

Digital Two Way Radio

DM-1801PRO

USER'S MANUAL

PREFACE

Thank you for purchasing this product. which is a dual band/dual display/dual watch. This easy-to-use radio will deliver you secure, instant and reliable communications at peak efficiency. Please read this manual carefully before use. The information presented herein will help you to derive maximum performance from your radio.



WARNING! European Users should note that operation of this unit in Transmit mode requires the operator to have a valid Amateur Radio License from their respective Countries Amateur Radio Licensing Authority for the Frequencies and Transmitter Power levels that this Radio transmits on. Failure to comply may be unlawful and liable for prosecution. At this subject, refer to the “EU” specification guide 2014/53/EU.



ATTENTION! When programming the radio, start by reading the factory software data, and then rewrite this data with your frequency etc., to a new saved code plug, otherwise errors may occur. You can use the programming cable with a PC to program the authorized frequency, bandwidth, power, etc. your programming must comply with your FCC (or EU other country) license certification.



ATTENTION! *Before using this product, read the RF Energy Exposure and Product Safety Guide that ship with the radio which contains instructions for safe usage and RF energy awareness and control for compliance with applicable standards and regulation.*



PMR446, FRS, GMRS, MURS

You may be tempted to use PMR446 (in Europe) or FRS, GMRS, MURS (in the USA) frequencies. Do note however that there are restrictions on these bands that make this transceiver illegal for use.

Chapter1. Getting Started

1.1 Regulations and Safety Warnings

■Precautions for Portable Terminals

Operating Prohibitions

To protect you against any property loss, bodily injury or even death, be sure to observe the following safety instructions:

1. Do not operate the product in a location containing fuels, chemicals, explosive atmospheres and other flammable or explosive materials. In such location, only an approved Ex-protection model is allowed for use, but any attempt to assemble or disassemble it is strictly prohibited.
2. Do not operate the product near or in any blasting area.
3. Do not operate the product near any medical or electronic equipment that is vulnerable to RF signals.
4. Do not hold the product while driving.
5. Do not operate the product in any area where use of wireless communication equipment is completely prohibited.

Important Tips

To help you make better use of the product, be sure to observe the following instructions:

1. Do not use any unauthorized or damaged accessory.
2. Keep the product at least 2.5 centimeters away from your body during transmission.
3. Do not keep the product receiving at high volume for a long time.
4. For vehicles with an air bag, do not place the product in the area over the air bag or in the air bag deployment area.
5. Keep the product and its accessories out of reach of children and pets.
6. Please operate the product within the specified temperature range.
7. Continuous transmission for a long time may lead to heat accumulation within the product. In this case, please keep it at a proper location for cooling.
8. Handle the product with care.
9. Do not disassemble, modify or repair the product and its accessories without authorization.

■Precautions for Batteries

Charging Prohibitions

To protect you against any property loss, bodily injury or even death, be sure to observe the following safety instructions:

1. Do not charge or replace your battery in a location containing fuels, chemicals, explosive atmospheres and other flammable or explosive materials.
2. Do not charge your battery that is wet. Please dry it with a soft and clean cloth prior to charge.
3. Do not charge your battery suffering deformation, leakage and overheat.
4. Do not charge your battery with an unauthorized charger.

5. Do not charge your battery in a location where strong radiation is present.
6. Overcharge shall always be prohibited for it may shorten the life of your battery.

Maintenance Instructions

To help your battery work normally or prolong its life, be sure to observe the following instructions:

1. Accumulated dust on charging connector may affect normal charging. Please use a clean and dry cloth to wipe it on a regular basis.
2. It is recommended to charge the battery under 5°C~40°C. Violation of the said limit may cause battery life reduction or even battery leakage.
3. To charge a battery attached to the product, turn it off to ensure a full charge.
4. Do not remove the battery or unplug the power cord during charging to ensure a smooth charging process.
5. Do not dispose of the battery in fire.
6. Do not expose the battery to direct sunlight for a long time nor place it close to other heating sources.
7. Do not squeeze and penetrate the battery, nor remove its housing.

Transportation Instructions

1. Damaged batteries must not be transported.
2. To avoid short circuit, separate the battery from metal parts or from each other if two or more batteries are transported in one packaging.
3. The radio must be switched off and secured against switch-on, if the battery is attached.

The content of the shipment must be declared in the shipping documents and by a Battery Shipping Label on the packaging. Contact your hauler for the local regulations and further information.

Maintenance

Your Two Way Radio is an electronic product of exact design and should be treated with care.

The suggestions below will help you to fulfill any warranty obligations and to enjoy this product for many years.

- Do not attempt to open the radio for any reason! The radio's precision mechanics and electronics require experience and specialized equipment; for the same reason, the radio should under no circumstances be realigned as it has already been calibrated for maximum performance. Unauthorized opening of the transceiver will void the warranty.
- Do not store the Radio under the sunshine or in hot areas.
- High temperatures can shorten the life of electronic devices, and warp or melt certain plastics.
- Do not store the radio in dusty and dirty areas.
- Keep the Radio dry. Rainwater or damp will corrode electronic circuits.
- If it appears that the Radio diffuses peculiar smell of smoke, please shut off its power immediately and take off the charger or battery from the radio.
- Do not transmit without antenna.

FCC STATEMENT:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

RF Exposure Statement:

SAR tests are conducted using standard operating positions accepted by FCC with the device transmitting at its highest certified power level in all tested frequency bands, although the SAR is determined at the highest certified power level, the actual SAR level of the device while operating can be well below the maximum value. Before a new model is available for sale to the public, it must be tested and certified to the FCC that it does not exceed the exposure limit established by the FCC. Tests for each product are performed in positions and locations as required by the FCC. For body worn operation, this device has been tested and meets the FCC RF exposure guidelines when used with and accessory designated for this product or when used with and accessory that contains no metal. To maintain compliance with FCC RF exposure guidelines, hold the transmitter and antenna at least 1 inch (2.5 centimeters) from your face and speak in a normal voice, with the antenna pointed up and away from the face.

