THANK YOU FOR YOUR PURCHASE OF THE UV-5X3. THIS TRIBAND RADIO WILL DELIVER YOU SECURE INSTANT RELIABLE COMMUNICATION.

PLEASE READ THIS MANUAL CAREFULLY BEFORE USE
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Part I. Getting started

Part one covers the basic setup and use of your hand-held two-way transceiver.

CHAPTER 1 INITIAL SETUP
CHAPTER 2 GETTING TO KNOW YOUR RADIO
CHAPTER 3 BASIC USE
Chapter 1. - Initial setup

Safety Information

The following safety precautions should always be observed during operation, service and repair of this equipment.

- Qualified technicians shall service this equipment only.
- Do not modify the radio for any reason.
- Use only BTECH supplied or approved batteries and chargers.
- Do not use any portable radio that has a damaged antenna. If a damaged antenna comes into contact with your skin, a minor burn can result.
- Turn off your radio prior to entering any area with explosive and flammable materials.
- Do not charge your battery in a location with explosive and flammable materials.
- To avoid electromagnetic interference and/or compatibility conflicts, turn off your radio in any area where posted notices instruct you to do so.
- Turn off your radio before boarding an aircraft; any use of a radio must be in accordance with airline regulations or crew instructions.
- Turn off your radio before entering a blasting area.
- For vehicles with an air bag, do not place a radio in the area over an air bag or in the air bag deployment area.
• Do not expose the radio to direct sunlight over a long time, nor place it close to heating source.

• When transmitting with a portable radio, hold the radio in a vertical position with the microphone 3 to 4 centimeters away from your lips. Keep antenna at least 2.5 centimeters away from your body when transmitting.

If you wear a radio on your body, ensure the radio and its antenna are at least 2.5 centimeters away from your body when transmitting.

FIND TUTORIALS, SUPPORT AND MORE


https://plus.google.com/+Baofengtechradio

https://www.youtube.com/c/Baofengtechradio
What's in the box
This transceiver comes shipped with the following items in the box:

- UV-5X3 Radio
- 1500mAh Battery
- V-85 Dual Band Antenna
- 220MHz Single Band Antenna
- CH-5 Charger
- CH-5 110V Adapter
- Earpiece Kit
- Wrist Strap
- Belt Clip
- User Manual
Available Accessories: [www.baofengtech.com/store](http://www.baofengtech.com/store)

- BL-5 Battery Eliminator
- BL-5 AA Battery Pack
- PC-03 FTDI USB Cable
- QHM-22 IP54 Speaker Mic
- Nagoya NA-320A Tri-Band Antenna
- BL-5 1500mAh Battery
- BL-5L 2100mAh Battery
- BL-5L 3800mAh Battery
Assembly

Before the radio is ready for use we need to attach the antenna and battery pack, as well as charge the battery.

**Antenna**

This transceiver is fitted with a Male SMA connector. To mount your antenna (Female SMA connector), align the two connectors and turn clockwise until it stops.

- Do not over-tighten your antenna to avoid damage to the connectors.
- When installing the antenna, don't grip it by the top. Grip by the base and turn.
- If you use an external antenna, make sure the SWR is about 1.5:1 or lower to avoid damage to the transceiver.
- Do not hold the antenna with your hand or wrap the outside of it to avoid bad operation of the transceiver.
- Never transmit without an antenna.
Belt clip
At the back of the radio there are two parallel screws mounted above the battery, remove these and thread them through the holes on the belt clip as you screw them back into the radio body.

*Do not use any form of glue to fix the screws on the battery clip. The solvents in the glue may cause damage to the battery casing.*

Battery
Before attaching or removing the battery make sure your radio is turned off by turning the power/volume knob all the way counter-clockwise.

Installation
Make sure the battery is aligned in parallel with the radio body with the lower edge of the battery about 1-2cm below the edge of the radio.

Once aligned with the guide-rails, slide the battery upward until you hear a click as the battery locks in place.
Removal

To remove the battery, press the battery release above the battery pack (see Figure 2.1, “BTECH UV-5X3, overview”), as you slide the battery downward.
Charging and battery maintenance

Charging

Battery should be fully charged before initial use. Optimum battery efficiency will be achieved after the three full battery charge and discharge cycles.

Follow these steps to hook up and use the charger:

1. Plug the DC connector of the power adaptor into the charger base.
2. Plug the AC connector of the power adaptor into a main AC wall outlet.
3. Place the radio in the charging slot on the charger.
4. Make sure the radio is making contact with the charger. When the red LED comes on steady, your radio is charging.
5. The radio is fully charged once the charger's green status LED goes steady. Please remove the radio at that time to avoid over-charging your battery.
Table 1.1. Charger LED codes

<table>
<thead>
<tr>
<th>Red LED</th>
<th>Green LED</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashing</td>
<td>Steady</td>
<td><strong>Standby</strong> (charger empty)</td>
</tr>
<tr>
<td>Steady</td>
<td>Off</td>
<td><strong>Error</strong> (charger with radio)</td>
</tr>
<tr>
<td>Off</td>
<td>Steady</td>
<td>Charging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Charge complete.</td>
</tr>
</tbody>
</table>
The charger and battery are fitted with matching notches so that you can charge your battery on its own! Practical if you have two batteries. That way you can charge one battery while still using your radio.

Radio should be turned OFF during charge cycle

Battery Maintenance

The battery for your radio comes uncharged from the factory; please let it charge for at least four to five hours before you start using your radio.

• Use only batteries approved by the original manufacturer.
• Never attempt to disassemble your battery pack.
• Do not expose your batteries to fire or intense heat
• Dispose of batteries in accordance with local recycling regulations. Batteries do not belong in your trashcan!

Prolonging the life of your battery

• Only charge batteries in normal room temperatures.
• When charging a battery attached to the radio, turn the radio off for a faster charge.
• Do not unplug the power to the charger or remove the battery and/or radio before it's finished charging.
• Never charge a wet battery.
• Batteries wear out over time. If you notice a considerably shorter operating time with your radio, please consider purchasing a new battery.
• Battery performance will be reduced in temperatures below freezing. When working in cold environments, keep a spare battery on you. Preferably inside your jacket or in a similar location in order to keep the battery warm.
• Dust can interfere with the contacts on the battery. If necessary wipe the contacts with a clean cloth to ensure proper contact with radio and charger.

If your battery has become wet, remove it from the radio, wipe it dry with a towel and put it in a plastic bag with a handful of dry rice. Tie the bag up and let it sit over night. The rice will absorb any remaining moisture in the battery. This method is only effective against minor splashes (light rain for instance). A soaked radio may very well be beyond repair.

Storage
Partially charge your battery before long-term storage in order to prevent damage from over-discharge. While lead acid must always be kept at full charge during storage, this radio uses a lithium-based battery and should be stored at around a 40 percent charge. This level minimizes age-related capacity loss while keeping the battery in operating condition and allowing self-
discharge.

To avoid severe capacity degradation of your battery while in long-term storage, please cycle the battery at least every six (6) months.

