

Wireless Customized Voice Announcer

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R603 User Manual

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1. Introduction

R603 is a wireless customized voice announcer. With 10 default alarm sounds (emergency/doorbell/burglar alarm...) and programmable RGB LED light, R603 makes every application as special as customized. In addition to its highly customized features, its backup battery supports non-stop operation when the main power source fails. R603 not only helps you build a more comprehensive alarm system but also gives you more options for every application.

LoRa Wireless Technology

LoRa is a wireless communication technology famous for its long-distance transmission and low power consumption. Compared with other communication methods, LoRa spread spectrum modulation technique greatly extends the communication distance. It can be widely used in any use case that requires long-distance and low-data wireless communications. For example, automatic meter reading, building automation equipment, wireless security systems, and industrial monitoring. It has features like small size, low power consumption, long transmission distance, strong 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



▲ Front





▲ Back



2. Features

- DC12V power supply
- 3* AAA 1.2V Ni-MH batteries as backup power
- Simple installation and setting
- IP30
- 10 default alarm sounds
- Customizable setting of volume and light
- Compatible with LoRaWANTM Class C
- Frequency hopping spread spectrum
- Configuration parameters can be configured through third-party software platforms, data can be read and alarms can be set via SMS text and email (optional)

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• Applicable to third-party platforms: Actility/ThingPark, TTN, MyDevices/Cayenne

3. Setup Instructions

On/Off

	Plug in the power adapter or insert three 1.2V nickel metal hydride batteries.
Turn on	Note: a. The device is powered by DC12V even when the batteries are in. b. The white indicator flashes once when R603 is successfully powered on.

Network Joining

Never joined the network	Turn on the device to search the network. The network indicator stays on: Success The network indicator remains off: Fail
Had joined the network (without factory resetting)	Turn on the device to search the network.The network indicator stays on: SuccessThe network indicator remains off: Fail
Fail to join the network	 First 2 minutes: send join request every 15 seconds After 2 minutes: send join request every 30 minutes Note: Please check the device verification information on the gateway or consult your platform service provider.

Function Key

Press and hold for 5 seconds	<u>Factory reset</u> The network indicator flashes for 20 times: Success The network indicator remains off: Fail
Short press	Report data In the network: the network indicator flashes once and reports an uplink command. Not in the network: N/A

Remotely Control

	Control R603 alarm and light through AppServer					
	10 types of alarm sounds:					
	a. 001.mp3: Emergency	f. 006.mp3: No smoking				
	b. 002.mp3: Doorbell	g. 007.mp3: Poor air quality				
	c. 003.mp3: Burglar	h. 008.mp3: The temperature is too high				
	d. 004.mp3: Water leaking	i. 009.mp3: Thief				
	e. 005.mp3: Help	j. 010.mp3: Welcome				
Alarm Sounds and Lights						



Backup Battery

	1. Backup batteries automatically provide power when DC power is unavailable. Powered by
	batteries, R603 operates 24 hours with no alarm triggered, whereas it works only 1.5 hours
	with alarms reported.
	2. When the main power source, DC 12V, is available, backup batteries stop powering R603.
	3. R603 only supports AAA 1.2V Ni-MH battery as backup power. Installing wrong batteries
Working Principle	could cause an explosion.
	4. With DC power connected, backup batteries start charging when they drop to low voltage (3.6V
	-3.1V). The network indicator flashes once every 5 seconds until the batteries are fully
	charged.
	5. If R603 is powered by dying batteries without the support of DC power, distorted sounds made
	by batteries could occur. Please reconnect the DC power and charge the batteries as soon as
	possible.

4. Data Report

After being powered on, the device will immediately send a version packet and report the status. The device sends data according to the default configuration before any other configuration.

Default Setting:

Min Interval: 0x0E10 (3600s)

Max Interval: 0x0E10 (3600s)

LED color: Blue ($0x00 \ 0x00 \ 0xFF$) (change the LED color through command by setting 0x00 - 0xFF)

WarningStatus: 0x00_No Warning (reports when the audio ends);

0x01_Warning (reports when the audio starts)

SirenNo:

0x00_Emergency	0x05_No smoking
0x01_DoorBell	0x06_Poor air quality
0x02_Burglar	0x07_The temperature is too high
0x03_Water leaking	0x08_Thief
0x04_Help	0x09_Welcome

StrobeMode:

 $0x00_N/A$ (NoLedIndication)

0x01_Flowing (LedBlinkMode1 in Parallel to Warning) 0x02_Blinking (LedBlinkMode2 in Parallel to Warning)

Note:

a. Min Interval and Max Interval could be customized.

b. The above data is decoded based on the Netvox LoRaWAN Application Command document and

http://www.netvox.com.cn:8888/cmddoc.

