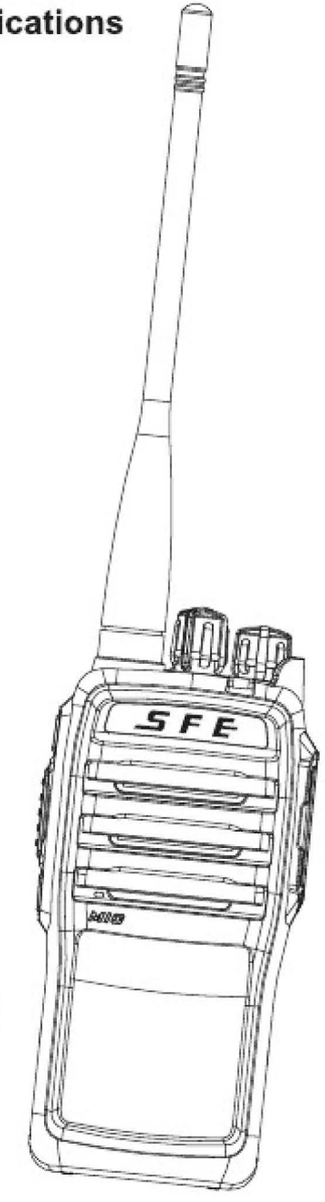
SFE

——Rugged-reliable Two-way Communications



Digital Portable Radio

USER MANUAL

Quanzhou SFE Electronic Technology Co.,Ltd

Add:No.35,Yangming Street,Shuangyang,Luojiang District,
Quanzhou City,Fujian Province 362012,China

Web:www.sfecom.cn

Introduction

Thank you for purchasing this SFE two-way radio, a truly versatile, professional and durable radio that will provide reliable, high quality communication, even under harsh and demanding conditions. Before operation and to obtain the best performance, please read this manual carefully to become familiar with the radio's features and uses.

Contents

Contents

Contents

Safety Information

Please read the following information carefully to become familiar with your new SFE two-way radio:

- Do not attempt to repair, disassemble or re-assemble the radio. Repair should only be carried out by a qualified Radio Engineer.
- In order to avoid electromagnetic interference, please turn off the radio in any areas where radio transmissions are not permitted e.g. Hospitals, Aircraft, etc.
- Do not place a radio in any area over, or in the deployment area of an Air Bag within a vehicle.
- Never operate the radio in potentially flammable and explosive atmospheres.
- Never replace or charge batteries in potentially flammable and explosive atmospheres.
- Do not operate the radio if its antenna is damaged.
- Do not expose the radio to long periods of direct sunlight, for example on the dashboard of a vehicle or close to heating appliances.
- When using your radio, try to keep it vertical and at a distance of 5~10cm from your mouth.
- Keep a distance of at least 2.5cm between the antenna and your head and body when transmitting.

Supplied Accessories

Please open the box carefully and check that the following items are included. If you find any items are missing or have been damaged during shipment, please contact your SFE dealer immediately.

Equipment and Accessories Supplied:

ITEM	QUANTITY
Two-way Radio Body	x1
Li-Ion Battery	x1
AC Adaptor	x1
Intelligent Charger Pod	x1
Antenna	x1
Wrist Strap	x1
Belt Clip	x1
User Manual	x1

Battery information

Caution

In order to avoid damage to the battery, only use the charger provided. The supplied charger is an 'intelligent' charger and has automatic and over-protect functions built in.

Do not short-circuit the battery pack or dispose of in a fire.

The optimal charging temperature is between 10℃ and 35℃.

When charging in temperatures below 10℃ there may be a leakage of electrolyte which will damage the battery. If charging above 35℃, battery performance will be reduced.

Battery Charging

Connect the AC adaptor to the charger. The red LED will light.

Place the battery or the radio with battery attached into the charger (check that the battery is properly in place). The red light will begin to flash – indicating that charging is in progress. The LED will turn green when the battery is fully charged.

