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VHF FM Transceiver / 136.000-173.9975MHz
All EU and EFTA member states. Operator license is required.

Printed in China

ALINCO

VHF FM Mobile Transceiver

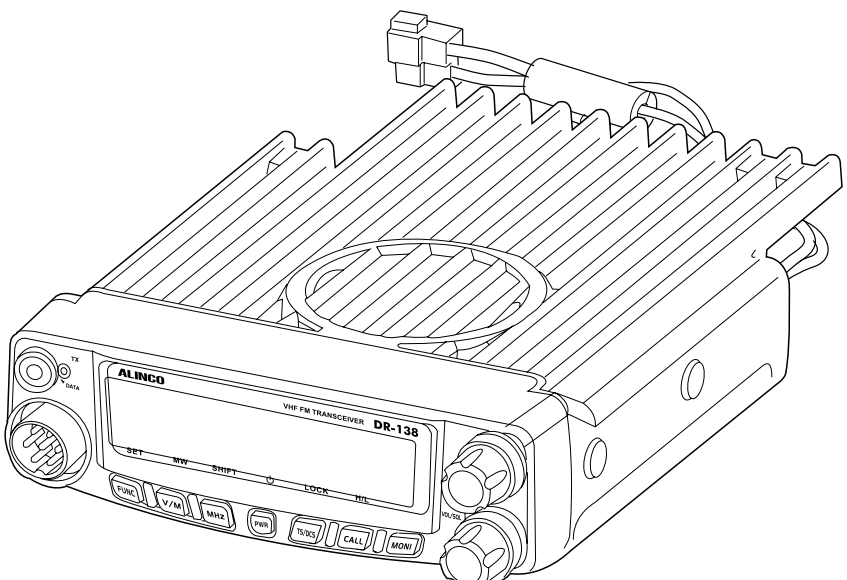
DR-138

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.

FCC ID:PH3-DR138

IC:3070C-DR138



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 proximity to the frequency ranges this product covers. Be careful not to cause interference when transmitting around such radio stations.

■ Lightning

Please note that no car provides adequate protection of its passengers or drivers against lightning. Therefore, Alinco will not take responsibility for any danger associated with using its radios or inside the car during lightning.

Features

- **Output power selectable 60W/25W/10W**
- **PC-programmable**
- **Alphanumeric name tags**
- **Voice Compander (Reduce Noise & enhance audio clarity)**
- **Inversion Scramble(Analog encryption)**
- **Sub-tone (CTCSS/DCS) Encode/ Decode, DTMF/ANI, 2-tone and 5-tone**
- **Voice prompt in English, Various scan modes, Key lock, Wide/Narrow operations and more at NO extra costs.**

Conformity Symbols

CE 0700 ! RoHS

Tested to comply MIL-STD-810G

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

CE Conformity Information

In case the unit you have purchased is marked with a CE symbol,a copy of relative conformity certificate or docu-ment can be reviewed at http://www.alinco.com/usa.html.Please see the back-cover for more details.

SAFETY TRAINING INFORMATION

WARNING:

This radio generates RF electromagnetic energy during transmission. This radio is designed for and classified as “Occupational Use Only”, meaning it must be used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards.This radio is NOT intended for use by the “GeneralPopulation” in an uncontrolled environment.

• For compliance with FCC and Industry Canada RF Exposure Requirements, the transmitter antenna installation shall comply with the following two conditions:

1.The transmitter antenna gain shall not exceed 0 dBi.

2.The antenna is required to be located outside of a vehicle and kept at a distance of 63 centimeters or more between the trans-mitting antenna of this device and any persons during operation.For small vehicle as worst case, the antenna shall be located on the roof top at any place on the centre line along the vehicle in order to achieve 63 centimeters separation distance. In order to ensure this distance is met, the installation of the antenna must be mounted at least 63 centimeters away from the nearest edge of the vehicle in order to protect against exposure to bystanders.

CAUTION:

To ensure that your exposure to RF electromag-netic energy is within the FCC allowable limits for occupationaluse, always adhere to the following guidelines:

• DO NOT operate the radio without a proper antenna attached, as this may damage the radio and may also cause you to exceed FCC RF exposure limits. A proper antenna is the antenna supplied with this radio by the manufacturer or an antenna specifically authorizedby the manufacturer for use with this radio.

In order to comply with RF exposure requirements, a minimum distance of 200 cm must be maintained between the antenna and all persons

• DO NOT transmit for more than 50% during the time of employment (50% duty cycle or less). Transmitting excessive amount of time can cause RF exposure compliance requirements to be exceeded. Please carefully read this instruction manual to learn how to transmit and stop transmitting before starting to use it.

Electromagnetic Interference/Compatibility

During transmissions, your radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so. DO NOT operate the transmitter in areas that are sensitive to electromagnetic radiation such as hospitals, aircraft, and blasting sites.

Occupational/Controlled Use

This product is used in situations that users are exposed to RF as consequence of their employment provided those users are fully aware of the potential RF hazards and can exercise control over their exposure.

- This transceiver is NOT ATEX approved and NOT intended for the use in hazardous explosive atmospheres.

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FOR CUSTOMERS IN CANADA :
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'EXPLOITATION EST AUTORISÉE AUX DEUX CONDITIONS SUIVANTES :
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

PRECAUTIONS:

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.

■ 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

- 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.
- Use of this product may be prohibited or illegal outside of your country. Be informed in advance when you travel.
- The manufacturer declines any responsibilities against loss of life and/or a property due to a failure of this product.
- Do not use multiple radios in very close proximity. It may cause interference and/or damage to the product(s).

⚠ 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

- 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.
- 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 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.

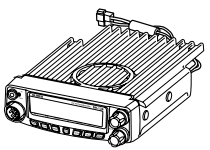
CONTENTS

CONTENTS

SUPPLIED ACCESSORIES

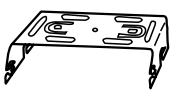
Carefully unpack to make sure the following items are found in the package in addition to this manual:

- Transceiver

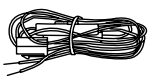


- Microphone (EMS-74) (with DTMF keyboard)

- Mobile Mounting Bracket

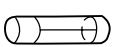


- DC Power Cable with Fuse Holder

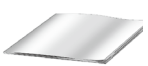


- Hardware Kit for Bracket

- Spare Fuses (one pair)



- User Manual



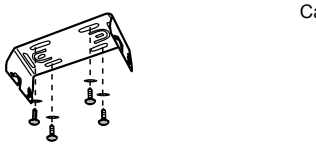
The standard accessories may vary slightly depending on the version you have purchased. Please contact your local authorized **Alinco** dealer should you have any questions. **ALINCO** and authorized dealers are not responsible for any typographical errors there may be in this manual. Standard accessories may change without notice.

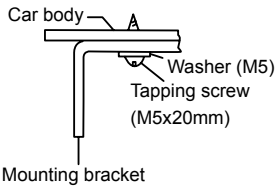
Warranty Policy: Please refer to any enclosed warranty information or contact your authorized Alinco dealer / distributor for the warranty policy.

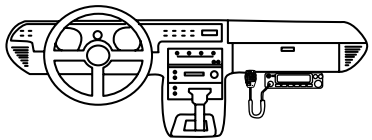
MOBILE INSTALLATION

The transceiver may be installed in any position in your car, where the controls and microphone are easily accessible and it does not interfere with the safe operation of the vehicle or the performance of the set. If your vehicle is equipped with air bags, be certain your radio will not interfere with their deployment. If you are uncertain about where to mount the unit, contact your vehicle's manufacturer.

1. Install the mounting bracket in the vehicle using the supplied self-tapping screws (4pcs) and flat washers (4pcs).

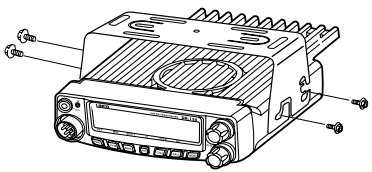






2. Position the transceiver, then insert and tighten the supplied hexagon SEMS screws.

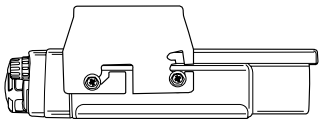
▼ Double check that all screws are tightened to prevent vehicle vibration from loosening the bracket or transceiver.

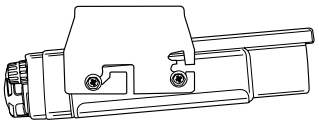


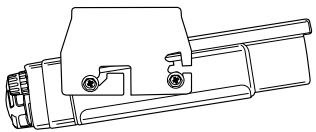
Caution:

Use only the provided screws otherwise you risk damaging the circuit board, components or fall-off of the unit.

▼ Determine the appropriate angle of the transceiver, using the 3 screw hole positions on the side of the mounting bracket.





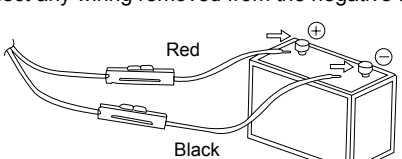


DC POWER CABLE CONNECTION

MOBILE OPERATION

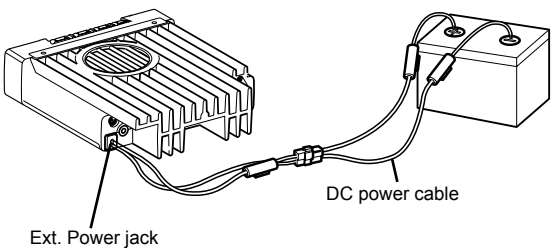
The vehicle battery must have a nominal rating of 12V. Never connect the transceiver to a 24V battery. Be sure to use a 12V vehicle battery that has sufficient current capacity. If the current to the transceiver is insufficient, the display may darken during transmission, or transmitting output power may drop excessively.

