Manuals+ — User Manuals Simplified.

KIRISUN TB2210H5 Digital Repeater

KIRISUN TB2210H5 Digital Repeater Instruction Manual

Contents

KIRISUN TB2210H5 Digital Repeater

We are very grateful for your purchasing the Kirisun digital repeater manufactured by Kirisun Communications Co., Ltd. We believe the Kirisun digital repeater, which always incorporates the latest technology brings great convenience to your life and work and meets demands for reliable communication.

Notice

- Please carefully read this instruction manual before using the product for easy operation. We will consider that you have read this manual once you use the product.

- Please carefully keep this manual for future reference.
- To protect your legal rights from infringement, please carefully fill in the warranty card and claim a valid receipt.
- Kirisun and its authorized partners own the intellectual property of all the parts of this product (including accessories).
- Any design and materials may not be modified, copied, extracted or translated without the authorization of Kirisun or its authorized parties.
- This product may involve updates or modifications in future, and Kirisun owns the right to change the specifications of software and hardware described in this manual without further notice.
- Specifications and information contained in this manual are for reference only.
- All the contents are carefully proofread, but mistakes may be inevitable. The rights to the final explanation are reserved by Kirisun.

Safety Precaution

- The radio can only be repaired or maintained by professional technicians. The user must not disassemble the radio at liberty.
- The settings and installation shall be approved by the local radio management department.
- Lightning protection is required when installing the repeater antenna.
- Please use a qualified power supply, antenna, thunder preventer, feeder and other accessories during installation, otherwise the repeater may be damaged.
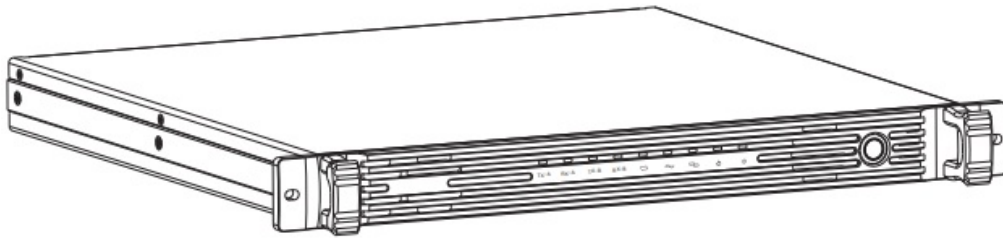
Unpacking and Checking

Please carefully open the box and make sure the items listed below are included. For items missing or damaged during delivery, please contact the local dealers for help.
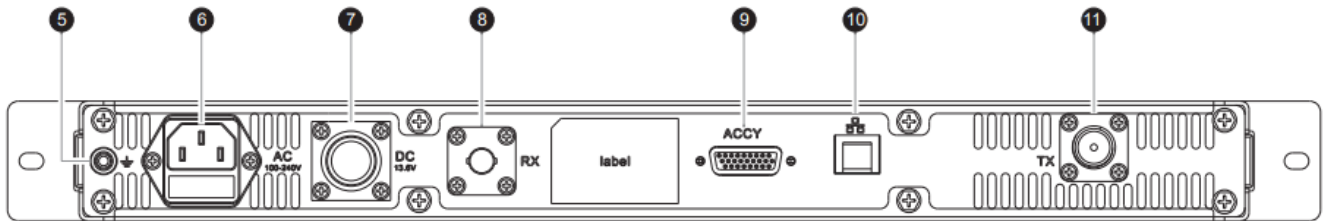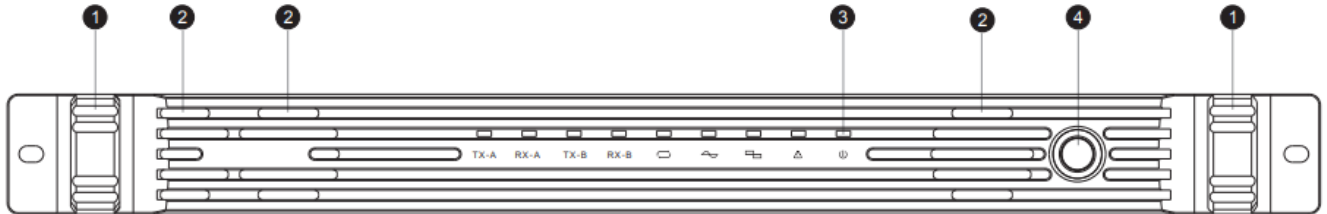
Accessories

