GUIDELINEGEO | MALÅ

Setup guide

For Emlid RS2 / RS2+ with the MALÅ MIRA HDR system, with or without cable

Introduction

This document provides instructions on how to configure the Emlid Reach RS2 / RS2+ for use with the MALÅ MIRA HDR, connected by Bluetooth or a serial RS232 cable to the Emlid unit.

The following scenarios are defined and described in this guide ->

With Bluetooth:

- Single Emlid RS2 / RS2+ unit using SIM card for RTK correction
- Single Emlid RS2 / RS2+ unit using hotspot on mobile device for RTK correction
- Two Emlid RS2 / RS2+ units used as base-rover set up

With cable (this might be needed if you have your data collection computer inside a car, or elsewhere when Bluetooth cannot be used):

- Single Emlid RS2 / RS2+ unit using SIM card for RTK correction
- Single Emlid RS2 / RS2+ unit using hotspot on mobile device for RTK correction
- Two Emlid RS2 / RS2+ units used as base-rover set up

To be able to run the Emlid RS2 /RS2+ unit you also need a mobile phone or a tablet. Download the *Emlid Flow* app from Google Play or App store to your mobile device. More information on GNSS measurements with Emlid RS2 / RS2+ units are available on https://emlid.com/support/reach-rs2/

Note: When using Bluetooth for communication, connect the Emlid unit to the computer, by choosing Add Bluetooth device (usually found in the System setting in the computer) and enter 123456 as pin-code.

Note: The Emlid GNSS can of course also be run without RTK correction, but this is not advisable when carrying out high-resolution multichannel measurements.

Note: If using the Emlid GNSS with cable, it can be advisable to add an extension cable to the original Emlid cable, as this has a limited length of 2 meters.

You can use any Serial RS-232 male to USB cables or a Serial RS-232 male to RS-232 female to extend the Emlid cable, so it reaches for instance from the MIRA HDR antenna box to the data collection computer in the front seat of your car.

Emlid Reach RS+/RS2 cable 2M with DB9 female connector (S/N 21-0055907)

The MIRAsoft HDR software will automatically recognize the com port used (or Bluetooth) as well as baud rate for communications.

Preparing the Emlid RS2 / RS2+

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 and can be connected to your mobile device.

Note: If the Wi-Fi indicator is blue the Emlid unit is connected to a Wi-Fi hotspot. Connect your mobile device to the same Wi-Fi network 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 then 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+ unit.

If you have several Emlid units powered on simultaneously, like a base and a rover, both will be displayed in 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/

Setup for Bluetooth

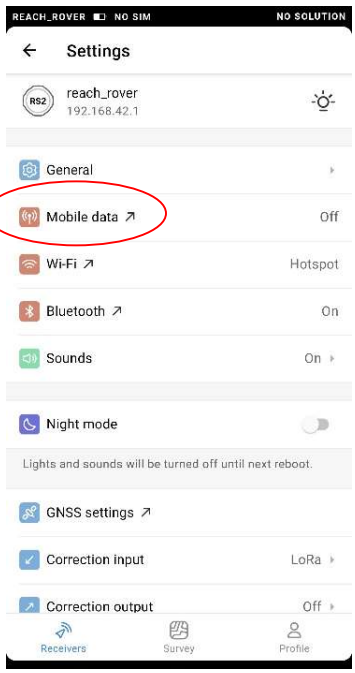
Make sure your field computer is paired with the EMlid unit. Use 123456 as pin-code.

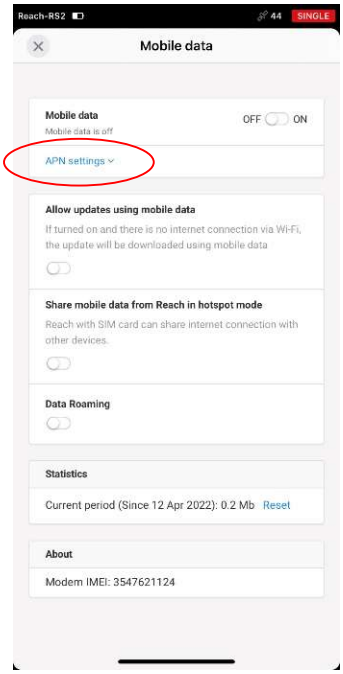
Setup for a single Emlid rover using SIM card

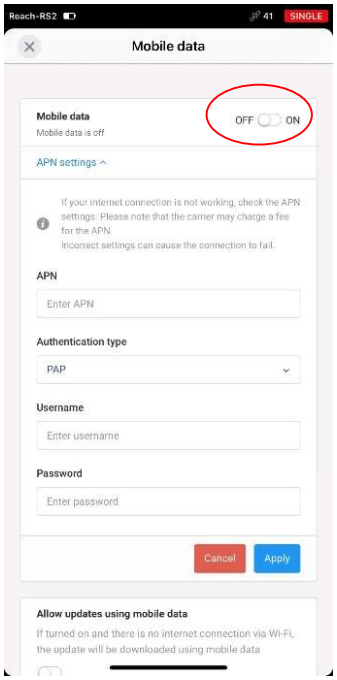
Insert your SIM card (with Internet subscription) into the Reach RS2 / RS2+ unit (see blue arrow).

