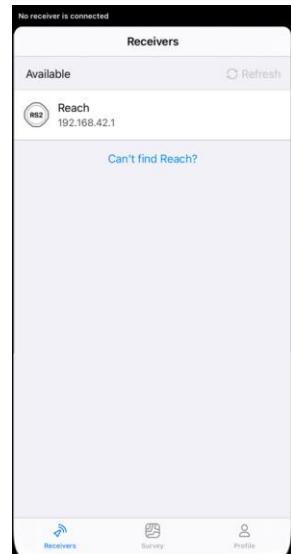
Start the *Emlid Flow* app on your phone or tablet.

Press the refresh button in the app and connect to the correct Emlid RS2 / RS2+ RS3 unit.

If you have several Emlid units powered on simultaneously, e.g. a base and a rover, both will be displayed on the list.

Note: You can rename the Emlid units in the Emlid Flow app, for easier differentiation.

Note: More information is found here
<https://docs.emlid.com/reachrs2/before-you-start/first-setup/>



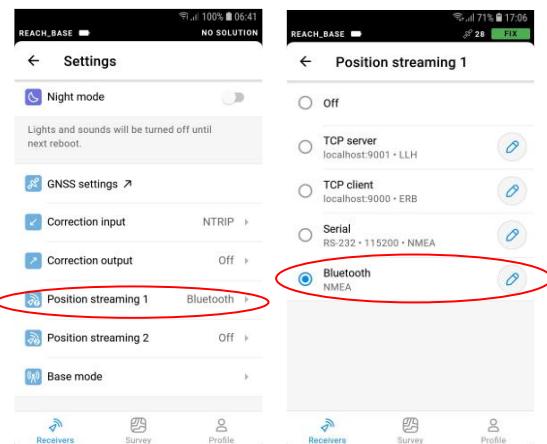
Note: Please ensure the firmware on the GNSS receiver is up to date by checking on the EMLID Flow App. Failure to do so may result in errors or issues when connecting to the GPR.

Set up for a single Emlid rover without correction

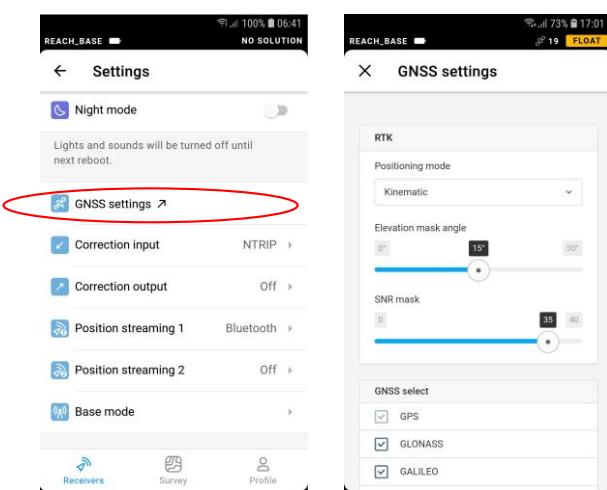
Follow the guide above (*Connecting the Emlid Flow App to the Emlid unit*) to connect your phone or tablet to the Emlid Reach RS2 / RS2+ / RS3 unit.

Go to the Settings menu in the Emlid Flow app, choose Settings and then Position Streaming 1 (Position Streaming 2 should be OFF).

Set this to Bluetooth and click on the pen symbol to choose the format (NMEA in GNGGA).



Finally, make sure the GNSS settings are correct.



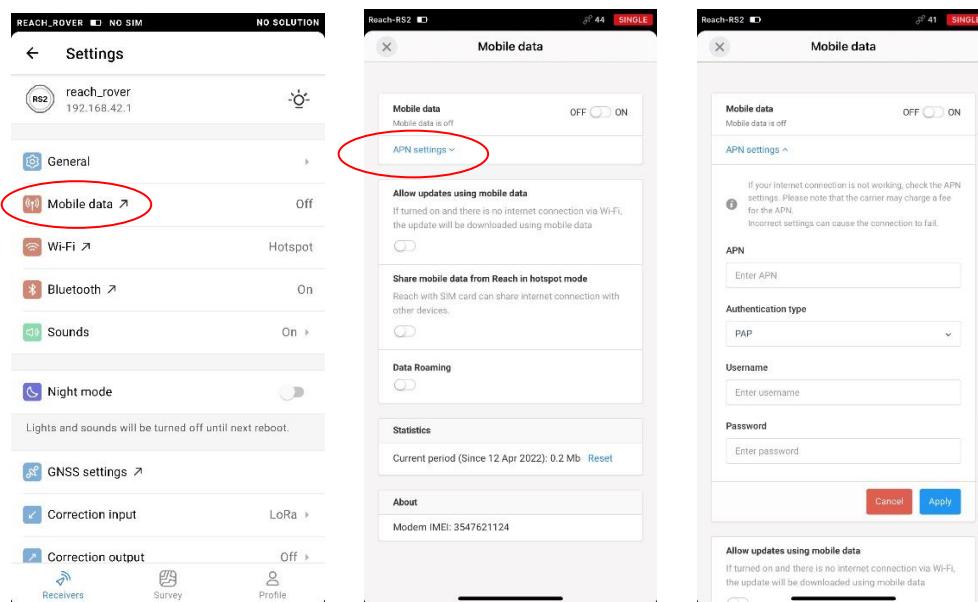
Set up for a single Emlid rover using SIM card