Item	Quantity
Repeater	1
User Manual	1
Certificate	1
Power Cable	1

Repeater

Overview

No.	Part Name
1	Handle
2	Fan
3	Indicator
4	Power Switch
5	Ground Interface
6	100-240V AC Interface
7	13.6V DC Interface
8	RX Signal Interface
9	ACCY Interface
10	Ethernet Interface
11	TX Signal Interface

Power Switch

Press this button to power on/off the repeater.

ACCY Interface
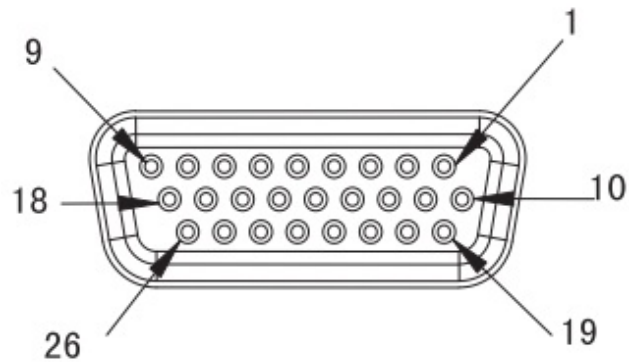
PIN Description

Pin	Description
PIN1	DC 13.8V Output
PIN2	Ground Cable
PIN3	Null
PIN4	Null
PIN5	Null
PIN6	Null
PIN7	External PTT Signal input, High level active. when connected with Pin20, enter transmission mode used for testing and bridge connection;
PIN8	SPEAKER-
PIN9	SPEAKER+
PIN10	ACC_MAP_ID2; used fortesting
PIN11	ACC_MAP_ID1; used fortesting
PIN12	Null
PIN13	RS232 serial port RXD
PIN14	RS232 serial port TXD
PIN15	Ground Cable

PIN16	Null
PIN17	Ground Cable
PIN18	External Analogue Audio Input
PIN19	Ground Cable
PIN20	High level electrical signal output
PIN21	Squelch is on when it is connected to PIN20 and it is used for testing
PIN22	Null
PIN23	Null
PIN24	PTT output; used for bridge connection
PIN25	Null
PIN26	Null

**External Interface Description**

- To Activate the External PTT
- Connect PIN7 and PIN20 of the ACCY interface to activate the external PTT, and you can test the TX signal of the repeater.
- Test the Analogue Receiving
- Connect PIN10 and PIN20 of the ACCY interface to test the analogue receiving.
- Reset IP Address

Connect PIN11 and PIN20 of the ACCY interface. The repeater changes the IP address and gateway address to the IP on the label, but the data are not changed. After re-boot, the configured IP address and gateway address will be recovered.

Panel LED Indicator
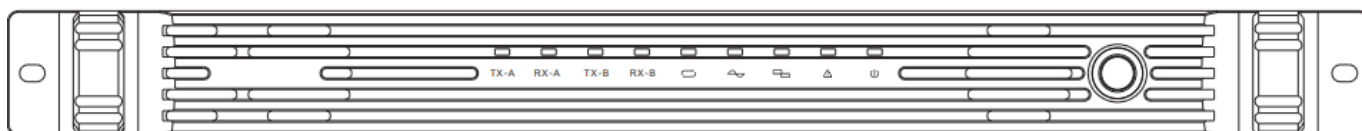
Indicator	Description
TX-A	Time Slot 1 TX Indicator
RX-A	Time Slot 1 RX Indicator
TX-B	Time Slot 2 TX Indicator
RX-B	Time Slot 2 RX Indicator
⟲	Signal Transmission Indicator
∿	Analogue Mode Indicator
⊓	Digital Mode Indicator
⚠	Emergency Indicator
Indicator	Description
⏻	Power Indicator

Basic Operation

Power on /off Repeater

When the repeater is off, press the power ⊚ switch to power it on. When the ⏻ indicator glows, the system starts to operate, and the ⌁ indicator ⊐ will indicate the current work mode. Press the power ⊚ switch to power off the repeater when it is on.

