

Release note

Topic	u-blox M9 ADR 5.15 firmware for ADR products	
	UBX-22037179	C1-Public
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1 General information

1.1 Scope

This release note describes the u-blox M9 firmware image 1.00 ADR 5.15, designed to run on the following hardware products:

- Modules: NEO-M9L-01A, NEO-M9L-20A
- Chipset: UBX-M9140-KA-DR

1.2 Related documentation

- [1] u-blox M9 ADR 5.10 firmware Release notes, [UBX-21051121](#)
[2] u-blox M9-ADR-5.15 Interface description, [UBX-22037101](#)
[3] u-blox NEO-M9L Integration manual, [UBX-20048485](#)

1.3 Software releases

1.3.1 External firmware image

Released firmware image for u-blox M9 products	
File	UBX_M9_100_ADR515.c8cc73e75bc135e83ce1713c42b70b7c.bin
Firmware version	EXT CORE 1.00 (71d265), FWVER=ADR 5.15
Protocol version	PROTVR=35.15
ROM base support	ROM 1.02 - ROM BASE 0x118B2060

2 New and improved features

2.1 New features

No new feature is introduced in this release. Refer to [1] for a list of new features that were made available in the previous release.

2.2 Improved features

This release introduces enhancements targeting the overall robustness of the u-blox M9 platform when operating in corner case scenarios. The key improvements to existing features are listed below:

- Enhanced the **dead reckoning (ADR/UDR) performance** by mitigating fly-aways and position jumps in corner case scenarios.
- Optimized the **advanced calibration handling** operation to mitigate position jumps when restoring UBX-MGA-SF after consecutive resets.
- Improved the **directionless odometer mode** when the input wheel tick quantization is very large (>> 1cm).
- Adapted the **course over ground value** in NMEA-GxRMC message to output values within 0-355.99 range.
- Corrected the **clock solution message** UBX-NAV-CLOCK to output updated values after reaching sensor fusion.

Please refer to the integration manual [3] for detailed information regarding these features.

3 Removed features

No feature has been removed in this release. Refer to [1] for a list of features that were removed in the previous release.

4 Message interface

4.1 UBX

This firmware now supports the **UBX Protocol Version 35.15**. Refer to [2] for details.

4.2 New and modified messages

The following modifications have been made compared to firmware 1.00 ADR 5.10:

4.2.1 New messages

Message	Description / comment
UBX-MON-SYS	Current system performance information, message output rate is configurable with new CFG-MSGOUT-UBX_MON_SYS_* configuration items
UBX-NAV2-SLAS	Support for a new message which outputs status information about SLAS corrections on secondary output. Message output rate configurable with new CFG-MSGOUT-UBX_NAV2_SLAS_* configuration items
UBX-NAV2-TIMEQZSS	Support for new messages which output information about QZSS time in secondary output. Message output rate configurable with CFG-MSGOUT-UBX_NAV2_TIMEQZSS_* configuration items
CFG-SBAS-IGN_HEALTH_FROM_PRNMASK CFG-SBAS-USE_IONOONLY	Ignore the health flag in the PRN mask Configuration to enable use of SBAS ionosphere correction only
CFG-SEC-JAMDET_SENSITIVITY_HI	Enable to increase the sensitivity of jamming detection at the expense of increased false alarm rate

4.2.2 Modified messages

Message	Description / comment
CFG-QZSS-SLAS_MAX_BASELINE	Maximum baseline increased to 350 km

4.2.3 Removed messages

Message	Description / comment
CFG-ITFM-ANTSETTING CFG-ITFM-BBTHRESHOLD CFG-ITFM-CWTHRESHOLD CFG-ITFM-ENABLE CFG-ITFM-ENABLE_AUX	Configuration for legacy interference monitor, this has been replaced with simpler configuration interface

5 Known limitations and issues

5.1 TDK IAM 20680x sensor driver

The TDK IAM 20680, 20680HT, 20680HP and 20680M sensors can fail during a self-test leading to the ESF-STATUS message reporting “missing data”. This problem applies only to UBX-M9140-KA-DR chipset designs using these specific models of sensors.

Workaround: for chipset-based designs we recommend selecting an officially supported IMU or any other IMU from the “4.5 Supported sensor drivers” section in [1].

5.2 Handling of inconsistent wheel tick or speed input

Inconsistent WT (wheel tick or speed) input can lead to an unexpected receiver reset and a potential configuration reset to factory default values in RAM, BBR and flash. An exception string output (*\$GNTXT,01,01,01,exception 0x00020002 has occurred*2E*) might be observed.

This happens during the WT scale factor estimation process and is typically seen when starting to drive. There are two scenarios that could trigger the issue:

- A. The WT input signal reflecting vehicle movement is not provided to the WT pin while the configuration item CFG-SFODO-USE_WT_PIN is set to 1 (true).
- B. The WT is provided as data via UBX-ESF-MEAS messages, but the data values do not indicate true speed or distance travelled.

Workaround:

- 1. Configure CFG-SFODO-USE_WT_PIN to 0 (false) if the WT pin is not intended to be used by the application.
- 2. Refrain from sending inconsistent odometer data in UBX-ESF-MEAS which does not reflect the travelled distance.

6 Open source software

The u-blox M9 firmware image 1.00 ADR 5.15 does not contain any open source software components.

7 Revision history

Revision	Date	Name	Comments
R01	01-Nov-2022	ggor	First official release of ADR5.15 release notes
R02	27-Mar-2023	ggor	Added <i>Section 5: Known limitations and issues</i>