

# **Preface**

Thank you for purchasing Hytera TC-446S portable two-way radio. TC-446S is endowed with professional outlook, reliable structure, practical functions and mature performance. It will bring you perfect communication.

To derive optimum performance from your product, please read this manual and the supplied Safety Information Booklet carefully before use.

## Instructional Icons

The following icons are available through this manual:



**Caution:** indicates situations that could cause damage to your product.



**Note:** indicates tips that can help you make better use of your product.

## Term Explanation

Please pay your attention to the following key terms:

### Key Operation

Short press: to press a key and release it quickly.

Long press: to press and hold down a key for above 1 second.

Hold down: to press a key and remain holding it down.

### User Mode

User mode is the operation mode you enter by powering on the radio.

### CTCSS/CDCSS

This technology can avoid unwanted calls at the same frequency.

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<http://www.hytera.cn>.

## **RF Energy Exposure Compliance**

Your product is designed and tested to comply with a number of national and international standards and guidelines (listed below) regarding human exposure to radio frequency electromagnetic energy. This product complies with the IEEE and ICNIRP exposure limits for occupational/controlled RF exposure environment at operating duty factors of up to 50% transmitting and is authorized by the FCC for occupational use only. In terms of measuring RF energy for compliance with the FCC exposure guidelines, your product radiates measurable RF energy only while it is transmitting (during talking), not when it is receiving (listening) or in standby mode.

### **Your product complies with the following of RF energy exposure standards and guidelines**

- 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 Edition
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998

### **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 no more than 50% of the time and always adhere to the following procedures:

#### **Transmit and Receive**

To transmit (talk), push the Push-To-Talk (PTT) key; to receive, release the PTT key.

## **FCC Licensing Information**

### **Part 15 Compliance**

This product has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This product generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this product does cause harmful interference to radio or television reception, which can be

determined by turning the product off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the product and receiver.
- Connect the product into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### **FCC Licensing Requirements**

A license from Federal Communications Commission is required prior to use. Your dealer will program each product with your authorized frequencies, signaling codes, etc., and will be there to meet your communications needs as your system expands. Contact your dealer for more information.

### **EU Regulatory Conformance**

The product is in compliance with the essential requirements and other relevant provisions of the Directive 1999/5/EC.

**CE 0678**



**Note:** The above information is applicable to EU countries only.

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## Checking Items in the Package

Please unpack carefully and check that all items listed below are received. If any item is missing or damaged, please contact your dealer.



