SRWF-1101 Series Low Power Wireless Transceiver Data Module

ShangHai TangRay Info-tech Co.,Ltd

SRWF-1101 Main Application Range:

SRWF-1101, 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 spacings as low as 25 kH*z:*

* AMR – Automatic Meter Reading
* Wireless alarm and security systems
* Home automation
* Low power telemetry
* 433 / 868 and 915 MHz ISM/SRD 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;

Ⅰ.Feature of SRWF-1101 Low Power Data RF Module:

1. low power transmission with the transmission power of 17dbm/50mW.

2. ISM frequency band , requiring on application of frequency point.
   Carrier frequency of 433MHz(SRWF-1101-F433), 868MHz(SRWF-1101-F868) , 915MHZ(SRWF-1101-F915).

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-1101 configuration provides 8 channels. If the user needs, it can be extended to 16/32 channels, meeting the multiple communication combination mode of the user.

7.Dual serial port, 3 interface modes

SRWF-1101 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 the user needs, it can also transmit the data in unlimited length at one time).

9. 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. SRWF-1101 will automatically, complete the other operations, such as transmission/receiving conversion in the air, control, etc.

10. Low power consumption and sleeping function

For receiving, current is <30mA, transmitting current is <100mA, and sleep current is <20uA。

11. High reliability, small and light

Single chip radio - frequency integrated circuit and single chip MCU are used for lessened peripheral circuit s, high reliability, and low failure rate.
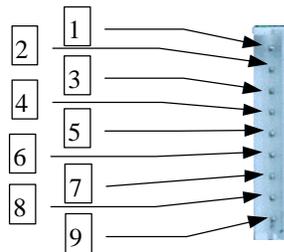
Ⅱ. How to use series SRWF-1101 low power wireless data transceiver module

1. Appearance chart
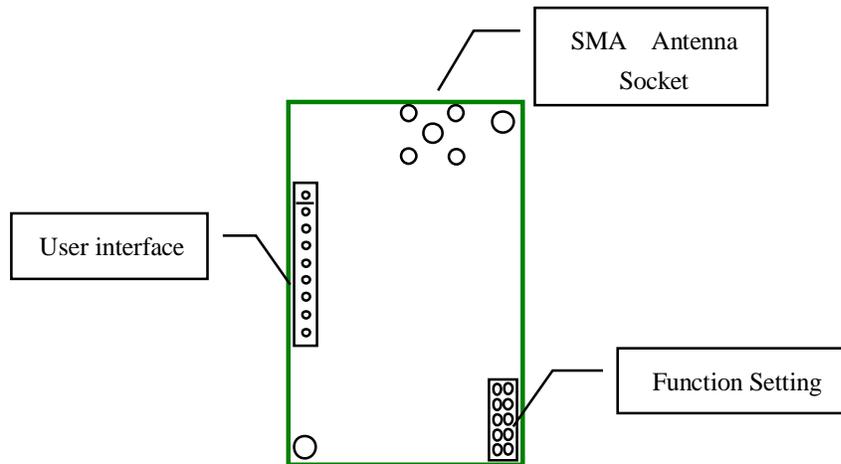
2 Interface definition

SRWF-1101 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	Memo
1	GND	Grounding of Power Supply		Grounding 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

Ⅲ.Setting of the channel, interface, data rate and data format:

1. **Before using SRWF-1101, you have to make simple configuration of your system parameter such as interface and data format.**
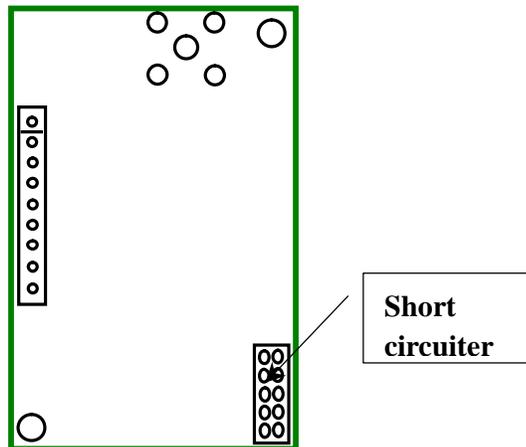
Short circuiter

There is one group of 5-bit short-circuiter wire (JP2) on the bottom right corner of SRWF-1101, defined as A、B 、C、D、E respectively .Assuming the open circuit of jumper wire (without short circuiter) is mode 1 and short circuit of jumper wire (with short circuiter) is mode 0.
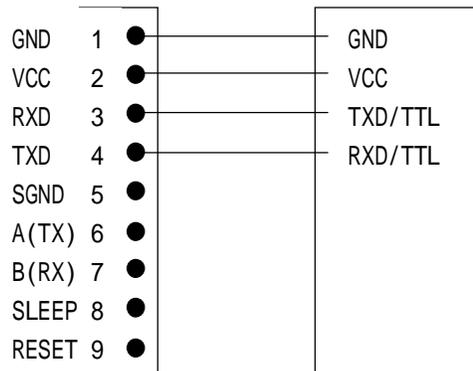
 A: channel configuration

ABC jumper wires of JP2 provide 8 options and you can choose to use 0-7 channels .if the work wireless module is work 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 3.