Insert your SIM card (with Internet subscription) into the Reach RS2 / RS2+ / RS3 receiver (see blue arrow).

Follow the guide above (*Connecting the Emlid Flow App to the Emlid unit*) to connect your phone or tablet to the Emlid Reach RS2 / RS2+ / RS3 receiver.



Go to the Mobile data settings in the app, enter the PIN code if needed and fill out the information regarding APN (Access Point Name). When all the information has been added, turn on the Mobile data.



Use the same GNSS settings (NTRIP etc.) for the Emlid unit as defined in Chapter *Set up a single Emlid unit using the hotspot on mobile* below.

Set up a single Emlid unit using a hotspot on a mobile phone

If you do not have a SIM card (with Internet subscription) you can use your mobile phone to provide the Emlid unit with an internet connection.

This will allow the Emlid to receive corrections to your positioning data through an NTRIP (Networked Transport of RTCM via Internet Protocol) service.

Note: The tablet, Samsung Galaxy Tab Active Pro (4G), used together with the MALÅ Controller App can use the same hotspot (on your mobile phone) to upload data etc.

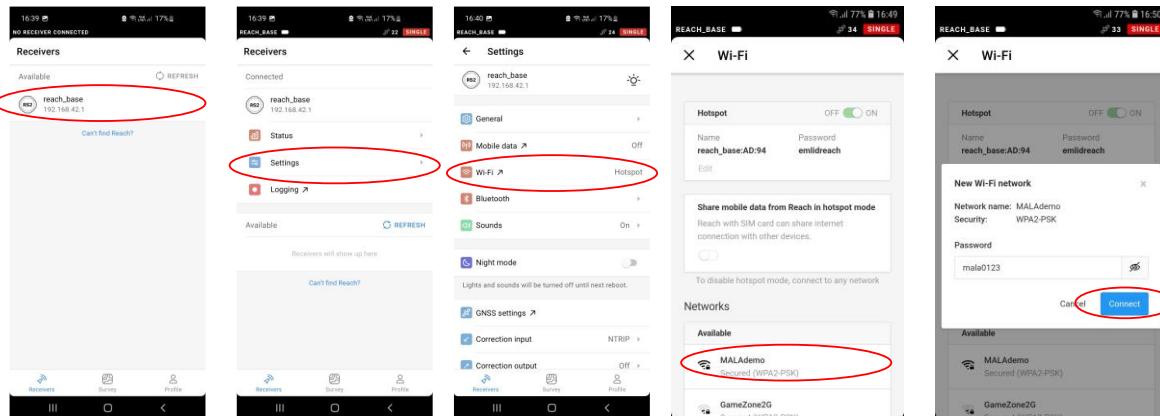
Start by configuring a hotspot on your mobile phone to share your mobile internet.

The hotspot in this guide is named *MALAdemo* with password *mala0123*, you can choose any name you like.

Follow the guide above (*Connecting the Emlid Flow App to the Emlid unit*) to connect your phone or tablet to the Emlid Reach RS2 / RS2+ / RS3 unit.