Battery



Rapid-rate Charger



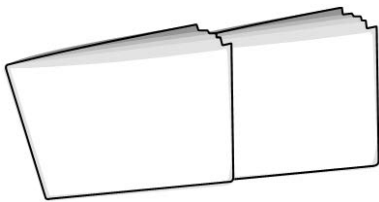
Power Adapter



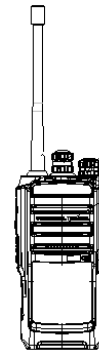
Belt Clip



Strap



Owner's Manual & Safety Information Booklet



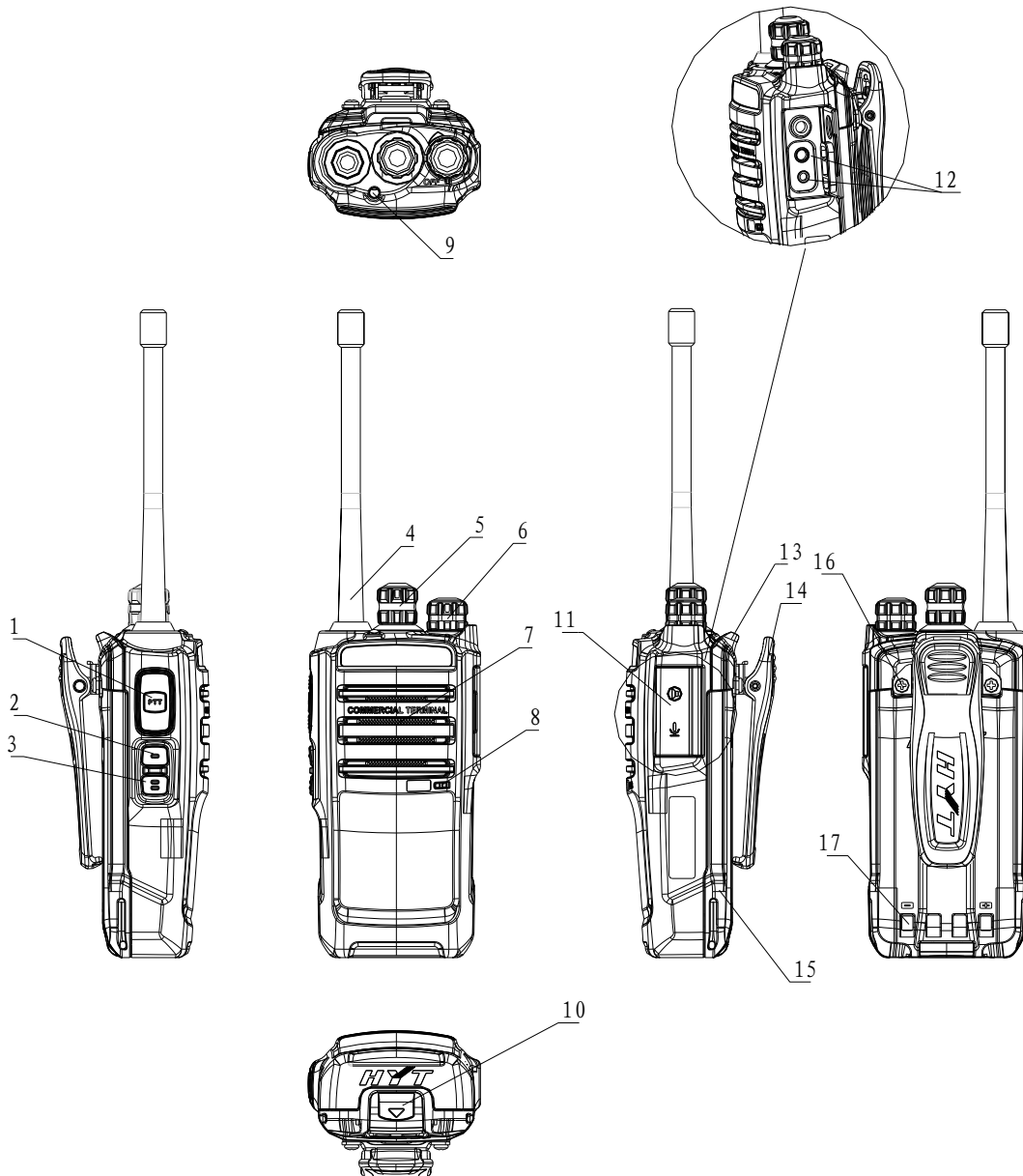
Radio Unit



**Note:** The pictures are for reference only.

# Product Overview

## Product Controls



No.	Part Name	No.	Part Name
①	PTT Key	⑩	Battery Latch
②	SK1 (programmable)	⑪	Accessory Jack Cover
③	SK2 (programmable)	⑫	Accessory Jack



④	Antenna	⑬	Strap Hole
⑤	Channel Selector Knob	⑭	Belt Clip
⑥	Radio On-Off/Volume Control Knob	⑮	Battery
⑦	Speaker	⑯	Screw of Belt Clip
⑧	Microphone	⑰	Charging Piece
⑨	LED Indicator		

### Programmable Keys

For enhanced convenience, you may request your dealer to program the keys **SK1** and **SK2** as shortcut to the functions listed below:

No.	Shortcut Key	Function
1	Monitor	To adjust the condition for incoming signal match.
2	Monitor Momentary	
3	Squelch Off	To always unmute speaker no matter whether carrier is present or not.
4	Squelch Off Momentary	
5	Scan	To listen to communication activities on other channels.
6	VOX	To make the radio transmit automatically when you speak.
7	Battery Strength Indicator	To indicate the charge remaining in the battery.
8	Channel Lock	To lock the current channel.



