Chengdu Ebyte Electronic Technology Co.,Ltd

Wireless Modem

User Manual

EWD95M-2G4Hxx(xxx)



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Contents

Disclaimer and Copyright Notice 2
1 Product Overview 3
1.1 Brief Introduction 3
1.2 Features 3
1.3 Quick Start 4
1.4 Description of components 6
1.4.1 RS485 interface 6
1.4.2 RS232 interface 7
1.5 Mounting Dimension 8
2 Technical indicators 9
2.1 Model Specification 9
2.2 General Specification Parameters 10
2.3 Frequency range and number of channels 10
2.4 Emission power level 10
2.5 Emission power level 10
2.6 Current parameter 11
2.7 Receiving and dispatching lengths and subcontracting methods. 11
3 Functions in detail 11
3.1 Targeted emission 11
4 Working mode 12
4.1 Fixed Frequency Mode (Mode 0) 12
4.2 Frequency hopping mode (mode 1) 13
4.3 Reserved mode (mode 2) 13
4.4 Configuration mode (mode 3) 13
5 Register read/write control 13
5.1 Factory Default Parameters 14
5.2 Reading of operating parameters 14
5.3 Version number reading 14
5.4 Reset command 15
5.5 Reset command 15
6 Configuration instructions for the host computer 17
7 Programming the radio 18
8 Connection diagrams for testing and practical applications 19
9 Related Products 19
10 Areas of practical application 20
11 Notes on use 21
12 Important statement 21
Revision history 22
About us 22

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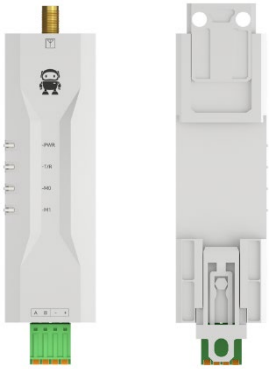
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1 Product Overview

1.1 Brief Introduction



EWD95M-2G4Hxx(xxx) is a wireless digital radio based on EBYTE E34-T series serial module (UART), working in the 2.4~2.518GHz band (default 2.4GHz). It supports interoperability with our company's E34 series modules. the radio provides a transparent RS485/RS232 interface, plastic housing, DIN-rail mounting structure, supports 5~28V (DC) wide voltage voltage input. Input.

The radio has automatic frequency hopping function, strong anti-interference ability, high transmission rate and small delay; automatic frequency hopping technology is to ensure the secrecy of the communication and anti-interference, compared with the fixed-frequency communication, the frequency hopping communication is more hidden and difficult to be intercepted. Frequency hopping communication also has good anti-interference ability, even if part of the frequency point is interfered with, still can be in other uninterfered frequency point for normal communication.

Wireless digital transmission radio as a communication medium, and optical fibre, microwave, open wire, as well as a certain scope of application: it provides some special conditions in the dedicated network of real-time monitoring signals, reliable data transmission, with low cost, easy installation and maintenance, strong ability to bypass the shot, the network structure is flexible, the coverage of the far range of characteristics, suitable for the point of much more and dispersed, geographically complex and other occasions, and can be used with PLC, RTU, rain gauge, liquid level meter, and so on. It can be connected with PLC, RTU, rain gauge, liquid level meter and other data terminals.

1.2 Features

- Support automatic frequency hopping, greatly improving the anti-interference ability of communication;
- Support fixed-frequency communication, fast transmission speed and small delay;
- Support for automatic retransmission of lost packets;
- Support fixed-point transmission, easy to group network communication;
- Ultra-small size, size 80*28*28.5mm, easy and fast installation;
- Built-in PA + LNA, transmit power up to 500mW, communication distance up to 5km;
- Support global licence-free ISM 2.4GHz band;
- Transmit power optional 20dBm/27dBm, and support multi-level adjustable, all technical indicators to industrial standards;
- Support data transmission rate of 250k~2Mbps;
- Support advanced GFSK modulation;
- Adopt flame retardant plastic shell, rail mounting structure, easy and efficient installation;
- Adopt hidden button to switch the working mode, to avoid false triggering, the equipment work operation is more reliable;
- Simple and efficient power supply design, support power adapter or voltage line mode, support 8 ~ 28V (DC) power supply;

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- Support Modbus protocol transmission;
- Operating temperature range: -40℃ ~+85℃, to adapt to a variety of harsh operating environments, true industrial-grade products;
- Power reverse connection protection, over connection protection, antenna surge protection and other multiple protection functions, greatly increasing the reliability of the radio;
- Communication ports, power supply interface with isolated high protection;
- Powerful software functions, all parameters can be set by programming: such as power, frequency, air rate, address ID, etc.;
- Built-in watchdog, and precise time layout, once an exception occurs, the radio will automatically restart, and can continue to work in accordance with the previous parameter settings.

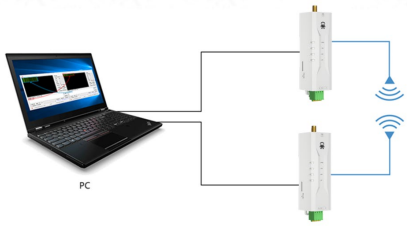
1.3 Quick Start

① You need to prepare two sets of DTU debugging components, including EWD95M-2G4Hxx(xxx), antenna, DC 5V~28V power adapter, USB to RS232/RS485 (or other ways), and connecting cables (including 4PIN 3.81 phoenix terminal male connector) each 2 pieces.

② Firstly, install the antenna for the digital radio. Firstly, install the antenna on the DTU and connect the DTU with the power adapter, TX A+ to A/T and RX B- to B/R.



