

SRWF-501 Low Power Wireless Transceiver Data Module User Manual



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I. Main Application

SRWF-501, the low-power wireless transceiver data module is used as the wireless data transceiver in short-ranges, with the small size, weight and power consumption and good stability and reliability. Narrowband low power UHF wireless data transmitters and receivers with 25 kHz channel band.

- * *AMR – Automatic Meter Reading.*
- * *Wireless alarm and security systems.*
- * *Home automation.*
- * *Low power telemetry.*
- * *433 / 868 and 915 MHz ISM/SRD band system.*
- * *Data radio can be used for Wireless conference voting system.*
- * *Mapping.*
- * *Radio modem can be used for Sports training & competition.*
- * *Wireless dinner ordering.*
- * *Wireless POS, PDA wireless smart terminal.*
- * *RF modem can be used for Electronic bus station and intelligent traffic.*
- * *RF transmitter Wireless electronic display screen and queuing machine.*
- * *Wireless telemetry Charging for parking lot.*
- * *Wireless modem Automobile inspection and four-wheel orientation.*
- * *Wireless sensor Industrial wireless remote control and air conditioning remote controller.*
- * *Observation and predication of oil well and hydrological information.*
- * *Wireless RS232/RS485 conversion/connector.*
- * *Point to multi-point wireless network, wireless on-the-spot bus and automatic data collection system.*

II. Module Features

1. Low power transmission

The transmission power is only 10dbm/10mW.

2. ISM frequency band, requiring on application of frequency point.

The carrier frequency is of 433/ 915MHZ/868MHz.

3. High anti- interference and low BER (Bit Error Rate)

Based on the GFSK modulation mode, the high- efficiency forward error correction channel encoding technology is used to enhance data's resistance to both burst interference and random interference and the actual bit error rate of 10^{-5} ~ 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 >500 m when the height is greater than 2m (BER=10⁻³@9600bps).

Within the range of visibility, the reliable transmission distance is >800 m when the height is greater than 2m (BER=10⁻³@1200bps).

Within the range of visibility, the reliable transmission distance is >800 m when the height is greater than 3m (BER=10⁻³@9600bps).

Within the range of visibility, the reliable transmission distance is >1200 m when the height is greater than 3m (BER=10⁻³@1200bps).

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).

6. Multi- channel

The standard SRWF-501-50 configuration provides 8 channels. If users need, it can be extended to 16/32 channels in the multiple communication mode.

7. Dual serial port, 3 interface modes

SRWF-501-50 provides 2 serial ports and 3 interfaces, with COM1 as the TTL level UART interface and COM2 as user defined standard RS - 232/RS - 485 interface (user only needs to plug/pull 1 bit short circuiter and energize it to make the definition).

8. Large data buffer zone

Interface bit rate is 9600bps with format of 8N1/8E1 and user self-definition, allowing the transmission of long data frames at one time for more flexible programming by users. (If users need, it can also transmit data in unlimited length at one time).

9. Intelligent data control without excessive programs

Even for semi duplex communication, users don't need to prepare excessive programs, only receiving/transmitting data from the interface. SRWF-501-50 will automatically complete other functions, such as transmission/receiving conversion in the air, control, etc.

10. Low power consumption and sleeping function

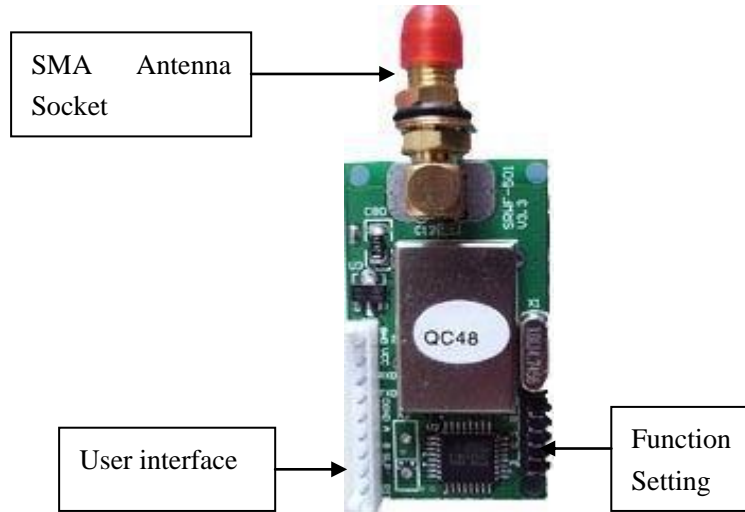
Receiving current is <30mA, transmitting current is <100mA, and sleep current is <20uA.

