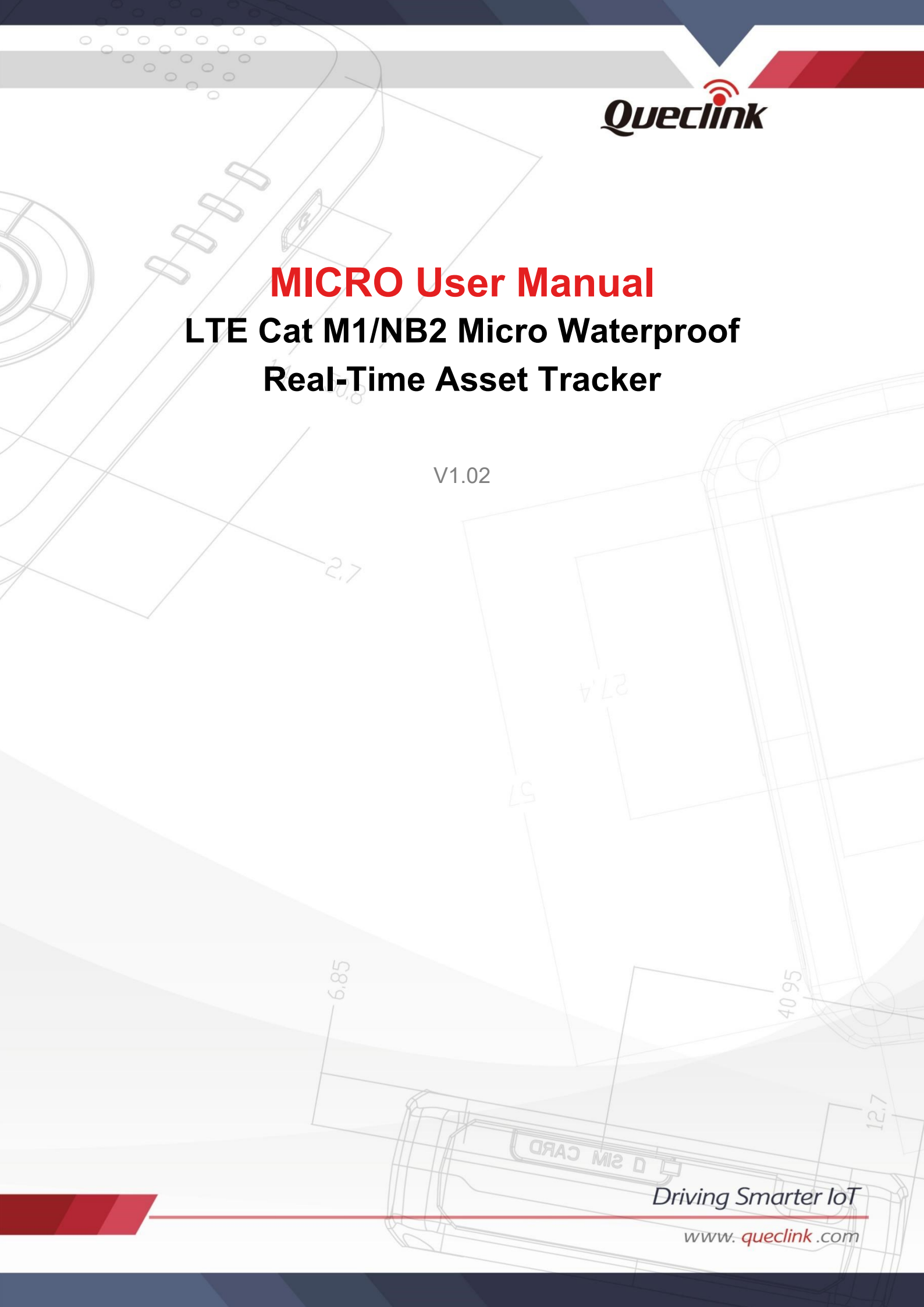
MICRO User Manual

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

V1.02



Driving Smarter IoT

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Contents

0.Revision History

Version	Date	Author	Description of Change
1.00	August 8, 2023	Oliver Ding	Initial.
1.01	August 24, 2023	Leaf Ye	Added chapter 5: Firmware Upgrade.
1.02	September 12, 2023	Hedy Yang	Added chapter 6: MCU Firmware Upgrade.