③ Finally, connect the computer to each of the 2 digital radios via USB to RS232/RS485 (or other means);

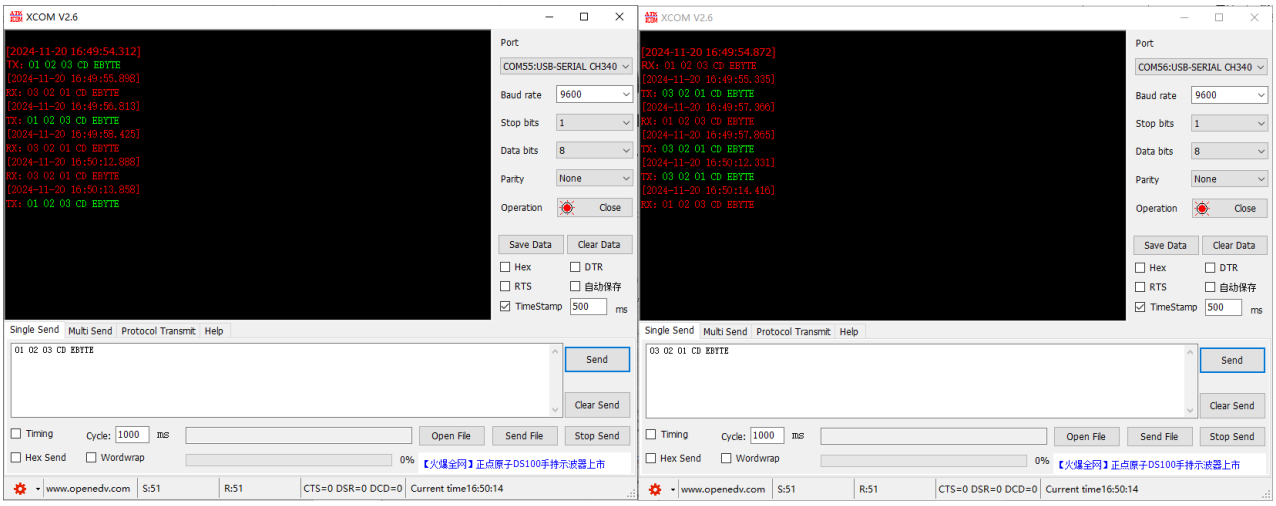


④ Start two serial port debugging assistants, select the serial port baud rate as 9600bps (default), 8N1, and switch the DTU to continuous mode.

⑤ Input data, tick to send data in hexadecimal (HEX SEND), send data, both directions can send and receive. The operation is the same in general mode.

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⑥ The working mode can be switched by Mode button, M0 indicator and M1 indicator are used to indicate different working modes. Press and hold the Mode button for 1 second, and the indicator changes to switch the mode once. Details of mode switching are shown in the table below:

Serial number	Type	M1	M0	Note
Mode 0	Fixed Frequency Mode	Light out	Light out	Serial port open, wireless open, transparent transmission, receiver must be mode 0, 2
Mode 1	Frequency hopping mode	Light out	Light on	Difference with mode 0: the radio will be based on certain algorithmic rules, the sending and receiving process, the frequency will be changed, the change range is not limited to the basic frequency point set by the user, the radio has a specific spreading sequence. The receiver must be mode 1.
Mode 2	Reserve mode	Light on	Light out	Reserved mode. Same as mode 0 for now.
Mode 3	Configuration Mode	Light on	Light on	The radio enters the configuration and can receive parameter setting commands. See Working Parameters Detail.

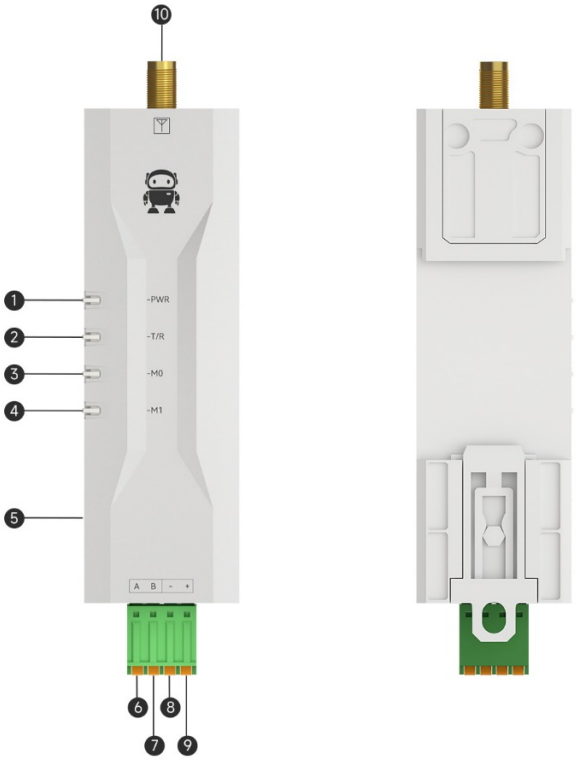
Note: The radio has the function of power-down saving mode, users need to switch the corresponding mode according to the M1 and M0 indicators (effective immediately).

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1.4 Description of components

1.4.1 RS485 interface



Serial Number	Name	Function	Instruction
1	PWR	Power indicator	Lights up when power is turned on.
2	T/R	Transmit/Receive Indicator	The blinking light is red when sending data and green when receiving data.
3	MO	Mode Indicator	Operating mode indicator.
4	M1	Mode Indicator	Operating mode indicator.
5	Mode	Mode switching button	Operating mode switching control.
6	A	RS485 signal A	RS485 signal A
7	B	RS485 signal B	RS485 signal B
8	-	GND	Power Negative
9	+	VCC	power positive（DC 5~28V）
10	ANT	RF interface	SMA-K, male threaded bore.

