

ProXR/XRS Firmware Upgrade

September 4, 2007

This document describes the new features included in the ProXR and ProXRS GPS Firmware. GPS Firmware can be checked on the ProXRS by going to your field software. In Terrasync, GPSCorrect, and GPS Controller, it can be found by going to Status/Receiver. If GPS Firmware is blank, connect to the GPS receiver using your field software and then check again. GPS Firmware upgrade instructions are at the end of this document.



Version 1.96 (August 2007)

Note – Pro XR receivers that have part number 29654-xx and Pro XRS receivers that have part number 33302-50 are not compatible with version 1.96 firmware and cannot be upgraded to this firmware version.

- Support for OmniSTAR's VBS2 broadcast formats.

OmniSTAR is in the process of changing their broadcast data formats to a new format – VBS2. This new format will be used on all differential satellite broadcasts in the future, and the old VBS format will be switched off. The version 1.96 firmware for GPS Pathfinder Pro XRS and Power receivers supports the new VBS2 format and is required to continue receiving OmniSTAR corrections once the switch to VBS2 is made. OmniSTAR has not yet set the exact time of this change.

- Support for new WAAS satellites.

The version 1.96 GPS firmware contains support for both new WAAS satellites (PRN 135 and 138). The new WAAS satellites are included in the default tracking list of receivers running the version 1.96 GPS firmware, allowing them to be tracked when using the *Auto* tracking mode in Trimble field software.

- Improved EGNOS tracking and reacquisition.

The version 1.96 GPS firmware contains updated EGNOS satellite information and tracking to improve initial fix and reacquisition times.

- Support for *Custom* SBAS tracking mode in Trimble field software.

This allows you to configure the receiver to track, or not to track, particular SBAS satellites. If you are planning on using the *Custom* SBAS tracking mode you need to download the latest SBAS.ini file. This can be found on the same download page as the GPS firmware.

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Version 1.70 (January 2003)

Note – Pro XR receivers that have part number 29654-xx and Pro XRS receivers that have part number 33302-50 are not compatible with version 1.70 firmware and cannot be upgraded to this firmware version.

- EGNOS real-time differential corrections

GPS Pathfinder Pro XR, Pro XRS, and Power receivers now feature support for EGNOS (European Geostationary Navigation Overlay Service) corrections.

- Improved WAAS DGPS yield

If the receiver is using WAAS differential corrections, and the WAAS signal is interrupted, corrections are now propagated until the configured real-time age limit is reached. This can improve DGPS yield when using WAAS corrections.

Version 1.52 (October 2001)

Note – Pro XR receivers with part number 29654-xx cannot be upgraded to version 1.52 firmware.

- Satellite use in dynamic applications

In some dynamic applications (moving while logging), receivers with previous firmware versions did not use all available satellites. This problem appeared in GPS Pathfinder Pro XR/XRS receivers with firmware version 1.42 and later, and in GPS Pathfinder Power receivers with firmware version 1.50. With the version 1.52 firmware, receivers can now use all available satellites. This change improves the accuracy of positions collected while moving. In particular, it improves accuracy in applications where you carry out dynamic GPS data collection while walking.

- WAAS Signal Tracking on GPS Pathfinder Power Receivers

A limited number of GPS Pathfinder Power receivers were not tracking the WAAS signal well enough to operate correctly. The version 1.52 firmware greatly improves WAAS signal tracking performance. Receivers that were already tracking WAAS are unaffected by this change.

- WAAS Accuracy

WAAS position accuracy was degraded for GPS Pathfinder receivers operating near or beyond the U.S. boundary. GPS Pathfinder receivers now have improved position accuracy performance when using the WAAS differential correction signal near or outside the U.S. mainland boundary.

- Racal Signal Processing

In areas of high ionospheric activity, GPS Pathfinder receivers had problems with Racal signal performance. Trimble receivers now have improved Racal signal processing of network correction messages.

- Racal Subscription Activation

In areas of high ionospheric activity, some GPS Pathfinder receivers were not activating correctly for the Racal differential signal service. Racal signal decoding has been improved, resulting in a normal activation sequence and faster activation.

NMEA GGA Messages

Firmware version 1.50 introduced a problem with NMEA output, in which the elevation reported in GGA messages was incorrect. Geoid separation is reported correctly in the version 1.52 firmware, resulting in a correct mean sea level elevation value.

UPGRADE PROCEDURE

This section describes how to upgrade to the version 1.96 firmware on your ProXRS series receiver.

1. Download and install the upgrade files.
2. Connect the receiver to an office computer.
3. Upgrade the firmware from the computer, using the upgrade files.

Step 1: Downloading and installing the firmware files

To download the upgrade firmware files:

1. Go to the Support area of the Trimble website (www.trimble.com/support.html).
2. Click the link for your receiver (GPS Pathfinder Pro XR or GPS Pathfinder Pro XRS).
3. Click Downloads.
4. Click the link to the version 1.96 firmware and save the download file to your computer.
5. The file that you download is a self-extracting zip file. To extract the files it contains, run the downloaded executable file from within Windows.

The following files are extracted by default to C:\Trimble, or to the folder that you specify:

- Two firmware files that have a .tnr extension
Use bt_196.tnr with GPS Pathfinder Pro XR and XRS receivers
Use ss_196.tnr with GPS Pathfinder Power receivers
- PFSys_196A_RelNotes_ENG.pdf (Firmware Release Notes)
- fl100v210.exe (the setup program for the FlashLoader100 version 2.10 software)

Note – *The FlashLoader100 version number is not related to the receiver firmware version.*

6. You must install the FlashLoader100 version 2.10 software before you can upgrade the receiver firmware. To install FlashLoader100, run fl100v210.exe from the folder you extracted the files to in Step e (see above), and then follow the instructions on the screen.

Step 2: Connecting the receiver to an office computer

1. Connect the GPS receiver to either the AC power adaptor or to the battery clip with fully charged batteries.
2. Connect the DE-9 connector on the field computer data cable to COM port 1 or COM port 2 on the computer.

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CAUTION – Pin 9 of the DE-9 connector on the receiver data/power cable is powered by the receiver at 12 volts DC with 1 amp capability. Before connecting this pin to the computer, refer to the documentation for the computer.

Step 3: Upgrading the receiver firmware

1. Run the FlashLoader100 software using one of the following methods:
 - Double-click the FlashLoader100 desktop icon.
 - Select FlashLoader100 from the Programs menu.

Note – By default, the software assumes that the receiver is connected to COM1 on the computer. To change this manually, select *Options / Settings* from the menu. Alternatively, click **Find Device** to let the FlashLoader100 software determine which port the receiver is connected to.

2. Select the *Upload firmware to receiver* check box.

A standard *File Open* dialog appears.

3. Navigate to the folder where you extracted the files that you downloaded from the Trimble website.

By default, the files are extracted to C:\Trimble on your computer.

4. Select the appropriate firmware (.tnr) file (see Step 5 on page 8) for your GPS receiver, and then click **Open**.

The FlashLoader software may take a few seconds to process this file.

5. Click **Proceed**. The upgrade starts.

The FlashLoader software connects to the receiver, transfers the firmware file, and then performs the upgrade. This will take several minutes.

6. When the process is complete, click the cross in the top right corner of the window to close the FlashLoader100 software.

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CAUTION – Do not turn off the computer, disconnect power to the receiver, or disconnect the cables between the computer and the receiver. Doing any of these interrupts the upgrade process and may cause the unit to require factory service.