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Electrical and electronic equipment and batteries should be recycled at a facility capable of handling these items. Contact your local authority for details of disposal rules.

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ALINCO

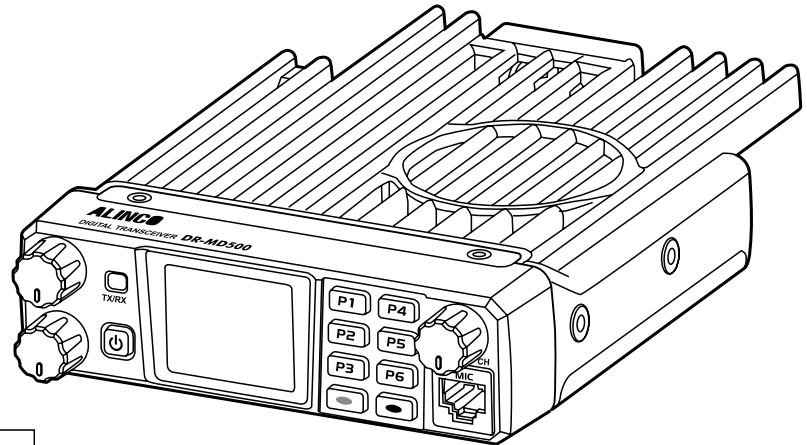
VHF/UHF Dual Band Digital Transceiver

DR-MD500

Instruction Manual

DMR

Thank you for purchasing your new Alinco transceiver. Please read this manual carefully before using the product to ensure full performance, and keep this manual for future reference as it contains information on after-sales services. 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.



NOTE: DR-MD500 may be delivered to you after dealer-programming. In such cases, please ask your dealer about the available features in your unit and how to operate this unit. Features and functions may be limited due to dealer-programming.

ALINCO, INC.

■ Introduction

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.

■ Safety

It is important that the operator is aware of, and understands, hazards common to the operation of any transceiver.

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.

■ Covering ranges

It may vary drastically depending on the type and location of antenna system. Please consult your dealer for details as DR-MD500 requires an external antenna.

■ Lightning

Any person is not safe outdoors during thunderstorms and lightning. Note also that no car provides adequate protection of its passengers or drivers against lightning as well. Therefore, Alinco will not take responsibility for any danger associated with using radios outdoors or inside the car during lightning.

■ Enclosure protection

This transceiver is NOT water and dust protected. Avoid contacts with water and dust, and if wet or dirty, immediately wipe them out with clean dry cloth. This product is NOT anti-explosive.

Never use in close vicinity to explosive gas, combustible dust, on an oil rig or in an open mine.

■ For North American users

Due to strict rules, this product is blocked for operations before sales and only dealers can program the radio before delivery to consumers. Manufacturer is not aware of details of such dealer-programming therefore please kindly contact your dealer first in case technical-service may be necessary.

■ Important Notice

The utility software may be available to distributors/dealers only. Programming cable is optional. The manufacturer will not release the software to unauthorized party so please contact your dealer for details. This product may be delivered to the consumer after being preprogrammed with the operating parameters, then certain operation may be disabled for user-accesses. The manufacturer and distributors are not aware of details of such dealer-programming. Therefore, please contact to your dealer in case any technical assistance may be necessary.

Conformity Symbols



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Comformity information

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Osaka 541-0043 Japan



Check with your local waste officials for details on recycling or proper disposal in your area.

Compliance Information Statement

FCC WARNING

This equipment generates or uses radio frequency energy.

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

INFORMATION TO THE DIGITAL DEVICE USER REQUIRED BY THE FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can generate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer for technical assistance.

