

# PREFACE

Thank you for your purchase of the HYT TC-780M trunking radio. This radio is compliant with the GA176-1998 police use standard and has passed the detect by the Ministry of Public Security. With powerful trunking functions, the radio supports CPSX and MPT1343 numbering schemes, for domestic public security systems and other trunking users using standard MPT1327 signalling. This easy-to-use radio will deliver your secure, instant and reliable communication at peak efficiency. Please read this manual carefully before use. The information presented herein will help you to derive maximum performance from your radio.

## MODELS COVERED IN THIS MANUAL

TC-780M VHF Trunking Radio

TC-780M UHF Trunking Radio

# Contents

Safety and General Information .....	错误! 未定义书签。
Product Inspection .....	4
Radio Overview.....	5
Battery Information.....	9
Antenna Information.....	11
Assembly and Disassembly .....	11
Attaching the Battery.....	11
Removing the Battery .....	12
Attaching the Antenna.....	12
Removing the Antenna.....	12
Attaching the Belt Clip.....	13
Removing the Belt Clip .....	13
Removing the Accessory Cover.....	14
Attaching the Earpiece/Microphone .....	14
General Radio Operations .....	15
Programmable Auxiliary Functions.....	16
Trunking Mode .....	18
Keypad Function .....	18
Function Description .....	22
Manual Dial.....	30
Menu Operation .....	40
Conventional Mode .....	55
Advanced Operations .....	55
Background Operations .....	59
Chinese/English Menu Operations .....	62
Appendix 1 LCD Icons .....	66
Appendix 2 Keypad Characters .....	67
Troubleshooting .....	67
Care and Cleaning .....	67
Optional Accessories .....	68

## SAFETY TRAINING INFORMATION



Your **HYT** radio generates RF electromagnetic energy during transmit mode. This radio is designed for and classified as “Occupational Use Only”, meaning it must be used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards. This radio is NOT intended for use by the “General Population” in an uncontrolled environment.

This radio has been tested and complies with the FCC RF exposure limits for “Occupational Use Only”. In addition, your **HYT** radio complies with the following Standards and Guidelines with regard to RF energy and electromagnetic energy levels and evaluation of such levels for exposure to humans:

- FCC OET Bulletin 65 Edition 97-01 Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
- American National Standards Institute (C95.1-1992), IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
- American National Standards Institute (C95.3-1992), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields— RF and Microwave.
- The following accessories are authorized for use with this product. Use of accessories other than those (listed in the instruction) specified may result in RF exposure levels exceed the FCC requirements for wireless RF exposure.



To ensure that your exposure to RF electromagnetic energy is within the FCC allowable limits for occupational use, always adhere to the following guidelines:

- **DO NOT** operate the radio without a proper antenna attached, as this may damaged the radio and may also cause you to exceed FCC RF exposure limits. A proper antenna is the antenna supplied with this radio by the manufacturer or antenna specifically authorized by the manufacturer for use with this radio.
- **DO NOT** transmits for more than 50% of total radio use time (“50%duty cycle”). Transmitting more than 50% of the time can cause FCC RF exposure compliance requirements to be exceeded. The radio is transmitting when the “TX indicator” lights red. You can cause the radio to transmit by pressing the “PTT” switch.
- **ALWAYS** keep the antenna at least 2.5 cm (1 inch) away from the body when transmitting and only use the **HYT** belt-clip which is listed in instructions when attaching the radio to your belt, etc., to ensure FCC RF exposure compliance requirements are not exceeded. To provide the recipients of your transmission the best sound quality, hold the antenna at least 5 cm (2 inches) from your mouth, and slightly off to one side.

The information listed above provides the user with the information needed to make him or her aware of RF exposure, and what to do to as-sure that this radio operates with the FCC RF exposure limits of this radio.

### Electromagnetic Interference/Compatibility

During transmissions, your **HYT** radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so. **DO NOT** operate the transmitter in areas that are sensitive to electromagnetic radiation such as hospitals, aircraft, and blasting sites.

### Occupational/Controlled Use

The radio transmitter is used in situations in which persons are exposed as consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

## IMPORTANT

READ ALL INSTRUCTIONS carefully and completely before using the transceiver

**SAVE THIS INSTRUCTION MANUAL-** This instruction manual contains important operating instructions for the Two-Way Radio

## EXPLICIT DEFINITIONS

WORD	DEFINITION
<b>WARNING</b>	Personal injury, fire hazard or electric shock may occur.
<b>CAUTION</b>	Equipment damage may occur.
<b>NOTE</b>	If disregarded, inconvenience only. No risk of personal injury, fire or electric shock.

## OPERATING NOTES

- When transmitting with a portable radio, hold the radio in a vertical position with its microphone 5 to 10 cm (2 to 4 inches) away from your mouth. Keep the antenna at least 2.5 cm (1 inch) from your head and body.
- If you wear a portable two-way radio on your body, ensure that the antenna is at least 2.5 centimeters (1 inch) from your body when transmitting.

## PRECAUTIONS

- **WARNING! NEVER** hold the transceiver so that the antenna is very close to, or touching exposed parts of the body, especially the face or eyes, while transmitting. The transceiver will perform best if the microphone is 5 to 10 cm (2 to 4 inches) away from the lips and the transceiver is vertical.
- **WARNING! NEVER** operate the transceiver with a headset or other audio accessories at high volume levels.
- **CAUTION! NEVER** short the terminals of the battery pack.
- **NEVER** connect the transceiver to a power source other than the Battery listed below. Such a connection will ruin the transceiver.
- **DO NOT** push the PTT when not actually desiring to transmit.
- **AVOID** using or placing the transceiver in direct sunlight or in areas with temperatures below  $-30^{\circ}\text{C}$  ( $-22^{\circ}\text{F}$ ) or above  $+60^{\circ}\text{C}$  ( $+140^{\circ}\text{F}$ ).
- **DO NOT** modify the transceiver for any reason.
- **MAKE SURE** the flexible antenna and battery pack are securely attached to the transceiver, and that the antenna and battery pack are dry before attachment. Exposing the inside of the transceiver to water will result in serious damage to the transceiver.
- **BE CAREFUL!** The series transceivers employ waterproof construction, which corresponds to IPX7 of the international standard IEC 60529 (2001), 1 m depth for 30 minutes. However, once the transceiver has been dropped, waterproofing cannot be guaranteed due to the fact that the transceiver may be cracked, or the waterproof seal damaged, etc.

The use of **non-HYT** battery packs/chargers may impair transceiver performance and invalidate the warranty.

### FCC CAUTION:

Changes or modifications to this device, not expressly approved by **HYT**, could void your authority to operate this transceiver under FCC regulations.

# Product Inspection

Please unpack the package box carefully and check that all items shipped were received; report any missing or damaged items to your dealer.

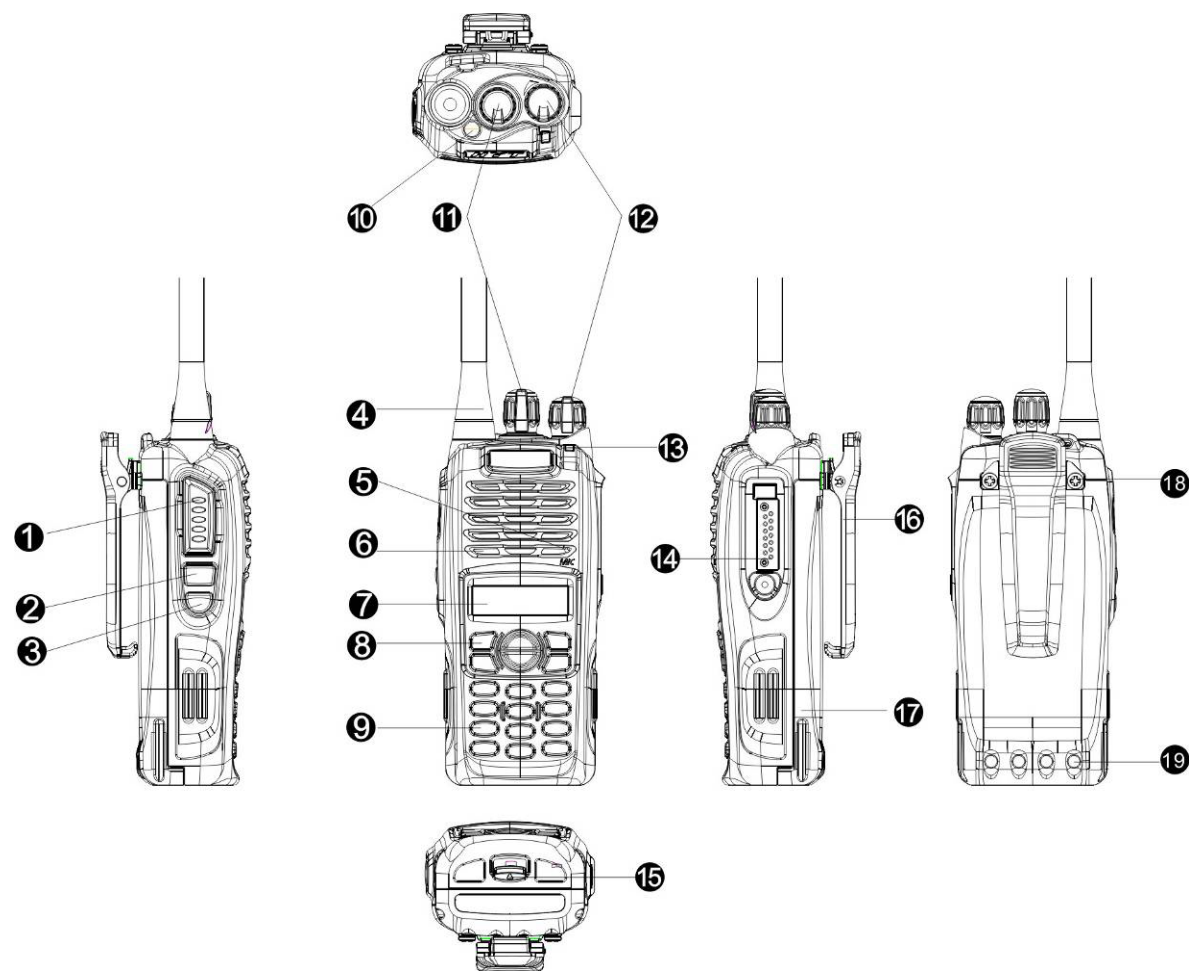
## Accessories

Item	Qty. (PCS)
Antenna	1
Belt Clip	1
Leather Strap	1
Li-Ion Battery	1
MCU Rapid-rate Charger	1
Switching Power	1
Owner's Manual	1

			
Antenna	Li-Ion Battery (1700mAh)	MCU Rapid-rate Charger	Switching Power (100-240V) (for use with different power cords in different countries and areas)
			
Belt Clip	Leather Strap		

Note: Frequency band is marked on the label of antenna, if not, identify the frequency band according to the color circle.  
Please refer to the label on the radio unit for detailed frequency band information.

## Radio Overview



① PTT (Push-to-Talk) Key	② SK1 (Side Key 1)	③ SK2 (Side Key 2)	④ Antenna
⑤ Microphone	⑥ Speaker	⑦ LCD Display	⑧ Function Keypad
⑨ Numeric Keypad	⑩ TK (Top Key)	⑪ Channel Selector Knob	⑫ Radio On-Off / Volume Control Knob
⑬ LED Indicator	⑭ Accessory Jack	⑮ Battery Latch	⑯ Belt Clip
⑰ Battery	⑱ Screw, Belt Clip	⑲ Charging Piece	

### \* PTT (Push-to-Talk) Key

Press and hold down the **PTT** key to transmit; release it to receive.

**\* SK1 (Side Key 1)**

Programmable function key.

