

# Preface

Thank you for purchasing the FM-approved intrinsically safe TC-700 Ex PLUS radio - the choice for professionals in hazardous environments. This easy-to-use radio will deliver you secure, instant and reliable communication at peak efficiency. Please read this manual carefully before use. The information presented herein will help you to derive maximum performance from your radio.

## MODELS COVERED IN THIS MANUAL

FM TC-700 Ex PLUS VHF

FM TC-700 Ex PLUS UHF

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# Safety Information

The following safety precautions shall always be observed during operation, service and repair of this equipment.

- Unauthorized modification of the radio may result in failure of Ex-protection.
- Unauthorized service or repair is inhibited.
- Do not disassemble the FM-approved intrinsically safe products.
- The radio must not be opened in a hazardous area.
- The battery must be changed in a non-hazardous area.
- Additional or spare batteries must not be carried into a hazardous area.
- Use only the Ex-battery BL1703-Ex specified by HYT. The use of other batteries is strictly prohibited and will result in failure of Ex-protection.
- The battery must be charged in a non-hazardous area with the designated charger CH10L11-Ex.
- Use only HYT approved accessories.
- Ensure that the radio is not taken into Zone 0 areas.
- To avoid electromagnetic interference and/or compatibility conflicts, turn off your radio in any area where posted notices instruct you to do so.
- Turn off your radio before boarding an aircraft. Any use of a radio must be in accordance with airline regulations or crew instructions.
- Turn off your radio before entering a blasting area.
- For vehicles with an air bag, do not place a radio in the area over an air bag or in the air bag deployment area.
- Do not use any portable radio that has a damaged antenna. If a damaged antenna comes into contact with your skin, a minor burn can result.
- Do not expose the radio to direct sunlight over a long time, nor place it close to heating source.
- When transmitting with a portable radio, hold the radio in a vertical position with the microphone 3 to 4 centimeters away from your lips. Keep antenna at least 2.5 centimeters away from your body when transmitting.



**WARNING:** If you wear a radio on your body, ensure the radio and its antenna are at least 2.5 centimeters away from your body when transmitting.



**WARNING:** Please use an FM-approved radio unit with dedicated FM-approved battery and accessories in a hazardous location; otherwise, a dangerously unsafe condition may result.

# FM-Approved Intrinsically Safe Radio Information

## ■ Certification

FM-approved Intrinsically Safe



**I.S. Classes I, II, III, Division 1, Groups CDEFG, T3C**

### INTRINSICALLY SAFE CLASSIFICATION

“Intrinsically Safe” is a fire safety rating given to the equipment by the Factory Mutual Research Corporation. When the equipment is given this rating, it is considered safe to use in certain flammable or combustible atmospheres. Flammable atmospheres have been categorized by Class, Division, and Group as described below:

#### Area Classification:

Class	Material
I	Gas, Vapor, Liquid
II	Dust
III	Fiber, Flying

Division	Description
1	An area where there is or could be an explosive atmosphere most of the time under normal operating conditions.
2	An area where an explosive atmosphere exists only under fault conditions.

#### Classification of Atmospheres:

Group	Typical Hazard
A	Acetylene
B	Hydrogen
C	Ethylene, ethyl ether, cyclopropane
D	Gasoline, naphtha, butane, propane, alcohol, acetone, benzol, natural gas
E	Metal dust including aluminum, magnesium, and their alloys

F	Carbon black, coal or coke dust
G	Flour, starch, or grain dust

**Temperature Class:**

<b>Class</b>	<b>Maximum Surface Temperature</b>
T1	450°C
T2	300°C
T2A	280°C
T2B	260°C
T2C	230°C
T2D	215°C
T3	200°C
T3A	180°C
T3B	165°C
T3C	160°C
T4	135°C
T4A	120°C
T5	100°C
T6	85°C