Tested to Comply

With FCC Standards



FOR HOME OR OFFICE USE

Information in this document is subject to change without notice or obligation. All brand names and trademarks are the property of their respective owners. Alinco cannot be liable for pictorial or typographical inaccuracies. Some parts, options and/or accessories are unavailable in certain areas. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

■ RADIO FREQUENCY ENERGY SAFETY INFORMATION

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

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

WARNING:

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

RF energy, or in which the persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

CAUTION:

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

- The electro-magnetic exposure of this device may exceed the standards of the hazard level when transmitting at the high-power setting while connected to a unity gain antenna at a distance of 63cm (24.8 inch) or less from the operator. Furthermore, the hazardous RF exposure level depends on the conditions of the combination of the antenna gain, distance from the operator, output setting and installation environment, therefore the operator may be exposed to stronger RF even at a distance of more than 63cm. For safety purpose, it is recommended that the antenna be installed outside of, and as far as possible from, the operator's area. Avoid using an excessively high-gained antenna in case the distance between the operator and the antenna is very limited. Always use the minimum necessary output power for communications.
- Do not transmit for more than 50% of the total transceiver use time; transmitting over 50% of the total use time may exceed the limits in accordance to the FCC RF exposure requirements. Nominal transceiver operation is 5% transmission time, 5% reception time, and 90% stand-by time.
- Use only Alinco authorized accessories The use of other than recommended or approved body- worn accessories may result in RF exposure levels which exceed the FCC's occupational/ controlled environment RF exposure limits.

IMPORTANT:

Not all features are available to users due to programming. The units are programmed by the dealer before sales therefore some features may be prohibited for manual access by the users. For this reason, it is suggested that users learn how to operate the units directly from the dealer who programmed the functions and channels. Please contact the dealer for any technical inquiry because the distributor and manufacturer are not aware of the details of dealer-programming.

Electromagnetic Interference/Compatibility

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

- Turn OFF your transceiver where signs are posted to do so. Hospitals and health care facilities use equipment that is sensitive to electromagnetic radiation.







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.


WARNING










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

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






ALERT

■ Environment and condition of use:






-  Do not drive while handling the radio for your safety. It is recommended that you check local traffic regulations regarding the use of radio equipment while driving.



-  Do not use this product in close proximity to other electronics 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 property due to a failure of this product when used to perform important tasks like life-guarding, surveillance, and rescue.
-  Do not use multiple radios in very close proximity. It may cause interference and/or damage to the product(s).
-  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 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.
-  Do not operate this product in a wet place such as shower room. It may result in electric shock, fire and/or malfunction.
-  Do not place conductive materials, such as water or metal in close proximity to the product. A short-circuit to the product may result in electric shock, fire and/or malfunction.
-  Do not touch the heatsink (on/around the unit mostly found on mobile-base units) as it may become very hot during/after the operation that may risk burn your skin.



■ About power-supply:

-  Use only appropriate, reliable and certified power supply of correct voltage and capacity.
-  Do not connect cables in reverse polarity. It may result in electric shock, fire and/or malfunction.
-  Do not plug multiple devices including the power-supply into a single wall outlet. It may result in overheating and/or fire.
-  Do not handle a power-supply with a wet hand. It may result in electric shock.
-  Securely plug the power-supply to the wall outlet. Insecure installation may result in short-circuit, electronic shock and/or fire.


-  Do not plug the power-supply into the wall outlet if the contacts are dirty and/or dusty. Short circuiting and/or overheating may result in fire, electric shock and/or damage to the product.
-  Do not modify or remove fuse-assembly from the DC-cable. It may result in fire, electric shock and/or damage to the product.

■ In case of emergency:

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

- When a strange sound, smoke and or strange odor comes out of the product.
 - When the product is dropped or the case is broken or cracked.
 - When a liquid penetrated inside.
 - When a power-cord (including DC-cables, AC-cables and adapters) is damaged.
-  For your safety, turn off then remove all related AC-lines to the product and its accessories including the antenna if a thunderstorm is likely.
 -  Turn off the unit, remove the mobile antenna from its base and keep it in the vehicle if a thunderstorm is likely. Please read cautions regarding the lightning-protection on page 9 also.

■ Maintenance

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



WARNING



CAUTION

■ Environment and condition of use:



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



Do not 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.



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.



Do not modify, dismantle, incinerate, or immerse the batteries that may be used in accessories you use with this product. Please check your local regulations for details on recycling option or disposal of the batteries in your area.

■ 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 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.

■ About power-supply



Use only reliable power supply of specific DC output range and be mindful of the polarity of the cables and DC jack.



Always turn off the power supply when connecting or disconnecting the cables.



When using an external antenna, make sure that the antenna ground is not common with the ground of the power supply.



When a transceiver is powered from an external DC power source, make sure that this power supply has approval to the level of IEC/EN 60950-1.