JUMPER ABC	CHANNEL NUMBER	FREQUENCY 433MHz	FREQUENCY 868MHz	FREQUENCY 915MHz
A ○○ B ○○ C ○○	0(ABC NO SHORT)	432.9MHz	867.9MHz	914.9MHz
A ⊠○ B ○○ C ○○	1	433.1MHz	868.1MHz	915.1MHz
A ○○ B ⊠○ C ○○	2	433.3MHz	868.3MHz	915.3MHz
A ⊠○ B ⊠○ C ○○	3	433.5MHz	868.5MHz	915.5MHz
A ○○ B ○○ C ⊠○	4	433.7MHz	868.7MHz	915.7MHz
A ⊠○ B ○○ C ⊠○	5	433.9MHz	868.9MHz	915.9MHz
A ○○ B ⊠○ C ⊠○	6	434.1MHz	869.1MHz	916.1MHz
A ⊠○ B ⊠○ C ⊠○	7	434.3MHz	869.3MHz	916.3MHz

B: Selection of interface mode

SRWF-1101 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) is fixed as **RS232/RS485 interface.** Which connection interface the user choice needs, when ordering indicates byall means must.
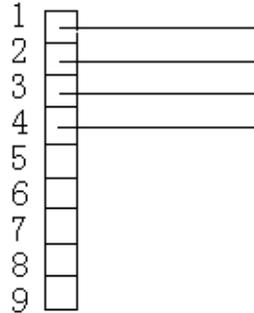
2. TTL interface connection sketch map

```
GND    1 ●━━━━━━━━━━━━━ GND
VCC    2 ●━━━━━━━━━━━━━ VCC
RXD    3 ●━━━━━━━━━━━━━ TXD/TTL
TXD    4 ●━━━━━━━━━━━━━ RXD/TTL
SGND   5 ●
A(TX)  6 ●
B(RX)  7 ●
SLEEP  8 ●
RESET  9 ●
```
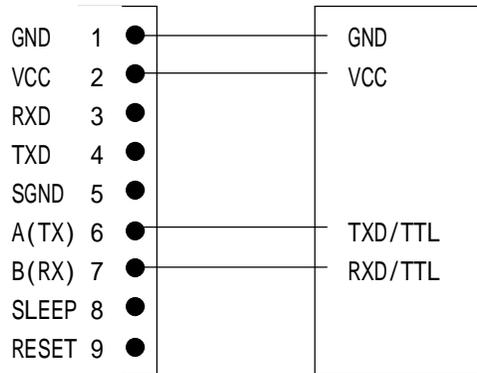
SRWF-1101interfac   User inquipment interface

NOTE: Please do not connect any wire on PIN7and PIN8 if com2 is no use

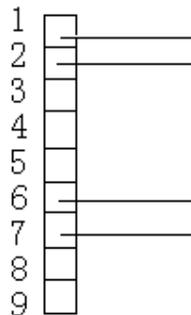The connection wire as next Picture

3. **RS-232/RS-485 interface connection sketch map**

SRWF-1101interfac   User inquipment interface

The connection wire as next Picture

NOTE: Please do not connect any wire on PIN3and 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).

C: Interface rate setting

The rate of SRWF-1101 is determined by hardware; to make sure the module rate is suit to your system, we are must be told your system's rate.

D:SRWF-1101 can support no parity and even parity mode of the serial communication UART it can chose parity mode through D and E of JP2
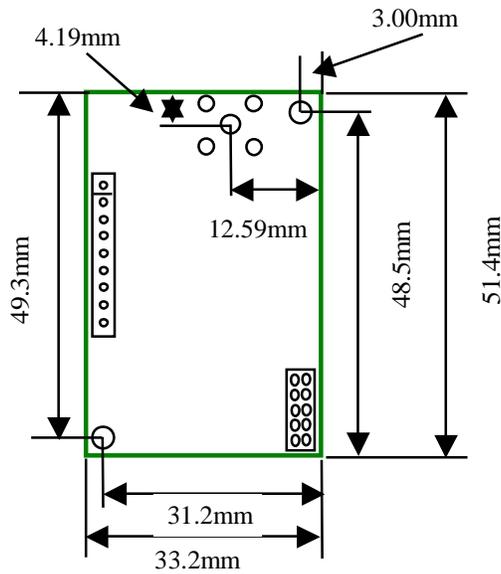