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]	MICRO @Track Air Interface Protocol	The air protocol interface between MICRO and backend server.

Table 1: MICRO Protocol Reference

2. Product Overview

2.1 Product Appearance

Figure 1. Appearance of MICRO

2.2 key interface description

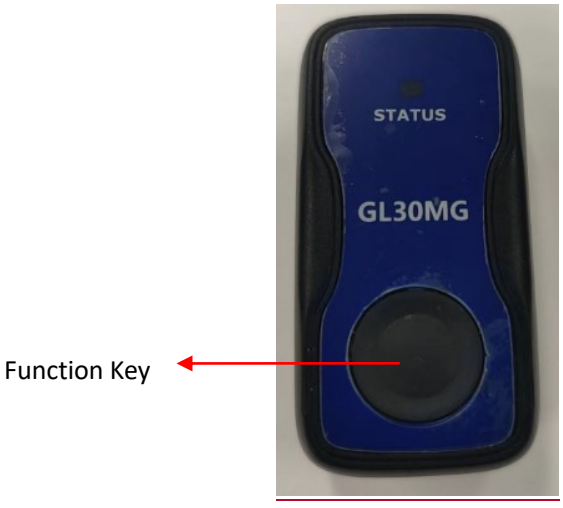


Figure 2. MICRO Function Key

Functions	Operation
Power on	Long press for more than 3 seconds until Red LED on.

Check the device status	Press the function button once.
Power off	Long press for more than 3s after power on.

Table 2: MICRO Key Description

2.3 LED Description

Figure 3. MICRO tri-color LED

There is a tri-color led on the device, which can work separately to indicate the status of the device. Please refer to the following table:

LED	Device Status	LED Status
CELL LED (Green)	searching for network.	Fast flash
	The device has been registered on the network.	Slow flash
	SIM-PIN locked	Solid
	Out of network	Dark
GNSS LED (Blue)	GNSS has fixed a position	Solid
	GNSS is in the process of fixing.	Fast flash
	GNSS is on and GNSS gets fix.	Slow flash
	GNSS is off.	Dark
PWR LED (Red)	Power on and normal	Dark
	Charger inserted and charging completed	Solid(tri-color LEDs on)
	Charger inserted and charging	Slow flash
	Power key pressed to power off the device	Fast flash
	Power low alert	Slow flash

Table 3. MICRO LED Description (work separately)

Note:

1. Fast flashing is about 60ms when the LED indicator is on and 780ms when it is off.
2. Slow flash is about 60ms when the LED indicator is on and 1940ms when it is off.

The Red led would be on after pushing the button for more than 3s when the device is powered off, if the push time is less than 3s that the push event would be ignored.

Green led would be on when pushing the button down when the device is waked up.

After the device is turned on, the LEDs turn on for 5 minutes and then turn off. Please refer to the following table when two LEDs work in combination:

During power-on	Red LED will be on to indicate the device is powered on.
When checking the device status	Green LED will be on to indicate the device still works.
During power-off	Red LED will flash simultaneously to indicate the device is powered off.

Table 4. MICRO LED Description (work in combination)

2.4 Parts List

Table 5: MICRO Parts List

Name	Picture
MICRO 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 MICRO has a UART interface that is used for configuring settings by using the UART cable.

3.2 USB Interface

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

3.3 Charging Interface

The MICRO 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 MICRO.
- 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 MICRO to the PC.

Note:
Before using MICRO 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 MICRO. 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 MICRO 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	MICRO USB Cable
File	FULL package
Tools	Queclink_Firmware_Upgrade_Tool_MDM_Vx.xx **Note**: Please use Version 1.57 (or above version).