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1

Supplied Accessories

SUPPLIED ACCESSORIES

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

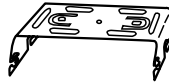
- Transceiver
DR-MD500



- Microphone EMS-88
(with DTMF keyboard)



- Mobile Mounting
Bracket



- DC Power Cable with
Fuse Holder



- Hardware Kit for Bracket

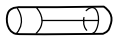
Black screws
(M4X8mm)
4PCS

Tapping screws
(M5X8mm)
4PCS

S-Washer



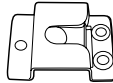
- Spare Fuses
(15A) 2pcs



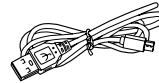
- User Manual



- Mic Hanger Unit



- PC Interface Cable



※ Utility software is available
to dealers only.

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.

- In order to operate this product, a properly tuned antenna, its feedline with connectors and fixing hardware are necessary. Please consult with your dealer for details.

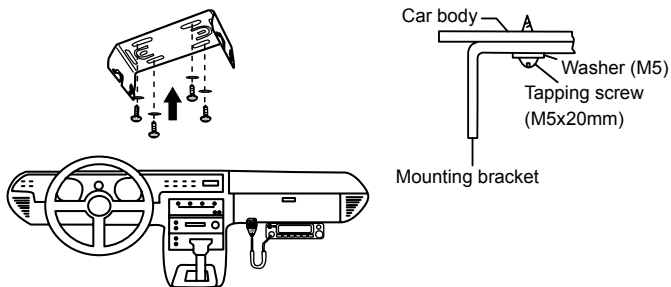
MOBILE INSTALLATION

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. If your vehicle is equipped with air bags, be certain your transceiver will not interfere with their deployment. If you are uncertain about where to mount the unit, contact your vehicle's dealer.



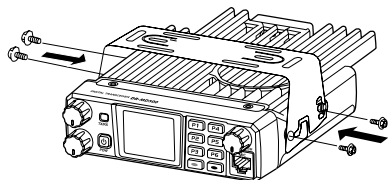
Prepare screwdriver to fasten and loosen screws.

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.

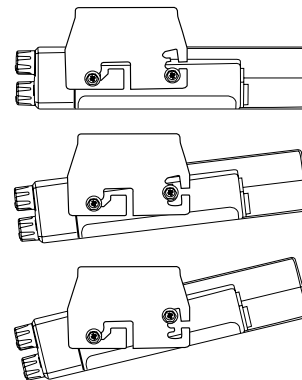
▼ Double check that all screws are tightened to prevent vehicle vibration from loosening the bracket or transceiver.



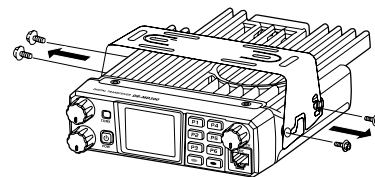
Caution:

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

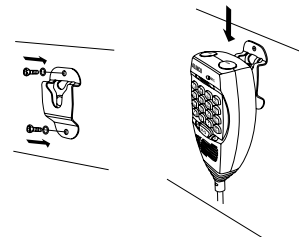
- ▼ Determine the appropriate angle of the transceiver, using the 3 screw hole positions on the side of the mounting bracket.



3. To remove the transceiver, unscrew all fixing hardware, and hold the transceiver in the way that it won't fall from bracket.



4. Install mic hanger unit. Install the mic hanger in the vehicle using the supplied self tapping screws (2pcs) and washers (2pcs).

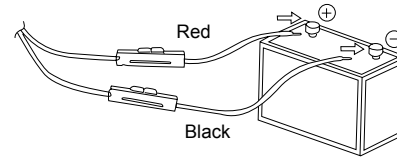


DC POWER CABLE CONNECTION**✕ MOBILE OPERATION**

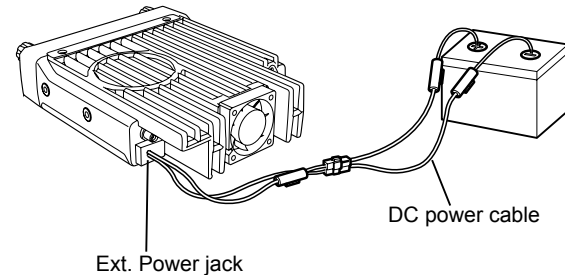
The vehicle battery must have a nominal rating of 12V. Never connect the transceiver to a 24V battery. Be sure to use a 12V vehicle battery that has sufficient current capacity. If the current to the transceiver is insufficient, the display may darken during transmission, or transmitting output power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



