QUICK REFERENCE GUIDE

PR900 DIGITAL REPEATER

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PR900

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User instructions

- Any use of radio transmitters within government controlled areas without the authority's permission is forbidden by the law.
- Penalties will be given on those who use transmitters illegally.
- Maintenance can only be carried out by professionals.

Disclaimer

During the preparation process of this manual, we sought for accuracy and completeness of its contents. Should there be any errors or omissions, we will not bear any responsibility. Due to continuous development of technology, we reserves the right not to give further notice on changes of design and specifications of our products.

RF radiation information

This product only meets the application requirements on RF energy radiation. The user must be acutely aware of the hazards brought by RF radiation, and able to take corresponding measures to meet the prescribed requirements of RF radiation.

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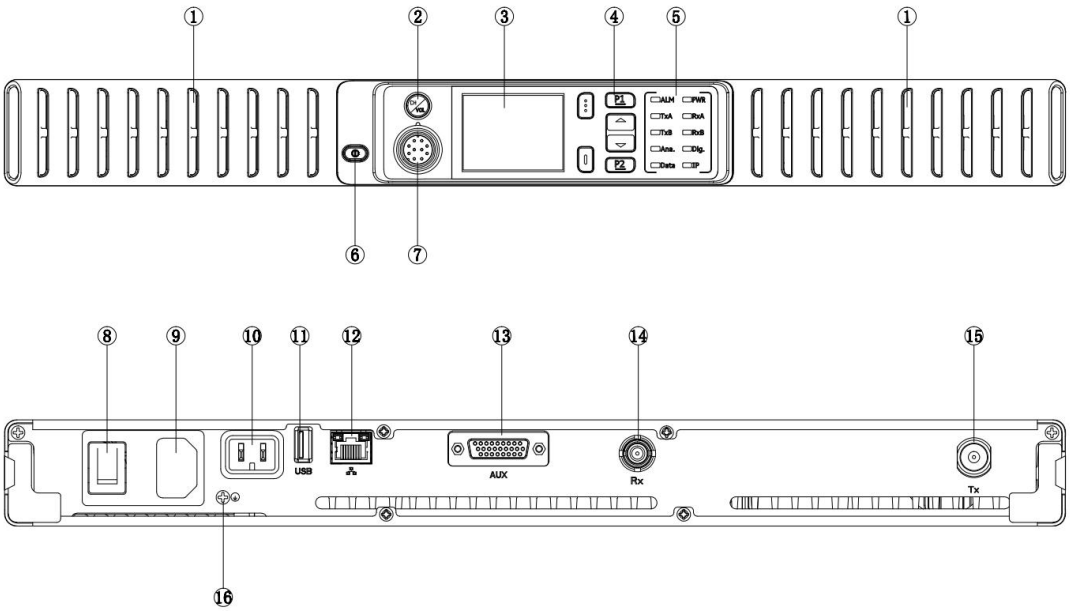
1 Unpacking and Checking

Please unpack carefully and check all the items listed in the following table before discarding the packing material. If any damage or loss occurs during shipment, please contact your dealer.

Standard Accessories

Item	Quantity
Repeater	1
Instruction Manual	1
Power cable	1

2 Radio Overview



No.	Part Name	No.	Part Name
1	Cooler	9	100~240V AC Cable Connector
2	Channel/Volume Button	10	13.6V DC Connector
3	LCD	11	USB Connector
4	Function Button	12	Network Connector(IP)
5	Front Panel LED Indicators	13	MAP Connector
6	Power ON/OFF Button	14	Rx Connector
7	MMP Connector	15	Tx Connector
8	AC Power Indicators	16	GND Screw

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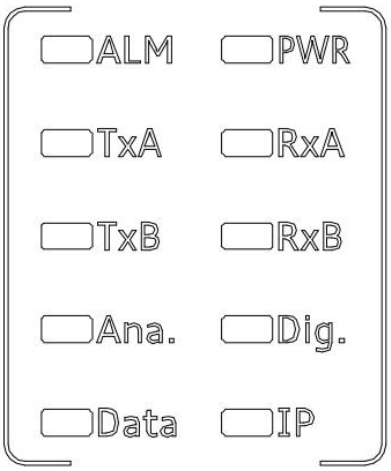
2.1 LED Indicators



Indicators	Description
ALM	Alarm indicator
PWR	Power indicator
TXA	Slot 1 transmitting indicator
RXA	Slot 1 receiving indicator
TXB	Slot 2 transmitting indicator
RXB	Slot 2 receiving indicator
Ana	Analog mode indicator
Dig.	Digital mode indicator
Data	Repeater signal indicator
IP	IP interconnection status indication

2.2 MMP Connector

PIN	Indicators	Description
1	MMP10_Mic	mic
2	MMP10_Spk	speaker
3	MMP10_PTT	External PTT，low level is effective
4	MMP10_Hook	Hang up signal

