WORKING WITH THE TRIUMPH-LS

HOW TO CONNECT WITH 3G AND TEST

May 25, 2014 - J-Field v1.10.3.11850

Contents

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Working with the Triumph-LS

How to Connect with 3G

Chapter 1 - Card Insertion

On the back of the LS, open the rubber boot covering the SIM1 slot.

Orient the Subscriber Identity Module (SIM) card exactly as the silkscreened graphic printed on the boot cover illustrates; i.e., square edge leading, chamfered corner on the lower right.

This illustrative convention applies to all available card slots on the back of the LS.

Pull the boot cover out of the way of the SIM card slot opening.

Start the card's insertion using your fingers pushing the card in as far as possible.

Carefully complete the last bit of the card's insertion using a dull blunt object such as the tweezer tips shown in this photo.

The card will decidedly be seated and remain inserted. Not pushing it in far enough will result in the card springing out.

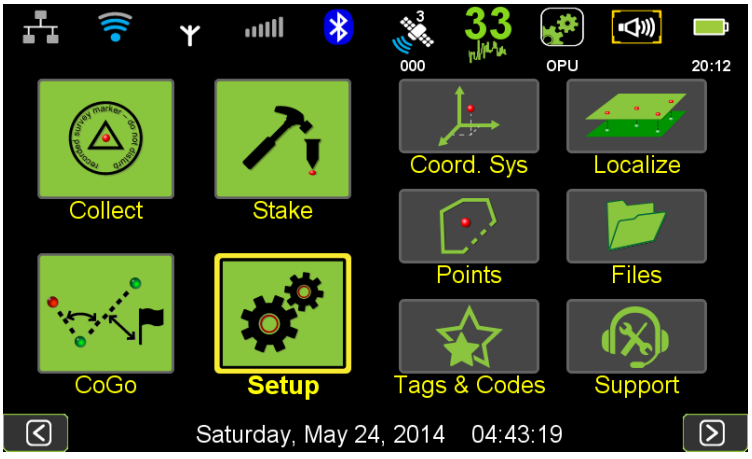
This is a push-push style SIM port which means pushing on the inserted card will eject it. When removing, use the provided tweezers.

The fully seated SIM card.

Firmly seat the rubber boot cover.

A good practice is to periodically check and firmly seat all rubber boots covering available ports and connections.

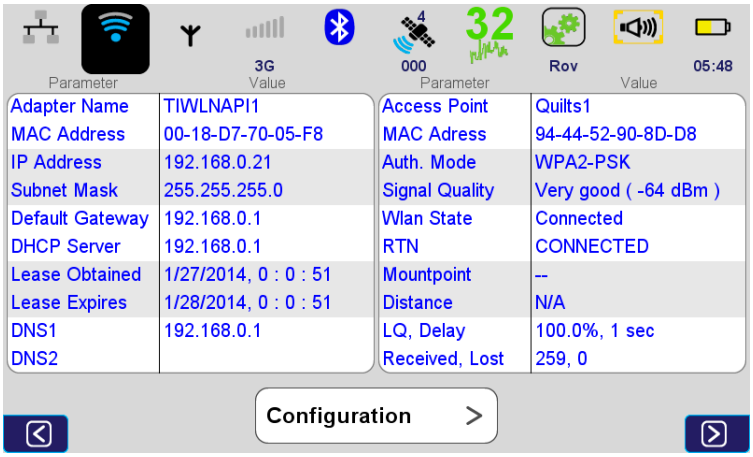
Chapter 2 - Configuration



This portion of the *How To* is based upon screen captures from J-Field v1.10.3.11850 which means you'll quite possibly see some differences since the software developers are amazingly responsive to user input and are frequently making updates available to the user.

Also, you may have previously created other Setups, connected via Ethernet and other variables that can't be reflected in this *How To*. For this discussion, it is assumed that you have already wirelessly connected to your local WiFi network.

Tap on the WiFi icon along the top of Home screen1.

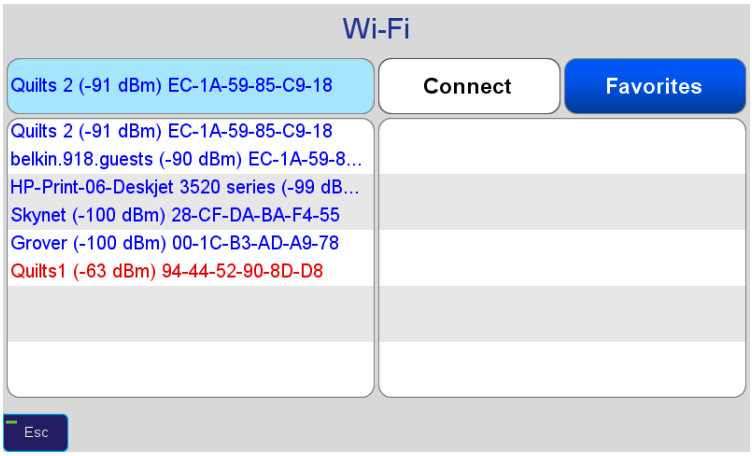


This screen shows details concerning the current status of the WiFi.

Because of the hierarchy of connections afforded the LS (as shown across the top of this screen), chances are your LS has already connected to your local area network in your home or office.

Before getting the 3G connected, we'll first need to stop the running WiFi connection.

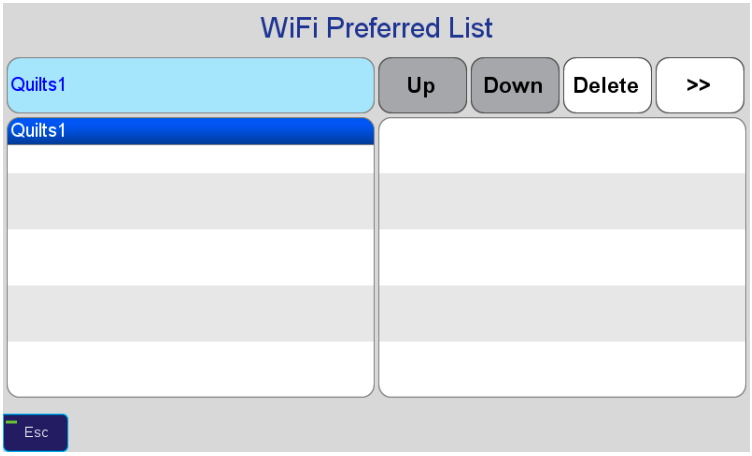
Tap on Configuration.



This screen shows fields populated by available WiFi connections in blue and the current connect in red.

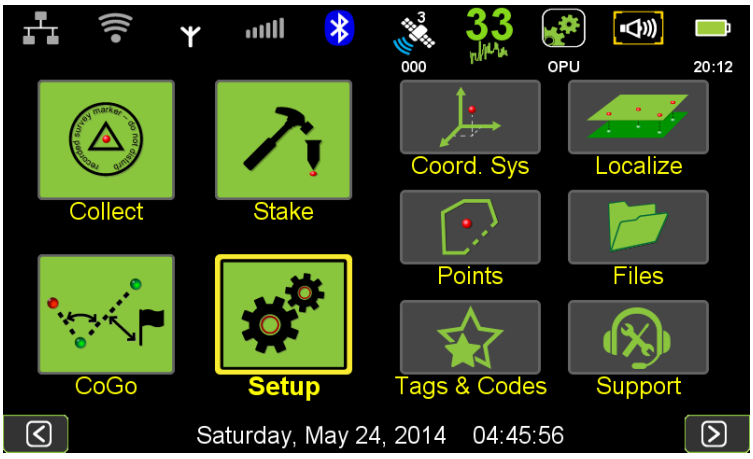
This is where you might select a different access point with a better signal.

For this discussion, tap on Favorites.



This screen shows fields populated by available WiFi connections that we have previously tied into and which remember the password (or key value) in accessing a secure WiFi.

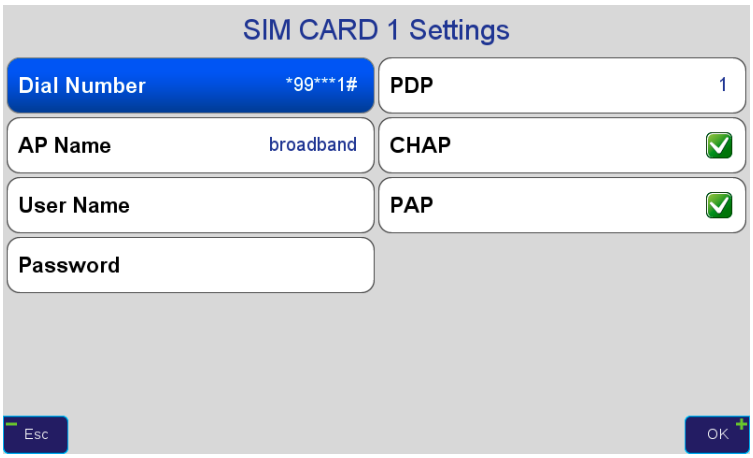
Select the current connection and delete it.



Check the effect of these steps thus far; return to Home screen1. You should see the WiFi icon grayed out.

You'll also note that the 3G icon is also shown grayed out in this example; however, it is possible that the 3G icon is showing one or more blue bars on your LS. It is possible to have an activated SIM card but no connection because of the hierarchical order of bindings mentioned above.

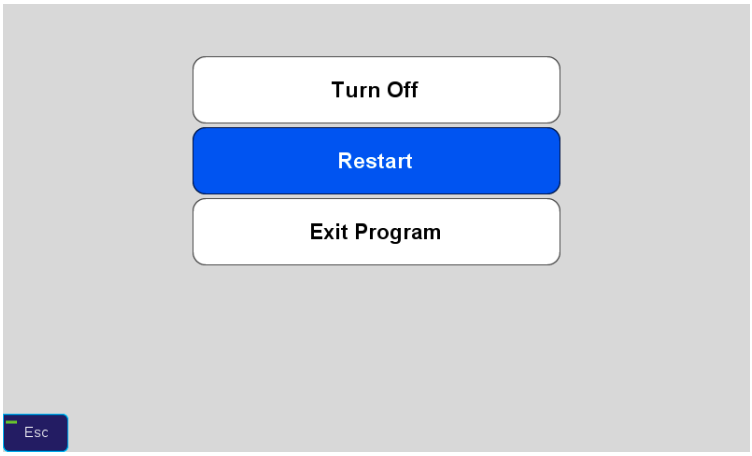
Tap on the 3G icon.



For this example, an AT&T SIM has been used. The default access point name (APN) and dial number should be left unchanged.

It is also important to note that these SIM settings are separate and apart from your RTN credentials with the former facilitating the latter.

Confirm that these settings are shown on your LS.



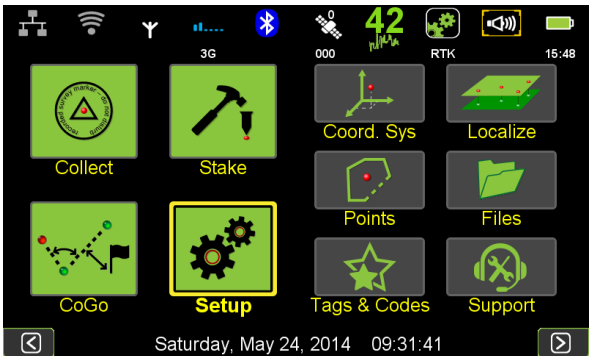
Restart the LS by pressing the power button.

