HP50X Digital Portable Radio
User Manual

Hytera Communications Corporation Limited

Preface

Welcome to the world of Hytera and thank you for purchasing this product. This manual includes a description of the functions and step-by-step procedures for use.

To avoid bodily injury or property loss caused by incorrect operation, please carefully read the *Safety Information Booklet* before use.

This manual is applicable to the following product:

HP50X Digital Portable Radio (X may represent 2, 5, 6, 8, or 9)

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RF Exposure Compliance and Control Guidelines and Operating Instructions

To control your exposure and ensure compliance with the occupational/controlled environmental exposure limits, always adhere to the following procedures.

- Transmit no more than the rated duty factor of 50% of the time. To transmit (talk), push the Push-To-Talk (PTT) key. To receive calls, release the PTT key. Transmitting 50% of the time, or less, is important because the radio generates measurable RF energy only when transmitting (in terms of measuring for standards compliance).
- Keep the radio unit at least 2.5 cm away from the face. Keeping the radio at the proper distance is important as RF exposure decreases with distance from the antenna. The antenna should be kept away from the face and eyes.

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Documentation Information

Icon Conventions

Icon	Description
NOTE	Indicates references that can further describe the related topics.
CAUTION	Indicates situations that could cause data loss or equipment damage.

Notation Conventions

Item	Description	Example
Boldface	Denotes menus, tabs, parameter names, window names, dialogue names, and hardware buttons.	To save the configuration, click **Apply**.
		The **Log Level Settings** dialogue box appears.
		Press the **PTT** key.
" "	Denotes messages, directories, file names, folder names, and parameter values.	The screen displays "Invalid Battery!".
		Open "PSS.exe".
		Go to "D:/opt/local".
		In the Port text box, enter "22".
>	Directs you to access a multi-level menu.	Go to **File** > **New**.
Italic	Denotes document titles.	For details about using the DWS, refer to *Dispatch Workstation User Guide*.
`Courier New`	Denotes commands and their execution results.	To set the IP address, run the following command: `vos-cmd - m name IP`

1. Packing List

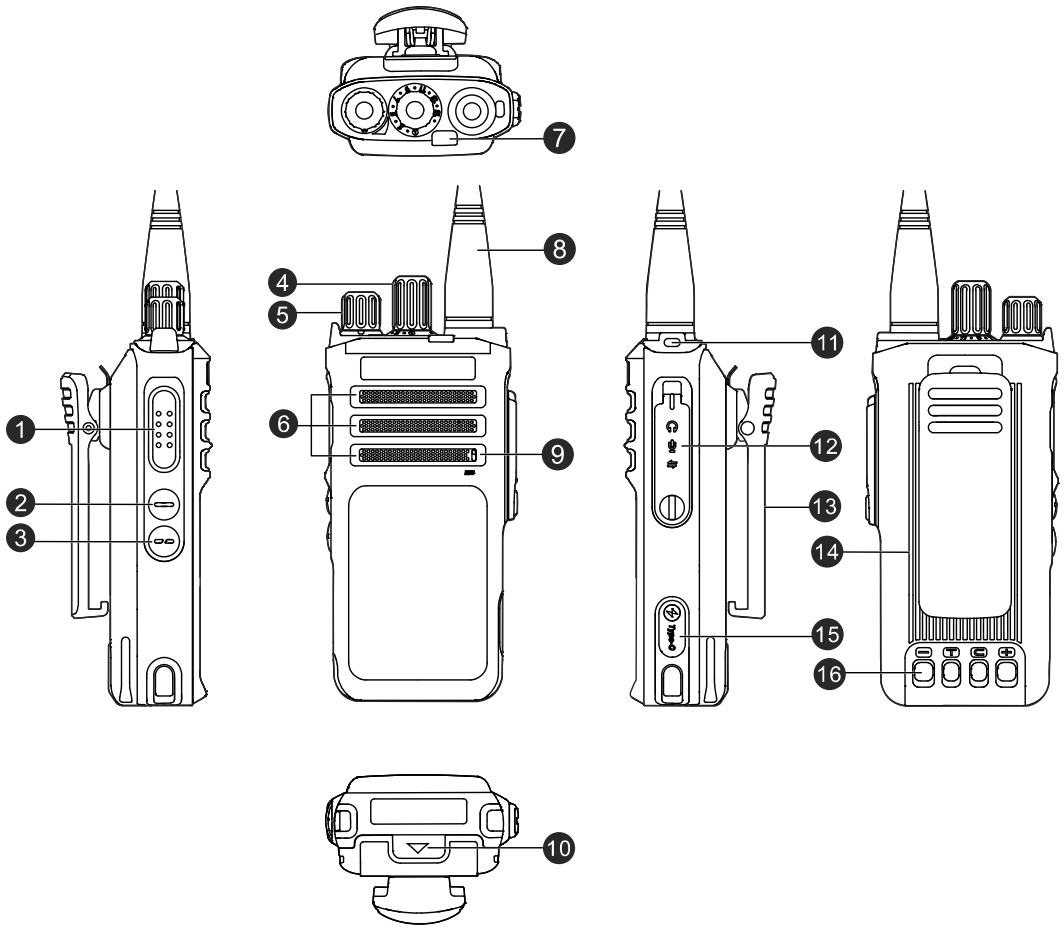
Unpack carefully and check that you have received the following items. If any item is missing or damaged, contact your dealer.

