

# USER'S MANUAL

## User Instruction

Please read the manual carefully before using this product, so that you can more easily operate the repeater. When you are using this product, we think that you have read the manual.

- Please keep the manual, in order to offer reference or user of this product
- In order to safeguard the legitimate rights and interests of you from infringement, please seriously truthfully fill in when buying the company's products (with door repair service card), and ask for the purchase vouchers of real and effective.
- This product relates to upgrade or improve, the company reserves without prior notice to change this manual at any time above the rights of software and hardware specifications.

All specifications mentioned product specifications and information is only for reference.

- Although all words carefully check, it is hard to avoid errors, the company reserves the final interpretation.

## Safety Tips

For your safe and efficient use of the repeater, please read the information below.

- Maintenance work must be carried out by professionals, do not disassemble.
- Set up and installation must be approved by the local radio management department.
- User must do a good job when installing repeater antenna to protect from the lightning, or it may lead to serious loss of life and property.
- Be sure to use qualified power, duplexers, antennas, lightning protection devices, feeders, splitters and other appropriate accessories and proper installation, as this may cause broken to repeater

# Contents

The term to illustrate ..... 02

Open-package inspection ..... 03

Get familiar with the repeater ..... 03

Basic operation ..... 06

The term to illustrate ..... 07

The technical parameters & specifications ..... 08

- Short press:  
After press the button and quick release button.
- Long press:  
Press and hold the button after 2 seconds then release the button.
- Analog channel:  
Only analog channel can be on the communication.
- Adaptive channel, digital or analog channel.  
Digital or analog signals can be on the communication (repeater will judge the digital singals or analog signals according to the received signals, and then tr-  
ansmit the same kind of signals the same as received signals).

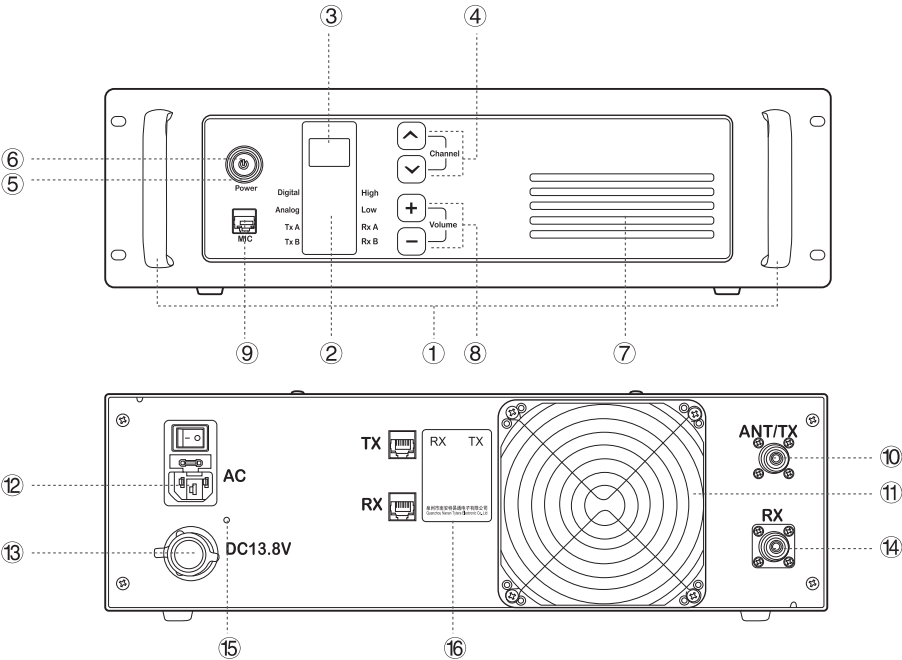
# Open-package inspection

Before use, please open the packing box, carefully check the repeater in the packaging carton and attached accessories, If you have any items lost or damaged in handling, please immediately contact the deliveryman or dealer.

## Accessories

| Model name        | Quantity |
|-------------------|----------|
| Repeater          | 1        |
| Power cable       | 1        |
| Programming cable | 1        |
| Software          | 1        |
| Manual            | 1        |
| Warranty card     | 1        |

## Get familiar with the repeater



| Number | Instruction             |
|--------|-------------------------|
| ①      | Handle                  |
| ②      | Front panel function    |
| ③      | Digital display tube    |
| ④      | Channel                 |
| ⑤      | Power (indicator light) |
| ⑥      | Power( on/off)          |
| ⑦      | Speaker                 |
| ⑧      | Volume                  |
| ⑨      | Microphone jack         |
| ⑩      | TX signals jack         |
| ⑪      | Radiator fan            |
| ⑫      | Power socket jack       |
| ⑬      | DC 13.8V                |
| ⑭      | RX signals jack         |
| ⑮      | Earthing screw          |
| ⑯      | Frequency sticker       |

- Panel button functions are as follows

Power (on/off): press this button to turn on/off the repeater

Channel : press this button to change the channels up

Channel : press this button to change the channel down

Volume : press this button shortly to turn down the volume,the speaker will show the indicator sound of volume change

Volume : press this button shortly to turn up the volume,the speaker will show the indicator sound of volume change

- Panel LED indicator light are as follows:

DIGITAL:

Channel for the digital or analog/digital double channel, the indicator light is on when the repeater forward the digital signal.

