

ALINCO



UHF FM Transceiver

DJ-W35

Instruction Manual

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.

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Introduction

Thank you very much for purchasing this excellent Alinco transceiver. Our products are ranked among the finest in the world. This radio has been manufactured with state of the art technology and it has been tested carefully at our factory. It is designed to operate to your satisfaction for many years under normal use.

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

Before transmitting

There are many radio stations operating in to the frequency ranges this product covers. Be careful not to cause interference when transmitting around such radio stations.

■ 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.

■ About IP54 rating / Dust and splash resistant

About IP54 rating

- 5: Dust protected / Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment; complete protection against contact.
- 4: Splashing water / Water splashing against the enclosure from any direction shall have no harmful effect.
Test duration: 5 minutes / Water volume: 10 liters per minute / Pressure: 80~100 kN/m²

The IP54 designation provides for limited dust and splash proofing of the radio per specified above. This compatibility is factory guaranteed for a period of one year provided all the jack covers are securely in place, any accessories connected must be specified genuine Alinco accessories and the radio has not been disassembled by the customer. The factory has tested and made the equipment compatible to IP54 certification during engineering. However, please understand that this equipment is NOT certified IP54 compliant but is designed to remain operational when used in hard conditions and is in no way stating that you should attempt to wash the radio for cleaning. Warranty will not cover radios that are water/dust damage due to negligence or misuse of the product.

The warranty period of dust and splash resistance is the same as the period of the product warranty.

■ Covering ranges

You may expect a range of approx.3km/2 miles or more at high-power when located on a flat, noise-free place like on a beach. However, it may vary drastically depending on how to wear and carry the radios, surrounding locations/conditions and static noise levels (below or near power transmission lines), etc.. In urban areas with many buildings or inside a building, such covering range will become drastically short even to several tens of meters.

Features

- Output power selectable 4W/2W/0.5W
- 128 PC-programmable channels
- Li-Ion battery pack and stand-charger as standard accessories
- Alphanumeric name tags
- FM broadcasting 76-108MHz receiver built-in
- Selectable Battery-save parameters
- Busy Channel Lockout
- Voice Compander (Reduce Noise & enhance audio clarity)
- Inversion Scramble(Analog encryption)
- Sub-tone (CTCSS/DCS) Encode/Decode and DTMF/ANI
- VOX built-in
- Voice prompt in English, Emergency Kill/Stun/Waken, Alarm signal, Various scan modes, Key lock, Wide/Narrow operations and more at NO extra costs.

Conformity Symbols














Tested to comply MIL-STD-810G

-Shock: Method 514.6/I,IV -Vibration: Method 516.6/I





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.
-  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.

-  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.
-  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.






■ Maintenance







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

Alert

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



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.

■ PC PROGRAMMING

NOTE: The utility software may be available to distributors/dealers only. USB programming cable is required. The manufacturer will not release the software to unauthorized party so please contact your dealer for details.

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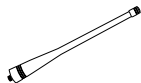
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• STANDARD ACCESSORIES

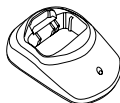
Standard Accessories



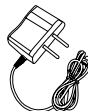
Antenna



Battery



Charger



AC Adaptor



Belt Clip



Instruction
Manual



Hand Strap

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 before purchase.

◦ OPERATION MODE (VFO mode and Channel mode)

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You may set the radio as VFO mode and Channel mode. There are also different setting parameters to properly set functions as per your operating comfort.

1. By programming software:

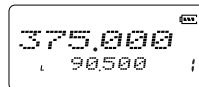
In PC programming utility software, "General Setting" menu, choose "Display Mode" to select VFO mode or Channel mode.

2. By manual setup:

Please refer to "Display Mode" in Page 51.

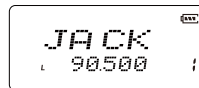
VFO Mode: In this mode, press **[D]** key to switch between Channel mode and VFO.

A. Memory mode/Freq.+channel display: At this mode, when set display as "**FREQ**", it enters into Frequency + Channel mode. Once the radio is turned off or switched to another channel, the temporary setting will be erased and back to initial settings. (As pic 1)



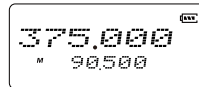
(Pic 1)

B. Memory mode/Name tag+channel number display: When set display as "**NAME**", it will display corresponding channel name when the current channel is edited with name in advance. Otherwise, it will display frequency and channel number. Its operations are the same as frequency + channel mode. (As pic 2)



(Pic 2)

C. VFO Mode (Frequency mode): This mode shows only frequency on the display. Set mode operation and Channel setting are stored as the latest value. Once the radio is turned off or changed to new frequency using VFO, the value remains until next change. (As pic 3)



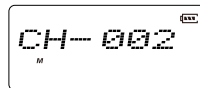
(Pic 3)

◦ OPERATION MODE (VFO mode and Channel mode)

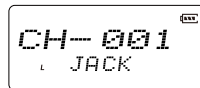
3. Commercial radio Mode:

When set display mode as "CH", it enters into Commercial radio mode. At this mode, except scanning, talk around/frequency reverse, DTMF encode or editing, BEEP on/off and keypad lock, all other functions should be set by PC software in advance to the operation (As pic 4). If name tag is programmed, the LCD will display current channel and name tag. (As pic 5)

NOTE: In Commercial radio mode, you can't switch the mode to VFO or channel manually, but you must use PC utility software.



(Pic 4)



(Pic 5)

4. In each operating mode, access to the set mode is possible.

Function	Key Operation	Parameter Instruction	Page
FM Radio On/Off	[A] → [1]	Activate FM broadcasting receiver	27
Beep Setup	[A] → [2]	Beep sound ON/OFF	28
CTCSS/DCS Scan	[A] → [3]	CTCSS Scan	28
CTCSS/DCS Scan	[A] → [3]	DCS Scan	28
Offset Frequency Direction Setup	[A] → [4]	(+):Transmitting frequency higher than receiving frequency	28
Offset Frequency Direction Setup	[A] → [4]	(-):Transmitting frequency lower than receiving frequency	29
Scan	[A] → [5]	Channel or Frequency Scan	29
Channel Scan Skip	[A] → [6]	S: Scan without current channel	30
Priority Scan	[A] → [7]	PRI: Check priority channel one time when scan each 10 channels	30
TX Power Selection	[A] → [9]	H: High Power 4W	31
Frequency Reverse / Talk Around	[A] → [*]	R: Frequency Reverse	34
Frequency Reverse / Talk Around	[A] → [*]	T: Talk Around	34
DTMF Code Enquiry	[A] → [0]	Displaying “-” when no data Displaying data when being with data	31
Keypad Lock	[A] → [#]	All keys locked, except PTT/PF1/ PF2	35

◦ KEY OPERATIONS / QUICK CHART

Function	Key Operation	Function Option	Display
Sub tone (CTCSS / DCS) Decode Setup	[A] → [8]	[B] / [C]	R-CDC OFF 1
Sub tone (CTCSS / DCS) Encode Setup	[A] → [8]	[B] / [C]	T-CDC OFF 2
Sub tone (CTCSS / DCS) Encode/Decode Synchronous Setup	[A] → [8]	[B] / [C]	C-CDC OFF 3
Offset Frequency	[A] → [8]	[B] / [C]	OFF SET 830.350 4
Wide/ Narrow Band Selection	[A] → [8]	[B] / [C]	W/N W2S K 5
Frequency Reverse/Talk Around	[A] → [8]	[B] / [C]	REV/TA REV 6
Scramble Setup(Encryption)	[A] → [8]	[B] / [C]	SCRM ON 7
Voice Compander Function	[A] → [8]	[B] / [C]	COMP ON 8
Busy Channel Lockout	[A] → [8]	[B] / [C]	BUSY BCL 9
Add Optional Signaling	[A] → [8]	[B] / [C]	OPT SIG ON 10
Signaling Relations	[A] → [8]	[B] / [C]	SIGNAL OR 11
PTT ID Setup	[A] → [8]	[B] / [C]	PTT-ID OFF 12
TX Off Function	[A] → [8]	[B] / [C]	TH-IHB ON 13
Whisper	[A] → [8]	[B] / [C]	WHI SPE OFF 14

Key Operation	Parameter Instruction	Enter and exit	Page
<p>Sub-tone setting: Operations are common to Decode (R-CDC), Encode (T-CDC) and Synchronous (C-CDC). Press [A] Key to move cursor to the menu, Press [1] Key to choose CTCSS/DCS/OFF, Press [B] / [C] Key to choose the value , [#] Key to choose correct DCS inverted and positive code.</p>	<p>CTCSS (50 Groups in total): 67Hz-254.1Hz DCS (232Groups in total): 017N-765I</p>	[D] / [#]	36
<p>Offset frequency shift value: Press [A] Key to move cursor to the menu, Press [B] / [C] Key to choose the value.</p>	<p>Available parameters are 0-70Mhz.</p>	[D] / [#]	38
<p>Bandwidth setting: Press [A] Key to move cursor to the menu, Press [B] / [C] Key to choose the value.</p>	<p>Wide band: 25K Middle band:20K Narrow band:12.5K</p>	[D] / [#]	38
<p>Frequency reverse / Talk-around: Press [A] Key to move cursor to the menu, Press [B] / [C] Key to choose the value.</p>	<p>REV : Frequency Reverse TA : Talk Around</p>	[D] / [#]	39
<p>Inversion scrambling: Press [A] Key to move cursor to the value of menu, Press [B] / [C] Key to choose the value.</p>	<p>OFF: Disable scramble ON: Enable scramble</p>	[D] / [#]	39
<p>Voice Componder: Press [A] Key to move cursor to the menu, Press [B] / [C] Key to choose the value. Note: Do not activate this function while communicating with Non-Componder radios.</p>	<p>ON: Enable compander OFF: Disable compander</p>	[D] / [#]	40