1. Route the DC power cable supplied with the transceiver directly to the vehicle's battery terminals using the shortest path from the transceiver.
   ▼ Never use the cigarette lighter socket as a DC source.
   ▼ The entire length of the cable must be dressed so it is isolated from heat, moisture, and the engine secondary (high voltage) ignition system/ cables.
2. After installing cable, in order to avoid the risk of damp, please use heat-resistant tap to tie together with fuse box. Don't forget to reinforce whole cable.
3. In order to avoid the risk of short circuit, please cut down connection with negative (-) of battery, then connect with radio.
4. Confirm the correct polarity of the connections, then attach the power cable to the battery terminals; red connects to the positive (+) terminal and black connects to the negative (-) terminal.
   ▼ Never remove the fuse holders from the cable.
5. Reconnect any wiring removed from the negative terminal.



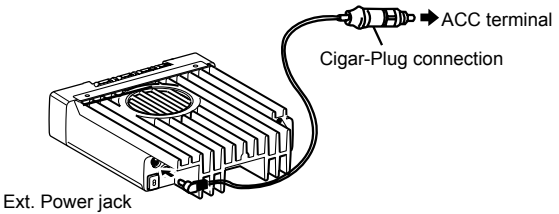
6. Connect the DC power cable to the transceiver's power supply connector.
   ▼ Press the connectors firmly together until the locking tab clicks.

If the ignition-key on/off feature is desired(optional feature),use the



optional QCC-01(For Cigar-Plug connection) cable. Connect one of the cables between the ACC terminal or a Cigar-Plug that operates with the vehicle ignition or ACC switch on the vehicle and EXT POWER jack on the rear side of the unit.

7. When the ignition key is turned to ACC or ON(Start) position with the radio turned off, the power switch illuminates. The illumination will be turned off when the ignition key is turned to the off position. To turn on the unit, press the power switch manually while it is illuminated. (While ignition key is at ACC or ON position)
8. When the ignition key is turned to ACC or ON position with the radio's power switch on, the unit turns on automatically and the power switch will be lit. Turn the ignition key to OFF position or manually turn the power switch off to shut down the radio.
9. Using extra cable,power consumption:5MAH.
10. Without this function,user can turn on/off radio by Power knob.

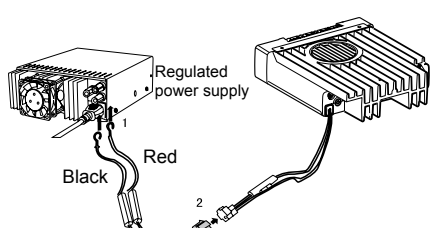


FIXED STATION OPERATION

In order to use this transceiver for fixed station operation, you will need a separate 13.8V DC power supply (not included) , Please contact local dealer to require.

The recommended current capacity of your power supply is 12A or more.

1. Connect the DC power cable to the regulated DC power supply and ensure that the polarities are correct. (Red: positive, Black: negative).
   - ▼ Never directly connect the transceiver to an AC outlet.
   - ▼ Use the supplied DC power cable to connect the transceiver to a regulated power supply.
   - ▼ Do not substitute a cable with smaller gauge wires.



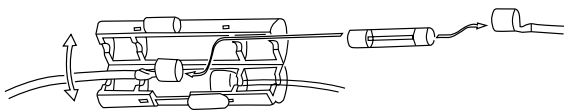
DC power cable with fuse holder

2. Connect the transceiver's DC power connector to the connector on the DC power cable.
   - ▼ Press the connectors firmly together until the locking tab clicks.

NOTE
- ▼ Before connecting the DC power to the transceiver, be sure to switch the transceiver and the DC power supply OFF.
- ▼ Do not plug the DC power supply into an AC outlet until you make all connections.

REPLACING FUSES

If the fuse blows, determine the cause, then correct the problem. After the problem is resolved, replace the fuse. If newly installed fuses continue to blow, disconnect the power cable and contact your dealer for assistance.



Fuse Location	Fuse Current Rating
Transceiver	15A
Supplied Accessory DC power cable	20A

Only use fuses of the specified type and rating, otherwise the transceiver could be damaged.

NOTE If you use the transceiver for a long period when the vehicle battery is not fully charged, or when the engine is OFF, the battery may become discharged, and will not have sufficient reserves to start the vehicle. Avoid using the transceiver in these conditions.

POWER SUPPLY VOLTAGE DISPLAY

After connecting the transceiver to the power supply, the supply voltage can be displayed on LCD by pressing the [FUN] key together with the [MONI] key.

The display immediately changes as the voltage supply changes, It also displays voltage during transmission.

The transceiver will return to its normal operation when the power is switched ON or repeat above operation.

Important The range of displayed voltage is only from 7V to16V DC. Because the displayed value is estimated, please use a voltmeter when a more precise reading is desired.

ANTENNA CONNECTION

Before operating, install an efficient, well-tuned antenna. The success of your installation will depend on the type of antenna and its correct installation.

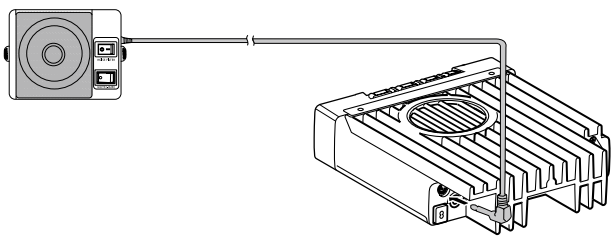
Use a 50Ω impedance antenna and low-loss coaxial feed-line that has a characteristic impedance of 50 Ω, to match the transceiver input impedance. Coupling the antenna to the transceiver via feed-lines having an impedance other than 50Ω reduces the efficiency of the antenna system and can cause interference to nearby televisions, radio receivers and other electronic equipment.

NOTE Transmitting without first connecting an antenna or other matched load may damage the transceiver. Always connect the antenna to the transceiver before transmitting.
All fixed stations should be equipped with a lightning arrester to reduce the risk of fire, electric shock, and transceiver damage.

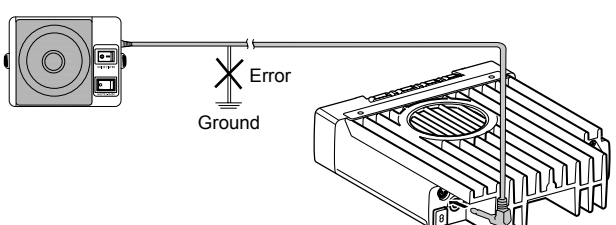
ACCESSORIES CONNECTIONS

EXTERNAL SPEAKER

If you plan to use an external speaker, choose a speaker with an impedance of 8 Ω. The external speaker jack accepts a 3.5 mm (1/8") mono (2-conductor) plug.

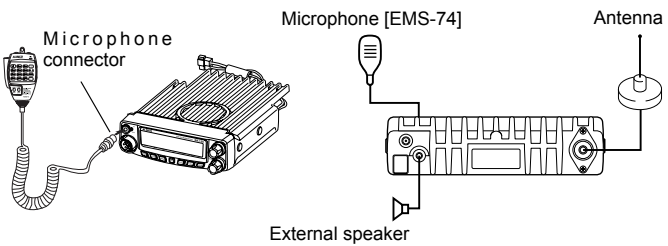


NOTE External speaker adopt double port BTL, please care about the connection. The speaker can not connect with the ground, otherwise the speaker will be fault.

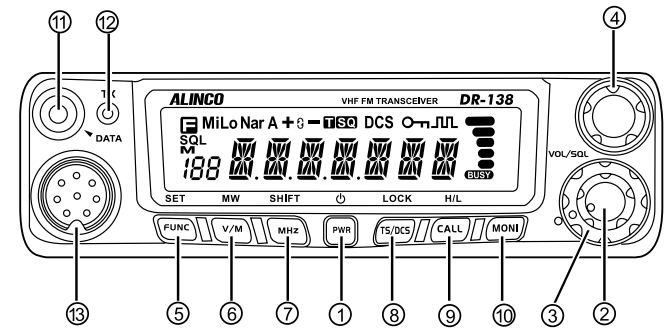


MICROPHONE

For voice communications, connect a microphone equipped with an 8-pin modular plug into the modular socket on the front of the main unit. Press firmly on the plug until the locking tab clicks. Attach the supplied microphone hanger in an appropriate location using the screws included in the screw set.



FRONT PANEL



- **Basic Functions**

NO.	KEY	FUNCTION
1	PWR(Power)	Power on/Off
2	VOL	Adjust Volume Key
3	SQL Knob	Adjust Squelch level
4	Main Dial	Change frequency, memory channel and scan direction etc.
5	FUNC/SET	Function Key
6	V/M/MW	Switches between VFO mode and Channel mode
7	MHz/SHIFT	Step Size Key (step:1MHz)
8	TS/DCS/LOCK	Sets CTCSS and DCS value
9	CALL/H/L	Call key
10	MONI	Squelch off
11	Data Terminal	Data reading/writing, cloning and theft alarm functions
12	TX	lights during Transmitting
13	Mic.connector	Microphone connection port

- **Press FUNC key until icon appears then press the following key.**

NO.	KEY	FUNCTION
4	FUNC/SET	Confirms the selective functions and exit
5	V/M/MW	Stores data into channels
6	MHz/SHIFT	Sets offset direction and offset frequency
7	TS/DCS/LOCK	Sets Keypad lock function
8	CALL /H/L	Switches between HI, MID and LOW power transmission
9	MONI	Compander mode on/off

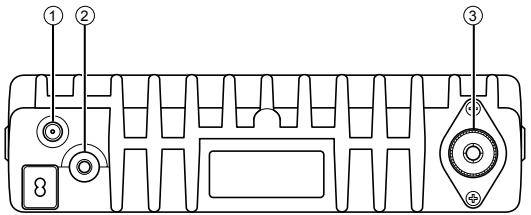
- **Press FUNC key and following key together to activate following function:**

