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Beta Software Release Notice

V4.0.5 Software Ensemble for
Sapphire, SF-3040, and SF-3050

Introduction

This software build will only function in the Sapphire GNSS engine, SF-3040, and the SF-3050.

Important Notes

Update the receiver with a consistent ensemble of software and to use only the latest versions of the StarUtil program included in this release.

Power cycle the receiver or issue [SHUTDOWN]REBOOT after installing the software.

Always install the new software and software options/licenses with the antenna connected and an area where the receiver can track satellites.

The receiver controller software may need updating to function properly with this new release and to enable some of the new features.

StarFire Type 14 message usage is prohibited in this release and forces the receiver to the new StarFire signal structure which will go into production mid-summer 2020.

New Messages and Features

- Tracks new StarFire signals

- Implements GPS P-code retirement strategy

Ensemble Data Management

Create a new folder for this ensemble. This will ensure that: 1) all of the correct software is in one location, 2) there is no mixing of old and new software, and 3) it affords the ability to revert to the previous version.

Software "ZIP" File Contents

Two versions of firmware are now available: a Unified File Load, which is designed to ease the upgrade process (and is described in the accompanying Quick Start Guide);

and an Individual File load, which is assembled using the former loading method (refer to the StarUtil 3000 Users Guide for instructions.

The Unified File Load "**ZIP**" file includes the following:

Program	Version/Date	Comments
SP_UFL_ v4.0.5.s19	Version 4.0.5	Unified File Load (Navigation and PIO board SW)
navcomx1c45x3040.inf	Dated 03 Sep 2011	Windows XP SF-3040 USB port driver
navcomx1c45x3050.inf	Dated 02 May 2009	Windows XP SF-3050 USB port driver
StarUtil-3000_v1.2.38.exe	Version 1.2.38	StarUtil program – Sapphire models
RinexUtilV3.9.3.exe	Version 3.9.3	RINEX conversion utility
chartdir41.dll	Rev A	Character map for StarUtil Program

Please note that RinexUtil which has always been supplied separately, is now embedded within the StarUtil3000 program under the "Post Processing" window view.
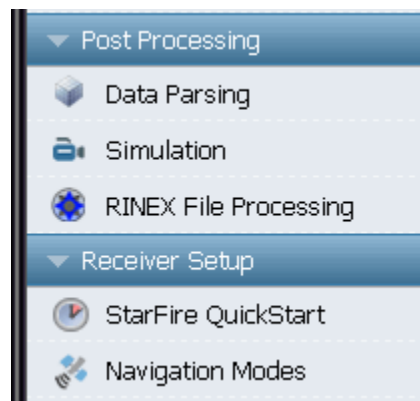
Documentation

The Technical Reference Manual, Product User Guides, Quick Start Guide, and the StarUtil User Guide have been revised with changes for this release. The latest versions of the Product User Guides, StarUtil User Guide, and Technical Reference Manual will be available on the NavCom's web site once the software is officially released.

Manual	Part Number	Revision	Description
Release Notes v4.0.5 Ensemble.PDF	Dated Sep 2020	n/a	Description of improvements and bug fixes (This document)
Readme.TXT	Dated Sep 2020	n/a	Update instructions and a list of files
StarUtil User Guide.pdf	96-310029-3001	Rev H	Describes the Graphical User Interface
SF-3050 Quick Start Guide	96-310033-3001	Rev F	Describes first steps to operating a new receiver
SF-3050 Product User Guide.pdf	96-310034-3001	Rev J	Describes the GNSS receiver capabilities and specification

SF-3040 Quick Start Guide	96-310035-3001	Rev C	Describes first steps to operating a new receiver
SF-3040 Product User Guide.pdf	96-310036-3001	Rev F	Describes the GNSS receiver capabilities and specification
Land-Pak Quick Start Guide	96-310039-3001	Rev E	Describes first steps to operating a new receiver
Land-Pak User Guide	96-310038-3001	Rev G	Describes the GNSS receiver capabilities and specification
Technical Reference Manual.pdf	96-312007-3001	Rev O	Describes the command and response data structure
RinexInstructions.txt	May 2015	n/a	RinexUtility Instructions

Software Changes/Improvements

The following sections describe the changes and improvements to each of the software modules included in the ensemble.