**\* SK2 (Side Key 2)**

Programmable function key.

**\* LCD Display**

Used to display radio status information.

**\* Function Keypad**

- **Exit key**

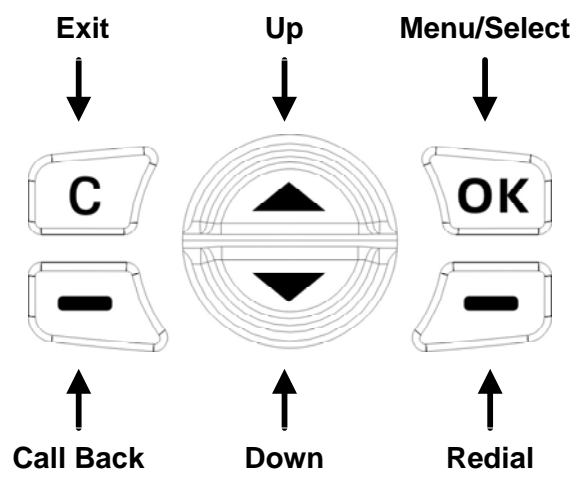
Use the **Exit** key to return to the previous menu.

- **Up key**

- **Down key**

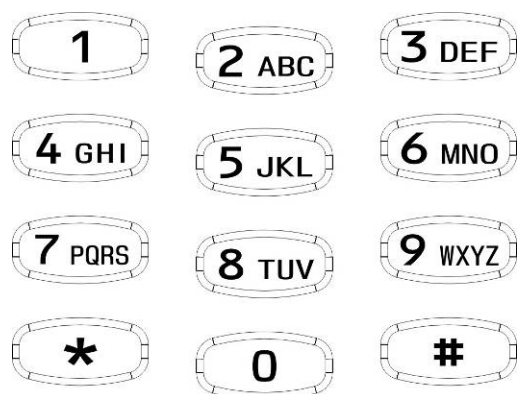
- **Menu/Select key**

Used to enter the menu mode. When you are in the menu mode, this key is also used to make menu selections.



**\* Numeric Keypad**

Used to enter information for programming the radio's lists. When the radio operates in trunking mode, the keys are also used to dial a phone number.



**\* TK (Top Key)**

Programmable function key.

**\* Channel Selector Knob**

Rotate the knob to select a desired channel.

**\* Radio On-Off/Volume Control Knob**

Rotate the knob clockwise to turn the radio on, and rotate the knob fully counter-clockwise until a click is heard to turn the radio off.

Turn the knob clockwise to increase the volume, or counter-clockwise to decrease the volume.

**\* LED Indicator**

Status		LED Indications and Tones
Wired Clone	Source radio: Turn the radio on while holding down <b>PTT</b> and <b>SK2</b> . Target radio: Rotate the <b>Radio On-Off</b> knob clockwise to turn the radio on.	The orange LED flashes twice.
	Source radio: turn on the target radio and connect the cloning cable. Then press the <b>PTT</b> on the source radio to initiate cloning.	<ol style="list-style-type: none"> <li>1. LED solidly glows red when cloning is in progress;</li> <li>2. LED goes out when cloning is completed;</li> <li>3. LED flashes red when cloning fails.</li> </ol>
	Target radio	<ol style="list-style-type: none"> <li>1. LED solidly glows green when cloning is in progress;</li> <li>2. LED goes out when cloning is completed.</li> </ol>
Power On		The green LED flashes once.
Low Battery Alert		Three beeps are heard.
Transmitting		LED glows red.
Receiving		LED glows green when carrier presents.
Scanning		Red LED flashes once every 1 second. The green LED flashes when



	carrier is detected.
Programming	Reading: LED glows red; Writing: LED glows green.
Encoding (DTMF)	LED glows red while transmitting
Power Select	1W: One beep is heard; 4W/5W: Three beeps are heard.
Function Key Press	One beep to enable, two beeps to disable.

**\* Accessory Jack**

The jack is used to connect audio accessories, or other accessories such as programming cable.

# Battery Information

## Initial Use

New batteries are shipped uncharged from the factory. Charge a new battery for 5 hours before initial use. The maximum battery capacity and performance is achieved after three full charge/discharge cycles. If you notice the battery power runs low, please recharge the battery.

## Applicable Battery Packs

To reduce the risk of injury, charge only the battery specified by the manufacturer. Other batteries may burst, causing bodily injury and damage.

### Caution:

1. To avoid risk of personal injury, do not dispose of batteries in a fire!
2. Dispose of batteries according to local regulations (e.g. recycling). Do not dispose as household waste.
3. Never attempt to disassemble the battery.

## Battery Tips

1. When charging your battery, keep it at a temperature among 5°C ~ 40°C to ensure a full charge. Temperature out of the limit will significantly reduce battery life.
2. When charging a battery attached to a radio, turn the radio off to ensure a full charge.
3. Do not cut off the power supply or remove the battery when charging a battery.
4. Never charge a battery that is wet. Please dry it with soft cloth prior to charge.
5. The battery will eventually wear out. When the operating time (talk-time and standby time) is noticeably shorter than normal, it is time to buy a new battery.

## To Prolong Battery Life

1. Battery performance will be greatly decreased at a temperature below 0°C. A spare battery is necessary in cold weather. The cold battery unable to work in this situation may work under room temperature, so keep it for later use.
2. The dust on the battery contact may cause the battery cannot work or charge. Please use clean dry cloth to wipe it before attaching the battery to the radio.

## Battery Storage

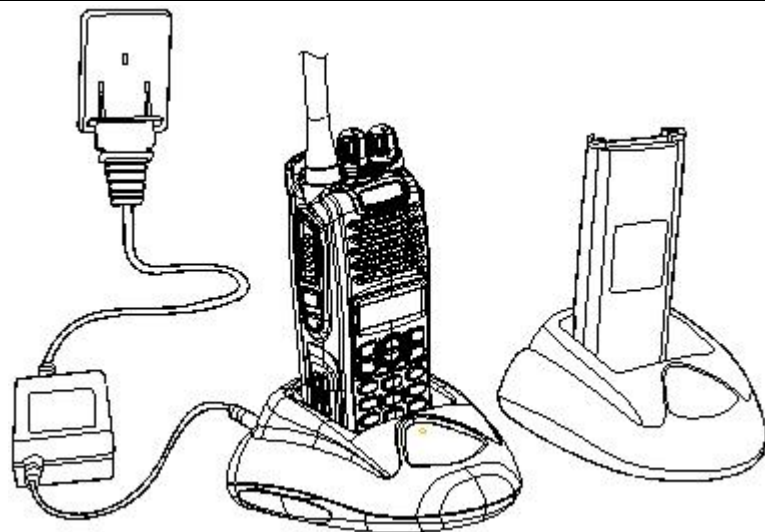
1. Fully charge a battery before you store it for a long time, to avoid battery damage due to over-discharge.
2. Recharge a battery after 3 months' storage, to avoid reducing battery capacity due to over-discharge.
3. When storing your battery, keep it in a cool, dry place under room temperature.

## Charging the Battery

When the battery level is very low, please recharge the battery.

Use only the charger specified by the manufacturer. The charger's LED indicates the charging progress.

Status	Charger LED	Remarks
Standby (no-load)	Red LED flashes slowly (0.2s on/3s off )	For MCU rapid-rate charger
Battery is charging	Red LED solidly glows	
Battery is fully charged	Green LED solidly glows	
Error	Red LED flashes rapidly (0.2s on/0.2s off)	For MCU rapid-rate charger



Please follow these steps:

1. Plug the power cord into the adapter.
2. Plug the AC connector of the adapter into the AC outlet socket.
3. Plug the DC connector of the adapter into the DC socket on the back of the charger.
4. Place the radio with the battery attached, or the battery alone, in the charger.
5. Make sure the battery is in well contact with the charging terminals. The charging process initiates when the red LED lights.
6. The green LED lights about 3 hours later indicating the battery is fully charged. Then remove the radio with the battery attached or the battery alone from the charger.

**Troubleshooting (MCU intelligent rapid-rate charger only):**

When troubleshooting, always observe the color of the LED:

#### **No LED Indication?**

1. Make sure that the power cord is plugged into an appropriate AC outlet.

#### **Red LED flashes rapidly (0.2s on/0.2s off)?**

1. Remove the battery from the charger, and:
  - a) Make sure that it is a HYT authorized battery. Other batteries may not charge.
  - b) Remove power from the battery charger, and clean the gold metal, charging contacts of the battery and charger, using a clean dry cloth.
2. The battery temperature may be above 45°C.
3. Defective battery. Please replace it with a new one.
4. Power up the charger and place the battery back into the charger pocket. If the LED indicator continues to flash red, replace the battery.

#### **Note:**

- ✚ When the battery charger detects the proper battery conditions, rapid charging begins automatically (steady red LED).
- ✚ If the battery temperature is above 45°C, the charger will report the fault by flashing red LED rapidly (0.2s on/0.2s off), and will not charge until the battery temperature is below 45°C, with red LED solidly glows (Ni-MH battery only).

## **Antenna Information**

1. Stubby antenna is ideal for communication within limited range. Thin and long antenna optimizes communication coverage, and its flexible and soft characteristic makes it ideal for wearing your radio on the belt.
2. Communication range may vary with terrain and your operating conditions. Rainy days or forest locations may narrow your communication range, please make preparation in advance to avoid potential inconvenience.

## **Assembly and Disassembly**

### **Attaching the Battery**

1. When attaching the battery, make sure the battery is in parallel and good contact with the aluminum chassis. The battery bottom is about 1 to 2 centimeters below the bottom of the radio's body.

2. Align the battery with the guide rails on the aluminum chassis and slide it upwards until a “click” is heard.
3. The battery latch at the bottom locks the battery. See figure 1.

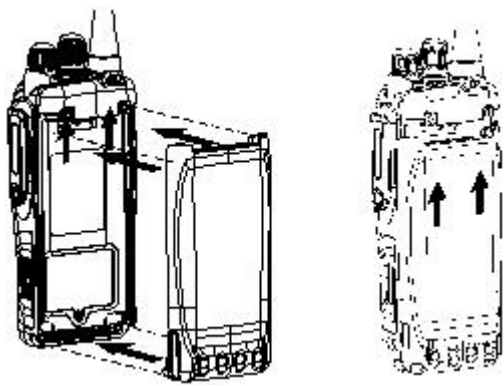


Figure 1

### Removing the Battery

1. Turn off the radio before removing the battery.
2. Slide the battery latch, at the bottom of the radio's body, in the direction indicated by the arrow.
3. Slide down the battery for about 1 to 2 centimeters, and then remove the battery from the radio's body. See figure 2.

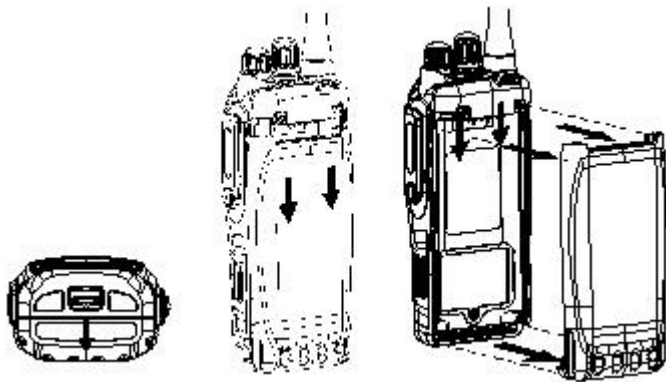


Figure 2

### Attaching the Antenna

1. Align the threaded end of the antenna with the radio's antenna connector.
2. Turn the antenna clockwise to fasten it. See figure 3

### Removing the Antenna

Turn the antenna counter-clockwise until you can remove it. See figure 3

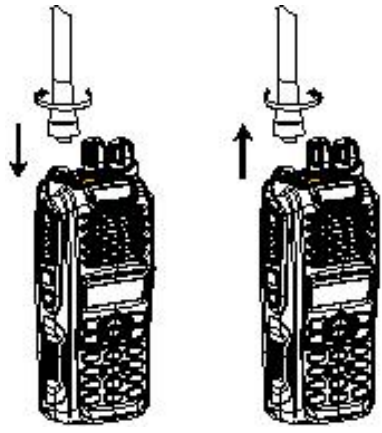


Figure 3

### Attaching the Belt Clip

1. Remove the screws (belt clip) on the radio's body.
2. Align the screw holes on the metal holder of belt clip with those on the radio's body.
3. Tighten the screws. See figure 4.