# Product Inspection

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

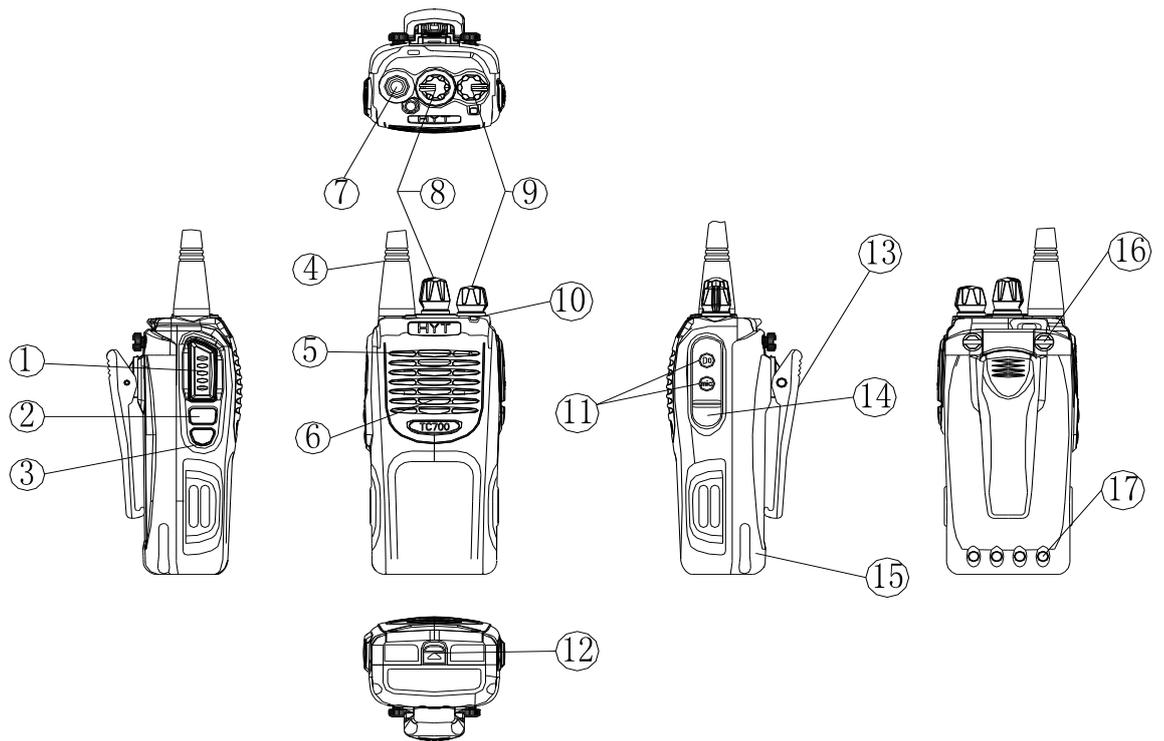
## Accessories

Item	Qty. (PCS)
VHF/UHF Antenna	1
Spring Belt Clip	1
Strap	1
Intrinsically Safe Li-Ion Battery	1
Rapid-rate Charger	1
Switching Power	1
Owner's Manual	1

			
VHF Antenna	UHF Antenna	Spring Belt Clip	Strap
			
Intrinsically Safe Li-Ion Battery (FM) BL1703-Ex	Rapid-rate Charger (for Li-Ion batteries) CH10L11-Ex	Switching Power (90-260V) (for use with different power cords in different countries and areas)	

Note: Frequency band is marked on the label of antenna, if not, please refer to the label on the radio unit for detailed frequency band information.

# Radio Overview



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

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

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

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

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

\* **TK (Top Key)** (programmable)

\* **Channel Selector Knob**

Rotate the knob to select from channel 1 to channel 16.

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

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

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

**\* LED Indicator**

The table below explains the functions of the LEDs and beeps.

Wired Clone	Source radio: Turn the source radio on while holding down the <b>PTT</b> and <b>SK2</b> keys. Target radio: Rotate the <b>Radio On-Off/Volume Control</b> knob clockwise to turn the target radio on.	The LED flashes orange twice.
	Source radio (power on the target radio and connect the cloning cable, and then press the <b>PTT</b> key of the source radio to initiate cloning.)	<ol style="list-style-type: none"> <li>1) The LED solidly glows red during cloning;</li> <li>2) The LED goes out when cloning is finished;</li> <li>3) The LED flashes red when cloning fails.</li> </ol>
	Target radio	<ol style="list-style-type: none"> <li>1) The LED solidly glows green during cloning;</li> <li>2) The LED goes out when cloning is finished.</li> </ol>
Wireless Clone	Turn on both the source radio and target radio while holding down the <b>PTT</b> and <b>SK1</b> keys. Both radios are required to be on the same channel for cloning.	The LED flashes orange once.
	Source radio (turn on both the source radio and target radio while holding down the <b>PTT</b> and <b>SK1</b> keys, and then press the <b>PTT</b> key of the source radio while both radios are on the same channel to initiate cloning.)	The LED solidly glows red during cloning.