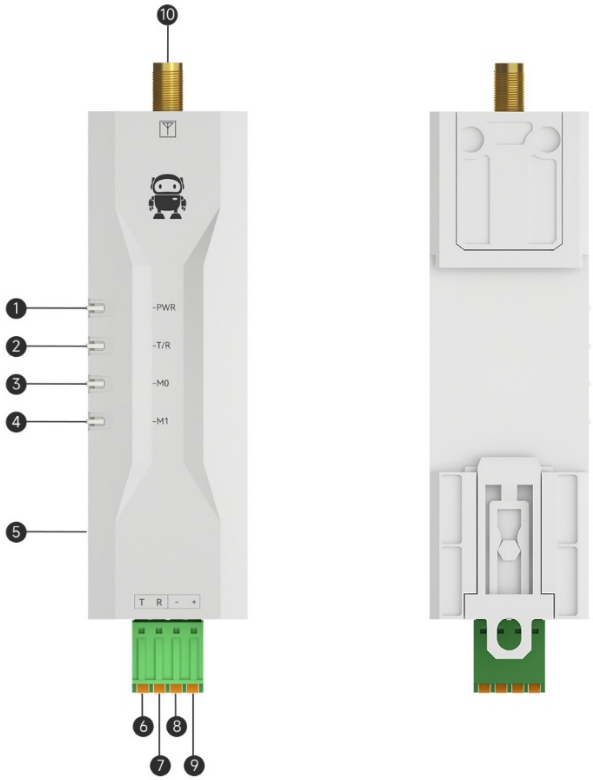
★ Note: Poor communication occurs when connecting the radio to multiple devices, but not when connecting to a single device, try connecting a 120Ω resistor in parallel between the 485_A terminal and the 485_B terminal.

★ The EWD95M-2G4Hxx(xxx) can be powered by an 5 to 28V (DC) power supply, and the wiring port is connected using terminal blocks.

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1.4.2 RS232 interface



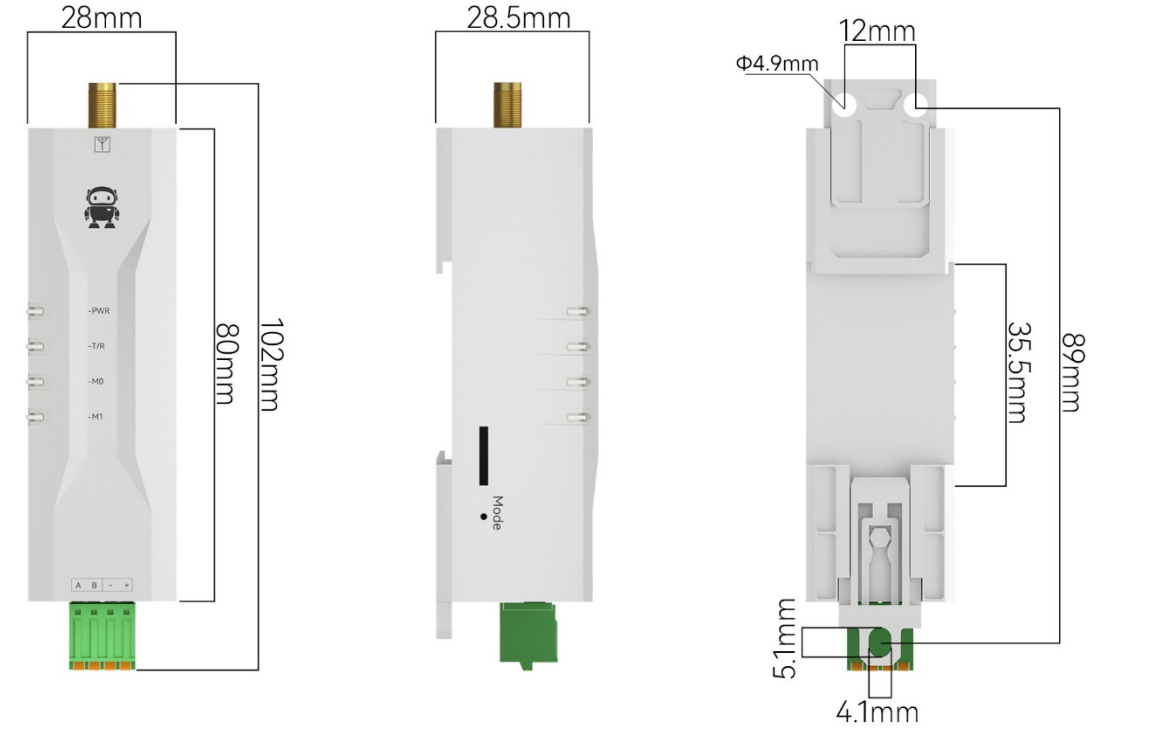
Serial Number	Name	Function	Instruction
1	PWR	Power indicator	Lights up when power is turned on.
2	T/R	Transmit/Receive Indicator	The blinking light is red when sending data and green when receiving data.
3	MO	Mode Indicator	Operating mode indicator.
4	M1	Mode Indicator	Operating mode indicator.
5	Mode	Mode switching button	Operating mode switching control.
6	T	RS232 bus TX interface	RS232 interface TX interface connected to device RX interface
7	R	RS232 bus RX interface	RS232 interface RX interface connected to device TX interface
8	-	VCC	Power Negative
9	+	GND	Power positive（DC 5~28V）
10	ANT	RF interface	SMA-K，External threaded bore.

