

MIDLAND®

DUAL BAND AMATEUR RADIO



DBR2500

midlandusa.com

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TROUBLESHOOTING**SPECIFICATIONS****CTCSS TONE FREQUENCY CHART (HZ)****DCS CODES FREQUENCY CHART****FCC WARNINGS AND STATEMENTS****LIMITED WARRANTY (United States and Canada)**

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WELCOME TO THE WORLD OF MIDLAND RADIO

Congratulations on your purchase of a high quality product. Your DBR2500 Dual Band Amateur radio represents state-of-the-art engineering. The circuitry is all solid-state and mounted on a rugged printed circuit board. Your DBR2500 radio is designed for reliable and trouble-free performance.

FEATURES

- 180 degree rotatable TFT LCD display
- Dual band UHF/VHF radio
- Full alloy body for heat radiation
- VFO mode and channel mode for different operation requirement
- Separate single channel band width: Wide 25K, Middle band 20K, Narrow band 12.5K
- 200 programmable memory channels
- Separate CTCSS, DCS, DTMF, and 5 Tone setting for each single channel
- Channel scan
- Voltage level protection
- LCD brightness control
- Automatic power on function
- Main unit and microphone key lock function
- 5Tone signaling for data transfer, alarm, all call, ANI, remote kill, and remote wake
- DTMF-ANI or 5Tone-ANI for automatic call recognition

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

IMPORTANT!

MIDLAND RADIO CORPORATION makes no warranty or claim regarding any modification to your DBR2500 not fully authorized by MIDLAND RADIO CORPORATION, nor any change in operability, performance, or regulatory compliance arising therefrom. You are solely responsible for operating your DBR2500 in accordance with the law.

FCC NOTICE (Continued)

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

IMPORTANT NOTICE, FCC LICENSE REQUIRED

The DBR2500 operates within Amateur (HAM) frequencies which require an FCC (Federal Communications Commission) license. You must be licensed prior transmitting on this radio. Serious penalties could result from unlicensed use of HAM channels, in violation of FCC rules, as stipulated in the Communications Act's Sections 501 and 502 (amended).

You will be issued a call sign by the FCC which should be used for station identification when operating the radio on Amateur (HAM) channels. You should also cooperate by engaging in permissible transmissions only, avoiding channel interference with other HAM users, and being prudent with the length of your transmission time.

To obtain a license or ask questions about the application, contact the FCC at 1-888-CALL FCC or go to the FCC's website: <http://www.fcc.gov> and request form 605.

Exposure To Radio Frequency Energy

Your Midland radio is designed to comply with the following national and international standards and guidelines regarding exposure of human beings to radio frequency electromagnetic energy.

- United States Federal Communications Commission, Code of Federal Regulations: 47 CFR part 2 sub-part J
- American National Standards Institute (ANSI)/Institute of Electrical & Electronics Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronics Engineers (IEEE) C95. 1-1999 Edition
- National Council on Radiation Protection and Measurements (NCRP) of the United States, Report 86, 1986
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- To control your exposure and ensure compliance with the general population or uncontrolled environment exposure limits, transmit no more than 50% of the time. The radio generates measurable RF energy exposure only when transmitting.
- The consumer must maintain a minimum safe separation distance of 23.6 inches (60 cm) from the antenna when transmitting.

INSTALLING YOUR RADIO

Preparation for Installation

This transceiver may be installed in any 12-volt negative ground-system car or truck. Most current U.S. and foreign vehicles use a negative system, but some older models and some newer large trucks may have a positive ground.

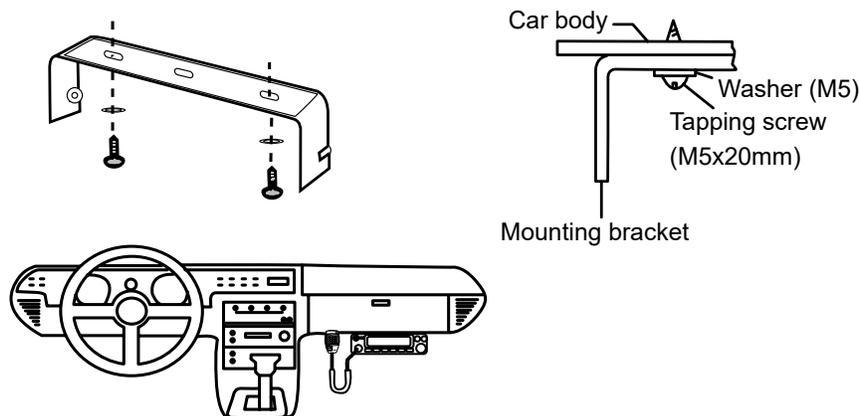
Check the requirements for your vehicle before you begin installation.

Generally, you have a negative-ground system if the negative (-) battery terminal is connected to the engine block. Contact your dealer in the event you are unable to determine your vehicle's polarity system.

Mobile Installation

To install the transceiver, select a safe, convenient location inside your vehicle that minimizes danger to your passengers and yourself while the vehicle is in motion. Consider installing the unit at an appropriate position so that knees or legs will not strike it during sudden braking of your vehicle. Try to select a well ventilated location that is shielded from direct sunlight. Also take into consideration the routing and length of the lead wires and cables to the power source, and antenna.

1. Install the Mounting bracket in the vehicle using the supplied selftapping screws (2pcs) and flat washers (2pcs).



2. Position the transceiver, then insert and tighten the supplied hexagon screws.
-Double check that all screws are tightened to prevent vehicle vibration from loosening the bracket or DBR2500.

DC POWER CABLE CONNECTION

 » Locate the power input connector as close to the DBR2500 as possible.
NOTE

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 battery that has sufficient current capacity. If the current to the transceiver is insufficient, the display may darken during transmission, or transmitting power may be dramatically reduced.

1. Route the DC power cable supplied with the radio directly to the vehicle's battery terminals using the shortest path from the DBR2500.

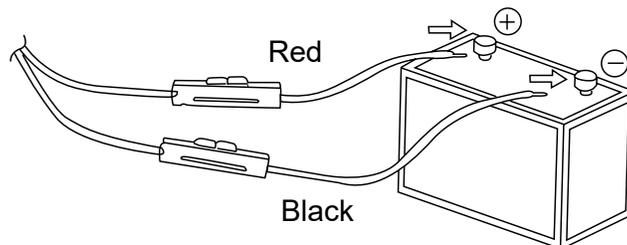
- We recommend that you do not use the cigarette lighter socket, as some cigarette lighter sockets introduce an unacceptable voltage drop.
- The entire length of the cable must be insulated so that it is protected from heat, moisture, and engine secondary (high voltage) ignition system and cables.

2. After installing the DC power cable, to avoid the risk of damage, please use heat-resistant tape to tie together the DC power cable with the fuse box. Be sure to reinforce the entire power cable with heat resistant tape.

3. In order to avoid the risk of a short circuit, please disconnect the connection with the negative (-) battery terminal, then connect to the 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.

- Use the full length of the cable without cutting off excess even if the cable is longer than required. In particular, 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 DBR2500's power supply connector
- Press the connectors firmly together until the locking tab clicks.

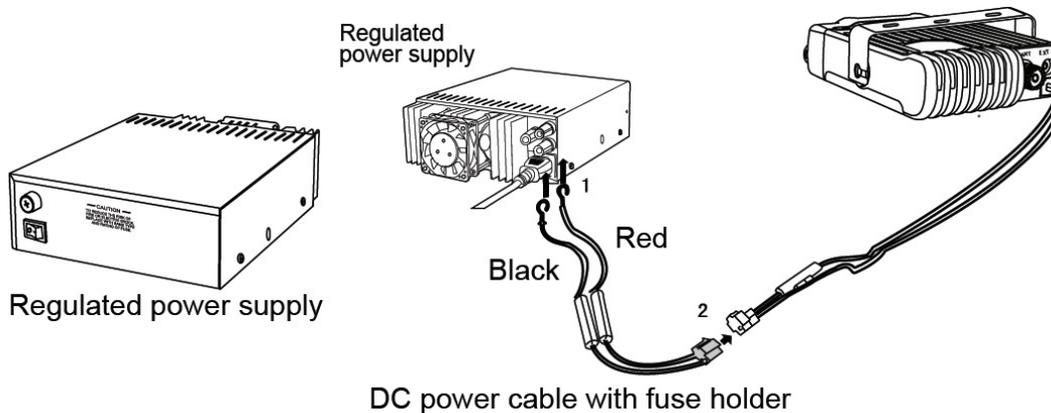
Fixed Station Operation

In order to use this DBR2500 for fixed station operation, you will need a separate 13.8V DC power supply (not included).