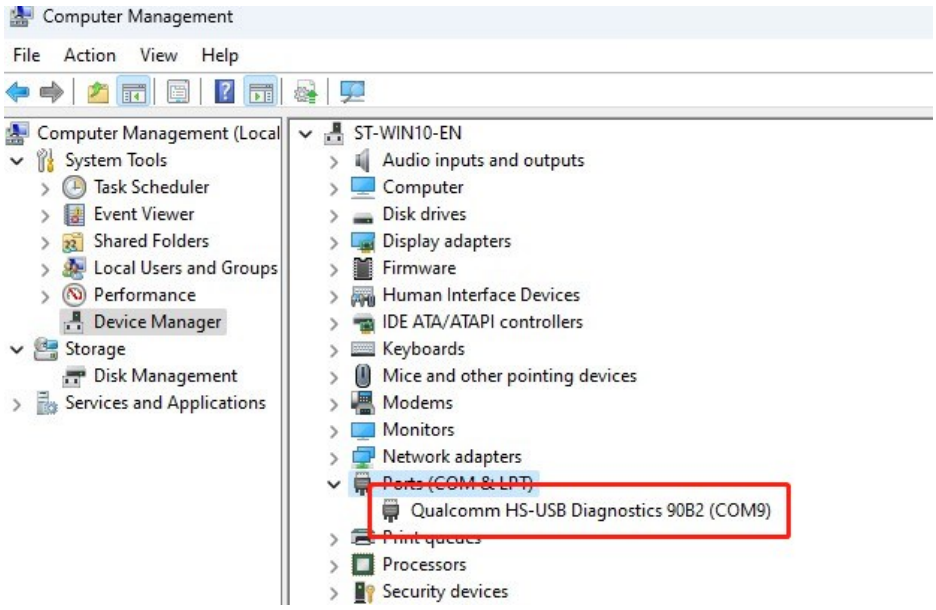
5.1.2. Upgrade Steps

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

Contact point between the device and the USB cable

USB cable connect with device.

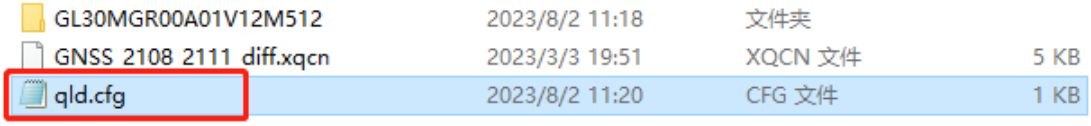
(Connect through five contact points, please hold the connection firmly by hand)



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 **GL30MGR00AxxVxxM512_FULL** folder.