NO.	KEY	FUNCTION
1	PWR	Reset to factory default settings
5	V/M/MW	Erase the memory
6	MHz/SHIFT	Switches between Wide/ Narrow band
7	TS/DCS/LOCK	Auto dialer
8	CALL	Enters clone data function mode
9	MONI	Enters power supply voltage indication mode

- **Functions that require continuous pressing following key to be activated**

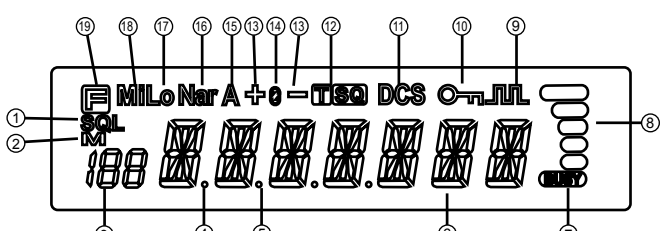
NO.	KEY	FUNCTION
4	FUNC/SET	Press and hold for 2s to enter the Setting mode
9	MONI	Monitor mode

REAR PANEL



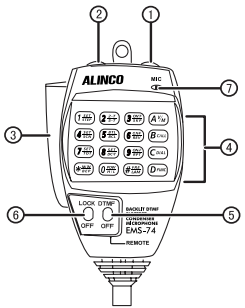
NO.	KEY	FUNCTION
1	Ext. Power Jack	Terminal for connecting optional cable for use with ignition key On/Off function.
2	Ext.Speaker Terminal	Terminal for optional external speaker.
3	Antenna Connector	Connection for 50Ω coaxial cable and antenna. Connector is PL/M.

DISPLAY



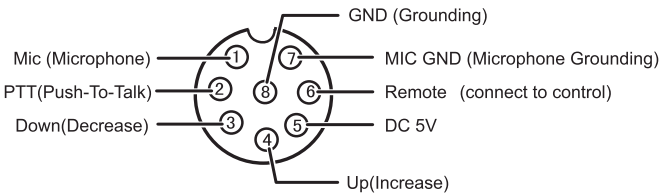
NO.	KEY	FUNCTION
1	SQL	Squelch level.
2	M	In channel mode.
3	188	Indicates the channel number in channel mode.
4	Decimal point	Channel skip.
5	Decimal point	Indicates the decimal point of frequency and the scanning function.
6	8.8.8.8.8.8	Indicates the frequency or memory name.
7	BUSY	Signal is being received or monitor.
8		Signal strength of receiving and transmitting.
9		Compander.
10		Keypad lock .
11	DCS	Set DCS function.
12	TSQ	Set CTCSS function.
13	+ −	Offset frequency direction.
14		Scramble.
15	A	Auto power off.
16	Nar	Narrow mode.
17	LO	Low power.
18	Mi	Middle Power.
19	F	Pressing FUN key.

MICROPHONE



NO.	KEY	FUNCTION
1	UP	Increase frequency ,channel number or setting value.
2	DOWN	Decrease frequency, channel number or setting value.
3	PTT	Press the PTT (Push-TO-Talk) key to transmit.
4	Number Key	Input VFO frequency or DTMF dial out etc..
5	DTMF ON/OFF	Switches between DTMF dialing or function operating.
6	LOCK Switch	Locks out the UP 、Down、Numerical keys and Function keys.
7	MIC	Speak here during transmission.

MIC Connector Diagram(in the front view of connector)



Operating Mode (VFO Mode or Channel Mode)

According to practical application,you can set the radio works as VFO Transceiver mode or Channel mode. There are also 2 levels operation menu to set functions as you need. It is easy and convenient (From No.1 to No. 15 are channel function setup,From No.15 to No.29 are general setting setup).

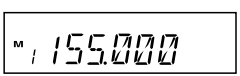
1. **Working Mode:**

A. By programming software: In PC software's "General Setting" menu, choose "Display Mode" to select VFO or Channel mode.

B. By manual setup:Please refer to "Display Mode" in P.23.

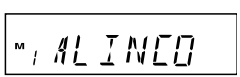
2. **VFO Mode:**

A. Frequency + Memory mode: At this mode, when set display as "FR", it enters into Frequency + Memory 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)



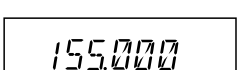
(Pic 1)

B. Channel + Name Tag Mode: When set display as "NM", it enters into Channel +Name Tag Mode. At this mode, 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)

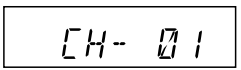
C.VFO Mode(Frequency mode): This mode shows only frequency on the display. Set mode operation and Channel setting are stored as the latest value. Once the radio is turned off or changed to new frequency using VFO, the value remains until next change. (As pic 3)



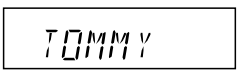
(Pic 3)

3. **Commercial radio Mode:**

When set display mode as "CH", it enters into Commercial radio mode. At this mode, except scanning, all other functions should be set by PC software in advance to the operation. If name tag is programmed, the LCD will display current channel and name tag. (As pic 4) Also menu # 1-17 in set-mode setting are masked and only be set by using the PC programming software. Once the transceiver has been set as this mode, a user can't access to reset or changing masked parameters manually.



(Pic 4)

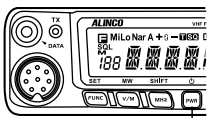


(Pic 5)

10

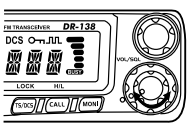
SWITCHING THE POWER ON/OFF

According to the option selected during installation, press the [PWR] switch or turn the ignition key to ACC (speed up) or ON (startup) position to power on. Press the [PWR] key for 1s or turn the ignition key to OFF position to turn off.



ADJUSTING THE VOLUME

Turn the VOL knob clockwise to increase the audio level, counterclockwise to decrease.

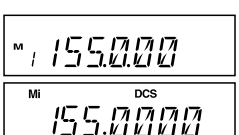


NOTE Press and hold MONI key to hear a white-noise to set the proper audio level.

11

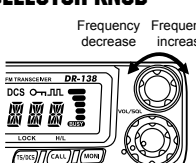
SWITCH BETWEEN VFO AND MEMORY MODE

In standby, press [V/M] key or Microphone's [VFO/MR] key until appear **M**, this indicates current frequency in Memory mode. Repeat above operation to switch between Frequency mode (VFO) and Memory mode.



ADJUSTING FREQUENCY/CHANNEL THROUGH SELECTOR KNOB

1. Under frequency (VFO) mode, you can change the current frequency to the desired one through selector knob; Turn clockwise to increase frequency; turn counterclockwise to decrease. Every click will increase or decrease one step. Press [MHz] key, the KHz order digits will be masked. In this status, turn selector knob or Microphone [UP / DOWN] key will increase or decrease frequency quickly by 1MHz step.
2. Under channel mode, you can change the current channel to the desired one through selector knob, clockwise turn to the forward channel, anticlockwise turn to the backward channel. In relative Operating mode, Microphone's [UP / DOWN] key has the same function for adjusting frequency and channel.



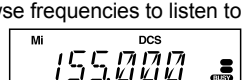
NOTE 5k, 6.25k, 8.33K,10k, 12.5k, 20k, 25k, 30k and 50k .

ADJUSTING SQUELCH LEVEL

A squelch eliminates white-noise (the background noise when a signal is not received). Higher level settings will keep the squelch "closed" more tightly for quieter monitoring, but weak signals will not be heard. Lower settings allow weaker signals to "open" the squelch but noise may also cause it to open. By rotating the SQL knob, adjust the squelch level to the desired level.

RECEIVING

Select the desired receiving frequency or browse frequencies to listen to ongoing communications. The S-meter shows relative signal strength between BUSY and 5th segment when the transceiver detects an incoming signal.



TRANSMITTING

Press and hold [MONI] key or press MIC's [MON BEP] key to monitor for a while to confirm the channel desired is not busy. Release [MONI] or press Mic's [MON BEP] key to return standby status,Then press and hold [PTT] key to speak into microphone.

▼ Please hold the microphone approximately 2.5-5.0cm from your lips, and then speak into the microphone in your normal speaking voice.

NOTE While transmitting, LED lights RED and TX-meter shows relative power level. Release PTT to receive.

TRANSMITTING TONE BURST TONE

Press and hold [PTT] key, then press Microphone [DOWN] key to transmit current selected tone-pulse signal.

TRANSMITTING OPTIONAL SIGNALING

Press and hold [PTT] key, then press Microphone UP key or press CALL key in front panel or press Mic's ON/F CALL key to transmit pre-stored and selected DTMF/2Tone/5Tone optional signaling. Details will follow.

MEMORY CHANNEL PROGRAMMING

1. Under frequency mode (VFO), turn selector knob to select the desired frequency or input frequency by MIC's numeric keys.
2. Press TS/DCS key to enter CTCSS/DCS signaling setup, turn selector knob to select the desired signaling.
3. Press FUNC key, LCD appears F, M icon and current channel number, M icon flashing means current channel is empty.
4. Turn selector knob to select the desired channel number to store.
5. Press V/M key, F , M icon and channel number disappears and beep sounds.
6. Press **V/M** key again to confirm that the memory channel is properly stored.

MEMORY CHANNEL DELETING

1. Under Memory mode, turn selector knob to select channel to be deleted.
2. Press FUNC key and V/M key together, current memory will be deleted beep sounds. M icon flashing means current memory is deleted.

SQUELCH OFF/SQUELCH OFF MOMENTARY

1. Squelch Off: Press [MONI] key to disable squelch, press [MONI] key again to resume squelch. This is factory default operation.
2. Squelch Off Momentary: Press and hold [MONI] key to disable squelch, release [MONI] key to resume squelch.This is set by programming software as an option.