(see illustration 1)

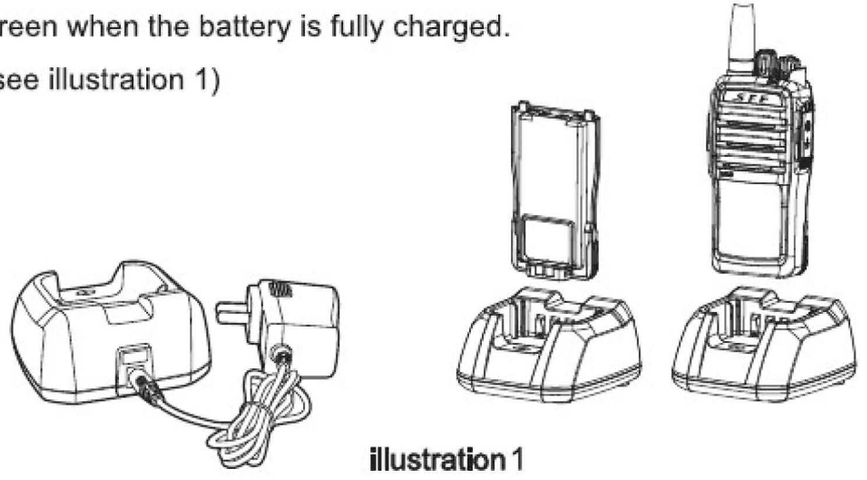


illustration 1

Installing and Removing the Battery Pack

Place the rechargeable battery pack onto the back of the radio. (It will only fit in one way). Snap the battery pack into place until you hear a click. Check that the battery pack fits tightly in place against the body of the radio. (See illustration 2)

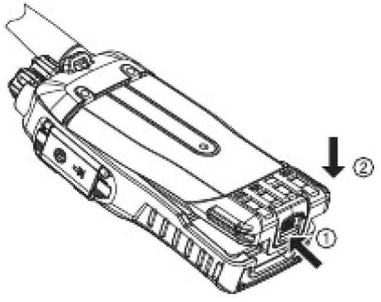


Illustration2

To remove the battery pack, make sure the radio zis off first, then pull back on release catch and lift the battery pack from the body of the radio. (See illustration 3)

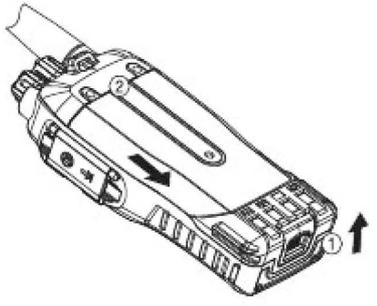


Illustration3

Installing/Removing the Antenna

Screw the antenna into the connector on the top of the transceiver by holding the antenna at its base and turning it clockwise until secure. (See illustration 4)

To remove the antenna, hold the antenna at its base and turning it counter-clockwise until it be released. (See illustration 5)

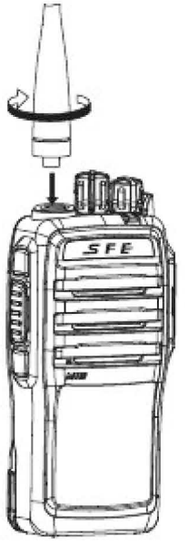


illustration 4

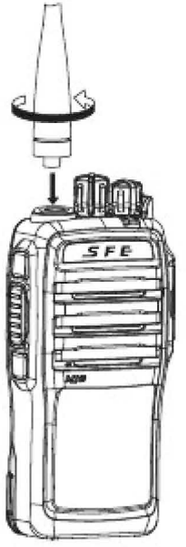


illustration 5

Accessories Installation

Installing the Earpiece

First release the Speak/microphone cover then insert the speaker/microphone plugs into the SP/MIC jacks.