	Target radio	<ol style="list-style-type: none"> <li>1) The LED solidly glows green during cloning;</li> <li>2) The LED flashes green and the radio sounds the beep tone, when cloning is finished;</li> <li>3) The LED flashes red when cloning fails.</li> </ol>
Power On		The LED flashes green once.
Low Battery Alert		The LED flashes red, and the radio sounds three beeps every 30 seconds.
Transmitting		The LED glows red
Receiving		The LED glows green when carrier presents.
Scanning		The LED flashes green once every 1 second.
Programming		Reading: the LED glows red; Writing: the LED glows green.
Encoding (DTMF/PTT ID/2-Tone /HDC1200/HDC2400™)		<ol style="list-style-type: none"> <li>1) The LED glows red while transmitting;</li> <li>2) The LED glows orange when transmission is over.</li> </ol>
Decoding (2-Tone/HDC1200/HDC2400™)		The LED flashes orange after the signaling is successfully decoded.
Select Power Level		<p>1W: One beep is heard;</p> <p>2W: Two beeps are heard;</p> <p>4W/5W: Three beeps are heard.</p>
Function Key Press		One beep to enable, two beeps to disable.

# Battery Information

## Initial Use

New batteries are shipped uncharged from the factory. Charge a new battery for 12 hours before initial use. The maximum battery capacity and performance is achieved after three full charge/discharge cycles. If you notice the battery power runs low, please recharge the battery.

## Applicable Battery Packs

To reduce the risk of injury, charge only the Ex-battery BL1703-Ex (Li-Ion) specified by the manufacturer. Unauthorized batteries could result in failure of Ex-protection and thus cause bodily injury and property damages.

### Caution:

1. To avoid risk of personal injury, do not dispose of batteries in fire!
2. Dispose of batteries according to local regulations (e.g. recycling). Do not dispose as household waste.
3. Never attempt to disassemble the battery.
4. All batteries can cause property damage and/or bodily injury such as burns if conductive materials such as jewelry, keys, or beaded chains touch exposed terminals. The conductive material may complete an electrical circuit (short circuit) and become quite hot. Exercise care in handling any charged battery, particularly when placing it inside a pocket, purse, or other container with metal objects.

## Battery Tips

1. When charging your battery, keep it at a temperature among 5°C - 40°C. Temperature out of the limit may cause battery leakage or damage.
2. When charging a battery attached to a radio, turn the radio off to ensure a full charge.
3. Do not return fully charged batteries to the charger for an "extra boost". This action will significantly reduce battery life.
4. Do not return a battery to the charger before the battery power runs low. This action will significantly reduce battery life. Never take the charger as a stand for your radio.
5. Never charge a battery that is wet. Please dry it with a soft cloth prior to charge.
6. The battery will eventually wear out. When the operating time (talk-time and standby time) is noticeably shorter than normal, it is time to buy a new battery.

7. Charge only the Ex-battery BL1703-Ex outside the Ex-area with the designated charger CH10L11-Ex. Unauthorized chargers could damage the battery.

### **To Prolong Battery Life**

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

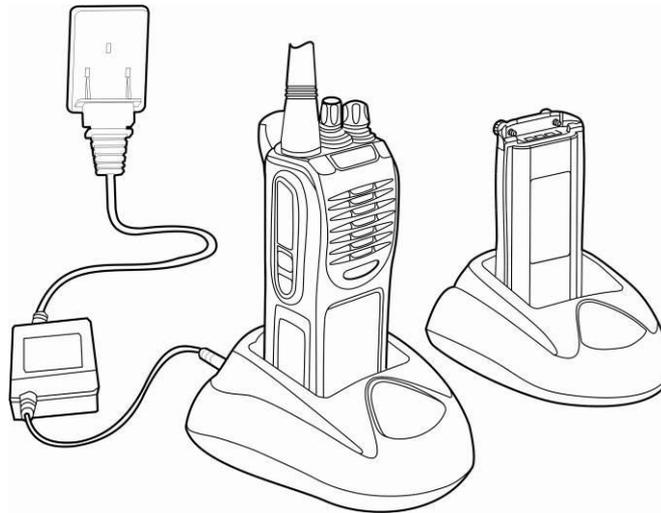
### **Battery Storage**

1. Fully charge a battery before you store it for a long time, to avoid battery damage due to over-discharge.
2. Recharge a battery after several months' storage (Li-Ion battery: 6 months), to avoid reducing battery capacity due to over-discharge.
3. When storing your battery, keep it in a cool and dry place under room temperature.

### **Charging the Battery**

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

<b>Charger LED</b>	<b>Status</b>
Red	Battery is being charged.
Green	Battery is fully charged; or charger is ready to charge.



Please follow these steps:

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

**Note:**

- It is normal that the charger LED flashes before inserting battery into the charger.
- Do not change the battery in the charger until the charger LED is stabilized.
- After the battery is placed properly, the LED solidly glows red indicating the battery is charging, or flashes indicating that the battery is damaged or the ambient temperature is over high/low.

