

XPLR-M9

Explorer kit for u-blox M9 standard precision GNSS

User guide



Abstract

This document leads you through the fast and efficient use of the M9 Explorer Kit with the dedicated u-start GNSS evaluation tool.

Document information

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Product name	Type number	Firmware version	PCN reference
XPLR-M9	XPLR-M9-00-00	SPG 4.04	N/A

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1 Overview

1.1 Product description

Thanks to the compact design, user-friendly interfaces, simplified and intuitive u-start evaluation software, XPLR-M9 is the perfect early evaluation tool for experiencing the best GNSS performance of the u-blox M9 standard precision GNSS technology.

The built-in USB interface provides both power supply and high-speed data transfer. In addition to the default simplified u-start evaluation software, XPLR-M9 can be used with u-blox u-center for extensive configuration, further testing and data analysis.



Figure 1: Explorer kit (60 x 32 x 15 mm)

1.2 Kit contents

The delivered package contains:

- XPLR-M9 unit
- USB cable (type C)
- Active GNSS antenna
- Quick start card

1.3 System requirements

- PC with USB interface
- Operating system: Microsoft Windows 7 onwards (x86 and x64 versions)

1.4 Safety precautions

XPLR-M9 must be supplied by a PS1 class limited power source. See section 6.2.2.4 of IEC 62368-1:2018 [11] for more information on the PS1 class.

In addition to a limited power source, only ES1 class circuits are to be connected to the XPLR-M9, including interfaces and antennas. See section 5.2.1.1 of IEC 62368-1:2018 [11] for more information on the ES1 class.

2 Getting started

2.1 XPLR-M9 evaluation with u-start (default)

You can explore u-blox M9 performance with u-start evaluation tool in four simple steps:

1. Connect the XPLR-M9 kit to a PC with a USB cable. The USB driver will be automatically installed when connecting the kit to the PC for the first time (requires internet connection). A removable flash device called XPLR-M9 will be visible in the PC after automatic driver installation.
2. Run u-start installer located in the XPLR-M9 device folder (administration rights for the PC are needed to install the u-start).
3. Connect to active GNSS antenna or connect to simulator.
4. Start u-start evaluation tool.



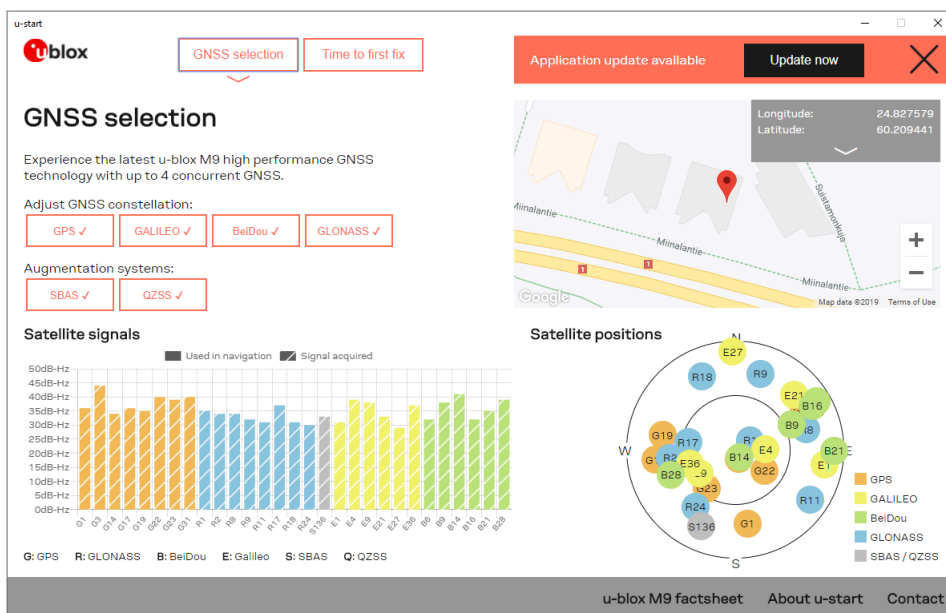
When u-start is launched, the XPLR-M9 performs a cold start if was already in use with another evaluation tool, i.e., u-center to make sure that the receiver is in a known state and all the changes that have been made to it previously are discarded.

