

Pico-SIM7020E-NB-IoT

The Pico-SIM7020E-NB-IoT is an NB-IoT (NarrowBand-Internet of Things) module designed for Raspberry Pi Pico. It supports multiple NB-IoT frequency band, can be controlled via serial AT commands, and supports communication protocols like HTTP/MQTT/LWM2M/COAP, etc. Due to the advantages of low delay, low power, low cost, and wide coverage, it is the ideal choice for IoT applications such as intelligent instruments, asset tracking, remote monitoring, and so on.

- Standard Raspberry Pi Pico header, supports Raspberry Pi Pico series boards
- UART communication, serial AT commands control, multiple communication protocols support, multiple cloud platform support
- Integrates 3.7V Li-po battery connector and recharge circuit, allows being powered from external rechargeable Li-po battery, or recharging it in turn
- 2x LED indicators, for monitoring the module operating status
- Onboard Nano SIM card slot for NB-IoT specific card
- Comes with development resources and manual (MicroPython examples)

Specifications

COMMUNICATION	
Frequency band	LTE-FDD : B1/B3/B5/B8
Data rate	≤26.15kbps (DL) , ≤62.5kbps (UL)
Communication interface	UART
Baudrate	300bps~921600bps (115200bps by default)
Communication Protocol	TCP/UDP/HTTP/HTTPS/MQTT/LWM2M /COAP/TLS/DTLS/DNS/NTP
Applicable region	Asia, Europe, Africa, Australia
OPERATING	

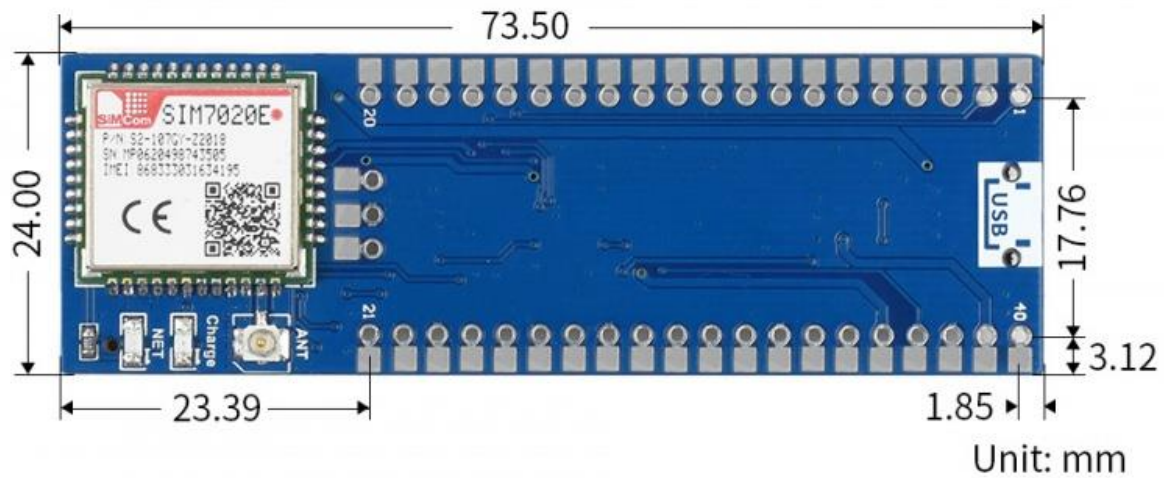
Power supply	通过锂电池接口或 Raspberry Pi Pico 的 USB 口
Battery interface	3.7V ~ 4.2V
Logical level	3.3V
Module standalone current	Idle mode: 5.6mA Sleep mode: 0.4mA PSM mode: 3.4uA
Dimensions	73.5 × 24.00mm

Pinout Definition

VBUS	1	VRUR	OFF	ON	40	GP0	VBUS	Power supply 5V~5.5V
VSYS	2	VSYS			39	GP1	VSYS	Power supply 3.7V~4.2V
GND	3	GND			38	GND	GND	Ground
3V3_EN	4	EN			37	GP2	GP0	Module UART RX
3V3(OUT)	5	3V3			36	GP3	GP1	Module UART TX
ADC_VREF	6	VREF			35	GP4	GP17	Used to wake-up module
GP25	7	GP25			34	GP5	GP14	Pull down to shutdown module
GND	8	GND			33	GND		
GP27	9	GP27			32	GP6		
GP26	10	GP26			31	GP7		
RUN	11	RUN			30	GP8		
GP22	12	GP22			29	GP9		
GND	13	GND			28	GND		
GP21	14	GP21			27	GP10		
GP20	15	GP20			26	GP11		
GP19	16	GP19			25	GP12		
GP18	17	GP18			24	GP13		
GND	18	GND			23	GND		
GP17	19	DTR			22	GP14		
GP16	20	GP16			21	GP15		

Waveshare
Pico-SIM7020X-NB-IoT
Battery 3.7V

Outline Dimensions



Resources

- [Schematic](#)
- [Demo Code](#)

SIM7020 Datasheets

- [SIM7020E SPEC EN 190424.pdf](#)
- [File:SIM7020 Series AT Command Manual V1.03.pdf](#)
- [File:SIM7020G Hardware Design V1.00.pdf](#)
- [File:SIM7020 Series MQTT Application Note.pdf](#)
- [File:SIM7020 Series MQTT\(S\) Application Note V1.03.pdf](#)
- [File:SIM7020 Series MQTT\(S\) Application Note V1.05.pdf](#)
- [File:SIM7020 Series CoAP Application Note V1.02.pdf](#)
- [File:SIM7020 Series FOTA Application Note V1.01.pdf](#)
- [File:SIM7020 Series HTTP Application Note V1.02.pdf](#)
- [File:SIM7020 Series TCPIP Application Note V1.02.pdf](#)
- [File:SIM7020 Series Low Power Mode Application Note V1.03.pdf](#)
- [File:SIM7020 Series TLS Application Note V1.01.pdf](#)
- [File:SIM7020 Series NVRAM Application Note V1.01.pdf](#)
- [File:SIM7020 Series SNTP Application Note V1.01.pdf](#)