D=0(without short circuiter**)**、 **E=0**(without short circuiter**)** 8N1 no parity

D=1(with short circuiter)、 **E=0(without short circuiter) 8O1 odd parity**

D=0(without short circuiter)、 **E=1(with short circuiter) 8E1 even 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.
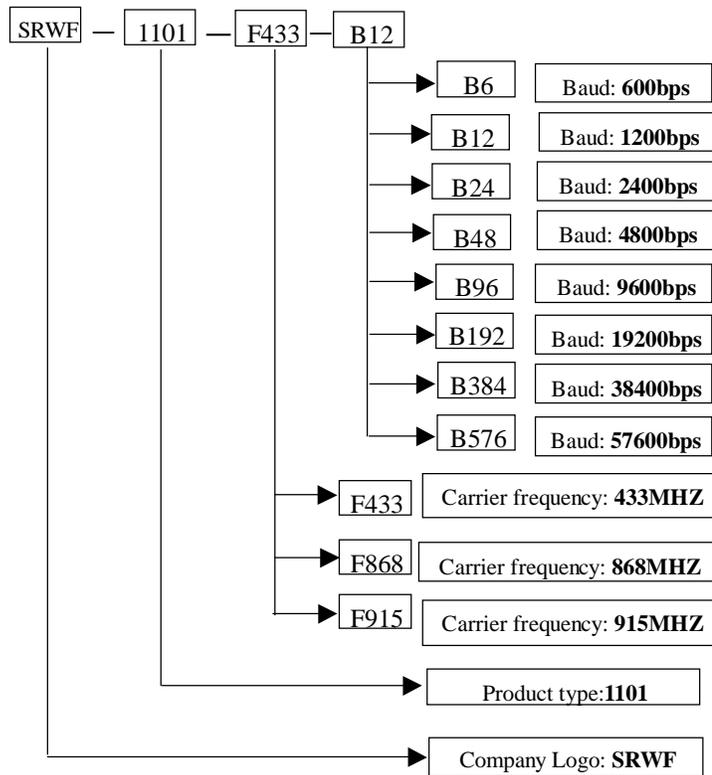
Ⅳ. **Technical specification of SRWF-1101:**

Serial number	Item	Parameter	Note
1	Modulation mode	GFSK/FSK	
2	Work frequency	433/868/915MHz	The ordering explained
3	Transmission power	17dBm(50mW)	
4	Receiving sensitivity	**-111 ～ -112dBm**	
5	Channel amount	8channel	User setting
6	Transmitting current	≤80mA	
7	Receiving current	≤20mA	
8	Sleeping current	≤20uA	
9	Interface velocity	**600/1200/2400/4800/9600/19200/38400/57600bps**	
10	Interface mode	UART TTL/RS-232/RS-485	The ordering explained
11	Power supply	+3～5VDC	
12	Working temperature	-25℃~80℃	
13	Working humidity	10%~90%(relative humidity without condensation)	
14	Dimension	51mm×33mm×10mm	
15	Reliable transmit distance	1200m	

Ⅴ.Sketch map of structural size (see below):

4.19mm
3.00mm
12.59mm
49.3mm
48.5mm
51.4mm
31.2mm
33.2mm

Ⅵ.model and name:

SRWF — 1101 — F433 — B12

B6 — Baud: **600bps**
B12 — Baud: **1200bps**
B24 — Baud: **2400bps**
B48 — Baud: **4800bps**
B96 — Baud: **9600bps**
B192 — Baud: **19200bps**
B384 — Baud: **38400bps**
B576 — Baud: **57600bps**

F433 — Carrier frequency: **433MHZ**
F868 — Carrier frequency: **868MHZ**
F915 — Carrier frequency: **915MHZ**

Product type:**1101**

Company Logo: **SRWF**

Ⅶ. technology support and after service :

We offer sufficient technology support for user use the module and second development for free; mending broken module one year for free, always offer after service.

To adapt different user structure, we can develop smaller module or various size modules

ShangHai TangRay Info-tech Co.,Ltd

ADDRASS: No 201,Keyuan RD Zhangjiang

high-tech park, Shanghai Pudong china

Tel:+86-021-50275250 /50275255/50273877

Fax:+86-021-50270187

E-mail： sales@tangray.com

Website: www.51sunray.com