Store your batteries in a cool and dry place, never above normal room temperatures.
Chapter 2. - Getting to know your radio

Figure 2.1. BTECH UV-5X3, overview
1. Antenna, see the section called “Assembly” for details.
2. Power / Volume knob, usage discussed in the section called “Power and volume”.
3. Two-line LCD
4. Call key
5. PTT key, usage discussed in the section called “Making a call”.
6. Monitor key
7. Keypad
8. Microphone
9. Accessory jack
10. VFO/MR mode key
11. Status LED
12. A / B select key
13. Band Button
14. Battery pack; see the section called “Charging and battery maintenance” for details.
15. Battery contacts
16. Battery release latch
17. Lanyard loop
18. LED flashlight - See the section called “Side key 2 - MONI (Monitor and Flashlight)” for more information.
The main display

Figure 2.2. BTECH UV-5X3, display

The transceiver is fitted with a seven character by two line dot matrix alphanumeric LCD, with auxiliary icons for miscellaneous features.

Table 2.1. LCD icon summary

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>188</td>
<td>Memory channel</td>
<td>R</td>
<td>Reverse function enabled</td>
</tr>
<tr>
<td>25, 75</td>
<td>Least significant modifiers.</td>
<td>N</td>
<td>Narrowband enabled</td>
</tr>
<tr>
<td>CT</td>
<td>CTCSS enabled</td>
<td></td>
<td>Battery level indicator</td>
</tr>
<tr>
<td>DCS</td>
<td>DCS enabled</td>
<td></td>
<td>Keypad lock enabled</td>
</tr>
<tr>
<td>+, -</td>
<td>Frequency shift direction (Offset)</td>
<td>L</td>
<td>Low Power Enabled</td>
</tr>
<tr>
<td>★</td>
<td>Channel Scan Enabled</td>
<td></td>
<td>High Power enabled When ‘L’ not Displayed</td>
</tr>
<tr>
<td>S</td>
<td>Dual watch enabled</td>
<td></td>
<td>Indicates active band or channel</td>
</tr>
<tr>
<td>VOX</td>
<td>VOX enabled</td>
<td></td>
<td>Squelch Open/ Close Indicator</td>
</tr>
</tbody>
</table>

UV-5X3
Even though it is a seven character by two-line display, channel memories are only configurable to six character names.

**Battery Level Indicator**

When the battery level indicator reads the battery is depleted. At this point the radio will start beeping periodically as well as flash the backlight of the display and when voice prompts are enabled, a "Low Voltage" announcement will be heard, indicating that you need to change your battery or put your radio in the charger.

**Status LED**

The status LED has a very simple and traditional design. When you receive a signal it turns green, when you transmit it turns red, and it's off in standby.

**Side key 1 - CALL (Broadcast FM and Alarm)**

Press momentarily to start the broadcast FM receiver. Another momentary press turns the broadcast FM receiver off. If a signal is received on the active frequency or channel while you are listening to the broadcast FM, the receiver will open squelch to that frequency (as if scanning) and remain there until the signal goes away; it will then switch back to broadcast FM.

Press and hold to activate the alarm function. Press (a short press) again to turn it off.
Side key 2 - MONI (Monitor and Flashlight)

Press (MONI) momentarily to turn on the LED flashlight. Another momentary press will flash the LED. Another momentary press turns the flashlight off.

Press and hold (MONI) to monitor the signal. This will open up the squelch so you can listen to the unfiltered signal.

VFO / MR - mode key

Pressing (VFO/MR) switches between Frequency (VFO) Mode and Memory (MR) mode. Memory mode is sometimes also referred to as Channel mode.

To save frequencies to channel memory you must be in Frequency (VFO) mode.

A / B select key

The (A/B) key switches between A (upper) and B (lower) displays. The frequency or channel on the selected display becomes the active listening and transmit frequency or channel.

To save frequencies to channel memory you must be on the A display.

When listening to broadcast FM, the (A/B) key switches between 65-75 MHz and 76-108 MHz
bands.

Band Key
The Band key can quickly toggle Between VHF/220/UHF Bands in Frequency (VFO) Mode.

You can also type in any supported frequency and the UV-5X3 will automatically toggle to the Band as well. You do not need to use the Band key when switching bands.

Numeric keypad
The BTECH UV-5X3 hand-held transceiver comes standard with a full numeric keypad.

Figure 2.3. BTECH UV-5X3, keypad

The numeric keys have their secondary function printed on them (in reality it's rather menu short-cuts, more on that in Chapter 4, Working the menu system).
The \( \text{SCAN} \) and \# \= \$ keys on the other hand have actual secondary functions, scan and keypad lock respectively.

### Pound # Key

In channel mode, \# = \$ also acts as a transmit power shift key. While in channel mode, momentarily press \# = \$ to change between High and Low transmit power. Do note that this is does not alter the transmit power stored to memory for that channel; it only affects the current session. Switching to another channel or another operating mode (including broadcast FM) will reset transmit power to what's stored in channel memory.

### Keypad Lock

The BTECH UV-5X3 features a keypad lock that locks out all keys except for the three side keys.

To enable or disable the keypad lock, press and hold the \# = \$ key for about two seconds.

You can also enable so that the radio automatically locks the keypad after ten seconds from the menu, see Chapter 4, *Working the menu system*

### Star * Key

A short momentary press of the key enables the reverse function (see Chapter 11 Repeaters).

When listening to broadcast FM a momentary press will start the scanning. Scanning in
broadcast FM will stop as soon as an active station is found, regardless of scanner resume method.

To enable the scanner, press and hold the \( \text{SCAN} \) key for about two seconds. See Chapter 5, *Scanning* for details.

**Zero 0 Key**

The UV-5X3 features a battery voltage meter that the current voltage of the battery on the display.

To see the voltage displayed, press and hold the \( \text{OSL} \) key for about two seconds.

**Menu and function keys**

The \( \text{MENU} \) key, used to enter the menu and confirm menu options.

The \( \uparrow \) and \( \downarrow \) keys are used to navigate through the menu as well as select channels and step up or down in frequency (depending on operating mode).

The \( \text{EXIT} \) key is used to exit menus and cancel menu options.
For a more in-depth explanation on how to work the menu see Chapter 4, *Working the menu system.*
Accessory jack
The accessory jack on the BTECH UV-5X3 is a Kenwood compatible two (2)-pin design.

Figure 2.4. Typical 2 pin Kenwood headset configuration.

- To attach accessories such as headsets, speaker-mics or programming cables, align the connectors and push in fully.
- The fit isn't always perfect on cheap or clone cables and connectors and may require a bit of force to wiggle them in completely.
- Make sure the radio is off before attaching any accessories.
Chapter 3. - Basic Use

Power and volume

Before we turn the power on, make sure you have attached the battery and antenna as described in Chapter 1, Initial setup.

Turning the unit on

To turn the unit on, simply rotate the volume/power knob clockwise until you hear a "click". If your radio powers on correctly there should be an audible double beep after about one second and the display will show a message or flash the LCD depending on settings for about one second (see “38 PONMSG - Power On Message” in Appendix B, Menu definitions). Then it will display a frequency or channel. If the Voice prompt is enabled, the voice will announce "frequency mode" or "channel mode".
You can get additional information about your radio when you turn it on by holding down miscellaneous keys as you turn it on.

Holding down the \( \text{SAVE} \) key while turning on the radio provides you with the firmware version.

**Turning the unit off**

Turn the volume/power knob counter-clock wise all the way until you hear a "click". The unit is now off.