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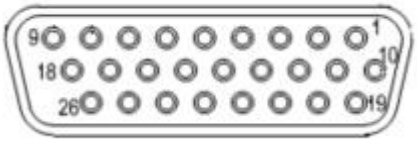
5	GND	GND
6	MMP10_USB_D+	USB_D+ signal
7	MMP10_USB_D-	USB_D- signal
8	MMP10_USB_Vbus	USB_VBUS +5V DC power
9	MMP10_DET1	Accessory detection 1
10	MMP10_DET2	Accessory detection 2

2.3 MAP Connector



PIN	Indicators	Description
1	RX_UART_RXD	RX UART RXD
2	RX_UART_TXD	RX UART TXD
3	Tx_Audio1	Transmit audio input for slot 1 in digital mode
4	Audio_GND	Audio GND
5	GPIO1	Program input
6	GPIO2	Program output
7	GPIO3	Program input/output
8	GPIO4	Program input/output
9	GPIO5	Program input/output,Default for Emergency function
10	Slot1_Audio	Received audio output for time slot 1 in digital mode
11	Slot2_Audio	Received audio output for time slot 2 in digital mode
12	Tx_Audio2	Transmit audio input input for time slot 2 in digital mode.
13	NC	Undefined
14	GND	GND
15	VBUS	+5V DC power,max current 500mA
16	USB_D+	USB_D+ signal
17	USB_D-	USB_D- signal
18	USB_GND	USB GND
19	TX_UART_TXD	TX UART TXD

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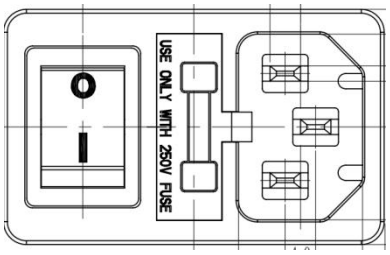
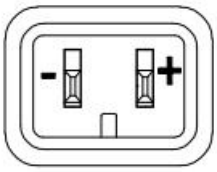
20	TX_UART_RXD	TX UART RXD
21	TDMA	Transmit trigger signal
22	ACC_MAP_DET1	It is used for test
23	ACC_MAP_DET2	It is used for test
24	SWB+	Output the system supply voltage,max current 1000mA
25	Ext_Alarm	Programmable alarm output,Output the system supply voltage,max current 300mA
26	Power_GND	Power GND

2.4 AC Cable Connector

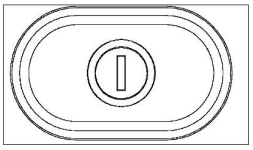


Press I to power on the AC power.Press O to power off the AC power.

2.5 DC Connector



2.6 Power ON/OFF Button



Power ON/OFF the repeater

2.7 Operation Button

Indicators	Description	Indicators	Description

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	Return		Up
	Menu/Confirm		Down
P1	Programmable button 1	P2	Programmable button 2
CH VOL	Channel/Volume Switch		

3 Operations

3.1 Powering On/Off

3.1.1 AC Power Supply

When the repeater is turned off , press the back panel (AC power switch)to turn on the power,the AC power indicator lights up, and then press the front panel (power button) to power on the repeater .The “PWR” indicator lights up, and the LCD will enter the operation interface after the system is working normally.

When the repeater is turned on, press (power button) to turn off the repeater , and press (AC power switch)to turn off the AC power.

3.1.2 DC Power Supply

When the repeater is turned off ,press the front panel (power button) to power on the repeater .The “PWR” indicator lights up, and the LCD will enter the operation interface after the system is working normally.The “PWR” indicator lights up, and the LCD will enter the operation interface after the system is working normally.

When the repeater is turned on, press (power button) to turn off the repeater .

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3.2 Voice and Data Transfer

The receiving and transmitting frequency are different on the repeater. Repeater will turn the weak receiving signal into strong transmitting signal and transmit on the same channel. When transmitting, the “DATA”light is on. If it is analog signal, the “Ana.”light on. if it is digital signal, the “Dig.”light flashes. The receiving and transmitting frequency and CDCSS/CTCSS can be set by CPS.

An analog channel or a smart analog/digital detecting channel can be programmed with one group of CDCSS/CTCSS encoding and decoding list. When receiving CDCSS/CTCSS on the channel, repeater will transmit according to preprogrammed CDCSS/CTCSS encoding and decoding list.

3.3 IP Connecting

Default IP address：192.168.1.100. Application update, parameters configuration and second development can be made through this port.

3.4 Warning

When unusual situation happens, the alarm indicator ”ALM” will be enlightened. For example, when Receiving Frequency unlocks, the warning light will flash once one second; Transmitting frequency unlocks, the warning light will flash once two seconds; When both transmitting and receiving frequency unlock, the alarm indicator ”ALM” will stay light on.

When the repeater occurs unusual situation, please let the related professional to check and recover the repeater.

4 CPS-Menu

4.1 File

Files refer to the configuration files of your Repeater, which are in .grd format.

