


Public Release Notes

Topic :	u-blox M8 Flash Firmware 3.01 HPG 1.40
	UBX-17021504
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 **The released firmware, u-blox M8 Flash Firmware 3.01 HPG 1.40, 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.**

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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.

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1.1 Scope

This release note describes u-blox M8 firmware 3.01 HPG 1.40. The document covers the changes compared to u-blox flash firmware 3.01 HPG 1.30.

Please refer to release note for u-blox M8 firmware 3.01 HPG 1.30 (UBX-17002825) for changes compared to u-blox M8 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	DO_EXT_301_HPG_140_ROVER.91bbd17d889e0fe40c2d823991595224.bin
FW ID String	EXT CORE 3.01 (db0c89) HPG 1.40ROV
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	DO_EXT_301_HPG_140_REFERENCE.ab799cc302b64f28ba73b55dfa945a04.bin
FW ID String	EXT CORE 3.01 (db0c89) 1.40REF
ROM base support	2.01, 3.01

1.3 Released documentation

Content	Document No.
u-blox 8 / u-blox M8 Receiver Description Including Protocol Specification	UBX-13003221
NEO-M8P u-blox M8 High Precision GNSS Modules Data Sheet	UBX-15016656
NEO-M8P u-blox M8 High Precision GNSS Modules Hardware Integration Manual	UBX-17021504
Public Release Notes, u-blox M8 Flash Firmware 3.01 HPG 1.30	UBX-17002825
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

Version 8.25 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>.

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

1.4.2 Firmware update tool

The Firmware update tool version 2.01 (or later) 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 v2.33

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 1.40.

2.1 New features

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

2.1.1 RTK features

- Support for moving baseline RTK. This mode differs from the standard RTK mode in that it does not require the reference to be stationary at a known location. In moving baseline RTK mode, both the reference station and rover receivers can move while computing a centimeter-level accurate 3D vector between them. This is ideal for applications where the relative position offset between two moving vehicles is required such as, for example, the follow-me feature on a UAV or attitude sensing products.
- Support for u-blox proprietary message RTCM 4072, subtype 0. This message is needed to enable NEO-M8P reference and rover receivers to operate in moving baseline RTK mode.

2.2 New and Modified Messages

The following sections list new messages introduced and modified messages in FW 3.01 HPG 1.40.

2.2.1 New Messages

Message	Description / Comment
RTCM 4072, subtype 0	Reference station PVT (u-blox proprietary message)

2.2.2 Modified Messages

Message	Description / Comment
UBX-NAV-RELPOSNED	Added three new flags specific to moving baseline operation

2.3 Modified behavior

A new, moving baseline, operating mode is introduced. If the receiver is not configured to operate in moving baseline mode, there are no modified behaviors and no changes that the user needs to observe.

Full description of the new moving baseline feature is provided in u-blox 8 / u-blox M8 Receiver Description Including Protocol Specification (UBX-13003221) and NEO-M8P Data Sheet (UBX-15016656).

2.4 Improvements

The following improvements in terms of positioning accuracy and reliability have been realized:

1. In Flash Firmware 3.01 HPG 1.30 the rover could be using RTCM corrections with invalid reference station position. The problem was triggered when rover received a RTCM message 1230, but other reference station data was not valid. The problem was only present in version HPG 1.30 (i.e. not earlier version) and only present in a setup where both GPS and GLONASS were used by both reference stations and rover.
2. In Flash Firmware 3.01 HPG 1.30 there was a degraded cold start and aided start performance compared to Flash Firmware 3.01. This has been corrected for in HPG 1.40.
3. Improved GLONASS-only performance.

2.5 Known limitations

2.5.1 Firmware

The flash firmware 3.01 HPG 1.40 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.
- 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 can be too optimistic during convergence phase.