GNSS OEM Receivers

This document contains late-breaking product information, updates, and troubleshooting tips not covered in the Trimble® GNSS OEM receivers' documentation.

Introduction

These release notes describe improvements made since version 5.66/6.28.

With this release, Trimble is making available two versions of the firmware, 5.68 and 6.28. The 6.28 firmware includes the ProPoint® RTK/Trimble RTX® engine. Only receivers that have the ProPoint option installed can load 6.xx firmware. Listed below are the Trimble GNSS OEM receivers that these release notes apply to and the firmware that can be loaded.

Receiver	Firmware version	
	5.68	6.28 ProPoint (upgrade may be required [1])
BD9250 / BD9250s	×	✓
BD940	✓	✓
BD940-INS	✓	✓
BX940	✓	✓
AX940 / AX940i [2]	×	✓
BD970	✓	×
BD982	✓	×
BX982	✓	×
BD992	✓	✓
BD992-INS	✓	✓
BX992	✓	✓

[1] Upgrade steps if the receiver was not purchased with the ProPoint option and does not have the ProPoint option installed: (a) Ensure that firmware version 5.46 or later is loaded in the receiver. (b) Install the purchased ProPoint option key password provided by the support team. (c) Install the ProPoint 6.XX firmware.

[2] All AX940 / AX940i and BD9250 / BD9250s receivers use the 6.XX firmware and do not require an upgrade to install 6.28.

To use the new firmware, you must have a valid firmware warranty. You can check the Firmware Warranty Date using the web interface. Make sure the date shown is 1 December 2022 or later to load firmware 5.68 and 1 September 2023 to load firmware 6.28. Alternatively, obtain the warranty date from the WinFlash software. Select **Verify receiver options** and ensure the **Firmware Option** is 1 December 2022 or later to load firmware 5.68 and 1 September 2023 to load firmware 6.28.

Note: Additional support information can be found at https://oemgnss.trimble.com/support/.

Upgrade procedure

There are two ways to load the new firmware:

- Use the WinFlash utility (BD9xx WinFlash V563V623.exe) downloaded from the Trimble website.
- Use the web interface of the receiver to load the firmware image file downloaded from the Trimble website.

Note: Additional help on upgrading can be found at https://tinyurl.com/mrxr5sz6.

New features and changes between versions 5.66 and 5.68

The following improvements have been made to the GNSS OEM receivers since version 5.66:

General improvements

- Updated OmniSTAR HP library to 8.45
- RT27 message will now output secondary signals if the L1 signal is jammed but tracking continues with other signals on the same satellite.
- Improvements to prioritize RTX streams received over NTRIP versus MSS.
- Improvements to BeiDou CNAV handling.
- Improvements to onboard RINEX converter
- Added RINEX 4.01 support
- General system performance improvements

New features and changes for ProPoint receivers between firmware versions 6.26 and 6.28

All features listed in the section New features and changes between versions 5.66 and 5.68 on page 2 also apply to version 6.28 of the ProPoint firmware unless noted otherwise. In addition, the following improvements have been made to the Trimble GNSS OEM ProPoint receivers since version 6.26:

General improvements

- Added support for Galileo High Accuracy Service (HAS).

  Note: Galileo HAS has reached service level 1, which means "reduced coverage and performance with respect to the Full Service". For example, the phase biases are still missing in the correction stream. Currently, Trimble cannot guarantee the convergence time specification at least until phase biases are provided. For more information, refer to https://www.gsc-europa.eu/galileo/services/galileo-high-accuracy-service-has.

  Note: Only receivers shipped with 6.28 ProPoint firmware or later have CLAS and HAS options enabled. For operation on ProPoint receivers shipping or shipped with lower versions, contact your Trimble sales manager for a no-charge upgrade.

- Improvements to Trimble IonoGuard. The goal of these changes is to make IonoGuard available by default in the situations where it provides value with minimal risks. The primary risk is very poor base station location. For safety, IonoGuard can be disabled if required. New mode selection and default setting. The following modes are now available:

  - **Disabled** – The receiver will not perform any IonoGuard processing.
  - **Enabled without Fallback Mode** – [Default] If the base station has IonoGuard enabled. Ionospheric disturbance detection runs at the base, and the disturbance information is sent to the rover receiver via RTCM/sCMRx messages. If the base station does not have IonoGuard enabled, then IonoGuard is disabled at the rover.
  - **Enabled with Fallback Mode** – If the base station does not have IonoGuard enabled, the rover will perform Ionospheric disturbance detection when the data received from the base station does not include IonoGuard messages.

Fallback mode allows the rover to calculate IonoGuard positions without receiving IonoGuard messages from the base. With **Enable without Fallback** mode, IonoGuard positions are only calculated if the base is transmitting IonoGuard messages. To prevent spikes in the radio throughput due to IonoGuard messaging, the messages are now transmitted over several epochs to smooth the bandwidth usage.

- ○ Added support for RTX IonoGuard. Coverage maps

- ITRF Realization epoch can be set to apply tectonic plate motion to RTX / HAS / CLAS for fixed epoch positioning.
- Fixes to Wide and Narrow Signal Tracking Bandwidth so that these are allowed and maintained through reboots with the intended dynamic models.
- Improvement to the age of correction output, this now reflects when corrections have been received.
- Improvements to QZSS L6D & L6D+ tracking.

Documentation updates

The latest documentation can be found online at https://oemgnss.trimble.com/support/.