

GL31MG User Manual

LTE Cat M1/NB2 Micro Waterproof Real-Time Asset Tracker

V1.00



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0.Revision History

Version	Date	Author	Description of Change
1.00	June 27, 2024	Eden Zhang	Initial.

1. Introduction

The device is a micro size and waterproof real-time tracker with LTE Cat M1/NB2 and 2G fallback. It is used for a wide range of applications that require real-time location knowledge, such as personal safety, animal management, asset monitoring, package delivery, temporary tracking of vehicles, and endurance racing.

1.1 Reference

SN	Document Name	Remark
[1]	GL31MG @Track Air Interface Protocol	The air protocol interface between GL31MG and backend server.

Table 1: GL31MG Protocol Reference

2. Product Overview

2.1 Product Appearance

Figure 1. Appearance of GL31MG

2.4 Parts List

Table 5: GL31MG Parts List

Name	Picture
GL31MG Locator	
UART Cable(Optional)	

USB Cable(Optional)



Charging cable



Note: UART cable and the USB cable are optional accessories and may not be delivered along.

3. Interface Definition

3.1 UART Interface

The GL31MG has a UART interface that is used for configuring settings by using the UART cable.



3.2 USB Interface

The GL31MG has a USB interface that is used for firmware download by using the USB cable



3.3 Charging Interface

The GL31MG has a charging interface that is used for charging by using the charging cable



4. Getting Start

4.1 Battery Charging

- ◆ Connect the AC-DC power adapter to GL31MG.
- ◆ Insert the AC-DC power adapter into the power socket.
- ◆ During charging, the PWR LED flashes fast. When the battery is fully charged, the PWR LED will be always on.
- ◆ You can also charge the battery via a USB cable that connects GL31MG to the PC.

Note:

Before using GL31MG for the first time, please fully charge the battery

4.2 Turing On/Off the Device

To turn on the device:

- ◆ Method 1: Press the power key for at least 3 seconds and release it to turn on GL31MG. At the same time, PWR LED also turns on.
- ◆ Method 2: Connect the device to the charger or external battery. The device will turn on automatically, and PWR LED will also turn on.

To turn off the device:

- ◆ Method 1: Press the power key for at least 3 seconds. PWR LED will flash and then turn off. It indicates that GL31MG is turned off. The time needs to power off the device depends on the quality of the network. The maximum time needed for power off is 90 seconds. This method is only valid for turning off the device when the internal battery is used.
- ◆ Method 2: If an external battery is used, the device will power off when the external battery is disconnected.

5. Firmware Upgrade

5.1. Upgrade the firmware through USB

5.1.1. Preparation

Item	Name
Cable	GL31MG USB Cable
File	FULL package
Tools	Queclink_Firmware_Upgrade_Tool_MDM_Vx.xx Note: Please use Version 1.57 (or above version).

5.1.2. Upgrade Steps

Install **Driver_qud.win.1.1_installer_x.x** for the USB cable before upgrading the firmware with the tool.

Connect GL31MG to the PC via the USB cable.

You can check the USB port in “Computer Management->Device Manager->Ports” when the device is well connected with USB cable.

TBD

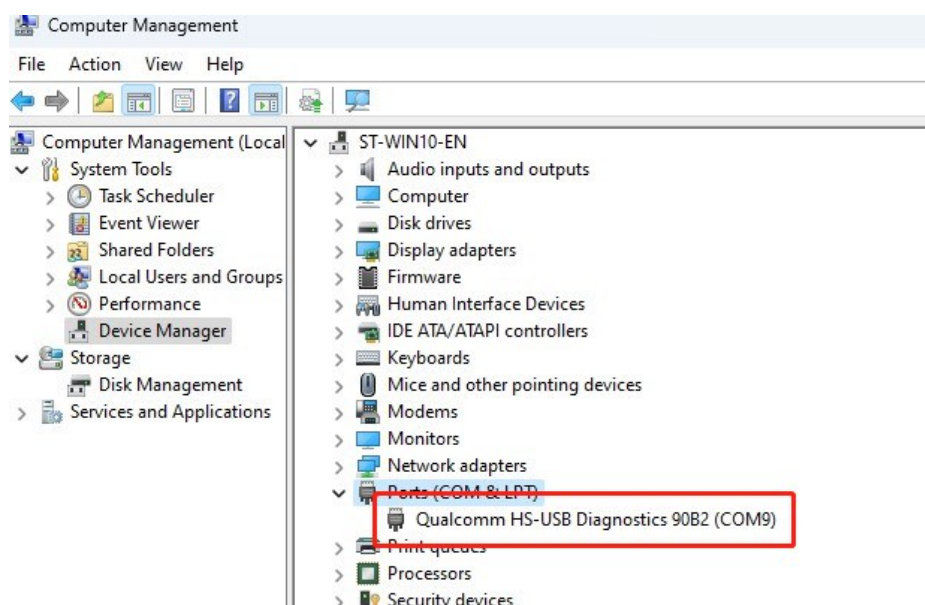
Contact point between the device and the USB cable

