

2.4 GHz band wireless remote controller NT-4, NR-4 Product release information

**CIRCUIT DESIGN, INC.** 株式会社 サーキットデザイン

# 2.4GHz band

## Wireless remote controller

Next-generation “EASY”

- 2.4 GHz band wireless remote controller

The NT-4 / NR-4 is a telecontrol product from Circuit Design based on a new concept.

Using frequency hopping technology, it alleviates radio interference and communication difficulties due to obstacles, enabling the operation of multiple units in the same area without worrying about managing channels. It operates in the 2.4 GHz ISM band available worldwide.

The NT-4 remote controller has a function for displaying the status of the link so that you can be sure that communication is taking place as expected.

As the first in the series of these 2.4 GHz band wireless remote controllers, Circuit Design plans to release a 4-button compact remote controller and output unit. Stay tuned!

The communication type is 1:1. 1:N communication is not possible.

The product available in this release is a sample product.

The features and specifications of the final product may differ.

 Uses the 2.4 GHz band ISM band.  
The system has approved for Technical Standard Conformity Certification in Japan.

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The NT-4 remote controller and NR-4 output unit form a wireless remote controller for the 2.4 GHz band. It can be used not only in Japan, but also in countries around the world. (Certification is required for each country in advance)

This radio equipment uses 2,403 to 2,480 MHz frequency radio waves and conforms to the Japanese radio standard ARIB STD-T66 "Second Generation Low Power Data Communication System". It has received Technical Standard Conformity Certification so that you do not need to apply for a license to use the equipment.

### Remote controller and output unit





**You can use several units within the same area without having to worry about frequency channels thanks to FHSS.**

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Using frequency hopping (FHSS) reduces communication problems due to interference from other radio equipment using the 2.4 GHz band.

Since frequency hopping avoids conflicts with other radio equipment, you can use several units within the same area without having to worry about frequency channels.

The NT-4 and NR-4 communicate by hopping between 20 frequency channels within 2,403 and 2,480 MHz. Communication is established if data is received once on any of the 20 channels used.



**Output operation using continuous transmission and selection of the output control mode of the receiver unit are possible.**

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315 MHz and 426 MHz band specific low power telecontrol products are subject to transmission time limits (duty cycle) by the provisions of the Radio Act in Japan, but the NT-4 and NR-4 use the 2.4 GHz band enabling continuous transmission.

The output unit can output continuously without time limit while the remote controller button is depressed, making it suitable for various applications.

In addition to continuous output, you can set the output control mode of the NR-4 to one-shot, toggle, or switching modes according to the application.◦



**Safe, because you can check the communication status**

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Two-way communication takes place between the remote controller and receiver unit for monitoring the communication link status within the equipment. You can check the LED display on the remote controller in your hand to see if you have adequate communication range and conditions for stable use, to ensure reliable and secure communication.

## Battery life is one year with a single CR2032 battery

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The NT-4 has low current consumption of 4 mA (average) and it can be used for about one year with a single CR2032 button battery. \* When used 20 times per day, with continuous transmission for 20 seconds at a time

## 100 m line-of-sight communication range

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The usable communication range of the NT-4 and NR-4 is 100 m, line-of-sight. However, the communication distance may be affected by the environment, such as other wireless devices and ambient noise.

The 2.4 GHz remote controller is suited for applications that require reliable, high-quality communication at close range.

## Product specifications

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Shared specifications		
Item	Specification	Remark
Applicable standards	ARIB STD-T66	Received Technical Standard Conformity Certification
Frequency Band	2,403 to 2,480 MHz	
Transmission system	Frequency hopping (FHSS)	
Transmitted power	1 mW	Spreading bandwidth 74 MHz
Bit rate	250 Kbps	
Communication method	One-way communication	Intermittent communication every 5 ms
Communication type	1:1 (Remote controller : receiver unit)	1:N or N:1 is not possible

Button operation response time	6 to 16 ms	Average 10 ms
Communication range	100 m	Reference for Line of sight

