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CE 0700

DJ-AXD1: VHF DIGITAL TRANSCEIVER 136-174MHz
 DJ-AXD4: UHF DIGITAL TRANSCEIVER 400-470MHz
 Use of this device is authorized in all EU and EFTA member states (CH/ICE/LI/NOR)

RoHS



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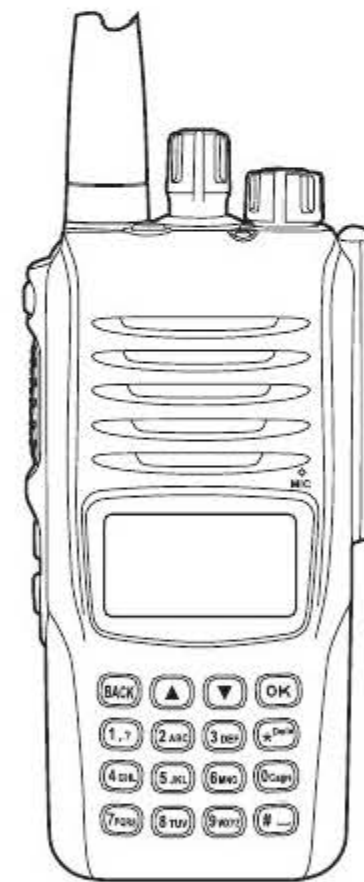
VHF DIGITAL TRANSCEIVER

DJ-AXD1

UHF DIGITAL TRANSCEIVER

DJ-AXD4

User Manual



DMR

Thank you for purchasing your new Alinco transceiver. Please read this manual carefully before using the product to ensure full performance, and keep this manual for future reference as it contains information on after-sales service. In case addendum or errata sheets are included with this product, please read those materials and keep them together with this instruction manual for future reference.

ALINCO, INC.

Notice

■ Introduction

Please be informed that this manual has been edited with consumer-use in mind. The product is delivered to consumers after being programmed by dealers. Some features are dealer-selectable and programmable using editor-software only and they are not mentioned in this manual. The product is blocked and not functional in ex-factory state due to regulations.

Please read this manual completely from the first page to the last, to learn basic functions the product offers. It is important to note that some of the operations may be explained in relation to information in other chapters. By reading just one part of the manual, you may risk not understanding the complete explanation of the function.

■ Lightning

Any person is not safe outdoor during thunderstorm and lightning. This condition is getting worse if somebody keeps a hand-held radio; chances of being hit by lightning are doubled since lightning may hit a radio antenna as well. At this time, there is no hand-held radio having any kind of protection against lightning current (which is higher than 10 kA.). Note also that no car provides adequate protection of its passengers or drivers against lightning as well. Therefore, Alinco will not take responsibility for any danger associated with using its hand-held radios outdoor or inside the car during lightning.

■ Covering ranges (without using repeaters)

You may expect a range of approx. 4km/2.5 miles or more at high-power when located on a flat, noise-free place like on a beach. However, it may vary depending on how to wear and carry the radios, surrounding locations/conditions and static noise levels, etc. In urban areas with many buildings or inside a building, such covering range may become drastically short.

■ Dealer programming

The utility software may be available to distributors/dealers only. An optional programming cable is required for programming. The manufacturer will not release the software to unauthorized party so please contact your dealer for details. This product is delivered to consumers after being programmed with the operating parameters, then certain operation may be disabled for user-accesses. For this reason some features mentioned in this booklet may not be available, or features NOT mentioned in this manual may be available to your radio. The manufacturer and distributors are not aware of details of such dealer-programming. Therefore, please contact to your dealer in case any technical assistance may be necessary.

■ Voice coding technology

The AMBE+2 voice compression software included in this product is protected by intellectual property rights including patent rights, copyrights and trade secrets of Digital Voice Systems, Inc. The user of this software is explicitly prohibited from attempting to decompile, reverse engineer, or disassemble the object code, or in any other way convert the object code into a human-readable form. This software is licensed solely for use within this product. US Patent Nos. #8,595,002, #8,359,197, #8,200,497, #6,912,495, #6,199,037, #5,826,222, #5,754,974, #5,715,365, and #5,701,390.