2.1.1 u-start supported features

After a successful installation, u-start is available in the Start menu. Select u-start evaluation tool to open the user interface.

u-start v.19.08.02 supports the features below:

- **GNSS selection tab**
 - You can choose between 4 concurrent GNSS constellations and see the amount of satellites visible in sky view.
 - SBAS and QZSS Augmentation systems enabled, you can select either or use both of them.
 - You can see your own position on Google map view.
 - Satellite signal view is enabled.
 - Prompts the user for the software update if newer version of the application is found.



- **Time to first fix (TTFF) tab**

- This view enables you to see and compare the performance of M9 receiver while evaluating cold start and hot start with or without the AssistNow Online or AssistNow Offline service.
- AssistNow Online service requires an internet connection. You can get a valid temporary token needed for the AssistNow services simply by clicking **Go to registration** button as indicated in Figure 3.

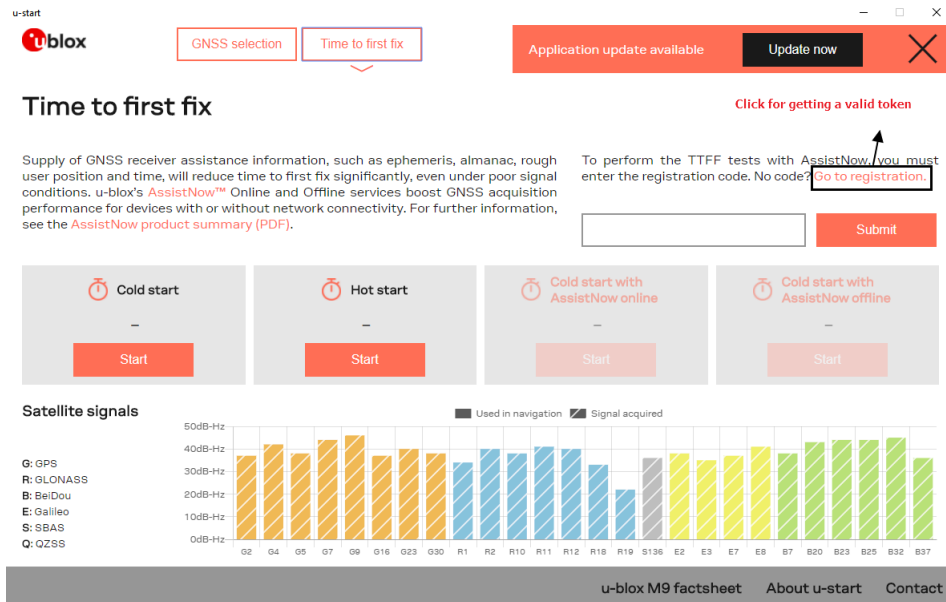


Figure 3: Time to first fix view

- **Other information tabs**

- **u-blox M9 factsheet:** Provides highlights of the u-blox M9 GNSS positioning technology.
- **About u-start:** Provides information about u-start version and license details as well as AssistNow registration code.
- **Contact:** Takes you to the u-blox contact page.

2.2 XPLR-M9 evaluation with u-center

u-center evaluation software can be used as an optional interactive tool for additional configuration, testing, visualization, data analysis and changing the firmware. Download u-center from [u-blox webpage](#).

For more information about u-center, refer to the u-center User guide [1].

3 Approvals

The XPLR-M9 is designed to in compliance with the essential requirements and other relevant provisions of Radio Equipment Directive (RED) 2014/53/EU.

The XPLR-M9 complies with the Directive 2011/65/EU (EU RoHS 2) and its amendment Directive (EU) 2015/863 (EU RoHS 3).

The Declaration of Conformity (DoC) is available at [u-blox website](#) within Support > Product Resources > Conformity Declaration.

4 u-start known limitations

- At application startup, the GNSS screen may be shown for a couple of seconds before displaying the "Antenna is not connected" warning dialog.
- Only the u-start application can be updated automatically, XPLR-M9 receiver firmware update is not yet supported in the current u-start v.19.08.02. Use u-center for GNSS firmware update, refer to the u-center User guide [\[1\]](#) for more information.
- If an error occurs when using the AssistNow Online, an invalid time is displayed (usually the last known valid time).
- Reset and Safeboot functionality are not implemented in u-start v.19.08.02. If incorrect configuration has been loaded accidentally while using u-center, there is no way of resetting the XPLR-M9.