The File menu includes the following functions:

Submenu	Description	Shortcut Key
New	This function clears all the data in the current window, restores it to the default setting, and creates a new file.	Ctrl+N
Open	This function opens a data file from the hard disk or other data media, for you to modify the file or write it to your Repeater.	Ctrl+O

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Open Template	Selecting the Open Template mode to open a file can save the CPS configuration parameters that are compatible with earlier versions and update the earlier database versions to the version corresponding to the current CPS.	
Close	This function closes the configuration file in the current window.	/
Save	This function saves the new file or modified file by the current filename under the current path. The file is saved in .grd format and must be saved in this format.	Ctrl+S
Save As	This function saves the current file by a new name under the specified path. The file is saved in .grd format and must be saved in this format.	Ctrl+A
Print	This function prints programming data. After you select this function, the Print dialog box is displayed, in which you can set printing options, such as the pages and number of copies, as needed.	Ctrl+P
Preview	After you select this function, the print preview window is displayed in the main window.	/
Print Setting	After you select this function, the Print Setup dialog box is displayed.	/
Exit	This function exits the CPS.	/

4.2 Model

Model Information: This function shows the models and the corresponding frequency bands [MHz] in the configuration file. You can select a model as needed.

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4.3 Program

The Program menu includes the following functions:

Submenu	Description	Shortcut Key
Read	This function reads data from your Repeater. After powering on your Repeater, connect it to a PC and select Program > Read. The Read dialog box is displayed. Click OK to read data. During the data reading process, a progress bar is displayed to show the progress. After programming data is read completely, a message box is displayed, showing that data is read successfully.	Ctrl+R
Write	This function writes data into your Repeater. After powering on your Repeater, connect it to a PC through a USB cable and select Program > Write from the menu. The Write dialog box is displayed. Click OK to write data. During the data writing process, a progress bar is displayed to show the progress. After programming data is written completely, a message box is displayed, showing that data is written successfully. Your radio will be restarted automatically and then use the new configuration data.	Ctrl+W
USB Port	This function allows you to select the port device for this operation.	/
Restore Factory Defaults	This function restores all parameter settings of your Repeater to the default values.	/
Clone	This function replicates the configured data to a target Repeater. After powering on your Repeater, connect it to a PC and select Program > Clone from the menu. The Clone dialog box is displayed, asking you to select the target	/

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	configuration file. Then, click OK to clone data. During the cloning process, a progress bar is displayed to show the progress. After cloning is completed, a success message box is displayed. The target radio will be restarted automatically and then use the new configuration data. Note: The cloning process skips checking the ID , name, account number, and password of your radio, and reads and writes the password information. Cloning is not allowed when the dialing rules for the clone data are inconsistent with the radio data	
Remote Read	This function reads data from your Repeater. select Program > Remote Read. The Read dialog box is displayed. Click OK to read data. During the data reading process, a progress bar is displayed to show the progress. After programming data is read completely, a message box is displayed, showing that data is read successfully.	
Remote Write	This function writes data into your Repeater. select Program > Remote Write from the menu. The Write dialog box is displayed. Click OK to write data. During the data writing process, a progress bar is displayed to show the progress. After programming data is written completely, a message box is displayed, showing that data is written successfully. Your radio will be restarted automatically and then use the new configuration data.	

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4.4 Tools

The Tools menu includes the following functions:

Submenu	Description
Language	This function sets the language of the CPS.
Import DT Data	This function is not supported on Repeater Model.
Export DT Data	This function is not supported on Repeater Model.
Import DG Data	This function is not supported on Repeater Model.
Export DG Data	This function is not supported on Repeater Model.
Read Reset Log	This function reads the data related to a down Repeater for analysis of developers.
Export the written information	After a write operation is complete, the back-end parameter file (WrittenInfoCache.dat) records the information written onto a Repeater, including the ID of Repeater and the last programming time. You can select Tools—Export the written information to export the information into a .csv file.
Load Carton File	This function enables you to import a customized .carton file into a radio so that the power-on and power-off carton packages can be customized.
Function Control Authorization Application	To function control the Advanced Encrypt, the Background Call & Decoding and the AMBE Vocoder applied for open or closed, According to the terminal serial number may apply for the 1000 largest number and generate fcla application file, Through authorization center management software to generate fclc registration file.
Function Control Authorization Registered	Import fcla application file and fclc registration file for register to CPS.Through application, register and write on the function control of the terminal for authorization.

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4.5 View

The Program menu includes the following functions:

Submenu	Description
Tree Menu	The tree menu is below the menu bar, and it classifies configuration functions by module in the form of a tree. To configure a function or property, you can select Edit from the menu bar or enter the function or property from the tree menu. It is recommended that you display the tree menu to facilitate your operations.
Tab	The tab bar is below the tool bar, and it shows the opened windows in the form of tabs according to the opening sequence, so that you can switch to any window as needed. It is recommended that you display the tab bar to facilitate your operations.
Tools	The tool menu is below the menu bar. It shows common operation menus in the form of icons and thus makes your operations more convenient. It is recommended that you display the tool bar to facilitate your operations.
Status	The status bar is located at the bottom of the window. It shows the model of the property that you are configuring, its frequency band, communication port, and the current date and time.

5 Common Setting

5.1 Common Setting-General Setting

5.1.1 Common Setting-General Setting-Common Setting

Common Settings

- Repeater Alias

  The repeater alias can be viewed and set via menu by users.