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Windows is a registered trademark of Microsoft Corporation in the United States and other countries.

All other trademarks are the properties of their respective holders.

ALINCO and authorized dealers are not responsible for any typographical errors there may be in this manual. The contents of this manual may be updated without any notice or obligation. Alinco cannot be liable for pictorial or typographical inaccuracies. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

■ Compliance Information Statement

FCC WARNING

This equipment generates or uses radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

INFORMATION TO THE DIGITAL DEVICE USER REQUIRED BY THE FCC

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 generate 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 the 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 to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer for technical assistance.



Conformity Information

In case the unit you have purchased is marked with a CE symbol, a copy of relative conformity certificate or document can be reviewed at <http://www.alinco.com/usa.html>.

■ RADIO FREQUENCY ENERGY SAFETY INFORMATION

This **Alinco** transceiver has been tested and complies with the standards listed below, in regards to Radio Frequency (RF) energy and electromagnetic energy (EME) generated by the transceiver.

- FCC RF exposure limits for *Occupational Use Only*. RF Exposure limits adopted by the FCC are generally based on recommendations from the National Council on Radiation Protection and Measurements, and the American National Standards Institute.
- FCC OET Bulletin 65 Edition 97-01 Supplement C
- American National Standards Institute (C95.1 - 1992)
- American National Standards Institute (C95.3 - 1992)



WARNING

This Alinco transceiver generates RF EME while transmitting. RF EME (Radio Frequency Electric and Magnetic Energy) has the potential to cause slight thermal, or heating effects to any part of your body less than the recommended distance from this radio transmitter's antenna. RF energy exposure is determined primarily by the distance to and the power of the transmitting device. In general, RF exposure is minimized when the lowest possible power is used or transmission time is kept to the minimum required for consistent communications, and the greatest distance possible from the antenna to the body is maintained. The transceiver has been designed for and is classified for Occupational Use Only. Occupational/ controlled exposure limits are applicable to situations in which persons are exposed to RF energy as a consequence of their employment, and such persons have been made aware of the potential for exposure and can exercise control over their exposure. This means you can use the transceiver only if you are aware of the potential hazards of operating a transceiver and are familiar in ways to minimize these hazards. This transceiver is not intended for use by the general public in uncontrolled environments. Uncontrolled environment exposure limits are applicable to situations in which the general public may be exposed to RF energy, or in which the persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Notice

The following list provides you with the information required to ensure that you are aware of RF exposure and of how to operate this transceiver so that the FCC RF exposure limitations are not exceeded.

- While transmitting (holding the PTT key or speaking with VOX enabled), always keep the antenna and the radio at least 0 cm (0 inches) from your body or face, as well as from any bystanders. A LED on the top of the radio shows red when the transmitter is operating in both PTT and VOX modes.
- Do not transmit for more than 50% of the total transceiver use time; transmitting over 50% of the total use time may exceed the limits in accordance to the FCC RF exposure requirements. Nominal transceiver operation is 5% transmission time, 5% reception time, and 90% stand-by time.
- Use only the specified antenna for this transceiver; this may be either the antenna provided with the transceiver or another antenna authorized by Alinco.

Use only Alinco authorized accessories (antennas, battery packs, belt clips, Speaker/ Mics or headsets etc.): When worn on the body, always place the radio in a Alinco recommended clip or carrying case meant for this product. The use of other than recommended or approved body- worn accessories may result in RF exposure levels which exceed the FCC's occupational/ controlled environment RF exposure limits.



CAUTION

To ensure that your exposure to RF EME is within the FCC limits for occupational use, you must observe and adhere to the above points.

■ Electromagnetic Interference Compatibility







Electronic devices are susceptible to electromagnetic interference (EMI) if they are not adequately shielded or designed for electromagnetic compatibility. Because this transceiver generates RF energy, it can cause interference to such equipment.

- Turn OFF your transceiver where signs are posted to do so. Hospitals and health care facilities use equipment that is sensitive to electromagnetic radiation.
- Turn OFF your transceiver while on board an aircraft when so instructed. Use of the transceiver must be in accordance with airline regulations and/or crew instructions.

WARNING


WARNING


To prevent any hazard during operation of Alinco's radio product, in this manual and on the product you may find symbols shown below. Please read and understand the meanings of these symbols before starting to use the product.


