BEST MODULES Quick Start Guide

Name: 4-key 433MHz RF wireless remote controller

Model: BCR-68F2130-X01

https://www.bestmodulescorp.com

1 Component Description and Layout

• Product appearance

• Internal structure diagram

1. BC68F2130
2. LED
3. CR2032 Battery

2 Product description

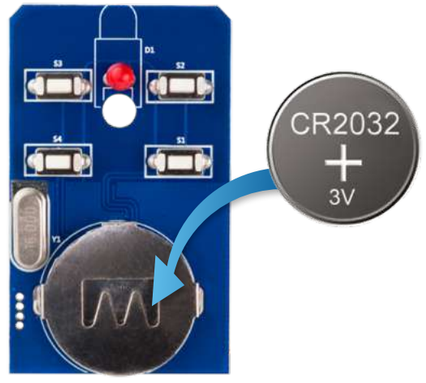
- This product uses a custom signal transmitting protocol, and should therefore be used together with an RF wireless receiving module, which needs to be purchased separately. Refer to the “Appendix 1: Product System Diagram” for more detailed information.
- The Master MCU, a BC68F2130, contains 2K of program memory. Another 4-key 433MHz RF remote controller, the BCR-68F2123-X01, can alternatively be used if a more cost effective solution is required. Using the BC68F2123 Master MCU, which contains 1K of memory, is more suitable for simpler functional requirements.

3 Functional Description

1. The product operating frequency is 433.92MHz.
2. The key de-bounce time is 40ms.
3. The corresponding data packet will be transmitted more than twice each time a key press is acknowledged.
4. The LED will be illuminated during data transmitting, an indication which can be used to check the product operation status.
5. A PCB antenna is used thus eliminating the need for an external antenna.
6. This product can be matched to several modules of the same type It can therefore control multiple modules at the same time when the keys are pressed.
7. The module Master MCU, the BC68F2130, includes integrated programs, eliminating the need for user programming.
8. Refer to the “Appendix 2: HT OOK demo board package format” for the RF transmitting package contents.

4 Insert Battery

Insert a CR2032 battery. Note that the MCU will enter the power down mode if there are no operations.



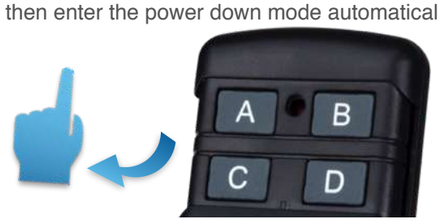
5 Check the corresponding signals

Press any key to transmit the corresponding signal, the LED indicator will be illuminated simultaneously.

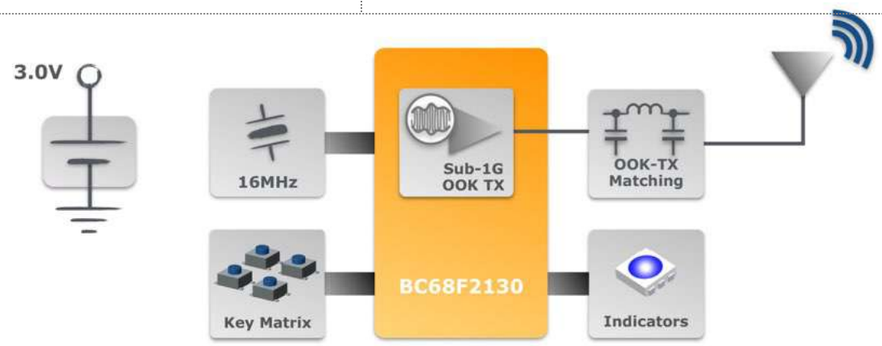
Note: The key should be pressed and held for at least 40ms to avoid the system ignoring any key press actions.

6 Power Down Mode

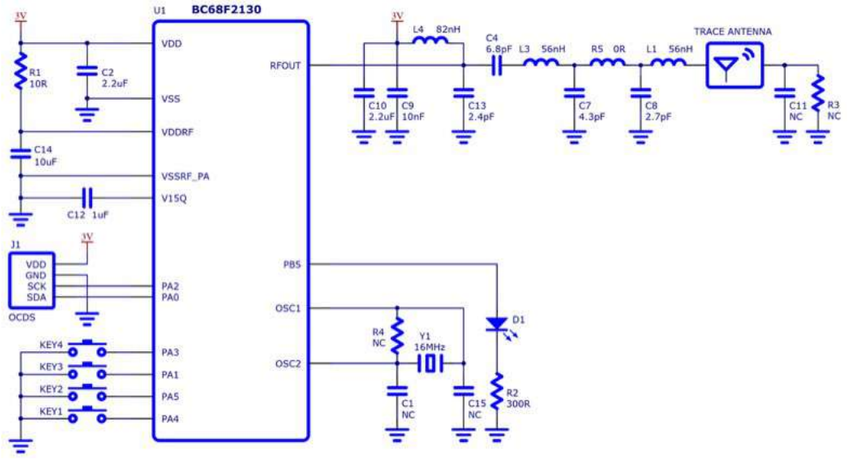
The signal transmission will stop and the LED indicator will be off after the key is released. The product will then enter the power down mode automatically.