Tap Restart.

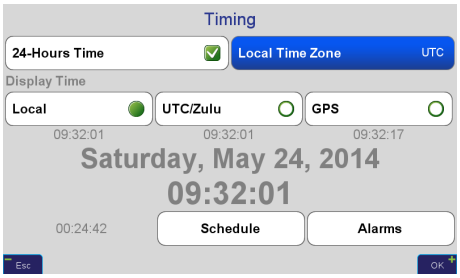
Yes, really.

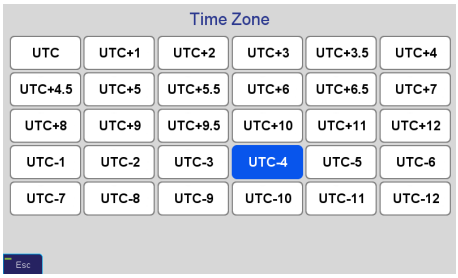
Tap Restart again.

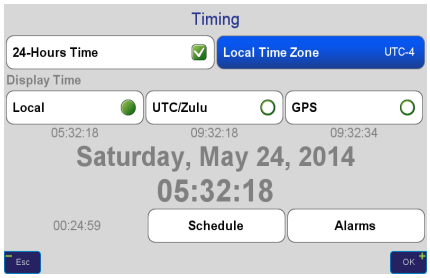
Sidebar
Suggestion: Provide 'Continue Work' option in previous screen and eliminate this question and screen entirely.



Once J-Field has completely booted, wait a minute and look for the blue bars in the 3G icon.

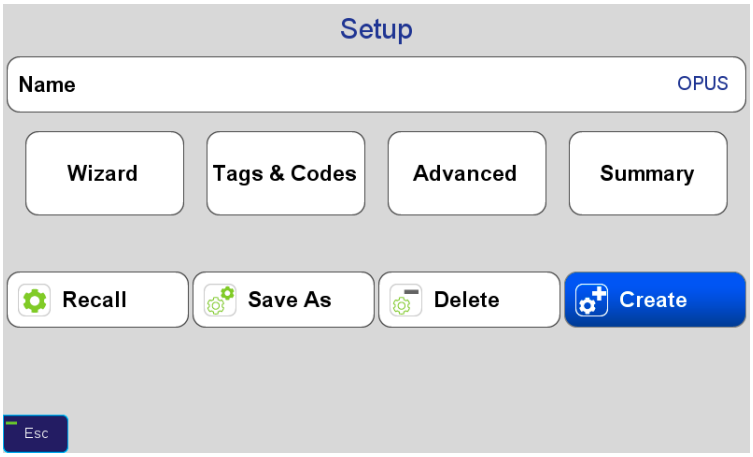






Sidebar
Note: If the time display along bottom of Home screen1; the previous Local Time setting of -4 hours has been changed to UTC. To change back, go to Timing accessed from Home screen2.

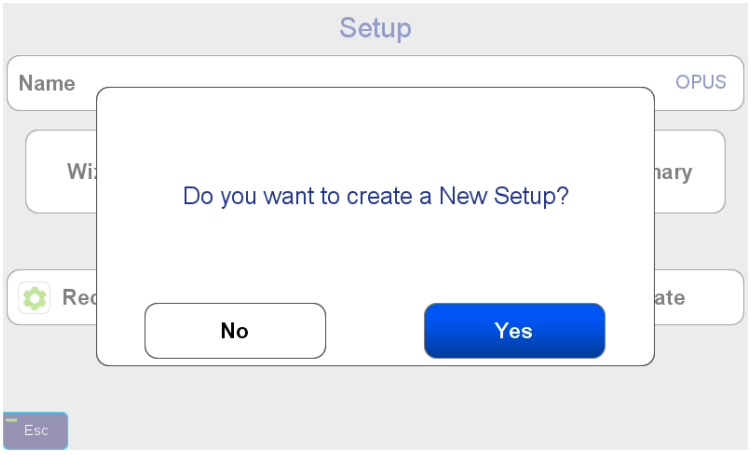
Chapter 3 - Create A New Setup RTN via TCP



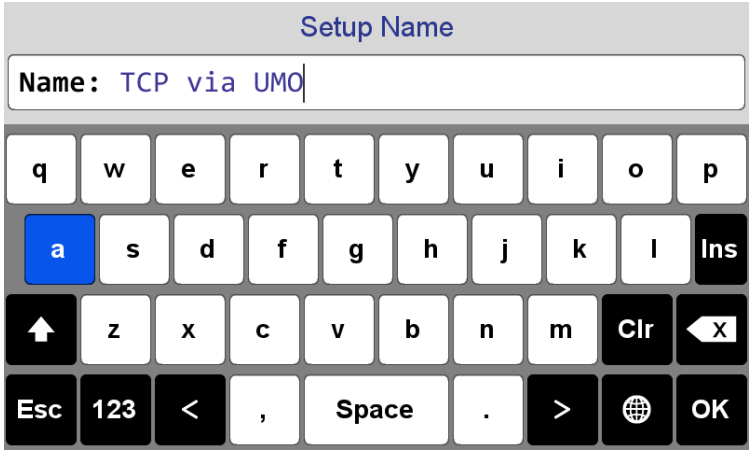
If you haven't yet set up credentials with your RTN service, you will want to do so before resuming this portion of the *How To* as you'll be using those values particular to its server as well as its respective RTN's base reference frame; i.e., WGS84, NAD83(2011), etc.

If you already have an account set up, a user name, password and coordinate system defined, then we're good to go.

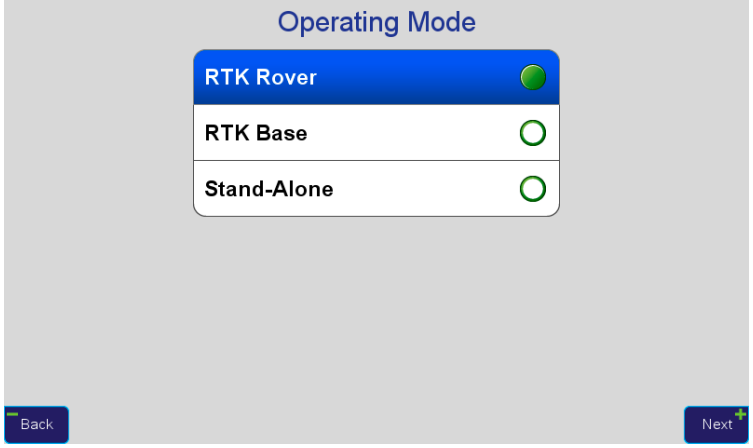
From Home screen1, tap on Setup and then begin by tapping on Create.



Tap Yes.



Create a name for your new Setup that will distinguish it from your current and future list of Setups. At some later point there may be another TCP connection so I'll simply identify this setup with the University of Maine at Orono.

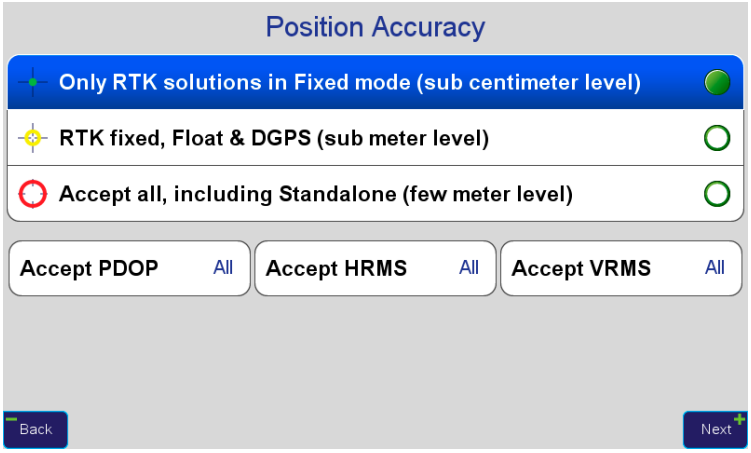


When you Create a new Setup, the Wizard begins automatically. Anytime that you want to go back and tweak an existing / current Setup, simply choose the Wizard.

The Wizard is basically an interview of the user and depending upon your answers to key questions, the subsequent questions / choices are tailored.

For this Setup, make sure that RTK Rover is selected.

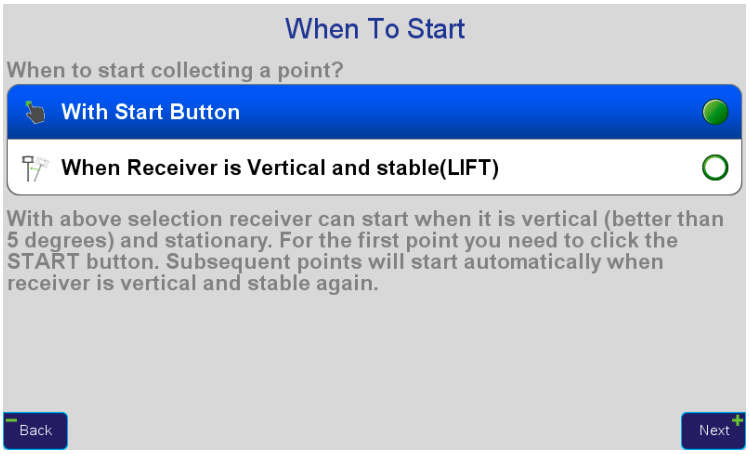
Tap Next. Alternatively, press the + key. Note, in many screens, navigation can by enhanced using the plus, minus and check mark (accept/okay) buttons.



Choose your level of acceptable precision.

Tap Next.

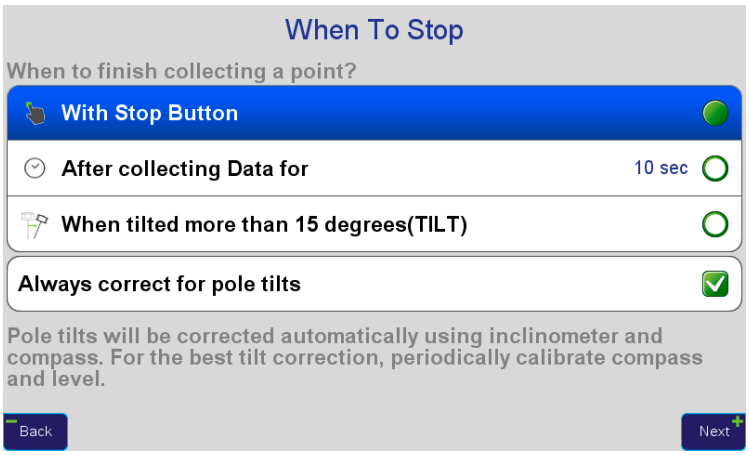
Alternatively, press the + key.



Choose your method of starting.

Tap Next.

