Serial control & remote control switch

# Product Specification

# Catalogue



## Note: Revision History

| Revision | Date | Comment |
|---|---|---|
| V1.0 | 2013-10-12 | First release |
| V2.0 | 2014-9-5 | Revised some parameters |
| V3.0 | 2015-4-25 | Graphic description added |
| V3.1 | 2017-06 | Logo updated |
| V3.2 | 2020-12 | Update description |
| | | |

## 1. Overview

SK108U includes SK108U-TX and SK108U-RX. SK108U-TX is an industrial serial control transmitter, it works with SK108U-RX to build wireless switch control system. SK108U-TX is serial interface which can connect with PC and other serial devices. One SK108U-RX has 4 channels relay output. One SK108U-TX can control multiple SK108U-RX. The frequency of the SK108U-TX and SK108U-Rx can be set to avoid frequency interference.

In hardware SK108U-Tx is the same as our SV series module, which has different output power and different interface for option.

SK108U-Rx is same as SK108 in hardware but different firmware.

SK108U strictly uses lead-free process for production and testing, and meets RoHS and Reach standards.

## 2. Features

- The power of SK108U-Tx is optional （100mw,500mW,2W,3W,5W）
- 40 predefined channels for SK108U-TX
  16 predefined channels for SK108U-RX
- Parameters configurable by PC software or serial device
- GFSK Modulation
- Antenna automatic matching
- Bi-directional wireless switch control
- Sensitivity up to -121 dBm
- Working temperature range：-40～+85 °C

## 3. Application

- Remote control switch control
- Security system
- Home automation remote sensing
- Wireless remote telemetry
- Building automation and security
- Access control system

## 4. SK108U-RX Parameters

**Note: Below parameters base on 12V power supply/ 25℃ testing environment.**

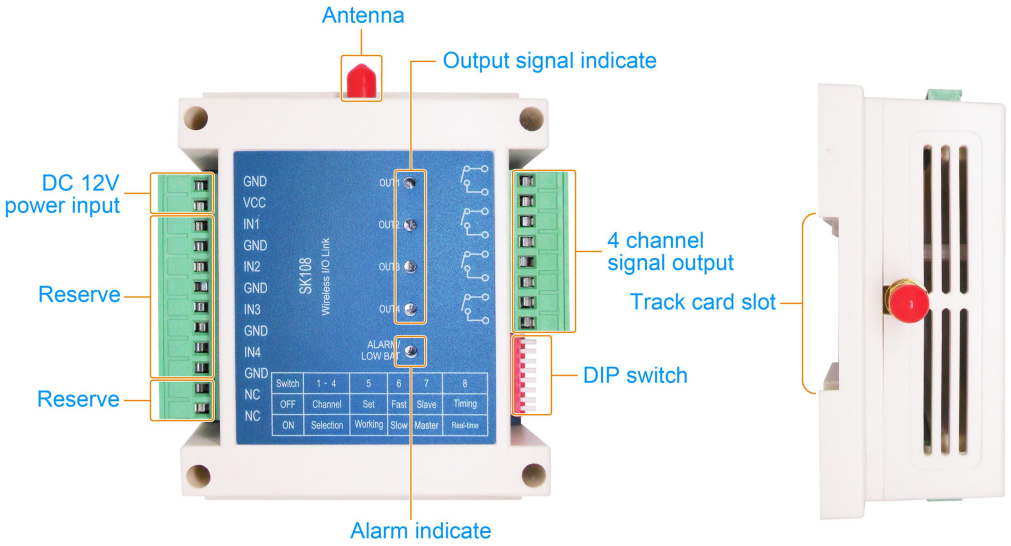
| Parameters | Min. | Typ. | Max. | Unit | Condition |
|---|---|---|---|---|---|
| Working Condition | | | | | |
| Voltage range | 9 | 12 | 30 | V | |
| )perating Temperatur | -40 | 25 | +85 | ℃ | |
| Current Consumption | | | | | |
| Rx current | | <20 | | mA | |
| RF Parameters | | | | | |
| Sensitivity | | -121 | | dBm | @1200 |

## 5. SK108U-TX Parameters

Note: SK108U-Tx is the same as our SV series module in hardware. It has different output power and different interface for option.

