

DX-6000 Series

User Manual



VHF Transceiver

DX-6100

DX-6200

UHF Transceiver

DX-6400

XRadio

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Version #1 (2019-03-25)

1. DX-6000 series features

DX-6000 series is designed to provide ease of use the functions of digital radio and it is an easy grip radio for the hand. It's developed for the consumer safety and convenience in complex public places such as military, fire department, construction, industrial field. In addition, it works in dual (analog/ digital) mode and is compatible with existing analog radio currently. Digital mode is made up for analog radio's weaknesses such as sound quality, call distance, and usage time.

The main functions of DX-6000 series are as follows

- 64 Zones 1024 channels selection (1zone = Max 1024channels)
- The total number of channels can be set up to 1025 channels
- 4.8/1 Watt RF Power
- Send/ receive text messages (up to 40 characters), up to 10 sentences
- Encryption Mode (AES128. 196. 256)
- TX Interrupt
- Lone Worker
- Man down function(optional)
- BCL / BCLO
- Time-Out Timer (TOT)
- Emergency / siren function
- Built-in flash lamp
- Vibration(optional)
- Voice recording and playback
- Mixed channel(analog / digital)
- GPS (optional)
- 5 levels VOX(Voice Operated Transmit)
- 5 levels S.Q selection (support analog radio).
- Remote Radio Stun / Kill / Revive
- 1Watt audio output
- UDC accessory connector for waterproof(IP67)
- OLED Display
- DC+7.2V Li-ion / 2,600mAH High capacity battery

2. Specification

2.1 DX-6000 Series

General

Frequency Range	DX-6100 : 136~174 MHz DX-6200 : 245~254 MHz DX-6400 : 400 ~510 MHz
Frequency Stability	±1.5ppm (-30 to +60°C)
Programmable Channels	16 Zones / 32 Channels
Channel Spacing	12.5KHz
Digital Vocoder	AMBE++
Dimensions	103mm(H) x 52mm(W) x 32mm(D)
Weight	280g
Power Source	DC +7.2V Li-ion 2,600mAH Battery
Current Drain (maximum)	Receive mode, rated audio out – 420 (Audio Max) Transmit mode – 1,200mA Standby mode – 110mA

Receiver

Sensitivity	0.20uV 12 dB SINAD
Squelch Sensitivity	0.18uV 10dB SINAD
Selectivity	65dB (12.5KHz)
Spurious and Harmonic Rejection	75dB
FM Hum and Noise	40dB (12.5KHz)
Audio Output Power	1 Watt across an 8-ohm load
Audio Distortion	Less than 3% at rated output
Audio Response	+1, -3 dB from 6dB per octave de-emphasis Characteristic from 300 ~ 3000Hz
Input Impedance	50 ohms

Transmitter

RF Power Output	DX-6100 : 5/1Watt DX-6200 : 4.8/1Watt
Spurious and Harmonic	DX-6400 : 5/1Watt
FM Hum and Noise	70dB
Audio Distortion	40dB (12.5KHz)
Audio Frequency Response	3% maximum with 1KHz modulation
Output Impedance	+1, -3dB from 6dB per octave pre-emphasis Characteristic from 300 ~ 3000Hz 50ohms

