

# SRWF-508(V3.1) Low Power Wireless Transceiver Data Module User Manual



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## I. SRWF-508 Main Application Range

SRWF-508, 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 channel spacing 25 kHz channel band:

- \* *AMR – Automatic Meter Reading*
- \* *Wireless alarm and security systems*
- \* *Home automation*
- \* *Low power telemetry*
- \* *433MHz ISM band systems*
- \* *Data radio can be used for Wireless conference voting system;*
- \* *Mapping;*
- \* *Radio modem can be used for Sports training & competition;*
- \* *Wireless dishes 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, 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 24~30dbm

### 2. ISM frequency band, requiring no application of frequency point.

The carrier frequency is of 433MHz (SRWF-508)

### 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  $10^{-5} \sim 10^{-6}$  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 >2500 m when the height is greater than 2m (BER=10<sup>-2</sup>@1200bps,AT-1 antenna).

Within the range of visibility, the reliable transmission distance is >4500 m when the height is greater than 3m (BER=10<sup>-2</sup>@1200bps,AT-6 antenna).

#### **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-508configuration 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-508 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 baud 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 the data in unlimited length at one time).

#### **9. Intelligent data control without excessive programs**

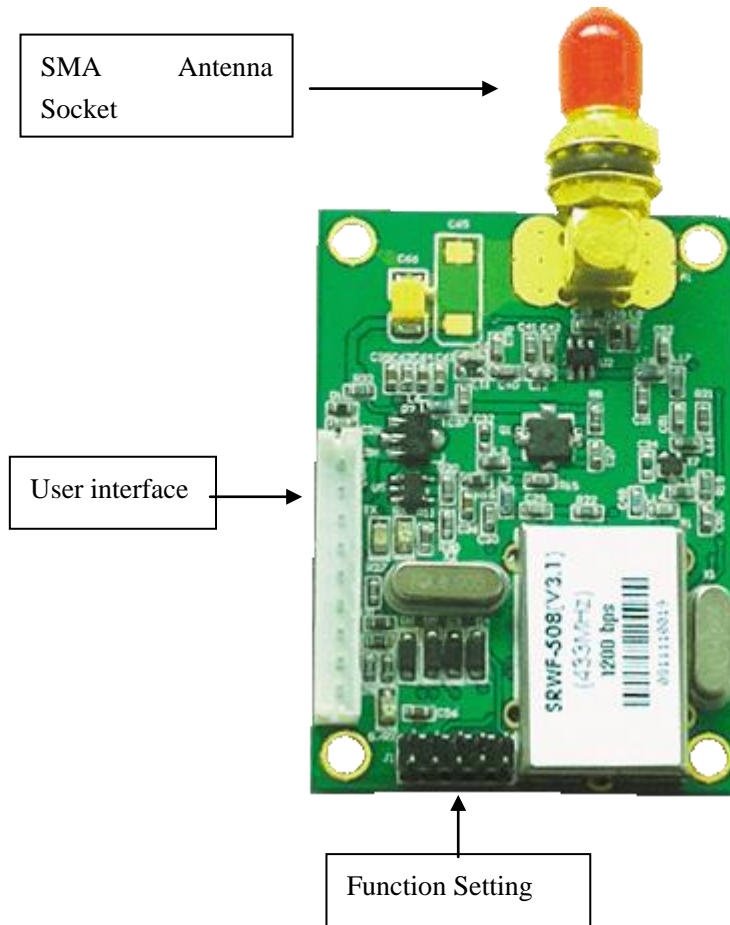
Even for semi duplex communication, users don't need to prepare excessive programs, only receiving/transmitting data from the interface. SRWF-501-50 will automatically complete other functions, such as transmission/receiving conversion in the air, control, etc.

#### **10. High reliability, small and light**

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

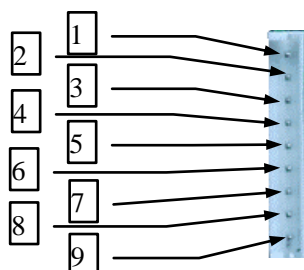
### III. How to use series SRWF-508 module

#### 1. Appearance



#### 2. Interface Definition

SRWF-508 can supply one 9- pin connector, and its definitions as well as connection method for terminals are shown in Table 1.x