| Product Name | Power | Interface | Picture |
|---|---|---|---|
| SK108U-TX-610 | 100mW | TTL |  |
| SK108U-TX-611 | 100mW | TTL/RS232/RS485 |  |
| SK108U-TX-612 | 100mW | TTL/RS232/RS485 |  |
| SK108U-TX-613 | 100mW | USB |  |
| SK108U-TX-614 | 100mW | RS232 |  |
| SK108U-TX-650 | 500mW | TTL /RS485 |  |
| SK108U-TX-651 | 500mW | TTL/RS232/RS485 |  |
| SK108U-TX-652 | 500mW | TTL/RS232/RS485 |  |
| SK108U-TX-653 | 500mW | USB |  |
| SK108U-TX-654 | 500mW | RS232 |  |
| SK108U-TX-6202 | 2W | TTL/RS232/RS485 |  |
| SK108U-TX-6300 | 3W | TTL/RS232/RS485 |  |
| SK108U-TX-6500 | 5W | TTL/RS232/RS485 |  |

## 6. SK108U-RX Interface




**1) Four channels output（LED Light and relay）**

SK108U-RX Module has total 4 channels output（OUT1~OUT4）,the status of output (open/close ) is controlled by SK108U-Tx.

**2) DIP switch Settings（valid when power on again）**

DIP8—Pull to “ON ” position

DIP7—Pull to “ON ” position

DIP6—Reserve

DIP5—Mode selection

ON—Normal working mode

OFF-- Configuration mode

DIP4~1—Working frequency channel selection， total 16 groups, frequency is configurable by PC software.

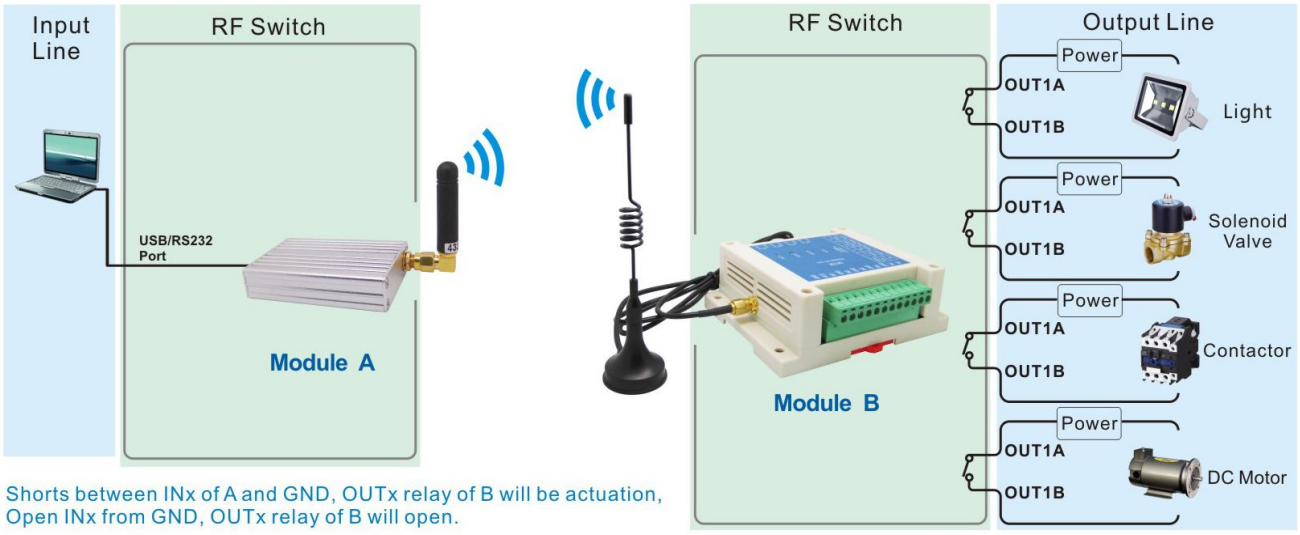
Relationship between DIP switch and working frequency channel：

| DIP NO. | Channel No. | DIP NO. | Channel No. | DIP NO. | Channel No. | DIP NO. | Channel No. |
|---|---|---|---|---|---|---|---|
|  | 1 |  | 5 |  | 9 |  | 13 |
|  | 2 |  | 6 |  | 10 |  | 14 |
|  | 3 |  | 7 |  | 11 |  | 15 |
|  | 4 |  | 8 |  | 12 |  | 16 |

