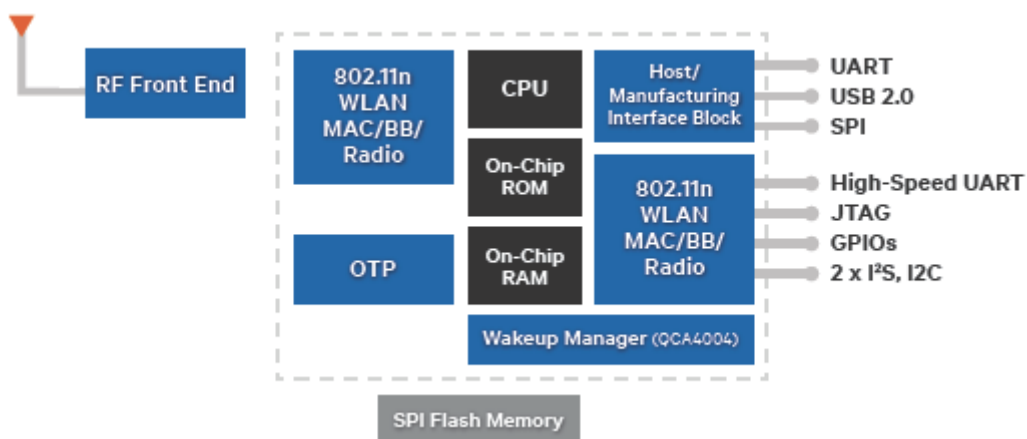# User Manual
M4004T

1. Product Introduction

M4004T is an embedded type WiFi module that has complete functions, highly integrated modules, ultra-low power consumption and low cost. The core chip is the special-purpose internet of things (IOT) chip, has rich peripheral control interfaces and module that has the built-in wireless network IEEE802.11b/g/n wireless standard protocol stack and TCP/IP network communication protocol stack (with SSL security encryption) and integrates specialized control and transmission. It can directly realize acquisition of the peripheral data. With the standard network, it can transmit and receive the network data, and control the external equipments.

The module operates with ultra-low power consumption, and thus it is the best option for different wireless applications with such requirements as energy-saving and emission reduction. In addition, the module takes the semicircle hole design, it can meet the demands for SMT or pin-type. With the module, the client can complete development of wireless products with complete functions in different fields, and the module can be applied at such many conditions as the control system requiring reliable data exchange and so on.

2. Product Information

The product can operate at the operating states of WiFi STA and AP. The module has rich control interfaces. The peripheral can realize UART data transmission, I2C, SPI, I2S, GPIO, USB and other functions. It can provide complete set of resolutions for ordinary WiFi of IOT.

3.2 Outside drawing

4. Parameter and Characteristics

Protocol and interface standard	
Network standard	Wireless standard: IEEE 802.11b/g/n
Interface	SPI/SDIO, UART, I2C, I2S, GPIO, USB
RF parameter	
Wireless transmission rate	802.11n:Max 150Mbps, 802.11g:Max 54Mbps, 802.11b:Max 11Mbps
WIFI channel number	Ch1~Ch11
RF frequency range	2.412-2.462GHz
Type of antenna	Integral antenna
Characteristics	
WIFI operation mode	Wireless network card (STA)/wireless access point (AP)
Wireless security support	WPS, WPA-PSK, WPA2-PSK, WEP
	64/128/152 bit WEP encryption
	Wireless security function switch
	Wireless MAC address filtration
Network management	Remote software upgrade
	Configured with file import and export
	Supporting local and remote management simultaneously
Maximum power consumption during current operation	
802.11b mode	197mA (3.3V)
802.11g mode	161mA (3.3V)
802.11n mode	150mA (3.3V)
Power consumption at standby mode	
Soc chip	Theoretically: 531uA(3.3V) Practically: 661uA(3.3V)
Other parameters	
State indicator light	Externally connected
Other performances	Optional frequency bandwidth: 20MHz, 40MHz, automatic
Physical specification	
Dimension	31x20mm
Weight	1.8g

5 Definition of Pins

Pin	Function	Direction of data flow
1	GND	GND
2	VDDIO_SDIO	Power
3	GPIO13/TDO	I/O
4	GPIO12/TCK/I2C_CLK	I/O
5	GPIO11/UART1_TXD/I2SO_BCK/TM	I/O
6	GPIO10/UART1_RXD/I2SO_MCK/TMS	I/O
7	GPIO6/UART0_RXD/I2C_DATA/TDI	I/O
8	GPIO5/SPI_CLK/I2S1_MCK	I/O
9	GND	GND
10	GPIO9/UART0_CTS	I/O
11	GPIO8/UART0_RTS	I/O
12	GPIO7/UART0_TXD	I/O
13	VDD33	Power
14	GPIO4/SPI_MISO/I2S1_WS/JTAG_EN	I/O
15	USB_DP	I/O
16	USB_DN	I/O
17	GPIO3/SPI_INT/I2S1_D0	I/O
18	GPIO2/SD_D2/I2S1_SDI/HM0/LED0	I/O
19	GPIO1/SPI_MOSI/SD_D3/I2S1_BCK	I/O
20	GPIO0/SPI_CSn/SD_CMD/HM1	I/O
21	CHIP_PWD#	O
22	WAKEUP	I
23	GPIO16	I/O
24	GPIO15	I/O
25	GND	GND
26	DVDD_GPIO	Power
27	GPIO17	I/O
28	GPIO21/I2S0_WS/TRST	I/O
29	GPIO18	I/O
30	GPIO19/I2S0_SDI	I/O
31	GPIO20/I2S0_SDO	I/O
32	GND	GND
33	EXT_ANT	I/0

6 Environment

6.1 Temperature

6.1.1 Operating temperature
Ambient temperature for continuous and reliable operation: -10℃ ~+50℃

6.1.2 Storage temperature
If the product is not damaged or does not deteriorate, the product is kept at -20℃ ~+85℃.

6.2 Humidity

6.2.1 Operating humidity condition
Within the relative humidity range of 20%~80% (without condensation), the product can operate continuously and reliably.

6.2.2 Non- operating humidity condition (including warehouse)
If the product is not damaged or does not deteriorate, the time for placing the product at the relative humidity of 20%~80% shall be more than 36h.

FCC Warning Statements:

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.

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

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: 2AD6FM4004T Or Contains FCC ID: 2AD6FM4004T".

When the module is installed inside another device, the user manual of this device must contain below warning statements;
1. 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.
(2) This device must accept any interference received, including interference that may cause undesired operation.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

The modular shall be be installed or integrated in mobile or fix devices only. This modular must not be installed or integrated in any portable device, for example, USB dongle.

Only the approved antenna equipped with this modular can be used.

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.