  The maximum length is 16 characters.

- Last Programmed Date

  This option indicates the last date on which the radio was programmed.

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- UART Baud Rate

This parameter sets the baud rate of the interface on the radio accessory when the radio communicates with a third-party device through the serial port.

Default: 115200, Range：300~600000.

- Designated Power-on Zone/Channel

This option allows users to set a power-on channel. When the radio is turned on, it will switch to this channel. If the user does not designate a power-on channel, the radio will enter the channel last used when it is turned on.

Default: off, Range: All available channels can be designated as the power-on channel.

- High Tx Power

This option allows users to set the high Tx power value of the mobile radio or repeater. This is a radio-wide feature.

Default: 50W, Range: 10 ~ 50W

- Low Tx Power

This option allows users to set the low Tx power value of the mobile radio or repeater. This is a radio-wide feature.

Default: 1W, Range: 1 ~ 10W

Microphone

- Internal Mic Gain

This option allows users to set the internal microphone Gain.

Default: 3.0, Range: 2.0 ~ 10.0.

- External Mic Gain

This option allows users to set the external microphone Gain.

Default: 3.0, Range: 2.0 ~ 10.0

Priority Control

- Phone Priority

This parameter allows you to enable and disable the Phone Priority feature.After the Phone Priority feature is enabled, if the repeater receives phone request from mobile phone or radio during repeating or local PTT transmitting, it will respond to the phone request first.

During a phone call, the Repeat Request Priority is set to First Come First Send; during a phone call or there is a phone request, the Path Priority is set to Repeat Request;

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when there is no phone request or phone call, the repeater responds to the request according to the predefined priority.

Default: Unchecked

Option Description:

Checked: To enable the Phone Priority feature.

Unchecked: To disable the Phone Priority feature.

- PTT Priority

This option allows you to set which path of audio signal the repeater will respond to first.

Default：First Come First Send

Option Description:

External PTT: The repeater will handle the external PTT first.

Front PTT: The repeater will handle the front panel PTT first.

Remote PTT: The repeater will handle the Remote PTT signal first.

First Come First Send: The repeater will handle the PTT on a first come first serve manner.

- Repeat Request Priority

This option allows the user to set the repeat request priority. When the repeater receives a repeat request, it responds to this request according to the predefined repeat request priority mode.

Default：First Come First Send

Option Description:

Local Repeating: The repeater responds to the Local Repeating request first.

IP Connect Repeating: The repeater responds to the IP Connect Repeating request first.

First Come First Send: The repeater responds to the first detected repeating request first.

- Tx Path Priority

The PTT signal is classified into Repeat Request and PTT Input according to the signal source. The Repeat Request signal is the audio signal that is being repeated by the

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repeater, while the PTT Input signal is the local audio signal from the front panel PTT or from the external PTT.

Default：Repeat Request

Option Description:

Repeat Request: The repeater responds to the Repeat Request signal first.

PTT Request: The repeater responds to the PTT Input signal first.

First Come First Send: The first received PTT audio service will be responded to first.

TOT Time

- Repeat TOT Time

This parameter is used to set the maximum time that the repeater is allowed to take for a single repeating.

Default: Infinite

Range: 15 – 600s and Infinite

- TOT Pre-alert Time

This parameter is used to set the interval between the time when the repeater starts to alert the user and the time when it terminates the repeating service.

Default: 30s

Range: 1-30s

- TOT Pre-alert Interval Time

This parameter decides the interval between the alerts that the repeater gives within the TOT Pre-alert Time.

Default: 10s

Range: 3-15s

- TOT Re-Repeat Time

This parameter decides the interval between the first repeating and the retrial made by the repeater for the same voice service. Within the interval, the repeater will be prohibited repeating the same voice service except other voice services.

Default: 5s

Range: 3-60s

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5.1.2 Common Setting-General Setting-Digital Setting

Digital Settings

- Repeater ID

  Allow users to set a unique ID to identify the repeater. This ID is used by other calling repeaters when addressing the radio, for instance, when making a private call or sending a text message.

  Range: 1-16775903

  Default: 1

- Group Call Hang Time

  This option allows users to set the duration the radio stays at in_call status after a group call transmission. In other words, a member's PTT operation can call back the group directly.

  Range: 0.0~30.0s

  Default: 4s

  Step: 0.5s

- Private Call Hang Time

  This option defines the duration the radio stays at in-call status after a private call ends. Within this period, either of the parties can hold down PTT to call the other back.

  Range: 0.0~30.0s

  Default: 3s

  Step: 0.5s

- Emergency Call Hang Time

  This option allows users to set the duration the repeater reserves the channel after the end of an emergency call transmission. During this time, only members of the Group that the channel is reserved for can transmit. User may want to set the longest hang time as compared to the Private and Group Call Hang Time to reserve the channel long enough to receive an emergency response.