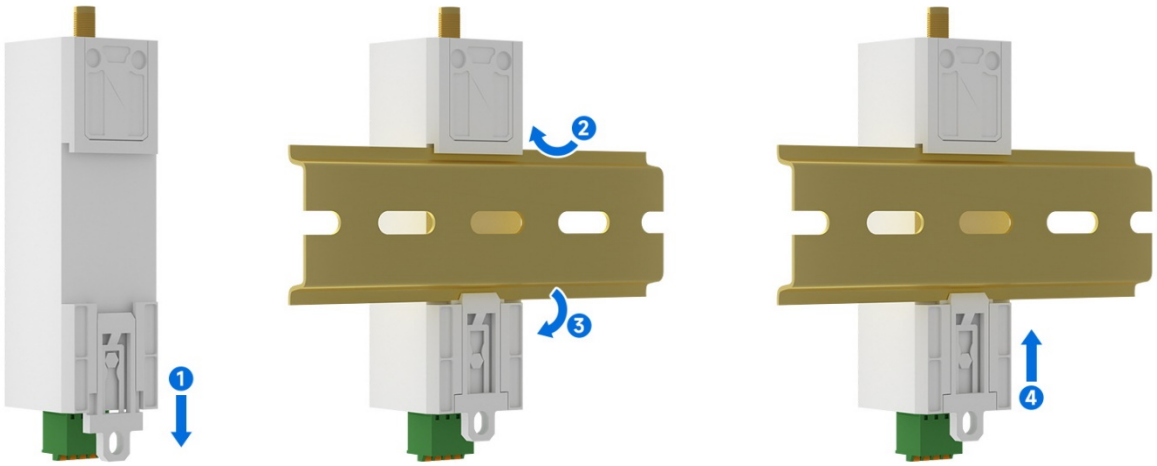
★ The EWD95M-2G4Hxx(xxx) can be powered by an 5 to 28V (DC) power supply, and the wiring ports are connected using terminal blocks.

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1.5 Mounting Dimension





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2 Technical indicators

2.1 Model Specification

Model Specifications	Operating frequency	Transmit power	Reference distance	Air speed	Technical characteristics
	Hz	dBm	km	bps	
EWD95M-400SL22(485)	410.125～493.125 M	22	5	2.4k~62.5k	New generation LoRa spread spectrum technology
EWD95M-400SL22(232)					
EWD95M-433GF20(485)	410～450M	20	3.5	2.4～500k	GFSK modulation technology
EWD95M-433GF20(232)					
EWD95M-433N20(485)	425～450.5M	20	2.5	1~25k	Wireless narrowband technology
EWD95M-433N20(232)					
EWD95M-400GL20(485)	410.125～493.125M	20	5	2.4 ~ 62.5k	ChirpIoT Spread Spectrum Technology
EWD95M-400GL20(232)					
EWD95M-433C20(485)	410～441M	20	6	0.5 ~ 470k	High-speed continuous transmission technology
EWD95M-433C20(232)					
EWD95M-2G4H20(485)	2.4～2.518G	20	2.5	250k～2M	Automatic frequency hopping technology
EWD95M-2G4H20(232)					
EWD95M-2G4H27(485)	2.4～2.518G	27	5	250k～2M	Automatic frequency hopping technology
EWD95M-2G4H27(232)					
EWD95M-400LN22 (485)	410～510M	22	5.6	Adaptive	LORAWAN Protocol
EWD95M-400LN22 (232)					
EWD95M-900LN22 (485)	850～930M	22	5.6	Adaptive	LORAWAN Protocol
EWD95M-900LN22 (232)					
EWD95M-400NW22(485)	410.125～509.125M	22	2.5	7～62.5k	LoRa Mesh Protocol
EWD95M-400NW22(232)					
EWD95M-900NW22(485)	850.125～929.125M	22	2.5	7～62.5k	LoRa Mesh Protocol
EWD95M-900NW22(232)					

★ Note: Sunny weather, open environment without shade, 12V/1A power supply, 5dBi suction cup antenna, antenna height of 2 metres from the ground, use factory default parameters.

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2.2 General Specification Parameters

Serial Number	Item	Specification	Instruction
1	Product Size	80*28*28.5 mm	See mounting dimensions for details
2	Product weight	32 g	Weight tolerance 2g
3	Operating temperature	-40℃～+85℃	Industrial grade
4	Voltage range	5～28V（DC）	12V or 24V recommended for DC versions
5	Communication interface	RS485/RS232	RS485, RS232 two choose one, to the product physical identification shall prevail
6	Baud rate	Factory Default 9600	Baud rate range 1200 to 115200
7	Address code	Factory Default 0	Total 65536 address codes can be set

2.3 Frequency range and number of channels

Model	Default frequency	Frequency range	channel spacing	channel count
	Hz	Hz	Hz	
EWD95M-2G4Hxx (xxx)	2400M	2400～2518M	2M	12

★ Note: When using multiple sets of digital transmission radios in the same area to communicate one-to-one at the same time, it is recommended that each set of digital transmission radios set a channel interval of 2MHz or more.

2.4 Emission power level

Model	0（Factory Default）	1	2	3
EWD95M-2G4H20(xxx)	20dBm	17dBm	14dBm	10dBm
EWD95M-2G4H27(xxx)	27dBm	21dBm	15dBm	9dBm

★ Note: The lower the transmit power, the closer the transmission distance, but the operating current will not be reduced in the same proportion, it is recommended to use the maximum transmit power.

2.5 Emission power level

Model	Default Air Rate	Level	Airspeed rating
	bps		kbps
EWD95M-2G4Hxx(xxx)	250k	3	250、1000、2000

★ Note: The higher the air rate setting is, the faster the transmission rate is and the closer the transmission distance is; therefore, if the rate meets the usage requirements, it is recommended that the lower the air rate is, the better.

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2.6 Current parameter

Model	Response current mA			Receiving Current mA		
	5V	12V	24V	5V	12V	28V
EWD95M-2G4H20(xxx)	239.2	112.2	20.7	28.4	15.6	9.4
EWD95M-2G4H27(xxx)	935.5	319.8	163.5	28.2	15.0	8.8

★ Note: The output power is set to maximum, and it is recommended to keep more than 50% current margin when selecting the power supply, which is conducive to the long-term stable operation of the radio.