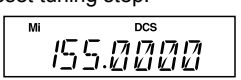
NOTE The above functions should be set in by software only, not by key operation.

FREQUENCY/MEMORY SCAN

FREQUENCY SCAN

Scans all VFO channels in regard to the preset tuning step.

1. In VFO mode,press [V/M] for 1s to start scanning.

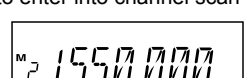


2. Turn selector knob or press Microphone [UP / DOWN] key to change scan direction.
3. Press any key except [PWR] and [FUNC] key to stop.

MEMORY SCAN

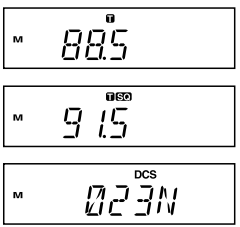
Scans all memory channels unless Memory skip feature is selected for a given memory.

1. In memory mode, press [V/M] key for 1s to enter into channel scan
2. Turn selector knob or press Microphone [UP / DOWN] key to change scan direction.



3. Press any key except [PWR] and [FUNC] key to exit.

CTCSS/DCS ENCODE AND DECODE SETUP



Many repeaters require a CTCSS tone or a DCS code encode setting as a “key” to access the system, so-called “selective-calling”. Sometimes, CTCSS or DCS decode features are used on the output of a repeater so they can be used as a squelch. In this mode, regardless of the main squelch status, the audio can be heard ONLY when the matching tone/code signal is received. The combination of CTCSS squelch and DCS function is not available; only one or the other may be used for a given channel.The operation is available on VFO and memory mode. Dealer-Preprogrammed units can't operate this function manually. In the memory mode, the setting is temporary; changing the channel or turning off the radio will erase the setting.

1. Press [TS/DCS] key. The current setting will be displayed with **T/SQ/DCS** icons and relative frequency/code. Press the same key to select **T/SQ/DCS** setting.
2. The numbers (such as 88.5) represent the CTCSS frequency in Hz. When it is displayed with the **T** icon only, the unit transmits the sub-audible tone while the PTT is pressed (encode) and the repeater access is enabled (assuming the repeater is using 88.5Hz tone).
3. Press the same key again so that the **SQ** icon shows up on the display. This is the CTCSS decode frequency. This enables CTCSS squelch (or Tone Squelch, TSQ).
4. Press it again so that the 3-digit number and **DCS** icon is displayed. This is the DCS code, and it enables DCS encoding and decoding.

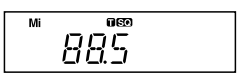
For 2-4, rotate the main dial or press the [UP / DOWN] keys to change tone or code. Press any key (Except **FUNC / PWR / TS / DCS**,

UP / DOWN keys) to enter the setting and return to original status. The **T/SQ/DCS** icon will remain on the display to show the current selective-calling status. To exit, simply use the TS/DCS key and press it until the relative status icon T/TQ/DCS disappears.

The CTCSS encoding and decoding frequencies may be set differently. The encode setting frequency automatically relates to the decode setting, but decode setting does not affect encode. The standard set of 50 different CTCSS tones are available. DCS encode/decode cannot be separated. The list of selectable tones and codes is shown on Appendix at the end of this booklet.

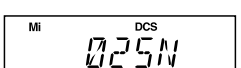
CTCSS SCAN

Repeatedly press TS/DCS key until LCD displays T icons ,then hold TS/DCS key for 1S to enter into CTCSS scanning. Once finding a matching CTCSS tone, a voice will be heard and resumes scanning after 15s.



DCS SCAN

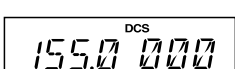
Repeatedly press TS/DCS key until LCD displays DCS icons ,then hold TS/DCS key for 1S to enter into DCS scanning. Once finding a matching DCS code,a voice will be heard and resumes scanning after 15s.



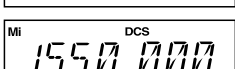
HIGH/MID/LOW POWER SWITCH

Press FUNC key until LCD display F iron, then press CALL key to switch between high/Mid/low power. The LCD appears:

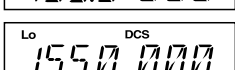
None: Transmit in high power



Mi: Transmit in middle power



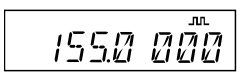
Lo: Transmit in low power

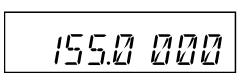


COMPANDER (DECREASE THE BACKGROUND NOISE AND ENHANCE AUDIO CLARITY)

Compander function will decrease the background noise and enhance audio clarity.

1. Press FUNC key, then press MONI key to turn on compander function, repeat above operation again to turn off .
2. When "⊓⊔⊓" icon is displayed, compander is active.



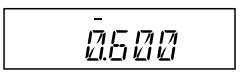


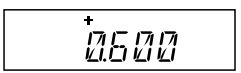
14

OFFSET DIRECTION AND OFFSET FREQUENCY SETUP

Repeater receives a signal(UP-LINK) on one frequency and re-transmits on another frequency(DOWN-LINK). The difference between these two frequencies is called the offset frequency. If the UP-LINK frequency higher than DOWN-LINK frequency, the direction is positive, If it is lower, the shift direction is negative.

1. Press FUNC key until the F icon displays on the LCD, then press MHz key, LCD displays offset direction and offset frequency.
2. Repeatedly press MHz key to select positive offset and negative offset.





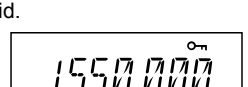
3. When LCD displays " + " icon, it indicates positive offset, which means transmitting frequency higher than receiving frequency.
4. When LCD displays " - " icon, it indicates negative offset, which means transmitting frequency lower than receiving frequency.
5. Turn selector knob or Mic's [UP / DOWN] key to change offset frequency in accordance with the step setting.
6. Press any key except FUNC and MHz key to set and finish setting.

NOTE: Under channel mode,this operation can be temporarily available. Once the radio is turned off or switched to another channel,the temporary setting will be erased.

KEYPAD LOCKOUT

Avoiding unintentional operation, this function will lock main keys, all keys except MONI、 FUNC and PWR key are invalid.

1. Press FUNC key until LCD displays F icon, then press TS/DCS key until, LCD displays 🔑 icon. Now keypad lockout function is valid.

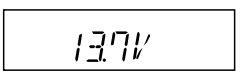


2. Repeat above operation, 🔑 icon disappears, indicating keypad lockout function is invalid.

CURRENT VOLTAGE ENQUIRY

This function will display Current Battery Voltage.

1. While pressing and holding FUNC key, press MONI key to display the current battery voltage.



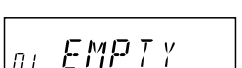
2. Repeat above operation to exit.

NOTE: In voltage display mode, all functions and channel or frequency selection are invalid. The displaying value is indicative and only for reference purposes.

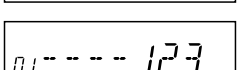
AUTO-DIALER SETUP

This will automatically transmit pre-programmed and stored DTMF tones. It is necessary to program Auto-dialer tones in advance to operate this feature.

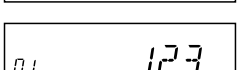
1. While pressing and holding FUNC key, press TS/DCS key to enter the auto-dialer enquiry mode, LCD displays current default data and current group displayed on left. If no data in current group,it shows"EMPTY".
2. Turn selector knob to choose group you wish to edit. Up to 16 Auto-dialer memories are available.



3. Press MONI key to program the DTMF you wish to transmit automatically.



4. The display scrolls when the 7th digit is entered. The numbers 0-9, --, A-D, * and # can be stored up to a total of 23 digits.



5. After editing, press PTT or CALL key to send current auto-dialer tones. Press MONI to exit and store.

TRANSMITTING EDITED DTMF TONES IN THE AUTO-DIALER MEMORY

1. While pressing and holding FUNC key, press TS/DCS key to enter into auto-dialer enquiry
2. Turn selector knob to select desired auto-dialer group to transmit.
3. Press PTT or CALL key to transmit selected DTMF tones.

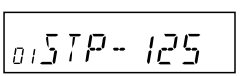
1. Press and hold [FUNC] key for over 2s to enter the parameter setting mode.
2. Press [CALL] or [MONI] to select the desired menu.
3. Turn selector knob to select the desired parameter.
4. Press [TS/DCS] to confirm and exit.

NOTE Some menu won't be available depending on the dealer-programmed setting or operating mode.
The default setting list is availabl on P33.

FREQUENCY STEP SETUP

Only in VFO mode, this function is valid. Turn selector knob to select frequency step.

1. Press and hold [FUNC] key for over 2s to enter setting menu.



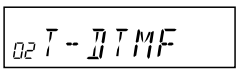
2. Press [CALL]/ [MONI] key to choose No.01 menu, LCD displays "STP--125"
3. Turn selector knob to select the desired frequency channel step. Channel step: 5K,6.25K,8.33K,10K,12.5K,20K,25K,30K and 50K.
4. Press [TS/DCS] key to confirm and exit

NOTE This function is not available in memory-mode. (Only available for pre-programmed units.)

DTMF, DTMF ANI, 2TONE OR 5TONE SIGNALING

DTMF/5Tone/2Tone signalling function as similarily as CTCSS/DCS. Without receiving correspondent tone signalling, the speaker will remain mute. DTMF and 5Tone signalling can be applied for other advanced features such as ANI, PTT ID, group call, remotely stun,remotely kill, waken,...etc. The signalling edition must be done through programming software.

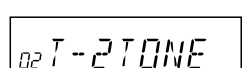
1. Press and hold [FUNC] key for over 2s to enter into setting menu.