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+ unit.

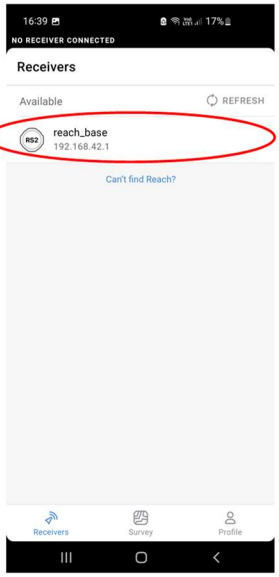
Go to the Mobile data settings in the app, enter a PIN-code if needed and fill out the information regarding APN (Access Point Name). When all information has been added, turn on the Mobile data.

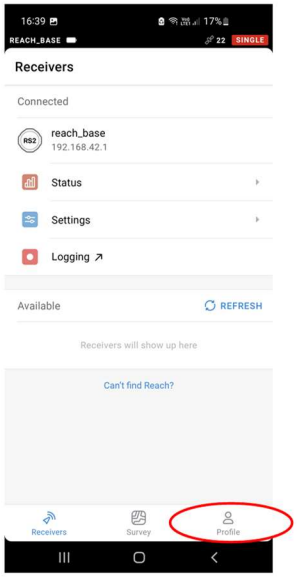


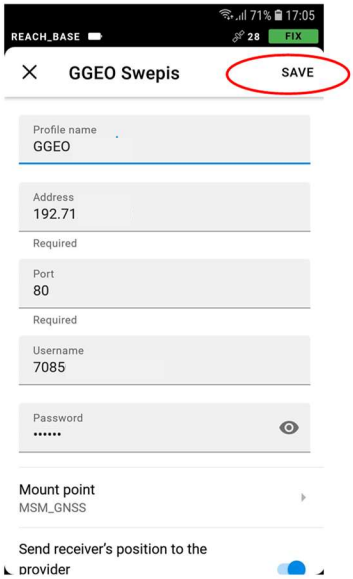




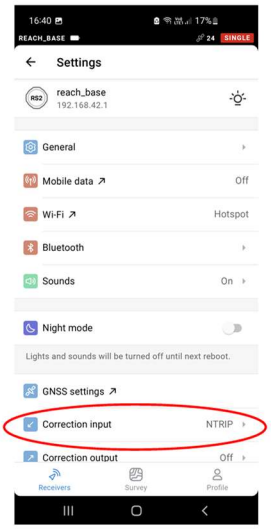
Create an NTRIP (Networked Transport of RTCM via Internet Protocol) profile in My NTRIP Profiles.

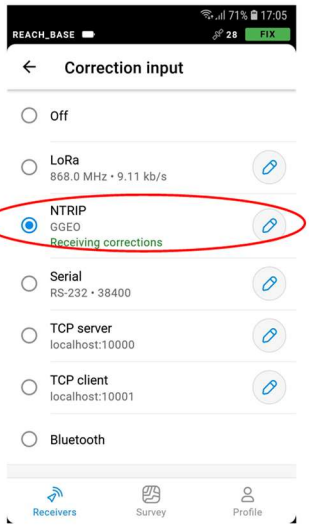




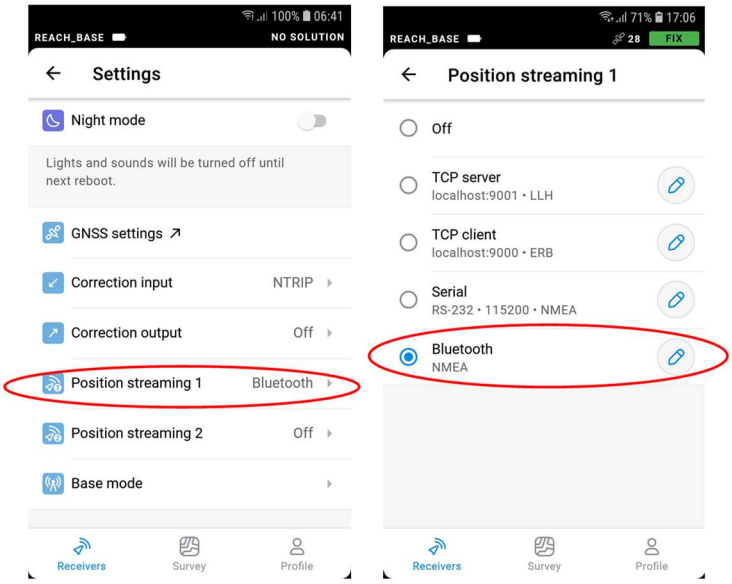


Choose this profile for setting the correction input.