2.7 Receiving and dispatching lengths and subcontracting methods.

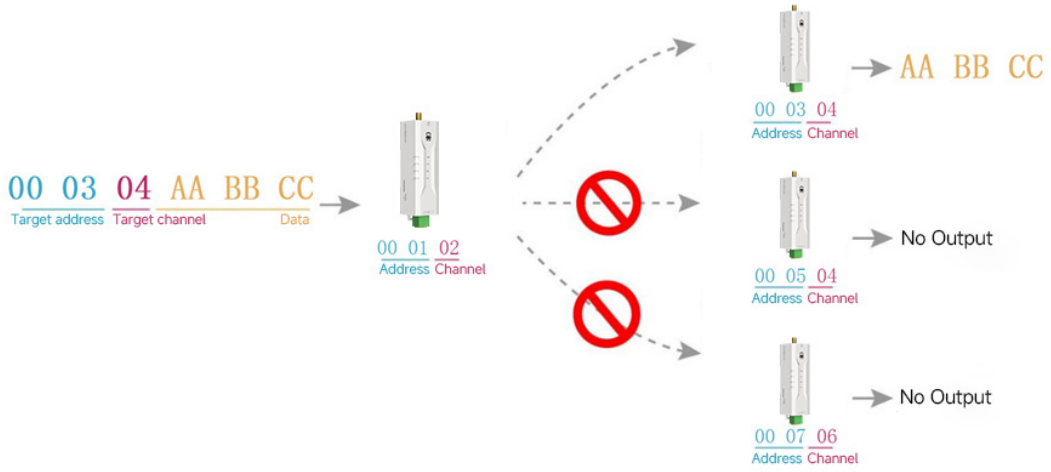
Model	Cache size	Subcontracting
EWD95M-2G4Hxx(xxx)	256 Bytes	Maximum length of a single transmission 27 bytes

★ Attention:

1. If the radio receives data more than the single packet capacity at a single time, the exceeding part of the data will be automatically assigned to the second transmission until the transmission is completed;
2. The radio single reception data cannot be larger than the cache capacity.

3 Functions in detail

3.1 Targeted emission



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4 Working mode

The EWD95M-2G4Hxx(xxx) has four modes of operation. It is recommended that the radio be configured in pass-through mode (Mode 0) if normal communication is required without demanding low-power requirements;
The radio is shipped from the factory with the default setting of pass-through mode (mode 0).

Serial Number	Type	M1	M0	Instruction
Mode 0	Fixed Frequency Mode	Lights out	Lights out	Serial port open, wireless open, transparent transmission, receiver must be mode 0, 2
Mode 1	Frequency hopping mode	Lights out	lights on	and mode 0 difference: The radio will send and receive according to certain algorithmic rules, the frequency will change, the change range is not limited to the basic frequency set by the user, the radio has a specific spread spectrum sequence. The receiver must be mode 1
Mode 2	Reserve mode	lights on	Lights out	Reserved mode. Same as mode 0 for now.
Mode 3	Configuration Mode	lights on	lights on	The radio enters configuration mode and can receive parameter setting commands. See Working Parameters Detail

Note: If there is no low power requirement, there is no need to care about WOR mode (mode 1).

4.1 Fixed Frequency Mode (Mode 0)

Type	When the M0 indicator is off and the M1 indicator is off, the radio is operating in mode 0
Emission	The radio receives user data from the serial port, the radio transmits wireless packet length of 27 bytes, when the amount of user input data reaches 27 bytes, the radio 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 27 bytes, the radio waits for 3 bytes of time, if no user data continues to be input, the data is considered to be terminated, and at this time the radio will send out all data packets through wireless; The data packet sent through mode 0 can only be received by the receiving radio in mode 0 and mode 2.
Reception	The radio keeps the wireless reception function turned on and can receive packets from Mode 0 and Mode 2;
Notice	When the radio transmits data, it cannot receive data. At the same time, data cannot be sent while the radio is receiving data.

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4.2 Frequency hopping mode (mode 1)

Type	When the M0 indicator is on and the M1 indicator is off, the radio is working in mode 1
Emission	The conditions under which the radio initiates packet transmission are the same as in mode 0, with the only difference being that the radio will send and receive according to certain algorithmic rules that will produce a change in frequency during the process. The range of variation is not limited to the base frequency set by the user. The radio has a specific spread spectrum sequence. The user does not need to care about this sequence. A packet sent through mode 1 can only be received by a receiver module that is in mode 1.
Reception	Equivalent to mode 0, only difference: the radio can only receive packets sent from mode 1.
Notice	When the radio transmits data, it cannot receive data. At the same time, data cannot be sent while the radio is receiving data.

4.3 Reserved mode (mode 2)

Type	When the M0 indicator is off and the M1 indicator is on, the radio is operating in mode 2
Emission	Equivalent to mode 0.
Reception	Equivalent to mode 0.
Notice	When the radio transmits data, it cannot receive data. At the same time, data cannot be sent while the radio is receiving data.

4.4 Configuration mode (mode 3)

Type	When the M0 indicator is on and the M1 indicator is on, the radio is operating in mode 3
Emission	Unable to transmit wireless data
Reception	Unable to transmit wireless data
Configuration	Configuration mode can be used for radio parameter setting, using the serial port 9600, 8N1, to set the radio operating parameters through a specific command format.
Notice	The radio reconfigures the parameters when going from configuration mode to other modes. configuration process.

