

User's Guide



VHF
Transceiver
DM-4100p
DM-4200p

UHF
Transceiver
DM-4400p

Version #1 (2025-11-26)

X-Radic

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1. DM-4000p Series Main Features

The Digital Vehicle DM Series is a high-power vehicle walkie-talkie with a simple and perfect design and a 2.2-inch TFT LCD that clearly displays the operation of the walkie-talkie.

This equipment is FCC, IC, CE, and KC certified and can be used anywhere in the world, and it can be used as a repeater and fixed station with a single frequency repeater (SFR) function built in.

The external 15-pin accessory connector can be used for various service purposes.

The main features of the DM-4000 series are.

- Dual-mode(Analog & DMR) Operation
- 1,024 Channel Capacity; 64 Zones (1zone = Max 1024 Channels)
- 5 ~ 50 Watt RF Power Setting
- IP Text Messages(Individual, Group)
- IP Location Messages.
- Dual Slot DMO.
- Repeater Activation.
- Individual Call(OACSU, FOACSU)
- Group Call.
- Call Queue(Received Message, Missed Call, Status Call)
- Call Alert.
- Channel Authorization.
- Emergency Call / Alert.
- Remote Monitor / Remote Check.
- Talk around.
- Time-Out Timer (TOT)
- Transmit Interrupt (Option)
- Lone worker.
- Ignition Sense Wiring.
- SFR(Single Frequency Repeater) - (Option)
- Multiple Scan Modes
- Internal 5Watt, External 10W Audio output
- CTCSS/DCS
- Analog Monitor/Squelch Override.
- Multiple Squelch
- 200 x 480 dots TFT LCD Display
- FCC, IC, CE & KC Certified.
- DC+13.8 $\pm$ 15% Power Source

2. Specification

2.1 DM-4000p Series

2.1.1 General

Frequency Range	DM-4100p VHF: 136 ~ 174 MHz DM-4400p UHF: 406.1 ~ 470 MHz
Frequency Stability	±1.0ppm (-30 to +60°C)
Programmable Channels	1,024 Channels
Zone	64 (1 Zone = Max 1,024 CH)
Channel Spacing	Dual Channel Spacing 12.5/25 KHz
Dimensions	103mm (H)×52mm (W)×32mm (D)
Weight	1.1Kg
Power Source	DC +13.8 V
Current Drain (maximum)	Receive mode, rated audio out –1A (Audio Max) Transmit mode – 11A Standby mode – 300mA

2.1.2 Receiver

Sensitivity	0.25uV 12 dB SINAD
Adjacent Channel Selectivity	65dB (12.5KHz), 70dB (25KHz)
Intermodulation Response Rejection	65dB
Blocking	86dB
Spurious and Harmonic Rejection	-36 dBm (< 1GHz) -30 dBm (> 1GHz)
Audio Output Power	Internal: 5 Watt across an 8Ω load, External: 10 Watt across an 8Ω load
Audio Distortion	Less than 15% at rated Max output
Audio Response	+1, -3 dB

2.1.3 transmitter

RF Power Output	5 ~ 50 W(DM-4100p) , 5 ~ 40 W(DM-4400p)
Adjacent Channel Selectivity	65dB
Spurious and Harmonic	-36 dBm (< 1GHz) -30 dBm (> 1GHz)
Audio Distortion	3% maximum with 1KHz modulation +1, -3dB
Audio Frequency Response	50Ω
Output Impedance	

2.1.4 Environmental

Military Standard	-
Dustproof & Waterproof	IP54

3. DM-4000p Series Appearance

3.1 DM-4000p Series Appearance Name



* The 15-pin D-SUB connector is an administrator port.