3. DX-6000 series accessories

* The accessory parts may be changed at the request of the buyer



Main body



Battery



2unit charger



Antenna



Belt Clip



Hand strip



User manual

Figure 3-1) DX-6000 series main accessories

3.1 DX-6000 series exterior view

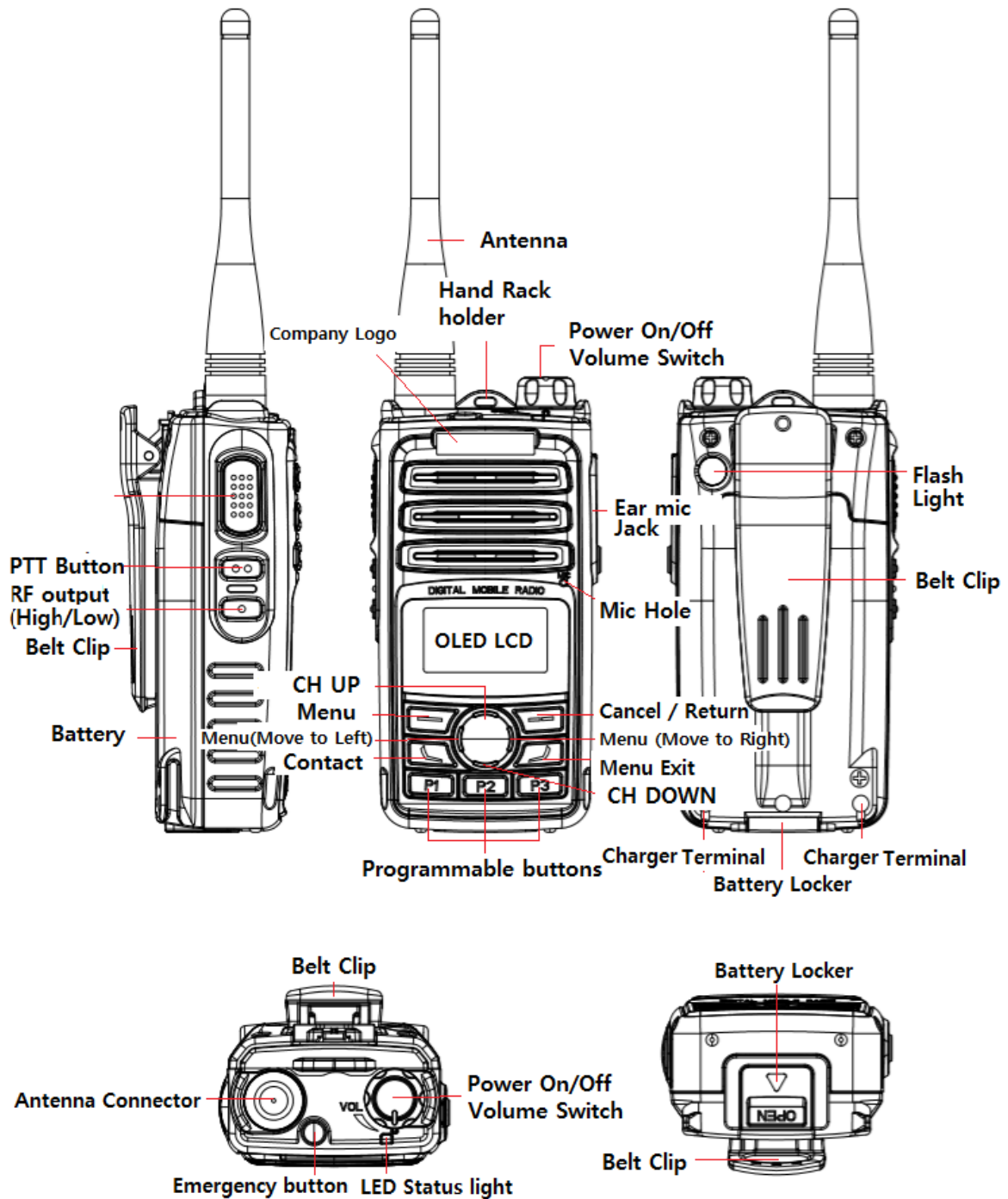


Figure 3-2) DX-6000 series exterior view and control buttons

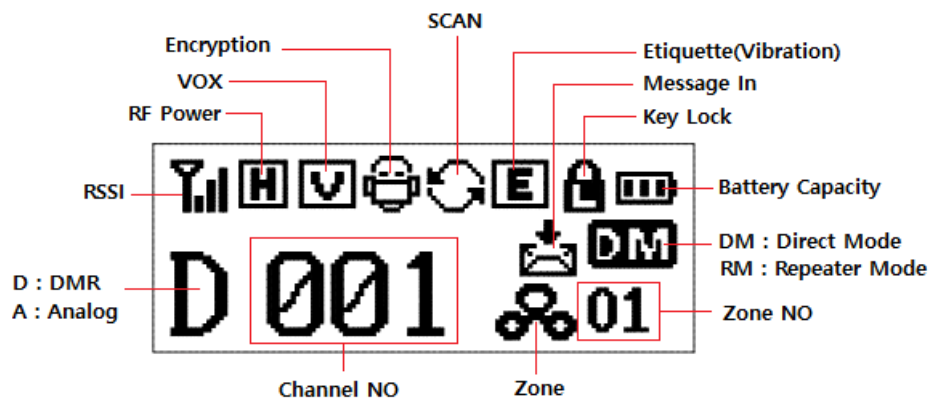


Figure 3-3) DX-6000 series LCD icon explanation

3.2 Basic operation description

Button	Description
Power On/Off volume switch	Turning the power On/Off volume switch clockwise, the radio is turned on and the volume is louder. Turning the power On/Off volume switch counterclockwise, the radio is turned off and the volume is decreased.
Volume/ Menu +/- button	By using +/- buttons to adjust the call volume. Press the + button to increase the volume and the – button to decrease the volume. *In the menu state, the user can move the menu items.
Up/Down button	The user can change the setting for the set channel. 32 channels can be put in per each zone. *In the menu state, the user can move the menu items.
Zone button	The user can change the calling areas in order.
Menu/OK button	The user can enter the menu with this button and select the menu items.
Cancel/Return button	While entering the menu, use the button to return the upper menu. The user can cancel from the menu setting screen.
P1, P2, P3 button	Programmable Key when operating with Short Key. Long Key (press longer than 2secs), - P1 is Lock / Unlock the button lock function - P2 is Flash On/ Off operation - P3 is etiquette On / Off operation