**Adjusting the volume**

To turn up the volume, turn the volume/power knob clock-wise.
To turn the volume down, turn the volume/power knob counter-clock-wise. Be careful not to turn it too far, as you may inadvertently turn your radio off.
By using the monitor function, enabled from the [MON] key below the PTT, you can more easily adjust your volume by adjusting it to the un-squelched static.

Making a call
Press and hold the PTT button on the side of the radio body to transmit. While transmitting, speak approximately 3-5cm from the microphone. When you release the PTT your transceiver will go back to receive mode.

Channel selection
There are two modes of operation: Frequency (VFO) mode, and Channel or Memory (MR) mode.

For everyday use, Channel (MR) mode is going to be a whole lot more practical than Frequency (VFO) mode. However, Frequency (VFO) mode is very handy for experimentation out in the field. Frequency (VFO) mode is also used for programming channels into memory. For details on how to program your transceiver see Chapter 10, Programming.

Ultimately which mode you end up using will depend entirely on your use case.
Frequency (VFO) mode

In Frequency (VFO) mode you can navigate up and down the band by using the ▲ and ▼ keys. Each press will increment or decrement your frequency according to the frequency step you've set your transceiver to. For details on how to set the frequency step on your transceiver see Chapter 4, Working the menu system and the section called “1 STEP - Frequency Step” in Appendix B, Menu definitions.

You can also input frequencies directly on your numeric keypad with kilohertz accuracy. However, the radio will floor to the nearest frequency that corresponds to your frequency step, in other words, when you input frequencies with greater than 1kHz resolution (such as 145.6875 MHz in the example below), always round your input up.

The following example assumes the use of a 12.5kHz frequency step.

Example 3.1. Entering the frequency 145.6875 MHz on display A
1. Use the VFO key to switch to Frequency (VFO) mode
2. Press A/B until the ▲ appears next to the upper display (display A).
3. Enter 1STEP 4VOX 5WN on the numeric keypad, it should look something like this:
4. Now, for the final four digits. Note that you can only enter three decimals on the keypad, if you type 687 it won't work. So how do you get the fourth and final digit 5 in there? By rounding 145.6875 up to 145.6880 MHz, an alternative is entering 145.675, and then pressing the ▲ key once to move it up to 145.6875.

Enter 6ABR 8BEEP 8BEEP on the numeric keypad, if all went well the display should look something like this:

**Figure 3.3. Successful frequency input**
Just because you can program in a channel does not mean you're automatically authorized to use that frequency.

Transmitting on frequencies you're not authorized to operate on is illegal, and in most jurisdictions a serious offence. If you get caught transmitting without a license you can and will get fined, and in worst case sent to jail.

However, it is legal in most jurisdictions to listen. Contact your local regulatory body for further information on what laws, rules and regulations apply to your area.

**Channel (MR) mode**

The use of Channel (MR) mode is dependent on actually having programmed in some channels to use. To find out more on how to program channels see Chapter 10, *Programming*.

Once you have channels programmed and ready, you can use the ▲ and ▼ keys to navigate between channels.

*If you have channels programmed with Transmit power set to Low, you can use the # key to momentarily switch over to high power if you're having trouble getting through.*
Part II. Advanced topics

Part two covers the more advanced topics, such as setup of repeater offset and programming via computer link.

CHAPTER 4 WORKING THE MENU SYSTEM
CHAPTER 5 SCANNING
CHAPTER 6 DUAL WATCH
CHAPTER 7 DTMF
CHAPTER 8 SELECTIVE CALLING
CHAPTER 9 CUSTOMIZATION
CHAPTER 10 PROGRAMMING
Chapter 4. - Working the menu system

For a complete reference on available menu items and parameters, see Appendix B, Menu definitions.

If your radio is set to Memory (MR) mode, the following menu items will not take any effect: STEP, TXP, W/N, CTCSS, DCS, S-CODE, PTT-ID, BCL, SFT-D, OFFSET, MEM-CH, BAND

Basic use

Procedure 4.1. Using the menu with arrow keys

1. Press the [MENU] key to enter the menu.
2. Use the [▲] and [▼] keys to navigate between menu items.
3. Once you find the desired menu item, press [MENU] again to select that menu item.
4. Use the [▲] and [▼] keys to select the desired parameter.
5. When you've selected the parameter you want to set for a given menu item;
   a. To confirm your selection, press [MENU] and it will save your setting and bring you back to the main menu.
   b. To cancel your changes, press [EXIT] and it will reset that menu item and bring
you out of the menu entirely.

6. To exit out of the menu at any time, press the \textit{EXIT} key.

**Using short-cuts**

As you may have noticed if you looked at Appendix B, \textit{Menu definitions}, every menu item has a numerical value associated with it. These numbers can be used for direct access of any given menu item.

The menu is also organized in such a way that the ten most common functions are on top, and as can be seen in Figure 2.3, “BTECH UV-5X3, keypad”, these are also printed on the keypad so you don't have to remember them all.

The parameters also have a number associated with them, see Appendix B, \textit{Menu definitions} for details.

**Procedure 4.2. Using the menu with short-cuts**

1. Press the \textit{MENU} key to enter the menu.
2. Use the numerical keypad to enter the number of the menu item.
3. To enter the menu item, press the \textit{MENU} key.
4. For entering the desired parameter you have two options:
   a. Use the arrow keys as we did in the previous section; or
   b. Use the numerical keypad to enter the numerical short-cut code.
5. And just as in the previous section;
   a. To confirm your selection, press [MENU] and it will save your setting and bring you back to the main menu.
   b. To cancel your changes, press [EXIT] and it will reset that menu item and bring you out of the menu entirely.
6. To exit out of the menu at any time, press the [EXIT] key.
7. All further examples and procedures in this manual will use the numerical menu shortcuts.
Chapter 5. - Scanning

The BTECH UV-5X3 features a built in scanner for the VHF, 1.25M and UHF bands. When in Frequency (VFO) mode it will scan in steps according to your set frequency step. In Channel (MR) mode it will scan your channels.

Dual Watch is inhibited while scanning

To enable the scanner, press and hold the [SCAN] key for about two seconds. Press any key to exit scanning mode.

Scanning modes

The scanner is configurable to one of three ways of operation: Time, carrier or search, each of which is explained in further details in their respective section below.

Procedure 5.1. Setting scanner mode

1. Press the [MENU] key to enter the menu.
2. Enter [STEP] [BEEP] on your numeric keypad to come to scanner mode.
3. Press the [MENU] key to select.
4. Use the ▲ and ▼ keys to select scanning mode.
5. Press the [MENU] key to confirm and save.
6. Press the [EXIT] key to exit the menu.

**Time operation**
In Time Operation (TO) mode, the scanner stops when it detects a signal, and after a factory pre-set time out, it resumes scanning.

**Carrier operation**
In Carrier Operation (CO) mode, the scanner stops when it detects a signal, and after a factory preset time with no signal it resumes scanning.

**Search operation**
In Search Operation (SE) mode, the scanner stops when it detects a signal. To resume scanning you must press and hold the [SCAN] key again.