TBD

TBD

USB cable connect with device.

(Connect through five contact points, please hold the connection firmly by hand)



The USB port show in the Computer Management

Step 1

Open Queclink_Firmware_Upgrade_Tool_MDM_Vx.xx.exe. Click **Load FW Files** and select **qld.cfg** file in **GL31MGR00AxxVxxM512_FULL** folder.

GL31MGR00A01V14M512	24/6/18 10:58	文件夹	
GNSS diff.xqcn	23/6/13 19:56	XQCN 文件	3 KB
qld.cfg	24/6/18 10:58	CFG 文件	1 KB
QLM100_FAC_2108_2314_diff_GNSS.x...	24/5/31 15:36	XQCN 文件	5 KB

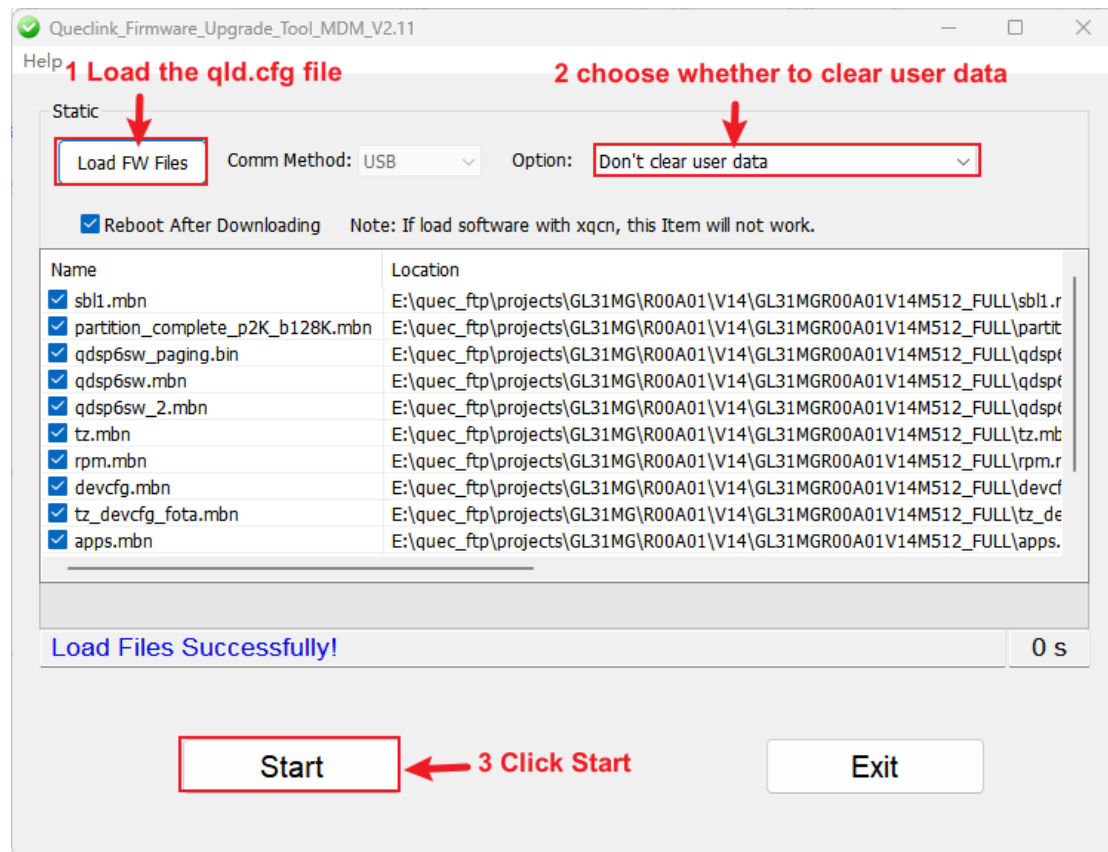
Load Firmware File

Step 2

For **Option**, you can choose whether to clear user data.