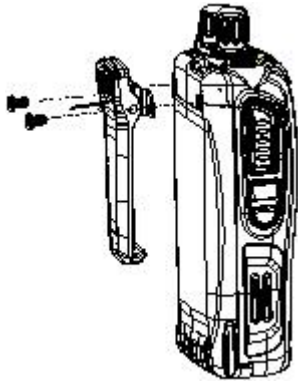


Figure 4

### Removing the Belt Clip

1. Remove the screws (belt clip).
2. Remove the belt clip. See figure 5.

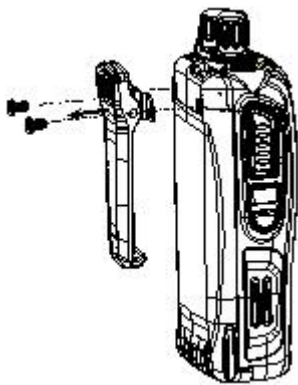


Figure 5

### Removing the Accessory Cover

1. Unscrew the screw on the accessory cover counter-clockwise with a flat head screwdriver.
2. Remove the accessory cover. See figure 6.

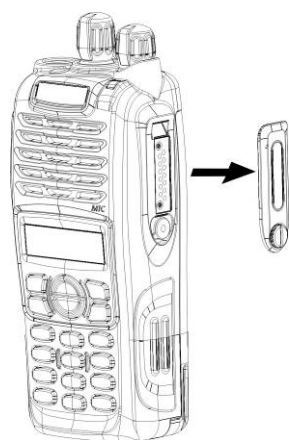


Figure 6

### Attaching the Earpiece/Microphone

1. Insert the tab at the bottom of the earphone/microphone into the slot on the radio.
2. Align the screw at the top of the earphone/microphone with the threaded hole on the radio.
3. Rotate the screw clockwise to fasten. See Figure 7.

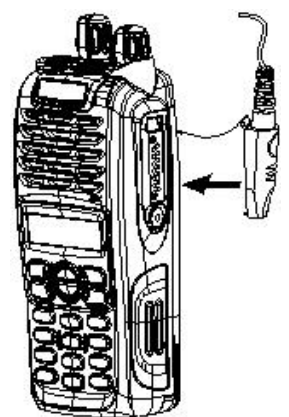


Figure 7

Note: The figures above are only for references. Please make the object as the standard.

## **General Radio Operations**

### **Turn On/Off the Radio**

Rotate the **Radio On-Off/Volume Control** knob clockwise to turn the radio on, or counter-clockwise until a “click” is heard to turn the radio off.

### **Adjust the Volume**

Rotate the **Radio On-Off/Volume Control** knob clockwise to increase the volume, or counter-clockwise to decrease the







volume.

### Password

If the Password feature is set, the LCD will display "PSW" after power-on. Input the correct password (1–8 digits) to enter the conventional mode.

### Lock/Unlock

- To lock the keypad, press  while holding down . When locked, the LCD displays "Key Locked".
- To unlock the keypad, press  while holding down . When unlocked, the LCD displays "Key Unlocked".

### Select a Channel

The radio provides 32 conventional channels, some of which may not be programmed and can not be used. Please contact your dealer for detailed information.

Rotate the **Channel Selector** knob to select a desired channel.

### Transmit

To transmit, press and hold down the **PTT** key, and speak into the microphone at your normal voice level.

Hold the microphone about 2.5 to 5 centimeters away from your mouth.

### Receive

To receive, release the **PTT** key.

## Programmable Auxiliary Functions

Your dealer may assign one of the following auxiliary functions to the **TK**, **SK1**, **SK2** keys (short or long button-press). Press the key to enable the function, and press it again to disable the function. Please refer to Advanced Operations.

### Trunking Mode:

- Off
- Disconnect
- Emergency
- Hunt

- Man Down
- Whisper
- Scrambler
- Power Select

**Conventional Mode:**

- Off
- Call 1/Call 1
- Emergency
- Emergency Cancel
- Man Down
- Man Down Backup
- Monitor
- Monitor Momentary
- Scrambler
- Scrambler Backup
- Squelch Off
- Squelch Off Momentary
- Talk Around
- Power Select
- Whisper
- Whisper Backup
- VOX
- VOX Backup
- Busy Channel Lock

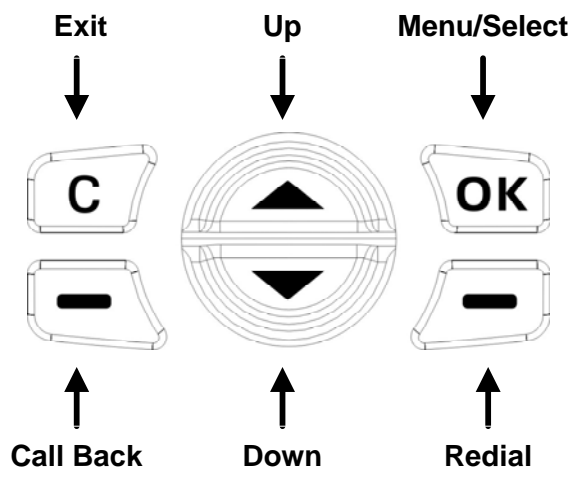
Trunking Mode

### **Keypad Function**

#### **Function Keypad**

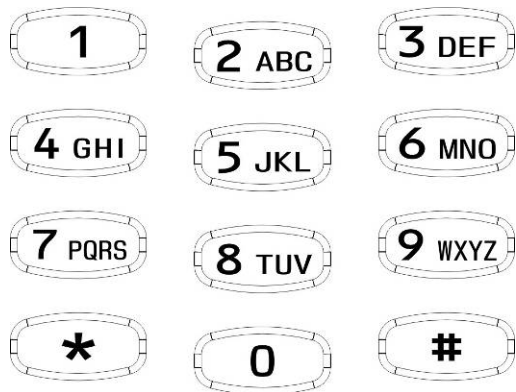
- Exit Key
- Up Key
- Down Key
- Redial Key
- Call Back Key
- Menu/Select Key

Used to enter the menu mode. When you are in the menu mode, this key is also used to make menu selections.



- Numeric Keypad

Used to enter information for programming the radio's lists. When the radio operates in trunking mode, the keys are also used to dial a phone number.





### Combined Function Key

- OK + 1: used to switch between trunking mode and conventional mode.
- OK + \*: used to lock/unlock the keypad.
- OK + 3: used to enable/disable Scrambler (valid in trunking mode).




#### 1. Dial Key #


Press # to make a call. Both the PTT key and # key are programmed with the same feature to meet personal requirements, making your operation more convenient.

#### 2. OK Key



Press  to enter the lower level menu, or to confirm one item in the menu. When icon  appears, press the key to view missed calls.

### 3. Exit Key



Press  to clear the error prompt on the LCD in case of call failure. Each press of  will clear the last digit of a wrong number. Long press  to return to the main menu directly.

In addition,  is the hang up key for all successful calls.


### 4. Redial Key

Hold down the **Redial** key just below , and the last dialled number appears. Press it again to make a call. Or press the **PTT** key or  to make the call.

### 5. Call Back Key

Hold down the **Call Back** key below , and the last caller number appears. Press it again to make a call. Or press the **PTT** key or  to make the call.


### 6. Numeric Key

Each digit appears on the LCD as it is entered. Press  to clear when a wrong digit is entered.

7. Each valid press of the numeric key is followed by an alert tone.

8. The programmable function keys **SK1**, **SK2** and **TK** can be programmed as the **Manual Hunt** key via the programming software.

When the base station, which the radio currently locks onto, can not provide good voice quality, press the **Manual Hunt** key to scan again, in order to search a better base station.

Note: If the radio locates at the boundary of two adjacent systems, pressing the key may cause the radio to switch to the other system. Pay attention to the current channel number and the roaming icon  on the LCD during scanning.

If the **Manual Hunt** key is held down, scan starts from the current frequency and move downwards in the frequency table. If the radio disconnects from the network, it will automatically scan from the start frequency in the frequency table, to ensure

the system's frequencies are scanned with priority.

9. The programmable function keys **SK1**, **SK2** and **TK** can be programmed as the **Disconnect** key via the programming software.

When transmitting on the traffic channel, press the **Disconnect** key to return to the control channel.

10. The programmable function keys **SK1**, **SK2** and **TK** can be programmed as the **Emergency** key via the programming software.

When the radio is standby on the control channel, press the **Emergency** key to send an emergency call to a predefined number (dispatcher number 8170-8180, individual call number, or group call number). The number is set via the programming software.

11. The programmable function keys **SK1**, **SK2** and **TK** can be programmed as the **Man Down** key via the programming software.

Press the key to enable/disable the Man Down feature.

12. The programmable function keys **SK1**, **SK2** and **TK** can be programmed as the **Scrambler** key via the programming software.

Press the key to enable/disable the Scrambler feature.

13. The programmable function keys **SK1**, **SK2** and **TK** can be programmed as the **Whisper** key via the programming software.

Press the key to enable/disable the Whisper feature.

14. The programmable function keys **SK1**, **SK2** and **TK** can be programmed as the **Power Select** key via the programming software.

Press the key to select the transmit power.

Note: The programmable function keys can be set to long or short button press and can be programmed with respective functions.
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
Note: Pay attention to the use of the long or short press definitions. The short press is not applicable for all features. Man Down and Whisper features must be enabled/disabled via long button press. It is recommended to fix the use in the programming software.

## Function Description

### Power On Status


Power on the radio in trunking mode. Enter the password if power on password is set and "Welcome!" appears on the LCD. The power on display can be changed in Model Information in the programming software.




Welcome!

Then the radio scans automatically. The LED indicator and  at the top right of the LCD flash, indicating the radio is scanning.

Scan recycles according to the preset mode until the radio has registered successfully. There are four scan modes: control channel table scan, band scan, all frequency scan and flexible channel plan.

Take all frequency scan for example.

 Scan Channel XXXX

After the radio has registered successfully, the LCD displays "Register Success" and icon  appears at the top right of the LCD, indicating the radio has automatically locked onto the local system. If the radio roams to other systems, icon  appears at the top right of the LCD. If the radio does not lock onto a system, scan recycles automatically. Whether to display  is dependant on the roaming icon display parameters set in the programming software. Please refer to the Help File of the programming software for details.

After the radio has registered successfully, the radio will enter the standby status automatically with green LED flashing. The LCD displays ID or number/alias of the work group in which the radio is in before power-off.

ID XXXXXXXXXXXX

01 taking part in XXXXXXXXXXXX

01 Vice Squad 1

### Chinese/English Menu

The dot matrix display and simple Chinese/English menus make operations easy for TC-780M. This feature can be set in item 7 Language Select in the menu.

#### **Auto Select BS**

The advanced scan technology enables the radio to always lock onto the BS with stronger signals, ideally suited for the multiple BS covered system. As for the single BS covered system, this feature can be disabled. This feature can be set in the Background Scan item (sub-menu of control channel) of trunking system setting in the programming software.