KEY OPERATIONS / QUICK CHART

Key Operation	Parameter Instruction	Enter and exit	Page
<p>Busy-Channel-Lockout (BCL): Press [A] Key to move cursor to the menu, Press [B] / [C] Key to choose the value.</p>	<p>OFF: Disable BCL: Prohibit transmitting when receiving a carrier and squelch is open. BTL: Prohibit transmitting when receiving a carrier with unmatched signaling.</p>	[D] / [#]	40
<p>Adding Optional Signaling tones: Press [A] Key to move cursor to the menu, Press [B] / [C] Key to choose the value. DCS (232Groups in total):017N-765I</p>	<p>CTCSS (50 Groups in total):67Hz-254.1Hz</p>	[D] / [#]	41
<p>Signaling relations: Press [A] Key to move cursor to the menu, Press [B] / [C] Key to choose the value.</p>	<p>AND: The other parties' traffics can be heard as long as the matched CTCSS / DCS signal AND optional signal are received. OR: The other parties' traffics can be heard as long as the matched CTCSS / DCS signal OR optional signal is received.</p>	[D] / [#]	42
<p>PTT ID Setup (DTMF encoding): Press [A] Key to move cursor to the menu, Press [B] / [C] Key to choose the value.</p>	<p>OFF: Disable PTT ID BOT: Press PTT key to transmit DTMF tones EOT: Release PTT key to transmit DTMF tones BOTH: Press and Release PTT key can both transmit DTMF tones</p>	[D] / [#]	43
<p>TX OFF (PTT lock): Press [A] Key to move cursor to the menu, Press [B] / [C] Key to choose the value.</p>	<p>ON: Enable TX Off function OFF: Disable TX Off function</p>	[D] / [#]	43
<p>Whisper (Enhance voice level while talking in undertones): Press [A] Key to move cursor to the menu, Press [B] / [C] Key to choose the value.</p>	<p>ON: Enable whisper function OFF: Disable whisper function</p>	[D] / [#]	44

KEY OPERATIONS / QUICK CHART

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Function	Menu Entry	Function Option	Display
Voice Prompting Selection	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Time-Out Timer (TOT)	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Voice Operated Transmission (VOX) Setup	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Voice Operated Transmission (VOX) Delay	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Voice Operated Transmission (VOX) Beep	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Frequency Step Setup	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Squelch level Setup	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Battery Save Setup	Press PF2 and hold this key for 3 seconds	[B] / [C]	
LCD Backlight Setup	Press PF2 and hold this key for 3 seconds	[B] / [C]	
LCD Backlight Color	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Scan Dwell Time Setup	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Display Mode Setup	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Tone Pulse Frequency Setup	Press PF2 and hold this key for 3 seconds	[B] / [C]	
DTMF Transmitting Time Setup	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Beep Volume Control	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Priority Channel Setup	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Current Battery Voltage Enquiry	Press PF2 and hold this key for 3 seconds	[B] / [C]	
Resume Factory Default	Press PF2 and hold this key for 3 seconds	[B] / [C]	

KEY OPERATIONS / QUICK CHART

Parameter Adjustment	Parameter Instruction	Confirm to back	Page
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	Voice prompt: ENG: Activate English Voice-guide OFF: OFF	[D] / [#]	45
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	Time-out-timer setting: Selectable parameter: 15 seconds to 240 seconds OFF: TOT Off	[D] / [#]	46
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	VOX activation and its operational audio level: Audio level parameter: 1, 2, 3 OFF: VOX OFF	[D] / [#]	46
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	VOX delay time (Time delay from end of TX to switch to RX) 10 parameters between 0.5 seconds to 5 seconds	[D] / [#]	47
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	ON: Enable VOX beep OFF: Disable VOX beep	[D] / [#]	47
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	VFO frequency step: Available Steps: 5KHz/ 6.25KHz/ 10KHz/ 12.5KHz/ 15KHz/ 20KHz/ 25KHz/ 30KHz/ 50KHz	[D] / [#]	48
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	Squelch level setting: Available level settings : 0 (opens squelch) to 9	[D] / [#]	48
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	Battery-save ratio: 4 different ratios (1:1 to 1:4) are available. 1:4 to obtain the best battery save effort but your risk to miss initial part of receiving signals becomes higher. OFF: Disable Battery-save function	[D] / [#]	49
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	LCD backlight operation OFF: Turned off always ON: Turned on always (consumes battery much faster) AUTO: Turns on with the key operation then turns off automatically	[D] / [#]	49

KEY OPERATIONS / QUICK CHART

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Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	LCD backlight color selection: BLUE: Blue backlight ORG: Orange backlight PUR: Purple backlight	[D] / [#]	50
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	Scan resume time setting: 3 parameters: 5 seconds / 10 seconds / 15 seconds	[D] / [#]	50
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	Display mode: (May be preprogrammed by dealer and locked) FREQ: Frequency and Channel display CH: Channel display NAME: Channel number with name-tag display if programmed	[D] / [#]	51
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	Tone-Burst tones: 4 tones available: 1750Hz / 2100Hz / 1000Hz / 1450Hz	[D] / [#]	51
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	DTMF tone transmitting time: 10 parameters including 50Microseconds, 100Ms, 150Ms, 200Ms, 250Ms, 300Ms, 350Ms, 400Ms, 450Ms, and 500Ms	[D] / [#]	52
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	Beep volume level: 5 levels from 1 to 5	[D] / [#]	52
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	Priority scan channel setup: Select one from available programmed channels OFF: Disable Priority Channel	[D] / [#]	53
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	Battery-voltage display (approx) Display current battery voltage	[D] / [#]	53
Press [A] Key to move cursor to the menu Press [B] / [C] key to choose the value	Perform RESET FACT? : Resume Factory Default, erasing the memory channels INIT? : Resume General Setting, keeping memory channel programming OFF: Cancels reset	[D] / [#]	54

◦ BATTERY INFORMATION

(((• Charging Operation

The battery is not charged at the factory, so please charge it before use. Charge the battery for the first time after purchase or extended storage (more than 2 months) may not bring the battery to its normal operating capacity. After repeating fully charge/ discharge cycle, the operating capacity will reach the best performance. The battery life is over when its operating time decreases even though it is fully and correctly charged, and it must be replaced by a new one.

(((• Battery Charger Type

Please use Alinco's designated charger, other models may cause explosion and injury. After installing the battery, when the radio displays low battery, please charge the battery.

(((• Notice for Charging Battery

- ▲ Do not shortcircuit the charger. Never attempt to remove the casing from the battery, otherwise the warranty is void and you risk serious damage to yourself and properties.
- ▲ The ambient temperature should be between 5°C and 40°C in charging. Charging outside this range may not fully charge the battery.
- ▲ Always switch off the transceiver equipped with a battery before charging. Otherwise, it will interfere with correct charging.
- ▲ To avoid interfering the charging procedure, please do not cut off the power or take out the battery during charging.
- ▲ Do not recharge the battery if it is already fully charged. This may shorten the life of the battery or damage the battery.
- ▲ Do not charge the battery or transceiver when wet. Dry it before charging to avoid danger.

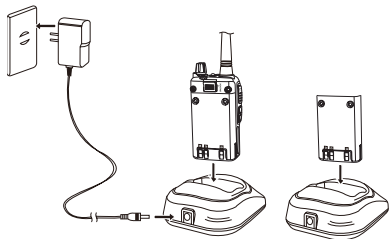
Caution

- Risk of explosion, generation of heat or leak of chemicals inside if the battery is replaced by an incorrect type or reverse polarity. Use always the recommended types of batteries in this manual only.
- The battery pack isn't fully charged when shipped. It must be charged before use.
- Charging should be conducted in a temperature range of +5°C to +40°C (+41°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 +45°C (-14°F to +113°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.
- Use specified genuine chargers only to charge battery packs. Use of other chargers may cause damage to products, you and your property.
- Never carry battery packs together with conductive articles such as metals in a same bag to prevent from short-circuiting. Put the packs only in nylon bags to carry them safely.

BATTERY INFORMATION

How to Charge the battery pack

1. Plug the AC adaptor into the AC outlet, then plug into the DC jack, the indicator lights orange for 1 second and goes out---waits to charge.
2. Slide the battery or transceiver with battery into the charger; make sure the battery terminals are in contact with the charging terminals. LED turns into twinkling RED ---pre-charging begins.
3. Pre-charging for about 5 minutes, LED stops blinking then charging up to.
4. It takes 4 hours to fully charge the battery, and LED turns to green when the charge is complete.



Warning: Never charge while the radio is turned on. When turned on, the charger can't detect the charging voltage properly and LED fails to indicate charge status correctly.

5. LED Indicator:

STATUS	self-examine when power on	(No battery)	Pre-charging	Charge normally	Fully Charged	Trouble
LED	Orange (for 1 second)	None	Red light twinkles for 5 minutes	Red	Green	Red twinkles alternatively

NOTE:

▲ Trouble means battery heating, short-circuit or charger malfunction. Remove the battery pack from the charger immediately and contact to your local dealer for services.