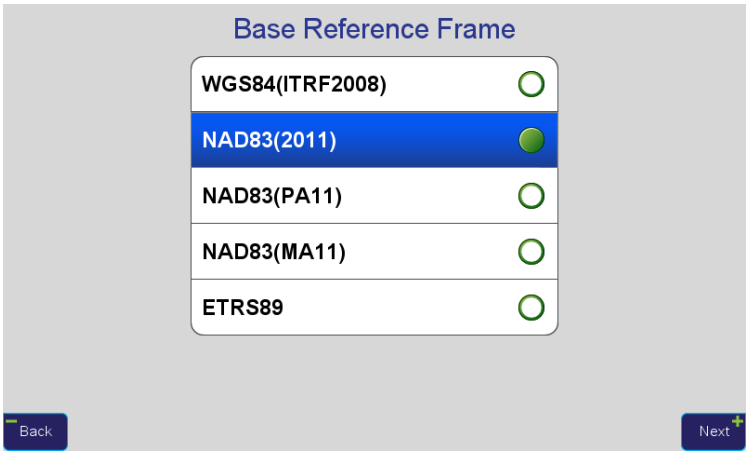
Alternatively, press the + key.



Choose your method of stopping observations.

Tap Next.

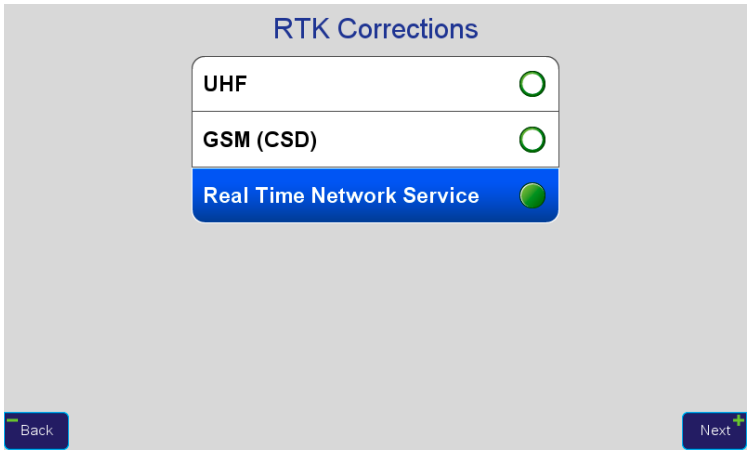
Alternatively, press the + key.



Choose your reference frame. For this example, I've selected NAD83(2011) because I'm going to be working in grid; in particular, Maine 2000, Central Zone.

Tap Next.

Alternatively, press the + key.

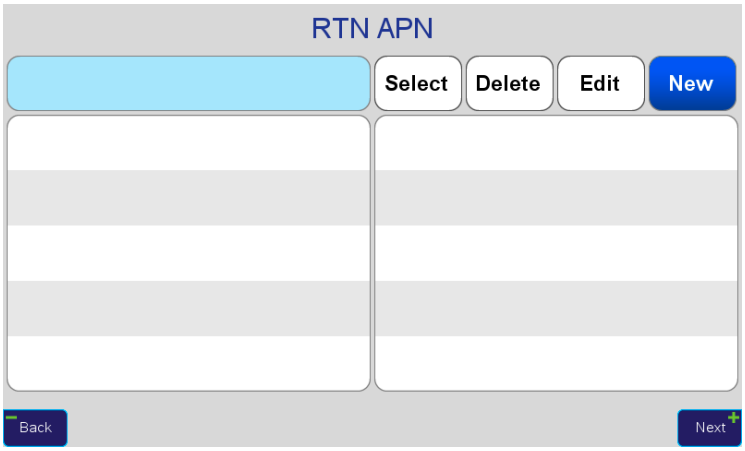


Here in this stage of the interview is where we get to start addressing the particulars for testing our RTN connection using the installed SIM.

Be sure to have RTN service selected.

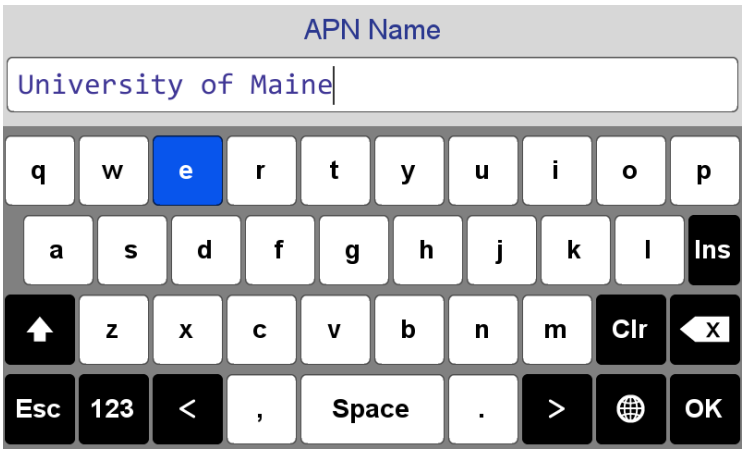
Tap Next.

Alternatively, press the + key.



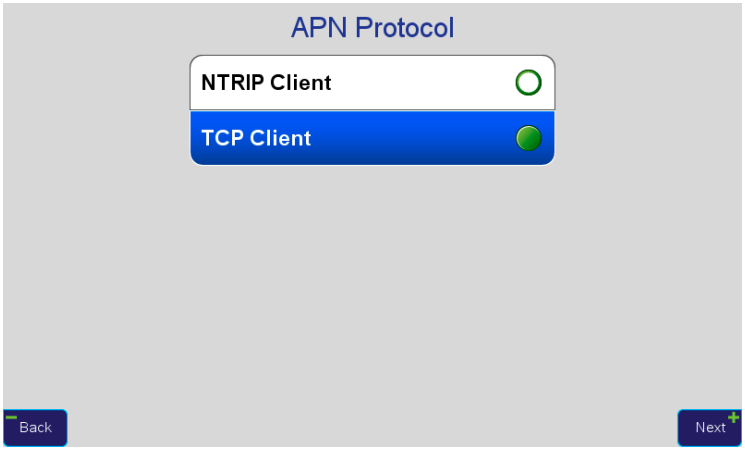
Create a new access point name.

Tap New.



Give your access point a name.

Tap OK.

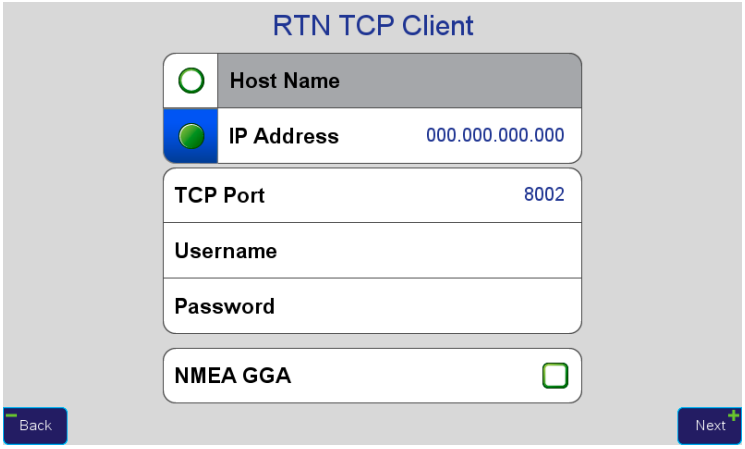


Choose a protocol; in this instance, select the your specific RTN service's protocol; for example, they may use the transmission control protocol (TCP) as shown selected here for UMO's server.

Each service is specific, so be sure to note the protocol to be used when you set up your account.

Once you've chosen the correct protocol specific to your service, tap Next.

Alternatively, press the + key.

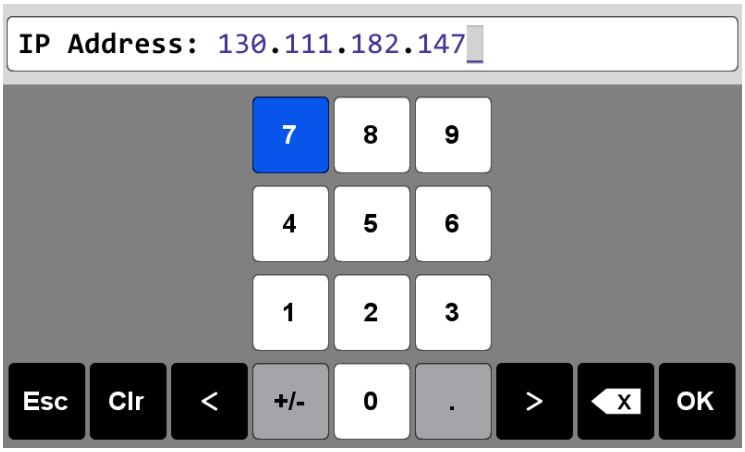


Depending on whether you had previously chosen TCP (like what's shown in the left screen) or NTRIP (shown in the Chapter 4), you will see different screens; another fork in the Wizard's interview, but some elements remain present in both as you'll see.

For our test, we'll be plugging in a specific IP address rather than a registered name.

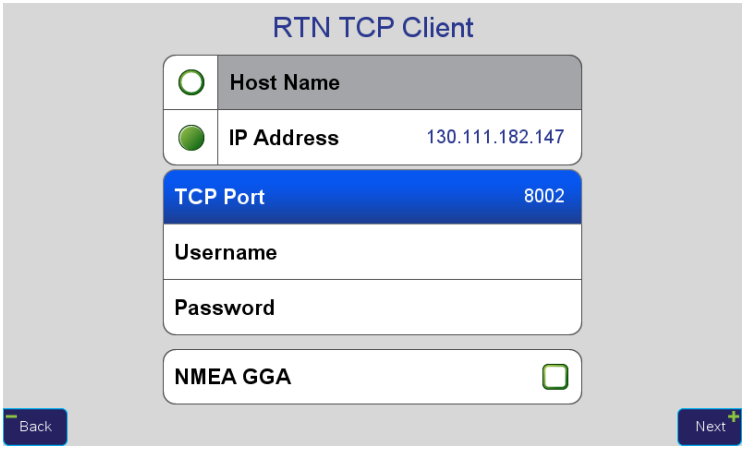
Tap Next.

Alternatively, press the + key.

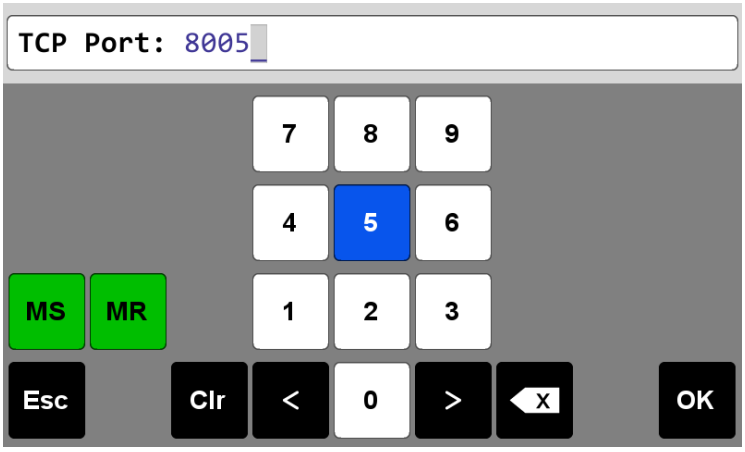


IP addresses are specific, and static IP addresses like this one remain constant. Enter this address exactly as shown if you'll be connecting to the UMO server; otherwise, carefully enter the full address of your service.