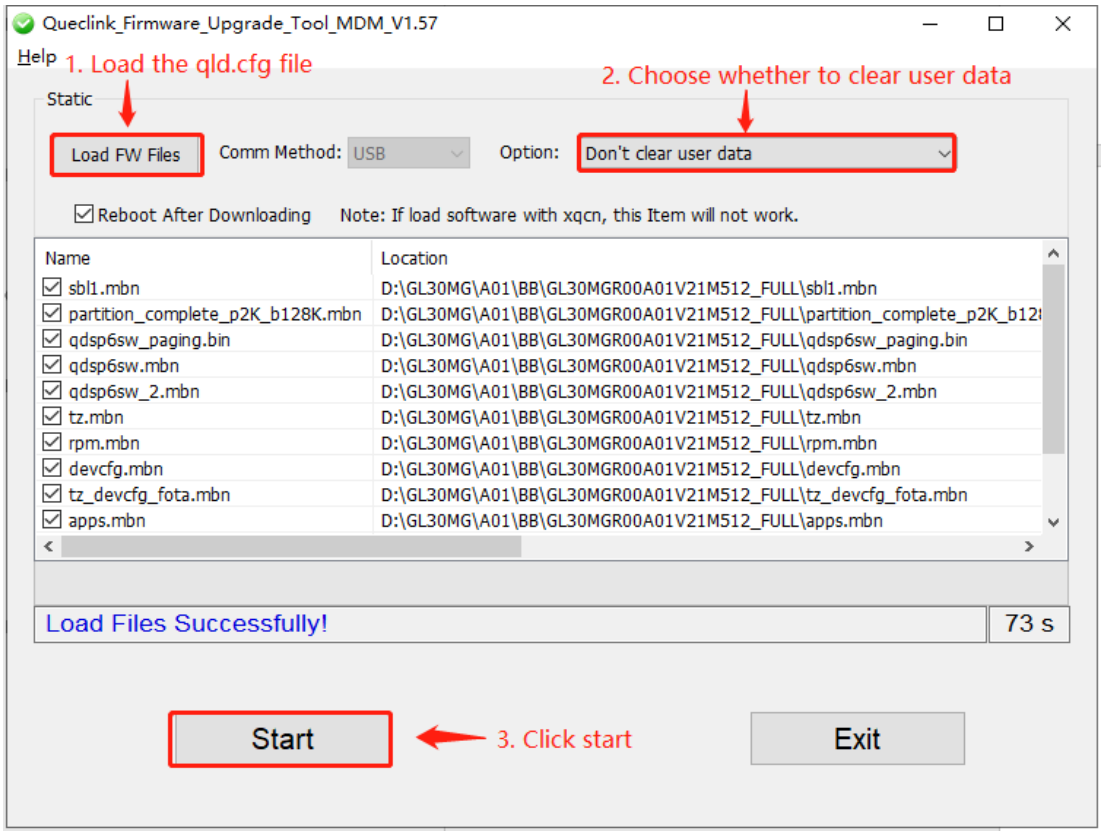
Load Firmware File

Step 2

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

Step 3

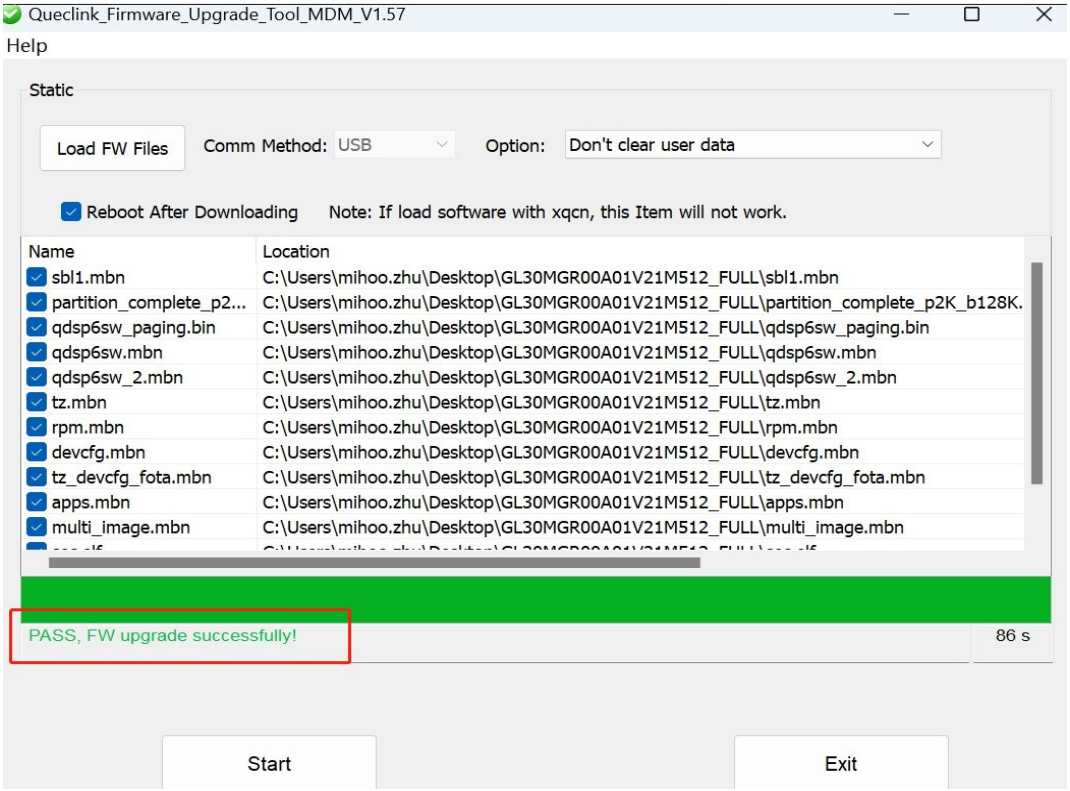
Select **Start**.



