

# 4G CBRS USB Dongle

IDG120-C6U01 (LTE cat. 6)

User Manual



# 4G CBRS USB Dongle

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## Chapter 1 Introduction

### 1.1 Introduction

Congratulations on your purchase of AMIT's IDG120 CBRS USB Dongle. With this AMIT USB dongle you have made a great step to turn your existing equipment into a CBRS OnGo-capable device. CBRS is a shared spectrum (3550-3700MHz) which is authorized by FCC for the commercial use in the US. OnGo Alliance is promoting 3GPP-based technology (e.g. LTE and 3G) running on this shared spectrum. Since any entity can build its own private LTE network, the possible applications could be including:

- Distance Learning
- Campus Networking
- Enterprise Private LTE
- In-Building Network

Main Features:

- Providing capability for laptop PC or existing USB-based equipments to connect to a LTE CBRS OnGo network.
- Build with a high-speed Cat-6 LTE-TDD modem which can meet data throughput requirement for various applications.
- Carrier aggregation (CA) support that can bring higher data throughput and better user experience in the field.
- Compact dongle design with two internal CBRS LTE antennas. Easy for installation and carry.
- Compatible with Microsoft Windows, Linux, Apple Mac, and Google Chromebook operating systems.

Connection Diagram:



# 4G CBRS USB Dongle

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## 1.2 Contents List

### 1.2.1 Package Contents

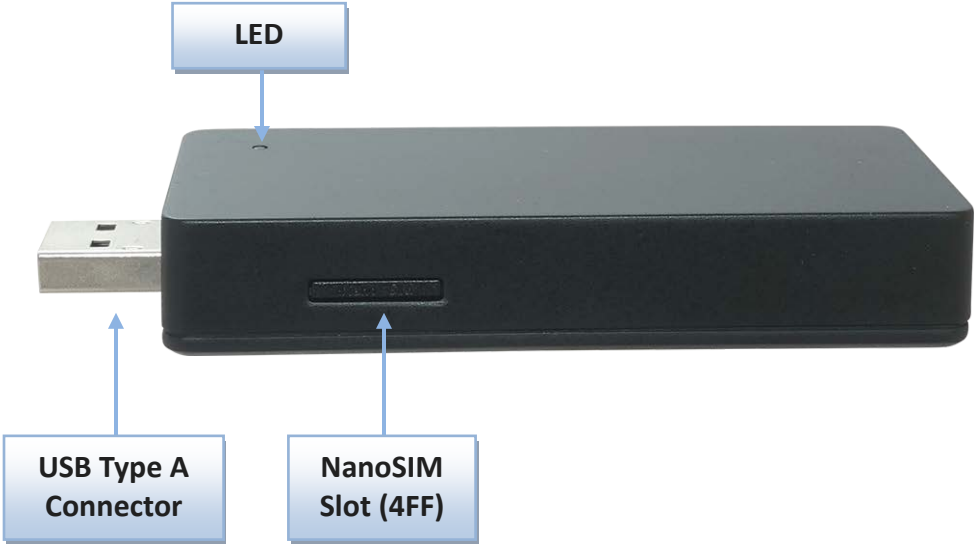
Items	Description	Contents	Quantity
1	IDG120-C6U01 4G CBRS USB Dongle		1pcs
2	USB Y-Cable		(Optional, sold separately)

# 4G CBRS USB Dongle

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## 1.3 Hardware Configuration

➤ Right and Top View



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## 1.4 LED Indication

LED Color	Description
Blue	The USB dongle is powered on
Violet	Data packet is transmitting or receiving over the LTE network

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## 1.5 Installation & Maintenance Notice

### 1.5.1 SYSTEM REQUIREMENTS

Network Requirements	<ul style="list-style-type: none"><li>• A USB2.0 Type A Connector</li><li>• Compatible OS: Microsoft Windows, Apple MAC, Linux, Chromebook</li></ul>
Connection Manager Software Utility Requirements	<ul style="list-style-type: none"><li>• Microsoft Windows 10 or later</li></ul>

### 1.5.2 WARNING



***Attention***

- Do not open or repair the device by yourself.
- The product is not designed for outdoor use.
- The temperature of the device surface could be very high while the device is operating at its maximum data throughput and maximum RF power.

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## **Federal Communication Commission Interference Statement**

This device complies with Part 15 and Part 96 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.

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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

## **FOR MOBILE DEVICE USAGE (>20cm/low power)**

### **Radiation Exposure Statement:**

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.



### 1.5.3 HOT SURFACE CAUTION



**CAUTION:** The surface temperature of the plastic enclosure can be very high! Especially after operating for a long time, installed at a closed cabinet without air conditioning support, or in a high ambient temperature space.

# 4G CBRS USB Dongle

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## 1.5.4 Product Specification

The following table includes the specification summary.

Item	Specification
LTE Capability	Category 6 LTE-TDD
LTE Band	Band 48 (3550-3700MHz)
CA Capability	Downlink: B48+B48 2CA
SIM Type	Nano SIM (4FF)
Power Input	DC 5V through USB Type A connector
Power Consumption	AVG. at 3.5W; Maximum at 5.5W <sup>1</sup>
Operation Temperature	-22°F to +104°F (-30°C to +40°C)
Storage Temperature	-22°F to +140°F (-30°C to +60°C)
Humidity	10%~95% (non-condensing)
Dimension (mm)	92(L) x 36.2(W) x 14(H)

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<sup>1</sup> A USB Y-cable is available and sold separately if the host device can't supply enough power through single USB port.

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## 1.6 Hardware Installation

### 1.6.1 Insert the SIM Card

**WARNING: BEFORE INSERTING OR REMOVING THE SIM CARD, PLEASE MAKE SURE THE USB DONGLE IS POWERED OFF.**

SIM card slot is located in the middle area of IDG400 series. You need to remove the outer SIM card cover before installing or removing an inserted SIM card. Please follow below instructions to install or remove a SIM card. After SIM card is well installed or removed, put back the outer SIM card cover.

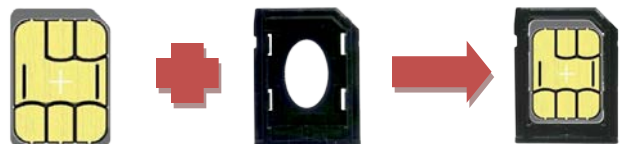
#### Step 1: Remove SIM Tray

Push the SIM cover to remove the SIM tray



#### Step 2: Put SIM Card on the SIM Tray

Securely put the Nano SIM card (4FF) on the SIM tray in the right direction



#### Step 3: Push SIM Tray Back to the Dongle

Push back the SIM tray with the SIM card is toward down

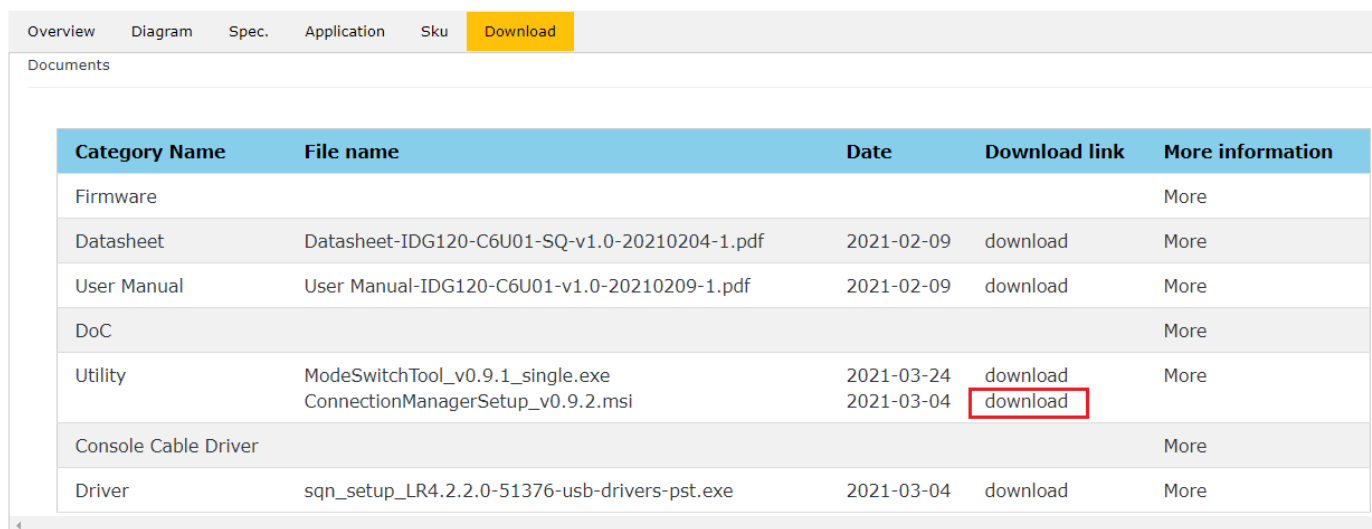


## Chapter 2 Configuration

### 2.1 Set Up Connection Manager on Windows

Download AMIT Connection Manager

at [http://www.amitwireless.com/productDetail.php?cate=986&product\\_id=1278&pid=1232&pid1=1231&pid2=986](http://www.amitwireless.com/productDetail.php?cate=986&product_id=1278&pid=1232&pid1=1231&pid2=986). The AMIT Connection Manager already includes the installer of Windows driver, so you don't need to download the Windows driver separately.



Category Name	File name	Date	Download link	More information
Firmware				More
Datasheet	Datasheet-IDG120-C6U01-SQ-v1.0-20210204-1.pdf	2021-02-09	download	More
User Manual	User Manual-IDG120-C6U01-v1.0-20210209-1.pdf	2021-02-09	download	More
DoC				More
Utility	ModeSwitchTool_v0.9.1_single.exe	2021-03-24	download	More
	ConnectionManagerSetup_v0.9.2.msi	2021-03-04	download	More
Console Cable Driver				More
Driver	sqn_setup_LR4.2.2.0-51376-usb-drivers-pst.exe	2021-03-04	download	More

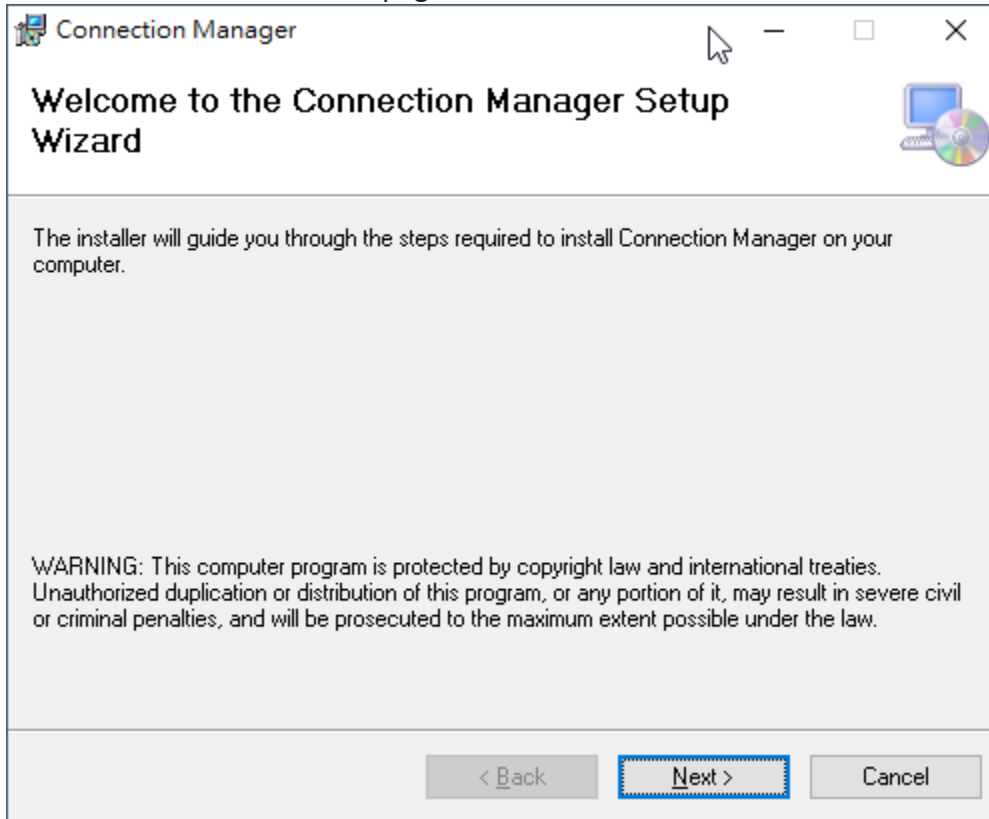
After you download the Connection Manager, please execute the file on your Windows PC and follow the instructions at section 2.1.1 to start the installation.