**Scanning a Frequency Range (VFO Mode)**
The UV-5X3 can scan a user selected frequency range

**Procedure 5.2. Setting scanning range**
1. Press and Hold \( \text{SCAN} \) for about 2 seconds
2. The Display will show: **RANGE ---:---**
3. Enter the Frequency Range (In MHz) Desired
4. *Example: 144:147*
5. The Radio will scan the frequency range from 144.000MHz-147.9975MHz According To Your Frequency Step (See Menu 1 Description)

**Scanning Your Selected Channels (Channel Mode)**

The UV-5X3 can scan your programmed memory channels; you can easily add or remove channels from the scanning bank at any time

**Procedure 5.1. Scanning channels**
1. Press and Hold \( \text{SCAN} \) for about 2 seconds to start scanning
2. Channels with a ★ by the Channel number will be included in the scan cycle

**Adding or Removing A Channel from the Scan List**

1. First Select the Channel You want to Add or Remove from the Scan List, you can do this by either typing the channel number or using the arrow keys to scroll to the desired
channel.

2. Press the [MENU] key to enter the menu.

3. Enter [SAVE] on your numeric keypad to come to Menu 33: SC-ADD

4. Press the [MENU] key to select.

5. Use the [▲] and [▼] keys to navigate between menu items.
   a. Set to OFF – to Remove the Channel from the Scanning List
   b. Set to ON – to Add the Channel to the Scanning List

6. Press the [MENU] key to confirm.

Tone Scanning

Scanning for CTCSS and DCS Tones/Codes

Scanning for a CTCSS tone or DCS code can be done while Frequency Mode (VFO) or Channel Mode (MR) is selected. Only when VFO mode is selected, can the detected tone/code be saved to menu 11/10.

CTCSS tone and DCS code scanning mode can be accessed with or without a signal being present. The scanning process itself only occurs while a signal is being received.
Not all repeaters requiring a CTCSS tone or DCS code for access will transmit one back. In that case, the transmitter of a station that can access the repeater would need to be scanned. In other words: this would be done by listening to stations on the repeater's input frequency.

**Scanning for CTCSS Tone**

1. Press the **[MENU]** key to enter the menu.
2. Enter **[1STEP 1STEP]** on your numeric keypad to come to Menu 11: R-CTCS
3. Press the **[MENU]** key to select. **Insure you have a tone activated (and it is not off)**
4. Press the **[SCAN]** to begin CTCSS scanning

A flashing "CT" will be in the left status display to indicate the radio is in CTCSS scanning mode. In this mode, whenever the radio is receiving an RF signal on the selected MR channel or VFO frequency, the lower display will cycle through the CTCSS tones as they are being tested. Once the frequency of the received CTCSS tone is determined, the "CT" indicator will stop flashing.

Press the **[MENU]** key to save the scanned tone into memory (VFO Mode Only) then press the **[EXIT]** key to exit the menu.

*Don't forget to set VFO menu 11 back to OFF when the CTCSS tone is no longer required.*
Scanning for a DCS tone

7. Press the **MENU** key to enter the menu.
8. Enter **STEP** on your numeric keypad to come to Menu 10: R-DCS
9. Press the **MENU** key to select. **Insure you have a tone activated (and it is not off)**
10. Press the **SCAN** to begin DCS scanning

A flashing "DCS" will be in the left status display to indicate the radio is in DCS scanning mode. In this mode, whenever the radio is receiving an RF signal on the selected MR channel or VFO frequency, the lower display will cycle through the DCS codes as they are being tested. Once the bits of the received DCS code are determined, the "DCS" indicator will stop flashing.

Press the **MENU** key to save the scanned tone into memory (VFO Mode Only) then press the **EXIT** key to exit the menu.

Don't forget to set VFO menu 10 back to OFF when the DCS tone is no longer required.
Chapter 6. - Dual Watch

In certain situations, the ability to monitor two channels at once can be a valuable asset. The BTECH UV-5X3 features Dual Watch functionality with the ability scan between two frequencies at a fixed intervals and to lock the transmit frequency to one of the two channels it monitors.

Procedure 6.1. Enabling or disabling Dual Watch mode

1. Press the [MENU] key to enter the menu.
2. Enter [TD] on the numeric keypad to get to Dual Watch.
4. Use the [▲] and [▼] keys to enable or disable.
5. Press the [MENU] key to confirm.
6. Press the [EXIT] key to exit the menu.

Due to the way the BTECH UV-5X3 is constructed, whenever one of the A or B Frequencies (VFO/MR) goes active, it will default to transmit on that channel. This behavior can be inconvenient, especially if when monitoring a frequency you should not transmit on. There is a menu option available to lock the transmitter to one of the A or B channels.
Procedure 6.2. Locking the Dual Watch transmit channel

1. Press the \textit{MENU} key to enter the menu.
2. Enter \texttt{3SAVE4VOX} on the numeric keypad to get to TDR-AB.
3. Press \textit{MENU} to select.
4. Use the \texttt{▲} and \texttt{▼} keys to select A (upper) or B (lower) display.
5. Press the \textit{MENU} key to confirm.
6. Press the \textit{EXIT} key to exit the menu.

\textit{If you want to momentarily override the lock without having to setting the menu option to OFF, you can do so by pressing the \texttt{A/B} key an instant before pressing the PTT.}

\textit{Another option is to disable menu \texttt{TDR} (TDR) to override the lock. Then re-enable TDR when you want the lock resumed.}
Chapter 7. - DTMF

DTMF is an in-band signaling method using dual sinusoidal signals for any given code. Originally developed for telephony systems, it has proved a very versatile tool in many other areas.

In two-way radio systems, DTMF is most commonly used for automation systems and remote control. A common example would be in amateur radio repeaters where some repeaters are activated by sending out a DTMF sequence (usually a simple single-digit sequence).

<table>
<thead>
<tr>
<th>Frequency</th>
<th>697 Hz</th>
<th>770 Hz</th>
<th>852 Hz</th>
<th>941 Hz</th>
<th>1209 Hz</th>
<th>1336 Hz</th>
<th>1477 Hz</th>
<th>1633 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>7</td>
<td>*</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>8</td>
<td>0</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td>B</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>9</td>
<td>#</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>8</td>
<td>0</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td>D</td>
</tr>
</tbody>
</table>

The BTECH UV-5X3 has a full implementation of DTMF, including the A, B, C and D codes.

The numerical keys, as well as the [ and ], keys correspond to the matching DTMF codes as
you would expect. The A, B, C and D codes are located in the \texttt{MENU}, \texttt{\textup{\textdownarrow}}, \texttt{\textdownarrow} and \texttt{EXIT} keys respectively (†).

To send DTMF codes, press the key(s) corresponding to the message you want to send while holding down the PTT key.

\textit{If you have the keypad lock enabled on your radio, you can still send DTMF tones the regular way without having to unlock your radio.}
Chapter 8. - Selective calling

Some times when you're working with larger groups of people using the same channel, things can get very crowded, very fast. To minimize this problem, several methods of blocking out unwanted transmissions on your frequency have developed. In general, there are two forms of selective calling in two-way radio systems: Group calling, and individual calling.

Group calling, as the name suggest, is a one-to-many form of communication. Every radio in your working group is configured the same way and any radio will make contact with every other radio in the group.

Individual calling, some times also known as paging, is a one-to-one form of communication. Every radio is programmed with a unique ID code. And only by sending out a matching code can you get that radio to open up to your transmissions.

The BTECH UV-5X3 features three different ways of group calling:

- **CTCSS**
- **DCS**
- **Tone-burst** (1000Hz, 1450Hz, 1750Hz, 2100Hz)
The BTECH UV-5X3 does not feature any form of individual calling.

Using these features does NOT mean that others won't be able to listen in on your transmissions.