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.

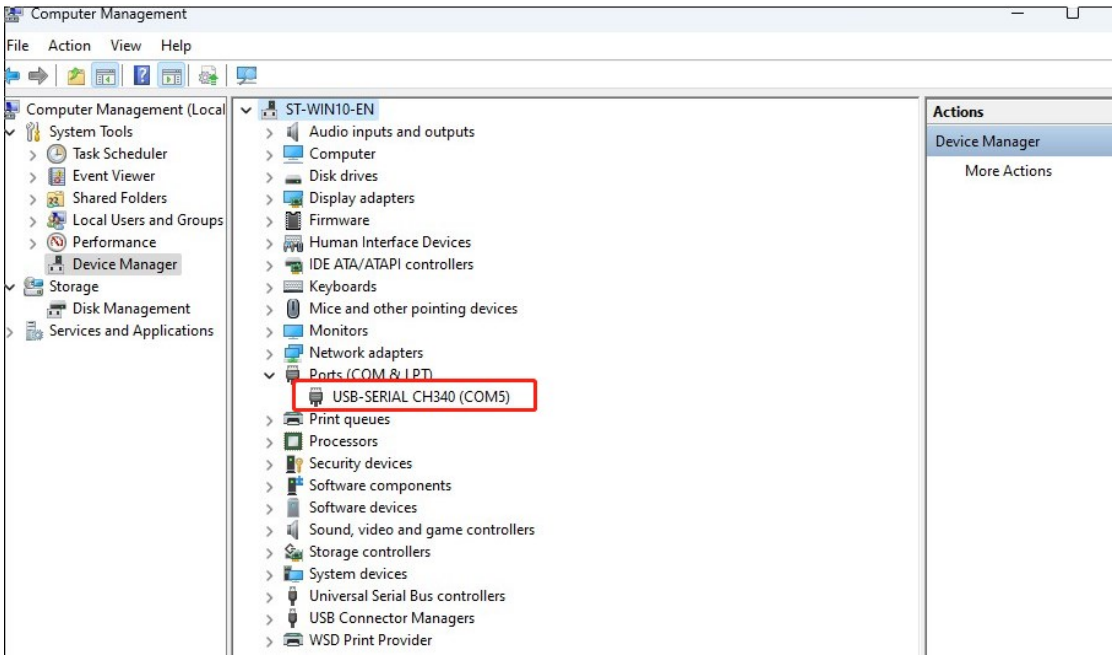
5.2. Upgrade the firmware through UART

5.2.1. Preparation

Item	Name
Cable	MICRO 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

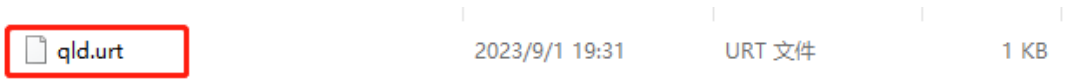
Install the driver **CH340G_Cable_Driver_Installer_Vx.xx** for the UART cable before upgrading the firmware.
Connect MICRO to the PC via the UART cable, you can refer to section 5.1.2 on how to connect the device with the cable, you can refer to section 5.1.2 on how to connect the device with the cable.
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 **GL30MGR00AxxVxxM512_UPD** folder.