Voice and Data Transmission

The TX frequency and RX frequency on the repeater channel are different. The signals received on the current channel will be transmitted on the same channel, and in the meantime, the weak signals will be switched to stronger signals before transmission to increase the communication distance. The indicator ⇄ glows when transmitting/receiving.

The ⌁ indicator flashes when the analogue signal is being received or transmitted and the ⊐ indicator flashes when the digital signal is being received or transmitted. Parameters such as RX/TX frequency and CTCSS on the channels can be programmed by dealers. One analogue channel or digital/analogue adaptive channel can edit one group of CTCSS/CDCSS codec list, and when CTCSS/CDCSS is received on this channel, the repeater will transmit the corresponding CTCSS/CDCSS codec list.

IP Interface

Default IP address: 192.168.1.100. You can upgrade software, configure the programming parameters and perform extended development through this interface.

Emergency Alarm

The emergency indicator glows during abnormal situations, for example, when RX frequency loses its lock, the emergency indicator flashes every second and when TX frequency loses its lock, it two seconds. When both TX and RX frequencies lose lock, the indicator glows constantly. Please turn to a professional technician for help when abnormal situations happen.

Programming Software

Please check the network status before programming the repeater. First, make sure the network button on the toolbar is pressed(the IP address option will be greyed out if it is not pressed) and also make sure the connection button is pressed. In case the connection button is pressed, the programming software will automatically connect to the matched repeater through IP according to the IP address; the status bar will show "XX network" after the connection is completed. If there is another programming software trying to connect to the same repeater, it shows busy network status on the second software, meanwhile, the connection button will pop up automatically, and you need to click it for re-connection.

Menu

New: creates new channel information. The repeater creates a new channel information configuration file and one analogue channel by default with default parameters. Open: open the file saved on the device.
Save: saves information configuration on the current channel. If the channel information is newly created or read from the repeater, the save path should be selected (similar to "Save as").
Save as: choose a path to save the configuration.
Exit: exits the programming software.

Radio Type

Radio Type: select repeater for radio type. Frequency 136-174MHz, 350-400MHz, 400-470MHz and 450-520MHz are available, or you can define the frequency band yourself. The self-defined frequency band should be within the available range.

Edit Menu

General Settings

Equipment ID: the only identity on the device. It is used for the recognition of multi-station networking and base stations.

Group Call Hang Time: during group calls on the terminal, if no PTT button is pressed on any terminals, the repeater will keep the call hang time and will not accept signals from another group. If there is any one of the members presses the PTT button during the call hang time, the hang time will be counted again.

After the call hang time is over, the call ends and the channel resources are released. Value range: 0~7000 milliseconds; step value: 500 milliseconds; 4000 milliseconds by default. Private Call Hang Time: after a private call is initiated on the terminal, and if no PTT button is pressed on both parties, the repeater will keep the call hang time for the terminals. During the call hang time, the repeater does not accept other calls. After the call hang time is over, the call ends and the channel resources will be released.

Value range: 0-7000 milliseconds; step value is 500 milliseconds; 4000 milliseconds by default. Emergency Call Hang Time: after an emergency call is initiated, and if no PTT button is pressed on both parties, the repeater will keep the call hang time for the terminals.

During the call hang time, the repeater does not accept other calls. After the call hang time is over, the call ends and the channel resources will be released. Value range: 0-7000 milliseconds; step value is 500 milliseconds; 4000 milliseconds by default. Call Hang Time: after the terminal call ends, the repeater keeps the call hang time for the terminal. During this time, press the PTT button without having to establish a connection to continue the call. Value range: 0-7000 milliseconds; step value: 500 milliseconds; 4000 milliseconds by default.

Internet Settings

- Local IP: repeater IP address, such as 192.168.1.100.
- Subnet Mask: the repeater subnet mask in the local area network, such as 255.255.255.0.
- Gateway: the repeater gateway in the local area network, such as 192.168.1.1.
- DNS: configure the domain name server or set it as 0.0.0.0.
- Networking Modes: supports three modes including no network, as a server or as a slave device. When it is used as a server, the local monitor port should be configured and the slave device is connected to the system network through this port. When it is used
- as a slave device, the serving IP(or domain name) and port should be configured.
- Network Time Slot Configuration: both two-time slots can be equipped with or without a network. In case of network status, the internet time slot ID should be configured.
- When the repeater is networked, it will determine whether it should transmit data according to the network time slot ID. It transmits data when the ID is different while it does not transmit data if the ID is different.

