

# APPLICATION NOTE



## **GPS16X-HVS Firmware** **Update Procedure**

4/19

# GPS16X-HVS Firmware Update Procedure

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The GPS date rollover event of April 2019 caused a date output error in many GPS16X-HVS devices. In the affected GPS16X-HVS devices, the date output from the GPS unit starts at August 1999. The data logger misinterprets this as 1963 when setting its clock to GPS time. Garmin released an updated firmware in March 2019 that resolves the issue. Updating the GPS unit requires the GPS16X-HVS, a 12 VDC power supply, free software from Garmin, and a computer with a RS-232 port. A native RS-232 port is preferred; some USB to RS-232 converters may be suitable.

System requirements:

- IBM-compatible computer running Windows 2000 or later operating system and an available COM 1, 2, 3, or 4 port
- PN 28840 Interface with Hood and Hardware Kit, DB9 Female to Terminal Block for connecting the GPS16X-HVS to a serial cable

1. Download the files from:

<https://www8.garmin.com/support/collection.jsp?product=010-00258-62>

You need both the unit software for the GPS16X and the SNSRXCFG configuration software. The unit software is a self-extracting zip file that must be run on the computer. Save the SNSRXCFG.exe file to a location where you can find it.

2. Connect the GPS16X-HVS to a 12V power supply. You can connect the GPS16X-HVS to the data logger and use its power supply (see FIGURE 1, FIGURE 2, and TABLE 1).

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## CAUTION

Connect the power grounds and shield before connecting the power wire.

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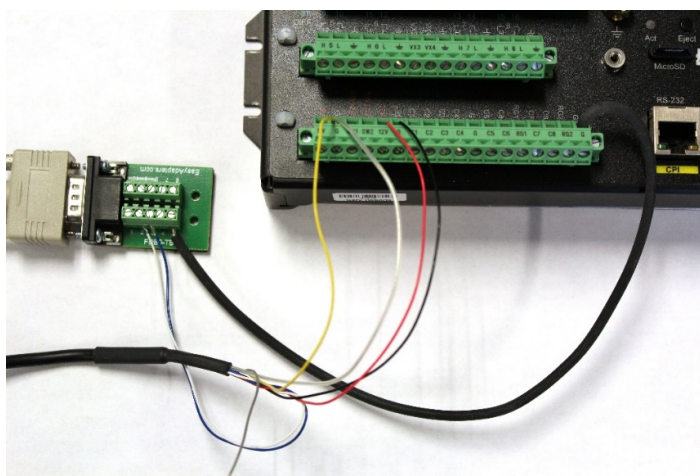


FIGURE 1. GPS16X-HSV connections for firmware update

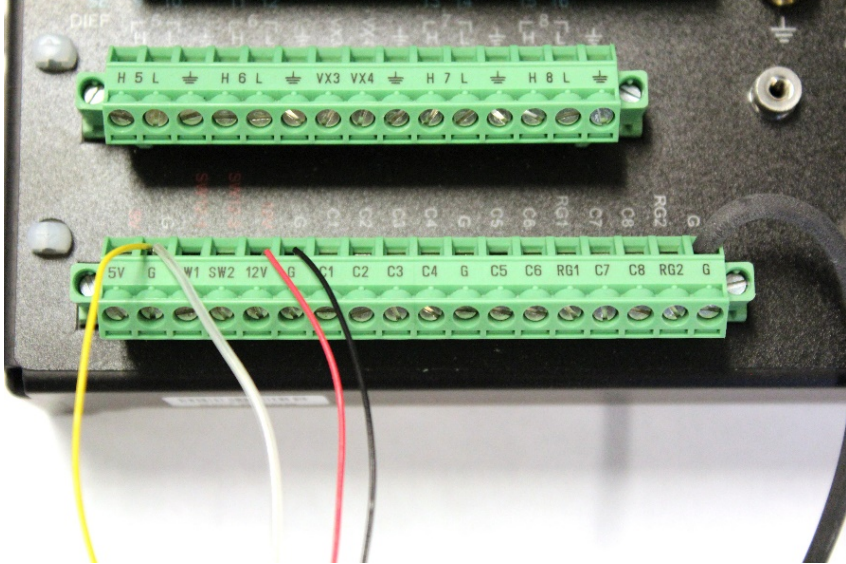


FIGURE 2. GPS16X-HSV connected to data logger

TABLE 1. Wire Color, Function, and Connections			
GPS16X-HVS Wire Color	Wire Function	Data logger Connection Terminal	Adapter Terminal
Yellow	Power ground	<b>G</b>	
Black	Power ground	<b>G</b>	
Clear	Shield	<b>G</b>	
Red	Power	<b>12V</b>	
White	TXD		<b>2</b>
Blue	Power ground		<b>3</b>
Gray	PPP	Not used	Not used
User-supplied wire		<b>G</b>	<b>5</b>