The recommended current capacity of your power supply is 12A

1. Connect the DC power cable to the regulated DC power supply and ensure that the polarities are correct. (Red: positive, Black: negative)

- Do not directly connect the DBR2500 to an AC outlet
- Use the supplied DC power cable to connect the DBR2500 to a regulated power supply
- Do not substitute a cable with smaller gauge wires



2. Connect the DBR2500's DC power connector to the connector on the DC power cable.

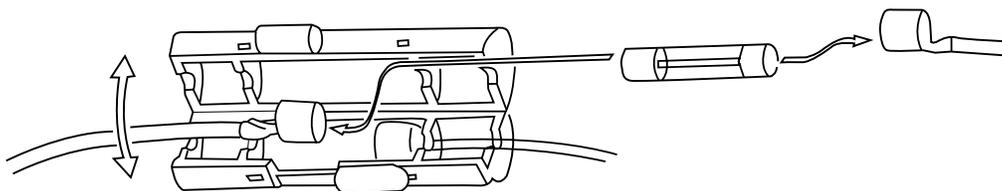
- Press the connectors firmly together until the locking tab clicks.

NOTE *» Before connecting the DC power to the DBR2500, be sure to switch the transceiver and the DC power supply to OFF.*

» Do not plug the DC power supply into an AC outlet until you make all connections.

Replacing Fuses

If a 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 Midland Radio Corporation for assistance.



Fuse Location	Fuse Current Rating
Transceiver	10A
Supplied Accessory DC power cable	10A

Only use fuses of the specified type and rating, failure to do so could cause damage to the DBR2500.

 **NOTE** » If you use the transceiver for a long period of time when the vehicle battery is not fully charged or when the engine is OFF, the battery may discharge, and may not have sufficient power to start the vehicle. Avoid using the transceiver in these conditions.

INSTALLING THE ANTENNA (Sold Separately)

Before operating, install an efficient, well-tuned antenna. The success of your radio will depend largely 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 DBR2500 input impedance. Coupling the antenna to the DBR2500 via feed-lines having an impedance other than 50Ω reduces the efficiency of the antenna system and can cause interference to nearby broadcast television receivers, radio receivers, and other electronic equipment.

 **NOTE** » Transmitting without first connecting an antenna or other matched load may damage the DBR2500. Always connect the antenna to the DBR2500 prior to transmitting.
 » All fixed stations should be equipped with a lightning arrester to reduce the risk of fire, electrical shock, and transceiver damage.

Specific installation requirements vary between vehicles. Use the following guidelines to install the antenna.

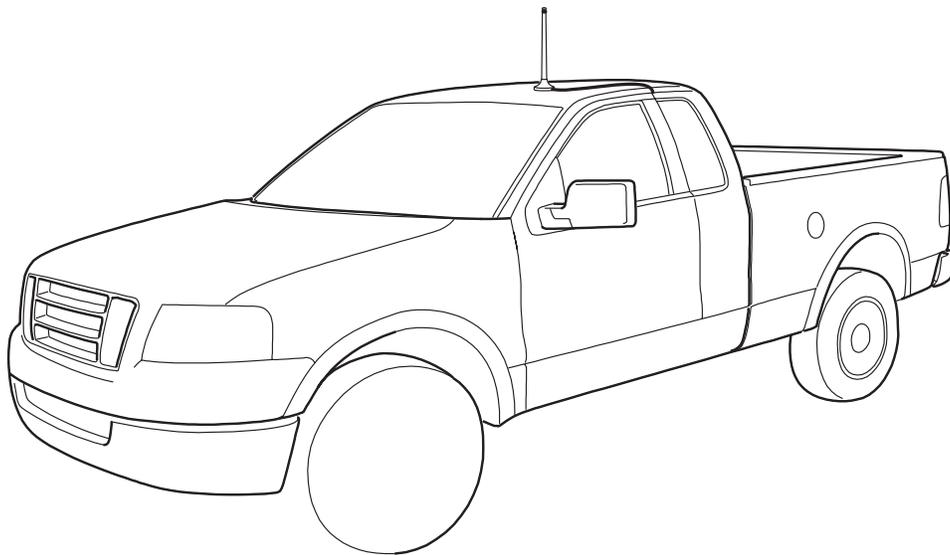
Where you locate your antenna does make a difference.

Some general rules for antenna location that can aid radio performance:

1. Metal surfaces covered by fiberglass or vinyl may affect radio range. Avoid these locations.
2. Mount the antenna as high on the vehicle as possible. The higher the better.
3. If possible, mount the antenna in the center of whatever surface you choose.
4. Be sure the mounting location is clean and dry before installing the antenna.
5. Route the antenna cable through an accessible entry point, such as a rear door or trunk opening.

6. When routing the antenna cable inside the vehicle, keep the cable away from noise sources, such as the ignition system, gauges, etc.
7. Exercise care to prevent cable damage. Make use of existing gaskets, grommets and weather stripping to protect the cable along its route.

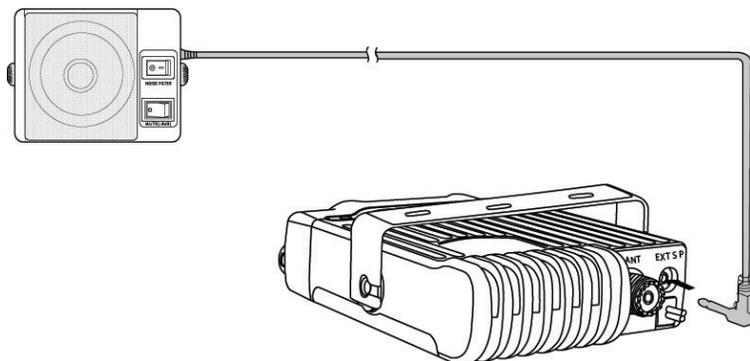
An ideal location of the antenna on a vehicle is shown below:



ACCESSORY CONNECTIONS

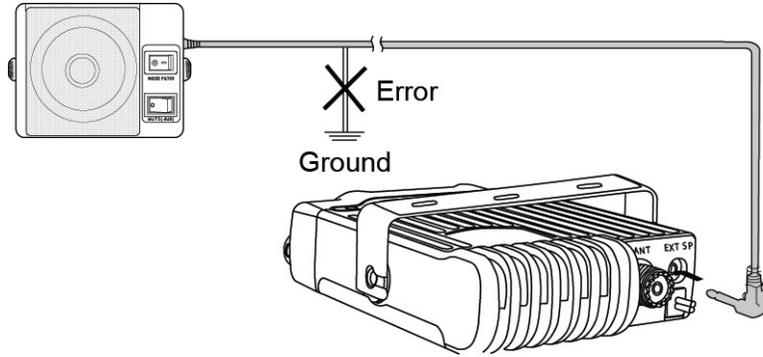
External Speaker (Sold Separately)

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



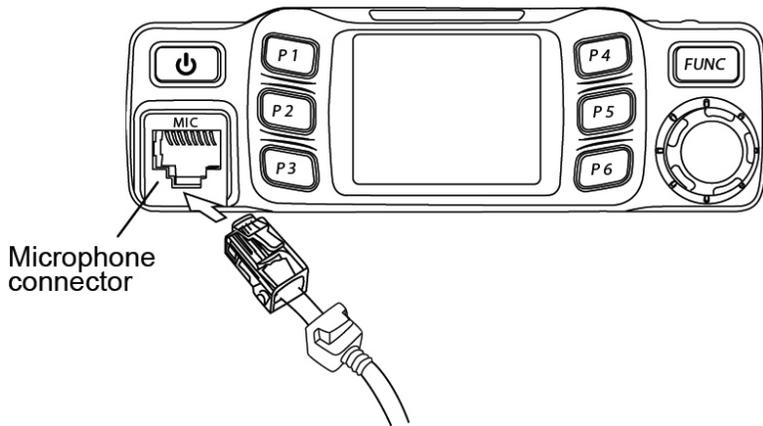
External speaker utilizes a double port BTL, please take care when connecting a speaker to this port. Do not allow the speaker to make contact with a ground, as it could damage the speaker.