(See illustration 6)

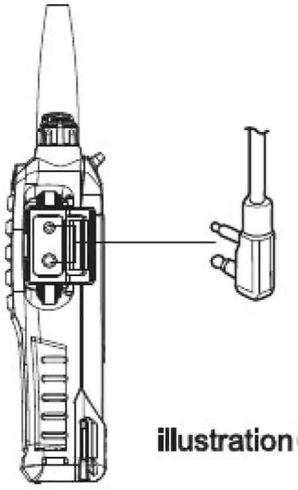


illustration 6

Installing/Removing the Belt Clip

Attach the belt clip using the two supplied screws.

(See illustration 7)

To remove the beltclip, release the screws on the belt clip.

(See illustration 8)

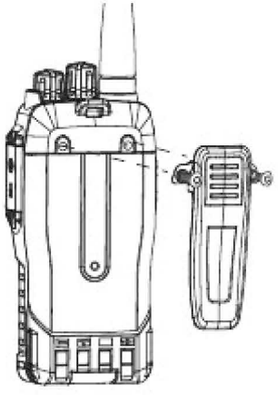


Illustration 7

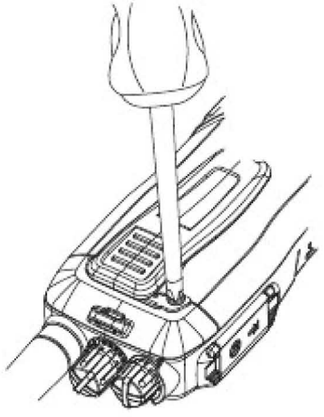
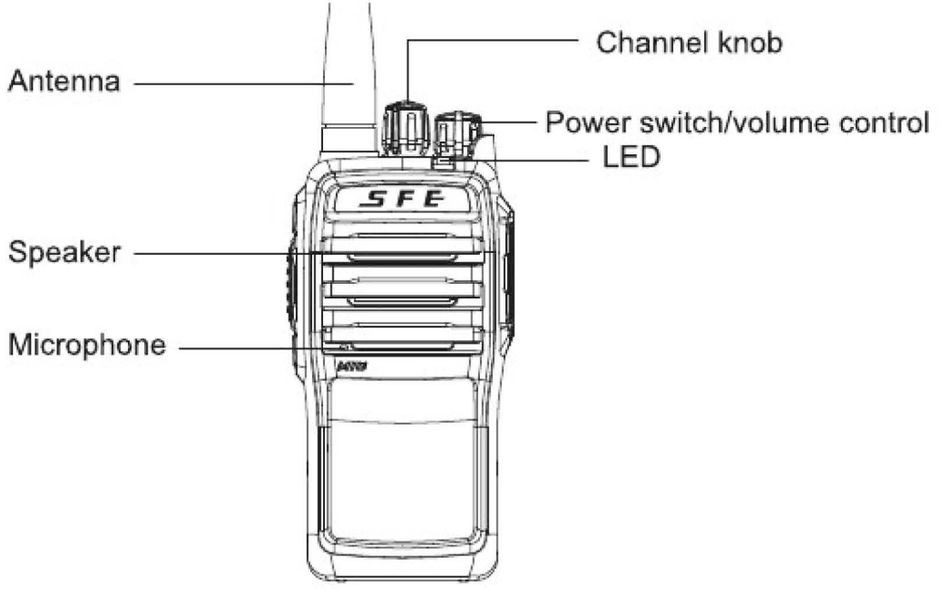
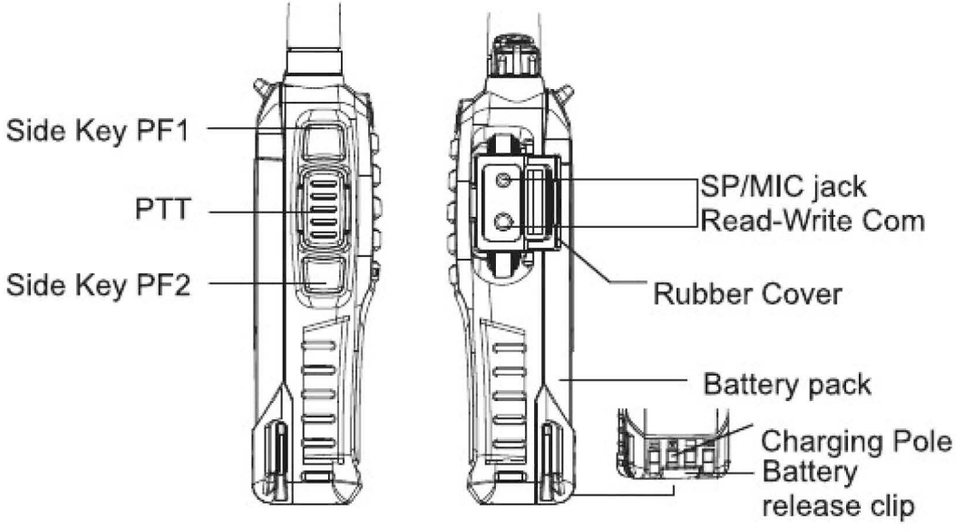


