BAOFENG

UV-5R

QUICK REFERENCE GUIDE

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BaoFeng UV-5R
Quick Reference Guide

By Matthew Kimball

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Proudly Printed in the United States of America

Table of Contents

- A/B Select Key
- Band Key
- Numeric Keypad
- # (key-image) Key
- Keypad Lock
- * Scan (Star) key
- Menu and Function keys

Basic Usage

- Power and Volume
- Channel Selection

Menu Systems

- Basic use
- Using short-cuts

Scanning

- Scanning modes
- Time operation
- Carrier operation
- Search operation
- Tone Scanning

Dual Watch

- Enabling or disabling Dual Watch mode
- Locking the Dual Watch transmit channel

Programming

- DTMF
- CTCSS
- DCS
- 1750Hz Tone-Burst
- Manual Programming
- Simplex Programming
- Duplex Programming
- Computer Programming
- Software
- Adding and deleting channels
- Radio to Radio Clone
- Automatic Number identification

Commercial Radio Setup
Narrowband Mode Setup
Amateur Radio Setup

Repeaters

Repeater Setup

Menu Definitions

SQL – Squelch Level
1 Step – Frequency Step
2 TXP – Transmit Power
3 Save – Battery Save
4 VOX – Voice Operated TXA
5 WN – Wide/Narrow Band
6 ABR – Display Illumination Time
7 TDR – Dual Watch
8 BEEP – Keypad Beep
9 TOT – Transmission Time-Out Timer
10 R-DCS - Receiver DCS
11 R-CTCS – Receiver CTCSS
12 T-DCS –Transmitter DCS
13 T-CTCS – Transmitter CTCSS
14 Voice – Voice Prompt
15 ANI-ID Automatic Number ID
16 DTMFST – DTMF Tone of Transmit Code
17 S-Code – Signal Code
18 SC-REV – Scanner Resume Method
19 PTT-ID – When to Send PTT-ID
20 PTT-LT – Signal Code Sending Delay
21 MDF-A – Channel Mode A Display
22 MDF-B – Channel Mode B Display
23 BCL – Busy Channel Lock-Out
24 AUTOLK – Automatic Keypad Lock
25 SFT-D – Frequency Shift Direction
26 OFFSET – Frequency Shift Amount
27 MEM-CH – Store a Memory Channel
28 DEL-CH – Delete a Memory Channel
29 WT-LED – Display Back-Light Color, Standby

30 RX-LED – Display Back-Light Color, Receive
31 TX-LED – Display Back-Light Color, Transmit
32 AL-MOD – Alarm Mode
33 BAND – Band Selection
34 TDR-AB – Transmit Selection while in a Dual Watch Mode
35 STE – Squelch Tail Elimination
36 RP-STE – Squelch Tail Elimination Through a Repeater
37 RPT-RL – Delay the Squelch Tail of a Repeater
38 PONMGS – Power On Message
39 ROGER – Roger Beep
40 RESET – Restore Defaults

About this eBook

HamApp brings you this eBook guide for the BaoFeng UV-5R Amateur Radio. We are in no way affiliated with the manufacturer of this device and are merely bringing you this eBook as a service for your use.