#### **Full Off Air Call Setup (FOACSU)**

The feature is available after both the calling and called parties are set with the feature. If the feature is set, the called radio rings when the calling radio transmits. However, the system does not allocate a traffic channel to the two parties until the **PTT** key of the called party is pressed to respond to the call. This feature can save channel resources and can be set in basic information of trunking system setting in the programming software. It asks for system support.

#### **Manual Select BS**

The radio can quickly switch to the designated control channel via combined keys. Press **\*42\*** + 4-digit FCC value + **#** to scan on the channel directly.

Note: When selecting BS manually, the input range of the 4-digit FCC value is limited and is dependant on the radio's current scan mode.

A: For control channel table scan, the 4-digit FCC value is within the FCC range listed in the channel.

B: For all frequency scan, the 4-digit FCC value is between the start channel and stop channel of all frequency scan.

C: For flexible channel plan, the 4-digit FCC value is within the control channel range listed in the flexible channel table.

D: For band N scan, the 4-digit FCC value is within the range listed in band N. N is set in the programming software.

#### **Flexible Channel Plan**

Tx/Rx frequency on the used control/traffic channel can be set by the user in the programming software. This feature can meet irregular channel frequencies of users.

Note: The set frequency must be a whole-number multiple of 1.25kHz.



**Kill/Revive**

Through the base station, a lost radio may be remotely killed, and a killed radio can be remotely revived.

**Compandor**

The feature effectively improves the dynamic range of voice signal and enhances the SNR of the given frequency deviation. Decreased background noise insures a transmission of clear voice even in noisy environment. The feature can be set in basic information of the programming software and can be enabled/disabled manually in the menu.

**Whisper**

The feature allows you to speak quietly into the radio and still be heard clearly. This feature can be checked in basic information of the programming software and can be enabled manually in the radio menu.

**Man Down**

If the feature is enabled, the radio will send the emergency message to the system when the radio is horizontally or inversely positioned for a certain period (set via the programming software). The feature can be enabled via the shortcut key or in the menu and can be used under special environments.

**Safety Check**

The system sends a Safety Check signalling to the radio at intervals and the radio sounds a special alert. Press the **PTT** key to acknowledge, indicating safe situation. If the **PTT** key is not pressed, the alert keeps sounding.


**Special ID Calling**

The user can assign 101 with a specific ID number, such as all call number, wired dispatcher number. Refer to the sub-item of Manual Dial for details.

**Temporary Grouping in Roaming System**

Manually change the system code (PFIX) to join the temporary grouping of the roaming system. Refer to the sub-item of Manual Dial for details.

**Missed Call Display**

Icon  appears, reminding the user of the missed call. This feature is not required to be set. Enter Call Record in the menu to view.

**Calling Party Number Display**

During a group call, the radio can display the number of the calling party for caller identification.

**High/Low Power Switchable**

By simple pressing one button, users can switch to low power when communicating within limited range coverage or switch to high power when further distance is required. The feature can be set in Radio Setting in the menu.

#### **Customized Display**

LCD displays the radio's ID, group call alias and group call number when the radio is standby. This feature can be set in CPSX or MPT1343 terminal grouping in the programming software.

#### **LCD Icons**

LCD icons provide quick recognition of battery strength, signal strength, transmit power, vibrate, roam, man down, whisper, etc.

#### **Customized Programming Interface**

The simple programming interface (in Chinese/English) is customized for your easier operation and test.

#### **Four System Networks**

The user may define parameters for three trunking networks and one conventional network. The current operating network can be selected manually in the radio.

#### **Transmit a Call**

The radio can transmit various calls, including individual call, group call, call to PABX/PSTN subscriber, via group call list or manual dial.

#### **Individual Call**

The radio can transmit an individual call by entering the called party's number via the keypad. The radio enters non-encryption or encryption mode according to the preset mode when communicating. Press the user-defined keys **OK** + **3** to quickly switch between non-encryption and encryption mode. The radio returns to the preset mode after hang-up.

#### **Group Call**

TC-780M radio can be set with 82 groups at most. Rotate the **Channel Selector** knob to select a group of the local system or roaming system as the current group. Rotate the **Channel Selector** knob to view the property and number of the group, which are displayed on the LCD, as join group 205-20-900 (CPSX dial). The group alias can be set to be displayed. Press the **PTT** key to call the current group. The calling party displays remaining time; the called party displays the caller ID and time (when the called party receiving), and displays group number and time upon no transmission.

The talk group can be categorized into hidden group, join group, simulcast group, ack group, temporary group, data group and encryption group.

Hidden Group: This group can only receive calls, but can not transmit calls. Hidden group can be called with the **Group Call Selector** at any position, but not displayed in the group call list.

Join Group: This group can not only receive calls, but also transmit calls. When called, the radio can only acknowledge in individual call and in current group.

Simulcast Group: It is same with join group, but PFIX is not compared.

Ack Group: The group can both receive and transmit calls with the **Group Call Selector** at any position.

Temporary Group: It is grouped with dynamic regrouping command. Its functions are same with those of ack group.

Data Group: The group can only respond to the data group call from the radio, and other radios won't respond to the call even if they join this group. This group is mainly used for data transmission.

Encryption Group: When this group talks, members in this group enters encryption mode automatically. After disconnect, they return to non-encryption or encryption mode, which is set during standby. Other functions are same with those of ack group.

Note 1: Encryption is enabled in encryption mode and encryption is not enabled in non-encryption mode.

Note: 2: In group call mode, the radio only responds to current group, hidden group, fleet-wide all call, ack group, encryption group, temporary group, system-wide all call and individual group, but not responds to calls of other join groups.

Note 3: PFIX can be set whether to be compared via the programming software for the above groups except simulcast group.

### **Receive Broadcast Message**

The radio can receive broadcast messages sent by the system on the control channel, to accomplish the following functions: add control channel frequency, delete control channel frequency, specify call maintenance parameters, specify registration parameters, etc. Please refer to the MPT1327 signaling standard for details.

Note: Only one frequency can be added for the radio each time if more than one frequency is added for the system. You can add another frequency via manual scan or turning the radio off and back on. Same operations for deleting frequencies. This feature asks for corresponding function support of the system.

### **Other Features**

#### **1. Dynamic Calling Party Number Display**

If the calling party and called party are in the same fleet, the called party will display the number of the calling party dynamically.

Note: This feature asks for system support, that is to say, the system must transmit broadcast messages on control channel, notifying all radios to send their own ID for message maintenance when the **PTT** key is pressed.

#### **2. Time-Out Timer (TOT)**

Set the amount of time the radio user can continuously transmit on a channel via the TC-780M programming software. The timer counts down upon transmission. When the timer expires, the radio will stop transmitting automatically.

Note: The TOT feature is only applicable for the calling party. The called party only displays the actual communication time.

#### **3. Fleet Call Inhibit**
















Calls (individual call/group call) are prohibited on some fleets by selecting hidden at the corresponding fleets in the TC-780M programming software. This feature only supports CPS dial.

#### **4. VoteNow**

After the VoteNow feature is enabled via the programming software, the radio will compare the signal strength of the broadcast BS with that of the currently locked BS. This feature asks for system support.

### **LCD Display**

In trunking mode, icons displayed on the LCD are as follows:

Icons and Indications				
				
Signal Strength	Status Message	Battery Strength	Call Forward	Speaker Unmute
				
Transmit Power	Transmit	Lock	Scan	Roam
				
Scrambler	Man Down	Missed Call	Whisper	Vibrate

Note: After the individual call is connected, the called radio rings continuously and displays the number of the calling party simultaneously. After the **PTT** key is pressed, the radio stops ringing. The communication time, which starts upon the radio's ringing, is displayed.

### Signal Tone

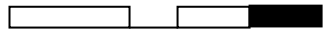


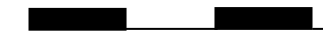
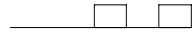
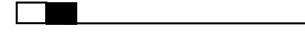


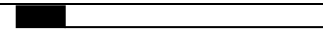
The radio provides a series of audible tones which can tell the operating status of the radio along with the LCD display. Signal tones include high-pitched and low-pitched tones. The operating statuses are indicated by changes in alert time, sequence and interval.

Note: A different, rapid beep tone is employed for Low Battery Alert.

When being called, the radio will continuously sound an alert tone until the **PTT** key is pressed.

High-pitched Tone  Low-pitched Tone

Signal Tone	Indication
-------------	------------

	Power on/revive
	Call failure
	Successfully called by other radios or PSTN/PABX subscribers
	System handling failure
	Successful call setup
	Hang up
	Grouped into the dynamic temporary grouping
	System call by the dispatcher
	Dial error

#### LED Indicator

The LED indicator located between the antenna and **Channel Selector** knob indicates the operating status of the radio to some extent.

No.	LED	Indication
1	Not light	Power off or flat battery
2	Green	Receiving in the network
3	Red	Transmitting in the network or in talk around mode
4	Flash Green	The radio locks onto a system. The flash frequency is dependant on the frame length of the current system signalling.
5	Flash Red	Poor signal, code error
6	Flash Orange	Scanning

### Programming

The radio is programmed with the dedicated programming cable and software. Operations are as follows:

1. Connect the radio to the PC serial port with the programming cable.
2. Power on the radio.
3. Run the programming software.

Remove the programming cable after programming is completed.

#### Precautions:

1. Install the programming software into your computer first.
2. Many functions can be set via the programming software. Read the Help File of the programming software carefully before programming.

### Manual Dial

The radio supports CPSX and MPT1343 numbering schemes. PABX call, PSTN call, emergency call, priority call, call forward and any group call can be made only when the corresponding right is programmed.

If Fleet Individual Call Inhibit is set in the programming software, individual calls are prohibited on the corresponding fleet. If Fleet Group Call Inhibit is set, group calls are prohibited on the corresponding fleet. This setting can limit the user's call right.

#### CPSX Manual Dial

## 1. Radio to Radio

The radio can make radio-to-radio individual call and group call. After Any Group Call Right is programmed, any group call can be made. If there is no any group call right, the radio can only transmit calls in the group call list.

- In-fleet Individual Call  
3-digit ID number (200~899) + # or PTT
  - In-fleet Group Call  
3-digit group call number (900~999) + # or PTT
  - Fleet-wide All Call  
9 9 9 # or PTT
  - Inter-fleet Individual Call  
5-digit ID number (20~79 + 200~899) + # or PTT
  - Inter-fleet Group Call  
5-digit group call number (20~79 + 900~999) + # or PTT
  - Inter-fleet All Call  
5-digit all call number + # or PTT
  - Interprefix Individual Call  
8-digit ID number (200~327 + 20~79 + 200~899) + # or PTT
  - Interprefix Group Call  
8-digit ID number (200~327 + 20~79 + 900~999) + # or PTT
- Hang Up: Press C or the **Disconnect** key.

Note: When the fleet number of inter-fleet call reaches 70, please dial the system PFX before the fleet number because of the conflict with leading character of the PABX call.

## 2. Radio to PABX/PSTN

The radio can call PABX and PSTN subscribers.

### 1) Radio to PABX

The radio can call 4~8 digit PABX number. When the PABX number exceeds 4 digits, prefix 7 or 8 is required in



the number.

- 4-digit Extension PABX

4-digit PABX number + # or PTT

e.g.: 1 2 3 4 #

- 5~8 Digit Extended Addressing PABX

7 +5~8 digit PABX number+ # or PTT

## 2) Radio to PSTN

0 + telephone number + # or PTT

The telephone number including DDD and IDD number is 3~15 digits.

Hang Up: Press C or the **Disconnect** key.

## 3. Special Call

### 1) Emergency Call

The emergency call has the highest call priority.