## Antenna Information

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

## Assembly and Disassembly

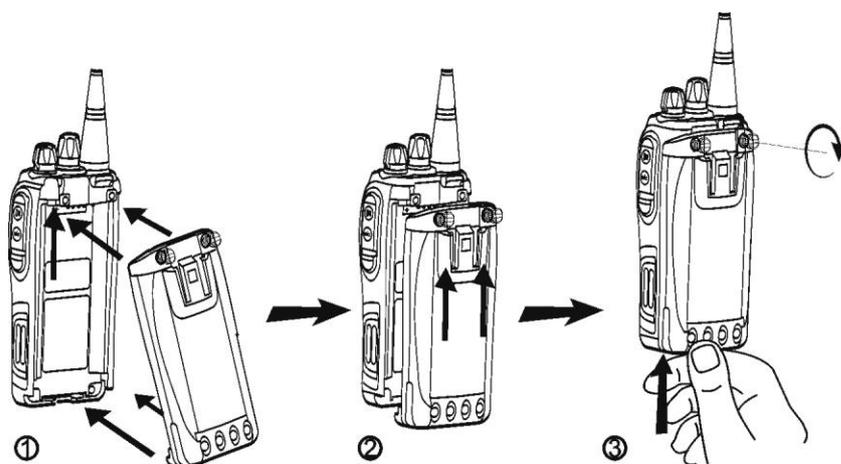
### Attaching/Removing the Battery

#### Attaching the Battery

Insert the battery top into the aluminum chassis, and make sure the battery top is positioned correctly (see figure ①).

Press the battery to make it cling to the guide rails, and make sure the battery and the aluminum chassis are well and parallelly contacted. Then push the battery upward until you hear a “click” (see figure ②).

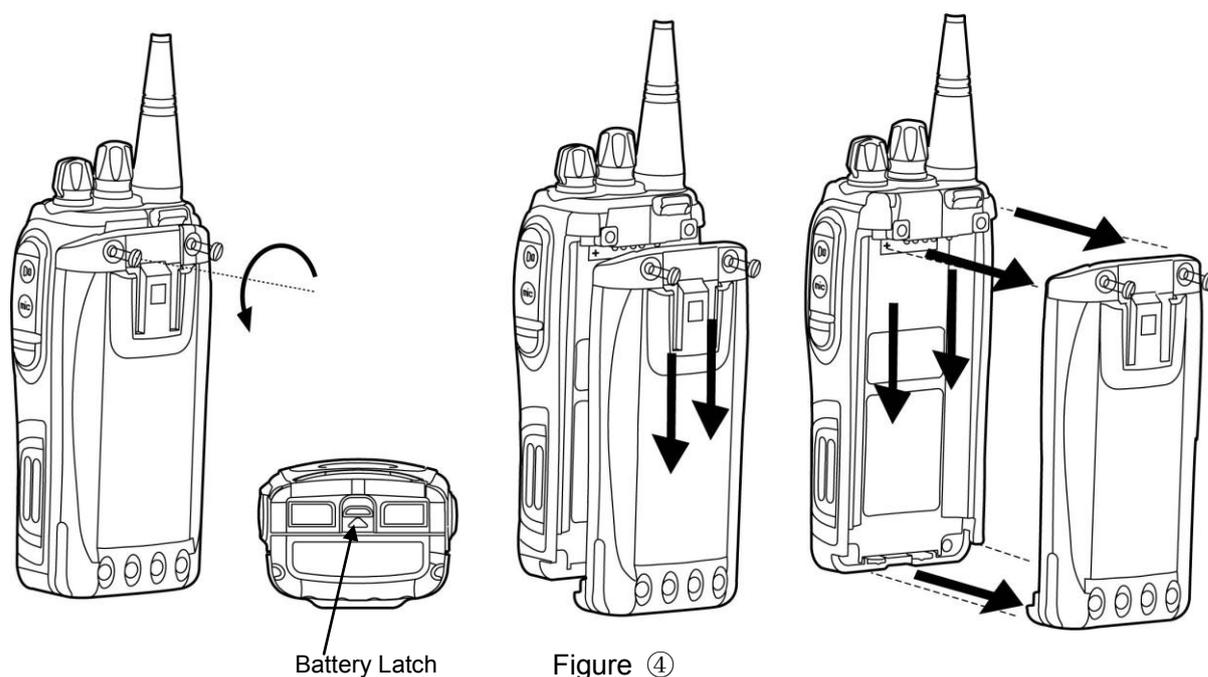
Hold the battery bottom and push the battery upward. Align the two screws on the battery with the screw holes on the radio body, and then tighten the screws. (see figure ③).



#### Removing the Battery

With the radio off, loosen the screws, but never remove them from the battery. Slide the battery

latch away from the battery, and slide down the battery for 1 to 2 centimeters. Then remove the battery from the radio unit. See figure ④.