3. Connect the GPS16X-HVS to a computer RS-232 port by using a DB9-female-to-terminal adapter (see FIGURE 1, FIGURE 3, and TABLE 1). Alternatively, a DB9 female-to-pigtail adapter can be used but requires twisting wires together.

**NOTE**

If your computer does not have a common ground with the power supply, connect terminal 5 on the adapter to the power supply ground.

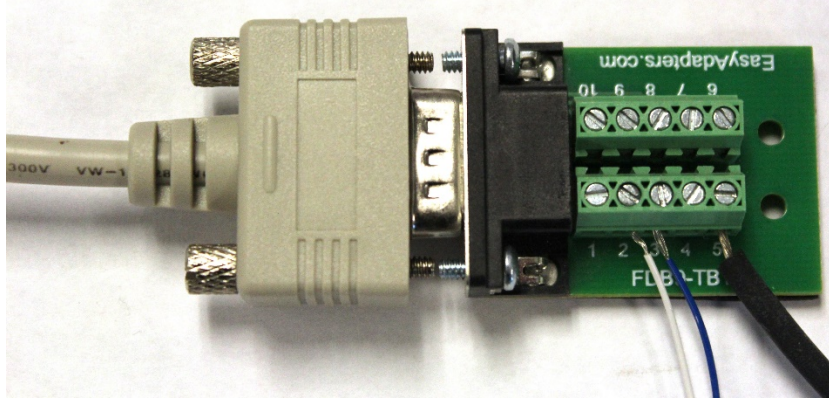
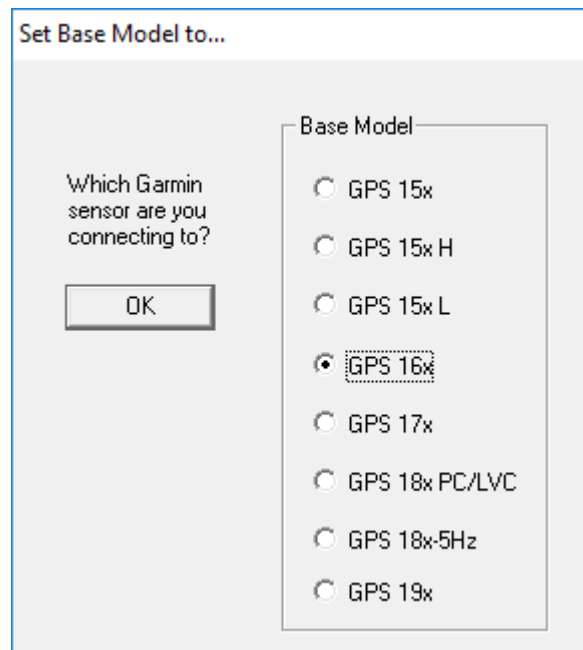
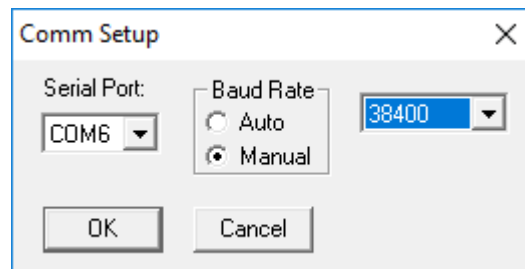


FIGURE 3. GPS16X-HSV connected to DB9 -female-to-terminal adapter

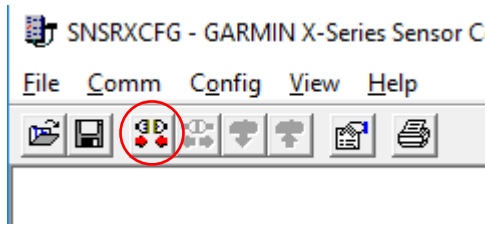
4. Open the SNSRXCFG software from Garmin. Select the correct base model as **GPS 16x** and click **OK**.



