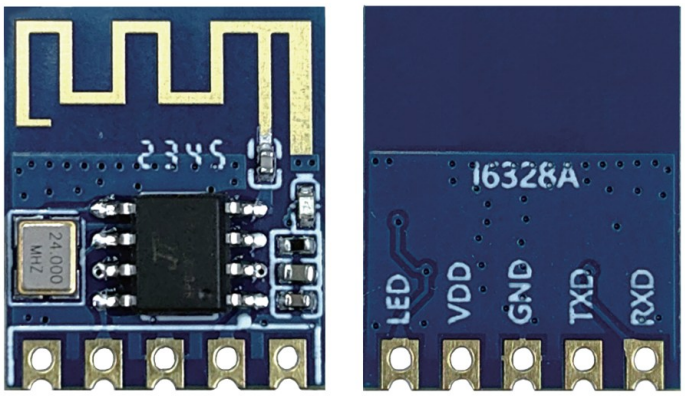
VG6328A Dual-Mode Bluetooth Transmission Module Specification Sheet

(V1.4)



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Document Revision Record

Version	Change date	Change instructions
V1.0	2023-12-20	Initial version
V1.1	2024-05-06	Update document errors and add UUID setting code
V1.2	2024-07-15	Add broadcast content/version number/customer number explanation, improve Bluetooth status query,Modify the working voltage range, add instructions to modify broadcast content,and add instructions to modify LED(PA9) Output level status AT command
V1.3	2024-10-17	English Module Spacification Sheet
V1.4	2024-12-11	Supplement the missing AT commands.

1.Overview

1.1 Basic module specifications

- VG6328A Bluetooth transparent slave module is a transparent module designed based on AC6328A2.
- AT command mode: Users can query or configure module parameters through the corresponding command set.
- Default parameters for serial port: baud rate (115200 baud), 8 data bits, 1 stop bit, no parity bit.
- The default setting for BLE MTU is 512 bytes, and the maximum MTU host can be set to 512 bytes.
- Broadcast interval: 100MS.
- Support AT mode: Users can also modify the parameters supported by the module through serial AT commands (For example: serial port baud rate, Bluetooth device name, etc.).
- Support transparent transmission mode: Users can communicate with mobile devices in both directions through the module's serial port; Mobile devices can Write to the module and listen for data from the serial port through the APP. The written data will be sent to the User devices; Similarly, after receiving data packets from the serial port, the module will automatically forward them to the mobile device.The VG6328A Bluetooth module can connect to both BLE Bluetooth and Classic Bluetooth simultaneously and communicate with each other. If necessary, only connect to them In BLE/SPP.

1.2 Application

- Personalized self timer: self timer, Tiktok artifact;
- Smart lighting: Bluetooth light control for light strips, bulbs, ceiling lights, etc;
- Smart plug-in locks: sockets, switches, door locks, shared products, etc;
- Intelligent remote control: OTT box, voice remote control, and other alternatives for infrared trial production;
- Household appliances: various small appliances such as tea bar machines, foot baths, toilets, electric hot pot, etc;
- Sports and health: health scales, toothbrushes, wristbands, sports equipment, medical testing;
  Smart toys: various types of toy products;

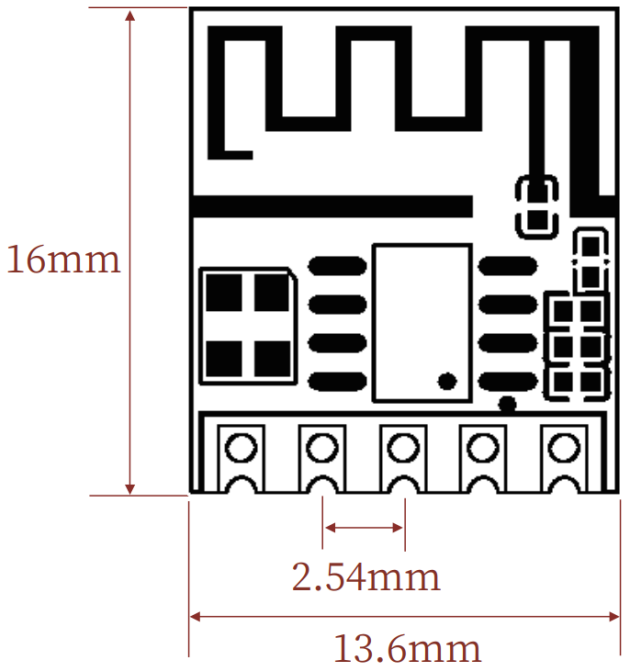
- Game office: keyboard, mouse, game controller;
- Intelligent printing: Bluetooth printer, error printer, etc