Data report configuration and sending period are as follows:

Min Interval (unit: second)	Max Interval (unit: second)
Any number between 1–65535	Any number between 1–65535

4.1 Example of ReportDataCmd

FPort: 0x06

Bytes	1	1	1	Var (Fix = 9 bytes)				
	CmdID DeviceType Repo		ReportType	NetvoxPayLoadData				

CmdID–1 byte

DeviceType-1 byte – Device Type of Device

ReportType – 1 byte – the presentation of the NetvoxPayLoadData, according to the devicetype

NetvoxPayLoadData- var bytes (Max = 9 bytes)

Tips

1. Battery Voltage:

a. If the battery is equal to 0x00, it means that the device is powered by a DC power supply

b. Powered by backup battery:

The voltage value is bit 0 - bit 6, bit 7=0 is normal voltage, and bit 7=1 is low voltage.

Battery=0xA0, binary= 1001 1111, if bit 7= 1, it means low voltage.

The actual voltage is $0001 \ 1111 = 0x1F = 31, \ 31*0.1v = 3.1v.$

2. Version Packet:

When Report Type = 0x00 is the version packet, such as $01DE\underline{00}0A01\underline{20240513}0000$, the firmware version is 2024.05.13.

3. Data Packet:

When Report Type=0x01 is the data packet.

Device	Device Type	Report Type	NetvoxPayLoadData					
R603	0xDE	0x01	Battery (1 byte, unit:0.1V)	WarningStatus (1 byte, 0x00_NoWarnring, 0x01_Warning)	Reserved (5 bytes, fixed 0x00)			

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Example of Uplink1: 01DE01260101000000000

1st byte (01): Version

2nd byte (DE): DeviceType 0xDE-R603

3rd byte (01): ReportType

4th byte (26): Battery -3.8V 26 (HEX) = 38 (DEC), 38*0.1V = 3.8V

5th byte (01): WarningStatus — Warning

 6^{th} –11th byte (00000000000): Reserved

Example of Uplink2: 01DE010000000000000000

1st byte (01): Version

2nd byte (DE): DeviceType 0xDE-R603

3rd byte (01): ReportType

4th byte (00): Battery — 0V

(R603 is powered by DC with no backup batteries in the case.)

5th byte (00): WarningStatus — NoWarning

6th byte (00): ContactSwitchStatus — Off

7th –11th byte (000000000): Reserved

4.2 Example of Report Configuration

FPort: 0x07

Bytes	1	1	Var (Fix = 9 bytes)
	CmdID	DeviceType	NetvoxPayLoadData

CmdID–1 byte

DeviceType-1 byte – Device Type of Device

NetvoxPayLoadData- var bytes (Max = 9 bytes)

Description	Device	Cmd ID	Device Type	NetvoxPayLoadData						
ConfigReport Req		0x01		MinTimeMaxTime(2 bytes, Unit: s)(2 bytes, Unit: s)(5 by				Reserved bytes, Fixed 0x00)		
ConfigReport Rsp		0x81		Status (0x00_success)	Reserved (8 bytes, Fixed 0x00)					
ReadConfigR eportReq		0x02			Reserved (9 bytes, Fixed 0x00)					
ReadConfigR eportRsp		0x82		MinTime (2 bytes, Unit: s)	MaxTime Reserved (2 bytes, Unit: s) (5 bytes, Fixed 0x00)					
StartSirenReq	R603	0x03	0xDE	SirenNo (1 byte) (0x00_0x09, Others_Reserved)	SirenLevel (0-30, 1 byte)	StrobeMode (1 byte)irenLevel(0x00_NoLedIndication(0-30,0x01_LedBlinkMode1in Parallel to Warning0x02_ LedBlinkMode2in Parallel to Warning)0x02_ ledBlinkMode2		Duration (2 bytes, Unit: 1s)	Rese (4 b Fixed	erved ytes, 0x00)
SetPeriodSire nReq		0x04		SirenNo (1 byte) (0x00_0x09, Others_Reserved)	SirenLevel (0-30, 1 Byte)	StrobeMode (1 byte) (0x00_NoLedIndication 0x01_LedBlinkMode1 in Parallel to Warning 0x02_LedBlinkMode2 in Parallel to Warning)		Duration (2 bytes, Unit: 1s)	Period Time (2 bytes, Unit: 1s)	Reserved (2 bytes, Fixed 0x00)