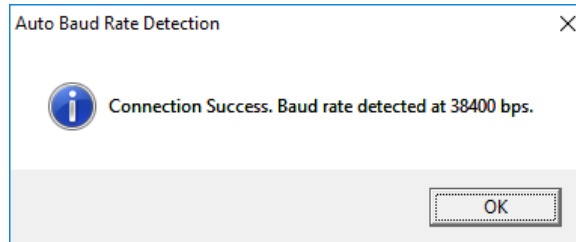
5. Within the SNSRXCFG software, open **Comm Setup**. Select the appropriate Serial Port number. The GPS16X-HVS is shipped from Campbell Scientific set to **38400** baud.



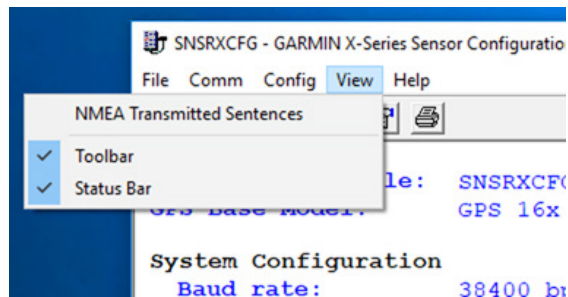
6. Click **OK** to close Comm Setup, then click the connect button.



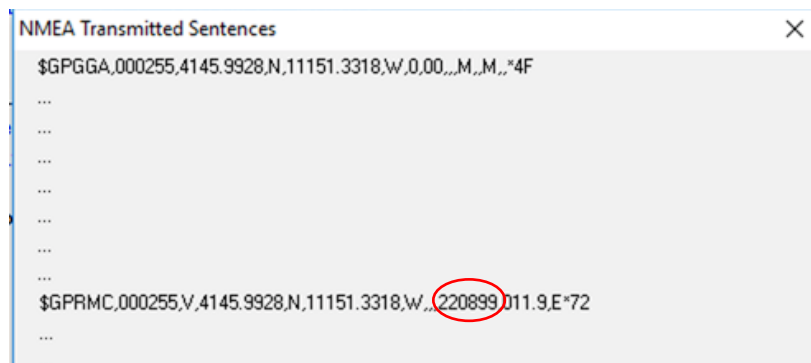
You should get a notification that connection was successful.



7. Place the GPS16X-HVS near a window without film or tint, or place the GPS16X-HVS outside with a clear view of the sky. Wait for at least 5 minutes while the GPS16X-HVS is powered.
8. With a successful connection, go to **View > NMEA Transmitted Sentences**.



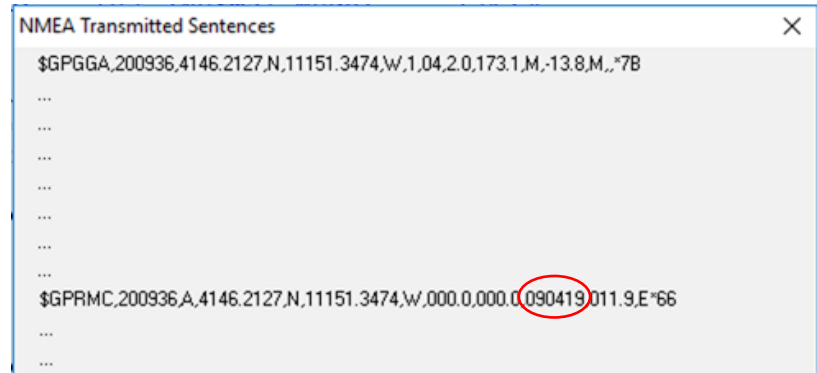
If the \$GPRMC date shows something other than the current date (following example shows 220899, which is the 22nd day of August 1999), it did not roll over, and you need to update the firmware by following the remaining steps in the procedure:



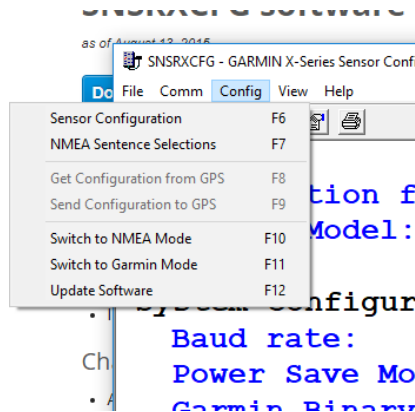
If the \$GPRMC date shows something similar to 090419 (9th day of April 2019), the GPS16X-HSV is working properly and you do not have to update the firmware.