 Danger	This symbol is intended to alert the user to an immediate danger that may cause loss of life and property if the user disregards the warning.
 Alert	This symbol is intended to alert the user to a possible hazard that may cause loss of life and property if the user disregards the warning.
 Caution	This symbol is intended to alert the user a possible hazard that may cause loss of property or injure the user if the warning is disregarded.
	Alert symbol. An explanation is given.
	Warning symbol. An explanation is given.
	Instruction symbol. An explanation is given.

Alert









■ Environment and condition of use

-  Use of this product may be prohibited or illegal outside of your country. Be informed in advance when you travel.




-  It is recommended that you check local traffic regulations regarding the use of a radio equipment while driving. Some countries prohibit or apply restrictions for the operation of radios and mobile-phones while driving.

-  Do not use this product in close proximity to other electronic devices, especially medical ones. It may cause interference to those devices.


WARNING

-  Keep the radio out of the reach of children.
-  In case a liquid leaks from the product, do not touch it. It may damage your skin. Rinse with plenty of cold water if the liquid contacted your skin.
-  Never operate this product in facilities where radio products are prohibited for use such as aboard aircraft, in airports, in ports, within or near the operating area of business wireless stations or their relay stations.
-  The manufacturer declines any responsibilities against loss of life and/or a property due to a failure of this product when used to perform important tasks like life-guarding, surveillance, and rescue.
-  Do not use multiple radios in very close proximity. It may cause interference and/or damage to the product(s).
-  Risk of explosion if battery is replaced with an incorrect type. Dispose of, or recycle used batteries according to your local regulations.
-  The manufacturer declines any responsibilities against loss of life and property due to a failure of this product when used with or as a part of a device made by third parties.
-  Use of third party accessory may result in damage to this product. It will void our warranty for repair.






■ Handling this product

-  Be sure to reduce the audio output level to minimum before using an earphone or a headset. Excessive audio may damage hearing.
-  Do not open the unit without permission or instruction from the manufacturer. Unauthorized modification or repair may result in electric shock, fire and/or malfunction and voids warranty.
-  Do not operate this product in a wet place such as in a shower room. It may result in electric shock, fire and/or malfunction, This product is splash-proof but not a complete water-proof.

WARNING

-  Do not place the product in a container carrying conductive materials, such as water or metal in close proximity. A short-circuit to the product may result in electric shock, fire and/or malfunction.


■ About chargers

-  Do not use adapters other than having the specified voltage. It may result in electric shock, fire and/or malfunction, Never turn on the radio while charging.
-  Do not plug multiple devices using an adapter into a single wall outlet. It may result in overheating and/or fire.
-  Do not handle adapter with a wet hand. It may result in electric shock.
-  Securely plug the adapter into the wall outlet. Insecure installation may result in short-circuit, electronic shock and/or fire.
-  Do not use the adapter if the plug or socket contacts are dirty. Overheating and/or short-circuiting may result in fire, electric shock and/or damage to the product.

■ In case of emergency

In case of the following situation(s), please turn off the product, switch off the source of power, then remove or unplug the power-cord. Please contact your local dealer of this product for service and assistance. Do not use the product until the trouble is resolved. Do not try to troubleshoot the problem by yourself.

- **When a strange sound, smoke and/or strange odor comes out of the product.**
- **When the product is dropped or the case is broken or cracked.**
- **When a liquid penetrated inside.**
- **When a power cord (including DC cables, AC cables and adapters) is damaged**

-  For your safety, turn off then remove all related AC lines to the product and its accessories from the wall outlet if a thunderstorm is likely.

WARNING

■ Maintenance



Do not disassemble the unit and its accessories. Please consult with your local dealer of this product for service and assistance.



Caution

■ Environment and condition of use



Do not use the product in proximity to a TV or a radio. It may cause interference or receive interference.



Do not place in a humid, dusty or insufficiently ventilated place. It may result in electric shock, fire and/or malfunction.



Do not place in an unstable or vibrating position. It may result in electric shock, fire and/or malfunction when/if the product falls to the ground.



Do not place the product in proximity to a source of heat and humidity such as a heater or a stove. Avoid placing the unit in direct sunlight.