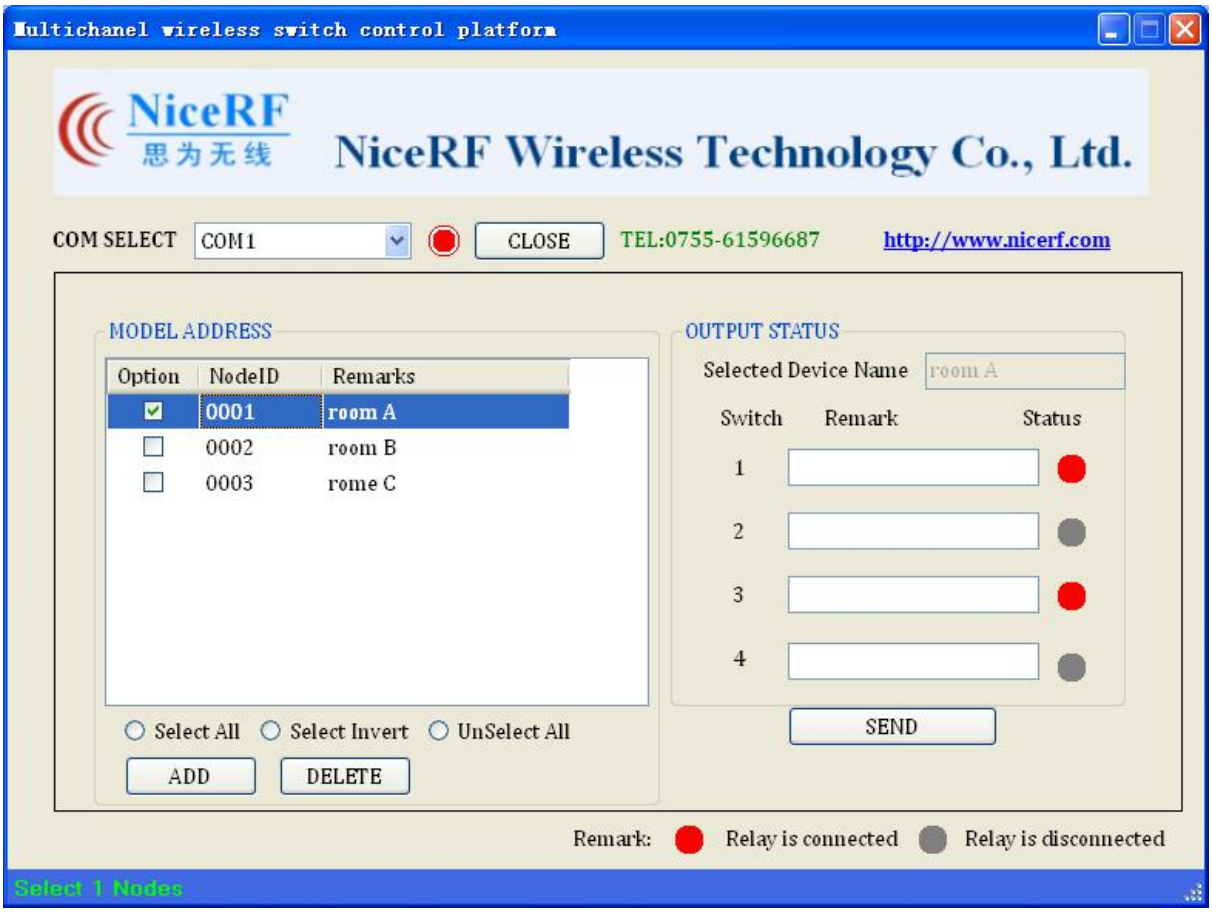
## 7. Working Mode

### 1) Normal working mode

Pull DIP5 to [ON] side to enter into normal working mode. In normal working mode, every SK108U-Rx has unique ID, the status of output (open/close ) is controlled by SK108U-Tx. Below is regular connection:




SK108U-Tx can work with PC, the PC software is as below:




As shown above, when press【SEND】button,SK108U-RX whose ID is 0001 will update the output :

1-ON 2-OFF 3-ON 4-OFF

Serial device can be connected to SK108U-Tx, the protocol format between the serial device and SK108U-TX is “Data bit: 8bit , Stop bit:1 bit , Parity bit: None, baud rate: 9600”.

**Protocol Description:**

Control instructions format：0x53+ ADDRESS_ID1+ADDRESS_ID0+OUTPUT STATUS+0x4b

Description:

0x53 is start command , 0x4b is the end code.

