E101-C6WN8 Series Development Board
User Manual



Chengdu Ebyte Electronic Technology Co.,Ltd.

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1. Module introduction

1.1 Feature introduction

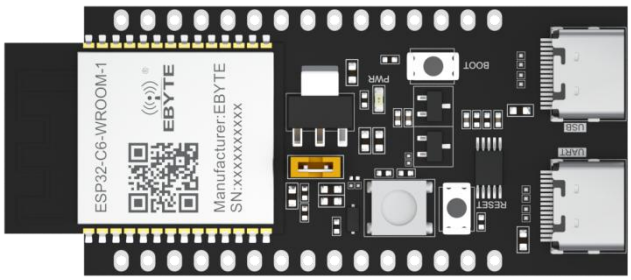


Figure 1 Actual picture of the module

The E101-C6WN8-PS and E101-C6WN8-XS-TB are two entry-level development boards featuring the compact E101-C6WN8-PS and E101-C6WN8-XS modules. These boards come equipped with full Wi-Fi and Bluetooth Low Energy (BLE) functionality, with most pins of the onboard modules routed via side pin headers. Developers can easily connect various peripherals through jumper cables according to their needs, while also supporting breadboard mounting for practical use.

1.2 Parameter introduction

SN	parameter name	Parameter value	Comment
1	Support module	E101-C6WN8-PS E101-C6WN8-XS	WiFi serial port module
2	Module size	52.9 * 25.4mm	Including USB connector , excluding module antenna size
3	Production Process	Lead-free process, machine-mounted	Wireless products must be machine-mounted to ensure batch consistency and reliability.
4	Power supply interface	USB	-
5	Communication Interface	TTL	-
6	Operating temperature	-40 ~ +85℃	Industrial grade
7	Working humidity	10%~90%	Relative humidity, no condensation
8	Storage temperature	-40 ~ +125℃	Industrial grade

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2. Brief description of functions

2.1 Component introduction

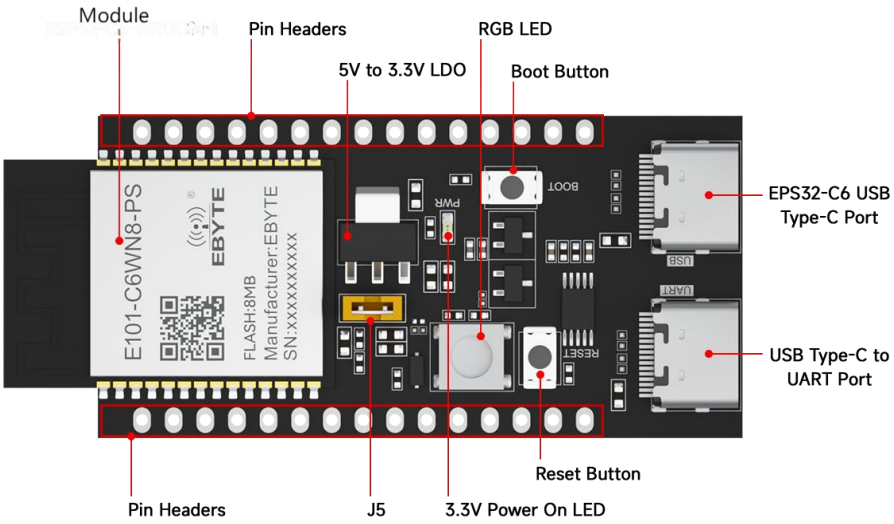


Figure 2 Main component diagram

serial number	Main firmware	introduce
1	E101-C6WN8-PS & E101-C6WN8-XS	E101-C6WN8-PS and E101-C6WN8-XS are universal modules that support 2.4 GHz Wi-Fi 6, Bluetooth 5 and IEEE 802.15.4 (Zigbee 3.0 and Thread 1.3). The module has a built-in ESP32-C6 chip and is equipped with 8 MB SPI flash. E101-C6WN8-PS uses an onboard PCB antenna, and E101-C6WN8-XS uses an external antenna connector. For more information, please refer to the E101-C6WN8-PS technical specification sheet.
2	Pin Header	All available GPIO pins (except the SPI bus of the flash) have been led out to the pin headers of the development board.
3	5 V to 3.3 V LDO (5 V to 3.3 V LDO)	Power converter, input 5 V, output 3.3 V.
4	3.3 V Power On LED	After the development board is connected to the USB power supply, the indicator light turns on.
5	USB-to-UART Bridge (USB to UART Bridge)	Single-chip USB to UART bridge providing transfer rates up to 1 Mbps.
6	ESP32-C6 USB Type-C Port （ESP32-C6 USB Type-C	The USB Type-C interface of the ESP32-C6 chip supports USB 2.0 full-speed mode, with a data transmission rate of up to 12 Mbps (note