  Range: 0.0~30.0s

  Default: 4s

  Step: 0.5s

- TX Preamble Duration

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Preamble is a string of bits added in front of a data message or control message (Text Messaging, Private Call, etc.) before transmission. This preamble prolongs the message in order to increase the chances of the message being detected by the receiving radio. The preambles as set in Tx Preamble Duration are sent in second attempt (that is retry) of a transmission. (TX) Preamble Duration costs channel resource, users can set it according to your needs and in different mode of radio operation, such as scanning to increase the scan landing success rate. This is a radio-wide feature

Range: 0~8640ms

Default: 960ms

Step: 60ms

- SIT

This option allows users to set how long the repeater will continue transmitting with absence of subscriber activity on the uplink. The Subscriber Inactivity Timer (SIT) starts when the repeater is activated and stops if activity is detected on either Slot 1 or 2. If no activity is detected on either Slot 1 or 2, the timer restarts. When this time expires, the repeater enters an IDLE status and waits for the next activation.

Range: Always/4.0~30.0s

Default: 4s

Step: 0.5s

- Vocoder

This parameters sets the vocoder of the radio.

Options: AMBE++ and NVOC. Default: NVOC.

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Beacon

- Beacon Tx Mode

This option decides the interval for beacon signal transmission in IP Multi-site Connect mode.

Range: Local/Network

Default: Local

- Beacon Duration

This option allows the user to configure how long the beacon signal lasts. In IP Multi-site Connect mode, the beacon signal will be transmitted when the beacon interval expires.

Range: Disable/480-18000ms

Default: Disable

Step: 120ms

- Beacon Interval

This option allows the user to configure the interval for transmitting beacon signal in IP Multi-site Connect mode.

Range: 10-600s

Default: 60s

Step: 10s

5.1.3 Common Setting-General Setting-Analog Setting

Analog Set

- Squelch Open Level

This function sets the squelch level of output Repeater. It can adjust the squelch enabling threshold of received signals. The value range of this parameter is variable, and it is associated with the Squelch Normal Level parameter value. The relationship is as follows: Squelch Open Level < Squelch Normal Level < Squelch Tight Level.

Default: 0.

- Squelch Normal Level

This function sets the squelch level of output Repeater. It can adjust the squelch enabling threshold of received signals. The value range of this parameter is variable, and

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it is associated with the Squelch Tight Level parameter value. The relationship is as follows: Squelch Open Level < Squelch Normal Level < Squelch Tight Level.

Default: 3.

- Squelch Tight Level

This function sets the squelch level of output Repeater. It can adjust the squelch enabling threshold of received signals. The value range of this parameter is variable, and it is associated with the Squelch Normal Level parameter value. The relationship is as follows: Squelch Open Level < Squelch Normal Level < Squelch Tight Level.

Default: 9

- Analog Call Hold Time

This option allows users to set the duration the repeater will reserve the channel for after the end of an analog call transmission. During this time, a member's PTT operation can call back the call directly.

Range：0~7.0s，Step：0.1s，Default：0s。

5.2 Common Setting-UI Setting

5.2.1 Common Setting-UI Setting

UI Setting

- Language

This parameter sets the language displayed on your repeater.

Options:Chinese Simple or English.

Default: English.

- Tone Volume

This parameter sets the volume of prompt tones.

Range: 1-8 or Current (meaning that the volume is adjusted through the Volume button on your radio. Default: 1.

Alarm Setting

- Local Alarm On/Off

To enable or disable the local alarm function when the repeater abnormal.

- Over Temperature

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This option allows users to choose whether the radio pop a dialog box to alert user when the temperature is too high for radio to work in current channel.

This option only allows users to check whether to alert user, when temperature is very high. The radio will detect temperature all the time in despite of whether user has checked this option.

Note: the Local Alarm On/Off is unchecked, this item can not available.

- Forward Power

This option allows users to choose to alert user of potential PA failure.

When the forward power is below the Low Forward Power, a warning will be indicated to user via the display as long as the Forward Power option is enabled

When the forward power value is measured to be zero, the PA power will be cutoff immediately regardless the setting value in this field and alarm.

This option only allow users to check whether to alert user, when the forward power is low. The radio will detect forward power periodically during transmission in despite of whether user has checked this option.

- Tx PLL Unlock

This option alerts users to choose whether the radio pop a dialog box to alert user when the transmission is Unlock for radio to work in current channel.

- Rx PLL Unlock

This option allows users to set whether the repeater will give users an alert when the RX PLL unlocks.

- Over/Low Voltage

This option alerts users when the voltage is too high or too low for radio to work.

This option only alert users when voltage is abnormal. The radio will detect voltage and protect itself all the time regardless of whether or not this option is checked.

Fan Control Setting

- Fan Control Mode

To Select fan control mode

Always On: the fan keep on always.

Temperature Control:the fan on or off depend on the repeater current work temperature.

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Default value is Temperature Control.

- Fan on User Temperature

This option allows users to set the temperature to turn on the fan if the fan is controlled via temperature. When the work temperature of the radio is higher than the preset temperature threshold, the fan will be turned on automatically in order to protect the radio.

Rang：10~80℃,step 1℃,Default Value is 50℃.