Contact List button	It is a button to enter directly into Contact List. The user can enter Private Contact, Private Call, Group Call or All Call.

4. How to operate the basic functions

Please read the instruction manual thoroughly before using the product.

This manual provides useful information related to the operation of the radio.

4.1 Antenna installation and Removal

Turn the antenna clockwise to tighten the antenna and counterclockwise to loosen the antenna as the Figure 4-1.

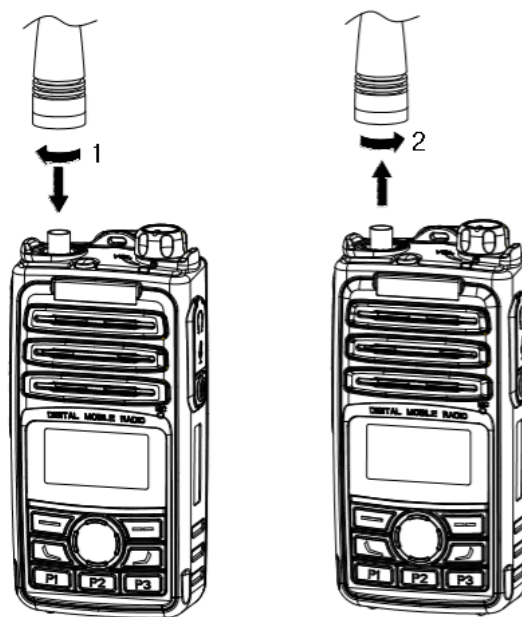


Figure 4-1) How to tighten and loosen the antenna from the radio



Caution

1. Do not over tighten the antenna as it may cause damage to the radio
2. NEVER HOLD by the antenna when carrying the transceiver.
3. Transmitting without an antenna may damage the transceiver.

4.2 Battery installation and Removal

As shown the figure 4-2, align the battery pack with the groove of the body and push it in the direction 2 to attach the battery. For removing the battery, push the battery locker and pull it in the direction of arrow 3 to remove the battery from the radio.

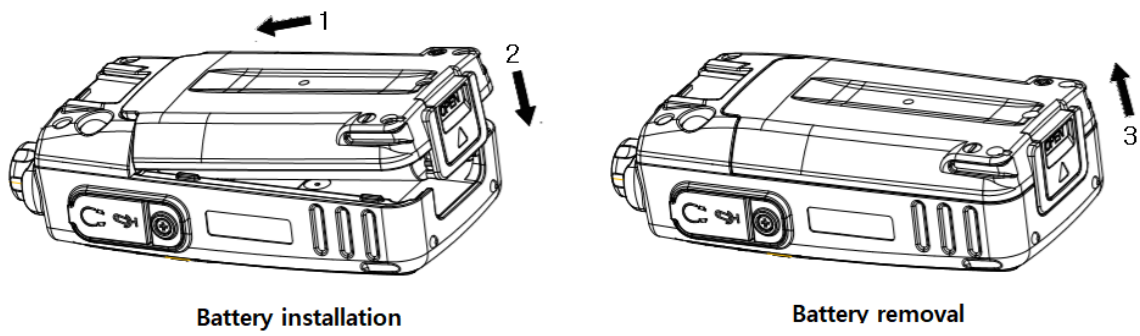


Figure 4-2) How to install and remove the battery

4.3 Belt Clip Installation and Removal

As shown the figure 4-3, align the on the belt clip holder and push it in the direction 1. For removing the belt clip, push the belt clip locker in the direction 2 and pull the belt clip in the direction 3.