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

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

The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment. Replacement of any transmitter component (crystal, semiconductor, etc.) not authorized by the FCC equipment authorization for this radio could violate FCC rules.

WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.

1.2 Content of the packaging

- 1 Radio
- 1 Fast desktop charger
- 1 Antenna

- 1 Li-Ion battery pack
- 1 Belt clip
- 1 USER'S MANUAL

If any item is missing, please verify with your dealer.

1.3 Main features

- Si4732 Full-band radio receives, support FM/AM modulation mode, support MR channel and VFO frequency mode
- 2.0" TFT large screen, full keypad, full open menu operations
- 10 Zones/1000 channels storage, manage channel groups by zones
- Built-in input method, support local edit channel name, receive frequency, transmit frequency
- Man, down alarm. Trigger mode, Tilt angle, Cur delay Time, Pre cue Time settings
- Dual watch, dual standby
- 5W RF output, high, medium and low power adjustable
- Characteristic scanning function: channel scanning, frequency scanning, CTCSS/DCS scanning
- Side key 1 customized function: VOX, SEARCH, SCAN, Bluetooth Audio
- Frequency difference frequency, frequency difference direction, inverted frequency, relay activation audio and other relay function settings
- Aviation band receiver AM108-136MHz, NOAA weather forecast receiver

Chapter2. Charging the Battery

2.1 Charging the Battery Pack

The Li-ion battery pack is not charged at the factory; please charge it before use. Charging the battery pack for the first time after purchase or extended storage (more than 2 months) may not bring the battery pack to its normal maximum operating capacity. Best operation will require fully charging/ discharging the battery two or three times before the operating capacity will reach its best performance. The battery pack life may be depleted when it's operating time decreases even though it has been fully and correctly charged. If this is the case, replace the battery pack.

2.2 Charger Supplied

Please use the specified charger provided by our company. Other models may cause explosion and personal injury. After installing the battery pack, and if the radio displays low battery with a voice prompt, please charge the battery.

2.3 Use Caution with the Li-ion Battery

- Do not short the battery terminals or throw the battery into a fire. Never attempt to remove the casing from the battery pack, as our company cannot be held responsible for any accident caused by modifying the battery.
- The ambient temperature should be between 5°C-40°C (40°F - 105°F) while charging the battery. Charging outside this range may not fully charge the battery.
- Please turn off the radio before inserting it into the charger. It may otherwise interfere with correct charging.
- To avoid interfering with the charging cycle, please do not cut off the power or remove the battery during charging until the green light is on.
- Do not recharge the battery pack if it is fully charged. This may shorten the life of the battery pack or damage the battery pack.
- Do not charge the battery or the radio if it is damp. Dry it before charging to avoid damage.



WARNING !

When keys, ornamental chain or other electric metals contact the battery terminal, the battery may become damage or injure a human. If the battery terminals are short circuited it will generate a lot of heat. Take care when carrying and using the battery. Remember to put the battery or radio into an insulated container. Do not put it into a metal container.

2.4 How to Charge

- Plug the AC adaptor into the AC outlet, and then plug the cable of the AC adaptor into the DC jack located on the back of the charger. The indicator light blinks orange and is then ready to charge a battery.
- Plug the battery or the radio into the charger. Make sure the battery terminals are good in contact with charging terminals. The indicator light turns to red---charging begins.

- c. It takes approximately 2-5 hours to fully charge the battery. When the lamp lights green, the charging is completed. Remove the battery or the radio unit with its battery from socket.

When charging a radio (with battery) the indicating lamp will not turn into green to show the fully charged status if the radio is powered on. Only when the radio is switched off will the lamp indicate normal operation. The radio consumes energy when it is power-on, and the charger cannot detect the correct battery voltage when the battery has been fully charged. So the charger will charge the battery in constant voltage mode and fail to indicate correctly when the battery has been fully charged.

2.5 LED Indicator

STATUS	LED
No Battery	Green and red alternately flashing
Charge Normally	Red
Fully Charged	Green
Trouble	Red blinks fast for a long time

NOTE: *Trouble means battery too warm, battery short-circuited or charger short-circuited.*

2.6 How to Store the Battery

- If the battery needs to be stored, keep it in status of 80% discharged.
- It should be kept in low temperature and dry environment.
- Keep it away from hot places and direct sunlight.
 - » Do not short circuit the battery terminals.
 - » Never attempt to remove the casing from the battery pack.
 - » Never store the battery in unsafe surroundings, as a short may cause an explosion.
 - » Do not put the battery in a hot environment or throw it into a fire, as it may cause an explosion.

2.7 Using the Type-C USB Charger

The micro-USB charger is a handy port that allows you to conveniently charge your Li-ion battery pack.

- Make sure your radio is turned OFF.
- Plug the Type-C USB cable into the Type-C USB charging port on your battery. Connect the other end of the micro-USB charger to wall power outlet.
- An empty battery will be fully charged in 4 hours.
- The battery meter on LCD will move to indicate the battery is charging.

Note:

- It is recommended to power OFF your radio while charging. However, if power is turned on while charging, you may not be able to transmit a*

message if the battery is completely empty. Allow time for the battery to charge to 1 bar before attempting to transmit a message.

- For optimal battery life, remove the radio from the charger within 6 hours. Do not store the radio while connected to the charger.

Chapter3. Installation of Accessories

Before the radio is ready for use we need to attach the battery pack, as well as charge the battery.

3.1 Installing/ Removing the Antenna

- Installing the Antenna: Screw the antenna into the connector on the top of the transceiver by holding the antenna at its base and turning it clockwise until secure.
- Removing the Antenna: Turn the antenna counter-clockwise to remove it.