They only provide a method to filter out unwanted incoming transmissions. Any communications made while using these features will still be heard by anyone not employing filtering options of their own.

Also, you cannot change the CTCSS or DCS settings while in memory (MR) mode.

CTCSS and 1750Hz tone-burst are also popular methods among amateur radio operators to open up repeaters.

**CTCSS**

CTCSS is set with menus 11 R-CTCS and 13 T-CTCS.

For a complete list of available CTCSS codes and corresponding sub-tone frequencies, see Table C.2, “CTCSS Frequencies” in Appendix C, *Technical specifications*. 
Procedure 8.1. CTCSS setup how-to

1. Press the [MENU] key to enter the menu.
2. Enter **1STEP** on the numeric keypad to get to receiver CTCSS.
4. Enter desired CTCSS sub-tone frequency in hertz on the numeric keypad.
5. Press [MENU] to confirm and save.
6. Enter **1STEP 3SAVE** on the numeric keypad to go to transmitter CTCSS.
8. Enter desired CTCSS sub-tone frequency in hertz on the numeric keypad. Make sure it's the same frequency as that you entered for receiver CTCSS.
10. Press [EXIT] to exit the menu system.

To turn CTCSS off, follow the same procedure but set it to off with the [0SQL] key instead of selecting a CTCSS sub-tone frequency.

For more information see the section called “11 R-CTCS - Receiver CTCSS” and the section called “13 T-CTCS - Transmitter CTCSS” in Appendix B, Menu definitions.
DCS

DCS is set with menus 10 R-DCS and 12 T-DCS.

For a complete list of available DCS codes, see Table C.1, “DCS Codes” in Appendix C, Technical specifications.

Procedure 8.2. DCS setup how-to

1. Press the [MENU] key to enter the menu.
2. Enter 1STEP 0SQL on the numeric keypad to get to receiver DCS.
4. Enter desired DCS code on the numeric keypad.
5. Press [MENU] to confirm and save.
6. Enter 1STEP 2TXP on the numeric keypad to go to transmitter DCS.
8. Enter desired DCS code on the numeric keypad. Make sure it's the same code as that you entered for receiver DCS.
10. Press 2TXP to exit the menu system.

To turn DCS off, follow the same procedure but set it to off with the 0SQL key instead of
selecting a DCS code.

For more information see the section called “10 R-DCS - Receiver DCS” and the section called “12 T-DCS - Transmitter DCS” in Appendix B, *Menu definitions*.

**1000Hz, 1450Hz, 1750Hz, 2100Hz Tone-burst**

To send out a tone-burst; you simultaneously will press a key while holding down the PTT. No further configuration required using this feature.

The following configurations will transmit accordingly:

- **PTT + CALL** = Transmits 1000Hz Tone Burst
- **PTT + VFO/MR** = Transmits 1450Hz Tone Burst
- **PTT + A/B** = Transmits 1750Hz Tone Burst
- **PTT + BAND** = Transmits 2100Hz Tone Burst

*If you have the keypad lock enabled on your radio, you can still send a 1750Hz tone the regular way without having to unlock your radio.*
Chapter 9. - Customization

The BTECH UV-5X3 allows for customization of both the power-on message (via computer link only), and the backlight color during the three states of the transceiver (Transmit, Receive and Standby).

Display

The LCD on the BTECH UV-5X3 is backlit by multi-color LEDs, the color of which can be pre-set from the menu system into a variety of colors.

To change the colors, follow these steps:

**Procedure 9.1. Changing backlight color**

1. Press the [MENU] key to enter the menu.
2. Enter one of the following on your numeric keypad:
   a. [2TX] [9TOT] to change the standby color.
   b. [3SAVE] [0SQL] to change the receive color.
   c. [3SAVE] [1STEP] to change the transmit color.
4. Use the ▲ and ▼ keys to pick the desired color.
5. Press [MENU] to confirm and save.
6. Press [EXIT] to exit the menu.

To change the time the backlight stays on for your LCD, follow these steps:

**Procedure 9.2. Setting backlight time-out**

1. Press the [MENU] key to enter the menu.
2. Enter 6ABR on your numeric keypad to come to backlight time out.
4. Use the ▲ and ▼ keys to pick the desired color.
5. Press [MENU] to confirm and save.
6. Press [EXIT] to exit the menu.

For details see the section called “29 WT-LED - Display backlight color, Standby” and onward in Appendix B, *Menu definitions*.

To sync channels on the display (simultaneously display channel name and frequency), follow these steps:

**Procedure 9.3. Synching the Display**

1. Press the [MENU] key to enter the menu.
2. Enter [2TXP4VOX] on your numeric keypad to come to the Sync Menu
4. Use the ▲ and ▼ keys to select ‘ON’.
5. Press [MENU] to confirm and save.
6. Press [EXIT] to exit the menu.

Use in Conjunction with Menus 21 & 22 to coordinate what is displayed – Appendix B Menu definitions

Power-on message

The power-on message can only be set via computer link, see the section called “Computer programming” for details on how to set up a link with your computer.

The following instructions assume that you've already established a link using the BTECH software from a computer running Windows, and that the BTECH software is already installed and running.

Procedure 9.3. Setting the power-on-message

1. Click other in the menu bar; a dialogue box titled "Other" should have popped up.
2. In the box titled "Power On Message", there are two text fields representing the two lines on your LCD. Enter the desired text in the fields.
3. Click Write to write your changes to the radio.
Even though the software has eight (8) character wide text fields for the power-on message, be aware that the display on the UV-5X3 can only display a maximum of seven (7) characters.

Make sure that menu item 38 is set to MSG, otherwise your message won't be displayed. See Chapter 4 Working the menu system for details on how to navigate the menu.

Some times it takes the BTECH software more than one try to connect to your radio. If you see a dialogue box popping up stating that you have a connection failure, close the dialogue box and click read or write again.
Chapter 10. - Programming

Memory channels are an easy way to store commonly used frequencies so that they can easily be retrieved at a later date.

The BTECH UV-5X3 features 128 memory channels that each can hold: Receive and transmit frequencies, transmit power, group signaling information, bandwidth, ANI/PTT-ID settings and a six character alphanumeric identifier or channel name \(^1\).
Frequency Mode vs. Channel Mode

*Switch between Modes by Using the V/M Front Panel Button*

*These two modes have different functions and are often confused.*

**Frequency Mode (VFO)** - Used for a temporary frequency assignment, such as a test frequency or quick field programming if permitted.