Illustration 8

Getting Acquainted

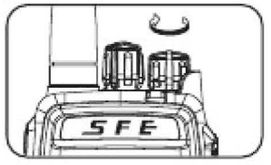




Basic Operation

Power ON/OFF

Turn the On/Off/Volume knob clockwise to switch the radio ON. Turn the On/Off/Volume knob counter-clockwise to switch the radio OFF.

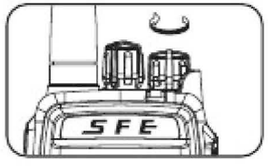


Volume Adjustment

Rotate the Volume knob to adjust the volume, clockwise to increase the volume and counter-clockwise to decrease it. In analog channel, if your dealer have programmed Monitor onto 【PF1】/【PF2】key, you can press Monitor key to hear background noise while adjusting the volume level.

Channel Selection

Rotate the channel knob to select the required channel.



Transmitting

Hold【PTT】to start transmitting. Please hold the microphone approximately 2.5~5.0cm from your mouth, and then speak into microphone in your normal voice to get the best timbre.

Note: The LED indicator will turn red when transmitting, release【PTT】to standby or receive callings.

Receiving

When radios receive any signal, the LED indicator will turn green. You can hear the calling.

Note: In analog channel, if the transceiver has set at higher squelch level, it may fail to hear the calling. If the LED indicator turns green but cannot hear the calling, that means the signal is with matching carrier but dis-matching CTCSS/DCS. In digital channel, if the LED indicator flash green but cannot hear the calling, that means the signal is with matching carrier but dis-matching color code, calling ID, time slot (through repeater).

Basic Setting

Radio Name:

Each radio can be input with a new name(alias), the name can be programmed as numeric, symbol, alphabet and Chinese character up to 16 digits.

Radio ID

Each radio can be assigned with an ID number, which is useful and can be identified by other users to place an individual call/group call or to send text info etc. ID Range: 1-16776415.

Noted: This function is valid only in digital mode.

Battery Save

If this function is programmed by your dealer, the transceiver will automatically switch to battery save mode when there is no receiving and no operation for more than 10 seconds, the activation time is

programmable with range 10-60S(Default: 10S). When the transceiver receives an incoming signal or is used to transmit, the battery save mode switch off automatically. Battery Save can be programmed ON/OFF by PC software programming.

VOX Function

Vox can be programmed ON/OFF by PC software programming or activated/disabled by pre-programmed key, VOX ON allow users to place a voice-activated hands-free call on the pre-programmed channel. Whenever microphone detect voice, the transceiver will automatically transmit and stop transmitting when voice disappear, or pre-pr0grammed TOT time expires.