# 4G CBRS USB Dongle

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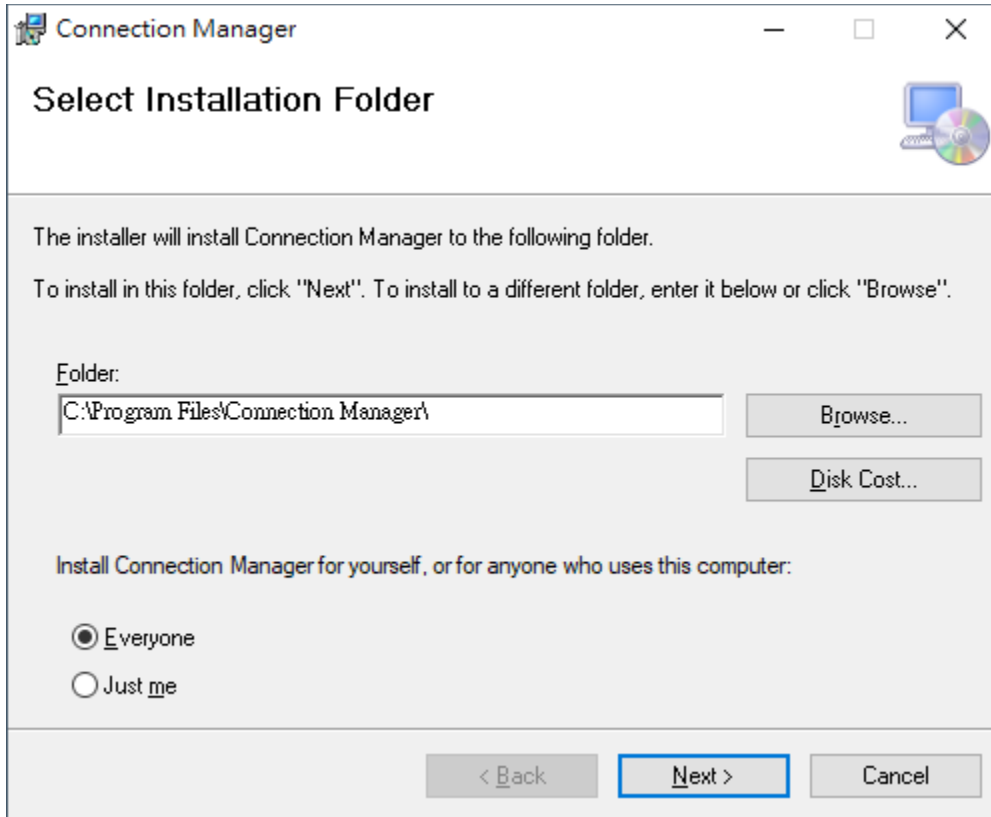
## 2.1.1 Install Connection Manager

1. Press “Next” at the welcome page.

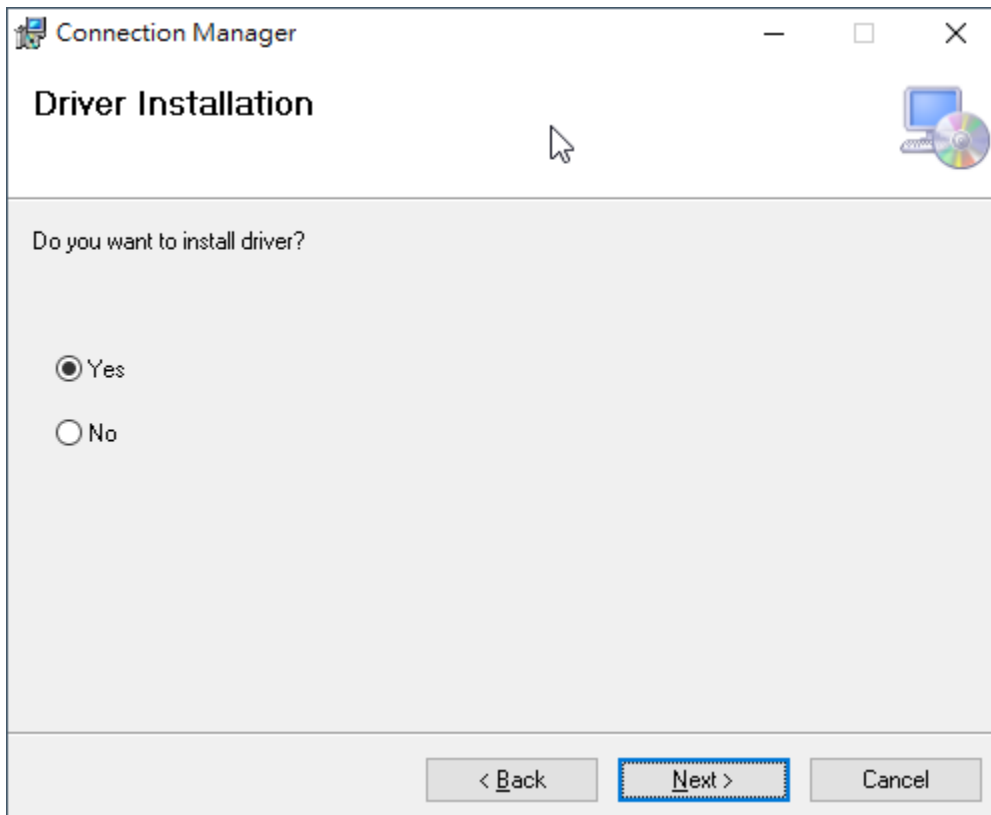


2. Select the installation folder of the Connection Manager. You can keep the default setting and press “Next” to continue.