#### NT-4 (Remote controller)

Item	Specification	Remark
Battery	Lithium battery CR2032 x 1 pc	DC 3 V
Battery life guideline	1 year with 20 operations per day	20 seconds of continuous transmission per operation
Current consumption	4 mA (average)	
Number of buttons	4	
Antenna	Built-in antenna	
External dimensions	76 x 31 x 13 mm	Not including projecting parts

#### NR-4 (Output unit)

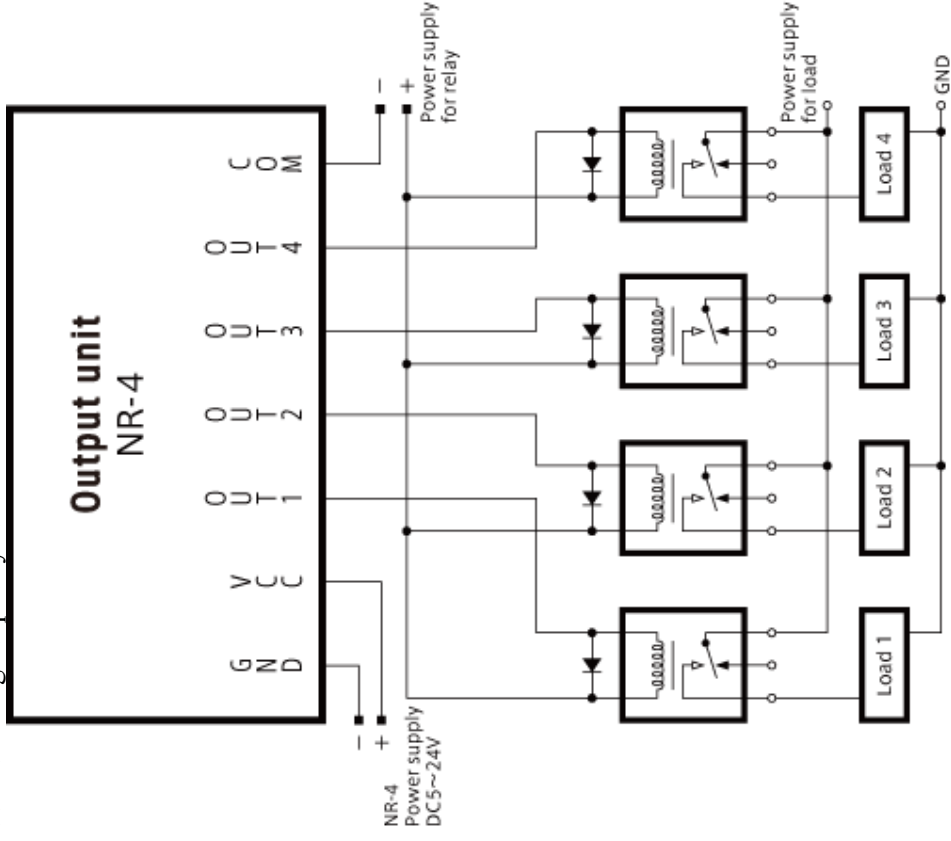
Item	Specification	Remark
Operating voltage	DC 5 to 24 V	Absolute maximum rating: DC 35 V
Current consumption	Max. 16 mA	When standing by
Output & rating	Photo MOSFET (4 output lines) DC 24 V / 220 mA (Max)	
Output control modes	One-shot, toggle, switching, continuous	Four control modes set using the mode switch
Antenna connector	Reverse SMA connector	Male
Antenna	2.4 GHz band non-directional antenna	Antenna length 87 mm, Reverse SMA connector (female), adjustable angle
External dimensions	40 x 55 x 13 mm	Not including projecting parts

\* These specifications may change without prior notice for the purpose of improvements.

\* If you use an antenna other than the antenna supplied, the unit may no longer comply with the regulations.

