

Connecting the CEESCOPE™ and CEE ECHO™ to Emlid Reach GNSS Receivers using Bluetooth.

The Emlid Reach line of GNSS receivers are popular low-cost standalone, Network (NTRIP) RTK, or Base-Rover positioning systems. These receivers may be paired with the CEESCOPE™ and CEE ECHO™ utilizing a convenient direct Bluetooth data link; selected NMEA position data messages are received directly from the GNSS. This setup avoids the requirement for separate GNSS and echo sounder connections to an acquisition PC and confers advantages such as internal data logging in the echo sounder and time tagged data. Once configured, the devices remain paired and subsequently may be quickly linked.

Configuring the Emlid Reach GNSS Receiver

The various available Emlid receivers may have different setup procedures. This example is generated using the Reach RS+.

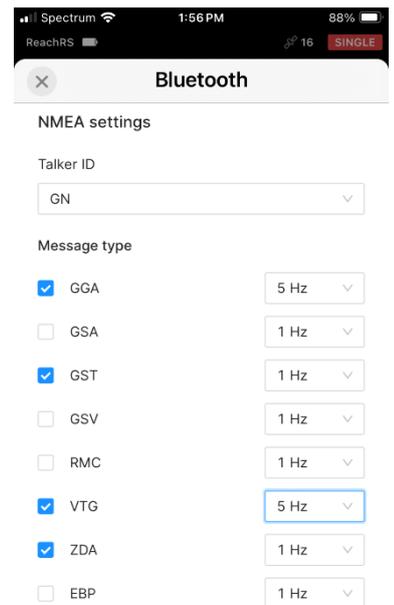
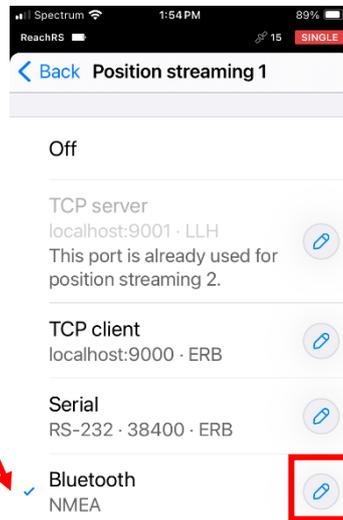
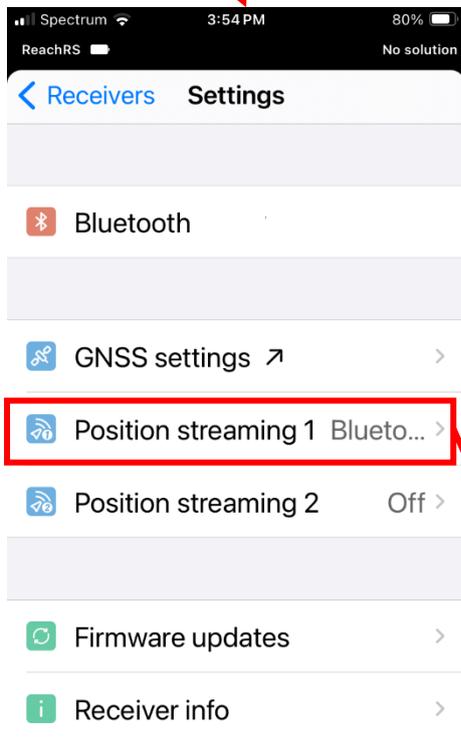
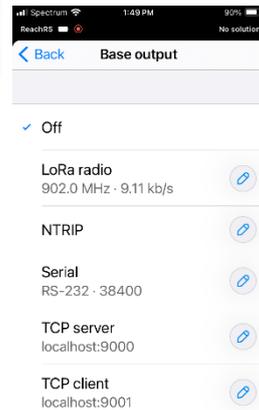
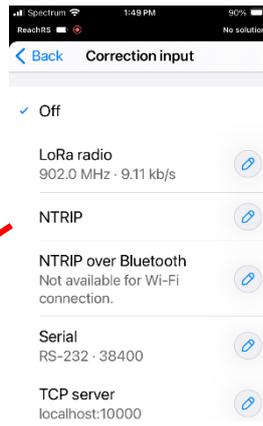
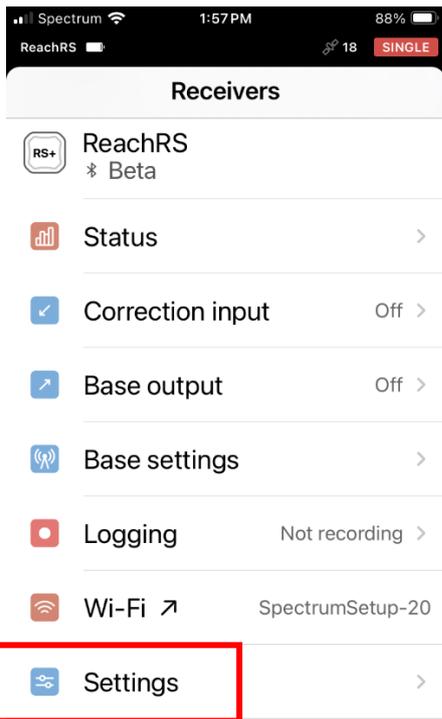
In general, when first configuring a Reach GNSS, the device is accessed directly via a WiFi hotspot (Reach xx:xx) using a smart phone. Once connected, the receiver is then initially configured and connected instead to a local WiFi network that simultaneously allows a connection to the internet (to allow automatic updating of firmware). After the firmware update, specific device settings may be managed.