Indicator Setting: in the networked status, the repeater will transmit signals regularly according to indicator settings, so that the portable radios can perform roaming according to signals. The time interval to activate the repeater is ranged from 10 seconds to 600 seconds; 30 seconds by default. The continual time to activate the repeater ranges from 200 milliseconds to 7000 milliseconds, 1000 milliseconds by default. Encryption Setting: encryption is optional. The password is set to be 10 hexadecimal characters, such as 8A4428331D. Message Delay Setting: the delay setting is used to prevent network latency. The user can set the delay time based on the network status. Value range: 60 milliseconds to 960 milliseconds; step value is 60 milliseconds.

Temperature Control
Fan Control Mode: the fan can be turned on constantly or turned on automatically according to power amplification temperature. Power Amplification Protection Temperature: when the power amplification temperature exceeds the specified threshold, the power amplifier will be disabled automatically. 85″C by default. Fan Enable Threshold Temperature: when the temperature is higher than the specified threshold, the fan will be turned on automatically.

40°C by default. Fan Disable Threshold Temperature: when the temperature is lower than the specified threshold, the fan will be turned off automatically. 30'C by default. Standing Wave Ratio: used to test whether the antenna is well matched with the transmitter. Default value: 3.0.

Channel Settings

Band Width: select channel spacing for the current channel. Options: 12.5kHz^ 20 kHz^ 25 kHz. Default value: 12.5 kHz. Colour Code: select the colour code for the current channel. Only radios with the same frequency and colour code can communicate with each other. Value range: 0~15.
Default value: 1. Squelch Type: select RX mode for the current channel.
Options: CSQ, CTCSS, CDCSS, -CDCSS.
Squelch Level: set the squelch electrical level. CTCSS Frequency: when the CTCSS squelch mode is selected, you need to select one CTCSS frequency value, otherwise the call between two parties is not possible. Value range: 0-254.1 Hz; step value is 0.1 Hz; default value: 67 Hz.
CDCSS: if the squelch type is CDCSS or -CDCSS, you have to select one CDCSS value, otherwise the call between two parties is impossible. Value range: 0-777; step value: 1; default value: 023.

Notice

(1) The squelch level is only applied to the analogue channel.
(2) The carrier cannot be selected for mixed channel receiving. It must choose CTCSS, CDCSS or -CDCSS.

Programming Menu

Read: read data from the repeater.
There will be a progress bar indicating progress during the reading process, and you can set it to automatically exit the data window when the data is fully read.
Write: write the configured data into the repeater. There will be a progress bar indicating progress during the writing process, and you can set it to automatically exit the data window when the data is fully written.

Notice

(1) Check the network status before reading data and make sure that the internet option is ticked. The IP on the software toolbar should be the same as the repeater IP.
(2) When the connection is completed, it shows "Internet OK" on the status bar, or it shows "Internet XX".
Upgrade: you can download each function module from the PC to the repeater and configure it with the main parameters. Select the path for the upgrade package before the upgrade.

IP Connect

An IP-connected system can be composed of multiple repeaters through the network. This system includes one master device and multiple slave devices (32 members max.). The master device records and maintains all the device information for the repeater, and when a certain slave device joins in or leaves, the master device will inform other devices. If the master device goes faulty and is not able to maintain, other devices maintain the same working status.

In the same IP-connected network, when one repeater receives a signal from a certain portable, it will transmit the signal to the rest of the members. As long as the ID of a wide area network is the same, it can transmit without limitation to time slot and frequency. In case of feature conflict, the IP-connected system will make adjustable assignments to arrange the same features being processed in the same system at the same time.
Note: features marked with is option and please contact your dealer if you need it.

Troubleshooting

Programming Software Connection Failure

The wrong repeater IP is entered into the programming software or the user forgets the repeater IP.

Transmission Failure

Check if the frequency configuration between the portable and repeater is the same and whether their modes are matched.