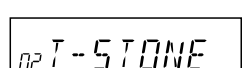


2. Press [CALL]/[MONI] to choose No 2 menu, LCD displays "**T-OFF**" .
3. Turn selector knob to select the desired setup.
   - ▼ "DTMF": the channel will be mute by a DTMF signal. The speaker won't be open until receiving a correspondent DTMF signal. Hold "PTT" then press [UP] or press [CALL] directly to transmit the pre-stored DTMF signaling.

NOTE In DTMF signaling mode, press [CALL] for 2s until LCD displays "AN---", turn selector knob to select desired digit(the other party ID).In this mode, press [TS/DCS] to confirm exist digit and move cursor to next, press [V/M] to forward cursor.After editing,press [CALL] key to operate ANI call.

- ▼ "2TONE": the channel will be mute by a 2-Tone signal. The speaker won't open until receiving a correspondent 2-Tone signal.Hold "PTT" then press [UP] or press [CALL] directly to transmit the pre-stored 2-Tone signaling.





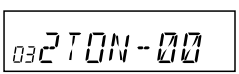
- ▼ "5Tone": the channel will be mute by a 5-Tone signal. The Speaker won't be open until receiving a correspondent 5-Tone signal. hold [**PTT**] then press [**UP**] or Press directly to transmit the pre-stored 5-Tone signaling.

NOTE In 5Tone signaling mode,press [CALL] for 2s until LCD displays "AN---",turn selector knob to select desired digit(caller ID).In this mode,press [TS/DCS] to confirm exist digit and move cursor to next,press [V/M] to forward cursor.After editing,press [CALL] key to operate ANI call.

4. Press [TS/DCS] key to confirm and exit

SENDING 2-TONE CALL

1. Press and hold [FUNC] key for over 2s to enter setting menu.
2. Press [CALL]/[MONI] key to choose No.03 menu, LCD displays "2TON XX","XX"indicates the group in the list.

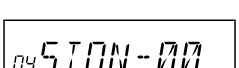


3. Turn selector knob to select the desired sending 2TONE group,Press PTT to transmit selected group.
4. Total:32groups,00-31,Default:00.
5. Press [TS/DCS] key to confirm and exit.

NOTE Content and name of 2TONE will be edited by programming software. This radio only query edited group or name.If there is corresponding name for 2TONE,this operation will display 2TONE corresponding name.

SENDING 5-TONE CALL

1. Press and hold [FUNC] key for over 2s to enter setting menu.
2. Press [CALL]/[MONI] key to choose No.04 menu, LCD displays "5TON XX","XX"indicates the group in the list.

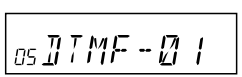


3. Turn selector knob to select the desired sending 5TONE group, Press **[PTT]** to transmit selected group.
4. Total:100groups,00-99,Default:00.
5. Press [TS/DCS] key to confirm and exit.

NOTE Content and name of 5TONE will be edited by programming software.This radio only query edited group or name.If there is corresponding name for 5TONE,this operation will display 5TONE corresponding name.

SENDING DTMF CALL

1. Press and hold [FUNC] key for over 2s to enter setting menu.
2. Press [CALL]/[MONI] key to choose No.05 menu, LCD displays "DTMF XX", "XX" indicates the group in the list.

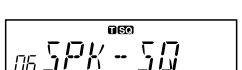


3. Turn selector knob to select the desired sending DTMF group,Press PTT to transmit selected group.
4. Total:16groups,00-16,Default:00.
5. Press [TS/DCS] key to confirm and exit.

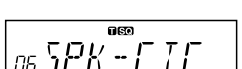
SIGNALING COMBINATION SETUP

This function is to improve the level of protecting the radio against receiving irrelative signal.

1. Press and hold [FUNC] key for over 2s to enter setting menu.
2. Press [CALL]/[MONI] key to choose No.06 menu, LCD displays "**SPK--SQ**".

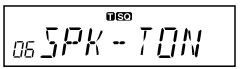


3. Turn selector knob to select the desired combination.

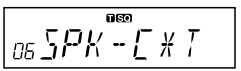


If select "**SQ**",it indicates you can hear the calling from caller when receive a matching carrier.

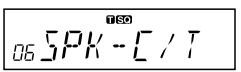
▼ If LCD displays "CTC",it indicates you can hear the calling from caller when receive a matching carrier and CTCSS/DCS signaling .



▼ If LCD displays "TON",it indicates you can hear the calling from caller when receive a matching carrier and DTMF/2TONE/5TONE signaling .



▼ If LCD displays "C/T",it indicates you can hear the calling from caller when receive a matching carrier and CTCSS/DCS and DTMF/2TONE/5TONE signaling .



▼ If LCD displays "C/T",it indicates you can hear the calling from caller when receive a matching carrier and either CTCSS/DCS DTMF/2TONE/5TONE signaling. .

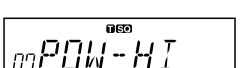
4. Press (TS/DCS) key to confirm and exit.

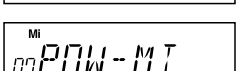
NOTE This setting will be set together with adding optional signaling and CTCSS/DCS.

HIGH/MID/LOW POWER SELECTION

1. Press and hold (FUNC) key for over 2s to enter setting menu.

2. Press (CALL) /(MONI)key to choose No.07 menu, LCD displays"POW--HI".



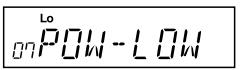


3. Turn selector knob to select the desired setting.

HI: High TX Power

MI : Middle TX Power

LOW: Low TX Power



4. Press (TS/DCS) key to confirm and exit. This feature is the same as [**FUNC**]+[**H/L**] key operation.

BAND-WIDTH SELECTION

Select suitable bandwidth in accordance with your local band-plans.

1. Press and hold (FUNC) key for over 2s to enter setting menu.

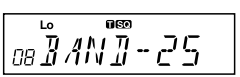
2. Press(CALL)/(MONI)key to choose No.08 menu, LCD displays"BAND--25".

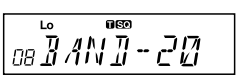
3. Turn selector knob to select the desired setting.

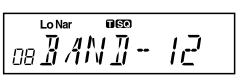
25: band width is 25k(Wide band)

20: band width is 20k(Middle band)

12:band width is 12.5k(Narrow band)







4. Press (TS/DCS) key to confirm and exit.

TX OFF SETUP

This function is to prohibit the transmission and to use the radio as a receiver.

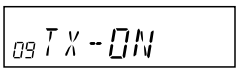
1. Press and hold (FUNC) key for over 2s to enter setting menu.

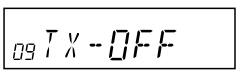
2. Press (CALL) / (MONI) key to choose No.09 menu, LCD displays"TX-ON".

3. Turn selector knob to select the desired setting .

   On:In current channel,Press PTT to transmit

   OFF:In current channel,Press PTT is invalid.



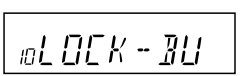


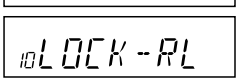
4. Press TS/DCS key to confirm and exit.

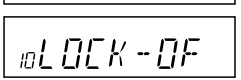
BUSY CHANNEL LOCKOUT

BCLO is to disable transmitting while RX signal is received. Once the channel is busy and you press PTT, the radio will beep as warning and get back to receiving.

1. Press and hold FUNC key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.10 menu, LCD displays"LOCK--OFF".
3. Turn selector knob to select the desired setting.





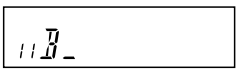


- ▼ BU: Enable BCLO, Carrier lockout, transmitting is inhibited when current channel receives a matching carrier.
- ▼ RL: Enable BTLO, transmitting is inhibited when current channel receives a matching carrier but dis-matching CTCSS/DCS.
- ▼ OFF: Busy channel lockout is disabled.It can transmit in any receiving status.

4. Press TS/DCS key to confirm and exit.

EDITING CHANNEL NAME (AVAILABLE ONLY IN MEMORY MODE)

1. In memory-mode, press and hold FUNC key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.11 menu, LCD displays cursor and flashing.
3. Turn selector knob to select the desired letter,press TS/DCS key to confirm selected letter and enter into next edition,Press V/M o return forward edition.
4. After edition,press MHz key to exit.



NOTE In Frequency (VFO) mode, this function will be auto-hidden.

REVERSE TX/RX

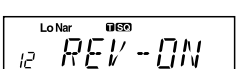
TX frequency turns to RX frequency & RX frequency changes to TX frequency. CTCSS/DCS setting is respected also.

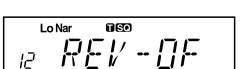
1. Press and hold FUNC key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.12 menu, LCD displays "**REV—OF**".
3. Turn selector knob to select the desired setting.

   ON:Enable Frequency Reverse

   OFF:Disable Frequency Reverse.

4. Press TS/DCS key to set and exit.





TALK AROUND

By Talk Around function,you can directly communicate with other radios in your group in case the repeater is not activated or when you are out of the repeater range. The transceiver will transmit by RX frequency with its CTCSS/DCS signaling.

1. Press and hold FUNC key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.13 menu, LCD displays "TALK—OF".
3. Turn selector knob to select the desired setting.

   ON:Enable Talk Around

   OFF:Disable Talk Around
4. After edition,press TS/DCS key to exit.

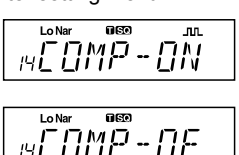
VOICE COMPANDER

Enable this function to reduce background noise and enhance audio clarity.

1. Press and hold FUNC key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.14 menu, LCD displays "COMP--OFF".
3. Turn selector knob to select the desired setting.

   ON:Enable compander

   OFF:Disable compander
4. Press TS/DCS key to confirm and exit.



NOTE Enable all radios within the group. Not recommended in case NOT all radios are compander-compatible.

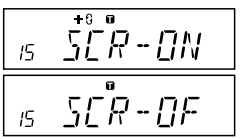
SCRAMBLER SETUP (ENCRYPTION)

An analog voice inversion scrambler is equipped. This special audio process can offer a more confidential communication.