2. Module parameters

Parameter	Description	Remark
Power Supply	1.8 ~ 3.6V	Typically 3.3V
Frequency Bands	2402MHz ~ 2480MHz	
Output Power	0dBm	
Bluetooth protocol	BLEV5.3 +BR + EDR	
modulation mode	GFSK	
Receive sensitivity	-92dBm	
BLE/BT not broadcasted, connected Current	4.4mA	
BLE/BT broadcasting Current	4.8mA	
BLE/BT Connected Current	5mA	
BLE/BT Continuous transmission current	11mA	
Stable communication distance	10 meters	Unobstructed straight-line distance
Maximum communication distance	20 meters	Unobstructed straight-line distance
Communication interface	UART TTL	
Storage Temperature	-55℃ ~ +125℃	
Operating Temperature	-40℃ ~ +85℃	
Size	16.0 ×13.6 ×2.6mm	LxWxH

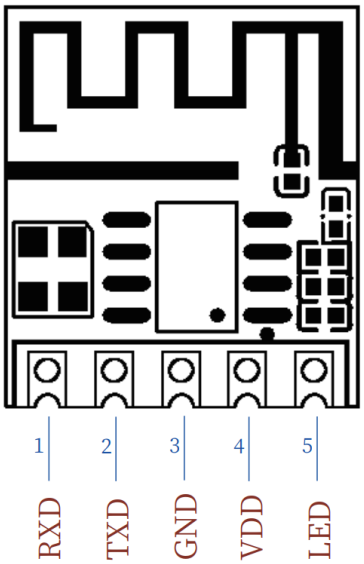
3. Module Description

3.1 Module size



Component height+board thickness: 2.63mm

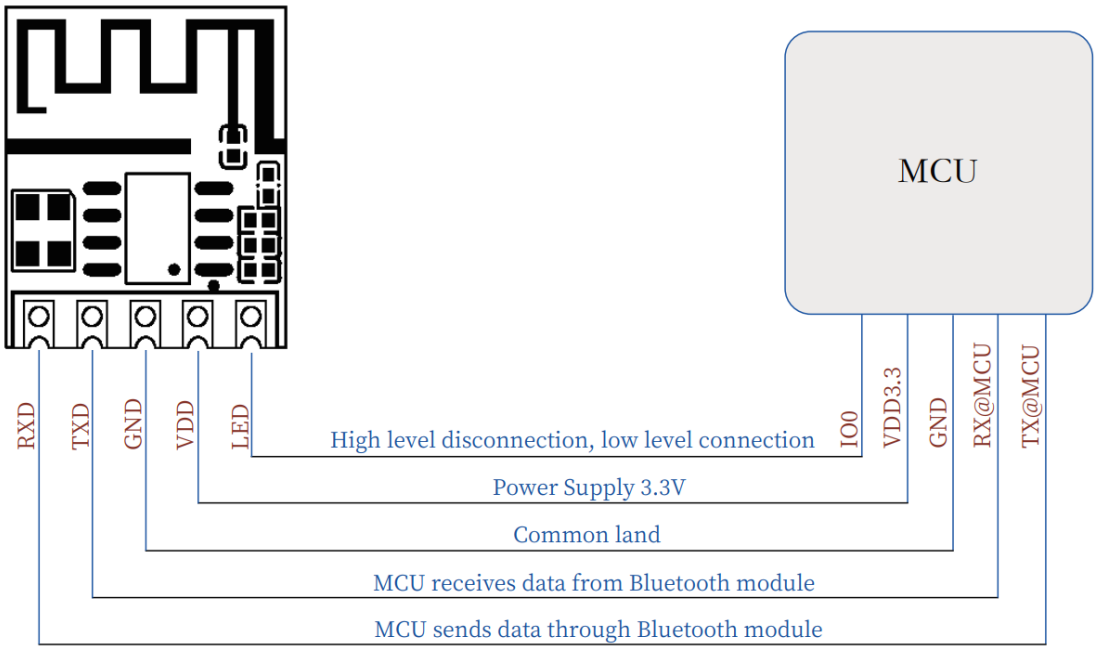
3.2 Module Pin Function Definition Diagram



3.3 Pin Function Description

Number	Name	Type	Description
1	RXD	I	Serial port RX data receiver
2	TXD	O	Serial TX data transmitter
3	GND	G	Ground
4	VDD	power	Module power supply
5	LED	O	Connect to 0, disconnect to 1, when BLE/BT When connected, represents the last state

3.4 Module Connection Diagram



4. Usage Introduction

1. Power supply VCC, GND can work normally, broadcast normally, and connect normally.

2. LED IO default: If the Bluetooth module fails to connect successfully, it will be set to high level. The Bluetooth module has successfully connected and the LED is at a low level.