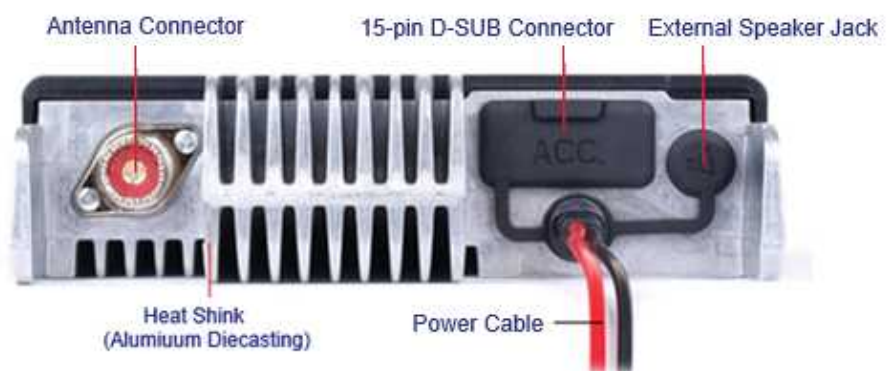


Figure 2-1) DM-4000p Series Key Names

3.2 DM-4000p Series Appearance Size

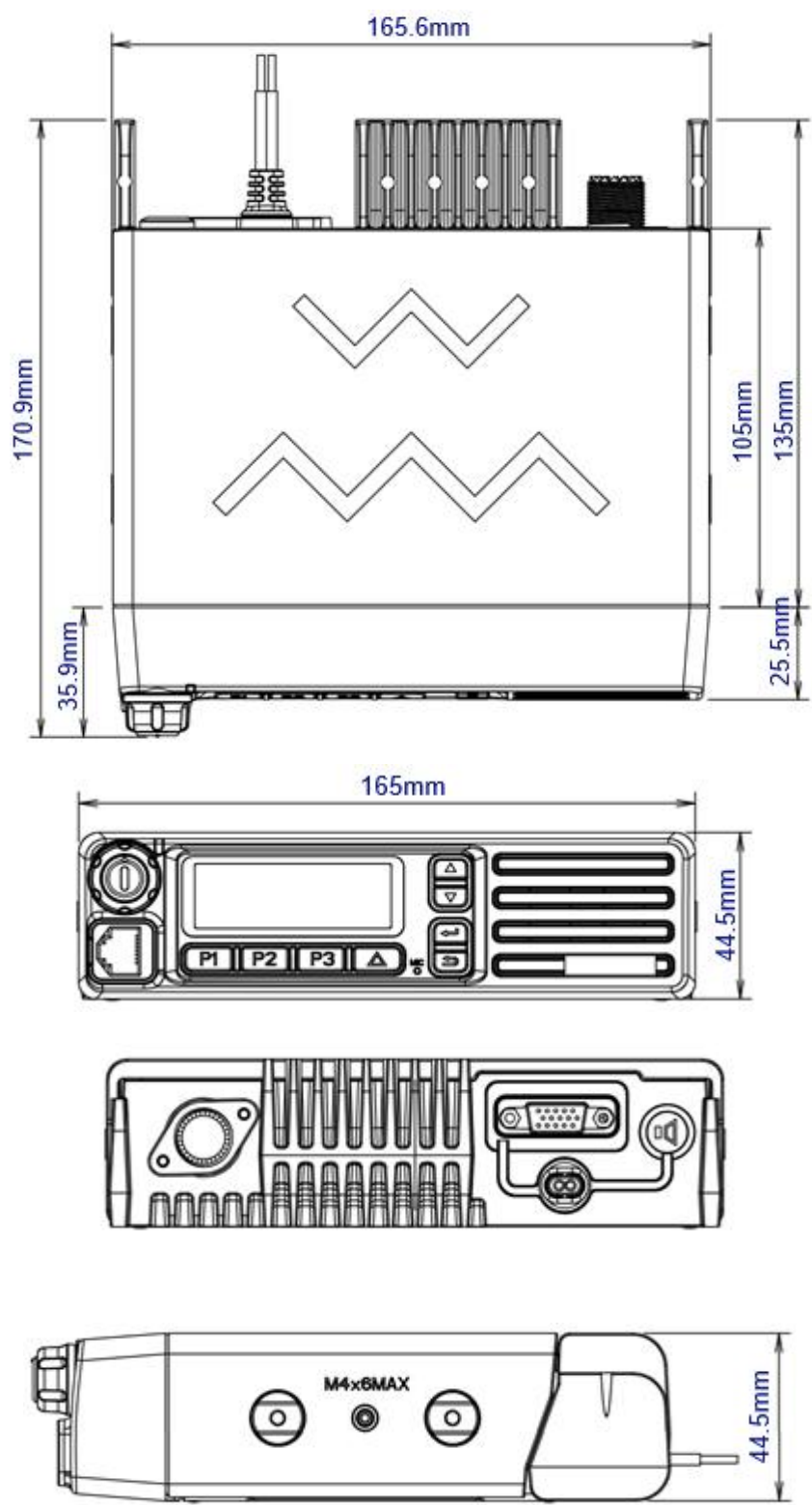


Figure 2-2) DM-4000p Appearance Size

3.3 DM-4000p Series Wiring and Installation Method

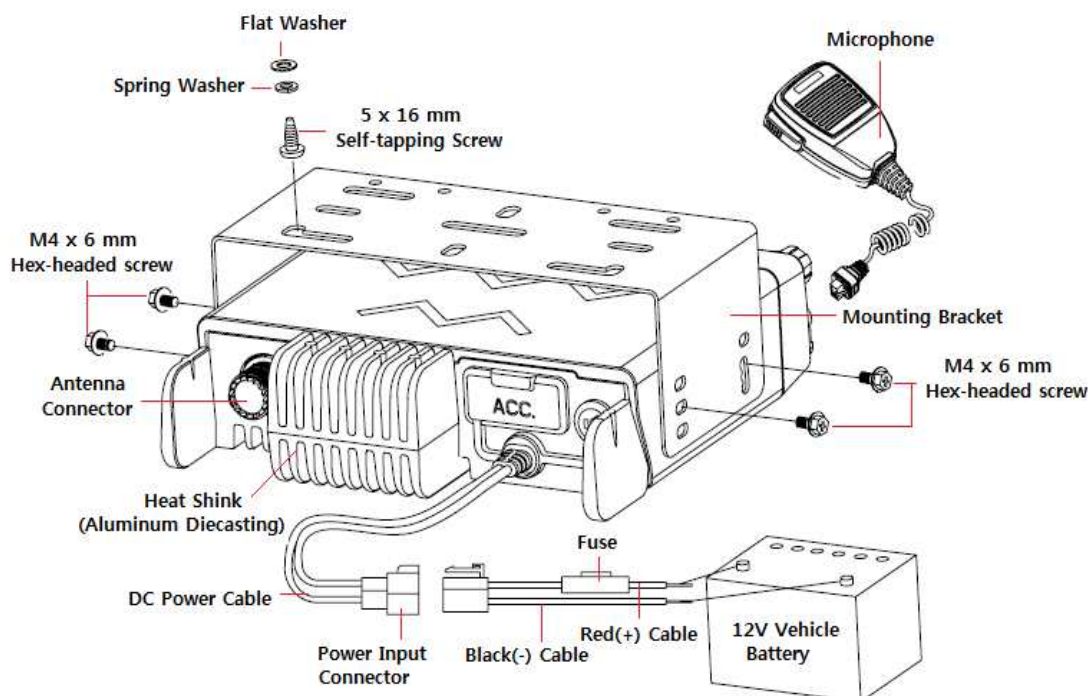


그림 2-3) DM-4000p 시리즈 연결방법

3.4 Supplied Accessories

The components of the DM series are as follows.

DC power cable

- 15A Fuse(XM-1000, PM-2000) ----- 1

Mounting Bracket ----- 1

Screw set

- | | | |
|--------------------------------|-------|---|
| • 5 x 16 mm self-tapping screw | ----- | 4 |
| • Hex-headed screw with washer | ----- | 4 |
| • Spring washer | ----- | 4 |
| • Flat washer | ----- | 4 |

Microphone(with cable)

- ACC 708 ----- 1

Microphone hanger(with 4 x16 mm self-tapping screws)	-----	1