VOX Level Range: 0-5, the VOX sensitivity is the highest while in level 5.

SQ (Squelch Level)

Squelch level can be programmed from level 0 to level 9, receiving sensitivity is the lowest when set in level 9.

Time-out-timer (TOT)

The purpose of the Time-out-timer is to prevent any caller from using a channel for an extended period and avoid any damage caused by long time transmission. Once a continuous transmission exceeds the preset time(programmable by dealer), the transceiver will automatically stop transmitting and emit aa warning tone until the PTT is released.

Time-out-timer range: 30-500S, steps: 10S, default: 180S.

Lone Worker

If there is no any operation to the transceiver for a period of preset time,

the transceiver will emit alarm or reminder alert tone according to the regular emergency system settings.

Lone Worker Response Time: 1-480Mins

Long Worker Reminder Time: 10-200S

Alert Tone Settings

1. Keypad Tone: ON/OFF selective, keypad volume level: 1-13.
2. Low Battery Alert Tone: ON/OFF selective, keypad volume level: 1-13.

Key Assignment (Buttons Setting)

The [PF1] and [PF2] can be re-assigned to any of the following functions by software programming, and users can choose “short press” or “long press”(with long press duration 0-15.5S, default: 2S) as per request.

• None(Un-defined) • Radio Enable(Remote Activation) • Radio Check
• Radio Disable(Remote Kill) • High/Lower Power Switch • Monitor
• Emergency Mode ON • Emergency Mode OFF • Zone Selection
• Scan ON/OFF • VOX ON/OFF • One Touch Access 1
• One Touch Access 2 • One Touch Access 3 • One Touch Access 4
• One Touch Access 5 • Repeater/Talk Around • Lone Worker

None: Un-defined(no function)

Radio Enable (Remote Activation): Press the programmed key to revive the pre-defined radio having been stunned by sending remote revive code.

Note: This function is valid only in digital mode.

Radio Disable (Remote Kill): Press the programmed key to remote kill the pre-defined radio by sending remote kill code. Transmitting and

receiving are prohibited for a killed radio and can be revived only by PC software programming with revived code.
Note: This function is valid only in digital mode.

High/Low Power Switch: Press the programmed key to switch between high and low power.

Monitor: Press the programmed key to open the signal squelch, it's used to listen to weak signals during normal operation and users can adjust the volume when no signals are present on the channel.
Note: This function is valid only in analog mode.

Emergency Mode ON: Press the programmed key to activate the emergency mode, after the function being activated both the caller and the called radio will emit emergency alarm.

Emergency Mode OFF: Press the programmed key or turn off the transceiver to exit alarm mode.

Zone Selection: Press the programmed key momentarily each time and select the desired zone.

Scan ON/OFF: Press the programmed key to activate scan function, the scan will start from the current channel, green/blue LED will light on and the transceiver will stay on the channel and keep receiving after a matching signal is successfully trapped, and then continue to scan after the matching signal disappears. Press again the programmed key to exit scan mode.

One Touch Access: Press the programmed key to place a call, each

key (short press and long press) can be assigned with one calling type (individual call, group call and all call) respectively.

Repeater/Talk Around: Press the programmed key to switch to repeater/talk around mode, in talk around mode, the receiving frequency will be used in place of the transmitting frequency when transmitting. After talk around function is activated, both the receiving frequency and receiving signaling will be used in place of the transmitting frequency and signaling when transmitting.

Lone Worker: Press the programmed key to active long worker function, the transceiver will emit alarm or alert tone if there is no any operation to the transceiver for a period of preset time. This function is mainly used to detect a missing radio.

Channel Function

Channel Information

Users can input a new name (alias) for each channel, the name can be programmed as numeric, symbol, alphabet and Chinese character up to 16 digits.

Output Power

The output power of each channel can be programmed to high or low as desired by PC software programming or side key operation.

Receive Only

When this function is selected, only receiving is allowed for the current channel (Transmitting is prohibited).

