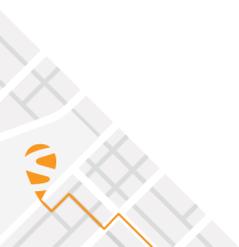# Release Notes and Installation Guide

PolaRx5 Firmware Package v5.3.0

1 Installation Guidelines

In order to upgrade the firmware to version 5.3.0, the following files must be installed on the receiver in the indicated order:

	SUF file	Located in	Contains
1.	PolaRx5-firmware-5.3.0-OS_failsafe.suf	firmware/failsafe/	See Section 6
2.	PolaRx5-firmware-5.3.0-full.suf	firmware/	See section 6

2 New Features and Improvements

2.1 New features in version 5.3.0

1. The receiver now supports GPS L1C.
2. The receiver can now track QZSS L6 as an optional feature.
3. The receivers can now track the B1C and B2a signals transmitted by BeiDou III satellites.
4. The QZSS almanac is now supported.
5. QZSS L1C and L1S are now supported.
6. The BeiDou almanac is now supported.
7. The receiver is now capable of tracking 2 L-band beams simultaneously (Multibeam). The receiver also now features automatic selection (Auto beam selection) of the simultaneously tracked L-band beams, this to enhance the ease of use and increase the availability of PPP corrections in difficult circumstances.
8. Point to Point Protocol (P2PP), which allows the receiver to set up a TCP/IP connection over its serial interfaces, is now supported.
9. The webUI now displays an AIM+ visual flag for both interference and spoofing.
10. A lite webUI has been introduced to accommodate those receivers behind a slow or expensive connection.
11. This firmware release contains a beta version of the "CloudIt" feature, which offers an alternative to FTP for remote file submission.
12. In Static IP mode, the value of MTU argument of sips is used as the MTU of the Ethernet port. When MTU is set to 0, the receiver will use the default MTU. In DHCP mode, setting MTU to 0 will result in using the MTU supplied by the DHCP server. When set to any other value, MTU will override the DHCP server once the link is established.

13. Support was added for GDA2020 in the sspg (setStaticPosGeodetic) and sspc (setStaticPosCartesian) commands.

2.2 Improvements in version 5.3.0

1. The default number of digits for the latitude and longitude fields of the GGA and GNS messages has been set to 5.
2. BeiDou signals BDSB1, BDSB2 & BDSB3 were renamed to BDSB1I, BDSB2I & BDSB3I.
3. The version of the RINEX files logged by the receiver is now v3.04, instead of v3.03. v2.11 is still supported as well.
4. Only TLS 1.2 or higher is supported from now on.
5. IRNSS has been renamed to NavIC.
6. When configuring a static position in the webUI, it is now possible to use the current position.
7. Login via expert console in the web browser is now possible.
8. An additional PPS-out output speed of 4Hz has been introduced (on top of 2Hz and 5Hz already present).
9. In order to ensure all-in-view tracking, the number of logical channels has been increased to 80.
10. When SECORX corrections are received via NTRIP, the corrections icon in the web interface now reflects the correct status.
11. When the PPSout interval is larger than one second, PPSout is now correctly aligned with BeiDou and Glonass time scales.
12. The source datum for the predefined datum transformations of the setGeodeticDatum command has been updated from ITRF2008 to ITRF2014.
13. New antenna calibration data from NGS, based on IGS14 (instead of IGS08), is now being used.
14. Fixed possible incorrect values in the B1 and B2 fields of the GLOTime SBF blocks.
15. Incremental file logging was added.
16. An auto mode was added to the NMEA talker ID. This auto mode allows for flexible talker ID, depending on the constellations used in PVT.
17. Support of IRNSS (NavIC) satellites I08 to I14 has been added.
18. The number of available IPR/TCP2way ports has been increased from 3 to 5.
19. The BINEX Decoded Galileo Ephemeris (record 0x01-04) has been updated to the new definition (record 0x01-14) : record 0x01-14 is now transmitted or logged instead of record 0x01-04.
20. From now on the "Viewer" access level will be the default access level for the "Disk" (instead of "User"). This will e.g. prevent unauthorised people to remove or add data to the disk(s), through anonymous ftp, on a receiver with factory default settings.
21. An issue was fixed that prevented the automatic deletion of logged data at the scheduled interval.
22. Antenna overcurrent conditions are now reported in the ReceiverStatus SBF block (bit 5 of RxError field).
23. In previous firmware releases, the phase of the REF OUT signal with respect to GNSS time or UTC could change after a power cycle. The phase is now deterministic.