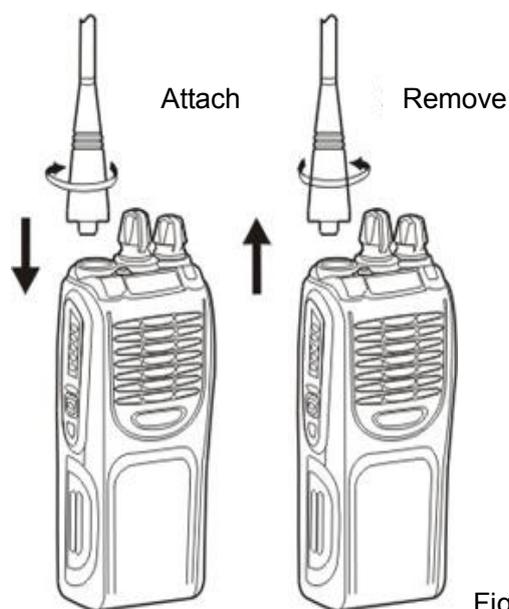
## Attaching/Removing the Antenna

### Attaching the Antenna

With the radio off, turn the antenna clockwise to attach it. See figure ⑤.

### Removing the Antenna

With the radio off, turn the antenna counter-clockwise to remove it. See figure ⑤.



## Attaching/Removing the Belt Clip

### Attaching the Belt Clip

Align the metal holder with the groove of the battery, and press the belt clip downwards to attach it.

See figure ⑥.



Figure ⑥

### Removing the Belt Clip

Lift up the dome, and slide the belt clip upwards to remove it. See figure ⑦.



Figure ⑦

## Attaching the Earpiece/Microphone

Open (not remove) the accessory cover, and plug the audio accessory firmly into the accessory jack. Then secure the screw using your hand or a coin. Please loosen the screw prior to removing the audio accessory. See figure ⑧.

Note: Use of the audio accessory may affect the waterproof performance of the radio.

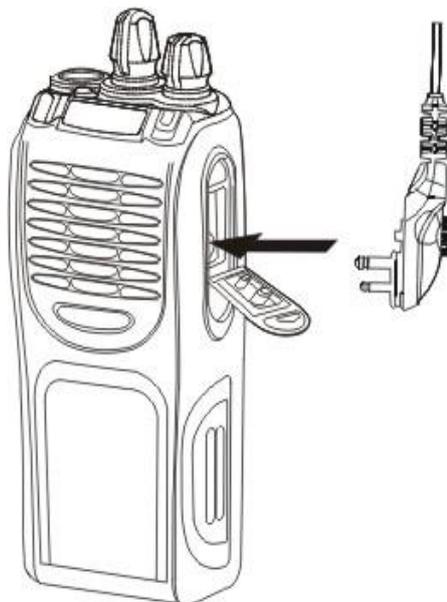


Figure ⑧

## Basic Operations

1. Rotate the **Radio On-Off/Volume Control** knob clockwise to turn the radio on, with green LED flashing once.  
You will hear a beep if the alert tone is already set by your dealer.
2. Press the programmed **Monitor** key or **Squelch Off** key to hear activities on the current channel, and then rotate the **Radio On-Off/Volume Control** knob clockwise to adjust the volume.
3. Rotate the **Channel Selector** knob to select a desired channel. If the Channel Annunciation feature is enabled by your dealer, your radio will automatically report number of the channel where the knob locates.
4. To transmit, press and hold down the **PTT** key, and speak into the microphone at your normal voice level.  
Hold the radio about 2.5 to 5 centimeters away from your mouth.
5. Release the **PTT** key to receive.

## Programmable Auxiliary Functions

Your dealer may assign the **TK**, **SK1**, **SK2** (long or short press) keys with the following auxiliary functions.

- None
- Call1/Call2
- Emergency
- Emergency Cancel
- Lone Worker
- Lone Worker Backup
- Man Down (optional)
- Man Down Backup (optional)
- Monitor
- Monitor Momentary
- Nuisance Channel Temporary Delete
- Nuisance Channel Delete
- Squelch Level Check
- Selectable Squelch Level (SQL)
- Scan
- Scan Backup
- Scrambler
- Scrambler Backup
- Squelch Off
- Squelch Off Momentary
- Talk Around
- Output Power Check
- Adjust Power Level
- Whisper
- Whisper Backup
- Battery Power Indicator
- Rental Time Indicator
- Channel Annunciation Temporary Enable
- Channel Annunciation

- External Scrambler (optional)
- External Scrambler Backup (optional)
- Auto Contact
- Auto Contact Temporary Delete
- Channel Lock
- Patrol Event Select
- Transmit Affirm

## Advanced Operations

The following functions are programmable by your dealer.