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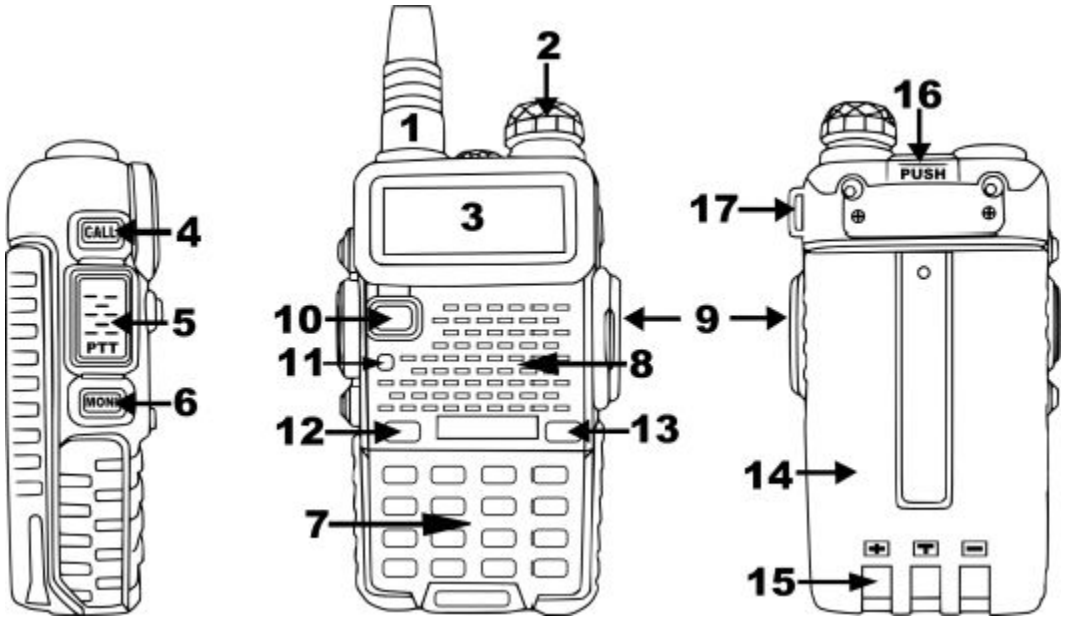
Thank you for your purchase.

73,

Matthew Kimball, K4MTK

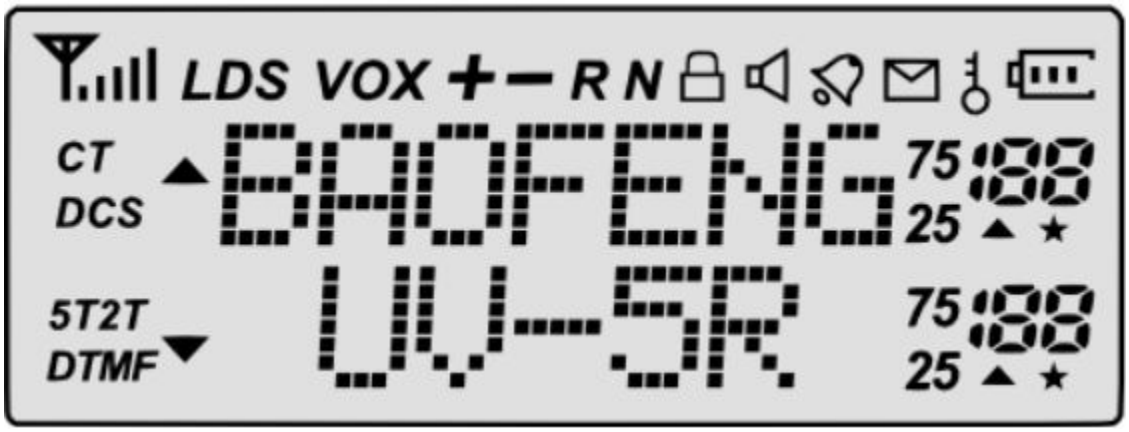
Know your Radio

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. Speaker and microphone
9. Accessory jack
10. VFO/MR mode key
11. Status LED
12. A / B select key
13. Band select key
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, (not marked) situated between antenna and power/volume knob.

The Main Display



Icon	Description
188	Memory channel
25, 75	Least significant modifiers.
CT	CTCSS enabled
DCS	DCS enabled
+, −	Frequency shift direction if enabled
S	Dual watch enabled
VOX	VOX enabled
R	Reverse function enabled
N	Narrowband enabled
	Battery level indicator
	Keypad lock enabled
L	Transmit power set to Low
▲ ▼	Indicates active band or channel
	Signal Strength Meter

QUICK TIP: While this is a 7-character display, memory mode only allows for 6 characters

Battery Level Indicator

When the battery level indicator reads  the battery is depleted. The radio will start beeping periodically and flash the display backlight, indicating you need to change/charge your battery.

QUICK TIP: Press [0] for 2 seconds and the battery level indicator appears for1 second. (Works on the UV5R and the GT-3TP Baofeng Radios)

Status LED

The Status LED will turn green when you receive and red as you transmit. The Status LED will also turn red when off or in standby mode.