Item	Quantity (PCS)	Item	Quantity (PCS)
Radio	1	Antenna	1
Battery	1	Belt Clip	1
Charger	1	Strap	2
Power Adapter	1	Documentation Kit	1

NOTE

- Figures in this manual are only for reference.
- Check whether the frequency band marked on the antenna label matches that on the radio label. If not, contact your dealer.

2. Product Layout



No.	Part Name	No.	Part Name	No.	Part Name
1	Push-to-Talk (PTT) Key	7	LED Indicator	13	Belt Clip
2	SK1 Key (Programmable)	8	Antenna	14	Battery
3	SK2 Key (Programmable)	9	Microphone	15	USB Type-C Port
4	Channel Selector Knob	10	Battery Latch	16	Charging Contacts
5	On-Off/Volume Knob	11	Strap Hole	/	/
6	Speaker	12	Accessory Connector	/	/

NOTE

To assign features to programmable keys, contact your dealer.

3. Before Use

3.1 Charge the Battery

CAUTION

- Use the approved charger to charge the battery.
- Read the *Safety Information Booklet* before charging.
- The remaining lithium-ion battery power is limited to 30% pursuant to the new lithium battery shipment regulation approved by the International Air Transport Association (IATA).
- It is recommended that the radio remains turned off during charging.

Before initial use, use the charger to charge the battery alone or the battery attached to the radio. Then, you can charge the battery in either of the following ways:

- Connect the radio with the battery to the power adapter, power bank, or PC through the USB Type-C port.
- Use the charger to charge the battery alone or the battery attached to the radio.

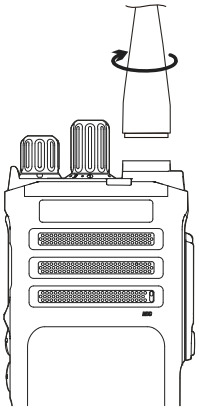
  The LED indicator on the charger shows the charging status, as described in the following table:

LED Indicator	Charging Status
Glows red	The battery is being charged.
Glows orange	The battery is charged to 90% or above.
Glows green	The battery is fully charged.
Flashes red slowly	No battery is placed on the charger.
Flashes red rapidly	The battery fails to be charged.

3.2 Attach the Antenna

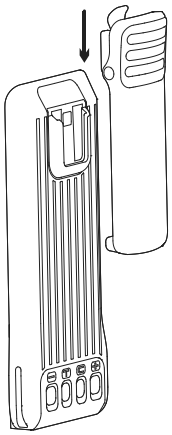
CAUTION

Do not hold the radio by the antenna and swing it. This may affect the antenna performance and shorten the life span of the antenna.



