User guide: MR/LR/XLR kit

Unboxing the kit:

Take a few minutes to open the box and understand the elements of your kit:

- 2x simpleRTK2B boards (one base & one rover, check the bottom of the board)
- 2x GPS/GNSS Dual Band Antennas
- (only in the LR kit) 2x Radio Link Antennas

Note that you will need a USB cables to power the boards.

- If you want to connect the boards to a PC, make sure you use a cable that can carry both power and data (many powerbank cables only carry power, but no data).
- For the base station, if you just want to power it, you can use any cable together with its wall adapter.

simpleRTK2B – Starter Kit LR

simpleRTK2B – Starter Kit MR

Setting up the base:

Start with the simpleRTK2B board labelled as “BASE”.

Do not power the board until the installation is finished. Because once the board is powered, it is very important to not move the GPS/GNSS antenna nor obstruct its visibility from the sky.

That being said, take the BASE unit and its antennas and install them in a fixed location with line of sight to the the area where the other unit will move around.

The top of a barn roof is a good place to install the base station.

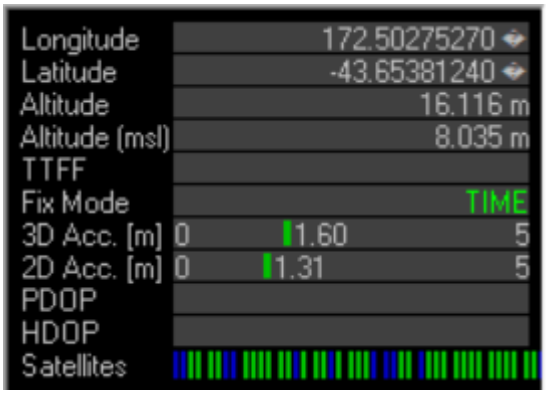
Once the installation is done, you are ready to power the board:

You can connect to “XBEE+POWER” to a wall adapter. If you are an advanced GPS user and would like to check the base station parameters, you can do this by connecting the “GPS+POWER” to your PC.

The BASE unit comes pre-configured so that once your power it up, it calculates its absolute position with an accuracy of 2.5meters. This process takes around 10 minutes. If you are not sure if the process finished, connect to the base and confirm that the fix type = TIME.

If you connect with u-center software, you should see the following “TIME” text in this Window. If you don’t find this Window in your u-center, you can open it via the Menu Bar >

View > Docking Windows > Data.



Once the base is in TIME mode, the unit will start sending corrections so that the rover can start calculating its relative position within centimeters.
You will also notice that the LED “GPS>XBEE” will increase its activity.

If high relative accuracy is not enough for you, and you need high absolute accuracy, you have 2 options:

- You can re-configure the base, to calculate its position with better absolute accuracy. You can use the message UBX-CFG-TMODE3 for that.
  You can monitor the status of this calculation with message UBX-NAV-SVIN.
  The better absolute accuracy you want, the longer it will take to calculate it.
  To give you an idea, with 6 hours you can achieve decimeter accuracy.
- If you know the exact position of the base station, you can also set it directly.

While you wait, you can start setting up the rover.

Setting up the rover:

Take the other simpleRTK2B board labeled as “ROVER”.

Get a microUSB cable and connect it to the USB labeled as “GPS+POWER”.
Connect the other end to your preferred mobile phone, tablet, or PC.

Once you power the board, start monitoring the LEDs:

- simpleRTK2B is powered: “POWER” LED will indicate that the board is powered.
- simpleRTK2B is receiving data from the base unit: Monitor “XBEE>GPS” LED to confirm.
- With good view of the sky, it will take 20-40 seconds until “GPS FIX” LED starts blinking: once it blinks once per second it means you have the first position fix.
- To know if the position fix is with standard accuracy or RTK accuracy, you can monitor “NO RTK” LED: blinking when receiving RTCM data, OFF when RTK fix

We know this LED codes for FIX and RTK are not ideal, but they are the default u-blox configuration.

Ready to go:

You are now ready to start enjoying high precision.

During the first minutes, we recommend that you check regularly the LEDs for RTK FIX to be sure that everything is working OK.

A RTK system is not like traditional GPS receivers, it doesn't work with the antenna inside or next to the Window. Make sure your GPS/GNSS antennas are placed outdoors. If you want to achieve the best positioning accuracy, we recommend having a read a the GPS/GNSS Antenna installation guide.

If you want to achieve the best range for the radio link, we recommend you to have a look at our XBee antenna installation guide.