RELEASE NOTES

Trimble® SPS Series Receivers

- Introduction
- New features and changes
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Release notice
This is the June 2011 release (Revision A) of the SPS Series Receivers Release Notes. It applies to version 4.42 firmware.

Notice to our European Union customers
For product recycling instructions and more information, please go to www.trimble.com/ewa.shtml.
Recycling in Europe: To recycle Trimble WEEE (Waste Electrical and Electronic Equipment, products that run on electrical power), Call +31 497 53 24 30, and ask for the “WEEE Associate”. Or, mail a request for recycling instructions to:
Trimble Europe BV
C/o Menlo Worldwide Logistics
Merheide 45
5521 DZ Eersel, NL
Introduction

These release notes describe improvements made to the following Trimble® SPS Series receivers:

- SPSx50, SPSx51, and SPSx52 Modular GPS receivers
- SPSx61 Modular Heading GPS receivers
- SPS882 Smart GPS antennas
- Fugro 9205 GNSS Modular receiver

With this release, all the above products can use version 4.42 firmware. To use firmware version 4.42, you must have a valid firmware warranty.

To load this firmware, the firmware warranty date of the receiver must be April 2011 or later. If necessary, contact your Trimble dealer to purchase a warranty.

Before you upgrade the firmware, Trimble recommends that you download and back up any files that are on the receiver.

Upgrading an SPS GNSS receiver

There are two ways to load the new firmware. In both cases, ensure that the receiver warranty date is April 2011 or later. Then:

- If using the WinFlash utility, use the latest version that is available with the version 4.42 web package.
- If using the receiver web interface to load the TIMG file, ensure that the receiver is already running version 3.71 or later before starting this installation. Version 3.71 is on the Trimble Support website.

Note – If you have a receiver with firmware earlier than version 3.60, first load version 3.60 and then load version 3.71 before loading version 4.42. If required, contact your Trimble dealer to obtain version 3.60.
If your Trimble receiver is supplied with additional Trimble firmware or software products, make sure that those products are upgraded to the latest version. For more information about upgrading, refer to the release notes for the products.

Use the following table to verify if you need to update the firmware for your receivers:

<table>
<thead>
<tr>
<th>Product/Feature</th>
<th>Firmware upgrade?</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPSx52</td>
<td>Recommended</td>
</tr>
<tr>
<td>SPSx50/SPSx51</td>
<td>Recommended</td>
</tr>
<tr>
<td>SPS882</td>
<td>Suggested</td>
</tr>
<tr>
<td>SPSx81/SPSx80</td>
<td>Not available</td>
</tr>
<tr>
<td>SPSx61</td>
<td>Recommended</td>
</tr>
<tr>
<td>Trimble Survey Controller™ software</td>
<td>Not required</td>
</tr>
<tr>
<td>SCS900 software</td>
<td>Suggested</td>
</tr>
<tr>
<td>OmniSTAR</td>
<td>Suggested</td>
</tr>
<tr>
<td>Beacon</td>
<td>Suggested</td>
</tr>
<tr>
<td>VRS™ system</td>
<td>Not required</td>
</tr>
<tr>
<td>IBSS (Internet Base Station Service) support</td>
<td>Recommended</td>
</tr>
<tr>
<td>Marine</td>
<td>Recommended</td>
</tr>
<tr>
<td>OEM Integrator</td>
<td>Suggested</td>
</tr>
</tbody>
</table>

New features and changes

This section documents the new features and changes since version 4.19.

**SPS Modular GNSS receivers only**

- The antenna database has been updated to include more Trimble and third-party antennas.
- Email alerts from the receiver can now be sent to multiple addresses by using a comma separated list.
• The receiver now supports three instances of the NTripClient (visible in the I/O Configuration page in the web interface).

• You can now log the receiver into the Connected Community™ website from the Network Configuration / Configure TCC menu. The login to the Connection Community is needed if you are using the Internet Base Station Service (IBSS). This release of firmware also allows for other functions such as sending receiver positions to the TCC Visual Organizer.

• The new menu items are Push Positions to TCC and the Period (the interval in seconds that you want to send the position of the receiver to the Connected Community).

Correction messages

• An issue in the I/O Configuration page of the web interface is now fixed so that all received corrections sources now appear. The correction source currently in use is shown in bolder text.

• Base station IDs in RTCM 3.0 can now be greater than 1023. The NMEA GGA and GNS reference station ID fields were previously null if the ID was greater than 1023.

