



HP702-IS Intrinsically Safe DMR Two-Way Radio User Manual



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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:

[HP702 Intrinsically Safe Digital Portable Radio](#)

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FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. Verification of harmful interference by this equipment to radio or television reception can be determined by turning it off and then on. The user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna. Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a different circuit to that of the receiver's outlet.
- Consult the dealer or an experienced radio/TV technician for help.

Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Note: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Compliance with RF Exposure Standards

The radio complies with the following RF energy exposure standards and guidelines:

- United States Federal Communications Commission, Code of Federal Regulations; 47 CFR § 1.1307, 1.1310 and 2.1093
- American National Standards Institute (ANSI)/Institute of Electrical and Electronic Engineers (IEEE) C95.1:2005; Canada RSS102 Issue 5 March 2015
- Institute of Electrical and Electronic Engineers (IEEE) C95.1:2005 Edition

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.

Guidelines:

- Do not remove the RF Exposure Label from the device.
- User awareness instructions should accompany device when transferred to other users.
- Do not use this device if the operational requirements described herein are not met.

Operating Instructions:

- Transmit no more than the rated duty factor of 50% of the time. To transmit (talk), press 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.
- When worn on the body, always place the radio in an approved holder, holster, case, or body harness or by use of the correct clip for this product. Use of non-approved accessories may result in exposure levels which exceed the FCC's occupational/controlled environmental RF exposure limits.
- Use of non-approved antennas, batteries, and accessories causes the radio to exceed the FCC RF exposure guidelines.
- Contact your local dealer for the product's optional accessories.

ISED Statement

The device has been tested and complies with SAR limits, users can obtain Canadian information on RF exposure and compliance.

Après examen de ce matériel aux conformités aux limites DAS et/ou aux limites d'intensité de champ RF, les utilisateurs peuvent sur l'exposition aux radiofréquences et la conformité and compliance d'acquérir les informations correspondantes.

This device complies with Innovation, Science and Economic Development Canada Compliance license-exempt RSS standard(s). Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RF Radiation Information

This product must be restricted to operations in an occupational/controlled RF exposure environment. Users must be fully aware of the hazards of the exposure and able to exercise control over their RF exposure to qualify for the higher exposure limits.

RF Radiation Profile

Radio Frequency (RF) is a frequency of electromagnetic radiation in the range at which radio signals are transmitted. RF technology is widely used in communication, medicine, food processing and other fields. It may generate radiation during use.

RF Radiation Safety

In order to ensure user health, experts from relevant industries including science, engineering, medicine and health work with international organizations to develop standards for safe exposure to RF radiation. These standards consist of:

- United States Federal Communications Commission, Code of Federal Regulations; 47CFR part 2 sub-part J;
- American National Standards Institute (ANSI)/Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992;
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999;
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998.

FCC Regulations

Federal Communication Commission (FCC) requires that all radio communication products should meet the requirements set forth in the above standards before they can be marketed in the U.S, and the manufacturer shall post a RF label on the product to inform users of operational instructions, so as to enhance their occupational health against exposure to RF energy.

Operational Instructions and Training Guidelines

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

- RF energy will be generated only when the radio is transmitting.
- The radio must be 2.5 centimeters away from human body when transmitting.

Hazardous Locations Certification Information

Compliance Standards

- CAN/CSA C22.2 No. 157-92 (R2016)
- ANSI/TIA-4950-A, Rev. May 13, 2014

Equipment marking

- I.S Class I, II, III, Division 1, Groups C, D, E, F, G, T4
- NI Class I, Division 2, Groups A, B, C, D, T4

–20°C to +60°C

Certificate Number

SGSNA/20/SUW/00085X

No Misoperations

Stop operating this product and leave the explosive atmosphere immediately when the safety or integrity of the product is endangered, and deliver it to your local dealer for examination.

These items may endanger the product's safety or integrity:

- The radio is stored improperly;
- The radio is faulty;
- The radio works with overload;
- The radio's operational error or threshold value is out of allowed range;

- The radio is damaged during transportation;
- The radio's housing is obviously damaged or cracked;
- The radio logo or model is hard to be recognized.

Safety Instructions



Caution: To protect you against any property loss, bodily injury or even death, be sure to observe the following safety instructions:

- Use only the Ex-battery BL2801-Ex specified by the Company. The use of other batteries may result in Ex-protection (intrinsic safety) failure.
- Charge the battery in a non-hazardous area only with the designated charger.
- Do not remove the battery from the radio in a hazardous area.
- Do not carry any standby battery into a hazardous area.
- Use the accessories specified by the Company only. Do not replace the accessories in a hazardous area.
- Do not use a damaged antenna. If a damaged antenna comes into contact with your skin, a minor burn may result.
- Do not expose the radio to direct sunlight for a long time, nor place it close to a heating source.
- Hold the radio upright and keep its microphone 2.5 to 5 centimeters away from your mouth during use.
- If you wear a radio on your body, ensure its antenna is at least 2.5 centimeters away from your body during transmission.
- Do not attempt to repair and service the radio, batteries and its accessories. Please contact your dealer for repair and servicing.
- Do not disassemble or redo the radio. Unauthorized modification of the radio may result in termination of Ex-protection (intrinsic safety) of the radio.
- Improper usage of the product other than it is intended to be used for will impair safety of the product, yourself and surrounding environment.