Confirm the address entered is correct and then tap OK.

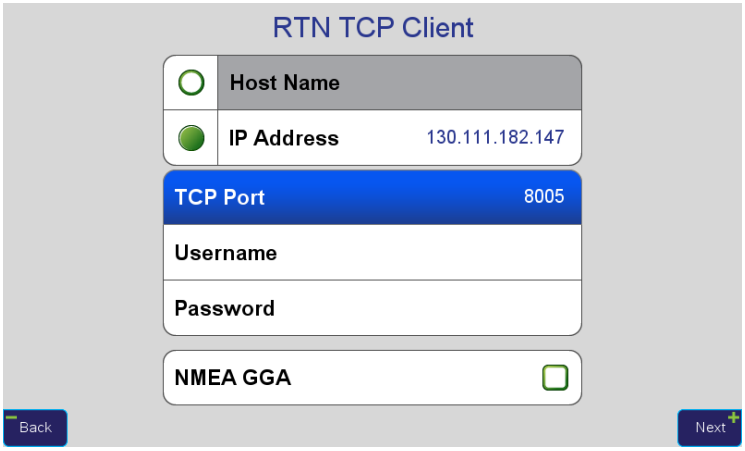


Tap TCP Port.



Make sure to enter the correct port number just as shown here if you are connecting to the University's server; otherwise, carefully enter the specific port number of your service.

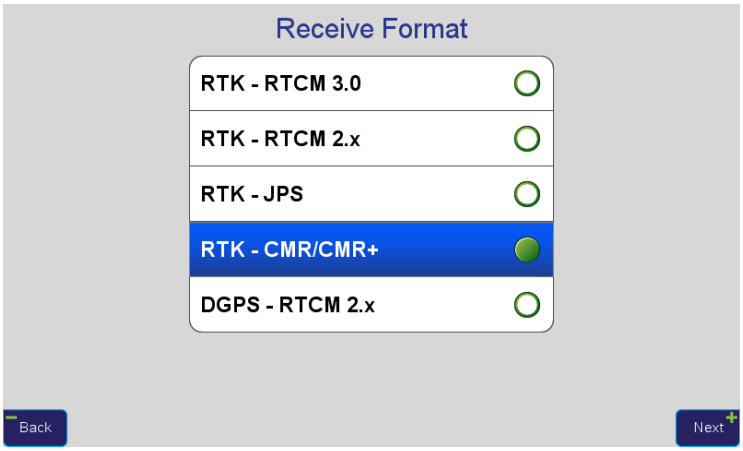
Confirm the port entered is correct and then tap OK.



Your new client should look like this example if you're connecting to the University of Maine.

Tap Next.

Alternatively, press the + key.

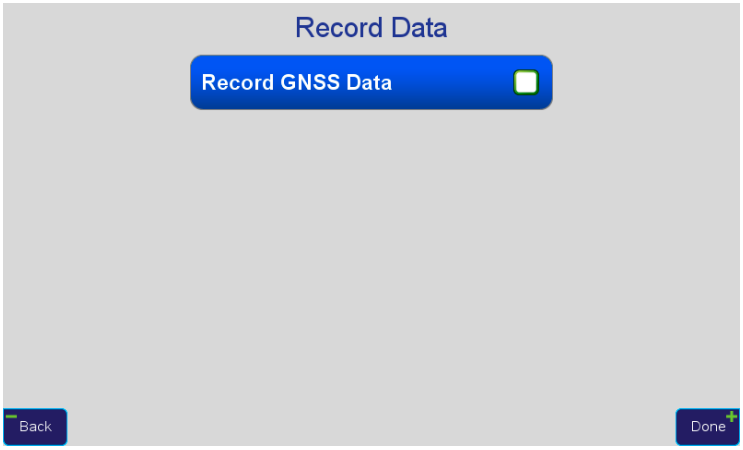


Depending on which service you connect with, select the format that's appropriate to your situation.

In this example, I'll be connecting using the transmission protocol of Compact Measurement Record (CMR+). This format may be both GPS + GLONASS or exclusively GPS, so keep an eye out for those details from your RTN service provider.

Tap Next.

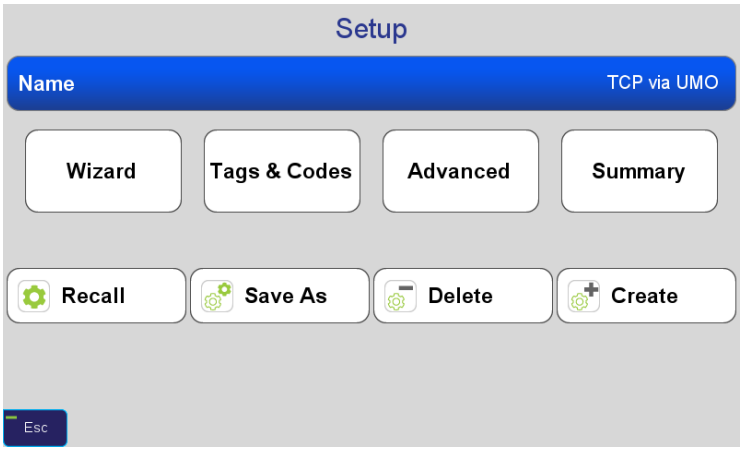
Alternatively, press the + key.



While it's conceivable you could collect sufficient data for later post processing, for this test we won't need to. Leave this box unchecked.

Tap Done.

Alternatively, press the + key.

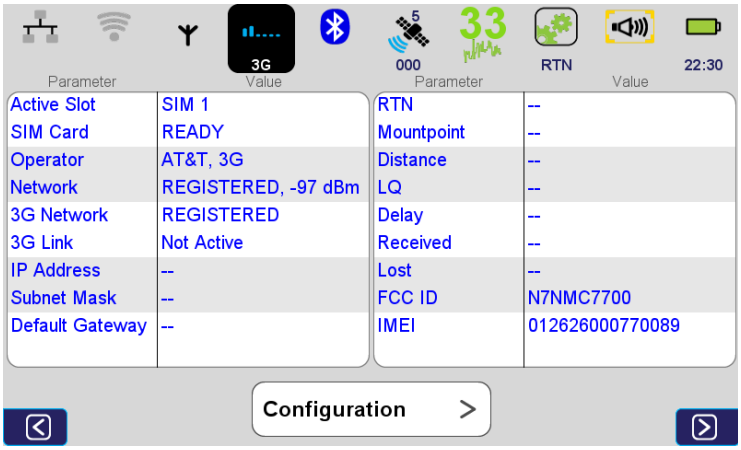


Whew!

After all of that, the benefits of having created a Setup just once and then recalling it for future use should be clearer. This concept will be even more clear in the next chapter where we'll develop the idea further and really put it use.

Now that this Setup is finished, let's test it to make sure it works.

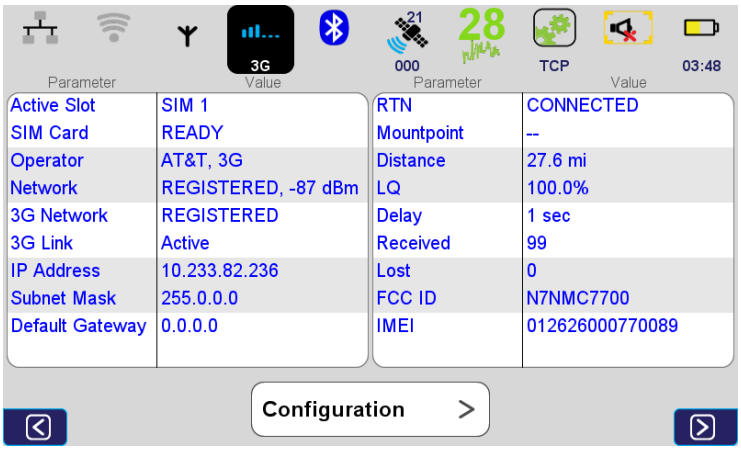
Press the Home key and then tap on the 3G icon.



Depending on the strength of your 3G signal, connection to the server may take minute, two or longer so, keep watching for the screen to change; i.e., 3G Link: Connecting.

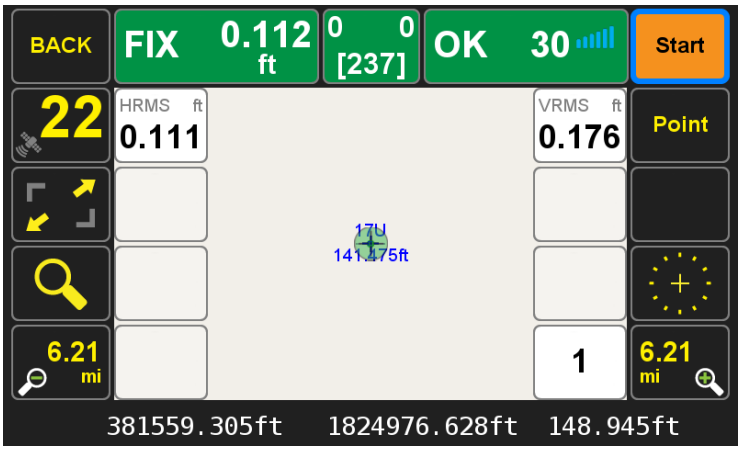
As mentioned earlier, the SIM connection and the RTN connection are two disparate things. Here we see the SIM connection working (left side) but nothing yet populating the RTN fields on the right side.

Whenever first connecting, always check to confirm connection with the network because just seeing the blue bars is not enough to know that you're linked with the RTN.



Once connected to the Internet and the RTN server, you should also see your data download numbers (Received) changing.

This then just serves as a test before looking for fixed solutions.

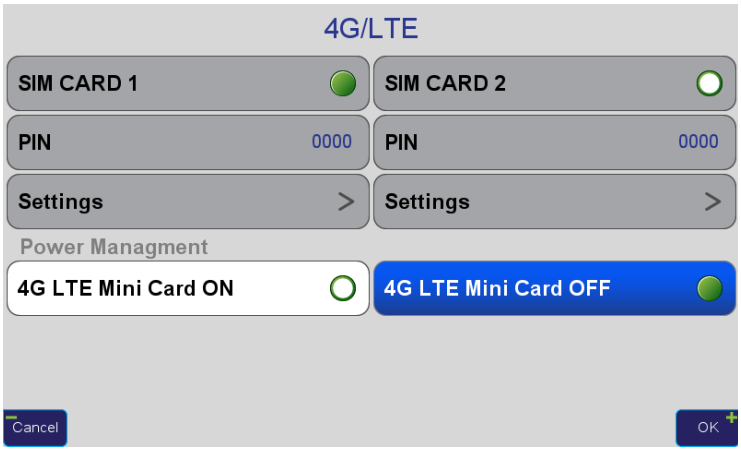


As of this writing, the first group of U.S. PLS testers started receiving their units last week. It's very important to be vetting the results, even when we're out of the beta testing stage.

