

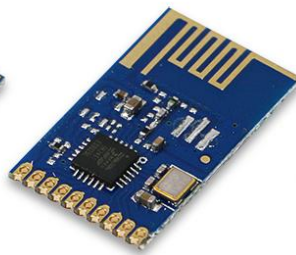
Wireless Switching Control 2.4Ghz RF Modules

SPECIFICATION

Model No.: DL-BK24K6-TX
DL-BK24K6-RX
DL-BK24K6-52TX (NEW)



52TX



TX



RX

Before using this module, please 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.

This module uses an onboard antenna. 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.

File version & update management

DATE	Software Version	Remarks
2016-8-5	V1.0	Standard 2.4G 6-channel switch program
2018-3-25	V1.1	Upgrade 2.4G 6-channel switch program
2019-1-10	V1.0	Add DL-BK24K6-52TX switch program

1. Module introduction

1.1 Brief introduction

DL-BK24K6 TX/RX Wireless Module is a 2.44Ghz SOC chip multi-channel switch control module developed by DreamLNK. It is no need to design complex underlying driver software, also no need to define the transceiver communication protocol, nor the key value definition. We have internally designed 2.44Ghz code matching, remote control, low power consumption, and Co-Channel Interference optimization. You just need to connect the necessary input buttons and output loads, code matching button, code matching indicator, etc. It can be used without any programming.

For the entire DL-BK24K6 series module: TX is a transmit module, RX is a receive module. While 52TX is a transmit module with optimized power consumption (developed specifically for battery-powered systems), which only requires a 3.3V power supply, transmitting buttons, LED transmitting and code status indication; the output port corresponding to the receive module can output level signals. The standard module has 6 independent control signals. The 6 buttons on the transmitting end correspond to the 6 signal outputs of the receive module. It can realize single-channel remote control, and can also realize multi-channel remote control.

The module is small in size, low in power consumption, and easy to use. The transmit module only needs to design the key board according to the remote-control shell. The receive module has no peripheral parts. The signal of the IO port can directly drive small loads such as LEDs, motors, and relays. The channel output signal is provided to the IO port of the MCU as a parallel level signal. It is very convenient and simple to use. Multiple sets of products can be used at the same time without interfering with each other, effectively solving the interfering problem at the same frequency, especially 315 / 433M remote control products transmitting at the same time.

Customized description: The module adopts 6-channel switching value as a standard, which can meet the requirements of 1-6 signal remote controls. If more signal control is required, the number of buttons of the transmit module can be expanded by scanning the matrix, or add more I/O, to increase the number of signal channels of the receive module; you can also adjust the power, rate, and data format of the transmitter to reduce power consumption according to product application requirements. For specific design and development requirements, please contact our RD department.

1.2 Features

- 2.4G ISM frequency band, global open frequency band, no safety restrictions;
- Adopt high-performance baseband processing chip, fast remote control and high security level;
- Built-in MCU-SOC (system on chip) combined with patented software design, without same frequency interference problem, users do not need to program;
- 6-channel input and output function, can be expanded, the output state can be customized (to customize the signal type);

- Highly integrated, small size, low power consumption design, no peripheral components, easy to use

1.3 Typical application

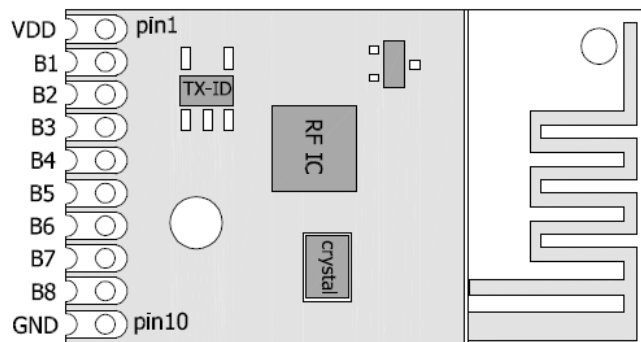
Wireless Remote Control; Smart Home Appliance; Remote Control Toy; Remote Control Boat; Remote Control Socket; Remote control door lock; Wireless sensor; Smart home control system; Garage access control system