**NOTE**

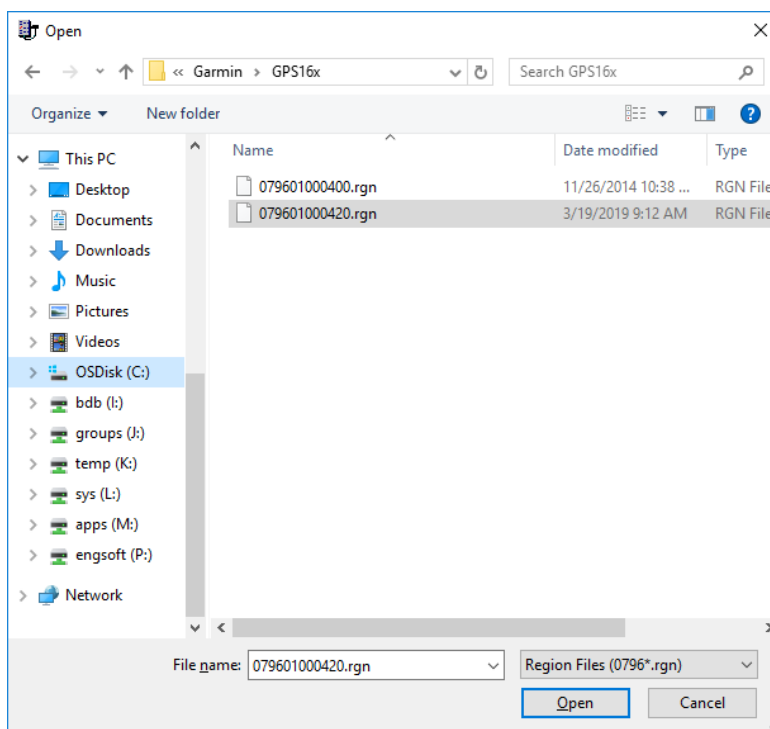
Campbell Scientific recommends that the user update the firmware to version 4.20 or better.



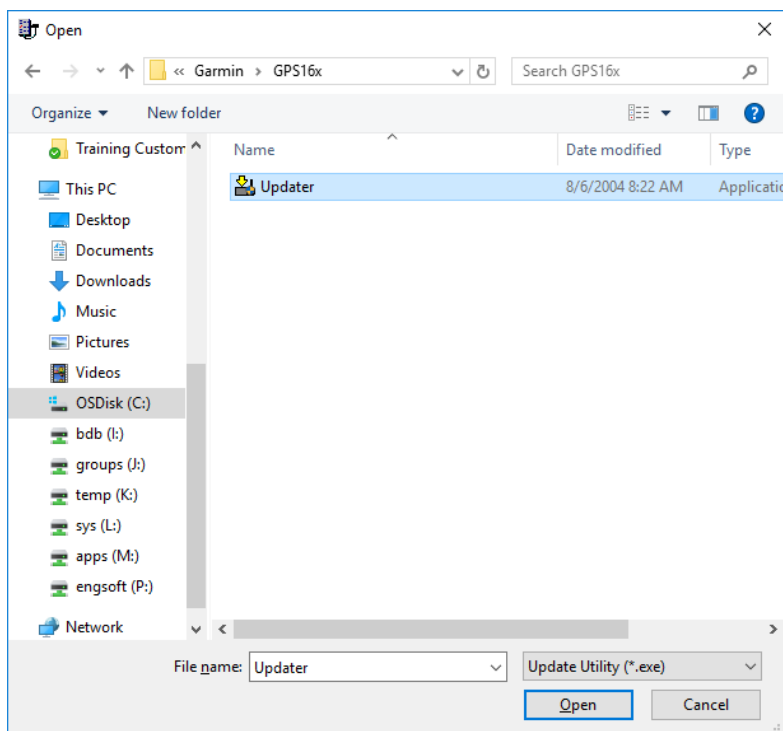
9. If you need to update the firmware, go to **Config > Update Software**.



10. Select the latest region file; version number is the last four digits. Last four digits of the file selected should be 0420 or higher. Click **Open**. The default folder where they are located is C:\Garmin\GPS16x.