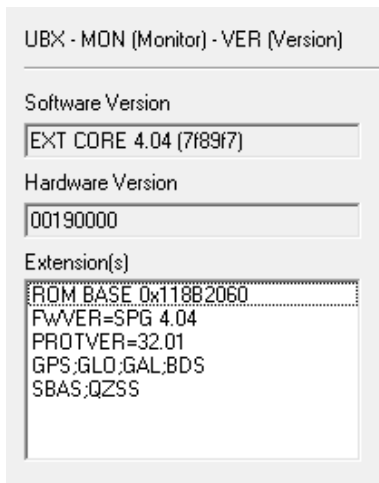


XPLR-M9 has no physical reset buttons and is not able to recover in case of issues.

5 Firmware update

The XPLR-M9 has the latest version of GNSS firmware at time of delivery. However, as newer firmware versions may become available during the lifetime of the product, you might need to update the firmware. This section shows how to update the firmware on XPLR-M9 if required. As firmware update is not supported by u-start v.19.08.02 yet, you need to use u-center for necessary firmware update. See u-center User guide [1].

To update the firmware with u-center, connect via USB to u-center and poll UBX-MON-VER to view the installed firmware, as shown in [Figure 4](#).



UBX - MON (Monitor) - VER (Version)
Software Version
EXT CORE 4.04 (7189f7)
Hardware Version
00190000
Extension(s)
ROM BASE 0x118B2060
FWVER=SPG 4.04
PROTVER=32.01
GPS;GLO;GAL;BDS
SBAS;QZSS

Figure 4: Checking XPLR-M9 firmware version from u-center

To upload a new firmware follow the instructions below:

1. Select **Tools > Firmware Update....** The firmware update window will appear as shown in Figure 5.

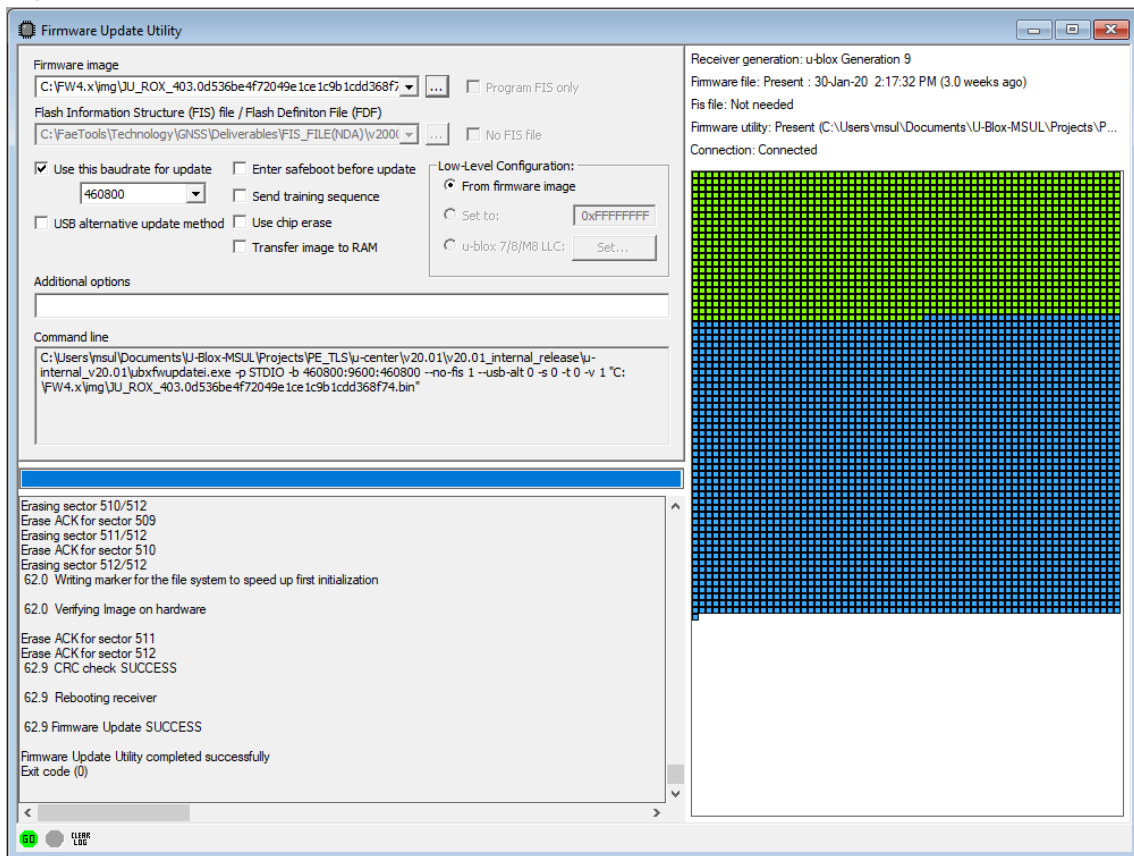


Figure 5: Firmware update tool

2. Select the firmware image by clicking the ellipsis button next to **Firmware image**.
3. Select **Use this baud rate for update** option and choose a higher baud rate 460800 to make the firmware update faster.
4. Click **GO**.
5. Poll UBX-MON-VER again to verify the updated firmware.