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	interface）	that this interface does not support the high-speed transmission mode of 480 Mbps). This interface can be used as the power supply interface of the development board, can burn firmware to the chip, can communicate with the chip through the USB protocol, and can also be used for JTAG debugging.
7	Boot Button	Download button. Press and hold the Boot button and press the Reset button to enter the "firmware download" mode and download the firmware through the serial port.
8	Reset Button	Reset button.
9	USB Type-C to UART Port (USB Type-C to UART interface)	It can be used as the power supply interface of the development board, which can be used to burn firmware to the chip. It can also be used as a communication interface to communicate with the ESP32-C6 chip through the onboard USB to UART bridge.
10	RGB LED	Addressable RGB LED driven by GPIO8.
11	J5	for measuring current

Note: 1. The J5 pin header on the development board (as shown in the functional component diagram above) can be used to measure the current of the E101-C6WN8-PS module: remove the J5 jumper: at this time the development board Disconnect the power supply of the peripherals and module, and connect the J5 pin header to the ammeter to measure the module current. Install J5 jumper cap (factory default): the development board returns to normal functions.
2. For specific function instructions, please refer to the user manual of E101-C6WN8-PS & E101-C6WN8-XS.

2.2 Pin definition

The picture below shows the front view of E101-C6WN8-PS-TB&E101-C6WN8-XS-TB:

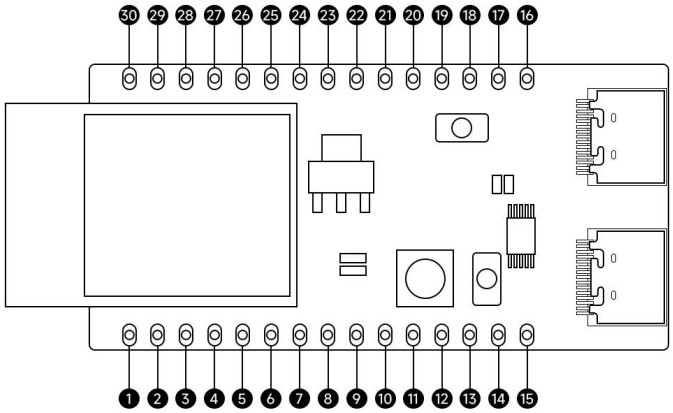


Figure 3 Current test interface diagram

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Pin number	Pin name	type	Pin usage
1	3V3	P	3.3 V power supply
2	RST	I	High level: chip enabled; low level: chip turned off.
3	4	I/O/T	MTMS, GPIO4, LP_GPIO4, LP_UART_RXD, ADC1_CH4, FSPIHD
4	5	I/O/T	MTDI, GPIO5, LP_GPIO5, LP_UART_TXD, ADC1_CH5, FSPIWP
5	6	I/O/T	MTCK, GPIO6, LP_GPIO6, LP_I2C_SDA, ADC1_CH6, FSPICLK
6	7	I/O/T	MTDO, GPIO7, LP_GPIO7, LP_I2C_SCL, FSPID
7	O	I/O/T	GPIO0, XTAL_32K_P, LP_GPIO0, LP_UART_DTRN, ADC1_CH0
8	1	I/O/T	GPIO1, XTAL_32K_N, LP_GPIO1, LP_UART_DSRN, ADC1_CH1
9	8	I/O/T	GPIO8
10	10	I/O/T	GPIO10
11	11	I/O/T	GPIO11
12	2	I/O/T	GPIO2, LP_GPIO2, LP_UART_RTSN, ADC1_CH2, FSPIQ
13	3	G	GPIO3, LP_GPIO3, LP_UART_CTSN, ADC1_CH3
14	5V	P	5V power supply
15	G	G	ground
16	NC	-	Empty pin
17	G	G	接地
18	TX	I/O/T	U0TXD, GPIO16, FSPICS0
19	RX	I/O/T	U0RXD, GPIO17, FSPICS1
20	15	I/O/T	GPIO15
21	23	I/O/T	GPIO23, SDIO_DATA3
22	22	I/O/T	GPIO22, SDIO_DATA2
23	21	I/O/T	GPIO21, SDIO_DATA1, FSPICS5
24	20	I/O/T	GPIO20, SDIO_DATA0, FSPICS4
25	19	I/O/T	GPIO19, SDIO_CLK, FSPICS3
26	18	I/O/T	GPIO18, SDIO_CMD, FSPICS2
27	9	I/O/T	GPIO 9
28	G	G	ground
29	13	I/O/T	GPIO13, USB_D+
30	12	I/O/T	GPIO12, USB_D-
31	G	G	ground
32	NC	-	Empty pin