• RTCM is now output when enabled from the web interface in legacy SPS751 2 Hz data rate receivers.

• The SCS900 software can now configure an SPS modular base station as an IBSS base station.

• A rare issue when decoding multiple CMRx messages in the same stream when using UHF radio repeaters is now resolved.

Correction controls rules manager

A correction controls rules manager is now available in the web interface. Select Receiver Configuration / Correction Controls. Use this page to manage the use of incoming RTK and DGNSS correction streams. If you are receiving more than one correction stream or the
same stream on different channels (such as radio, serial port, and ethernet), you can choose to switch from one to another based on predefined criteria.

The receiver always attempts to use the most precise positioning solution by using the following correction types in order:

1. RTK.
3. Differential (DGPS, DGNSS).
4. OmniSTAR VBS.
5. Beacon DGPS.
6. SBAS.
7. Autonomous.

The correction streams are grouped into three categories according to how they will be processed:

- RTK
- DGNSS
- OmniSTAR

If there are multiple correction streams within any one of the three categories, the selection is made by the following rules in order:

1. Use the CMR Input Filter and RTCM Input Filter
2. Use the user defined Correction Controls
3. If the category is RTK, use CMRx over CMR+™ over RTCM 3 over RTCM 2 (RTK).
4. If streams are of the same types use the lowest RefStnId.
5. If the sources are identical remain with the currently used channel:

![Correction Controls](image)

**User Interface**

- Czech and Portuguese language support are now available for the front panel of the receiver. Portuguese support is now available in the web interface.

- The graphing pages in the web interface (for example, *Satellites / Tracking (Graph)*) have been improved and have a common look irrespective of the web browser used.

- A satellite rise/set graph has been added in to the web interface. You can set the current location, a nearby city, or a specific location by latitude and longitude.
• It is now easier to check the operating mode of the SPS receiver. An Accuracy Mode Summary table has been added to the two line display of the SPS Modular receiver as well as in the web interface (Receiver Status / Receiver Options):

<table>
<thead>
<tr>
<th>Description</th>
<th>SPS351</th>
<th>SPS852</th>
<th>SPS882</th>
<th>SPSx61</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base options:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>DGNSS</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTK</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rover accuracy modes:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1 Only</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRTK 30/30</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>LRTK 10/10</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>LRTK 10/2</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>RTK</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>
The following example shows that the receiver can operate in Precision RTK rover mode, but cannot operate in any static Base Station mode. If the receiver is required for base station operation, you must purchase the option from your local Trimble authorized dealer.

- For receivers that support Heading, the SPS Modular receivers now implement the Vector Status page in the web interface. Select Receiver Status / Vector - Heading Display. The page provides a graphical display of the heading.
SPS Modular and Smart GNSS receivers

General

- Ongoing improvements have been made to the RTK engine to improve the robustness of the Precision RTK solution. The signal processing acquisition and reacquisition firmware is also improved. The signal processing is improved to track lower power signals.

- The Autonomous/Differential Engine can now be set to Kalman or Least Squares:

  ![Autonomous/Differential Engine]

  Trimble recommends that you select the default Kalman setting, which means that Autonomous or Differential positions are more reliable in a rover receiver when there are signal dropouts around bridges or high buildings. The Kalman setting improves positioning performance around forested areas both when the receiver is hand-carried or used in a vehicle. This setting has no impact when using precision RTK positioning.

- Introduction of the QZSS satellite system support. Presently the QZSS system is set unhealthy. When it is set to healthy, this firmware allows its use in the autonomous and SBAS solution.

Input/Output

- New GSOF message – The ability to load a calibration file (DC or CAL file) for local coordinates using the Application Files menu has been available for a while and the NMEA PJK output has been used to provide the local site positions to application software. To complete this feature, Trimble has introduced the binary GSOF equivalent to the GSOF PJK message.

- An updated magnetic data model that is used to transform True Heading to Magnetic Heading is now available for NMEA output messages.
• For SPS receivers with data logging enabled:
  – T02 file format is now supported, which provides increased compression relative to the older T01 file; now more epochs of data can be logged per MB of memory.

  More information is in the place markers when T02 data is converted on download to Google Earth in Lines and Points format.

  – If users are converting T02 files to RINEX files on download from the receiver, there is now a Receiver field to set the observer and agency RINEX header fields.