

Procedure for configuring an ASD approved GPS receiver

The ASD software (RS³ and Indico Pro) uses National Marine Electronics Assoc. (NMEA) text output from a GPS receiver. Specifically, the software uses the GGA (i.e., fix) sentence structure. Your GPS receiver will need to be able to output NMEA 0183 GGA sentence text in order to work with the ASD software. This output option is usually found in the interface or communication settings for your receiver.

The NMEA text is formatted as a serial data stream. This means that the GPS receiver has to connect to the computer with a connection that is or will emulate a serial port. Most GPS receivers communicate via a USB cable although there are still models that use a RS232 cable. Bluetooth receivers are also becoming more common. The following are general guidelines to configuring a GPS receiver to operate in conjunction with the ASD software:

RS232 (serial) cable - If your computer has a COM port, then the cable would be connected directly to the port. This is the simplest method but few computers have COM ports any longer. It is common to use a Serial to USB converter cable to allow the RS232 cable to connect to the receiver and the USB cable to connect to the computer. ASD sells serial to USB cables or you can find them from various GPS manufacturers and from computer supply sources.

USB Cable - This method of communication does not always result in a usable serial text communication. Newer model Garmin receivers can utilize the Garmin Spanner software (available from Garmin) to convert the USB protocol into the necessary serial text format. Unfortunately, the Garmin Spanner software is only compatible with Windows XP. For versions of Windows other than, and including, Windows XP, the Franson GpsGate software (available from Franson Technology AB) may be utilized. Both methods work well with the ASD software. The Spanner software does not seem to work well with some earlier GPS models.

Bluetooth - Bluetooth receivers appear to work with the ASD software when configured as a serial port. We have found that receivers that are communicating directly with the computer through the Bluetooth radio work best. When the receiver communicates to the computer through a USB dongle, the software can hang up when shutting down the software and requires the user to use the task manager to close down the ASD applications that are running.

The following procedures will explain in more detail how to configure the GPS receiver to the three communication methods listed above. The direct serial cable to COM port method is not detailed separately. If you are using this type of connection, use the section of the Serial Cable to USB Port description for information on the GPS settings in the RS3 software.

Serial Cable to USB Port

Step 1

If you purchased a computer and the GPS receiver from ASD, your USB to serial cable driver will already be installed so all you will have to do is locate the USB to RS-232 cable and plug it into a USB port. If the driver is not already installed, turn on the instrument controller computer and run the driver installation utility that comes with the USB to RS232 adapter cable. This will be found on the cable manufacturer's CD-ROM or the software flash drive in your ASD System Documentation folder.

Plug the USB end of the USB to RS232 adapter cable into one of the USB ports on the computer. ASD configures the USB port on the left side of the notebook computer (while viewing the screen) for the GPS receiver but this may vary from installation to installation. It is preferable to decide which USB port you will always use prior to



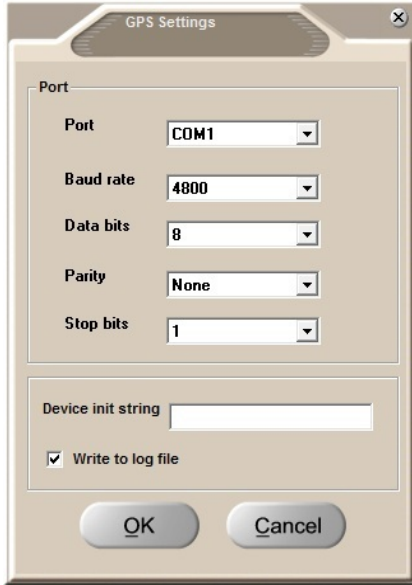


Figure 1.

configuring the software since the settings could change if you use a different port. This could require repeating some of these steps.

