ashtech

Firmware Release Notes	GNSS FW Platform

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Product: GNSS Firmware Platform (x24)

Introduction

This document is the GNSS FW platform (x24) release notes.

Firmware list and versions

General FW version number:

- **Gx24** for MB500
- **Kx24** for MB800
- **Hx24** for MB100

PC based software which could be used with this version:

- AshCom.exe   Version: 3.0.40
- bin2std.exe   Version: BS003
- GNSS FW Loader   Version: 2.05

New features

Summary of main new features:

1. New Z-Blade Technology. GNSS FW became non-GPS centric or GNSS-centric:

    a. All GNSS SV are treated equally even during RTK initialization phase

    b. $PASHS,GPS,ON/OFF is available and is working the same way as GLO,ON/OFF or SBA,ON/OFF or GAL,ON/OFF

    c. Option [N] (GPS tracking) has been added. MB100 can be purchased for example in GLONASS only configuration, i.e. GPS tracking will be disabled.

2. Receiver can work in GLO-only mode including RTK:

    a. New functionality, so called Primary GNSS System (PGS) is now supported to output data in a specified GNSS datum and /or time

    b. PZ90.02 datum is supported

3. GALILEO E1 tracking support has been added for new MB800 board

4. GPS L5 tracking support has been added for new MB800 board

5. Simultaneous GPS L2P and L2C tracking for new MB800 board

6. Up to 10Hz (Time Tagged) Internal Heading function is available for MB100 board under option [D]

    a. This feature, so called "Duo" mode allows a single MB100 board to compute SBAS positioning + L1 GPS+SBAS Heading when the board is connected simultaneously to 2 antennas

7. Extrapolated heading feature (up to 20Hz) is available for all boards, including MB100 in Duo mode

8. New Flying RTK option [F] available for decimeter level of accuracy

9. Virtual port Z is available for generating different data via one physical port

10. ATOM V2 is supported.

    a. Please refer to ATOM Manual (updated version to come soon)

11. ATOM,RNX replace ATOM,MES for raw data output

    a. Please refer to ATOM Manual (updated version to come soon)

12. Automatic ATOM,PVT separation added for modes CPD,FST,ON/OFF and VEC,FST/TT. Now ATM,PVT, depending on output configuration, may be output either as a single message per epoch or may be split into two messages (heading + position). If (FST,ON and VEC,FST) a single message is generated. There can be up to 2 PVT's messages in different receiver modes.

13. The following Options dependencies added:

    a. Option S is set equal to option P state
    b. Option E is set equal to option L state
    c. Option F is set equal to option J state
    d. Option H and V are set equal to Option J state

14. SBAS ionosphere algorithms improved

15. CTS/RTS mechanism for serial ports is enabled by default. The serial command for CTS/RTS management has been added

16. ANR functionality has been implemented (position tagging)

17. New antennas added in Antenna Table: ASH802147, SPP39105.90, SPP67410_42, SPP67410_44, SPP67410_46, SPP68410_10, TRM59800.00 and TRM59800.80, EPOCH 50

Known issues

Below is the list of different known issues which have been discovered during platform x24 development and testing:

1. MB800 Target:

    a. ATM,RNX and ATM,PVT data generated by MB800 can be lost in some configurations. E.g. if receiver is configured to track simultaneously 5 GPS signals: 1C,1W,2W,2L,5Q, then with more than 12 SV tracked, the data will not be output

    b. ATM,RNX data generated by MB800 can be lost in some configurations. E.g. ATM,RNX,SCN,0 will not be output when its size >1023 bytes. With open sky conditions and GPS,GLONASS,GAL and SBAS tracking it can be possible quite often

    c. MB800 Base uses incorrect model of ellipsoid in PGS,GLO (GLONASS defined as primary GNSS system ; default mode is GPS)

2. MB100 Target:

    a. Antenna and cables set-up are important to ensure good performances in Internal Heading (Duo) mode. Please refer to MB100 reference manual (Rev. B) for proper installation and avoid discrepancies in SNR reported by each "antenna".

    b. In internal Heading (Duo) mode, do not disconnect an antenna while the board is computing heading, otherwise it may take several minutes to restore

normal operation and get Heading values back. If it happens, send $PASHS,RST command to solve the issue.

c. If there is no external antenna connected to MB100, external antenna status is reported as "CONNECTED". Antenna selection in AUTO mode is behaving in accordance with this status. AUTO mode is not recommended if there is no antenna connected to MB100

d. Do not try ATM,STA group in high hertz heading (MB100 in CFG,DUO Only, >1Hz), it may lead to some exception in generation ATM,STA,DPS structure.

3. All targets:

a. Unexpected behavior may occur using USB port just after software restart (S,RST; S,INI etc.):

i. Sometimes a receiver doesn't accept first command after restart.

ii. Sometimes it may freeze data output but accept input commands.

b. There may be missed data logged via USB port under Linux OS

c. ATL output may be stopped after INI,0

d. Sometimes, there is no "$PMGNGO*1C" message after $PASHS,RST commands

Recommendations

1. Different products are based on GNSS FW platform x24. Some of these products have limitation of operation due to hardware specific. Some operating modes are not supported or other modes should be used with some precautions. Please refer to each reference manual for additional information.

2. The receiver can generate the so-called "trouble ticket" in the form of ATL messages (ATL for All To Log). When experiencing problems with their receivers, users may run the ATL command in order to be able to provide the problem data files to the Ashtech Technical Support. ATL messages are generated using a proprietary format. To enable the generation of ATL messages on a port (e.g. port A), run the following command:

> $PASHS,ATL,A

To disable ATL messages, use this command:

> $PASHS,ATL,OFF

Please refer to your reference manual for additional information.

3. User working with 3rd party NTRIP Networks should be recommended to escape connecting to VRS mount points, if others (MAC or FKP) are available. This will guarantee more stable performance.

4. User working with 3rd party bases/Networks generating GLONASS reference data is recommended to clarify with provider the name (brand) of reference receivers. If this brand is known a priori, it can be specified on rover by command $PASHS,RCP,REF,brand,1 (supported brand are TRIMBLE, NOVATEL, SEPTENTRIO, TOPCON). GPS+GLONASS rover RTK performances will be improved.

5. MB100 & MB800 targets:

a. Whenever you run a $PASHS command (set command), you must be aware that the resulting change is not saved to backup memory instantly, but only after a

certain delay, which is estimated to be not greater than 120 seconds. There is a requirement behind this operating mode, which is to extend the chip's life cycle as much as possible by reducing the number of write operations in the memory chip.

b. Because the $PASHS commands causing the receiver to restart (i.e. INI, RST, CFG, POP, PWR, etc.) are also part of the "delayed" commands (seen from the backup memory), it is therefore recommended that you run $PASHS,PWR,OFF about 2 to 3 seconds before you initiate a power cycle or reset through one of these commands.

c. $PASHS,PWR,OFF: this command is used to prepare the board before it is turned off. Using this command allows all the settings and parameters to be saved in the non-volatile memory. This command DOES NOT switch off the on-board power supply