Load Firmware File

Step 2

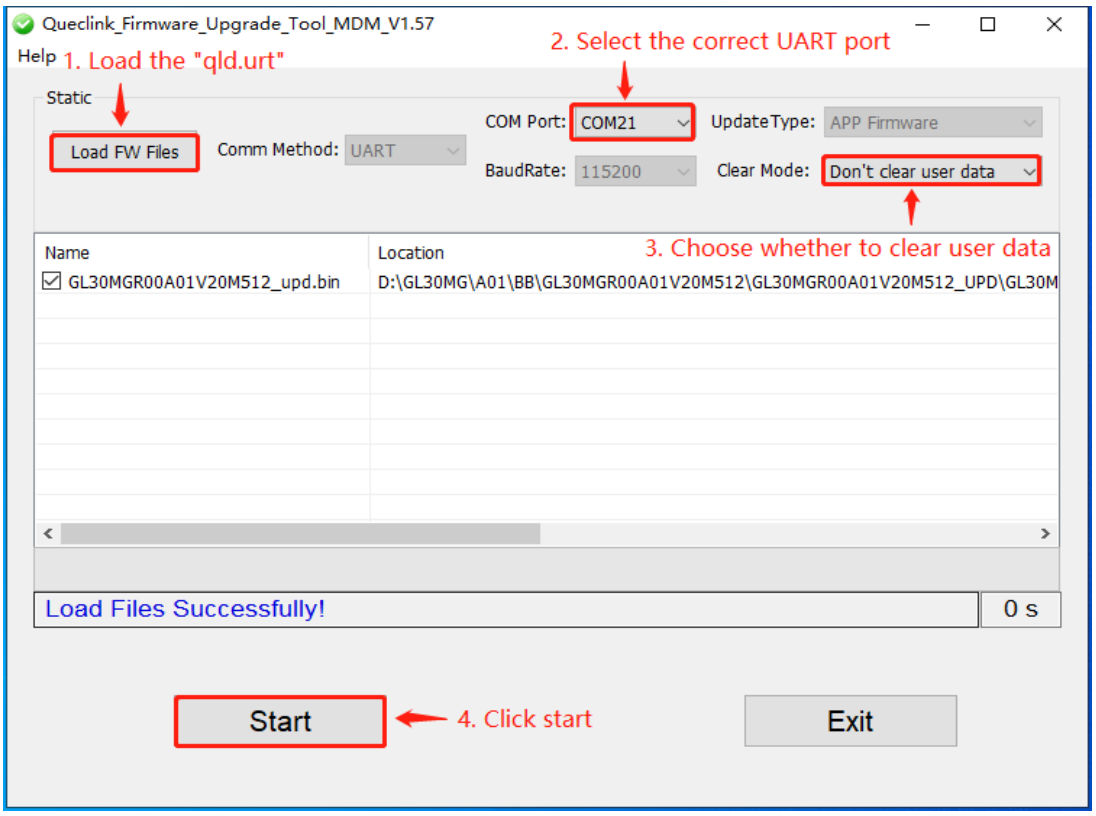
Select the correct UART port for upgrading.