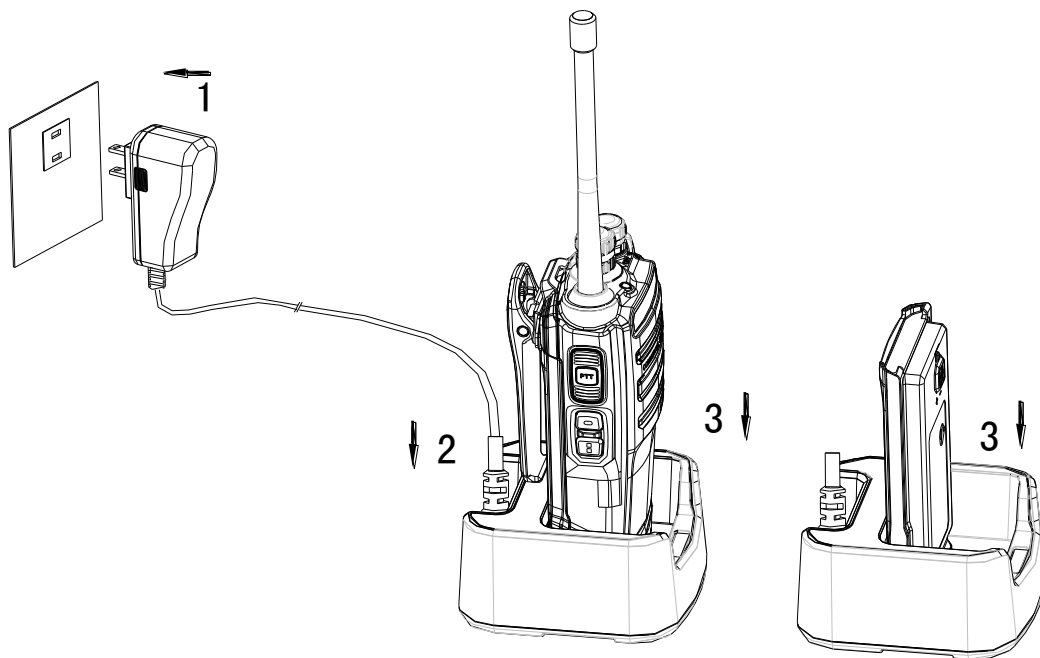
**Note:** Long and short press of the key can be assigned with different functions by your dealer.

# Before Use

## Charging the Battery

Use only the charger and battery specified by Hytera. Charger LED can indicate the charging process.

■ Charge Diagram



■ Procedures

1. Connect the power adapter to AC source. See arrow 1;
2. Plug the power adapter into the rear socket of the charger. See arrow 2;
3. Place the radio with the battery attached, or the battery alone, into the charger; See arrow 3;
4. The charging process initiates when LED glows red, and is completed when LED glows green.



**Note:** To achieve optimal battery performance, please charge the battery for 5 hours before initial use.

■ Charge Indicator

LED Indicator	Charge Status
Red LED glows.	Charging
LED solidly glows orange.	About fully charged
LED solidly glows green.	Fully charged

When battery power runs low, the LED will flash red, and the low-pitched tone will sound periodically. In this case, please replace or charge the battery.

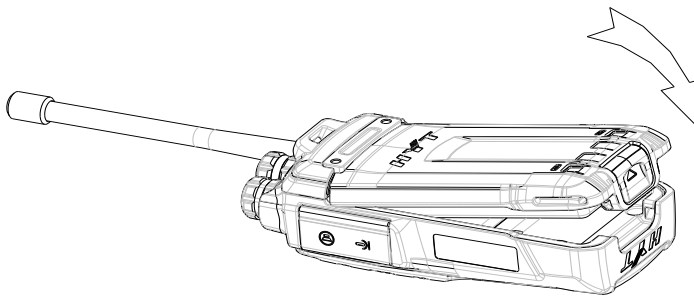


**Caution:** Be sure to read the Safety Information Booklet, to get necessary safety information.

## Assembling the Accessories

### Attaching the Battery

1. Push the battery into the radio's slot;
2. Slightly press the bottom of the battery until a click is heard.



To remove the battery, turn off the radio first. Then slide the battery latch upward to release the battery.