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Instruction manual ----- 1

3.5 Terminal Description

3.5.1 ACC(D-SUB 15 Pin Connector)

Pin NO	Pin Name	Description	Specification	I/O	Remake
1	RSSI	DC Power Output	0.6~1.4V	O	
2	IGN	Ignition Signal Input	Power ON : ↑ 8V Power OFF : ↓ 6V R79 is selection	I	
	LSP	Low Speed Data	R12 is selection		
3	EXT_SPK	Loudspeaker Output	10Ω, 8Watt	O	
4	AF_OUT	Audio Output	500mV	O	
5	EXT_MIC	Audio Input	5 kΩ	I	
6	TXD/FCN1	TX Serial Data	3.3V TTL	O	
7	RXD/FCN2	RX Serial Data	3.3V TTL	I	
8	EXT_PTT	External PTT	3.3V(H) : PTT OFF 0V(L) : PTT ON	I/O	
9	F_AUDIO	IF IC Output	100mV	O	
10	COR/COS	Squelch Output	S.Q ON : 3.3 V S.Q OFF : 0V	O	
11	EXT/INPUT	Programmable	High Impedance	I/O	
12	DC+5V	DC Power Supply	DC+5V Max 100mA	O	
13	HR1	Horn Alert Signal Output	Max 3A	O	
14	HR2	Horn Alert Signal Output	Max 3A	O	
15	GND	Ground	Ground	-	