3.3 Attach the Belt Clip

1. Align the holder on the belt clip with the groove on the battery.
2. Press the belt clip downwards into place.



NOTE

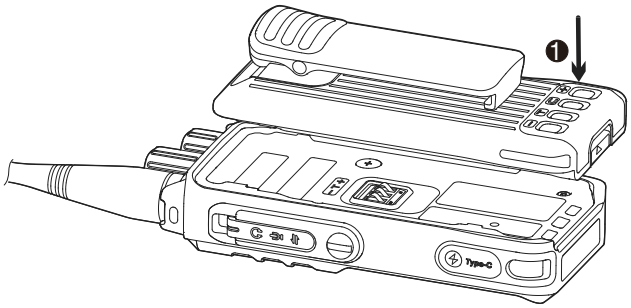
You can press and hold the belt clip spring plate and push the belt clip upwards to remove it.

3.4 Attach the Battery

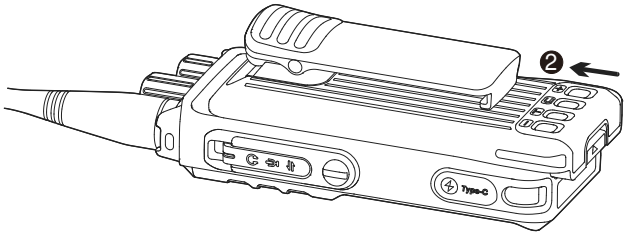
CAUTION

- Use the approved battery to avoid the risk of explosion.
- Dispose of the used battery according to "Precautions for Disposal" in the *Safety Information Booklet*.

1. Align the battery with the battery slot.



2. Press and push the battery into the battery slot until a click is heard.



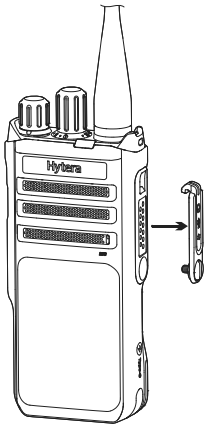
3.5 Attach the Audio Accessory

CAUTION

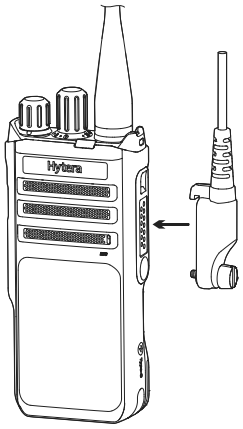
For optimal waterproof and dustproof performance, do as follows:

- When attaching the accessory, do not scrape the silicone rubber surrounding the screw hole on accessory connector.
- After removing the accessory, close the accessory connector cover and fasten the screw.

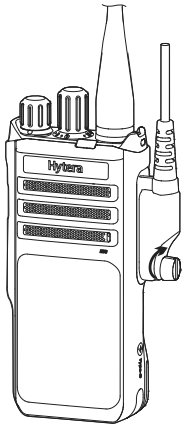
1. Loosen the screw on the accessory connector cover, and then remove the cover.