Step 2

Turn off the GPS receiver before starting the computer. Connect the GPS receiver cable to the GPS unit and to the serial end of the RS-232 to USB cable. After the computer has started, you can turn on the GPS receiver. If you purchased a computer and the GPS receiver from ASD, the GPS settings will already be set to the proper interface setting. If you did not purchase your GPS or computer from ASD, start the GPS receiver and go to the GPS receiver's communication interface settings. On the Garmin etrex models, this will be found under the Main menu->Setup->Interface. Choose the communication format that outputs NMEA text. On the Garmin etrex series this will be the NMEA In/NMEA Out option. When configuring a Garmin 60CSx for NMEA GGA Text go to the Setup -> Interface screen and select NMEA IN/OUT from the drop-down menu. Select MENU and then select "Advanced NMEA Setup" from the secondary menu. Uncheck the "Autopilot Mode". Close the setup windows and allow the receiver to acquire a position fix.

Step 3

If you have purchased a computer and GPS with your instrument, your GPS settings in the ASD software will be configured for the receiver already as long as the COM port assigned to the USB to RS-232 cable does not change. The settings in the software are found under the GPS menu and should be configured as shown in Figure 1. To start the GPS collection, choose the enable option either in the GPS menu or by right clicking the mouse on the padlock icon in the lower left corner of the RS^3 software. Once the GPS receiver has acquired a location, the coordinates will display on the bottom of the screen.

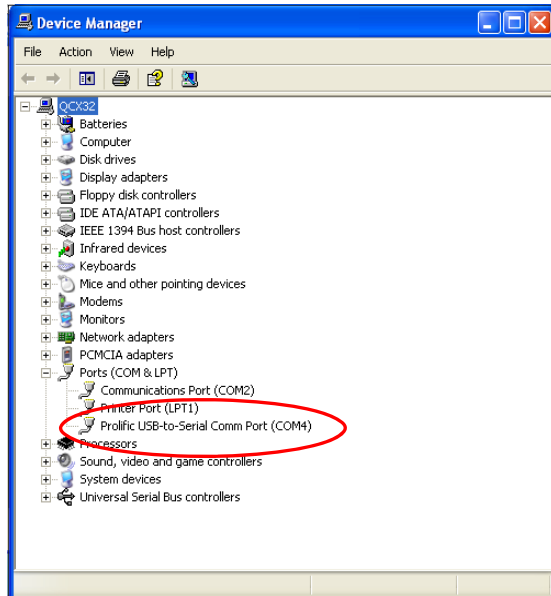


Figure 2.

If the COM port assigned the USB to RS-232 cable has changed from the one set at ASD or if you are configuring it for the first time, open up the Windows Device Manager. The device manager can be accessed by clicking the Start->Control Panel->System->Hardware->Device Manager . Open the Ports entry and look at what COM port the USB to RS-232 adapter cable has been assigned (Figure 2). Note what COM port number it has been assigned and set the COM port number in the ASD software GPS settings to the same number (Figure 1). The baud rate should also match what your GPS receiver setting is. The other COM port settings for the USB to serial port should be set to the same settings as the ASD software GPS settings shown in Figure 1. You can check these by double clicking on the "USB to serial Com Port" entry shown in Figure 2 and opening the Port Settings tab.

USB Cable

Not all GPS receivers that communicate to a computer by USB cables will output a data stream that is formatted correctly to allow the ASD software to read it. Certain Garmin models use the Garmin Spanner software (http://www8.garmin.com/support/download_details.jsp?id=1627) to allow the ASD software to obtain a position while connected by USB cable. However, the Garmin Spanner software is only compatible with Windows XP. Franson GpsGate is a third-party software that will emulate the port necessary for GPS communication with the ASD software. GpsGate is compatible with Windows 7 / Vista / XP / 2000 / NT / 9x / ME. The procedure below will explain the setup for Garmin models that can use the GpsGate software.

Step 1

If the Franson GpsGate software is not already installed by ASD, install the Free GpsGate Client for Windows on the instrument computer. The software can be downloaded from Franson (<http://gpsgate.com/download>).

Start the GPS receiver and change the interface setting to the Garmin Spanner option. Connect your GPS receiver to the computer via the USB cable. If the receiver asks to go to Mass Storage, answer No. If the computer does not automatically/successfully install the drivers for your GPS device (connection to the internet is necessary), it may be necessary to download a driver package from Garmin (http://www8.garmin.com/support/download_details.jsp?id=591). Once successfully installed, a notice in the computer's notification area may be seen identifying the GPS device and indicating the driver software has been installed. Garmin GPS devices will display in the computer's Device Manager under GARMIN Devices.