# 4G CBRS USB Dongle

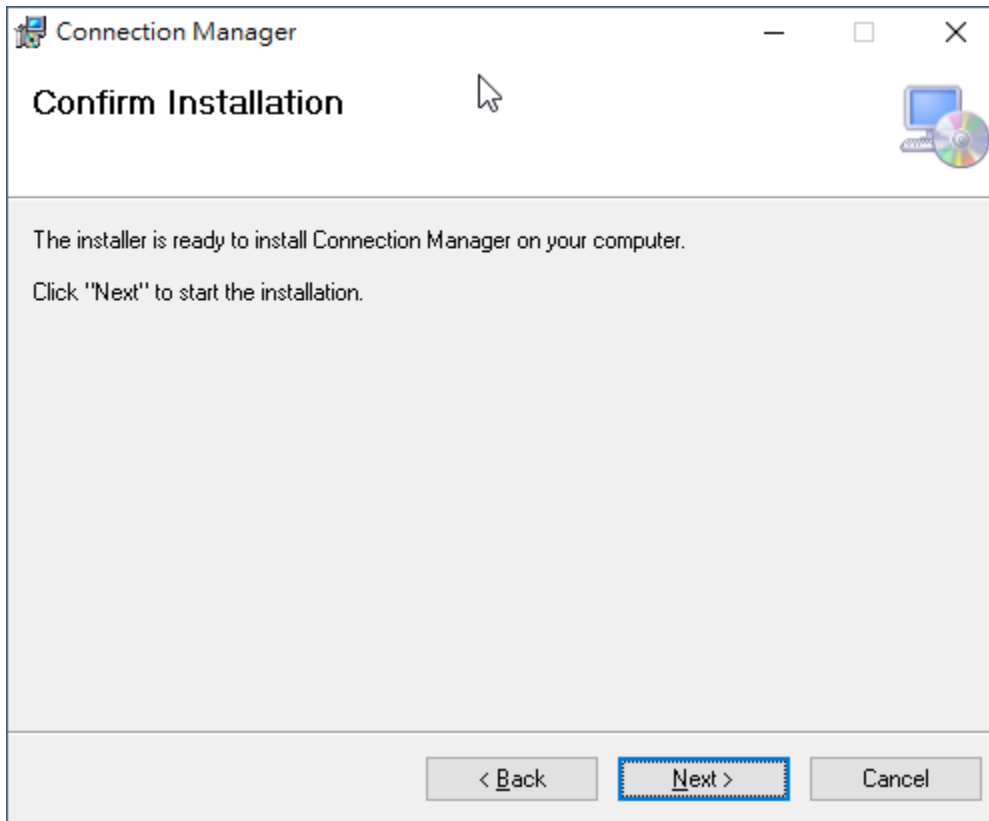


3. Please choose "Yes" to install Windows driver for the first-time installation.

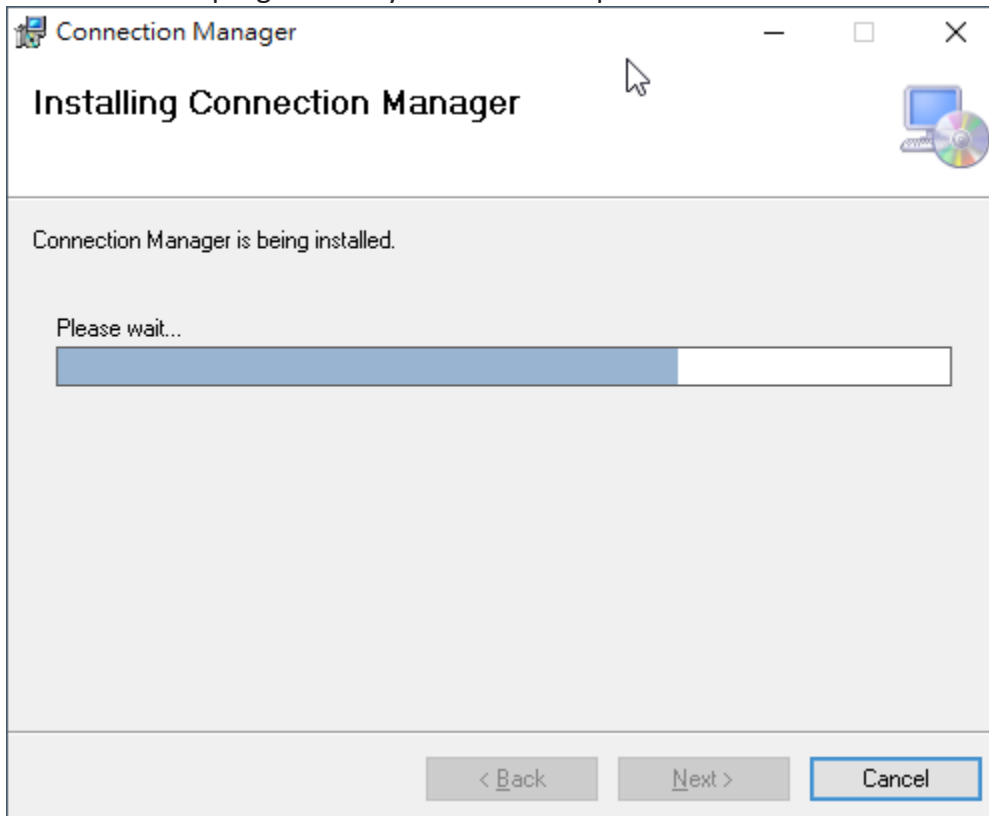


# 4G CBRS USB Dongle

4. Press "Next" to start the installation.

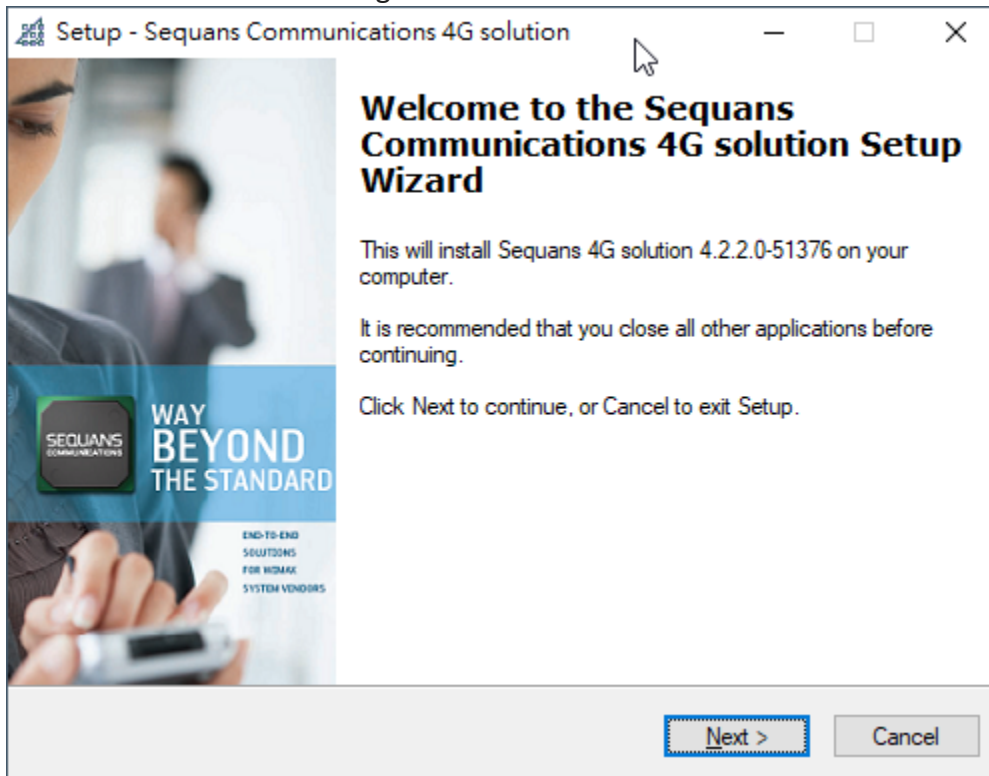


5. Installation is in progress and you will see a separated window for the driver installation.

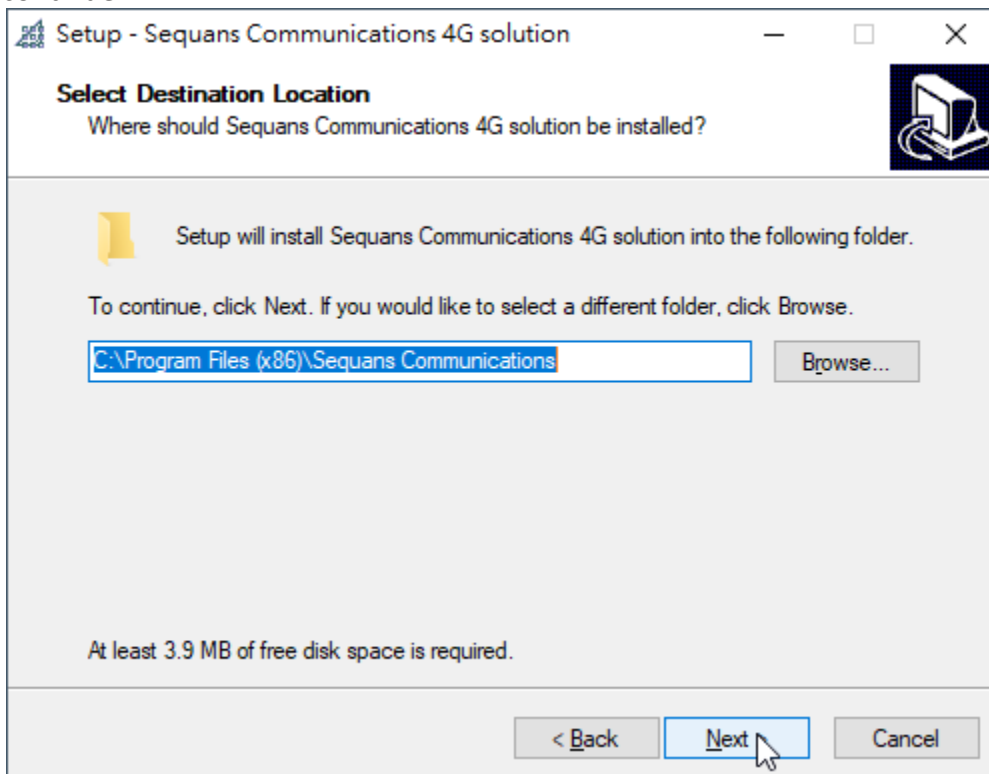


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6. Find this window for installing Windows driver. Press “Next” to continue.



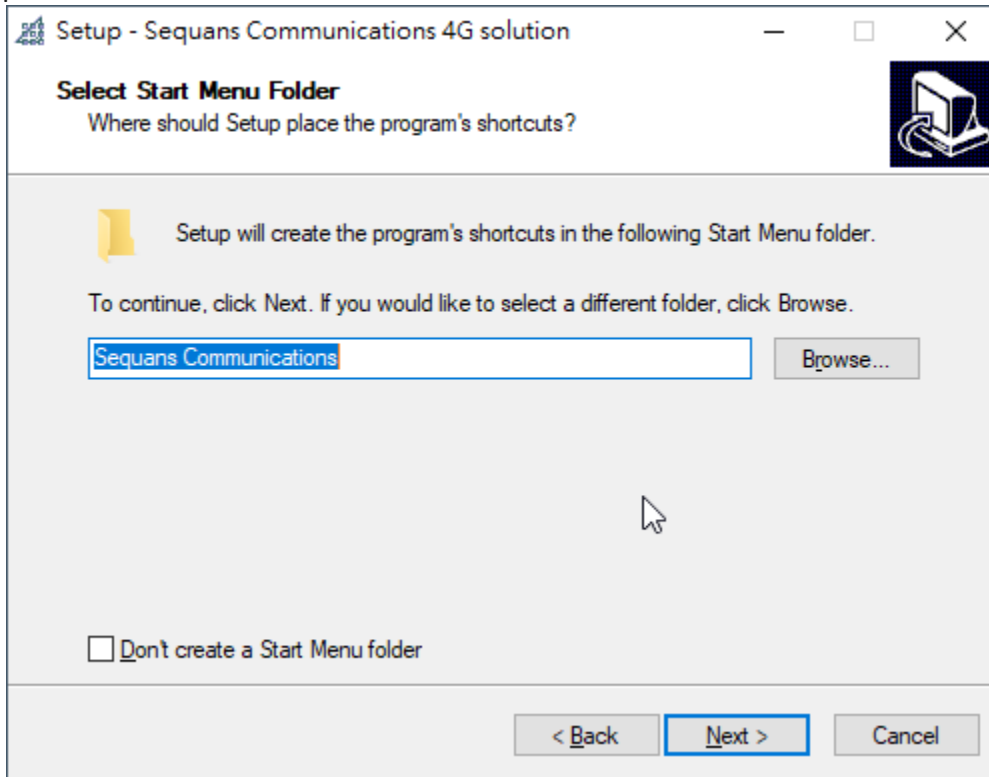
7. Select the installation folder of the Windows driver. You can keep the default setting and press “Next” to continue.



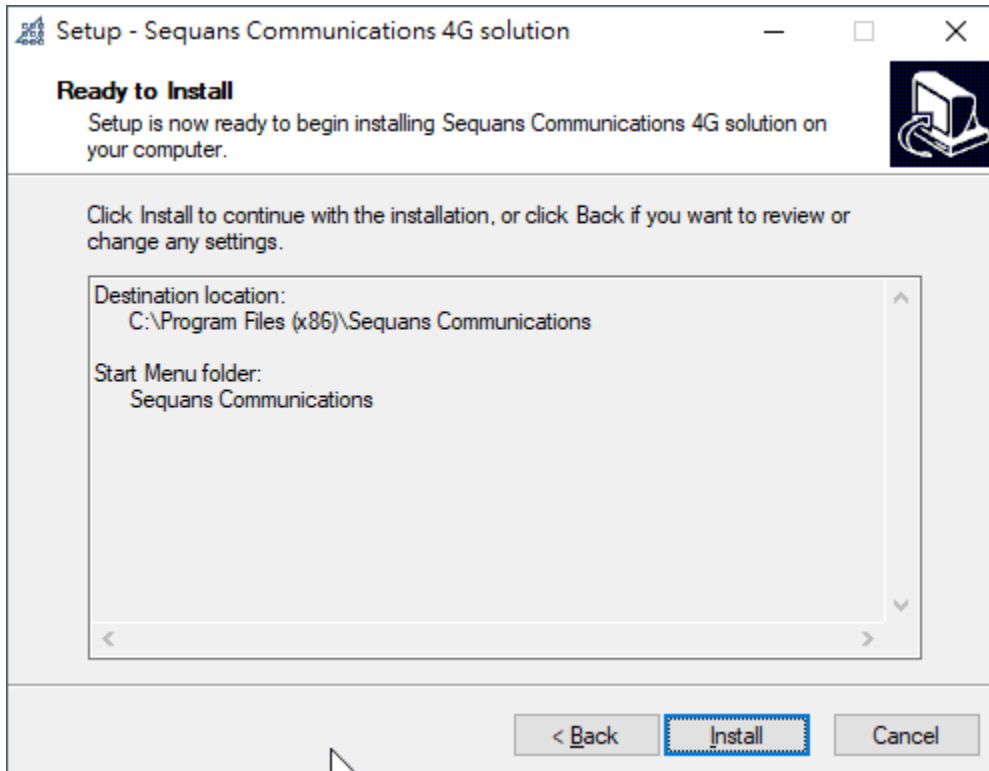


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8. Select the name of the folder showed at the start menu on Windows. You can keep the default setting and press "Next" to continue.

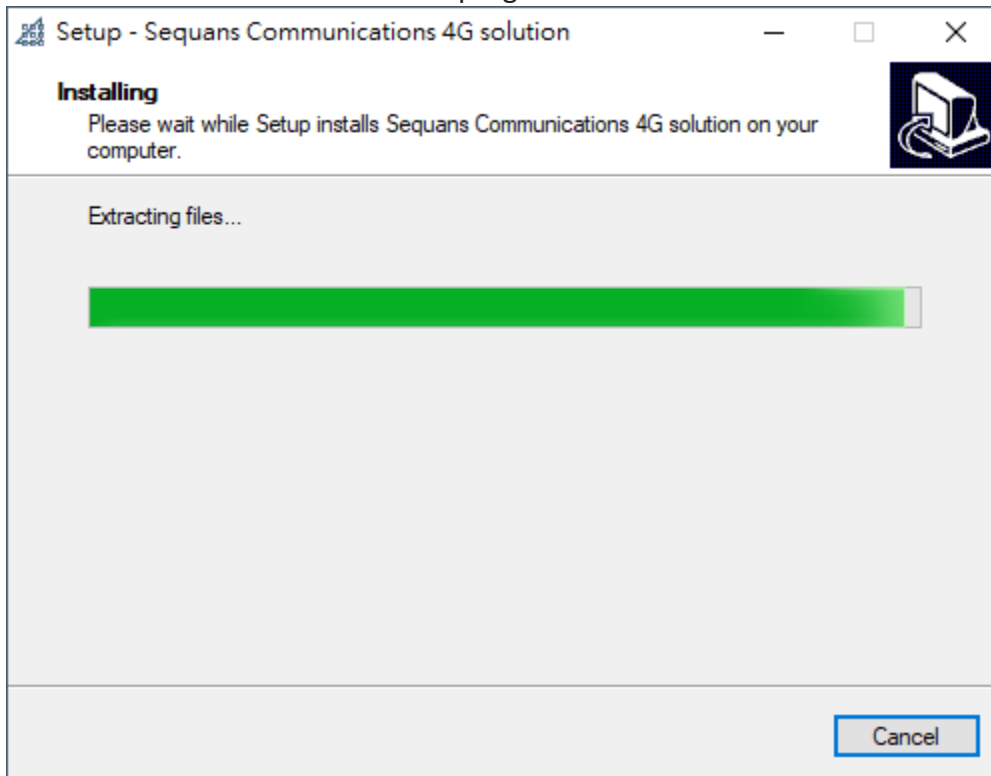


9. Confirm to start the installation.



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10. Installation of Windows driver is in progress.