Specifications

Item	Specifications
Rated Operating Voltage	DC 7.4 V
Max. Operating Voltage	DC 8.4 V
Dimensions (H x W x D) (with standard battery, without antenna)	132 mm x 55 mm x 36.5 mm

Weight (with standard antenna & battery)	369 g
Sensitivity	0.18 μ V
Rated Audio Power Output	0.5 W
Audio Distortion	$\leq 3\%$
Ambient Temperature	−20°C to +60°C
Storage Temperature	−40°C to +85°C
Charging Temperature	0°C to 45°C
Battery	Ex-battery BL2801-Ex (2850 mAh)
Charging Time	About 4 hours

Renseignements sur l'homologation des endroits dangereux

Normes de conformité

- CAN/CSA C22.2 No. 157-92 (R2016)
- ANSI/TIA-4950-A, Rev. May 13, 2014

Marquage de l'équipement

- I.S Classe I, II, III, Division 1, Groupe C, D, E, F, G, T4
- NI Classe I, Division 2, Groupe A, B, C, D, T4

–20°C à +60°C

Numéro de certificat

SGSNA/20/SUW/00085X

Mauvaises utilisations à éviter

Arrêtez d'utiliser ce produit et quittez l'atmosphère explosive immédiatement si la sécurité ou l'intégrité du produit sont compromises, puis retournez-le à votre revendeur local pour vérification.

Voici la liste des éléments susceptibles de compromettre la sécurité ou l'intégrité du produit:

- La radio n'est pas stockée correctement.
- La radio est défaillante.
- La radio fonctionne en surcharge.
- La valeur de seuil ou d'erreur de fonctionnement de la radio se trouve en dehors de la plage autorisée.
- La radio est endommagée au cours du transport.
- Le boîtier de la radio est visiblement endommagé ou fendillé.
- Le logo ou le modèle de la radio sont difficilement reconnaissables.

Instructions de sécurité



Avertissement: Pour vous protéger contre la perte de biens, les blessures corporelles ou même les risques mortels, assurez-vous de suivre les instructions de sécurité suivantes:

- N'utilisez que la batterie Ex BL2801-Ex spécifiée par l'Entreprise. L'utilisation d'autres batteries peut entraîner une défaillance de la protection Ex (sûreté intrinsèque).
- Chargez uniquement la batterie dans une zone ne présentant aucun risque, à l'aide du chargeur prévu à cet effet.
- Ne retirez pas la batterie de la radio dans une zone à risques.

- Ne transportez pas de batterie de rechange dans une zone à risques.
- Utilisez uniquement les accessoires spécifiés par l'Entreprise. Ne remplacez pas les accessoires dans une zone à risques.
- N'utilisez pas une antenne endommagée. Si une antenne endommagée entre en contact avec votre peau, vous risquez des brûlures superficielles.
- N'exposez pas la radio à la lumière directe du soleil pendant une période prolongée. Ne la placez pas à proximité d'une source de chaleur.
- Tenez la radio en position vertical et gardez le micro à une distance de 2,5 à 5 cm de votre bouche pendant son utilisation.
- Si vous transportez une radio, assurez-vous que son antenne se trouve à une distance minimale de 2,5 cm de votre corps au cours de la transmission.
- N'essayez pas de réparer et d'entretenir la radio, les batteries et les accessoires. Veuillez contacter votre revendeur pour la réparation et l'entretien.
- Ne démontez pas la radio, ne la modifiez pas. Toute modification non autorisée de la radio peut compromettre la protection Ex (sûreté intrinsèque) de la radio.
- Une utilisation incorrecte du produit, autre que dans le cadre de l'utilisation prévue, peut compromettre la sécurité du produit, votre sécurité et celle de votre environnement.
- Ne transportez pas la radio dans des zones 0 et 20. Veuillez ne pas utiliser la radio en dehors des plages de température de fonctionnement spécifiées pour ce produit.

Spécifications

Élément	Spécifications
Tension nominale de fonctionnement	DC 7.4 V
Tension maximum de fonctionnement	DC 8.4 V
Dimensions (H × L × P) (avec batterie standard, sans antenne)	132 mm x 55 mm x 36.5 mm
Poids (avec antenne et batterie standards)	369 g
Sensibilité	0.18 µV
Puissance nominale de sortie audio	0.5 W

Distorsion audio	$\leq 3\%$
Température ambiante	−20°C à +60°C
Température de stockage	−40°C à +85°C
Température de charge	0°C à 45°C
Batterie	Ex-battery BL2801-Ex (2850 mAh)
Durée de chargement	Environ 4 heures

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Documentation Information

This section describes the audience, conventions and revision history of this guide.

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.
 DANGER	Indicates situations that could cause major personal injury or even death.