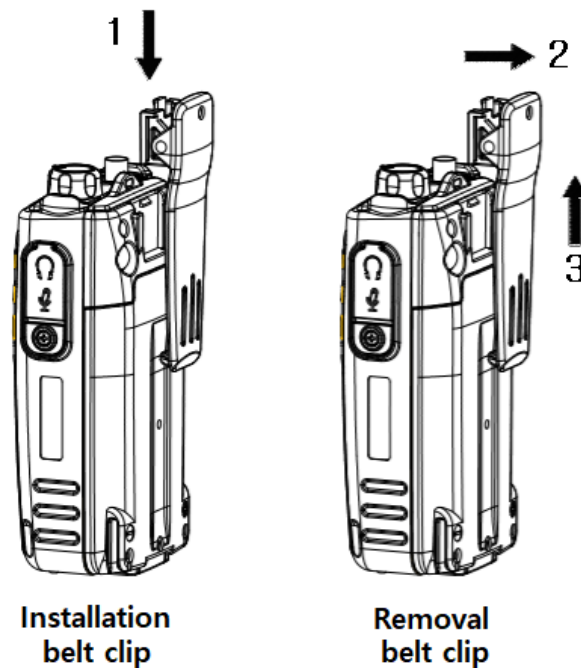


Figure 4-3) How to install and remove the belt clip

4.4 External Accessory Connector Jack

When connecting the external accessories, as show in the figure 4-4, align the main unit and the accessories, then push the accessories while pulling out the accessories.

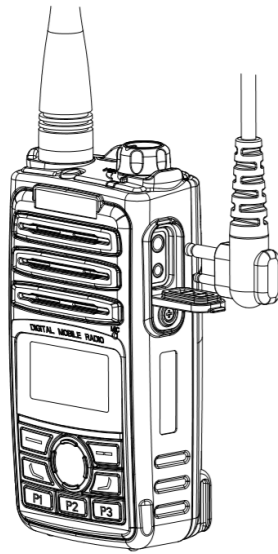


Figure 4-4) External accessory connector jack

4.5 How to charge the battery

RED lamp indicates the radio is on the charger (XC-200D) that the unit is starting to charge and the LED will illuminate GREEN when the charging is completed. XC-200D is developed as the double-ended to charge the main body and the battery pack itself.

When the main body of the radio and the battery packed are charged at the same time, the main body will be charged first then when charging is completed, the battery pack will be charged.



Figure 4-5) How to charge the battery

5. Operation of the radio

DX-6000 series body buttons are defined as shown the figure 5-1.

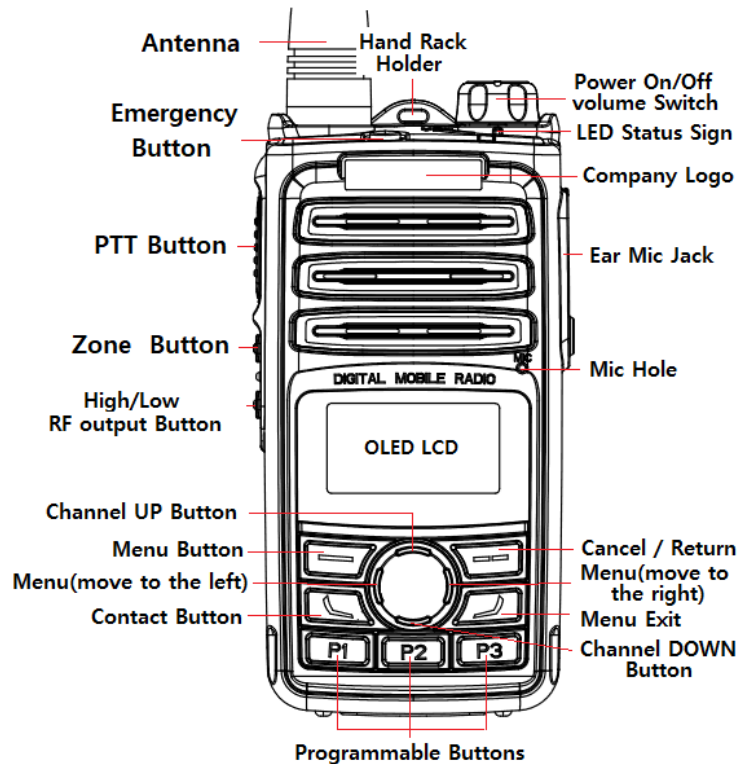


Figure 5-1) DX-6000 series button definitions

5.1 Power ON/OFF Volume Switch

Turning the volume switch to the right to turn on the LCD with the start-up sound and turn the radio on. Turning the power ON / OFF switch to the left while the radio is on will turn off the power with the message "Goodbye". To increase the volume sound, turn the volume switch clockwise and to decrease the volume sound, turn the volume switch counterclockwise.