- Emergency In-fleet Call

\* 9 \* + 3-digit individual call or group call number + # or PTT

- Emergency Inter-fleet Call

\* 9 \* + 5-digit individual call or group call number+ # or PTT

- Emergency Inter-zone Call

\* 9 \* +8-digit individual call or group call number+ # or PTT

- Emergency Call to PABX/PSTN

This operation is more or less the same with radio-to-PABX/PSTN operation except that prefix \* 9 \* is required here.

Hang Up: Press C or the **Disconnect** key

### 2) Priority Call

This call has call priority.

- Priority In-fleet Call

**\*8\*** + 3-digit individual call or group call number+ **#** or **PTT**

- Priority Inter-fleet Call

**\*8\*** + 5-digit individual call or group call number + **#** or **PTT**

- Priority Call to PABX/PSTN

This operation is more or less the same with radio-to-PABX/PSTN operation except that prefix **\*8\*** is required here.

Hang Up: Press **C** or the **Disconnect** key

### 3) Call Forward

Forward the incoming call to another radio and PABX/PSTN subscribers.

- Forward to Another Radio

**\*41\*** + individual call or group call number + **#** or **PTT**

- Forward to PABX

4-digit extension PABX:

**\*41\*** + 4-digit PABX number+ **#** or **PTT**

5~8 digit extended PABX:

**\*41\*** + **7** or **8** + 5~8 digit PABX number+ **#** or **PTT**

- Forward to PSTN

**\*41\*0** + 3~15 digit PSTN number+ **#** or **PTT**

The PSTN number including area code has a maximum of 15 digits.

- Cancel Call Forward

**#41#**

### 4) Short Data (CPSX manual dial)

1~25 digit short data can be sent between portable radios.

**\* 2 \*** +3, 5 or 8 digit ID number + **\*** +1~25 digit number + **#** or **PTT**

5) Include Call

After a call is established, enter 3, 5 or 8 digit ID number + **#**

Hang Up: Press **C** or the **Disconnect** key

6) RQQ Status Message

The status message is a code used to transfer the preset information and needs system support. For example, status "08" indicates "on mission". Preset the English information with 16 English characters through programming.

**\* 0 \*** +3, 5 or 8 digit ID number + **\*** + 2-digit number among 00~31+ **#** (32 statuses can be defined in all)

7) Emergency: Use the **Emergency** key.

Note: Calls made by the special function key are emergency calls. When this function is used, the radio must have emergency call right.

8) PFIX Manually Grouped into Temporary Grouping

This feature can enable the radio to join the temporary grouping when roaming.

Rotate the **Work Group Selector** to the specified temporary group and then enter **\* 5 \*** + 3-digit PFIX + **#**

The 3-digit PFIX is a number among 200~327 specified by MPT1343.

Note: The Temporary Grouping feature can only be used within the local system, because MPT1327 and the police use standard does not specify PFIX in temporary grouping signaling. Ease of use, this feature is ideal for policemen on mission in other areas.

9) Special ID Calling

Preset a special ID number to 101 through keypad operations **\* 6 \*** + XXXXXX + **#**. The 7-digit ID number "XXXXXXX" is 3-digit PFX plus 4-digit ID number among 8136~8191. The radio can transmit a call to the set ID by dialling 101 and will not lose the set ID number even if it is powered off.

10) Call to Dispatcher

According to the police use standard, the radio can call several dispatchers. The following table lists the dispatchers' ID corresponding to dial numbers.

Note: Calls directly transmitted to the following dispatchers are common calls. To transmit emergency call to the dispatchers, prefix **\* 9 \*** is required.

Table 1

No.	Dial No.	ID
1	<b>1 0 0</b>	8170
2	<b>1 1 1</b>	8171
3	<b>1 2 1</b>	8172
4	<b>1 3 1</b>	8173
5	<b>1 4 1</b>	8174
6	<b>1 5 1</b>	8175
7	<b>1 6 1</b>	8176
8	<b>1 7 1</b>	8177
9	<b>1 8 1</b>	8178
10	<b>1 9 1</b>	8179

## 1. Radio to Radio

The radio can make radio-to-radio individual call and group call. After Any Group Call Right is programmed, any group call can be made. If there is no any group call right, the radio can only transmit calls in the group call list.

- In-fleet Individual Call

2-digit ID number (20~89) + # or PTT

3-digit ID number (200~899) + # or PTT

- In-fleet Group Call

2-digit ID number (90~98) + # or PTT

3-digit group call number (900~998) + # or PTT

- Inter-fleet Individual Call

6-digit ID number with a leading digit in the range 2~6 (2001~6050 + 20~89) + # or PTT

7-digit ID number with a leading digit in the range 2~6 (2001~6050 + 200~899) + # or PTT

- Inter-fleet Group Call

6-digit ID number with a leading digit in the range 2~6 (2001~6050 + 90~98) + # or PTT

7-digit ID number with a leading digit in the range 2~6 (2001~6050 + 900~998) + # or PTT

- Interprefix Individual Call

9-digit ID number with a leading digit 2 or 3 (200~327 + 2001~6050 + 20~89) + # or PTT

10-digit ID number with a leading digit 2 or 3 (200~327 + 2001~6050 + 200~899) + # or PTT

- Interprefix Group Call

9-digit ID number with a leading digit 2 or 3 (200~327 + 2001~6050 + 90~98) + # or PTT

10-digit ID number with a leading digit 2 or 3 (200~327 + 2001~6050 + 900~998) + # or PTT

Hang Up: Press **C** or the **Disconnect** key

## 2. Radio to PABX/PSTN

The radio can call PABX and PSTN subscribers.

1) Radio to PABX

1. 0 + # or PTT: call short addressing PABX (ID=8000)

0 + 3~6 + # or PTT: call short addressing PABX (ID=8000)

1000~8999 + # or PTT: call 4-digit short addressing PABX

3~6+1000~8999 + # or PTT: call 4-digit short addressing PABX

0, 7, 8 + PABX number (4~6 digit)

7, 8 + PABX number (4~8 digit)

2) Radio to PSTN

0 + telephone number + # or PTT

The telephone number including DDD and IDD number is 7~20 digits.

Hang Up: Press C or the **Disconnect** key

3. Special Call

1) Emergency Call

The emergency call has the highest call priority.

\* 9 \* + individual call or group call number + # or PTT

- Emergency Call to PABX/PSTN

This operation is more or less the same with radio-to-PABX/PSTN operation except that prefix \* 9 \* is required here.

Hang Up: Press C key

Note: Calls made by the special function key are emergency calls. When this function is used, the radio must have emergency call right.

In addition, 999 + # or PTT: (ID=8180)

## 2) Call Forward

Forward the incoming call to another radio and PABX/PSTN subscribers.

- Forward to Radio

**\* 4 1 \*** + individual call or group call number + **#** or **PTT**

- Forward to PABX

**\* 4 1 \*** + PABX number + **#** or **PTT**

- Forward to PSTN

**\* 4 1 \* 0** + 4~15 digit number + **#** or **PTT**

The PSTN number including area code has a maximum of 15 digits.

- Cancel Call Forward

**# 4 1 #** or **PTT**

## 3) Short Data Transmit

1~25 digit short data can be sent between portable radios.

**\* 2 \*** + data + **\*** + called party's number + **#** or **PTT**

## 4) RQQ Status Message

The status message is a code used to transfer the preset information, which needs system support. For example, status "08" indicates "on mission". Preset the English information with 16 English characters through programming.

**\* 0 \*** + 3, 5 or 8 digit ID number + **\*** + 2-digit number among 00~31 + **#** (32 statuses in all can be programmed)

## 5) Emergency Alarm:

Press the **Emergency** key, and the radio will transmit emergency call to the dispatcher or other terminals.

## 6) Abbreviated Dialling

20~29 + 200~998 + **PTT**

90~99 + 200~998 + **PTT**

200~299 + 20~98 + **PTT**

900~999 + 20~98 + **PTT**

## 7) Call to Dispatcher

This feature is consistent with CPS.

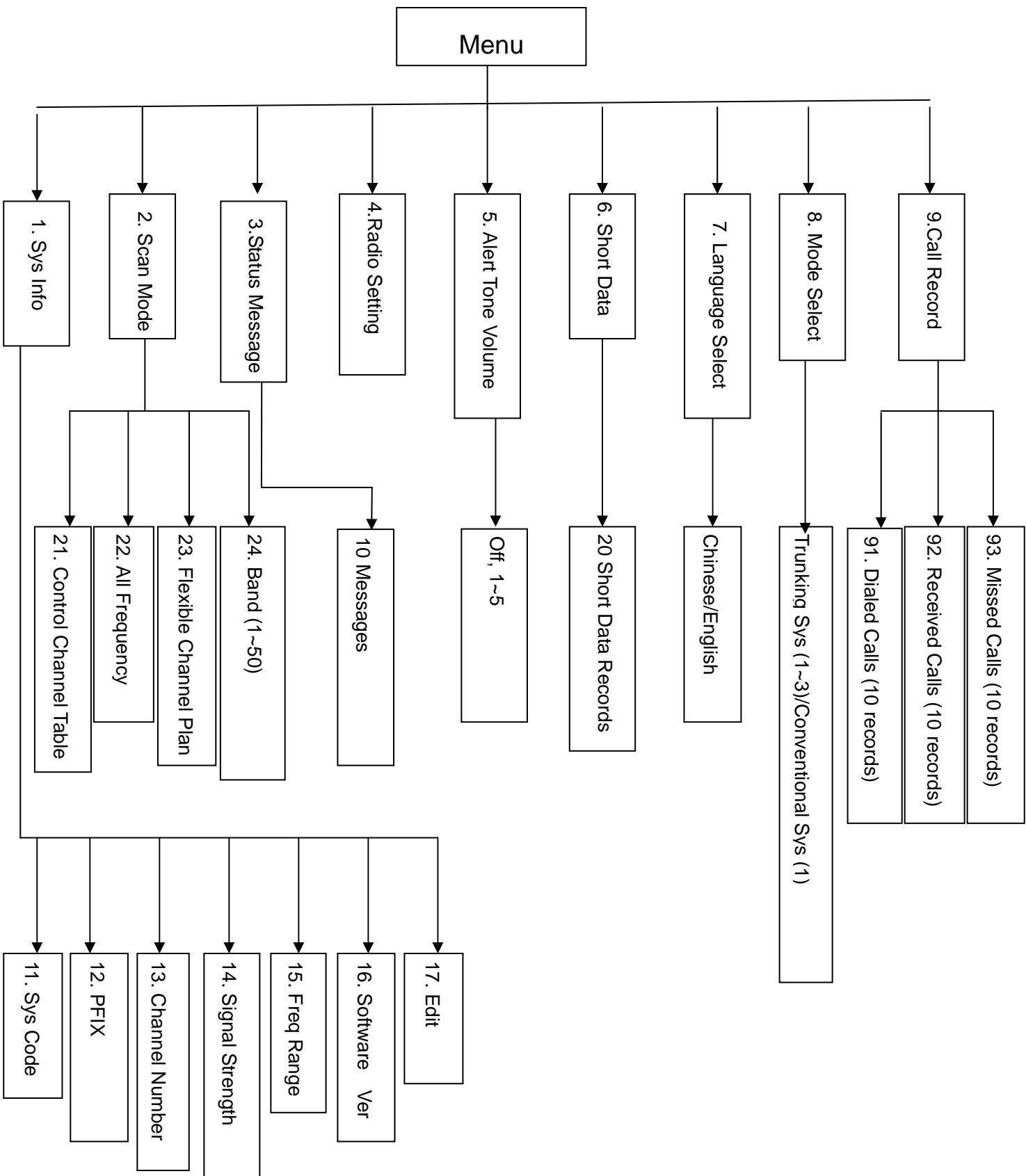
8) Direct Call to Called Party (MPT1327 dial)

