SIM7600G-H-M.2

From Waveshare Wiki
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Overview

SIM7600G-H-M.2

(https://www.waveshare.com/sim7600x-h-m2.htm)

The SIM7600G-H-M.2 series is the LTE Cat 4 module which supports wireless communication modes of LTE-TDD/ LTE-FDD/HSPA+/GSM/GPRS/EDGE etc. It supports a maximum 150Mbps downlink rate and 50Mbps uplink rate.

The SIM7600G-H-M.2 series adopts M.2 form factor and consists of a SIM7600-H series module and a M.2 adapter board. It is easy for customers to integrate.

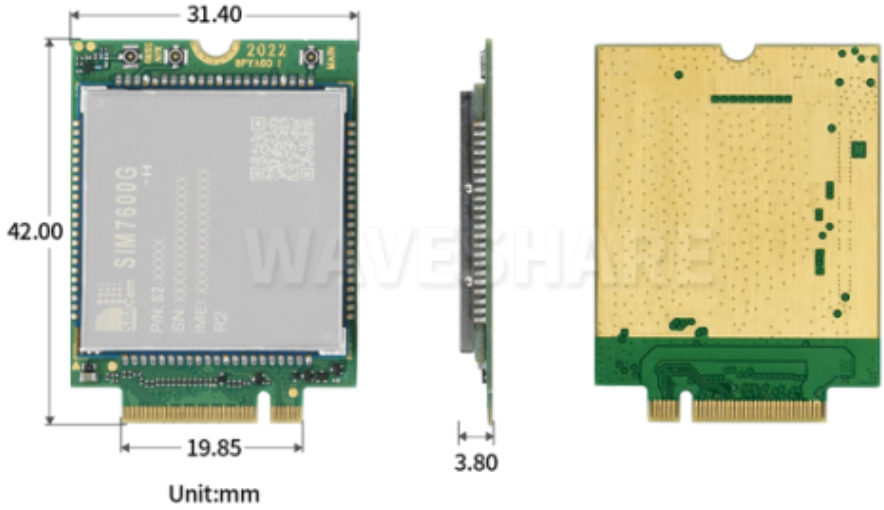
The SIM7600G-H-M.2 series integrates multiple satellites high accuracy positioning GNSS systems, with multiple built-in network protocols, supports drivers for main operation systems (USB driver for Windows, Linux, and Android, etc.) and software function, AT commands are compatible with SIM7500/SIM7600 series modules.

Meanwhile, the SIM7600G-H-M.2 series integrates main industrial standard interfaces, with powerful expansibility, including abundant interfaces such as UART, USB, GPIO, which is suitable for main IoT applications such as telematics, surveillance devices, CPE, industrial routers, and remote diagnostics, etc.

Specifications

Frequency Band	
LTE-FDD	B1, B2, B3, B4, B5, B7, B8, B12, B13, B18, B19, B20, B25, B26, B28, B66
LTE-TDD	B34, B38, B39, B40, B41
WCDMA	B1, B2, B4, B5, B6, B8, B19
GSM	850, 900, 1800, 1900MHz
GNSS	GPS, Beidou, GLONASS, GALILEO, QZSS
Data Transfer	
LTE	150 Mbps (DL) / 50 Mbps (UL)
HSPA+	42 Mbps (DL) / 5.76 Mbps (UL)
WCDMA	384 Kbps (DL) / 384 Kbps (UL)
EDGE	236.8 Kbps (DL) / 236.8 Kbps (UL)
GPRS	85.6 Kbps (DL) / 85.6 Kbps (UL)
Software Features	
Operating system	Windows/Linux/Android
Protocol	TCP, IP, IPV4, IPV6, Multi-PDP, FTP, FTPS, HTTP, HTTPS, DNS
SMS	Supports MT, MO, CB, Text, PDU
Firmware upgrade	USB/FOTA
Hardware Specifications	
SIM card	1.8V/3.0V
Antenna interface	IPEX-4 connector (LTE main antenna + LTE diversity antenna + GNSS antenna)
Power supply	3V ~ 4.2V
Form factor	M.2 B KEY
Dimensions	42.0 × 31.4 × 3.8mm
Operating temperature	-40℃ ~ +85℃
Applications	
Applicable regions	global coverage
Examples	Healthcare, smart payment, Internet talk, environmental monitoring, energy monitoring, fleet management, smart industry, intelligent agriculture, etc.