7 Block Diagram



8 Circuit Schematic



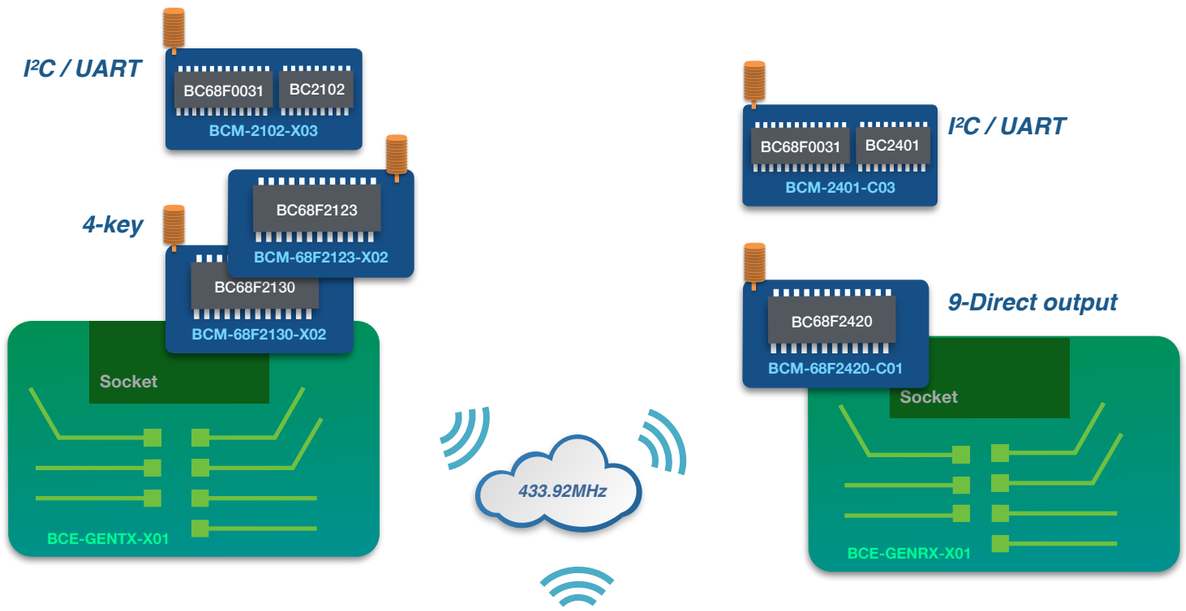
9 Easy Trouble Shooting

1. If the LED remains off when a key is pressed, users should check the battery condition.
2. If problems are unable to be resolved using the above methods, consult the “Technical Support” on the Best Module Official Website.

10 Specification

- Size (L × W × H): 58 × 36 × 15 (mm)
- Weight: 14.8 grams, without battery
- Operating voltage: 2.2V~3.6V
- RF frequency: 433.92 MHz
- Transmitting power: 10dBm (10mW)
- Operating temperature: -40 °C ~ +85°C

11 Appendix 1: Product System Diagram



This product uses a custom signal transmitting protocol, and should therefor be used together with the corresponding 433MHz RF receiving module, namely the BCM-68F2420-C01/ BCM-2401-C03.

Hyper link BC68F0031 | BC68F2123 | BC68F2130 | BC68F2420 | BC2401 | BC2102

12 Appendix 2: HT OOK demo board package format

The “code word” is a group of code bits used in OOK wireless communication.

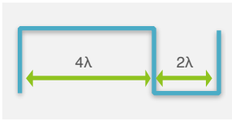
This document describes the code word format used in HT OOK demo boards.

A code word consists of leading code, start code, address, data, CRC and end code. Each fields are composed with several symbols. The symbol rate is set as 5Kbps. Each symbol (λ) in table below is 200us.

A. Leading Code + Start code

Leading code: Repeating 1λ high and 1λ low for 8 times.

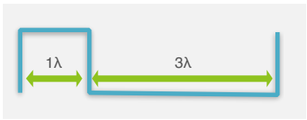
Start code: 4λ high + 2λ low



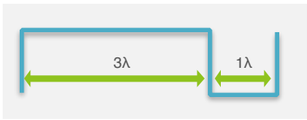
B. Address, data & CRC

Each bit is composed with 4 symbols. The format for bit “0” and “1” are shown below:

Bit “0” → 1λ high + 3 λ low



Bit “1” : 3λ high + 1λ low



For TX demo boards / remote controllers, their addresses are pre-programmed in the MCU program ROM. Users do not need to specify the address.

For RX demo boards, they have to be paired with a TX first before being used. The paring process allows the RX recognize the TX and memorize TX’s address in its non-volatile memory.

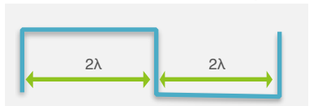
CRC=X^8+X^5+X^4+1 ,

Below shows the data when K1~K4 is pressed down

	D7	D6	D5	D4	D3	D2	D1	D0
K1	0	0	0	0	0	0	0	1
K2	0	0	0	0	0	0	1	0
K3	0	0	0	0	0	1	0	0
K4	0	0	0	0	1	0	0	0

C. End code: 2λ high + 2λ low

End code is used to separate the sequent two code words.



The code word format is like:

	Leading	Start	Address	Data	CRC	END
length	16λ	6λ	4λ/bit*24bit	4λ/bit*8bit	4λ/bit x 8bit	4λ

The total length for a code word is 200us x (16+6+96+32+32+4) = 37.2ms