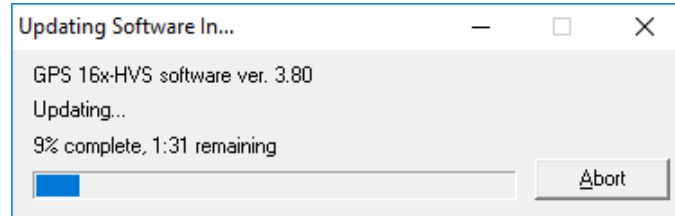
11. Open the Updater Utility.



You should get a progress screen such as the following. If it does not appear, the software failed to launch, but the GPS16X-HVS should be ready for update.

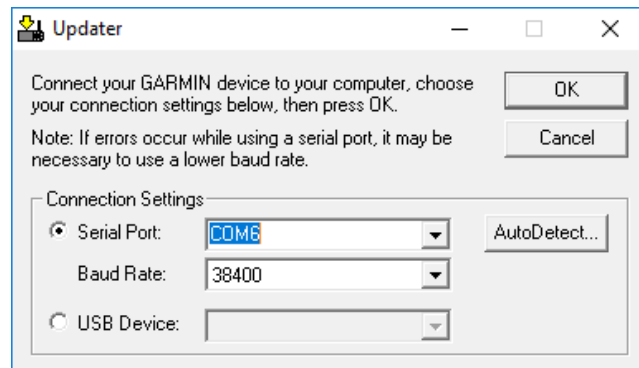
**NOTE**

The version listed in the progress screen is the firmware version that is currently in the GPS16X-HVS and not the firmware version to which it is being updated. This progress screen shows the GPS16X-HVS had version 3.80, which will be updated to version 4.20.

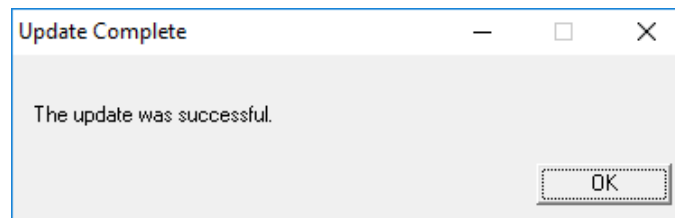
**WARNING**

**Interrupting the update process will render the GPS unusable and unrepairable.**

12. If the progress screen did not appear, open Updater by itself. Pick your serial port number and **38400** baud. The progress screen should then appear.

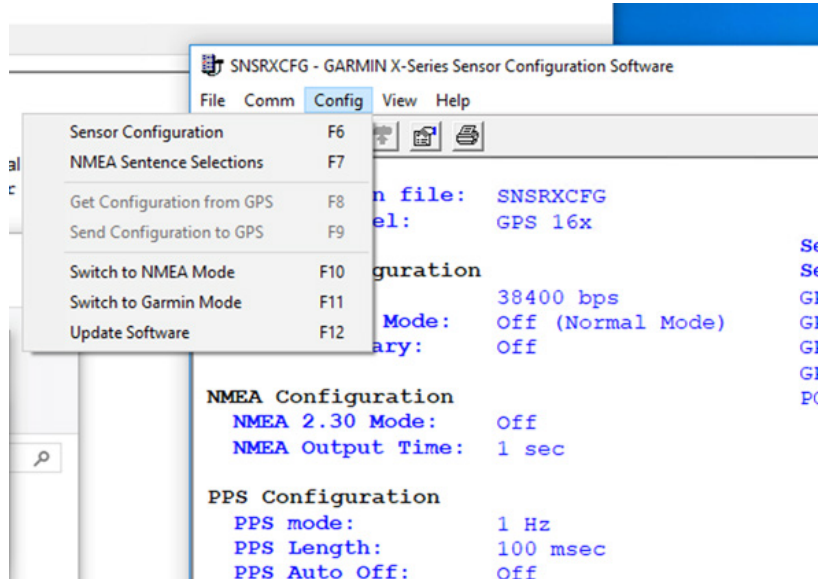


A confirmation message will appear when the process is complete.





13. Set the GPS16X-HVS back to the NMEA mode by going to **Config > Switch to NMEA Mode:**



14. Power off the GPS16X-HVS and reconnect it to the data logger. It should now function properly. After getting a GPS fix again, the data logger should set its clock to the correct GPS time.

**NOTE**

The GPS16X-HVS may not receive a fix while indoors. Placing the GPS16X-HSV on a window sill for 10 minutes, while powered, will often allow it to receive a fix.



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