11. High reliability, small and light

Radio frequency integrated circuit and MCU are used for lessened peripheral circuits, high reliability, and low failure rate.

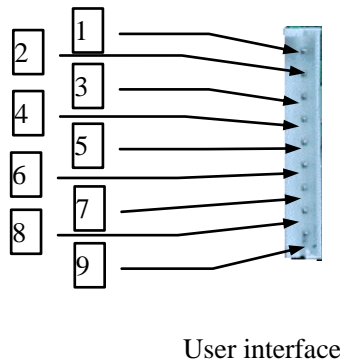
III. How to use SRWF-501 module

1. Appearance



2. Interface definition

SRWF-501 can supply one 9-pin connector, and its definitions as well as connection method for terminals are shown in Table 1.



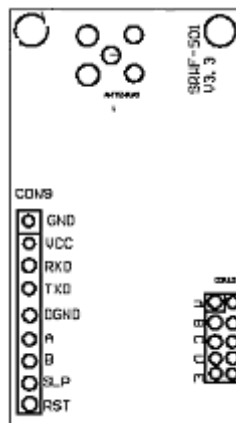
User interface

Table 1

Pin No	Pin Name	Description	Level	Connecte d to Terminal	Note
1	GND	Grounding of Power Supply		Groundin g of Power Supply	
2	VCC	Power supply DC	+3.3~5.0V		
3	RXD/TTL	Serial data receiving end	TTL	TXD	COM1
4	TXD/TTL	Serial data transmitting end	TTL	RXD	
5	SGND	Grounding of the signal			
6	A(TX)	A of RS-485 Or TX of RS-232		A(RXD)	COM2
7	B(RX)	B of RS-485 or RX of RS-232		B(TXD)	
8	SLEEP	Sleep control (Input)	TTL	Sleep signal	Low efficiency t>15ms
9	RESET	Reset control (input)	TTL	Reset signal	Negative pulse reset 1ms

IV.Channel,Interface,BaudRate,Data Format Configuration






Before using SRWF-501, you have to make simple configuration of your system parameter such as interface and data format. There is one group of 5-bit short-circuiter wire (JP2) on the bottom right corner of SRWF-501, defined as A、 B 、 C、 D、 E respectively .



1. Channel configuration

ABC jumper wires of JP2 provide 8 options and you can choose to use 0-7 channels .if the wireless module is working at the same channel (ABC jumper wire mode is same), you can transmit data between each module but keep in mind, at the same time only one module is in TX mode. More detail is Table 2.

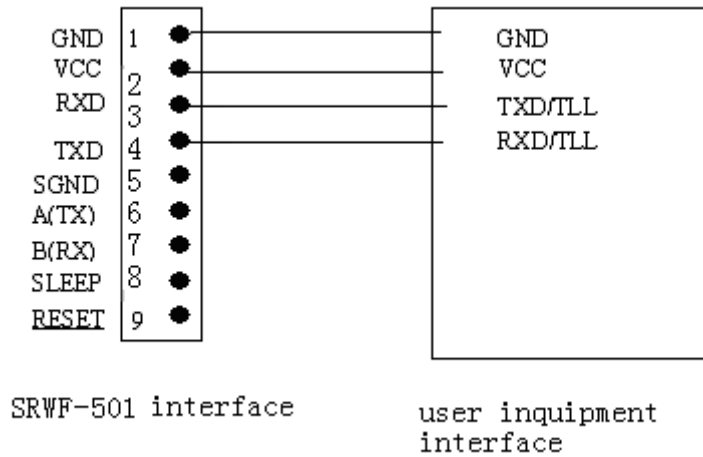
Table 2

JUMPER ABC	CHANNEL NUMBER	PROGRAM with MARK A--FREQUENCY	PROGRAM WITHOUT A--FREQUENCY
	0(ABC NO SHORT)	430.2 MHz	425.9292MHz
	1	431.4288MHz	428.3868MHz
	2	431.736MHz	430.8444MHz
	3	430.5072MHz	433.3020MHz
	4	434.6940MHz	435.7596MHz
	5	434.2332MHz	438.2172MHz
	6	433.1580MHz	440.6748MHz
	7	433.9260MHz	443.1324MHz

