

FY-602 Data radio

User's Manual



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Dear Pilot,

Thank you for purchasing the FY-602 data radio from FeiYu Tech.

In order to achieve full potential and safe operation of this product, please carefully read this manual prior to installation.

About FY-602

FY-602, the Low power wireless module, is used as the wireless data transmission in short distance.

With the small size, weight and power consumption and good stability and reliability, it has the function of bi-directional data sign transmission, test and control.

It is used for Wireless meter reading, such as water meter, electric meter and gas meter, parking meter, intellectual card, electronic weighing apparatus, meter for checking on work attendance, queue wireless meter, building control, shipping company control, alarm system, intelligent equipment, Automatic data collecting system; Industrial remote control and remote test building automation, safety and security, powerhouse equipment wireless monitor, entrance control system, etc. It provide the USB power interface to be convenient for the mini computer and PC users if necessary.

FY-602 Feature

1.Ultra low power transmission

Transmission power: 500mW, high receiving sensitivity: -123dbm,

Size: 63mm*43mm*15mm

2. Low power consumption

Receiving current<45mA, transmission current<360Ma, sleeping current <1mA.

3. Saving power model

FY-602 have three saving power models: awaken from Hardware, awaken from COM Port, awaken from Air;

4. ISM frequency band, not requiring on application of frequency point

Carrier frequency of 433MHz, also capable of 915MHz.

5. High anti-interference and low BER (Bit error Rate)

Based on the GFSK modulation mode, it adopts the efficient communication protocol. The actual bit error rate of 10^{-5} ~ 10^{-6} can be achieved when channel bit error rate is

6. Long transmission distance

Within the range of visibility, the reliable transmission distance is (BER= $10^{-3}/1200\text{bps}$) >3000m when the antenna height is greater than 3m (BER= $10^{-3}/9600\text{bps}$).

7. Transparent data transmission

Transparent data interface is offered to suit any standard or nonstandard user protocol. Any false data generated in the air can be filtrated automatically (What has been received is exactly what has been transmitted). The charge time for receiving and sending <10ms

8. Multi-channel and speed

The standard FY-602 configuration provides 16 channels. to meet the multiple communication combination mode of the users. It has baud rate to be chosen such as 1200bps、2400bps、4800bps、9600bps、19200bps、38400bps. The wireless transmission rate is direct ratio with baud rate of interface to meet user's equipment requirement.

9. High speed wireless communication and Large data buffer

When the speed rate in the air is quicker than interface's, allowing to transmit unlimited length data at one time, when the speed rate is slower or equal the interface's, allowing the transmission of 255 Bytes long data frames at one time for more flexible programming by users.

10. Intelligent data control and the user doesn't need to prepare excessive programs

Even for semi duplex communication, the user doesn't need to prepare excessive programs, only receiving/transmitting the data from the interface. FY-602 will automatically complete the other operations, such as transmission/receiving conversion in the air, control, etc.

11. High reliability, small and light

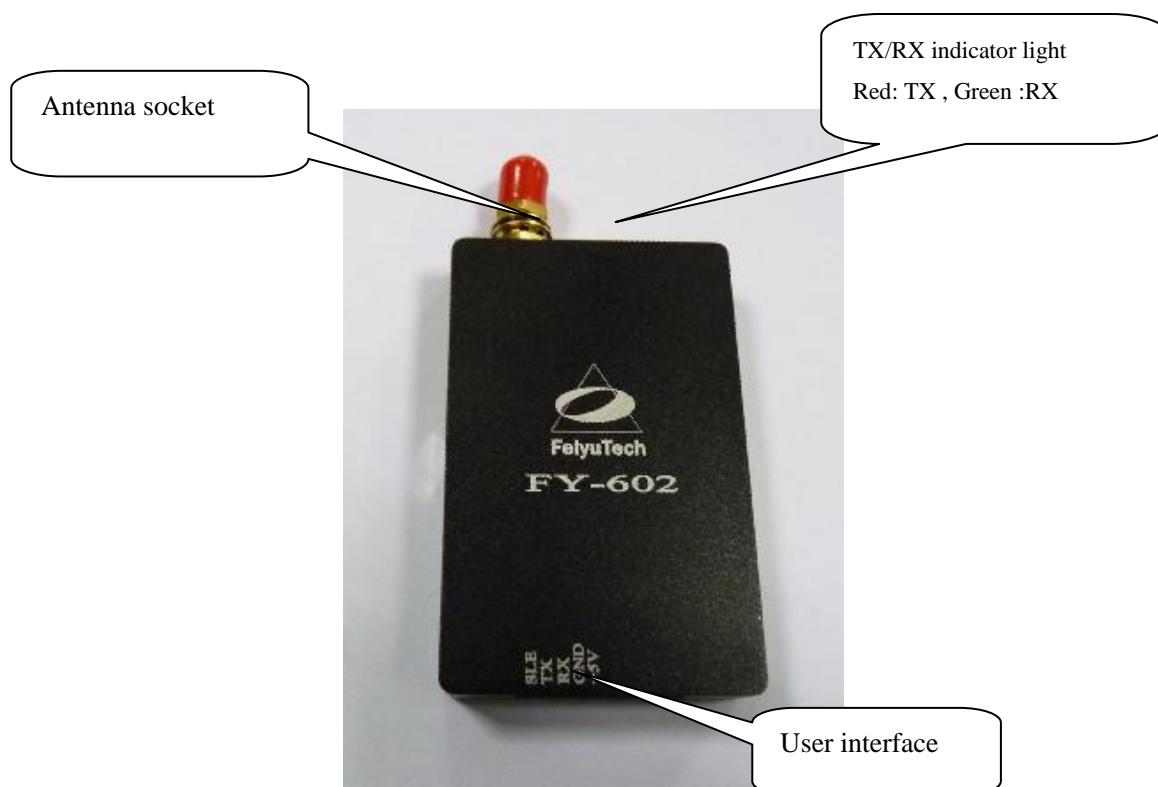
Single chip radio- frequency integrated circuit and single chip MCU are used for lessened peripheral circuits, high reliability, and low failure rate.