*The image on page 11 shows the **incorrect** connecting method.*



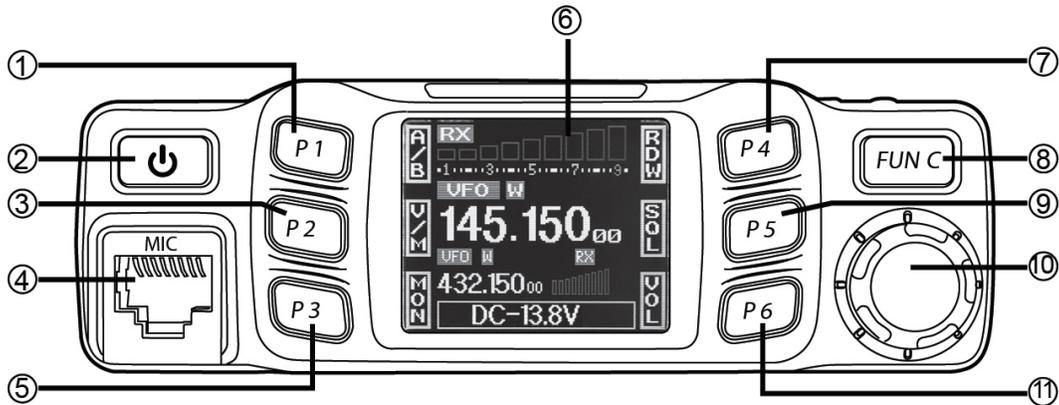
Microphone

Insert the 8P8C (commonly "RJ45") connector into the front of the DBR2500. Press firmly on the plug until the locking tab clicks.



CONTROLS AND INDICATORS

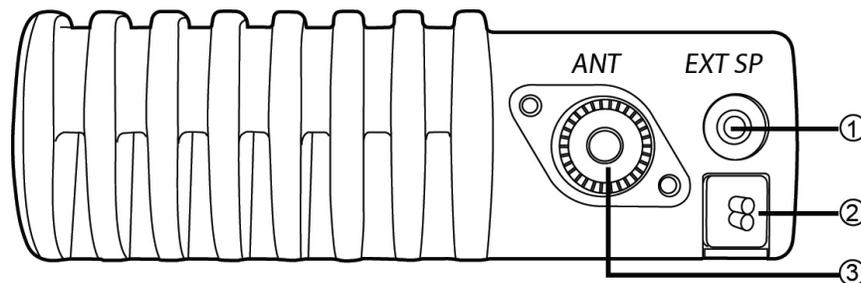
Front Panel



No.	Button	Functions
1		User programmable button (also referred to as a “[P:X] button”)
2		Power On / Off / Mute
3		User programmable button (also referred to as a “[P:X] button”)
4	MIC	Microphone Jack
5		User programmable button (also referred to as a “[P:X] button”)
6	LCD Display	Displays channel / frequency / functions
7		User programmable button (also referred to as a “[P:X] button”)
8		Function button / Function group button
9		User programmable button (also referred to as a “[P:X] button”)
10		Channel switch / Push button / Key lock
11		User programmable button (also referred to as a “[P:X] button”)

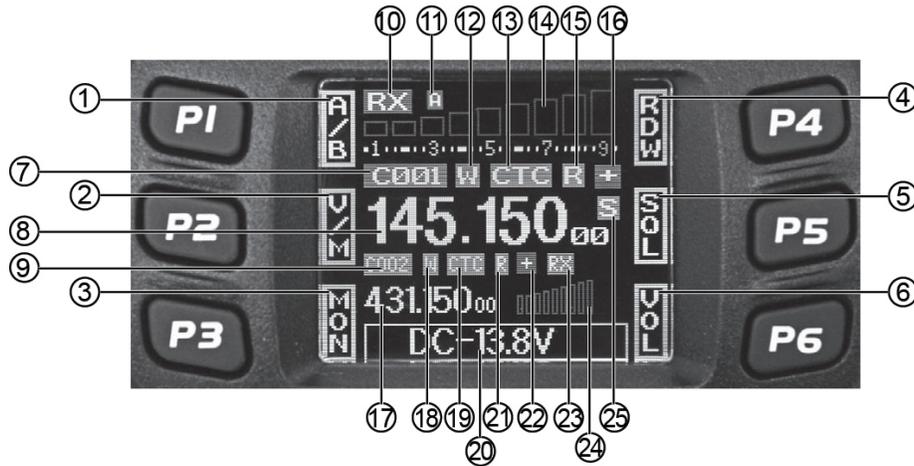
NOTE  » *The term [P:X] button is used in reference to the user programmable P1, P2, P3, P4, P5, and P6 buttons. When [P:X] is referenced in this manual, please press the corresponding button (P1, P2, P3, etc.) for which the user has programmed the desired function.*

Rear Panel



No.	Feature	Function
1	Ex-Speaker Jack	Connect an optional external speaker
2	Power Cable	Connect a standard DC power cable
3	Antenna Connector	Connect a 50 ohm antenna

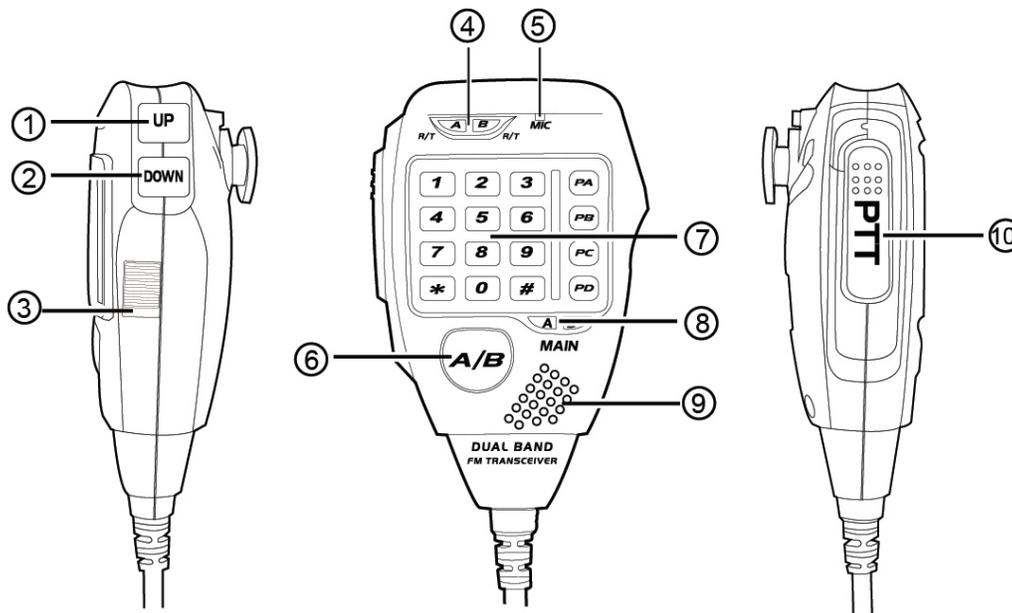
Display



NO.	Functions
1	Displays the user programmable function if you press P1
2	Displays the user programmable function if you press P2
3	Displays the user programmable function if you press P3
4	Displays the user programmable function if you press P4
5	Displays the user programmable function if you press P5
6	Displays the user programmable function if you press P6
7	Displays main channel number in channel mode
8	Displays main channel frequency or name
9	Displays subchannel number in channel mode
10	Displays the main channel TX or RX status
11	Displays when automatic power off function is on
12	Displays when setting the band width for main channel
13	Displays when setting the main channel CTCSS/DCS
14	Displays the main channel field strength
15	Displays when main channel reverse function is on
16	Displays when main channel offset function is on
17	Displays the sub-channel frequency or name
18	Displays when setting band width for sub-channel
19	Displays when setting the sub-channel CTCSS/DCS
20	Displays voltage and menu setting

21	Displays when sub-channel reverse function is on
22	Displays when sub-channel offset function is on
23	Displays when sub-channel is receiving a signal
24	Displays signal strength
25	Displays when main channel is in scan list

Microphone



No.	Button	Functions
1	UP	Increase frequency, channel number, or setting value
2	DOWN	Decrease frequency, channel number, or setting value
3	Lock UP/DOWN	Up position, buttons are unlocked. Down position, buttons are locked
4	TX / RX Indicator	Green light while receiving, red light while transmitting
5	MIC	Speak here during transmission
6	A / B Band	Choose left band or right band as main band
7	Number Key	Input VFO frequency, or DTMF dial out, etc.
8	Band Indicator	The indicator light on for the main band
9	Speaker	If base unit speaker is off, sound will only emit from handset speaker
10	PTT	Press the PTT (Push-to-Talk) key to transmit

OPERATING YOUR RADIO

VFO or Channel Mode

You can set the radio to work in VFO Mode, or Channel Mode. There are also 2 levels of the operation menu to set functions. The FUNC MENU is for setting the background function, the CHAN MENU is for setting the channel function, the MINI KEY menu is used for setting the self defined buttons.