3.5.2 Microphone Jack

Pin NO	Pin Name	Description	Specification	I/O	Remake
1	MBL	Backlight of Microphone	-	O	
2	DC+13.6V	DC Power Output	13.6±15%	O	
3	GND	Ground	Ground	-	
4	PTT/TXD0	PTT/PC Serial Data	3.3V TTL	I	
5	ME	MIC Ground	MIC Ground	-	
6	MIC	MIC Signal Input	600Ω	I	
7	HOOK/RXD0	HOOK/PC Serial Data	3.3V TTL	I	
8	DM	MIC Data Detection	High Impedance	I/O	

3.5.3 Speaker Jack(3.5mm Phone Jack) 5Watt/8Ω

Pin NO	Pin Name	Description	Specification	I/O	Remake
1	SPO	External Speaker Output	5Watt/8Ω	O	
2	GND	Ground	Ground	O	

3.5.4 DC Input Power Connector

Pin NO	Pin Name	Description	Specification	I/O	Remake
Red	DC+13.6V	DC Power Output	13.6±15%	I	
Black	GND	Ground	Ground	I	

3.5.5 Antenna Connector

Impedance is 50Ω

4. DM-4000p Series Description

The DM-4000p series digital vehicle body button definition is shown in Figure 4-1).



4.1 Power ON/OFF Volume Switch

Pressing the power ON/OFF volume switch for more than 2 seconds turns the logo on to the LCD with the start sound and turns on the radio. Pressing the power ON/OFF switch for more than 2 seconds with the radio on will turn off the power with the message "Goodbye". With the radio on, the volume increases when the power ON/OFF switch is turned clockwise, and the sound decreases when the power ON/OFF switch is turned counterclockwise.

Additional) When the power on/off volume switch is pressed briefly (less than 1 second) while the power is on, You can change the zone. You can move the zone as it grows one by one each time you press the button.

4.2 PTT button

Press the PTT button to enter the transmit mode and release to enter the receive mode. In order to transmit good sound quality, it is recommended to keep a gap of about 5-10 cm from the microphone and speak.

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4.4 PTT button

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4.4 Menu Button

To enter the menu tree as displayed in Figure 4-2, press the MENU button. Press the ▲ to move to the right and press ▼ to move to the left. To enter the submenu, press the MENU button one more time.