1. Press and hold FUNC key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.15 menu, LCD displays "SCR--OF".
3. Turn selector knob to select the desired setting.

   ON:Enable Scrambler

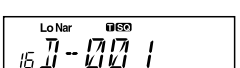
   OF:Disable Scrambler
4. Press TS/DCS key to confirm and exit.



NOTE Only for S version.

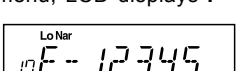
RADIO'S DTMF SELF ID ENQUIRY

1. Press and hold FUNC key for over 2s to enter general setting menu.
2. Press CALL/MONI key to choose No.16 menu, LCD displays"D--XXX". XXX is radio's DTMF SELF ID.
3. Press TS/DCS key to confirm and exit.



RADIO'S 5TONE SELF ID ENQUIRY

1. Press and hold FUNC key for over 2s to enter general setting menu.
2. Press CALL/MONI key to choose No.17 menu, LCD displays"**F--XXXXX**", "**XXXXX**" is radio's 5TONE SELF ID.
3. Press TS/DCS key to confirm and exit.



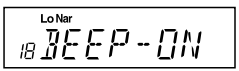
BEEP SOUND

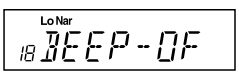
The beep provides confirmation of entry, error status or malfunctions of the transceiver. You can enable or disable beep sounds.

1. Press and hold FUNC key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.18 menu, LCD displays"BEEP--ON".
3. Turn selector knob to select the desired setting.

   ON:Enable beep sounds.

   OFF:Disable beep sounds.
4. Press TS/DCS key to confirm and exit.





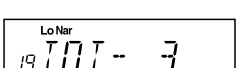
TOT (TIME-OUT TIMER)

TOT prohibits the users from transmitting after a certain period of time has elapsed. When the time is over,transmitting stops and automatically returns to receiving. Until the PTT is released once and pressed again, the radio will not transmit.

1. Press and hold FUNC key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.19 menu, LCD displays"TOT--3"
3. Turn selector knob to select the desired timer setting.

   Timer:1-30min,each level 1min

   OFF: Disable TOT
4. Press TS/DCS key to confirm and exit.



APO (AUTO POWER OFF)

Once APO is activated, the radio will be automatically switched off when the pre-set time is elapsed.

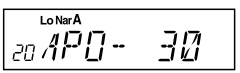
1. Press and hold MONI key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.20 menu, LCD displays"APO--OFF".
3. Turn selector knob to select the desired setting.

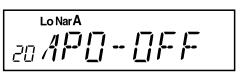
   30MIN:Auto power off after 30m

   1HOUR:Auto power off after 1h

   2HOUR:Auto power off after 2h

   OFF:Disable Auto power off
4. Press TS/DCS key to confirm and exit.

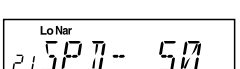




DTMF TRANSMITTING TIME

1. Press and hold FUNC key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.21 menu, LCD displays"SPD--50".
3. Turn selector knob to select the desired setting, in miliseconds.

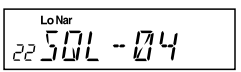
   30/50/100/200/300/500, which indicates the time for sending each DTMF signal & the interval between each DTMF being sent.
4. Press TS/DCS key to confirm and exit.



DISPLAY IIIUMINATION COLOR SETTING

This is to select the display illumination color.

1. Press and hold CALL/MONI key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.22 menu, LCD displays "**COL--ORG**".
3. Turn selector knob to select the desired color. Available colors are: **ORG-Orange**, **PUR-Purple**, and **BLU-Blue**.
4. Press TS/DCS key to confirm and exit.



SCAN RESUME TIME SETUP

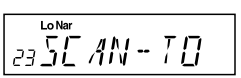
There are 3 kinds of scan resume conditions.

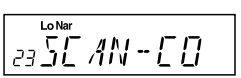
1. Press and hold FUNC key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.23 menu, LCD displays "**SCAN--TO**".
3. Turn selector knob to select the desired Scan Resume Time.

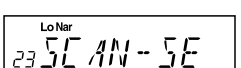
   TO: Timed Scan, it resumes scanning after receiving 5s or when the signal is gone, which ever faster.

   CO: Busy Scan, it resumes scanning when the receiving signal is gone.

   SE: Stops scanning when a signal is received.
4. Press TS/DCS key to confirm the selection and exit.

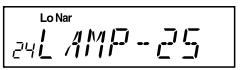






LCD DIMMER

1. Press and hold FUNC key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.24 menu, LCD displays "**LAMP--25**"
3. Turn selector knob to select the desired LCD brightness; 1 to turn off, 32 to the brightest.
4. Press TS/DCS key to confirm and exit.



TONE-BURST TONES

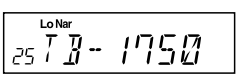
1. Press and hold FUNC key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.25 menu, LCD displays"TB--1750".
3. Turn selector knob to select the desired pilot frequency.

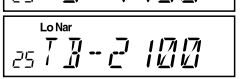
   1750HZ: Tone-burst tone.

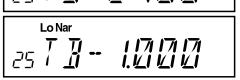
   2100HZ: Tone-burst tone.

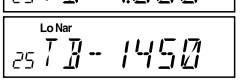
   1000HZ: Tone-burst tone.

   1450HZ: Tone-burst tone.
4. Press TS/DCS key to confirm the selection and exit.









DISPLAY MODE SETUP

There are 3 different dispaly modes: Frequency+Memory mode, Channel mode&Channel+Name Tag mode.

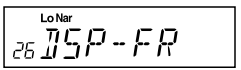
1. Press and hold FUNC key for over 2s to enter setting menu.

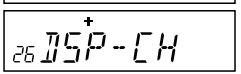
2. Press CALL/MONI key to choose No.26 menu, LCD displays"DSP—FR".
3. Turn selector knob to select the desired mode.

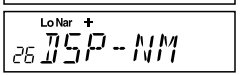
   FR: Frequency+Memory mode.

   CH:Channel mode.

   NM:Channel+Name Tag mode,if channel not named,it displays Frequency+Memory mode.







4. Press TS/DCS key to confirm and exit.

NOTE This function may not be available in dealer-programmed units.

PIN SETUP (USELESS IF PIN IS NOT ASSIGNED)

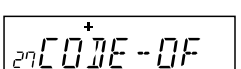
Enable this function,you have to insert a matching PIN to enter into normal status when radio is turned on.(The PIN can be assigend by programming software only.)

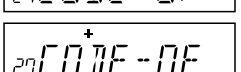
1. Press and hold FUNC key for over 2s to enter setting menu.
2. Press CALL/MONI key to choose No.27 menu, LCD displays "**CODE-OF**".
3. Turn selector knob to enable/disable Pin setup.

   ON: Turn on Pin setup

   OFF:Turn off Pin setup

4. Press TS/DCS key to confirm and exit.

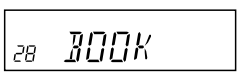


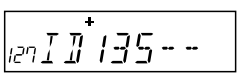


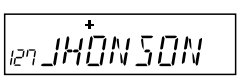
ADDRESS LIST

You store desired ID and corresponding ID name in address list.The LCD displays ID corresponding name if radio received ANI calling and find matching ID in address list .

1. Press and hold FUNC key for over 2s to enter general setting menu.
2. Press CALL/MONI key to choose No.28 menu, LCD displays"BOOK".
3. Press MHz to enter into ID setting,press CALL/MONI to select the desired group (00-127,total is 128 group ID). Turn selector knob to select desired number,press TS/DCS confirm and move cursor to next edition,press V/M to clear out all digits.







4. After finishing edition,press to confirm and enter into edition of current group's ID corresponding name.Turn selector knob to select desired letter,press TS/DCS to move cursor to next edition,Press V/M to clear out all letters. 00-127,total 128 group ID and corresponding ID name.
5. Press MHz to confirm and return into main menu.Repeat above Step 3 and Step 4 operations to edit multi-ID and corresponding ID name.
6. Press TS/DCS key to return into standby status.

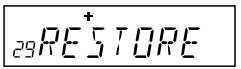
RESET

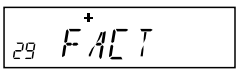
If your radio seems to be malfunctioning, resetting the microprocessor may solve the problem. When performing the reset, you may lose memory data and stored information. Back up or write down important data before performing the reset.

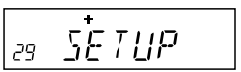
1. Press and hold FUNC key for over 2s to enter general setting menu.
2. Press CALL/MONI key to choose No.29 menu, LCD displays "**RESTORE**".
3. Turn selector knob to select the desired operation.

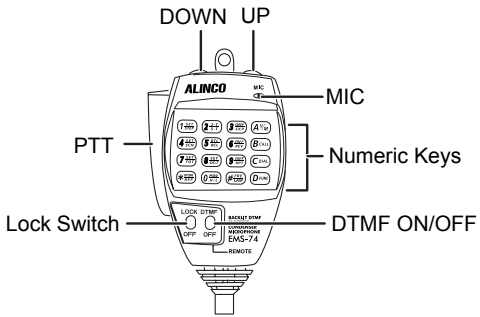
   FACT:Resume factory default for channel,signaling and general setting.

   SETUP:Return initial setup for No.18-No 27 general setting menu.
4. Press MHz key to confirm.









You can operate the transceiver by keypad or input desired frequency or channel through the EMS-74 microphone (Note:In professional transceiver mode,other keys are invalid except PTT,[UP / DOWN], (B CALL) and (C DIAL)).

KEYPAD LOCK

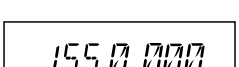
Pull down the slide switch to lock position,The lamp is turned off and all of keypads is not work except PTT switch.

