

## 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:

TF-41X Portable Radio (X may represent 2 or 5).

## Copyright Information

Hytera is the trademark or registered trademark of Hytera Communications Corporation Limited (the Company) in the People's Republic of China (PRC) and/or other countries or areas. The Company retains the ownership of its trademarks and product names. All other trademarks and/or product names that may be used in this manual are properties of their respective owners.

The product described in this manual may include the Company's computer programs stored in memory or other media. Laws in PRC and/or other countries or areas protect the exclusive rights of the Company with respect to its computer programs. The purchase of this product shall not be deemed to grant, either directly or by implication, any rights to the purchaser regarding the Company's computer programs. The Company's computer programs may not be copied, modified, distributed, decompiled, or reverse-engineered in any manner without the prior written consent of the Company.

## Disclaimer

The Company endeavors to achieve the accuracy and completeness of this manual, but no warranty of accuracy or reliability is given. All the specifications and designs are subject to change without notice due to continuous technological development. No part of this manual may be copied, modified, translated, or distributed in any manner without the prior written consent of the Company.

We do not guarantee, for any particular purpose, the accuracy, validity, timeliness, legitimacy or completeness of the third-party products and contents involved in this manual.

If you have any suggestions or would like to receive more information, please visit our website at: <http://www.hytera.com>.

## 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

Hytera's 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), push the **Push-To-Talk (PTT)** key. To receive calls, release the **PTT** key. Transmitting 50% of the time, or less, is important because the radio generates measurable RF energy only when transmitting (in terms of measuring for standards compliance).

- Keep the radio unit at least 2.5 cm away from the face. Keeping the radio at the proper distance is important as RF exposure decreases with distance from the antenna. The antenna should be kept away from the face and eyes.
- When worn on the body, always place the radio in a Hytera-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 optional accessories of the product.

## IC 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 Industry Canada 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

## EU Regulatory Conformance

As certified by the qualified laboratory, the product is in compliance with the essential requirements and other relevant provisions of the following directives: 1999/5/EC or 2014/53/EU, 2006/66/EC, 2011/65/EU, and 2012/19/EU.

Please note that the above information is applicable to EU countries only.