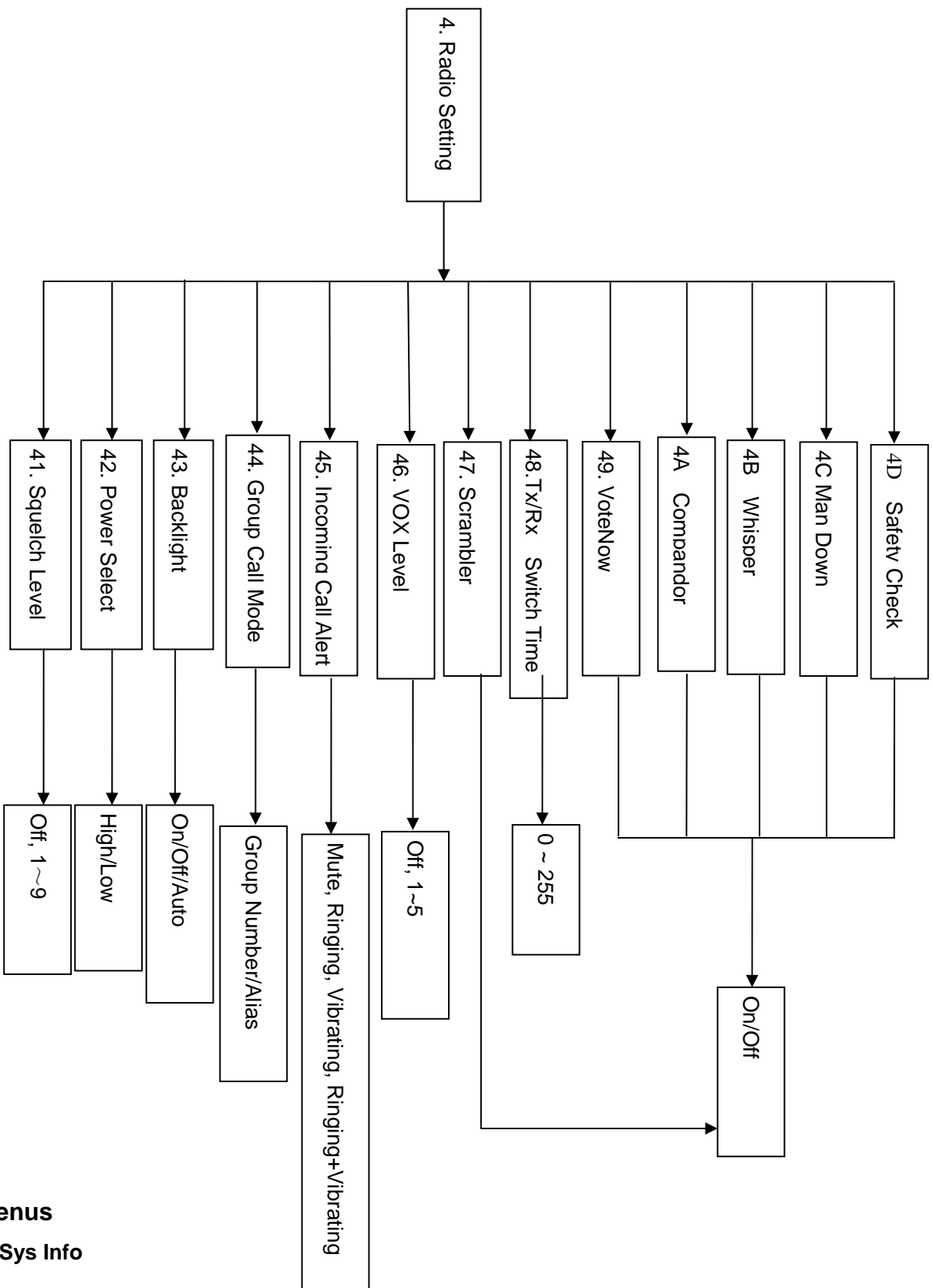
1+ PFX (000~127) + ID (0001-8100)

e.g.: 1 0120246



# Menu Operation





**Menus**  
**1. Sys Info**

(1) In TMO mode, press **OK** in standby mode to enter the main menu, or **C** to exit.

(2) Press **▲/▼** to select your desired menu (e.g. "Sys Info").

(3) Press **OK** to enter "Sys Info".

1      Sys Info
-----------------

(4) Press **▲/▼** to select items upwards/downwards.

**"11 Sys Code"**

Press **OK** to save the setting and return to "Sys Info"

-or-

**C** to return to "Sys Info" without saving the setting.

11   Sys Code   XXXX
----------------------

**"12 PFIx"**

Press **OK** to save the setting and return to "Sys Info"

-or-

**C** to return to "Sys Info" without saving the setting.

12   PFIx   XXX
-----------------

**"13 Channel Number"**

Press **OK** to save the setting and return to "Sys Info"

-or-

**C** to return to "Sys Info" without saving the setting.

13   Channel Number   XXXX
----------------------------

**"14 Signal Strength"**

Press **OK** to save the setting and return to "Sys Info"

-or-

**C** to return to "Sys Info" without saving the setting.

14 Signal Strength XXXXdbm

#### "15 Freq Range"

Press **OK** to save the setting and return to "Sys Info"

-or-

**C** to return to "Sys Info" without saving the setting.

15 Freq Range XXX~XXXM

#### "16 Software Ver"

Press **OK** to save the setting and return to "Sys Info"

-or-

**C** to return to "Sys Info" without saving the setting.

16 VX.XX.XX.XXX

#### "17 Edit"

Press **OK** to save the setting and return to "Sys Info"

-or-

**C** to return to "Sys Info" without saving the setting.

17 Edit Month/Date/Year

## 2. Scan

(1) In TMO mode, press **OK** in standby mode to enter the main menu, or **C** to exit.

(2) Press ▲/▼ to select your desired menu (e.g. "Scan Mode").

(3) Press **OK** to enter "Scan Mode".

2 Scan Mode

(4) Press ▲/▼ to select items upwards/downwards.

**"21 Channel Table"**

Press **OK** to save the setting and return to "Scan Mode"

-or-

**C** to return to "Scan Mode" without saving the setting.

21 Control Channel Table

**"22 All Frequency"**

Press **OK** to save the setting and return to "Scan Mode"

-or-

**C** to return to "Scan Mode" without saving the setting.

22 All Frequency

**"23 Flexible Channel Plan"**

Press **OK** to save the setting and return to "Scan Mode"

-or-

**C** to return to "Scan Mode" without saving the setting.

23 Flexible Channel Plan

**"24 Band"**

Press **OK** to save the setting and return to "Scan Mode"

-or-

**C** to return to "Scan Mode" without saving the setting.

24 Band 01~50

### 3. Status Message

(1) In TMO mode, press **OK** in standby mode to enter the main menu, or **C** to exit.

(2) Press **▲/▼** to select your desired menu (e.g. "Status Message").

(3) Press **OK** to enter "Status Message".

3 Status Message

(4) Press **▲/▼** to select a status message (10 message locations in all).

#### "Status Message"

Press **OK** to save the setting and return to "Status Message"

-or-

**C** to return to "Status Message" without saving the setting.

30: Null

39: Null

There is a "Delete All?" option between location 30 and location 39.

Press **OK** to delete and return to "Status Message"

-or-

**C** to return to "Status Message" without deleting.

No Delete All? Yes

### 4. Radio Setting

(1) In TMO mode, press **OK** in standby mode to enter the main menu, or **C** to exit.

(2) Press **▲/▼** to select your desired menu (e.g. "Radio Setting").

(3) Press **OK** to enter "Radio Setting".

4 Radio Setting

(4) Press ▲/▼ to select items upwards/downwards.

**“41 Squelch Level”**

Press **OK** to save the setting and return to “Radio Setting”

-or-

**C** to return to “Radio Setting” without saving the setting.

41 Squelch Level

Press ▲/▼ to select a desired squelch level (off, 1~9).

Press **OK** to save the setting and return to “41 Squelch Level”

-or-

**C** to return to “41 Squelch Level” without saving the setting.

1~9

Off

**“42 Power Select”**

Press ▲/▼ to select the power (high/low).

Press **OK** to save the setting and return to “42 Power Select”

-or-

**C** to return to “42 Power Select” without saving the setting.

42 Power Select

High

Low

**“43 Backlight”**

Press ▲/▼ to select On/Off/Auto.

Press **OK** to save the setting and return to "43 Backlight"

-or-

**C** to return to "43 Backlight" without saving the setting.

43 Backlight

On

Off

Auto

#### "44 Group Call Mode"

Press **▲/▼** to select Group Number/Alias.

Press **OK** to save the setting and return to "44 Group Call Mode"

-or-

**C** to return to "44 Group Call Mode" without saving the setting.

44 Group Call Mode

Group Number

Alias

#### "45 Incoming Call Alert"

Press **▲/▼** to select Mute/Ringing/Vibrating/Ringing+Vibrating.

Press **OK** to save the setting and return to "45 Incoming Call Alert"

-or-

**C** to return to "45 Incoming Call Alert" without saving the setting.

45 Incoming Call Alert

Mute

Ringing

Vibrating

Ringing+Vibrating

#### "46 VOX Level"

Press **▲/▼** to select a desired level (Off, 1~5).



Press **OK** to save the setting and return to "46 VOX Level"

-or-

**C** to return to "46 VOX Level" without saving the setting.

46 VOX Level					
Off	1	2	3	4	5

**"47 Scrambler"**

Press **▲/▼** to toggle the feature On/Off.

Press **OK** to save the setting and return to "47 Scrambler"

-or-

**C** to return to "47 Scrambler" without saving the setting.

47 Scrambler	
On	Off

**"48 Tx/Rx Switch Time"**

Press **▲/▼** to select the time (0~255).

Press **OK** to save the setting and return to "48 Tx/Rx Switch Time"

-or-

**C** to return to "48 Tx/Rx Switch Time" without saving the setting.

48 Tx/Rx Switch Time		
0	.....	255

**"49 VoteNow"**

Press ▲/▼ to toggle the feature On/Off.

Press **OK** to save the setting and return to "49 VoteNow"

-or-

**C** to return to "49 VoteNow" without saving the setting.

49 VoteNow

On

Off

#### "4A Compandor"

Press ▲/▼ to toggle the feature On/Off.

Press **OK** to save the setting and return to "4A Compandor"

-or-

**C** to return to "4A Compandor" without saving the setting.

4A Compandor

On

Off

#### "4B Whisper"

Press ▲/▼ to toggle the feature On/Off.

Press **OK** to save the setting and return to "4B Whisper"

-or-

**C** to return to "4A Whisper" without saving the setting.

4B Whisper

On

Off

#### “4C Man Down”

Press ▲/▼ to toggle the feature On/Off.

Press **OK** to save the setting and return to “4C Man Down”

-or-

**C** to return to “4C Man Down” without saving the setting.

4C Man Down

On

Off

#### “4D Safety Check”

Press ▲/▼ to toggle the feature On/Off.

Press **OK** to save the setting and return to “4D Safety Check”

-or-

**C** to return to “4D Safety Check” without saving the setting.

4D Safety Check

On

Off

#### 5. Alert Tone Volume

(1) In TMO mode, press **OK** in standby mode to enter the main menu, or **C** to exit.

(2) Press ▲/▼ to select your desired menu (e.g. “Alert Tone Volume”).

(3) Press **OK** to enter “Alert Tone Volume”.

5 Alert Tone Volume

(4) Press ▲/▼ to select a desired level (Off, 1~5).

Press **OK** to save the setting and return to "Alert Tone Volume"

-or-

**C** to return to "Alert Tone Volume" without saving the setting.

1~5

Off

## 6. Short Data

(1) In TMO mode, press **OK** in standby mode to enter the main menu, or **C** to exit.