A quick fix with <.2' RMS looks inviting to accept. But then compare the location with a 6.5-hr OPUS solution for the same mark:

381566.131, 1824968.849, 147.816 (NEZ)

One other note: Collect screen2 is showing a token 3G connection icon and not a true representation of the signal strength.



Be aware that you won't necessarily want to stay connected to the Internet using your SIM card as it will gobble up all of your SIM card minutes should your data plan be limited. Use your WiFi connection for data intensive updates.

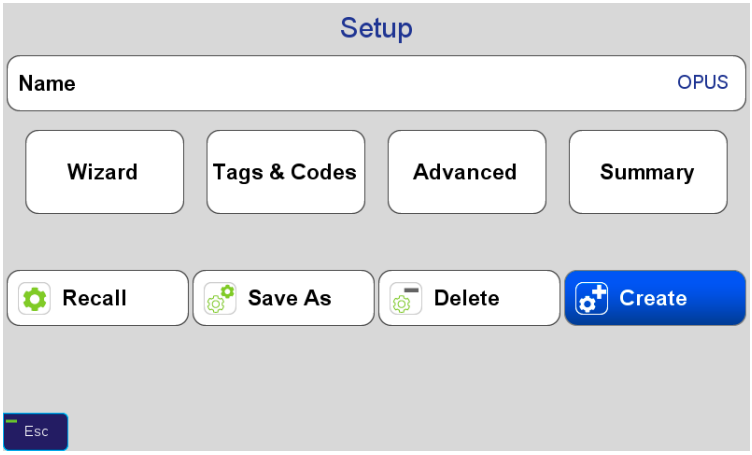
If you know that you won't be using corrections downloaded over the SIM connection; for example, you'll be using only the corrections broadcast by your base unit, turn the card off and save the juice.

Tap Configuration and choose off.

Tap OK and your 3G is turned off.

Alternatively, press the + key.

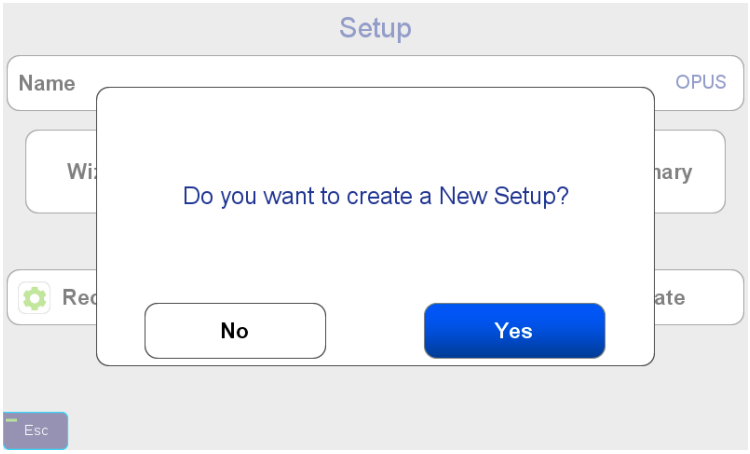
Chapter 4 - Create A New Setup
RTN via NTRIP



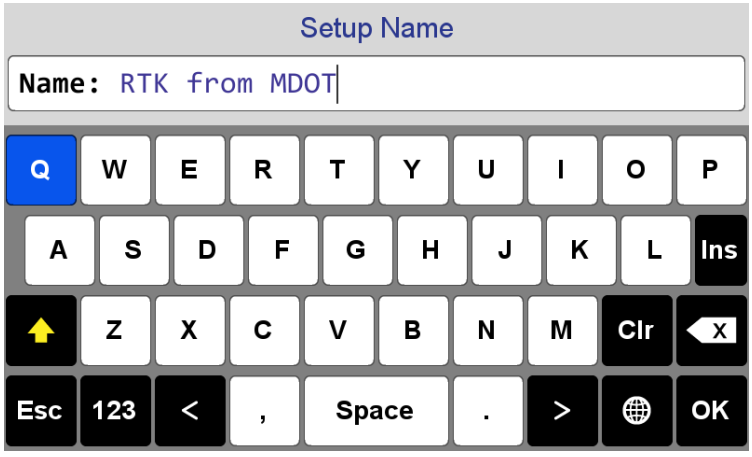
As mentioned earlier in Chapter 3, if you haven't yet set up credentials with your RTN service, you will want to do so before resuming this portion of the *How To* as you'll be using those values particular to its server as well as its respective RTN's base reference frame; i.e., WGS84, NAD83(2011), etc.

If you already have an account set up, a user name, password and coordinate system defined, then we're good to go.

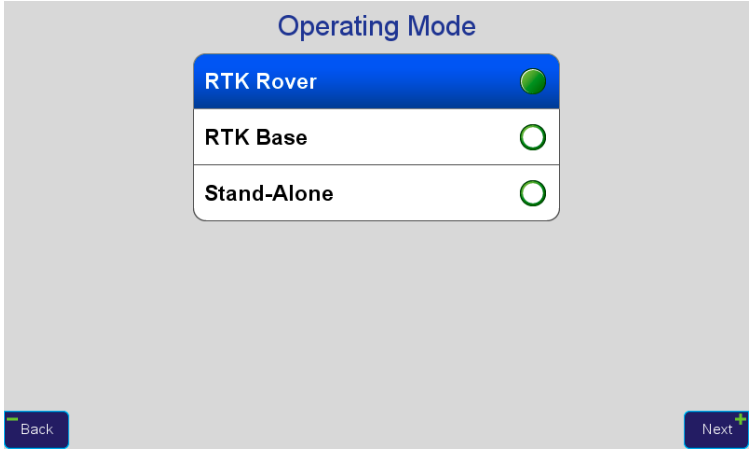
From Home screen1, tap on Setup and then begin by tapping on Create.



Tap Yes.



Create a name for your new Setup that will distinguish it from your current and future list of Setups. At the end of this chapter we'll create tweaked Setups predicated on this first one so I'll simply identify this setup with the Maine Department of Transportation.

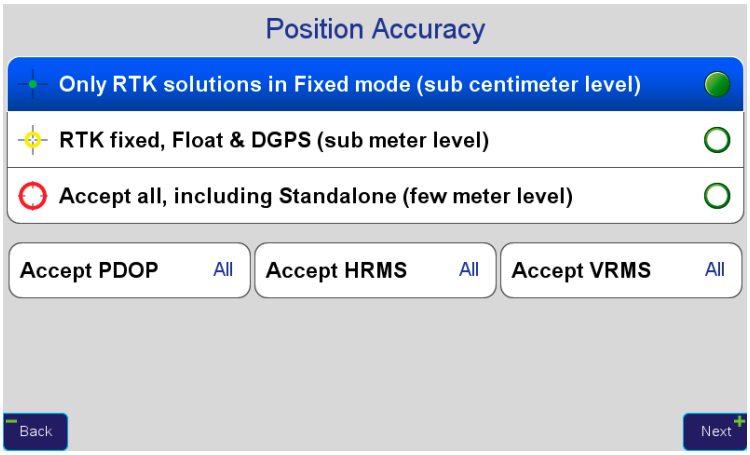


Recall from chapter 3 that when you Create a new Setup, the Wizard begins automatically. Anytime that you want to go back and tweak an existing / current Setup, simply choose the Wizard.

The Wizard is basically an interview of the user and depending upon your answers to key questions, the subsequent questions / choices are tailored.

For this Setup, make sure that RTK Rover is selected.

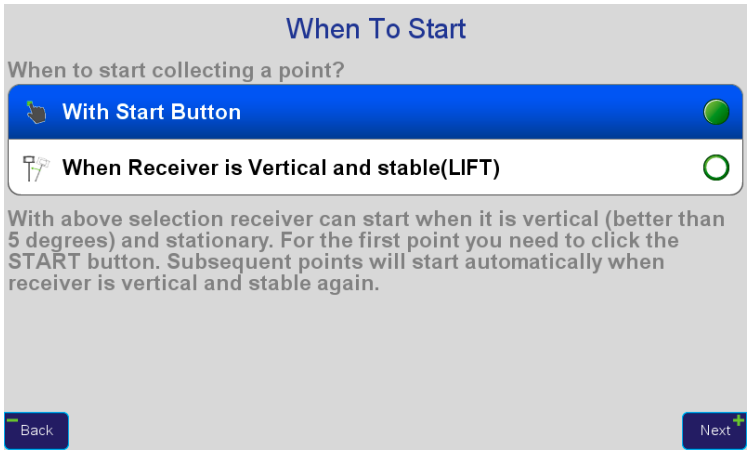
Tap Next. Alternatively, press the + key. Note, in many screens, navigation can by enhanced using the plus, minus and check mark (accept/okay) buttons.



Choose your level of acceptable precision.

Tap Next.

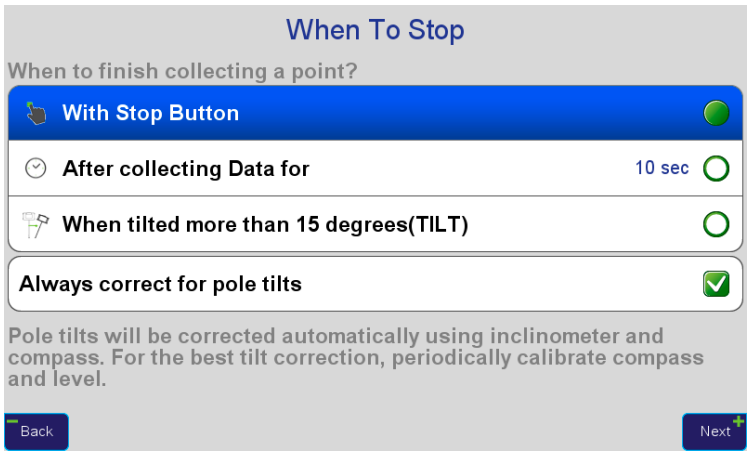
Alternatively, press the + key.



Choose your method of starting.

Tap Next.

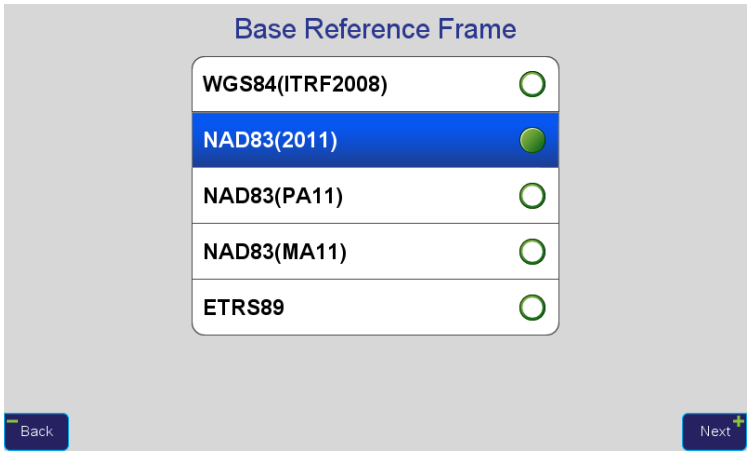
Alternatively, press the + key.