Step 3

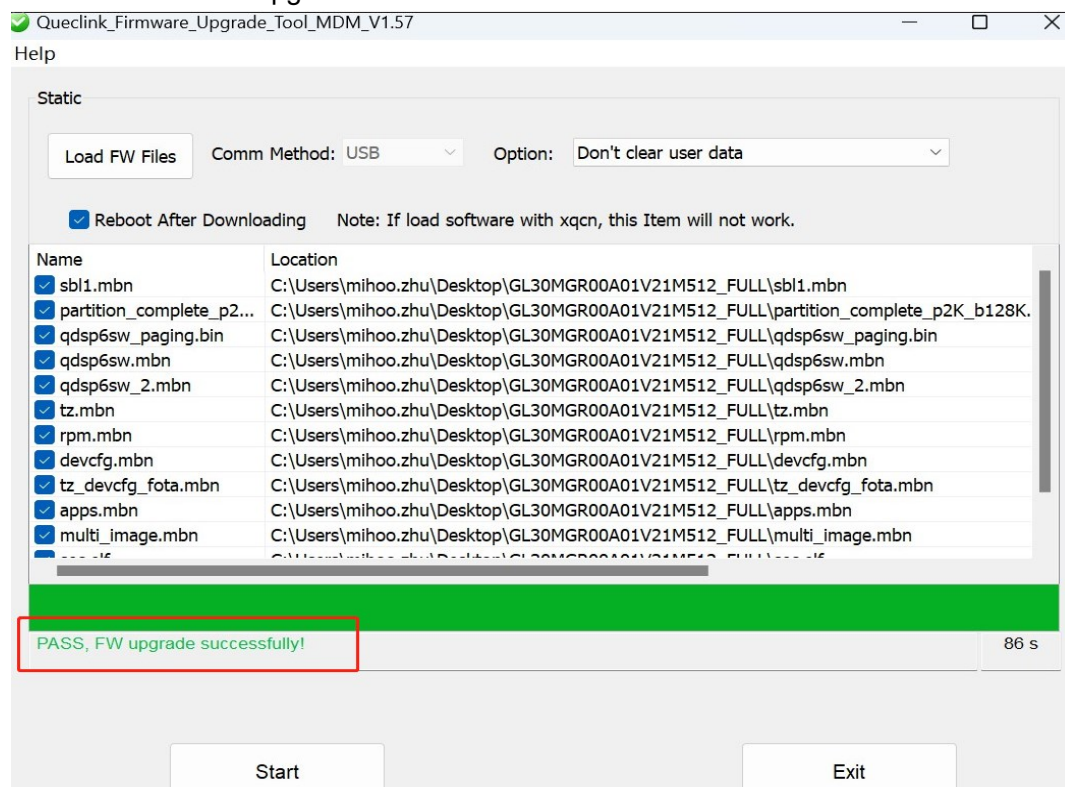
Select **Start**.



Basic setting

Step 4

Wait for the firmware upgrade to succeed.



Upgrade success

5.1.3. Troubleshooting

- a) If the USB port keeps disconnecting while downloading the firmware, the upgrade tool will stop downloading and prompt Download Fail in seconds. In this case, please power off the device and power on the device, then try again.
- b) If the upgrade tool is closed while downloading the firmware, open the upgrade tool but an error message will appear. In this case, please power off the device and power on the device, then try again..
- c) If other unexpected errors occur, please power off the device and power on the device, then try again.