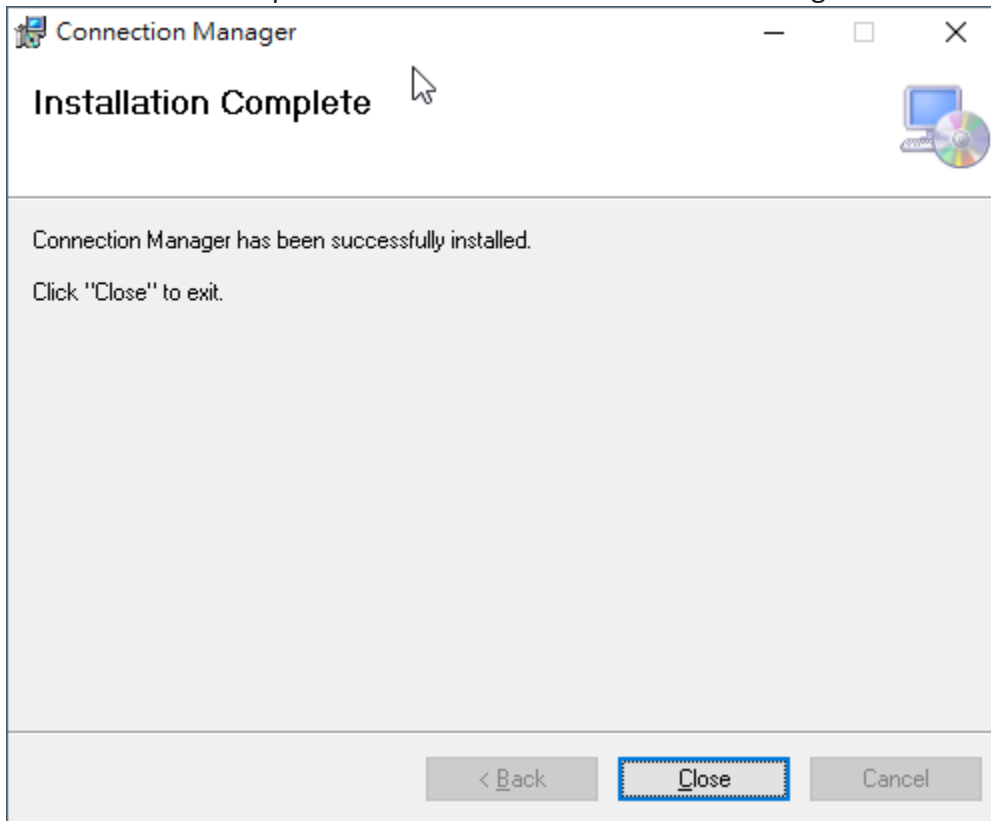


11. Press "Finish" to complete the installation of Windows driver.



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12. Press "Close" to complete the installation of Connection Manager.



13. After installation is completed, you can see an icon of Connection Manager at desktop of Windows.



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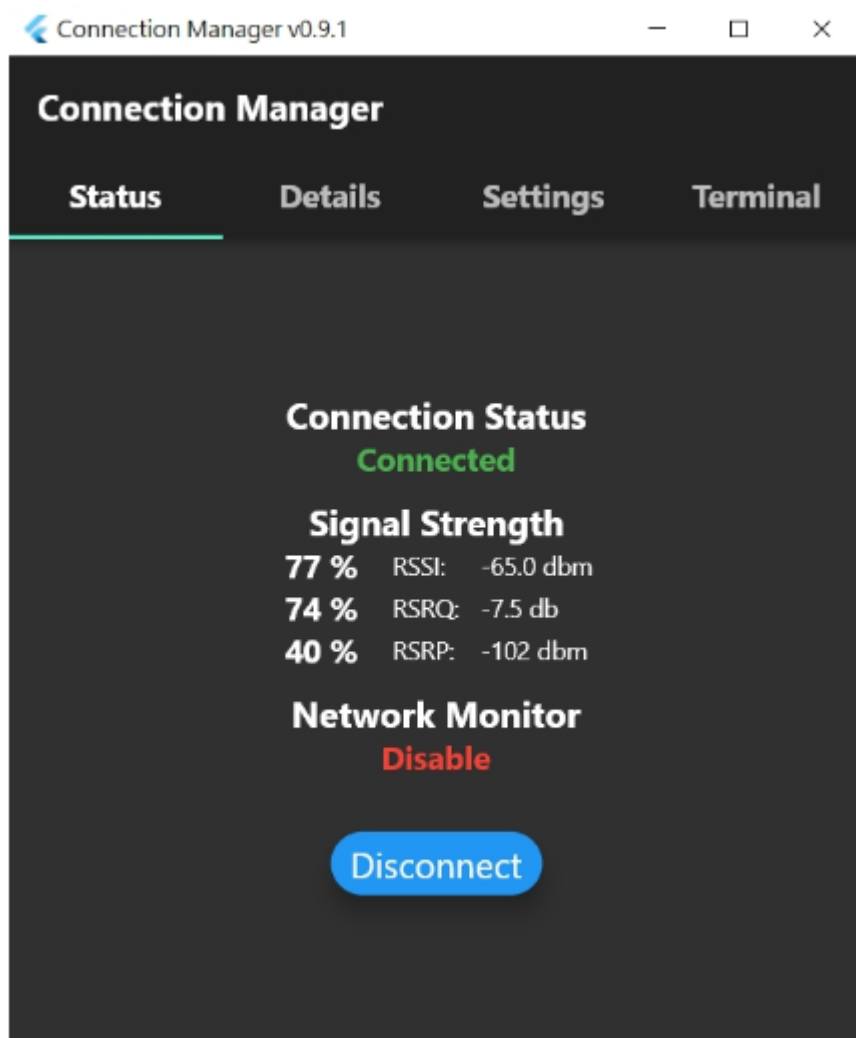
## 2.1.2 How to Use Connection Manager

The Connection Manager is designed for end users to get on CBRS network with the minimum effort. End users can finish the connection settings and monitor the connection information through this GUI-based software utility. The Terminal page allows end users or technicians to place AT Command manually if necessary. Furthermore, the Network Monitoring feature will try to resume the CBRS connection automatically if the existing connection is dropped by any reason.

PLEASE FOLLOW THE INSTRUCCIONES IN APPENDIX A TO CONFIGURE THE IDG120 DONGLE AT “Windows” MODE BEFORE YOU USE IT WITH A Windows DEVICE. THE IDG120 DONGLE IS AT Windows MODE BY DEFAULT.

There are four pages (Status, Details, Settings, Terminal) with the Connection Manager.

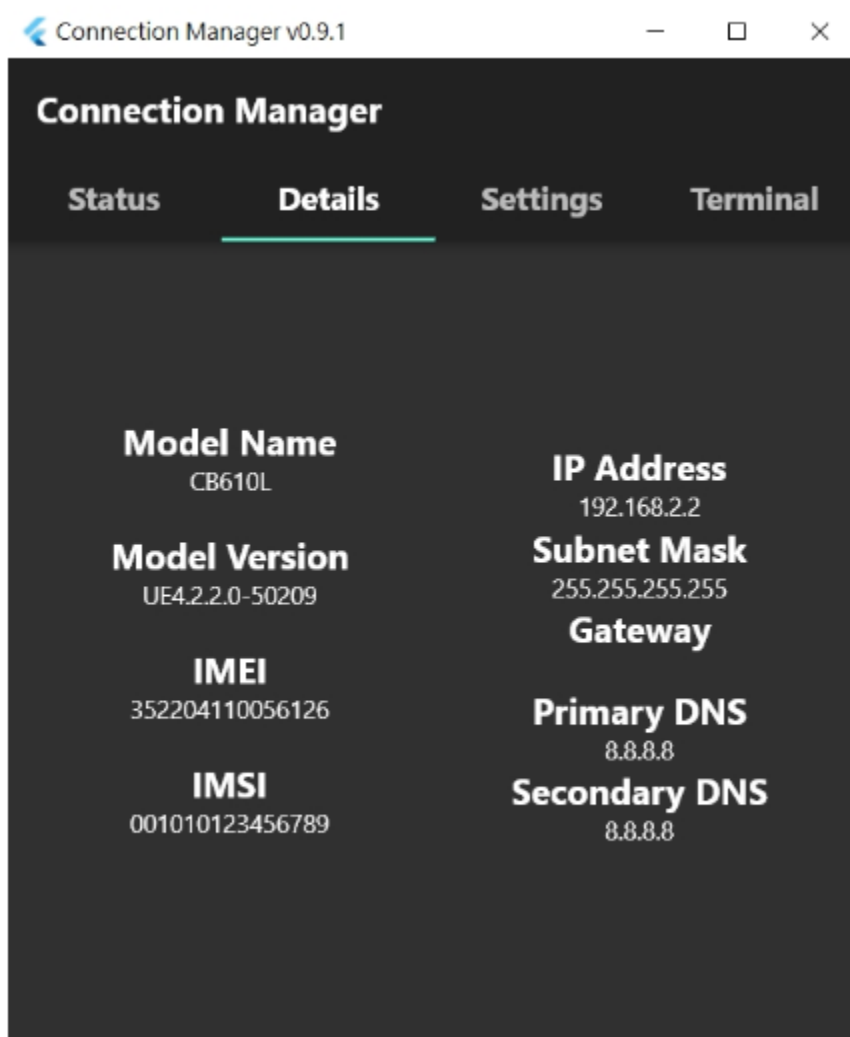
### Status Page



# 4G CBRS USB Dongle

Item	Value / Setting	Description
Connection Status	No Device	USB dongle is not detected
	Searching	Network Manager is detecting USB dongle
	Connecting	Network Manager is connecting to CBRS network
	Connected	CBRS connection is connected
	Disconnecting	Network Manager is disconnecting to CBRS network
	Disconnected	CBRS connection is disconnected
Signal Strength	RSSI	Displayed in percentage and number in dbm
	RSRQ	Displayed in percentage and number in db
	RSRP	Displayed in percentage and number in dbm
Network Monitor	Enable	Network Monitor function is activated
	Disable	Network Monitor function is deactivated
Function Button	Detect	Start to detect if a USB dongle is plugged
	Connect	Start connect to CBRS network
	Disconnect	Start to disconnect from existing CBRS network

## Details Page



# 4G CBRS USB Dongle

Item	Value / Setting	Description
Model Name	CB610L	The model name of the embedded LTE module
Model Version		The firmware version of the embedded LTE module
IMEI	A 15-digit number	The IMEI code of the device
IMSI	A 15-digit number	The IMSI code of the device
IP Address		IP address assigned from CBRS network
Subnet Mask		Subnet Mask assigned from CBRS network
Gateway		IP address of default gateway assigned from CBRS network
Primary DNS		IP address of Primary DNS assigned from CBRS network
Secdonary DNS		IP address of Secondary DNS assigned from CBRS network

## Settings Page

Connection Manager v0.9.2

**Connection Manager**

Status Details **Settings** Terminal

**APN**

APN Name

Username

Password

PIN code

**Network Monitoring**

Enable

ICMP Destination IP

ICMP Interval  
10

Fail Threshold  
5

Apply

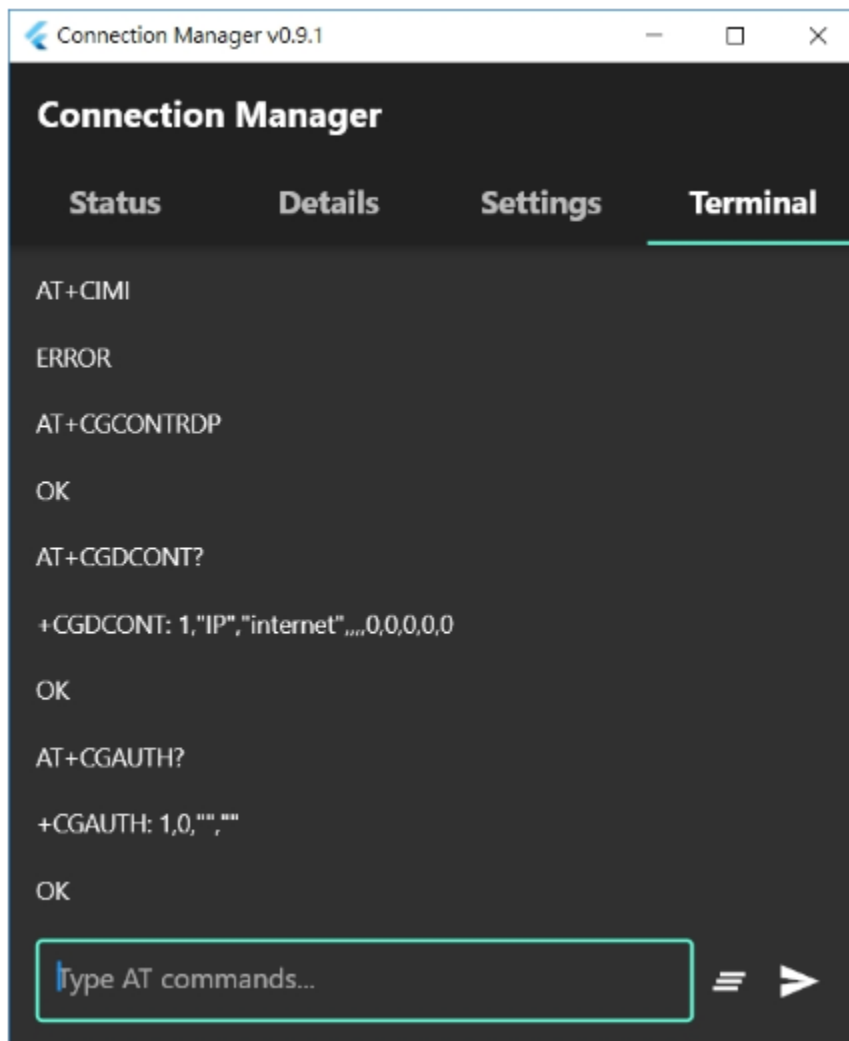
Item	Value / Setting	Description
APN Name		APN Name for connecting to the CBRS network
Username		Username for connecting to the CBRS network
Password		Password for connecting to the CBRS network

# 4G CBRS USB Dongle

PIN Code		PIN code for the SIM card. Leave it blank if no PIN code setting on the SIM card
Network Monitoring	Enable	Enable or disable Network Monitoring function
	ICMP Destination IP	IP address of the host that Network Monitoring function is using for connection keep-alive detection.
	ICMP Interval	The time interval between two ICMP packets
	Fail Threshold	The Connection Manager will disconnect and then try to re-connect to CBRS network again after fail to receive the ICMP response for the pre-defined trials
Function Button	Apply	Press "Apply" to save the settings

## Terminal Page

The page allows users to place AT commands manually.