1. Working Mode

- a. Using the programming software: Access the software's "General Setting" menu, choose the "Display Mode" to select VFO mode or Channel mode.
- b. To set Working Mode on the DBR2500: Please refer to "Display Mode" on Page 21.

2. VFO Transceiver Mode

If the DBR2500 does not display "CH" (as shown in pic 4), all other modes will be in the VFO mode. While in VFO mode, press the [P:X] button matched to the V/M function to switch between Channel mode and VFO mode.

- a. Frequency+Channel mode: When setting display as "FRQ", it enters into Frequency+Channel mode, new setting of channel operation and shortcut operation can be temporarily used by the user. Once the radio is turned off, or switched to another channel, the temporary setting will be erased and will revert back to the initial settings (shown in pic 1).
- b. Channel+Name Tag Mode: When setting the display as "NM", it enters into Channel+Name Tag mode. In this mode, it will display corresponding channel name when the current channel is edited with a name. Otherwise, it will display the frequency and channel mode (shown in pic 2).
- c. VFO Mode (Frequency mode): This mode shows only frequency on the display. Shortcut operation and channel setting will be changed & stored as the latest value permanently. Once the radio is turned off, or changed to a new VFO frequency, the latest setting will remain until it is changed (shown in pic 3).



Pic 1



Pic 2



Pic 3



Pic 4

3. Channel Mode

When setting the display mode as "CH", the radio enters into Channel mode. If there is a corresponding name for the current channel, the LCD will display the current channel name; otherwise, it shows the current channel number (shown in pic 4).



NOTE >> If your DBR2500 is programmed to operate in Channel mode and locked, you cannot return to VFO mode using the transceiver's general settings until it is unlocked.

BASIC OPERATIONS

Switching the power On/Off

Press and release the  button to power on the radio, or program the radio to automatically power on using the function menu. Hold the  button for over 2 seconds to power off the radio.

Adjusting the Volume

1. Press and release the [P:X] button programmed as VOL control, the LCD will display “VOL:XX”, then turn the channel switch to adjust the volume.
2. During receiving, press and release  to mute the speaker, the LCD will display “AUDIO:MT”, short press it again to return to the last volume level.

 **NOTE** » During communication, the volume level can be adjusted more accurately.

Adjusting Frequency

1. Using the channel knob: in VFO mode, turn the channel knob to the adjust frequency. Push the channel knob, the matching character will flash, then turn the channel knob to adjust the frequency by step size: 1K, 10K, 100K, 1Mz, 10MHz.

 **NOTE** » The microphone UP/DOWN button can also adjust the frequency, each press will move one step size. Hold the button down to speed up the frequency adjustment. If the channel knob is programmed as VOL function, users need to press the [P:X] button, which is programmed as FRQ function, when the LCD displays “VFO FREQ”, turn the channel knob to adjust the frequency.

2. Using the number buttons: in VFO mode, you can input the desired frequency by using the microphone keypad (ex: to input 145.125Mhz, press buttons 1, 4, 5, 1, 2, 5. If just 145Mhz is desired, press buttons 1, 4, 5. The input is invalid if the frequency is over the range).

 **NOTE** » 2.5k, 5k, 6.25k, 10k, 12.5k, 20k, 25k, 30k, and 50k step sizes are available on this radio.

Adjusting the Channel

1. Adjusting the channel by using the channel switch: In channel mode, turn the channel knob to adjust the channel, the [UP]/[DOWN] button on the microphone can also adjust the main channel.

 **NOTE** » If there is an empty channel, the radio will jump over it to the next channel. If the channel knob is programmed as VOL function, users need to press the [P:X] key which is programmed as CH function, when the LCD displays “CH XX”, turn the channel knob to adjust the channel.

2. By number button: in CH mode, you can input your desired channel by using the microphone to input 3 numbers (001-200). 001 is for channel 1. If the input channel is an empty channel, the radio will report an error and return to the last channel.

Receiving

When the channel you are operating on is being called, the screen shows a red RX and field strength is indicated.



» *When the RX icon, and field strength flash and you cannot hear the call, it means the current channel is receiving a matching carrier, but an unmatching signal. Refer to CTCSS/DCS CODE or Optional Signaling setup on Page 18*

NOTE

Transmitting

Hold the [PTT] button and speak into the microphone to transmit. Hold the microphone approximately 2.5 - 5.0cm from your mouth.

Switch between Main Channel and Sub-Channel

The DBR2500 features dual channel monitor, in standby, the frequency on the top is the main channel and the frequency on the lower portion is the sub-channel. The radio can only transmit on the main channel.

1. Press and release the [FUNC] button to switch function group, choose the [P:X] button defined as A/B function
2. Press and release the [P:X] button defined as A/B function, then repeat press the [P:X] button, or turn the channel knob to switch the main channel and sub-channel, the LCD will display **Main:XX**.
3. Hold the [PUSH] button or the [FUNC] button to store and exit, or wait 10 seconds for the radio to store the setting and exit.

Switch between VFO and Channel Mode

1. Press and release the [FUNC] button to switch function group, choose the [P:X] button defined as V/M function.
2. Press and release the [P:X] button defined as V/M function, then repeatedly press the button, or turn the channel knob to switch main channel and sub-channel, the LCD will display **V/M:XX**.
3. Hold the [PUSH] or the [FUNC] button to store and exit, or wait 10 seconds for the radio to store the setting and exit.

Channel Edit

1. In VFO mode, turn the channel knob or the [UP]/[DOWN] button on microphone to adjust frequency.
2. Press the [FUNC] button to switch function group, choose the [P:X] button defined as CDT function. Press the [P:X] button defined as CDT function to set CTCSS/DCS code. Turn the channel knob or the [UP]/[DOWN] button on the microphone to choose CTCSS/DCS code.

3. Press and hold the [FUNC] button to enter channel setting menu, to choose the desired setting.
4. Press and release the [FUNC] button to switch the function group, hold the [P:X] button defined as V/M function until the channel number flashes, if the channel number is red it means the current channel is valid, if the channel number is green, it means that the current channel is empty.
5. Turn the channel knob or the microphone [UP]/[DOWN] button to choose the channel number to be stored.
6. Hold the [P:X] button defined as V/M function to confirm and store the channel, the channel number will stop flashing and the radio will emit a beep sound, indicating the channel is stored successfully.

Channel Delete

1. In channel mode, turn the channel knob the or microphone [UP]/[DOWN] button to choose an unwanted channel.
2. Press and release the [FUNC] button to switch function group, choose the [P:X] button defined as V/M function, press this button together with [FUNC] button for 2 seconds, the current channel is then deleted and the radio will automatically jump to the next channel.

CTCSS/DCS Encode and Decode Setup

1. Press and release the [FUNC] button to switch function group, choose the [P:X] button defined as CDT function.
2. Press and release the [P:X] button defined as CDT function, then repeatedly short press this button to set the current channel if using a CTCSS/DCS to encode and decode.
3. When the LCD displays: RCDT:XXX, turn the channel knob or press the microphone [UP]/[DOWN] button to choose to add CTCSS/DCS decode signaling to current channel. Press the [PUSH] button then turn channel knob or press the microphone [UP]/[DOWN] button to choose the desired CTCSS/DCS decode signaling.
4. When the LCD displays: TCDT:XXX, turn the channel knob or press the microphone [UP]/[DOWN] button to choose if you want to add a CTCSS/DCS encode signaling to current channel. Press the [PUSH] button then turn channel knob or press microphone [UP]/[DOWN] button to choose the desired CTCSS/DCS encode signaling.
5. CTCSS: 62.5-254.1Hz plus one user defined frequency for a total 52 codes available DCS: 000N-777I for a total of 1024 codes. N is normal code, I is inverse code. Press the [FUNC] button to choose a normal or inverse code.
6. Hold the [PUSH] or [FUNC] button to store and exit, or wait 10 seconds and the radio will automatically store the setting and exit.