Side Key 1 – CALL (Broadcast FM & Alarm)

Press [CALL] momentarily to start the FM Broadcast receiver. Pressing it again turns the broadcast FM receiver off.

Side Key 2 – MONI (Monitor & Flashlight)

Press [MON] momentarily to turn on the LED flashlight. Another momentary press turns the flashlight off.
Press [MON] and hold to monitor the signal, which will open up the squelch so you can listen to the unfiltered signal.

VFO/MR – Mode Key

Pressing [VFO/MR] switches the mode between Frequency (VFO) and Memory (MR). Memory mode is 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/channel on the selected display becomes the active listening and transmit frequency/channel.

Band Key

The [BAND] key switches bands between VHF and UHF when in Frequency (VFO) mode.

When listening to broadcast FM, the [BAND] key switches between 65-75 MHz and 76-108 MHz bands.

Numeric Keypad

The numeric keys have their secondary function printed on them. Menu short cuts are explained further in ”Menu Systems”.

The [*SCAN] and [#(key-image)] keys have actual secondary functions, scan, and keypad lock respectively.

(key-image) Key

In channel mode, [# (key-image)] also acts as a transmit power short cut key. When in channel mode, momentarily press [#(key-image)] to change the transmit power between High and Low. Note that this is does not alter the transmit power stored to memory for that channel; it only changes the current transmission. Switching to another channel or operating mode (including broadcast FM) will reset transmit power to the setting stored in the memory channel.

Keypad Lock

The keypad lock, locks out all keys except for the three side keys.

To enable or disable the keypad lock, press and hold the [# (key-image)] key for about two seconds.

Quick Tip: You can also set the radio to automatically lock after ten seconds. See “Menu System for more information.

* Scan (Star) key

A short press of the [*SCAN] key enables the reverse function (More info in Repeaters).

When listening to broadcast FM, a short press will start the scanning. Scanning in broadcast FM will stop as soon as an active station is found.

To enable the scanner, press and hold the [*SCAN] key for about two seconds.

Menu and Function keys

The [MENU] key is used to enter the menu and confirm menu options.

The [UP ARROW] and [DOWN ARROW] keys are used to navigate through the menu as well as select channels and step up/down in frequency (operating mode dependent).

The [EXIT] key is used to exit menus and cancel menu options.

For a more in-depth explanation on how to work the menu see Menu Systems.

Basic Usage

Power and Volume

NOTE: Before you turn the power on, make sure the battery and antenna are attached.

Turning the unit on

To turn the unit on, simply rotate the volume/power knob clockwise until you hear a "click". The radio powers on correctly when you hear a double

beep. The display and backlight will also turn on.

> QUICK TIP: Additional information about your radio is available when you turn it on by holding down the miscellaneous keys as you turn it on, as listed below:

Holding down the [3 SAVE] key while turning on the radio provides the firmware version.

Holding down the [6] key while turning on the radio provides what are both a manufacturing date and a hardware revision number. (It should be noted that this is not confirmed)

Turning the unit off

Turn the volume/power knob counter-clock wise all the way until you hear a "click". The display and backlight will turn 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. Use caution not to turn it too far, as you may turn your radio off.

> QUICK TIP: Using the monitor function, enabled from the Monitor key (below the PTT button), you can easily adjust the volume by adjusting it to the un-squelched static.

Making Calls

Press and hold the PTT button on the side of the radio body to transmit. Once you release the PTT key your transceiver will go back into receive mode.

> QUICK TIP: For best transmission, allow 1 to 2 seconds after keying the PTT button before speaking and speak 1 to 2 inches from the microphone, speaking slowly and distinctly.

Channel Selection

Frequency (VFO) mode

In Frequency (VFO) mode you can change the frequency in the band by using the [UP ARROW] and [DOWN ARROW] keys. Each press will increase or decrease the frequency according to the frequency step you have set your transceiver to. For details on how to set the frequency step on your transceiver see “Menu Systems”.

You are able to input frequencies directly on the numeric keypad with kilohertz accuracy. However, the radio will stop at the nearest frequency that correspond to your frequency step. i.e.: when you input frequencies that are greater than 1kHz (such as 147.6875 MHz in the example below), always round your entry up, the radio will only go three places after the decimal.