# 4G CBRS USB Dongle

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## 2.2 Set Up on Linux

PLEASE FOLLOW THE INSTRUCTIONS IN APPENDIX A TO CONFIGURE THE IDG120 DONGLE AT “**Windows**” MODE BEFORE YOU USE IT WITH A LINUX DEVICE. Windows MODE ALSO WORKS FOR A LINUX DEVICE. THE IDG120 DONGLE IS AT Windows MODE BY DEFAULT.

### [Switch to Windows Mode](#)

The driver is already built in the most of the Linux distributions. The Linux system will show two new ports after the USB dongle is plugged.

- CDC\_ACM (/dev/tty/ACM0), the console port
- CDC\_ECM (eth1 and eth2), 2x Ethernet ports (the name of the Ethernet port may be different with different Linux distributions)

Follow the following instructions to get the IP address from the CBRS network.

- `ifconfig eth1 up`
- `udhcpc -i eth1`

Then use the command below to check if eth1 port gets the IP address

- `ifconfig eth1`

After eth1 gets the IP address successfully, the settings of DNS, routing and default gateway still need to be configured correctly to access the CBRS network.

If there is a problem to get the IP address for the eth1 port, please use AT commands at console port for the troubleshooting.



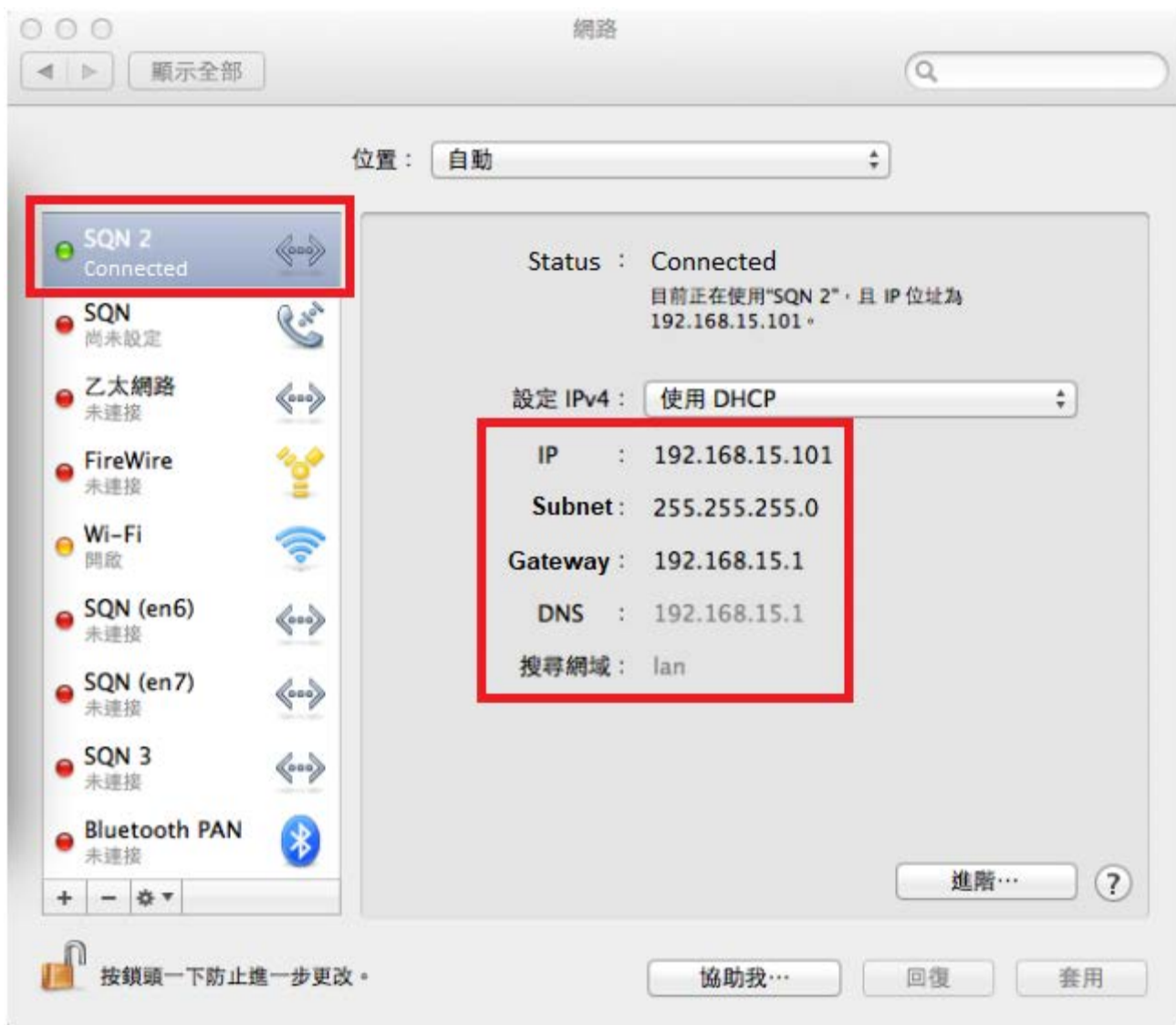
# 4G CBRS USB Dongle

## 2.3 Set Up on Macbook

PLEASE FOLLOW THE INSTRUCTIONS IN APPENDIX A TO CONFIGURE THE IDG120 DONGLE AT “Macbook” MODE BEFORE YOU USE IT WITH A Macbook DEVICE.

[Switch to Macbook Mode](#)

After you plug IDG120 to your Macbook, the Macbook will detect it and get an IP address automatically.



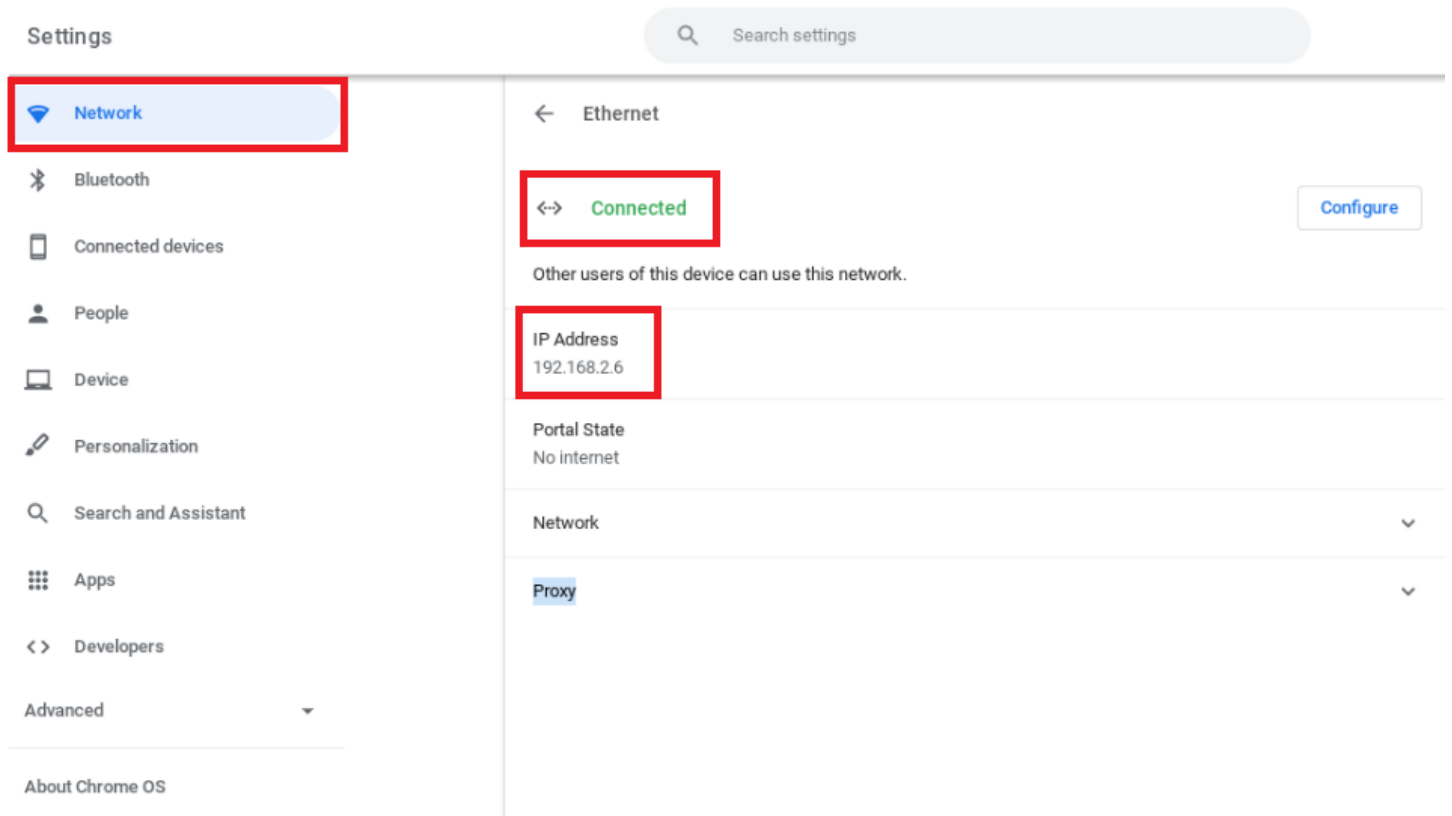
# 4G CBRS USB Dongle

## 2.4 Set Up on Chromebook

PLEASE FOLLOW THE INSTRUCTIONS IN APPENDIX A TO CONFIGURE THE IDG120 DONGLE AT “**Chromebook**” MODE BEFORE YOU USE IT WITH A Chromebook DEVICE.

[Switch to Chromebook Mode](#)

After you plug IDG120 to your Chromebook, the Chromebook will detect it and get an IP address automatically when it connects on the CBRS network.

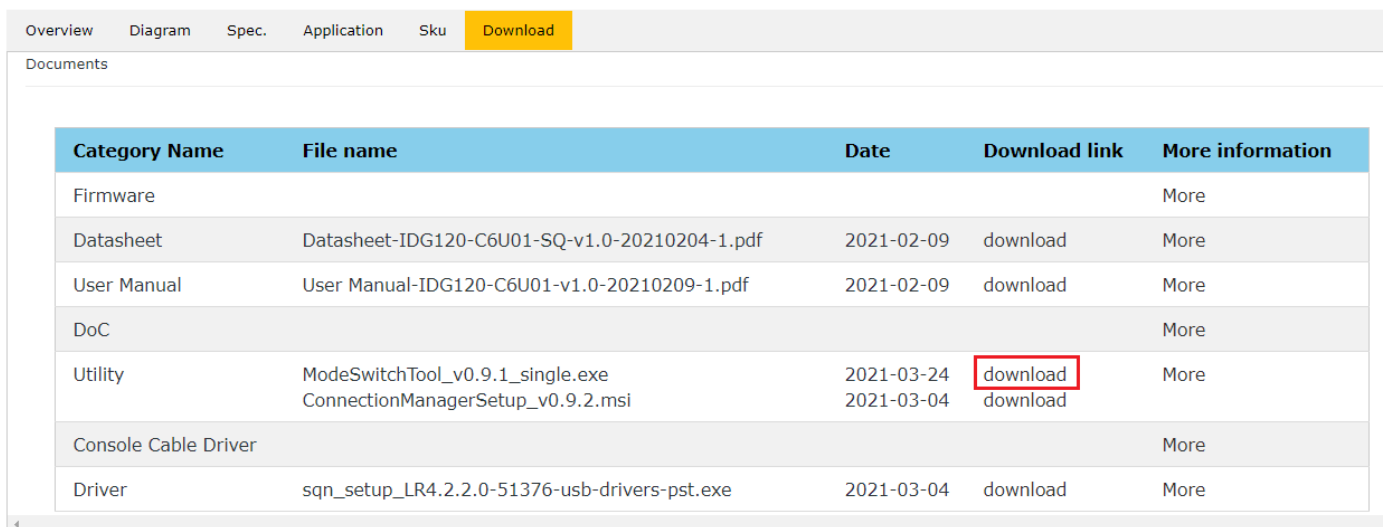


## Appendix A Mode Switch Tool

The IDG120 CBRS dongle can work on Windows, Linux, Chromebook and Macbook devices. However, some parameter settings need to be changed according to the requirement of those different OS. Therefore, we develop a tool for our users to complete all the required settings by one-click button. Please make sure the IDG120 dongle is in the correct mode before you connect it to a Windows, Linux, Chromebook, or Macbook device.