SetPeriodSire nRsp	0x84	Status (0x00_success)	Reserved (8 bytes, Fixed 0x00)
GetPeriodSire nReq	0x05		Reserved (9 bytes, Fixed 0x00)

GetPeriodSire nRsp	0x85	SirenNo (1 byte) (0x00_0x0 Others_Reser	enNo oyte) 0_0x09, Reserved) SirenLevel (0-30, 1 byte)		Strobe (0x00_N 0x01_I in Para 0x02_1 in Paral	Mode (1 byte) NoLedIndication LedBlinkMode1 Illel to Warning LedBlinkMode2 Ilel to Warning}	Duration (2 bytes, Unit: 1s)	Period Time (2 bytes, Unit: 1s)	Reserved (2 bytes, Fixed 0x00)		
StopPeriodSir enReq	0x06		Reserved (9 bytes, Fixed 0x00)								
StopPeriodSir enRsp	0x86	Status (0x00_succ	Reserved (8 bytes, Fixed 0x00)								
SetLEDColor Req	0x07	Red (1 byte)	G (1	reen byte)	H (1	Blue byte)	(6	Reserv 5 bytes, Fixe	ed ed 0x00)		
SetLEDColor Rsp	0x87	Status (0x00_succ	ess)			Reserved (8 bytes, Fixed 0x00)					
GetLEDColor Req	0x08	Reserved (9 bytes, Fixed 0x00)									
GetLEDColor Req	0x88	Red (1 byte)	G (1	reen Byte)] (1	Blue byte)	Reserved (6 bytes, Fixed 0x00)		ed ed 0x00)		

Note: a. MinTime = MaxTime; b.SirenLevel = 0x00 (mute); 0x1E (max volume level)

MinTime = 0x003C (1min), MaxTime = 0x003C (1min)

(1) ConfigReportReq

Downlink: 01DE003C003C000000000

81DE01000000000000000000 (configuration fail)

ConfigReportRsp

Response: 82DE003C003C0100C80000 (current parameter)

```
Execute the command and report WarningStatus = 0x01.
```

WarningStatus = 0x00 is sent after the alarm stops.

Set Emergency alarm

SirenNo = 0x00 (Emergency); SirenLevel = 0x0F (15); StrobeMode = 0x01 (Flowing); Duration = 0x000A (10s)

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Downlink: 03DE000F01000A0000000

Set Doorbell

SirenNo = 0x01 (Doorbell); SirenLevel = 0x1E (30); StrobeMode = 0x02 (Blinking); Duration = 0x001E (30s)

Downlink: 03DE011E02001E0000000

Set Doorbell

SirenNo = 0x01 (Doorbell); SirenLevel = 0x1E (30); StrobeMode = 0x00 (N/A); Duration = 0x001E (30s)

Downlink: 03DE011E00001E00000000

Set Doorbell

SirenNo = 0x01 (Doorbell); SirenLevel = 0 (0x00); StrobeMode = 0x02 (Blinking); Duration = 0x001E (30s)

Downlink: 03DE010002001E00000000

(3) SetPeriodSirenReq

Executed command 30 seconds after it is sent.

WarningStatus = 0x01 is sent before an audio alert starts; WarningStatus = 0x00 is sent after the alarm stops.

Set SirenNo = 0x00 (Emergency); SirenLevel = 0x0F (15); StrobeMode = 0x01 (Flowing); Period = 0x0258 (10 minutes)

Downlink: 04DE000F01000A02580000

86DE01000000000000000 (configuration fail)

(4) SetLEDColorReq

(Last configuration would be kept after the device is factory reset.)