(2) Press **▲/▼** to select your desired menu (e.g. "Short Data").

(3) Press **OK** to enter "Short Data".

6 Short Data

(4) Press **▲/▼** to select short data (20 records in all).

Press **OK** to save the setting and return to "Short Data"

-or-

**C** to return to "Short Data" without saving the setting.

60: Null

619: Null

There is a "Delete All?" option between the first data record and the last data record.

Press **OK** to delete and return to "Short Data"

-or-

**C** to return to "Short Data" without deleting.

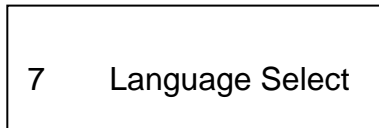
No Delete All? Yes

## 7. Language Select

(1) In TMO mode, press **OK** in standby mode to enter the main menu, or **C** to exit.

(2) Press **▲/▼** to select your desired menu (e.g. "Language Select").

(3) Press **OK** to enter "Language Select".

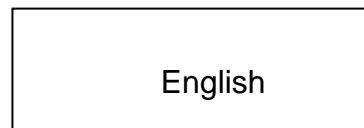


(4) Press **▲/▼** to select Chinese/English.

Press **OK** to save the setting and return to "Language Select"

-or-

**C** to return to "Language Select" without saving the setting.

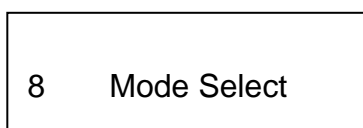


## 8. Mode Select

(1) In TMO mode, press **OK** in standby mode to enter the main menu, or **C** to exit.

(2) Press **▲/▼** to select your desired menu (e.g. "Mode Select").

(3) Press **OK** to enter "Mode Select".

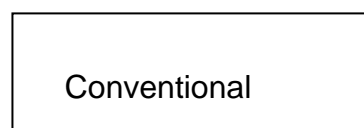
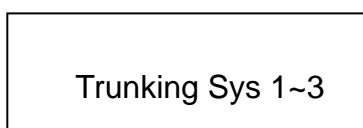


(4) Press **▲/▼** to select a mode (Trunking Sys 1~3/Conventional)

Press **OK** to save the setting and return to "Mode Select"

-or-

**C** to return to "Mode Select" without saving the setting.



## 9. Call Record

(1) In TMO mode, press **OK** in standby mode to enter the main menu, or **C** to exit.

(2) Press **▲/▼** to select your desired menu (e.g. "Call Record").

(3) Press **OK** to enter "Call Record".

9 Call Record

(4) Press **▲/▼** to select items upwards/downwards.

### "91 Dialed Calls"

Press **OK** to save the setting and return to "Call Record"

-or-

**C** to return to "Call Record" without saving the setting.

91 Dialed Calls

Press **▲/▼** to select a dialed call (10 records in all).

Press **OK** to save the setting and return to "91 Dialed Calls"

-or-

**C** to return to "91 Dialed Calls" without saving the setting.

910: Null

There is a "Delete All?" option between the first record and the last record.

Press **OK** to delete and return to "91 Dialed Calls"

-or-

**C** to return to "91 Dialed Calls" without deleting.

No Delete All? Yes

### "92 Received Calls"

Press **OK** to save the setting and return to "Call Record"

-or-

**C** to return to "Call Record" without saving the setting.

92 Received Calls

Press **▲/▼** to select a received call (10 records in all).

Press **OK** to save the setting and return to "92 Received Calls"

-or-

**C** to return to "92 Received Calls" without saving the setting.

920~929: Null

There is a "Delete All?" option between the first record and the last record.

Press **OK** to delete and return to "92 Received Calls"

-or-

**C** to return to "92 Received Calls" without deleting.

No Delete All? Yes

#### "93 Missed Calls"

Press **OK** to save the setting and return to "Call Record"

-or-

**C** to return to "Call Record" without saving the setting.

93 Missed Calls

Press **▲/▼** to select a missed call (10 records in all).

Press **OK** to save the setting and return to "93 Missed Calls"

-or-

**C** to return to "93 Missed Calls" without saving the setting.

930~939: Null

There is a "Delete All?" option between the first record and the last record.

Press **OK** to delete and return to "93 Missed Calls"

-or-

**C** to return to "93 Missed Calls" without deleting.

No Delete All? Yes

## Conventional Mode

### Advanced Operations


As stated above, the following features are programmable by your dealer.



## Call 1/Call 2

Press the key programmed as **Call 1/Call 2** to send the stored DTMF code.

## Emergency

Press the key programmed as **Emergency**, and the LCD displays “Emergency” and icon . The radio can transmit the emergency alert, or send its ID or background tone to other radio subscribers or the system (selectable by the user via programming software).

A corresponding long/short button press will disable the Emergency feature.

## Man Down

Press the key programmed as **Man Down**, and the LCD displays “Man Down On”. The radio enters Man Down mode. The radio will sound an alert tone if it is horizontally or inversely positioned for a certain period. If it keeps such status within the pre-set time, it will automatically enter Emergency mode. Place the radio in vertical position to cancel the alert.

Press the key again to disable the Man Down feature. The LCD displays “Man Down Off”.

The Man Down status will not be memorized once the radio is off and back on.

## Man Down Backup


Press the key programmed as **Man Down**, and the LCD displays “Man Down On”. The radio enters Man Down mode. The radio will sound an alert tone if it is horizontally or inversely positioned for a certain period. If it keeps such status within the pre-set time, it will automatically enter Emergency mode. Place the radio in vertical position to cancel the alert.

Press the key again to disable the Man Down feature. The LCD displays “Man Down Off”.

The Man Down status will be memorized after the radio is off and back on.


## Monitor

### ● Monitor

1. Press the **Monitor** key to hear activities on the current channel. The LCD displays icon .
2. Press the **Monitor** key again to exit.

After the Monitor feature is enabled, the radio will mute for all signalings. The speaker will unmute directly if carrier presents.

### ● Monitor Momentary

1. Press the **Monitor** key to hear activities on the current channel. The LCD displays icon .

2. Release the **Monitor** key to exit.
3. There is only one monitor mode (carrier monitor).

### **Scrambler**

Press the key programmed as **Scrambler** to prevent the third party eavesdropping your communication. The LCD displays "Scrambler On".

Press the key again to disable the Scrambler feature. The LCD displays "Scrambler Off".

The Scrambler status will not be memorized once the radio is off and back on.

### **Scrambler Backup**

Press the key programmed as **Scrambler** to prevent the third party eavesdropping your communication. The LCD displays "Scrambler On".

Press the key again to disable the Scrambler feature. The LCD displays "Scrambler Off".


The Scrambler status will be memorized after the radio is off and back on.

### **Squelch Off**

- **Squelch Off**

Press the key programmed as **Squelch Off** to open squelch with icon  on the LCD. Press the key again to exit.

- **Squelch Off Momentary**

Press the key programmed as **Squelch Off** to open squelch with icon  on the LCD. Release the key again to exit.

### **Talk Around**


Press the key programmed as **Talk Around** to enable the Talk Around feature. The LCD displays "TalkAround On". When enabled, the Rx frequency is used in place of the Tx frequency when transmitting, and the decoding CTCSS/CDCSS is used in place of encoding CTCSS/CDCSS.

Press the key again to disable the feature. The LCD displays "TalkAround Off".

### **Power Select**

Each channel is preset with different power levels.

The radio can operate at high power when further distance is required, or at low level to save battery.

Press the key programmed as **Power Select** to select and save high/low power. The LCD displays icon .

## Whisper

Press the key programmed as **Whisper** to enable the Whisper feature. The LCD displays "Whisper On". When enabled, you can speak quietly into the radio and still be heard clearly.

Press the key again to disable the feature. The LCD displays "Whisper Off".

The Whisper status will not be memorized once the radio is off and back on.

## Whisper Backup

Press the key programmed as **Whisper** to enable the Whisper feature. The LCD displays "Whisper On". When enabled, you can speak quietly into the radio and still be heard clearly.

Press the key again to disable the feature. The LCD displays "Whisper Off".

The Whisper status will be memorized after the radio is off and back on.

## VOX

Press the key programmed as **VOX** to enable the VOX feature. The LCD displays "VOX On". The feature can be used when an earpiece is inserted.

1. Transmission starts automatically when you speak directly into the microphone.
2. Transmission stops automatically when you stop speaking.

Press the key again to disable the feature. The LCD displays "VOX Off".

The VOX status will not be memorized once the radio is off and back on.

To purchase earpieces, please contact your local dealer, or dial 86-0755-26972999-1126, or send an email to [service@hyt.com.cn](mailto:service@hyt.com.cn).

## VOX Backup

Press the key programmed as **VOX** to enable the VOX feature. The LCD displays "VOX On". The feature can be used when an earpiece is inserted.

3. Transmission starts automatically when you speak directly into the microphone.
4. Transmission stops automatically when you stop speaking.

Press the key again to disable the feature. The LCD displays "VOX Off".

The VOX status will be memorized after the radio is off and back on.





## Channel Lock

Press the key programmed as **Channel Lock** to enable the Channel Lock feature. The LCD displays "ChannelLock On".

When enabled, the **Channel Selector** knob is invalid.

Press the key again to disable the feature. The LCD displays "ChannelLock Off".

### **Keypad Lock**

Press  while holding down  to lock the keypad. When the keypad is locked, press  while holding down  to unlock the keypad. When locked, the LCD displays "Key Locked"; when unlocked, the LCD displays "Key Unlocked".

## **Background Operations**

### **Time-Out Timer (TOT)**

The feature allows for more efficient use of channels by limiting the maximum time of each transmission. Once a continuous transmission exceeds the preset time (programmable by your dealer), the transmission is automatically terminated and an alert tone is heard. Release the **PTT** to cancel the alert tone.

Your dealer may program the alert tone sounds before the TOT timer almost expires.

### **Busy Channel Lockout (BCL)**

When the BCL feature is enabled, you are prevented from transmitting on a channel that is already in use. Press the **PTT** key on a channel that is already in use, the radio will sound an alert tone and turn back to the receive mode.

Carrier: If BCL is set on the current channel, press the **PTT** key while the channel is already in use, and the radio will sound beeps without transmission.

CTCSS/CDCSS: If CTCSS/CDCSS and BCL are set on the current channel, press the **PTT** key while the channel is already in use, and the radio will sound beeps without transmission.

### **Battery Save**

When enabled, the Battery Save feature is automatically enabled once the situation, in which no activity is on the channel or no operation is performed, lasts for 12 seconds.

Pressing any key or receiving a signal will cause the radio to exit Battery Save.

### **Low Battery Alert**

For extra convenience, the red LED flashes and the radio sounds three beeps within 30 seconds, to remind the user to recharge the battery if the battery level runs low.

### **CTCSS/CDCSS**

If CTCSS/CDCSS is set on the current channel, causes a CTCSS/CDCSS match to be required on an incoming signal for the radio to unmute. Radios set with the same CTCSS/CDCSS, or not set with CTCSS/CDCSS, can hear from you.

Your dealer may program the current channel with CTCSS/CDCSS, to prevent unwanted conversations on the same frequency.

The radio will not unmute to an incoming call with invalid CTCSS/CDCSS. This feature does not mean that your conversation will not be heard by others.


### **DTMF**

The DTMF signalling can be enabled/disabled by your dealer. If DTMF signalling is set on the current channel, press the key programmed as **Call 1/Call 2** to transmit DTMF code.

### **Direct Call**

In receive mode, the input DTMF number (16 digits at maximum) scrolls on the LCD. Press the **PTT** key to transmit. The radio sounds a corresponding DTMF tone and returns to the current channel.

- When encoding, LED glows red; after encoding, red LED goes out.
- When decoding, LED glows green; after successful decoding, LED flashes orange until the valid time expires.