12. Watchdog monitor

Watchdog monitors the inner function, so it can change the traditional product structure and improve the product reliability.

Application of FY-602

1. Appearance figure



FY-602 figure

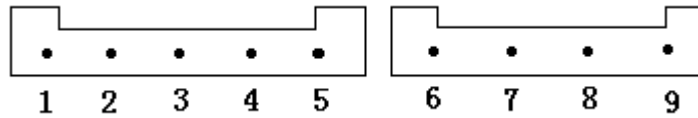
2. FY-602 interface definition



1) User's interface

FY-602 have one interface of TTL.

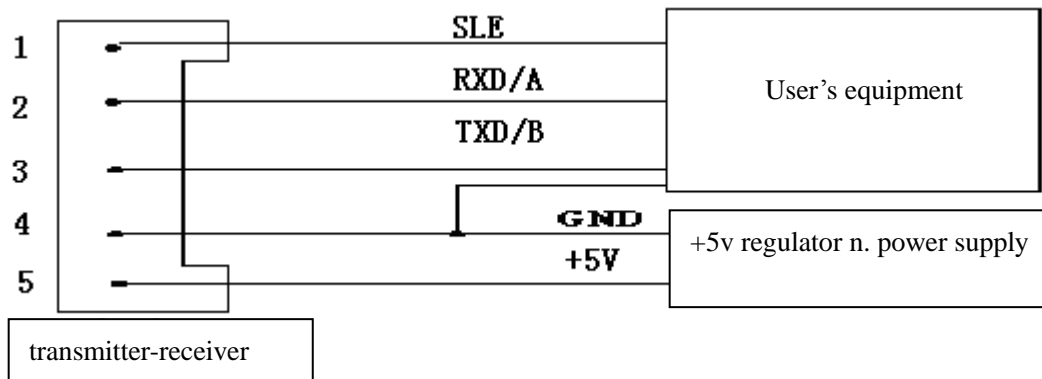
FY-602 standard interface: when the antenna upward, the plastic socket gap upward, from left to right, 1-9 pin in turn, as follows:



(Remarks: Jack space between is 2.0 mm.)

Definition of connecting pins and connection method:

Item no	PIN	Description Connected to the terminal	Level	User terminal	Remarks
1	SLE	Sleep control (input) end			Low level to sleep, High level awake
2	TXD/ (RS-485)	A	Serial data transmitting end	RXD/ A (RS-485)	
3	RXD/ (RS-485)	B	Serial data receiving end	TXD/ B (RS-485)	
4	GND	Power supply/Ground		DGND/AGND	
5	VCC	+5±0.5V		+5±0.5V	TTL 3V user's choose
6	I ₂	No use		retain	
7	I ₁	No use		retain	
8	O ₂	No use		retain	
9	O ₁	No use		retain	



Remarks:

To avoid to connect the interface reversely and can not communicate, please check and assure the voltage of 2 and 3 pin is existing by using multimeter. If there is one pin that has the voltage, another has not voltage, which means the interface is connected reversely, pls. Change the connection wires between pin 2 and 3

2) Power supply

FY-602 uses DC power supply with voltage of +5V.

It can also share power with other equipment, however, the high quality power with desirable ripple factor should be selected. In addition, the reliable grounding must be used if there is other device in the system equipment. In case of failure to connect with the earth, it can form its own grounding ,but it must be absolutely

separated from the municipal electric supply.

3.Saving power model

FY-602 have three Power-Saving models: Awaken from Hardware, Awaken from COM Port, Awaken from Air. The model can be set by RF Module software. The user can choose Power-Saving model, the default model is “Awaken from Hardware”.