24. This firmware resolves a glitch in the BeiDou MSM (type 1111 to 1117) epoch time reporting at week cross-over.
25. This firmware resolves a glitch in the GLONASS MSM (type 1081 to 1087) day of week reporting at week cross-over.

2.3   New features in version 5.2.0

1. The receiver now supports HTTPS.
2. The new Meas3 SBF blocks can now be used as a compact alternative to the MeasEpoch SBF block.
3. RTCM-MSM messages can now be recorded on disk with the limitation that cell mask splitting is not supported.
4. The receiver now supports the output of BeiDou and Galileo I/NAV ephemerides in RTCM3.
5. It is now possible to define a static reference position that is used for the generation of RTCM messages or RINEX files, and which is independent from the position computed by the receiver.
6. The receiver now supports TCP2Way functionality.
7. Multi-session logging now supports NMEA.
8. The RTK engine now supports Galileo, BeiDou, GPS and GLONASS.
9. In the command line interface, the BeiDou signals CMPL1, CMPE5b and CMPB3 have been renamed BDSB1, BDSB2 and BDSB3 respectively, and the SBF blocks CMPRaw and CMPNav have been renamed BDSRaw and BDSNav respectively. The old names are still recognised but should not be used in new designs.

2.4   Improvements in version 5.2.0

1. External USB disks up to 128 GB are now supported.
2. The receiver can now track the L5 signal of SBAS satellites transmitting according to the new SBAS L5 DFMC ICD.
3. The NTRIP caster now supports NTRIPv1 clients.
4. FTP Push now supports clients with multi-line welcome messages.
5. NMEA message SRX, SDI & SPW were added.
6. Galileo satellites E33 to E36 are now supported.
7. The receiver is now able to track BeiDou G7 (C17).
8. QZSS satellites J04 through J07 are now supported.
9. Support for CNAV has been improved.
10. Galileo satellites transmitting test-data messages are now flagged as unhealthy.
11. SBAS MSM is now supported.
12. The base station ID range in the GGA NMEA message (0-1023) has been increased to (0-4095) to support the RTCM base ID definition.
13. The encoding of the datum in GGA and GNS NMEA messages was corrected.
14. Security on WiFi connections has been improved.
15. In the setSBFOutput user command, the GEORawL1 SBF block has been removed from the RINEX SBF group.
16. The code smoothing algorithm has been improved.

17. When using a GNSS constellation simulator, correct time determination is guaranteed only when the simulated date is set after Dec 31, 2015 (instead of Dec 31, 2009 in earlier firmware versions).
18. The REF OUT frequency is now steered to GNSS time (unless disabled by command).
19. The Dropbear SSH Server has been upgraded.
20. In RTCM message types 1003 and 1004, the value of the "GPS L2 Code Indicator" field associated to P(Y) measurements has been changed from 1 to 3.
21. The visualisation of unhealthy satellite signals in the web interface has been improved.
22. The performance of the WAAS-based position solution has been improved.
23. The RTK compatibility with legacy RTCM2 streams has been improved.
24. The latitude and longitude fields in the SBF block PosCovGeodetic were swapped. This has been corrected.
25. If the receiver is started with Galileo and/or BeiDou tracking disabled/not permitted (and no ephemeris in memory), then empty GAGSV and BDGSV sentences are no longer output.

3   Known Issues and Limitations

1. 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.
2. It is not possible to upgrade the receiver using mobile Safari on iOS devices.
3. When logging data at a very low rate, the WebUI Disk Usage widget may not correcly indicate which data types are logged.
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 requesting a burst of https requests, occasional CPU overloads can be detected.

4 Support

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

5 Legal Notice

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6 System Components and Versions

Firmware Package: 5.3.0 Applicable Product: PolaRx5 Receiver Platform: SSRC7 Release Date: 22 July 2019	version	PolaRx5-firmware-5.3.0-OS_failsafe.suf	PolaRx5-firmware-5.3.0-full.suf
Failsafe	5.4.0-g5b5675d	Y	
Operating System	5.4.0-g5b5675d		Y
GNSS Firmware	6.2.1-r74732		Y
Antenna Information	2.13.0-b3c0c3e9		Y