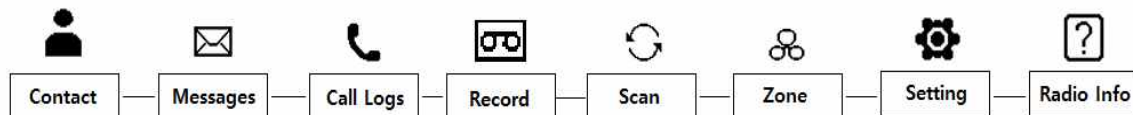


Figure 4-2) DM-4000p Series Menu

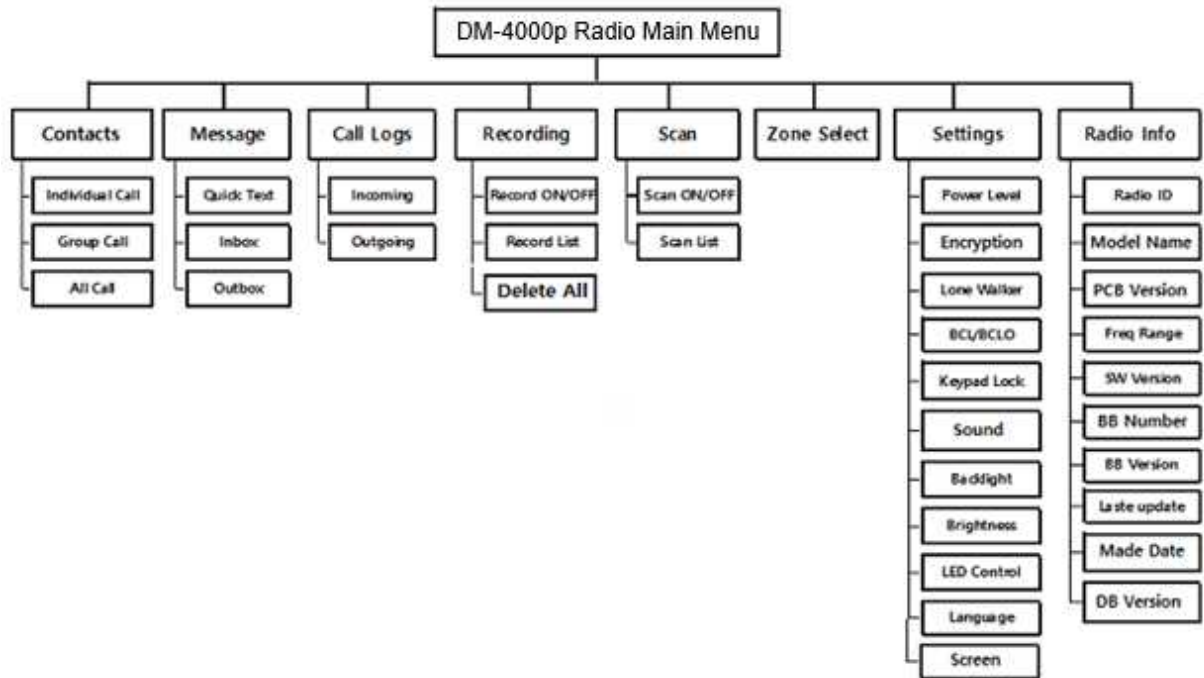


Figure 4-3) DM-4000p Series Menu Tree

4.5 Move menu ▲/▼ button and channel ▲/▼ button

After pressing the menu button, press the ▼ button to move the menu sequentially, and press the ▲ button to move the menu in reverse. Pressing the menu button on the selected menu to select the selected menu.

With the radio on, press the ▲ button to increase the channel sequentially, and press the ▼ button to decrease the channel.

4.6 menu exit button

Press the menu exit button to return to the initial state from the current menu.

4.7 Programmable buttons (P1, P2, P3, ▲)

It is a button created to provide user convenience, and function assignment can be set by the CPS program.

4.8 Emergency microphone

The emergency microphone is a microphone provided for temporary use in the event of a sudden failure of the vehicle's hand microphone.

The emergency microphone PTT allocation is set by the program, and among the normal buttons, the user can designate and use the convenient button as the CPS program.

4.9 External Connection Connection

The external connection connector is the connector used to use the vehicle hand microphone or to perform CPS programs and radio Firmware UP Grades.

4.10 Status LED

This is an LED indicating the operational status of this equipment. The main status indicators are as follows.

- ① Red on normal transmission
- ② Green on normal reception
- ③ If the frequency is correct and the color code is not correct and is not received, the green will flash.
- ④ If it is a low battery counterpart, it will flash red and produce an alarm.

5. How to use DM-4000p series

5.1 Menu Description

Press the menu button in front of you to enter menu mode. There are eight main menus in menu mode, and you can use the walkie-talkie more conveniently by setting it according to your usage and environment.

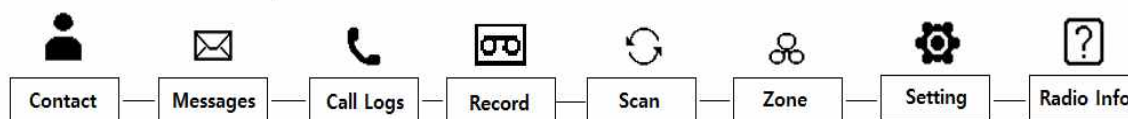


Figure 5-1) DM-4000p Series Menu Configuration

⚠ Caution) If you do not operate for more than 25 seconds after entering the menu, the menu mode is automatically terminated and switched to the receiving mode.

5.1.1 Contact

You can make a call by setting the outgoing contact (set as a CPS program) set on the radio and pressing the PTT button. If you want to make a call with another registered contact, you can make a call

by selecting a contact in the contact list and pressing the PTT button.

The contact lists in the menu can be registered/deleted using the Customer Programming Software (CPS) program.

When you enter the Contacts menu, a list appears, divided into individual, group, and All Call contacts.