▲ The max trickle pre-charging time is 30 minutes. In case the red indicator continues to blink longer, please stop charging and consult with your local dealer for services.

▲ It is known that Li-Ion battery packs heat up over 400°C by itself when kept in a temperature of over 80°C for extended period of time. Although the packs are protected against overheating with a protective circuit, never leave the battery packs in a car or similar locations in hot seasons.

▲ Li-ion packs may deteriorate by over 30% regardless of conditions after 3 years. This is a nature of Li-ion pack and not a defect of the product.

▲ The charger is to charge the battery pack only. It is not an AC adapter to operate the radio. Never attempt to transmit the radio with using the charger as it will cause the damage to the charger and a repair/replace may become necessary.

▲ The charge should be conducted in an ambient temperature with a minimum proper air-conditioning in an extremely hot or cold seasons.

▲ Try charging the battery pack only when having trouble charging with the radio. In case the radio may have troubles, the charge can't be conducted properly. If the battery pack can be charged alone, please take the radio to your local dealer for services.

◦ INSTALLATION & CONNECTION

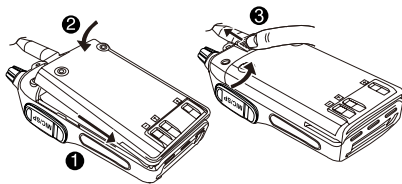
(((How to Store the Battery

1. The battery should be kept in the status of 50% discharge when storing.
2. Remove the battery pack from the radio and keep it in a cool, dry place.
3. Keep away from source of heat and direct sunlight.

NOTE: Incorrect storage will damage both the battery pack and the radio. Please always remove the battery pack from the radio when not in use.

(((Installing / Removing the Li-ion Battery

1. Match the three grooves of the battery pack with the corresponding guides on the back of the transceiver, then push it.
2. Press the battery and transceiver firmly together until the release latch on the top of the transceiver locks. After hearing a "click" sounds, the battery has been locked.
3. To remove the battery, slide up the release latch and remove the pack away from the transceiver.



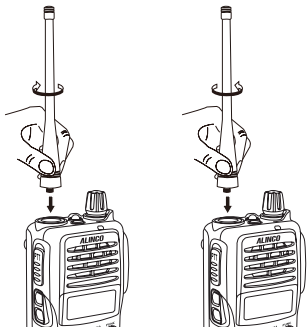
(((Installing / Removing the Antenna

Installing 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 and secure 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.

(((Installing / Removing the Belt Clip

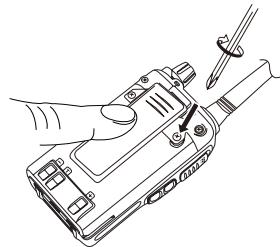
Installing the Belt Clip:

1. Put the belt clip on the back of the unit, and 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 PM Φ 2.5mm x 3mm)



• INSTALLATION & CONNECTION

《《 Accessories

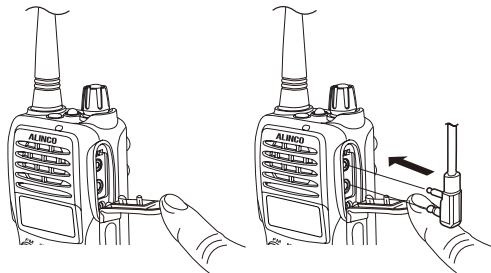
Open the jack cover and insert the accessory plug into the jack, as shown.

When the accessory is not used, please be sure to close the cover securely.

NOTE:

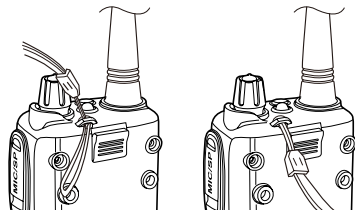
1. To keep the radio dust and splash resistant, the cover must be closed properly with the original supplied cover.

2. The radio is not dust and splash resistant while using the optional accessory risking that the water may penetrate inside through the plug.



《《 Installing the Hand Strap

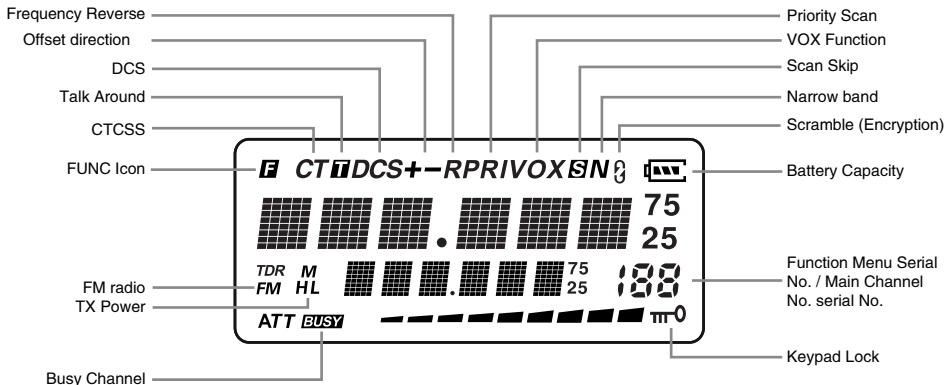
Attach the hand strap as shown.



(((**LCD Display**

Following are the meaning of the icons and signs shown on the display.

Some icons may not appear while operating this product due to pre-programming status by your dealer.



NOTE:

Battery capacity indicator(full)

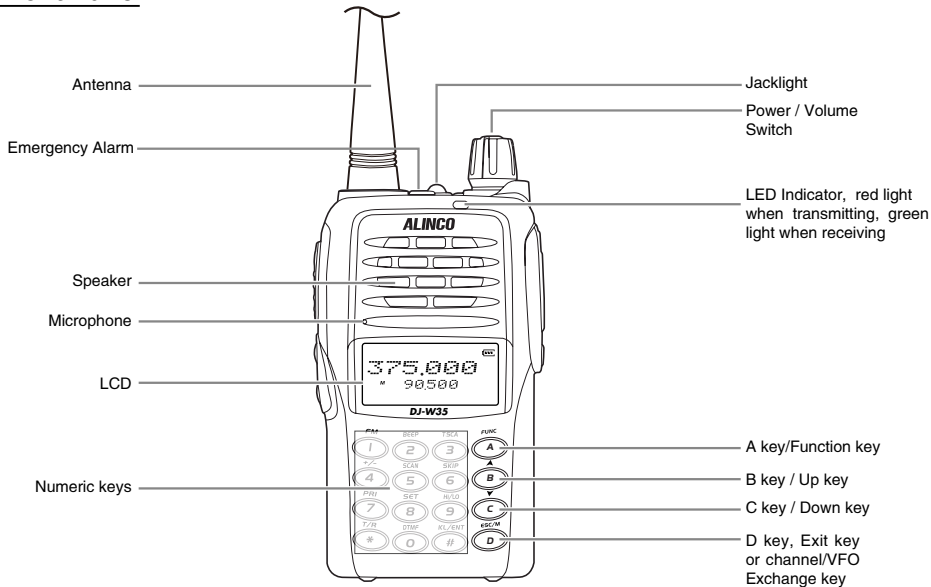
Battery power consuming

No power,replace battery pack or charge battery

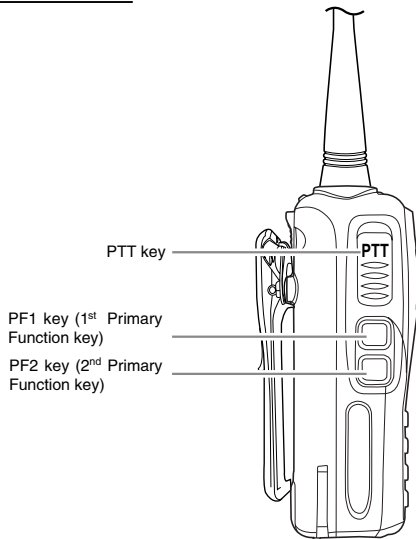
Real time display receiving signal strength/Power Indicator

◦ GETTING ACQUAINTED

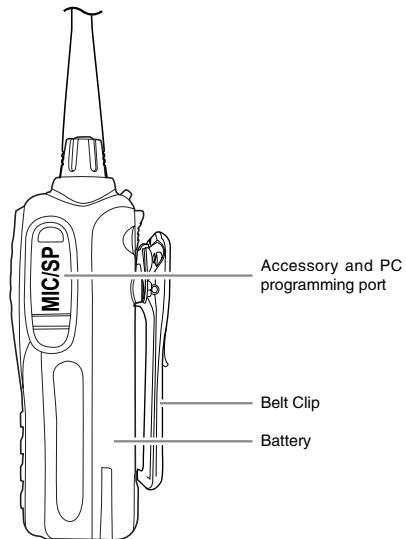
Front Panel



📶 Side Panel



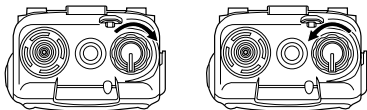
Left Panel



Right Panel

• BASIC OPERATIONS

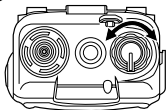
🔊 Power On and off



Turn **【POWER】** / **【VOLUME】** dial clockwise to power on.

Turn it counterclockwise to power off.

🔊 Adjusting Audio output level



Press and hold PF2 key to monitor white noise to refer to the current audio level.