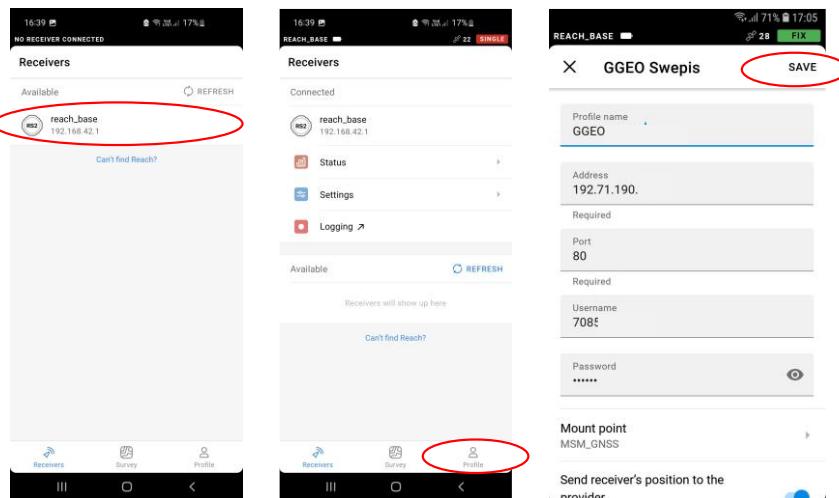


Then follow the sequence below to connect to the Wi-Fi hotspot provided by the mobile phone.

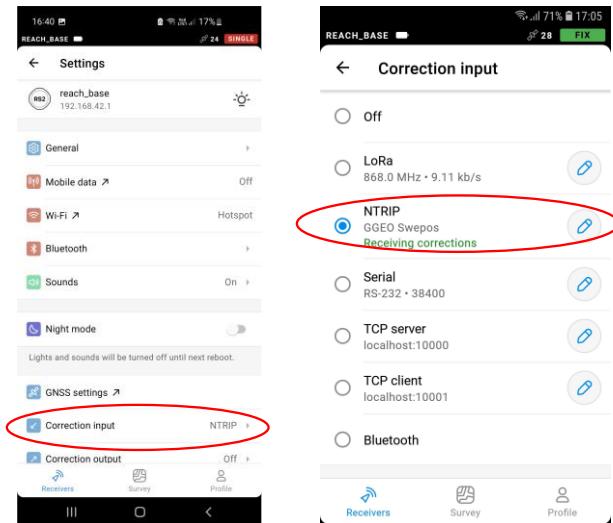


Connect the Samsung Tab Active Pro (4G) tablet to the same hotspot (*MALAdemo* in this example) and using the Emlid Flow app, reconnect with the EMLID Reach RS2 Unit.

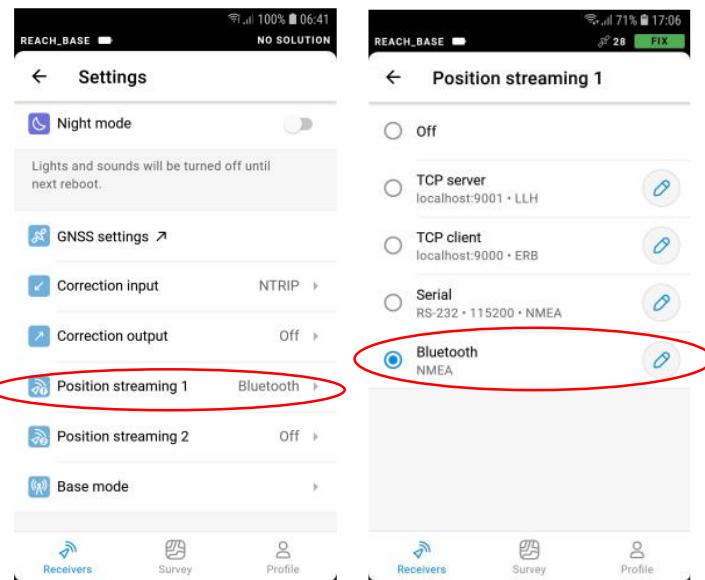
Create an NTRIP profile in *My NTRIP Profiles*.



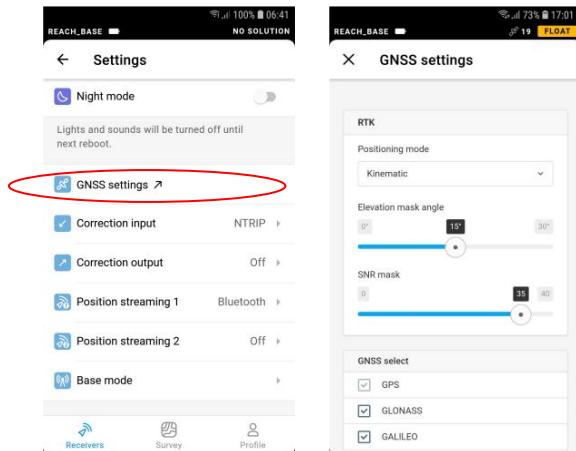
Choose this profile for setting the correction input



Choose Bluetooth as positioning streaming.