- Fan Off User Temperature

This option allows users to set the temperature to turn off the fan if the fan is controlled via temperature. When the work temperature of the radio is lower than the preset temperature threshold, the fan will be turned off automatically in order to protect the radio.

Rang：10~80℃,step 1℃,Default Value is 40℃.

5.2.2 Common Setting-UI Setting-Backlight

Backlight

- Backlight

This parameter sets whether to automatically turn off the backlight of terminals with a LCD, and the time before the backlight is automatically turned off after being turned on.

Options: 5-60 s (step: 1 s) or Always On or Disable. Default: Always On.

- Brightness

This parameter sets the brightness level when the backlight is turned on.

Options: 0-6s, default: 4s.

5.2.3 Common Setting-UI Setting-Button

Button

- **Long Press Duration(s)**

This parameter sets the minimum duration that you shall press and hold a button to trigger the long press function.

Options: 0.5 s to 5.0 s. Step: 0.5 s. Default: 2.0 s.

- P1 Short

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This parameter sets the programmable function of the P1 button when you press it shortly.

For a description of the optional functions, refer to the function list. Default: Adjust Power Level.

- P1 Long

This parameter sets the programmable function of the P1 button when you press and hold it.

For a description of the optional functions, refer to the function list. Default: None.

- P2 Short

This parameter sets the programmable function of the P2 button when you press it shortly.

For a description of the optional functions, refer to the function list. Default: Adjust Squelch Level.

- P2 Long

This parameter sets the programmable function of the P2 button when you press and hold it.

For a description of the optional functions, refer to the function list. Default: Analog Speaker On/Off.

Programming Button Function List:

Option	Overview	Remark
None	Performs no function.	
Adjust Power Level	Adjusts the transmission power of the repeater.	
Adjust Squelch Level	Adjusts the squelch level.	Analog mode only
Reset	Reset the repeater right now	
Repeater Disable	To Disable the repeater.	
Analog Speaker On/Off	To turn on or off the speaker on the front panel of the repeater.	Analog mode only
Local Alarm On/Off	To turn on or off the local alarm function when device abnormal.	

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Monitor On/Off	To enable or disable the Monitor feature.	

5.2.4 Common Setting-UI Setting-Menu

- Menu Reset Time

  This parameter sets the time for automatically exiting a menu.

  Range: 1-60 s or Infinite; step: 1 s; default: 15 s.

Menu

- Channel Info

  This parameter sets whether to display the Channel Info menu on the repeater LCD.

  Default: enabled.

- Network

  This parameter sets whether to display the Network menu on the radio.

  Default: enabled.

- Version

  This parameter sets whether to display the Version menu on the radio.

  Default: enabled.

- Device Information

  This parameter sets whether to display the Device Information menu on the radio.

  Default: enabled.

- Setting

  This parameter sets whether to display the Setting menu on the radio.

  Default: enabled.

Setting

- Power Level

  This parameter sets whether to display the Power Level menu on the radio.

  Default: enabled.

- Language

  This parameter sets whether to display the Language menu on the radio.

  Default: enabled.

- Backlight

  This parameter sets whether to display the Backlight menu on the radio.

  Default: enabled.

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- Brightness

  This parameter sets whether to display the Brightness menu on the radio.

  Default: enabled.

- Squelch Level

  This parameter sets whether to display the Squelch Level menu on the radio.

  Default: enabled.

- Tones

  This parameter sets whether to display the Tone menu on the radio.

  Default: enabled.

6 Conventional Setting

6.1.1 Conventional Setting-Password

Write Password

- CPS Write Lock

  This parameter allows you to enable or disable the CPS write lock. With this feature enabled, you will need to enter the correct CPS write password before writing.

  Unchecked: The CPS Write Lock feature is disabled

  Checked : The CPS Write Lock feature is enabled

  Default：Unchecked.

  Note:Contact your local dealer for help if you forget the password.

- Modify Write Password

  If the CPS Write Lock parameter is enabled, you can click this button to modify the CPS writing password, which consists of 1 to 8 digits.

  Factory default password: 88888888.

- CPS Write Password Tries

  If the number of times that you enter incorrect CPS writing passwords consecutively exceeds this value, you cannot perform the CPS writing operation on your terminal. You can only restore all configuration data of the radio to default factory settings to solve the CPS writing problem.

  Range: 1-255 (step: 1) or Infinite. Default: Infinite.

Read Password

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- CPS Read Lock

  This parameter sets whether to enable the CPS reading password function.

  Default: disabled.

- Modify Read Password

  If the CPS Read Lock parameter is enabled, you can click this button to modifythe CPS reading password, which consists of 1 to 8 digits.

  Factory default password: 88888888.

- Read Password Retry

  If the number of times that you enter incorrect CPS reading passwords consecutively exceeds this value, you cannot perform the CPS reading operation on your terminal. You can only restore to default factory settings to reset the CPS reading password.

  Range: 1-255 (step: 1) or Infinite. Default: Infinite.

6.1.2 Conventional Setting-Zone

- Zone Alias

  The Zone alias allows the user to define a unique name for each Zone. The maximum length is 14 characters,minimum length is one character.