2. Insert the audio accessory plug into the accessory connector.

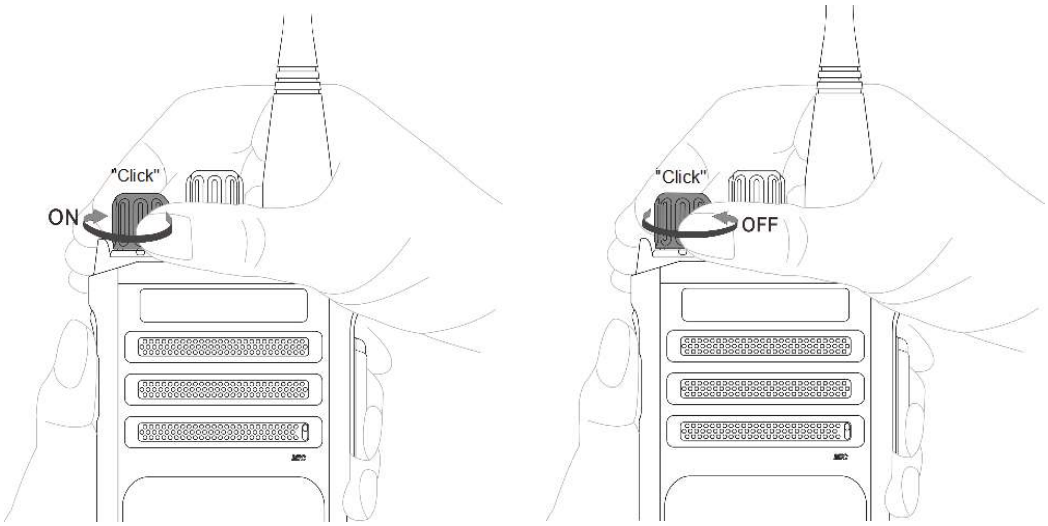


3. Tighten the screw on the audio accessory plug.

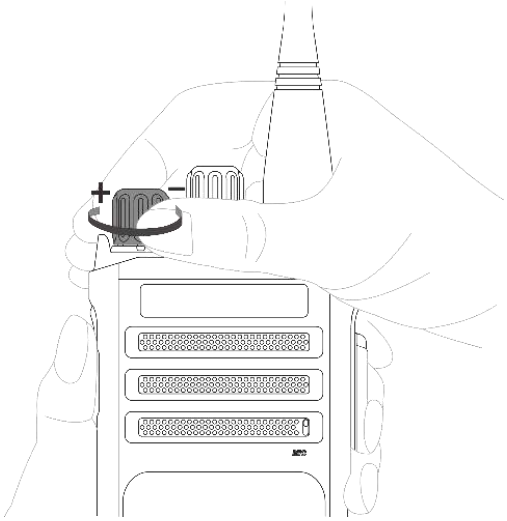


4. Basic Operations

4.1 Turn On or Off the Radio



4.2 Adjust the Volume



4.3 Select a Zone

A zone is a group of channels within the same operational area.

To select a zone, press the preprogrammed **Zone Up** or **Zone Down** key.

4.4 Select a Channel

The radio receives and transmits voice and data on the selected channel. Before selecting a channel, make sure that the current zone contains the channel.

To select a channel, do any of the following:

- Rotate the **Channel Selector** knob.
- Press the preprogrammed **Channel Up** or **Channel Down** key.
- Press the preprogrammed **Preset Channel** key.

NOTE

With Voice Broadcast enabled, the radio audibly conveys the current channel you have just changed.

5. LED Indications

You can learn about the radio status through the LED indicator.

LED Indicator		Radio Status
Flashes green		The radio is being turned on.
Glows green		The radio is receiving.
Glows red		The radio is transmitting.
Flashes orange slowly		The radio is scanning or roaming.
Flashes orange rapidly		The radio is operating in emergency mode.
Glows orange		● Digital mode: The radio is in the call hang time. In this case, no voice is being transmitted or received during a call. Within such a period, you can press and hold the **PTT** key and speak. ● Analog mode: The radio is in the auto reset time.
Flashes blue	Every 3s	BT is enabled, but no BT device is connected.
	Every 1.5s	A BT device is connected.
	Every 0.1s	BT is being disabled.

6. Call Services

When you are speaking during a call, keep the microphone about 2.5 cm to 5 cm away from your mouth. This ensures optimal voice quality on the receiving radio.

6.1 Call on Digital Channel

On the digital channel, you can make the following calls to the preset contacts:

Call Type	Description
Group Call	A call from an individual user in a group to all the other members in the group.
Private Call	A call from an individual user to another individual user.
All Call	A call from an individual user to every user on the current digital channel.

6.1.1 Make a Call

- Make a call to the preset contact on a channel
  a. Select a digital channel according to 4.4 Select a Channel.
  b. Press and hold the **PTT** key.
- (Optional) Make a call to the preprogrammed contact
  a. Press the preprogrammed **One Touch Call** key.
  b. Press and hold the **PTT** key.

6.1.2 Answer a Call

You can answer a call without any operation.

6.1.3 End a Call

- The private call or group call ends when the call hang time expires.
- The all call ends when the caller releases the **PTT** key.

6.2 Call on Analog Channel

You can make or receive a call on an analog channel with or without signaling.

