

Trimble Juno-SB GPS Receiver

Overview Hardware and Software

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Hi. my name is **Dayle Sherba**, and I'm the GPS Coordinator for BLM at the Alaska State Office.

I'm going to be covering how to use one of **Trimble's handheld GPS receivers - the Juno-SB**. Before collecting GPS data, there are settings in the Windows operating system that we need to address. Here's a list of what I'm going to review:

Summary of Topics: (no audio)

Suspend / Off / Reset, Help, Sound, Power Conservation, Screen Alignment, Clock.

Windows OS Settings: Let's start with turning it [Trimble Juno-SB receiver] on. If the screen is blank, then look at the left-hand side, and press the Power button. The screen should light up.

Suspend versus Off: Most of the time when we are finished, we just want the screen to turn blank, so press the Power button briefly, about one second, and the receiver will go into Suspend mode. It is not turned off, it is in Suspend mode. It is still using power; it's just at a low level. To truly turn off the Juno, hold the Power button for about five seconds, and it will completely shut down the handheld.

Resets: If tapping on the screen or pressing the button doesn't work, you will need to perform a reset. Start with a soft reset, which is similar to restarting your computer. Use the stylus to press the Reset button. It's on the right-hand side and is recessed. If that doesn't solve the problem, perform a hard reset. While holding the Power button, press the Reset button. If the problem still isn't fixed, perform a factory reset. Warning! This will delete anything you installed or saved on the Juno, including the TerraSync

application. So as a precaution, store your data files on the SD Card in the Juno, and copy files to your computer regularly.

Find Help: There's almost a whole user guide's worth of information available to you all the time. You can access it through the Help menu. Press the Start menu, and tap on Help. If help doesn't appear in the Pick List, then, on the **Display Help** slide, you can press Start - go to the bottom where it says Settings. At the bottom of that page, press on the Personal tab. Find the Menu icon - tap on that. And, when the screen opens, slide down until you see Help, and place a checkmark in the box. Then press OK.

Get Help: Now, when you press Help, you will get information that is context sensitive.

Turn on Sound: To make sure that the sound is turned on so that we can hear when we're collecting the data and use our eyes to keep us safe, we need to get back to the Personal tab so we can start over again with the Start menu. Go into the Settings area. At the bottom is the tab Personal - click on Sounds and Notification. At the bottom of that screen is the Sounds tab and then the box that says Programs - place a checkmark in there. And you can press OK.

Adjust Volume: Now, to adjust the volume or basically turn the sound on or off, back on the Today screen, at the very top click on the Speaker icon, and the slider bar will open. While you're in the classroom, you might want to keep it off. When you go outside to collect data, tap the radial button by On, and make sure the volume is turned up to the top.

Backlight: For the Backlight, it's important to conserve power by setting it up so it will turn off after a certain amount of time. So we again can press the Start button, go to Settings, and this time, at the bottom, we want the tab marked System. Press the icon for Backlight and, at the bottom of the screen, we want to work on the tab that's labeled Battery Power. So place a checkmark in the box right by "Turn off backlight if device is not used." And I'm recommending 30 seconds. Also place a checkmark in the box that

says “Turn on backlight when a button is pressed or the screen is tapped,” and then it will come back on. Press the OK button.

Power Status: You can monitor your power status by staying at that System screen, or, if you’ve gotten lost or fat-fingered it, you can always go back to the Start menu - Settings at the bottom - the tab marked System, and select the icon for Power. And, at the bottom of the screen, again the tab marked Battery, and then you can see how much power you have left in the system.

Power Conservation: Press the tab at the bottom labeled Advanced, and you can put a checkmark in the box labeled “Turn off device if not used for,” and you can set that to whatever you’d like. I’m recommending two minutes. Please note, as we discussed earlier, this is not really turning the device off; it’s just putting it in Suspend mode, and that’s what we want, and press the OK button.

Align Screen: If you find that your tapping doesn’t get you the desired results, it’s as if you hit the item above or below, then you might need to realign your screen. You’re going to have to do this every time there’s a cold boot or you restart the Juno. But, if you need to do it in between times, this is how you would get there: Press the Start button. Go to the Settings area. At the bottom, you want to press on the tab labeled System. Find the icon for Screen. In the middle of it, there’ll be a button that says “Align Screen.” Tap on that, and then you will receive direction. There’s a plus that you need to press on, and it will ask you to do that five times. After that, the screen will be recalibrated for the way you see it, and now, when you tap on things, you should get what you were aiming for.

Set Home Clock: Setting the Home Clock - that’s important because local time does show up throughout the TerraSync software, and it’s really valuable for that time to be correct. Starting from the Start menu, go into the Settings area. At the bottom, there’s a tab labeled System, then the icon Clock and Alarms. At the bottom of the screen that says Time, we want to go up to where it says Home, and click that radial button, and then select the correct time zone for where you are in standard time. Go ahead and

make sure that the time of the day is correct by using the up and down arrows, and make sure that the date is correct. The software will automatically adjust for Daylight

Saving Time, so you don't have to make that adjustment when you're setting up the time now. And then click the OK button.