Set LED color as 0xFF 0x00 0x00 (Red)

Downlink: 07DEFF00000000000000000

GetLEDColorReq

4.3 Example of NetvoxLoRaWANRejoin

(NetvoxLoRaWANRejoin command is to check if the device is still in the network. If the device is disconnected, it will automatically rejoin back to the network.) Fport: 0x20

CmdDescriptor	CmdID (1 byte)	Payload (5 byt	es)	
SetNetvoxLoRaWANRejoinReq	0x01	RejoinCheckPeriod (4 bytes, Unit: 1s 0XFFFFFFF Disable NetvoxLoRaWANRejoinFunction)	RejoinThreshold (1 byte)	
SetNetvoxLoRaWANRejoinRsp	0x81	Status (1 byte, 0x00_success)	Reserved (4 bytes, Fixed 0x00)	
GetNetvoxLoRaWANRejoinReq 0x02		Reserved (5 bytes, Fi	xed 0x00)	
GetNetvoxLoRaWANRejoinRsp	0x82	RejoinCheckPeriod (4 bytes, Unit:1s)	RejoinThreshold (1 byte)	

(1) Configure parameters

RejoinCheckPeriod = 0x00000E10 (60min); RejoinThreshold = 0x03 (3 times)

Downlink: 0100000E1003

Response: 81000000000 (configuration succeed)

81010000000 (configuration fail)

(2) Read configuration

Downlink: 02000000000 Response: 820000E1003

Note: a. Set RejoinCheckThreshold as 0xFFFFFFF to stop the device from rejoining the network.

b. The last configuration would be kept as user reset the device back to the factory setting.

c. Default setting: RejoinCheckPeriod = 2 (hr) and RejoinThreshold = 3 (times)

4.4 Example for MinTime/MaxTime logic

Example#1 MinTime = MaxTime= 1 Hour



5. Alarm Sound Customization

- (1) Connect the computer and device with a Type-C cable.
- (2) Wait 1 to 2 minutes until the virtual USB drive appears.
- (3) Right click the USB Drive and select format.



(4) Click OK to start formatting.



ormat USB Drive (F:)	×	Quick Format
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	OK Cancel	1

(5) Format complete.

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(6) Turn off and on the device. The flash drive should be empty as the picture shown below.

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- (7) Create a new folder in USB Drive and rename it as 01.
- (8) Put all files of audio alerts in the 01 folder.

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(9) Name all audio alerts as 00x.mp3.

Default:	001.mp3: Emergency	006.mp3: No smoking
	002.mp3: Doorbell	007.mp3: Poor air quality
	003.mp3: Burglar	008.mp3: The temperature is too high
	004.mp3: Water leaking	009.mp3: Thief
	005.mp3: Help	010.mp3: Welcome

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Note: (1) The folder and audio alerts should be named according to the default setting.

(2) The file type of audio alerts should always be mp3.

(3) The above procedure should be followed when uploading new audio alerts.

(4) The storage capacity of the flash drive is 16MB by default.

6. Installation Instructions

(1) Turn R603 over and hold the clip to remove the cover.



(2) Check the polarity and insert 3* AAA 1.2V Ni-MH batteries.







(5) Open the lid of R603.

Hold R603 with your left hand and turn the lid counterclockwise with your right hand.



(6) Short press the function key to test R603.



(7) Close the lid back to R603 by turning clockwise.



Note: Please make sure the clips match the notches before turning the lid.



7. Important Maintenance Instructions

Kindly pay attention to the following to achieve the best maintenance of the product:

- Keep the device dry. Rain, moisture, or any liquid might contain minerals and thus corrode electronic circuits. If the device gets wet, please dry it completely.
- Do not use or store the device in a dusty or dirty environment. It might damage its detachable parts and electronic components.
- Do not store the device under extremely hot conditions. High temperatures can shorten the life of electronic devices, destroy batteries, and deform or melt some plastic parts.
- Do not store the device in places that are too cold. Otherwise, when the temperature rises, moisture that forms inside the device will damage the board.
- Do not throw, knock, or shake the device. Rough handling of equipment can destroy internal circuit boards and delicate structures.
- Do not clean the device with strong chemicals, detergents, or strong detergents.
- Do not apply the device with paint. Smudges might block the device and affect the operation.
- Do not throw the battery into the fire, or the battery will explode. Damaged batteries may also explode.

All of the above applies to your device, battery, and accessories. If any device is not operating properly, please take it to the nearest authorized service facility for repair.