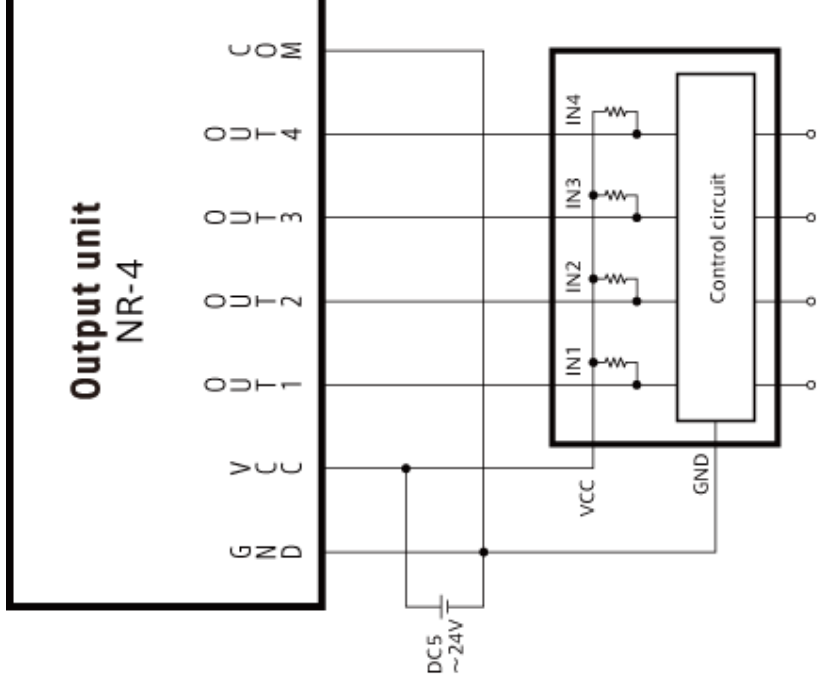
### Connection example 1

To achieve isolation, an external control power supply can be used to control a large capacity load



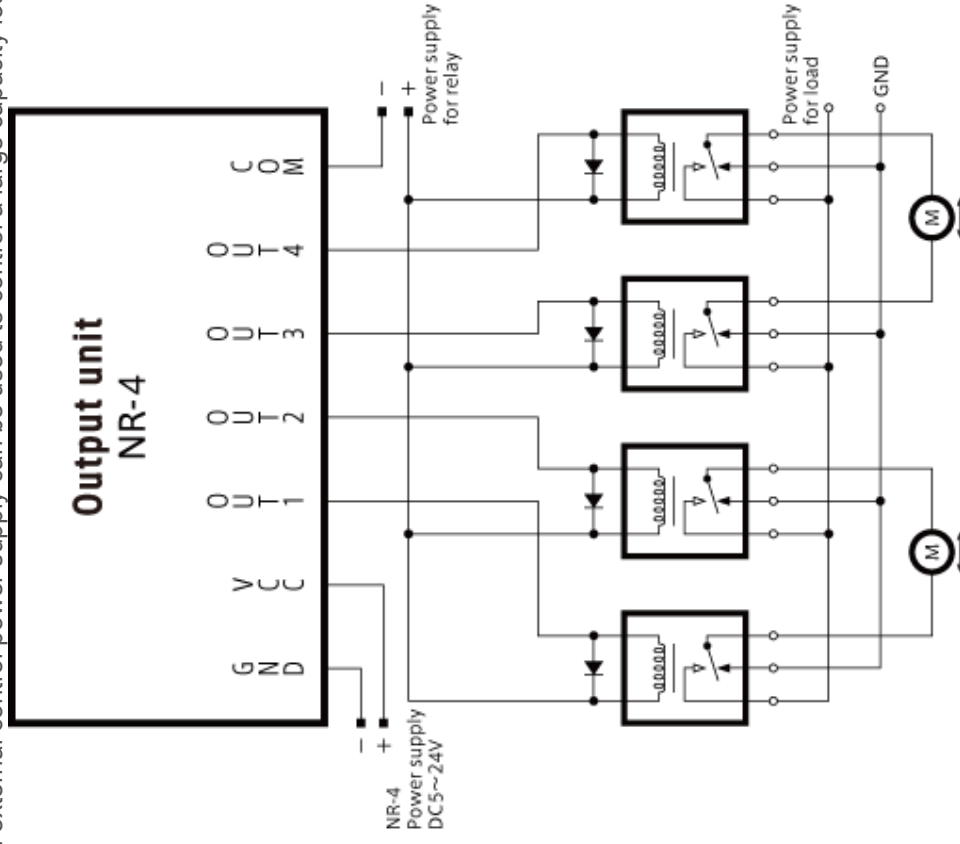
### Connection example 2

Share the power supply to control a relatively low capacity load. Isolation is not achieved in this case