# Contents

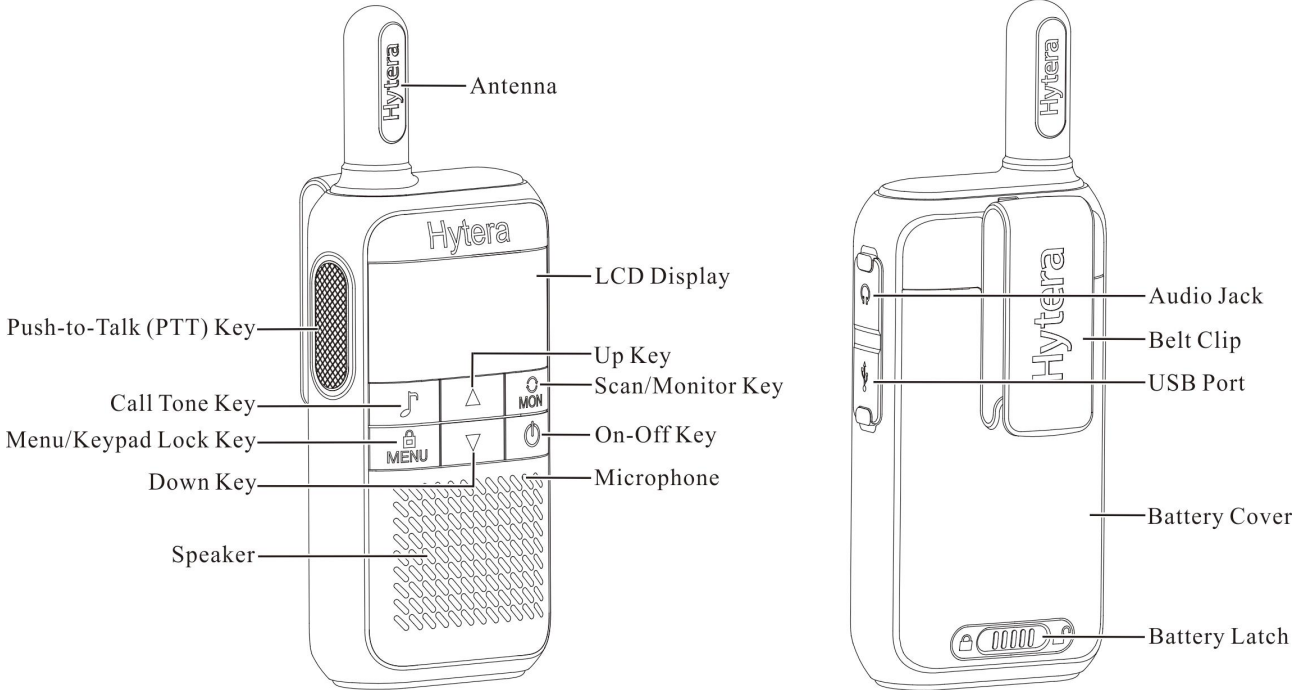
<b>1. Packing List</b> .....	<b>1</b>
<b>2. Product Controls</b> .....	<b>2</b>
<b>3. Before Use</b> .....	<b>3</b>
3.1 Inserting Batteries.....	3
3.2 Charging the Ni-MH Battery.....	3
3.3 Attaching the Belt Clip.....	3
<b>4. Basic Operations</b> .....	<b>4</b>
4.1 Turning the Radio On/Off.....	4
4.2 Adjusting the Volume.....	4
4.3 Selecting a Channel.....	4
4.4 Selecting a CTCSS/CDCSS Code.....	4
<b>5. LCD Icons</b> .....	<b>5</b>
<b>6. Call Services</b> .....	<b>6</b>
6.1 Initiating a Call.....	6
6.2 Receiving a Call.....	6
<b>7. Supplementary Features</b> .....	<b>7</b>
7.1 Keypad Lock.....	7
7.2 Scan.....	7
7.3 Monitor.....	7
7.4 Power Level (TF-412 only).....	7
7.5 Call Tone.....	8
7.6 Talk End Tone.....	8
7.7 Voice Operated Transmit (VOX).....	9
7.8 Keypad Tone.....	9
7.9 Room Monitor.....	10
7.10 Sleep Level.....	10
7.11 Battery Save.....	11
7.12 Low Battery Alert.....	11
7.13 Time-out Timer (TOT).....	11
7.14 Auto Squelch.....	11
<b>8. Troubleshooting</b> .....	<b>12</b>
<b>9. Optional Accessories</b> .....	<b>14</b>
<b>Channels and Frequencies</b> .....	<b>15</b>

# 1. Packing List

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

<b>Item</b>	<b>Quantity (PCS)</b>	<b>Item</b>	<b>Quantity (PCS)</b>
Radio	2	Lanyard	2
Battery	2	Power Adapter	1
Belt Clip	2	Documentation Kit	1

# 2. Product Controls



## 3. Before Use

### 3.1 Inserting Batteries

You can use the Ni-MH battery provided by us or three AA alkaline batteries prepared by yourself.

To attach batteries, do as follows:

1. Slide the battery latch to the unlock position and then remove the battery cover.
2. Insert the Ni-MH battery or three AA alkaline batteries following the polarity indicated in the battery compartment and the instruction on the batteries.
3. Put the battery cover into space and then slide the battery latch to the lock position.

### 3.2 Charging the Ni-MH Battery

---

 **Caution**

- Use the specified power adapter to charge the battery.
  - Read the *Safety Information Booklet* before charging.
- 

Before initial use, fully charge the battery.

To charge the battery, do as follows:

1. Insert the USB plug of the power adapter into the USB port of the radio.
2. Plug the power adapter to a power outlet.

### 3.3 Attaching the Belt Clip

To attach the belt clip, do as follows:

1. Align the rails on the belt clip with the groove on the back of the radio.
2. Press the belt clip downwards into place.