Download AMIT Mode Switch Tool

at [http://www.amitwireless.com/productDetail.php?cate=986&product\\_id=1278&pid=1232&pid1=1231&pid2=986](http://www.amitwireless.com/productDetail.php?cate=986&product_id=1278&pid=1232&pid1=1231&pid2=986).



Category Name	File name	Date	Download link	More information
Firmware				More
Datasheet	Datasheet-IDG120-C6U01-SQ-v1.0-20210204-1.pdf	2021-02-09	download	More
User Manual	User Manual-IDG120-C6U01-v1.0-20210209-1.pdf	2021-02-09	download	More
DoC				More
Utility	ModeSwitchTool_v0.9.1_single.exe ConnectionManagerSetup_v0.9.2.msi	2021-03-24 2021-03-04	download download	More
Console Cable Driver				More
Driver	sqn_setup_LR4.2.2.0-51376-usb-drivers-pst.exe	2021-03-04	download	More

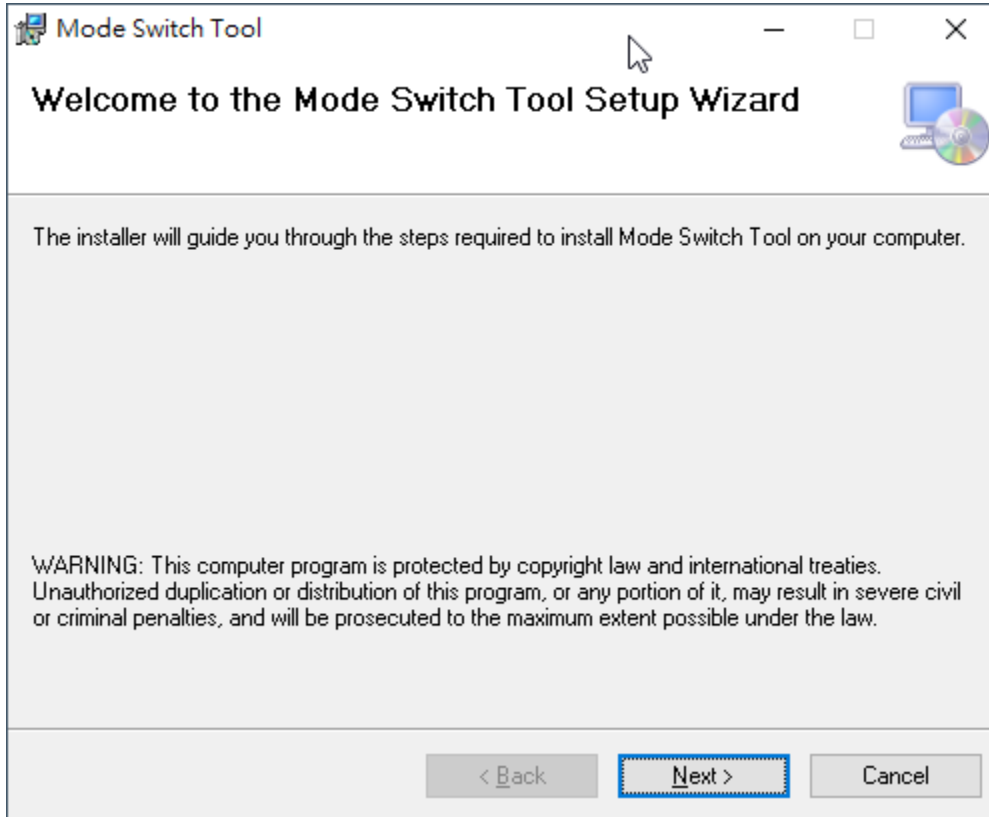
After you download the tool, please execute the file on your Windows PC and follow the instructions at the next section to start the installation.

# 4G CBRS USB Dongle

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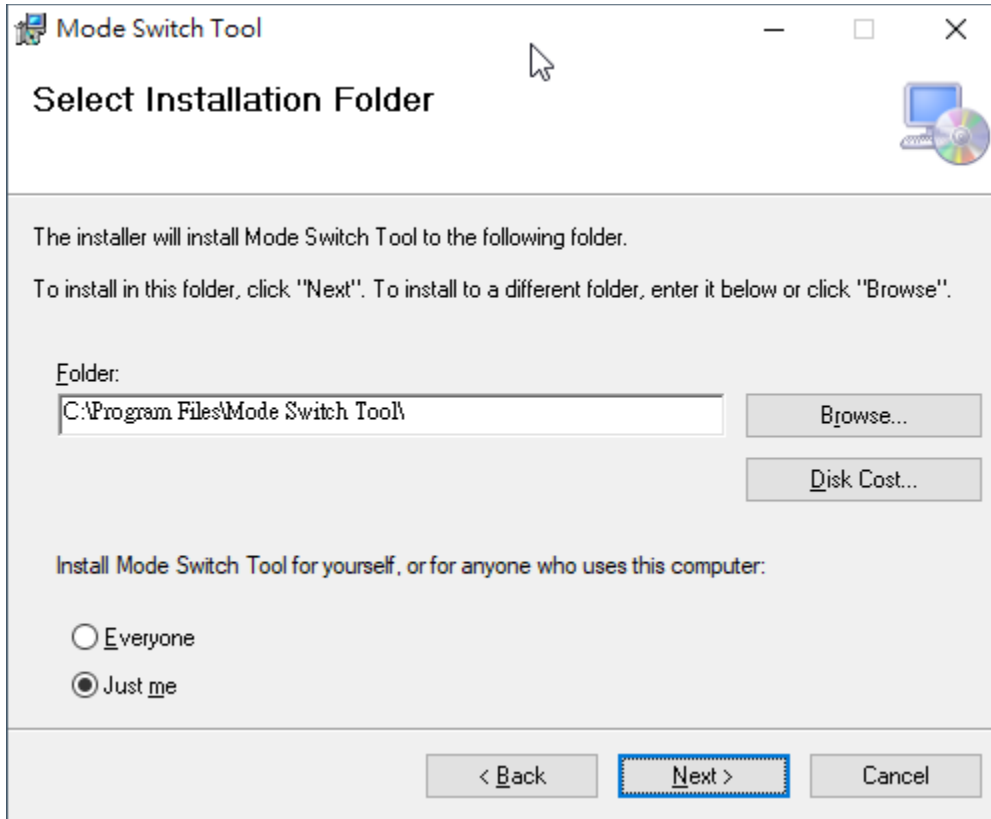
## Install Mode Switch Tool on Windows