3. Default baud rate for module serial port: 115200, data bit 8, checksum N, stop bit 1.

5. Program version number, customer number

1. Program firmware version number: XXXX, customer customization will have a dedicated version number (for verification purposes).
2. Program firmware customer number: Only customized customers will have a dedicated number (for verification).

6. Default Bluetooth name, default baud rate

1. Default Bluetooth names: XLBLE (BLE), XLBT (SPP).
2. Default shipment speed of 115200 bps, data bit 8, stop bit 1, no parity check.

7. Default Broadcast Packet Description

1. Bluetooth name: XLBLE
2. The data content of the broadcast package is as follows: 0x0201060303E0FF0609584C424C45

Length	Type	Data
02	0X01	0X06
03	0X03	0XE0FF
06	0X09	0X584C424C45

8. Bluetooth communication UUID

BLE Bluetooth default GATT service and feature UUID (UUID can be customized according to customer requirements, please contact us).

Service UUID: 0xFFE0

Characteristics UUID:

---0XFFE1: Write, Write Without Response [Downstream data, data flow direction APP -->UART]

---0xFFE2: Notify [Upward data, data flow direction UART -->APP]

9. Test tool

1. Iphone : LightBlue 

2. Android : Nrf Connect 

10. Query instruction

Note: Select the carriage return line break option for the serial port tool, add carriage return and line feed (0X0D 0X0A) after the instructions in the MCU program.

Description	Instruction	Respond	Parameter Description
Query FLASH UID	AT+FUID	XX XX XX XX XX XX XX XX XX XX XX XX EB 60 12 11 20 04 08 08 06 09 15 00 C7 00 50 FF (example)	Return 16 byte FLASH UID hexadecimal address
Query firmware version	AT+VERS	XXXX\r\n D948\r\n(example)	Return software version number 2 bytes

Query firmware customer number	AT+CUID	XXXXXXXX\r\n SCC-0001\r\n(example)	Return customer firmware number 4 bytes
Query SPP Bluetooth name	AT+SPGN	XXXX XLBT(example)	Return the corresponding SPP Bluetooth name characters
Query LE Bluetooth name	AT+LEGN	XXXX XLBLE(example)	Return the corresponding BLE Bluetooth name characters
Obtain SPP Bluetooth address	AT+SPGA	XXXXXXXXXXXX 09 15 00 C7 00 50(example)	Return 6-byte address data, output in the same order as the address displayed on the Bluetooth debugging assistant
Obtain BLE Bluetooth address	AT+LEGA	XXXXXXXXXXXX 09 15 00 C7 00 50(example)	Return 6-byte address data, output in the same order as the address displayed on the Bluetooth debugging assistant
Read Bluetooth connection status	AT+CONN	XX	Return a single byte to reflect the status: 1. No connection, return 0X04 2. BLE connection, return 0X10 3. Classic Bluetooth connection, returns 0X0F 4. BLE&SPP dual connection, returns 0X1B

11. Set instruction

Note: Select the carriage return line break option for the serial port tool, add carriage return and line feed (0X0D 0X0A) after the instructions in the MCU program. Please use the “AT+ENAT “command to make the module enter the AT command mode before using AT commands.

Description	Instruction	Respond	Parameter Description
Enter command mode	AT+ENAT	OK\r\n	Module reset automatically exits command mode. All AT commands need to enter AT command mode before they can take effect.
Enter data mode	AT+EXAT	OK\r\n	The AT command is invalid, the module will reset and automatically enter data mode.
Enable BLE broadcasting	AT+LEON	OK\r\n	The APP can search for BLE module devices, which are enabled by default at the factory. The setting commands will be saved even in the event of a power outage.
Turn off BLE broadcast	AT+LEOF	OK\r\n	The APP cannot search for BLE module devices,the setting commands will be saved even in the event of a power outage.
Enable SPP broadcast	AT+SPON	OK\r\n	APP can search for BR EDR devices, factory default enabled, the setting commands will be saved even in the event of a power outage.
Turn off SPP broadcast	AT+SPOF	OK\r\n	The APP cannot search for BR EDR module devices, the setting commands will be saved even in the event of a power outage.
Change SPP name	AT+SPNAXXXX (example): AT+SPNAXLBT	OK\r\n	The characters following AT+SPNA are the displayed Bluetooth name. It should be no more than 20 bytes at most. After the setting is successful, it needs to be reset via the AT command for the setting to take effect. The setting commands will be saved even in case of a power failure.
Change BLE name	AT+LENAXXXX (example): AT+LENAXLBLE	OK\r\n	The characters following AT+LENA are the displayed Bluetooth name, which should not exceed 20 bytes at most. After the setting is successfully completed, it needs to be reset by using the AT command for the setting to take effect. The setting command will be saved even in case of a power failure.