This example assumes the use of a 12.5kHz frequency step.
For example, if 147.6875 MHz is needed, do the below:

1. Use the [VFO/MR] key to switch to Frequency (VFO) mode.
2. Press the [A/B] key until the [UP] Key appears next to the upper display (display A).
3. Press the [BAND] key until you get to VHF. The display should read somewhere between 136 and 174 MHz.
4. Enter [1] [4] [7] on the numeric keypad.
5. Enter [6] [8] [8] on the numeric keypad.

Channel (MR) mode

The use of Channel (MR) mode is dependent on having channels programmed.

Once you have channels programmed, use the [UP] and [DOWN] keys to navigate between the programed channels.

QUICK TIP: Channels programmed with the transmit power set to “Low”, can be temporarily changed by pressing the [# KEY IMAGE] key to switch to “high” power.

Menu Systems

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

Basic use

1. Using the menu with arrow keys.
2. Press the [MENU] key to enter the menu.
3. Press the [UP] and [DOWN] keys to navigate between menu items.
4. Once you find the desired menu item, press [MENU] again to select that menu item.
5. Use the [UP] and [DOWN] keys to select the desired parameter.
6. When you have selected the parameter you want to set for a given menu item.
    a. To confirm selection, press [MENU] and it will save your setting and bring you back to the main menu.
    b. To cancel changes, press [EXIT] and it will reset that menu item and bring you out of the menu entirely.
7. To exit out of the menu at any time, press the [EXIT] key.

Using short-cuts

QUICK TIP: Every menu item has a numerical value associated with it. Those numbers can be used for direct access for any given menu item. The menu is also organized in such a way that the ten most common functions are on top and are also printed on the keypad so you do not have to memorize them.

1. Press the [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 [MENU] key.
4. For entering the desired parameter you have two options:
5. Use the arrow keys to navigate the menu

    or

    Use the numerical keypad to enter the numerical short-cut code.
6. Confirm or cancel changes.
    a. To confirm selection, press [MENU] and it will save your setting and bring you back to the main menu.

b. To cancel changes, press [EXIT] and it will reset that menu item and bring you out of the menu entirely

To exit out of the menu at any time, press the [EXIT] key.

Scanning

The Baofeng UV-5R features a built in scanner on both the VHF 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.

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

Setting scanner mode

1. Press the [MENU] key to enter the menu.
2. Enter [1] [8] on your numeric keypad to come to scanner mode.
3. Press the [MENU] key to select.
4. Use the [UP] and [DOWN] 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 pre set time of inactivity, it resumes scanning.

Carrier operation

In Carrier Operation (CO) mode, the scanner stops when it detects a signal, and as soon as the signal goes away 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 key [*SCAN] again.

Tone Scanning

In frequency mode you can scan for CTCSS tones and DCS codes on active frequencies. Scanning for a CTCSS tone or DCS code can be accomplished while in either frequency mode (VFO) or channel mode (MR) is selected. Only during VFO operation can a detected tone/code can it be saved to the menu item. The CTCSS tone or DCS code scanning option can be assessed with or without a present signal. Scanning processes only occur when the signal is being received. Please note not all repeaters require a CTCSS tone or DCS code for access. In these instances, the transmitter of the station accessing the repeater will need to be scanned. This is accomplished by listening to stations on the repeaters input frequency.
To scan for CTCSS or DCS on active channels, follow these steps:

1. Press the [MENU] key to enter the menu.
2. Enter one of the following on the numeric keypad:
   a. [1] [0] to scan for DCS codes.
   b. [1] [1] to scan for CTCSS sub-tones.
3. Press the key to select.
4. Press the [*SCAN] key; CTCSS or DCS will start flashing in the display as the radio starts scanning. Once it finds a tone or code in use, it will beep and stop flashing, indicating that a tone or code has been found.
5. Press the key [*SCAN] to confirm.
6. Press the [*SCAN] key to exit the menu system.