3.2 Installing the belt clip

- At the back of the radio there are two parallel screws mounted above the battery, remove these and thread them through the holes on the belt clip as you screw them back into the radio body.
- Removing the Belt Clip: Unscrew counter-clockwise to remove the belt clip.

3.3 Installing the battery pack

Before attaching or removing the battery make sure your radio is turned off by turning the power/volume knob all the way counter-clockwise.

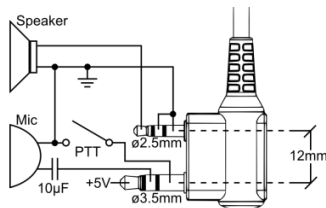
- Make sure the battery is aligned in parallel with the radio body with the lower edge of the battery about 1-2cm below the edge of the radio.
- Once aligned with the guide-rails, slide the battery upward until you hear a click as the battery locks in place.

Remove the battery pack

To remove the battery, press the battery release above the battery pack, as you slide the battery downward.

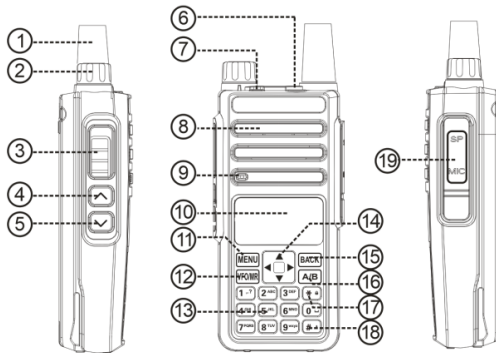
3.4 Installing the Additional Speaker/Microphone (Optional)

Pry open the rubber MIC-Headset jack cover and then insert the Speaker / Microphone plug into the double jack.



Chapter4. Radio Overview

4.1 Buttons and controls of the radio



1. Antenna

4. SK1 (Custom Side Key)

7. LED Status Indicator

10. Full Dot Matrix LCD

13. Numeric Keypad

16. A/B – Main/Sub Frequency Switch Button

19. Accessory Jack

2. Power/Volume Knob

5. SK2 (Custom Side Key)

8. Speaker

11. MENU Button

14. Up/Down Navigation Keys

17. * Key (Keyboard Lock/Unlock)

3. PTT Transmit Button

6. TK (Emergency Alarm Button)

9. Microphone (MIC)

12. VFO/MR – Frequency/Channel Switch Button

15. BACK – Exit/Return Button

18. # Key (Manual Dialing)

Side Key [SK1/SK2] Customization Function

Programmable Key Function List

Option	Description
None	No function assigned to this key; pressing it has no effect.
Power Adjustment	Press to switch among high, medium, and low power output.
Battery Prompt	Quick access to battery status with voice announcement: high, medium, or low battery.
Break-in	Press to switch terminal between direct mode and repeater mode (valid in repeater mode).
Digital Encryption	Press to enable or disable digital encryption (valid in digital mode).
Call	One-touch call to a pre-set contact.
VOX	Press to enable or disable VOX function on the current channel.
V/M Switch	Press to switch between Frequency (VFO) / Channel (MR) mode. Long press EXIT to switch between frequency and channel.
Alarm	Press to initiate or cancel alarm; typical function assigned to the TK key.
One-touch Call 1~5	Shortcut keys for calling; press to send corresponding call, SMS, or auxiliary service after one-touch call/menu.
SMS	Press to enter the SMS menu.
Contacts	Press to directly access the favorite contacts list menu.
Zone Up	Press to switch to the previous zone.
Zone Down	Press to switch to the next zone.
Scan	Press to enable or disable scan function.
Record Switch	Press to enable or disable call recording.
Previous Record	Press to quickly play back the previous recording (depending on firmware).
Next Record	Press to quickly play back the next recording (depending on firmware).
FM Radio	Short press to turn on/off FM radio function. <i>Default</i>
Monitor	Press to switch to monitor squelch mode; press again to return to receive squelch mode.
Main Channel Switch	Press to switch between Screen A and Screen B.
Lone Worker	Press to toggle lone worker function on or off.
Keypad Lock	Press to lock or unlock the keypad.
Noise Channel Delete	When scan pauses, press to temporarily remove unwanted noise channels (they will be restored after terminal reboot).
TBST Send	Press to transmit 1750Hz, 2100Hz, 1450Hz, or 1000Hz repeater activation tone.

Channel Type Switch	Quickly switch channel type: Digital, Analog, Digital-Analog, Analog-Digital.
Display Mode	Press to switch between dual-band dual-watch, dual-band single-watch, and single-band display.
CTCSS/DCS Scan	In analog mode, press to enter analog CTCSS/DCS scan.
CTCSS/DCS Setup	In analog mode, press to quickly enter analog CTCSS/DCS settings.
Mute	Press to enable or disable all prompt tones.
Roam	Press to enable or disable roaming function.
Sub PTT	Hold to transmit on Band B (dual-band dual-watch mode, dual-PTT enabled, transmit on Band B).
Analog Scrambler	In analog mode, press to enable or disable analog scrambler.
One-touch Freq Scan	In analog mode, short press to enable or disable one-touch frequency scan.
Man Down Alarm	Press to turn on/off Man Down alarm. Hidden when disabled via CPS.

Long and short press functions for SK1/SK2 keys can be programmed via **CPS software** → **Public** → **Key Function** and written to the radio.

Local programming path: Press **[MENU]** to enter main menu → **Settings** → **Radio Settings** → **Key Function**.

4.2 Status Indications

The status LED has a very simple and traditional design.

LED Indicator	Radio Status
Constant Red	Transmitting.
Constant Green	Receiving.

Chapter 5. Basic Operations

5.1 Power On/Off

Turn the [Power/Volume] knob clockwise until you hear a ****click**** to power on the radio.

The screen displays the power-on message, and a beep sounds after 3 seconds. It then shows a frequency or channel.

