



GNSS Firmware v4.8

Release Notes

May 2020

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Supported Products

Systems

- Topcon HiPer SR, GR-5¹, HiPer V, HiPer II, GRS-1, Net-G3A, MR-1, MC-i3, and MC-i4
- Sokkia GSX2, GCX2, GRX2, GRX1, and GHX2 (Mesa RTK)

OEM Boards

- B110, OEM-1, Euro 112PII

Features and Changes

- Incorporates all changes from previous releases (4.7p6, 4.7p7, 4.7p8 and 4.7p10)
- Tuning of DION, Velocity filters, VISOR convergence, Satellite acquisition and tracking algorithms
- Tuning of default values for positioning engine:
 - minimum SNR values for GPS and GLONASS L2 signals in RTK changed to 15
 - PDOP mask changed to 20
 - Minimum number of satellites changed to 6
 - Ambiguity fixing level set to extralow
 - Doppler smoothing filter parameter extended to 100 Hz
 - Default value for pos/dion/switch changed to on
- Message improvements:
 - New extended [Lh] message added to support all constellations (based on original [LH] message)
 - Extended [ha] message to include HRMS and PRMS values
 - Fixed output of [LE], [LA] and [WO] messages
 - Fixed output of wsmcnt parameter
- Increased acquisition of GPS L2C signal
- Performance using 100 Hz position update rate improved (applies to specific configurations with OEM boards only)
- Support for Satellite Status Code 61
- Enhanced satellite reacquisition in cases of antenna shadowing
- Fixed reporting of battery information (HiPer SR only)
- Updated Antenna database
- Fixed UDP data transfer protocol (Net-G3A)
- Improved logic to update base data when reference station changed
- Fixed issue with loss of RTK fixed solution after correction type change when using AIM mode.
- Improved acquisition time for GLONASS signals

¹ GR-5 with Vanguard technology now supported by FW 5.1p1 and later.

Features and Changes from Previous Releases

Changes introduced in 4.7p10

- Fix for BINEX output after GPS week rollover (Net-G3A only)
- Improved firmware performance during leap second and GPS week rollover events.

Changes introduced in 4.7p8² (released for Topcon HiPer SR, B110 OEM, Sokkia GSX2, Sokkia GCX2 only)

- Optimized internal memory usage and processor loading for B110 based receivers
- Added protections during firmware installation which restricts installation of firmware on incompatible B110 based hardware.³

Changes introduced in 4.7p7⁴ (released for Topcon BX10 OEM, MC-i4 (BX10), MC-i3 only)

- Improved data backup to memory during receiver reset (HiPer V & GRX2). Also requires installation of Mainboard Firmware v2.3.
- Optimized internal memory usage and processor loading for BX10 based receivers.
- Added protections during firmware installation which restricts installation of firmware on incompatible BX10 based hardware.⁵

Changes introduced in 4.7p6 (released for Topcon OEM-1, MR-1, Euro112PII, Net-G3A only)

- Improved firmware performance during Leap Second and GPS Week Rollover events.
- DION improvements to fix behavior when NTRIP corrections received
- RMS error improvements in Stand-alone and Code Differential engines, as well as for velocities in RTK mode.
- Output of full covariance matrix (SP, SV, AP messages) is enabled for all solution modes.
- Added support for use of mixture of corrections for GPS L2C and GPS P2 simultaneously in RTK.
- Fixed "QZSS L2C quarter cycle" issue when working with non-Topcon bases.
- Improved GLONASS tracking when not visible parameter status is changed.
- PI message was updated to include mmGPS solution indicators.
- New antenna data base version 2.3.6 has been supported.
- New classes are introduced for Trimble, Novatel and Sokkia receivers in order to better handle for GLONASS biases in positioning solution:
 - TPS - for all Topcon receivers
 - JPS - for Javad receivers
 - ASHTECH - for Ashtech receivers
 - SOK - for legacy Sokkia receivers
 - SKA - for Topcon/Sokkia receivers - new class
 - SEPT - for Septentrio receivers
 - MAGELLAN - for Magellan receivers
 - NOV - for Novatel with old firmware (approximately - prior September 2016)

² Please see 4.7p8 Release Notes for complete information and compatibility notes.

³ If an incompatibility between B110 based firmware and hardware is identified during installation, the process will be stopped automatically. A power reset will return the receiver to its previous state.

⁴ Please see 4.7p7 Release Notes for complete information and compatibility notes.

⁵ If an incompatibility between BX10 based firmware and hardware is identified during installation, the process will be stopped automatically. A power reset will return the receiver to its previous state.

- 2NOV - for Novatel with new firmware (approximately - after September 2016) - new class
- LEICA - for Leica receivers
- TRIMBLE - for Trimble receivers with old firmware (approximately - older than 5.11 of 2016)
- 2TRIMBLE - for Trimble receivers with new firmware (approximately - 5.11 of 2016 and newer) - new class
- OTHER - for other receivers
- UNKNOWN - if receiver is unknown