Be cautious of a dew formation. Please completely dry the product before use when it happens.

■ About transceiver



Be cautious of the whip antenna when carried in your shirt-pocket etc. It may make contact with your eye and cause injury.



Do not connect devices other than specified ones to the jacks and ports on the product. It may result in damage to the devices.



Turn off and remove the power source (AC cable, DC cable, battery, cigar cable, charger adapter etc.) from the product when the product is not in use for extended period of time or in case of maintenance.



Never pull the cord alone when you unplug AC cable from the wall outlet.

WARNING



Use a clean, dry cloth to wipe off dirt and condensation from the surface of the product. Never use thinner or benzene for cleaning.



Check with your local waste officials for details on recycling or proper disposal of the electronics product, battery-packs and accessories in your area.



■ IP67 Dust and water proof

6: Dust tight / No ingress of dust; complete protection against contact. Test duration of up to 8 hours based on air flow using specified powders.

7: No water penetration / Submerge the device for 30 minutes at a depth of 1 meter from the fresh water's surface.

The IP67 designation provides for limited dust and fresh water proofing of the radio, antenna and battery pack when integrated, perspecified above. This compatibility is factory guaranteed for a period of one year provided all specified conditions of use are respected, any accessories connected must be specified genuine Alinco accessories and the device has not been disassembled by the consumer. The device is designed to remain operational when used in rain, severe weather or in accidental cases of dropping it in wet place when used in extreme conditions and is in no way stating that you should attempt to use the device under water or submerge the radio for cleaning. Warranty will not cover devices that are damaged due to negligence or misuse of the product. Never remove the small label attached on the rear chassis of this product, or cover it with other materials. This label is essential to adjust an air pressure inside to secure dust/water proofing. A periodical, professional maintenance is recommended when the ingress protection is very important to you.

Contents

Notice	2
Warning	7
Contents	12
1 Accessories	13
2 Names and Operations of Parts	18
3 Basic Operation	19
4 Options	21
5 Specifications	23

1 Accessories

1.1 Standard Accessories

- EBP-100 Li-ion battery pack (7.4V 2000mAh)
- EDC-218 Li-ion battery charger
- EDC-216/217 AC Adaptor (depending on the version of purchase)
- EA-244/245 Antenna
- EBC-49 Belt clip
- Instruction manual

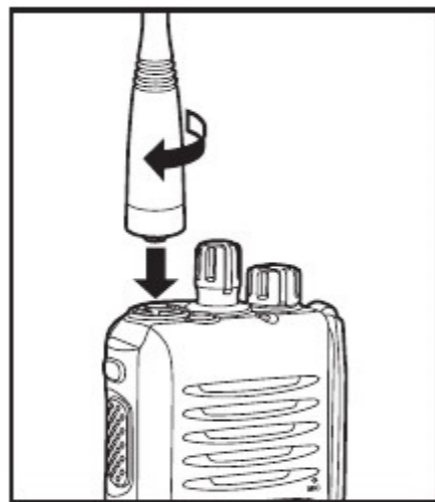
NOTE:
Accessories may differ depending on the version you have purchased. Please contact your local dealer for details of standard accessories and the warranty-policy.

1.2 Installations

1.2.1 Antenna

■ Attaching the Antenna

1. Hold the antenna by its base.
2. Align the grooves at the base of the antenna with the protrusions on the antenna connector.
3. Slide the antenna down and turn it clockwise until it stops.
4. Confirm that the antenna is securely connected. Check the connection from time to time.



■ Removing the Antenna

Turn the antenna counter-clockwise to disconnect the antenna.

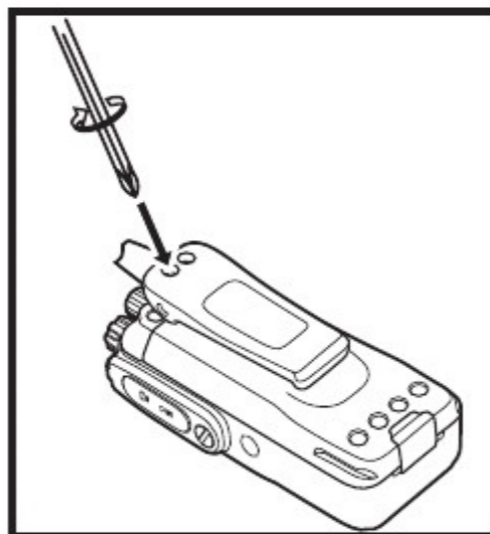
NOTE:

Do not use third-party antenna as it may radiate more RF that exceeds SAR limit guidances.

