

Wireless IR Blaster

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R211

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:	<p>1. On/off interval is suggested to be about 10 seconds to avoid the interference of capacitor inductance and other energy storage components.</p> <p>2. Press function key and plug in adapter at the same time; it will enter engineer testing mode.</p>

Network Joining

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

Button Function

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

5. Control

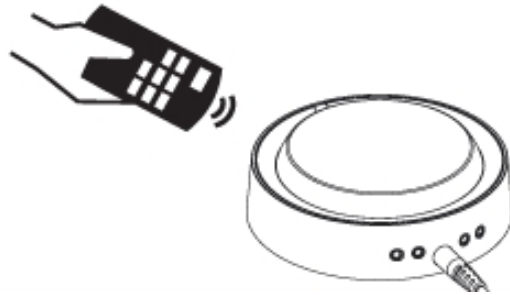
Infrared Learning

(1) 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.

(2) Blue LED is off after learning completed and sends the message back to gateway.

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



Send Commands via Complete IR Codes

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

Send Commands via the IR index (Supported after firmware 20200324)

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

6. Data Report

6.1 ReportDataCmd

The device will immediately send a version packet when it joins the network and will send heartbeat packets according to the default report interval.

The version packet and manual trigger button: Report type is 00, and the heartbeat packet is 80.

FPort: 0x06

Device	Device Type	Report Type	NetvoxPayLoadData			
R211	0F	0x00	SoftwareVersion (1Byte) Eg.0x0A—V1.0	HardwareVersion (1Byte)	DateCode (4Bytes, eg 0x20170503)	Reserved (2Bytes, fixed 0x00)
		0x80				

Example 1 of Uplink: 010F800A05202108130000 // Heartbeat

Example 2 of Uplink: 010F000A05202108130000 // Version packet or manual trigger

1st Byte (01): Version

2nd Byte (0F): DeviceType

3rd Byte (00/80): ReportType

4th Byte (0A): Software Version - V1.0

5th Byte (05): Hardware Version – V0.5

6th - 9th Byte (20210813): Date Code – 2021.08.13

10th –11th Byte (0000): Reserved

6.2 Infrared Learning

FPort: 0x21

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 IRIndex	Data Index 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)

Downlink: 490001

Uplink returns: 4A000001000F6FA652000040A0000000000000001D9

0x4A= Cmd

0x0000= Actual IRIndex

0x01= Data Index number

0x00= Data Index

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

0x6FA652000040A0000000000000001D9= Data // Each infrared device is difference.

6.3 Send Commands via Complete IR Codes

FPort: 0x21

AIR IR Apply request

Bytes	1	1	1	1	Var(Max=32)
	Cmd=0x07	Data Index 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.

Downlink: 0701000F6FA652000040A000000000000001D9

Uplink returns: 080000 succeed

080100 failed

6.4 Send Commands via IR Index (Supported after firmware 20200324)

FPort: 0x21

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)

Downlink: 320000

Uplink returns: 3300 succeed

3301 failed

6.5 Erase IR Codes

FPort: 0x21

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)

Downlink: 0D05717188

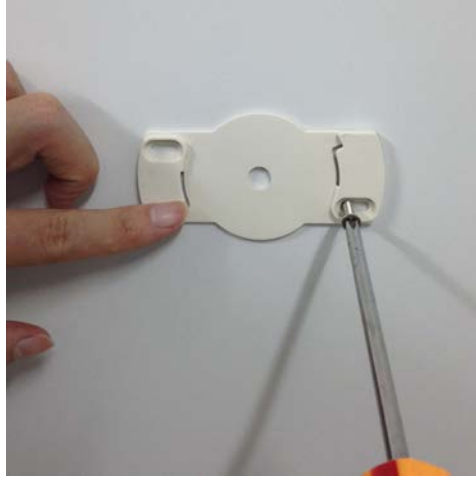
Uplink returns: 0E00 succeed

0E01 failed

Note: Erase IR Code means all IR code was cleared.

7. Installation

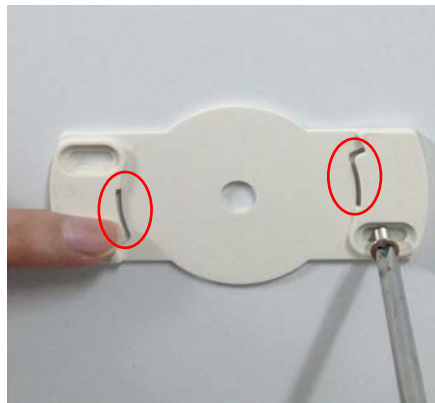
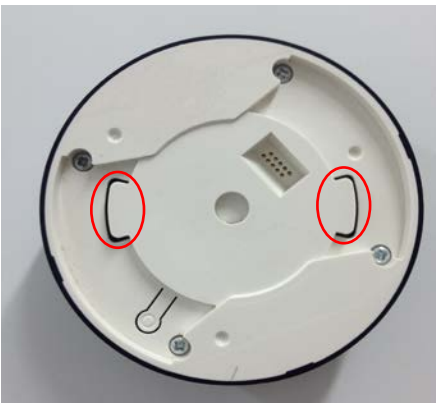
1. Please fix the base of R211 and mount to the wall or ceiling with screws, as shown below



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 output connector of the attached adapter jack into the R211 power-in port (DC 12V) as shown in the picture, and plug the other end into a standard socket to power the R211.

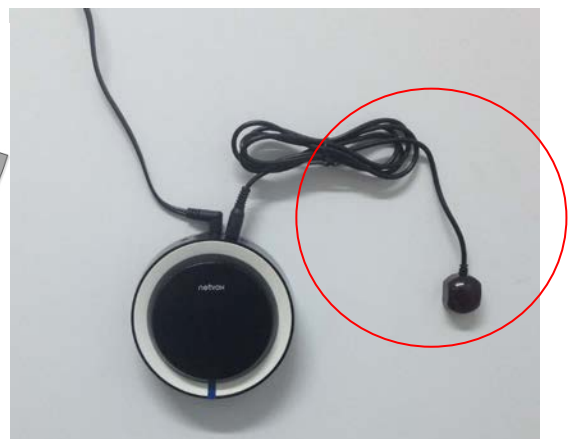
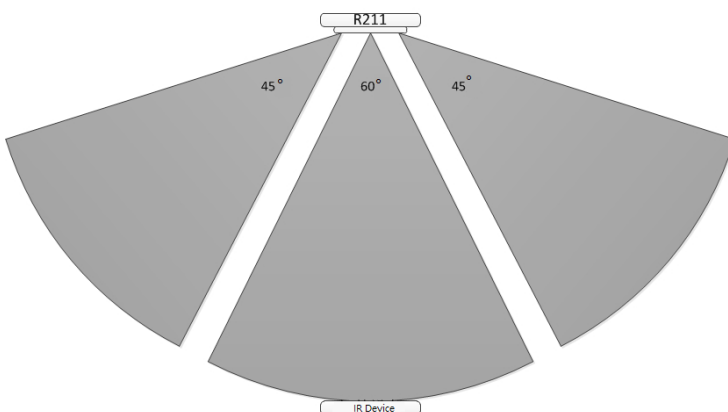
4. The device is compatible with LoRaWAN open protocol class C which enables it to transmit infrared command upon receipt of the downlink command. The device also supports remote controller functions.

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.
2. It would be suggested to have the controlled objects placed within the center 60 degrees range.
3. The transmission can be extended via infrared transmitting range extender (cable)



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.