5.2. Upgrade the firmware through UART

5.2.1. Preparation

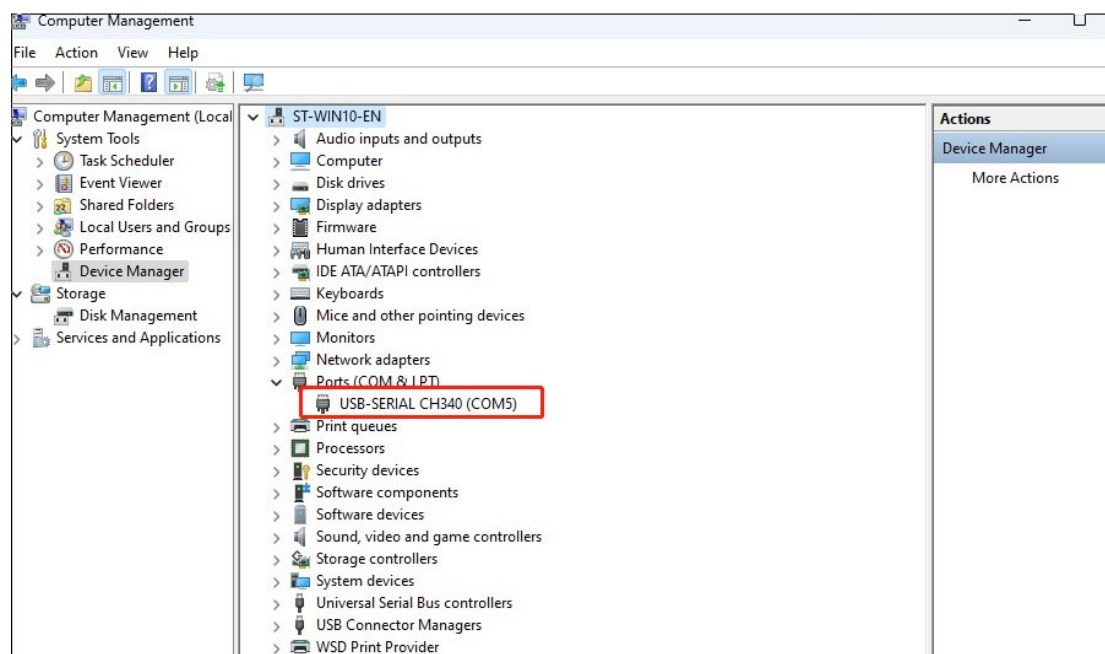
Item	Name
Cable	GL31MG UART cable
File	UPD package
Tools	Queclink_Firmware_Upgrade_Tool_MDM_Vx.xx Note: Please use Version 1.57 (or above version).

5.2.2. Upgrade Steps

Install the driver **CH340G_Cable_Driver_Installer_Vx.xx** for the UART cable before upgrading the firmware.

Connect GL31MG to the PC via the UART cable, you can refer to section 5.1.2 on how to connect the device with the cable, you can refer to section 5.1.2 on how to connect the device with the cable.

You can check the UART port in “Computer Management->Device Manager->Ports” when the device is well connected with UART cable.



The UART port show in the Computer Management

Step 1

Open Queclink_Firmware_Upgrade_Tool_MDM_Vx.xx.exe. Click **Load FW Files** and

select **qld.urt** file in **GL31MGR00AxxVxxM512_UPD** folder.

 qld.urt	2023/9/1 19:31	URT 文件	1 KB
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Load Firmware File