**Channel Mode (MR)** - Used for selecting preprogrammed channels.

**All Programming MUST be initially done in the Frequency Mode (VFO) ONLY. From there you have the option of assigning the entered data to a specific channel for access in the Channel Mode**

**Call Tones, TX/RX Tones, Squelch, and Power Settings Are Adjustable on Saved Channels in Channel Mode**

**Programming Channels are different from the VFO settings; the Offset settings are not stored, instead you enter a TX frequency directly (E.G. 145.000 RX with an offset of (+) .600 would be a TX frequency of 145.600).**
Ex: Programming a Channel Repeater Offset with CTCSS Tone

EXAMPLE New memory in Channel 99:
RX = 145.000 MHz
TX = 145.600 MHz (This is a (+ .600) Offset)

TX CTCSS tone 123.0

1. Change from Menu to Menu by pressing the [EXIT/AB] button.
2. Set radio to VFO Mode by pressing [V/M]
   
   *Channel number at the right will disappear.*

4. Menu 13 [M] 123.0 [M] [EXIT] Selects desired TX encode tone

5. **Enter RX frequency (Ex. 145000)**
6. Menu 27 [M] 9 9 [M] Enter the desired channel (Ex 99)
   
   ➢ [EXIT] RX has been added

7. **Enter TX frequency (Ex. 145600)**
8. Menu 27 [M] 9 9 Enter the same channel (Ex 99)
   
   ➢ [EXIT] TX has been added

9. [V/M] Return to MR Mode. *Channel number will re-appear.*
Ex. Programming a Simplex Channel with CTCSS tone

EXAMPLE New memory in Channel 99:
RX = 446.000 MHz
TX CTCSS tone 123.0

1. Change from Menu to Menu by pressing the [EXIT/AB] button.
2. Set radio to VFO Mode by pressing [V/M]
   Channel number at the right will disappear.
3. Menu 28 [M] 9 9 [M] [EXIT] Delete Prior Data in channel (Ex. 99)
4. Menu 13 [M] 123.0 [M] [EXIT] Select desired TX encode tone (Ex 123 CTCSS)
   Use [A/B] to select Upper display -> Enter RX frequency (Ex. 446000)
5. Menu 27 [M] 9 9 [M] Enter the desired channel (Ex 99)
   [EXIT] Channel has been added
6. [V/M] Return to MR Mode. Channel number will re-appear.
Computer programming

The Radio kit does not include a programming cable. To attain a PC cable please visit https://baofengtech.com/pccable

Download programming software at http://baofengtech.com/download and find helpful guides at http://miklor.com for more information on using the software

PC-03 FTDI PROGRAMMING CABLE
For UV-5X3 Computer Programming

Software and cable support for Windows, macOS, and Linux
Part III. How-to and setup guides.

*Part three covers is a collection of how-to documents to help you set up your radio for specific working environments.*

**CHAPTER 11 REPEATERS**

**CHAPTER 12 APPLICATION SPECIFIC SETUP**
Chapter 11. - Repeaters

A radio repeater is an automated transceiver in a fixed location. Usually mounted high up on hilltops or on tall buildings, but sometimes they operate within buildings for internal use. A repeater takes one signal and relays it, usually after amplifying it by orders of magnitude. This can be very handy, as this enables you to use a small low powered hand-held two-way transceiver such as the BTECH UV-5X3 to reach great distances.

Whether you're a commercial (business or government) user or an amateur radio operator, chances are you'll be dealing with a repeater system sooner or later. To find out what settings to use to use your local repeater, ask your employer or someone at your local amateur radio organization for details.

A common type of repeater is the duplex repeater. In a duplex repeater system, the repeater transmits and receives simultaneously, but on different frequencies. To utilize this type of repeater, your radio has to be capable of transmitting and receiving on different frequencies on the same memory channel. How you use this kind of repeater is by setting the receive frequency of your radio to the output frequency of the repeater, and the transmit frequency of your radio to the input frequency of the repeater. Often times, the transmit frequency to use isn't explicitly stated, but rather an offset relative your receive frequency is
specified. This is conveniently enough also how the BTECH UV-5X3 natively handles repeater setup in VFO, by specifying offset rather than transmit frequency.

   This might cause confusion because many expect this to be true globally when it isn't. SFT-D and OFFSET only function in VFO mode.

MR mode uses and stores the RX frequency and the TX frequency only. SFT-D and OFFSET don't have to be set or they can even be set completely wrong and a working repeater channel can be created.

   It is convenient to use SFT-D and OFFSET with 'reverse' mode to determine the TX frequency to be stored in a channel, but they are otherwise unused for MR mode.

The following instructions assume that you know what transmit and receive frequencies your repeater employs, and that you're authorized to use it.

   **Procedure 11.1. Repeater setup**

1. Set the radio to Frequency (VFO) mode with the [VFO/MR] key.
2. Enter the repeater’s output (your receiving) frequency by either using the [▲] and [▼] keys, or by entering it directly on the numerical keypad.
3. Press the \textbf{MENU} key to enter the menu.
4. Enter \textbf{2TXP 5WN} on the numeric keypad to get to frequency offset.
5. Press \textbf{MENU} key to select.
6. Use the \textbf{▲} and \textbf{▼} keys and the numerical keypad to enter the specified frequency offset. See the section called “26 OFFSET - Frequency shift amount” for details.
7. Press \textbf{MENU} to confirm and save.
8. Enter \textbf{2TXP 6ABR} on the numeric keypad to get to offset direction.
9. Use the \textbf{▲} and \textbf{▼} keys to select +(positive) or -(negative) offset.
10. Press \textbf{MENU} to confirm and save.
11. Optional:
    a. Save to memory, see the section called “Manual programming” for details.
    b. Set up CTCSS; see the section called “CTCSS” for details.
12. Press \textbf{EXIT} to exit the menu.

If everything went well, you should be able to make a test call through the repeater. If you're experiencing problems making a connection to the repeater, check your settings and/or go through the procedure again.

Certain Amateur Radio repeaters (especially in Europe) use a 1750Hz tone burst to open up the repeater. To see how this is done with the BTECH UV-5X3, see the section called “1750Hz Tone-burst”.
If you're still unable to make a connection, contact the person in charge of the radio system with your employer or your local amateur radio club, as the case may be.

If you for some reason want to listen to the repeater's input frequency instead, press momentarily and you'll reverse your transmit and receive frequencies.

This is indicated in the LCD on the radio with an R in the top row, next to the + and - for the offset direction.
Chapter 12. - Application Specific Setup

Commercial Radio Setup

PLMR users in the United States are mandated to move to 12.5 kHz narrowband communication in the 150-174 MHz VHF and 421-512MHz UHF bands by January 1, 2013.

Follow these instructions to set your radio to Narrowband mode:

This section is only true for VFO mode.

WN is settable on a per channel basis and has to be set prior to storing a channel. Once a channel has been programmed, the channel must be deleted and reprogrammed to change the WN setting.

1. Press the [VFO/AM] key to enter frequency mode.
2. Press the [MENU] key to enter the menu.
5. Use the [▲] and [▼] keys to select between Wide and Narrow ("Narr").
6. Press [MENU] to confirm and save
7. Press [EXIT] to exit the menu.
If your employer has a dispatch system that requires your radio to identify via ANI, please see Chapter 12, *Automatic Number Identification* for detailed instructions on how to set that up on your radio.

To find out what other channels and features needed, please contact your employer.

**Amateur Radio Setup**

In contrast with Commercial radio operators, who often need very specific requirements to be compatible with a very specific radio implementation, Amateur radio operators tend to need the broadest possible settings in order to be compatible with as many systems as possible. This basically implies turning all the fancy features that you typically might need for a commercial setup off.

In a typical Amateur radio setup the following settings would be recommended:

- Set bandwidth to Wide (menu item 5).
- Turn DCS and CTCSS off (menu items 10 through 13).
- Turn ANI, DTMFST, S-CODE, PTT-ID off and PTT-LT to 0ms (menu items 15 through 17 and 19 through 20).
- Turn off Squelch Tail Elimination (STE) features (menu items 35 through 37).
• Turn roger beep (ROGER) off (menu item 39).

For further information see Appendix B, *Menu definitions* and Chapter 4, *Working the menu system*.