Dimensions



(/wiki/File:SIM7600G-H-M.2-details-1.png)

Pinouts

74	VBAT	CONFIG_2=GND	75
72	VBAT	GND	73
70	VBAT	GND	71
68	NC	CONFIG_1=GND	69
66	USIM_DET(I)(1.8V)	RESET#(I)(1.8V)	67
64	GPIO3(IO)(1.8V)	ANTCTL3(O)(1.8V)	65
62	GPIO77(IO)(1.8V)	ANTCTL2(O)(1.8V)	63
60	UART_TXD(O)(1.8V)	ANTCTL1(O)(1.8V)	61
58	UART_RXD(I)(1.8V)	ANTCTL0(O)(1.8V)	59
56	UART_CTS(O)(1.8V)	GND	57
54	UART_RTS(I)(1.8V)	NC	55
52	UART_DTR(I)(1.8V)	NC	53
50	GPIO40(IO)(1.8V)	GND	51
48	GPIO41(IO)(1.8V)	NC	49
46	GPIO43(IO)(1.8V)	NC	47
44	GPIO44(IO)(1.8V)	GND	45
42	I2C_SDA(IO/OD)(1.8V)	NC	43
40	I2C_SCL(O/OD)(1.8V)	NC	41
38	NC	GND	39
36	USIM_VDD	NC	37
34	USIM_DATA	NC	35
32	USIM_CLK	GND	33
30	USIM_RST	NC	31
28	PCM_CLK(O)(1.8V)	NC	29
26	W_DISABLE2_N(I)(3.3V)	GND	27
24	PCM_OUT(O)(1.8V)	DPR(I)(1.8V)	25
22	PCM_IN(I)(1.8V)	WoWWAN(OD)(1.8V/3.3V)	23
20	PCM_SYNC(O)(1.8V)	CONFIG_0=GND	21
	Notch	Notch	
	Notch	Notch	
	Notch	Notch	
	Notch	Notch	
10	LED1#(OD)(3.3V)	GND	11
8	W_DISABLE1_N(I)(3.3V)	USB_D-	9
6	FUL_CARD_POWER_OFF#(I)(1.8/3.3V)	USB_D+	7
4	VBAT	GND	5
2	VBAT	GND	3
		CONFIG_3=NC	1

(/wiki/File:SIM7600G-H-M.2-

PIN.png)

Notices

- **DO NOT plug the module while powering.**
- The supply voltage should be about 4.0V for properly working.
- Please check the interface before you use the module. M.2 B Key is not compatible with MINI-PCIE.

Indicators

STA	NET	Status
ON	OFF	Turning off or turning on
ON	OFF	Operating
ON	ON	SIM card isn't inserted or weak signal
ON	Blink	Networking, working normal
OFF	Blink/ON	Shutdowning

Please make sure that you have connected and powered the module normally before you configure it.

Set up 4G in Raspberry Pi

- Open a terminal and run the following commands to install minicom.

```
sudo apt-get install minicom
```

- Open the minicom:

```
sudo minicom -D /dev/ttyUSB2
```

- Configure the module by the following command in minicom.

```
AT+CUSBPIDSWITCH=9011,1,1
```

- Configure the port and networking.

```
sudo dhclient -v usb0
```

- RNDIS Dial-up Internet Access (https://www.waveshare.com/wiki/Raspberry_Pi_RNDIS_dial-up_Internet_access).
- If you set up the module successfully, however, it cannot be networking normally, please try to change the frequency by the AT command (just choose one of them).

```
AT+CNBP=0x0002000000400183,0x000001E000000000,0x0000000000000021
AT+CNBP=0x0002000000400180,0x480000000000000000000000000000000000000000000000420000
01E200000095,0x0000000000000021
```

AT commands

If the module cannot connect to the network normally, please use minicom and AT commands to check the module.

```
sudo apt-get install minicom
sudo minicom -D /dev/ttyUSB2
```

Common AT commands

The following commands are working for both 4G/5G modules

Comamnd	Description	Return
AT	AT test command	OK
ATE	ATE1 to enable echo ATE0 to disable echo	OK
AT+CGMI	Check module manufacturer	OK
AT+CGMM	Check module type	OK
AT+CGSN	Check SN of module	OK
AT+CSUB	Check module version and the chip	OK
AT+CGMR	Check firmware version	OK
AT+IPREX	Set serial baud rate of module	+IPREX: OK
AT+CRESET	Reset module	OK
AT+CSQ	Check signal quality	+CSQ: 17,99 OK
AT+CPIN?	Check SIM card status, READY for normal	+CPIN: READY
AT+COPS?	Check the current network supplier, it returns supplier information if the network is normal	+COPS: OK
AT+CREG?	Check network status	+CREG: OK
AT+CPSI?	Check UE system information	
AT+CNMP	Select network mode： 2：Automatic 13：GSM only 38：LTE only 48 ： Any modes but LTE	OK