NOTE » Under channel mode, this operation can be temporarily used by the user. Once the radio is turned off or switched to another channel, the temporary setting will be erased. If the channel setting programmed is valid, the temporary setting will remain valid until the next change, or if the radio is switched off or switched to another channel.

CTCSS Scan

In channel or VFO mode, press and release [FUNC] to switch function group, choose the [P:X] button defined as CDT function. Press and release this button to enter CTCSS code setting. When the LCD displays CTC, press and hold this button to enter CTCSS scan. Turn channel knob or press microphone [UP]/[DOWN] button to change scan direction. Once it finds a matching CTCSS signal, it will stop for 5 seconds, then scan again, press and release any button to exit CTCSS scan.

DCS Scan

In channel or VFO mode, press and release the [FUNC] button to switch function group, choose the [P:X] button defined as CDT function. Press and release this button to enter DCS code setting. When the LCD displays DCS, press and hold this button to enter DCS scan, turn the channel knob or press the microphone [UP]/[DOWN] button to change scan direction. Once it finds a matching DCS signal, it will stop for 5 seconds then scan again, press any button to exit DCS scan.

Frequency/Channel Scan

Frequency Scan

In frequency (VFO) mode, this function is designed to monitor signal of all frequency points under each step size.

1. In VFO mode, press and release the [FUNC] button to switch the function group, choose the [P:X] button defined as SCN function.
2. Press and release the [P:X] button defined as SCN function to start frequency scan, the LCD displays "S".
3. Turn channel knob or press microphone [UP]/[DOWN] button to change scan direction.
4. Turn channel knob or press any button except the microphone [UP]/[DOWN] button to exit.

Channel Scan

In channel mode, this function is designed to monitor the signal of all channels.

1. In channel mode, press [FUNC] button to switch function group, choose the [P:X] button defined as SCN function.
2. Press and release the [P:X] button defined as SCN function to start channel scan, the LCD displays: "S".
3. Turn the channel knob or press microphone [UP]/[DOWN] button to change scan direction.
4. Turn the channel knob or press any button except the microphone [UP]/[DOWN] button to exit.

Scan Skip

In channel mode, press [FUNC] button to switch function group, choose the [P:X] button defined as SCN function. Hold this button to add into or delete from the scan list.

1. When the LCD displays: **S**, the current channel is in the scan list.
2. When LCD does not displays: **S**, the current channel is not in the scan list.

Squelch off/Squelch off Momentarily

The [P:X] button defined as MON function, can monitor for weak signals

1. Press the [FUNC] button to switch function group, choose the [P:X] button defined as MON function
2. Press and release the [P:X] button defined as MON function to turn squelch off / squelch off momentarily, the LCD displays red “**RX**” icon

Squelch off: press the [P:X] button defined as MON to disable squelch, press [MON] button to resume squelch

Squelch off momentarily: hold the [P:X] button defined as MON to disable squelch, release the [MON] button to resume squelch

Keypad Lockout

To avoid unintentional operation, this function will lock all keys except the [PTT], [PUSH],  buttons

1. Press and hold the [PUSH] button, the lower part of the LCD displays Key Lock, this means the keypad is locked
2. Press and hold [PUSH] button again, the lower part of the LCD displays : Key Unlock, means the keypad is unlocked

 » When the keypad is locked, the  button, [PUSH] button, and [PTT] button will
NOTE continue to remain operational.

Transmit DTMF/5 Tone Signaling

If the current channel requires DTMF/5 Tone signaling, hold the [PTT] button and the [UP] button to transmit pre-programmed DTMF/5 Tone signaling.

Transmit Tone Burst Frequency

Hold the [PTT] and [DOWN] buttons to transmit the selected pre-programmed tone burst frequency.

Transmit DTMF by Microphone Keypad

Hold the [PTT] button, then input DTMF signaling by using the microphone keypad.

FUNCTION MENU

1. Hold the [FUNC] button to enter SELECT MENU interface
2. Press and release the [P4], [P6] button or turn channel knob to choose menu list Press and release the [P5] button to quickly flip through pages
3. Press the [PUSH] button to enter the FUNC MENU setting
4. Press and release the [P4], [P6] button or turn channel knob to choose the desired setting

Beep

1. Enter the FUNCTION MENU list, choose the No.01 function
2. Press the [PUSH] button, the menu value in the LCD turns to green color
3. Turn the channel knob to choose desired setting. Off~5: 6 levels available. Off: Turn off the BEEP function
4. Press the [PUSH] button or the [P3] button to store the setting and exit

Frequency Step Size Setup

1. Enter the FUNCTION MENU list, choose the No.02 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose desired setting. There are 9 Channel step sizes available: 2.5K,5K,6.25K,10K,12.5K,20K,25K, 30K and 50K
4. Press the [PUSH] button or [P3] button to store setting and exit

Display Mode Setup

This radio has 3 different display options: Frequency+Channel, Channel name, and Tag mode.

1. Enter the FUNCTION MENU list, choose the No.03 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
 - FRQ: Frequency+Channel mode(VFO mode)
 - CH: Channel mode
 - NM: Channel+name mode+ Channel mode(VFO mode), If the channel is not named, it will display Frequency + Channel mode, otherwise it displays the channel name (VFO mode)
4. Press the [PUSH] button or [P3] button to store the setting and exit

Squelch Level Setup

This function is used for setting the RX signal strength.The signal will be heard only when it reaches the squelch level that is set, otherwise the radio will sound the received audio.

1. Enter the FUNCTION MENU list, choose the No.04 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn channel knob to choose desired setting
 - Off-9: Total of 10 levels, OFF is lowest level, squelch is off
4. Press the [PUSH] button or [P3] button to store the setting and exit

Volume Level Setting

1. Enter the FUNCTION MENU list, choose the No.05 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting 1-36 (36 levels available)
4. Press the [PUSH] button or [P3] button to store the setting and exit

Setting a Password

If this function is enabled, the correct password must be input in order to turn on the DBR2500. Access the programming software (page 30) to set or change the password. The DBR2500 comes default from the factory with the password set to 123456.

1. Enter the FUNCTION MENU list, choose the No.06 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
 - ON: Turn on password function
 - OFF: Turn off password function
4. Press the [PUSH] button or [P3] button to store setting and exit

Scan Dwell Time Setup

1. Enter the FUNCTION MENU list, choose the No.07 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
 - TO: it will pause for the preset pause time when scanning a matching signal, then resume scanning
 - CO: it pauses once when scanning for a matching signal, and resumes scanning when the signal disappears
 - SE: it stops once scanning receives a matching signal
4. Press the [PUSH] button or [P3] button to store the setting and exit

Scan Pause Time Setup

1. Enter the FUNCTION MENU list, choose the No.08 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
 - 5S : It pauses 5s while scanning for a matching signal, then resumes scanning
 - 10S : It pauses 10s while scanning for a matching signal, then resumes scanning
 - 15S : It pauses 15s while scanning for a matching signal, then resumes scanning
4. Press the [PUSH] button or [P3] button to store the setting and exit

AOP (Automatic Power On) Setup

When AOP is turned off, the radio requires the  to be pressed to power on the radio

1. Enter the FUNCTION MENU list, choose the No.09 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
 - ON : Enable AOP function
 - OFF: Power off by manual
4. Press the [PUSH] button or [P3] button to store the setting and exit

Dual Watch Setup

1. Enter FUNCTION MENU list, choose the No.10 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn channel knob to choose the desired setting
 - ON: Enable Dual Watch function
 - OFF: Disable Dual Watch function
4. Press the [PUSH] button or [P3] button to store the setting and exit

Backlight Brightness Setup

1. Enter FUNCTION MENU list, choose the No.11 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to the choose brightless level, 1-3 level available
4. Press the [PUSH] button or [P3] button to store the setting and exit

TOT (Time Out Timer)

The time-out timer limits continuous transmitting time. When the transmit time lasts over programmed value, the transmitting will stop and will emit a prompt

1. Enter the FUNCTION MENU list, choose the No.12 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
 - 1-30: 1-30 minutes range available by 1 minute/step
 - OFF: Turn off the TOT function
4. Press the [PUSH] button or [P3] button to store the setting and exit

APO (Automatic Power Off)

Once APO is activated, the transceiver will automatically be switched off when the pre-set timer runs out

1. Enter the FUNCTION MENU list, choose the No.13 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to the choose desired setting
 - 30Min: Automatical power off after 30 minutes.
 - 60Min: Automatical power off after 60 minutes.
 - 120Min: Automatical power off after 120 minutes
 - OFF: Automatical power off function is off
4. Press the [PUSH] button or [P3] button to store the setting and exit

Pilot Frequency

This function is used to start a repeater. Repeaters need a certain intensity Pilot Frequency to start a dormant repeater. There is no need to send pilot frequency again once the repeater has started.