☞ ICON shown in the Contact List

-  : Individual contact list (individual calls, individual messages can be sent)
-  : Group Contact List (Group Call, group messages can be sent)
-  : All contacts list (terminals with the same channel and Color Code can be used)

5.1.2 Messages

When a new message arrives in receive mode, the message will be displayed on the LCD and displayed in ICON form when a new message arrives while in menu mode.

The Message menu provides three additional menu functions: Simple Message, Inbox, and Outbox.

1) a simple message

A total of 40 messages can be registered using the CPS program, and up to 40 characters can be edited for one message.

If you select a simple message menu, you can view the registered message, and if you select the message you want to send, you can view the message content by pressing the menu button.

Press the menu button again to send the selected message to the registered device.

2) an inbox.

You can receive a total of 10 messages in your inbox. Select what is saved in the list to view the messages you receive.

Incoming messages are managed as 10 and if there are more than 10, the first received messages are erased and registered.

If you want to delete incoming messages, you can select and delete the entire Delete menu.

3) an outgoing letter.

You can store a total of 10 messages in your mailbox. When you select the content saved in the list You can view the messages sent.

Outgoing messages are managed as 10 and if there are more than 10, the messages sent first are erased and registered.

If you want to delete outgoing messages, you can select and delete the entire delete menu.

5.1.3 Call Logs

This menu only saves individual call history. Group, all call call history is not saved. Message content is managed in the message inbox.

1) an inbox

You can store a total of 10 call histories in your inbox. You can view the other party's ID that you receive from the list.

Up to 10 inboxes are managed, and if there are more than 10, the received history is erased and registered first. If you want to delete the inbox history, you can select and delete the entire delete menu.

2) an outgoing letter.

You can store a total of 10 call histories in your mailbox. You can view the ID of the sender in the list.

Up to 10 mailboxes are managed, and if there are more than 10, the history sent first will be erased and registered. If you want to delete the mailbox history, you can select and delete the entire delete menu.

5.1.4 Record a call

Call recording is a function of storing incoming and incoming call content. If you do not need a recorded content, you can delete it entirely.

The call content list can store up to 63 calls, and one call history is limited to about 160 seconds.

If you want to use the call recording feature, you can choose from Settings.

5.1.5 Scan

When the scan action is turned on in the scan menu, the scan starts in the order of the channels set in the scan list. If there is a channel used during the scan, it stops and receives the content.

If you want to make a call during the scan, you can set the CPS program to suit your usage.

1) Scan ON/OFF

Select Scan Settings, Scan Unscan from the menu and go to depth mode to operate.

2) Scan list

The scan list can be set up using the CPS program.

5.1.6 Currency Zone (ZONE)

ZONE can create up to 64 channels and register 1,024 channels per ZONE.

The ZONE designation method is available in the CPS program.

5.1.7 Setting

This is a menu that sets the various states of the radio. Settings include transmit output, voice encryption, Lone Walker, BCL/BLCO, keypad lock, sound, back, clarity, LED setting, language, screen setting, etc.

1) Transmission output

It is a function to set the radio transmission output in five stages.

2) Voice Encryption

It is a function that encrypts transmitted and received voices.

The voice encryption function can be set up for each channel on any digital channel.

The voice encryption code is set by the CPS program and provides 128/192/256 bit encryption.

3) Ron Walker

It is a function that informs the other party of their safety within the time set by the user on the menu.

The setup time is supported from 1 to 100 minutes.

4) BCL/BCLO

It is a function that restricts transmission to avoid disturbing users on the channel they are currently using.

-. Digital mode

When set to BCL on, limits transmission when the channel is in use.

-. Analog mode

If the BCL is ON and the BCLO is OFF, restrict the transmission when the channel is currently in use.

If the BCL is ON and the BCLO is ON, it is sent when it matches the tone received.

5) button lock

It is a function that limits the operation except for the minimum necessary buttons to prevent unnecessary device manipulation by the user.

When the button is locked on, all keys except PTT buttons, emergency buttons, and power ON/OFF buttons are locked.

The button lock temporarily releases can be used by pressing the user-defined button (default button) for a long time (about 2 seconds) and returns to the button lock state after a certain period of time (set by the user) after the last button is entered.

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The button lock temporarily releases can be used by pressing the user-defined button (default button) for a long time (about 2 seconds) and returns to the button lock state after a certain period of time (set by the user) after the last button is entered.

2) sound

Sound effect setting function of this device. It has volume, call connection sound, message sound, button sound, start sound, microphone input, and fixed volume menu.

