Hytera

QUICK REFERENCE GUIDE

HP78X DIGITAL PORTABLE RADIO

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.

RF Energy Exposure Awareness and Control Information and Operational Instructions for Occupational Use

NOTICE: This radio is intended for use in occupational/controlled conditions where users have full knowledge of their exposure and can exercise control over their exposure to meet the occupational limits in FCC and International standards. This radio device is NOT authorized for general population consumer use.

This radio uses electromagnetic energy in the radio frequency (RF) spectrum to provide communications between two or more users over a distance. It uses radio frequency (RF) energy or radio waves to send and receive calls. RF energy is one form of electromagnetic energy. Other forms include, but are not limited to, sunlight and x-rays. RF energy, however, should not be confused with these other forms of electromagnetic energy, which when used improperly, can cause biological damage. Very high levels of x-rays, for example, can damage tissues and genetic material.

Experts in science, engineering, medicine, health, and industry work with organizations to develop standards for safe exposure to RF energy. These standards provide recommended levels of RF exposure for both workers and the general public. These recommended RF exposure levels include substantial margins of protection.

All Hytera radios are designed, manufactured, and tested to ensure they meet government-established RF exposure levels. In addition, manufacturers also recommend specific operating instructions to users of radios. These instructions are important because they inform users about RF energy exposure and provide simple procedures on how to control it.

Please refer to the following websites for more information on what RF energy exposure is and how to control your exposure to assure compliance with established RF exposure limits:

http://www.fcc.gov/oet/rfsafety/rf-faqs.html

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.

ISEDC 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 conformité 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

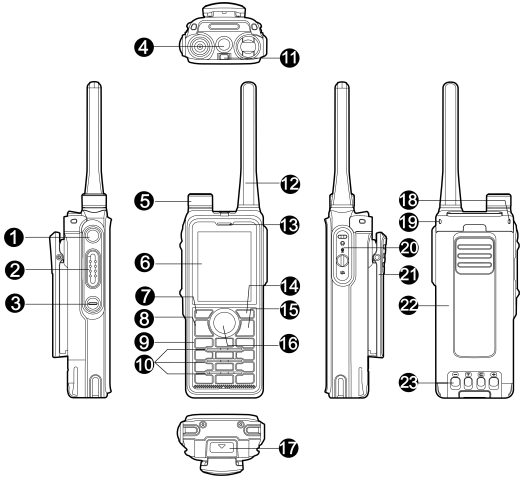
EU Regulatory Conformance

As certified by the qualified laboratory, the product is in compliance with the essential requirements and other relevant provisions of the following directives: 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.

Product Overview

Product Layout



No.	Part Name	No.	Part Name
1	Side Key 1 (SK1)	13	Microphone
2	Push-to-Talk (PTT) Key	14	Back/Subgroup Key
3	Side Key 2 (SK2)	15	On-Off/P2/End Key
4	Top Key (TK)	16	Navigation Keys
5	Smart Knob	17	Battery Latch
6	LCD Display	18	Strap Hole 1
7	OK/Menu Key	19	Strap Hole 2
8	P1/Answer Key	20	Accessory Connector
9	Numeric Keypad	21	Belt Clip
10	Speaker	22	Battery
11	LED Indicator	23	Charging Piece
12	Antenna	/	/

Programmable Keys

For enhanced convenience, you can request your dealer to program the following keys as shortcuts to radio features: **TK**, **SK1**, **SK2**, **P1/Answer** key, **P2/End** key, **Up** key, and **Down** key. Consult your dealer for assignable radio features.

Basic Operations

Charging the Battery

CAUTION

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

Before initial use, charge the battery. You can charge either the standalone battery or the radio with battery attached. It is recommended that the radio remain powered off during charging.

The LED indicator on the charger shows the charging status. For details, see the following table.

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

Turning the Radio On or Off

To turn the radio on or off, press and hold .

Adjusting the Volume

To increase or decrease the volume, rotate the **Smart** knob clockwise or counter-clockwise.

Selecting the Contact or Channel

To select the contact or channel, press the **Smart** knob, and then rotate the knob.

NOTE

If you do not rotate the knob within 5s or if you press it again within 5s, you can rotate it to adjust the volume.

Locking or Unlocking the Keypad

When the keypad is not in use, it is recommended that you lock it to avoid unintended operations.

To allow the keypad to be locked automatically, do as follows:

1. Go to **Menu** > **Settings** > **Basic Settings** > **Keypad Lock**.
2. Enable **AutoLock**, and then go to **Timed** to set the auto lock time.

If you do not operate the radio or if the radio receives no call or message within the auto lock time, the keypad is locked automatically.