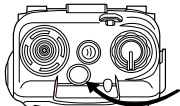
Turn **【POWER】** / **【VOLUME】** clockwise to increase the audio level, counterclockwise to decrease.

CAUTION:

NEVER USE EARPHONE while adjusting audio level. The max audio output is 1W, and it's loud enough to hurt your eardrums.

You may feel a static shock when wearing an earphone in a dry atmosphere but it's not a defect of product but a cause of nature. It is the same shock you feel typically when opening a door of a car in certain conditions.

⌘ Emergency Alarm Function



While Stand-by state, press this key for 3 seconds to enable the emergency alarm function. When activated the function, the radio will sound an alarm beep and start transmitting the alarm beep. The alarming lasts 1 minute, then the radio will return to Stand-by, or you may press this key again to stop alarming.

⌘ Change between Main Channel and FM Radio

Press **[A]** key and then press **[1]** key to switch between Main Channel and FM broadcasting receiver. When switching to FM radio, the radio will automatically start receiving both FM radio frequency and Main Channel. An arrow directs the current operational channel.

NOTE: While receiving FM radio, only the following functions are supported: Channel editing, channel deletion, keypad lock and beeping on/off. Other functions are available only for main channel.

⌘ FM radio station scanning

While listening to the FM broadcasting, press **[B]** key or **[C]** key to start scanning. When a signal is received, LCD displays current frequency and stops scanning.

Repeat the key operation to exit the FM radio station receiving.

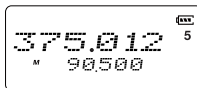
◦ BASIC OPERATIONS

(((Frequency Input by Keypad

In VFO mode or FM radio receiver, You may directly enter frequency through numeric keys.

1. Press **[D]** to switch to VFO.
2. Enter the desired frequency in 6–digit by numeric keys.

Example: To enter 375.0125, press [3][7][5][0][1][2] then 5 appears and sets automatically. To enter 375.100, press [3][7][5][1][0][0]. By pressing the last [0], a dot appears after the MHz unit and the frequency is set. When an invalid numbers are entered, the display will return to the current state and an error beep sounds.



NOTE: This product operates in accordance with legally assigned frequency only. In the FM receiver mode, the frequency step size input by numeric keys is 50KHz.

(((Channel Input by Keypad

In Frequency + Channel or Channel + Name Tag mode, you may select the channel by entering three channel digits (001-128). If the entered channel has not been preprogrammed, a beep sounds to alert you that input is wrong and then return to current channel.

(((Adjusting Channel / Frequency By " [B] " Key & " [C] " Key

In VFO mode, you may use **[B]** key/ **[C]** key as up/down keys to change the operating frequency. Press **[B]** to increase, **[C]** key to decrease the frequency. Every press moves frequency by a channel step.

NOTE: Available channel steps: 5K, 6.25K, 10K, 12.5K, 15K, 20K, 25K, 30K and 50KHz in total 9 for option. Please refer to stepping frequency setup in the SET-MODE chapter.

In Channel mode, press **【B】** key/ **【C】** key to choose the desired channel. Press **【B】** key once to enter the downward channel while press **【C】** key to enter the upward channel.

(((•) Monitor / Squelch Off

In case the receiving signal is weak and the audio is intermittently cut off by the squelch, press and hold **【PF2】** key. As long as this key is pressed, the squelch including TSQ/DCS unmutes making the audio easier to hear. Press it again to close.

(((•) Receiving

Press **【PF1】** key to turn on the LED located on the upper panel. Repeat it to turn off. Use it only necessary as it consumes battery considerably.

Select the operating mode and frequency or channel that you wish to operate.

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

NOTE: Please be aware of the squelch level and selective-calling settings such as CTCSS and DCS as you may risk not hearing the receiving signal.

◦ BASIC OPERATIONS

(((• Transmitting

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

Before transmitting, it is recommended to monitor the channel you are going to use to ensure it is not busy by pressing and holding **【PF2】** key.

(((• Side Key **【PF1】** Function Instruction

【PF1】 Key is assigned to multiple functions:

Default setting: Press this key once to turn on/off jacklight.

1. DTMF code TX: In stand-by conditions, press this key to transmit pre-stored DTMF tones.
2. Alarm: Press this key to start alarm function. (Optional: Preprogramming is necessary)
3. Alarm Off: In the alarm mode, press this key to stop the alarm. (Optional: Preprogramming is necessary)
4. Jacklight Switch: In stand-by, press this key to switch on or off the jacklight.
5. Tone-burst tone transmitting: While transmitting, press and hold this key to send the selected tone-burst tone.

(((• Side Key 【PF2】 Function Instruction

Default setting: Monitor function

1. Monitor function: In stand-by state, press and hold this key to open the squelch and monitor the channel. Release the key to Exit.
2. Turning on with this key pressed and hold it for 3 seconds to enter to the parameter.

(((• Switch between VFO and Frequency+Channel Mode

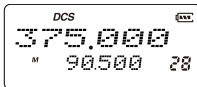
Press **【D】** key to switch between frequency mode (VFO) and Frequency + Channel mode or Channel+Name Tag mode.

NOTE: When the channel hasn't been preprogrammed, this operation is unavailable.

◦ ADVANCED OPERATIONS

(((Editing Channels

1. In VFO mode, enter the frequency and set the operating parameters as you desire. After pressing **[A]** key, While **F** icon is displayed on the top left corner, press and hold **[D]** key for 2 seconds. A beep sounds and LCD displays the channel No. icon.
2. Press **[B]** / **[C]** key to select desired channel number. LCD will display "-----" if current channel name is not preprogrammed.
3. After pressing and holding **[D]** key for 2 seconds, a beep sounds and completes the operation.

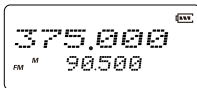


(((Deleting Channels

In the Channel mode, select the channel to be deleted. After pressing **[A]** key, While **F** icon is displayed on the top left corner, press and hold **[D]** key for 2 seconds. A beep sounds and skips to another channel. The channel is deleted and completes the operation.

(((Turn On/ Off FM Radio receiver

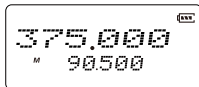
In Stand-by conditions, after pressing **[A]** key, While **F** icon is displayed on the top left corner, press **[1]** key. LCD displays 'FM' and starts receiving FM broadcasting frequency. Repeat the operations to turn off.



(((Enable / Disable Beeping

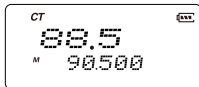
Beep sounds to confirm or alert the operation status.

In Stand-by conditions, after pressing **[A]** key, While **[F]** icon is displayed on the top left corner, press **[2]** key to turn off the beep. Repeat it to enable beep sounds.

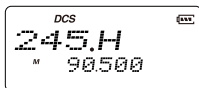


(((CTCSS / DCS Scan (Works only when CTCSS/DCS are preprogrammed)

In Stand-by conditions, after pressing **[A]** key, While **[F]** icon is displayed on the top left corner, press **[3]** key to activate CTCSS / DCS Scanning. Press **[B]** key or **[C]** key to change the scan direction. When the matched tone is detected with the radio's signaling setting, it will stay tuned for 15 seconds and resumes scanning. Press any key except **[A]** , **[*]** , **[#]** keys to exit.



NOTE: This function is not available in Commercial radio mode and no sub tone is received in current channel. In current channel, if signaling sets as CTCSS, it will scan CTCSS, if signaling sets as DCS, it will scan DCS.



(((Offset Frequency Direction Setup

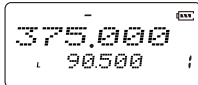
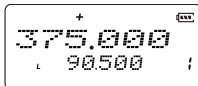
In VFO mode, frequency + channel mode or channel + name tag mode, after

◦ ADVANCED OPERATIONS

pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[4]** key to choose positive offset direction (+), minus offset direction (-) or exit setting (no icons displayed).

- 1.(+)Positive offset: Indicates the frequency is higher than receiving frequency. When enable reverse function, the receiving frequency is higher than transmitting frequency.
- 2.(-)Minus offset: Indicates the frequency is lower than receiving frequency. When enable reverse function, the receiving frequency is lower than transmitting frequency.
3. None: Indicates the radio is in the simplex mode.

NOTE:This function is unavailable in commercial radio mode.



(((Frequency/Channel Scan

While receiving, after pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[5]** key to begin frequency scan or channel scan.

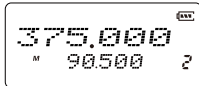
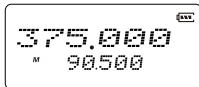
1.Frequency Scan

In VFO mode, it scans all channels. Press numeric key or **[D]** key to stop scanning.

2.Channel Scan

In channel modes, it scans in accordance with preprogrammed channels.

Press any numerical, PTT press **[D]** key to stop scanning.



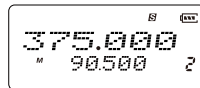
NOTE:

Frequency scan checks all bands allocated to the VFO. When channel scanning, the skipped channel is excluded from the scanning. While scanning, change the direction upward/downward by pressing **[B]** key or **[C]** key. When a signal is being received, the scan stops for 15 seconds and resume scanning.

(((**Channel Scan Skip**

In memory modes, after pressing **[A]** key, while and then press **[6]** icon is displayed on the top left corner, press **[6]** key to set the current channel to be skipped while channel-scanning, and 'S' icon appears to indicate skip state.

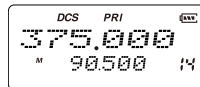
Repeat the operations to cancel channel scan skip setting.