## 4. Basic Operations

### 4.1 Turning the Radio On/Off

Press and hold the **On-Off** key until the radio is on or off.

### 4.2 Adjusting the Volume

On the home screen, press the **Up** key or **Down** key to increase or decrease the volume.

### 4.3 Selecting a Channel

To communicate with other users through these radios, you need to select the same channel as others.

To select a channel, do as follows:

1. Press the **Menu/Keypad Lock** key.  
The channel number flashes.
2. Press the **Up** key or **Down** key to select a channel.
3. Press the **PTT** key to confirm your selection.

### 4.4 Selecting a CTCSS/CDCSS Code

The Continuous Tone Coded Squelch System (CTCSS) or Continuous Digital Controlled Squelch System (CDCSS) code allows you to prevent unwanted calls on the same channel. If a CTCSS/CDCSS code is set on a channel, you receive calls from radios with matching CTCSS/CDCSS code only.

To set a CTCSS/CDCSS code for the selected channel, do as follows:

1. Press the **Menu/Keypad Lock** key for two consecutive times.  
The code number flashes.
2. Press the **Up** key or **Down** key to select your desired code.

---

 **Note**










Code 0 means no CTCSS/CDCSS code is selected. To communicate with radios which do not have a CTCSS/CDCSS code, select code 0.

---

3. Press the **PTT** key to confirm your selection.

## 5. LCD Icons



Icon	Description	Icon	Description
	Battery		Talk End Tone
	Room Monitor		Call Tone
	VOX	<i>TX</i>	Transmit
	Battery Save	<i>RX</i>	Receive
	Keypad Tone	<i>HI</i>	High Power (TF-412 only)
	Keypad Lock	<i>LO</i>	Low Power (TF-412 only)
	Scan	/	/

## 6. Call Services

### 6.1 Initiating a Call

You can initiate calls to other radios on the same channel and CTCSS/CDCSS code as yours.

To initiate a call, do as follows:

1. Select a channel and a CTCSS/CDCSS code.
2. Hold the radio vertically 2.5 to 5 cm from your mouth.
3. Press and hold the **PTT** key, and then speak into the microphone.

When transmitting, the radio displays **TX**.

4. When you finish talking, release the **PTT** key.

### 6.2 Receiving a Call

When receiving a call, you can listen to the call without any operation. If you need to speak, wait until the person who is speaking release his/her **PTT** key, and then press and hold your **PTT** key to speak into the microphone.

# 7. Supplementary Features


## 7.1 Keypad Lock

The Keypad Lock feature allows you to lock the keypad to avoid accidental operations when the radio is not in use. In the keypad lock mode, you can initiate calls and turn the radio on or off.

To lock or unlock the keypad, press and hold the **Menu/Keypad Lock** key until  appears or disappears on the screen.

## 7.2 Scan

The Scan feature allows you to find someone in your team who has accidentally changed the channel, and can quickly find unused channels for your own use.

To turn on this feature, press the **Scan/Monitor** key. The radio displays  and begins to scan channels. When detecting activities on a channel, the radio stays on the channel to receive signals. Two seconds after the signal disappears, the radio continues to scan channels.

To turn off this feature, press the **Scan/Monitor** key again.

## 7.3 Monitor

The Monitor feature allows the radio to receive weak signals on the current channel.

To turn on this feature, press and hold the **Scan/Monitor** key. The radio displays **RX** and begins to monitor the channel and receive signals.

To turn off this feature, release the **Scan/Monitor** key.

## 7.4 Power Level (TF-412 only)

The Power Level feature allows you to adjust the power level for the selected channel.

To adjust the power level, do as follows:

1. Press the **Menu/Keypad Lock** key for three consecutive times.

The current setting flashes.

2. Press the **Up** or **Down** key to select one of the following:

- **HI**: enables communication with distant radios but consumes more battery power.

