


Public Release Notes

Topic :	u-blox M8 Flash Firmware 3.01 HPG 1.11
	UBX-16011964
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 **The released firmware, u-blox M8 Flash Firmware 3.01 HPG 1.11, is ONLY for High Precision GNSS products, NEO-M8P and C94-M8P. It must not be used for Standard Precision, Timing or Dead Reckoning products.**

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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 1.11, is ONLY for High Precision GNSS products, NEO-M8P and C94-M8P. It must not be used for Standard Precision, Timing or Dead Reckoning products.

1.1 Scope

This release note describes u-blox M8 firmware 3.01 HPG 1.11. The document covers the changes compared to u-blox flash 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_111_ROVER_NEOM8P0.76e33ee36d6e6d6b37cbaf7acef84609.bin
FW ID String	EXT CORE 3.01 (b8bc67) HPG 1.11
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_111_REFERENCE_NEOM8P2.b45d5e63c7aa261bd58dfbcbc22bad68.bin
FW ID String	EXT CORE 3.01 (b8bc67) HPG 1.11
ROM base support	2.01, 3.01

See section 2.4 to learn how boot screen messages can be used to determine whether the NEO-M8P module is the NEO-M8P-2 or the NEO-M8P-0 variant.

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 HPG1.11	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 1.00	UBX-16005104

1.4 Released software tools

1.4.1 u-center

u-center version 8.22B03 and later should be used together with this firmware. This software is available for downloading from u-blox website.

1.4.2 Firmware update tool

The firmware update utility tool v2.01 (or higher) supports this product and can be used to re-program (Flash) a module running u-blox M8 Flash Firmware 3.01 HPG 1.00.

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 v2.24

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 the list the features introduced in u-blox M8 firmware 3.01 HPG 1.11.

2.1 New features

2.1.1 Standard features

- BeiDou B1I support

2.1.2 RTK features

- GPS+BeiDou L1 RTK
- RTCM3 input: BeiDou MSM5 (1125) and BeiDou MSM7 (1127)
- RTCM3 output: BeiDou MSM7 (1127)
- 5 Hz RTK navigation rate for GPS/GLONASS
- 5 Hz RTK navigation rate for GPS/BeiDou
- 8 Hz RTK navigation rate for GPS-only
- High resolution position output (UBX and NMEA)
- RTK float only solution

2.2 New and Modified Messages

The following sections list new messages introduced and modified messages in HPG 1.11.

2.2.1 New Messages

Message	Description / Comment
UBX-CFG-DGNSS	Can be used to configure RTK float only mode
UBX-NAV-HPPOSECEF	High precision position in ECEF format
UBX-NAV-HPPOSECEF	High precision position in LLH format
UBX-RXM-RTCM	Output message echoing basic information about received RTCM input message Can be used to monitor the quality of the communication link

2.2.2 Modified Messages

Message	Description / Comment
UBX-CFG-NMEA	Added a flag to enable high precision position output (2 more decimals on all axes) This mode cannot be used with compatibility or limit82 mode
UBX-CFG-NAV5	Rename dgpsTimeOut to dgnsTimeout

2.3 Improved Performance

The following sections list major performance improvements in HPG 1.11.

2.3.1 RTCM tuning

- Store corrections from all satellites (not only the ones used in NAV)
- Better handling of outages in the RTCM data stream
- New message to facilitate the monitoring of the received RTCM stream

2.3.2 RTK tuning

- Lower the default elevation mask to 10 degrees

- Robustness and performance improvements through better handling of carrier cycle slips, outliers and measurements with no or incomplete corrections

2.4 Known limitations

The flash firmware 3.01 HPG 1.11 has the following known limitations:

- It is not possible to determine if the firmware holds Base Station functionality, i.e. if it is a NEO-M8P-0 or a NEO-M8P-2 module, using UBX-MON-VER. This can be determined by checking the LLC string in the boot screen. For NEO-M8P-0 the LLC string will be one of these:
 - `FFFFFFFF-FFFFFFFF-FFFFFFFF-FFFFFFF9E-FFFFFF69`
 - `FFFFFFFF-FFFFFFFF-FFFFFFFF-FFFFFFF9E-FFFFFFD`For NEO-M8P-2 the LLC string will be one of these:
 - `FFFFFFFF-FFFFFFFF-FFFFFFFF-FFFFF79E-FFFFFF69`
 - `FFFFFFFF-FFFFFFFF-FFFFFFFF-FFFFF79E-FFFFFFD`
- In the NMEA-GNS message, the position mode flags are set to RR for GPS and GLONASS even though GLONASS ambiguities are kept as float solutions.
- When estimating rover position, undifferenced and differenced range measurements are not mixed. Hence, poor visibility at the Base Station can lead to degraded rover performance.
- The estimated position accuracy is too optimistic during the convergence phase.
- TTFAP for GPS+BDS will be optimized in next iteration of the ES firmware.
- 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.