**FRS, GMRS, MURS, PMR446**

You may be tempted to use FRS, GMRS, MURS (in the USA) or PMR446 (in Europe) frequencies. Do note however that there are restrictions on these bands that make this transceiver illegal for use.

**FCC Notice**

*NOTE:* This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the
user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.
## Appendix A. - Troubleshooting

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The radio doesn't start.</td>
<td>The battery is too low.</td>
<td>Change or recharge the battery.</td>
</tr>
<tr>
<td></td>
<td>The battery isn't correctly installed.</td>
<td>Remove the battery and reinstall it.</td>
</tr>
<tr>
<td>The battery dies quickly</td>
<td>The battery is dead.</td>
<td>Purchase a new battery.</td>
</tr>
<tr>
<td></td>
<td>The battery isn't fully charged.</td>
<td>Recharge the battery.</td>
</tr>
<tr>
<td>The LED indicates reception, but the speaker is silent.</td>
<td>Volume is too low.</td>
<td>Turn up the volume.</td>
</tr>
<tr>
<td></td>
<td>CTCSS or DCS enabled</td>
<td>Change your CTCSS or DCS to match those you're trying to communicate with.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn CTCSS or DCS off.</td>
</tr>
<tr>
<td>Others can't hear my transmission.</td>
<td>Their CTCSS or DCS settings don’t match yours.</td>
<td>Change your CTCSS or DCS settings to match your peers.</td>
</tr>
<tr>
<td></td>
<td>You're too far apart.</td>
<td>Move in closer.</td>
</tr>
<tr>
<td>The radio transmits without touching the PTT.</td>
<td>The VOX is enabled.</td>
<td>Turn VOX off.</td>
</tr>
<tr>
<td></td>
<td>VOX sensitivity is too high.</td>
<td>Turn down VOX sensitivity.</td>
</tr>
</tbody>
</table>
## Appendix B. - Menu definitions

See Chapter 4, *Working the menu system* for more info about using the menu-system.

<table>
<thead>
<tr>
<th>Menu</th>
<th>Name (Full Name)</th>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
</table>
| 0    | SQL - Squelch Level | [0 - 9] Setting the squelch to 0 will open up the squelch entirely. | - Squelch silences the receiver when there is no signal.  
- Sensitivity can be varied from .1 to .3 mV on UHF  
Sensitivity can be varied from .1 to .2 mV on VHF |
<p>| 2    | TXP - Transmit Power | HIGH [0] | LOW [1] | Selects between HIGH and LOW transmitter power when in VFO/Frequency mode. Use the minimum transmitter power necessary to carry out the desired communications. |</p>
<table>
<thead>
<tr>
<th></th>
<th>Feature</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>SAVE - Battery Save</td>
<td>OFF [0]</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>VOX - Voice Operated TX</td>
<td>OFF [0]</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>WN - Wideband / Narrowband</td>
<td>WIDE [0]</td>
<td>NARR [1]</td>
</tr>
<tr>
<td>6</td>
<td>6 ABR - Display Illumination Time</td>
<td>OFF [0]</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>TDR - Dual Watch, Dual Reception</td>
<td>OFF [0]</td>
<td>ON [1]</td>
</tr>
<tr>
<td>8</td>
<td>BEEP - Keypad Beep</td>
<td>OFF [0]</td>
<td>ON [1]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>This feature provides a safety switch that limits transmission time to a programmed value. This will promote battery conservation by not allowing you to make excessively long transmissions, and in the event of a stuck PTT switch it can prevent interference to other users as well as battery depletion.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>R-DCS - Receiver DCS</td>
<td>OFF [0]</td>
<td>see DCS Table in Appendix C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mutes the speaker of the transceiver in the absence of a specific low-level digital signal. If the station you are listening to does not transmit this specific signal, you will not hear anything.</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>R-CTCS - Receiver CTCSS</td>
<td>OFF [0]</td>
<td>see CTCSS Table in Appendix C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mutes the speaker of the transceiver in the absence of a specific and continuous sub-audible signal. If the station you are listening to does not transmit this specific and continuous signal, you will not hear anything.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>T-DCS - Transmitter DCS</td>
<td>OFF [0]</td>
<td>see DCS Table in Appendix C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transmits a specific low-level digital signal to unlock the squelch of a distant receiver (usually a repeater).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Setting</td>
<td>Description</td>
</tr>
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<td>---</td>
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<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
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<tr>
<td>13</td>
<td>T-CTCS - Transmitter CTCSS</td>
<td>OFF [0]</td>
<td>see CTCSS Table in Appendix C</td>
</tr>
<tr>
<td>15</td>
<td>ANI-ID - Automatic Number ID</td>
<td>OFF [0]: No DTMF Side Tones are heard DT-ST [1]: Side Tones are heard only from manually keyed DTMF codes ANI-ST [2]: Side Tones are heard only from automatically keyed DTMF codes DT+ANI [3]: All DTMF Side Tones are heard</td>
<td>Displays the ANI code that has been set by software. This menu cannot be used to change it. The ANI-ID is sent when the alarm is activated and menu 32 = CODE</td>
</tr>
<tr>
<td>16</td>
<td>DTMFST – DTMF- Side Tone of transmit code</td>
<td>DT-ST [1]: Side Tones are heard only from manually keyed DTMF codes ANI-ST [2]: Side Tones are heard only from automatically keyed DTMF codes DT+ANI [3]: All DTMF Side Tones are heard</td>
<td>Determines when DTMF Side Tones can be heard from the transceiver speaker.</td>
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<td>18</td>
<td>SC-REV - Scanner Resume Method</td>
<td>TO [0]: Time Operation - scanning will resume after a fixed time has passed</td>
<td>CO [1]: Carrier Operation - scanning will resume after the signal disappears</td>
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<td>19</td>
<td>PTT-ID - When to send the PTT-ID</td>
<td>OFF [0]: No ID is sent</td>
<td>BOT [1]: The selected S-CODE is sent at the beginning</td>
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<td>PTT-LT - Signal code sending delay</td>
<td>0 - 50ms</td>
<td>PTT-ID Delay (milliseconds)</td>
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<tr>
<th></th>
<th>MDF-A - Channel Mode A Display</th>
<th>CH [0]: Displays the channel number</th>
<th>[A] MR/Channel Mode Display Format</th>
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<tr>
<td></td>
<td>NAME [1]: Displays the channel name.</td>
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<td>Note: Names must be entered using software.</td>
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<td>FREQ [2]: Displays programmed Frequency</td>
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<td>21</td>
<td>MDF-B - Channel Mode B Display</td>
<td>CH [0]: Displays the channel number</td>
<td>[B] MR/Channel Mode Display Format</td>
</tr>
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<td>NAME [1]: Displays the channel name.</td>
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<td>Note: Names must be entered using software.</td>
</tr>
<tr>
<td></td>
<td>FREQ [2]: Displays programmed Frequency</td>
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<td>22</td>
<td>BCL - Busy Channel Lock-out</td>
<td>OFF [0]</td>
<td>ON [1]</td>
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<td>24</td>
<td>SYNC - Sync</td>
<td>OFF [0]</td>
<td>ON [1]</td>
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<tr>
<td>25</td>
<td>SFT-D - Frequency Shift Direction</td>
<td>OFF [0]: TX = RX (simplex) + [1]: TX will be shifted higher in frequency than RX - [2]: TX will be shifted lower in frequency than RX</td>
<td>Enables access of repeaters in VFO/Frequency Mode</td>
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<tr>
<td>26</td>
<td>OFFSET - Frequency shift amount</td>
<td>00.000 - 69.990 in 10 kHz steps</td>
<td>Specifies the difference between the TX and RX frequencies</td>
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<td>27</td>
<td>MEM-CH - Store a Memory Channel</td>
<td>000 - 127</td>
<td>This menu is used to either create new or modify existing channels (0 through 127) so that they can be accessed from MR/Channel Mode.</td>
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<td>28</td>
<td>DEL-CH - Delete a memory channel</td>
<td>000 - 127</td>
<td>This menu is used to delete the programmed information from the specified channel (0 through 127) so that it can either be programmed again or be left empty.</td>
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<td>32</td>
<td>AL-MOD - Alarm Mode</td>
<td>SITE [0]: Sounds alarm through your radio speaker only</td>
<td>SITE: Sounds alarm through your radio speaker only</td>
</tr>
<tr>
<td>33</td>
<td>SC-ADD – Scan Add</td>
<td>OFF [0]</td>
<td>ON [1]</td>
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<tr>
<td>Page</td>
<td>Description</td>
<td>Setting</td>
<td>Details</td>
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<td>------</td>
<td>-------------</td>
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<td>---------</td>
</tr>
<tr>
<td>34</td>
<td>TDR-AB - Transmit selection while in Dual Watch mode</td>
<td>OFF [0]</td>
<td>When enabled, priority is returned to selected display once the signal in the other display disappears.</td>
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<td>35</td>
<td>STE - Squelch Tail Elimination</td>
<td>OFF [0]</td>
<td>This function is used to eliminate squelch tail noise between BTECH handhelds that are communicating directly (no repeater). Reception of a 55 Hz or 134.4 Hz tone burst mutes the audio long enough to prevent hearing any squelch tail noise.</td>
</tr>
<tr>
<td>36</td>
<td>RP-STE - Squelch Tail Elimination</td>
<td>OFF [0]</td>
<td>This function is used to eliminate squelch tail noise when communicating through a repeater.</td>
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<tr>
<td>37</td>
<td>RPT-RL - Delay the squelch tail of repeater</td>
<td>OFF [0]</td>
<td>Delay the Tail Tone of Repeater (X100 milliseconds)</td>
</tr>
<tr>
<td>38</td>
<td>PONMSG - Power On Message</td>
<td>FULL [0]: Performs an LCD screen test at power-on MSG [1]: Displays a 2-line power-on message</td>
<td>Controls the behavior of the display when the transceiver is turned on.</td>
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<tr>
<td>39</td>
<td>ROGER - Roger Beep</td>
<td>OFF [0]</td>
<td>ON [1]</td>
</tr>
<tr>
<td>40</td>
<td>D-ANI – Decode ANI Transmissions</td>
<td>OFF [0]</td>
<td>ON [1]</td>
</tr>
<tr>
<td>41</td>
<td>DTMF-G</td>
<td>0-60</td>
<td>Adjusts the audio level of transmitted DTMF tones. Audio level adjustment for ANI and DTMF options.</td>
</tr>
<tr>
<td>42</td>
<td>RESET - Restore defaults</td>
<td>VFO [0]</td>
<td>ALL [1]</td>
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## Appendix C. - Technical specifications