### Attaching the Belt Clip

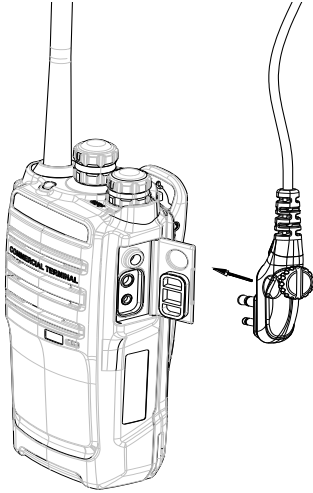
1. Remove the screws;
2. Align the screw holes on the belt clip with those on the radio's body, and then tighten the screws.



To remove the belt clip, loosen the screws.

**Attaching the Audio Accessory/Programming Cable**

1. Uncover the accessory jack;
2. Plug an audio accessory/programming cable into the accessory jack (if it is an audio accessory, remember to tighten the screw).



To remove the accessories, pull out the plug (if it is an audio accessory, remember to loosen the screw first).



**Caution:** When you are using an external accessory, waterproof performance of the radio may get affected.

# Status Indication

The top LED indicator will help you easily identify current radio status.

LED Indicator	Radio Status
Red LED glows.	Transmitting
Red LED flashes.	Low battery alert
Green LED glows.	Receiving
Green LED flashes.	Scanning

# Basic Operations

## Turning the Radio On/Off

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

## Adjusting the Volume

You may control the volume level using the **Radio On-Off/Volume Control** knob. After the radio is powered on, rotate the knob clockwise to increase the volume, or counter-clockwise to decrease the volume.

## Selecting a Channel

The radio supports up to 16 channels. Rotate the **Channel Selector** knob to align your desired channel number with the white channel mark.



**Note:** When the radio is currently staying on a blank channel, it would sound beep tones continuously.

## Transmitting/Receiving

To transmit audio signals, press and hold down the **PTT**, and speak into the microphone. During transmitting, the LED solidly glows red.

To receive, just release the **PTT**. When any audio signal is received, the LED solidly glows green.



**Note:**

- ✚ To ensure optimal volume of the receiving radio, hold the radio approximately 2.5 to 5 centimeters away from your mouth.
- ✚ Communication range may get affected in rainy days or forest locations.

# Functions and Operations

## CTCSS/CDCSS

You may set up talkgroups with unique CDCSS/CTCSS to prevent unwanted conversations at the same frequency. If CTCSS/CDCSS is set on a certain channel, you can only receive voice calls from radios with matching CTCSS/CDCSS. Otherwise you will receive voice calls from all users operating at the same frequency.

You may request your dealer to program corresponding parameters on certain channels. For detailed operation method, please consult your dealer.



**Note:** The radio supports 38 groups of standard CTCSS, 83 groups of standard CDCSS, and 180 degree CTCSS tail reverse.

## Time-out Timer (TOT)

The purpose of TOT is to prevent any user from occupying a channel for an extended period. If the preset time expires, the radio will automatically terminate transmission and keep beeping. To stop beeping, please release the **PTT** key. You must wait for a certain time period (preset by your dealer) before you can press and hold down the **PTT** key to transmit again.

If the pre-alert function is set by your dealer, your radio will alert you to the TOT expiration in advance.

## Monitor

This feature allows you to lower the conditions for incoming signal match.

### Operation:

- Press the programmed **Monitor** key to activate this function (an alert tone sounds); press it again to deactivate the function (the alert tone sounds twice). Or
- Press and hold the programmed **Monitor Momentary** key to activate this function (an alert tone sounds); release the key to exit (the alert tone sounds twice).