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 .
<i>Italic</i>	Denotes document titles.	For details about using the DWS, refer to <i>Dispatch Workstation User Guide</i> .
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

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

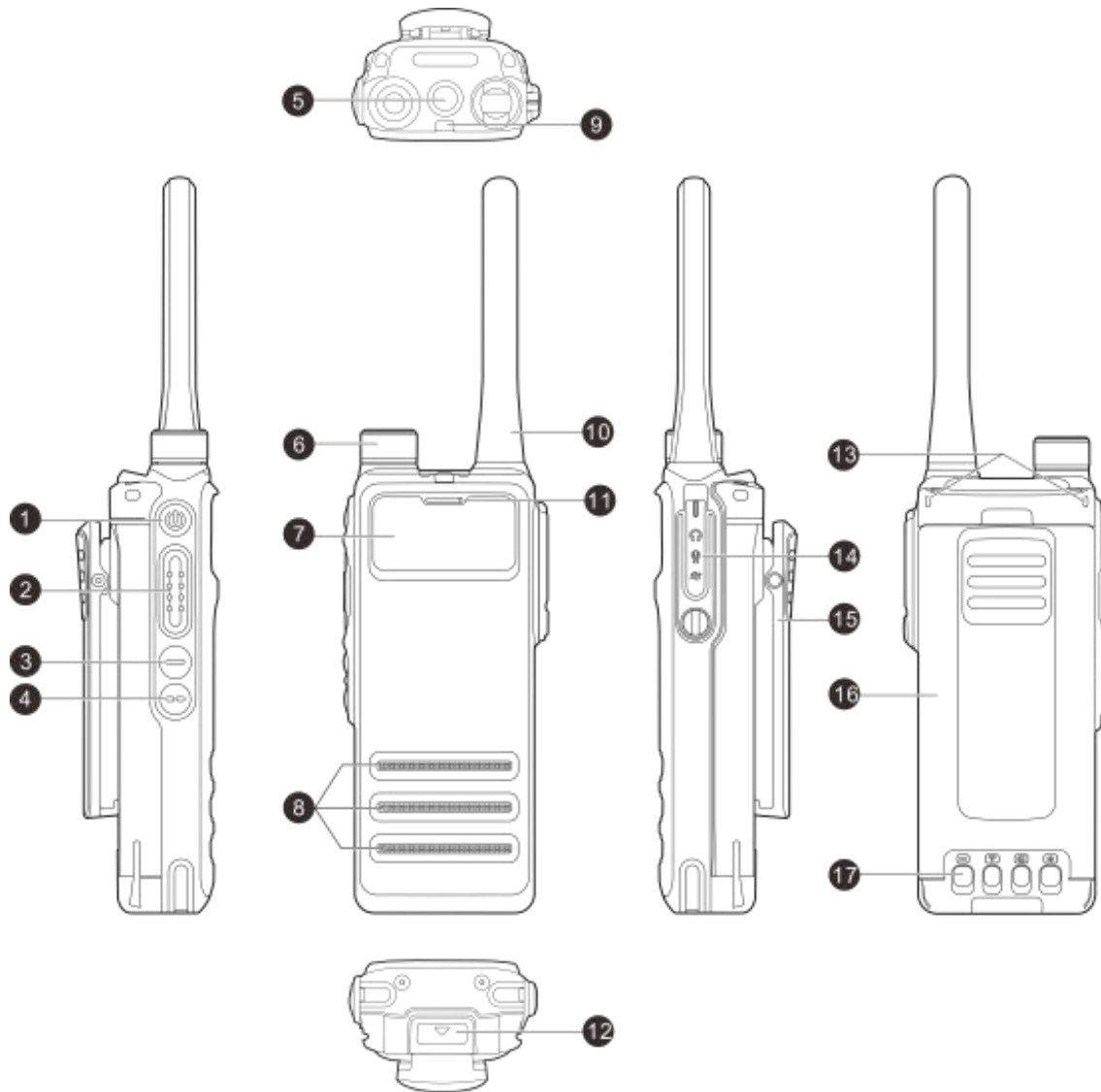
Item	Quantity (PCS)	Item	Quantity (PCS)
Radio	1	Antenna	1
Battery	1	Belt Clip	1
Charger	1	Strap	1
Power Adapter	1	Documentation Kit	1

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 Overview

2.1 Product Layout



NO.	Part Name	NO.	Part Name
1	On-Off Key	10	Antenna
2	Push-to-Talk (PTT) Key	11	Microphone
3	Side Key 1 (SK1)	12	Battery Latch
4	Side Key 1 (SK2)	13	Strap Hole
5	Top Key (TK)	14	Accessory Connector
6	Smart Knob	15	Belt Clip

NO.	Part Name	NO.	Part Name
7	OLED Display	16	Battery
8	Speaker	17	Charging Contacts
9	LED Indicator	/	/

2.2 Programmable Keys

For enhanced convenience, you can request your dealer to program **TK**, **SK1**, and **SK2** as shortcuts to radio features. For details, consult your dealer.

3. Before Use

3.1 Charging 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).

Before initial use, charge either the battery alone or the battery that is attached to the radio. It is recommended that the radio remain powered off during charging.

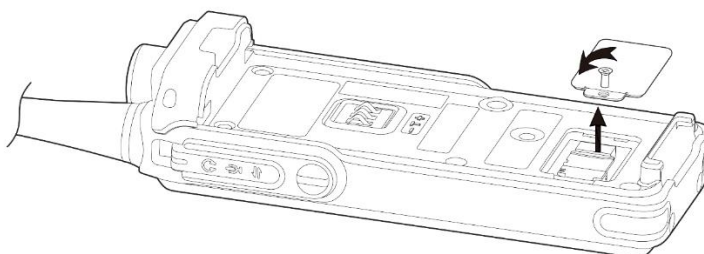
The LED indicator on the charger shows the charging status, as described in the following table.

