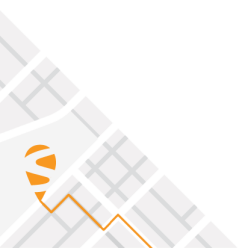# Release Notes and Installation Guide

PolaRx5S Firmware Package v5.5.0

1 Installation Guidelines

In order to upgrade the firmware to version 5.5.0, only the following file is to be installed on the receiver:

SUF file	Located in	Contains
PolaRx5S-5.5.0.suf	firmware/	See section 6

There is no need to install the file PolaRx5S-5.5.0-failsafe.suf, unless Septentrio Support advises otherwise.

2 New Features and Improvements

2.1 New features in version 5.5.0

1. The receiver now allows to upload configuration scripts via the Lite-WUI.
2. Galileo OSNMA support has been added.
3. NavIC L5 ephemeris data can now be decoded.
4. BeiDou B2a ephemeris data can now be decoded.
5. An IOD holdoff can now be defined for RTCMv2 corrections.
6. Native on-board logging of RINEX 4.00 has been added.

2.2 Improvements in version 5.5.0

1. BeiDou Phase III signals (B1C, B2a and B2b) are now encoded in RTCM3 MSM.
2. The receiver has been made robust against possible crashes induced when scanning Wi-Fi networks with non printable SSID names.
3. It is now possible to configure the PPS pulses to be generated every 4 seconds.
4. The receiver now supports tracking of QZSS-L5S and outputs the raw L5S navigation message in the QZSRawL5S SBF block.
5. E6B tracking is automatically selected upon detection of encrypted E6C.
6. Login with Ed25519 SSH keys is now supported.
7. It is now possible to configure the PPS pulses to be generated every 30 seconds or every 60 seconds.
8. An issue related to an invalid UTC time field at startup of the receiver in the NMEA interface has been resolved.
9. Decoding of Galileo ephemerides at cold startup has been improved.
10. When logging to the internal disk, the ".A" suffix that is added to indicate files currently being written to was not always removed after closing the file. This has been fixed.
11. TLS 1.3 is now supported.

12. Support for RINEX v3.05 logging has been added.
13. Decoding of Galileo I/NAV ephemerides in difficult environment has been improved.
14. The spoofing detector has been improved and identifies more types of spoofers.
15. Handling of antenna phase center offset has been improved.
16. The receiver can now also encode observables from the BeiDou B2b signal in BINEX.
17. When logging RINEX files, RINEX version 3.04 is now the default (instead of version 2.11).
18. The GPSCNav SBF block has been added, containing CNAV data from GPS L2C and L5.
19. A new command setIpKeepAlive has been added to allow the customer to enable and configure TCP/IP keepalive functionality on the IP and IPS ports.
20. The receiver now has full support of the QZSS J04.
21. Some rare issues with the tracking of the QZSS L6 signals have been fixed.
22. The ability to recover to normal operation after a spoofing attack has been improved.
23. In a signal simulation scenario using only L1 and L2P GPS and GLONASS legacy signals, time must start after Dec 31, 2019 (instead of Dec 31, 2015 in previous releases).
24. Tailored the PPP filter response at higher measurement update rates.
25. Support for the future QZSS L1 C/B signal has been added as a beta-feature. If QZSS L1 C/B is enabled with the setSignalTracking user command, and if it transmitted by at least one QZSS satellite, the corresponding measurements are available in SBF and in RINEX v4.00 logs.
26. NavIC ephemeris (RTCM3 message type 1041) can now be encoded.
27. NavIC ephemeris (RTCM3 message type 1041) can now be decoded.
28. Support of the BINEX 0x01-07 record (decoded NavIC ephemeris) has been added.
29. The GPS Almanac handling has been improved.

2.3   New features in version 5.4.0

1. A new option is created to group related RINEX files into one file for disk storage and file transfer.
2. This firmware adds support for TLS (Transport Layer Security) for NTRIP caster, client and server connections.
3. When using specific base stations that send L1P instead of L1CA, GLONASS is now enabled in the RTK solution.
4. QZSS satellite visibility is now available in NMEA GSV message.
5. Support for decoding of RTCM2 message 34 (GLONASS partial correction set) was added.
6. A new SBF message NTRIPServerStatus was added.
7. Support for decoding of RTCM3 ephemeris message 1042, 1044 and 1046 was added.
8. Tracking of the BeiDou B2b signal has been added.
9. The Preserve On Event Logging feature now supports a command based trigger.
10. The granularity of setRTCMv3Delay was increased from 1 to 0.1 seconds.
11. Cosmos receiver service is now supported for field tests.