1.2.2 Belt Clip

■ Attaching the Belt Clip

1. Put the belt clip on the back of the unit, and turn the screw clockwise until it stops.
 2. Confirm that the belt clip is securely attached.
- * Tighten up the screw occasionally.



■ Removing the Belt Clip

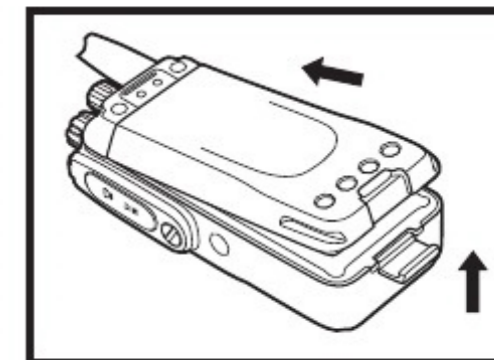
Turn the screw counter-clockwise to remove the belt clip.

Caution: Use the screws of specified size only. Others may cause damage to the product. (screws size M 3.0mm x 4.0mm)

1.2.3 Battery Pack

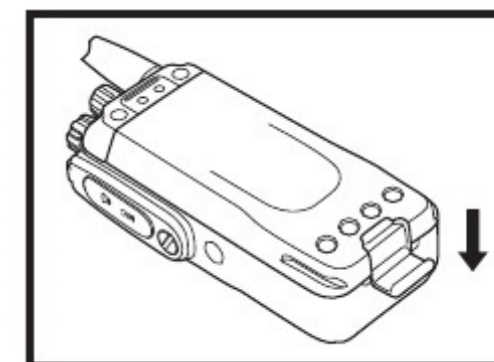
■ Attaching the Battery Pack

Align the catches on the battery pack with the grooves on the unit, and close the latch until it clicks.



■ Removing the Battery Pack

Push the latch in the direction of the arrow, and pull out the battery pack.