Choose your method of stopping observations.

Tap Next.

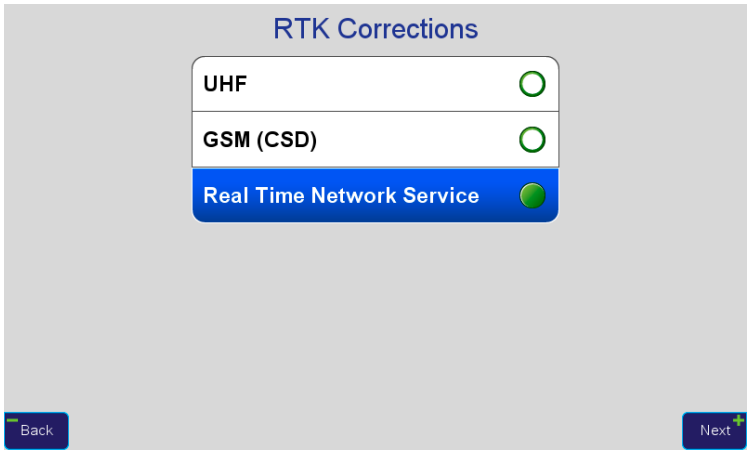
Alternatively, press the + key.



Choose your reference frame. For this example, I've selected NAD83(2011) because I'm going to be working in grid; in particular, Maine 2000, Central Zone.

Tap Next.

Alternatively, press the + key.

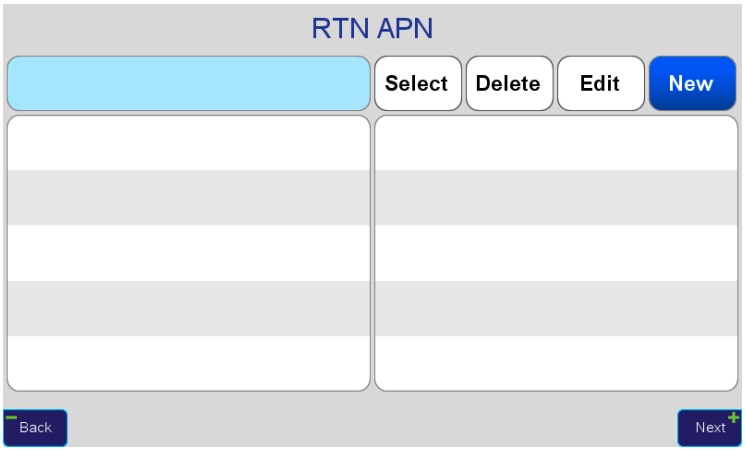


Here in this stage of the interview is where we get to start addressing the particulars for testing our RTN connection using the installed SIM.

Be sure to have RTN service selected.

Tap Next.

Alternatively, press the + key.

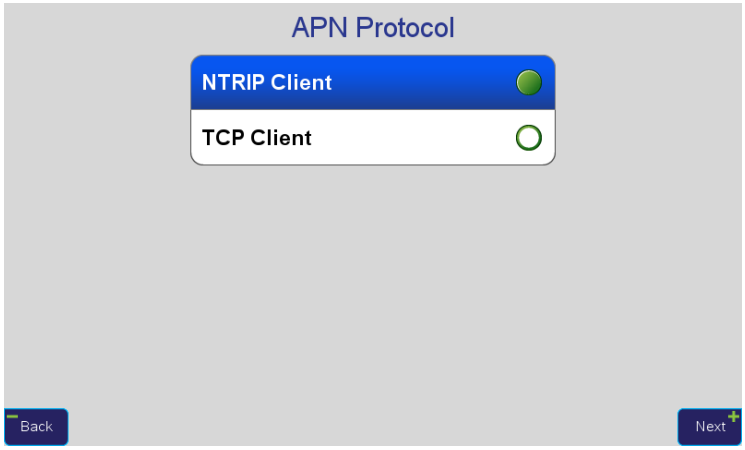


Create a new access point name.

Tap New.

Give your access point a name.

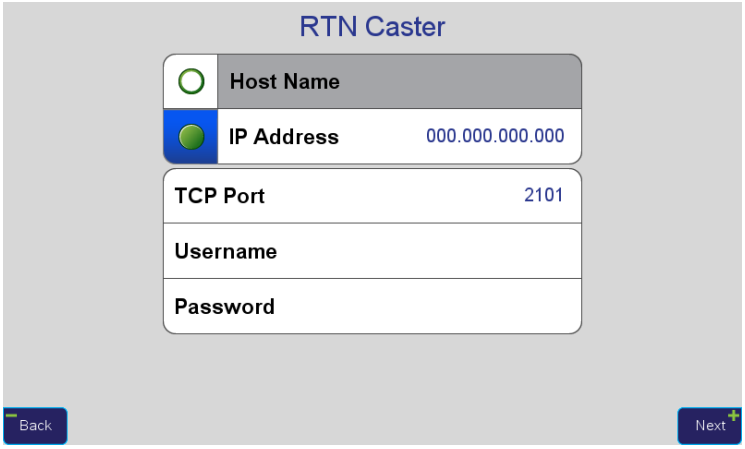
Tap OK.



Choose a protocol; in this instance, select the your specific RTN service's protocol. In the case of logging into the MDOT server, I'm going to choose the open standard of the Networked Transport of RTCM via Internet Protocol (Ntrip) and its associated NTRIP client. Each service is specific, so be sure to note the protocol to be used when you set up your account.

Once you've chosen the correct protocol specific to your service, tap Next.

Alternatively, press the + key.

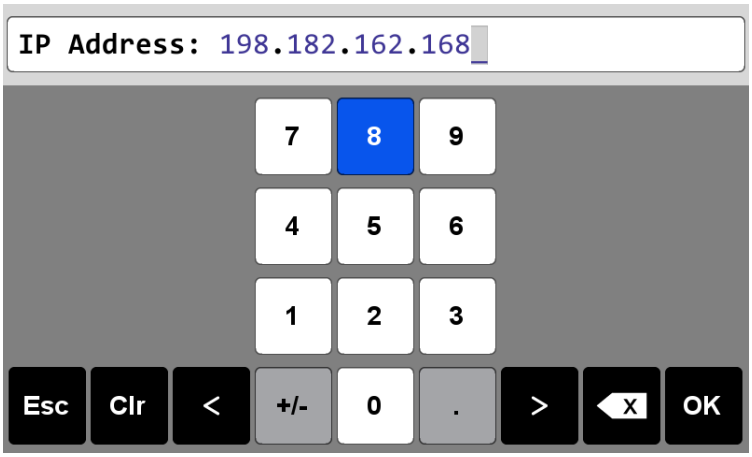


Depending on whether you had previously chosen NTRIP (like what's shown in the left screen) or TCP (shown in the Chapter 3), you will see different screens; another fork in the Wizard's interview, but some elements remain present in both as you'll see.

For our test, we'll be plugging in a specific IP address rather than a registered name.

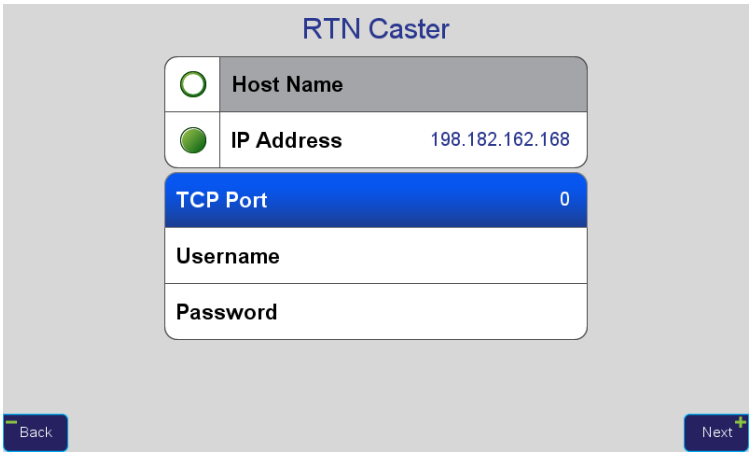
Tap Next.

Alternatively, press the + key.

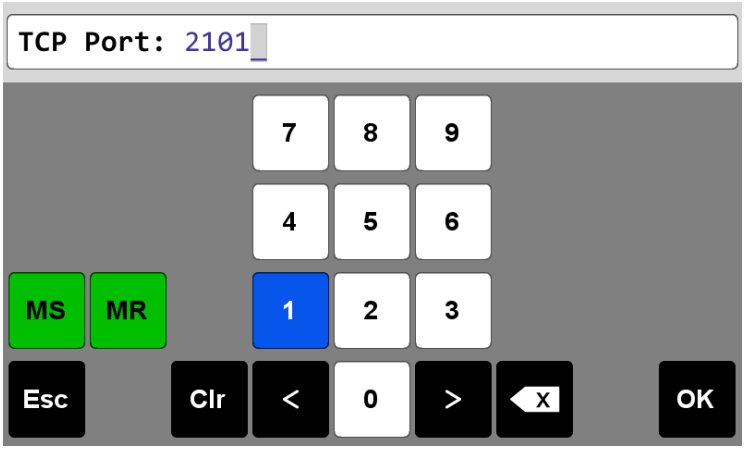


IP addresses are specific, and static IP addresses like this one remain constant. Enter this address exactly as shown if you'll be connecting to the MDOT server; otherwise, carefully enter the full address of your service.

Confirm the address entered is correct and then tap OK.

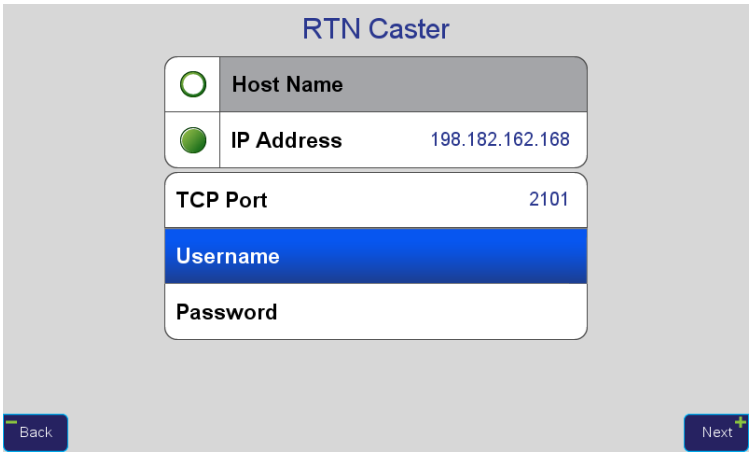


Tap TCP Port.