- **LO**: enables communication with close radios and saves battery power.
- 

 **Note**

You cannot change the power level from low to high for channel 8 to channel 14.

---


3. Press the **PTT** key to confirm your selection.

## 7.5 Call Tone

The Call Tone feature allows you to send a tone to notify others that you want to talk.

To transmit a call tone, do as follows:

1. Select a call tone.
  - a. Press the **Menu/Keypad Lock** key:
    - For TF-412, press the key for four consecutive times.
    - For TF-415, press the key for three consecutive times.

The radio displays  and the current setting flashes.

- b. Press the **Up** or **Down** key to select a call tone.
- 

 **Note**

Setting the call tone to **OFF** turns off the Call Tone feature.

---


- c. Press the **PTT** key to confirm your selection.
2. Press the **Call Tone** key to transmit the call tone.

## 7.6 Talk End Tone

The Talk End Tone feature allows you to send a tone when you release the **PTT** key. This tone notifies others that you have finished your talk.

To turn on or off the feature, do as follows:

1. Press the **Menu/Keypad Lock** key:
  - For TF-412, press the key for six consecutive times.
  - For TF-415, press the key for five consecutive times.

The radio displays  and the current setting flashes.


2. Press the **Up** or **Down** key to select **ON** or **OFF**.
3. Press the **PTT** key to confirm your selection.

## 7.7 Voice Operated Transmit (VOX)

The VOX feature allows the radio to transmit voice automatically with or without an earpiece when the voice volume reaches the preset level.

To turn on or off this feature, do as follows:

1. Press the **Menu/Keypad Lock** key:
  - For TF-412, press the key for five consecutive times.
  - For TF-415, press the key for four consecutive times.

The radio displays  and the current setting flashes.

2. Press the **Up** or **Down** key to select **L1**, **L2**, or **L3** to turn on the feature, or select **OFF** to turn off the feature.

**L1**, **L2**, and **L3** mean different sensitivity levels, as shown below:

- **L1**: low sensitivity applicable to noisy environments
- **L2**: medium sensitivity applicable to common environments
- **L3**: high sensitivity applicable to quiet environments

3. Press the **PTT** key to confirm your selection.

---

### Note

A short delay occurs from the time you start talking till the time the radio starts transmitting.


---

## 7.8 Keypad Tone

The Keypad Tone feature allows you to hear the key tone when you press a key.

To turn on or off the feature, do as follows:

1. Press the **Menu/Keypad Lock** key:
  - For TF-412, press the key for seven consecutive times.
  - For TF-415, press the key for six consecutive times.

The radio displays  and the current setting flashes.

2. Press the **Up** or **Down** key to select **ON** or **OFF**.
3. Press the **PTT** key to confirm your selection.

## 7.9 Room Monitor

The Room Monitor feature allows the radio to transmit voice automatically when the voice volume reaches the preset level. When you are out, you can use this feature to monitor your room.

---

### Note


In the room monitor mode, the radio cannot receive signals.

---

To turn on or off this feature, do as follows:

1. Press the **Menu/Keypad Lock** key:

- For TF-412, press the key for eight consecutive times.
- For TF-415, press the key for seven consecutive times.

The radio displays  and the current setting flashes.

2. Press the **Up** or **Down** key to select **L1**, **L2**, or **L3** to turn on the feature, or select **OFF** to turn off the feature.

**L1**, **L2**, and **L3** mean different sensitivity levels, as shown below:

- **L1**: low sensitivity applicable to noisy environments
- **L2**: medium sensitivity applicable to common environments
- **L3**: high sensitivity applicable to quiet environments

3. Press the **PTT** key to confirm your selection.


## 7.10 Sleep Level

The Sleep Level feature allows the radio to enter the sleep mode for a duration if no channel activity or operation is detected at the specified interval. It saves the battery power.

To turn on or off this feature, do as follows:

1. Press the **Menu/Keypad Lock** key:

- For TF-412, press the key for nine consecutive times.
- For TF-415, press the key for eight consecutive times.