When updating the SPG firmware on the XPLR-M9, the default baud rate must be set to 460800 baud manually with u-center. Otherwise, the default baud rate of the SPG firmware (38400 baud) applies and u-start cannot communicate with the device.

6 Troubleshooting

Explorer Kit is not connected

When trying to run multiple instances of the u-start application or when u-center is already connected to the Explorer kit, the second instance remains in the "Explorer Kit not connected" error state.

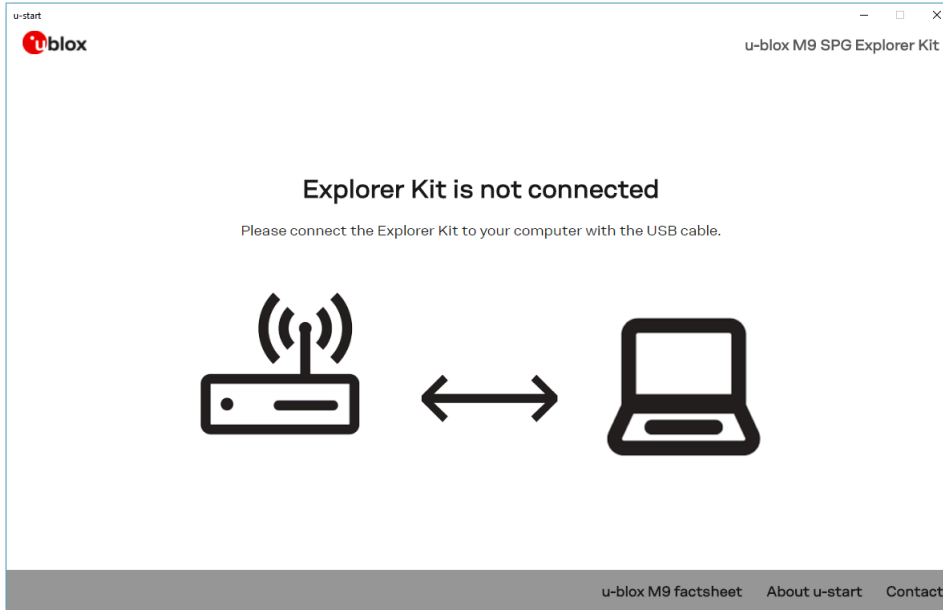


Figure 6: Multiple instance of u-start shows this not connected state

Close duplicate instance/instances of u-start or disconnect the Explorer kit from u-center and try again.

Related documents

- [1] u-center User guide, [UBX-13005250](#)
- [2] UBX-M9140-KB Integration manual, UBX-18020542 (NDA required)
- [3] UBX-M9140-KB Interface description, UBX-19039383 (NDA required)
- [4] UBX-M9140-KB Data sheet, UBX-18020412 (NDA required)
- [5] UBX-M9140-KA Integration manual, UBX-19041089 (NDA required)
- [6] UBX-M9140-KA Interface description, UBX-19042181 (NDA required)
- [7] UBX-M9140-KA Data sheet, UBX-18021372 (NDA required)
- [8] NEO-M9N Integration manual, [UBX-19014286](#)
- [9] NEO-M9N Interface description, [UBX-19035940](#)
- [10] NEO-M9N Data sheet, [UBX-19014285](#)
- [11] Information technology equipment – Safety Standard [IEC 62368-1:2018](#)



For regular updates to u-blox documentation and to receive product change notifications please register on our [homepage](#).

Revision history

Revision	Date	Name	Status / Comments
R01	1-Nov-2019	msul	Initial release
R02	13-Feb-2020	msul	Added sections 3 approvals and 1.4 safety precautions, updated firmware version to SPG 4.03, added M9140-KA documentation as reference and removed one firmware limitation.
R03	17-Sep-2020	msul	Added section 5 firmware update, updated firmware version to SPG 4.04, updated section 4 u-start known limitation.

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