

ATC-871 Mini Power Wireless Module User's Manual (Ver 2.0)



About ATC-871

ATC-871, the mini 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.

ATC-871 Feature

1.Ultra low power transmission

transmission power less than of 100mW, high receiving sensitivity: -110dbm ,

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

Carrier frequency of 433MHz, also capable of providing 315/868/915MHz carrier frequency.

3. 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 $10^{-5} \sim 10^{-6}$ can be achieved when channel bit error rate is 10^{-2} .

4. Long transmission distance

Within the range of visibility, the reliable transmission distance is (BER=10-3/1200bps) >800m when the antenna height is greater than 500m (BER=10-3/9600bps).

5. 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.

6. Multi-channel and speed

The standard ATC-871 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.

7. 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.

8. 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. ATC-871 will automatically complete the other operations, such as transmission/receiving conversion in the air, control, etc.

9. Low power consumption

Receiving current<20mA, transmission current<100mA, sleeping current <1uA.

10. 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.

11. Watchdog monitor

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

12. antenna choose

Users can choose various antenna setting project and antenna according to user's different need to achieve a optimal effect.

Application of ATC-871

1.ATC-871 interface definition

RS-232/RS-485 User's interface

ATC-871 can supply one RS-232 DB9 Female connector or RS-485 connector and its definitions as well as connection method for terminals are shown in Table 1.

RS-232/485 Pinout at DB9-F

DB9 Pin	RS-232	RS-485	Description
2	RXD	485-	I/O
3	TXD	485+	I/O
9	SLE	SLE	High level to sleep, Low level awake
5	GND	GND	Ground

RS-232/485 Pinout at six terminal

Pin (From left)	RS-232	RS-485	Description
1	TXD	485+	I/O
2	RXD	485-	I/O
3	SLE	SLE	High level to sleep, Low level awake
4	NC	NC	
5	VIN	VIN	
6	GND	GND	Ground

ATC-871 Power supply and sleep mode

1. Power supply

ATC-871 uses DC power supply with voltage of +9-12V. It can also share power supply with other equipment, however, the high quality power supply 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.

2. Sleeping function

ATC-871 had sleeping and no-sleeping version. The current of ATC-871 in the sleeping state is 1Ua. Users must tell which version will be chosen before place the order in advance. For sleeping version, users can open and close the sleeping function by themselves. ATC-871 with the sleeping function has two awakening way, one is hardware awakening way, another is interface awakening way(air awakening will be reserved) Hardware awakening is achieved by the Pin 5 input to the high level and input low level to awake. Interface awakening is achieved by users send designate protocol data by ATC-871 interface to open or awake. ATC-871 with the function of sleeping is default in close state before leaving factory, so users must set by ATC-871 software to set the awakening mode to hardware awakening or interface awakening. Users can also tell us to set in advance.

If users use ATC-871 with the sleeping function, but hope not to apply the sleeping function, the users can set by ATC-871 software to set for no-sleeping state or make ATC-871 Terminal pin 3 to connect the ground in the mode of hardware awaken.

ATC-871 parameters setting

ATC-871 have one interface of TTL、RS232、RS485, You must specify the interface when you buy. ATC-871 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 ATC-871 communication must have condition as follow:

- 1. Their channels(i.e. frequency)is same.
- 2. Their RF rates is same.
- 3. RF Module Com baud rate and verify is agree with its equipment or PC that it connects with.

parameters default value:

Channel: 1
Interface speed rate: 9600BPS
Interface verify: none
Speed rate in air: 9600BPS

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 ATC-871

Modulation mode: FSK/GFSK

Working frequency:433MHZ

Transmission power: <100mW

Receiving sensitivity: -121dBm

Transmitting current: <100mA,

Receiving current:<20mA

Sleeping current:<1uA

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

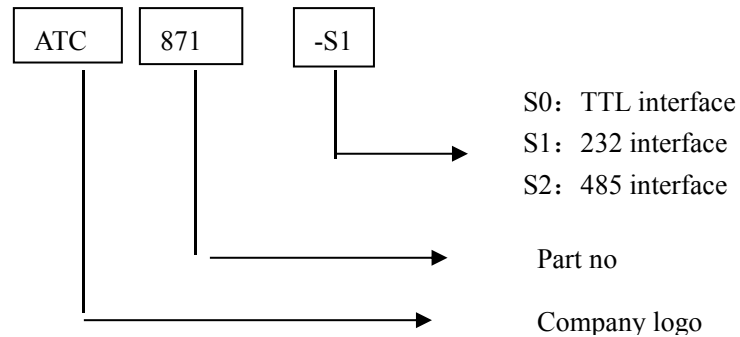
Power supply:9-12VDC

Working temperature:-20℃～65℃

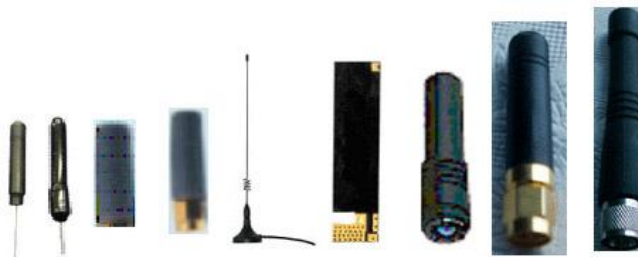
Working humidity:10%～90% relative humidity without condensation

Dimension:44mmX27mmX8mm

Model and name



Remarks: Antenna for users choice



How to Setup RF Module Software

Please check the CD for ATC-871 RF-module software User's Manual. You can change channel and frequency by our RF Module soft