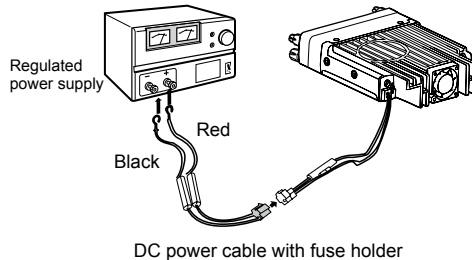
6. Connect the DC power cable to the transceiver's power supply connector.
 - ▼ Press the connectors firmly together until the locking tab clicks.

**✕ 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 current capacity of your power supply must be 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.



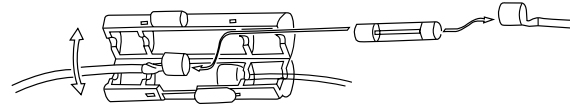
2. Connect the transceiver's DC power connector to the connector on the DC power cable.
 - ▼ Press the connectors firmly together until the locking tab clicks.

- ▼ Before connecting the DC power to the transceiver, be sure to switch the transceiver and the DC power supply OFF.
- NOTE** ▼ 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	15A

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

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.

■ 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 50Ω, 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 electronic equipment.



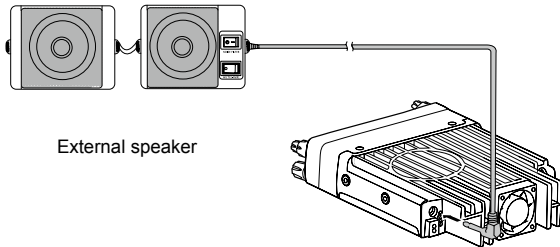
Transmitting without first connecting an antenna or other matched load may damage the transceiver. Always connect the antenna to the transceiver before transmitting.

All fixed stations should be equipped with a lightning arrester to reduce the risk of fire, electric shock, and transceiver damage.

ACCESSORIES CONNECTIONS

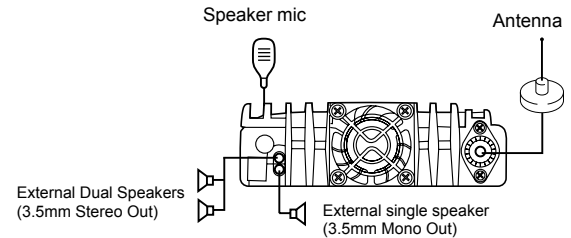
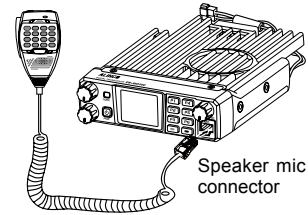
EXTERNAL SPEAKER

If you plan to use the optional external speaker/s, There are 2 options. For a single speaker, plug into the 3.5mm SP Jack on the rear of the transceiver to hear both bands through one speaker. To use dual speakers, use the stereo plug into the 3.5mm ST Jack on the rear of the transceiver to split the left and right bands between the 2 speakers.



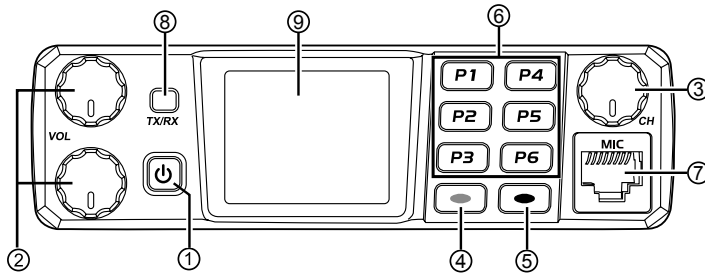
SPEAKER MIC

For voice communications, connect a provided Speaker mic into the socket on the front of the main unit. Turn the ring firmly on the plug until it locks. Attach the supplied Speaker mic hanger in an appropriate location using the screws included in the screw set.