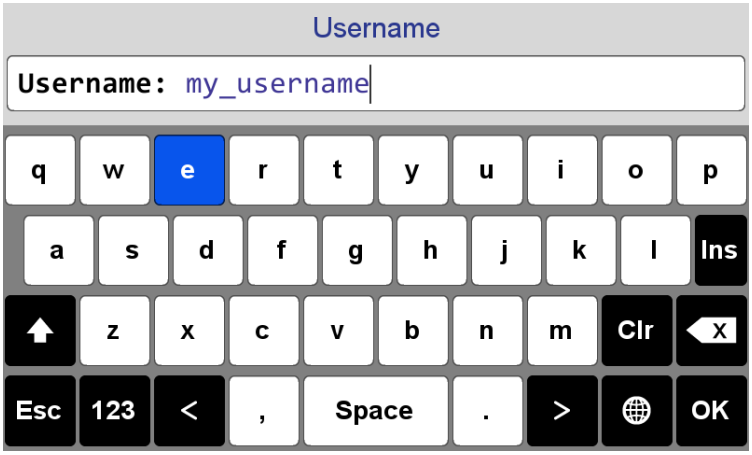


Make sure to enter the correct port number just as shown here if you are connecting to the MDOT's server; otherwise, carefully enter the specific port number of your service.

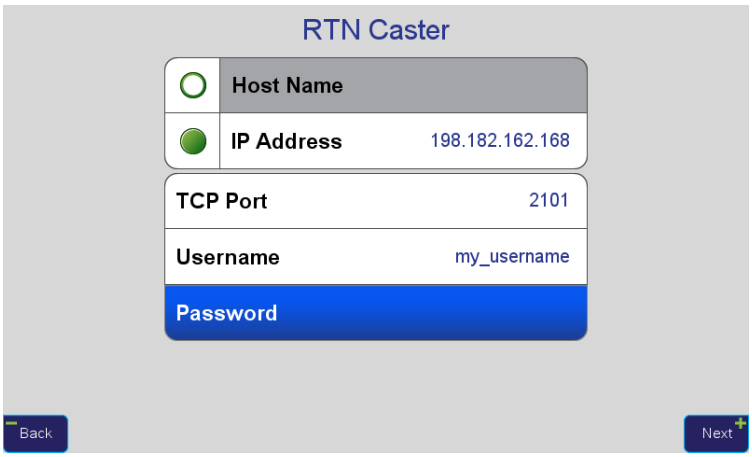
Confirm the port entered is correct and then tap OK.



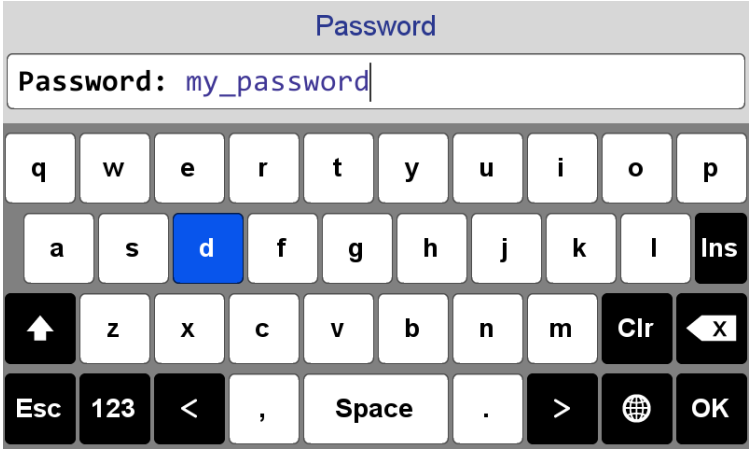
Tap Username.



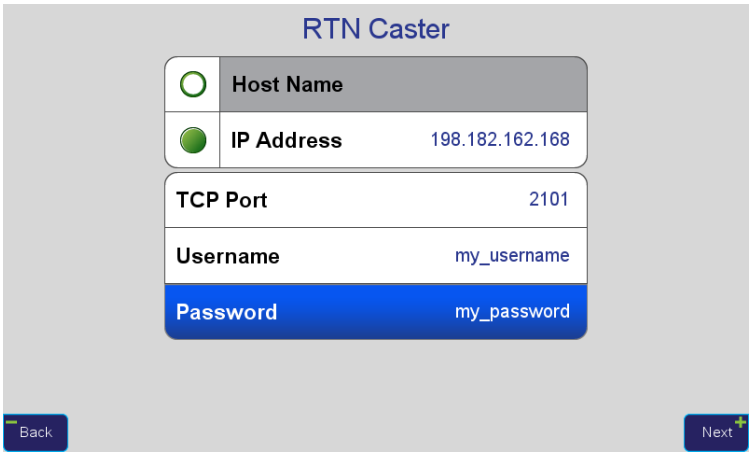
Enter your Username and tap OK.



Tap Password.



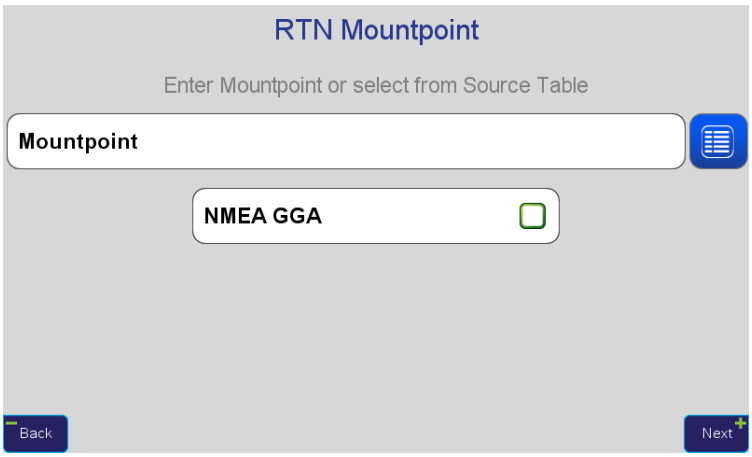
Enter your Password and tap OK.



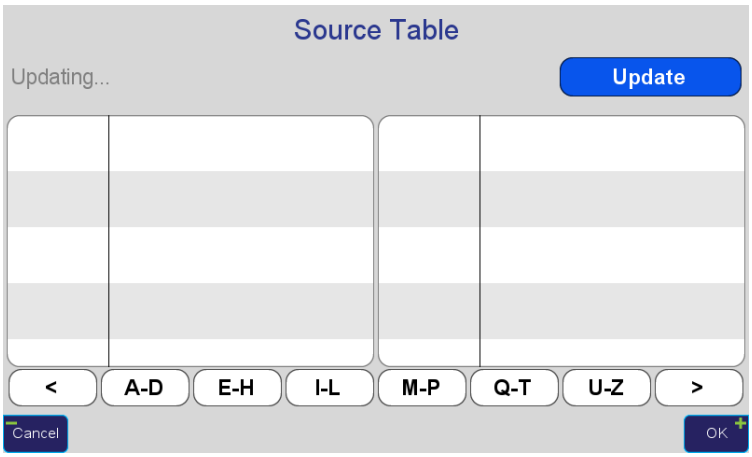
Your new client should look like this example (with your own account credentials) if you're connecting to the Maine Department of Transportation.

Tap Next.

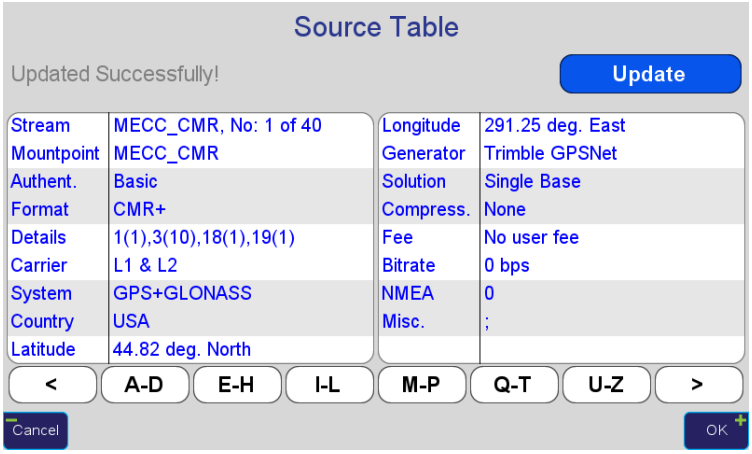
Alternatively, press the + key.



Tap the table icon.



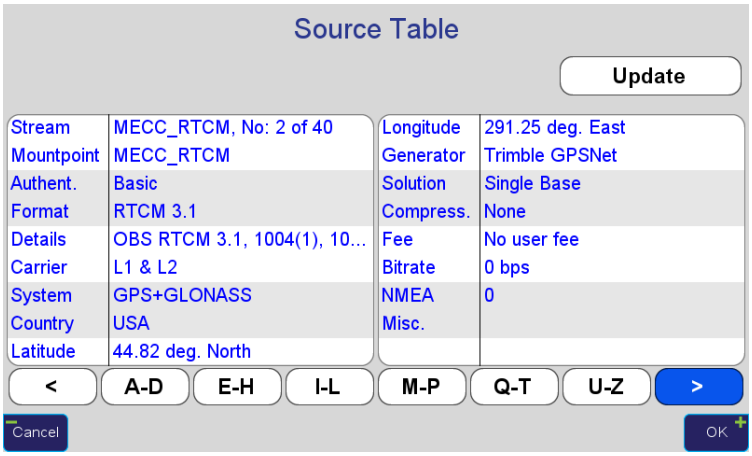
Tap Update to populate the table with available Mountpoints.



With the table populated, you'll next need to select the appropriate 1) mountpoint and 2) the correct protocol as a single mountpoint will have multiple protocols to choose from.

Depending on how the mountpoints are named in your locality, take advantage of the alphabetized links along the bottom to navigate your way through the list.

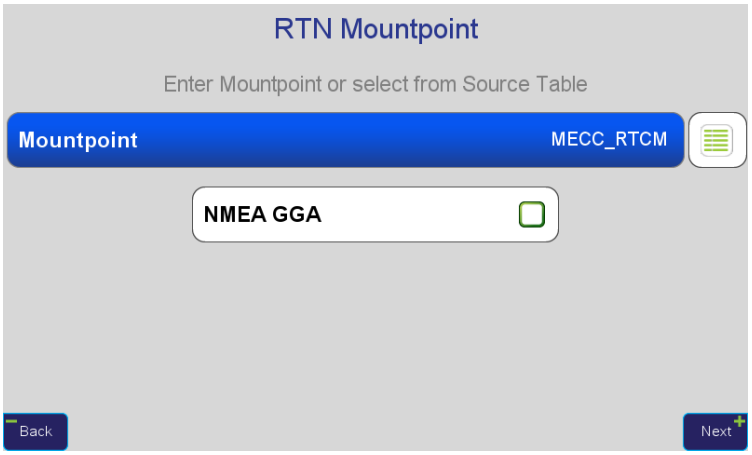
In Maine, for example, all of the DOT's mountpoints begin with ME so you may just have to browse the list of 40 with taps on the left and right arrows.



For this example, I'm choosing the nearest mountpoint to my location which is in Bangor (MECC) and will be using the RTCM 3.1 protocol.

One thing to note in this example, MDOT's solution statewide is a single baseline - not a true network solution or Virtual Reference Station (VRS). Depending on where you live in the U.S. you may be able to take advantage of having a VRS immediate to your location so browse through the available mountpoints and look for VRS with the RTCM protocol version 3.

