E34-2G4Dxxx Product Specifications

2.4GHz TTL Full-Duplex Wireless Module



Chengdu Ebyte Electronic Technology Co.,Ltd.

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1 Introduction

1.1 Brief Introduction

E34-2G4Dxxx series products are full-duplex wireless data transmission modules developed by Chengdu Ebyte Electronic Technology Co.,Ltd. working in the 2.4 ~ 2.518GHz frequency band, TTL level output, compatible with 3.3V and 5V IO port voltage, using the serial port to send and receive data, lowering the threshold of wireless applications. Typical features are high-speed transmission, under a variety of baud rates, can achieve full-duplex characteristics (bidirectional simultaneous sending and receiving), unlimited packet length, support for uninterrupted transmission, support for file transfer.

The module has data encryption and compression functions. Module in the air transmission of data, with randomness, through the strict encryption and decryption algorithms, so that the data intercepted to lose significance. The data compression function has the probability to reduce the transmission time, reduce the probability of interference, improve reliability and transmission efficiency.

1.2 Features

- Supports full duplex characteristics (simultaneous sending and receiving in both directions) at a maximum baud rate of 57600;
- Supports uninterrupted transmission with unlimited packet length;
- Supports file transfer;
- Module transmit power can be selected from 11dBm/20dBm/27dBm, and supports software multi-level adjustable;
- Supports global license-free ISM 2.4GHz band;
- The air rate automatically adapts to the baud rate;
- Supports advanced GFSK modulation;
- Supports low power consumption mode for battery applications;
- Supports 3.3~5.5V power supply, any power supply greater than 5V can ensure the best performance;
- Industrial-grade standard design, support -40 ~ +85 ℃ long time use;

1.3 Application

- Wearables;
- Smart home as well as industrial sensors;
- Security systems, positioning systems;
- Wireless remote controls, drones;
- Wireless gaming remote controls;
- Healthcare products;
- Wireless voice, wireless headset;
- Automotive industry applications.

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2 Specification and parameter

2.1 RF parameters

RF parameters	Unit	Model			Note
		E34-2G4D11S	E34-2G4D20SX E34-2G4D20D	E34-2G4D27SX E34-2G4D27D	
Maximum Transmit Power	dBm	11.0±1	20.0±1	27.0±1	-
Receiver sensitivity	dBm	-90	-101～-103	-101～-103	Air rate of 250kbps
Reference distance	m	130	2000	5000	Clear and open environment, antenna gain 5dBi, antenna height 2.5 meters, baud rate 9600bps
Operating frequency	MHz	2400～2518			Supports ISM bands
Airspeed	bps	irreconcilable			Software auto-optimization and automatic baud rate adaptation
Blocking power	dBm	10	10	10	Risk of burnout in close proximity
Launch length	Btye	29	29	29	Maximum length of a single transmission
Cache capacity	Btye	1024	1024	1024	Unlimited packet length in continuous mode

2.2 Electrical parameters

Electrical parameters	Unit	Model			Note
		E34-2G4D11S	E34-2G4D20SX E34-2G4D20D	E34-2G4D27SX E34-2G4D27D	
Working Voltage	V	3.3～5.5			Output power is guaranteed at ≥5V, above 5.5V there is a risk of burning the module.
Communication level	V	3.3V			Risk of burn-in using 5V TTL

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Power consumption	Launch current	mA	50	110	400	Instantaneous power consumption @30dBm
	Receiving Current	mA	23	21.5	21	
	Sleeping current	uA	-	75	510	software shutdown
temperature	Operating temperature	℃	-40～+85			Industrial-grade design
	Storage temperature	℃	-40～+85			Industrial-grade design

2.3 Hardware parameters

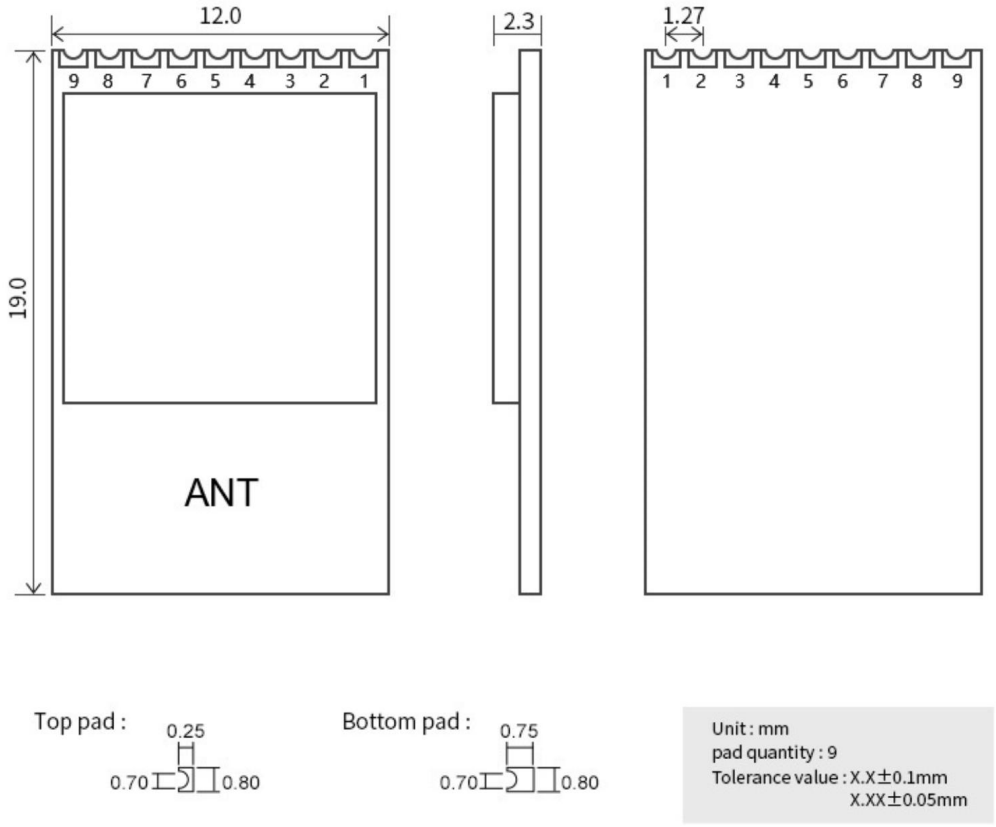
Hardware parameters	**Model**			**Note**
	E34-2G4D11S	**E34-2G4D20SX** **E34-2G4D27SX**	**E34-2G4D20D** **E34-2G4D27D**	
Modulation method	GFSK	GFSK	GFSK	Next Generation LoRa Modulation Technology
Interface method	1.27mm stamp hole	1.27mm stamp hole	2.54mm Pin	
Communications interface	UART	UART	UART	TTL level
Package	SMD	SMD	DIP	-
Antenna Interface	PCB on-board antenna	IPEX/ Stamp hole	SMA-K	Equivalent impedance approx. 50Ω
Size	12*19mm	16*26mm	21*36mm	±0.2mm