Set SPP address	AT+SPADxxx (example): AT+SPAD0123456789AC	OK\r\n	The characters following AT+SPAD are the SPP Bluetooth address, which is 6 bytes long. After the setting is successful, it needs to be reset with the AT command for the setting to take effect. The setting command will be saved even in the event of a power outage.
Set BLE address	AT+LEADxxx (example): AT+LEAD0123456789AC	OK\r\n	The characters following AT+LEAD are the BLE Bluetooth address, which is 6 bytes in length. After the setting is successful, it is necessary to reset it with the AT command for the setting to take effect. The setting command will be saved even in case of a power failure.
Disconnect SPP connection	AT+SPNC	OK\r\n	The module actively disconnects the connection.
Disconnect BLE connection	AT+LENC	OK\r\n	The module actively disconnects the connection.
Baud rate 9600	AT+BAUD0	OK\r\n	It takes effect after reset and is saved in case of power failure.
Baud rate 19200	AT+BAUD1	OK\r\n	It takes effect after reset and is saved in case of power failure.
Baud rate 38400	AT+BAUD2	OK\r\n	It takes effect after reset and is saved in case of power failure.
Baud rate 57600	AT+BAUD3	OK\r\n	It takes effect after reset and is saved in case of power failure.
Baud rate 115200	AT+BAUD4	OK\r\n	It takes effect after reset and is saved in case of power failure.
Baud rate 230400	AT+BAUD5	OK\r\n	It takes effect after reset and is saved in case of power failure.
Baud rate 256000	AT+BAUD6	OK\r\n	It takes effect after reset and is saved in case of power failure.
Baud rate 4608	AT+BAUD7	OK\r\n	It takes effect after reset and is saved in case of power failure.
Baud rate 921600	AT+BAUD8	OK\r\n	It takes effect after reset and is saved in case of power failure.

Baud rate 1000000	AT+BAUD9	OK\r\n	It takes effect after reset and is saved in case of power failure.
SetUUID Service	AT+UIDS AT+UIDSFFE0(example)	OK\r\n	It takes effect after reset and is saved in case of power failure.
Set UUID Write Write	AT+UIDW AT+UIDWFFE0(example)	OK\r\n	It takes effect after reset and is saved in case of power failure.
Set UUID Notify	AT+UIDN (example): AT+UIDNFFE0	OK\r\n	It takes effect after reset and is saved in case of power failure.
Broadcast content with MAC address	AT+SADV	OK\r\n	Broadcast adds 0X07 0XFF XXXXXXXXXXXX (X is the MAC address)
Broadcast content restored to factory	AT+CADV	OK\r\n	Broadcast restore default content
Broadcast content with user customization	AT+UADV	OK\r\n	Broadcast adds 0Xxx 0XFF XXXXXXXXXXXX (X is user-defined content), The total broadcast length shall not exceed 31
Set PA9 (LED) output high	AT+OUTL	OK\r\n	PA9 (LED) - Bluetooth not connected outputs high level, - Bluetooth connected outputs low level (default)
Set PA9 (LED) output low	AT+OUTH	OK\r\n	PA9 (LED) - Bluetooth not connected outputs low level, - Bluetooth connected outputs high level
Set PA9 (LED) 1HZ	AT+OTHZ	OK\r\n	PA9 (LED) - Bluetooth not connected outputs 1HZ frequency level, - Bluetooth connected outputs low level
Bluetooth module reset	AT+REST	NO	Reset and power on the system again.
Restore factory settings	AT+RDEF	NO	Restoring factory settings will perform the following actions: 1. The BLE name is XLBLE 2. The SPP name is XLBT 3. Turn off SPP broadcasting (product does not use SPP

			function) 4. BLE MAC address is 9 to 14 bytes from FUID 5. SPP MAC address is 9 to 14 bytes from FUID 6. The baud rate is 115200 7. UUID Server： 0xFFE0 8.UUID Write Without Response ,Write: 0xFFE1 9.UUID Notify: 0xFFE2 10. Restore default broadcast content 11. Restore default PA9 (LED) output level 12. Module reset.

12. What can we do for our customers?

1. Provide pre burned chips and mount them on the customer's board to provide the best cost control for the customer.
2. Match the crystals currently being used on our module, or purchase qualified crystal oscillators under our guidance.
3. Provide customers with paid customized development.

13. Contact us

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