Public Release Notes

Topic :	**u-blox M8 Flash Firmware 3.01 HPG 1.30**
	UBX-17002825
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Date :	20 January 2017

The released firmware, u-blox M8 Flash Firmware 3.01 HPG 1.30, is ONLY for High Precision GNSS products, NEO-M8P and C94-M8P. It must not be used for Standard Precision GNSS, Timing or Dead Reckoning products.

1 General Information

The released firmware described in this document operates with u-blox NEO-M8P-0 and NEO-M8P-2 modules.

The released firmware, u-blox M8 Flash Firmware 3.01 HPG 1.30, is ONLY for High Precision GNSS products, NEO-M8P and C94-M8P. It must not be used for Standard Precision GNSS, Timing or Dead Reckoning products.

1.1 Scope

This release note describes u-blox M8 firmware 3.01 HPG 1.30. The document covers the changes compared to u-blox flash firmware 3.01 HPG 1.20.

Please refer to release note for u-blox M8 firmware 3.01 HPG 1.20 (UBX-16024900) for changes compared to u-blox M8 firmware 3.01 HPG 1.11.

Please refer to release note for u-blox M8 firmware 3.01 HPG 1.11 (UBX-16011964) for changes compared to u-blox M8 firmware 3.01 HPG 1.00.

Please refer to release note for u-blox M8 firmware 3.01 HPG 1.00 (UBX-16005104) for changes compared to u-blox M8 firmware 3.01.

1.2 Released firmware images

Flash image for u-blox NEO-M8P-0. **This image contains support for rover operation.**	
File	UBX_M8_301_HPG_130_ROVER_NEOM8P0.3ee86a9e4775e3335e742b53527fa5d0.bin
FW ID String	EXT CORE 3.01 (d080e3) HPG 1.30ROV
ROM base support	2.01, 3.01

Flash image for u-blox NEO-M8P-2 and C94-M8P. **This image contains support for base station operation and must only be uploaded to NEO-M8P-2 modules. This image is intended to the application board C94-M8P.**	
File	UBX_M8_301_HPG_130_REFERENCE_NEOM8P2.59a07babb501ba6a89ff87cac2f2765f.bin
FW ID String	EXT CORE 3.01 (d080e3) HPG 1.30REF
ROM base support	2.01, 3.01

1.3 Released documentation

Receiver Description / Protocol Specification:

Content	**Document No.**
u-blox 8 / u-blox M8 Receiver Description Including Protocol Specification	UBX-13003221
u-blox 8 / u-blox M8 Protocol Specification Addendum for HPG1.30	UBX-16004304
NEO-M8P u-blox M8 high precision GNSS modules Data Sheet	UBX-15016656
Public Release Notes, u-blox M8 Flash Firmware 3.01 HPG 1.20	UBX-16024900

Public Release Notes, u-blox M8 Flash Firmware 3.01 HPG 1.11	UBX-16011964
Public Release Notes, u-blox M8 Flash Firmware 3.01 HPG 1.00	UBX-16005104

1.4 Released software tools

1.4.1 u-center

The u-center GNSS evaluation software is a powerful tool for evaluation, performance analysis and configuration of u-blox GNSS receivers.

Version 8.24 (or later) of u-center should be used with the released firmware. The software is available for downloading from u-blox website https://www.u-blox.com/en/evaluation-software-and-tools.

1.4.2 Firmware update tool

The Firmware update tool version 2.01 (or later) supports this product and can be used to re-program a NEO-M8P module running u-blox M8 Flash Firmware 3.01 HPG 1.xx. Please note that u-center also integrates the firmware update capability.

1.4.3 USB drivers

- u-blox GNSS Standard Driver for Windows (CDC-ACM) v1.2.0.8
- u-blox GNSS Sensor Device Driver for Windows v2.32

The latest drivers are available from the Product Resources section of the u-blox website http://www.u-blox.com

1.5 USB identification u-blox M8

Vendor ID:	0x1546
Product ID:	0x01A8
Driver String:	u-blox GNSS receiver

2 Firmware

This section describes the details of new features and modified messages introduced in u-blox M8 firmware 3.01 HPG 1.30.

2.1 New features

The following sections list the new features introduced in this firmware release.

2.1.1 RTK features

- Support for RTCM MSM4 encoding and decoding. Using MSM4 instead of MSM7 when the reference station is static can help reduce the communication bandwidth requirements.
- Support for RTCM MSM 1230 (GLONASS code-phase biases). Without this message, the rover receiver cannot fix GLONASS ambiguities.

2.2 New and Modified Messages

The following sections list new messages introduced and modified messages in FW 3.01 HPG 1.30.

2.2.1 New Messages

Message	Description / Comment
RTCM 1230	GLONASS L1 and L2 code-phase biases
RTCM 1074	GPS MSM4 (Full GNSS pseudoranges and phase ranges plus CNR)
RTCM 1084	GLONASS MSM4 (Full GNSS pseudoranges and phase ranges plus CNR)
RTCM 1124	BeiDou MSM4 (Full GNSS pseudoranges and phase ranges plus CNR)

2.2.2 Modified Messages

None.

2.3 Improved Performance

The following sections list major performance improvements in FW 3.01 HPG 1.30.

2.3.1 RTK

- Improved RTK Fixed availability. The performance improvement is achieved by fixing GLONASS ambiguities. Fixing the GLONASS ambiguities typically makes ambiguity resolution faster, especially in not so open-sky cases. It also helps maintaining the RTK fixed in presence of signal degradations such as partial signal blockage or attenuation e.g. caused by trees.

2.4 Modified behavior

- The CarrSoln flag in messages UBX-NAV-RELPOSNED and UBX-NAV-PVT is set to fixed when at least three carrier range measurements with fixed integer ambiguities have been used to compute the solution. This used to be one.
- To enable GLONASS ambiguity fixing, the rover must receive RTCM message 1230, and reference station must be configured to output this message. This message can be sent at a lower rate as the biases value will be kept in the data base until a new version of the message is received.

2.5 Known limitations

2.5.1 Firmware

The flash firmware 3.01 HPG 1.30 has the following known limitations:

- In the NMEA-GNS message, the position mode flags are set to RR for GPS and GLONASS (or GPS and BeiDou) even though fixed ambiguities are not explicitly sorted by constellation.
- The communication port used for correction messages should be dedicated to RTCM to secure best performance and other messages (NMEA, UBX) should be put on other ports.
- When estimating rover position, un-differenced and differenced range measurements are not mixed. Hence, poor satellite visibility at the Base Station can lead to degraded rover performance.
- The estimated position accuracy is often too optimistic during the convergence phase.