LED Indicator	Charging Status
Glow red	The battery is being charged.
Glow orange	The battery is charged to 90% or above.
Glow 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.

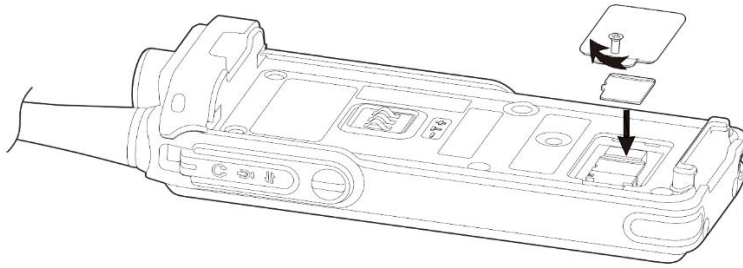
3.2 Installing the TF Card

If you purchase a TF card, install it as follows:

1. Use a screwdriver to loosen the screw on the card slot cover, and then remove the card slot cover.

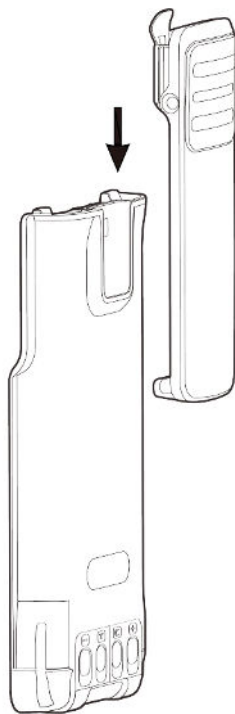


2. Install the TF card, put the card slot cover back in place, and then tighten the screw.



3.3 Attaching the Belt Clip

Align the holder on the belt clip with the groove on the battery, and then press the belt clip downwards into place.



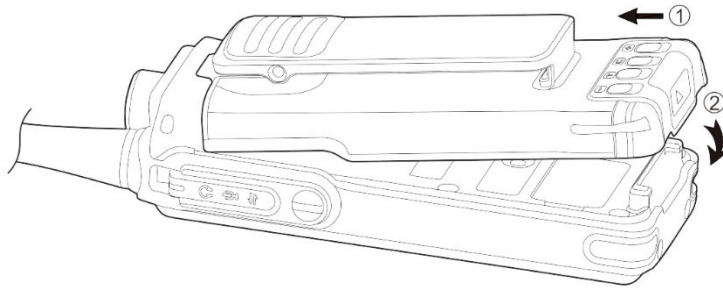
NOTE

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

3.4 Attaching 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*.



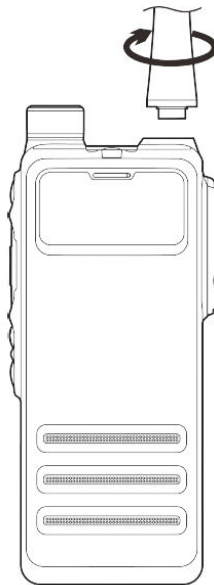
NOTE

To remove the battery, make sure that the radio is turned off, and then lift the battery latch.

3.5 Attaching 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.



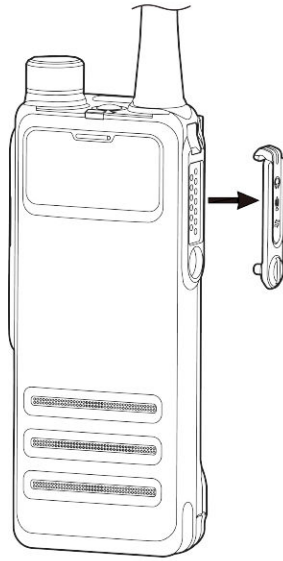
3.6 Attaching the Audio Accessory

CAUTION

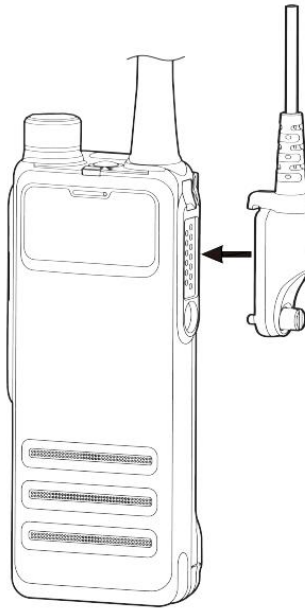
For optimal waterproof and dustproof performance, do as follows:

- Attach the accessory with care to avoid scraping the silicone rubber surrounding the accessory connector screw hole.
- Close the accessory connector cover and fasten the screw after removing the accessory.

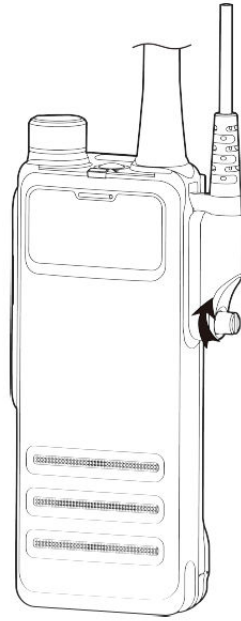
1. Loosen the screw on the accessory connector cover, and then remove the cover.



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





3. Tighten the screw on the audio accessory plug.



4. Basic Operations

4.1 Turning the Radio On or Off

- To turn the radio on long press , or reattach the battery.
- To turn the radio off, long press .