Choose Bluetooth as positioning streaming.



Set up a single Emlid unit using 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 with an internet connection.

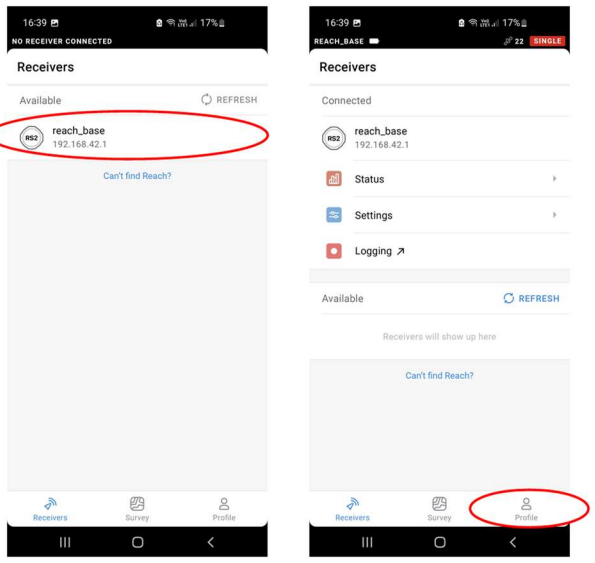
This will allow the Emlid to receive corrections to your positioning data through an NTRIP (Networked Transport of RTCM via Internet Protocol) service.

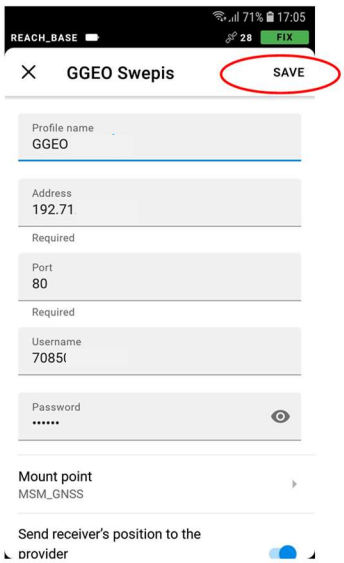
Start by configuring a hotspot on your mobile phone to share your mobile internet.

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

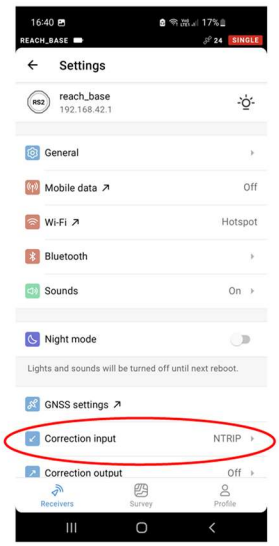
Follow the guide above (*Connecting the Emlid Flow app to the Emlid unit*) to connect your phone or tablet to the Emlid Reach RS2 / RS2+ unit.

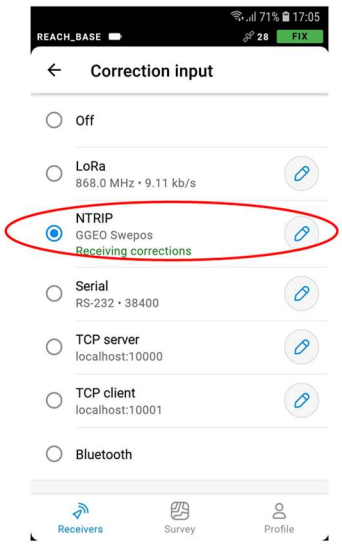
Create an NTRIP profile in *My NTRIP Profiles*.