To communicate with another amateur, determine what CTCSS or DCS settings they are transmitting with; configure your transmitting CTCSS or DCS accordingly with the scanner, set for your receiving CTCSS tone or DCS code.

Quick Tip for DCS Codes: A flashing “DCS” will be on the left display status to indicate the transceiver is in DCS scanning mode. Whenever the radio receives an RF signal on either MR channel or VFO frequency mode, the lower display will cycle through the DCS codes. Once the bits of the

received DSC code are determined, the DCS indicator will stop flashing. Do not forget to set VFO menu 10 back to the “Off” mode when the DCS code is no longer needed.

Quick Tip for CTCSS Tones: A flashing “CT” will be on the left display status to indicate the transceiver is in CTCSS scanning mode. Whenever the radio receives a signal in either MR channel or VFO frequency mode, the lower display will cycle through, the CTCSS tones are being tested. Once the frequency of the CTCSS tone is determined the “CT” indicator will stop flashing. Do not forget to set VFO menu 11 back to the “Off” mode when the CTCSS tone is no longer needed.

Dual Watch

The Baofeng UV-5R features the ability to monitor two channels at once. Dual Watch functionality (single receiver) gives the ability to lock the transmit frequency to one of the two channels it monitors.

This can be achieved in one of two ways. You either have the receive frequency in your radio and flip-flop between the two frequencies at a fixed interval (known as Dual Watch), or you can equip a radio with two receivers (known as Dual Receive or Dual VFO).

QUICK TIP: During Dual Watch Mode, certain functions are not available. You cannot use the reverse function. You cannot use the [3 key image] key to switch between high and low transmit power in channel mode. Also, you cannot save duplex channels.

Enabling or disabling Dual Watch mode

1. Press the key [MENU] to enter the menu.
2. Enter [7] on the numeric keypad to get to Dual Watch.
3. Press [MENU] to select.
4. Use the [UP] and [DOWN] keys to enable or disable.

5. Press the [MENU] key to confirm.
6. Press the [EXIT] key to exit the menu.

Whenever one of the A or B channels are active, it will default to transmit on that active channel. This behavior can be highly inconvenient; especially if you are listening to a frequency you are not allowed to transmit on. There is a menu option available to lock the transmitter to either A or B channels.

Locking the Dual Watch transmit channel

1. Press the [MENU] key to enter the menu.
2. Enter [3] [4] on the numeric keypad for TDR-AB.
3. Press [MENU] to select.
4. Use the [UP] and [DOWN] keys to select A (upper) or B (lower) displays.
5. Press the [MENU] key to confirm.
6. Press the [EXIT] key to exit the menu.

QUICK TIP: To override the lock without having to setting the menu option to OFF, you can do so by pressing the key an instant before pressing the PTT.

Another option for overriding the lock temporarily is to program in the reverse Channel (MR) mode into Frequency (VFO) mode and use the key to swap between the primary and secondary channels.

Programming

DTMF

DTMF is commonly used for remote control. A common example would be in where the repeater is activated by sending out a DTMF sequence (usually a simple single-digit sequence).

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

The numerical keys, as well as the [*SCAN] and [# KEY IMAGE] keys, correspond to the matching DTMF codes as you would expect. The A, B, C, and D codes are located in the [MENU], [UP], [DOWN] and [EXIT] keys respectively.

QUICK TIP: Having the keypad lock enabled, you are still able to send DTMF tones without having to unlock the radio.

CTCSS

CTCSS is set with menus 11 R-CTCS and 13 T-CTCSS. For a complete list of available CTCSS codes and corresponding sub-tone frequencies, see Table C.2, “CTCSS Frequencies” in Appendix C, Technical specifications.

Setting up CTCSS

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

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

DCS

DCS stands for Digital Code Squelch (also known as Digital Private Line or DPL for Motorola units) DCS is 2 - way like CTCSS, but instead of using

a continuous sub-audible tone, it uses a digitally encoded 3-digit code. DCS may be used by a group of hams to set their radios so they can just hear each other in crowded radio venues such as hamfest.

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

Setting up DCS

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

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

1750Hz Tone-Burst

The 1750Hz Tone Burst is an outdated method of selective calling in the United States, although it is still used in other parts of the world to select repeaters.
To send out a 1750Hz tone-burst; press the [BAND] key while holding down the PTT button.