- If voice prompts are enabled, the current channel is announced by voice.

- Power-on tone setting: Press **[MENU]** → ****Settings**** → ****Radio Settings**** → ****Prompt Tone**** → ****9 Power-on Tone****.

- Power-on interface setting: Press **[MENU]** → ****Settings**** → ****Radio Settings**** → ****Display**** → ****Power-on Interface****.

Power Off

Turn the [Power/Volume] knob counterclockwise until you hear a click.

The LCD displays ****Powering Off****.

****Note:**** Do not remove the battery forcibly during shutdown until the radio is completely off.

5.2 Volume Adjustment

Rotate the [Power/Volume] knob to adjust volume.

- Clockwise: increase volume
- Counterclockwise: decrease volume

Do not turn the volume too low, as this may accidentally power off the radio.

5.3 Main / Sub Band Switch

The display shows Main and Sub bands (also called upper/lower screen).

Short press [A/B] to switch between Main and Sub bands.

- The band indicated by the **arrow icon** is the active transmit band.

Letters above the icon indicate channel type:

- **A**: Analog mode
- **D**: DMR digital mode
- **A+D**: Mixed Analog+Digital, transmit in Analog
- **D+A**: Mixed Digital+Analog, transmit in Digital
- **AM**: Aviation receive channel (108–136 MHz, receive only, no transmit) *Display: AM*
- **WX**: NOAA weather channel (receive only, no transmit)

5.4 Frequency / Channel (VFO/MR) Switch

The radio has two operating modes:

- **VFO**: Frequency mode
- **MR**: Memory (Channel) mode

Press [VFO/MR] to toggle between modes.

- Channel (MR) mode: shows channel number on the right.
- Frequency (VFO) mode: shows only the current frequency.

MR mode is more practical for daily use; VFO mode is suitable for on-site testing.

5.5 VFO Mode

Press [VFO/MR] to enter VFO mode.

Method 1: Press **▲/▼** to adjust VFO frequency by the pre-programmed step.

Method 2: Enter frequency directly via the keypad.

Example (12.5 kHz step): enter **432.5625 MHz** on the main band

1. Press [VFO/MR] to enter VFO mode.
2. Enter digits: [4][3][2][5][6][2][5].

Note: Channel type (Analog, Digital, A+D, D+A) can be changed in:
[MENU] → **Settings** → **Channel Setup** → **Channel Type**.

5.6 Select a Zone

Zones are channel groups for easier management.

Method 1: Press pre-programmed [Zone Up] or [Zone Down] key.

Method 2: Use pre-programmed One-touch function to enter Zone Selection, then press ▲/▼ to select zone and [MENU] to confirm.

Method 3:

1. Press [MENU] → **Zone**.
2. Press [MENU], use ▲/▼ to select a zone.
3. Press [MENU], select **Apply** with ▲/▼.

5.7 Select a Channel

Press [VFO/MR] to enter Channel (MR) mode.

Method 1: Press ▲/▼ to select a channel.

Method 2:

Enter channel number via keypad, then press [MENU] to confirm.

Example: enter **64** + [MENU] to go to channel 64.

5.8 Create a New Channel (Manual Programming)

1. Press [VFO/MR] to enter Channel mode.
2. Press [MENU] → **Settings** → **Channel Setup** → **Add Channel**.
3. Select channel type: Analog, Digital, A+D, D+A, AM.
4. Enter channel alias and confirm.
5. Enter RX frequency and confirm.
6. Enter TX frequency and confirm.
7. "Added successfully" appears and returns to previous menu.

Add New Channel to Zone

1. Enter Channel mode.
2. Press [MENU] → **Zone**, select a zone and confirm.
3. Select **Add Channel** with ▲/▼.
4. Select the new channel and confirm.

5. "Added successfully" appears.

Configure Channel Parameters

1. Enter Channel mode.

2. Press [MENU] → ****Settings**** → ****Channel Setup****.

- Analog: CTCSS/DCS, radio ID, alias, bandwidth, etc.

- Digital: TX contact, RX group list, color code, time slot, ID, alias, dual time slot direct, etc.

5.9 Call Services

5.9.1 Digital Call

You can make/receive these digital calls:

- ****Private Call****: one individual to another individual.

- ****Group Call****: one user to all members in the group.

- ****All Call****: one user to all stations on the current channel.

Contact your dealer to enable All Call function.

5.9.1 Digital Call

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

Private Call: A call from one individual user to another individual user.

Group Call: A call from one user in a group to all other members in the same group.

All Call: A call from one individual user to all other users on the current channel.

You can request your dealer to enable the All Call function.

5.9.1.1 Initiating a Call

You can initiate a call using the following methods:

Method 1: Select a digital channel, press and hold the [PTT] key to call the pre-programmed transmit contact on the current digital channel.

Method 2: Press the [MENU] key to enter the main menu, go to **Contacts** → **Contact List**, use the ▲/▼ keys to select a contact, then press and hold the [PTT] key to initiate the call.

Method 3: Press the [MENU] key to enter the main menu, go to **Call Records** → **Missed Calls/Received Calls/Dialed Calls**, select a call record, then press and hold the [PTT] key to initiate the call.

Method 4: Press the [MENU] key to enter the main menu, go to **Contacts** → **Manual Dial**, enter a number (press the [#] key to switch between Private Call and Group Call), then press and hold the [PTT] key to initiate a Private or Group Call.

Method 5: When the [One-Touch Call] key is programmed for a Private or Group contact, press the pre-programmed [One-Touch Call] key, then press and hold the [PTT] key to initiate a Private or Group Call.

During a call, hold the radio vertically 2.5–5 cm away from your mouth. The red LED will light up, and the recipient's ID / alias / city / state / country / call type

and call icon will appear on the LCD screen.

Release the [PTT] key to receive a reply.

Press the pre-programmed [Power Adjust] key to temporarily switch between high and low transmit power.