6.2.1 Call Without Signaling

On an analog channel without signaling, you can make a call to all the other users on the channel.

1. Select an analog channel according to 4.4 Select a Channel.
2. Press and hold the **PTT** key.

6.2.2 Call with Signaling

On an analog channel with signaling, you can make a call to a specific contact on the channel.

Press the preprogrammed **One Touch Call** key.

7. Safety and Security

7.1 Emergency

The Emergency feature allows you to seek help from your companion or the control center in case of an emergency. You can make an emergency call with the highest priority even when your radio is transmitting or receiving.

In emergency mode, the radio transmits at high power level by default. According to the emergency type preset by your dealer, the radio gives different indications as follows:

Emergency Type	Description
Siren Only	The radio emits a siren but does not transmit any emergency signal to the control center.
Regular	The radio gives an audible indication.
Silent	The radio gives no audible indication.
Silent w/Voice	The radio gives an audible indication only upon receiving a call. Otherwise, the radio gives no audible indication.
Alarm w/Siren	The radio transmits the emergency signal to the control center, and then emits a siren.

In addition, you can request your dealer to set one of the following emergency modes:

Emergency Mode	Description	Note
Call Only	It allows you to make an emergency call.	If the emergency type is Siren Only or Alarm w/Siren, you do not need to set the emergency mode.
Alarm w/Call	It allows you to send an emergency alarm and make an emergency call.	
Alarm	It allows you to send an emergency alarm.	

7.1.1 Make an Emergency Call

To make an emergency call to the preset contact, press the preprogrammed **Emergency On** key.

If Alarm w/Call To Follow is preprogrammed by your dealer, you can speak into the microphone without pressing and holding the **PTT** key. If the preset voice cycles expire, you can press and hold the **PTT** key to make an emergency call again.

7.1.2 Receive an Emergency Call

You can answer an emergency call without any operation.

7.1.3 End an Emergency Call

- For Caller
  - Press the preprogrammed **Emergency Off** key.
  - Turn off the radio.
- For Callee
  - Switch the channel.
  - Turn off the radio.

NOTE

With Send Emergency Exit Message preprogrammed by your dealer, you can send an emergency exit message to the recipient when ending an emergency alarm or emergency call initiated by mistake.

7.2 Lone Worker

Lone Worker allows the radio to automatically send an emergency alarm to your companion or the control center in either of the following scenarios:

- You do not operate the radio within the preset time.
- The radio does not transmit voice within the preset time.

You can press the keys, rotate the knob, or transmit voice to exit the emergency mode.

To enable Lone Worker, press the preprogrammed **Lone Worker** key.

7.3 Encryption

Encryption refers to end-to-end encryption (E2EE), which protects your voice and data against eavesdropping.

7.3.1 Enable Encryption

Press the preprogrammed **Encrypt** key.

NOTE

Encryption is valid for the current channel. When switching to the current channel, the radio automatically enables Encryption.

7.3.2 Set Encryption

To use the encryption services, both the transmitting radio and the receiving radio must enable Encryption

simultaneously with matching encryption key. The encryption key is preprogrammed by your dealer.

7.4 Radio Disable and Radio Enable

- Radio Disable allows you to disable the radio by sending a Radio Disable command to the radio.

  The disabled radio can be monitored remotely, but is deprived of other features.

- Radio Enable allows you to enable the disabled radio again by either of the following:

  - Send a Radio Enable command to the radio.
  - Program the radio again.

8. Basic Settings

8.1 Profiles

Profiles allows you to set the audio, alert tone, and vibration of the radio to suit your preference and work environments.

Profile	Description	Operation
General	Applies to the low-noise environment, such as a quiet street.	To switch the profile, press the preprogrammed **Profiles Switch** key.
Meeting	Applies to the indoor environment that is relatively quiet.	
Outdoor	Applies to the high-noise outdoor environment, such as a highway.	
Custom	Applies to other specific situations.	

8.2 Audio Settings

8.2.1 Switch the Audio Routing

You can set audio routing for voice transmitting or receiving. With the audio accessory connected, you can switch the audio options.