TRANSMITTING DTMF BY MICROPHONE KEYPAD

Slide DTMF key to DTMF position, press and hold the [PTT] key, transmitting the desired DTMF signaling by the numeric key directly. (Note:Slide DTMF key to DTMF position,the keyboard is invalid in standby).

FUNCTION SETUP BY MICROPHONE KEYPAD

Squelch off:In standby, press (* MONI/BEEP) key, the squelch is disabled when BUSY icon flashed in LCD, Press (* MONI/BEEP) again to enable squelch and the BUSY icon disappears.



SWITCHES BETWEEN VFO AND CHANNEL MODE

In standby, press (A V/M) key to switch between channel mode and Frequency mode (VFO).

SHORT CALLING

In standby,press (B CALL) to transmit the selected DTMF/2TONE/5TONE in current channel.

Transmitting DTMF Code:In standby,press (C DIAL), LCD displays DTMF data and group.Press [UP / DOWN] key to select the desired transmitting DTMF group,then Press PTT to transmit.

If no DTMF data in current group,LCD displays "EMPTY",press (C DIAL) key again and input desired DTMF code by keypad,press PTT to transmit and store DTMF data.

FREQUENCY STEP

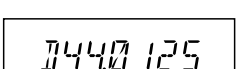
Only in VFO mode,this function is valid.

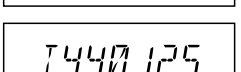
1. Press (FUNC), then press (1 SET STEP), LCD displays "STP--125"
2. Press UP / DOWN to select the desired frequency channel step. Channel step: 5K,6.25K,8.33K,10K,12.5K,20K,25K,30K and 50K.
3. Press any numeric keys to save and exit.

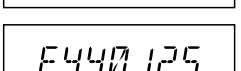
OPTIONAL SIGNALING

In standby,press (FUNC),then press (2 CT/DT) to add optional signaling,repeat above operation to set DTMF,2TONE or 5TONE signaling.

- When first bit of Exa byte in frequency displays "D",it indicates DTMF function enable.
- When first bit of Exa byte in frequency displays "T",it indicates 2Tone function enable.







▼ When first bit of Exa byte in frequency displays "F",it indicates 5Tone function enable.

NOTE This function can be temporarily used in channel mode. Once the radio is turned off or switched to another channel, the temporary setting will be erased and back to initial settings.

SCAN SKIP

In Channel mode,press [FUNC] then press [3 SKIP] ,decimal point displayed between frequency's ten digit and unit digit,it means current channel is scan skip. Repeat above operation to set scan or scan skip in current channel.

1. decimal point displayed between frequency's ten digit and unit digit,it means current channel is scanned skip.
2. decimal point is not displayed between frequency's ten digit and unit digit,it means current channel is scanned.

FREQUENCY/CHANNEL SCAN

In corresponding mode,press [FUNC] then press [4 SET SCN] key to enter into scanning.

In scanning mode,press [UP] / [DOWN] to change scan direction.

BUSY CHANNEL LOCKOUT

BCLO is to disable transmitting while RX signal is received. Once the channel is busy and you press PTT, the radio will beep as warning and get back to receiving.

1. In standby,press [FUNC] ,then press [5 BTL BCL] to enter into Busy Channel Lockout.
2. Press [UP / DOWN] to select the desired value.

BU: Enable BCLO, Carrier lockout, transmitting is inhibited when current channel receives a matching carrier;press [PTT] to emit error voice prompt.

RL: Enable BTLO, transmitting is inhibited when current channel receives a matching carrier but dis-matching CTCSS/DCS.press [PTT] to emit error voice prompt It can transmit in any receiving status.

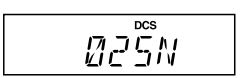
OFF: Busy channel lockout is disabled.

3. Press number keys to confirm and exit.

NOTE This function can be temporarily used in Channel mode . Once the radio is turned off or switched to another channel, the temporary setting will be erased and back to initial settings.

REVERSE TX/RX

TX frequency turns to RX frequency & RX frequency changes to TX frequency. The signaling will also be reversed if CTCSS/DCS signaling exited in this channel.



1. In standby,press [FUNC] ,then press [6 REV],LCD displays “REV—OF”.
2. Press [UP / DOWN] to select the desired value.

   ON:Enable Frequency Reverse

   OFF:Disable Frequency Reverse

3. Press number keys to confirm and exit.

NOTE This function can be temporarily used in Channel mode . Once the radio is turned off or switched to another channel, the temporary setting will be erased and back to initial settings.

TOT (TIME-OUT TIMER)

The time-out timer limits the amount of transmitting time. When you reach the time limit which has been programmed by your dealer, your transmission will be cut off. In order to transmit again, you must release PTT button to reset the timer.

1. In standby,press [FUNC] ,then press [7 SET TOT] "LCD displays "TOT-X".
2. Press [UP / DOWN] to select the desired value.
3. Press number key to confirm and exit.

CTCSS/DCS ENCODE AND DECODE

1. In standby,press [FUNC] ,then press [8 SET DCS] to enter into CTCSS/DCS Encode and Decode.
2. Repeat above operation to set as below:
   - ▼ LCD displays T icon,it indicates CTCSS encode set in current channel.
   - ▼ LCD displays T and SQ icon,it indicates CTCSS encode and decode set in current channel.
   - ▼ LCD displays DCS icon,it indicates DCS encode and decode set in current channel.
3. In corresponding icon,press [UP / DOWN] to select the desired CTCSS/DCS encode and decode.
4. Press [* MON BEP] ` [V/M] ,or C/SET to confirm and exit.

NOTE: This function can be temporarily used in Channel mode. Once the radio is turned off or switched to another channel, the temporary setting will be erased and back to initial settings.

TALK AROUND

By Talk Around function,you can directly communicate with other radios in your group in case the repeater is not activated or when you are out of the repeater range. The transceiver will transmit by RX frequency with its CTCSS/DCS signaling.

1. In standby,press [FUNC] ,then press [9 ONF RPT] key,LCD displays “TALK--OF”.
2. Press [UP / DOWN] to select the desired setting .

   ON:Enable Talk Around

   OFF:Disable Talk Around
3. Press number key to confirm and exit.

NOTE: This function can be temporarily used in Channel mode . Once the radio is turned off or switched to another channel, the temporary setting will be erased and back to initial settings.

VOICE PROMPT

The prompting tone provides confirmation of entry, error status or malfunctions of the transceiver. You can enable or disable this function.

1. In standby,press [FUNC] ,then press [* MON BEP],LCD displays "BEEP--XX”.
2. Press [UP / DOWN] to turn on/off BEEP voice prompt.

   BEEP—OF :turn off voice prompt

   BEEP—ON :turn on voice prompt
3. Press number key to exit and store.

HIGH/MID/LOW POWER SELECTION

1. In standby,press [FUNC],then press [0 POW HI/TL] ,LCD displays"POW-XX".
2. Press [UP / DOWN] to select the desired power.

HI:High Power

MI:Middle Power

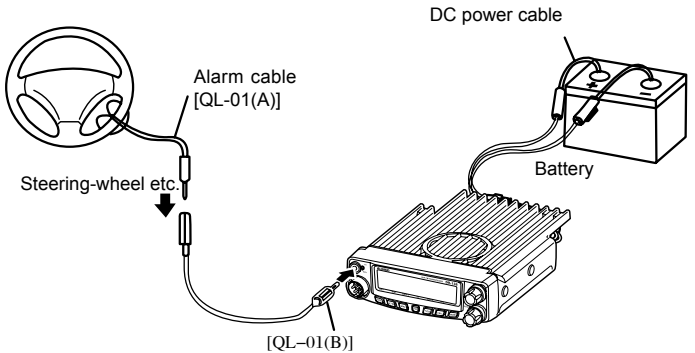
LOW:Low Power

3. Press number keys to exit and store.

LCD BACKLIGHT

1. In standby status,press FUNC , then press #ERS LAMP LCD displays"LAMP-XX" .
2. Press [UP / DOWN] to select desired backlight brightness(1-32 levels).
3. Press number keys to confirm and exit.

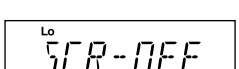
This function is mainly use for simple anti-theft alarm device in vehicles. When the transceiver be removed in an improper manner,the transceiver will emit and transmit alarming and background voice to system and other transceiver of the same frequency.



Alarm cable [QL-01(B)]

Connect DC power cable with car battery.

1. Connect the optional alarm cable QL-01(A) to the data jack on the front panel as shown. Secure the other end of the cable to an object that stays fixed in vehicle. (Note: if alarm cable QL-01 (A) is not enough long, you can choose optional alarm cable QL-01 (B) to extend).
2. When transceiver power off by press [PWR] key ,the long-distance anti-theft alarm enable.

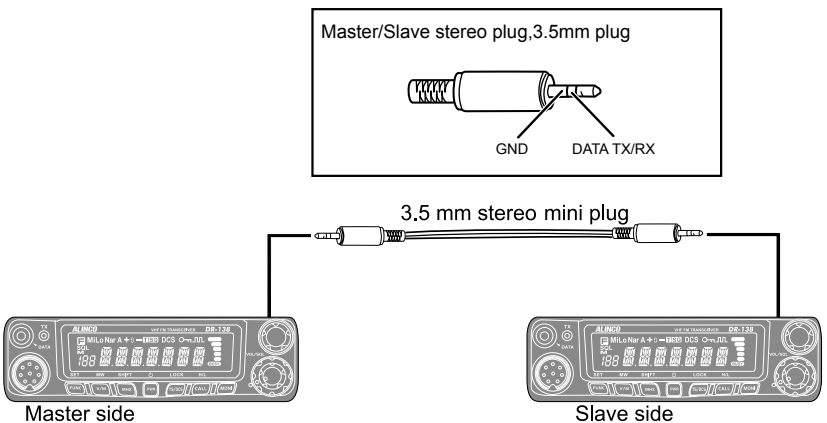


3. Note:The long-distance anti-theft alarm only available when transceiver power off .
4. When the alarm cable QL-01(A) or QL-01(B) is removed from the DATA jack or cut by improper sequence, the alarm function enable and will alarm as programmed. In alarming,the transceiver will stop alarm once receiving a matching signal. And alarm again when a matching signal disappeared.
5. Restart radio to cancel anti-theft alarming.Reconnect with alarm cable and turn off radio,the system will return to alarm mode.