5.9.1.2 Receiving and Replying to a Call

When the radio is in digital mode, it can receive and respond to calls with the same frequency / color code / time slot.

To answer a call:

If the caller's DMR ID is programmed in the receiver's digital contact list, the radio will beep briefly.

The LCD will display the corresponding DMR ID / alias / city / state / country / call type and incoming call icon according to the contact list:

icon for Private Call

icon for Group Call

icon for All Call

The green LED will light up.

During the call, after the other party finishes speaking, you can press and hold the [PTT] key to reply.

5.9.1.3 Ending a Call

The call will be terminated automatically if no one presses the [PTT] key to speak beyond the call hold time.

If the caller releases the [PTT] key during an All Call, the terminal will end the call.

5.9.2 Analog Call

An analog call is a call initiated on an analog channel.

To transmit, press and hold the [PTT] key and speak into the microphone.

To receive, release the [PTT] key.

5.9.2.1 Non-Signaling Call

A non-signaling call is a call initiated on a channel without signaling, intended for all users on that channel.

Press the ▲/▼ keys to select an analog channel, then press and hold the [PTT] key to initiate a non-signaling call.

5.10. Call in Frequency Mode

In frequency mode, you can initiate digital or analog calls.

Press the [VFO/MR] key to switch to VFO mode, enter the transmit frequency using the numeric keypad, and initiate a digital call in the same way as described in Section 5.9.

5.11. Signaling Call

This radio supports DTMF, 2-Tone, 5-Tone, and BDC1200 analog signaling.

A signaling call is a call initiated on a channel with DTMF, 2-Tone, 5-Tone, or BDC1200 analog signaling, intended for users on the same channel with matching signaling.

Initiating a Signaling Call

Press the ▲/▼ keys to select an analog channel, then press and hold the [PTT] key to initiate a signaling call.

Or press the pre-programmed One-Touch Call key, then press and hold the [PTT] key to initiate a signaling call.

Press the [#] key to switch to manual dial mode, enter the desired number, and briefly press the [PTT] key to start a DTMF call.

Receiving a Signaling Call

When a call with DTMF, 2-Tone, 5-Tone, or BDC1200 analog signaling is received and successfully decoded, you can communicate with the caller within the reset time.

If the hang time is exceeded, re-decoding is required.

5.12. Monitor

In DMR digital standby mode, press the pre-programmed [Monitor] key to enter monitor mode. The speaker will unmute, and the icon, monitored call ID, color code, and call type will be displayed.

Press the [Monitor] key again to mute the speaker and return to standby mode.

Note: In analog mode, noise will be heard when pressing the [Monitor] key if no signal is present.

5.13. DMR Emergency Alarm

The emergency alarm function allows users to request assistance in critical situations.

The alarm can only be activated by pressing the [Alarm] key if the channel is configured with an emergency alarm system.

It can be programmed via CPS as follows:

Off: Alarm function disabled.

Buzzer Only: Local alarm tone only; no alarm signal sent to the control center.

Normal: Audible and visual indications during alarm.

Silent: No audible or visual indications during alarm.

Silent with Voice: No audible or visual indications except for incoming call audio.

Alarm Buzzer: Sends emergency alarm to the control center, then activates local alarm tone with audible and visual indications.

CPS Path: Digital → Digital Alarm System. Channel (or VFO A/VFO B) → Emergency Alarm System.

5.13.1 Initiating an Alarm

Press the pre-programmed [Alarm] key to send an alarm to the pre-programmed contact.

During an emergency or alarm call, if Auto Emergency Call is enabled, you can speak without holding the [PTT] key.

If the number of auto emergency calls exceeds the dealer-programmed limit, press and hold the [PTT] key to initiate another emergency call.

5.13.2 Receiving an Alarm

When an emergency call is received, you can answer it without any operation.

5.13.3 Stopping an Alarm

The caller can stop the alarm in the following ways:

Press the pre-programmed [Alarm] key.

Power off the radio.

The called party can exit the alarm prompt by switching channels or powering off.

5.13.4 Lone Worker

If no operation is performed on the radio within the pre-programmed time during Lone Working, the radio will automatically send an alarm to notify partners or the control center for assistance.

Press the pre-programmed [Lone Worker] key to activate Lone Working.

CPS Path: Common → Optional Features → Lone Worker.

The Lone Worker response time (1–255 minutes), warning time (0–255 seconds), operating mode, and tone can be configured via the CPS programming software.

Lone Worker requires the “Emergency Alarm System” to be configured on a digital channel.

5.13.5 Man Down (Optional Function)

The radio supports the Man Down function.

When activated, if the terminal tilts beyond a specified angle and is not righted within the Man Down delay time, or remains stationary for the delay time, it will send an alarm message to the programmed alarm number.

Move or upright the terminal to exit the emergency alarm.

Press the pre-programmed [Man Down] key to activate the Man Down function.

5.14. VOX (Voice Operated Transmit)

VOX is a voice-activated transmit function. When the microphone detects voice that meets the transmit threshold, the terminal will transmit automatically. You can speak directly without holding the [PTT] key.

To enable or disable VOX for the current channel:

Method 1: Press the pre-programmed [VOX] key.

Method 2: Press [MENU] → Settings → Radio Settings → Other Functions → VOX → VOX Switch.

The icon appears when VOX is enabled.

To adjust sensitivity:

Press [MENU] → Settings → Radio Settings → Other Functions → VOX → Gain Level.

Adjustable range: Level 1–9.

5.15. Encryption

Encryption uses keys to provide end-to-end encryption for voice or data. The receiver can only decrypt the signal if it uses the same key, preventing eavesdropping.

Encryption types:

None: Encryption disabled.

Custom Encryption: Up to 14 characters. CPS auto-fills with 'F' to 14 characters if shorter.