The 52TX module is used in battery-powered remote controllers, the high-power TX module is used in adapter power supply systems, and the RX receive module is compatible with two transmit modules

1.4 Technical Parameter

Transmit Module	DL-BK24K6-52TX	Transmit Module	DL-BK24K6-TX	Receive Module	DL-BK24K6-RX
Frequency	2.4G-2.5Ghz	Frequency	2.4G-2.5Ghz	Frequency	2.4G-2.5Ghz
Operating Current	20mA (instantaneous current)	Operating Current	90mA (instantaneous current)	Operating Current	23mA (defaulted) Customizable
Output Power	5dbm	Output Power	12dBm	Receive sensitivity	-96dBm
Max. Transfer Rate	2Mbps	Max. Transfer Rate	2Mbps	Output State	Latched/Unlatched; B8 setting
ID No.	individual	ID No.	individual	Match Codes	Max. 20 transmit IDs
Distance	70M	Distance	120M	Distance	120M
Voltage	2.0-3.6V	Voltage	2.8-3.6V	Voltage	2.8-3.6V
Stand-by current	5-10uA	Stand-by current	10-12uA	Stand-by current	-96dBm
Modulation	GFSK	Modulation	GFSK	Modulation	GFSK
Input	6-channel switch value	Input	6-channel switch value	Output	6-channel switch value
Antenna	PCB Antenna	Antenna	PCB Antenna	Antenna	PCB Antenna

2. Pin Definitions



DL-BK24K6-TX / DL-BK24K6-52TX

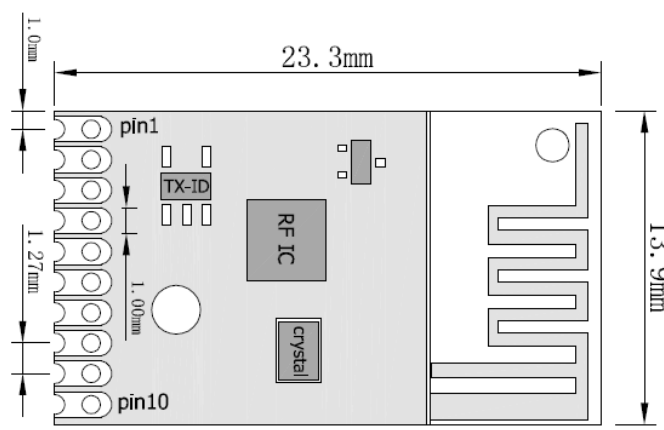
Pin No	Pin's Name	Description
1	VCC	Positive power supply, 2.8-3.6V@TX / 2.0-3.6V@52TX
2-7	B1-B6	6-channel data pin, transmit/receive button, active low
8	B7	Code matching pin, learning button, active low
9	B8	Indicator pin (code matching, transmitting), for LED connecting
10	GND	Module grounding

DL-BK24K6-RX

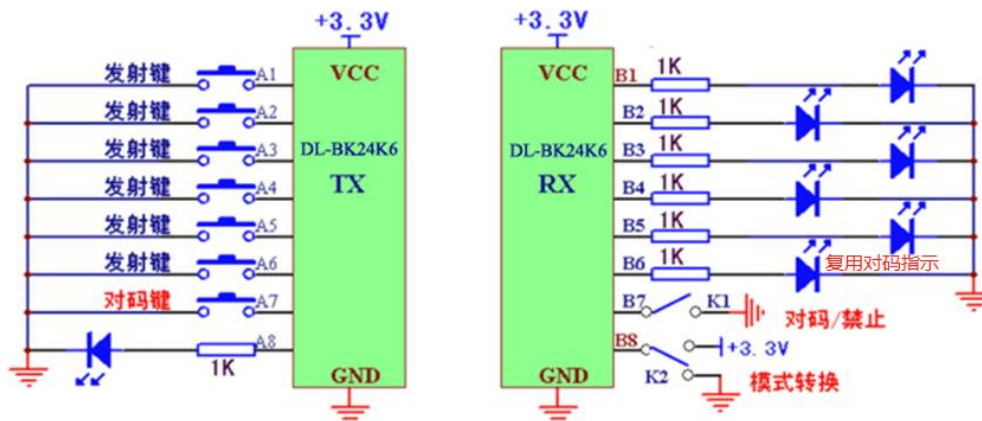
Pin No	Pin's Name	Description
1	VCC	Positive power supply 2.8-3.6V, 3.3V is recommended
2-7	B1-B6	6-channel data output pin, High level output; B6 can be also reused for LED code indication
8	B7	Code matching pin, grounding for code matching,
9	B8	Output mode selection. Set low level (0) for latched output, set high level (1) for non-latched output
10	GND	Module grounding

