Hytera

OWNER'S MANUAL

MD61X DIGITAL MOBILE RADIO

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. It also includes a troubleshooting guide. 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:

MD61X Digital Mobile Radio (X may represent 2, 5, 6, or 8)

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FCC Statement

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

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

Operation is subject to the following two conditions:

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

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

Compliance with RF Exposure Standards

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

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

RF Exposure Compliance and Control Guidelines and Operating Instructions

To control your exposure and ensure compliance with the occupational/controlled environmental exposure limits, always adhere to the following procedures.

Guidelines:

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

Operating Instructions:

- Transmit no more than the rated duty factor of 50% of the time. To transmit (talk), press the **Push-to-Talk** (**PTT**) key. To receive calls, release the **PTT** key. Transmitting 50% of the time, or less, is important because the radio generates measurable RF energy only when transmitting (in terms of measuring for standards compliance).
- Keep the radio unit at least 2.5 cm away from the face. Keeping the radio at the proper distance is important as RF exposure decreases with distance from the antenna. The antenna should be kept away from the face and eyes.
- When worn on the body, always place the radio in an approved holder, holster, case, or body harness or by use of the correct clip for this product. Use of non-approved accessories may result in exposure levels which exceed the FCC's occupational/controlled environmental RF exposure limits.
- Use of non- approved antennas, batteries, and accessories causes the radio to exceed the FCC RF exposure guidelines.
- Contact your local dealer for the product's optional accessories.

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 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 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 2014/53/EU, 2012/19/EU, and 2011/65/EU.

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

Contents

Documentation Conventions

Icon Conventions

Icon	Description
🔵 Note	Indicates references that can further describe the related topics.
⚠️ Caution	Indicates situations that could cause data loss or equipment damage.

Notation Conventions

Item	Description	Example
Boldface	Denotes menus, tabs, parameter names, window names, dialogue names, and hardware buttons.	To save the configuration, click **Apply**.
		The **Log Level Settings** dialogue appears.
		Press the **PTT** key.
" "	Denotes messages, directories, file names, folder names, and parameter values.	The screen displays "Invalid Battery!".
		Open "PDT_PSS.exe".
		Go to "D:/opt/local".
		In the **Port** text box, enter "22".
>	Directs you to access a multi-level menu.	Go to **File** > **New**.
Italic	Denotes document titles.	For details about using the DWS, refer to *Dispatch Workstation User Guide*.
Courier	Denotes	To set the IP address, run

Item	Description	Example
	commands and their execution results.	the following command: `vos-cmd - m name IP`

Packing List

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

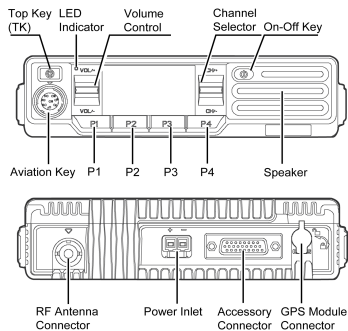| Item	Quantity (PCS)	Item	Quantity (PCS)
Mobile Radio	1	Palm Microphone	1
Mounting Bracket	1	Microphone Hanger	1
Locking Knob	2	4 mm x 16 mm Screw	3
4.8 mm x 20 mm Screw	4	Power Cord	1
Fuse	1	Documentation Kit	1

🔵 **Note**

Check whether the frequency band marked on the antenna label matches that on the radio label. If not, please contact your dealer.
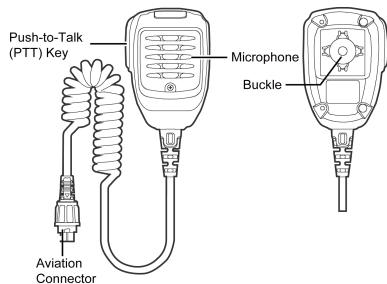
Product Overview

Product Layout

Mobile Radio

Palm Microphone

Programmable Keys

You can request your dealer to program the following keys as shortcuts to assignable radio features: **TK**, **P1** key, **P2** key, **P3** key, and **P4** key.
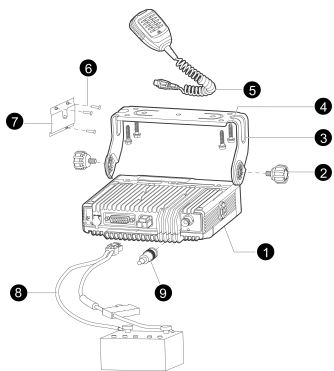
Installation

Instructions

Before you install the radio in a vehicle, read the following instructions carefully:

- The radio must work with a 13.6V ± 15% negative ground electrical system only. Ensure to check the polarity and voltage of the vehicle power supply prior to installation.
- Check how long the screws will extend from the bottom surface of the radio. Drill the mounting hole cautiously to avoid damage to the vehicle wiring and other parts.
- Connect the antenna and power cord to the radio before you install it in the bracket. And make sure the antenna and power cord are dedicated for digital radios of the Company.
- Install the radio with mounting bracket supplied by the Company, to avoid radio looseness in case of accidents. The loose radio may cause bodily injury.
- Install the radio in a location where you can reach the front panel conveniently.
- Keep sufficient clearance at the back of the radio for wiring.
- Be sure to use the fuse with the same specification for DC power cord upon replacement.
- If any other devices are in the vicinity of this radio, the antenna of this radio shall be no less than 10 meters away from that of such RF device.