And here are some additional tips:

Storage: For storage, if you're going to use the receiver pretty much regularly, then you want to keep it charged. If you're going to be setting it aside for more than three months at a time, go ahead and turn it off, as in truly turning it off - holding that Power button for five seconds.

GPS Firmware Version: It's important to have the latest firmware installed on your GPS receiver. To find out what firmware version you have, you go to the Start menu - down to the Settings areas. At the bottom of the screen, the tab marked System, the icon System Information, and then, on the page, scroll down to where it has the OS version. You might need to tap on the plus sign to open it up, and then you can see what GPS firmware version is on your GPS receiver and compare it to what is the current version that's available. And then you can hit the X to close the screen.

Windows Mobile Version: If you need to know what Windows Mobile version you're using, again, at the Start menu, go into the Settings area. At the bottom, the tab marked System - the icon About. At the bottom of the screen, we want the tab labeled Version. And, at the top, you can see what version of Windows Mobile you're using. Now you could hit the OK button, but I wanted to show you, next, the device ID information. So you can just go ahead, and, at the bottom of the screen, click on the tab Device ID. We recommend that you put the serial number. That will provide you with a unique name. And then, for the description, you can use whatever you'd like.

If Sync Partnership: The Device Name will show up if you establish a sync partnership. Then it will appear in the Microsoft ActiveSync window - right here (follow

cursor in video), as well as when you perform data transfer - over here (follow cursor in video).

[Next section] Making the Connection between the Juno-SB Receiver and ActiveSync

Juno-SB ActiveSync Connection: Now I'm going to talk about making the connection with ActiveSync. Before I start, I'll spend a moment talking about the different models. Although the slides are prepared for the Juno SB, they also work if it's the Juno SC. They'll work for Nomad. And they'll work for the older version of the Juno, the ST.

Connect Device to Computer: In order to connect the devices to the computer, you need to connect the cable, and then you're going to use the software called ActiveSync. The latest version is 4.5.0, for now. And, of course, you can keep up on what the latest versions are by going to the website.

Establish Guest Partnership: Once the device is connected, the ActiveSync window will pop up, and you will see the Synchronization Setup Wizard. We recommend that you establish a guest partnership. In order to do that, you need to click on the Cancel button. Once that's done, the ActiveSync window will appear, indicating that you are connected as a guest.

Guest vs. Sync Partnerships: The difference between the guest and the sync partnership is that, as a guest, it's great for those receivers that you are borrowing and that you have no intention of synchronizing with. So it allows for a temporary connection, and there is no initial setup to go through, other than that screen where it says "What do you want to do?" and you say "Cancel."

The advantages for the sync partnership are that, as soon as you put it in the cradle, it will recognize that this is a receiver with which it has a relationship, and it will automatically synchronize all those items you've asked it to synchronize. You are limited to synchronizing only to two devices - no more than that. So it allows for a permanent connection, and the connection will happen pretty quickly.

[Next section] Select Settings for the Juno-SB GPS Receiver

Objective: Next, we're going to be talking about the settings for the GPS receiver. The main objective is to select those settings that will be appropriate for each project, and they can change. So it's not so easy to just create a cheat sheet. It's important for you to know where to go and what to select and why so that you can make those changes while you're in the field, as conditions change.

Summary of Topics: We're going to be looking at the settings that affect the quality and quantity of data that you're collecting, and we're just going to briefly touch on those settings that are for display purposes only and will not affect the way the data is collected or stored.

Open TerraSync: The first thing we're going to need to do is open up the TerraSync application. So from the Start menu, go down to TerraSync, and tap on TerraSync. The splash screen will open, showing you the latest version, and then you will get the Status window.

Open Setup Section: The TerraSync software has five sections, and we can see those five sections right here: Status, Map, Data, Navigation, and Setup. We want the Setup section. So tap on Setup, and the screen will open, showing you all kinds of buttons.

Remember - Help: And, again, I want to remind you that Help is available so wherever it is that you are in TerraSync, if you need some help just go back to the Start menu. Tap on it, and go down to where the Help is, and it will come up with whatever is appropriate for where you are.

Setup Section: On the Setup Section screen, as I said, there's a lot of buttons. The buttons along the first line are the buttons we need to look at, and they will affect the way the data is collected and stored - the quality and the quantity. The buttons on the bottom just affect the display. That is, of course, unless you're using an external sensor. We're

not covering that so that's not part of the settings that are important for data collection.
[Next section] Logging Settings

Select Logging Settings: So the first one we want to look at is the Logging Settings button. Go ahead and select Logging Settings.

Logging Settings Form: At the top of the screen is a number with an arrow. This is indicating what the accuracy is according to what you have selected. And the way you make that selection is by tapping on the wrench. In this window, we can select whether we want the accuracy to be displayed as horizontal or vertical - I'm suggesting horizontal - and whether we want it to be the estimated accuracy after post-processing or while we're in the field. And I'm recommending that we use "In the field." We do not want to use Accuracy-based Logging so make sure that is set to No. And then you can tap on the OK button.