Remark: The red Demo receiving board, B8 state is set with buttons: long press to set low, release button to set high;

3. Module size



4. Application connection diagram



5. RX Module Conversion

Latch mode: The RX output port is normally at 0 level. Press the key once to receive the output high level and latch it. Press the button again, the receive output becomes 0 level, and the B8 port needs to be connected to GND;

Non-latching mode: Press and hold the transmit key, the output level is high, release the key, the receive output becomes 0 level, the B8 port needs to be connected to VDD

6. Code Matching & No Code Matching

TX and RX must be paired before using. RX can only identify the TX whose code is successfully matched. After the code is successfully matched, the receiving B7 pairing port needs to be disconnected (N/C), which will prohibit other TX pairing codes, to prevent other remote controllers' illegally controlling. The receiving port can accept up to 20 remote controller code-checking codes, in the code-checking state (multi transmit & one receives), and you can decide how many codes to match. If the receive module (RX) is replaced after code matching, the original remote control (TX) needs to be recoded.

Code description:

★ Power on the receiver (RX) at first, make sure the receiver code-matching port B7 is grounded (with the learning key pressed); when the code-matching indicator B6 is constantly on, the receiver board enters the code-matching state. At this time, press the **transmitter** coding button B7, and the LED of the receiver B6 port flashes 3 times, then the code matching is successful. Press the receiver end B7 again to exit the code matching state. The B6 light is off and the code matching is completed. Or do not perform any operation after the LED light flashes 3 times; wait for the LED light to turn off automatically to exit the code matching state;

★ After successful code matching, you need to wait for about 10 seconds (or trigger the receiving end B7 to exit the code matching status again), until B6 LED lights off. Press the A1-A6 transmit button to receive the corresponding port B1-B6 to output high level. Normal remote control, no need to wait, press the remote-control key to output high level immediately. After the code matching is successful,

the receiving code matching port needs to be disconnected from the code matching state, and other transmissions are prohibited to match the code;

★ After the code is successfully matched, the transmitter and receiver will not lose the code when the power is off, and will be saved permanently. If you need to re-code, repeat the above code-matching process to reproduce the code-matching. If you need to clear the pairing, just long-press the code-matching key until the B6 port LED flashes 3 times to clear the pairing.

7. Test and Use

★ After coding complete, press the B1 ~ B6 transmit button, the B1 ~ B6 port will receive output high level, the LED indicators will show whether the output function is normal, the distance in an open ground is about 50 meters; The transmission is usually in low power consumption mode, and the standby current will be 10-12uA; signals can only be transmitted when the transmit button is pressed; the receive module can provide an output current of 2mA to drive 3V LED. If driving other large loads, a power drive circuit needs to be added.

★ The power supply of the module cannot be reversed, and the voltage cannot exceed 3.6V, otherwise the device will be damaged, and the module needs to provide a stable voltage. It is best to connect a 10R resistor and a 10UF capacitor in parallel in front of VDD to supply power to the module. Normally, the power consumption of a receive module is 23mA. If the receive module is battery-powered, a low-power mode is required. Low-power software needs to be customized according to your requirements, taking into account of different networking scenarios, such as one-to-one, one-to-many, many-to-one, many-to-many, etc.

★ The module is a PCB on-board antenna. The antenna must be away from the copper of the main board, otherwise the transmission and reception distance will be affected.

8. 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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