5 Register read/write control

- 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):

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Serial Number	Command format	Explain in detail
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 C3 are sent in hexadecimal format and the module returns the version information, which must be sent consecutively.
5	C4 C4 C4	Sending three C4 in hexadecimal format will generate a reset in the module, which must be sent consecutively.

5.1 Factory Default Parameters

Model	Factory Default Parameter Values：C0 00 00 18 00 40						
Model	Frequency	Address	Channel	Air speed	Baud rate	Serial Port Format	Emission power
EWD95M-2G4H20SX	2.4GHz	0x0000	0x00	250kbps	9600	8N1	20dBm
EWD95M-2G4H27SX	2.4GHz	0x0000	0x00	250kbps	9600	8N1	27dBm

5.2 Reading of operating parameters

Command format	Explanation
C1 C1 C1	In configuration 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.

5.3 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 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.

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5.4 Reset command

Command format	Explanation
C4 C4 C4	In setup mode (M0=1, M1=1), send a command (HEX format) to the module serial port: C4 C4 C4, the The module will generate a reset; During the reset, the module performs a self-test and then begins normal operation. At this point, you can switch modes or initiate the next command.

5.5 Parameter setting command

	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	7, 6, 5, 4 Number of lost packet retransmissions (valid only for modes 0, 2)				Default 15 times (default F); when there are multiple receivers with the same address, it may cause conflicts, please set to 0
		3, 2, 1, 0 module address high 4 bits (default F0H)				default 0
2	ADDL	Module address low byte (default 00H)				00H-0FFH
3	SPED	7	6	serial port parity bit		Serial port modes can be different on both sides of the communication
		0	0	8N1（default）		
		0	1	8O1		
		1	0	8E1		
		1	1	8N1（Equivalent to 00）		
		5	4	3	TTL serial port rate (bps)	Baud rates can be different for each side of the communication The serial port baud rate is independent of the wireless transmission parameters and does not affect the wireless transceiver characteristics.
		0	0	0	Serial port baud rate of 1200	
		0	0	1	Serial port baud rate of 2400	
		0	1	0	Serial port baud rate of 4800	
		0	1	1	Serial port baud rate of 9600 (default)	
		1	0	0	Serial port baud rate of 19200	
		1	0	1	Serial port baud rate of 38400	
		1	1	0	Serial port baud rate of 57600	
		1	1	1	Serial port baud rate of 115200	
		2	Retention of unused			Recommended to write 0
		1	0	Wireless air rate (bps)		The airborne wireless transmission rate must be the same for both sides of the communication; The lower the air rate, the longer the distance, the greater the anti-interference performance and the longer the transmission time.
		0	0	Air rate 250k (default)		
		0	1	Air rate 1M		
		1	0	Air rate 2M		
		1	1	Air rate 2M (equivalent to 10)		
4	CHAN	7、6、5、4 Retention of unused				Recommended to write 0
		3、2、1、0 communications channel				00H to 0BH, for a total of 12 channels;
		Fixed frequency mode (mode 0)				

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<table>
<tr><td></td><td></td><td colspan="3">0-5 channel corresponding frequency: 2400M + CHAN * 2M
6-11 channel corresponding frequency: 2508M + (CHAN-6)* 2M
Frequency Hopping Mode (Mode 1)
Corresponding frequency for channels 0-11: 2412M + CHAN * 2M</td><td></td></tr>
<tr><td rowspan="11">5</td><td rowspan="11">OPTION</td><td>7</td><td colspan="2">Fixed-point transmit enable bit (MODBUS-like)</td><td rowspan="3">When it is 1, the first 3 bytes of each user data frame are used as high and low address and channel. When transmitting, the module changes its own address and channel, and when finished, restores the original settings.</td></tr>
<tr><td>0</td><td colspan="2">Transparent transmission (default)</td></tr>
<tr><td>1</td><td colspan="2">fixed-point transmission</td></tr>
<tr><td>6</td><td colspan="2">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="2">TXD push-pull output, RXD pull-up input</td></tr>
<tr><td>0</td><td colspan="2">TXD open output, RXD open input</td></tr>
<tr><td colspan="3">5、4、3、2 Retention of unused</td><td>Recommended to write 0</td></tr>
<tr><td>1</td><td>0</td><td>Transmit power (approximate)</td><td rowspan="5">The external power supply must provide more than 800mA current output capability and ensure that the power supply ripple is less than 100mV;

It is not recommended to use lower power transmission, the power utilisation efficiency is not high.</td></tr>
<tr><td>0</td><td>0</td><td>20/27dBm（default）</td></tr>
<tr><td>0</td><td>1</td><td>17/21dBm</td></tr>
<tr><td>1</td><td>0</td><td>14/15dBm</td></tr>
<tr><td>1</td><td>1</td><td>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 250kbps		
Corresponding hexadecimal	1		8					

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6 Configuration instructions for the host computer

The following figure shows the display interface of EWD95M-2G4Hxx(xxx) configuration upper computer, users can switch to the configuration mode through the MODE button, and carry out quick configuration and reading of parameters in the upper computer.