### Connection example 3

To achieve isolation, an external control power supply can be used to control a large capacity load such as a motor

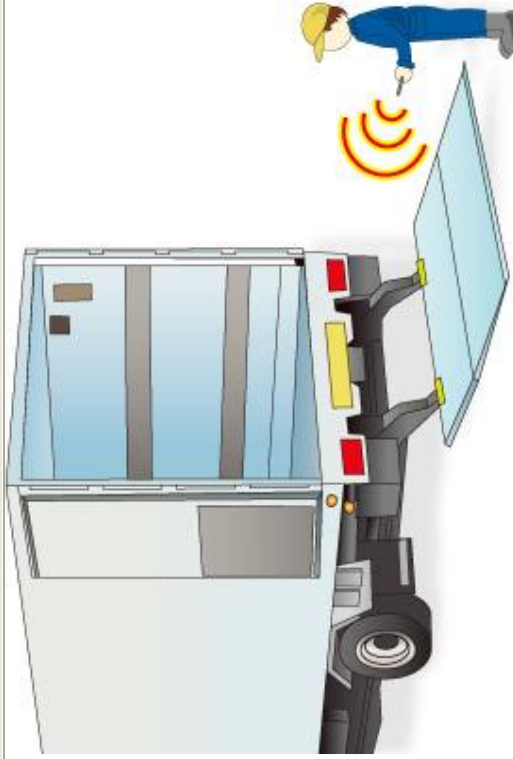


### Application example 1

#### Truck rear gate

The electric rear gate of a truck can be operated remotely. Ideal for telecontrol of vehicle mounted equipment thanks to noise-resistant SS wireless.

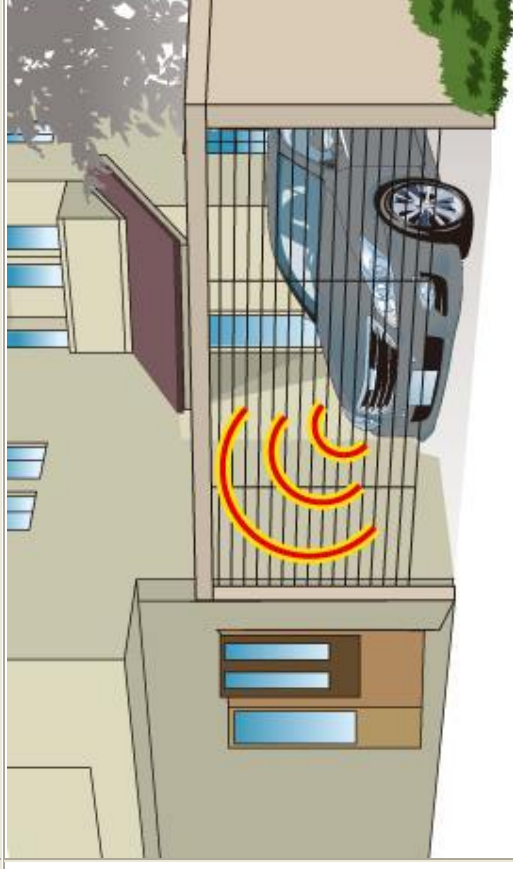
Multiple systems can be used simultaneously in locations such as distribution depots



### Application example 2

#### Garage opener

Open and close the electric shutter of a garage without getting out of the car. The remote controller is compact and easy to hold. Simple for anyone to operate.



### Application example 3

#### Assistive vehicle

Remotely operate the electric wheelchair lift of an assistive vehicle while handling the wheelchair. Long battery life is important for portable systems.

### Application example 4

#### Indoor lighting and curtains

Switch indoor lighting on and off, and open and shut curtains remotely. The wireless remote controller offers four communication contacts (input and output) so you can control up to four operations.