Option	Description	Operation
Follow PTT	When you press the **PTT** key of the radio to transmit voice, the radio uses the internal microphone. When you transmit voice through the audio accessory, the radio uses the external microphone.	● Press the preprogrammed **Mic Set Switch** key to switch the microphone audio option. ● Press the preprogrammed **SPK Set Switch** key to switch the speaker audio option.
Only Internal	The radio uses only the internal microphone and speaker.	
Only External	The radio uses only the microphone and speaker of the audio accessory, such as earpieces and remote speaker microphone.	
External First	When audio accessories are connected, the radio uses the external microphone and speaker. Otherwise, the radio uses the internal microphone and speaker.	

8.2.2 Enable AI-based Noise Cancellation

AI-based Noise Cancellation allows the radio to automatically eliminate ambient noise when receiving or transmitting

voice. This feature enhances the voice clarity but slightly decrease the volume.

To enable AI-based Noise Cancellation, press the preprogrammed **AI-based Noise Cancellation** key.

8.3 Positioning

Positioning allows the radio to collect its location information.

NOTE

- Positioning is available only for radios with GPS, BDS, or GLONASS.
- To enable Location, contact your dealer.

8.3.1 GPS Report

GPS Report allows the radio to report its location information to the control center.

Manual

Press the preprogrammed **GPS Report** key.

Automatic

To make the radio automatically report location, contact your dealer. The trigger conditions include power-on, power-off, preset time, or distance.

8.4 BT

CAUTION

- To derive optimal communication quality, it is recommended that you use the BT devices approved by the Company.
- If BT earpieces of other makes are used, you must use them with the BT Ring PTT produced by the Company. Otherwise, the earpieces cannot transmit the voice.

BT allows the radio to connect to a BT device for short-distance communication and data exchange.

NOTE

BT applies only to radios with the BT module.

8.4.1 Enable BT

Manual

Press the preprogrammed **BT** key.

Automatic

To make BT automatically enabled and let the radio stay discoverable by other BT devices upon power on, contact your dealer to enable BT Always Discoverable.

8.4.2 Connect to a BT Device

Only after the connection between the radio and the BT device is established, the radio can automatically search and connect to this BT device.

NOTE

To establish the connection between the radio and the BT device, contact your dealer.

8.4.3 Switch the BT Audio Output Path

To switch the audio output path between BT earpieces and the radio, press the preprogrammed **BT Audio Switch** key.

9. PMR Features

NOTE

To pre-configure features in this chapter, contact your dealer.

9.1 Power Level

Power Level allows you to set the TX power level to high or low.

- High: The radio can support long-distance communications while consuming more battery power.
- Low: The radio can support short-distance communications while saving battery power.

To adjust the power level, press the preprogrammed **Adjust Power Level** key.

9.2 Scan

Scan allows you to listen to activities on other channels, keeping track of your team members.

To enable Scan, press the preprogrammed **Scan** key.

With Scan enabled, the radio scans according to the scan list, during which the LED indicator flashes orange slowly. When detecting activities on a channel, the radio stays on the channel, during which the LED indicator glows green.

NOTE

If you do not want to hear activities on the channel, press the preprogrammed **Nuisance Temporary Delete** key to remove the channel from the scan list temporarily.

9.3 One Touch Call

One Touch Call allows you to quickly initiate a preset service by pressing the preprogrammed **One Touch Call** key.

You can choose any of the following preset services:

<table>
<tr><th>Channel Type</th><th>Service</th><th>Operation</th></tr>
<tr><td>Analog channel</td><td>Make a call to a 2-tone contact.</td><td rowspan="2">Press the preprogrammed One Touch Call key.
NOTE
To make a call on a digital channel, you must press and hold the PTT key after pressing the preprogrammed One Touch Call key.</td></tr>
<tr><td>Digital channel</td><td>● Make a group call, a private call, or an all call.
● Send a quick text message or position message to a private or group contact.</td></tr>
</table>

Channel Type	Service	Operation
	● Initiate an Alert Call, Radio Check, Remote Monitor, Radio Disable, or Radio Enable service to a private contact.	