Logging Settings Form continue: The setting for a Point/Vertex does not matter so I'm only going to move on to the ones that are important. The antenna height needs to be set, and you can click on the wrench. It opens up the Antenna Settings page. You need to select the height of the antenna above what it is you're going to be collecting, and you can type that information in, whether it's in feet, meters, yards, inches, millimeters, or centimeters. And then the software will convert it back to whatever the units are that have been selected. In my case, they're meters. So I could have typed this in as 3ft, and it would have converted back to what it would be in meters. And then you can set it to "Confirm Per File." The antenna type is a Juno Internal, and the Part Number doesn't matter. We can click on the OK button, and it brings you back to the Logging Setting page. Set the Log Velocity Data to No. Change that to Yes if you're under difficult GPS conditions, such as wet foliage.

Logging Settings Form continue: The next setting that's important is the Filename Prefix. Typically, R is used to indicate that it's a Rover file, and that's fine to use as a default. However, if you have many people going to the field collecting data at the same time, then all their files will start the same way, with R. And then, if you go with the

default, it will also include a name that's the same for everybody. So at that point, you might want to assign a different letter to each person so that your files will all have different names.

Logging Settings Form continue: Sliding on down the page, the next thing that's important to talk about is Between Feature Logging. Set it to Off. If it had been turned On, it would be collecting positions that are not part of any feature. So for instance, we have a feature called Tree, and the feature shows up. But all the positions that aren't part of the Tree or any other feature are just a black dot, and you can see they're scattered all over the place. So unless you have a really good reason to have these black dots scattered all over, make sure this is turned to Off. We're done with this page so you can click the OK button.

[Next section] GPS Settings

GPS Settings Form: When something is highlighted at the bottom it will give you some information about it. So the Com Port's highlighted, and, at the bottom, it tells you "Select the port the GPS receiver's connected to." There are a number of different ports available, depending on how you're connecting or what you're connecting to. For us, using the internal GPS in the Juno, we want Com 7.

GPS Settings Form continue: Sliding on down the page a little bit, we can take a look at the other settings for ".maximum," the minimum SNR, the minimum elevation and the Velocity Filter. For those veteran GPS Trimble users, you'll notice that these filters on the Juno and the Nomad are wide open, and they're locked down. We cannot make any changes. Click the OK button.

[Next section] Real-Time Settings

Real Time Settings Form: If WAAS works well in your area, then go ahead and select the integrated SBAS for your Choice 1. You can go ahead and tap on the Wrench and see that, again, on this receiver, there are no options for the Tracking Mode, and there's

no option for setting a Real Time Age Limit. If WAAS does not work well in your area, then just go with “Use Uncorrected GPS” for your Choice 1. Click OK.

Always Geodetically Correct: Before I talk about the display for a coordinate system, I wanted to digress for a moment. When the GPS receivers are collecting information, they’re actually using a coordinate system called Cartesian coordinates. We can’t see those, in some cases, or it’s very difficult to access in others. So for the sake of our discussion, I’m going to say that the coordinate system used by GPS is Lat, Long [Latitude and Longitude].

Then the next thing is that, with Trimble receivers, there is no problem with setting the coordinate system, the datum, or the time zone, in that there’s only one way it can happen. Automatically, the GPS receiver will store all that information in Lat, Long, WGS84, GPS Week 1150, and in the UTC Time Zone. So you can’t select the wrong coordinate system or the wrong datum or the wrong time zone, in terms of the GPS receiver part.

Storage - The Only Way: And, just to reiterate that, the only way it can be stored, both on the receiver and on the computer, is in Lat, Long, WGS84, GPS Week 1150, UTC.

We can choose to display it on the computer and on the GPS receiver in any variety of ways that we want. But it is storing it ultimately only one way, and we can’t make a mistake on that. So when someone says, “Well, how should I set up my GPS receiver?” you need to say, “Well, it doesn’t matter, if the only thing I’m doing is collecting the data, because I can’t set it up wrong.”

[Next section] Coordinate System

Select Coordinate System: However, if you do want to compare what you’re seeing on your GPS screen with a background image or perhaps a paper map or someone else’s GPS receiver, then you may need to change some of these.

Coordinate System Form: So select Coordinate System, and, on the screen, you can see there's options to select the system: Some have a zone, the datum, how you're going to look at your altitude, and what the coordinate units should be. And the only reason I'm showing this is because you'll need to go here if you've got to match your background map or if you have to match someone else's map. Otherwise, these settings are not important for collecting the data. And say OK.

[Next section] Units

Select Units: Now for Units - go ahead and click on the Units button.

Units Form: One thing I wanted to point out is that, if you were used to using TerraSync's earlier version, there was a declination error in the lookup table, and that has now been fixed. So it is safe to trust the North reference as true and let the Magnetic Declination be automatic. It indicates that it's figuring it out by putting an Auto there, and it indicates what the most recent measurement is. And click OK.

Review of Topics: So we looked at the collection settings that are important for the quality and the quantity of the data that you're collecting. And we also looked at those settings that are for display purposes only.

And that concludes the GPS settings.

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