In the Configuration Upper, the radio address, frequency channel, network ID, and key are in decimal display mode, where each parameter takes a range of values:

Network address: 0 to 65535

Frequency channel: 0 to 83

Network ID: 0～255

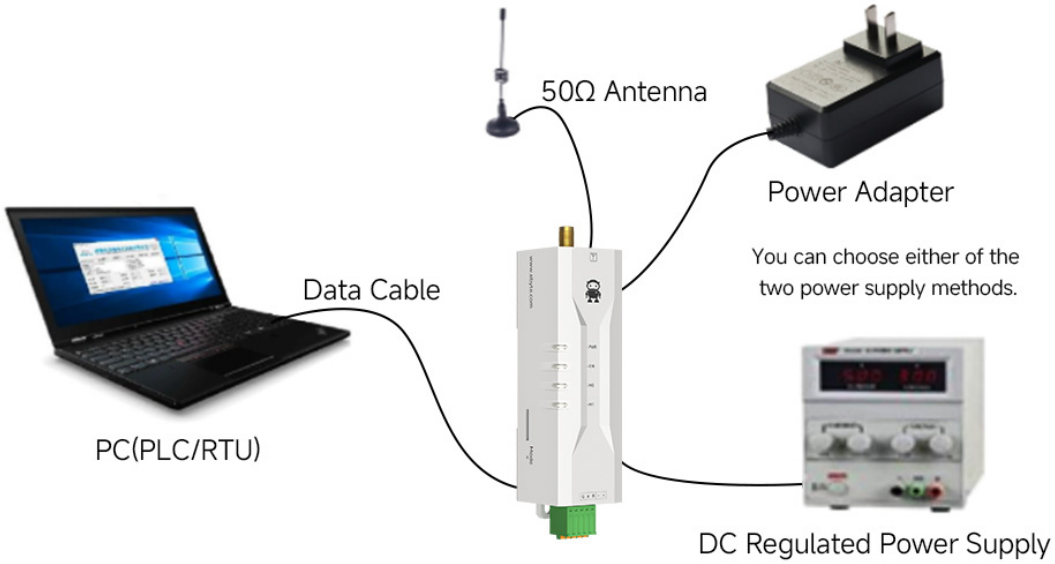
Key: 0～65535

Users need to pay special attention when using the upper computer to configure the relay mode, because in the upper computer, each parameter is in decimal display mode, so the radio address and network ID need to be filled in by converting the system. For example, if the network ID inputted by the transmitter A is 02 and the network ID inputted by the receiver B is 10, then when the relay R sets the radio address, it will convert the hexadecimal value 0X020A to the decimal value 522 as the radio address filled by the relay R. In other words, at this time, the relay R needs to fill in the radio address. That is to say, the radio address value to be filled in by relay R is 522.

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7 Programming the radio



Working mode	M1	M0	Note
Configuration Mode	Indicator light	Indicator light off	The radio can only be programmed in the current mode using the configuration software

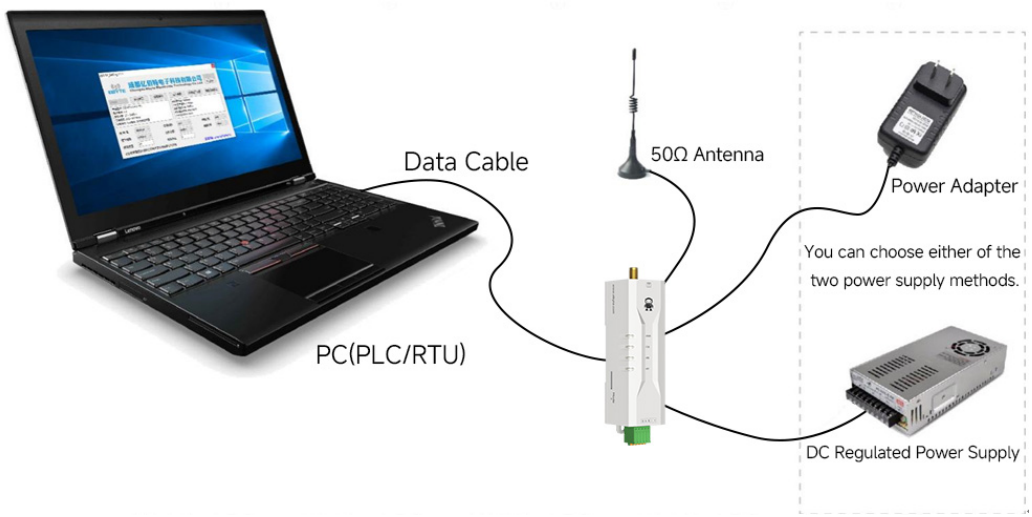
1、 Programming can only be carried out in specific working modes (see the above table), when programming fails, please make sure that the working mode of the radio is correct.

2、 If there is no need for complex programming, open the EWD95M-2G4Hxx(xxx) configuration software and modify the relevant parameters.

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8 Connection diagrams for testing and practical applications