Connection to a local WiFi network may be tricky. The RS+ is 2.4GHz only and does not have a 5GHz band. Place the receiver close to the WiFi router / radio. If the receiver will not connect to the local WiFi network, and the password and network details are correct, check the WiFi is connecting at 2.4GHz.

If it becomes impossible to connect to the Emlid receiver and it appears to be stuck at the connecting stage, power cycle the smart phone and reconnect.

Once connected to a smart phone, the various setup menus may be accessed. The Emlid Reach WILL NOT automatically connect to any third-party device and output position data unless the proper configuration has first been implemented.

The main menu allows configuration of the GNSS receiver. The appropriate corrections source (if any) should be selected, and the base output and automatic logging should be deactivated. Position Streaming 1 should be set to Bluetooth and the standard NMEA messages and update rate are selected for that output port.



The recommended NMEA output messages and update rates are as follows:

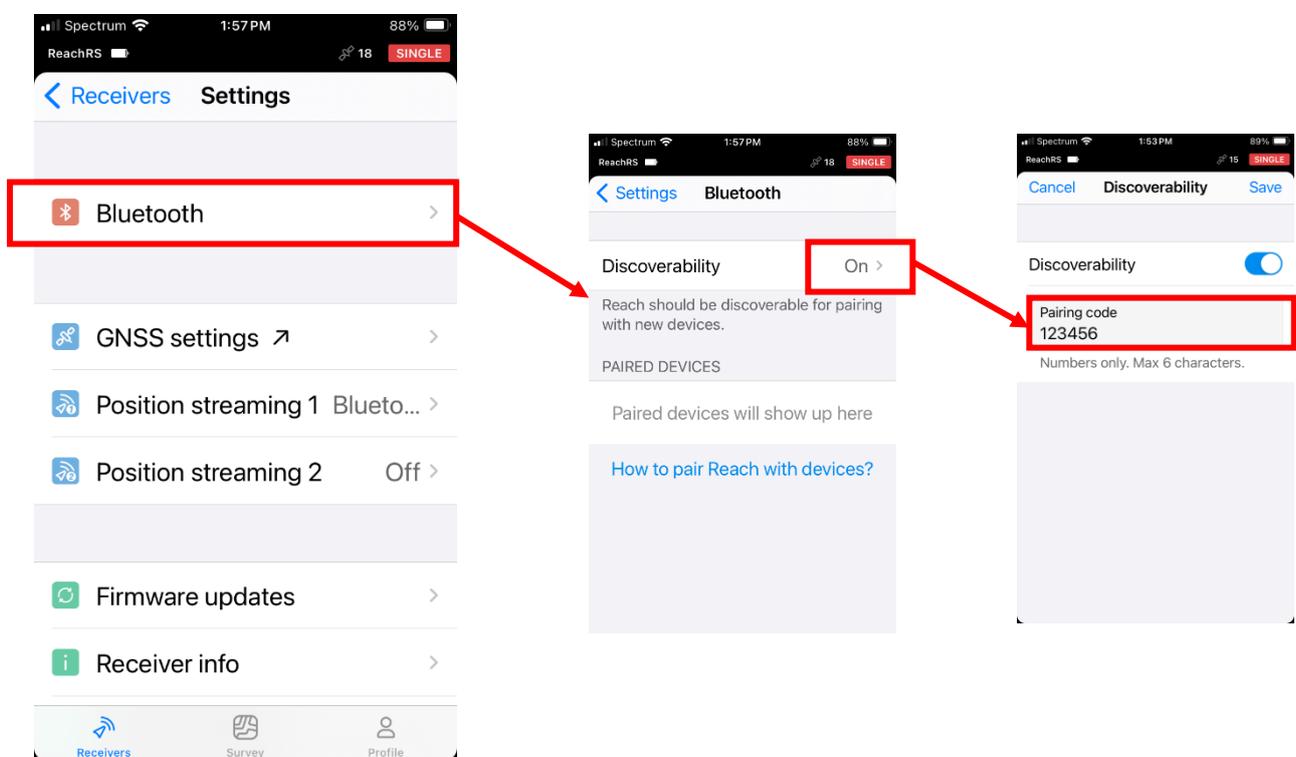
GGA: 5Hz

VTG: 5Hz

GST: 1Hz

ZDA: 1Hz

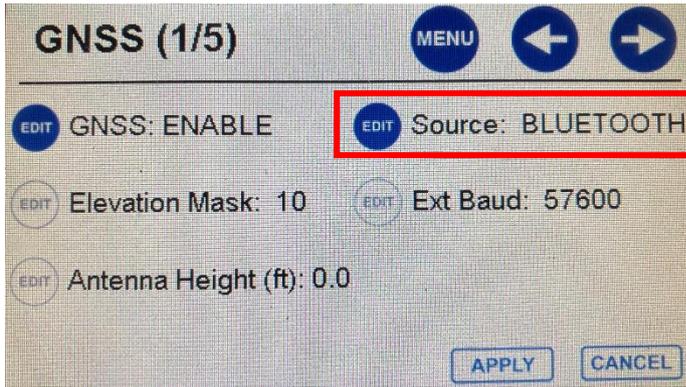
Before the GNSS receiver can be paired with the CEESCOPE, the Bluetooth interface needs to be switched to “discoverable” and the desired pairing code input (default is 123456).



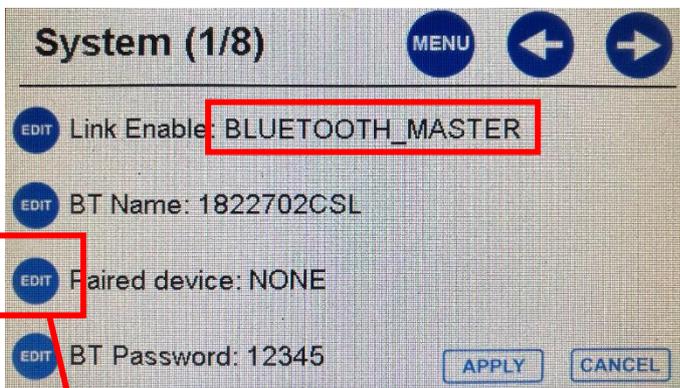
At this point, the Emlid Reach is set to output standard GNSS position messages on its Bluetooth port and is ready to be connected to the CEESCOPE (or a PC).

Connecting the Emlid Reach GNSS to the CEESCOPE

Once the NMEA output messages have been configured in the Emlid Reach receiver, its Bluetooth output port may be paired with the CEESCOPE. On the CEESCOPE GNSS menu, first change the GNSS Source to BLUETOOTH. Note that Bluetooth connections have NO BAUD RATE selections.