The radio displays  and the current setting flashes.

2. Press the **Up** or **Down** key to select **L1**, **L2**, or **L3** to turn on the feature, or select **OFF** to turn off the feature.

**L1**, **L2**, and **L3** mean that the radio is in sleep mode for one second, two seconds, and three seconds, respectively.

3. Press the **PTT** key to confirm your selection.

---

 **Note**


In the sleep mode, the radio does not receive or send any signal. Therefore, when you must respond to emergencies, do not enable the Sleep Level feature.

---

## 7.11 Battery Save

The Battery Save feature allows the radio to get maximum operational life on a single battery charge. When the radio does not detect any activity or operation for three seconds, it enters the battery save mode.

## 7.12 Low Battery Alert

When the radio is low on power,  flashes on the screen and an alert tone rings when you press the **PTT** key, indicating that the radio enters the low battery alert mode. In this mode, you are not allowed to send a call tone or initiate a call.

To exit this mode, charge or replace the battery.

## 7.13 Time-out Timer (TOT)

The purpose of TOT is to prevent any user from occupying a channel for more than 60 seconds. After 60 seconds, the radio stops transmitting and keeps beeping. To stop beeping, release the **PTT** key.

## 7.14 Auto Squelch

The Auto Squelch feature allows the radio to improve voice clarity during the call by automatically removing background noise.



## 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 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 or replace the battery.
During receiving, the voice is weak, discontinuous or totally inactive.	The battery voltage may be low.	Recharge or replace the battery.
	The volume level may be low.	Increase the volume.
	The speaker may be blocked.	Clean the surface of the speaker.
You cannot communicate with other members.	The channel or CTCSS/CDCSS code may be inconsistent with that of other members.	Set your channel and CTCSS/CDCSS code to the same as those of other members.
	You may be too far away from other members.	Move towards other members.
You hear unknown voices or noise.	You may be interrupted by radios using the same channel and/or CTCSS/CDCSS code.	Change the channel and/or the CTCSS/CDCSS code.
	The radio may be set with no CTCSS/CDCSS code.	Set a CTCSS/CDCSS code for all radios in your team to avoid interference.
You are unable to hear anyone because of too much noise and hiss.	You may be too far away from other members.	Move towards other members.
	You may locate in an unfavorable position. For example, your communication may be blocked by high buildings or frustrated in the	Move to an open and flat area, restart the radio, and try contacting again.

Phenomena	Analysis	Solution
	underground areas.	
	It could be the result of external disturbance (such as electromagnetic interference).	Stay away from equipment that may cause interference.
You cannot use the keys.	The keypad may fail to function temporarily.	Restart the radio.
The LCD does not display any information.	The LCD may fail to function temporarily.	Restart the radio.

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

## 9. Optional Accessories

Contact your local point of purchase for the optional accessories used with the product.

---

 **Caution**

Use the approved accessories only. We will not be liable for any loss or damage arising out of the use of any unauthorised accessories.

---

# Channels and Frequencies

## TF-412

Channel No.	Frequency (MHz)	Description	Channel No.	Frequency (MHz)	Description
1	462.5625	GMRS/FRS	12	467.6625	FRS
2	462.5875	GMRS/FRS	13	467.6875	FRS
3	462.6125	GMRS/FRS	14	467.7125	FRS
4	462.6375	GMRS/FRS	15	462.5500	GMRS
5	462.6625	GMRS/FRS	16	462.5750	GMRS
6	462.6875	GMRS/FRS	17	462.6000	GMRS
7	462.7125	GMRS/FRS	18	462.6250	GMRS
8	467.5625	FRS	19	462.6500	GMRS
9	467.5875	FRS	20	462.6750	GMRS
10	467.6125	FRS	21	462.7000	GMRS
11	467.6375	FRS	22	462.7250	GMRS

## TF-415

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	446.00625	5	446.05625
2	446.01875	6	446.06875
3	446.03125	7	446.08125
4	446.04375	8	446.09375