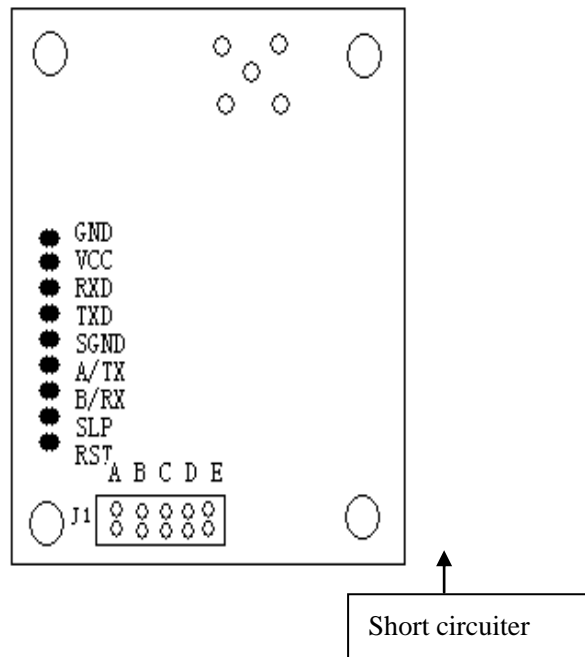
User interface

**Table 1**

| Pin No | Pin Name | Description                    | Level     | Connected to Terminal     | Note                         |
|--------|----------|--------------------------------|-----------|---------------------------|------------------------------|
| 1      | GND      | Grounding of Power Supply      |           | Grounding of Power Supply |                              |
| 2      | VCC      | Power supply DC                | +4.5~5.5V |                           |                              |
| 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<br>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<br>$t > 15ms$ |
| 9      | RESET    | Reset control (input)          | TTL       | Reset signal              | Negative pulse<br>reset 1ms  |

## IV. Channel, Interface, Baud Rate, Data Format Configuration









Before using SRWF-508, 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 right corner of SRWF-508, 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**

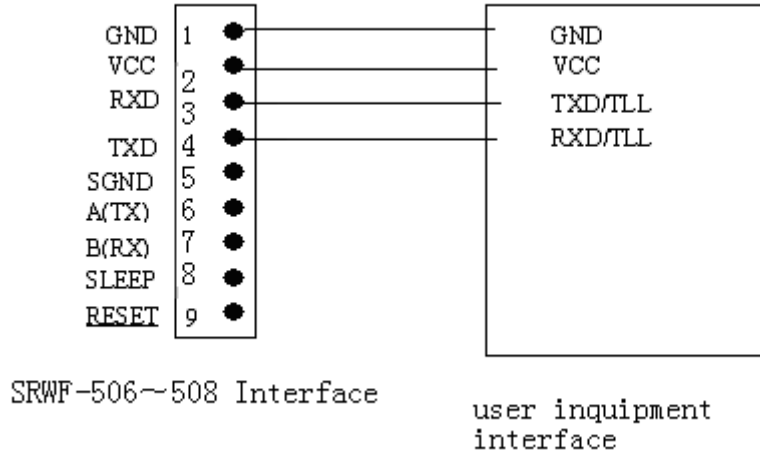
| JUMPER ABC  | CHANNEL NUMBER  | PROGRAM with MARK A--FREQUENCY | PROGRAM WITHOUT A--FREQUENCY |
|---|-----------------|--------------------------------|------------------------------|
|    | 0(ABC NO SHORT) | 430.2 MHz                      | 425.9292MHz                  |
|    | 1               | 431.4288MHz                    | 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                  |

### 3. Selection of interface mode

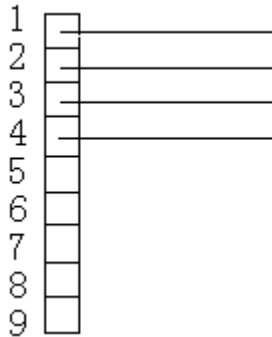
SRWF-508 provides 2 serial ports. COM1 (Pin3 and Pin4 of JP1) is fixed as UART serial port of TTL level; COM2 (Pin6 and Pin7 of JP1) can choose interface mode through D of JP2:




1) TTL interface connection layout

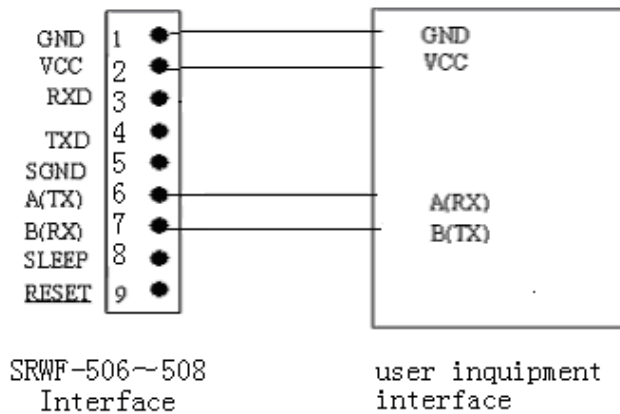


NOTE: Please do not connect any wire on PIN7and PIN8 if com2 is not used.  
 If you use the TTL only please make sure the D jumper of JP2 without jumper wire  
 The connection wire as next picture