### Call1/Call2

Press the programmed **Call1/Call2** key to transmit the stored DTMF code, 2-Tone, HDC1200 or HDC2400™ signaling.

### Emergency

Press the programmed **Emergency** key to emit emergency alarm, or send ENI (Emergency Number Identity)/background tone to a pre-defined person or the dispatcher (selectable via the programming software). You may long or short press the function key to cancel the emergency procedure.

### Lone Worker

The feature provides added security and safety for individuals who work remotely from their team.

Press the programmed function key to activate the Lone Worker feature. The radio is set to request a response from a user at regular intervals. Should a user not press any key as a response to a regular warning tone, a defined emergency procedure will be activated.

The Lone Worker status will not be memorized once the radio is powered off.

### Lone Worker Backup

The feature provides added security and safety for individuals who work remotely from their team.

Press the programmed function key to activate the Lone Worker feature. The radio is set up to

request a response from a user at regular intervals. Should a user not press any key as a response to a regular warning tone, a defined emergency procedure will be activated.

The Lone Worker status will be memorized after the radio is powered off and on again.

### **Man Down (optional)**

Press the programmed function key to activate the Man Down mode, in which horizontally or inversely positioning the radio will activate an alert tone. A defined emergency procedure is activated if the radio is horizontally or inversely positioned for a certain length of time. Place the radio vertically to cancel the emergency procedure.

The Man Down status will not be memorized once the radio is powered off.

### **Man Down Backup (optional)**

Press the programmed function key to activate the Man Down mode, **in which** horizontally or inversely positioning the radio will activate an alert tone. A defined emergency procedure is activated if the radio is horizontally or inversely positioned for a certain length of time. Place the radio vertically to cancel the emergency procedure.

The Man Down status will be memorized after the radio is powered off.

### **Monitor/Squelch Off**

- Monitor

Press the **Monitor** key to open signaling squelch. Press the key again to close it.

- Monitor Momentary

Press the **Monitor Momentary** key to open signaling squelch. Release the key to close it.

- Squelch Off

Press the **Squelch Off** key to open noise squelches. Press the key again to close it.

- Squelch Off Momentary

Press the **Squelch Off Momentary** key to open noise squelch. Release the key to close it.

### **Squelch Level Check/Selectable Squelch Level (SQL)**

Upon long press of the programmed **Squelch Level Check** key, the radio reports the squelch level set on the current channel.

Short press the **Adjust Squelch Level** key to change the squelch level. The squelch increases

by 1 level upon every press of the function key (level 9~0 cycle, selecting level 0 activates a beep tone with the squelch always open), and then save your change.

## Scan

Press the programmed **Scan** key to initiate radio scanning from the current channel, and scanning ascends through the channel numbers in the Scan list. The green LED flashes when scanning proceeds, and solidly glows when a signal is received with signalling match on a channel. Press the **Scan** key again to exit radio scanning. The Scan status will not be memorized once the radio is powered off.

### ● **Nuisance Channel Temporary Delete**

- When scanning pauses on an unwanted channel such as a nuisance channel, press the programmed **Nuisance Channel Temporary Delete** key to temporarily delete the channel from the Scan list.
- The priority channel can be deleted temporarily only.
- If the current Scan list contains only one or two channels, Nuisance Channel Temporary Delete is not possible.
- Once the radio exits the Scan mode, or is powered off and on again, the temporarily deleted channel will appear in the Scan list again.

### ● **Nuisance Channel Delete**

When scanning pauses on an unwanted channel such as a nuisance channel, press the programmed **Nuisance Channel Delete** key to permanently delete the channel from the Scan list. The deleted channel will not appear in the Scan list once the radio exits the Scan mode, or is powered off and on again.

- The priority channel can be deleted temporarily only.
- If the current Scan list contains only one or two channels, Nuisance Channel Delete is not available.

## Scan Backup

Press the programmed **Scan** key to initiate radio scanning from the current channel, and scanning ascends through the channel numbers in Scan list. The green LED flashes when scanning proceeds, and solidly glows when a signal is received with signaling match on a channel.

Press the **Scan** key again to exit radio scanning.

The Scan status will be memorized after the radio is powered off and on again.

## **Scrambler**

The feature includes Scrambler and Scrambler Backup.

In order for members of your own group to understand your call while you are using the Scrambler, all other members must also activate the Scrambler on their radios. When the feature is activated, any other party listening on your channel will be unable to understand your conversation.

