

# GC-ATC-863

## Mini Power Wireless Module

### User's Manual



#### About GC-ATC-863

GC-ATC-863, 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 provides the USB power interface to be convenient for the mini computer and PC users if necessary.

#### GC-ATC-863 Features:

##### 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 ) 300m when the antenna height is greater than 300m (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 GC-ATC-863 configuration provides 8 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. 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. GC-ATC-863 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<40mA , 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 GC-ATC-863

#### 1.GC-ATC-863 interface definition

##### RS-232/RS-485 User's interface

GC-ATC-863 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/TTL	RS-485	Description
2	RXD	485-	I/O
3	TXD	485+	I/O
4	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/TTL	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

### GC-ATC-863 Power supply and sleep mode

#### 1. Power supply

GC-ATC-863 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

GC-ATC-863 had sleeping and no-sleeping version. The current of GC-ATC-863 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. GC-ATC-863 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. Users send designate protocol data by GC-ATC-863 interface to open or awake achieve interface awakening. GC-ATC-863 with the function of

sleeping is default in close state before leaving factory, so users must set by GC-ATC-863 software to set the awakening mode to hardware awakening or interface awakening. Users can also tell us to set in advance.

If users use GC-ATC-863 with the sleeping function, but hope not to apply the sleeping function, the users can set by GC-ATC-863 software to set for no-sleeping state or make GC-ATC-863 Terminal pin 3 to connect the ground in the mode of hardware awaken.

#### GC-ATC-863 parameters setting

GC-ATC-863has one interface of TTL、RS232、RS485,

**You must specify the interface when you purchase.**

GC-ATC-863 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 c an transmit 255 bytes most. You can set the rate according your need. The general Power supply is 5V DC.

Two GC-ATC-863 communications must have condition as follow:

1. Their channels (i.e. frequency) are same.
2. Their RF rates are same.
3. RF Module Com baud rate and verify is agreeing 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	428.0028MH Z	5	433.1176MHZ
2	429.0012MH Z	6	433.6706MHZ
3	433.3020MH Z	7	433.8286MHZ
4	433.9164MH Z	8	433.5308MHZ

**Technical specification of GC-ATC-863**

Modulation mode: FSK/GFSK

Working frequency: 433MHZ

Transmission power: 100mW

Receiving sensitivity: -121dBm

Transmitting current: <40mA ,

Receiving current : <20mA

Sleeping current: <1uA

Channel speed rate: 1200/2400/4800/9600

19200Bit/s,

Interface speed rate:

1200/2400/4800/9600/19200Bit/s,

Change time for receiving and sending: <10ms

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

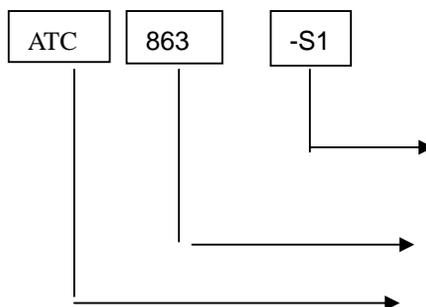
Power supply: 9-12VDC

Working temperature:-20°C ~ 65°C

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

Dimension:44mmX27mmX8mm

**Model and name**



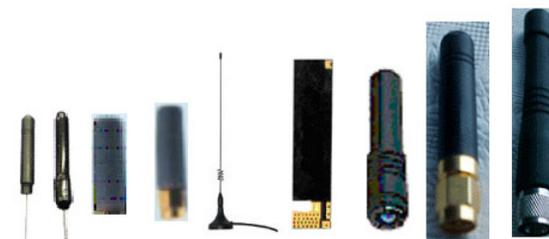
S0 : TTL interface

S1 : 232 interface

Part no

Company logo

**Remarks : Antenna for user's choice**



**How to Setup RF Module Software**

Please check the CD for GC-ATC-863 RF-module software User's Manual. You can change channel and frequency by our RF Module soft



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