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**Wireless IR Blaster**

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# **Wireless IR Blaster User Manual**

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## 1. Introduction

R211 is a long-distance infrared learning device based on the LoRaWAN open protocol (Class C).

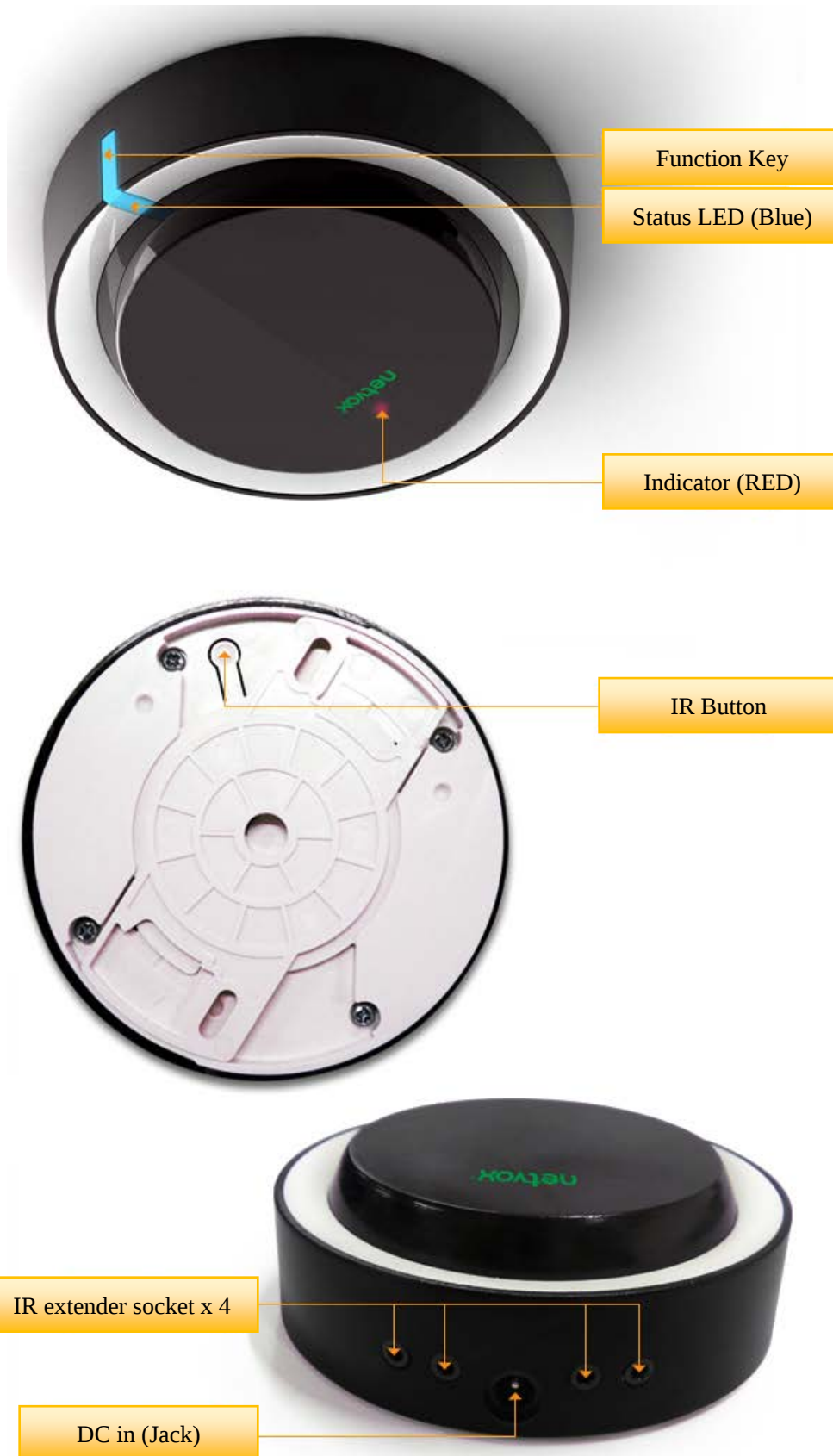
### **LoRa Wireless Technology:**

LoRa is a wireless communication technology dedicated to long distance and low power consumption. Compared with other communication methods, LoRa spread spectrum modulation method greatly increases to expand the communication distance. Widely used in long-distance, low-data wireless communications. For example, automatic meter reading, building automation equipment, wireless security systems, industrial monitoring. Main features include small size, low power consumption, transmission distance, anti-interference ability and so on.

### **LoRaWAN:**

LoRaWAN uses LoRa technology to define end-to-end standard specifications to ensure interoperability between devices and gateways from different manufacturers.

## 2. Appearance



### 3. Main Features

- Compatible with LoRaWAN Class C
- DC 12V power supply
- Infrared frequency 38KHz
- Infrared learning and emission
- Simple operation and setting

### 4. Set up Instruction

#### On/Off

|           |                                                                                                                                                                                                                                                   |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power on  | Plug in DC 12V Adapter                                                                                                                                                                                                                            |
| Turn ON   | Blue and Red LED flash at the same time after power-on means turn on successfully                                                                                                                                                                 |
| Power off | Remove Adapter.                                                                                                                                                                                                                                   |
| Note:     | 1. On/off interval is suggested to be about 10 seconds to avoid the interference of capacitor inductance and other energy storage components.<br>2. Press function key and plug in adapter at the same time; it will enter engineer testing mode. |

#### Network Joining

|                                                     |                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Never joined the network                            | Power on the device to search the network<br>RED Indicator stays on: success<br>RED Indicator remains off: fail                                                                                                                                                        |
| Had joined the network<br>(Never reset to default)  | Power on the device to search the previous network.<br>RED Indicator stays on: success<br>RED Indicator remains off: fail                                                                                                                                              |
| Fail to join the network<br>(When the device is on) | First two minutes: Wake up every 15 seconds to send join-request.<br>After two minutes: enter sleeping mode and wake up every 15 minutes to send join-request.<br>Note:<br>Suggest checking device verification on gateway or consult with your NS provider if failed. |

#### Button Function

|                                               |                                                                                                                                             |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Press and hold the function key for 5 seconds | Function : Reset to factory default<br>RED Indicator flashes for 20 times.<br>Reset to factory default is failed if RED LED does not flash. |
| Press function key once                       | Joined the network: Sends an uplink version packet.<br>Not joined the network: No response                                                  |

## 5. Data Report

The device will immediately send a version packet when joined the network  
The device sends heartbeat according to default report interval.

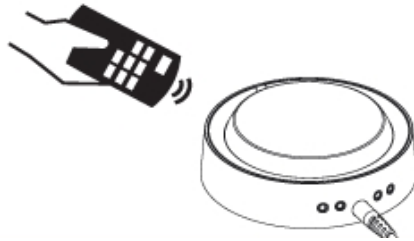
## 6. Control

### 6-1 Device Learning Command

Sending learning commands from gateway to turn on learning mode.

After device's BLUE LED is on, press remote controller's button and point it to device to learn IR command.

BLUE LED is off after learning completed and sends the message back to gateway.



Note:

IR saving storage is full if return status is '02', and needs to erase IR command to continue learning.

### 6-2 IR Command Execution

#### IR execution method 1.

This method needs to have complete IR codes (IR data) response when learning.

#### IR execution method 2.

This method uses Actual IRIndex response command to edit IR command execution and do not need to have complete IR codes (IRdata) .

## 6-3 Control Command

FPort: 0x21

### 6-3-1 IR Learning

#### NEW IR learn request(IR)

| Bytes | 1        | 2        |
|-------|----------|----------|
|       | Cmd=0x49 | IR Index |

IR Index - 2 bytes - Index of IR Command

#### NEW IR learn Confirm response(IR)

| Bytes | 1        | 2                 | 1                    | 1          | 1        | Var(Max=32) |
|-------|----------|-------------------|----------------------|------------|----------|-------------|
|       | Cmd=0x4A | Actual<br>IRIndex | Data Index<br>number | Data Index | Data len | Data        |

Actual IRIndex - 2 byte - Index of IR Command Assigned by device

Data index number - byte - IR array have all piece number.

Data Index - byte - Index of IR Data array.

Data len - byte - length of IR array.

Data – var bytes - IR data. (MAX=32bytes)

Ex.

If remote controller's original IR code is 6FA652000040A00000000000000001D9

Downlink: 490001

Uplink returns: 4A000001000F6FA652000040A00000000000000001D9

0x4A= Cmd

0x0000= Actual IRIndex

0x01= Data Index number

0x00= Data Index

0x0F= Data len, means Data's length have 15 bytes

0x6FA652000040A00000000000000001D9= Data

0F (Hex) =15( Dec)

(Each infrared device is difference.)

## 6-3-2 Operating IR Remote Controller

Below command is use complete infrared code to control remote controller

### AIR IR Apply request

|       |          |                      |            |          |             |
|-------|----------|----------------------|------------|----------|-------------|
| Bytes | 1        | 1                    | 1          | 1        | Var(Max=32) |
|       | Cmd=0x07 | Data Index<br>number | Data Index | Data len | Data        |

Data index number - byte - IR array have all piece number.

Data Index - byte - Index of IR Data.

Data len - byte - length of IR array.

Data - var bytes - IR array data.(MAX=32bytes).

### AIR IR Apply Confirm response

|       |          |        |            |
|-------|----------|--------|------------|
| Bytes | 1        | 1      | 1          |
|       | Cmd=0x08 | Status | Data Index |

Status - byte - This field shall be set to SUCCESS (0x00) or FAILURE (non-zero)

Data Index - byte - Index of IR Data.

Ex.

According to the previous example, we got NEW IR learn Confirm response is

4A000001000F6FA652000040A0000000000000001D9

Downlink: 0701000F6FA652000040A000000000000001D9

Uplink returns:

080000 succeed

080100 failed

Below command is use Actual IR Index to control remote controller

#### **AIR IR Apply With IR Index request**

| Bytes | 1        | 2              |
|-------|----------|----------------|
|       | Cmd=0x32 | Actual IRIndex |

Actual IRIndex - 2 byte - Index of IR Command Assigned by device  
(Should use IRIndex return By NEW IR learn Confirm response(IR))

#### **AIR IR ApplyWithIRIndex Confirm response**

| Bytes | 1        | 1      |
|-------|----------|--------|
|       | Cmd=0x33 | Status |

Status - byte - This field shall be set to SUCCESS (0x00) or FAILURE (non-zero)

Ex.

According to the previous example ,We got NEW IR learn Confirm response is

4A000001000F6FA652000040A000000000000001D9

Downlink: 320000

Uplink returns:

3300 succeed

3301 failed

### 6-3-3 Erase IR Code

#### Erase IR request

|       |          |              |
|-------|----------|--------------|
| Bytes | 1        | 4            |
|       | Cmd=0x0D | Magic number |

Magic number - 4bytes – fixed to 0x05717188.

#### Erase IR Confirm response

|       |          |        |
|-------|----------|--------|
| Bytes | 1        | 1      |
|       | Cmd=0x0E | Status |

Status - byte - This field shall be set to SUCCESS (0x00) or FAILURE (non-zero)

Ex.

Downlink: 0D05717188

Uplink returns:

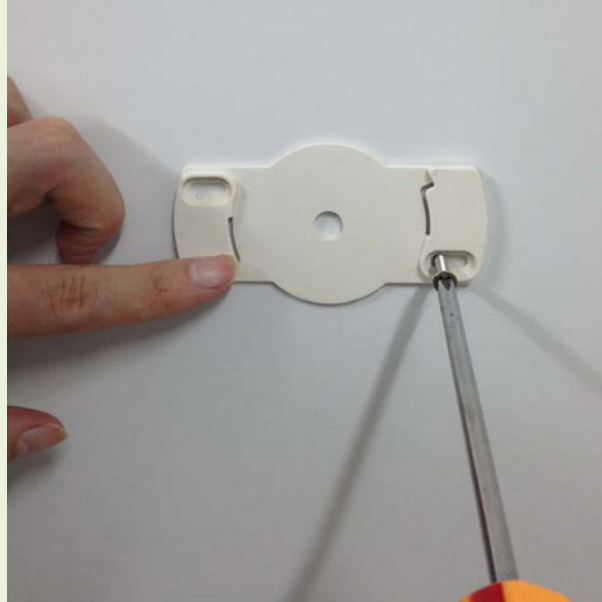
0E00 succeed

0E01 failed

Note: Erase IR Code means **ALL** IR code was cleared.

## 7. Installation

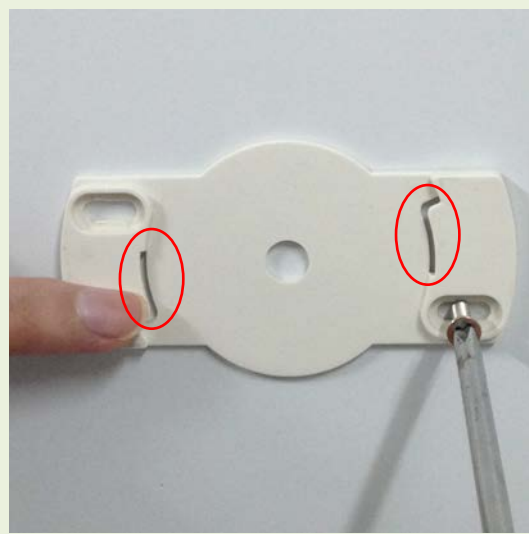
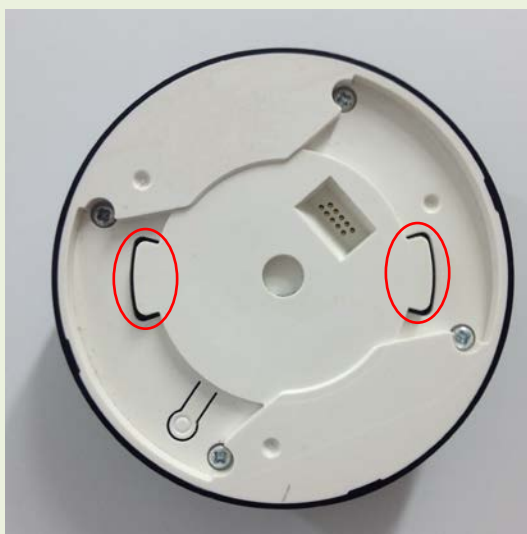
1. Please fix the base of R211 and mount to the wall or ceiling with screws, as shown below



Note:

1. Not attached screws will come along with the device
2. Make sure not to have the device installed in a metal shielded box nor have other electrical equipment around it to avoid disturbance from them to the device wireless transmission.

2. Have the inserting part clicked to the base. (Red circled parts) then switch 15 degrees clockwise.



3. Plug the attached adapter jack output connector to the R211 power-in port (DC 12V) refer to picture, and have the other side plugged to the standard socket (AC 220V) in order to power the R211.



4. The device is compatible with LoRaWAN open protocol class C which enables it to transmit infrared command upon receipt of the downlink command. The device also supports remote controller functions.

R211 use case as below:

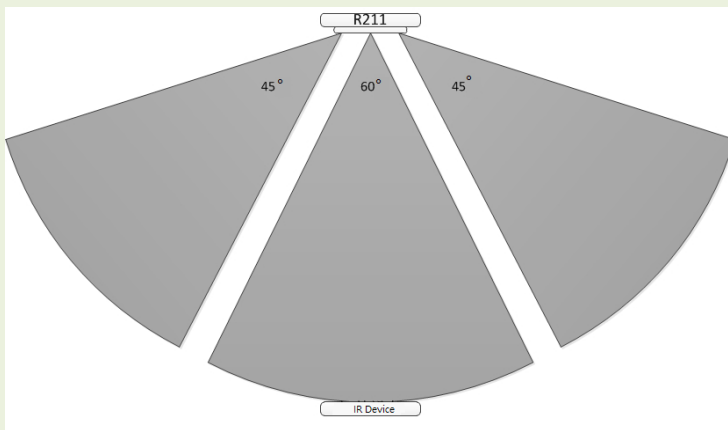
- Classroom
- Conference room
- Audio room
- Smart home
- Any infrared device

Note:

1. R211 infrared effective transmitting range being 30 meters, so please have all the devices to be controlled by it being within 30 meters from R211. Spreading angel less than 150 degrees and no obstacle in between, refer to the gray area below.

\*It would be suggested to have the controlled objects placed within the center 60 degrees range.

2. The transmission can be extended via infrared transmitting range extender (cable)



## 8. Important Maintenance Instruction

Your device is a product of superior design and craftsmanship and should be used with care. The following suggestions will help you use the warranty service effectively.

- Keep the equipment dry. Rain, moisture, and various liquids or moisture may contain minerals that can corrode electronic circuits. In case the device is wet, please dry it completely.
- Do not use or store in dusty or dirty areas. This can damage its detachable parts and electronic components.
- Do not store in excessive heat. High temperatures can shorten the life of electronic devices, destroy batteries, and deform or melt some plastic parts.
- Do not store in a cold place. Otherwise, when the temperature rises to normal temperature, moisture will form inside, which will destroy the board.
- Do not throw, knock or shake the device. Rough handling of equipment can destroy internal circuit boards and delicate structures.
- Do not wash with strong chemicals, detergents or strong detergents.
- Do not apply with paint. Smudges can block debris in detachable parts and affect normal operation.
- Do not throw the battery into a fire to prevent the battery from exploding. Damaged batteries may also explode.

All of the above suggestions apply equally to your device, battery and accessories. If any device is not working properly.

Please take it to the nearest authorized service facility for repair.