Tools

- Electric drill
- Cross head screwdriver
- T20 torx screwdriver

Parts

NO.	Part Name	NO.	Part Name
1	Mobile Radio	6	4 mm x 16 mm Screw
2	Locking Knob	7	Microphone Hanger
3	Mounting Bracket	8	Power Cord
4	4.8 mm x 20 mm Screw	9	RF Antenna
5	Palm Microphone	10	/

Procedure

1. Select a location where you can operate the radio conveniently, drill holes based on the shape of the mounting bracket, and then use the 4.8 mm x 20 mm screws to secure the bracket.
2. Connect RF antenna and power cord to the radio.
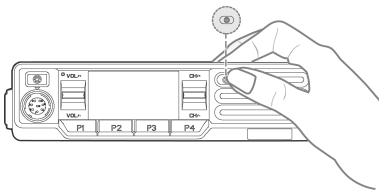

📝 Note

The RF antenna should be purchased separately.

3. Slide the radio into the properly mounted bracket and secure it using the locking knobs.
4. Install the microphone hanger in a location where it can be reached easily, and use the 4 mm x 16 mm screws to secure it.
5. Align the triangle index on the palm microphone with the microphone installation index, plug the connector into the radio, and rotate the connector clockwise to secure it.
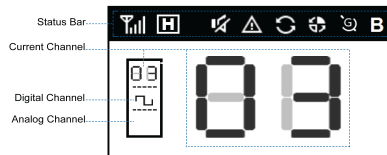6. Place the palm microphone on the hanger when you do not use it.

Basic Operations

Turning the Radio On or Off

To turn the radio on or off, long press the **On-Off** key.

Understanding the Screen

Status Bar

Icon	Radio Status
▔▎▍	More bars indicate stronger signal strength.
H	The radio operates in high power mode.
L	The radio operates in low power mode.
🔇	The radio operates in silent mode.
⚠	The radio is in emergency mode.
♻	The radio is scanning.
📶	The radio is roaming.

Checking LED Indications
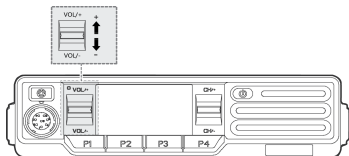
To determine the radio status, check the LED indicator on the radio according to the following table:

LED Indicator	Radio Status
Flashes green	Being turned on.
Glows green	Receiving.
Glows red	Transmitting.
Flashes orange	Scanning or roaming.

LED Indicator	Radio Status
slowly	
Flashes orange rapidly	Working in emergency mode.
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.

Adjusting the Volume

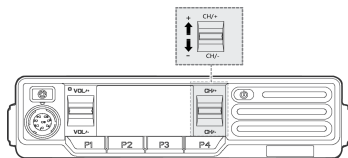To increase or decrease the volume, press the **VOL/+** or **VOL/-** key.

Selecting a Zone and Channel

The radio receives and transmits data and voice on the selected channel. A zone is a group of channels within the same operational area. The radio supports up to three zones, each of which contains up to 16 channels. Before selecting a channel, make sure that the current zone contains the channel.

To select a zone, press the preprogrammed **Zone Up** or **Zone Down** key.

To select a channel, press the **CH/+** or **CH/-** key as shown below.

Call Services

When you are speaking during a call, keep the microphone about 2.5 to 5 cm away from your mouth. This ensures optimal voice quality on the receiving radio.

Call on Digital Channel

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

- Private call: a call from an individual user to another individual user.
- Group call: a call from an individual user in a group to all the other members in the group.
- All call: a call from an individual user to all the other users on the current channel.

📷 Note

The All Call feature must be authorized by your dealer.

Initiating Calls

To initiate a call, do one of the following:

- To initiate a call to the private contact, group contact or all call contact preset for the current channel, press and hold the **PTT** key.
- To initiate a call to another private contact, group contact or all call contact, press the **CH/+** or **CH/-** key to select the channel associated with the required contact, and then press and hold the **PTT** key.
- Press the preprogrammed **One Touch Call/Menu** key to initiate a private or group call to the preset private or group contact.