Step 2

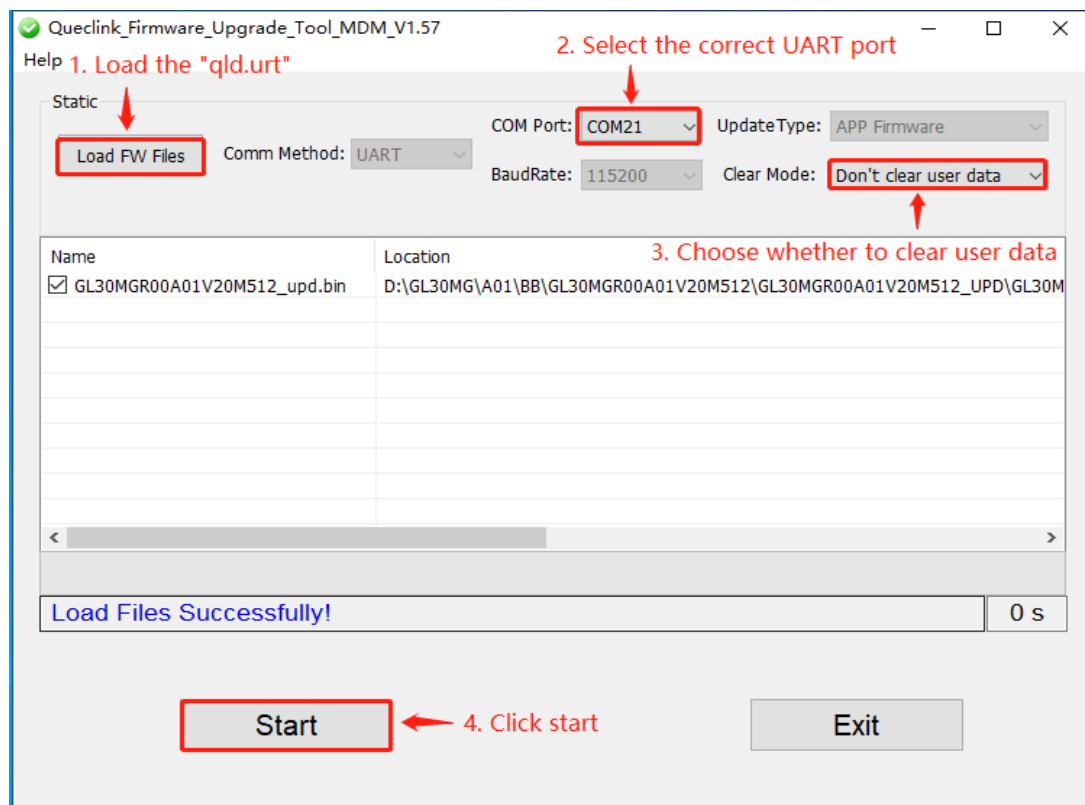
Select the correct UART port for upgrading.

Step 3

For **Clear Mode**, you can choose whether to clear user data.

Step 4

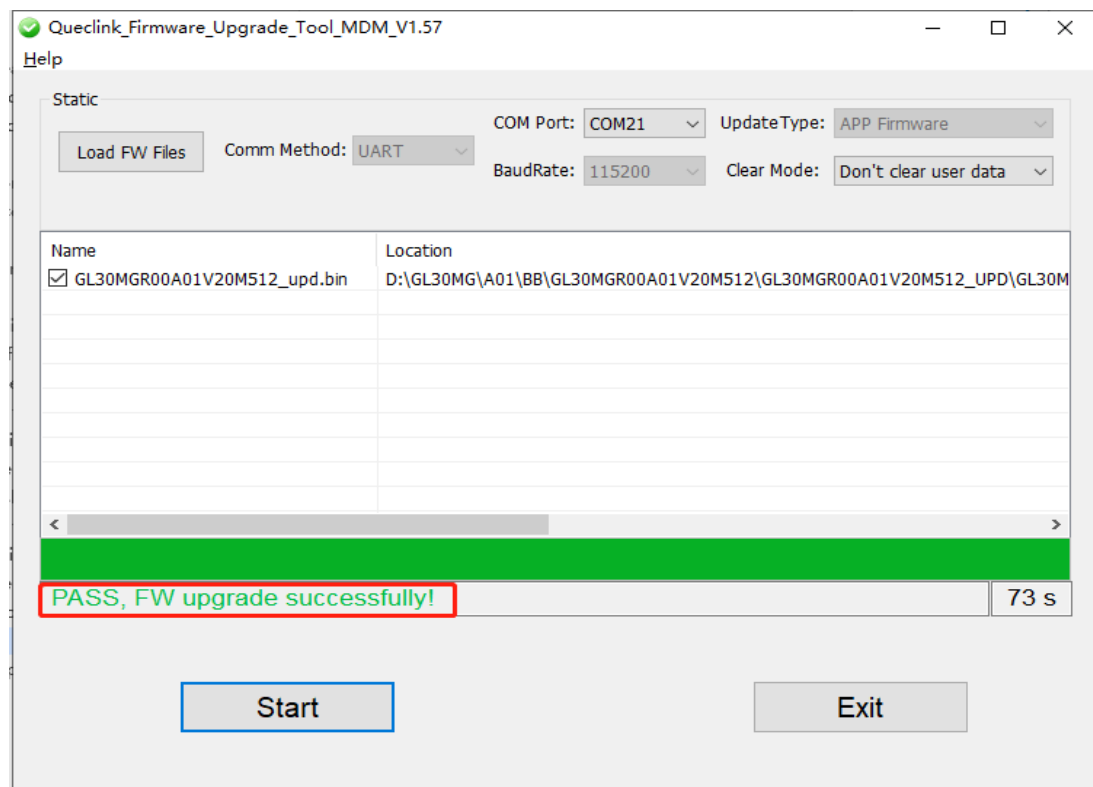
Select **Start**.