After installing your antenna, ensure that you have the best possible SWR reading.

FRONT PANEL



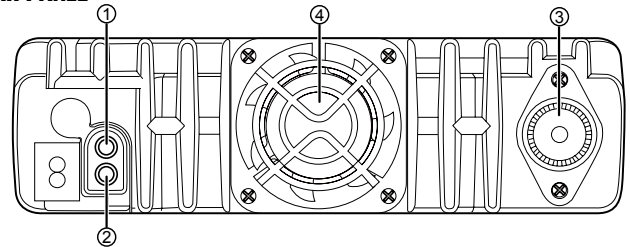
• Basic Functions

NO.	KEY	FUNCTION
1	Power Key	Press to power On. Press and hold for 2 seconds to turn Off the transceiver.
2	VOL A knob VOL B knob	Adjust audio level of channel A. Adjust audio level of channel B.
3	CH knob (channel selector)	Rotate to choose a frequency/channel. In scan mode, rotate to change scan directions.
		Press: To use the pre-programmed function. Press and hold: To use the pre-programmed function.
4	MENU key	Press to enter function menu set up. Press to select/confirm a selection.
		Press and hold[MENU] key until the LCD display "Next Please Press Dial Key", press the number key, it will perform the programmed function. Combination key function shall be setup in PC software-Public-Hot key.

5	EXIT key	Press : Press to return to previous menu. Press to delete characters when texting message. Press and hold to active keypad lock.
		Press/ press and hold these keys to use the pre-programmed functions. In the radio menu setting, P1 is up key and P2 is down key.
6	P1-P6 key	Connector to connect the speaker mic.
7	MIC connector	Constant Red : Transmitting Constant Green : Analog Receiving Flashing Green : Scan Constant Orange : Repeater function.
8	LED indicator	Displays frequencies, channels and other operating parameters.
9	LCD Display	

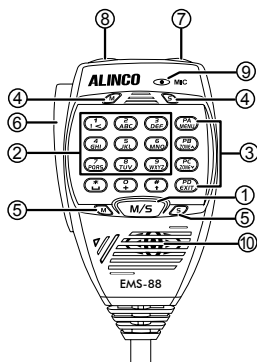
✘ Features, channels of operation and functions may be blocked by the dealer programming.

REAR PANEL

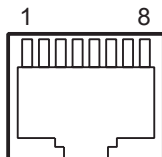


NO.	KEY	FUNCTION
1	Ext. Dual Speakers	To connect external stereo speaker.
2	Ext. Single Speaker	To connect external mono speaker.
3	Antenna Connector	Connect a 50Ω antenna.
4	Fan	Set fan control in PC software and by manual setting.

SPEAKER MIC



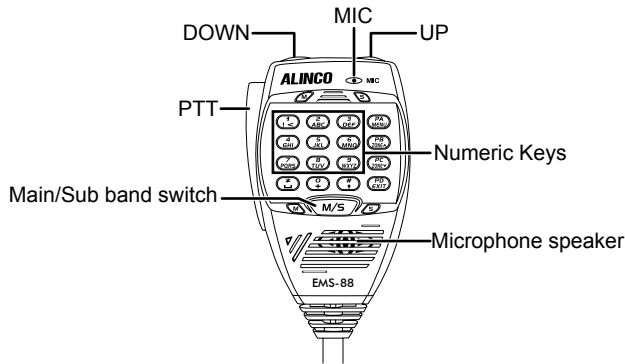
Speaker mic
connector
(Front view)