For more information about the AT commands, please refer to the AT command manual (https://files.waveshare.com/upload/6/68/SIM7500_SIM7600_Series_AT_Command_Manual_V2.00.pdf)

For more documents, please refer to SIMCom website (https://simcom.com/product/SIM7600X-H.html)

For more examples, please refer to the related HAT devices of Waveshare.

Resource

Datasheet

- SIM7600X Hardware Design manual (https://files.waveshare.com/upload/0/02/SIM7600X-M2_Hardware_Design_V1.01.pdf)
- SIMCom documents (https://simcom.com/technical_files.html?pro_cat=4&pro_li=86&time=0&filetype=0)

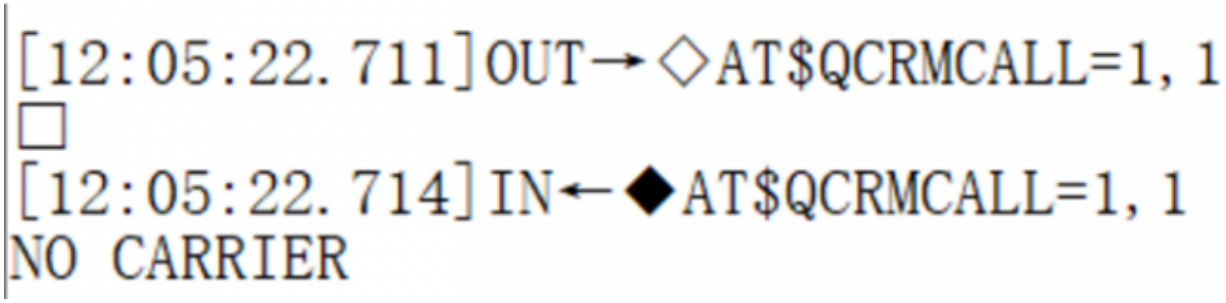
Software

- SIM7600 Driver (https://files.waveshare.com/upload/2/24/SIMCOM_Windows_USB_Drivers_V1.0.2.zip)
- CP2102 Driver (https://files.waveshare.com/upload/6/62/CP210x_USB_TO_UART.zip)
- SIM7600-AT-SSCOM (https://files.waveshare.com/upload/2/20/SIM7600-AT-SSCOM-CN.7z)
- GPS Test Tool (https://files.waveshare.com/upload/c/cc/GPS-Software.7z)
- TCP Test Tool (https://files.waveshare.com/upload/a/a6/TCP-Test_Tool.7z)
- Xshell Tool (https://files.waveshare.com/upload/b/b4/Xshell.7z)
- VLC media player (https://files.waveshare.com/upload/4/4f/VLC-media-player.7z)
- Unicode Software (https://files.waveshare.com/upload/b/b3/Unicode.7z)

FAQ

Question:Why does it return NO CARRIER after the computer NDIS dials?

```
AT$QCRMCALL=1,1
```



(/wiki/File:SIM7600_dial_up_no.png)

Answer:

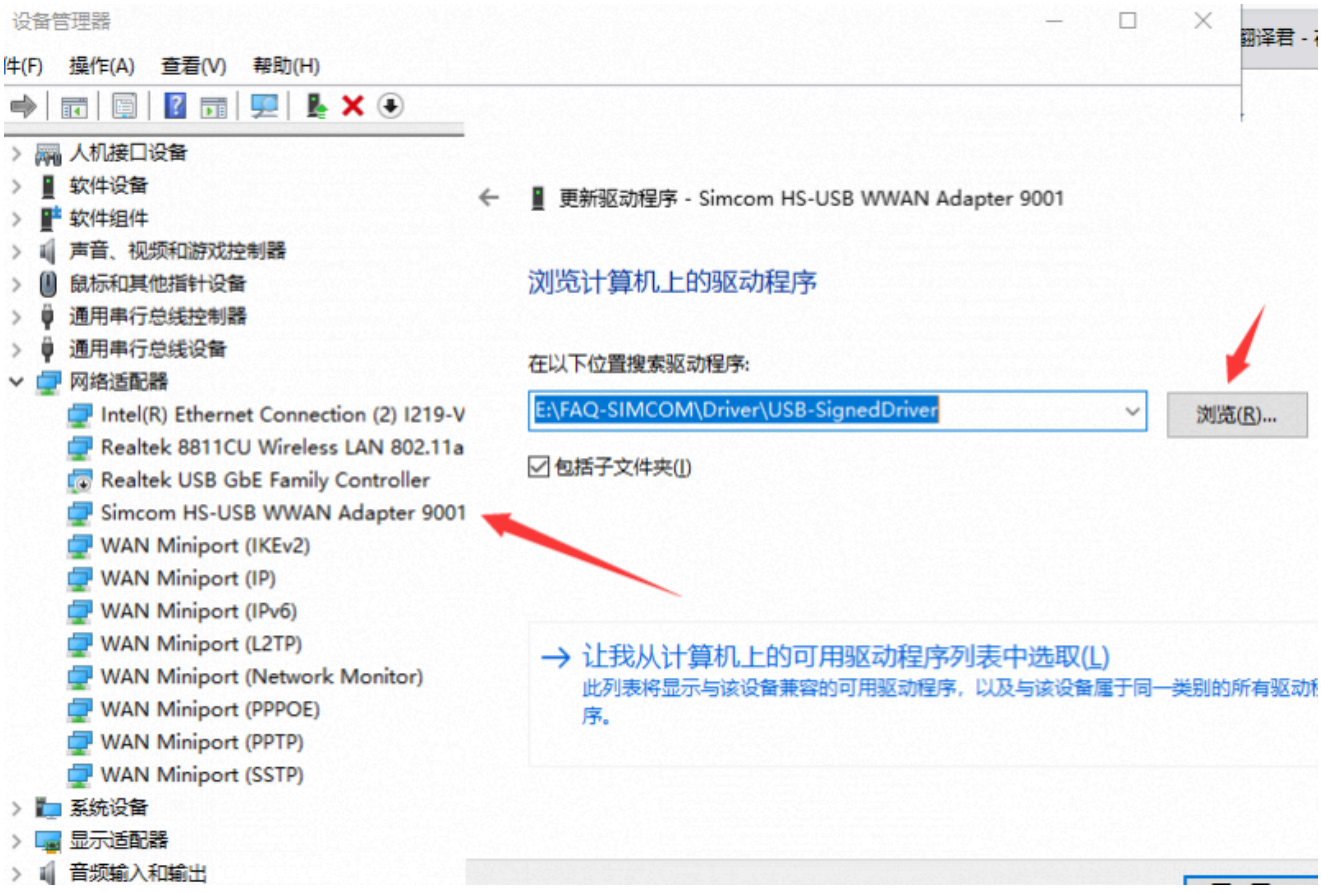
- Under normal circumstances, SIM7600X has already dialed automatically when it is connected to the Windows system, no need to repeat the dialing, the repeated dialing will return NO CARRIER
- If you still cannot dial up, please use the following command to change to the Windows default dial-up mode

```
AT+CUSBPIDSWITCH=9001,1,1
```

- The display is turned off and the mobile network is not enabled, you can ignore it and go online directly;

(/wiki/File:SIM7600X_rndis_dial-up_.png)

- You can also install the driver SIM7600X dial-up Driver (https://www.waveshare.net/wiki/File:SIM7600X_dial-up_Driver.zip) to update the network card



(/wiki/File:SIM7600_NET_work_driver.png)

- After installing the driver, the network card shows that it is enabled

(/wiki/File:SIM7600_dial_up_succeed.png)

Question:What is the function of the AUX antenna? Can I not connect the MAIN antenna and only connect the AUX antenna?

Answer:

1. The AUX auxiliary antenna is a diversity antenna. If the signal of the main antenna is not good, you can use the receiving antenna to receive the signal. They are located in different physical positions, so there is always one that is better. After connecting the diversity antenna, the bandwidth, speed, and sensitivity will increase by about 20%.
2. Diversity antenna allows the receiver to obtain a maximum diversity gain of up to 3db., but it does not have a transmission function. Therefore, the main antenna must be connected to transmit signals to the base station and register with the network before the auxiliary antenna can function.

Support

Technical Support

If you need technical support or have any feedback/review, please click the **Submit Now** button to submit a ticket, Our support team will check and reply to you within 1 to 2 working days. Please be patient as we make every effort to help you to resolve the issue.
Working Time: 9 AM - 6 PM GMT+8 (Monday to Friday)

Submit Now (https://service.waveshare.com/)