April 4, 2018

Sales Release Notification – PolaRx5/PolaRx5S/PolaRx5TR firmware 5.2.0

Septentrio is happy to announce the release of firmware 5.2.0 for the PolaRx5 product line.
The following new features have been added:

File management and data storage:

New SBF blocks (MEAS3) for log file size optimization
RTCM-MSM logging
NMEA logging
Increase of maximum number of simultaneous logging jobs to 40
External drives up to 128 GB are now supported

GNSS:

PRN extension for Galileo and QZSS
SBAS L5 with navbit structure autodetection
BeiDou tracking improvements
GLONASS L3 tracking improvements

Increased IT security:

HTTPS
Dropbear SSH Server upgrade

Enhanced ease-of use:

RINEX encoding when in static RTK for inter-station distance determination
TCP2way
Embedded caster now supports NTRIPv1

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File management and data storage.

New blocks (MEAS3) for file size optimization of the SBF logs are available.
Meas3 is a set of new SBF blocks, designed for data compactness and specifically targeting continually logging stations and RINEX generation.
It is offered as alternative to the existing MeasEpoch and MeasExtra blocks.
In the new implementation, the information is split in user-selectable messages: the Meas3Ranges block contains pseudoranges, carrier phases and C/N0, while Doppler is available in the companion Meas3Doppler block. Meas3CN0HiRes contains the high-resolution C/N0.
The main advantage of the new Meas3 blocks is their reduced size compared to the MeasEpoch blocks.
The table below compares the file size for different logging formats for RINEX generation, with and without compression.
It shows the disk space required to log all code and carrier phase measurements from all GNSS signals over the period of one day at a 1-Hz rate.

Data format	File Size (uncompressed)	File Size (compressed)
SBF (Rinex group)	170 MB	118 MB
SBF (RinexMeas3 group)	45 MB	40 MB
RINEX (v3)	365 MB	38 MB (Hatanaka+gzip)
BINEX (7F-05)	95 MB	76 MB
RTCM-MSM (MSM4)	86 MB	61 MB

The values have been measured in February 2018 at Septentrio HQ. They will change depending on location and will increase as more satellites are launched. The table aims at illustrating the relative differences among the formats for RINEX generation on PolaRx5 receivers.

RTCM-MSM is added as new logging format. RTCM-MSM supports the creation of fully defined, phase aligned RINEX 3.0x observations files. Following the IGS recommendation and in the spirit of promoting interoperability via standardized formats, on board logging of native MSM files becomes available on the PolaRx5 product line.
Similarly to RINEX, BINEX, SBF and NMEA, files can be logged on the internal and external memory of the receiver, transferred via FTP-push to a server/directory of choice and synchronized via Septentrio Data Storage Integrity algorithm, SYNC+.

Alongside RTCM-MSM, NMEA is also added as supported format for logging, with an increase of the maximum number of simultaneous logging jobs to 40. Each logging job, can be independently FTP-pushed to user-defined servers/directories and independently edited and managed.
In the optimization and flexibility of the logging functionality, adding more compact SBF and new formats, is complemented by the support of external drives up to 128 GB.

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GNSS.

Following the evolution of the existing constellations, the firmware has been updated to be able to track the new QZSS satellites J04 and J07 and extend the Galileo PRN to 36.
SBAS L5 with navbit structure autodetection also becomes available.
Historically, SBAS L5 navbit structure has been aligned to L1. Recently, a new dedicated structure for L5 was defined. With firmware 5.2.0, PolaRx5 can now can seamlessly auto-detect the structure: the new definition is supported and no backwards incompatibilities are introduced.
Adaptations have been made to follow the evolution of the GLONASS L3 ICD and tracking improvements are implemented for BeiDou.

IT security.

HTTPS is now supported. The HTTPS certificate (.pem file) can be uploaded on the receiver by the user, who controls the process.
Dropbear SSH Server upgrade is also part of the continuous security updates.

Enhanced ease-of use.

To increase the usability, the IP server ports now support TCP2Way: the port is able to send data and process input data (such as user commands or differential corrections) for a single client.
This feature is particularly useful for users whose receiver resides on a local network behind a firewall and they cannot (or are not allowed to) change the firewall settings, or for those users that would like to get raw differential correction data from a server but are unable to do so because that server is requesting NMEA at regular intervals, without using NTRIP.

RINEX encoding when in static RTK for inter-station distance determination has been tuned to facilitate RTK networks operation. 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.
The embedded NTRIP caster now supports NTRIPv1 clients.

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