(((**Priority Scan(Preprogramming of PRI channel is required)**

In memory modes, after pressing **[A]** key, while **F** icon is displayed on the top left corner memory modes, press **[7]** key to activate the priority scan. In priority scan state, it monitors priority channel once every 10 channel scanning. When the priority channel receives a matching signal, transceiver will stay tuned to the priority channel until current signal disappear.

NOTE: In VFO mode, priority scanning is unavailable



◦ ADVANCED OPERATIONS

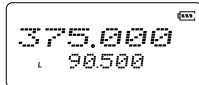
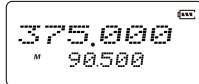
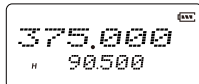
(((TX Power Selection

After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[9]** key to set the output power. When the bottom left corner of screen displays 'H' the power is 5W/high power.'L' for 0.5W. When nothing is displayed, the output power is middle/2W.

(((DTMF Code Enquiry and Setup

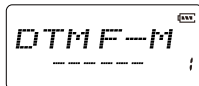
After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[O]** key to show the DTMF Auto-dialer group setting (16 groups in total). You should preprogram the DTMF auto-dialer group in advance to activate this feature. Each group can store up to 16 DTMF characters.

1. Press **[B]** key or **[C]** key to choose the desired Auto-dialer group. If it is not been edited in advance, it displays the current group number and “__”.
2. When current group is displayed as “__”, press **[A]** key, while **F** icon is displayed on the top left corner, press and holding **[O]** key for 2 seconds. A beep sounds “DU” and enters to DTMF code edit mode. Now you can enter the DTMF data using keypad. Press and hold **[O]** key to erase and edit the codes.
3. After editing, press **[PF2]** key to sound DTMF tones then to save and exit the edit mode.



(((Manually Transmitting DTMF Tones

Method 1: Press and hold **[PTT]** key to transmit. While transmitting enter the desired DTMF characters using corresponding keys.



Method 2: Press and hold **【PTT】** key to enter the first DTMF character, then release **【PTT】** key. It will remain transmitting for 2 seconds. You can keep entering the desired DTMF characters using keypad and don't need to always press and hold **【PTT】** key while operating. When transmitting DTMF tones, you can monitor the tone sounds from a speaker.

【Advanced DTMF operations】 Selective calling using DTMF tones may be possible.

Preprogramming may be necessary using dealer programming software.

1.**ANI:** When receive a matching ANI calling, the LCD will display the caller's ID, then recognize who is the caller.

2.**PTT ID:** Set available channel as PTT ID, press or release PTT key to send ID code.

3.By programming software, you can set group call wildcard for each group (DTMF character: A. B. C. D. "*" or "#"). The caller can call different group by sending different group call code. After receiving a matching ID from caller, carry out selective call, group call and all call function. Meanwhile, one or all of character of receiver's ID will be replaced by wildcard character. Also, Press PTT to input ID code by numeric keys in keypad to carry out selective call, group call and all call function. It is more convenient and flexible.

◦ ADVANCED OPERATIONS

For example: Group code as “C”

(Radio A) (Radio B) (Radio C) (Radio D)

Receiver self ID 123 223 235 355

Caller press and hold PTT to input 123 223 235 or 355, A or B or C or D will receive selective calling.

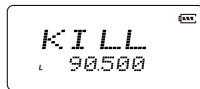
Caller press and hold PTT to input C23, A and B will receive group calling.

Caller press and hold PTT to input CC5, C and D will receive group calling.

Caller press and hold PTT to input CCC, all radios receive all calling.

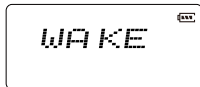
(((Remotely Kill / Revive

For security reasons, it is possible to make radios of your user group blocked by sending a preprogrammed “kill” code. When the user group manager remotely sends the kill code, “KILL” is shown on the display. To recover, send the kill code + “#”. For example, if “I234” is the kill code, sending “I234#” can wake up the radios. When Revive, “WAKE” is showed on LCD.



(((Remotely Stun / Revive

For security reasons, it is possible to make radios of your user group all keys and performance temporarily completely unavailable except for receiving by sending a preprogrammed “Stun” code. When the user group manager remotely sends the code, “STUN” is shown on the display. To recover, send the stun code + “#”. For example, if “I234” is remotely stun code, sending “I234#” can wake up the radios. When Revive, “WAKE” is showed on LCD.



NOTE:

Remotely kill/stun codes should be preprogrammed using the programming software. The maximum available digit for the kill/stun codes is 16. When Revive, radios return to normal operation

Frequency Reverse / Talk Around ON/OFF

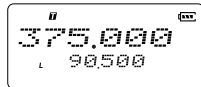
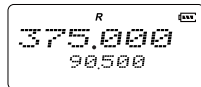
After pressing **[A]** key, while **[F]** icon is displayed on the top left corner, press **[*]** key for 1 second to start frequency reverse or talk around. Repeat the above operations to exit.

NOTE:

This operation is available only when the channel has been set with shift and offset setting.

When it displays “**R**” icon on screen, it means that current channel is in the frequency reversion function. Now the transmitting frequency and receiving frequency are interchanged, namely, receiving frequency switches to transmitting frequency while transmitting frequency switches to receiving frequency. If CTCSS / DCS signaling is set, it will also interchange.

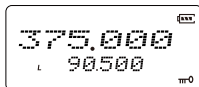
When it displays “**T**” icon on screen, it means that current channel is in the talk around function. Under these conditions, transceiver will transmit as receiving frequency. If CTCSS / DCS signaling is set, it will interchange decoding CTCSS as encoding.



◦ ADVANCED OPERATIONS

(((Keypad Lock

Keypad lock function is useful to prevent from wrong operation. In stand-by state, after pressing **[A]** key, while **[L]** icon is displayed on the top left corner, press and hold **[#]** key for 2 seconds to start keypad lock function. Repeat to cancel the key lock function.



NOTE:

When keypad is locked, only PTT / PF1 / PF2 / A key are usable.

(((Operating Parameter Setting

You may set operating parameters such as shift offset to properly utilize the available features. Please read the following pages for details.

NOTE:

- In memory modes such setting is still possible but temporary. Once the radio is turned off or switched to another channel, such temporary changes are canceled and resumes original memory setting.
- This function is not available in the Commercial radio mode.

(((**Tone Squelch / DCS squelch (Sub tone CTCSS / DCS) Decode Tone Setup**

This function enables the selective-calling and speaker sounds only when a signal with matching encoded CTCSS/DCS tone being received.

1. After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[B]** key to enter into function menu.
 2. Press **[B]** / **[C]** key to choose Menu 1 and display "R-CDC" .
 3. Press **[A]** then press **[I]** key to choose CTCSS, DCS or OFF. When DCS signaling is selected, press **[*]** key to choose DCS positive or inverse code.
 4. Press **[B]** key or **[C]** key to choose the desired CTCSS / DCS decode tone.
 5. Available CTCSS tones: 67Hz- 254.1Hz, 50 tones in total, Default is OFF.
 6. DCS: 017N-765I, 232 codes, **[N]** stands for positive, **[I]** stands for inverse codes. Default is OFF.
- *PRESS **[A]** key again then press **[B]** or **[C]** to move to the next menu, or press PTT to set and exit to a communication mode.

R- CDC
OFF ;

R- CDC
67.0 ;

R- CDC
017N ;

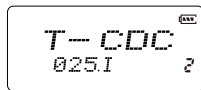
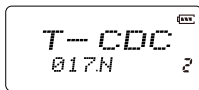
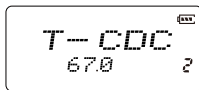
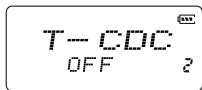
R- CDC
023.I ;

(((**Tone Squelch / DCS squelch (Sub tone CTCSS / DCS) Encode Tone Setup**

1. After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[B]** key to enter into function menu.
2. Press **[A]** key to choose Menu 2 and display "T-CDC" .
3. Press **[A]** then press **[1]** key to choose CTCSS, DCS or OFF. When DCS signaling is selected, press **[*]** key to choose DCS positive or inverse code.

ADVANCED OPERATIONS

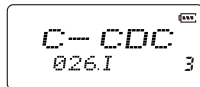
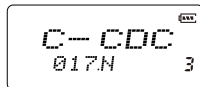
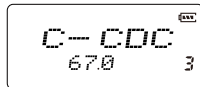
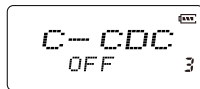
- Press **[B]** key or **[C]** key to choose the desired CTCSS / DCS encode tone.
- Available CTCSS tones: 67Hz- 254.1Hz, 50 tones in total, Default is OFF.
- DCS: 017N-765I, 232 codes, **[N]** stands for positive, **[I]** stands for inverse codes. Default is OFF



Tone Squelch / DCS squelch (Sub tone CTCSS / DCS)

Encode/Decode tones synchronized setup

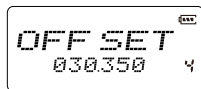
- After pressing **[A]** key, while **[F]** icon is displayed on the top left corner, press **[8]** key to enter into function menu.
- Press **[A]** key to choose Menu 3 and display "C-CDC".
- Press **[A]** then press **[1]** key to choose CTCSS, DCS or OFF. When DCS signaling is selected, press **[*]** key to choose DCS positive or inverse code.
- Press **[A]** key to choose the desired CTCSS / DCS tone.
- Available CTCSS tones: 67Hz- 254.1Hz, 50 tones in total, Default is OFF.
- DCS: 017N-765I, 232 codes, "N" stands for positive, "I" stands for inverse codes. Default is OFF.