VOX Function

VOX ON allow users to place a voice-activated hands-free call on the pre-programmed channel, whenever microphone detect voice, the transceiver will automatically transmit and stop transmitting when voice disappear, or pre-programmed TOT time expires.

Scan List

User is able to add the current channel to the scan list or delete it from the scan list.

Auto Start Scan

If this function is selected on the current channel, the transceiver will automatically enter scan mode once after switched to the current channel.

Channel Mode

Each channel can be set as Digital channel or Analog channel by PC software programming.

---In Digital Mode

Repeater Time Slot

DMR adopts TDMA technology and divide 12.5KHz bandwidth into two alternating time slots, each channel can be configurated with Time Slot 1 or Time Slot 2 by PC software programming, the same group transceivers working through a digital repeater must be programmed with the same time slot so that they can communicate with each other. In this way, a digital repeater will work for two groups of transceivers working in the same frequency and color code but with different time slot.

Function and Operation

Color Code

Each channel can be configurated with a color code (Range: 0,1,2,3...15 selective), the transceivers working in the same frequency must be programmed with the same color code so that they can communicate with each other.

Emergency Alarm

Each channel can be configurated with an emergency alarm type by PC software programming. Press the programmed key to activate the emergency mode, after the function being activated both the caller and the called radio will emit emergency alarm.

RX Group Call List

This allows users to create/delete receiving group list by adding/deleting members (Digital contacts), group list name can be changed to any Alias (up to 8 digits containing numeric, symbol, alphabet and Chinese character). The transceiver support maximum 250 receiving group lists and maximum 33 members to each group call list.

Digital Contacts

Individual call/Group call/All call are available for choice, the transceiver supports maximum 1024 digital contacts. This allows users to add digital contacts and input Alias containing numeric, symbol, alphabet and Chinese character up to 12 digits. Range of numeric: 1-16776415.

Access Politics

The purpose of this function is to avoid interference to other

transceivers using the same frequency, with this function, the transceiver will be allowed to transmit only when access politics matched. They are three types of access politics for digital channel:
Always (Impolite): Transmitting is always allowed in any status by pressing PTT button, .
Color Code (Polit to Color Code): Transmitting is allowed only when the channel is free or a matching carrier with matching color code received (Transmitting is prohibited when carrier with unmatched color code received).
Channel Free(Polite to All): Transmitting is allowed only when the channel is free.

---In Analog Mode

Bandwidth Setting

User can choose wide band 25KHz or narrow band 12.5 by PC software programming.

PTT ID (DTMF)

DTMF signaling can be enabled/disabled to each analog channel, they are totally 32 PTT templates for choice. DTMF system, DTMF code and PTT template are editable by PC software programming.

CTCSS/DCS

Allow user to select a specific CTCSS/DCS code for each channel by PC software programming. If CTCSS/DCS has been set on the current channel, CTCSS/DCS match is required for radio to unmute to an incoming signal. If CTCSS/DCS is not set, the radio can receive calls

from all users operating on the same frequency. Your dealer may program the current channel with CTCSS/DCS, to prevent unwanted conversation on the same frequency. This feature does not mean that your conversation will not be heard by others. Radios with the same CTCSS/DCS can receive calls from the calling radios.

Access Politics

The purpose of this function is to avoid interference to other transceivers using the same frequency, with this function, the transceiver will be allowed to transmit only when access politics matched. They are three types of access politics for analog channel:
Always (Impolite): Transmitting is always allowed in any status by pressing PTT button, .
CTCSS/DCS (Polit to CTCSS/DCS): Transmitting is allowed only when the channel is free or a matching carrier with matching CTCSS/DCS received (Transmitting is prohibited when carrier with unmatched CTCSS/DCS received).
Channel Free (Polite to All): Transmitting is allowed only when the channel is free.