Basic setting

Step 5

Wait for the firmware upgrade to succeed.



Upgrade success

6. MCU Firmware Upgrade

6.1. Preparation

	Name
Cable	GL31MG UART cable
File	MCU Firmware Image
Tools	Queclink_Firmware_Upgrade_Tool_MDM_Vx.xx Note: Please use Version 1.57 (or above version).

6.2. Upgrade Steps

Install the driver **CH340G_Cable_Driver_Installer_Vx.xx** for the UART cable before upgrading the MCU firmware with the tool.

Connect GL31MG to the PC via the UART cable, you can refer to section 5.1.2 on how to connect the device with the cable.

You can check the UART port in "Computer Management->Device Manager->Ports" when the device is well connected with UART cable.(Please refer to the picture **The UART port show in the Computer Management** in section 5.2.2)

Step 1

Open Queclink_Firmware_Upgrade_Tool_MDM_Vx.xx.exe. Click **Load FW Files** and select **qld.urt** file in **GL31MG_McuR0EVx.xx** folder.

 qld.urt	2023/9/7 17:38	URT 文件	1 KB
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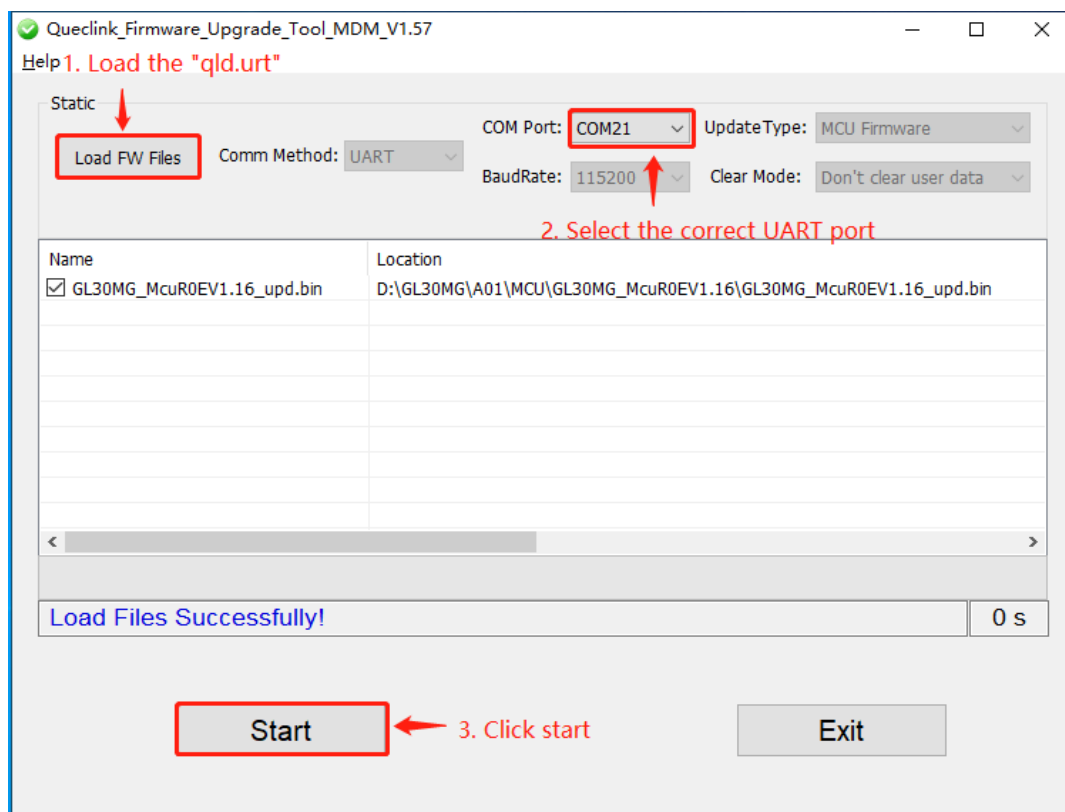
Load Firmware File