#### ANALOG:

Channel for analog channel or analog/digital double channel, the indicator light is on when the repeater forward the analog signal.

#### HIGH:

When TX, the indicator light when the channel is in high power.

#### LOW:

When RX, the indicator light when the channel is in low power

#### TxA:

Digital channel time slot 1 TX instructions or analog TX instructions.

#### Rx A:

Digital channel time slot 1 RX instructions or analog RX instructions.

#### TxB:

Digital channel time slot 2 TX instructions.

#### RxB:

Digital channel time slot 2 RX instructions.

- Also panel has the following parts:

#### Digital tube:

Used to display the current channel.

#### External interface:

When repeater is equipped with inside duplexer, you will only need one antenna, and please install this antenna to ANT TX jack ⑩,

while when it is not equipped with inside duplexer, you need to install two antennas, one is for transmitting and the other is for receiving,

and please place these two antennas in right jack. TX one to ⑩ and RX one to ⑭.

TX8 crystal joint is TX device's programming interface

RX8 crystal joint is RX device's programming interface

## Basic Operation

### ● Turn on/off the repeater :

When repeater is off, press "Power(on/off)" shortly to turn on the repeater, the light turns green after the repeater on, when repeater is on, press Power(on/off) for 3 seconds to turn off the repeater, the light turns yellow

### ● Select Channel :

This repeater can be programmed 100 channels, press  or  to change the channel number. Press  or  for long time can change the channel quickly. When the current channel in the repeater is analog, the ANALOG indicator light turns on.

When the current channel in the repeater is digital, the DIGITAL indicator light turns on. When the current channel in the repeater is adaptive channel (digital/analog channel), the indicator light will turn on different color according to what type mode the repeater is on. When the repeater is in standby, the DIGITAL indicator light turns on.

### ● Transit :

Repeater's TX frequency and RX frequency are different, the repeater will TX the signal which they RX in current channel, and the repeater will gain the weak signal to a high signal, so that enlarge the communication range, meanwhile will play the sound received with the speaker (digital channel doesn't support this function).

Note: If the repeater has a duplexer inside, frequency must be within the duplexer's frequency range 1MHz

If the repeater doesn't have a duplexer inside, frequency range is only restricted by software.

### ● Adjust volume :

Press volume  or  Volume to adjust the volume (volume is only available for analog channel)

### ● Programming Settings :

Some parameters of the repeater can be set up through the dealer's programming, in order to meet your requirements better, these parameters include channel TX fre-

quency, TX power, RX frequency, noise level, CTCSS/DCS, color code, channel and other working parameters, etc. Users can ask the local dealer for details.

### **Program the frequency :**

Circuits in this repeater, TX and RX are independent, so when programming the frequency ,it also should be programmed separately. User should connect programming cable with repeater's ctystal interface TX8 at the back of repeater when program the TX device's frequency. User should connect programming cable with repeater's ctystal interface RX8 at the back of repeater when program the RX device's frequency .



# Technical parameters

## Specification

|                     |                                               |
|---------------------|-----------------------------------------------|
| Model name          | Repeater                                      |
| Frequency range     | 136-174 MHz                                   |
| Channel capacity    | 100                                           |
| Frequency stability | 2.5ppm                                        |
| Working temperature | -30℃—+60℃                                     |
| Working voltage     | 220V/110V AC $\pm 15\%$ / 13.8V DC $\pm 15\%$ |
| Dimension(HxWxD)    | 133mm x483mm x330mm                           |
| Weight              | 16kg                                          |

## Receiver

|                                   |                              |
|-----------------------------------|------------------------------|
| Reference sensitivity(analog)     | 0.25uV @ 12dB SINAD          |
| Adjacent channel selectivity ETSI | 60dB @ 12.5KHz               |
| Reference sensitivity(digital)    | 0.22uV/-120dBm 0.35uV/120dBm |
| Spurious response rejection       | $\geq 70$ dB                 |
| Rated audio output                | +1 ~ -3dB                    |
| Rated audio distortin             | <5%                          |
| FM noise                          | $\geq 40$ KHz @ 12.5KHz      |

## Transmitter

|                            |                                                                                                 |
|----------------------------|-------------------------------------------------------------------------------------------------|
| RF power output            | 50W(Two kinds of duplexer available, before purchasing, please let us know which kind you need) |
| Antenna impedance          | 50 $\Omega$                                                                                     |
| Radiated spurious emission | -36dBm < 1GHz -30dBm > 1GhZ                                                                     |
| FM noise                   | 40dB @ 12.5KHz                                                                                  |
| Modulation distortion      | <5%                                                                                             |
| Digital protocol           | ETSI-TS102 361-1,-2,-3                                                                          |
| Frequency modulation       | 11k $\Phi$ 3E(analog) 4FSK(digital)                                                             |
| Modulation limiting        | $\pm 2.5$ KHz @ 12.5KHz                                                                         |

## **Warning Statement**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference including received interference that may cause undesired operation.

The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment. Replacement of any transmitter component (crystal, semiconductor, etc.) not authorized by the local government radio management departments equipment authorization for this radio could violate the rules

This equipments complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipments shall be installed and operated with minimum distance 251.2 cm between tha radiator&body.

**MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.