ARC4: Up to 10 characters. CPS auto-fills with 'F' to 10 characters if shorter.

AES128: Up to 32 characters. CPS auto-fills with 'F' to 32 characters if shorter.

AES256: Up to 64 characters. CPS auto-fills with 'F' to 64 characters if shorter.

Key values consist of digits (0–9) and letters (A–F).

CPS Path: Digital → Encryption System. Channel (or VFO A/VFO B) → Digital Channel → Digital → Encryption → Encryption Key.

Only one encryption type can be assigned to the radio at a time.

To decrypt an encrypted call or data transmission, the receiving radio must be pre-programmed with the same **Encryption Key** as the transmitting radio.

If the radio receives an encrypted call with a different key, key value, or key ID, distorted audio will be heard.

Press the pre-programmed [Encryption] key to toggle encryption on or off.

The icon appears when digital encryption is enabled.

In normal mode, encryption applies to the current channel. Encryption is enabled automatically when switching to that channel.

Chapter 6. MAIN MENU FUNCTIONS

This radio menu features an **auto reset function**. If no menu operation is performed within the pre-programmed time (menu reset time), the device will automatically return to the standby interface.

No main regional menu in DMR and VFO modes.

Only **Scan** and **Settings** main menus in Analog and VFO modes.

No submenus for CTCSS/DCS, step frequency, or analog-function menus/submenus in DMR and MR modes.

Only **Scan**, **Zone**, and **Settings** main menus in Analog and MR modes; no DMR-function menus or submenus.

When describing menu operations in this document, only the **menu item sequence** is provided.

Example: The path to enter the Contact List is **Contacts → Contact List**.

Via CPS software:

Common → Optional Features → Menu

This allows you to enable or disable all or part of the radio menus. Check the menu options to be made available and write them to the radio.

Basic Menu Operations

Press the [MENU] key to enter the main menu (1st-level menu).

Press the ▲/▼ keys to navigate to the desired submenu (2nd-level menu).

Press the [MENU] key to enter the 2nd-level menu, then press the ▲/▼ keys to navigate to the desired submenu (3rd-level menu).

After selecting a 3rd-level menu or option parameter, you have two choices:

A. To confirm the selection, press the [MENU] key. This saves your setting and returns to the previous menu level.

B. To cancel changes, press the [BACK] key. This resets the menu item and returns to the previous menu level.

To exit the menu at any time, press the [A/B] key.

Menu Shortcut Operation

Via CPS software:

Common → Key Function → One-Touch Operation

Define "Function key + Numeric key" as menu shortcut operations.

Press and hold the [MENU] key, and a prompt will pop up on the screen saying "Please press a numeric key to enable the one-touch function". Press the corresponding numeric key to enter the pre-programmed shortcut menu.

Chapter 7. Broadcast AM/FM/SW/LW/RDS Radio Receiver



Notes for use!

1. The radio function of this device is an optional function (not standard function), please note.
 2. The radio function supports FM/AM modulation mode. For more radio operation and radio accessories purchase, please contact your dealer.
 3. Before using the radio function of this equipment, you must install the full-band antenna and install it firmly and reliably.
- FM frequency range: 65-108MHz.

Appendix A. – Trouble shooting guide

Phenomena	Analysis	Solution
You cannot turn on the radio.	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 dirty or damaged battery contacts.	Clean the battery contacts or replace the battery.
During receiving, the voice is weak or intermittent.	The battery voltage maybe low.	Recharge or replace the battery.
	The volume level may be low.	Increase the volume.
	The antenna maybe loose or maybe installed incorrectly.	Turnoff the radio, and then remove and reattach the antenna.
	The speaker maybe blocked.	Clean the surface of the speaker.
You cannot communicate with other group members.	The frequency or signaling type maybe inconsistent with that of other members.	Verify that your TX/RX frequency and signaling type are correct.
	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 maybe 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 unfavorable 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.
The radio keeps transmitting.	VOX may be turned on or the headset is not installed in place	Turn off the VOX function. Check that the headphones are in place.

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

Appendix B. – Shortcut Menu operations

Menu		Name		Setting	Description
1	BANK	1	BANK 1	Channel1-Channel1 00	A Bank is a group of channels grouped together. The radio has 10 Banks. A Bank can have the maximum of 100 channels.
2	SCAN	1	Freq Ranger	NNNNnnn	Input VFO range lower and upper frequency
				Time	Time Operation - scanning will resume after a fixed time has passed
		2	Scan Mode	Carrier	Carrier Operation -scanning will resume after the signal disappears
				Search	Search Operation -scanning will not resume
				CTCSS	Search within CTCSS Tone (Rang 67-254.1, A total of 50 groups)
		3	Scan SubCode	DCS	Search within DCS Code (Rang 023N-754I, A total of 210 groups)
				ALL	RX_TX are saved (default is all, encoding and decoding are the same)
				DECODER	Save only in Transmitter CTCSS/DCS
3	Bluetooth	1	BT Mode	ENCODER	Save only in Receiver CTCSS/DCS
				OFF	Turn off the Bluetooth function
				Bluetooth Data	Turns on the Bluetooth programming radio feature. The status bar displays the Bluetooth icon
		2*	BT device	Bluetooth Audio	Turn on Bluetooth audio (BLE) mode, press and hold the Bluetooth PTT button to control transmit and receive, send and receive calls via Bluetooth headset
					Search for Bluetooth devices. *This option is not available when Bluetooth mode is set to OFF or Bluetooth data function.
					Set the volume of Bluetooth reception, adjust it to a comfortable level, 1-5 levels can be selected. *This option is not available when Bluetooth mode is set to OFF or Bluetooth data function.
		3*	BT Voice	1~5	Set the microphone sensitivity of the Bluetooth device, adjust to a comfortable level, 1-5 levels selectable. *This option is not available when Bluetooth mode is set to OFF or Bluetooth data function.
				1~5	
4	Radio Setting	1	Step	2.5-100K	Selects the amount of frequency change in VFO/Frequency mode when scanning or pressing the ▲ or ▼ keys.
		2	Squelch	OFF, LEVEL1-LEVEL5	Squelch silences the receiver when there is no signal. Setting the squelch to 0 will open up the squelch entirely.
		3	Power Save	OFF	Turn off radio sleep. The battery consumption is large, and the standby time may be shortened