### ■ Scrambler

Press the programmed function key to activate the Scrambler feature. When the feature is activated, any other party listening on your channel is prevented from eavesdropping your conversation.

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

### ■ Scrambler Backup

Press the programmed function key to activate the Scrambler Backup feature. When the feature is activated, any other party listening on your channel is prevented from eavesdropping your conversation.

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

### ■ External Scrambler (optional)

The external scrambler is controlled from the programmed **External Scrambler** key.

The External Scrambler status will not be memorized once the radio is powered off and on again.

### ■ External Scrambler Backup (optional)

The external scrambler is controlled from the programmed **External Scrambler** key.

The External Scrambler status will be memorized after the radio is powered off and on again.

## **Talk Around**

Press the programmed function key to activate the Talk Around feature. With the feature activated, the Rx frequency will be used in place of the Tx frequency during transmission.

## **Output Power Check/Adjust Power Level**

Upon long press of the programmed **Output Power Check** key, the radio reports the output power level set on the current channel, with one beep for low power level, two beeps for medium

power level, or three beeps for high power level.

Short press the **Adjust Power Level** key to change the power level. The power increases by 1 level upon every press of the function key (low~med~high cycle), and then save your change.

### **Whisper**

Press the programmed function key to activate the Whisper feature. When the feature is activated, you can speak quietly into the radio and still be heard clearly. Press the key again to exit the feature. The Whisper status will not be memorized once the radio is powered off and on again.

### **Whisper Backup**

Press the programmed function key to activate the Whisper feature. When the feature is activated, you can speak quietly into the radio and still be heard clearly. Press the key again to exit the feature. The Whisper status will be memorized after the radio is powered off and on again.

### **Battery Power Indicator**

Upon press of the programmed **Battery Power Indicator** key, the radio sounds “1”, “2”, “3”, or “4” to indicate the current battery level.

Audible Indicator	Battery Level
“1”	Very Low
“2”	Low
“3”	Satisfactory
“4”	High

### **Rental Timer Indicator**

Upon press of the programmed **Rental Time Indicator** key, the radio sounds “1”, “2”, “3”, “4”, or “5” to indicate the remaining time that the user is allowed to use the radio. The Rental Time is programmable by your dealer.

### **Channel Annunciation Temporary Enable**

Press the programmed **Channel Annunciation Temporary Enable** key to activate the following two situations:

- a) If the current channel number is heard:

Press the function key. If two beeps are heard, the Channel Annunciation will be temporarily canceled. The current channel number will be heard when the radio is turned on again.

If one beep is heard, the Channel Annunciation will be temporarily activated. The current channel number will be heard when the radio is turned on again.

b) If the current channel number is not heard:

Press the function key. If two beeps are heard, the Channel Annunciation will be temporarily canceled. The current channel number will not be heard when the radio is turned on again.

If one beep is heard, the Channel Annunciation will be temporarily activated. The current channel number will not be heard when the radio is turned on again.

### **Channel Annunciation**

Press the programmed **Channel Annunciation** key. If two beeps are heard, the Channel Annunciation will be canceled. The current channel number will not be heard when the radio is turned on again.

If one beep is heard, the Channel Annunciation will be activated. The current channel number will be heard when the radio is turned on again.

### **Auto Contact**

When a group of radios are set with Auto Contact, the radio will automatically sound the alert tone if the user is out of the communication range.

### **Auto Contact Temporary Delete**

Press the programmed **Auto Contact Temporary Delete** key to temporarily delete the selected ID from the current Auto Contact list.

### **Channel Lock**

When the Channel Lock feature is activated, channels cannot be selected via the **Channel Selector** knob.

### **Patrol Event Select**

After a patrol message is received, press the programmed **Patrol Event Select** key to select an appropriate patrol event.

## **Transmit Affirm**

Press the programmed **Transmit Affirm** key to transmit the selected patrol event to the dispatcher.

# **Background Operations**

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

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

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

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

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

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

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

Optional Signaling: If 2-Tone/HDC1200/HDC2400™ signaling and BCL are set on the current channel, press the **PTT** key while the channel is already in use, and the radio will sound beeps without transmission.

## **Battery Save**

If the feature is programmed by your dealer, Battery Save will be automatically activated once no activity is present on the channel and no operation is performed (no key press and no knob selection) for extended operation time.

Once the radio detects no activity on the channel and no operation is performed during standby

time, it will automatically enter Battery Save mode in 12 seconds. Pressing any key or receiving a signal will cause the radio to restore to normal operation and exit from Battery Save.

### **Low Battery Alert**

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

### **Safety Check**

Once the radio receives a safety check signal, an alert tone will be heard, requesting the user to make some operation (pressing any key). Should the user not respond to a safety check signal, a defined emergency procedure will be activated.