5.2 PTT Button

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

5.3 ZONE Button

Pressing the ZONE button will select the zones registered in the program in order. The user can use the channel UP / DOWN buttons to select the channel in the selected zone.

5.4 Menu Button

After pressing menu button, press right button of the menu screen, the menu appears as shown in Fig. 5-2). Press the move button to move to the left and press the Menu button again on the selected menu to enter the detailed menu.

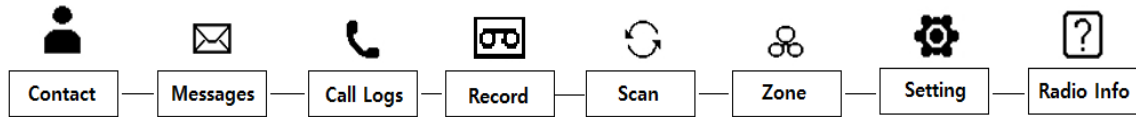


Figure 5-2) DX-6000 series menu

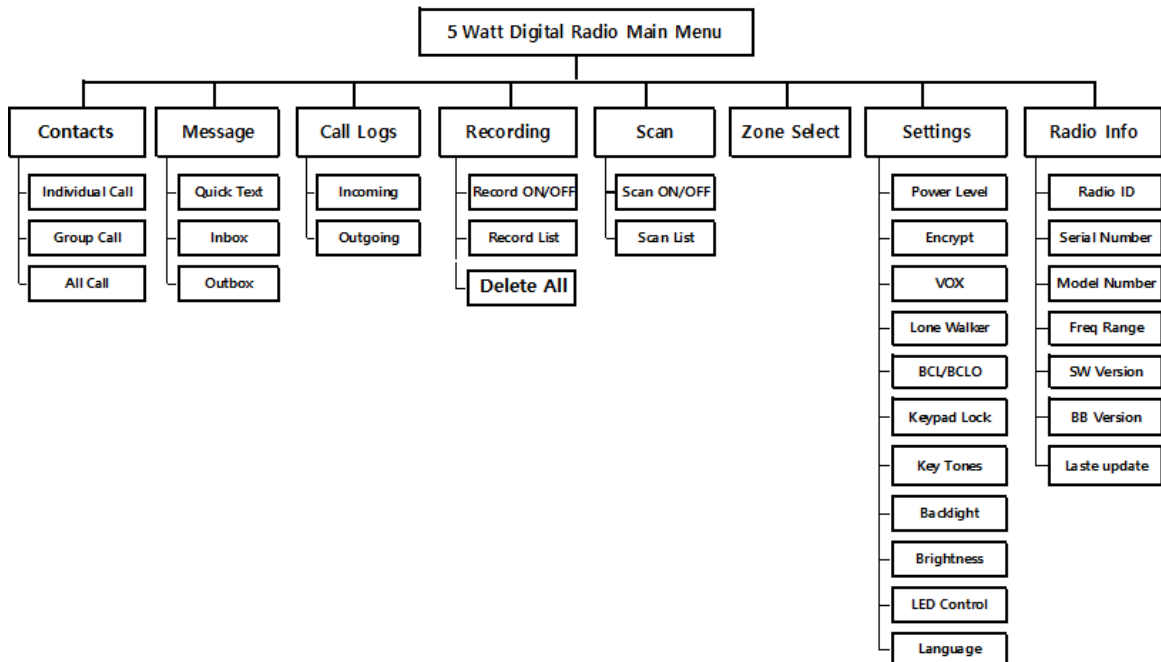


Figure 5-3) DX-6000 series menu tree

5.5 Channel Menu UP/Down Button

Channel menu UP / Down button operates as normal channel UP / Down button and also it operates as menu UP / Down selection function when entering menu mode.

5.6 Contact Button

Press Contact button to enter connection mode such as Individual, Group, All Call registered in Contact menu.

5.7 P1, P2, P3 Programmable Button

The P button performs two actions as Short Key and Long Key (pressing longer than 2 seconds). The Short Key can be used to configure the functions in the PC program.

Key Lock is automatically set when there is no input information for 10 seconds. If you want to cancel the Key Lock function, press the P1 key with the Long Key to cancel and use all the keys. If there is no input information for 10 seconds, Key Lock mode will be activated automatically again. To cancel the key lock completely, turn off the Key Lock Menu in the setup menu, and the Key Lock function is canceled.

P button Key	Short Key	Long Key
P1	Programmable	Key Lock ON/OFF
P2	Programmable	Flash Light ON/OFF
P3	Programmable	Vibration mode ON/OFF

5.8 UDC EAR/MIC Jack

The UDC EAR / MIC jacks are jacks for use with external speaker microphones, CPS program setting, radio firmware upgrading, and communication with external devices.