		ON	Turn on radio sleep. Turning on is more power efficient, but you might miss the first few syllables before the RX turns on.
4	VOX Switch	OFF	Turn off the radio VOX.
		ON	Turn on the radio VOX.
5	VOX Level	LEVEL1-LEVEL9	When enabled it is not necessary to push the [PTT] button on the transceiver. Adjust the gain level to an appropriate sensitivity to allow smooth transmission.
6	VOX Delay	0.5.....2.0s	When the VOX is enabled, set up the VOX delay to help to extend the transmission time to avoid stopping a transmission too early. 0.5s-2s, Step 0.1 second. a total of 16 times offered.
7	TOT	OFF	Allow continuous launch, launch time is not limited
		15;30;45...180	Maximum allowed time for transmission while holding down the PTT key.
8	TOA	OFF	Disable TOA function
		1.....10	Activate TOA function. Range 0 – 10 seconds, Step 1 second.
9	Voice	OFF	Disable voice prompts
		ON	Activate voice prompts
10	Language	Chinese	Display menus and voice prompts in Chinese language
		English	Display menus and voice prompts in English language
11	ROGER	OFF	Disable ROGER function. Release PTT key without ROGER audio.
		BEEP	Activate the ROGER function. Sends an end-of-transmission tone to indicate to other stations that the transmission has ended.
		TONE 1200	Similar to MDC1200 signaling end tone
12	Beep	OFF	Disable key confirmation tone.
		ON	Activation key to confirm tone. Allows audible confirmation of a key press
13	BackLight	ALWAYS ON	The backlight is always on.
		5.....20	Set the backlight off time in no-operation delay time. 5-20, step value is 5.
14	Power on Display	PICTURE	Show preset picture when radio is on
		VOLTAGE	Display battery voltage when radio is on
15	Dual Watch	OFF	Disable dual table, dual receive.
		ON	Monitor [A] and [B] at the same time. The display with the most recent activity ([A] or [B]) becomes the selected display.
16	AutoLock	OFF	Disable automatic keypad lock. Allow manual keypad lock (press and hold the  key to lock/unlock the keyboard)

		ON	When ON, the keypad will be locked if not used in 8 seconds. Pressing the  key for 2 seconds will unlock the keypad.
17	Alarm Mode	On Site	Sounds alarm through your radio speaker only
		Send Sound	Transmits a cycling tone over-the-air
		Send Code	Transmits '119' (911 in reverse) followed by the ANI code over-the-air
18	Alarm Tone	OFF	The radio speaker blocks the alarm sound.
		ON	The radio speaker sounds an alarm
19	ANI-Edit	100	View the ANI ID, and if necessary, will allow to change the ANI ID
20	DTMF-ST	OFF	No DTMF Side Tones are heard
		DT-ST	Side Tones are heard only from manually keyed DTMF codes
		ANI-ST	Side Tones are heard only from automatically keyed DTMF codes
		DT+ANI	All DTMF Side Tones are heard
21	PTT-ID	OFF	No ID is sent.
		BOT	The selected S-CODE is sent at the beginning
		EOT	The selected S-CODE is sent at the ending
		BOTH	The selected S-CODE is sent at the beginning and ending
22	PTT-DLY	100-3000ms	Signal code sending delay. PTT-ID Delay (milliseconds)
23	ALERT	1000Hz	The following configurations will transmit accordingly: PTT + SK2 = Transmits 1000Hz Tone Burst
		1450Hz	PTT + SK2 = Transmits 1450Hz Tone Burst
		1750Hz	PTT + SK2 = Transmits 1750Hz Tone Burst
		2100Hz	PTT + SK2 = Transmits 2100Hz Tone Burst
24	TAIL	OFF	Disable Squelch Tail Elimination.
		ON	Enable Squelch tail elimination. to prevent any squelch tails from being heard.
25	MENU EXIT TIME	5-60S	After entering the menu, start the menu reset timer. If there are no panel keys, PTT keys, or menu related programmable key operations before the timer overflows, exit the menu.
26	Press SK1	FM Radio	FM radio on/off
		SCAN	Scan on/off
		SEARCH	Search on/off
		VOX	VOX on/off
		LAMP	Flashlight on/off

5	Program Channel			SOS	Alarm on/off
		27	Reset	VFO MODE	Reset the radio's VFO menu to factory defaults (no reset for bank, scan settings)
				RESET ALL	Resets the radio to factory defaults, with some exceptions.
		1	CH.NAME	Channel 1	View channel name, allows to rename the current channel. Press the [#z] key to switch the input method, allowing the input of letters, numbers and symbols.
		2	RX Frequency		View the current channel Receiver frequency.
		3	TX Frequency		View the current channel Transmitter frequency.
		4	Trans Power	High	Selects between HIGH transmitter power when in VFO/Frequency mode.
				Low	Selects between LOW transmitter power when in VFO/Frequency mode.
		5	Bandwidth	Wide	Wideband (25 kHz bandwidth) FCC not supported
				Narrow	Narrowband (12.5 kHz bandwidth)
		6	RX CTCSS	OFF;67-254.1	Mutes the speaker of the transceiver in the absence of a specific and continuous sub-audible signal. If the station you are listening to does not transmit this specific and continuous signal, you will not hear anything.
		7	RX DCS	OFF;023N-754I	Mutes the speaker of the transceiver in the absence of a specific low-level digital signal. If the station you are listening to does not transmit this specific signal, you will not hear anything.
		8	TX CTCSS	OFF;67-254	Transmits a specific and continuous sub audible signal to unlock the squelch of a distant receiver (usually a repeater).
		9	TX DCS	OFF;023N-754I	Transmits a specific low-level digital signal to unlock the squelch of a distant receiver (usually a repeater).
		10	Encryption	OFF	Disable encrypted mode, your conversations are not private.
				ON	Activating encryption mode ensures the privacy of your conversations. To use the Encryption function, the other part of the radio must also have Encryption activated and must be tuned on the same DCS code.
		11	Signaling	1-20	Selects 1 of 20 DTMF codes. The DTMF codes are programmed with software and are up to 3 digits each.
		12	CH-MDF	NAME	MR/Channel mode is displayed in NAME format. Note: NAME allows CPS program or edit in the channel name (Munu 1) .
				FREQ	MR/Channel mode is displayed in frequency format.
				CH	MR/Channel mode is displayed in CH format.
		13	SP-Mute	QT	when radios is set in this mode, the monitor feature is activated only when the radio receives the correct CTCSS/DCS.
				QT*DTMF	• QT*DTMF: the monitor is activated when the radio receives the correct