- . Volume

You can set the sound volume associated with the sound effects of the walkie-talkie (release, low, medium, loud)

-. Call connection sound

You can set the sound effect when the radio transmits/receives calls. (Release, set)

-. Message sound

You can set the sound effect when sending/receiving messages. (Disable, set)

-. the sound of a button

You can set the sound effect when the button is operated on the walkie-talkie. (Release, set)

-. the beginning sound

You can set the sound effect when the radio is turned on/off when it is loud. (Release, set)

-. Microphone input

You can adjust the volume of sound input from the walkie-talkie to the microphone.

(small, basic, large, larger)

-. Fixed Volume

The volume button on the walkie-talkie can't adjust the button, and the volume is always at a fixed value

This is the menu you set when you want to fix it.

3) Rear light (OLED LCD BACKLIGHT)

It is a function that turns on/off the TFT LCD backlight..

4) TFT LCD Contrast

It is a function to adjust the brightness of the TFT LCD screen, and you can set it from 1 to 7.

5) Status Display LED Settings

With the function of setting the status display LED, detailed settings can be made using the CPS program.

6) Language

This is the function of selecting the language for the menu of this device.

7) Screen Settings

The waiting screen for reception can be set and used according to the user's convenience among three types of screen 1, screen 2, and screen 3.

5.1.8 Radio Information

This menu shows the information of this device.

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with a minimum distance of 141 centimeters between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

a. Rule Part 15.19(a)(3): This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

b. Rule Part 15.21: The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital

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

6. Precautions

6.1 Matters affecting the performance of the equipment.

	Don't remove the antenna from the radio and don't modify the antenna or make any changes to the antenna. Strong electronic waves emitted from the radio can have an effect on the performance of the radio if the antenna is modified and can cause the radio to have a defect not covered under warranty.
	Don't use other manufacturer's accessories (such as rechargeable batteries, adapters, external speaker microphone and earphone, etc.). Unknown or unauthorized accessories may damage the radio and void the warranty.
	Don't disassemble or reorganize the radio. The disassembly or reorganization of your radio is punishable by law and can cause damage to the radio that will not be covered by the warranty.
	Don't use frequencies you do not have a permit for. Unauthorized frequencies is punishable by law.
	Avoid excessive shock to the radio. Don't place the radio where the direct sunlight, humidity and/or the high temperature occurs, battery damage can occur in this environment.

6.2 Influences to the operations of Radio or other Equipment

The Radio emits a strong electronic wave which may have an effect on the operation of other equipment and can also be affected by those other devices.

	If using radio in an area where medical equipment is being used, please get permission from relevant staff to prevent interference issues.
	Be careful when using your radio in a place where computers or other electronic devices are being used because the strong electronic waves from the radio can affect this equipment.

7. Safety Notes

Please make sure to read the followings for safe and effective use of the Radio.



- Do not touch antenna if it is damaged. Risk of skin burn can occur if the outside surface of antenna gets stripped out.
- Please be careful when putting the battery in a pocket or a bag. If you contact a conductive metal to a battery terminal, there is a heat and fire risk to your radio.
- Please don't listen to the radio at a high-volume level when using earphones. Loud volume may have a lasting bad effect on your hearing.
- It is recommended to adjust the volume step by step to the level you want after you set the radio volume of the radio at a low level.
- Please don't remove or replace or charge or discharge the battery in a hazard area where sparks could cause an electrical fire.
- Turn off the radio in areas where there is a strong electromagnetic force

WARRANTY CARD

Thank you for purchasing DM-4000p Series.

1. This product has passed strict quality control and testing process.
2. Warranty is one year from original date of purchase.

Failure of the product under normal operating conditions, during the warranty period may be repaired by YeonHwa M Tech Co.,Ltd or our authorized service organization free of charge.

3. For the following cases, some service fees will be charged.
 - When repair occurs after the warranty period has passed.
 - When the product is damaged due to user's mishandling, abuse or improper operation.
 - When the product is damaged due to user's modification, attempted repair or otherwise access to sealed/non-user serviceable items.
 - When the product is damaged due to fire, pollution, earthquakes and any other natural or unnatural conditions, accidents, etc.
4. Product and personal information

Model Name		☐ DM-4100p / ☐ DM-4400p
SIN Number		
Purchase Date		
Purchase	Name	
	Address	

※ When purchasing a product, please make sure to write the information in the product release.

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