11 Cable Clone

This feature will copy the programmed data and parameters in the master unit to slave units. It copies the parameters and memory program settings.

1. Use optional CP50 cloning cable, connect the cable between the data jacks on both master and slave.
2. Press and hold FUNC key, then press CALL key to enter into cloning mode, LCD displays "**CLONE**".



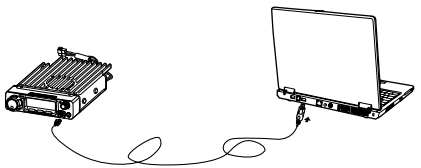
3. Press master unit's [PTT] key, LCD displays "SD XXX", "XXX" indicates data volume in transmitting. Slave unit displays "LD XXX", "XXX" indicates received data volume. When the transmission is successfully finished, the master and slave unit both display "**PASS**". Turn off the power, disconnect the cable and repeat step 2 to step 3 operations to clone the next slave unit.

NOTE If the data is not successfully transmitted, turn off both units, make sure the cable connection is correct and repeat the entire operation from the beginning.

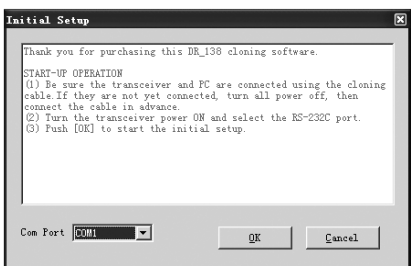
Double click " DR_138 setup.exe", then follow the installing instruction.

INSTALL USB CABLE DRIVER PROGRAMME

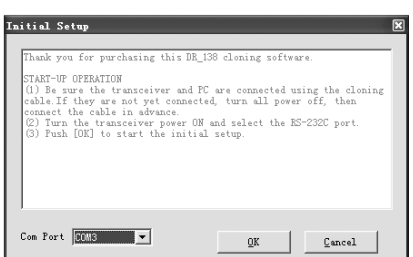
1. Click start menu in computer, under "ALL PROGRAMS" menu, choose and click "USB To Com port" in DR_138 program, install "USB To Com port" driver by indication.
2. Connect the optional PC50 USB Programming cable to USB port in PC with transceiver.(As pic 1)
3. Double click DR_138 shortcut or click DR_138 in procedure index of start menu, choose serial com port as indicated then click OK to start programming software. (As pic 2)
4. According to instruction,select correct"COM Port"(As pic 3),then click "OK" to start programming software.



(As pic 1)



(As pic 2)



(As pic 3)

Note: Even in same computer,the selective COM Port is different when USB cable connects with different USB port.

You shall install software before connecting the USB cable line. Switch on transceiver before writing frequency.You had better not switch on or off the power supply of transceiver when it is connected with computer, otherwise, it will make transceiver unable to read or write frequency. In this case, you have to turn off programming software, pull out USB cable. then reinsert USB cable and open software, then rechoose COM Port, it will turn into normal operation. Therefore, please connect transceiver with computer after switching on the transceiver. Don't restart transceiver power when it is connected with computer.

NOTE This software has product identify system, so when firstly installing the software, you have to connect the products, otherwise you can not start the software.

DEFAULT SETTING AFTER RESETTING(VHF)

	DR-138			
VFO frequency	145.00MHz		DCS code	023N
Memory channel 0–199	–		Output power	HI
Offset direction	–		Key-lock setting	OFF
Offset frequency	600KHz		TOT	OFF
Channel step	12.5KHz		APO	OFF
CTCSS encode and decode	–		Squelch Level	4
CTCSS frequency	88.5Hz			

TROUBLE SHOOTING

Problem	Possible Causes and Potential Solutions
(a) Power is on, nothing appears on Display.	+ and - polarities of power connection are reversed. Connect red lead to plus terminal and black lead to minus terminal of DC power supply.
(b) Fuse is blown.	Check and solve problem resulting in blown fuse and replace fuse with new fuse.
(c) Display is too dim.	Dimmer setting is "LAMP-L". Please make the dimmer setting "LAMP-H".
(d) No sound comes from speaker.	• Squelch is muted. Decrease squelch level. • Tone or CTCSS/DCS squelch is active. Turn CTCSS or DCS squelch off.
(e) Key and Dial do not function.	Key-lock function is activated. Cancel Key-lock function.
(i) Rotating Dial will not change memory channel.	Transceiver is in CALL mode. Press the VFO or memory mode.
(g) PTT key is pressed but transmission does not occur.	• Microphone connection is poor. Connect microphone properly. • Antenna connection is poor. Connect antenna properly.

General	
Frequency Range	VHF: 136-173.9975MHz
Number of Channels	200 channels
Channel Spacing	12.5K (Narrow band)
Phase-locked Step	5KHz, 6.25KHz, 8.33KHz, 10KHz, 12.5KHz, 15KHz, 20KHz, 25KHz, 30KHz, 50KHz
Operating Voltage	13.8V DC ±15%
Squelch	Carrier/CTCSS/DCS/5Tone/2Tone/DTMF
Frequency Stability	±2.5ppm
Operating Temperature	-20℃~+60℃
Dimensions(WxHxD)	145 (W) x 47 (H) x 190 (L)mm
Weight	about 1.2Kg

NOTE Specifications are subject to change without notice due to advancements in technology.

Receiver (ETSI EN 300 086 standard testing)		
	Narrow band	
Sensitivity (12dB Sinad)	≤0.35μV	
Adjacent Channel Selectivity	≥60dB	
Intermodulation	≥60dB	
Spurious Rejection	≥70dB	
Audio Response	+1~-3dB(0.3~2.55KHz)	
Hum & Noise	≥40dB	
Audio distortion	≤5%	
Audio power output	> 2W@10%	

Transmitter (ETSI EN 300 086 standard testing)		
	Narrow band	
Power Output	60W /25W/10W(VHF)	
Modulation	11KΦF3E	
Adjacent Channel Power	≥60dB	
Hum & Noise	≥36dB	
Spurious Emission	≥60dB	
Audio Response	+1~-3dB(0.3~2.55KHz)	
Audio Distortion	≤5%	

50 GROUPS CTCSS TONE FREQUENCY(HZ)

67.0	79.7	94.8	110.9	131.8	156.7	171.3	186.2	203.5	229.1
69.3	82.5	97.4	114.8	136.5	159.8	173.8	189.9	206.5	233.6
71.9	85.4	100.0	118.8	141.3	162.2	177.3	192.8	210.7	241.8
74.4	88.5	103.5	123.0	146.2	165.5	179.9	196.6	218.1	250.3
77.0	91.5	107.2	127.3	151.4	167.9	183.5	199.5	225.7	254.1

1024 GROUPS DCS CODE.

000	001	002	003	004	005	006	007
010	011	012	013	014	015	016	017
020	021	022	023	024	025	026	027
030	031	032	033	034	035	036	037
040	041	042	043	044	045	046	047
050	051	052	053	054	055	056	057
060	061	062	063	064	065	066	067
070	071	072	073	074	075	076	077
100	101	102	103	104	105	106	107
110	111	112	113	114	115	116	117
120	121	122	123	124	125	126	127
130	131	132	133	134	135	136	137
140	141	142	143	144	145	146	147
150	151	152	153	154	155	156	157
160	161	162	163	164	165	166	167
170	171	172	173	174	175	176	177
200	201	202	203	204	205	206	207
210	211	212	213	214	215	216	217
220	221	222	223	224	225	226	227
230	231	232	233	234	235	236	237
240	241	242	243	244	245	246	247
250	251	252	253	254	255	256	257
260	261	262	263	264	265	266	267
270	271	272	273	274	275	276	277
300	301	302	303	304	305	306	307
310	311	312	313	314	315	316	317

320	321	322	323	324	325	326	327
330	331	332	333	334	335	336	337
340	341	342	343	344	345	346	347
350	351	352	353	354	355	356	357
360	361	362	363	364	365	366	367
370	371	372	373	374	375	376	377
400	401	402	403	404	405	406	407
410	411	412	413	414	415	416	417
420	421	422	423	424	425	426	427
430	431	432	433	434	435	436	437
440	441	442	443	444	445	446	447
450	451	452	453	454	455	456	457
460	461	462	463	464	465	466	467
470	471	472	473	474	475	476	477
500	501	502	503	504	505	506	507
510	511	512	513	514	515	516	517
520	521	522	523	524	525	526	527
530	531	532	533	534	535	536	537
540	541	542	543	544	545	546	547
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560	561	562	563	564	565	566	567
570	571	572	573	574	575	576	577
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610	611	612	613	614	615	616	617
620	621	622	623	624	625	626	627
630	631	632	633	634	635	636	637
640	641	642	643	644	645	646	347
650	651	652	653	654	655	656	657
660	661	662	663	664	665	666	667
670	671	672	673	674	675	676	677

700	701	702	703	704	705	706	707
710	711	712	713	714	715	716	717
720	721	722	723	724	725	726	727
730	731	732	733	734	735	736	737
740	741	742	743	744	745	746	747
750	751	752	753	754	755	756	757
760	761	762	763	764	765	766	767
770	771	772	773	774	775	776	777

NOTE **N** is positive code, **I** is negative code, total: 232groups.