Emergency Alarm Function (This is valid only for digital channels)

Allow user to configurate an emergency alarm setting to each channel by PC software programming, press the programmed button to activate the function.
User can set only the calling transceiver emitting emergency alarm or

both the calling transceiver and the target transceivers emitting emergency alarm after this function activated.

Impolite Retries

With this function on, the calling transceiver will place emergency alarm calls constantly according to times setting (Times range: 1-15). This function is used to ensure the emergency calls received by the called transceivers, as there may be missing calls occurs.

Digital Contacts (Valid only for digital channel)

Individual call/Group call/All call are available for choice, the transceiver supports maximum 1024 digital contacts.

This allow user to add digital contacts and input Alias containing numeric, symbol, alphabet and Chinese character up to 12 digits.

Range of numbers (caller ID): 1-16776415.

RX Group List (Valid only for digital channel)

This allows user to create/delete receiving group list by adding/deleting members (contacts), group list name can be changed to an Alias (up to 13 digits containing numeric, symbol, alphabet and Chinese character). The transceiver supports maximum 250 receiving group lists and maximum 33 members to each group call list.

Scan List

This allows user to create/delete scan list by adding/deleting channels to be monitored, scan list name can be edited as an Alias (up to 8 digits

containing numeric, symbol, alphabet and Chinese character). The transceiver supports maximum 16 scan lists and maximum 32 channels to each scan list. (Both digital channels and analog channels can be added to the same scan list)

Priority Scan

Provided that priority scan channel has been added to the transceiver, priority scan mode will be activated by pressing pre-set side button. This allows user to set maximum 2 priority scan channels, and the scan sequence will be as below:

1. One priority scan channel

Provided that channel 2 is pre-programmed as priority channel, the scan sequence will be:

CH2→CH1→CH2→CH3→CH2→CH4→CH2→CH5→CH2→CH6→.....

2. Dual priority scan channels

Provided that both channel 1 and channel 2 are pre-programmed as priority channels, the scan sequence will be:

CH1→CH3→CH2→CH4→CH1→CH5→CH2→CH6→CH1→CH7→.....

Transmitting Revert Channel

In scan mode the transceiver can be programmed to revert to a certain channel upon pressing [PTT]. This allows the transceiver to be customized to the user's transmission requirements while using scan. The revert channel types are last activated channel, fixed channel and selected channel.

Scan Dwell Time (Residence Time)

The length of scan dwell time on each channel is programmable. Range 0.5-10S, Default 0.5S.

TX Dwell Time

TX dwell time is the time from the end of transmission to the time scanning automatically resumes. Range 0.5-10S, Default 0.5S.

Digital Part (DMR Service)

Basic Setting

Call Hang Time (Call Retention Time)

Call Hang Time (Call Retention time) is the time from the end of PTT being released to the time transmitting ends.

Range: 0-600ms

Step: 30ms

Default: 300ms.

Activate Wait Time

This option defines the time period during which the radio receives a synchronic signal from the repeater, after sending an instruction to revive the repeater. If the radio receives no signal from the repeater and the times of Wakeup Retries do not expire, the radio will send the instruction again.

Range: 130-1000ms

Step: 5ms

Default: 300ms.

Activation Retries Times

This option defines the times for the radio to revive the repeater. The radio tries to send such revival instruction for the defined times. However, if the radio finally receives no signal from the repeater, it will be regarded that the repeater is not revived.

Range：1~10

Step：1

Default：2

Number of TX Preamble Packets

Preamble Packets is a series of extended information loaded before data or control (text content or single call) info., and it increases the probability for receivers to test message. Setting Preamble Packets will occupy channel resource and users could set according to operation mode and as demand.

Value Range：0~63

Step：1

Default Value：0

Radio Disable Decode (Remote Kill Decode)

This option is used to determine whether the transceiver can be remote killed or not, only when this function is selected by PC software programming, the transceiver will be able to be remote killed. Both transmitting and receiving are prohibited for a killed radio and can be revived only by PC software programming or receiving valid activating code. This function is valid only in digital mode, default setting: disabled.