Every SK108U-RX has 2 bytes as ID, which is Address _ID1, Address _ID0. Address_ID1 is the maximum byte. The range of Address ID is 0x0000~0xffff. If the ADDRESS_ID is 0x0000, the module status will be updated by any SK108U-Tx.

Output status : lowest 4bit is corresponding to the output of the 4 relay. 1 means close, 0 means open.

Example：0x53 0x00 0x01 0x04 0x4b

The SK108U-Rx with ID equal to 0x0001 will be controlled. The status of this SK108U-Rx is :

Channel 1 relay is : open

Channel 2 relay is : open

Channel 3 relay is : close

Channel 4 relay is : open

Multiple SK108U-Rx can be controlled by one SK108U-Tx.

The command format as shown below:

0x53+1st ADDRESS_ID1+1st ADDRESS_ID0+OUTPUT 1st STATUS + 2nd ADDRESS_ID1+ 2nd ADDRESS_ID0+OUTPUT STATUS+ 3rd ADDRESS_ID1……+0x4b

Description:

Maximum 18 pieces of SK108U_Rx can be controlled.

0x53 is start command , 0x4b is the end code.

1st ADDRESS_ID1, 1st ADDRESS_ID0 is the ID of the 1st SK108U-Rx

2nd ADDRESS_ID1+ 2nd ADDRESS_ID0 is the ID of the 2nd SK108U-Rx

The range of Address ID is 0x0000~0xffff. If the ADDRESS_ID is 0x0000, the module status will be updated by any SK108U-Tx.

1st STATUS is the output status of the 1st SK108U-Rx

2nd STATUS is the output status of the 2nd SK108U-Rx

Example：0x53 0x00 0x01 0x04 0x00 0x02 0x04 0x00 0x03 0x04 0x4b

The SK108U-Rx with ID equal to 0001 , 0002 and 0003 will be controlled.

**2) Parameters configuration mode**

Pull DIP5 to [OFF] side to enter into parameters configuration mode. In parameters configuration mode, parameters of SK10U-RX can be configured by SK108-S with PC software. The configurable parameters include Address ID, Channel frequency.SK108U-Rx can communicate with SK108U-Tx when parameters matched. PC software show as below：

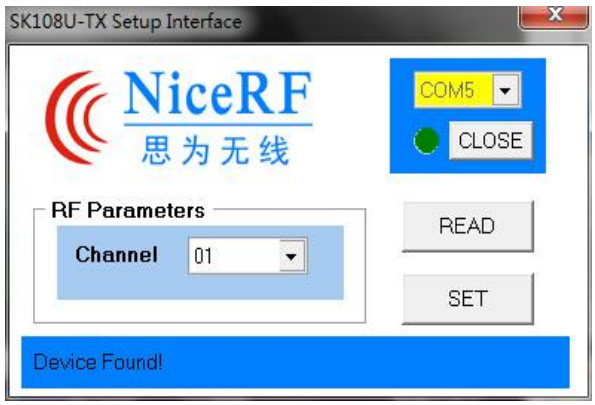

✧ **Address ID**

Address ID is 2byte, the Module with same address ID will synchronize output status.

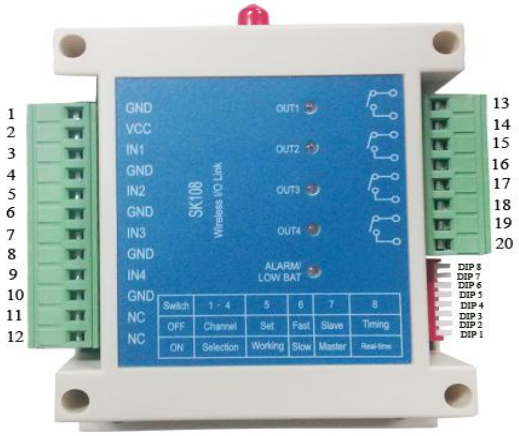
✧ **CHANNEL**

SK108U-Rx has 16 predefined frequency channels, one of them can be chosen via DIP switch. Thefrequency value can only be set the same as the SK108U-Tx. Default frequency value is recommended. Frequency channel of SK108U-TX can be configured by PC software, PC