2. Selection of interface mode

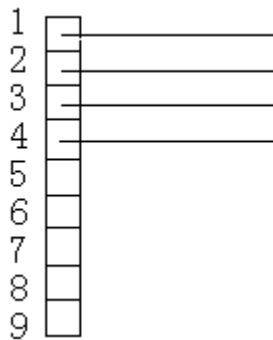
SRWF-501 provides 2 serial ports. COM1 (Pin3 and Pin4 of JP1) is fixed as UART serial port of TTL level; COM2 (Pin6 and Pin7 of JP1) can choose interface mode through D of JP2:

1) TTL interface connection layout



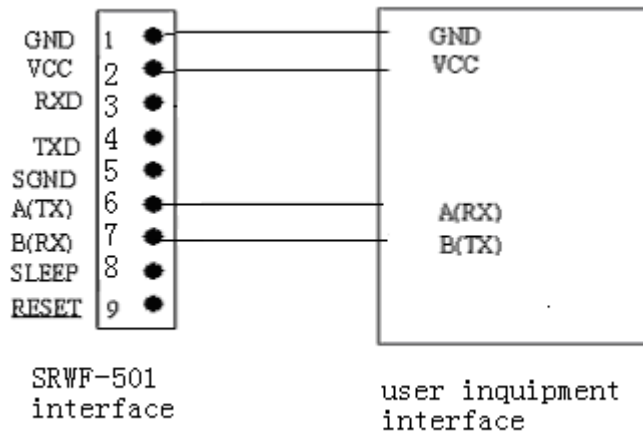
NOTE: Please do not connect any wire on PIN7 and PIN8 if com2 is no use
 If you use the TTL only please make sure the D jumper of JP2 without jumper wire

The connection wire as next Picture

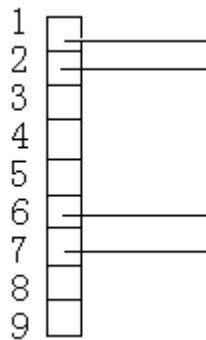


2)RS-232 interface connection sketch map

D=1 (with short jumper as: )

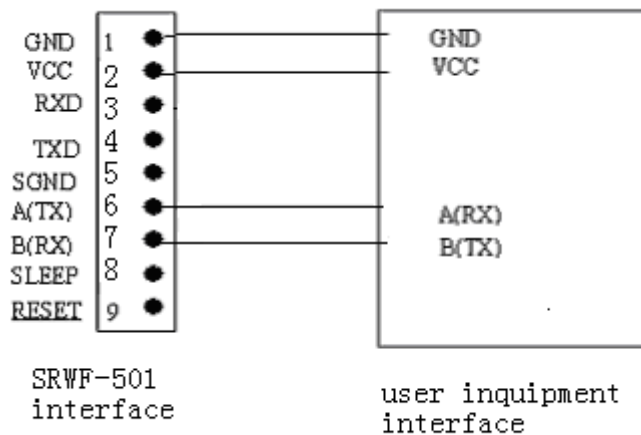


The connection wire as next Picture



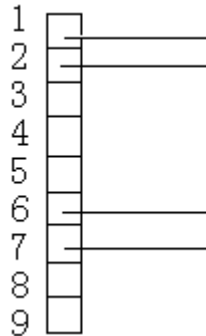
3) RS-485 Interface connection sketch map

D=0(without short jumper as: $\frac{D}{\text{O}}$)



NOTE: Please do not connect any wire on PIN3 and PIN4 if com1 is no use, if the two use different Power supply please make sure the two use the same GND (join the two's GND together).

The connection wire as next Picture



3. Interface rate setting

The rate of SRWF-501 is determined by hardware; to make sure the module rate is suitable for your system, we must be notified your system's rate..

4. SRWF-501 can support no parity and even parity mode of the serial communication UART it can chose parity mode through E of JP2

E=0 (without short circuiter) parity 8E1 (even parity)