### **CTCSS/CDCSS**

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

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

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

### **DTMF**

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

- The red LED solidly glows during encoding, and goes out when encoding is over.

### **2-Tone/HDC1200/HDC2400™**

The 2-Tone/HDC1200/HDC2400™ signaling can be enabled/disabled by your dealer. If 2-Tone/HDC1200/HDC2400™ signaling is set on the current channel, press the programmed **Call 1/Call 2** key to transmit 2-Tone/HDC1200/HDC2400™ signaling. The preset function will be performed when the radio receives an incoming signal with match 2-Tone/HDC1200/HDC2400™.

Radios set with match 2-Tone/HDC1200/HDC2400™ can receive from you.

- The red LED solidly glows during encoding; after encoding, the orange LED solidly glows until the preset time expires.
- The green LED solidly glows during decoding; after successful decoding, the orange LED flashes until the preset time expire.

## Signalling Logic

CTCSS/CDCSS “AND” / “OR” 2-Tone/HDC1200/HDC2400™

“AND”: The radio unmutes when both the CTCSS/CDCSS and 2-Tone/HDC1200/HDC2400™ conditions are satisfied.

“OR”: The radio unmutes when either the CTCSS/CDCSS or 2-Tone/HDC1200/HDC2400™ condition is satisfied.

## BOT ID and EOT ID (PTT ID)

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

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

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

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

## Troubleshooting

Symptom	Solution
Cannot power on the radio.	<ul style="list-style-type: none"><li>● The battery has run out. Please recharge the battery or replace it with a new one.</li><li>● The battery is not properly installed. Please remove the battery and attach it again.</li></ul>

<p>The operating time is noticeably shorter than normal performance, even though the battery is properly charged.</p>	<ul style="list-style-type: none"> <li>● The battery has worn out, and it is time to buy a new battery.</li> <li>● The battery is not fully charged. Be sure to remove the battery from charger after the charger LED glows green.</li> </ul>
<p>Cannot talk to or hear group members.</p>	<ul style="list-style-type: none"> <li>● Make sure radios have the same channel and the same CTCSS/CDCSS settings.</li> <li>● Make sure you are within their communication range.</li> </ul>
<p>Hear non-group members</p>	<p>Send the radio to your dealer to change your CTCSS/CDCSS settings, and so as your group members.</p>
<p>No voice or low voice while transmitting</p>	<ul style="list-style-type: none"> <li>● Make sure the volume control knob is positioned properly.</li> <li>● Send the radio to your dealer for microphone examination.</li> </ul>
<p>Noise always on</p>	<p>Group members are too far away to receive their call. Please go within the communication range and re-power on the radio to try.</p>

## Care and Cleaning

- Do not hold the radio by its antenna or external earpiece directly.
- Do not place the radio in a dusty or dirty environment.
- Clean the radio with a lint-free cloth to remove dirt or grease, to avoid poor contact due to excessive dust.
- Clean the radio using a lint-free cloth moistened with clean water and a mild dishwashing liquid.
- Avoid subjecting the radio to corrosives, solvents or spirits.

## Optional Accessories (FM-approved)

			
UHF Antenna	Remote Speaker Microphone SM08M1-Ex	Receive-only Earpiece ESS01	Earbud ESM01-Ex
			
Multi-unit Charger MCL07-Ex	Carrying Case (Leather)(non-swivel) LCBN57		

## Specifications

Frequency Range	VHF: 136-174 MHz UHF: 300-350 MHz    350-390 MHz 400-470 MHz    470-520 MHz 440-490 MHz    450-520 MHz
Channel Capacity	16
Operating Voltage	DC7.4V
Channel Spacing	25/20/12.5KHz
Dimensions (H×W×D)	122×55×38mm

(with battery, without antenna)	
Weight (with antenna & battery)	426g
Sensitivity	0.25/0.35 $\mu$ V
RF Power Output	3.5W/1W
Rated Audio Power Output	0.5W
Ambient Temperature	-20 $^{\circ}$ C ~ +50 $^{\circ}$ C
Storage Temperature	-20 $^{\circ}$ C ~ +60 $^{\circ}$ C
Charging Temperature	0 $^{\circ}$ C ~ +40 $^{\circ}$ C
Battery	Ex-battery BL1703-Ex (1700mAh Li-Ion battery)
Battery Life (5-5-90 duty cycle)	Approx. 14 Hours
Charging Time	Approx. 4 Hours
Max. Charging Voltage	DC 12V

HYT endeavors to achieve the accuracy and completeness of this manual, but no warranty of accuracy or reliability is given. All the above specifications and designs are subject to change without prior notice due to continuous development.

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