- Available

  The table displays the available channels or channels which may not be programmed for you to add into a zone. Available channels are related to the channels in the device.

- Members

  The table displays existing channels in the current zone. These channels which may not be programmed come from the Available channel list on the left.

6.1.3 Conventional Setting-Channel-Digital Channel

- Channel Alias

  Users can set a unique name for each channel.Such as D456.150.

- Color Code

  Color code is used to identify a system. User who wish to communicate with each other are assigned with the same color code. Range:0~15.

- Slot

  This option is used for local PTT to transmit signals.

- IP Multi-site Connect

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This option allows users to specify a time slot through which the repeater transmit/receive the data to/from other repeaters in the IP Multi-site Connect network.

Rx

- Receive Frequency[MHz]

  This option allows users to set a frequency for the current channel to receive signals. Range:136-174MHz.

Tx

- Transmit Frequency[MHz]

  This option allows users to set a frequency for the current channel to transmit signals. Range:136-174MHz.

- Tx Contact Name

  This option allows users to select a regular contact for the current channel.

- Power Level

  This option allows users to set the TX power level for the current channel.

- Tx Time-out Time[s]

  This option allows users to set a transmission time-out time for the current channel. Range:15~600s or Infinite.

6.1.4 Conventional Setting-Channel-Analog Channel

- Channel Alias

  Users can set a unique name for each channel.Such as A456.150.

- Channel Spacing[KHz]

  This options allows users to set the channel spacing for the current channel.

- EmpDe-emp

  This option sets the pre-emphasis and de-emphasis functions to improve the articulation of audio. The pre-emphasis function filters transmitted signals, and the de-emphasis function filters received signals.

- Multi CTC/CDC

  This option allows users to apply the CTCSS/CDCSS table as the condition during decoding.

- CTCSS Tail Revert Option

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This option allows users to set the CTCSS tail reversion phase for the current channel.

- Repeater Mode

  This option allows users to set the repeater mode for the current channel.

Rx

- Receive Frequency[MHz]

  This option allows users to set a frequency for the current channel to receive signals. Range:136-174MHz.

- RX Squelch Mode

  This option allows users to set the Rx squelch mode for the current channel.

- RX CTCSS/CDCSS Type

  This option allows users to set the CTCSS/CDCSS type for the current channel.When the host receives a signal, it first checks whether the received CTCSS/CDCSS type matches the CTCSS/CDCSS type set for the channel. The host processes the received signal only when they are matched.

- RX CTCSS Frequency[Hz]

  This option allows users to set the Rx CTCSS frequency for the current channel. The CTCSS frequency is the signaling that is loaded in the carrier and is lower than the audio frequency. Range: 136-174MHz.

- RX CDCSS Code

  This option allows users to set the Rx CDCSS code for the current channel. The CDCSS code is the signaling that is transmitted at the speed of 134.4 bit/s in the carrier and is lower than the audio frequency.When RX CTCSS/CDCSS Type is set to CDCSS, Range:D023N~D754N.When RX CTCSS/CDCSS Type is set to CDCSS Invert, Range:D023I~D754I.

- Carrier Squelch Level

  This option allows users to set the squelch level for the current channel.

TX

- Transmit Frequency[MHz]

  This option allows users to set a frequency for the current channel to transmit signals. Range:136-174MHz.

- Power Level

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This option allows users to set the TX power level for the current channel.

- TX CTCSS/CDCSS Type

  This option allows users to set the CTCSS/CDCSS type for the current channel.

- TX CTCSS Frequency[Hz]

  This option allows users to set the TX CTCSS frequency for the current channel. The CTCSS frequency is the signaling that is loaded in the carrier and is lower than the audio frequency. Range: 67.0~254.1hz.

- TX CDCSS Code

  This option allows users to set the TX CDCSS code for the current channel. The CDCSS code is the signaling that is transmitted at the speed of 134.4 bit/s in the carrier and is lower than the audio frequency.When TX CTCSS/CDCSS Type is set to CDCSS, Range:D023N~D754N.When TX CTCSS/CDCSS Type is set to CDCSS Invert, Range:D023I~D754I.

- Tx Time-out Time[s]

  This option allows users to set the transmission time-out time for the current channel. Range:15~600s or Infinite.

6.1.5 Conventional Setting-Multi CTC/CDC

This table allows users to define up to 16 pairs of CTCSS/CDCSS. When this table is associated with a certain channel, the CTCSS/CDCSS conditions must be satisfied for the repeater.

6.1.6 Conventional Setting-Contact

- Batch Add

  Adds batch of members to the contact list, a maximum of 100 members can be added.

- Add

  Adds new members to the contact list.

- Insert

  Inserts a new member to the specified position in the contact list.

- Delete

  Deletes the specified member from the contact list.

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- Call alias

This option allows users to set the alias for the specified member. Range:1~14 characters.

- Call Type

This option allows users to set the call type for the specified member.

- Call ID

This option allows users to set the call id for the specified member. Range:1~16776415.

6.1.7 Conventional Setting-Network-Network

Repeater IP

- DHCP

This option allows users to define whether to dynamically assign the IP address to the repeater.