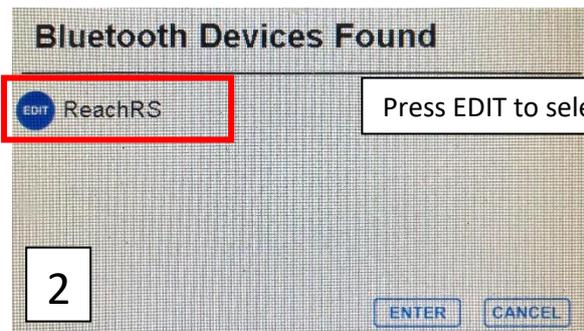
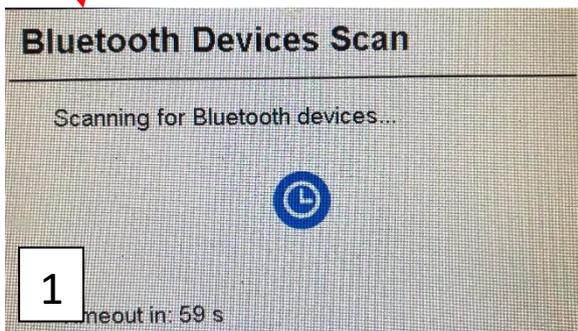


The CEESCOPE Bluetooth port may be used to receive or transmit data. To receive data from an external GNSS, the LINK must be set to BLUETOOTH_MASTER and the CEESCOPE must search for the Emlid Reach for pairing.

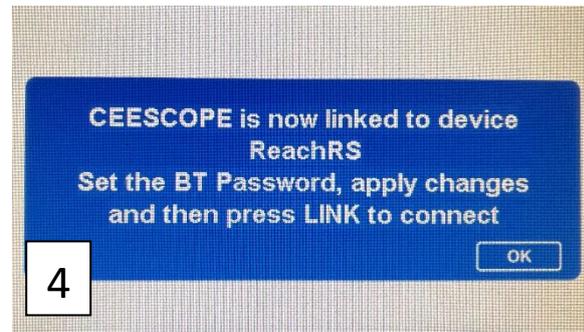
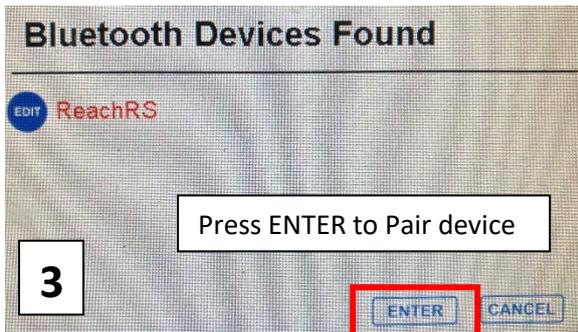