Step 2

If the GPS and controlling computer were purchased with your instrument, the GPS settings have already been configured for use with the ASD software. If setup of GpsGate and the ASD software is necessary, double-click the GpsGate shortcut on the desktop to open the settings window, or right-click the GpsGate icon in the notification area and select Settings (Figure 3). Once open, click the Setup Wizard button. Leave the default boxes checked and click the Next button. The GPS should be identified as a Garmin USB. Click Yes to continue. Uncheck the box for use of the GPS with nRoute/MapSource and click Next (Figure 4). Make note of the COM ports listed in the Summary window before clicking the Finish button (this information will be useful when configuring the ASD software). Once finished, the GpsGate icon should turn yellow indicating the GPS is recognized and communicating, but that a position has not been established. This icon can be seen in the GpsGate settings window or in the notification area of the computer. Once a GPS satellite position is obtained, the icon will change to green. A red icon indicates that no GPS device is recognized by the GpsGate software.

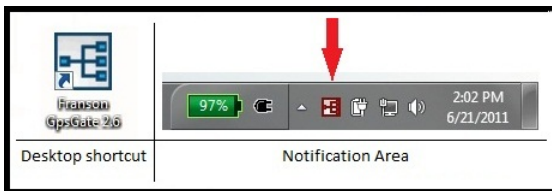


Figure 3.

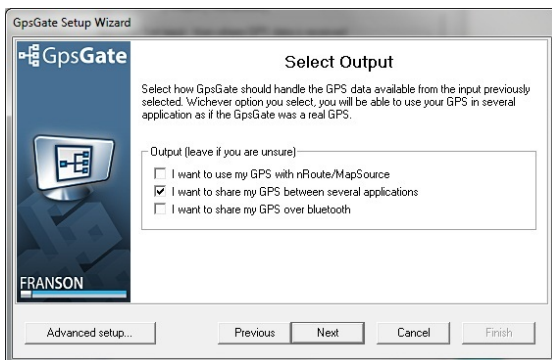


Figure 4.

(continued)



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Step 3

To start the GPS collection, first, confirm the GPS settings in the ASD software match those displayed in Figure 1. The GPS Settings window (Figure) can be accessed through the GPS dropdown menu at the top of the ASD software. It is necessary that the Port option be set to one of the output ports indicated during the GpsGate setup (COM1 is the default setting). To view/create available GpsGate output ports, open the Output tab in the GpsGate settings window. To begin GPS data collection, the GPS device must first have a position lock. After enabling/activating the GPS option in the GPS menu (or by right clicking on the padlock icon in the lower left corner of the RS³ software) coordinates will display on the bottom of the ASD software window.

Bluetooth Receivers

The set up for a Bluetooth receiver is shown below on a Lenovo computer and on a Panasonic Toughbook computer, both with Bluetooth radios installed on the computers. The procedure for a Bluetooth receiver that communicates to a USB receiver may be slightly different. For both Lenovo and Panasonic computers, it is necessary for the physical wireless switch to be in the On position before attempting the software setup.

Lenovo Computer

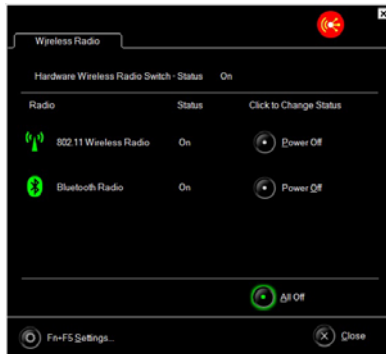


Figure 5.

Step 1

After turning on the GPS receiver, turn on the Bluetooth radio of the computer by pressing the Fn+F5 keys and clicking the “Power On” radio button (Figure 5). Click the Bluetooth icon in the Windows system tray and select Add a Device. Select your GPS receiver and click Next. Click on “Enter the Device’s Pairing Code” and then enter the specific code for your device (the code can typically be found in the manufacturer’s documentation for your GPS receiver). Click Next to finish the pairing. A message indicating successful addition of the GPS should now be displayed. Click close to finish the process. Once you connect to the receiver, it will be assigned a COM port number. This number can be verified by clicking on the Bluetooth icon in the system tray and selecting “Open Settings”.