					CTCSS/DCS or the correct DTMF code.
		14	SCAN ADD	OFF	Forbid the current channel to join the scan group.
				ON	Add the current channel to the scan group.
		15	Busy Lockout	OFF	The [PTT] button on the channel is always allowed.
				ON	Disables the [PTT] button on a channel that is already in use. The transceiver will sound a beep tone and will not transmit if the [PTT] button is pressed when a channel is already in use.
		*13	OffSet		Specifies the difference between the TX and RX frequencies
		*14	Direction	None	TX = RX (simplex). Disable access to repeaters in VFO/Frequency mode
				Plus	Plus frequency shift direction. TX will be shifted higher in frequency than RX
				Minus	Minus frequency shift direction. TX will be shifted lower in frequency than RX
		16	CH_Memory	CH001-CH100	This menu is used to either create new or modify existing channels (1 through 100) so that they can be accessed from MR/Channel Mode.
6	Fall Down	17	CH_Delete	CH001-CH100	This menu is used to delete the programmed information from the specified channel (1 through 100) so that it can either be programmed again or be left empty.
		1	Trigger Mode	Off	Disable Man Down Function
				Tilt	When the radio tilts at or over the preset Trig Tilt Gradient over the Trig Entry Delay Time, it will enter the Man Down mode automatically.
				Motionless	When the radio is motionless or takes uniform rectilinear motion (reference object: the ground) over Trig Entry Delay Time, the radio will enter the Man Down mode automatically.
				Tilt or Motionless	When the radio tilts at or more than Trig Tilt Gradient or is motionless over Trig Entry Delay Time, it will enter the Man Down mode automatically.
		2	Tilt Angle	75°, 60°, 45°, 30°	The radio will have real-time detections of its tilt degrees off the vertical. When the radio's degree off the vertical exceeds Tilt Gradient, the radio will enter Man Down mode automatically.
		3	Cur dly time	10 – 255s	This option allows users to set the interval between radio falling down and alarm activation. The alarm will not be activated if users place the radio upright within the interval.
		4	Pre cue time	10 – 254s	After you Man Down the radio and within Trig Entry Delay Time before the emergency mode is activated, the radio will pre-alert you to the situation.
7	Radio Info	Radio ID\Firmware\Hardware			Displays radio ID, firmware version, hardware version. to check the radio information.

Appendix C. - Technical Specifications

General

Item	Specification
Frequency Range	Receiving: 136–174 MHz / 400–470 MHz / 65–108 MHz / AM 108–136 MHz Transmitting: 136–174 MHz / 400–470 MHz
Memory Channels	4000
Zones	250
Scan Lists	32
DMR Contacts	800 (Favorite) / 50000 (.CSV)
Receive Groups	32
Quick Messages	20
Frequency Stability	±1.0 ppm
Operating Temperature	-20°C ~ +60°C
Operating Voltage	DC 7.4 V ±20% (Rechargeable Li-ion Battery)
Dimensions	133 × 61 × 34 mm (excluding antenna)
Weight	269 g

Transmitter

Item	Specification
RF Power	≤ 5 W
Transmit Current	Analog ≤ 2.6 A; Digital ≤ 1.2 A
Standby Current	≤ 0.15 A
FM Modulation	16K0F3E @ 25 kHz; 11K0F3E @ 12.5 kHz
4FSK Digital Modulation	7K60FXD (Data only, 12.5 kHz) 7K60FXE (Data & Voice, 12.5 kHz)
Modulation Distortion	< 5%
S/N Ratio (Wide/Narrow)	≥ 45 dB @ 25 kHz; ≥ 40 dB @ 12.5 kHz
Adjacent Channel Power	≤ -65 dB; ≤ -60 dB
Audio Response	+1 ~ -3 dB
Spurious Emissions	9 kHz–1 GHz: ≤ -20 dBm 1 GHz–12.75 GHz: ≤ -20 dBm
Digital Protocol	ETSI TS 102 361-1, -2
Vocoder Type	AMBE+2™

Receiver

Item	Specification
Analog Sensitivity	-122 dBm (12 dB SINAD)
Digital Sensitivity	-120 dBm (BER ≤ 5%)
Audio Output Power	1 W
Audio Distortion	< 10%
Audio Response	+1 ~ -3 dB
Spurious Response Rejection	≥ 70 dB
Intermodulation Rejection	≥ 58 dB
Adjacent Channel Selectivity	≥ 60 dB
Receive Current	≤ 380 mA
FM Noise	≥ 45 dB @ 25 kHz / ≥ 40 dB @ 12.5 kHz

*All specifications are subject to change without prior notice or liability.

NOTE: All specifications may be modified without prior notice or liability. Thank you.

Disclaimer

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