TECHNICAL BULLETIN

To: HGNSS Customers

From: Hemisphere GNSS

Date: **January 31, 2023**

Reference #: TB1632022-01-31

PRODUCTS AFFECTED:

- **Hemisphere GNSS OEM Boards and Products**
  - **160-0516-W (FW,APP,P32x-PHANTOMxx,MFA,v6.1Aa00)**
  - **160-0520-M (FW,APP,H328-VEGAxx,MFA,v6.1Aa00)**

SCOPE:

HGNSS has released new GNSS firmware (6.1Aa00) for the products listed above. This new firmware release represents Hemisphere GNSS ongoing commitment to ensure HGNSS customers experience the best possible performance from their products.

The enhancements and improvements available with this new firmware are outlined below:

Firmware Release Notes
Version: 6.1Aa00, since 6.0Aa05e • Beta support for Galileo OSNMA • Automatic selection of Australia and New Zealand SouthPAN SBAS • Improvements to ethernet robustness **Please review the changes in 6.0Aa05e and prior versions**

Firmware Release Notes
Version: 6.0Aa05e, since 6.0Aa05d • Allow $JMODE,GLOFIX query to return a response

Firmware Release Notes

Version: 6.0Aa05d, since 6.0Aa05a

- Support upcoming sustained platform variations due to supply chain challenges
- Support NMEA version 4.11 message output for $xxGNS and $xxGSV
- **Atlas coverage area improvements**, updated coastline provides more land and near shore area
- RTK improvments with **changes to AUTOSTATIC mode**, to lower the threshold trigger speed - see note following this section
- SUREFIX can be used for RTK float mode - see note following this section
- Updated WAAS satellite table to use PRN 135 instead of PRN 138
- Updated $JOFF,ALL to include Port D (Port D is now available as a full-featured port, see v6.0Aa05a update notes on next page)
- JSHOW command now only shows supported ports (example, not Port D on Vega 28)
- Support added for BIN52 NavIC (IRNSS) almanac message
- Support added for $JI,OTHER to display the other app version
- Improved aRTK coasting to maintain Atlas H10 performance during long correction outages
- Improved support for QZSS in RTK MSM messages
- Improved support for B2B-PPP solutions
- Improved support for BeiDou Phase 3 satellites in RTK and heading solutions
- Improved reaquisition of Galileo signals after multi-hour signal outages
- Improved handling of signal tracking after jamming events
- Improved base cycle slip detection field in RTKSTAT message
- Resolved WebUI issue regarding identifying enabled messages
- Web UI updates for web-capable A631 and V200 series
- **Added $>JETHERNET,COMPLETE** to be the final line output in a series of $JETHERNET messages
- **Added $>JSHOW,COMPLETE** to be the final line output in a series of $JSHOW messages

NOTES on v6.0Aa05d:

In RTK, the AUTOSTATIC mode allows the receiver to sense when it is moving less than 2 cm/s (about 0.8 inches per second). This improve how it handles and manages various indicators in the RTK solution. In very slow moving RTK applications (deformation monitoring, tide monitoring, paving equipment, etc.), best results may be achieved using $JMODE,AUTOSTATIC,OFF (this will reset to ON after a power cycle). To use RTK corrections on a multi-frequency activated receivers without an RTK activation for float-accuracy positioning (example, 20cm), use $JPHOENIX,RTKFIXMODE,SUREFIX to activate this, and $JPHOENIX,RTKFIXMODE,NORMAL to turn it off. The $JSAVE command saves this through power cycles.