1. Select MASTER for data input

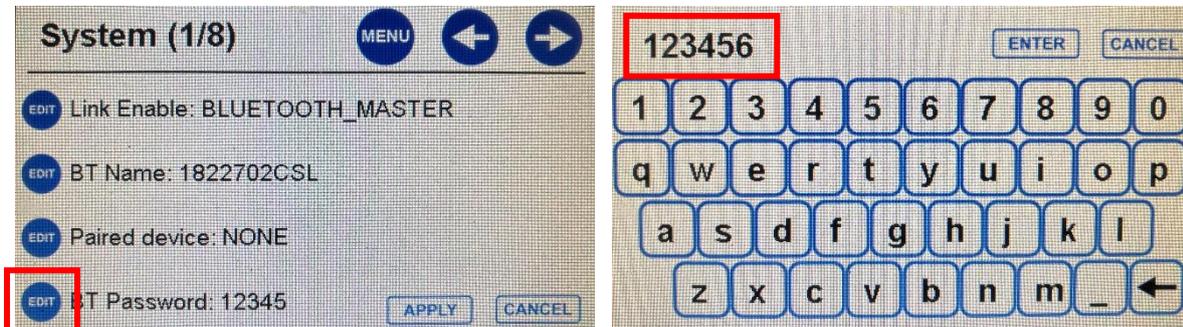
2. Press EDIT to search for devices



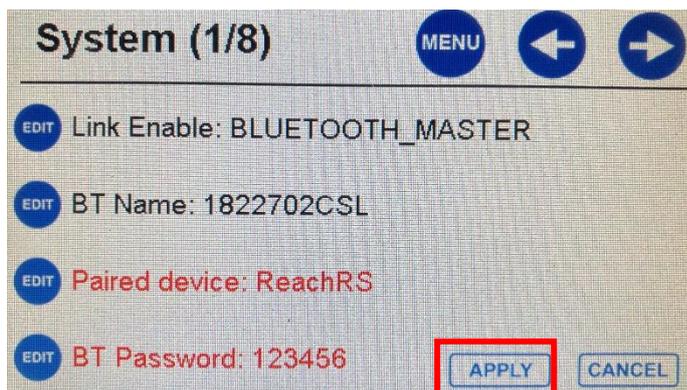
Press EDIT to select device



The CEESCOPE Bluetooth password must now be matched to the Emlid Reach Bluetooth password. The Emlid Reach default password is 123456. The default CEESCOPE Bluetooth password is 12345. Either may be changed, but it is easiest to change the CEESCOPE password.



After entering the new Bluetooth password, the settings are complete.



Press APPLY to finalize setup

To connect the CEESCOPE to the Emlid Reach, press the LINK ENABLE button



Now the devices are paired, automatic connection will occur each time the LINK button is pressed. No repeat of the setup process above is required for this specific GNSS receiver. Now the LINK indicator LED will glow solid orange.

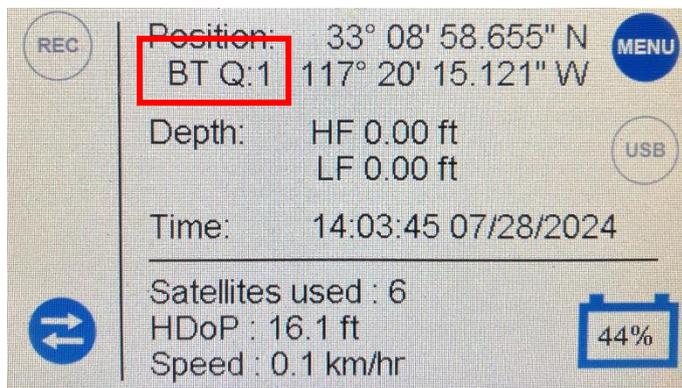


The LINK LED behaves as follows:

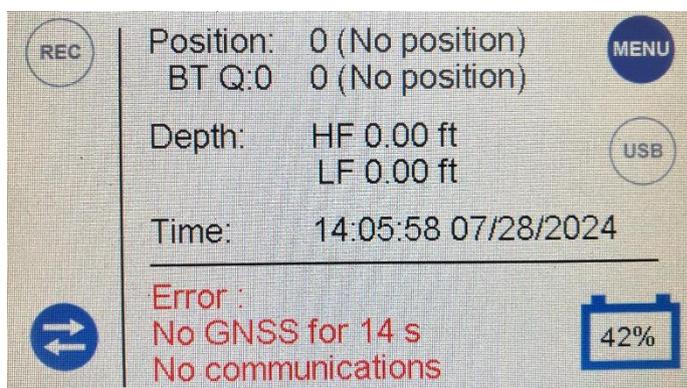
- Off Link disabled. No data transfer.
- Flashing Bluetooth is ready and trying to connect.
- Solid Bluetooth is connected and data can transfer.

Note that if the link LED is flashing there will be NO DATA TRANSFER. The link LED MUST be solid; ensure this is the case before proceeding further.

The CEESCOPE home screen will show position with a "BT" code indicating a Bluetooth connection. The Emlid Reach data quality indicator will show (1) even if SBAS corrections are received, as the quality indicator in the GGA message is NOT updated to reflect differential corrections received by any SBAS system.



Should the communication with the receiver fail, likely because of an excessive distance between the devices, a communications error will appear. Then the devices are brought back into range data will automatically reappear.



To terminate the data link, deactivate the LINK by pressing the LINK ENABLE button. Simply restart the LINK to connect to the GNSS receiver in the future.