Checked: The transceiver can be disabled by receiving valid kill code;

Unchecked: The transceiver cannot be disabled/killed;

Radio Check Decode

This option is used to determine whether the transceiver can be remote checked or not, only when this function is selected by PC software programming, the transceiver will be allowed to remote checked. This function is valid only in digital mode, default setting: disabled.

Checked: The transceiver can be checked by receiving valid check code;

Unchecked: The transceiver is not allowed to be checked;

Radio Enable Decode (Remote Activation Decode)

This option is used to determine whether the transceiver can be remote enabled or not, only when this function is selected by PC software programming, the transceiver will be allowed to be enabled by receiving matched enable encode. This function is valid only in digital mode, default setting: disabled.

Checked: The transceiver can be enabled by receiving valid enable code;

Unchecked: The transceiver cannot be enabled;

Digital Voice Encryption

The transceiver offers digital voice encryption function with maximum 16 groups for choice and for each group maximum 5 bits for free edition, users is able to choose any group of voice encryption for each channel as desired.

Group range: None, 1, 2…16

Voice encryption value range: 0-65535

Remote Control

This allows user to remote control a target radio by placing a private call, which includes remote disable (remote kill), remote enable (remote

activation) and remote check. This function is valid only in digital mode.

Remote disable (remote kill): Setup a private call in Digital Contact List and then choose target transceiver ID in settings under DMR Services menu.

Remote enable(remote activation): Setup a private call in Digital Contact List and then choose target transceiver ID in settings under DMR Services menu.

Remote Check: Setup a private call in Digital Contact List and then choose target transceiver ID in settings under DMR Services menu.

DTMF Signaling

DTMF code

DTMF code could be programmed as any combination formed by numbers and English letters up to 16 bits by PC software programming.

DTMF System

This allows user to edit Side Tone, PreTime, Tone Duration, Tone Interval and Restoration time, totally 4 DTMF systems are available for edition.

Side Tone: Transceiver will emit a corresponding side tone while transmitting a DTMF signaling.

PreTime: The waiting time to transmit DTMF code after pressing PTT.

Range: 400ms-1000ms

Step: 10ms

Default: 400ms

Tone Duration: The duration of transmitting each single DTMF code.

Range: 30-1900ms

Step: 10ms

Default: 30ms

Tone Interval: The time interval between transmitting every two single DTMF codes.

Range: 30-1900ms

Step: 10ms

Default: 30ms

Restoration Time (reset time): The time duration from the end of DTMF transmission to automatically restoration.

Range: 0.2-33s

Step: 0.2s

Default: 2s

PTT Template

On the PTT Template, user is able to choose desired DTMF system, PTT ID type, PTT ID mode, Connect ID and Disconnect ID.

DTMF System: Choose the preset DTMF system, totally 4 DTMF systems are available for choice.

PTT ID Type: Choose desired PTT ID Type including None, Pre Only, Post Only and Pre&Post.

None: Close both connect ID and disconnect ID.

Pre Only: Transmitting connect ID Only.

Post Only: Transmitting disconnect ID Only.

Pre and Post: Transmitting both connect ID and disconnect ID.

PTT ID Mode: Choose desired PTT ID mode including Forbid, Each and Once.

Connect ID and Disconnect ID: Choose Desired Connect ID and Disconnect ID;

Range: None, 1-16.

Zone Setting

Zone Name

User is able to input a new name for each zone by PC Software programming, the name can be programmed as a combination of numeric, symbol, alphabet and Chinese character up to 8 digits.

Zone Member

User is able to add desired available channels to each zone by PC software programming; each zone can be added with maximum 16 channels.

Zone Add/Delete

User is able to add or delete zone as desired by PC software programming, there are maximum 64 zones available to be added, and at least one zone for valid PC software programming.