Note:

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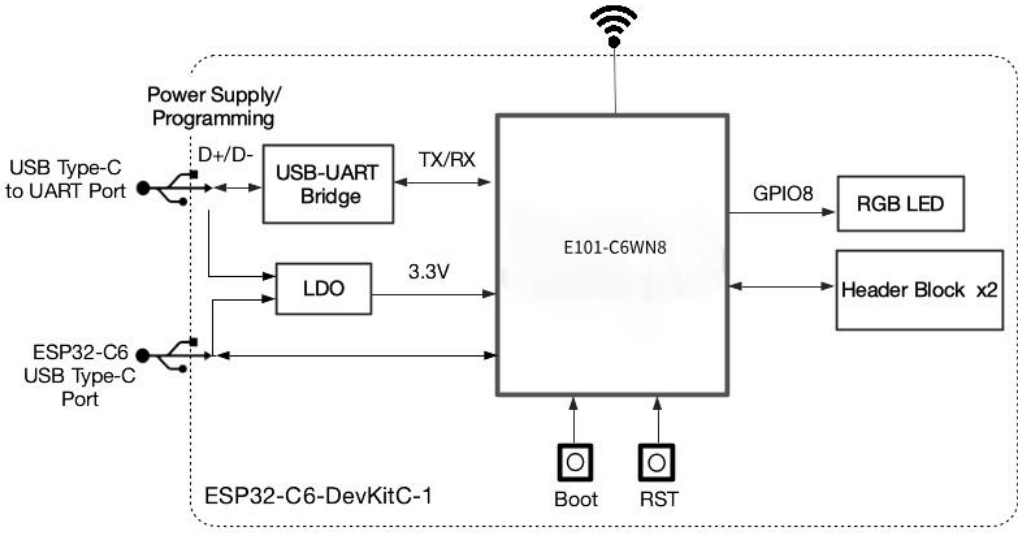
1. P : power supply; I: input; O: output; T: can be set to high impedance.
2. The E101-C6 Series Module AT features two UART ports: UART0 handles firmware updates and log output, while UART1 manages AT command transmission and response reception. Both ports operate at a default baud rate of 115200.

Function	Development board pins/Module	Other device pins
Download firmware/output log	UART0 • GPIO17 (RX) • GPIO16 (TX)	PC：TX、RX
AT command/response	UART1： • GPIO6 (RX) • GPIO7 (TX) • GPIO5 (CTS) • GPIO4 (RTS)	USB to UART module：TX，RX，RTS，CTS

For details, please download the AT Instruction Set from the website.

2.3 Function introduction

E101-C6WN8-PS-TB&E101-C6WN8-XS-TB The main components and connections are shown in the figure below:



3 . Things to note when developing applications

- There are three power supply methods available: 1. USB Type-C to UART interface or ESP32-C6 USB Type-C interface power supply (select one or both), default power supply method (recommended); 2.5V and GND pin header power supply; 3.3V3 and GND pin header for power supply.

4 . Version Information

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Version	Revision date	Revision Notes	Maintenance man
1.0	2024-4-8	initial version	Hao
1.1	2025-9-24	Add pin description	Hao

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