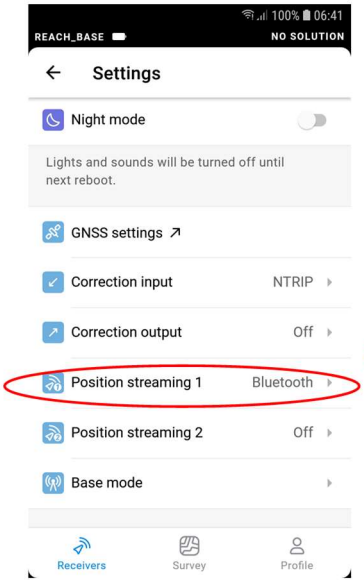


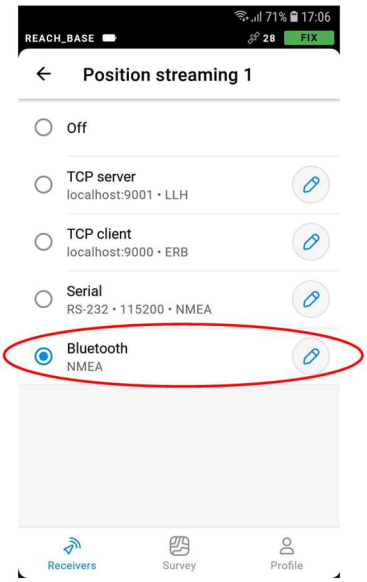
Choose this profile for setting the correction input.



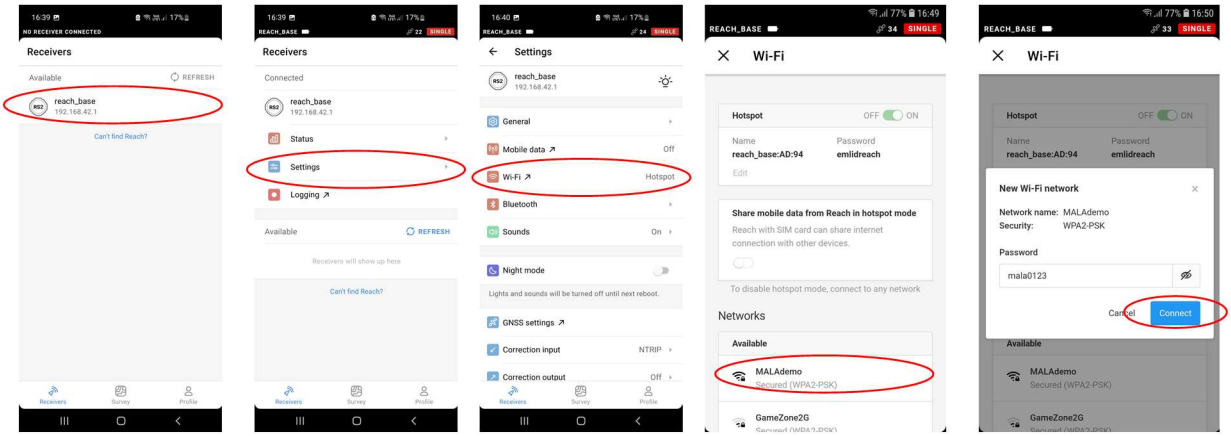


Choose Bluetooth as positioning streaming and make sure the format is set to NMEA.





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



Set up of two Emlid units used as base-rover

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

One Emlid (called the base) is mounted on a tripod at a fixed, clear and open location, that provides good GNSS reception. The other Emlid unit (called the rover) is used as a receiver mounted on top of the GPR antenna providing corrected positions by cable to the MALÅ Controllers.

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.

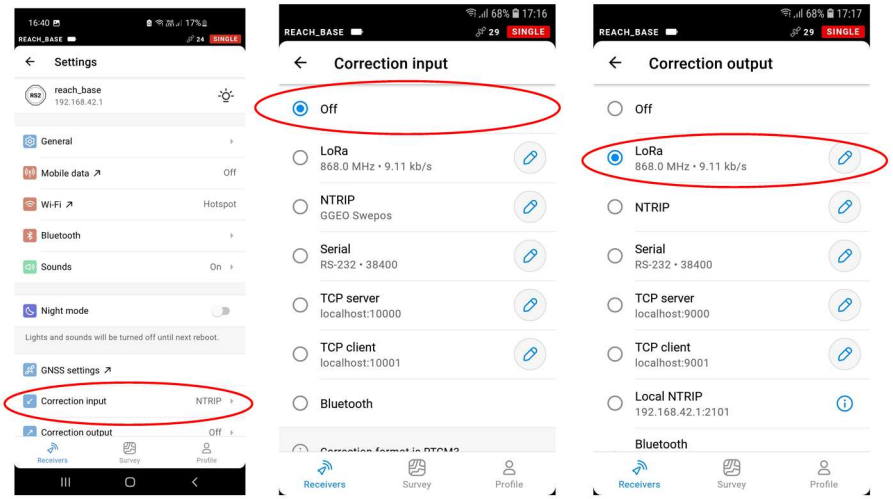
The LoRa antennas are found in the Emlid RS2 / RS2+ transport bags

Note: It is very important to set up the base in a proper way to achieve a good positioning result. 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+ unit.