1. Enter the FUNCTION MENU list, choose the No.14 function

2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
 - 1000Hz: Pilot frequency 1000Hz
 - 1450Hz: Pilot frequency 1450Hz
 - 1750Hz: Pilot frequency 1750Hz
 - 2100Hz: Pilot frequency 2100Hz
4. Press the [PUSH] button or [P3] button to store the setting and exit

DIR (LCD Display Direction) Setup

1. Enter the FUNCTION MENU list, choose the No.15 function
2. Press the [PUSH] button, the menu value in the LCD turns to green.
3. Turn the channel knob to choose the desired setting
 - FAIL: Reverse display
 - STAN: Normal display
4. Press the [PUSH] button or the [P3] button to store the setting and exit.

Microphone Speaker

1. Enter the FUNCTION MENU list, choose the No.16 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
 - M&H: Turn on Main speaker and microphone speaker
 - MAIN: Turn on Main speaker
 - HAND: Turn on microphone speaker
4. Press the [PUSH] button or the [P3] button to store the setting and exit

RTDF (RX/TX Dissimilar Frequency) Setup

The DBR2500 has dissimilar frequency function, when this function is on, the frequency on the top portion of the LCD is the RX frequency, and the frequency on the bottom is the TX frequency. You can change the RX frequency by the numeric keypad on the microphone, you can revise the TX frequency by using the A/B button on the microphone or the [P:X] button defined as A/B function.

1. Enter the FUNCTION MENU list, choose the No.17 function.
2. Press the [PUSH] button, the menu value in the LCD turns to green.
3. Turn the channel knob to choose the desired setting
 - ON: Turn on RTDF function.
 - OFF: Turn off RTDF function
4. Press the [PUSH] button or the [P3] button to store the setting and exit.



» The RTDF function can only be turned off in VFO mode.

NOTE

Reset to the Factory Default Settings

If your radio is malfunctioning due to incorrect operation or setup, this function will reset all settings on the DBR2500 to the factory default settings:

1. Enter the FUNCTION MENU list, choose the No.18 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
ALL: All channel, signaling function setup resume factory default
OPT: All function menu setup resume factory default except CHAN MENU
4. Press the [PUSH] button or the [P3] button to store the setting and exit

CHANNEL MENU

1. Hold the [FUNC] button to enter the SELECT MENU interface
2. Press and release the [P4] button, [P6] button, or turn the channel knob to choose the menu list. Press and Release the [P5] button to quickly turn pages
3. Press the [PUSH] button to enter the CHAN MENU list
4. Press and release the [P4], [P6] button, or turn the channel knob to choose the desired setting

RCDT (CTCSS/DCS Decode) Setup

1. Enter the CHAN MENU, choose the No.1 function
2. Press the [PUSH] button, the menu value in the LCD turns to green.
3. Turn the channel knob to choose the desired setting
OFF: Turn off CTCSS/DCS decode
CTCSS: Choose CTCSS decode
DCS: Choose DCS decode
4. When selecting CTCSS/DCS decode, press the [PUSH] button to enter CTCSS/DCS decode setup, then turn the channel knob to choose the desired CTCSS/DCS decode.
CTCSS: 62.5-254.1Hz, and one self-define group, total 52 groups
DCS: 000N-777I, total 1024 groups
N is positive code, I is inverse code
Press the [FUNC] button to choose positive or inverse code

 » CTCSSDCS decoding is dependant upon the associated Squelch Mode Setup (Refer to Signaling Combination Setup on Page 25).

CTCSS/DCS Encode Setup

1. Enter the CHAN MENU, choose the No.2 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
OFF: Turn off CTCSS/DCS encode
CTCSS: Choose CTCSS encode
DCS: Choose DCS encode

4. When selecting CTCSS/DCS encode, press the [PUSH] button to enter CTCSS/DCS encode setup, then turn the channel knob to choose the desired CTCSS/DCS encode.
CTCSS: 62.5-254.1HZ, and one self-define group, 52 total CTCSS groups
DCS: 000N-777I, there are a total of 1024 DCS groups
N is normal code, I is inverse code
5. Press the [PUSH] button or the [P3] button to store the setting and exit

High/Mid/Low Power Selection

1. Enter the CHAN MENU, choose the No.3 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
HI: Choose high power level
MI: Choose middle power level
LO: Choose low power level
4. Press the [PUSH] button or the [P3] button to store the setting and exit

5TENC (5 Tone Encode) Setup

1. Enter the CHAN MENU, choose the No.4 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
0~99: Total of 100 groups 5Tone encode for selection
4. Press the [PUSH] button or the [P3] button to store the setting and exit

 » 5 Tone group name and connect shall be programmed by PC software. If the selected
NOTE 5Tone encoding has a group name. the LCD will display group name only.

T-DEC (Add Optional Signaling)

This transceiver has 2 optional signaling modes: DTMF/5Tone. Those signaling modes function similar to CTCSS/DCS signaling. When the receiver adds an optional signal, the caller shall transmit a matching signal. DTMF and 5Tone signaling can also be applied for other advanced features such as ANI, PTT ID, group call, select call, remote stun, remote kill, and wake.

1. Enter the CHAN MENU, choose the No.4 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
DT: means DTMF signaling is added
5T: means DTMF signaling is added
OFF: Turn off optional signaling
4. Press the [PUSH] button or the [P3] button to store the setting and exit

 » In order for Optional Signaling to work, the associated Squelch Mode will also need to
NOTE be configured properly. (Refer to Squelch Mode Setup on Page 20)

Signaling Combination Setup

This function can improve the level of blocking of irrelevant signals

1. Enter the CHAN MENU, choose the No.6 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
 - SQ: You can hear the call when receiving a matching carrier
 - CDT: You can hear the call when receiving a matching carrier and CTCSS or DCS signaling
 - TONE: You can hear the call when receiving matching carrier + optional signaling.
 - C&T: You can hear the call when receiving matching carrier + CTCSS/DCS + optional signaling
 - C/T: You can hear the call when receiving any matching carrier or CTCSS/DCS or optional signaling
4. Press the [PUSH] button or the [P3] button to store the setting and exit



» This setting is only valid when CTCSS/DCS signaling is added

NOTE

Bandwidth Selection

Select the desired bandwidth in accordance with different local conditions and laws

1. Enter the CHAN MENU list, choose the No.7 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
 - WID: band width is 25k(Wide band)
 - MID: band width is 20k(Middle band)
 - NAR: band width is 12.5k(Narrow band)
4. Press the [PUSH] button or the [P3] button to store the setting and exit

Frequency Reverse

With this function on, the transceiver will be able to communicate with a transceiver in the same network without the use of a repeater.

1. Enter the CHAN MENU list, choose the No.8 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
 - ON: Turn on reverse function
 - OFF: Turn off reverse function
4. Press the [PUSH] button or the [P3] to store the setting and exit



» If Frequency Reverse is enabled, the TX and RX frequency will be exchanged. The CTCSS/DCS signaling will also be exchanged if one is selected on current channel.

Talk Around

1. Enter the CHAN MENU list, choose the No.9 function
2. Press the [PUSH] button, the menu value in the LCD turns to green

3. Turn the channel knob to choose the desired setting
 - ON: Turn on talk around function
 - OFF: Turn off talk around function
4. Press the PUSH button or the [P3] button to store the setting and exit

 » *This function will be hidden when RTDF function is enabled.*

NOTE

Offset Frequency and Direction Setup

1. Enter the CHAN MENU list, choose the No.10 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting, press the [FUNC] button to set the offset direction.
 - Minus offset, means the transmitting frequency is lower than the receiving frequency
 - + Plus offset, means the transmitting frequency is higher than the receiving frequency.
 - OFF: OFFSET is turned off
 - VHF: 0 - 38 Mhz frequency available
 - UHF: 0 - 90 Mhz frequency available
4. Press the [PUSH] button or the [P3] button to store the setting and exit

 » *OFFSET frequency is adjusted according to the Step Size Setup. This function is hidden with RTDF function is ON.*

NOTE

Editing Channel Name

After adding a name for a channel, if the display mode has a channel name, the radio will display the name in this menu. Otherwise it will display the frequency

1. Enter the CHAN MENU list, choose the No.11 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting. Press the [PUSH] to confirm and enter editing for the next character
4. Press the [PUSH] button or the [P3] button to store the setting and exit

 » *In Frequency (VFO) mode, or if RTDF function is ON, this function will automatically be hidden.*

NOTE

Busy Channel Lockout

Busy channel lockout is to disable transmitting once the channel is busy and you press the [PTT], the radio will beep as warning and get back to receiving.

