High Sensitivity ASK Wireless Receiver Module

SPECIFICATION

Model No.: DL-RXS531R

Version: V2.0

ShenZhen Dreamlnk Technology Co., Ltd   **Tel:** 86-755-29369047   **E-mail:** james@dreamlnk.com   www.iot-rf.com

1

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-RXS531R is the new generation single-chip wireless ASK/OOK (ON-OFF Keyed) receiving module, which is mainly used in the field of wireless radio frequency remote control. Compared with previous generation products, DL-RXS531 has higher sensitivity, which can reach -112dBm in 433MHz application environment, greatly increasing the receiving distance. Meanwhile, this model has a higher integration, with high frequency signal reception functions all on chip, to achieve the most reliable receiving results, with the least peripherals and the lowest cost.

DL-RXS531 is a real "high frequency antenna AM signal input, digital signal output" receiving module with French imported single chip design. All RF and IF tuning is done automatically on the chip, which eliminates the manual adjustment process in the development and production, will reduce your R&D costs and enhance the product competitiveness.

This RF receiving module is compact in shape and less than 1cm in width, is the best choice for small space applications. This module has a preset CE enabled control pin, which can be well used in power saving mode, to achieve a better average power consumption. It also has super anti-interference ability.

1. Features:

● Standard COMS interface control and decoding data output

● Complete monolithic UHF receiver, frequency range 300-450 MHz

● Receive sensitivity: -109dBm (315MHz), -109dBm (433MHz)

● Transmission rate: 2.5 kbps (SWP), 10 kbps (FIXED) auto tuning

● No need for manual adjustment, no need for external filters and inductors

● Preset CE enabled control pin to shift sleep / wake-up (Low level effective).

● Common frequencies: 433M, 315M, 390M, adopt different local oscillation crystals;

● 4.5mA (315MHz, full operation); 0.5uA (shutdown mode); 370uA at "CE = High" (315MHz, 10:1 duty ratio)

● WOR function is used to enable external decoder board and MCU, RF antenna radiation is very low

2. Applications:

● Security
● Environmental Monitoring
● Automatic meter reading
● Health Care
● Lighting control
● Asset management
● Process control
● Access control
● Remote control receiver
● Photo remote control of driving recorder
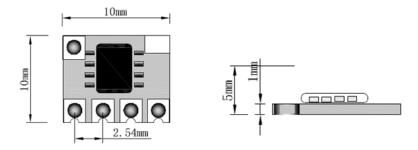
3. Product Size

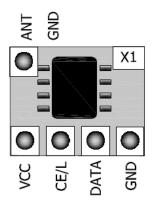
Figure 1: Module size

4. Pins Definition:

The DL-RXS531 module has four pins, which are defined in the following table

Pin	Name	Description	Remark
1	VCC	Power supply, DC5.0V is recommended	＞3.6V
2	CE/L	Module enabled end; low level effective	
3	DATA	Data output, connected with decoding chip or MCU	
4	GND	Grounding, common ground with the system	
5	ANT	Antenna input, single core copper wire is recommended	＞0.8mm φ

Table 1: Pins Definition of DL-RXS531

5. Technical Parameter

DC characteristics

Description	Min.	Max.	Unit
Supply voltage	3.6	5.5	V
Working current	4.5	7.0	mA
Standby current		＜0.5uA	mA
I/O Port voltage	Vss-0.3	Vdd+0.3	V
Working temperature	-20	70	℃

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	450	MHz
2	Antenna signal input peak value	—		10	dBm
3	Receive sensitivity		-109		dBm
4	Transmission rate	0.6	1.2	10	Kbps
5	LNA Gain	10		12	dB
6	CE enable wake up time	7		8.5	mS
7	Noise figure (NF)	—	—	3.6	dB
8	PLL frequency range	220		450	MHz
9	IF bandwidth (RBW)		300		KHz
10	Standby power consumption		0.9		uA
11	Common use crystal frequency		DL-S31		MHz
12	Crystal accuracy	20		10	PPM

Table 3: High frequency characteristic table of the module

6. Connection between module and terminal equipment (TTL electrical level)
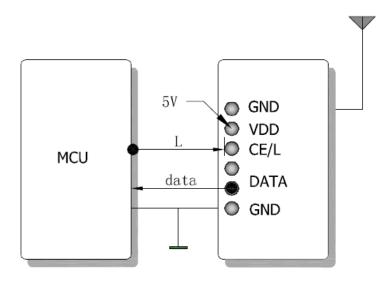
Figure 2: Wiring diagram for module application

7．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.

ShenZhen Dreamlnk Technology Co., Ltd   **Tel:** 86-755-29369047   **E-mail:** james@dreamlnk.com   www.iot-rf.com

6

8. Contact us

Shenzhen DreamLnk Technology Co., Ltd

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

Office Add.: Room 603, Unit C, Zone A, Huameiju Business Center, Xinhu Rd., Bao'an District, Shenzhen, Guangdong Province, China
Factory Add.: 5th Floor, Building B, Huazhi Innovation Valley, No. 7 Yuhua Street, 138 Industrial Zone, Tangxia Town, Dongguan, Guangdong Province, China
TEL.: +86-755-29369047   FAX: +86-755-27844601
Mobile: +86 13760215716   Wechat: wsj_james
E-mail: james@dreamlnk.com   Web: www.iot-rf.com