GNSS Engine Software

This GNSS Engine release of software provides the following list of changes, improvements, and features incorporated since the previous formal release of v3.6.14.0 (all products unless otherwise noted):

V4.0.5:

- Added StarFire Type 16-20 message formats; removed Type 10 & 14 formats
- Removed STARFIREMODE feature
- Added GPS P-code retirement logic
  - CMR/CMR+ correction format is not compatible with the new GPS signal structures and will fail to function when the receiver has less than 5 P-code signals in use
- Updated support for NCT62 RTK format
- Updated support for NCT62 MBRTK format
- Resolved NMEA TTM zero velocity issue
- Resolved NMEA VTG and RMS 360/0-degree reporting issue
- Resolved NCT x59 secure base reporting issue
- Updated internal supported antenna list
- Resolved an RTCM 3 rover RTK implementation found in v4.0.2
- Resolved an RTK-X timing issue found in v4.0.2
- Resolved a StarFire Channel Number reporting issue found in v4.0.2
- Updated the default GNSS almanac
- Updated the default StarFire™ almanac

GNSS Engine Bootloader1

This GPS Engine Bootloader release of software provides the following list of changes, improvements, and features incorporated since the previous formal release of v2.1.4 (all products unless otherwise noted):

V2.1.4:

- No Changes

GNSS Engine Bootloader2

This GPS Engine Bootloader release of software provides the following list of changes, improvements, and features incorporated since the previous formal release of v2.1.6 (all products unless otherwise noted):

V2.1.6:

- No Changes

Power I/O Board Software (SF-3050/SF-3040)

This PIOB release of software provides the following list of changes, improvements, and features incorporated since the previous formal release of v3.6.14.0:

V4.0.5:

- Added RADIOTYPE command for Deere Shared Base feature

Power I/O Board Bootloader Software (SF-3050)

This PIOB release of software provides the following list of changes, improvements, and features incorporated since the previous formal release of v2.3.1.0:

V2.3.1.0:

- No Changes

Power I/O Board Bootloader Software (SF-3040)

This PIOB release of software provides the following list of changes, improvements, and features incorporated since the previous formal release of v2.1.4.0:

V2.1.4.0:

- No Changes

Webpages

This Webpages release of software provides the following list of changes, improvements, and features incorporated since the previous formal release of v3.6.14.0:

V4.0.5:

- Resolved an error for: Help page url links results in 'page not found'

- Updated RTK Mode - Base dropdown list

- Resolved an error for: View / Load Profile - Profile not saved to receiver or laptop

- Resolved an error for: View / Load Profile - Profile not loaded from laptop

StarUtil 3000 Software

This StarUtil release of software provides the following list of changes, improvements, and features incorporated since the previous formal release of v1.2.38:

V1.2.38

- No Changes

RINEXUtil Software

This RINEXUtil release of software provides the following list of changes, improvements, and features incorporated since the previous formal release of v3.9.3:

V3.9.3

- No Changes

Known Issues

NavCom has only tested SanDisk 16GB SD commercial grade cards. Performance with lower grade SD cards may vary.

3rd Party GLONASS Corrector Compatibility

- The Sapphire receiver is able to use Code DGPS GLONASS corrections from Javad base stations.

- This build of Sapphire, SF-3040, and SF-3050 code supports GLONASS RTK corrections received from a 3rd party base receiver (limited implementation to known competitive receivers). This is a common industry limitation among the various manufacturers due to hardware bias calibration requirements for each manufacturer (make) and each hardware model. For example, if two different Trimble model base receivers use different core GNSS hardware, each receiver type requires a different bias-calibration table. However, if two different Trimble model base receivers share the same core GNSS hardware, one bias-calibration table is typically used for both model receivers.

- The Sapphire board, SF-3040, and SF-3050 are capable of operating in a full GNSS solution mode when both the base and the rover utilize NavCom correctors.

Internal Data Logging (SF-3050)

- Internal data logging is limited to 25Hz PVT1B and MEAS1B.

- Due to hardware speed limitations, file extraction of a 1GB log file requires approximately 1Hr (SF-3050).

Network RTK

- The use of a UDP interface is currently recommended to stream Ethernet data to the network, when an Ethernet connection is desired. TCP connections, in this application, may interrupt normal operations for port retransmissions when the ISP misses packets due to network loading.

- Ethernet connection does not work reliably with Dynex hub products. No resolution is planned; recommend usage of other high quality hub products.

- The Network RTK software option allows the receiver to generate and receive RTCM 1000-series messages. The navigation algorithms are designed to support single-base correction configurations. Network adjusted RTK formats are not currently supported.

If you have any questions regarding the installation or use of the software upgrade package please contact NavCom Customer Support at customerservice@navcomtech.com or by phone at +1 310.381.2000.