4.2 Adjusting the Volume

Rotate the **Smart Knob** clockwise to increase the volume, or counterclockwise to decrease the volume.

4.3 Switching the Operation Mode

The radio can operate in conventional mode, or digital trunking mode (preprogrammed by your dealer).

- Manual Switch
 - Press the preprogrammed **Operation Mode Switch** key.
 - If the Zone/Subgroup Switch Mode feature is enabled, you can switch the operation mode by switching the contact through the **Smart Knob**.

- Auto Switch

The Mode Automatic Switch feature allows the radio to automatically switch the operation mode, so as to ensure smooth communication in case of the radios in blind spot or the system failure.

To enable this feature, press the preprogrammed **Mode Auto Switch** key.

4.3.1 Conventional Mode

In conventional mode, the radio receives and transmits voice and data on the selected channel.

Selecting 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.

Selecting a Channel

Before selecting a channel, make sure that the current zone contains the channel.

To select a channel, do one of the following:

- Press the **Smart Knob**, and then rotate the knob within 5s.
- Press the preprogrammed **Channel Up** or **Channel Down** key.

- Press the preprogrammed **Preset Channel** key.

NOTE

If the Voice Notify feature is enabled, the radio automatically announces the current channel upon power-on and channel change.

4.3.2 Trunking Mode

In trunking mode, the radio automatically hunts for available base stations (BSs). During hunting, the LED indicator flashes orange. After registration with the BS, the radio can receive and transmit voice and data.

Selecting a Group or Private Contact

To select a group or private contact, do either of the following:

- Press the **Smart Knob**, and then rotate the knob within 5s.
- Press the preprogrammed **Group/Private Up** or **Group/Private Down** key.




















Selecting a Subgroup

- A subgroup consists of multiple groups or private contacts.
- To select a subgroup, press the preprogrammed **Subgroup Up** or **Subgroup Down** key.

5. Status Indications

5.1 OLED Icons

5.1.1 Basic Status

Icon	Radio Status
	The radio detects no signal.
	The number of bars indicates the signal strength.
	In single BS mode, the number of bars indicates the signal strength.
	The radio is in emergency mode.
	The radio is scanning or hunting.
	The radio stays on an active channel.
	The radio stays on Priority Channel 1.
	The radio stays on Priority Channel 2.
	The radio operates in low power mode.
	The radio operates in high power mode.
	More bars indicate more remaining battery power.
	The battery power runs out. Recharge or replace the battery.
	The TF card is nearly full.
	The TF card is full.
	The TF card is abnormal.
	The BT feature is enabled.
	A BT device is connected.
	The GPS feature is enabled, and valid positioning data has been received.
	The GPS feature is enabled, but no valid positioning data has been received.

5.1.2 Operation Mode

Icon	Radio Status
C	The radio operates in conventional mode.
TD	The radio operates in digital trunking mode.

5.2 LED Indications

LED Indicator	Radio Status
Flashes green	The radio is being turned on.
Flashes green slowly	The radio is standby in trunking mode.
Glow green	The radio is receiving.
Glow red	The radio is transmitting.
Flashes red	The radio is establishing a call in trunking mode. (This indication is applicable only to the calling radio.)
Flashes orange slowly	<ul style="list-style-type: none"> ● Conventional mode: The radio is scanning or roaming. ● Trunking mode: The radio is hunting.
Flashes orange rapidly	<ul style="list-style-type: none"> ● Conventional mode: The radio is operating in emergency mode. ● Trunking mode: The radio is establishing a Full Off Air Call Set-up (FOACSU) private call. (This indication is applicable only to the called radio.)
Glow orange	Call hang time: No voice is being transmitted or received during a call. Within such a period, you can press and hold the PTT key and speak.
Flashes blue every 3s	The BT feature is enabled, but no BT device is connected.
Flashes blue every 1.5s	A BT device is connected.
Flashes blue every 0.1s	The BT feature 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.

NOTE

In trunking mode, if the radio is not registered or attached, or an empty group is selected, you cannot initiate a call.

6.1 Call on Digital Channel

On a digital channel, you can initiate or receive the following types of calls:

- 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.
- Broadcast call (preprogrammed by your dealer): a special group call in trunking mode, during which only the calling party can transmit voice.
- All call (preprogrammed by your dealer):
 - Conventional mode: a call from an individual user to all the other users on the current digital channel.
 - Trunking mode: a call from an individual user to all the other users in the network.

Preprogrammed by your dealer, an all call can be either of the following types:

- Broadcast all call: Only the calling party can transmit voice.
- General all call: Both the calling party and the called party can transmit voice.

NOTE

In trunking mode, with the Auto Select Available Site feature preprogrammed by your dealer, the radio automatically registers with an unrestricted BS for successful call establishment when making a call to the restricted group.

6.1.1 Initiating a Call

Conventional Mode

- On the home screen, press and then rotate the **Smart Knob** to select the digital channel with preset contact, and then press and hold the **PTT** key.
- With the One Touch Call feature preprogrammed by your dealer, press the preprogrammed **One Touch Call**

key, and then press and hold the **PTT** key.

Trunking Mode

- On the home screen, press and then rotate the **Smart Knob** to select the contact, and then press the **PTT** key.
- With the One Touch Call feature preprogrammed by your dealer, press the preprogrammed **One Touch Call** key.