9.4 Roam

Roam allows you to enjoy seamless communication across sites or networks.

To enable or disable Roam, press the preprogrammed **Roam** key.

9.5 Talk Around

Talk Around allows you to continue communication in direct mode when the repeater malfunctions or the radio is out of the coverage of the repeater.

To switch between direct mode and repeater mode, press the preprogrammed **Talk Around** key.

9.6 Squelch Level

Squelch Level refers to the squelch threshold required for the speaker of the radio to be turned on. The higher squelch level requires a stronger signal.

To adjust the Squelch Level, press the preprogrammed **Adjust Squelch Level** key.

9.7 Priority Interrupt

Priority Interrupt allows you to interrupt the ongoing activities (such as a call, a call hang status, or remote monitor) on the current channel to release the channel, so that you can make a new call or data service on this channel.

Manual Priority Interrupt

Press the preprogrammed **Priority Interrupt** key.

Auto Priority Interrupt

Auto Priority Interrupt	Triggered When You…
Emergency Priority Interrupt	Make an emergency call.
Call Back Priority Interrupt	Press and hold the **PTT** key to call back.
Message Priority Interrupt	Send a message.

Auto Priority Interrupt	Triggered When You…
Radio Disable Priority Interrupt	Send the Radio Disable command.
All Call Priority Interrupt	Make an all call.

9.8 XPT

In the Extended Pseudo Trunk (XPT) system networked by multiple digital repeaters, the radio can initiate services on any available logic channel, no longer limited to a dedicated control channel. This improves the channel usage and ensures stable communication.

9.9 Scrambler

Scrambler allows the radio to invert the frequency spectrum of transmitted audio signals. Only the receiving radio with the same Scrambler settings can restore the audio signals. This prevents eavesdropping and ensures communication privacy.

To enable Scrambler, press the preprogrammed **Scrambler** key.

10. Troubleshooting

Phenomena	Analysis	Solution
The radio cannot be turned on.	The battery may be installed improperly.	Remove and reattach the battery.
	The battery power may have run out.	Recharge or replace the battery.
	The battery may suffer from poor contact caused by dirtied or damaged battery contacts.	Clean the battery contacts.
The voice is unclear.	The signal may be weak.	Make sure call participants are within the communication range.
There are unknown voices or sounds on the channel.	You may be interrupted by radios using the same frequency.	Change the frequency, or adjust the squelch level.
	The radio may be set with no signaling.	Set signaling for all member radios to avoid interference at the same frequency.
The radio cannot be located.	The radio may be at an unfavorable position, so no GPS signal is received.	Move to an open and flat area, and try again.
The radio cannot pair with the BT device.	The battery power of the BT device may be low.	Recharge the BT device.
	The BT device may be too far away from the radio.	Move the BT device towards the radio.
During receiving, the voice is weak, discontinuous, or totally inactive.	The battery voltage may be low.	Recharge or replace the battery.
	The volume may be low.	Increase the volume.
	The antenna may be loosened or installed improperly.	Turn the radio off, and then remove and reattach the antenna.

Phenomena	Analysis	Solution
	The speaker may be blocked or damaged.	Clean the surface of the speaker.
The radio fails to communicate with group members.	The frequency or signaling type may be inconsistent with that of other members.	Set your TX/RX frequency and signaling to the same as that of other members.
	The channel type (digital/analog) may be set inconsistently.	Make sure all members are on the same digital/analog channel.
	You may be too far away from the group members.	Move towards other members.
There is too much noise and hiss.	The signal may be weak.	Make sure call participants are within the communication range.
	The radio may be in an unfavorable position. For example, the signal may be blocked by tall buildings or frustrated in the underground areas.	Move to an open and flat area, and restart the radio.
	The radio may suffer from external disturbance (such as electromagnetic interference).	Stay away from the equipment that may cause interference.

If the above solutions cannot solve your problems, or you may have some other queries, please contact us or your local dealer for more technical support.

11. Radio Care

11.1 Radio

CAUTION

If the radio is seriously wet inside, do not turn on it. Contact your dealer or maintenance center for maintenance in time.