9 Related Products

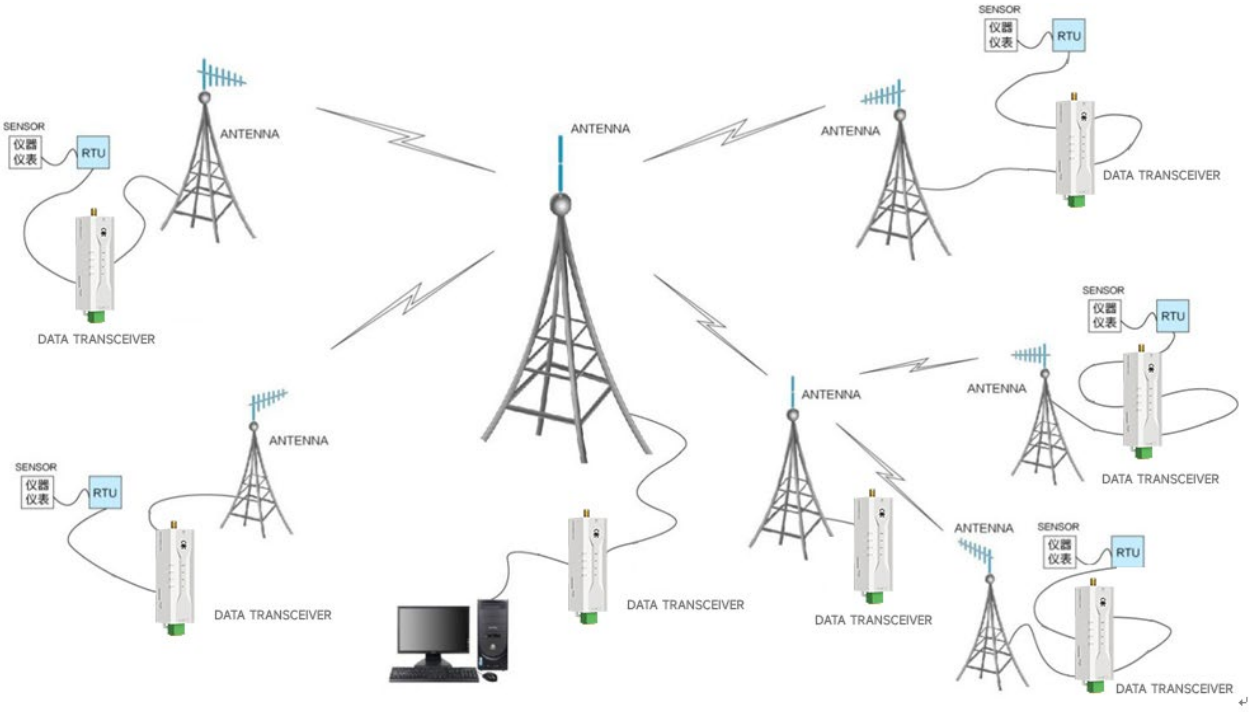
Model	Interface Type	Operating frequency MHz	Emission power dBm	Communication distance km	Features
E90-DTU(900L20)-V8	RS232 RS485	862～930	20	3	LoRa spread spectrum, long-distance anti-interference
E90-DTU(433L37)-V8	RS232 RS485	410～441	37	20	LoRa spread spectrum, long-distance anti-interference
E90-DTU(433L20)-V8	RS232 RS485	410～441	20	3	LoRa spread spectrum, long-distance anti-interference
E90-DTU(433L30)-V8	RS232 RS485	410～441	30	8	LoRa spread spectrum, long-distance anti-interference
E95-DTU(433L20-485)-V8	RS485	410～441	20	3	LoRa spread spectrum, long-distance anti-interference
E95-DTU(433L30-485)-V8	RS485	410～441	30	8	LoRa spread spectrum, long-distance anti-interference
E96-DTU(433L20-485)-V8	RS485	410～441	20	3	LoRa spread spectrum, long-distance anti-interference
E96-DTU(433L30-485)-V8	RS485	410～441	30	8	LoRa spread spectrum, long-distance anti-interference
E800-DTU(400SL20-485)-V8	RS485	410～441	20	3	LoRa spread spectrum, long-distance anti-interference
E800-DTU(400SL30-485)-V8	RS485	410～441	30	8	LoRa spread spectrum, long-distance anti-interference

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10 Areas of practical application

EBYTE digital transmission radios are suitable for all kinds of point-to-point and point-to-multipoint wireless data transmission systems, such as smart home, Internet of Things transformation, power load monitoring, distribution network automation, hydrological and water condition measurement and reporting, water mains network monitoring, urban street light monitoring, air-raid alarm control, railway signal monitoring, centralised control of railway water supply, monitoring of oil and gas supply pipeline network, GPS positioning system, remote meter reading, electronic crane, automatic alarm target, seismic measurement and reporting, fire prevention and environmental monitoring and other industrial automation systems. target reporting, earthquake detection and reporting, fire and theft prevention, environmental monitoring and other industrial automation systems, as shown below:



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11 Notes on use

1. The radio should not be operated in the vicinity of flammable places (e.g. coal mines) or explosive hazardous objects (e.g. detonators).
2. use a suitable DC voltage regulator power supply, which should have strong resistance to high-frequency interference, low ripple, and sufficient load capacity; it is better to have the functions of over-current and over-voltage protection as well as lightning protection, etc. to ensure the normal operation of the digital radio.
3, do not use the digital radio beyond the environmental characteristics of the working environment, such as high temperature, humidity, low temperature, strong electromagnetic fields or dusty environment.
4. Do not allow the digital radio to continuously transmit at full load, otherwise the transmitter may be burned out.
5. The earth wire of the digital radio should be well connected with the ground wire of external devices (such as PC, PLC, etc.) and the earth wire of the power supply, otherwise it may easily burn out the communication interface, etc.; do not plug or unplug the serial port with electricity.
6. when testing the digital radio, it must be connected with matching antenna or 50Ω dummy load, otherwise it is easy to damage the transmitter; if it is connected with antenna, it is better for the human body to be away from the antenna more than 2 metres so as not to cause injury, and never touch the antenna when transmitting.
7. wireless digital transmission radio often has different communication distance in different environments, the communication distance is often affected by temperature, humidity, density of obstacles, volume of obstacles and electromagnetic environment; in order to ensure stable communication, it is recommended to reserve more than 50% of the communication distance.
8. If the measured communication distance is unsatisfactory, it is recommended to analyse and improve the communication distance from the antenna quality and antenna installation method. Also can contact support@cdebyte.com seek help.
9. When selecting the power supply, in addition to the need to reserve 50% of the current margin according to the recommendation, it should be noted that its ripple should not exceed 100mV.

12 Important statement

1. EBYTE reserves the right of final interpretation and modification of all contents of this manual.
2. Due to the continuous improvement of the hardware and software of the product, this manual may be changed without further notice, and the latest version of the manual should prevail.

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Revision history

Version	Revision Date	Revision Notes	Maintainer
1.0	2024-11-26	Initial release	Lei
1.1	2024-12-24	Modify the size description. Add a description of module interoperability.	Lei
1.2	2025-01-22	Correct the errors in the accompanying illustrations	Lei

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