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3 Mechanical Dimensions and Pin Definitions

3.1 E34-2G4D11S Mechanical Dimensions and Pin Definitions



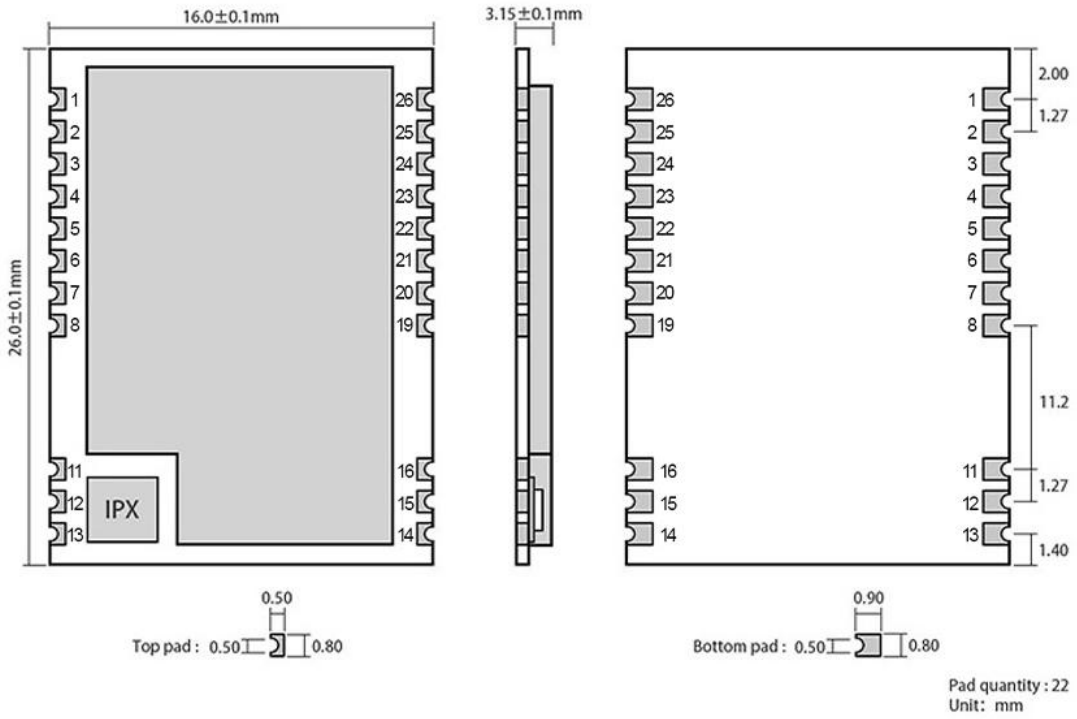
Pin Definition:

Pin Number	Pin Name	Pin Direction	Pin Usage
1	M0	Input (very weak pull-up)	In conjunction with M1, determines the 4 operating modes of the module (cannot be suspended, can be grounded if not in use)
2	M1	Input (very weak pull-up)	In conjunction with M0, determines the 4 modes of operation of the module (cannot be suspended, can be grounded if not in use)
3	RXD	Input	TTL serial input, connected to external TXD output pin.
4	TXD	Output	TTL serial output connected to external RXD input pin.
5	AUX	Output	Used to indicate module working status (can be suspended) User wakes up the external MCU and outputs a low level during power-on self-test initialization.
6	VCC		Module power supply positive reference, voltage range: 2.5 to 3.6V DC
7	GND	Input	Module Ground
8	RESET	Input	Module reset pin, active low
9	NC		reserve feet

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3.2 E34-2G4D20SX&E34-2G4D27SX Mechanical Dimensions and Pin Definitions



Pin Definition:

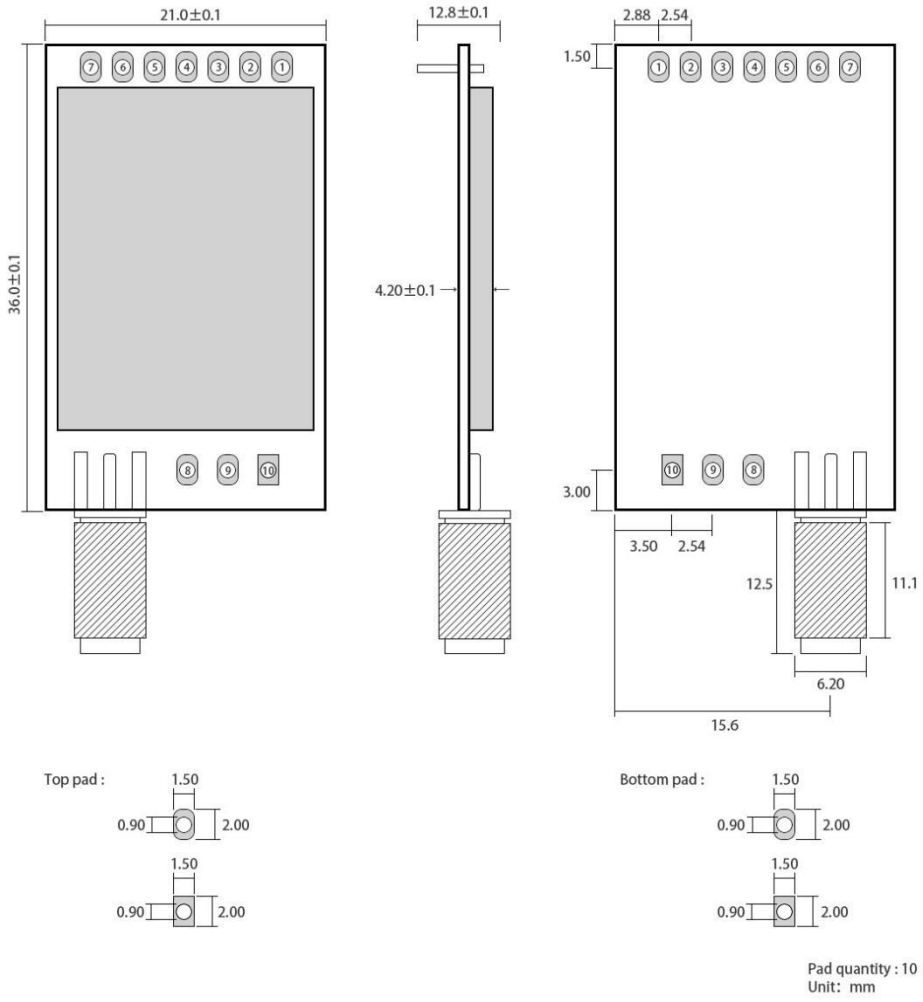
Pin Number	Pin Name	Pin Direction	Pin Usage
1	RESET	Input	Module reset pin, 3.3V.
2	GND	-	Module Ground
3	NC	-	Empty feet (not open for use, no need for users to care)
4	NC	-	Empty feet (not open for use, no need for users to care)
5	NC	-	485_EN control pin
6	NC	-	burn-in pin
7	NC	-	burn-in pin
8	GND	-	Module Ground
11	GND	-	Module Ground
12	ANT	-	Antenna interface (HF signal output, 50 ohm characteristic impedance)
13	GND	-	Module Ground
14	GND	-	Module Ground
15	GND	-	Module Ground
16	GND	-	Module Ground
19	GND	-	Module Ground
20	M0	Input (very weak	In conjunction with the M1, determines the 4 modes of operation of the

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		pull-up)	module (non-hovering, can be grounded if not in use)
21	M1	Input (very weak pull-up)	In conjunction with M0, determines the 4 modes of operation of the module (cannot be left unattended, can be grounded if not in use)
22	RXD	Input	TTL serial input connected to an external TXD output pin;
23	TXD	Output	TTL serial output connected to external RXD output pin;
24	AUX	Output	Used to indicate the working status of the module; the user wakes up the external MCU and outputs a low level during power-on self-test initialization; (can be suspended)
25	VCC	-	Module power supply positive reference, voltage range: 2.3 to 5.5V DC
26	GND	-	Module Ground

3.2 E34-2G4D20D & E34-2G4D27D Mechanical Dimensions & Pin Definitions



Pin Number	Pin Name	Pin Direction	Pin Usage
1	M0	Input (very weak	In conjunction with M1, determines the 4 operating modes of the module (cannot

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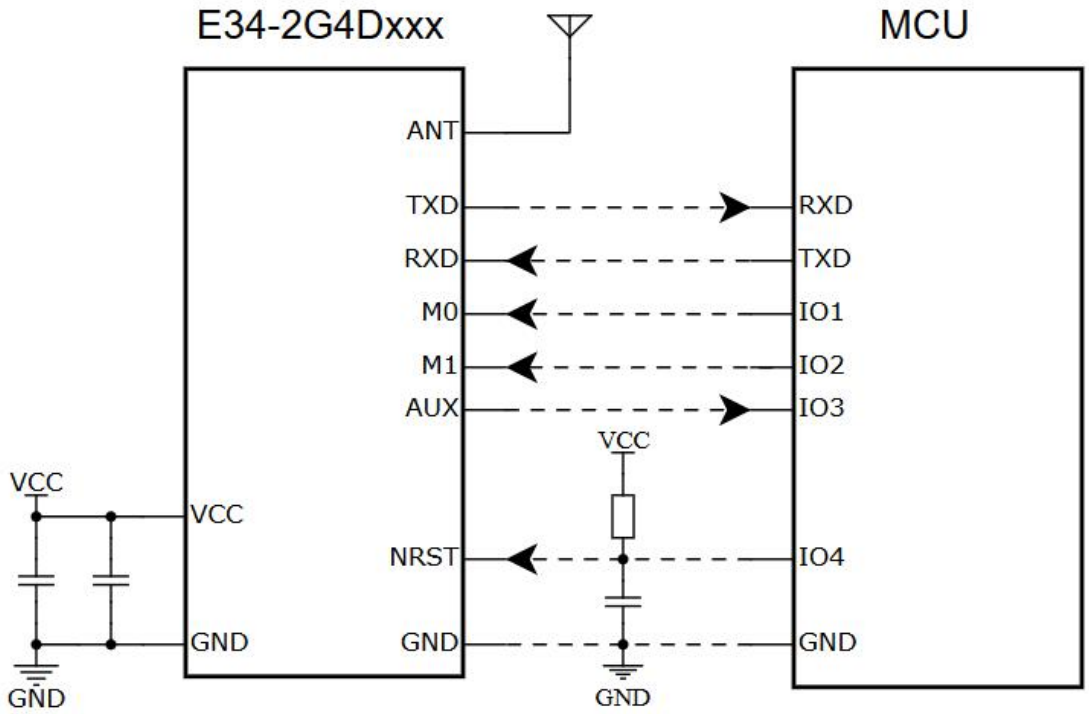
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		pull-up)	be suspended, can be grounded if not in use)
2	M1	Input (very weak pull-up)	In conjunction with M0, determines the 4 modes of operation of the module (cannot be suspended, can be grounded if not in use)
3	RXD	Input	TTL serial input connected to an external TXD output pin; Can be configured as an open drain or pull-up input, see Parameter Settings for details.
4	TXD	Output	TTL serial output connected to external RXD input pin; Configurable as open drain or push-pull outputs, see Parameter Settings for details.
5	AUX	Ouput	Used to indicate the working status of the module (can be suspended) User wakes up the external MCU and outputs a low level during power-on self-test initialization; Can be configured as open drain output, or push-pull output, see parameter setting for details.
6	VCC		Module power supply positive reference, voltage range: 2.3 to 5.5V DC
7	GND	Input	Module Ground
8	fixing hole	Input	fixing hole
9	fixing hole		fixing hole
10	fixing hole		fixing hole

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4 Recommended connection charts



Serial number	Brief connection description between the module and the microcontroller (the above figure takes the STM8L microcontroller as an example)
1	The wireless serial module is TTL level, please connect with TTL level MCU.
2	For some 5V microcontrollers, it may be necessary to add 4 to 10K pull-up resistors to the TXD and AUX pins of the module.

5 Functions in detail

5.1 Module reset

- After the module is powered on, AUX will immediately output a low level, and carry out hardware self-test, as well as set up the working mode according to user parameters;
- During this process, AUX will keep low level, and when it is finished, AUX will output high level and start to work normally according to the working mode combined by M1 and M0;
- Therefore, the user needs to wait for the rising edge of AUX as the starting point of normal operation of the module.

5.2 AUX Explained

- AUX is used for wireless transceiver buffer indication and self-test indication;
- It indicates whether the module has data that has not yet been emitted through the wireless, or whether the wireless

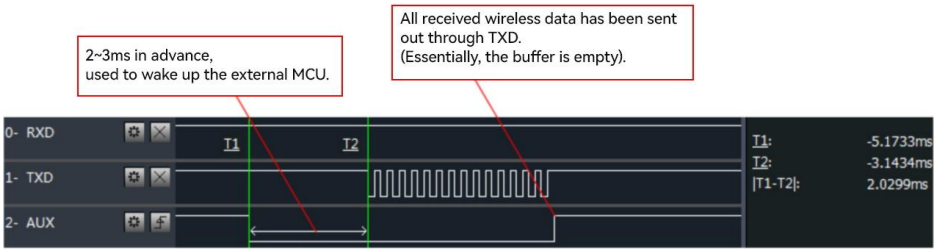
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data that has been received has not yet been sent out in full through the serial port, or whether the module is in the process of initializing the self-test.

5.2.1 Serial data output indication

- Used to wake up a dormant external MCU;



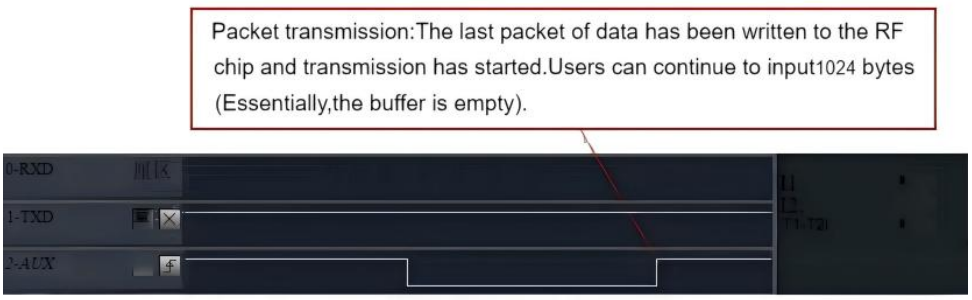
AUX pin timing diagram when module serial port sends out data.

5.2.2 Radio transmission indication

- Buffer Empty: the data in the internal 2048 byte buffer are written to the wireless chip (automatic packetization). When AUX=1 when the user continuously initiates less than 2048 bytes of data, will not overflow;

When AUX=0 when the buffer is not empty: internal 2048 bytes of buffer data, have not yet all written to the wireless chip and open the launch, at this time the module may be waiting for the end of the user's data timeout, or is being wireless sub-packet launch;

Note: AUX=1 does not mean that all the serial data of the module have been launched through the wireless, or the last packet of data is being launched.



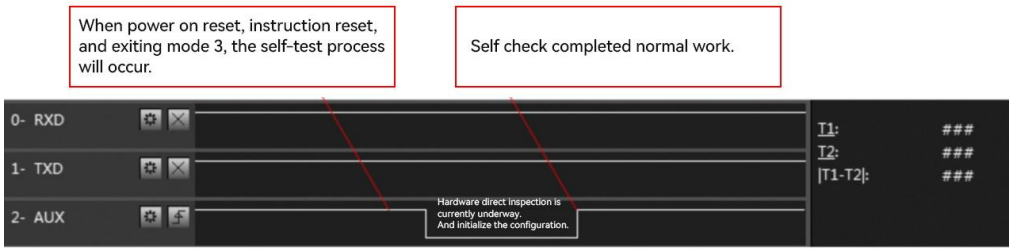
AUX pin timing diagram when the module receives serial port data.

5.2.3 Module is in the process of being configured

- Only when resetting and exiting hibernation mode;

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During self check, AUX pin timing diagram.

5.2.4 AUX Notes

- Function 1 and Function 2 above, output low level is prioritized, i.e.: when any output low level condition is satisfied, AUX outputs low level; when all low level conditions are not satisfied, AUX outputs high level.
- When AUX outputs low level, it means that the module is busy, and no working mode detection will be carried out at this time; when the module AUX outputs high level within 20ms, the mode switching work will be completed.
- After the user switches to a new working mode, at least 2ms after the rising edge of AUX is needed before the module will really enter the mode; if AUX is always high, then the mode switching will take effect immediately.
- When the user enters into other modes from mode 3 (sleep mode) or during reset, the module will reset the user parameters, during which AUX outputs a low level.

6 Operating mode

The module has four operating modes, which are set by pins M0 and M1; details are shown in the table below:

Mode（0-3）	M0	M1	Introduction to the model	Notes
0 half duplex mode	0	0	Serial open, wireless open, transparent transmission, half-duplex operation	The receiver must have the same address, channel, and baud rate.
1 full duplex mode	1	0	Serial open, wireless open, transparent transmission, full duplex operation	The receiver must have the same address, channel, and baud rate.
2 reserve mode	0	1	reserve mode	Same as mode 0 for now
3 Setup Mode	1	1	Parameter setting commands can be received	See Working Parameters Detail

6.1 Mode switching

- Users can combine high and low levels of M1 and M0 to determine the module working mode;

The 2 GPIOs of MCU can be used to control the mode switching;

When changing M1, M0: If the module is idle, it can start working according to the new mode after 15-20ms;

If the module has serial data which has not yet finished transmitting through wireless, it can only enter the new working mode after transmitting;

If the module receives the wireless data and sends out the data through the serial port, it needs to finish sending out

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before entering the new working mode;
So the mode switching can only be effective when AUX outputs 1, otherwise the switching will be delayed.

- For example, if the user inputs a large amount of data continuously in mode 0 or mode 1 and switches modes at the same time, the switching mode operation is invalid at this time;

The module will process all user data before new mode detection;
So the general suggestion is: detect the output status of AUX pin, wait for 2ms after AUX output high level before switching.

6.2 Half-duplex mode (mode 0)

Type	When M0 = 0 and M1 = 0, the module operates in mode 0
launch	The module receives the user data from the serial port, the module transmits the wireless data packet length of 29 bytes, when the user inputs the amount of data to reach 29 bytes, the module will start the wireless transmission, at this time the user can continue to input the data that need to be transmitted. When the user needs to transmit bytes less than 29 bytes, the module waits for 3 bytes of time, if no user data continue to input, it is considered that the data is terminated, at this time the module will be all the data packets sent out through the wireless. When the module receives the first user data, it will AUX output low level, when the module puts all the data into the RF chip and starts to transmit, AUX outputs high level. At this point, it indicates that the last packet of wireless data has been initiated for transmission and the user can continue to enter data up to 2048 bytes long. Packets sent through mode 0 can only be received by the receiver module that is in mode 0, mode 1, or mode 2.
reception	The module always turns on the wireless reception function, and can receive data packets sent from mode 0, mode 1, and mode 2. After receiving the packet, the module AUX outputs a low level and starts to send the wireless data through the serial port TXD pin, and after all the wireless data are output through the serial port, the module outputs AUX high.
Note	When the module transmits data, it cannot receive data. At the same time, when the module receives data, it cannot transmit data.

6.3 Full duplex mode (mode 1)

Type	When M0 = 1 and M1 = 0, the module operates in mode 1
launch	The module receives user data from the serial port, the module transmits the wireless data packet length of 29 bytes, when the user inputs the amount of data to reach 29 bytes, the module will start the wireless transmission, at this time, the user can continue to input the data that need to be transmitted; When the user needs to transmit bytes less than 29 bytes, the module waits for 3 bytes of time, if no user data continue to input, it is considered that the data is terminated, at this time the module will be all the data packets sent out through the wireless; When the module receives the first user data, will AUX output low level, when the module puts all the data into the RF chip and starts to transmit, AUX output high level; At this point, it indicates that the last packet of wireless data has been initiated for transmission and the user can continue to enter data up to 2048 bytes long; The packet sent through mode 0 can only be received by the receiver module which is in mode 0, mode 1 and mode 2.

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reception	The module keeps the wireless receive function on and can receive packets from Mode 0, Mode 1 and Mode 2; After receiving the packet, the module AUX outputs a low level and starts to send out the wireless data through the serial port TXD pin, and after all the wireless data are output through the serial port, the module outputs the AUX to a high level.
Note	When the module transmits data, it can receive data. At the same time, when the module receives data, it can send data.

6.4 Reserved mode (mode 2)

Type	When M0 = 0 and M1 = 1, the module operates in mode 2
launch	Equivalent to mode 0.
reception	Equivalent to mode 0.

6.5 Setting mode (mode 3)

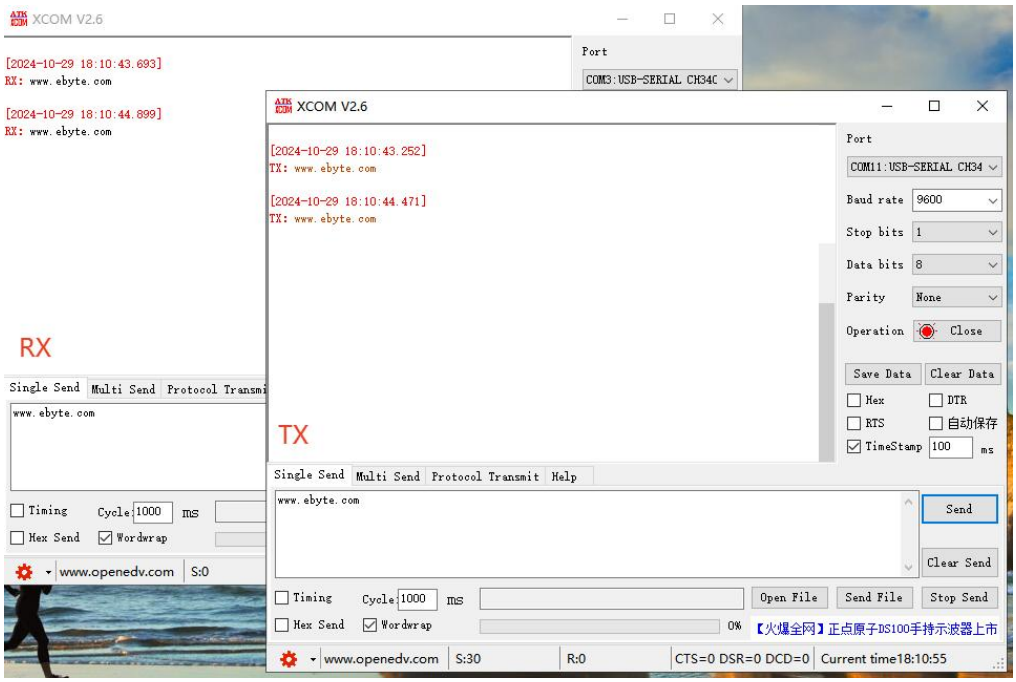
Type	When M0 = 1 and M1 = 1, the module operates in mode 3
launch	Unable to transmit wireless data.
reception	Wireless data cannot be received.
configuration	The hibernation mode can be used for module parameter setting, using the serial port 9600, 8N1, to set the module operating parameters through a specific command format.
Note	When entering from the setup mode to other modes, the module will reconfigure the parameters, during the configuration process, AUX stays low; the When finished, it outputs a high level, so it is recommended that the user detects the rising edge of AUX.

6.6 Fast communication test

Steps	Specific operation
1	Plug the USB test board (E15-USB-T2) into the computer and make sure the driver has been installed correctly; Plug in the mode selection jumper (i.e. M1=0, M0=0) on the USB test board.
2	Either 3.3V or 5V power supply can be selected (the module supports 2.3 to 5.5V).
3	Run the “Serial Port Debugging Assistant” software and select the correct serial port number to observe the transmit window and the corresponding receive window.

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7 Command format

The list of supported commands in setup mode (Mode 3: M0=1, M1=1) is as follows (only 9600, 8N1 format is supported during setup):

Serial number	command format	Explanation
1	C0+ Operating Parameters	Sends C0 + 5 bytes of operating parameters in hexadecimal format for a total of 6 bytes, which must be sent continuously (power-down save)
2	C1+C1+C1	Three C1s are sent in hexadecimal format and the module returns the saved parameters, which must be sent consecutively.
3	C2+ Operating Parameters	Sends C2 + 5 bytes of operating parameters in hexadecimal format, for a total of 6 bytes, which must be sent continuously (power-down is not saved)
4	C3+C3+C3	Three C3s are sent in hexadecimal format and the module returns the version information, which must be sent consecutively.
5	C4+C4+C4	Sending three C4s in hexadecimal format will generate a reset in the module, which must be sent consecutively.

7.1 Factory Default Parameters

Model	Factory default parameter value:C0 00 00 18 00 40						
Module Model	Frequency	Address	Signal path	Airspeed	Baud-rate	Serial Port Format	Launch power
E34-2G4D11S	2.4GHz	0x0000	0x00	Adaptive Baud Rate	9600	8N1	13mW

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E34-2G4D20SX	2.4GHz	0x0000	0x00	Adaptive Baud Rate	9600	8N1	100mW
E34-2G4D27SX	2.4GHz	0x0000	0x00	Adaptive Baud Rate	9600	8N1	500mW
E34-2G4D20D	2.4GHz	0x0000	0x00	Adaptive Baud Rate	9600	8N1	100mW
E34-2G4D27D	2.4GHz	0x0000	0x00	Adaptive Baud Rate	9600	8N1	500mW

7.2 Reading of operating parameters

Command format	Explanation
C1+C1+C1	In sleep mode (M0=1, M1=1), issue the command (in HEX format): C1 C1 C1, to the module serial port. The module will return the current configuration parameters, e.g. C0 00 00 18 00 40.

7.3 Version number reading

Command format	Explanation
C3+C3+C3	In setup mode (M0=1, M1=1), send a command (in HEX format) to the module serial port: C3 C3 C3, the The module will return the current configuration parameters, e.g.: C3 39 xx yy; Here 39 stands for the module model (E39 series), xx is the version number, and yy refers to other features of the module.

7.4 Version number reading

Command format	Explanation
C4+C4+C4	In setup mode (M0=1, M1=1), send a command (HEX format) to the module's serial port: C4 C4 C4, the The module will generate a reset; During the reset process, the module carries out self-test and AUX outputs a low level; after the reset is completed, AUX outputs a high level and the module starts to work normally. At this time, mode switching or initiating the next command can be performed.

7.5 Parameter setting commands

	Name	Description	Note
0	HEAD	Fixed 0xC0 or 0xC2, indicating that this frame data is a control command	Must be 0xC0 or C2 C0: The set parameters are saved by power-down. C2: The set parameters will not be saved by power-down.
1	ADDH	High byte of module address (default 00H)	00H-FFH
2	ADDL	Module address low byte (default 00H)	00H-FFH

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<table>
<tr><td rowspan="15">3</td><td rowspan="15">SPED</td><td>7</td><td>6</td><td colspan="2">serial port parity bit</td><td rowspan="5">Serial port modes can be different on both sides of the communication</td></tr>
<tr><td>0</td><td>0</td><td colspan="2">8N1 (default)</td></tr>
<tr><td>0</td><td>1</td><td colspan="2">8O1</td></tr>
<tr><td>1</td><td>0</td><td colspan="2">8E1</td></tr>
<tr><td>1</td><td>1</td><td colspan="2">8N1 (Equivalent to 00)</td></tr>
<tr><td>5</td><td>4</td><td>3</td><td>TTL serial port rate (bps)</td><td rowspan="10">The baud rate can be different between the two sides of the communication The serial port baud rate has nothing to do with the wireless transmission parameters and does not affect the wireless transceiver characteristics.</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>Serial port baud rate of 1200</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>Serial port baud rate of 2400</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>Serial port baud rate of 4800</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>Serial port baud rate of 9600 (default)</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>Serial port baud rate of 19200</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>Serial port baud rate of 38400</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>Serial port baud rate of 57600</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>Serial port baud rate of 115200</td></tr>
<tr><td>2</td><td>1</td><td>0</td><td>Retention of unused</td><td rowspan="2">Recommended to write 0</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="4">4</td><td rowspan="4">CHAN</td><td colspan="4">General Model</td><td></td></tr>
<tr><td colspan="4">7, 6, 5, 4 retained unused</td><td>Recommended to write 0</td></tr>
<tr><td colspan="4">communications channel</td><td rowspan="2">00H to 1FH, totaling 16 channels; Corresponds to 2400MHz + CHAN * 7MHz</td></tr>
<tr><td colspan="4">3、2、1、0 , default 00H (2400MHz)</td></tr>
<tr><td rowspan="15">5</td><td rowspan="15">OPTION</td><td>7</td><td colspan="3">Retention of unused</td><td rowspan="2">Recommended to write 0</td></tr>
<tr><td></td><td colspan="3"></td></tr>
<tr><td>6</td><td colspan="3">IO drive mode (default 1)</td><td rowspan="3">This bit is used to enable the module's internal pull-up resistor. The open drain method level adaptation is more robust and may require an external pull-up resistor in some cases.</td></tr>
<tr><td>1</td><td colspan="3">TXD, AUX push-pull outputs, RXD pull-up inputs</td></tr>
<tr><td>0</td><td colspan="3">TXD, AUX open output, RXD open input</td></tr>
<tr><td>5</td><td>4</td><td>3</td><td>Retention of unused</td><td rowspan="2">Recommended to write 0</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>2</td><td colspan="3">Retention of unused</td><td rowspan="2">Recommended to write 0</td></tr>
<tr><td></td><td colspan="3"></td></tr>
<tr><td>1</td><td>0</td><td colspan="2">Transmit power (approximate)</td><td rowspan="5">The external power supply must provide more than 250mA of current output capability and ensure that the power supply ripple is less than 100mV;

It is not recommended to use lower power sending, its power utilization efficiency is not high.</td></tr>
<tr><td>0</td><td>0</td><td colspan="2">11/20/27dBm (default)</td></tr>
<tr><td>0</td><td>1</td><td colspan="2">7/17/21dBm</td></tr>
<tr><td>1</td><td>0</td><td colspan="2">7/14/15dBm</td></tr>
<tr><td>1</td><td>1</td><td colspan="2">-1/10/9dBm</td></tr>
</table>

Example (Meaning of the byte "SPED" in serial number 3):

Binary bits of this byte	7	6	5	4	3	2	1	0
Specific values (user-configurable)	0	0	0	1	1	0	0	0
Representativeness	Serial port parity bit 8N1		Serial port baud rate of 9600			Air Rate Adaptive		
Corresponding hexadecimal	1		8					

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8 Hardware Design

- It is recommended to use a DC regulated power supply to power this module, the power supply ripple factor should be as small as possible, and the module should be reliably grounded;
- Please pay attention to the correct connection of the positive and negative terminals of the power supply, if the reverse connection may cause permanent damage to the module;
- Please check the power supply to ensure that it is between the recommended supply voltages, if it exceeds the maximum value, it may cause permanent damage to the module;
- Check the stability of the power supply to ensure that the voltage does not fluctuate significantly and frequently;
- When designing the power supply circuit for the module, it is often recommended to keep more than 30% of the residual capacity, and the whole machine is conducive to long-term stable operation;
- Modules should be kept as far as possible from power supplies, transformers, high-frequency alignments and other parts of the electromagnetic interference;
- High-frequency digital alignment, high-frequency analog alignment, power supply alignment must be avoided below the module, if you really need to go through the module below, assuming that the module is welded in the Top Layer, in the module contact part of the Top Layer laying ground copper (all laying copper and a good ground), it must be close to the digital part of the module and the alignment in the Bottom Layer;
- Assuming that the module is soldered or placed in the Top Layer, it is also a mistake to run wires in the Bottom Layer or any other layer, which will affect the spuriousness of the module as well as the reception sensitivity to varying degrees;
- It is assumed that the module is surrounded by a large electromagnetic interference devices will also greatly affect the performance of the module, according to the intensity of the interference is recommended to stay away from the module, if the situation permits you can do appropriate isolation and shielding;
- Assuming that there is a large electromagnetic interference around the module alignment (high-frequency digital, high-frequency analog, power supply alignment) will also greatly affect the performance of the module, according to the intensity of the interference is recommended to stay away from the module, if the situation permits you can do appropriate isolation and shielding;
- If 5V level is used for the communication line, 1k-5.1k resistors must be connected in series (not recommended, there is still a risk of damage);
- Try to stay away from some TTL protocols whose physical layer is also 2.4GHz, e.g. USB3.0;
- When the module is mounted inside the chassis, use a good quality antenna extension cable to extend the antenna to the outside of the chassis and preferably vertically upwards.

9 FAQ

9.1 Unsatisfactory transmission distance

- When there are linear communication barriers, the communication distance will be attenuated accordingly;
- Temperature, humidity, co-channel interference, will lead to communication packet loss rate increase;
- The ground absorbs and reflects radio waves, so the test effect is poor near the ground;
- Seawater has a strong ability to absorb radio waves, so the effect of the seaside test is poor;

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- There are metal objects near the antenna, or placed in a metal shell, the signal attenuation will be very serious;
- Incorrect power register setting, air rate setting is too high (the higher the air rate, the closer the distance);
- The low voltage of the power supply at room temperature is lower than the recommended value, the lower the voltage the lower the power generated;
- The antenna is poorly matched with the module or the quality of the antenna itself.

9.2 Modules are vulnerable

- Please check the power supply to ensure that it is between the recommended supply voltages, if it exceeds the maximum value it will cause permanent damage to the module;
- Please check the stability of the power supply, the voltage can not be large and frequent fluctuations;
- Please ensure that the installation and use of the process of anti-static operation, high-frequency devices electrostatic sensitivity;
- Please ensure that the installation and use of the process of humidity should not be too high, part of the components for humidity-sensitive devices;
- If there is no special demand is not recommended in too high, too low temperature use.

9.3 BER is too high

- There is interference from the same frequency signal nearby, stay away from the source of interference or modify the frequency and channel to avoid interference;
- Unsatisfactory power supply may also cause garbled code, be sure to ensure the reliability of the power supply;
- Extension cords, feeder cords of poor quality or too long, can also cause high BER.