1) Awaken from Hardware:

In this model, the current is under 100uA.

Sleeping status: when you input low level at NO. 5 pin, FY-602 can sleep, but it can not transmit and receive data.

Normal work status: when you input High level at NO. 5 pin, FY-602 turn into Normal work status, 10ms later, it can transmit and receive data.

Remarks: if you keep the NO. 5 pin untouched, then FY-602 is in Normal work status.

2) Awaken from COM Port:

When FY-602 in this model, the current is under 11mA.

When you input data with COM port, FY-602 turn into Normal work status after 10mS and can transmit the data.

When FY-602 not receive data in COM port in 20 seconds , FY-602 will turn into sleep status.

3) Awaken from Air:

In this model, the current is under 20mA.

When in this status, FY-602 works intermittently.

When FY-602 received data from air, FY-602 will turn into Normal work status after 10ms, It can receive data normally.

When FY-602 not receive data from air in 20 seconds, It will turn into sleep. So when you choose Awaken from Air, you can transmit some useless data firstly.

FY-602 parameters setting

The interface of FY-602 is TTL.

FY-602 main parameters: COM baud rate and verify, RF baud rate, Channel and frequency.

You can change these parameters by our RF Module soft. When RF baud rate is faster than COM baud rate, One frame Can transmit limitless data. When RF baud rate is not faster than COM baud rate , One frame Can transmit 255 bytes most. You can set the rate according your need.

The general Power supply is 5V DC.

Two FY-602 communication must have condition as follow:

1. Their channels (i.e. frequency) are the same.
2. Their RF rates are the same.
3. RF Module Com baud rate and verify is comply with its equipment or PC.

Parameters default value:

Channel: 5

Interface speed rate: 19200BPS

Interface verify: none

Speed rate in air: 19200BPS

Channel and frequency list

Channel	Frequency	Channel	Frequency
1	430.2000MHZ	9	458.5250MHZ
2	431.4288MHZ	10	459.1250MHZ
3	431.7360MHZ	11	459.5250MHZ
4	430.5072MHZ	12	460.1250MHZ
5	434.6940MHZ	13	460.5250MHZ
6	434.2332MHZ	14	461.1250MHZ
7	433.1580MHZ	15	461.5250MHZ
8	433.9260MHZ	16	462.1250MHZ

Technical specification of FY-602

Modulation mode: GFSK

Working frequency: 433MHZ

Transmission power: 500mW

Receiving sensitivity: -123dBm

Transmitting current: <360mA

Receiving current: <45mA

Sleeping current: < 1mA

Channel speed rate: 1200/2400/4800/9600/19200/38400Bit/s, user can Choose one

Interface speed rate: 1200/2400/4800/9600/19200/38400Bit/s, user can Choose one

Change time for receiving and sending: <10ms

Interface data format: 8E1/8N1/8O1

Power supply: $5 \pm 0.5V$ DC

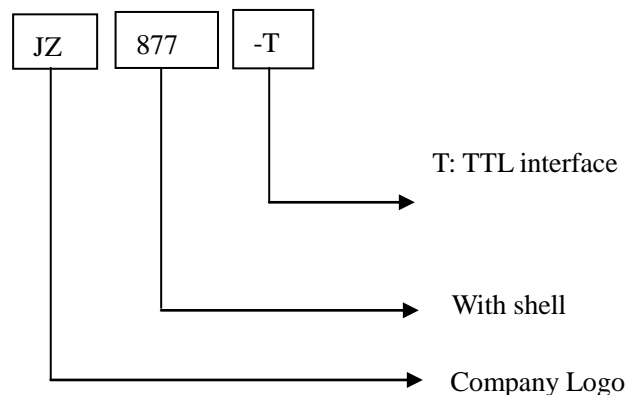
Working temperature: $-20^{\circ}C \sim 85^{\circ}C$

Working humidity: 10%~90% relative humidity without condensation

Dimension: 64mm*43mm*15mm

Attachable Communication with Model: FY-602/ FY-605

Model and name



Optional Antenna:



Trouble and solve ways:

Item	Trouble	Trouble causes and solve ways
1	No shine of Indicator light	a、Power Line badness touch . b、Power is bad. c、Power line meet in reverse, or diode of polarity protect is bad.
2	No transmitting or receiving	a、Radio is badness touch with PC/terminal. b、Radio with TTL not match terminal. c、RX frequency and TX frequency is not same.
3	High Bit error rate	a、antenna not match, or touch bad; b、RF baud rate is not right. c、Power supply ripple is too great.
4	Indicator light twinkling	a、Electromagnetism disturb in circumstance. b、Same frequency disturb in the circumstance.

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Note: We reserve the right to change this manual at any time! And the newest edition will be shown on our website www.feiyudz.cn.