Step 2

Select the correct UART port for upgrading.

Step 3

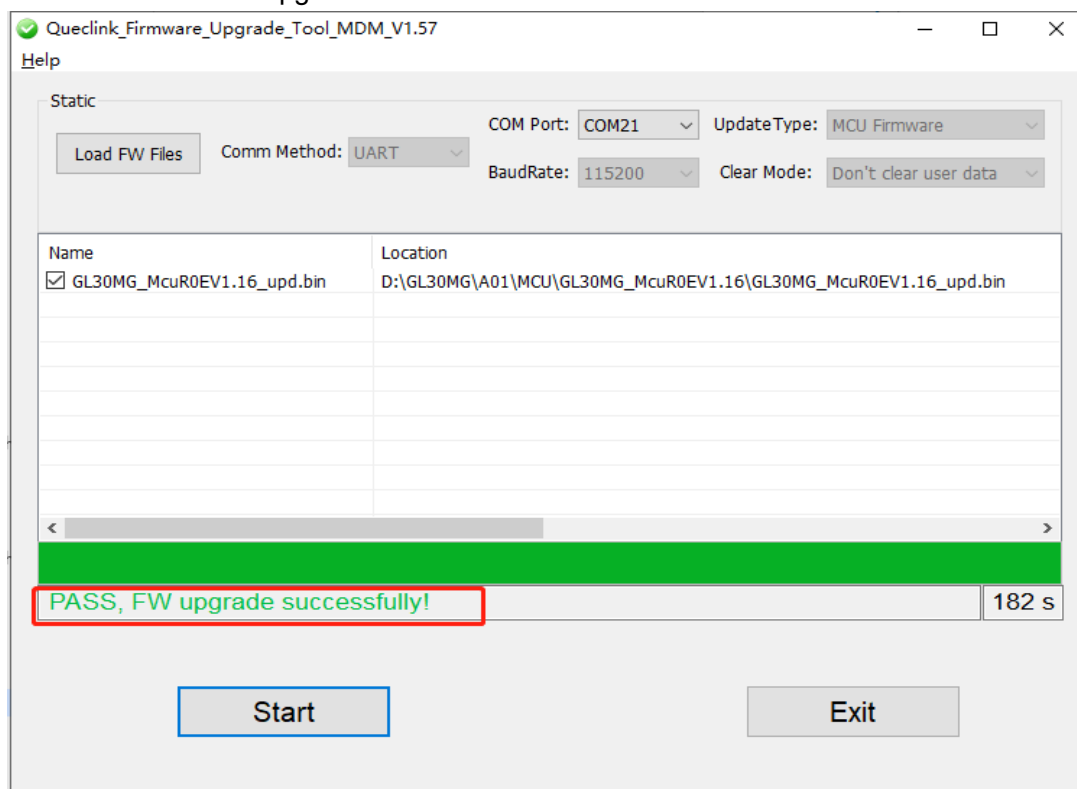
Select **Start**.



Basic setting

Step 5

Wait for the firmware upgrade to succeed.



Upgrade success

7. Usage reference

7.1. AT+GTBID

Set parameter <Lost Times> of **AT+GTBID** command to 1 when using sample device to deploy in field. In daily use scenarios set its value to 3 or 5 times in order to reduce false positives by other obstacles.

FCC Caution.

a、 § 15.19 Labeling requirements.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

b、 § 15.21 Changes or modification warning.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

c、 § 15.105 Information to the user.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

*RF warning for Mobile device:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided.