High Sensitivity ASK Wireless Receiving Module

SPECIFICATION

Model No.: DL-RXC2015-3/4/9

Version: V2.0

Before using this module, please read this document carefully, and pay attention to the following important matters:

This module is an electrostatic sensitive product. Please operate it on an anti-static workbench during installation and testing.

The module uses an external antenna by default. The antenna can be a wire antenna or a standard UHF antenna. You can choose a specific antenna according to the actual situation. If the terminal product uses a metal shell, be sure to install the antenna outside the metal shell. Otherwise, the RF signal will be seriously attenuated, which will affect the effective distance.

Metal objects and wires should be kept away from the antenna as much as possible.

When installing the module, nearby objects should be kept at a sufficient safety distance from the module to prevent short circuit damage.

This module should be used in a dry environment. Please do not make any liquid substance come into this module.

Please use an independent voltage regulator circuit to supply power to this module, and avoid sharing with other circuits. The tolerance of the power supply should not be less than 5%.

Limitations:

This module is intended to be embedded in the customer's terminal product application, and does not provide a casing itself. It is not recommended that the customer directly resell this module as a final product without permission.

This series of modules are in accordance with commonly used international standards. If there is any special certification needed, we can adjust certain indicators according to your needs.

This module cannot be applied to life rescue, life-support systems, or any occasion where personal injury or life threatening may cause by equipment failure. Any organization or individual carrying out the above-mentioned applications shall bear all risks at their own.

We will not be responsible for any direct or indirect damage, injury or loss of profits caused by products that use this module.

DL-RXC2015 is a compact and low-power wireless receiving module based on the high-performance ASK wireless superheterodyne receiver chip. The module is designed with ultra-high cost performance ISM band receiver chip, which is mainly set at 315-433mhz frequency band. The module has a strong anti-interference capability that the similar chip solutions do not have.

The traditional 10.7m peripheral IF (intermediate-frequency) filter is omitted, which greatly improves the consistency of mass production. The module can lead out the enabling pin of the chip, which can be used as the control port of sleep / wake-up, so as to set the module to work in low-power state, which provides convenience for low-power battery application system.

This RF receiver module was launched to address the cost pressures of the radio frequency part in the process of product development. The interface adopts gold plating PCB binding process with half hole, which is convenient for production and application. It can be inserted on the main board or SMT on the PCB, so it is very flexible.

1. Features:

- 350m transmission distance in an open air (1200bps)
- Working frequency: 315M, 433.92M
- Ultra-wide operating voltage range: 2.0V-5.5V
- CE wake-up time is very short, 6ms (clutter free mode)
- Good chip consistency, ESD standard HBM3kV
- Standby current of 0.1uA in sleep state
- SMT process is used for peripheral devices to improve productivity and consistency

2. Applications:

- Wireless sensor;
- Home automation;
- Automated data collection;
- Industrial remote control, telemetry;
- Data monitoring and transmission;
- Home Appliance Control;
- Security, alarm control;