6.1.2 Receiving a Call

Receiving a Group/Broadcast/All Call

You can answer a group, a broadcast call, or an all call without any operation.

Receiving a Private Call

- Conventional mode: You can answer a group call without any operation.
- Trunking mode:

- **FOACSU**

When receiving a FOACSU private call, the radio rings and vibrates. To answer the call, press the **PTT** key within the preset time.

- **Off Air Call Set-Up (OACSU)**

The call is established automatically.

6.1.3 Ending a Call

Conventional Mode

A call ends in either of the following cases:

- The call hang time expires.
- The calling party releases the **PTT** key.

Trunking Mode

A group/broadcast/all call ends when the calling party hangs up or presses the preprogrammed **Clear Down** key.

A private call ends when the calling or called party hangs up or presses the preprogrammed **Clear Down** key.

6.2 Call on Analog Channel

In conventional mode, you can initiate 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 initiate a call to all the other users on the channel.

On the home screen, press and then rotate the **Smart Knob** to select the analog channel, and then press and hold the **PTT** key.

6.2.2 Call with Signaling

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

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

7. Supplementary Features

7.1 Profiles

Description

The Profiles feature allows you to set the audio, alert tone, and vibration of the radio to suit your preference and work environments. The profiles include **General**, **Meeting**, **Outdoor**, **Covert Mode**, and custom mode.

- **General**: This profile is applicable to the low-noise environment, such as a quiet street.
- **Meeting**: This profile is applicable to the indoor environment that is relatively quiet.
- **Outdoor**: This profile is applicable to the high-noise environment, such as a highway.
- **Covert Mode** (preprogrammed by your dealer): This profile is applicable to special situations. The radio locks the screen and disables all alert tones and LED indications. The radio uses only an audio accessory is required to output voice.
- **Custom**: This profile is applicable to other situations.

Procedure

To switch the profile, press the preprogrammed **Profiles Switch** key.

7.2 Audio Settings

7.2.1 Mode Switch

You can set the radio to use the microphone or speaker for transmitting and receiving voice. With the audio accessory connected, you can switch the audio options. For details, see the following table.

Option	Description	Operation
Follow PTT	When you transmit voice through the PTT key of the radio, 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.
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.	

Option	Description	Operation
External First	When audio accessories are connected, the radio uses the external microphone and speaker. Otherwise, the radio uses the internal microphone and speaker.	<ul style="list-style-type: none"> ● Press the preprogrammed SPK Set Switch key to switch the speaker audio option.

7.2.2 Noise Cancellation

The Noise Cancellation feature allows the radio to automatically eliminate ambient noise when receiving or transmitting voice. This feature enhances the voice clarity, while also decreases the volume.

With this feature preprogrammed by your dealer, press the preprogrammed **Noise Cancellation** key to enable the feature.

7.3 Power Level

You can set the TX power level to high or low. High power can enhance the signal strength of the voice and increase the communication distance, while low power can save power.

Press the preprogrammed **Adjust Power Level** key to switch the power level.

7.4 Scan

7.4.1 Conventional Mode

In conventional mode, the Scan feature allows you to listen to activities on other channels, keeping track of your team members. With this feature enabled, the radio scans according to the scan list. The LED indicator flashes orange slowly. When detecting activities on a channel, the radio stays on the channel. The LED indicator glows green.

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

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.

7.4.2 Trunking Mode

Pre-registration Hunt

Before registering, the radio hunts through the control channels for available BSs. Two hunting plans are adoptable:

- Fixed Trunking Station Control Channel (Fixed TSCC)

When the radio has unified frequency plans, it can use the Fixed TSCC.

- Flexible Trunking Station Control Channel (Flexible TSCC).

When the radio does not have unified frequency plans, it can use the Flexible TSCC. After being powered on, the radio automatically starts hunting.

Post-registration Hunt

After successful registration, you can press the preprogrammed **Manual Current Hunt** key to hunt again. To ensure seamless communication, you can enable the following hunt modes:

Hunt Mode	Description	Operation
Background Hunt	This feature allows an idle radio to keep detecting the signal strength of the BS with which it registers. If the signal strength goes below the threshold level preset by the dealer, the radio will automatically hunt for an adjacent BS with stronger signal strength and register with it.	Press the preprogrammed Background Hunt , HomeStation Hunt , or Multi-site Handover key.
Home Station Hunt	In a BS overlapping area, this feature allows the radio operating on another channel to switch back to the home station channel when its signal strength reaches the preset threshold. It is recommended that you set your frequently used channel as the home station channel.	
Handover	The signal strength received from a BS may fluctuate due to position change and affect the communication quality of the radio. On such occasions, this feature allows the radio to automatically register with the BS with stronger signal.	
Vote Now	This feature allows the radio in idle to check the signal strength of the BS assigned in a broadcast call, and decide whether to register with the BS.	This feature is enabled by default.

7.5 Positioning

The Positioning feature allows the radio to collect its location information through GPS. This feature is preprogrammed by your dealer.

NOTE

This feature applies only to radios with GPS.

7.5.1 Voice w/Location

The Voice w/Location feature allows the radio to report its location information to the dispatch station when initiating a private call, a group call, or an emergency call.