Finally, make sure the GNSS settings are correct. The NMEA format should be a GNGGA message. MALÅ Controller App needs the GNSS settings to be GNGGA.



Set up of two Emlid units used as base-rover

If you do not have any correction service via the Internet and NTRIP as explained above, you can use two Emlid units to create a base-rover set-up.

One Emlid (the base) is mounted on a tripod at a fixed, clear and open location, that provides good GNSS reception.

The second Emlid unit (the rover) is used as a receiver mounted on the GPR antenna and provides corrected positions by Bluetooth to the MALÅ Controller App.



Both Emlid units, the base and the rover, must be equipped with LoRa (Long Range) antennas, to allow correction data to be sent from the base to the rover.

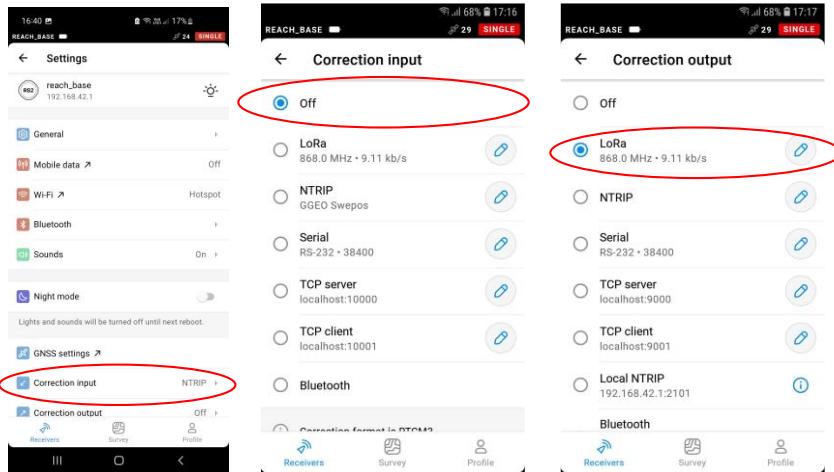
The LoRa antennas are found in the Emlid RS2 / RS2+ / RS3 transport bags.

Note: It is important to set up the base correctly to achieve good positioning results. For more information visit <https://docs.emlid.com/reachrs/ppk-quickstart/placing-the-base>

Base configuration

Follow the guide above (*Connecting the Emlid Flow App to the Emlid unit*) to connect your phone or tablet to the Emlid Reach RS2 / RS2+ / RS3 unit.

Choose *Off* as correction input and *LoRa* for correction output:

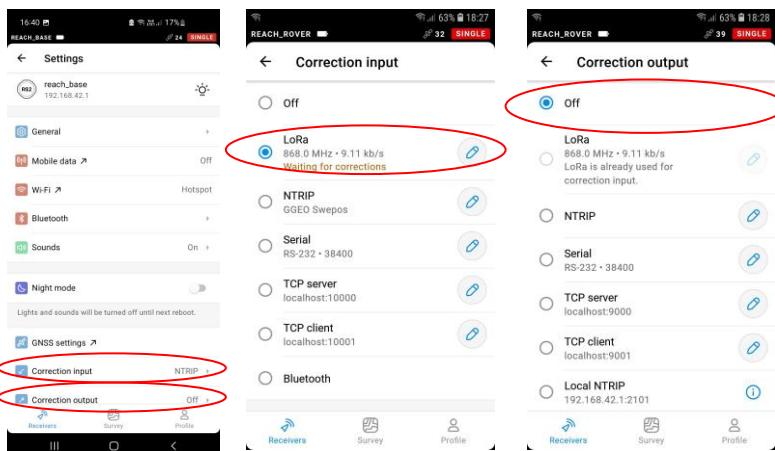


Place the base unit on a tripod at an open spot with good reception of GNSS satellites and restart the Emlid base unit. To achieve the highest level of positioning, leave the base on for several minutes before starting the rover. When sufficient time has passed, switch on the rover and place it at least > 10 m away from the base.

Rover configuration

Follow the guide above (*Connecting the Emlid Flow App to the Emlid unit*) to connect your phone or tablet to the Emlid Reach RS2 / RS2+ / RS3 unit.

Choose *LoRa* as correction input and *off* for correction output:



Use the same GNSS settings for the rover configuration as defined in the chapter *Set up a single Emlid unit using hotspot on mobile phone* above.