Note: If a wrong digit is entered or you do not want to dial the number, press  to delete and exit.

#### **BOT ID & EOT ID (PTT ID)**

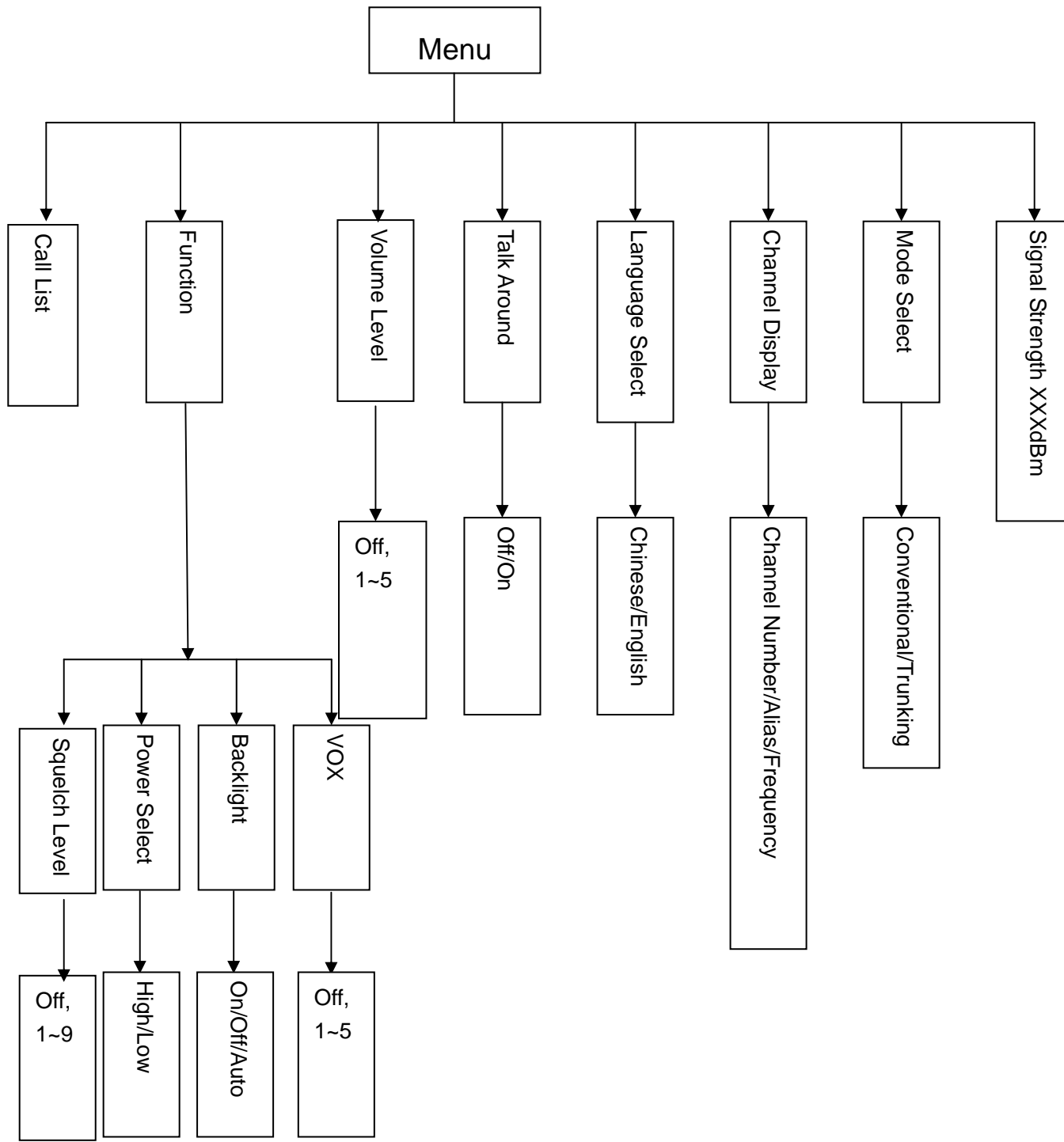
Your dealer may configure whether to transmit Connect ID (BOT ID) or Disconnect ID (EOT ID), to connect or disconnect to a repeater or telephone system.

BOT ID: sent upon each press of the **PTT** key.

EOT ID: sent upon each release of the **PTT** key.

Both: sent both upon each press and release of the **PTT** key.

## Chinese/English Menu Operations



## Call List

1. Press **OK** in standby mode to enter the main menu, or **C** to exit. The radio enters "Call List" first.

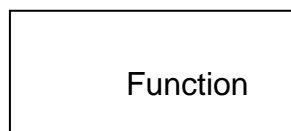


2. Press **OK** to enter the call list. Press **▲/▼** to select the DTMF ID to be called.
3. Press the **PTT** key to call and then exit, or press **C** to return to the previous menu.

## Function

### Backlight

1. Press **▼** to select "Function".



2. Press **OK** to enter the function list. Then press **▲/▼** to select the item to be changed and press **OK** to enter the item.

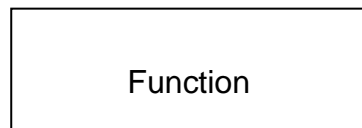
To change backlight status, press **OK**.



3. Press **▲/▼** to select On/Off/Auto. Press **OK** to save the setting and return to the function list, or press **C** to return to the function list without saving the setting.

### Squelch Level

1. Press **▼** to select "Function".



2. Press **OK** to enter and then press **▼** to select and enter "Squelch". The current squelch level is displayed. Press **▲/▼** to select a squelch level (Off, 1~9).



Squelch Level

3. Press **OK** to save the setting and return to the function list, or press **C** to return to the function list without saving the setting.

#### VOX

1. Enter "Function"

Function

2. Press **▼** to select "VOX" and press **OK** to enter. The VOX level is displayed on the LCD.

VOX

3. Press **▲/▼** to select a VOX level (Off, 1~5). "Off" on the LCD indicates that the VOX feature is disabled. Press **OK** to save the setting and return to the function list, or press **C** to return to the function list without saving the setting.

#### Power Select

1. Enter "Function".

Function

2. Press **▼** to select "Power" and press **OK** to enter. Power select is displayed on the LCD.

Power Select

3. Press **▲/▼** to select High/Low. Press **OK** to save the setting and return to the function list, or press **C** to return to the function list without saving the setting.

#### Volume Level

1. Press **▼** to select "Volume Level".

Volume Level

2. Press **OK** to enter. The volume level is displayed on the LCD. Press **▲/▼** to select a volume level (Off, 1~5). Press **OK** to save the setting and return to the main menu, or press **C** to return to the main menu without saving the setting.

#### Talk Around

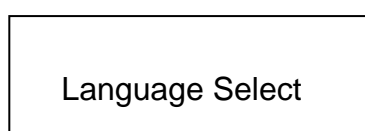
1. Press **▼** to select "Talk Around".



2. Press **OK** to enter. The current repeat status is displayed on the LCD. Press **▲/▼** to select On/Off. Press **OK** to save the setting and return to the function list, or press **C** to return to the function list without saving the setting.

#### Language Select

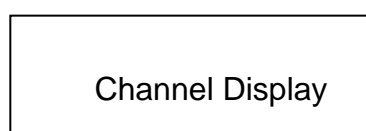
1. Press **▼** to select "Language Select" and **OK** to enter. The current language is displayed on the LCD. Press **▲/▼** to select Chinese/English.



2. Press **OK** to save the setting and return to the function list, or **C** to return to the function list without saving the setting.

#### Channel Display

1. Press **▼** to select "Channel Display".



2. Press **OK** to enter. The current channel display mode is displayed on the LCD. Press **▲/▼** to select Channel Number/Alias/Frequency. Press **OK** to save the setting and return to the function list, or press **C** to return to the function list without saving the setting.

#### Mode Select

1. Press **▼** to select "Mode Select".

Mode Select

2. Select Conventional/Trunking.
3. Conventional: The radio operates with conventional features.  
Trunking: The radio operates with trunking features.

Note:











1. Press ▲/▼ in the main menu to switch repeatedly according to the above order.
2. During menu operation, if the radio remains at one interface for more than 20 seconds or the **Channel Selector** knob is rotated, the radio will return to the standby mode. All values will not be saved. Responses to other keys are identical with processes in the standby mode.
3. Chinese/English interface.
4. Languages can be changed to others via the programming software and are displayed according to the programming set.

**Signal Strength**

Press ▼ to enter "Signal Strength". The signal strength value of the current channel is displayed.

Signal Strength    XXXdBm

**Appendix 1 LCD Icons**

Icons & Indications				
Signal Strength	Vibrate	Battery Strength	Transmit Inhibit	Monitor/Squelch On
				
Transmit Power	Priority Channel	Talk Around	Emergency	Call
	P: 			
Accessory Interface	Short Message			

📶	✉			
---	---	--	--	--

## Appendix 2 Keypad Characters

Keypad											
0	1	2	3	4	5	6	7	8	9	*	#

## Troubleshooting

Symptom	Solution
Cannot power on the radio.	<ul style="list-style-type: none"> <li>● The battery runs out. Please recharge the battery or replace it with a new one.</li> <li>● The battery is not properly installed. Please remove the battery and attach it again.</li> </ul>
The operating time is noticeably shorter than normal.	<ul style="list-style-type: none"> <li>● The battery has worn out. It is time to buy a new battery.</li> </ul>
Cannot talk to or hear group members.	<ul style="list-style-type: none"> <li>● Make sure that your radio operates on the same frequency and has the same CTCSS/CDCSS settings with your group members.</li> <li>● Make sure you are within the communication range.</li> </ul>
Hear non-group members	<ul style="list-style-type: none"> <li>● Please change your CTCSS/CDCSS settings, and so as your group members.</li> </ul>





## Care and Cleaning



- Do not handle the radio by its antenna or external microphone directly.
- Do not place the radio in a dusty or dirty environment.

- Clean the radio with a lint-free cloth to remove dirt or grease, to avoid poor contact due to excessive dust.
- Clean the radio using a lint-free cloth moistened with clean water and a mild dishwashing liquid.
- Avoid subjecting the radio to corrosives, solvents or spirits.

## Optional Accessories

			
Antenna	Belt Clip BC09	Ni-MH Battery (1800mAh) BH1801	Li-Ion Battery (2100mAh) BL2102
			
MCU Multi-unit Charger (for Li-Ion/Ni-MH batteries) MCA03	Switching Power PS7501 (for use with different power cords for different countries and areas)	Vehicle Adapter CHV09	Earbud with in-Line PTT ESN05

			
Earbud with on-MIC PTT ESN06	Earpiece with on-MIC PTT & Transparent Acoustic Tube EAN04	D-earset with in-Line Microphone & PTT EHN07	D-earset with Boom Microphone & in-Line PTT EHN08
			
2-Wire Surveillance Earpiece with Transparent Acoustic Tube (beige/black) EAN05/EAN07	3-Wire Surveillance Earpiece with Transparent Acoustic Tube (beige/black) EAN06/EAN02	2-Wire Earpiece with Wireless Earphone and Neck Loop (beige) EWN03	Bone Induction Earpiece with in-Line PTT EBN01
			
Light-weight, Throat-Vibrating Earpiece with in-Line PTT ELN02	Heavy Duty, Noise-Cancelling Headset ECN08	Behind-the-Head, Noise-Cancelling Headset ECN09	Remote Speaker Microphone SM08N1
			
Receive-only Earpiece (for use with remote speaker microphone) ESS07	Receive-only Earpiece with Transparent Acoustic Tube (for use with remote speaker microphone) ESS08	Leather Carrying Case (swivel) (for keypad and display models) LCBY22	Chest Pack LCBN13

			
Programming Cable (COM port) PC18	Programming Cable (USB port) PC25		

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