Parameters

- Frequency Range: 400-470MHz
- AC: 100-240V@2.5A 50/60 Hz
- DC: 10.8-15.6V@15A
- DC Insurance: AC100-240V 50/60Hz or DC 10.8-15.6V,15A
- AC Insurance: 2.5A 250VAC, 5x20mm
- Insurance Type: HRC ceramic, Time lag (T)
- Supplied Power: 200W
- TX Power: 40W(UHF)
- Size: 482.6mm (Length) *450mm (Width) *44mm (Height)
- Weight: 11.2kg

We, Kirisun Communications Co., Ltd.
3-6Flrs, ROBERTA Building, No. 1, QiMin Road, Song Ping
Shan Area, Science & Industry Park, Nanshan District
Shenzhen 518057 P.R.China
Declare on our sole responsibility that this equipment complies with Annex III Module B of the Council Directive 2014/53/EU of 16 April 2014 and that any applicable Essential Test Suits measurement have been performed.

Description of equipment: VHF DMR Repeater
We, Kirisun Communications Co., Ltd.
3-6Flrs, ROBERTA Building, No. 1, QiMin Road, Song Ping
Shan Area, Science & Industry Park, Nanshan District
Shenzhen 518057 P.R.China
Declare on our sole responsibility that this equipment complies with Annex III Module B of the Council Directive 2014/53/EU of 16 April 2014 and that any applicable Essential Test Suits measurement have been performed.

146MHz- 156.4875MHz, 156.8375MHz- 161.9625MHz
162.0375MHz-174MHz
Model No.: DR600 (With GPS), DR600T(Without GPS)

This compliances is based on conformity with the following harmonised standards or documents:

(1) EN 300 086 V2.1.2(2016-08)   EN 300 113 V2.2.1(2016-12)
    EN 300 440 V2.1.1(2017-03)
(2) EN 301 489-1 V2.1.1(2017-02)   EN 301 489-3 V2.1.1(2017-03)
    EN 301 489-5 V2.1.1(2016-11)
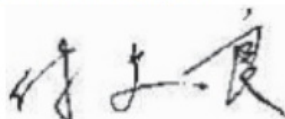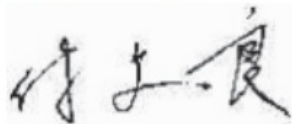(3) EN 60950-1:2006+A11:2009+A1:2010+A12:2011 +A2:2013
(4) EN 50385:2002

Shenzhen, 16 Oct 2017
Place and date of issue

WenLiang, Fu
General Manager

_____
Signature
Kirisun Communications Co.,Ltd.

Description of equipment: UHF DMR Repeater

Where a plug on the power supply cord is used as the disconnect device, the installation instructions shall state that for pluggable equipment, the socket outlet shall be easily accessible. For pluggable equipment intended for installation by an ordinary person, the
installation instructions shall be made available to the ordinary person.

406.1 MHz - 430MHz, 440MHz - 470MHz
Model No.: DR600-Q2, TR850G (With GPS)
DR600T-02.TR850 (Without GPS)

This compliances is based on conformity with the following harmonised standards or documents:

(1) EN 300 086 V2.1.2(2016-08)   EN 300 113 V2.2.1(2016-12)
EN 300 440 V2.1.1(2017-03)
(2) EN 301 489-1 V2.1.1(2017-02)   EN 301 489-3 V2.1.1(2017-03)
EN 301 489-5 V2.1.1(2016-11)
(3) EN 60950-1:2006+A11:2009+A1:2010+A12:2011 +A2:2013
(4) EN 50385:2002

Shenzhen, 16 Oct 2017
Place and date of issue

WenLiang, Fu

General Manager

Signature

Kirisun Communications Co.,Ltd.

FCC Warning

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. 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 received, including interference that may cause undesired operation.
Note: This equipment has been tested and found to comply with the limits for a Class B digital device, under 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 by 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 the receiver.
- Connect the equipment to 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.

ISEDC Warning

This product meets the applicable Industry Canada technical specifications. This equipment complies with FCC/ISEDC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and

operated with a minimum distance of 1.58m(FCC)&1.6m(ISEDC) between the antenna& your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Documents / Resources

	KIRISUN TB2210H5 Digital Repeater [pdf] Instruction Manual TB2210H5 Digital Repeater, TB2210H5, Digital Repeater, Repeater

References

- 🌐 **Kirisun Communication Co., Ltd.**
- **User Manual**