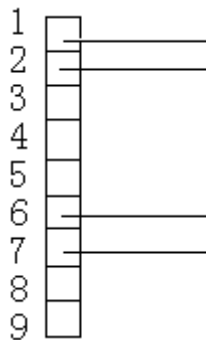


2) RS-232 interface connection layout

D=1( with short jumper as:  )

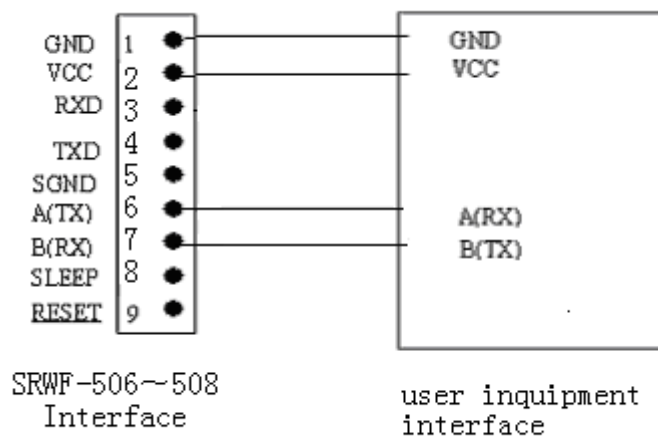


The connection wire as next picture



### 3) RS-485 Interface connection sketch map

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



**NOTE:** Please do not connect any wire on PIN3 and PIN4 if com1 is not used, if the two use different power supply, please ensure they use the same GND (join the two's GND together).

The connection wire as next picture



### 3. Interface rate setting

The rate of SRWF-508 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-508 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)

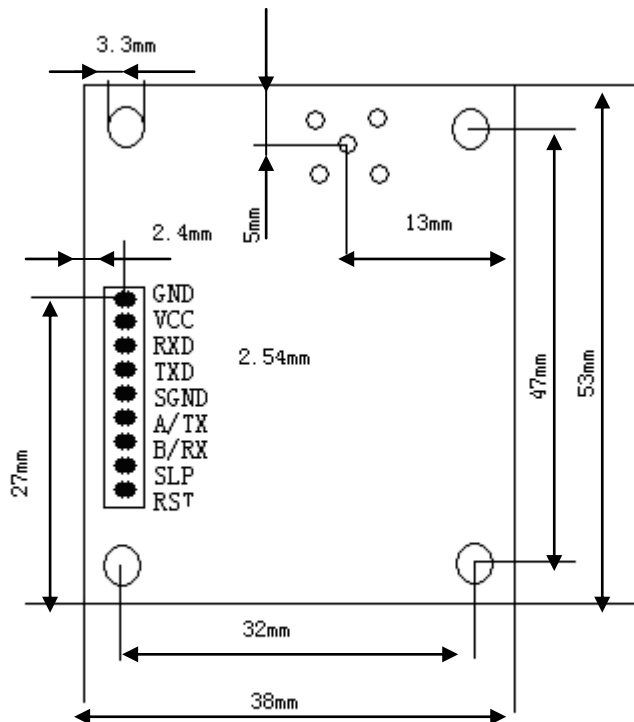
E=1 (with short circuiter) parity 8N1 (no parity)

**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 of SRWF-508

| Serial number | Item                       | Parameter                                       | Note                    |
|---------------|----------------------------|---|-------------------------|
| 1             | Modulation mode            | GFSK/FSK  |                         |
| 2             | Working frequency          | 420.00~450.30                                   |                         |
| 3             | Transmitting power         | 30dBm   |                         |
| 4             | Receiving sensitivity      | -119dbm(1200bps)                                |                         |
| 5             | Channel amount             | 8channel  | User setting            |
| 6             | Transmitting current       | 550mA   |                         |
| 7             | Receiving current          | 32~38mA   |                         |
| 8             | Sleeping current           | 25uA  |                         |
| 9             | Interface velocity         | 1200/2400/4800/9600/19200bps                    |                         |
| 10            | Interface mode             | UART TTL/RS-232/RS-485                          | User setting            |
| 11            | Power supply               | +4.5~5.5VDC                                     |                         |
| 12            | Working temperature        | -20℃~70℃  |                         |
| 13            | Working humidity           | 10%~90%(relative humidity without condensation) |                         |
| 14            | Dimension                  | 53mm×38mm×10mm                                  |                         |
| 15            | Reliable transmit distance | SRWF-506 1.8Km                                  | 1200bps<br>AT-1 antenna |
|               |                            | SRWF-507 2.2Km                                  |                         |
|               |                            | SRWF-508 2.5Km                                  |                         |
|               |                            | SRWF-506 3.6Km                                  | 1200bps<br>AT-6 antenna |
|               |                            | SRWF-507 4.1Km                                  |                         |
|               |                            | SRWF-508 4.5Km                                  |                         |

## VI. Layout Dimension



## VII. 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.