This feature is preprogrammed by your dealer, and configured in either of the following ways:

- When you press and hold the **PTT** key to transmit voice, the radio reports its location information at the same time.
- When you press and hold the **PTT** key to transmit voice, the radio reports its location information at regular intervals.

7.5.2 GPS Report

The GPS Report feature allows the radio to report its location information to the control center or trunking system.

Conventional Mode

You can report the location information to the control center in either of the following ways:

- Press the preprogrammed **GPS Report** key.
- Request your dealer to configure the GPS Report trigger as power-on/off, preset time, or distance interval.

The radio automatically reports the location information according to the trigger.

Trunking Mode

With the GPS Active Report feature preprogrammed by your dealer, the radio automatically reports the location information when reaching the preset time or distance.

If the radio is enabled with the GPS Report in Voice feature, you can report the location information during a call.

7.6 BT

CAUTION

- To derive optimal communication quality, it is recommended to use the BT devices approved by the Company.
 - If BT earpieces of other companies are used, you must use them with the wireless ring PTT of the Company. Otherwise, transmission is unavailable through the earpieces.
-

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

NOTE

The BT feature applies only to radios with the BT module.

7.6.1 Enabling the BT Feature

You can enable the BT feature in either of the following ways:

- Press the preprogrammed **BT** key.
After this feature is enabled, the LED indicator flashes blue every 3 seconds.
- Request your dealer to enable the BT feature and the BT Always Discoverable feature.
After power-on, the radio automatically activates the BT feature and stays detectable for other BT devices.

7.6.2 Connecting a BT Device

Before connecting a BT device, check the connectivity between the radio and the BT device.

NOTE

The connectivity is preprogrammed by your dealer through the CPS.

With the connectivity configured, the radio automatically searches and connects to the BT device.

After successful connection, the LED indicator of the radio flashes blue every 1.5 seconds.

7.6.3 Switching the BT Audio Output

With a BT device connected, you can press the preprogrammed **BT Audio Switch** key to switch the audio output device between BT earpieces and the radio.

7.7 One Touch Call

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

Call key.

The following table shows the services that can be implemented by this feature and the corresponding operations.

Mode	Description	Operation
Conventional mode	<p>On an analog channel, you can initiate a call to a 2-tone contact.</p> <p>On a digital channel, you can do any of the following:</p> <ul style="list-style-type: none"> ● Initiate a group, private, or all call. ● Send a quick text message or position message to a private or group contact. ● Initiate an alert call, radio check, remote monitor, radio enable, or radio disable service to a private contact. 	<ul style="list-style-type: none"> ● To initiate a call on a digital channel, press the preprogrammed One Touch Call key, and then press and hold the PTT key. ● To initiate other services, press the preprogrammed One Touch Call key.
Trunking mode	<ul style="list-style-type: none"> ● Initiate a group, private, all, broadcast, or emergency call. ● Send a quick text message or status message. 	

7.8 Roam (Conventional Only)

The Roam feature allows you to enjoy seamless communication across sites.

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

7.9 Talk Around

The Talk Around feature 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 the direct mode and repeater mode, press the preprogrammed **Talk Around** key.

7.10 Squelch Level

In conventional mode, the 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.

Press the preprogrammed **Adjust Squelch Level** key to adjust the level.

7.11 DGNA

The Dynamic Group Number Assignment (DGNA) feature allows you to initiate a call to or receive a call from a dynamic group temporarily created by a dispatch station.

For operations of initiating, receiving, or ending a DGNA call, see [6.1 Call on Digital Channel](#).

7.12 Priority Interrupt

The Priority Interrupt feature 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 as to initiate a new call or a new data service.

This feature includes manual priority interrupt and auto priority interrupt.

7.12.1 Manual Priority Interrupt

Press the preprogrammed **Priority Interrupt** key to interrupt the ongoing activities.

7.12.2 Auto Priority Interrupt

Auto Priority Interrupt includes Emergency Priority Interrupt, Call Back Priority Interrupt, Message Priority Interrupt, Radio Disable Priority Interrupt, and All Call Priority Interrupt.

With this feature preprogrammed by your dealer, you can interrupt an ongoing call in one of the following ways:

- Press and hold the **PTT** key.
- Initiate an emergency call.
- Initiate an all call.
- Send a message.
- Send the Radio Disable command.

7.13 Emergency

The Emergency feature allows you to seek help from your companion or the control center in case of emergency. You can initiate 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. The available emergency types are 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 audible indications.

Emergency Type	Description
Silent	The radio gives no audible indication.
Silent w/Voice	The radio gives 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 initiate 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 initiate an emergency call.	
Alarm	It allows you to send an emergency alarm.	

7.13.1 Initiating an Emergency Call

Press the preprogrammed **Emergency On** key to initiate an emergency call to the preset contact.

If the Alarm w/Call To Follow feature 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 initiate the emergency call again.

7.13.2 Receiving an Emergency Call

You can answer an emergency call without any operation.

7.13.3 Ending an Emergency Call

Conventional Mode

The calling party can end an emergency call in either of the following ways:

- Press the preprogrammed **Emergency Off** key.
- Turn off the radio.

The called party can exit an emergency call in either of the following ways:

- Switch the channel.
- Turn off the radio.

Trunking Mode

The calling party can end an emergency call in either of the following ways:

- Press the preprogrammed **Emergency Off** key.
- Turn off the radio.
- Rotate the **Smart Knob** to select an empty group.