To manually lock or unlock the keypad, do one of the following:

- Press the preprogrammed **Keypad Lock** key.
- On the home screen, press the **OK/Menu** key, and then press .

NOTE

- If the Keypad Lock Backup feature is enabled by your dealer, the radio automatically saves the last settings of keypad lock upon power-off.
- You can go to **Menu** > **Settings** > **Basic Settings** > **Keypad Lock** > **Optional Key** to set whether the corresponding keys and knobs still work when the keypad is locked.

Using the Keypad

You can use the keypad to enter contact aliases and IDs, or edit messages.

- To switch the input method between alphabetic mode and numeric mode, press #.
- To enter special characters, press 1 in alphabetic mode.
- To enter a space, press * in alphabetic mode.

Switching the Operation Mode

The radio can operate in conventional mode, or trunking mode if enabled by your dealer.

To switch the operation mode, do one of the following:

- Press the preprogrammed **Operation Mode Switch** key.
- Go to **Menu** > **Mode**, and then select the mode.

NOTE

If the Zone/Subgroup Switch Mode feature is enabled, you can switch the operation mode by switching the contact through the menu or the **Smart** knob.

To allow the radio to automatically switch to a mode based on signal strength, do one of the following:

- Press the preprogrammed **Mode Auto Switch** key.
- Go to **Menu** > **Mode**, and then enable **Auto Switch**.

Conventional Mode

In conventional mode, a zone is a group of channels within the same operational area. The radio receives and transmits data and voice on the selected channel.

Selecting a Zone

To select a zone, do one of the following:

- Go to **Menu** > **Zone**, select the zone, and then select **Set Default**.
- 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 and rotate the **Smart** knob.
- Go to **Menu** > **Zone**, select the zone, and then select the channel.
- 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.

Trunking Mode

In trunking mode, the radio hunts for available base stations (BS) automatically. After registration, the radio can receive and transmit data and voice.

Selecting a Group or Private Contact

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

- Press and rotate the **Smart** knob.
- On the home screen, press the **Back/Subgroup** key or go to **Menu** > **Subgroup**, select the subgroup, and then select the group or private contact.
- 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, do one of the following:

- On the home screen, press the **Back/Subgroup** key or go to **Menu** > **Subgroup**, select the subgroup, and then select **Set Default**.
- Press the preprogrammed **Subgroup Up** or **Subgroup Down** key.

Status Indications

LCD Icons

Icon	Radio Status
	The fuller the battery bar is, the stronger the battery power remains.
	The battery power is low.
	The battery power runs out. Recharge or replace the battery.
	The radio detects no signal.
	The number of bars indicates the signal strength.
	The radio operates in Low Power mode.
	The radio operates in High Power mode.
	The keypad is locked.
	An accessory is connected.
	The Mode Auto Switch feature is enabled.
	The radio is scanning or hunting.
	The VOX feature is enabled.
	The radio is mute.
	The radio operates in Meeting mode.
	The radio operates in Outdoor mode.
	The radio is in Emergency mode.

Icon	Radio Status
	There is/are missed call(s).
	There is/are unread short message(s).
	The Inbox is full.

For details on other LCD icons, refer to the *User Manual*.

LED Indications

LED Indicator	Radio Status
Flashes green	The radio is being turned on.
Flashes green slowly	The radio is standby in trunking mode.
Glows green	The radio is receiving.
Glows 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	The radio is scanning, hunting, or roaming.
Flashes orange	• Conventional mode: The

LED Indicator	Radio Status
rapidly	radio is working in emergency mode. ● Trunking mode: The called radio is establishing a Full Off Air Call Set-Up (FOACSU) call.
Glows orange	Call hang time: No voice is being transmitted or received on the channel during a call. Within such a period, you can press and hold the **PTT** key and speak.
Flashes blue every 3 seconds	The BT feature is enabled, but no BT device is connected.
Flashes blue every 1.5 seconds	A BT device is connected.
Flashes blue every 0.1 second	The BT feature is being disabled.

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.

Call on Digital Channel

You can initiate or receive the following types of calls on a digital channel:

- 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.

Initiating a Group Call

Through Preset Contact

Press and rotate the **Smart** knob to select the channel or group contact, and then press and hold the **PTT** key.

Through Contact List

- Conventional mode: Go to **Menu** > **Contact** > **Favorite**/**Contact**, select the group contact, and then press and hold the **PTT** key.
- Trunking mode: Go to **Menu** > **Subgroup**, select the subgroup and group contact, and then press or the **PTT** key.

Through Manual Dial

- Conventional mode: With the dial authority for group call enabled, on the home screen, use the numeric keypad to enter the group ID, and then press and hold the **PTT** key.
- Trunking mode: On the home screen, use the numeric keypad to enter the group ID, and then press or the **PTT** key.