### General

<table>
<thead>
<tr>
<th>Specification</th>
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<tr>
<td>Frequency Range (MHz)</td>
<td>65-108 (Rx only)</td>
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<tr>
<td></td>
<td>144-148MHz (Rx/Tx)</td>
</tr>
<tr>
<td></td>
<td>222-225MHz (Rx/Tx)</td>
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<tr>
<td></td>
<td>420-450MHz (Rx/Tx)</td>
</tr>
<tr>
<td>Memory channels</td>
<td>128</td>
</tr>
<tr>
<td>Frequency stability</td>
<td>2.5ppm</td>
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<tr>
<td>Frequency step (kHz)</td>
<td>2.5K/5.0K/6.25K/10.0K/12.5K/20.0K/25.0K/50.0K</td>
</tr>
<tr>
<td>Antenna impedance</td>
<td>50 Ohm</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20°C to +60°C</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>7.4</td>
</tr>
<tr>
<td>Consumption</td>
<td>≤ 75mA (standby)</td>
</tr>
<tr>
<td></td>
<td>380mA (reception)</td>
</tr>
<tr>
<td></td>
<td>≤ 1.4A (transmission)</td>
</tr>
<tr>
<td>Mode of operation</td>
<td>Simplex or semi-duplex</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>03 / 03 / 54 min. (Rx / Tx / Standby)</td>
</tr>
<tr>
<td>Dimensions (mm)</td>
<td>58 x 110 x 32</td>
</tr>
<tr>
<td>Weight (g)</td>
<td>214</td>
</tr>
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</table>
## Transmitter

**Transmitter specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>RF power (W)</td>
<td>5 (VHF high)</td>
</tr>
<tr>
<td></td>
<td>4 (1.25M high)</td>
</tr>
<tr>
<td></td>
<td>4 (UHF high)</td>
</tr>
<tr>
<td></td>
<td>1 (VHF low)</td>
</tr>
<tr>
<td></td>
<td>1 (1.25M low)</td>
</tr>
<tr>
<td></td>
<td>1 (UHF low)</td>
</tr>
<tr>
<td>Type of modulation</td>
<td>FM</td>
</tr>
<tr>
<td>Emission class</td>
<td>16K#F3E (wideband)</td>
</tr>
<tr>
<td></td>
<td>11K#F3E (narrowband)</td>
</tr>
<tr>
<td>Maximum deviation (kHz)</td>
<td>≤± 5.0 (wideband)</td>
</tr>
<tr>
<td></td>
<td>≤ ± 2.5 (narrowband)</td>
</tr>
<tr>
<td>Spurious emissions (dB)</td>
<td>&lt;−60dB</td>
</tr>
</tbody>
</table>
Receiver

Receiver specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiver sensitivity</td>
<td>0.2µV (at 12dB SINAD)</td>
</tr>
<tr>
<td>Intermodulation</td>
<td>60dB</td>
</tr>
<tr>
<td>Audio Output</td>
<td>1000mW</td>
</tr>
<tr>
<td>Adjacent channel selectivity</td>
<td>65/60dB</td>
</tr>
</tbody>
</table>

DCS table

Table C.1. DCS Codes

<table>
<thead>
<tr>
<th>Number</th>
<th>Code</th>
<th>Number</th>
<th>Code</th>
<th>Number</th>
<th>Code</th>
<th>Number</th>
<th>Code</th>
<th>Number</th>
<th>Code</th>
</tr>
</thead>
<tbody>
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</table>

*After DCS Number Shortcut 137, in order to navigate through the subsequent codes manually key in shortcut 137 and then use the arrow keys to navigate to the DCS tone required.*
# CTCSS table

**Table C.2. CTCSS Frequencies**

<table>
<thead>
<tr>
<th>Number</th>
<th>Frequency</th>
<th>Number</th>
<th>Frequency</th>
<th>Number</th>
<th>Frequency</th>
<th>Number</th>
<th>Frequency</th>
<th>Number</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
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<td>69.3</td>
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