**The frequency value can be set according to below frequency sheet.**software show as below：



## 8. Pin definition




| Pin NO. | Pin | Description |
|---|---|---|
| 1 | GND | Connect power negative |
| 2 | VCC | Connect power anode |
| 3~12 | NC | Open |
| 13 | OUT1 | Ch1 relay control output, |
| 14 | | |
| 15 | OUT2 | Ch2 relay control output, |
| 16 | | |
| 17 | OUT3 | Ch3 relay control output, |
| 18 | | |
| 19 | OUT4 | Ch4 relay control output, |
| 20 | | |

## 9. Accessories

1) **Antenna**

The antenna is very important for RF communication, its performance will affect the communication directly. Module needs antenna in 50ohm. Common antenna has rubber straight/ elbow/ foldable rod and sucker antenna and etc. Users can order accordingly. To ensure module in the best performance, we suggest to use the our antennas.

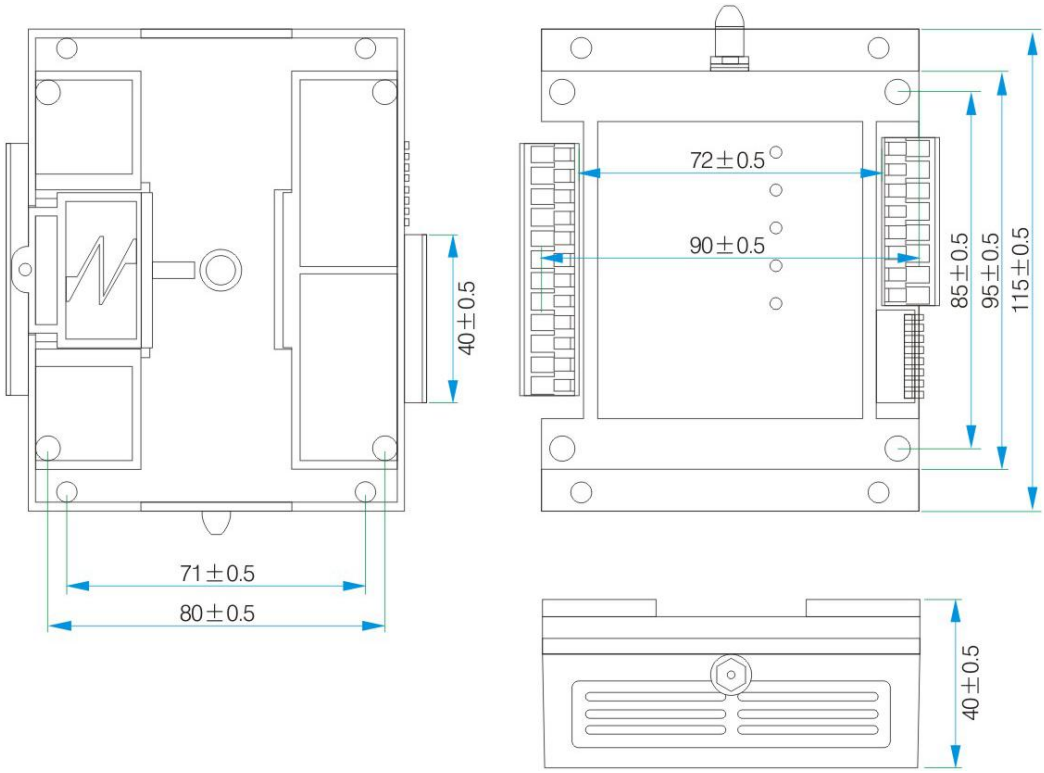
★To ensure modules get the best performance, user must obey the following principles when using the antennas：

- Put the antenna away from the ground and obstacles as possible as you could；
- If you choose the sucker antenna, pull straight the lead wire as possible as it can be, the sucker under arches should be attached on the metal object；

**2) Power supply**

The standard power supplier for this module is DC 12V(suggest to using current in 1A or higher), module will not work when voltage is lower than 9V. Power supply is very important for this module, its performance will affect the communication . We suggest to use our standard power supply to get better performance.

## 10. Mechanical Measurement(Unit:mm)




## 11. FAQ

a) Why modules can't communicate?

1) Check if power supply is connected correctly

2) Check if module in normal communication mode;

3) Check if the frequency ,channel, NET ID and air rate of each module are the same

4) Check if module is damaged (if the LED flash when powered on?)

b) Why communication distance is not so far as expected?

1) Check if the Power supply is stable ;

2) Check if the antenna well matched and install properly;

3) Check if the surrounding environment is good;

4) Check if strong same frequency interference existed;