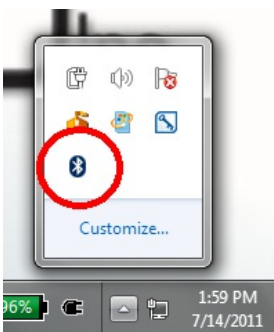


Figure 6.

Step 2

If you have purchased a computer and GPS with your instrument, your GPS settings in the ASD software will be configured for the receiver already as long as the COM port assigned to the Bluetooth receiver does not change. The settings in the software are found under the GPS menu and should be configured as shown in Figure 1. The Port Number must be assigned to match your GPS. The baud rate can be set as high as possible with the receiver still remaining in communication with the computer.

To start the GPS collection, choose the enable option, either in the GPS menu or by right clicking the mouse on the padlock icon in the lower left corner of the RS³ software. Once the GPS receiver has acquired a location, the coordinates will display on the bottom of the screen.

Panasonic Toughbook Computer (Bluetooth)

Step 1

After turning on the Bluetooth GPS device, right-click the Bluetooth icon in the Windows system tray and select Bluetooth Settings. Click the New Connection button. The window shown in Figure 7 should appear. Select Custom Mode and click Next. Select your device from the list and click Next. Continue with the wizard and proceed to the Select a COM port step.

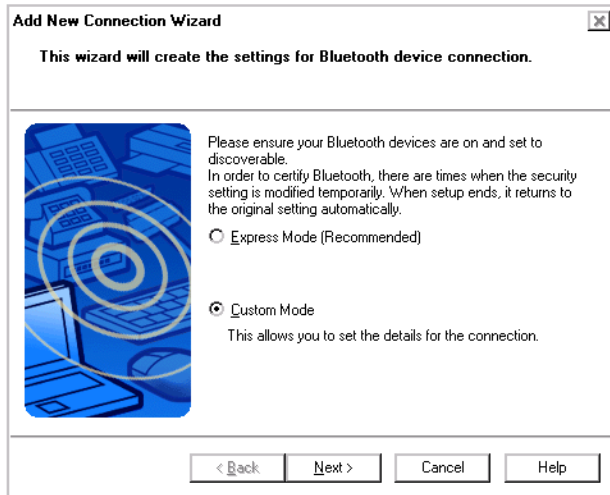


Figure 7.

Uncheck the Use default COM Port box if the recommended COM port number is higher than COM port 8 (see Figure 8). Select an unassigned COM port number between 1 and 8 and finish the configuration wizard. You may receive a warning about manually assigning a COM port. As long as you have picked a COM port number that is not currently being used, you can ignore this warning.

Step 2

If you have purchased a computer and GPS with your instrument, your GPS settings in the ASD software will be configured for the receiver already, as long as the COM port assigned to the Bluetooth receiver does not change. The settings in the software are found under the GPS menu and should be configured as shown in Figure 1. The baud rate can be set as high as possible with the receiver still remaining in communication with the computer.

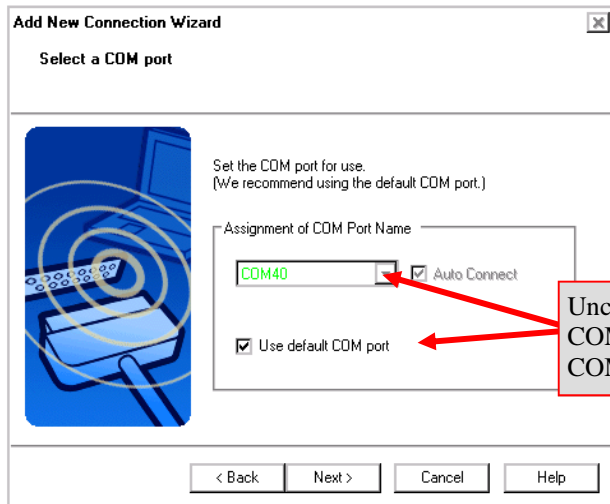


Figure 8.

To start the GPS collection, choose the enable option, either in the GPS menu or by right clicking the mouse on the padlock icon in the lower left corner of the RS^3 software. Once the GPS receiver has acquired a location, the coordinates will display on the bottom of the screen.