The called party can exit an emergency call in either of the following ways:

- Switch the contact.
- Turn off the radio.

NOTE

In conventional mode, with the Send Emergency Exit Message feature preprogrammed by your dealer, you can send an emergency exit message to the receiver when ending an emergency alarm or emergency call initiated by mistake.

7.14 Man Down

The Man Down feature allows the radio to automatically enter the emergency mode in either of the following scenarios:

- The radio is inclined by an angle greater than the preset angle.
- The radio keeps motionless (including moving at a constant speed) longer than the preset time.

You can place the radio upright or move it to exit the emergency mode.

To enable this feature, press the preprogrammed **Man Down** key.

7.15 Lone Worker

The Lone Worker feature 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 this feature, press the preprogrammed **Lone Worker** key.

7.16 Encrypt

The Encrypt feature provides end-to-end encryption for voice and data to protect your voice and data against

eavesdropping.

Enabling the Encrypt Feature

Press the preprogrammed **Encrypt** key.

Setting the Encrypt Feature

To use the encryption services, the transmitting radio and the receiving radio must enable the Encrypt feature simultaneously with matching encryption key. The **Encrypt** key is preprogrammed by your dealer.

7.17 Stun, Revive, and Kill

Conventional Mode

You can send the Radio Disable command to a private contact to disable its radio. The disabled radio is incapable of any function except the remote monitor. The disabled radio must be reprogrammed by the dealer or enabled by the Radio Enable command for reuse.

You can send the Radio Enable command to a private contact to restore its radio to normal use.

Trunking Mode

When the radio is stunned by the dispatch station or trunking system, the radio cannot initiate or receive any network service (including calls), but retains features such as registration, revive, kill, and authentication. A stunned radio can restore to normal use when receiving the revive command from the dispatch station or trunking system.

When the radio is killed by the dispatch station or trunking system, the radio is incapable of any function except power-on/off. To restore normal use, send the radio back to the Company.

The Stun, Revive, and Kill features are preprogrammed by your dealer by default and triggered by the dispatch station or trunking system.

7.18 Emergency Erase Data

The Emergency Erase Data feature allows the radio to erase encrypted data in case of emergency, so as to prevent unauthorized access. When erasing the data, the radio stops voice and data services and returns to the home screen.

If this feature is preprogrammed by your dealer, the encrypted data can be erased in the following cases:

- Press **SK1** and then the **PTT** key (within 1.5s) for two times, and then press **SK1** again.
- When the radio is killed, the data in the radio will be erased automatically.

8. 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 radio cannot be registered. The radio is registered repeatedly. The radio cannot establish a call. No voice is heard after a call is established.	The radio cannot detect signal from the BS.	Make sure the radio is within the coverage of the BS.
	The radio may not be authorized.	Contact the BS manager to check if the radio is authorized in the network management system.
	The signal may be intermittent.	Make sure the radio is within the coverage of the BS.
	The signal may be weak.	Make sure the radio is within the coverage of the BS.
The called party disconnects repeatedly during communication. The voice is unclear. There are unknown voices or noises on the channel. The OLED display does not display any information.	The radio ID may be repeated.	Contact the BS manager to check whether the radio ID is repeated in the network management system.
	The signal may be intermittent or weak.	Make sure the radio is within the coverage of the BS.
	The signal may be weak.	Make sure call participants are within the communication range.
	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 OLED display may fail to function temporarily.	Restart the radio.

Phenomena	Analysis	Solution
The positioning system cannot locate your position.	The radio may be at an unfavorable position, so no position signal is received.	Move to an open and flat area, and try again.
The BT device cannot be paired.	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, or contact your dealer to disable the Mic AGC feature.
	The antenna may be loosened or installed improperly.	Turn the radio off, and then reattach the antenna.
	The speaker may be blocked or damaged.	Clean the surface of the speaker.
Communications with group members are unavailable.	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.
	The signal may be weak.	Make sure call participants are within the communication range.
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	Move to an open and flat area, and then restart the radio.

Phenomena	Analysis	Solution
	tall buildings or frustrated in the underground areas.	
	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.

9. Product Care

9.1 Radio

CAUTION

If the radio is seriously wet inside, do not turn on it. Contact the 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 disassembly the radio.
- Do not throw, crack, or hammer the radio.
- Do not pierce or scrape the radio, especially 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 accessory 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.

9.2 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 turned 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.

9.3 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 to clean the radio regularly. During cleaning, you can check whether the components are damaged. If damages exist, contact the 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.

NOTE

If you want to clean the battery slot, use the non-metal brush to clean up the dust or dirt, and then use the dry and soft lint-free cloth to clean up the battery contacts.

9.4 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 to sterilize the radio regularly. You can sterilize the radio by the following tips:

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

9.5 Storing

CAUTION

- Turn off the radio and remove the battery before storage.
- Ensure no external devices are connected to the radio.
- The capacity and performance of the battery may degrade if the battery is not used for long time.

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.

10. 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 product.

11. Abbreviations

Abbreviation	Full Name
ESN	Electronic Serial Number
FOACSU	Full Off Air Call Set-Up
GPS	Global Positioning System
LCD	Liquid-Crystal Display
LED	Light-Emitting Diode
OACSU	Off Air Call Set-Up
PTT	Push-To-Talk
SK	Side Key
TF	TransFlash
TK	Top Key



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