2.4   Improvements in version 5.4.0

1. The receiver has been made more robust against possible crashes induced when requesting a PVTSupport(A) block with the exeSbfOnce command.

2. In the WebUI, the "Use Current" function of the "Antenna Reference Point Static Position" configuration has been improved to handle antenna offsets better.
3. The spectrum plot display in the web interface has been improved.
4. When sending input on a port configured with ASCIIIn input, all ASCIIIn messages are now displayed in the WUI.
5. Cases of GLONASS satellite duplication (two different satellites being assigned the same slot number) should not occur any more.
6. It is now possible to change the PPS pulse width.
7. The Beidou PRN range is extended to PRN C63
8. The argument Disk (DSK) of the setDefaultAccessLevel command is now renamed to FileTransfer.
9. An instability in the tracking of S30 (a BeiDou SBAS satellite) has been fixed.
10. Data gaps affecting GLONASS satellites transmitting non-standard L3 signals have been fixed.
11. The availability of BeiDou carrier phases has been improved.
12. The deletion of long filename RINEX files has improved.
13. The RTCM2 message type 22 now correctly refers to the antenna L1 phase center height when antenna offset parameters are defined.
14. The upgrade success/failure debriefing mechanism in the Web UI was improved.
15. RTCM3 ephemeris messages include current week number.
16. The MaxBaseline setting of setDiffCorrUsage is also applied in the selection of the RTK base.
17. Decoding of the BeiDou almanac has been improved.
18. With the implementation of TLS on NTRIP, the NTRIPClientStatus SBF block and the NMEA SNC message have been updated.
19. Reporting of smoothing interval in RTCM3 MSM messages for Galileo, BeiDou, QZSS and SBAS has been fixed.
20. A rare occurrence of incorrect data in the decoded GPS ephemerides has been fixed.
21. An error causing the wrong computation of the magnetic course in NMEA VTG message has been fixed.

3 Known Issues and Limitations

1. When accessing the webUI over HTTPS, occasional CPU overloads can be detected.
2. If the message "USB device not recognised" is shown on the PC after an upgrade of the receiver firmware, it is recommended to restart the receiver. Afterwards, the USB connection will be functional again.
3. It is not possible to upgrade the receiver using mobile Safari on iOS devices.
4. If more than one user simultaneously changes settings via the web interface, the resulting configuration of the receiver may not be consistent.
5. The time needed to detect an external USB disk connected to the receiver varies with the size of the USB disk and the CPU load of the receiver. For larger USB disks, this can take up to 1 minute.
6. IPS connections may stay visible in the web interface after the client has been disconnected.
7. When connecting to the web interface using clientless SSL VPN, the Expert Control Panel may fail to load commands.

8. The external disk must be large enough to hold more than one day of data. If the disk is too small, FTP push may fail and the logged data may be lost.
9. The NTRIP server connection is sometimes not reliable when connected to a caster running "Professional Ntrip Broadcaster" (up to v2.0.22).
10. The generation rate of GBS and GRS NMEA sentence is limited to 1 Hz.
11. During bootup of the receiver, the status of the external disk is labeled as "no disk detected" in the webserver. Please do not disconnect the disk to avoid filesystem corruption.
12. When logging data at a very low rate, the WebUI Disk Usage widget may not correctly indicate which data types are logged.
13. The Preserve On Event Logging feature only supports preserving of files with a standard IGS filename.
14. Unmounting or remounting the in use disk during logging operations might interrupt post processing actions defined for an active log session.
15. When logging is manually stopped during IGS file runover, the last log file is not added to the compress and FTP push queue.
16. If logging is interrupted due to a power outage and the IGS time frame is passed, the last logging file will not be compressed nor FTP pushed.
17. When a log session is recording RINEX v2x this log session will be updated to a RINEX v3.04 ShortName.

4 Support

For further information or support, please consult the Septentrio support website (http://www.septentrio.com/support).

5 Legal Notice

Septentrio does not authorize the use of its products as critical components in devices or systems intended for safety-of-life applications or in devices or systems, of which the failure may endanger life or cause injuries, unless written approval is given.

All the firmware and documentation delivered with the PolaRx5S Firmware Package is licensed, as explained in the About page which is accessible via the web interface of the receiver.

6 System Components and Versions

Product: PolaRx5S Version: 5.5.0 Receiver Platform: SSRC7 Release Date: 25 August 2022	version	PolaRx5S-5.5.0-failsafe.suf	PolaRx5S-5.5.0.suf
Failsafe	12.0.6-g130c671	Y	
Operating System	12.0.6-g130c671		Y
GNSS Firmware	6.12.9-g5d98170e8b		Y
Antenna Information	22.1.0		Y