Step 3

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

Step 4

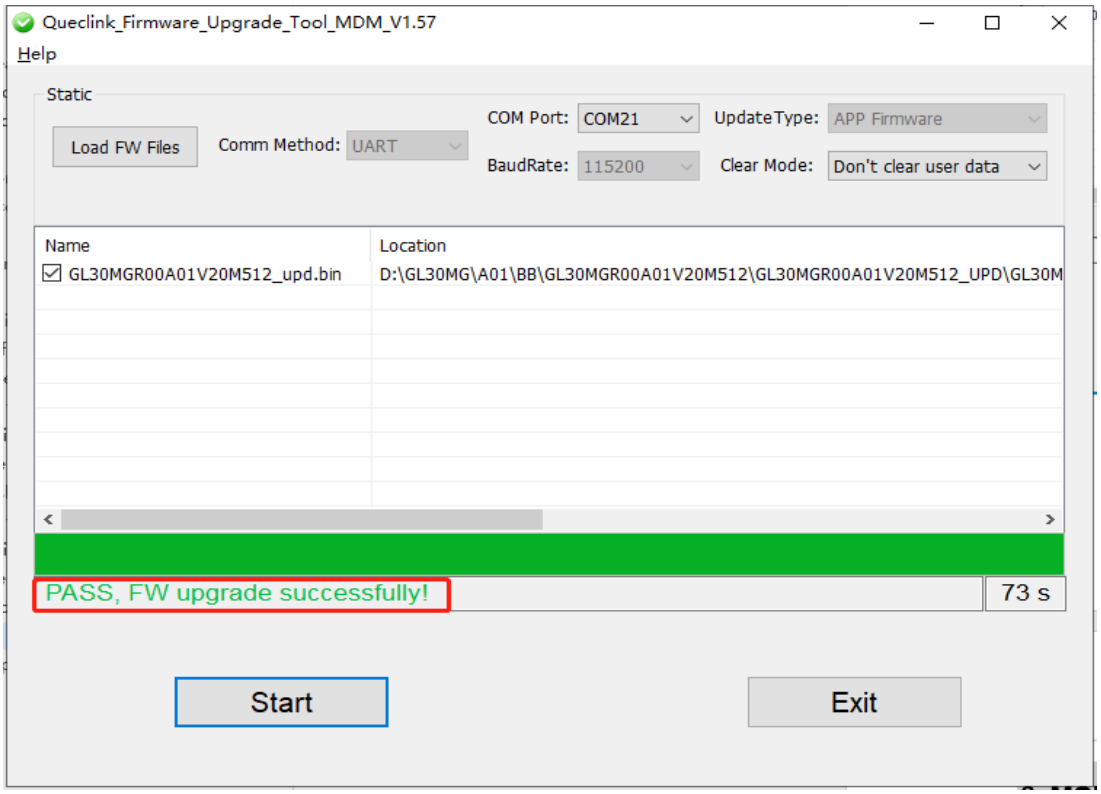
Select **Start**.



Basic setting

Step 5

Wait for the firmware upgrade to succeed.



Upgrade success

6. MCU Firmware Upgrade

6.1. Preparation

	Name
Cable	MICRO 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

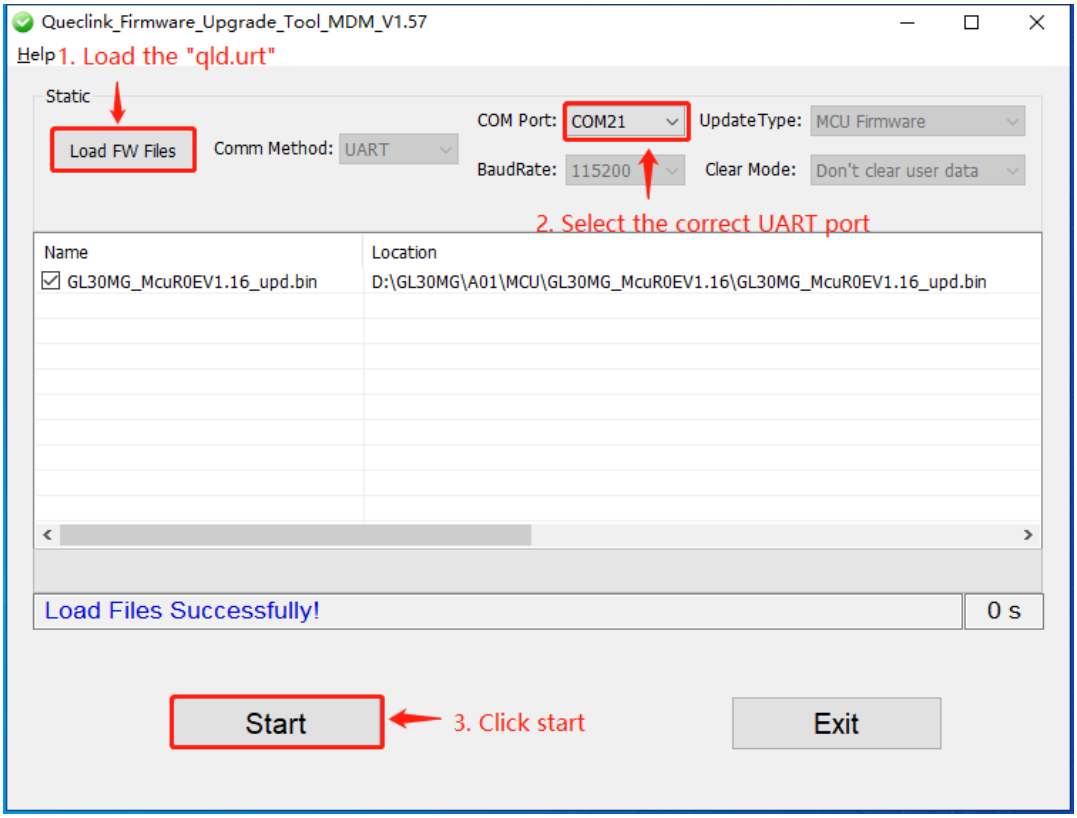
Install the driver **CH340G_Cable_Driver_Installer_Vx.xx** for the UART cable before upgrading the MCU firmware with the tool.
Connect MICRO to the PC via the UART cable, you can refer to section 5.1.2 on how to connect the device with the cable.
You can check the UART port in "Computer Management->Device 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 **GL30MG_McuR0EVx.xx** folder.