5.9 LED Status Sign


This LED indicates the operation status of the radio. The main status notation is as follows.

- ① Red at normal transmission
- ② Green at normal reception
- ③ When the frequency is correct but the color code does not match, it will blink green if not received.
- ④ In case of low battery, red light flashes and with an alarm sounds.


6. How to charge the battery

6.1 Precautions

- 1) The DX-6000 series uses a large-capacity Li-ion battery (XB-2600). The battery is safe and highly reliable, the standard charger allows you to fully use the battery's efficiency and life.

 Caution	Charging in a third party charger will cause damage to the battery as well as damage to the unit.
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- 2) For optimal capacity and safe operation of the device, please charge the battery before use.
- 3) When charging the battery with the wireless device, make sure to turn off the power.

 Caution	Continuous rapid discharge (when the positive or negative terminal of the battery touches the metal object) will cause a fatal defect in the battery and may cause the battery to explode or cause a fire.
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6.2 Battery Charge

When the battery voltage drops, the communication distance becomes shorter and the performance of the radio cannot be maximized. Charge the battery in the following conditions.

- 1) When it is judged that the battery capacity has decreased.
- 2) When the red lamp on the front of the product flashes during transmission or reception (0.5sec cycle)
- 3) When the battery indicator icon blinks
- 4) When low battery alarm sound occurs during use


6.3 How to charge the battery

- 1) Plug the adapter of the XC-200D charger into the AC220V power outlet.
- 2) When charging the radio equipped with the battery, turn off the power completely and insert it into the charger.
- 3) Even if the green lamp is turned on after the charging is completed, keep charging for about 30 minutes for full charging.

Status	LED Indication	Status	LED Indication
Charging	Red LED lights	Error Detection	Red LED flickers
Complete Charging	Green LED lights	Keep Charging	Green LED Appears

7. DX-6000 series radio operation

7.1 Menu functions

To enter the menu tree, press  button. There are 8 main menus in menu mode. The user can use the radio more conveniently if the user set it according to usage purpose and environment.

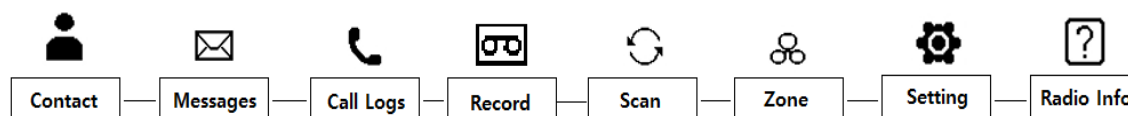


Figure 7-1) DX-6000 series main menus




Note) If the menu is not operated for at least 25 seconds after launch, the radio will revert to standby mode.

7.1.1 Contact

Select the transmission contact (set by CPS program) and press the PTT button to make a call. If a user wants to make a call with another registered contact, select the contact in the contact list and press the PTT button to make the call.

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

When the user select into the contact menu, the list is displayed divided into individual, group and All Call contacts.

- ICONs shown in contact list
 -  : Individual contact list (individual calls, individual messages can be sent)
 -  : Group contact list (group call, group message can be sent)
 -  : All contact lists (terminals with the same channel and color code are available)


7.1.2 Messages

When a new message arrives in the receive mode, the message contents are displayed on the LCD and enter the menu mode. When a new message arrives at another operation, it will be displayed as ICON.

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

1) Quick Message

By using the CPS program, the user can register total 10 messages and 1 message can be edited up to 40 characters.

The user can see the registered message by selecting the simple message menu, select the message the user wants to send, and press  button to view the message contents.

Press  button again to send the selected message to the registration terminal.

2) Inbox.

A maximum of 10 messages can be received from the inbox. A user can view the received messages by selecting the contents stored in the list.

If 10 received messages are maximum and more than 10 received messages are deleted first. If a user wants to delete the received message, you can delete the entire message by selecting the Delete All menu.

3) Outbox.

The maximum number of messages in the Outbox can total 10. The user can view the messages that have been sent by selecting the contents stored in the list.

The number of outgoing messages is managed as 10, and the number of outgoing messages is cleared and received first. If a user wants to delete the outgoing message, the user can delete the whole delete menu.

7.1.3 Call Logs

Call Logs menu stores only the history of individual calls. Group, All call are not saved. The messages are managed by the message inbox and outbox.

1) Inbox

The user can store 10 call histories in total. The stored contents in the list show the ID of the receiving party.