1. Press “Next” at the welcome page.

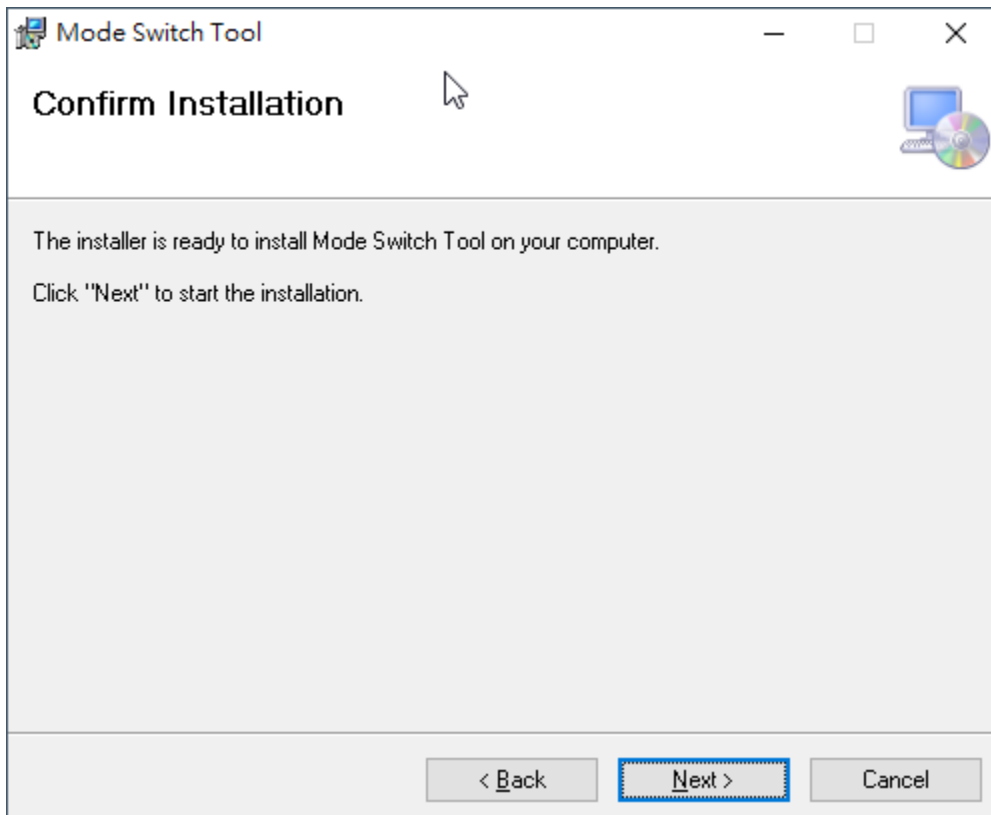


2. Select the installation folder of the tool. You can keep the default setting and press “Next” to continue.

# 4G CBRS USB Dongle

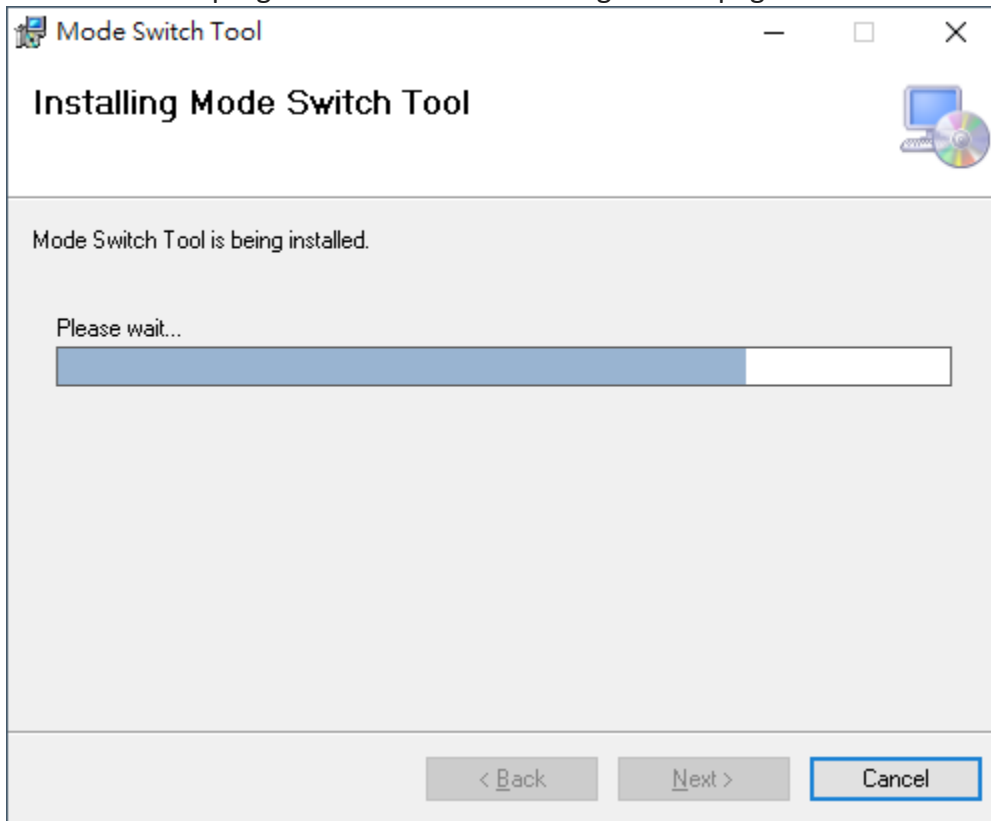


3. Press "Next" to start the installation.

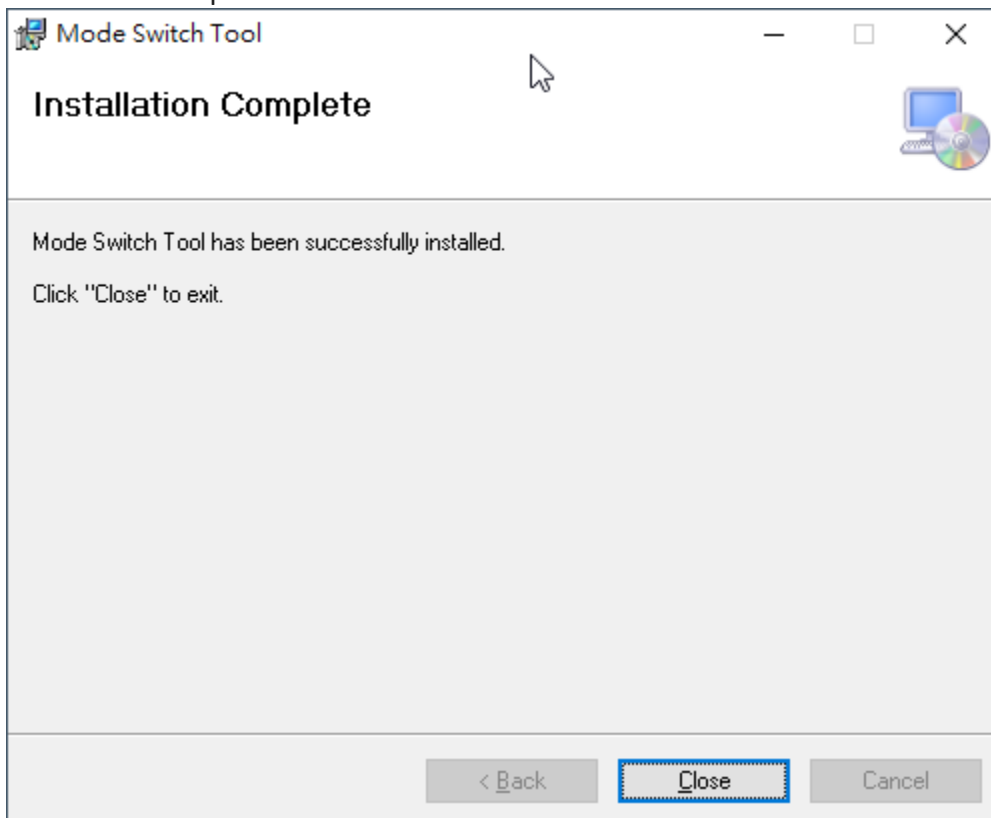


# 4G CBRS USB Dongle

4. Installation is in progress and wait until moving to next page.



5. Installation completes. Press "Close" button to end the installation.



## 4G CBRS USB Dongle

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6. After installation is completed, you can see an icon of Mode Switch Tool at desktop of Windows.



# 4G CBRS USB Dongle

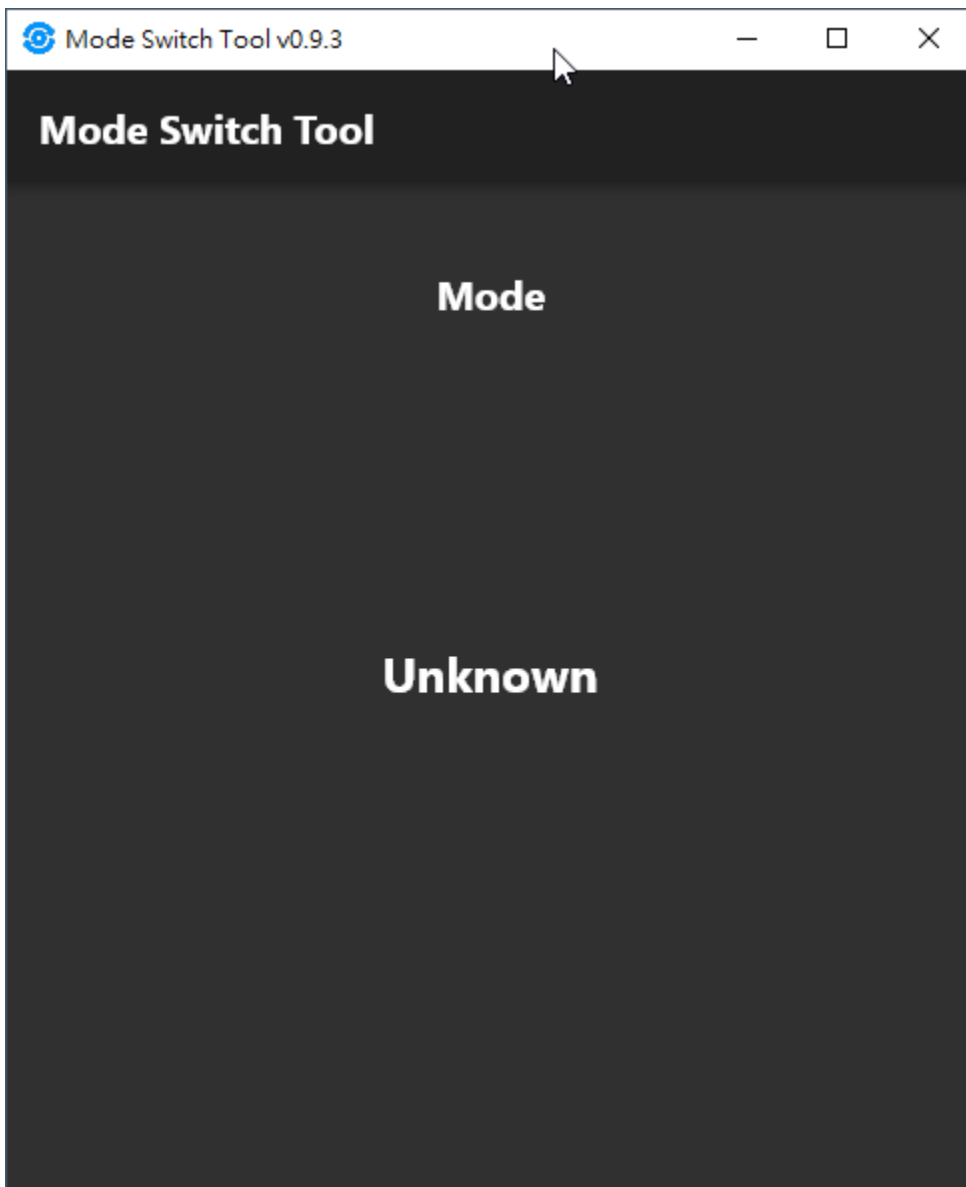
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## How to Use Mode Switch Tool

The Mode Switch Tool is designed for users to configure the IDG120 dongle correctly for Windows, Linux, Chromebook, and Macbook. Your device may not detect IDG120 dongle if the IDG120 is in an incorrect mode to your device. Please follow the instructions in the section to configure IDG120 dongle to a correct mode for your device.

**THE SIM CARD NEEDS TO BE REMOVED FROM THE IDG120 DONGLE BEFORE YOU USE THIS TOOL.**

Double click on the icon to launch the tool. You will see the screen as below if you didn't plug the IDG120 dongle to your Windows PC yet.



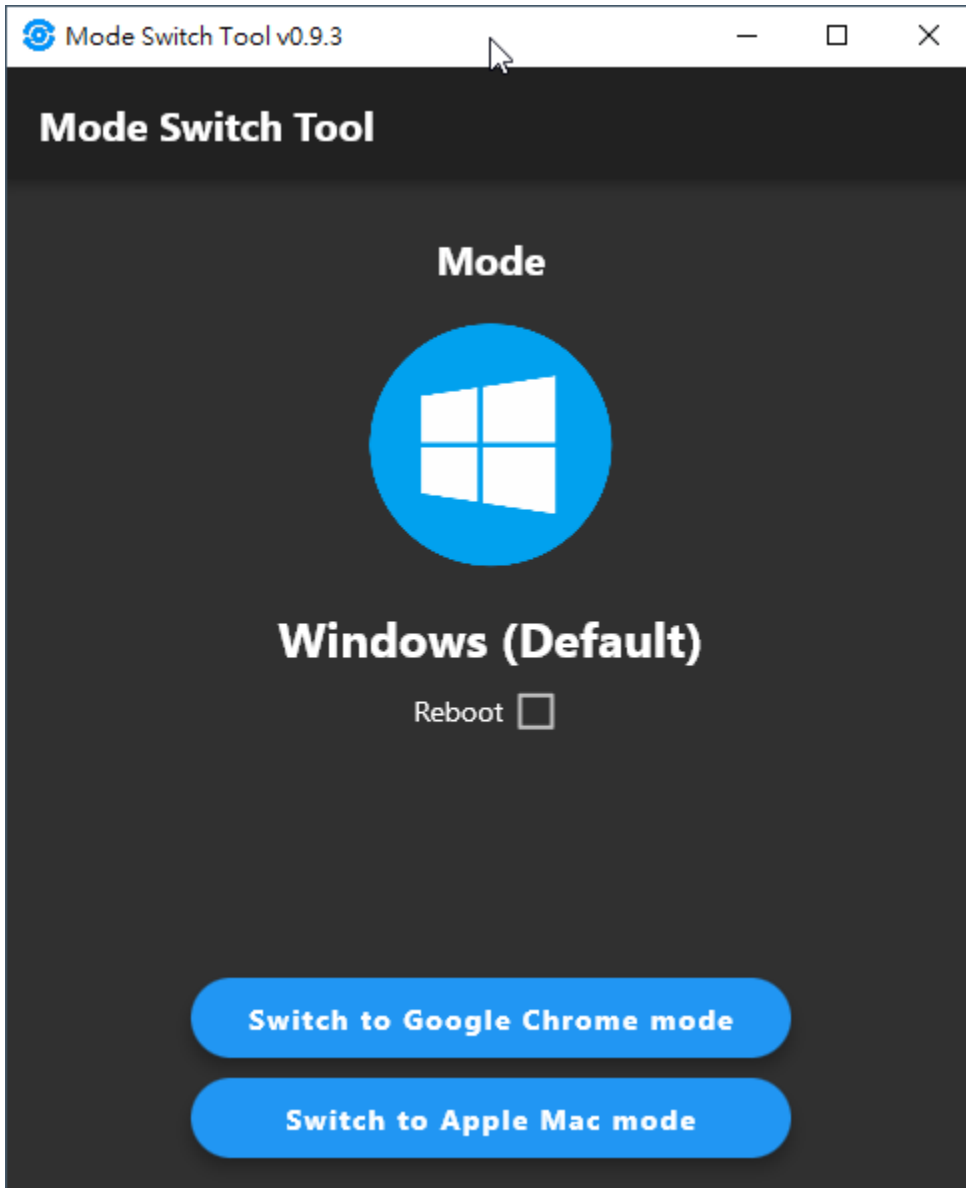


# 4G CBRS USB Dongle

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Please plug IDG120 dongle to your Windows PC. Then the tool will detect the dongle and show the mode information. Please note that it may take a few seconds for the tool to detect the IDG120 dongle.

As the example in the snapshot below, the IDG120 dongle is in Windows mode which is set by default.