- Manual Set DNS

This option allows users to define whether to configure the DNS server. This server saves the domain name and IP address of the master in the IP Multi-site Network, and it can convert the domain name into IP address.

- MAC Address

It displays the MAC address of the repeater. The MAC address, also known as the hardware address, is a unique identifier for a network device.

- IP address

This option allows users to set the Ethernet IP for the repeater.

- Gateway IP

This option allows users to set the gateway IP under TCP/IP protocol for the repeater.

- Netmask

This option allows users to set the subnet mask for the repeater.

- DNS Server IP

This option allows users to set the IP address of the DNS server. Via the DNS server IP, the slave can find the master. Moreover, the repeater SIP service can also be carried out.

IP Multi-site Connect Setting

- Repeater Type

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This option allows users to set the operation mode for the repeater.

- Master Domain Name On/Off

This option allows users to set whether to enable the DNS feature of the salve in IP Multi-site Connect services. Through the DNS server, the slave can obtain the IP address of the master through the master's domain names. Thus, dynamic IP address is allowed for the master, which is effective in lowering IP Multi-site Connect costs.

- Jitter Buffer Length

This option allows users to set the length of buffer area for the repeater to process the received voice and data in the IP network. When the network connectivity is poor, the buffer length can be increased to improve the communication continuity. Range:1~16.

- IP Multi-site Connect Periodical Heartbeat[s]

This option allows users to set the periodical heartbeat between the master and the slave. Range:6~60.

- Master IP

This option allows users to set the IP address of the master.

- Master UDP Port

This option allows users to set the UDP port of the master.

- IP Multi-site Connect UDP Port

This option allows users to set the UDP port of the slave.

- IP Multi-site Connect RTP Port(slot 1)

This option allows users to set the RTP port for the slave to transmit voice service via slot 1.

- IP Multi-site Connect RTP Port(slot 2)

This option allows users to set the RTP port for the slave to transmit vocie via slot 2.

- Network Authentication Key

This option allows users to set the authentication key used for accessing IP network. All slave repeaters within the same IP site must share the same key as the master.

- Master Domain Name

This option allows users to set the domain name of the master.Through the DNS server, the slave in the IP Multi-site Network can resolve this domain name to the corresponding IP address of the master, even though this IP address may change.

Remote Upgrade/Data Writing

- Remote Upgrade UDP Port

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This option allows users to set the UDP port to upgrade the repeater remotely.

- Remote Data Writing/Reading UDP Port

  This option allows users to set the UDP port for the remote data writing/reading.

Network Management Parameter

- Network Management IP

  This option allows users to set the IP address of the Network Management.

- UDP Port

  This option allows users to set the UDP port of the Network Management.

- TCP Port

  This option allows users to set the TCP port of the Network Management.

6.1.8 Conventional Setting-Network- Local Access Management

This table allows users to set the ID range of the source terminal that is allowed to access the repeater and send calls via the repeater. The repeater only retransmits the calls when ID of the source terminal is within the ID range preset via Access Manger.

6.1.9 Conventional Setting-Network-Multisite Access Management

This table allows users to set the ID range of the target terminal that is allowed to access the repeater in IP Multi-site Network. The repeater only retransmits the calls when ID of the target terminal is within the ID range preset via Access Manger.

6.1.10 Conventional Setting-Network-Application Programming Interface

- AIS Enable

  This option allows users to enable or disable the AIS feature. With AIS enabled, the dispatcher server based on AIS standard is able to communicate smoothly with the repeater.

- Server IP

  This option allows users to set the IP address of the dispatcher server.

- Password

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This option allows users to set the password which should be the same as the dispatcher server.

- Server Port

  This option allows users to set the SIP port of the dispatcher server.

- Voice Service Port(Slot 1)

  This option allows users to set the port number for the repeater to transmit voice service via slot 1 in AIS network.

- Voice Service Port(Slot 2)

  This option allows users to set the port number for the repeater to transmit voice service via slot 2 in AIS network.

- RTP Packets Buffer Length

  This option allows users to set the buffer size of the repeater in IP Multi-site Connect mode for audio packet buffering. When in network congestion, the user can increase the buffer size for better capability of the repeater to buffer RTP audio packets.

- Periodical Heartbeat[s]

  This option allows users to set the interval between the repeater and the dispatcher server.

- Repeater Periodical Register

  This option allows users to set the interval for the repeater registering to the dispatcher server.

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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, 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.

Operational Instructions and Training Guidelines
To ensure optimal performance and compliance with the occupational/controlled environment RF energy exposure limits in the above standards and guidelines, users should transmit not more than 50% of the time and always adhere to the following procedures:

- Antenna gain must not exceed 8.5dBi.
- The antenna must be installed complying with the requirements of manufacturer or supplier, and it must be at least 126cm away from human body.
- Do not remove the RF Exposure Label from the device.
- User awareness instructions should accompany device when transferred to other users.
- Do not use this device if the operational requirements described herein are not met.

FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an occupational/controlled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with minimum distance 126cm between the radiator& your body.