(((Offset Frequency

In conventional repeater systems, a signal received on one frequency is retransmitted on another frequency. The difference between these two frequencies is called the offset frequency. The selectable offset frequency of this unit is from 0 to 70.00MHz.

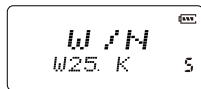
1. After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[B]** key to enter into function menu.
2. Press **[B]** / **[C]** key to choose Menu 4 and display "OFFSET".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the offset frequency. Available frequency range is 00-50MHz, and default is 0.000MHz.



(((Wide/ Narrow Channel-spacing Selection

Set the proper channel-spacing value allocated to the radio services in your area. This is not a Channel-step setting, but to determine the deviation width of the modulation.

1. After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[B]** key to enter into function menu.
2. Press **[B]** / **[C]** key to choose Menu 5 and display "W/N".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the channel-spacing:
25K (wide band), 20K (middle band), 12.5K (narrow band). Default value is 25K (KHz).



◦ ADVANCED OPERATIONS

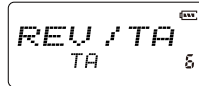
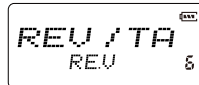
(((Frequency Reverse or Talk Around

1. After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[8]** key to enter into function menu.
2. Press **[B]** / **[C]** key to choose Menu 6 and display "REV/TA".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the desired parameter.

REV: The frequency reverse function is selected.

TA: The talk around function is selected.

Press **[A]** and hold **[*]** key while receiving to activate the selected function.

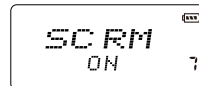


(((Inversion scrambling (Encryption)

NOTE: This is an analog encryption and decoding is possible by using commonly available receivers. Alinco does not warrant the confidentiality of the communications.

An analog voice inversion scrambler is equipped and such audio processing can offer an advanced confidentiality to your business communications.

1. After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[8]** key to enter into function menu.
2. Press **[B]** / **[C]** key to choose Menu 7 and display "SCRM".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the desired parameter.

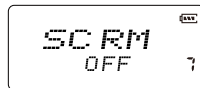


◦ ADVANCED OPERATIONS

ALINCO

ON: Scramble is enabled.

OFF: Scramble is disabled. Default setting is OFF.



(((Voice Comander (Reduce noise & enhance audio clarity)

Enabling this function to reduce background noise and enhance audio clarity. It is recommended to activate this function if all radios in your group are equipped with Voice Comander otherwise worse the clarity of communications.

1. After pressing **[A]** key, while **F** icon is displayed on the top left corner, press

[B] key to enter into function menu.

2. Press **[B]** / **[C]** key to choose Menu 8 and display "COMP".

3. Press **[A]** key then press **[B]** key or **[C]** key to choose the desired parameter.

ON: Comander is enabled.

OFF: Comander is disabled. Default is OFF.



NOTE: All units in your group should be set the same setting otherwise worse the audio clarity.

(((Busy Channel Lockout

BCLO is to restrict transmitting while RX signal is received. When Busy Channel Lockout is set to on, transmission is possible only in the specific conditions. The alarm beeps if the PTT key is pressed when transmission is prohibited.

1. After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[B]** key to enter into

ADVANCED OPERATIONS

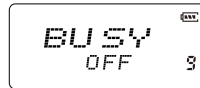
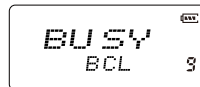
function menu.

2. Press **[B]** / **[C]** key to choose Menu 9 and display "BUSY".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the desired parameter.

BCL: Enable BCL, carrier wave lockout, transmitting is prohibited when receives any carrier.

BTL: Enable BTL, transmitting is prohibited when current channel receives a carrier signal that CTCSS/DCS tones are different from your group's.

OFF: Busy channel lockout is disabled. Default is OFF.



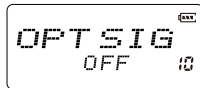
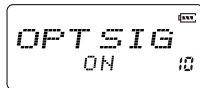
Turn On/Off Optional Signaling function

Optional signaling function is similar to CTCSS/DCS. Without receiving corresponding tone signals, the speaker will remain mute. Optional signaling can be applied for other advanced features such as ANI, PTT ID, group call, individual call, remotely stun, remotely kill, waken etc..

1. After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[B]** key to enter into function menu.
2. Press **[B]** / **[C]** key to choose Menu 10 and display "OPTSIG".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the desired parameter.

ON: Optional signaling DTMF is enabled.

OFF: Optional signaling DTMF is disabled. Default is OFF



NOTE:

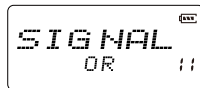
DTMF signaling is applied as an optional signaling to this product.

(((**Signaling Relations**

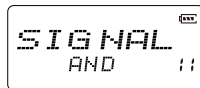
Select how to operate the Selective-calling (Signaling) function.

1. After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[8]** key to enter into function menu.
2. Press **[B]** / **[C]** key to choose Menu 11 and display "SIGNAL".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the desired parameter.

OR: As long as receiving a matching CTCSS / DCS tones OR any one of optional signaling, the squelch unmutes and receives audio. Default if OR.



AND: As long as receiving a matching CTCSS / DCS signaling AND optional signaling at the same time, the squelch unmutes and receives audio.



Note: DTMF signaling is used as an optional signaling to this product.

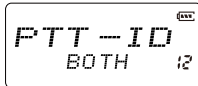
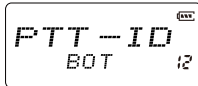
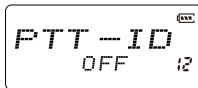
ADVANCED OPERATIONS

PTT ID

1. After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[8]** key to enter into function menu.
2. Press **[B]** / **[C]** key to choose Menu 12 and display "PTT-ID".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the desired parameter.

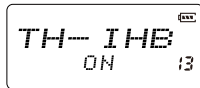
OFF: PTT ID is disabled. Default is OFF.

BOT: Press **[PTT]** key to send a preprogrammed DTMF code as PTT ID at the beginning of transmission.



TX OFF (Transmission Prohibited)

1. After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[8]** key to enter into function menu.

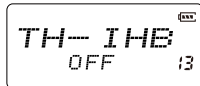


2. Press **[B]** / **[C]** key to choose Menu 13 and display "TX-IHB".

3. Press **[A]** key then press **[B]** key or **[C]** key to choose the desired parameter.

ON: TX Off is enabled. PTT operation is disabled. Default setting is OFF.

OFF: TX Off is disabled. PTT operation is possible.



(((**Whisper**

This function is to increase your voice level while talking in low voice. Do not activate this function while you can talk normally otherwise the voice may be distorted.

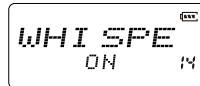
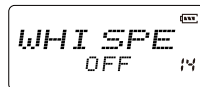
1. After pressing **[A]** key, while **F** icon is displayed on the top left corner, press **[8]** key to enter into function menu.

2. Press **[B]** / **[C]** key to choose Menu 14 and display "WHISPE".

3. Press **[A]** key then press **[B]** key or **[C]** key to choose the desired parameter.

ON: Whisper on

OFF: Whisper off. Default is OFF.



◦ SET MODE OPERATIONS

(((• Set Mode Setting

The Set mode is used to customize the various operational parameters of DJ-W35. The Set Mode parameters are stored and remain until next change regardless of power on/off operation.

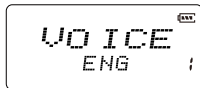
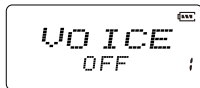
Please read the following pages for details of menu.

At the end of each setting operation, press **[A]** key again to set. Press **[B]** or **[C]** key to move to the next menu, or press **PTT** to set and exit the set mode.

(((• Voice Prompt

English Voice-guidance is available. Key touch and some other major operations are assisted with English voice.

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing **[PF2]** key for 3 seconds to enter into the Set Mode operations.
2. Press **[B]** / **[C]** key to choose the Menu 1 and display "VOICE".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the parameter.
OFF: Voice prompting is disabled.
ENG: English guidance activated. Default is OFF.

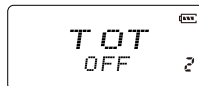
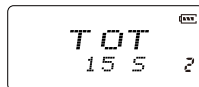


(((• Time-Out-Timer(TOT)

This function stops the transmission automatically when the continuous transmission time exceeds the set time and alerts it with a beep.

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing **[PF2]** key for 3 seconds to enter into the Set Mode operations.
2. Press **[B]** / **[C]** key to choose the Menu 2 and display "TOT".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the parameter, that is from 15 to 240 seconds (4 minutes) in 15 seconds step.

OFF: TOT is OFF and default is 180s.



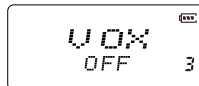
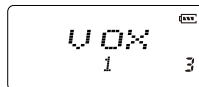
(((• Voice Operated Transmission (VOX) (An optional earphone-microphone is necessary)

An optional earphone-microphone is necessary.

After enabling this function, you can directly start transmitting by voice instead of pressing **[PTT]** key.