To guarantee optimum performance as well as a long service life of the radio, follow the tips below:

- Do not disassemble the radio.
- Do not throw, crack, or hammer the radio.
- Do not pierce or scrape the radio, espeically the interfaces.
- Do not expose the radio to the extreme temperature.
- Keep the radio away from substances that can corrode it.
- Close the accessory connector cover when no accessory is in use.
- Do not connect the radio to the incompatible device.
- Do not hold the radio by its antenna.

To avoid liquid penetration into the radio, follow the tips below:

- Do not expose the radio to the environment with high temperature and high humidity.
- Keep the radio away from salty water, ionized water, alcoholic beverage, lotion, or other impure water.
- Before connecting the accessory or charger to the radio, ensure the radio and the interface are dry.

If the radio has been wet, follow the tips below:

- Do not turn on the radio.
- Do not connect the accesory or charger to the radio.
- Do not dry the radio by microwave, hair dry, or other external heat sources.
- Do not insert the cotton buds or tissue into the interface.
- Use the clean and soft cloth to dry the water on the radio surface, and then put the radio to the well-ventilated place until it is dry.

11.2 Battery

To guarantee optimum performance as well as a long service life of the battery, follow the tips below:

- Use the approved charger to charge the battery.

- Keep the radio turnned off during charging.
- Do not use the radio during charging.
- Charge the battery under the temperature from 0°C to 45°C.
- When the low battery alert occurs, replace or charge the battery in time.
- When the battery is fully charged, disconnect the charger in time.
- Do not drop the battery by force.
- Do not make the battery wet.
- To avoid short circuit, do not use the conductive substance such as iron wire to touch the anode and cathode of the battery.

11.3 Cleaning

CAUTION

- Turn off the radio and remove the battery before cleaning.
- Ensure no external devices are connected to the radio.
- Do not use chemical preparations such as stain removers, alcohol, sprays, or oil preparations.
- Do not directly spray the neutral cleanser on the radio.
- Do not use the radio before it is fully dry.
- After cleaning the accessory connector, put the cover back in place.

It is recommended that you clean the radio regularly. During cleaning, you can check whether the components are damaged. If damages exist, contact your local dealer or the Company.

1. Use the non-metal brush to clean up the dust or dirt on the radio surface.
2. Use the lint-free cloth with proper neutral cleanser to clean the surface, screen, keys, knobs, and interfaces.
3. Use another lint-free cloth with proper pure water to clean up the cleanser or residue.
4. When cleaning the battery slot, use the non-metal brush to clean up the dust and dirt in the slot, and then use the dry and soft lint-free cloth to clean the contacts.

11.4 Sterilizing

CAUTION

- Turn off the radio and remove the battery before sterilizing.

- Ensure no external devices are connected to the radio.
- Do not directly spray the alcohol on the radio.
- Keep the radio away from the power supply and fire.
- Do not use the radio before it is fully dry.
- After sterilizing the accessory connector, put the cover back in place.

It is recommended that you sterilize the radio regularly. You can sterilize the radio by the following tips:

Use the lint-free cloth with proper rubbing alcohol (density ≥ 70%) to clean the radio surface, screen, keys, knobs, and interfaces.

11.5 Storing

CAUTION

- Turn off the radio and remove the battery before storage.
- Ensure no external devices are connected to the radio.

When storing the radio, follow the tips below:

- Keep the radio in the well-ventilated place with the temperature from –5°C to 25°C and with the humidity from 45% to 75%.
- Keep the radio away from the acidic and corrosive substances.
- Keep the radio away from the fire or other heat sources.
- Do not store the radio in direct sunlight.
- During storing, charge the battery once every three months, and care the battery once every six months.

12. Optional Accessories

CAUTION

Use the accessories approved by the Company only. Otherwise, we will not be liable for any loss or damage arising out of the use of unauthorized accessories.

Contact your local dealer for the optional accessories used with the radio.

13. Abbreviations

Abbreviation	Full Name
GPS	Global Positioning System
IATA	International Air Transport Association
LED	Light-emitting Diode
PTT	Push-to-Talk
SK	Side Key

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