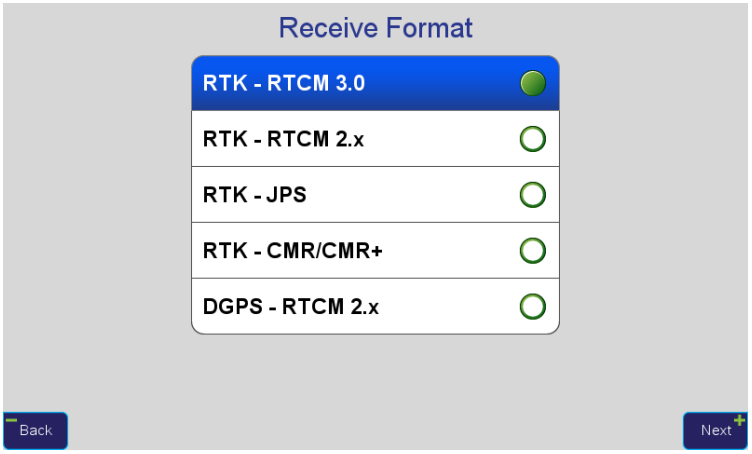
Once selected, tap OK.



Confirm Mountpoint and protocol as correct.

Tap Next.

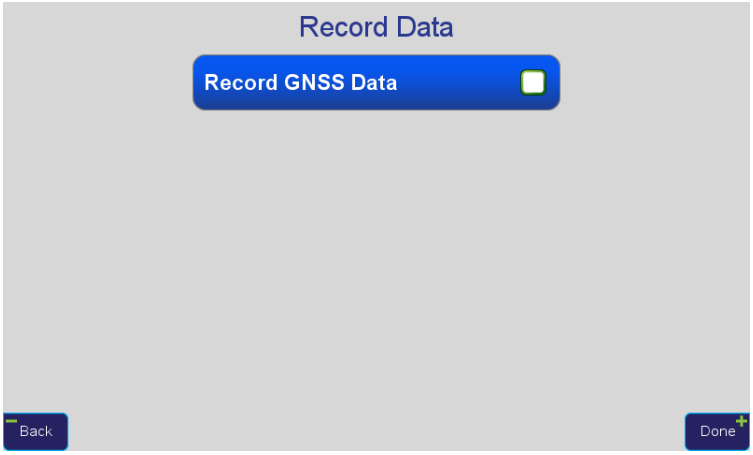
Alternatively, press the + key.



Confirm the appropriate protocol for your mountpoint has been chosen.

Tap Next.

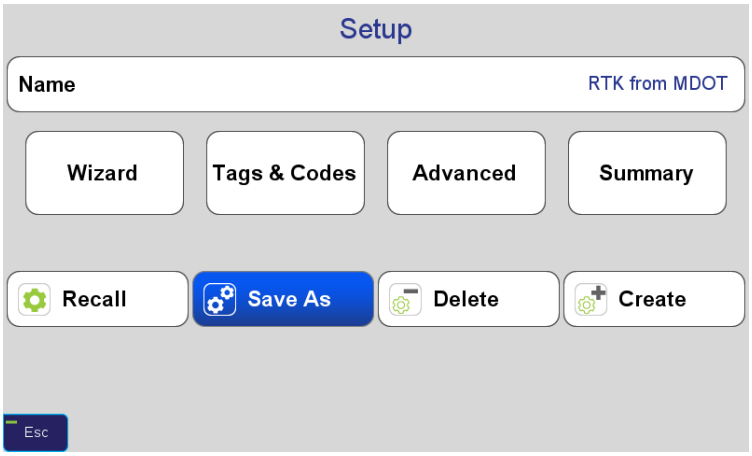
Alternatively, press the + key.



Depending on your project, you could collect sufficient data for later post processing; however, for this Setup we won't need to. Leave this box unchecked.

Tap Done.

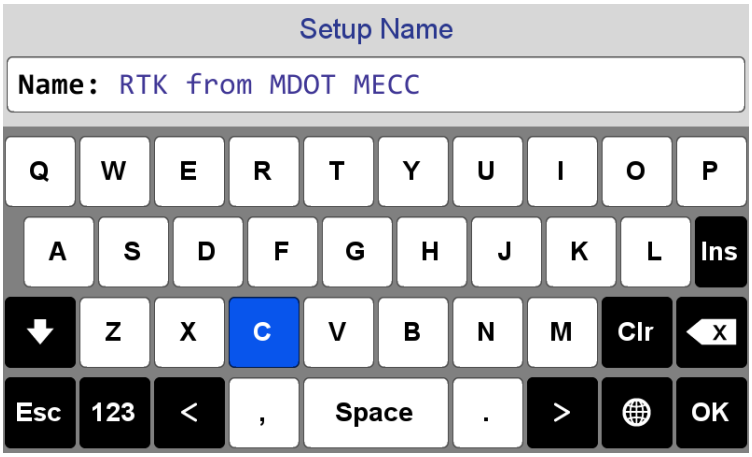
Alternatively, press the + key.



So we're done setting up our RTK NTRIP client, but before we go and test it, recall for a second all of those mountpoints on the Source Table. Some of my work takes me into Washington County, our country's eastern-most regions and the mountpoint in Machias might be handy to have on hand. What a great occasion to utilize the *Save As* feature.

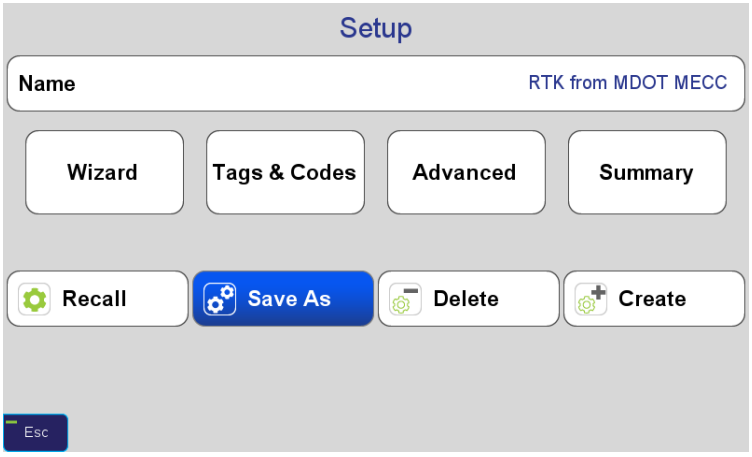
You can skip this part if you won't ever have more than one Setup ;)

Tap Save As.



Initially I had created a Setup Name generic to MDOT. Here I can be appending it with the explicit mountpoint from Bangor.

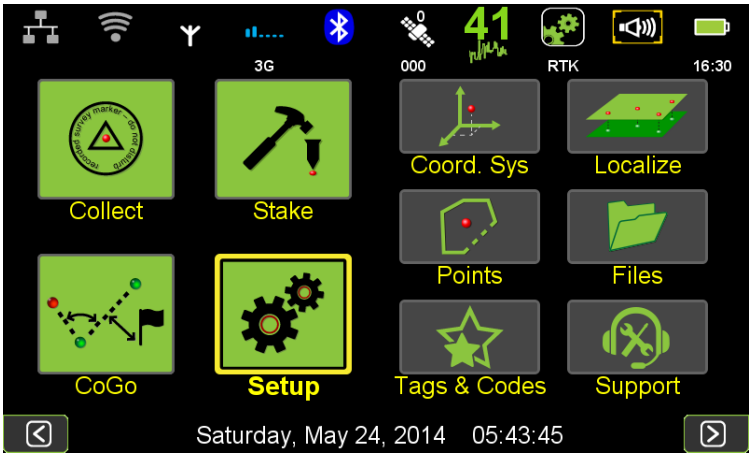
Tap OK.



So now there are two identical Setups. One with the generic name, one with the explicit MECC handle. It's important to remember that everything is the same except the name; i.e., I haven't change the mountpoint.

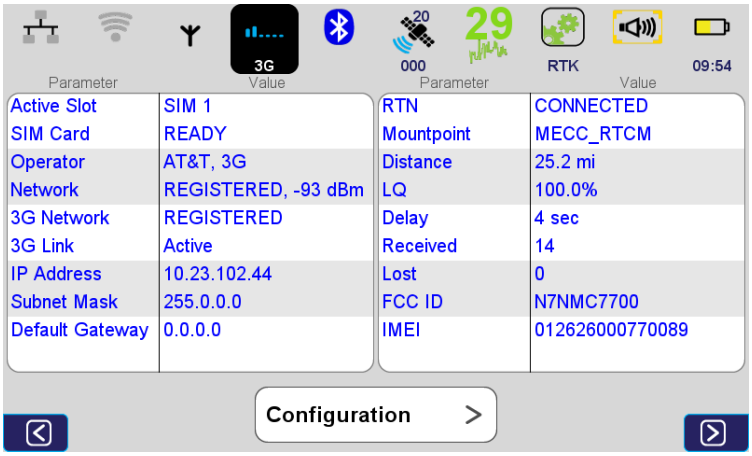
Later when I return and *Save As* **RTK from MDOT MEMA** (Machias's mountpoint), I'll necessarily have to go through the Wizard, though much faster now since all of the values have been entered up to that point where the mountpoint selection is made. Then a little tweak for MEMA and done.

Let's check our connection first, no sense replicating our errors and omissions. Press the Home key.



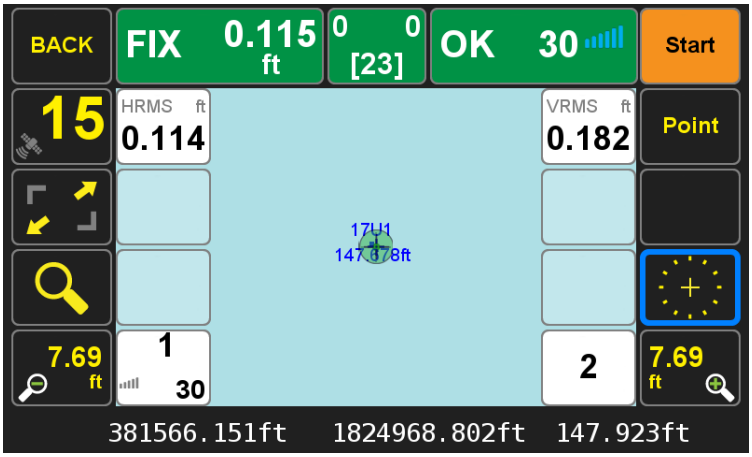
We still have 3G...

Tap the 3G icon.



Wait a moment or two and the RTN side of the table should populate with live data.

Okay, looks like we can go outside and test it under the sky.



As of this writing, the first group of U.S. PLS testers started receiving their units last week. It's very important to be vetting the results, even when we're out of the beta testing stage.

A quick fix with <.2' RMS looks inviting to accept. Let's compare the location with a 6.5-hr OPUS solution for the same mark:

381566.131, 1824968.849, 147.816 (NEZ)

Hmmm, better than I had expected with the base 25.2 miles away!

One other note: Collect screen2 is showing a token 3G connection icon and not a true representation of the signal strength.

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