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing **[PF2]** key for 3 seconds to enter into the Set Mode operations.
2. Press **[B]** / **[C]** key to choose the Menu 3 and display "VOX".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the parameter
Available parameters are 3 levels of VOX sensitivity in 1, 2 or 3. 1 is most sensitive, 3 is less sensitive that requires more voice level to activate VOX.

OFF: VOX transmitting is disabled. Default is OFF.



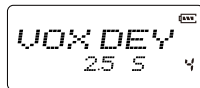
NOTE: VOX is not usable in noisy areas as it may start transmitting by the back noise.

◦ SET MODE OPERATIONS

(((• VOX Delay

This is to make a time delay at the end of VOX transmission. When you stop speaking to take breath, the radio still holds the transmission for the time you set in this menu.

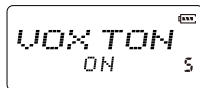
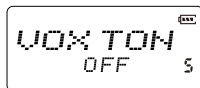
1. Press and hold **【PF2】** key while turning on the radio, and keep pressing **【PF2】** key for 3 seconds to enter into the Set Mode operations.
2. Press **【B】** / **【C】** key to choose the Menu 4 and display "VOXDEY".
3. Press **【A】** key then press **【B】** key or **【C】** key to choose the parameter, that is from 0.5 to 5 seconds in 0.5 seconds step. Default is 2 seconds.



(((• VOX Beep

After enabling this function, beginning transmitting by VOX, a beep will sound.

1. Press and hold **【PF2】** key while turning on the radio, and keep pressing **【PF2】** key for 3 seconds to enter into the Set Mode operations.
2. Press **【B】** / **【C】** key to choose the Menu 5 and display "VOXTON".
3. Press **【A】** key then press **【B】** key or **【C】** key to choose the parameter.
ON: VOX beeping is enabled.
OFF: VOX beeping is disabled. Default setting is OFF.



(((Frequency Step Size Setup

Tuning step can't be changed in the Channel modes but usable only in VFO mode.

Frequency input and frequency scan are both affected by tuning step setting.

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing

[PF2] key for 3 seconds to enter into the Set Mode operations.

2. Press **[B]** / **[C]** key to choose the Menu 6 and display "STEP".

3. Press **[A]** key then press **[B]** key or **[C]** key to choose the parameter.

Available steps are 5 / 6.25 / 10 / 12.5 / 15 / 20 / 25 / 30 / 50KHz.

Default is 12.5k.



(((Squelch Level

Squelch is a function that eliminates the noise when no signals are being received.

Setting the higher squelch level allows you to monitor only stronger signals.

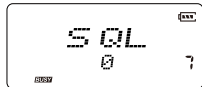
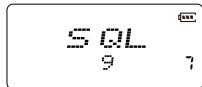
Usually start from level zero (the squelch is open and hear the noise), increasing the level and when the noise is gone, set just 1 level higher than the current level. For example the noise is cut at level 3, set the level to 4 and exit.

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing

[PF2] key for 3 seconds to enter into the Set Mode operations.

2. Press **[B]** / **[C]** key to choose the Menu 7 and display "SQL".

3. Press **[A]** key then press **[B]** key or **[C]** key to choose the parameter, that is from 00 to 09 in 10 levels. Default is 3.



NOTE: Higher squelch levels block more noise but risk not hearing weaker signals.

◦ SET MODE OPERATIONS

(((Battery Save

This function prevents useless battery consumption by switching the power ON/OFF at a fixed ratio if there is no key operation or receiving signal for a continuous period of 5 seconds or more. Higher OFF time (1:4 setting) saves more amount of battery but may cause slight delay on receiving. The Battery Save function is temporarily suspended when a key is operated or a signal is received. The display remain unchanged even the BS function is in the OFF cycle.

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing **[PF2]** key for 3 seconds to enter into the Set Mode operations.
2. Press **[B]** / **[C]** key to choose the Menu 8 and display "SAVE".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the parameter from 3 ratios. 1:1 / 1:2 / 1:4

OFF: Battery saving is disabled. Not recommended for normal operations. Default setting is 1:2.

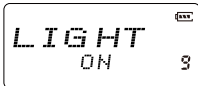


(((LCD Backlight operation

Always lit, turned off and automatic are available as LCD illumination operation mode.

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing **[PF2]** key for 3 seconds to enter into the Set Mode operations.
2. Press **[B]** / **[C]** key to choose the Menu 9 and display "LIGHT".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the parameter.

AUTO: Automatic, turns on and off automatically. Default is AUTO.



◦ SET MODE OPERATIONS

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ON: Always lit, not recommended as it considerably consumes battery.

OFF: Remain turned off always.

(((LCD Backlight Color Setup

There are three backlight colors available to suit your preference.

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing **[PF2]** key for 3 seconds to enter into the Set Mode operations.
2. Press **[B]** / **[C]** key to choose the Menu 10 and display "COLOR".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the parameter.

ORG: Orange and default.

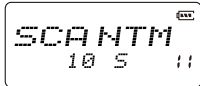
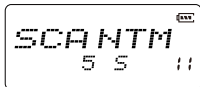
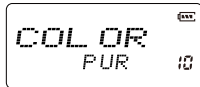
BLUE: Blue

PUR: Purple

(((Scan Resume Time

There are three time setting available for scan resume condition.

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing **[PF2]** key for 3 seconds to enter into the Set Mode operations.
2. Press **[B]** / **[C]** key to choose the Menu 11 and display "SCANTM".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the parameter.



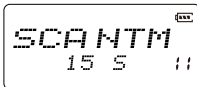
◦ SET MODE OPERATIONS

SST: When receives signal, scan stops for 5 seconds and resume.

IOST: Same, 10 seconds.

ISST: Same, 15 seconds.

Default is 10 seconds.



(((Frequency/Channel Display Mode

There are 3 different display modes available, Frequency + Channel mode, Channel mode and Channel+Name Tag modes.

1. Press and hold **【PF2】** key while turning on the radio, and keep pressing **【PF2】** key for 3 seconds to enter into the Set Mode operations.

2. Press **【B】** / **【C】** key to choose the Menu 12 and display "DSP".

3. Press **【A】** key then press **【B】** key or **【C】** key to choose the parameter.

FREQ: Frequency + Channel mode (VFO mode). Press **【D】** key to switch into VFO mode.

CH: Channel mode. Note that manual setting is not available when the radio has been preprogrammed by the dealer using software.

NAME: Channel+Name Tag mode(VFO mode). Press **【D】** key to switch into VFO mode.

Default setting is FREQ.



(((Tone Burst Tone

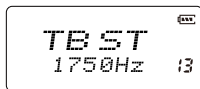
Especially in Europe, Tone-burst tone operated repeaters are popular. To access to those repeaters,

◦ SET MODE OPERATIONS

ALINCO

certain audible tone is required. **DJ-W35** offers 4 major Tone-burst tones.

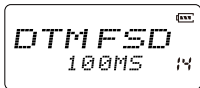
1. Press and hold **[PF2]** key while turning on the radio, and keep pressing **[PF2]** key for 3 seconds to enter into the Set Mode operations.
2. Press **[B]** / **[C]** key to choose the Menu 13 and display "TBST".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the parameter.
1000Hz / 1450Hz / 1750Hz / 2100Hz
Default is 1750Hz.



(((DTMF Transmitting Time

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing **[PF2]** key for 3 seconds to enter into the Set Mode operations.
2. Press **[B]** / **[C]** key to choose the Menu 14 and display "DTMFSD".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose from 10 different parameters.
50MS/100MS/150MS/200MS/250MS/300MS/350MS/400MS/450MS/500MS
(Unit: milliseconds)

This is the time for sending each DTMF signal and an interval between each DTMF being sent. Default is 100MS.

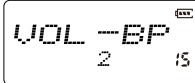


(((Beep Volume level

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing **[PF2]** key for 3 seconds to enter into the Set Mode operations.
2. Press **[B]** / **[C]** key to choose the Menu 15 and display "VOL-BF".

◦ SET MODE OPERATIONS

3. Press **[A]** key then press **[B]** key or **[C]** key to choose parameters, that is 1 to 5. Higher the louder. Default is 2.

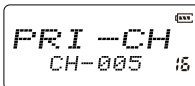


(((Priority Channel Setup

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing **[PF2]** key for 3 seconds to enter into the Set Mode operations.

2. Press **[B]** / **[C]** key to choose the Menu 16 and display "PRI-CH".

3. Press **[A]** key then press **[B]** key or **[C]** key to choose the channel you wish to use for Priority Scan operation from any one of 128 available channels.



OFF: Priority channel is disabled. Default is OFF.

NOTE:

This function is only to set the channel used for the priority scan monitoring. At least one channel must be preprogrammed to activate priority scanning. Scan skip channel or channel without being programmed cannot be selected.

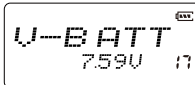
(((Current Battery Voltage Display

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing **[PF2]** key for 3 seconds to enter into the Set Mode operations.

2. Press **[B]** / **[C]** key to choose the Menu 17 and display "U-BATT".

At this state, the approximate battery voltage is displayed on the LCD.

Please note that the voltage is approximate and Alinco does not guarantee the accuracy.



(((Resume Factory Default (RESET)

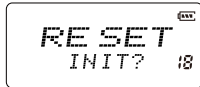
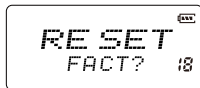
Use this feature to reset settings and go back to the default state or in case the radio malfunctions and key operations may become faulty.

