

Software Release Notice

V3.1.6 Software Ensemble for Onyx and SF-5050

Introduction

This software build will only function in the Onyx GNSS engine and the SF-5050.

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 is in production as of August 3, 2020.

New Messages and Features

- StarFire™ with ambiguity resolution
- Updated navigation engine
- Refer to the Onyx Technical Reference Manual for a list of message changes

Ensemble Data Management

Create a new folder for this ensemble. This will ensure that: 1) all 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

Individual File loading is currently supported, which is assembled using the former loading method (refer to the StarUtil 5000 Users Guide for instructions).

The “ZIP” file includes the following:

Program	Version/Date	Comments
Onyx_PIOApp_3.1.6.s19 Onyx_PIOBoot1_3.1.6.s19 Onyx_PIOBoot2_3.1.6.s19	Version 3.1.6	PIO board SW
Onyx_GnssApp_3.1.6.s19 Onyx_Boot1_3.1.6.s19 Onyx_Boot2_3.1.6.s19	Version 3.1.6	GNSS board SW
5050_WebPages_3.1.6	Version 3.1.6	Web Server Interface
StarUtil-5000_1.0.4.exe	Version 1.0.4	StarUtil program – Onyx models
RinexUtil_3.9.3.exe	Version 3.9.3	RINEX conversion utility

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 v3.1.6.PDF	Dated 10/7/2020	n/a	Description of improvements and bug fixes (This document)
Readme.TXT	Dated 8/24/2020	n/a	Update instructions and a list of files
Technical Reference Manual.pdf	96-312008-3001	Rev C	Describes the command and response data structure
RinexInstructions.txt	Dated 6/12/2017	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 v3.1.1 (all products unless otherwise noted):

V3.1.6:

- Resolved Trimble RTK implementation: RTCMv3 Message Type 1230 multi-constellation packed message set
- Resolved coding error: RTCMv3 Message Type 1033 set to Antenna Descriptor to blank to represent "UNKNOWN" antenna
- Resolved coding error: GLONASS not tracked during StarFire™ convergence

- Update TRACKINGMODE defaults
- Resolved coding error: does not output PVT1B & MEAS1B @ 25Hz
- Set RAPIDRECOVERY default FOM to 4
- Changed the default StarFire Almanac to the new beams
- Resolved coding error: v3.1.1 provides incorrect Point Radius license coordinate value by not adding (-) for South and West.
- Resolved coding error: Set ANTENNAINFO DEFAULT for SF-5050 & ONYX to "NAV_ANT3001R NONE"
- Removed BASEMSM1, BASEMSM2, BASEMSM5, BASEMSM6, BASEMSM7 Correction type from RTKMODE command query list.
- Resolved coding error: [Webserver] Firmware Update Receiver is not resetting after loading the GNSS
- and PIO firmware files.
- Added StarFire™ ambiguity resolution on Type 16-20 message formats
- Removed STARFIREMODE feature
- Expanded Deere Shared Base RAL list 1200
- 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.
- Review the Onyx Technical Reference Manual for significant message changes in TRACKINGMODE, NAVMEASURE, CHANNELSTATUS1B, MEAS1B, PVT1B, and other primary commands.

GNSS Engine Bootloader1 & Bootlader2

This GPS Engine Bootloader release of software provides the following list of changes, improvements, and features incorporated since the previous formal release of v3.1.1:

V3.1.6:

- No Changes

Power I/O Board Software (SF-5050)

This PIOB release of software provides the following list of changes, improvements, and features incorporated since the previous formal release of v3.1.1:

V3.1.6:

- Update [Webpages] RTK Mode Dropdown List
- Update SD Card Driver to fix read/write and timing issues

- Resolved coding error: FSCD command unable to change directory and FSDIR unable to display contents
- Resolved coding error: FSDRIVE does not change directory
- Add Support for USB1 in Boot2
- Merged commands and responses to a new development trunk. No changes in primary function or operation

Power I/O Board Bootloader1 & Bootlader2 (SF-5050)

This PIOB release of software provides the following list of changes, improvements, and features incorporated since the previous formal release of v3.1.1:

V3.1.6:

- No Changes

StarUtil 5000 Software

This StarUtil release of software provides the following list of changes, improvements, and features incorporated since the previous formal release of v1.0.4:

V1.0.4:

- 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

Performance impact

- [ANTENNAINFO] does not support the input "UNKNOWN" keyword. Use the keyword "NONE" instead
- If OTL (Ocean Tide Loading) is not loaded already, StarFire™ GNSS performance may degrade a few cm in vertical for users outside of Torrance. If GPB (Global Plate Boundary) is not loaded already, LTR (Long Term Repeatability) will not take effect. If GGM02 or Geoidal099 is not already installed on the receiver, contact support for the models and details on how to install them.

Onyx Configuration

- Version 3.1.1 is compatible with both Onyx and SF-5050 Units. For Onyx-only units, please set [ONYXCONFIG] to [ONYXCONFIG] SPI, DISABLE to properly configure the firmware to work on an Onyx Board. This will also disable errors normally outputted by the receiver when the PIOB is absent.
- SF-5050 do not need this command to be configured, since its Onyx Board will be paired with a working PIOB within its unit.

3rd Party GLONASS Corrector Compatibility

- The Onyx receiver is able to use Code DGPS GLONASS corrections from Javad base stations.
- Onyx and SF-5050 code supports GLONASS RTK corrections received from a 3rd party base receiver (limited 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.
- The Onyx board and SF-5050 are capable of operating in a full GNSS solution mode when both the base and the rover utilize NavCom correctors.

Internal Data Logging (SF-5050)

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

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.