Inboxes are managed with a maximum of 10 call histories, and if more than 10 histories are received, automatically deleted the call history which registered the first. The user can delete the entire call histories in the Delete Menu.

2) Outbox

A total of 10 call histories can be stored in the Outbox. The contents stored in the list can see shows the ID of the called party.


The number of outboxes is managed as 10 call histories, and if the number is more than 10 call histories, automatically deleted the call history which registered the first. The user can delete the entire call histories in the Delete Menu.

7.1.4 Record

Call recording is a function to save the contents of outgoing and incoming calls. If a user does not need the recorded contents, the user can delete it all.

The user can save up to 63 calls and single call is limited to 2 minutes and 30 seconds.

The user can use the call recording function, select it on the setting menu.

 <p>Caution</p>	When the encryption mode is selected, only encryption mode call is recorded, and if encryption mode is not selected, normal call contents cannot be heard.
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7.1.5 Scan

When the user turns on the scan operation in the scan menu, scanning starts in the order of the channels set in the scan list. If there is a channel being used during scanning, it will stop on that channel and receive its contents. If a user wants to make a call while scanning, set it on the CPS program.

1) Scan ON/OFF

A user can set scan function on/ off in the Menu

2) Scan list

The scan lists can be set on the CPS program.

7.1.6 ZONE

Zones are created up to 16 zones and each zone can be registered 32 channels. Use the CPS program to set the zones.

7.1.7 Setting

This menu is used to set various statuses of the radio. Settings include transmission output, voice encryption, VOX, Lone Walker, BCL / BLCO, keypad lock, sound, backlight, clarity, LED settings, and language.

1) Transmission power

Set the high and low of the transmission power.

2. Voice Encryption

This is a feature to encrypt the incoming and outgoing voice. Voice Encryption function can be set for each channel from all of the digital channels.

The setting of voice encryption code is using the CPS program, the total number of encryption can be set from 0 to 65535.

3. VOX

VOX function is transmitted by detecting a voice level without using the PTT button

VOX sensitivity level is 1 - 5 steps, you can set using the CPS program.

4. Lone walker

It is function to inform others about your safety within the time set in the menu.

Setting time supports up to 1-100 minutes.

5. BCL/BCLO

If the another user on the currently used channel, it is the ability to limit the transmission so as not to interfere.

BCL: If the current channel is busy, the transmission prohibition

BCLO: The ability to send regardless of the user of the current channel

6. Button Lock

With the exception of the minimum of buttons necessary for the user to prevent unwanted terminal operation, it is the ability to limit the operation.

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

7. Tones

This is a Tone setting function. The main menu is available only ON / OFF.

The detailed sound can be set using the CPS program.

8. LCD BACKLIGHT

This feature is LCD backlight ON / OFF.

9. LCD Contrast

The function is to adjust the brightness. The brightness can be set from 1 to 7 step.

10. LED Control.

The feature is to set the LED status display. It can be set detailed using the CPS program.

11. Language






The feature is to select the language for the menus.

7.1.8 Radio information

A menu that shows the information in this device.




8. Precautions

8.1 Matters affecting the performance of the equipment.

 WARNING	<p>Don't remove the antenna from the Radio or don't transform the antenna or don't make any change on the antenna. The strong electronic wave to be emitted from the Radio can have an effect on the performance of the Radio and can cause the Radio to have a defect.</p>
 Caution	<p>Don't use the accessories (such as rechargeable battery, adaptor, external speaker microphone and earphone, etc.) from the other makers, which can cause to make a defect on battery and a malfunction or a defect on the Radio.</p>
 WARNING	<p>Don't disassemble or reorganize the Radio. The disassembly or reorganization will be causes of defect or malfunction and it will be impossible to make repair afterward. Also, a punishment can be made by law.</p>
 WARNING	<p>Don't use the other frequency except for the permitted frequency in order not to be punished by law.</p>
 Caution	<ul style="list-style-type: none"> • Don't give an excessive shock to the Radio. • Don't place the Radio where the direct sunlight and/or the high temperature occurs. • If the Radio is placed for a long time in car in summer, the hot temperature in the car may cause an explosion of battery. • Don't make a damage to the battery by a sharp substance and/or an excessive shock.

8.2 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 also, can be influenced by the other devices.