1. Red : URX
2. Brown : 5V
3. Yellow : UTX
4. Green : SP+
5. Black: MIC GND
6. White : MIC
7. Blue: SP-
8. Grey : GND

NO.	KEY	FUNCTION
1	M/S	Switches between Main and Sub bands.
2	Number Key	Input VFO frequency or DTMF dial out etc.
3	PA MENU	Programmed key [Set the programs in PC software]. The MENU key is set as default setting.
	PB ZONE UP	Programmed key [Set the programs in PC software]. The ZONE up key is set as default setting.
	PC ZONE DOWN	Programmed key [Set the programs in PC software]. The EXIT key is set as default setting. Key Lock / Unlock is set as default setting of holding key in advance.
	PD EXIT	Programmed key [Set the programs in PC software]. The EXIT key is set as default setting.
4	TX/RX Indicator (Main/Sub)	Illuminates red while transmitting, green while receiving signals. M lights on when: RX/TX Channel A. S lights on when: RX/TX Channel B.
5	Band Indicator	The indicator light on when select as Channel A or Channel B.
6	PTT	Push-To-Talk key: Press this key to transmit.
7	UP	Increase frequency, channel number or setting value.
8	DOWN	Decrease frequency, channel number or setting value.
9	MIC	Speak here during transmission.
10	Speaker	Allows the voice come out from the speaker on microphone.

■ MICROPHONE OPERATION



You can operate the transceiver by keypad or input desired frequency and channel through the EMS-88 microphone.

✘ SEND DTMF SIGNALING

Hold the [PTT] key; input the desired DTMF signaling by the numeric keys.

✘ MAIN/SUB BAND SWITCHING

At the default setting, both MAIN and SUB bands are displayed. The transmitting is possible only on the frequency/channel.

To switch main / sub band, press the [M/S] or [P1] key to set the desired frequency or channel.

■ RESUME FACTORY DEFAULT

If your transceiver seems to be malfunctioning because of wrong operation or setup, this function will be able to resume all setup and channels to factory default.

Press and hold [P2] Key + CH knob + Power key at the same time to power on the transceiver.

The transceiver will start up with a note on the display "Are you sure you want to initialize radio?"

Press [Menu] Key to proceed the reset, on the screen displays "Initialize Radio" Then radio will resume to factory default setting status.

(Channel A: 155MHz, Channel B: 456MHz)



NOTE Reset function may be prohibited by PC programming. The memory channels will be erased and can't recall after reset.

■ TURNING ON THE POWER

Turn on the transceiver by pressing the power key, and the LCD displays "Booting, please wait". Then it will show a start-up message, and you will hear a beep after 7 seconds.

■ TURNING OFF THE POWER

Turn off the transceiver by pressing and hold the power key for 2 seconds, and the LCD light is turned off.

■ ADJUSTING THE AUDIO OUTPUT (VOLUME)

Turn the VOL A or B knob clockwise to increase the audio level, counter-clockwise to decrease audio level of channel A or channel B.

■ RECEIVING

9 When a signal is received on the channel that you selected, then the received signal can be heard.

The indicator lights green while transceiver is receiving in analog channel or lights cyan if it is receiving in digital channel.

■ TRANSMITTING

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

■ SPARES

EMS- 88 Speaker Microphone

ERW-21 PC interface cable

Mounting brackets, hardware, DC cable etc are also available as spare parts from your dealer.

GENERAL

Frequency Range	TX /RX : 136MHz - 174MHz 400MHz - 480MHz 76-108MHz (FM radio RX only)
Number of Channels	4000 channels
Channel Spacing	Analog: 12.5/25KHz
	Digital: 12.5KHz
Zones per Radio	250 zone (MAX 250ch/zone)
Operating Voltage	13.8V DC \pm 15%
Operating Temperature Range	-20~+60°C
Frequency Stability	\pm 2.0ppm
Antenna Impedance	50 Ω
Dimensions (WxHxD Approx)	141x40x188 mm (5.55x1.57x7.40 inches)
Weight (Approx)	1.04kg /36.68 ounces
Recording time	4 Hours

TRANSMITTER

RF Power Output	VHF: 55W(144-148MHz), 50W/25W/10W/1W
	UHF: 40W/25W/10W/1W
Channel Spacing	Less than 1GHz: -36dBm
	More than 1GHz: -30dBm
FM Hum & Noise (Analog)	25kHz: 40dB
	12.5kHz: 36dB
Modulation	16K0F3E/11K0F3E/7K60FXD/7K60FXE

RECEIVER

Sensitivity (Analog/12dB SINAD)	25kHz: 0.25uV
	12.5kHz: 0.35uV
Sensitivity (Digital/BER)	5%: 0.3uV
	1%: 0.7uV
FM Hum & Noise (Analog)	25kHz:45dB
	12.5kHz:40dB
Audio Distortion	\leq 5%
Audio Output	2W / 8 Ω