## Squelch Off

This feature allows you to unmute the speaker on current channel, no matter whether a carrier is present.

### Operation:

- Press the programmed **Squelch Off** key to activate this function; press the key again to deactivate it. Or
- Press and hold the programmed **Squelch Off Momentary** key to activate this function; release the key to deactivate it.



**Note:** When this function is enabled on current channel, you will hear audio signals (if any); otherwise, background noise will be heard.

## Scan

This feature allows you to listen to communication activities on other channels so that you can keep a close track of your team members. The scan list can be set by your dealer.

### Operation:

1. To activate this function, you may
  - Press the programmed **Scan** key; or
  - Switch to a channel enabled with the auto scan feature (programmed by your dealer).



**Note:** The radio will not start scan if there are less than two channels in the scan list.

2. After the feature is enabled, your radio will scan according to the scan list set for the channel on which scanning starts. The scanning process is as follows:
  - During scanning, the LED flashes green;
  - When communication activities are detected on a channel, the radio will stay to receive activities present on this channel. At this time, the LED glows green;
  - If the talk back feature is enabled by your dealer, press and hold down the **PTT** to reply when the radio stays on a certain channel.
  - You can scan the frequently used channel if the priority scan feature is enabled. When scan stays on a non-priority channel, the radio will keep detecting activities on the priority channel. Once any activity is detected, it will jump to the priority channel. For more information, please



consult your dealer.

3. To exit the scanning process, you may

- Press the **Scan** key again; or
- Switch to a channel where the auto scan feature is not enabled;
- Turn the radio off.



**Note:**

- ✚ You can enable or disable the following alert tones: scan start alert and scan exit alert.
- ✚ During scanning, the following function keys, if programmed, are available: PTT, .Squelch Off, Squelch Off Momentary, Monitor and Monitor Momentary.

## VOX

This feature allows you to transmit the voice with no need to press **PTT**. However, you must employ a dedicated earpiece to realize this function.

**Operation:**

- 1 Set the **PTT/VOX Switch** on the earpiece to VOX;
- 2 Plug the earpiece into the accessory jack;
- 3 Press the programmed **VOX** key to activate this function;
- 4 Speak into the microphone (on the earpiece) to transmit your voice, and transmission will stop automatically when you stop talking;
- 5 Power the radio off or press the **VOX** key again to deactivate this function.



**Note:**

- ✚ If the **PTT/VOX Switch** on the earpiece is set to PTT, you can only transmit by pressing the external **PTT**, no matter whether VOX is activated.
- ✚ When the earpiece is plugged into the accessory jack, do not switch the **PTT/VOX Switch** from PTT to VOX directly if it is set to PTT; otherwise, continuous transmission may occur. If continuous transmission occurs unexpectedly, you can restore the radio to normal operation by toggling the switch from VOX to PTT, or turning the radio off and back on.
- ✚ You can select an appropriate VOX sensitivity according to the operating environment. If VOX is activated under heavy noise, continuously transmission may occur.

## Battery Strength Indicator

With this feature, you can learn the remaining battery strength easily.

### Operation:

Press and hold down the programmed **Battery Strength Indicator** key, and the LED glows to indicate remaining battery strength by different colors (see table below). Release the key to exit.

The table lists different colors representing different battery strength levels.

LED Indicator	Battery Strength
LED glows green.	High
LED glows orange.	Medium
LED glows red.	Low

## Low Battery Alert

This feature allows you to know the low battery status. When battery power runs low, the LED will flash red, and the low-pitched tone (programmed by your dealer) will sound periodically. In this case, please replace or charge the battery.



**Note:** When the battery strength is insufficient, the programmed **Battery Strength Indicator** key will become unavailable. However, when the battery strength is drained, transmission will be prohibited; if you press **PTT** in such situations, the radio will sound an alert to warn you.

## Channel Lock

This feature can avoid unexpected channel change due to rotation of **Channel Selector** knob by accident.

### Operation:

Press the programmed **Channel Lock** to activate this function (an alert tone sounds); press the key again to deactivate it (the alert tone sounds twice). After this function is activated, the radio will stay on current channel; at this time, you can not change the channel even using the **Channel Selector** knob.