Load Firmware File

Step 2
Select the correct UART port for upgrading.

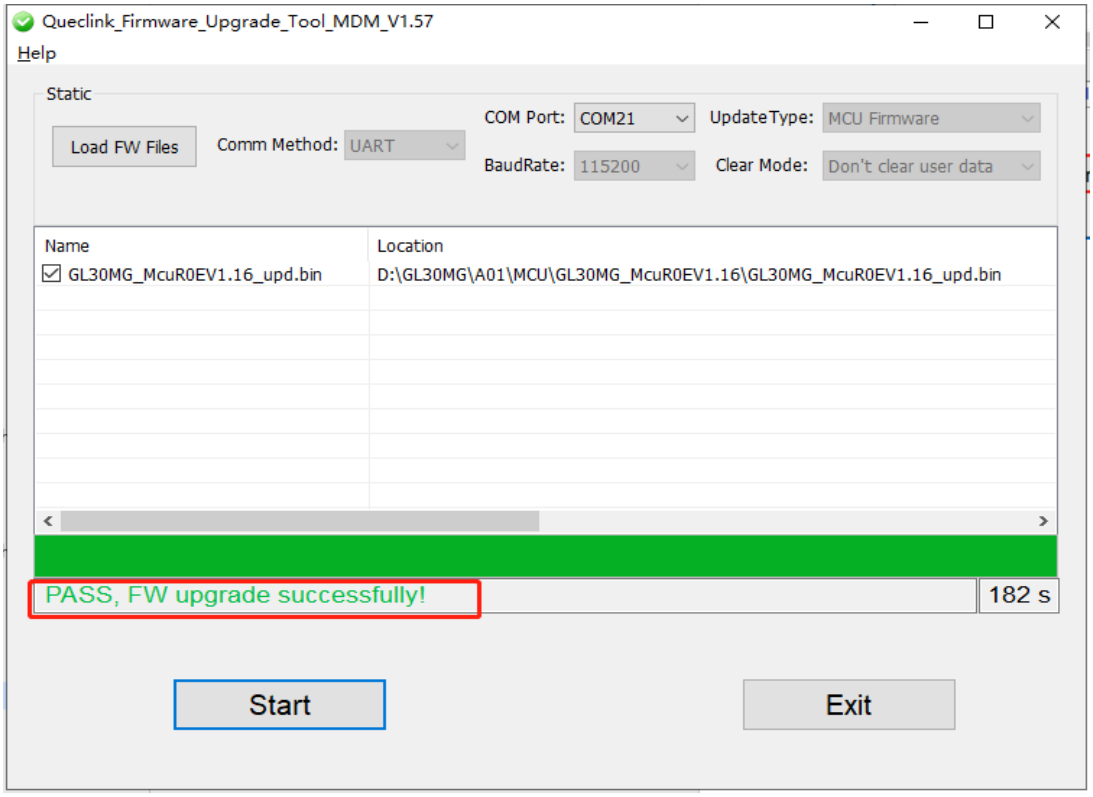
Step 3
Select **Start**.



Basic setting

Step 5

Wait for the firmware upgrade to succeed.



Upgrade success

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.