1. Enter the CHAN MENU list, choose the No.12 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
 - BU: Busy Channel Lockout is enabled, transmitting is inhibited when the current channel receives a matching carrier
 - RL: Busy Channel Lockout is enabled, transmitting is inhibited when the current channel receives a matching carrier but unmatching CTCSS/DCS code
 - OFF: Busy channel lockout is disabled. Transmitting is allowed in any receiving status
4. Press the [PUSH] button or the [P3] button to store the setting

Transmit (TX) Off

1. Enter the CHAN MENU list, choose the No.13 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
ON: TX allowed, press the [PTT] to transmit
OFF: TX not allowed, only work in RX mode, press the [PTT] to emit a beep
4. Press the [PUSH] button or the [P3] button to store the setting and exit

OWNID (Self ID Inquiry)

1. Enter the CHAN MENU list, choose the No.14 function
2. The LCD will display the current channel DTMF ID or 5 Tone ID

Main Unit Keypad Menu Setup

1. Hold the [FUNC] button to enter SELECT MENU interface
2. Press and release [P4] button, [P6] button or turn channel knob to choose menu list. Press and release the [P5] button to fast turn the page
3. Press the [PUSH] button to enter the MINI KEY menu list
4. Turn the channel knob to choose the desired setting
5. Press and release the [PUSH] button to choose the desired keypad group
6. Press and release the [P1]~[P6] button to choose the desired self-define button
7. Press the [FUNC] button to confirm and exit

H-DIM Microphone Keypad Backlight Setup

1. Hold the [FUNC] button to enter the SELECT MENU interface
2. Press and release the [P4] button, [P6] button or turn the channel knob to select menu list. Press and release the [P5] button to quickly turn the page
3. Press the [PUSH] button to enter the HANDY KEY menu list
4. Press and release the [P4] button, [P6] button or turn the channel knob to choose the desired setting

Microphone Keypad Backlight Brightness Setup

1. Hold the [FUNC] button to enter the SELECT MENU interface
2. Press and release the [P4] button, [P6] button, or turn the channel knob to select menu list. Press and release the [P5] button to quickly turn the page
3. Press the [PUSH] button to enter HAND KEY menu list, choose No.1 function, press [PUSH] button to enter value setting, the menu value in the LCD turns to green
4. Turn the channel knob to choose the desired setting, the microphone keypad has OFF-31, a total of 32 brightness levels. OFF will turn off the MIC backlight
5. Press the [PUSH] button or [P3] button to store the setting and exit

H-PA / H-PD Microphone Self-Define Keypad Setup

1. Hold the [FUNC] button to enter the SELECT MENU interface
2. Press and release the [P4] button, [P6] button or turn the channel knob to select the menu list. Press the [P5] button to turn the page quickly
3. Press the [PUSH] button to enter the HANDY KEY menu list. Choose the No. 2-5 function, then press the [PUSH] button to enter value setting. The menu value in the LCD turns to green
4. Turn the channel knob to choose the desired setting
5. Press the [PUSH] button or the [P3] button to store setting and exit

DTMF Encoding Group Setup

1. Enter the DTMF menu. Choose the No.1 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
There are a total of 16 DTMF encode available
4. If selected group is empty, Press PUSH to edit the DTMF code, the LCD displays
“= = = = = =”
5. Turn the channel knob to choose the desired character, press the [PUSH] button to confirm and move to next character selection
6. Press the [P3] button to store the setting and exit

DTMF Encoding Transmitting Time

1. Enter the DTMF menu. Choose the No.2 function
2. Press the [PUSH] button, the menu value in the LCD turns to green
3. Turn the channel knob to choose the desired setting
50MS: The time for transmit a single DTMF encode and the interval is 50MS
100MS: The time for transmit a single DTMF encode and the interval is 100MS
200MS: The time for transmit a single DTMF encode and the interval is 200MS
300MS: The time for transmit a single DTMF encode and the interval is 300MS
500MS: The time for transmit a single DTMF encode and the interval is 500MS
4. Press [PUSH] button or [P3] button to store the setting and exit

PROGRAMMING SOFTWARE

Installing the USB Programming Software

Programming software is available for download at midlandusa.com. Be sure to install the programming software before connecting the USB cable to the DBR500.

1. Once the software is installed, open the “DBR2500” program folder from the start menu on the computer, select and open “USB To Com Port” in the DBR2500 program folder, install the “USB To Com Port” driver. Close this application upon completion of the install.
2. Connect the optional USB Programming cable to the USB port on the PC and connect the other end to the DBR2500.

3. Double click the “DBR2500” application shortcut or click DBR2500 from the start menu, choose “Serial Com Port” as indicated then click “OK” to start programming software

» *The selected COM Port may be different, even on the same computer, when the USB Cable is connected to a different USB Port.*

4. According to the instructions, select the correct ”COM Port”, then click “OK” to start the programming software.

Make sure the DBR2500 is powered on prior to writing any data to the radio.

Do not turn off the DBR2500 while it is connected to the computer. Doing so will cause the DBR2500 to disconnect from the computer, thus not allowing the computer to read/write to the DBR2500.

If the DBR2500 is disconnected from the computer, close the programming software, pull out the USB cable, then reinsert the USB cable and re-open the programming software. Then re-select the COM Port and the DBR2500 will resume normal operation.

MAINTENANCE

Factory Default Settings

Frequency band	VHF	UHF
VFO frequency	144.000MHz	450.000MHz
Memory channel	--	--
Offset direction	--	--
Offset frequency	600KHz	5MHz
Chanel step	10KHz	10KHz
CTCSS encode & decode	--	--
CTCSS tone frequency	88.5Hz	88.5Hz
DCS encode & decode	--	--
DCS Code	000N	000N
Output power	HI	HI
TOT	3	3
APO	OFF	OFF
VOL	28	28
Squelch level	3	3

TROUBLESHOOTING

Problem	Possible Causes and Potential Solutions
(1) 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
(2) Fuse is blown	Check and solve problem resulting in blown fuse and replace fuse with new fuse
(4) No sound comes from speaker	<ul style="list-style-type: none"> • Squelch is muted. Decrease squelch level. • Tone or CTCSS/DCS squelch is active. Turn CTCSS or DCS squelch off
(5) Key and Dial do not function	Key-lock function is activated. Cancel Key-lock function
(6) No Scan	Did not list the channel in the scan when programmed
The whole band with noise after programmed	The squelch has opened during programmed
Communication range was short, bad sensitivity	<ul style="list-style-type: none"> a. Check the antenna is well or not, and check the antenna port whether well connected. b. Antenna connector has debris or damaged. Whether set Low power
Can not talk with other members within the group	<ul style="list-style-type: none"> a. Frequency/channel different, pls modify b. CTCSS/DCS different, pls reset c. Out of the communication range

SPECIFICATIONS

GENERAL	
Frequency Range	VHF: Receive: 136-174MHz; Transmit: 144-148MHz UHF: Receive: 400~490MHz; Transmit: 420-450MHz
Number of Channels	200 channels
Channel Spacing	25K (Wide Band) 20K(Middle Band) 12.5K (Narrow band)
Phase-locked Step	2.5KHz, 5KHz, 6.25KHz, 10KHz, 12.5KHz, 20KHz, 25KHz, 30KHz, 50KHz
Operating Voltage	13.8V DC \pm 15%
Squelch	Carrier/CTCSS/DCS
Frequency Stability	\pm 2.5 ppm
Operating Temperature	-20 \square ~+60 \square
Dimensions(mm)	124 (W) x 163(D) x 39 (H)
Weight	about 0.64Kg