**Note:** This function will be deactivated if the radio is powered off and back on, or it is programmed.

## **Battery Save**

In Standby mode, if the radio is inactive (no key press/transmission/reception) for 10 seconds (programmable), it will automatically enter Battery Save mode to reduce battery consumption. The radio may exit the Battery Save mode and get activated once any key is pressed or any signal is received.

## **Busy Channel Lockout**

If enabled via the programming software, this feature can prevent your radio interfering with other transmitting radios on the same channel. If you hold down the **PTT** key while the channel is in use, your radio will keep beeping and return to Receive mode. To stop beeping, please release the **PTT** key.

# Troubleshooting

Phenomena	Analysis	Solution
The radio can not be powered on.	The battery may be improperly installed.	Remove the battery and attach it again.
	The battery may 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. If the problem can not be solved, contact your dealer or authorized service center for inspection and repair.
During receiving signals, the voice is weak, discontinuous or totally inactive.	The battery strength may be too low.	Recharge or replace the battery.
	The volume may be set to a low level.	Increase the volume by rotating the Radio On-Off/Volume Control knob clockwise.
	The speaker may be blocked or damaged.	Clean surface of the speaker. If the problem can not be solved, contact your dealer or authorized service center for inspection and repair.
You can not communicate with other members.	The frequency or signaling may be inconsistent with that of other members.	Set your TX/RX frequency and signaling the same as that of other members.
	The radio may be locked on other channels.	Deactivate the Channel Lock function and switch to your desired channel.
	You may be too far away from the group members.	Move towards other members. And make sure that you are within the communication range.
Irrelevant communications or noises are heard on the channel.	You may be interrupted by radios using the same frequency.	Change the frequency, or adjust the squelch level.
	The radio may not be set with any signaling.	Set signaling for all member radios to avoid interference at the same frequency.
The noise is too loud.	You may be too far away from other members.	Move towards other members, power off your radio and then restart it.
	You may be at an unfavorable position. For example, your communication may be blocked by high buildings or frustrated in the underground areas.	Move to an open and flat area, and restart the radio.
	You may suffer from external disturbance (such as electromagnetic interference).	Stay away from equipment that may cause interference.

If the above solutions can not fix your problems, or you may have some other troubles, please contact us or your local dealer for more technical support.

# Care and Cleaning

To guarantee optimal performance as well as a long service life of your product, please follow the tips below.

## Product Care

- Do not pierce or scrape the product with any edged instruments or hard objects.
- Keep the product far away from substances that can corrode the electronic circuit.
- Do not hold the product by its antenna or headset cable directly.
- Attach the accessory jack cover when the product is not in use.

## Product Cleaning



- Clean up the dust and fine particles on the product surface and charging piece with a clean and dry lint-free cloth or a brush regularly.
- Use neutral cleanser and a non-woven cloth to clean the keys, control knobs and front case after long-time use. Do not use chemical preparations such as stain removers, alcohol, sprays or oil preparations, so as to avoid surface case damage. Make sure the product is completely dry before use.



**Caution:** Power off and remove the battery before cleaning.

# Optional Accessories

The following items are the main optional accessories for the product, and please consult your local dealer for more other accessories.

			
<p>Li-Ion Battery (1300mAh) BL1301</p>	<p>Vehicle Power Adapter CHV09</p>	<p>Six-Unit Switching Power PS7002</p>	<p>Earbud with in-Line PTT &amp; VOX ESM11</p>
			
<p>Earbud with on-MIC PTT &amp; VOX ESM12</p>	<p>D-earset with Boom MIC &amp; VOX EHM16</p>	<p>D-earset with in-Line MIC &amp; VOX EHM15</p>	<p>Nylon Carrying Case (non-swivel) (black) NCN001</p>

**⚠ Caution:** Use the accessories specified by Hytera only. If not, Hytera shall not be liable for any losses or damages arising out of use of unauthorized accessories.