1. Press and hold **[PF2]** key while turning on the radio, and keep pressing **[PF2]** key for 3 seconds to enter into the Set Mode operations.
2. Press **[B]** / **[C]** key to choose the Menu 18 and display "RESET".
3. Press **[A]** key then press **[B]** key or **[C]** key to choose the reset mode.

FACT?: Resume Factory default. Frequency, signaling tones and function settings will return to the factory default.

INIT?: Resume Set mode setting parameters to default. Frequency, signaling tones and function settings remain unchanged.

4. Press **[#]** key to confirm and perform the reset.



NOTE:

Once the reset is performed, previous programming data are gone and can't recall. To manually record major parameters such as frequency and signaling settings used in your group to manually restore the data after reset.

Once the reset is performed, the data will be all erased and can't be resumed.

The reset is not available to Dealer-programmed units. Please consult the dealer for technical assistances.

◦ DEFAULT SETTINGS

VFO Frequency	375.000MHz
Memory Channel	1ch:375.000MHz 2~128ch: Blank
PF1 long press key	Call
PF1 short press key	Light Switch
PF2 key	Squelch Open
Voice Prompting	OFF
Time-Out Timer	180s
VOX Setup	OFF
VOX Delay	2.0s
VOX Beep	OFF
Frequency Step	12.5kHz
Squelch level	3
Battery Save	1:2
LCD Backlight	Auto
LCD Backlight Color	Orange
Scan Dwell Time	10s
Display Mode	Frequency
Tone Pulse Frequency	1750Hz
DTMF Transmitting Time	100ms
Beep Volume	2
Priority Channel	OFF

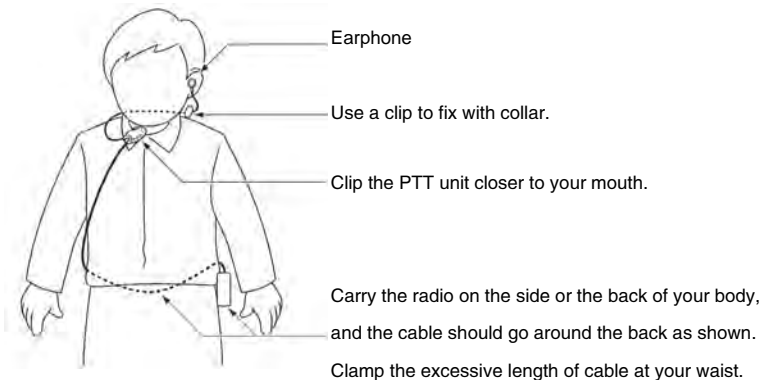
FM Radio	OFF
Key Beep	ON
Offset Frequency Setup	OFF
Channel Scan Skip	NO
TX Power Selection	High
Reverse / Talk Around	Reverse
DTMF Code	None
Keylock	OFF
CTCSS/DCS Decode/Encode	None
Offset Frequency	0.000
Channel Spacing	25K
Scramble	OFF
Voice Compander	OFF
Busy Channel Lockout	OFF
Optional Signaling	OFF
Signaling Relation	OR
PTT ID	OFF
TX Off Function	OFF
Whisper	OFF

◦ **OPTIONAL ACCESSORIES**

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EA-218	UHF & FM radio Antenna (350MHz)
EBC-34	Belt Clip
EBP-87	Li-ion Battery Pack (DC 7.4V 1500mAh)
EBP-88	Li-ion Battery Pack (DC 7.4V 1700mAh)
EDC-189	Li-ion Battery Charger
EDC-190E	AC Adaptor (220V Linear type)
EDC-191E	AC Adaptor (220V)
EDC-191T	AC Adaptor (120V)
EME-56A	Earphone Microphone
EMS-76	Speaker microphone

◦ RECOMMENDED INSTALLATION OF EARPHONE MICROPHONE



TECHNICAL SPECIFICATIONS

ALINCO

General		
Frequency range	TX/RX	340–400MHz
	FM radio	76–108MHz (RX only)
Modulation	F3E(16K0F3E/11K0F3E / RX only WFM)	
Programmable channels	128 channels	
Frequency stability	± 2.5ppm	
Power supply	DC7.4V (Battery only)	
Current drain	TX(5W)	≤ 1.4A
	RX	≤ 300mA
	Stand-by	≤ 70mA
	Battery save on	≤ 30mA
Temperature range	Operating: -20 ~ +55°C (-4 ~ 131° F) / Charging: +5 ~ +40°C (+41 ~ 104° F)	
Dimensions (Projections not included/approx.)	59(W) x 98(H) x 35(D) mm 2.32"(W) x 3.86"(H) x 1.38"(D)	
Weight *approx	227g or 8.01oz (with battery pack and antenna)	

TECHNICAL SPECIFICATIONS

Transmitter		
Output power (Approx.)	high	4W
	middle	2W
	low	0.5W
Modulation	Variable reactance FM	
Spurious emissions	- 60dB or less	
Max.deviation(Wide/Narrow)	$\leq \pm 5\text{kHz} / \leq \pm 2.5\text{kHz}$	

Receiver	
Receive system	Double coversation superheterodyne
Intermediate frequencies	26.45MHz (1st) / 450kHz (2nd)
Sensitivity(12dB SINAD)	\geq wide -13dBu, \geq Narrow -12dBu
Selectivity	- 6dB : 12kHz or more / - 60dB :30kHz or less
Audio output power	1W (10% distortion)

* All specifications are subject to change without notice or obligation.

* ALINCO and Alinco logo are registered trademarks of Alinco, Inc in many countries including USA, Russia, EU states and China.

Problem	Corrective Action
No power	A.The battery may be exhausting. Recharge or replace the battery. B.The battery may not be installed correctly. Remove the battery and install it again. C.The power switch is broken; send it to local dealers to repair. D.Battery life is end; contact to local dealers to replace.
Battery power dies shortly after charging.	The battery is exhausted. Replace the battery pack with a new one.
Transceiver cannot scan	Squelch is open. Adjust the level.
All band is noisy	Adjust squelch level.
No sound when using earphone.	Earphone or the jack is broken. Please contact with local dealers for inspection.
Communication distance becomes short, and Low sensitivity	A.Check whether the antenna is in good conduction and the antenna base do not come adrift. B.Antenna may be broken. Consult your local dealer for services.
Cannot talk or hear other members in your group	A.Different frequency or channel, please change it. B.Different CTCSS / DCS /DTMF, please reset it. C.Out of communication range.
Can not power on or frequent power off	Check if the battery pack is securely attached.

◦ TROUBLE SHOOTING GUIDE

The receiving sound level is low or intermittent	Consult with local dealers for inspection.
Receiving signal is intermittent.	A.Out of communication range or obstruct by walls, buildings etc. Change position to transmit. B.4Internal components may be in trouble, please contact with local dealers to repair.
Loudspeaker sounds lower or with dry noise after certain time of usage.(Speaker magnet attracts iron powders)	Check whether the loudspeaker is broken, Iron powder or dusts is in the loudspeaker. Please contact with local dealers to repair.
Receive voice from the other parties and can not transmit	Interference is being received. BCLO activated.
Receiving indicator with green light but no sound	A.Low volume, increase the audio level. B.Volume switch or loudspeaker is broken, please contact with local dealers to repair. C.Earphone jack is broken, please contact with local dealers to repair.

NOTE: Alinco guarantees the supply of minimum-necessary spare parts such as battery-packs, components and mechanical parts for at least 5 years after the production of this product is terminated except in case of accidents beyond control.

(((•CTCSS Frequency Chart

1	67.0	11	94.8	21	131.8	31	171.3	41	203.5
2	69.3	12	97.4	22	136.5	32	173.8	42	206.5
3	71.9	13	100.0	23	141.3	33	177.3	43	210.7
4	74.4	14	103.5	24	146.2	34	179.9	44	218.1
5	77.0	15	107.2	25	151.4	35	183.5	45	225.7
6	79.7	16	110.9	26	156.7	36	186.2	46	229.1
7	82.5	17	114.8	27	159.8	37	189.9	47	233.6
8	85.4	18	118.8	28	162.2	38	192.8	48	241.8
9	88.5	19	123.0	29	165.5	39	196.6	49	250.3
10	91.5	20	127.3	30	167.9	40	199.5	50	254.1

ATTACHED CHART

DCS Chart

1	017	18	073	35	165	52	261	69	356	86	464	103	632
2	023	19	074	36	172	53	263	70	364	87	465	104	645
3	025	20	114	37	174	54	265	71	365	88	466	105	651
4	026	21	115	38	205	55	266	72	371	89	503	106	662
5	031	22	116	39	212	56	271	73	411	90	506	107	664
6	032	23	122	40	217	57	274	74	412	91	516	108	703
7	036	24	125	41	223	58	305	75	413	92	523	109	712
8	043	25	131	42	225	59	306	76	423	93	526	110	723
9	047	26	132	43	226	60	311	77	425	94	532	111	731
10	050	27	134	44	243	61	315	78	431	95	534	112	732
11	051	28	135	45	244	62	325	79	432	96	546	113	734
12	053	29	143	46	245	63	331	80	445	97	565	114	743
13	054	30	145	47	246	64	332	81	446	98	606	115	754
14	055	31	152	48	251	65	343	82	452	99	612	116	765
15	065	32	155	49	252	66	345	83	454	100	624		
16	071	33	156	50	254	67	346	84	455	101	627		
17	072	34	162	51	255	68	351	85	462	102	631		