RECEIVER		
	Wide band	Narrow band
Sensitivity (12dB Sinad)	\leq 0.25 μ V	\leq 0.35 μ V
Adjacent Channel Selectivity	\geq 60dB	\geq 60dB
Audio Response	+1~-3dB(0.3~3KHz)	+1~-3dB(0.3~2.55KHz)
Hum & Noise	\geq 45dB	\geq 40dB
Audio distortion	\leq 5%	
Audio power output	>2W@8	

TRANSMITTER		
	Wide band	Narrow band
Power Output	25W / 15W / 5W	
Modulation	16K Φ F3E	11K Φ F3E
Adjacent Channel Power	\geq 70dB	\geq 60dB
Hum & Noise	\geq 40dB	\geq 36dB
Spurious Emission	\geq 60dB	\geq 60dB
Audio Response	+1~-3dB(0.3~3KHz)	+1~- 3dB(0.3~2.55KHz)
Audio Distortion	\leq 5%	

CTCSS TONE FREQUENCY CHART (HZ)

No.	Freq. (Hz)								
1	62.5	12	94.8	23	136.5	34	177.3	45	218.1
2	67	13	97.4	24	141.3	35	179.9	46	225.7
3	69.3	14	100.0	25	146.2	36	183.5	47	229.1
4	71.9	15	103.5	26	151.4	37	196.2	48	233.6
5	74.4	16	107.2	27	156.7	38	189.9	49	241.8
6	77	17	110.9	28	159.8	39	192.8	50	250.3
7	79.7	18	114.8	29	162.2	40	196.6	51	254.1
8	82.5	19	118.8	30	165.5	41	199.5	52	user defined
9	85.4	20	123.0	31	167.9	42	203.5		
10	88.5	21	127.3	32	171.3	43	206.5		
11	91.5	22	131.8	33	173.8	44	210.7		

DCS CODES FREQUENCY CHART

Code No.	DSC (Octal)														
1.	000	2.	001	3.	002	4.	003	5.	004	6.	005	7.	006	8.	007
9.	010	10.	011	11.	012	12.	013	13.	014	14.	015	15.	016	16.	017
17.	020	18.	021	19.	022	20.	023	21.	024	22.	025	23.	026	24.	027
25.	030	26.	031	27.	032	28.	033	29.	034	30.	035	31.	036	32.	037
33.	040	34.	041	35.	042	36.	043	37.	044	38.	045	39.	046	40.	047
41.	050	42.	051	43.	052	44.	053	45.	054	46.	055	47.	056	48.	057
49.	060	50.	061	51.	062	52.	063	53.	064	54.	065	55.	066	56.	067
57.	070	58.	071	59.	072	60.	073	61.	074	62.	075	63.	076	64.	077
65.	100	66.	101	67.	102	68.	103	69.	104	70.	105	71.	106	72.	107
73.	110	74.	111	75.	112	76.	113	77.	114	78.	115	79.	116	80.	117
81.	120	82.	121	83.	122	84.	123	85.	124	86.	125	87.	126	88.	127
89.	130	90.	131	91.	132	92.	133	93.	134	94.	135	95.	136	96.	137
97.	140	98.	141	99.	142	100.	143	101.	144	102.	145	103.	146	104.	147
105.	150	106.	151	107.	152	108.	153	109.	154	110.	155	111.	156	112.	157
113.	160	114.	161	115.	162	116.	163	117.	164	118.	165	119.	166	120.	167
121.	170	122.	171	123.	172	124.	173	125.	174	126.	175	127.	176	128.	177
129.	200	130.	201	131.	202	132.	203	133.	204	134.	205	135.	206	136.	207
137.	210	138.	211	139.	212	140.	213	141.	214	142.	215	143.	216	144.	217
145.	220	146.	221	147.	222	148.	223	149.	224	150.	225	151.	226	152.	227
153.	230	154.	231	155.	232	156.	233	157.	234	158.	235	159.	236	160.	237
161.	240	162.	241	163.	242	164.	243	165.	244	166.	245	167.	246	168.	247
169.	250	170.	251	171.	252	172.	253	173.	254	174.	255	175.	256	176.	257
177.	260	178.	261	179.	262	180.	263	181.	264	182.	265	183.	266	184.	267
185.	270	186.	271	187.	272	188.	273	189.	274	190.	275	191.	276	192.	277
193.	300	194.	301	195.	302	196.	303	197.	304	198.	305	199.	306	200.	307
201.	310	202.	311	203.	312	204.	313	205.	314	206.	315	207.	316	208.	317
209.	320	210.	321	211.	322	212.	323	213.	324	214.	325	215.	326	216.	327
217.	330	218.	331	219.	332	220.	333	221.	334	222.	335	223.	336	224.	337
225.	340	226.	341	227.	342	228.	343	229.	344	230.	345	231.	346	232.	347
233.	350	234.	351	235.	352	236.	353	237.	354	238.	355	239.	356	240.	357
241.	360	242.	361	243.	362	244.	363	245.	364	246.	365	247.	366	248.	367
249.	370	250.	371	251.	372	252.	373	253.	374	254.	375	255.	376	256.	377
257.	400	258.	401	259.	402	260.	403	261.	404	262.	405	263.	406	264.	407
265.	410	266.	411	267.	412	268.	413	269.	414	270.	415	271.	416	272.	417
273.	420	274.	421	275.	422	276.	423	277.	424	278.	425	279.	426	280.	427
281.	430	282.	431	283.	432	284.	433	285.	434	286.	435	287.	436	288.	437
289.	440	290.	441	291.	442	292.	443	293.	444	294.	445	295.	446	296.	447
297.	450	298.	451	299.	452	300.	453	301.	454	302.	455	303.	456	304.	457
305.	460	306.	461	307.	462	308.	463	309.	464	310.	465	311.	466	312.	467

313.	470	314.	471	315.	472	316.	473	317.	474	318.	475	319.	476	320.	477
321.	500	322.	501	323.	502	324.	503	325.	504	326.	505	327.	506	328.	507
329.	510	330.	511	331.	512	332.	513	333.	514	334.	515	335.	516	336.	517
337.	520	338.	521	339.	522	340.	523	341.	524	342.	525	343.	526	344.	527
345.	530	346.	531	347.	532	348.	533	349.	534	350.	535	351.	536	352.	537
353.	540	354.	541	355.	542	356.	543	357.	544	358.	545	359.	546	360.	547
361.	550	362.	551	363.	552	364.	553	365.	554	366.	555	367.	556	368.	557
369.	560	370.	561	371.	562	372.	563	373.	564	374.	565	375.	566	376.	567
377.	570	378.	571	379.	572	380.	573	381.	574	382.	575	383.	576	384.	577
385.	600	386.	601	387.	602	388.	603	389.	604	390.	605	391.	606	392.	607
393.	610	394.	611	395.	612	396.	613	397.	614	398.	615	399.	616	400.	617
401.	620	402.	621	403.	622	404.	623	405.	624	406.	625	407.	626	408.	627
409.	630	410.	631	411.	632	412.	633	413.	634	414.	635	415.	636	416.	637
417.	640	418.	641	419.	642	420.	643	421.	644	422.	645	423.	646	424.	647
425.	650	426.	651	427.	652	428.	653	429.	654	430.	655	431.	656	432.	657
433.	660	434.	661	435.	662	436.	663	437.	664	438.	665	439.	666	440.	667
441.	670	442.	671	443.	672	444.	673	445.	674	446.	675	447.	676	448.	677
449.	700	450.	701	451.	702	452.	703	453.	704	454.	705	455.	706	456.	707
457.	710	458.	711	459.	712	460.	713	461.	714	462.	715	463.	716	464.	717
465.	720	466.	721	467.	722	468.	723	469.	724	470.	725	471.	726	472.	727
473.	730	474.	731	475.	732	476.	733	477.	734	478.	735	479.	736	480.	737
481.	740	482.	741	483.	742	484.	743	485.	744	486.	745	487.	746	488.	747
489.	750	490.	751	491.	752	492.	753	493.	754	494.	755	495.	756	496.	757
497.	760	498.	761	499.	762	500.	763	501.	764	502.	765	503.	766	504.	767
505.	770	506.	771	507.	772	508.	773	509.	774	510.	775	511.	776	512.	777

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions; (1) this device does not cause any harmful interference, and (2) this radio must accept any interference that may cause undesired operations

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Warranty Service Department
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Kansas City, MO 64120**

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