3. Product Size & Pins Definition:

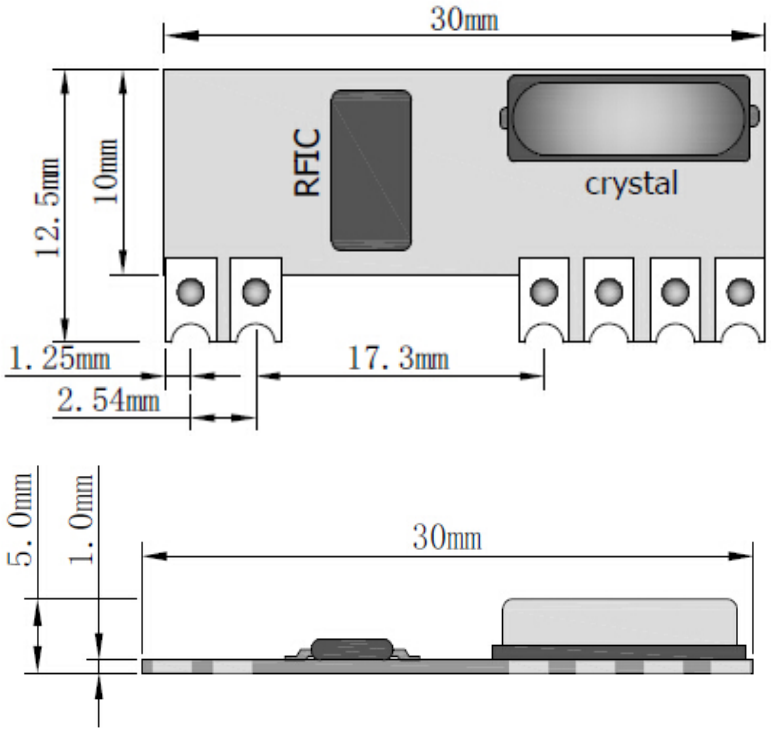

Figure 1: Module size

The DL-RXC2015 module has 5 pins, which are defined in the following table

Pin	Name	Description	Remark
1	ANT	Antenna input, single core copper wire is recommended	＞0.8mmΦ
2	GND	Grounding, common ground with the system	
3	VDD	Power supply	
4	CE	Receive low level enable, sleep / wake up control	
5	DATA	Data output, connected with decoding chip or MCU	
6	GND	Grounding, common ground with the system	Strong current isolation

Table 1: Pins Definition of DL-RXC2015 Module

4. Technical Parameter

DC characteristics

Description	Min.	Max.	Unit
Supply voltage	2.0	5.5	V
Working current	4.3	6.5	mA
Standby current		＜1uA	mA
Wake up time	2.0	6	mS
Low power settings	150	500	uA

Table 2: DC characteristics of the Module

RF characteristics (Unless otherwise stated, the temperature is 25 ℃, and VCC is 3.3V)

No	Characteristics	Technical Parameter			Unit
		Min.	Typi.	Max.	
1	Frequency range	300	315/433	500	MHz
2	Antenna signal input peak value	—		-25	dBm
3	Receive sensitivity	-110		-115	dBm
4	Data baud rate	0.5	1.2	20	Kbps
5	LNA Gain	12		15	dB
6	CE enable wake up time	2.0		6	mS
7	Noise figure (NF)	—	—	3.6	dB
8	PLL frequency range	220		550	MHz
9	IF bandwidth (RBW)		300		KHz
10	RSSI signal detection strength		75		dB
11	Standby power consumption		1		uA
12	Crystal accuracy	20		10	PPM

Table 3: High frequency characteristic table of the module

5. Connection between module and terminal equipment (TTL electrical level)

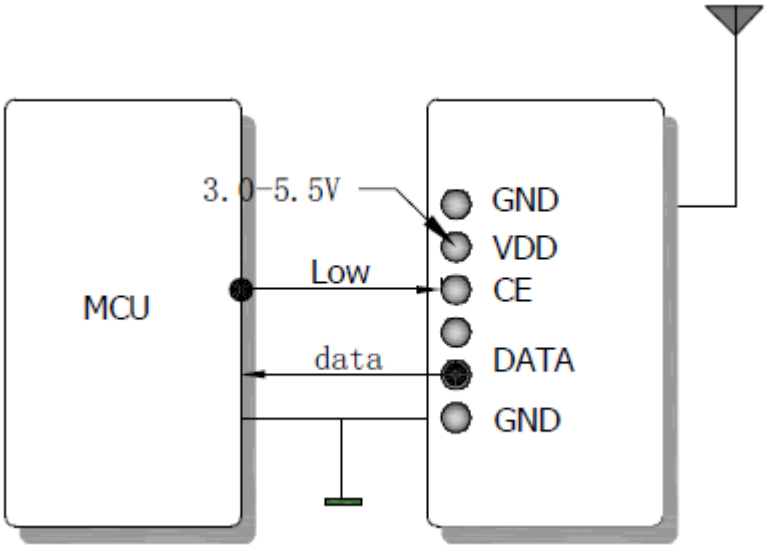

Figure 2: Wiring diagram for module application

6. Notices in module application

Considering the complexity of data transmission over the air, the radio frequency modulation method of the data, and some inherent characteristics of electromagnetic waves, the following issues should be considered during the application process.

1. The electromagnetic interference of the application environment will affect the actual distance of the remote control. Electromagnetic wave interference is divided into mainboard power supply interference, TFT screen data cable interference, Flash data exchange interference; and airborne carrier frequency interference, noise interference, high-power signal source interference, etc.
2. Factors such as product size, internal space, and coating of the shell will cause the attenuation of the wireless signal, which will affect the remote-control distance. Usually the narrow internal space of the product is not conducive to the extension of the antenna. The outer shell should avoid metal or metal plating as much as possible.
3. To choose a proper antenna is very important. The antenna is an important part of the communication system, and its performance directly affects the indicators of the communication system. We must pay attention to its performance (antenna type, antenna electrical performance) when selecting the antenna. Please feel free to contact us for consultation or recommendation, if you need.

7. Contact us

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★ Data collection, Smart home, Internet of Things applications, Wireless remote-control technology, Remote active RFID, Antennas ★

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