10 Welding instruction

This product is a direct-plug type module, welding personnel in the welding module, be sure to follow the discharge of static electricity operation specification work;

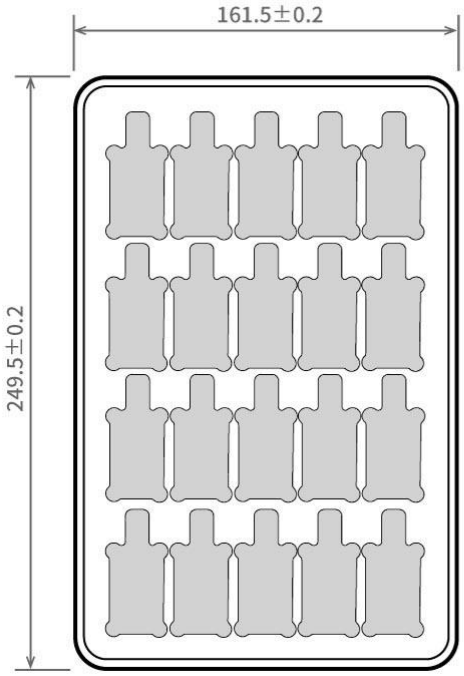
This product is electrostatic sensitive products, not according to the rules of arbitrary welding module may module permanent damage.

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11 Bulk Packaging Methods

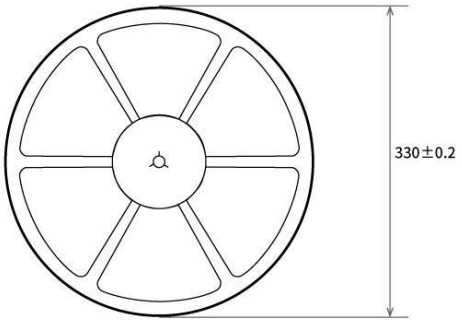
11.1 E34-2G4D20D&E34-2G4D27D

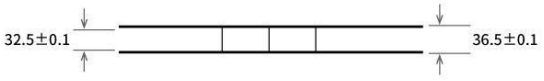


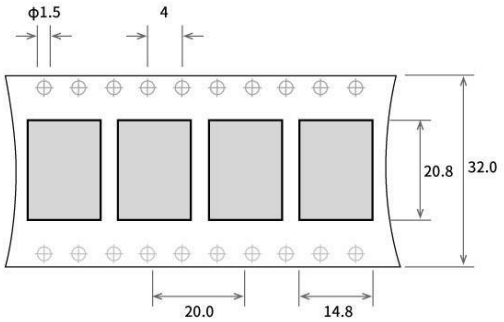


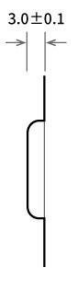
Unit: mm
Each Layer: 20 pcs
Each Package: 5 layers

11.2 E34-2G4D20SX&E34-2G4D27SX







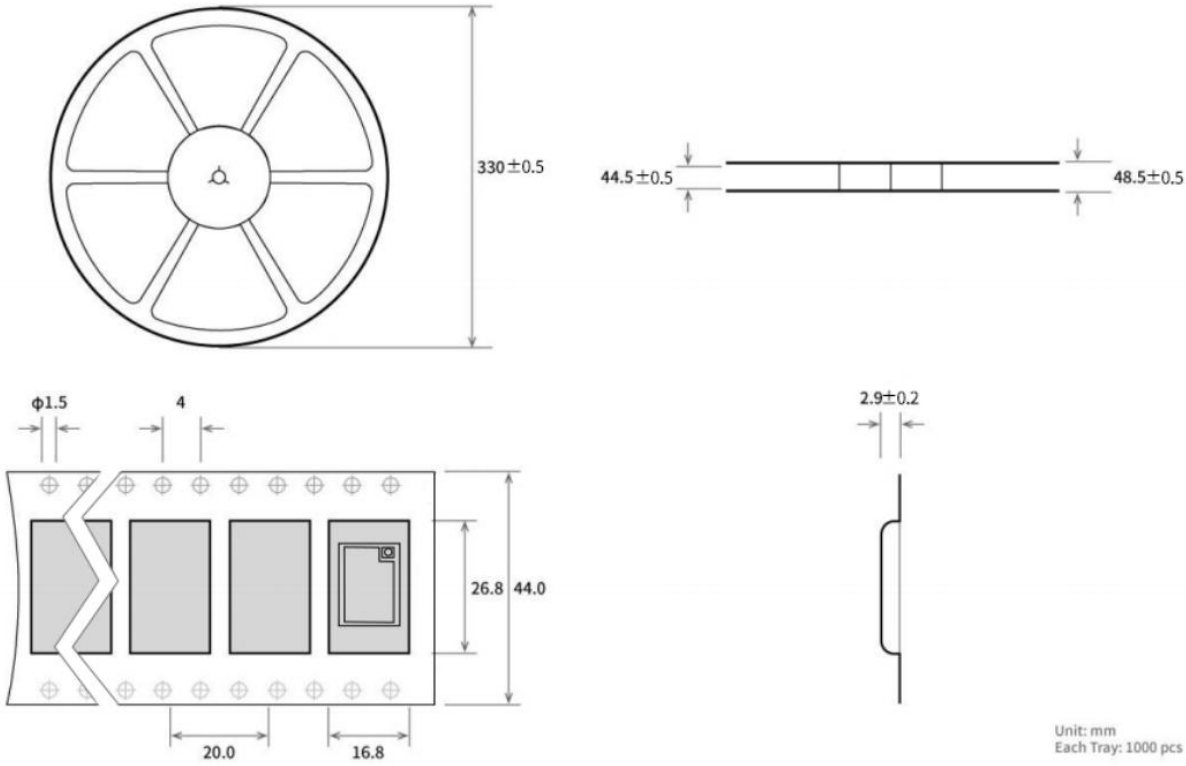


Unit: mm
Each Tray: 1000 pcs

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11.3 E34-2G4D11S



Revision history

Version	Revise date	Revised description	maintainer
V1.0	2024-10-9	initial version	Hao

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