NOTE

To input an ID that complies with the dialing rules, consult your dealer for details.

Receiving a Group Call

You can receive a group call without any operation.

Ending a Group Call

Conventional Mode

A group call ends when the call hang time expires.

Trunking Mode

A group call ends in one of the following scenarios:

- The call hang time expires.
- The calling party ends the call.
- The call duration exceeds the preset time.
- The BS signal is lost.
- A preemptive or emergency call interrupts the call.
- The calling party changes the contact with the Clear Down Via Group Switch feature enabled.

Initiating a Private Call

Through Preset Contact

Press and rotate the **Smart** knob to select the channel or private contact, and then press and hold the **PTT** key.

Through Contact List

Go to **Menu** > **Contact** > **Favorite**/**Contact**, select the private contact, and then press and hold the **PTT** key.

Through Manual Dial

- Conventional mode: With the dial authority for private call enabled, use the numeric keypad to enter the private ID, and then press and hold the **PTT** key.
- Trunking mode: On the home screen, use the numeric keypad to enter the private ID, and then press or the **PTT** key.

NOTE

To input an ID that complies with the dialing rules, consult your dealer for details.

Receiving a Private Call

Conventional Mode

You can receive a private call without any operation.

Trunking Mode

- FOACSU

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

- OACSU

  When receiving an Off Air Call Set-Up (OACSU) private call, you can answer it without any operation. The call is established automatically.

Ending a Private Call

Conventional Mode

A private call ends when the call hang time expires.

Trunking Mode

A private call ends in one of the following scenarios:

- The call hang time expires.
- The calling or called party ends the call.
- The call duration exceeds the preset time.

- The BS signal is lost.
- A preemptive or emergency call interrupts the call.
- The calling or called party changes the contact with the Clear Down Via Private Switch feature enabled.

Call on Analog Channel (Conventional Only)

Call without Signaling

On an analog channel without signaling, you can initiate a call to all the other users on the channel. Do as follows:

1. Rotate the **Smart** knob to select the channel.
2. Press and hold the **PTT** key.

Call with Signaling

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

1. Press the preprogrammed **Contact List** key, or go to **Menu** > **Contact** > **Favorite**/**Contact**.
2. Select the contact.
3. Press and hold the **PTT** key or the preprogrammed **One Touch Call** key.

Emergency Call

In case of an emergency, you can initiate an emergency call to seek help from your companion or the control centre. With the highest priority, the emergency call can be initiated even when the radio is transmitting or receiving.

This feature is configured and enabled by your dealer. For details, refer to the *User Manual*.

Message Services

The radio can send and receive short messages.

- Text message: a message containing text or number.
- Quick text message: a frequently used text message that can be created, edited, and deleted.
- Status message (trunking only): a predefined code that transfers the message content.

Sending a Message

To send a message, do as follows:

1. Go to **Menu** > **Message** > **Msg New**.
2. In the recipient field, enter the contact ID, and then press # ⬆ to switch the contact type.

   Alternatively, press the **OK/Menu** key to enter the contact list, and then select the contact.
3. In the message content field, enter the message content.

   Alternatively, select **Insert**, and then insert a quick text message or status message.
4. Select **Send**.

Replying to a Message

To reply to a message, do as follows:

1. Go to **Menu** > **Message** > **Msg**, and then select the message.
2. Select **Reply**, and then enter the text content or insert a quick text message or status message.
3. Select **Send**.

Managing a Message

Go to **Menu** > **Message** > **Msg**, select a message, press the **Up** key, and then manage the message as follows:

- To forward the message, select **Forward**, and then add the contact.
- To resend the message, select **Resend**.
- To delete the message, select **Delete**.
- To delete all messages, select **Delete All**.

BT

CAUTION

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

BT is a wireless technology that supports short-distance communications and data exchange between devices. With the built-in BT module, you can connect the terminal to a BT device.

To enable the BT feature, press the preprogrammed BT key, or go to **Menu** > **BT**, and then enable **BT**.

NOTE

The BT feature only applies to radios with BT.

Connecting to a BT Device

1. Turn on the BT device and enter the pairing status. For detailed operations, refer to the corresponding accessory manual.
2. On the home screen, press the Menu key, and then go to Accessory > BT > Pairing to search for BT devices.
3. Select the required BT device in the device list, and then accept the connection request.

Setting Visibility

After the BT feature is enabled, the radio waits for connection. When waiting time expires, the radio enters the standby state to save power and ensure the security of BT connection. In this case, the radio is invisible to other BT devices.

To respond to the BT connection request any time, you can set the radio to be always visible after being turned on. To set visibility, on the home screen, press the **Menu** key, go to **Accessory** > **BT** > **Visibility**, and then select **On**.