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

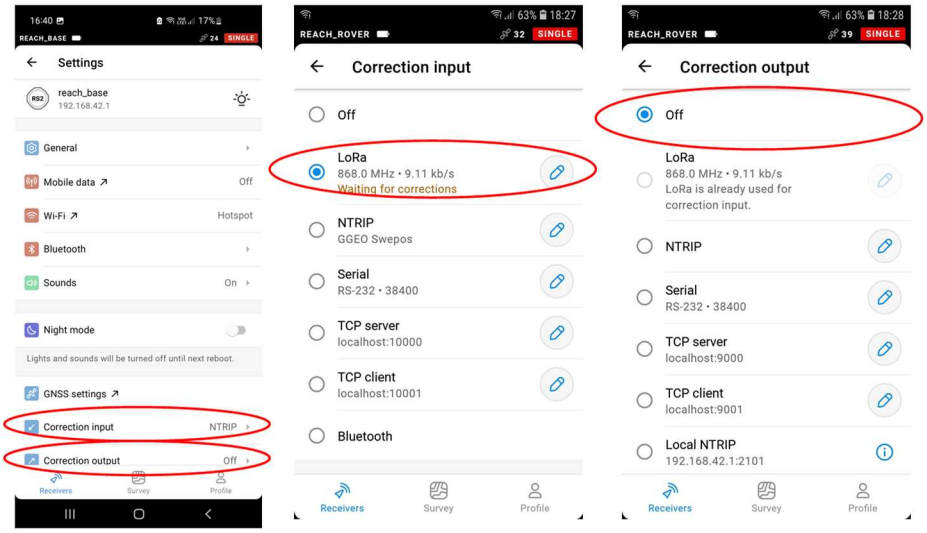


Place the base unit on a tripod at an open spot with good reception of GNSS satellites and restart the Emlid base unit. If possible, this spot should be a known position, where coordinates can be added in the Emlid Flow app. If an unknown position, leave the base on for several minutes before starting the rover. When a sufficient time has passed, turn on the rover and place it at least > 10 m away from the base.

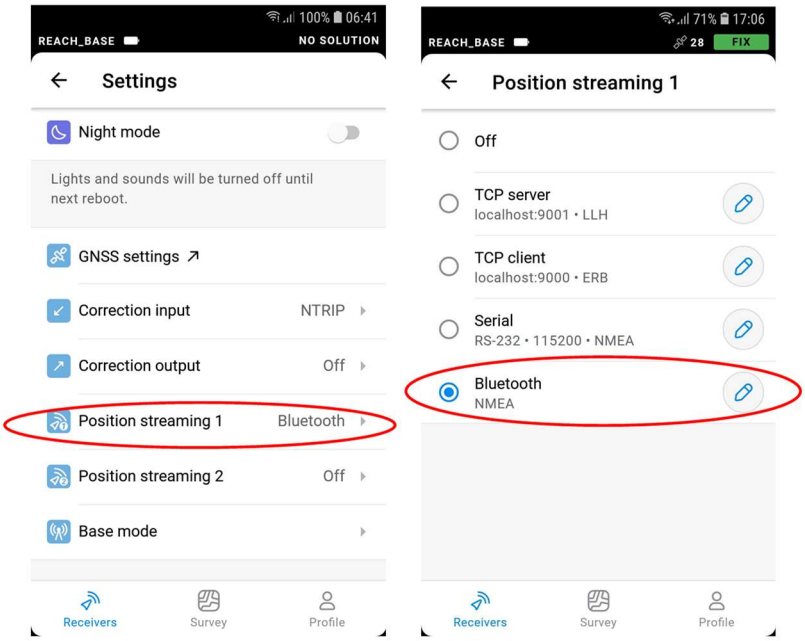
Rover configuration

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+ unit.

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



Choose Bluetooth as positioning streaming and make sure it is set to NMEA.



Setup for cable

Depending on measurement setup you can use:

- The short Emlid cable and directly connect the Emlid unit to the RS-232 port on the computer.
- The short Emlid cable extended by any serial RS-232 male to USB cable or a serial RS-232 malet to RS-232 female cable to connect the Emlid to a USB port on the computer. This is advisable if you have the data collection computer inside a vehicle.

The settings are as described above, just make sure that Positioning streaming is made by Serial and not Bluetooth. Also check that serial is set to RS-232 and format to NMEA by choosing the pen option.