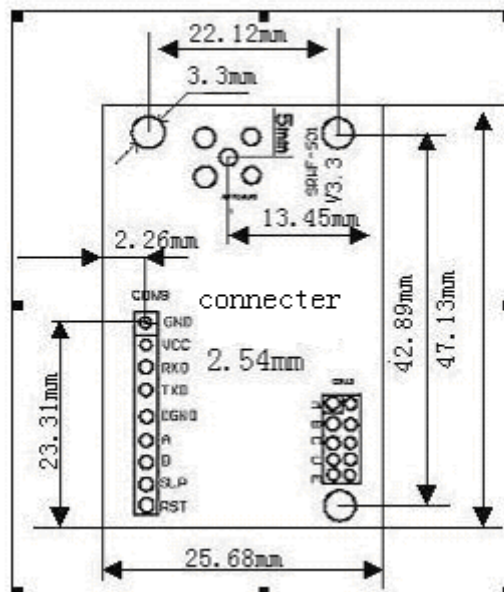
E=1 (with short circuiter) parity 8N1 (no parity)

NOTE: Channel setting, Com2's Interface mode and parity mode is fixed after the power is on if you want to change the setting, you must reset the module or power on again.

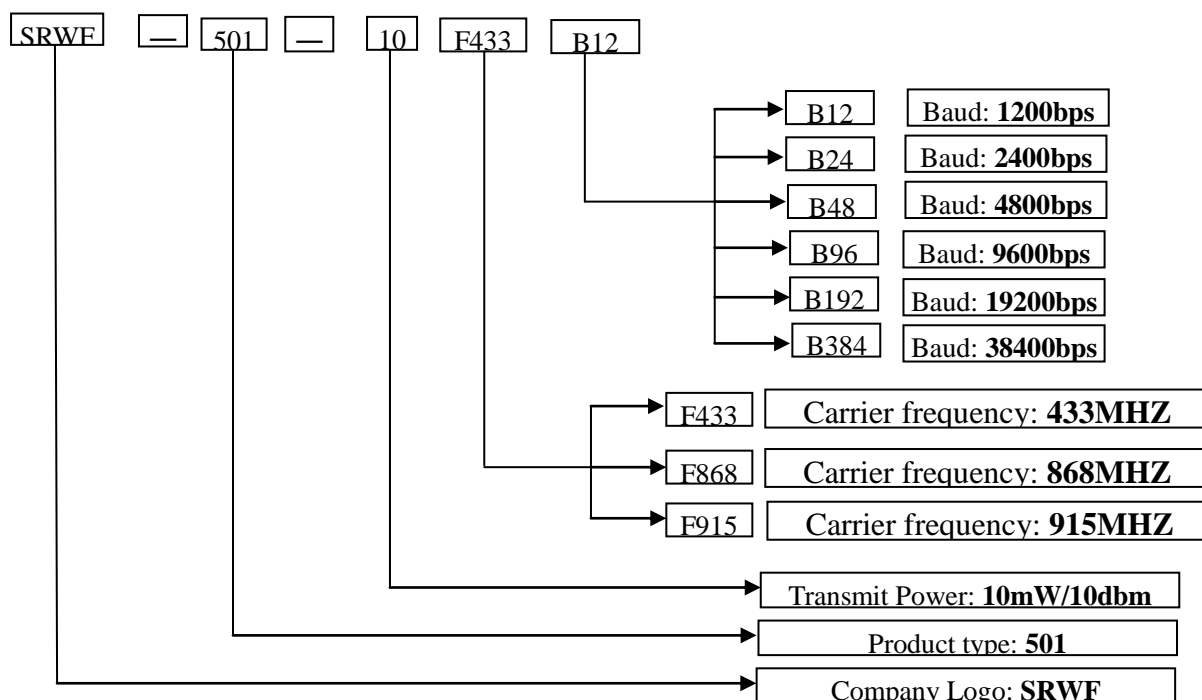
V. Technical Specification

Serial number	Item	Parameter	Note
1	Modulation mode	GFSK/FSK	
2	Working frequency	420.00~450.30/860~875/910~925MHz	
3	Transmitting power	10dBm(10mW)	
4	Receiving sensitivity	-115 ~ -118dBm	
5	Channel amount	8channel	User setting
6	Transmitting current	≤40mA	
7	Receiving current	≤20mA	
8	Sleeping current	≤20uA	
9	Interface velocity	1200/2400/4800/9600/19200bps	
10	Interface mode	UART TTL/RS-232/RS-485	User setting
11	Power supply	+3~5VDC	
12	Working temperature	-25°C~80°C	
13	Working humidity	10%~90%(relative humidity without condensation)	
14	Dimension	47mm×26mm×10mm	
15	Reliable transmit distance	800m	

VI. Layout Dimension



VII. Model and name



VIII. Technical Support and After Service

We provide technical support of applications and secondary development for our clients. Our products have one-year warranty and perpetual maintenance services.