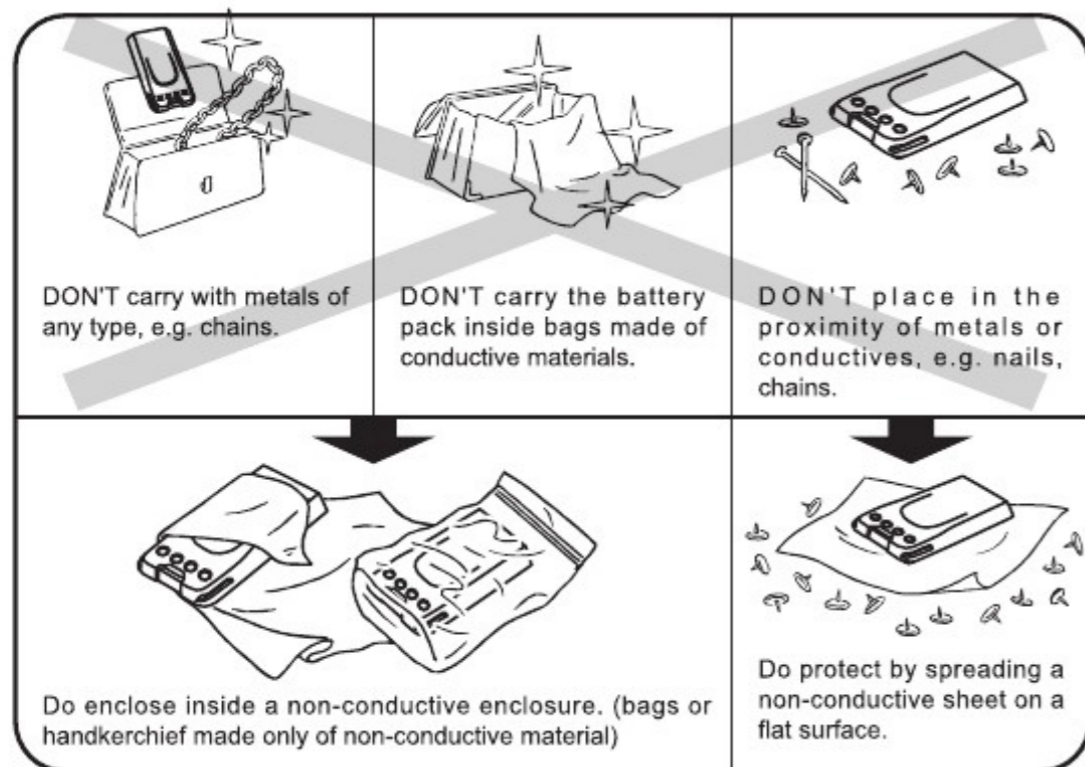


NOTE:

Be sure to remove the battery pack from the transceiver when not in use. Leaving it attached will discharge the battery faster resulting an over-discharge that cause deterioration of the battery pack.

1.2.4 Prevent Short Circuiting the Battery Pack

Be extra cautious when carrying the rechargeable battery pack; short circuiting will produce surge current possibly resulting in fire.



Caution

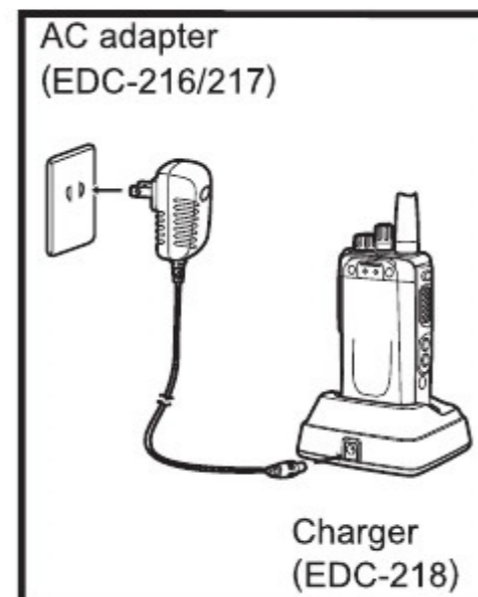
- The battery pack isn't fully charged when shipped. It must be charged before use.
- Charging should be conducted in a temperature range of 0°C to +40°C (+32°F to +104°F).
- Don't modify, dismantle, incinerate or immerse the battery pack in the water as this can be dangerous.
- Never short-circuit the battery pack terminals, as this can cause damage to the equipment or lead to heating of the battery which may cause burns.
- Unnecessary prolonged charging (overcharging) can deteriorate battery performance.
- The battery pack should be stored in a dry place where temperature is in -10°C to +40°C (14°F to 104°F) range. Temperatures outside this range can cause the battery liquid to leak. Exposure to prolonged high humidity can cause corrosion of metal components.
- Battery-packs are a consuming part. When its operating time becomes considerably short after a normal charge, please consider that the pack is exhausted and replace it with a new one.
- The battery pack is recyclable. Check with your local waste officials for details on recycling options or proper disposal in your area.

1.2.5 Using the Charger

1. Connect the AC adapter plug to the DC-IN jack on the back of the charger.

*The design of the AC adapter may vary depending on the models.