 WARNING	<p>Please turn off the Radio before boarding on airplane. When you want to use the Radio in the airplane, please follow the rules in the airplane or the instructions by crew.</p>
 WARNING	<p>In case of the area that medical equipments are being used, please use the Radio after discussion with the equipment maker or the related doctor.</p>
 Caution	<p>Please don't use the Radio at the place where computer or the other electric/electronic devices are being used, because the strong electronic wave from the Radio can have an effect on the equipment.</p>

9. Safety Notes

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



WARNING

- Please keep the Radio away at least 1inch from the body.
- If the outside surface of antenna gets stripped out, it can make a burn on the skin.
- If you contact a conductive metal to battery terminal, a heat can be made and it may cause fire, explosion and burn. Especially, please be careful when putting the battery in a pocket or a bag.
- When using an earphone, please don't listen to the sound at a high level. The high sound may have a bad effect on your ear.
- After setting the volume of the Radio at a low level, please adjust the volume step by step to the level you want. A sudden high sound may give a bad damage to the ear or the heart.
- Please don't remove or replace or charge or discharge the battery at a dangerous area, since it may cause an explosion or a fire by an electrical spark.
- At the area where an electromagnetic force can be made, please make sure to turn off the power of the Radio.

Warranty Card

Thank you for purchasing DX-6000 Series.

1. This product has passed strict quality control and testing process.
2. Warranty is one year from the day the factory.
 - 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.
 - It occurs after the warranty period has passed, performance failure, malfunction or damage.
 - 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 fires, pollution, earthquakes and any other natural or unnatural conditions, accidents, etc.
4. Product check list

Model No.		DX-6000
Serial No.		
Purchase date		
Purchaser	Name	
	Address	

※ When you purchasing, please fill out this check list.

YeonHwa M Tech Co.,Ltd

36 Jeonpa-Ro, 44Beon-Gil, Manan-Gu, Anyang-City, Gyeongg-Do, Korea

Tel: 82-31-444-7270

FCC statement

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.

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 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.

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

Hold the transmitter approximately 2 inches (25mm) from your face and speak in a normal voice, with the antenna pointed up and away.

IC statement

English Statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions: 1, This device may not cause interference. 2, This device must accept any interference, including interference that may cause undesired operation of the device.

Safety Information

This equipment complies with IC radiation exposure limits set forth for an controlled exposure environment. When the talk button is pushed, it sends out radio frequency (RF) signals. The device is authorized to operate at a duty not to exceed 50%.

For body-worn operation, this radio has been tested and meets the IC RF exposure guidelines when used with manufacturer accessories supplied or designated for this product. Use of other accessories may not ensure compliance with FCC RF exposure guidelines. Use only the supplied antenna. Unauthorized antennas, modifications, or attachments could damage the transmitter and may violate FCC regulations.

Hold the transmitter approximately 2 inches (25mm) from your face and speak in a normal voice, with the antenna pointed up and away.

Canada Déclaration

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." l'information sur la sécurité

ce matériel est conforme aux limites de dose d'exposition aux rayonnements énoncés pour contrôlées l'exposition environnement. quand le parler bas est poussé, il envoie des signaux radio fréquence (RF). les dispositifs est autorisée à exploiter, à une obligation de ne pas dépasser 50%. opération portés sur le corps, la radio a été testé et respecte les directives d'exposition aux IC RF utilisée avec le fabricant d'accessoires fournis ou désignés pour ce produit. utilisation d'autres accessoires ne peut s'assurer de la conformité avec les lignes directrices sur l'exposition aux radiofréquences. utiliser uniquement la fournies antenne. les modifications ou les antennes de non autorisée, pourrait nuire à l'émetteur et peuvent violer les règlements de la IC.

l'émetteur à environ 2 inches (25 mm) de votre visage et parlez normalement, avec l'antenne a signalé et loin.

Cautions

- 1 The device complies with RF specifications when it is used at 25mm distance from your body.
- 2 Risk of explosion if battery is replaced by an incorrect type, dispose of used batteries according to the instructions.
- 3 Adapter shall be installed near the equipment and shall be easily accessible.
- 4 EUT Temperature:-10°C ~ +40°C.
- 5 Adapter information:
Model name: DSA-12PFA-09 FEU 120100
Input: 100 ~ 240 V 50/60 Hz 0.5A
Output: DC 12V/1A

Hereby, YeonHwa M Tech Co.,Ltd.

Declares that this Digital 5W Portable Radio is in compliance with the essential requirements and other relevant provisions of directive 2014/53/EU and without limitation of use in Europe .
The declaration of conformity may be consult at:

Manufacturer:

YeonHwa M Tech Co.,Ltd.

36, Jeonpa-ro 44beon-gil, Manan-gu, Anyang-si, Gyeonggi-do 14086
Korea