



# GNSS Firmware v5.5

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## Release Notes

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## Supported Products

### *Systems*

- Topcon NET-G5, HiPer HR, HiPer VR, MR-2, GR-5<sup>1</sup>, AGM-1, AGS-2<sup>2</sup>, GR-i3<sup>3</sup>
- Sokkia GNR5, GRX3, GCX3

### *OEM*

- Topcon B111, B111A, B125, B210

## Accompanying Topcon Software and Firmware

- To access all new features and improved functionality available in GNSS Firmware 5.5 the following Topcon software versions (or later) are recommended:
  - TRU v3.6.1
  - MAGNET v7.3.1
- BLE Firmware v1.8 (HiPer VR, GRX3)

## Features and Changes

### Signal tracking

- General
  - Improved initiation of signal tracking process for receiver configurations without backup battery
- BeiDou
  - BDS B1C signal support including tracking, raw measurement generation, raw data output, positioning, correction messages (GCX3)
  - Extended BDS B1C & B2A correction message support (BINEX, RTCM3)
  - New BDS-3 B2b signal support including tracking, raw measurement generation, raw data output, positioning, correction messages
  - Add BDS support for PRNs 59 - 63 including tracking, measurement generation, raw data output, standalone positioning
- GALILEO
  - Output of GAL I/NAV and F/NAV signals
- GPS/QZSS
  - GPS L1C signal support including tracking, raw measurement generation, raw data output, positioning, correction messages (GCX3, B111, B111A)

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<sup>1</sup> GR-5 with Vanguard Technology.

<sup>2</sup> Features available through AGS-2 firmware bundle release only; distributed with Horizon software updates

<sup>3</sup> Includes all GR-i3 receiver variants

- QZSS
  - QZSS L1C signal support including tracking, raw measurement generation, raw data output, positioning, correction messages (GCX3, B111, B111A)
  - QZSS L1C/B signal support including tracking, measurement generation, raw data output, standalone positioning, correction messages
  - Enable tracking of all QZSS PRNs by default
  - QZSS L6 signal tracking improvements
  - Improvements for handling unhealthy QZSS satellites
- GLONASS
  - GLONASS L3 signal support including tracking, measurement generation, raw data output, standalone positioning, correction messages (GR-5)
  - Option added to control GLONASS L3 signal tracking (OAF)
- SBAS
  - Improved acquisition time for WAAS satellites
  - Update to identify QZSS -SAIF satellites under SBAS type (previously GPS)
- General
  - Improved signal acquisition after receiver cold start
  - Extended Automatic Gain Control (AGC) implementation to support 'in-field' calibration<sup>4</sup>
  - Autonomous GNSS signal tracking for better SNR & positioning performance in moderate levels of interference

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#### Positioning

- Galileo only positioning mode (NET-G5, HiPer HR, HiPer VR, MR-2, GR-5, GNR5, GRX3, B125, B210)
- Improve RTK performance & stability after correction type change
- New mode that reduces probability of RTK position outliers which is beneficial when working with longer baselines (enabled automatically for baselines > 100 km)
- New feature for detecting and alerting users to base station movement
- StarPoint NTRIP correction services support (GCX3, B111 OEM, B111A OEM)
- New Baseline Seeding feature for Skybridge PPP that improves convergence and position quality
- Extended PPP configuration settings for improved performance
- DGNS positioning improvements

#### Data rates

- 100 Hz GPS + GLONASS dual frequency RTK positioning (B210)
- 20 Hz GPS + GLONASS + Galileo + BeiDou dual frequency RTK positioning
- Improved 100 Hz raw data logging to SD card when using CSD profiles (Net-G5 with def2 data set)

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<sup>4</sup> Calibration settings available in Topcon Field software

## Message input/output

- Smart correction output for RTCM3 corrections<sup>5</sup>
- Support for encrypted RTCM input streams (OAF required)
- [ID] message update to support GPS, GLO, BDS, GAL and include RMS error for estimated delays
- Fix BINEX 7F-05 message for GLONASS frequency number (FCN)
- NMEA message improvements including & improved behavior when setting time validity flag in NMEA messages
- RTCM3 MSM message improvements & bug fixes
- Transmission of receiver serial number added to RTCM3 messages (1033)
- Removed required restart action when switching input mode on serial ports C or D (AGS-2, B111, B125, B210)
- Fix bug with DGNS RTCM3 when input mode is auto
- Improved resynchronization after corruptions and data loss with incoming RTCM3 corrections

## File System

- Improved media activation on receiver start-up
- Automatic mounting of media to host PC when connecting via USB<sup>6</sup> (HiPer VR, GRX3, HiPer HR)
- Long file path support (up to 128 characters)
- Improved file system functionality when working with long file names
- Extended support for special characters in file system names
- Increased maximum file size from 2GB to 4GB (HiPer VR, HiPer HR, Net-G5)
- New Quota support (HiPer VR)

## Networking

- New Email Notification Support (HiPer VR)
- New IPv6 support (TCP)
- New IP discovery protocol
- Ability to connect to NTRIP client with computer name
- Automatic restart of NTRIP process when using cellular connection (Net-G5, HiPer HR, GNR5)
- Update default NTRIP Caster names for HiPer HR (“HIPER HR”) and GNR5 (“GNR5”) receivers
- Removed required receiver restart to activation of FTP Push functionality
- Improvements to FTP push for Google Cloud FTP Service
- Support ability to customize port for FTP Push (non-Linux receivers)
- Improve DTP performance for large data package delivery
- Improved UDP performance for large data transfers
- Support of UDP for getting Differential corrections (non-Linux receivers)
- Automatic reconnection of WiFi connections

## Timing Functionality

- High-accuracy time synchronization with an external device (OAF required) (Net-G5 only)
- Improve synchronization of UTC time between receiver processors

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<sup>5</sup> Requires Topcon software supporting this feature

<sup>6</sup> Must eject media from PC if accessing through TRU or SRU

AGM-1 receiver enhancements:

- Sleep mode support
- LED indicator during firmware upgrades

General

- Fix issue with Bluetooth and Radio turning during with receiver start up (GR-5)
- Fixed compatibility issue between GNSS Firmware and Topcon Machine Control field software when using CMR corrections and setting that controls minimal distance between reference stations
- Improved support for 10 second Parameter Reset and 30 second Factory Reset options (HiPer VR, HiPer HR, GCX3)
- TEAM option support (GCX3, AGM-1, MR-2)
- Support for virtual serial port to allow connection via USB<sup>7</sup> (GCX3, B111 OEM)

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<sup>7</sup> Requires driver update available with TRU and SRU 3.6.1 installation or download from myTopcon or Sokkia Care