2. Connect the adapter to an outlet.



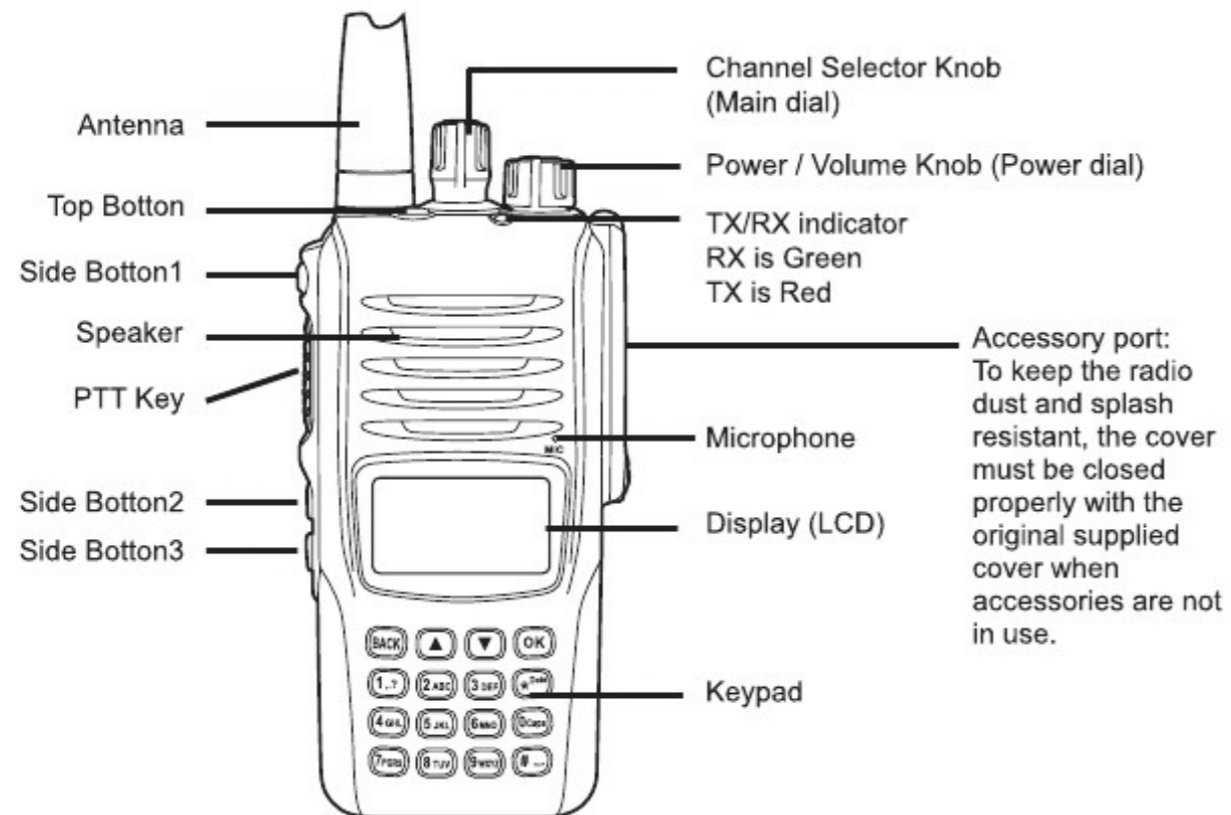
3. Turn off the unit. The battery pack can't be charged correctly when the unit is turned on. Insert the unit to the charger as shown above.

The red indicator on the desktop charger turns on while charging. When charging is completed, the green indicator turns on. It takes up to 4-5 hours to fully charge the battery.

NOTE:
You can't operate the unit with using a provided charger. The charger is to charge the battery pack only.

2 Names and Operations of Parts

■Front



Name	Function
PTT key	Press to transmit, release to receive.
BACK key	Press to return to previous menus.
OK key	Press to select and set menus.
▼/▲ key	Press to select desired menus/parameters.
Top Botton	Press to activate dealer-programmed functions.
Side Botton1	
Side Botton2	
Side Botton3	

3 Basic Operation

3.1 Turning On the Power

Turn Power dial clockwise to power on.
Turn it counter-clockwise to power off.

3.2 Adjusting the Audio Output (Volume)

Turn Power dial clockwise to increase the audio level,
counter-clockwise to decrease.
Never use earphone while adjusting audio level for your safety.

3.3 Selecting the Operating Channel

Turn Main dial clockwise to increase the channel number,
counter-clockwise to decrease.

3.4 Receiving

When a signal is received on the channel that you selected, S-meter is displayed on the LCD, then the received signal can be heard. The green RX indicator also lights at this time.

3.5 Transmitting

1. Press the PTT key. The red TX indicator turns on while transmitting.
2. While holding down the PTT key, speak into the unit at normal voice from the distance of 5cm (2").
3. Release the PTT key to receive.