Receiving and Responding to Calls

When receiving a call, you can listen to it without any operation.

You can press and hold the **PTT** key and speak within call hang time.

Ending Calls

The radio will end a call when the call hang time expires.

Call on Analog Channel

You can initiate or receive a call on an analog channel with or without signaling.

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 **CH/+** or **CH/-** key to select the required channel.
2. Press and hold the **PTT** key, and speak into the microphone.

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 **CH/+** or **CH/-** key to select the required channel.
2. Press the **PTT** key to send the code.

The call is established when the target radio receives and decodes the matched signaling.

Quick Text

A quick text is a frequently used text preset by your dealer.

You can press the preprogrammed **One Touch Call/Menu** key to send the quick text to the preset private or group contact.

Supplementary Features

Power Level

The Power Level feature allows you to set the TX power level of the current channel. High power level enables long distance communication but consumes more battery power. Low power level enables short distance communication and saves battery power.

To adjust the power level, press the preprogrammed **Adjust power level** key to switch between the high and low power level.

Time-out Timer

The Time-out Timer (TOT) feature allows the radio to automatically stop transmission and keep beeping when the period preset by your dealer expires. To stop beeping, release the **PTT** key. You need to wait for a certain period (also preset by your dealer) to initiate transmission again.

This feature aims to prevent a radio user from occupying a channel for an extended period. It also avoids potential radio damage caused by overheating.

Busy Channel Lockout

The Busy Channel Lockout feature allows the radio to keep beeping when you press and hold **PTT** key when the current channel is occupied by other radios. When the current channel is idle, you can transmit by pressing and holding **PTT** key.

The Busy Channel Lockout feature aims to prevent interference from other radios on the same channel during transmission.

Emergency Feature

The Emergency feature allows you to ask for help from your companion or the control centre in case of emergency.

In emergency mode, the radio gives different indications according to the preset emergency type. The available emergency types are as follows:

Emergency Type	Description
Siren Only	The radio sounds shrill alarm tones

Emergency Type	Description
	with visible indications.
Regular	The radio gives audible and visible indications.
Silent	The radio gives no audible or visible indication.
Silent w/ Voice	The radio gives audible indication only for an incoming call.
Alarm w/ Siren	The radio sends an alarm and sounds shrill alarm tones with visible indications.

In addition, you can request your dealer to set one of the following emergency modes:

Emergency Mode	Description
Alarm	Allows you to send an emergency alarm.
Call Only	Allows you to initiate an emergency call.
Alarm W/Call	Allows you to send an emergency alarm and initiate an emergency call.

The three emergency modes can be combined with any of the following emergency types: **Regular**, **Silent**, and **Siren w/ Voice**.

Triggering the Emergency Mode

To trigger the emergency mode, press the preprogrammed **Emergency On** key. The radio then

enters the preset emergency mode with or without indications depending on the preset emergency type.

Receiving an Emergency Call

You can listen to a received emergency call without any operation.

Exiting the Emergency Mode

To exit the emergency mode (as the initiating party) or emergency alert mode (as the receiving party), press the preprogrammed **Emergency Off** key or turn off the radio.

Scan

The Scan feature allows you to listen to activities on a channel, keeping a track of your team members. With this feature enabled, the radio searches the scan list preset for the current channel and stay on an active channel.

To turn the Scan feature on or off, press the preprogrammed **Scan** key.

During scanning, the LED Segment displays ⟳, and the LED indicator flashes yellow slowly. When it stays on an active channel, the LED indicator glows green.

Talk Around

The Talk Around feature allows your radio to continue transmitting and receiving when the repeater is not operating, or when your radio is out of the repeater's coverage but within other radio's coverage.

To turn this feature on or off, press the preprogrammed **Talk Around** key.

Public Address

Public Address allows you to address a large public via the external speaker. With this feature enabled, your voice will be output via the external speaker if you hold down the **PTT** key and speak.

To address a large public, press the preprogrammed **Public Address** key, and then hold down the **PTT** key and speak.

Ignition Sense

The following functions can be realized by the vehicle ignition. You may request your dealer to assign any one to the radio.

Type	Description	Operation
Ignition or Switch	Allows you to turn the radio on or off by following the ignition sense or pressing the **On-Off** key.	● Start the engine to turn the radio on; stop the engine to turn the radio off. ● Press the **On-Off** key to turn the radio on and off.
Ignition Only	Allows you to turn the radio on and off by following the ignition sense only. In this case, the **On-Off** key does not work.	Start the vehicle engine to turn the radio on; stop the vehicle engine to turn the radio off.
PTT Disable	Allows you to enable or disable the PTT key by the	Start the engine to enable the **PTT** key; stop the engine to disable the PTT

Type	Description	Operation
	ignition sense.	key.
Disable Ignition Off	Allows you to turn the radio on by following the ignition sense or pressing the **On-Off** key, and allows you to turn it off only by pressing the **On-Off** key.	● Start the engine to turn the radio on; but stopping the engine will not turn the radio off. ● Press the **On-Off** key to turn the radio on and off.