Prior firmware release updates are outlined below **with notable behavior changes in red**:

Firmware Release Notes
Version: 6.0Aa05a, since 6.0Aa04a • RTK and ATLAS improvements • Improved RTK performance in high ionosphere conditions • Improved long baseline RTK accuracy estimate • Added support for BeiDou phase 3 B1C, B2a and B2b signals in RTCM3 MSM messages (RTCM v3.3 amendment 2) • Resolved GLONASS RTCM3 legacy message issue • **Enabled $JMODE,AUTOSTATIC,YES by default** • Added tracking improvements for B1i bandwidth • Added $JQUERY,PPPCONV to show convergence status and accuracy of background PPP solution • Added $JMSG16,SIGNAL,INCLUDE and EXCLUDE to include or exclude signals within BIN 16 messages • Added $JASC,GNGSV,1 to enable all GSV sentences with one command • Added support for GGAALLGNSS and ALLGNSS modes to work in Athena and Atlas builds • **Removed $JMODE,GLOFIX as it is always enabled in RTK** • Resolved Bin32 and Bin34 output issue • Resolved $JGEO command issue • Improved $JATT,COGTAU reply • Improved handling of interrupted or cancelled in-app programming • Reduced the frequency of flash writes for long-occupation applications • Improved support for legacy Bluetooth pairing • Added support for Bridge Alert Management, required for IMO approval • Preliminary support for NavIC (IRNSS) • Preliminary support for B2b PPP • Preliminary support for B2b PPP aRTK • **Added support for Port D messages, allowing Port D to operate as a regular port, not just for use with SBX-4** • Added Cygnus anti-jam status to WebUI • Supports Vega 34

Firmware Release Notes

Version: 6.0Aa04a, since 6.0Aa04

- Support MSM7 corrections from uBlox
- RAIM improvements including more accurate indication of status
- Resolved infrequent crash on P328 and other SX5 based boards

Firmware Release Notes

Version: 6.0Aa04, since 6.0Aa02a

- RTK improvements in high multipath and foliage
- Improvements for high ionosphere and scintillation
- Improved matching for RTK signal types between base and rover
- Improved dynamic ATLAS and RTK performance in difficult conditions
- Improved use of single frequency base corrections with multi frequency rovers
- Ability to track additional BeiDou channels
- BeiDou B1C tracking improvements
- BeiDou GEO PRN 59,60,61 support
- Improved use of BeiDou phase 3 in RTK
- Improved use of QZSS L2C with non-HGNSS base stations
- Now using B2b I channel instead of Q channel
- ATT messages now available via manual mark
- **Removed support for the $JATT,NEGTILT** command
- **Removed support for the $JATT,FLIPBRD** command, use the ACC90, ACC180, and TILTCAL process described in the Vega Integration documentation
- Improved dual antenna moving baseline performance
- Updated GNGSA message to NMEA 4.11
- Atlas single frequency operation now available on multi-frequency platform
- Supports A631 platform

Firmware Release Notes

Version: 6.0Aa02a, since 6.0Aa01

- RTK improvements under foliage and high multipath
- Legacy RTK and SureFix improvements
- Improved use of L2C in the RTK solution
- Improvements for Phantom and Vega tracking under foliage

(continued…)

Firmware Release Notes
(…continued) • Faster use of SBAS at startup in some situations • PMIC parameter updates • TCP Keepalive for reference network • SureFix changes to improve “false float” condition

Firmware Release Notes
Version: 6.0Aa01 additional since 6.0Aa00 • RTK Improvements • Support for new signals in MSM output • Improved CMR+ decoding • Improvements to RTK SURVEY mode for difficult conditions • Improve accuracy metric for short baselines • Improved use of QZSS in RTK • Support for NTRIPSERVER and NTRIPCLIENT • Improved L2P tracking • Improved USB writing robustness • WebUI improvements • Improved Ethernet and UDP support • NMEA 2000 (N2K) Improvements • PVALID polarity can be defined

Product specific release notes and binary files can be downloaded on our website at ***WWW.HGNSS.com***

FURTHER INFORMATION:

If you have any further questions, please contact Hemisphere GNSS technical service department at +1 (480) 348-6380. For support via email, please contact Support@HGNSS.com or consult WWW.HGNSS.COM for the latest HGNSS product and software information.

This document is provided for technical support purposes only.
Please refer to the product documentation for warranty, license and safety information associated with the product.