NOTE:

- Speaking too loud, too close or too far from the unit may distort the audio.
- Because the transceiver is manufactured to be water resistant, a special cloth material covers the built-in microphone. For this reason, the transmitting audio may be slightly different using the built-in microphone in comparison to using an optional external microphone.
- Do not close the microphone hole on the front panel with your finger. Be cautious specially when wearing gloves.

4 Options

EMS-80 Speaker Microphone

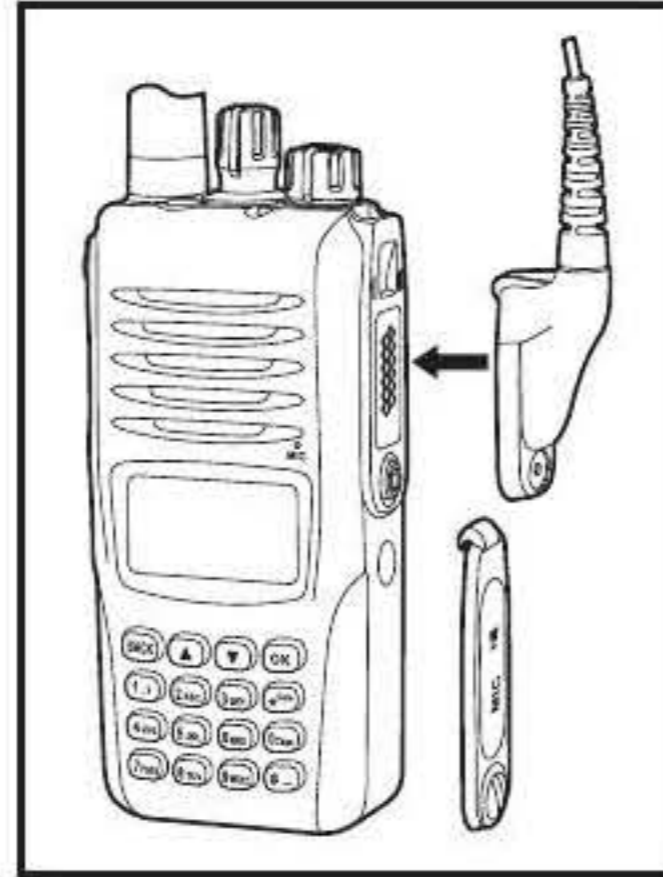
Spares:

EA-244/245 Whip antenna
EBP-100 Li-ion Battery Pack (7.4V 2000mA)
EDC-218 Li-ion Battery Charger
EDC-216/217AC Adaptor (120V)
EBC-49 Belt Clip

4.1 Accessory port

- Attaching the Accessory plug
 1. Put the accessory plug on the side of the unit, and turn the screw clockwise until it stops.
 2. Confirm that the accessory plug is securely attached.
- * Tighten up the screw occasionally.

- Removing the Accessory plug
Turn the screw counter-clockwise to remove the accessory plug.


NOTE:

To keep the radio dust and splash resistant, the cover must be closed properly with the supplied cover.

5 Specifications

■ GENERAL

Frequency Range	DJ-AXD1:136-174MHz DJ-AXD4:400-470MHz
Number of Channels	1000ch
Zones per Radio	250 zone (MAX 16ch/zone)
Channel Spacing	Digital Voice/ Data 12.5KHz: F1W
	Digital Data 12.5KHz: F1D
Operating Voltage	7.4V DC nominal
Operating Temperature Range	-20°C to +50°C (-4 °F to +122 °F)
Frequency Stability	±2.5ppm
Antenna Impedance	50Ω
Dimensions (W x H x D Approx.) with EBP-100 Li-ion pack /antenna length	64.0x120.0x38.0mm /170.0mm (2.52x4.72x1.50inches /6.70inches)
Weight (Approx.) with EBP-100 Li-ion pack	320g / 11.29 ounces

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.

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.

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The highest SAR value reported under this standard during product certification for use at the ear is 1.28 W/kg and when properly worn the the body is 3.69W/kg, This device was tested for typical body-worn operations. To comply with RF exposure requirements, a minimum separation distance of 0 cm. must be maintained between the user's body and the interphone,including the antenna. Third-party belt-clips, holsters and similar accessories used by this device should not contain any metallic components. Body-worn accessories that do not meet these requirements may not comply with RF exposure requirements and should be avoided.