[Switch to Chromebook Mode](#)

[Switch to Macbook Mode](#)

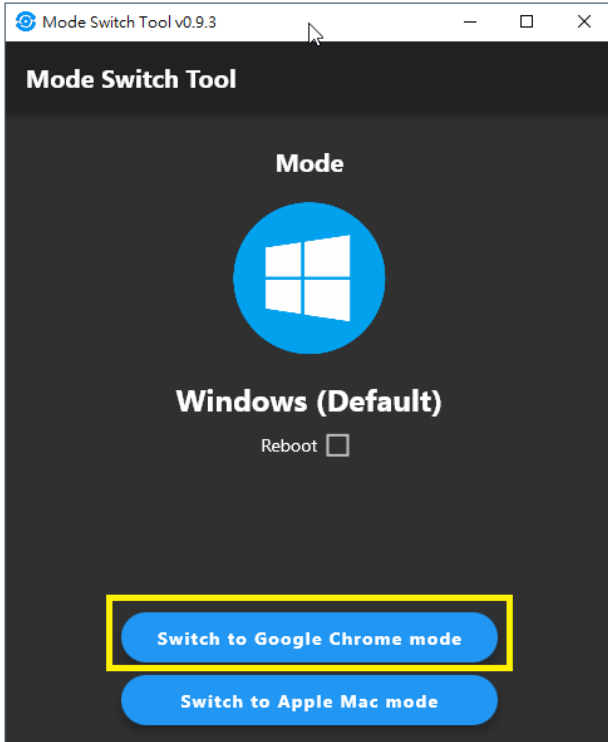
[Switch to Windows Mode \(Default\)](#)

# 4G CBRS USB Dongle

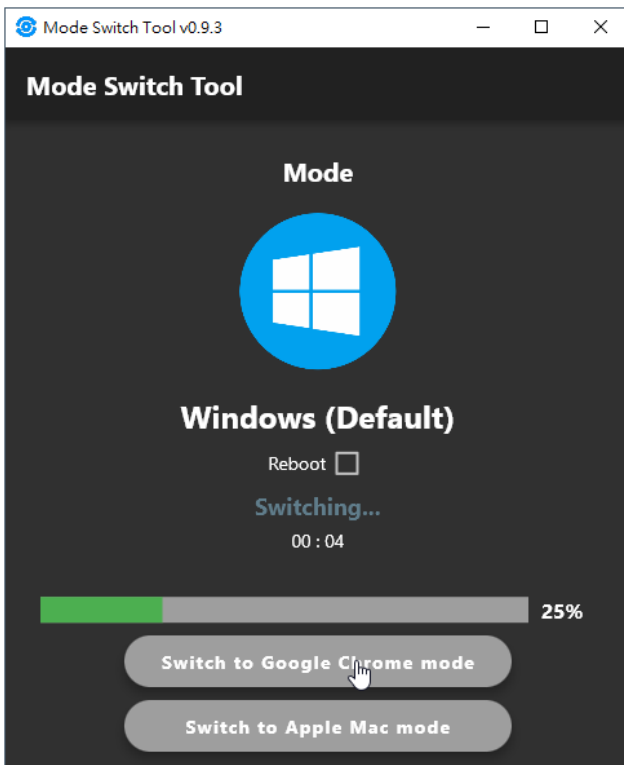
## Switch to Chromebook Mode

THE SIM CARD NEEDS TO BE REMOVED FROM THE IDG120 DONGLE BEFORE YOU USE THIS TOOL.

Press "Switch to Google Chrome mode" button.

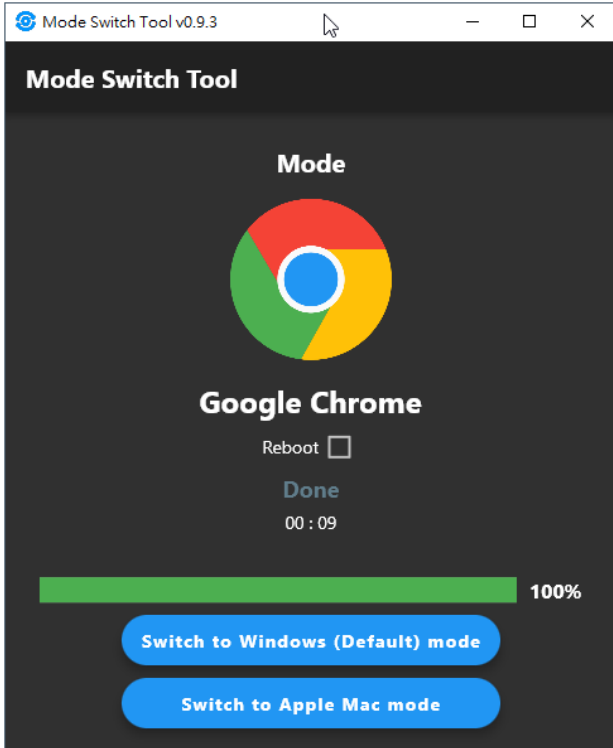


Then the transition process will start automatically.



# 4G CBRS USB Dongle

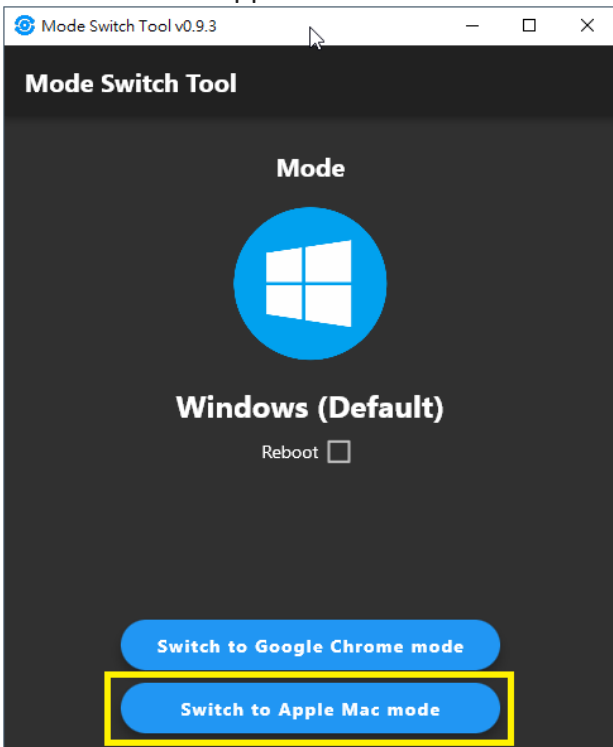
Finally you will see the dongle has been switched to Google Chrome mode after the process is completed.



## Switch to Macbook Mode

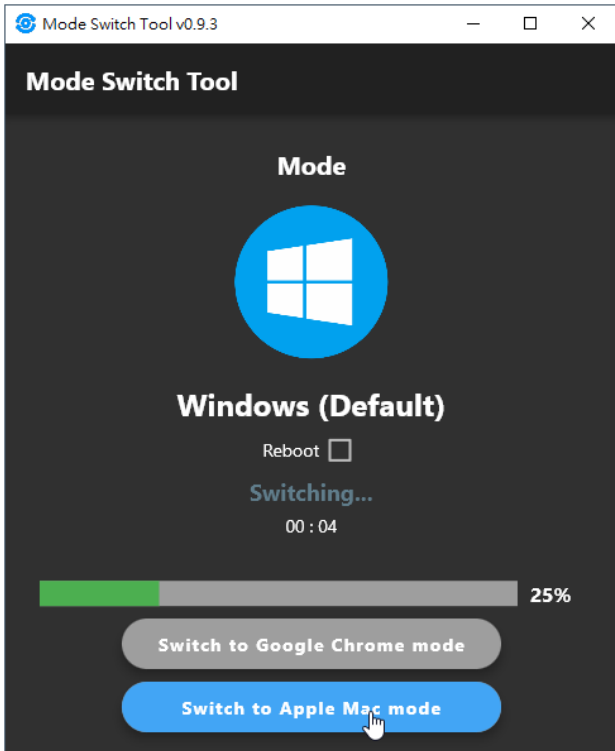
**THE SIM CARD NEEDS TO BE REMOVED FROM THE IDG120 DONGLE BEFORE YOU USE THIS TOOL.**

Press "Switch to Apple Mac mode" button.

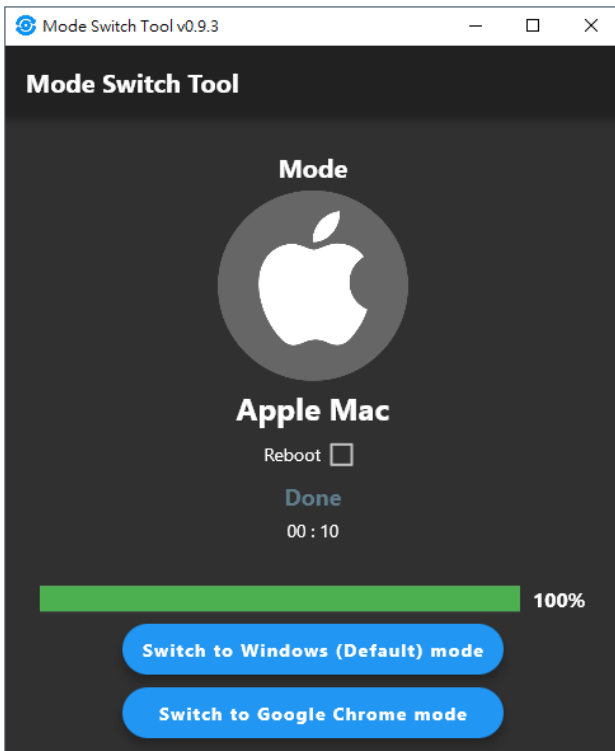


# 4G CBRS USB Dongle

Then the transition process will start automatically.



Finally you will see the dongle has been switched to Apple Mac mode after the process is completed.



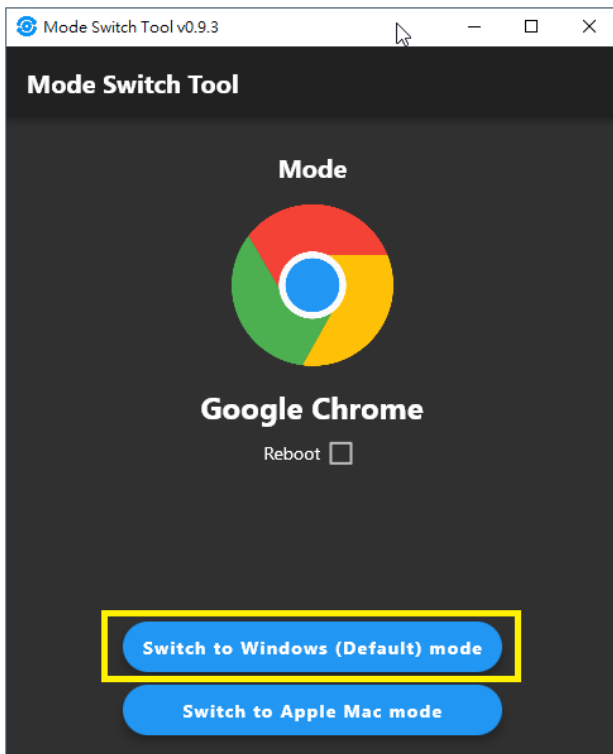
# 4G CBRS USB Dongle

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## Switch to Windows Mode

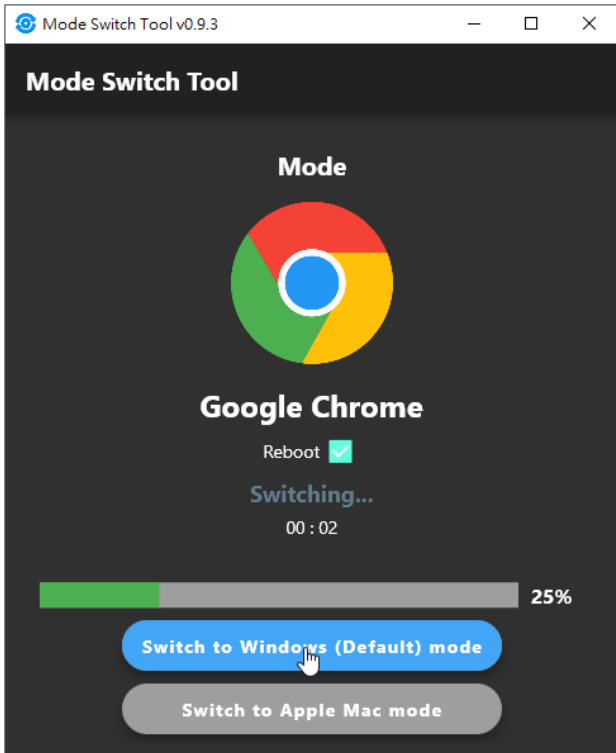
THE SIM CARD NEEDS TO BE REMOVED FROM THE IDG120 DONGLE BEFORE YOU USE THIS TOOL.

If you want to continue to use IDG120 on the same PC after the mode switch, please check the “Reboot” checkbox to take the change effective right away. Then press the “Switch to Windows” button.



# 4G CBRS USB Dongle

Then the transition process will start automatically.



Finally you will see the dongle has been switched to Windows mode after the process is completed.