Digital Services

One Touch Call/Menu

The One Touch Call/Menu feature allows you to press the preprogrammed **One Touch Call/Menu** key to quickly access a service assigned by your dealer. The services available for assignment are as follows:

Service Type	Description
Initiating a private or group call	Press the preprogrammed **One Touch Call/Menu** key and then press and hold the **PTT** key to speak.
Sending quick text	Press the preprogrammed **One Touch Call/Menu** key.

Encrypt

The Encrypt feature allows the radio to automatically encrypt transmitted voice or data. Only the receiving radio with the same key value or ID can decrypt the voice or data. This prevents eavesdropping and ensures communication privacy.

To turn this feature on or off, press the preprogrammed **Encrypt** key.

TDMA Direct Mode

TDMA Direct Mode allows the radio to transmit and receive through the other time slot if one time slot is occupied.

You can request your dealer to enable this mode.

Roam

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

This is a paid feature. For details, contact your dealer.

Analog Features

Scrambler

The Scrambler feature allows the radio to invert the frequency spectrum of transmitted audio signals. Only the receiving radio with the same scrambler setting can restore the audio signals. This prevents eavesdropping and ensures communication privacy.

To turn this feature on or off, press the preprogrammed **Scramble** key.

Monitor

The Monitor feature allows the radio to receive weak signals.

To turn this feature on or off, press the preprogrammed **Monitor** key.

Squelch Off

The Squelch Off feature allows the radio's speaker to keep turned on no matter whether the squelch condition is satisfied.

To turn this feature on or off, press the preprogrammed **Squelch Off** key.

Squelch Level

The squelch level refers to the squelch threshold required for the radio's speaker to be turned on.

To adjust the squelch level, press the preprogrammed **Adjust Squelch Level** key. The radio switches among three levels, i.e. Open, Normal, and Tight (from low to high). Generally, a higher squelch level requires higher signal strength. If the squelch level is set to Open, the speaker will always keep turned on.

CTCSS/CDCSS

The Continuous Tone-Coded Squelch System (CTCSS)/Continuous Digital-Coded Squelch System (CDCSS) feature allows the radio to filter out unwanted voice on the current channel. With this feature enabled by your dealer, the radio's speaker is turned on only when the CTCSS/CDCSS code received matches the CTCSS/CDCSS code set for the radio.

You can request your dealer to enable this feature.

Troubleshooting

Phenomena	Analysis	Solution
You cannot turn the radio on.	The power cord may be disconnected or not securely connected to the outlet.	Properly connect the power cord and ensure secure connection.
During receiving, the voice is weak or intermittent.	The volume level may be low.	Increase the volume.
	The antenna may be loose or may be installed incorrectly.	Turn the radio off, and then remove and reattach the antenna.
	The speaker may be blocked.	Clean the surface of the speaker.
You cannot communicate with other group members.	The frequency or signaling type may be inconsistent with that of other members.	Verify that your TX/RX frequency and signaling type are correct.
	The channel type (digital or analog) may be set incorrectly.	Verify that you are on the correct digital or analog channel.
	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 frequency.	Change the frequency, or adjust the squelch level.
	The radio in analog mode may be set with no signaling.	Request your dealer to set signaling for the current channel 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 be in an unfavourable position. For example, your communication may be blocked by high buildings or blocked in an underground area.	Move to an open and flat area, restart the radio, and try again.
	It may 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 not work temporarily.	Restart the radio.
The LCD does not display any information.	The LCD may not work temporarily.	Restart the radio.
The speaker of the receiving radio outputs abnormal voice.	The palm microphone of the transmitting radio is not connected properly.	Remove and reattach the palm microphone.

If the above solutions cannot fix your problems, or you may have some other queries, please contact your dealer for more technical support.

Care and Cleaning

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

Product Care

- Do not pierce or scrape the product.
- Keep the product far away from substances that can corrode the circuitry.
- Do not hold the product by the antenna or earpiece cable.
- Close the accessory connector cover when no accessory is in use.

Product Cleaning

⚠ **Caution**

Turn off the product and remove the battery before 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 fabric to clean the keys, 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.

Optional Accessories

Contact your local dealer for the optional accessories used with the product.

⚠ **Caution**

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

Abbreviations

Abbreviation	Full Name
LCD	Liquid-Crystal Display
LED	Light-Emitting diode
PTT	Push-to-Talk
TDMA	Time Division Multiple Access