No further configuration is required to use this feature.

Manual Programming

QUICK TIP: If the keypad lock is enabled, you can still send a 1750Hz tone without having to unlock the radio.

Note: The ANI and S-CODE IDs can only be set from a computer. When programming channels remember you can save memory channels when

working on the upper display in VFO mode. You can only name the channels with the use of a computer.

To create a new channel, start by switching the radio to Frequency (VFO) mode using the [VFO/MR] key. When in Frequency (VFO) mode, select the desired receive frequency using the numerical keypad. Then use the menu system to configure the finer details of the channel needed to program to memory, such as transmit power, bandwidth, CTCSS or DCS, etc.

Simplex Programming

Simplex programming must be in Frequency (VFO) mode, enter the desired frequency to store to memory.

1. Press the [MENU] key to enter the menu.
2. Enter [2] [7] on the numerical keypad to get to MEM-CH.
3. Press [MENU] to select.
4. Use the [UP] and [DOWN] keys to select a memory channel, or enter it directly on the numerical keypad.
5. Press the [MENU] key to confirm.
6. Press the [EXIT] key to exit the menu.

To test your new channel, change to Channel (MR) mode with the [VFO/MR] key.

Duplex Programming

The following assumes the duplex channel is in VFO mode on the upper display, as described in Chapter 11, Repeaters.

1. Save a regular simplex channel as described in the previous section.
2. Press the [*SCAN] key to go into the reverse mode.
3. Save that again to the same memory channel just as in step one (1).

To test your new channel, change to the Channel (MR) mode with the [VFO/MR] key.

Computer Programming

Before attaching the programming cable, make sure the radio is turned off.

To attach the cable, uncover the accessory port behind the rubber flap on the right side of the radio body (see Figure 2.1, “Baofeng UV-5R, overview”), align the connectors and push cable in firmly.

Attach the USB (or DE9 in the case of standard RS-232) connector to your computer and start the programming software. You can now turn the radio on.

When you start the Baofeng programming software you will be greeted by the Channel Information window. This is where you enter the channel information for your memory channels. If the Channel Information window does not show automatically, bring it up by going to Edit -> Channel Information.

Before adding channels, go to “Communication” to select the port the cable is attached to. Next go to “Program” then “Read” from radio and click “Read” to read the existing channel information on the radio. If the program read is successful, the LED on the radio will start flashing red indicating that the radio is transmitting data to the computer.

Note: The Baofeng programming software is known to fail to connect the first try. If your connection fails, just try to read or write again. If it continues to fail, check the connection of your cable and that you have configured the port properly in the programming software.

The Channel Information window in the Baofeng software features a simple and easy to use spreadsheet style interface. Some columns are obvious; others are not as clear. However, in most cases the default values tend to be the appropriate ones.

Channel Information window, column definitions

Channel	**Channel Number**
Band	What band, defaults to both VHF and UHF.
RX	Frequency Receive frequency.
TX	Frequency Transmit frequency. Defaults to the receive frequency.

CTCSS/DCS	Dec Receiver CTCSS or DCS. Defaults to OFF.
CTCSS/DCS Enc	Transmitter CTCSS or DCS. Defaults to OFF.
TX Power	Transmit power. Defaults to HIGH.
W/N	Wideband or Narrowband operation. Defaults to W for Wideband.
PTT-ID	Enables and sets position of PTT-ID. Defaults to OFF.
BusyLock	Busy Channel Lockout. Defaults to OFF.
Scan Add	Add to scanner list. When enabled the channel is included in scanning mode. Default: ON.
SigCode	Signal Code, group ID for the channel. Defaults to 1.
Ch-Name	Channel name.

Theoretically you can edit any field in a row at any time, however the software seems to work best when you work from left to right.

Software

We recommend using the CHIRP software. CHIRP is a free, open-source tool for programming your amateur radio. It supports a large number of manufacturers and models, as well as provides a way to interface with multiple data sources and formats.
http://chirp.danplanet.com/projects/chirp/wiki/Home

Adding and deleting channels

To add a new channel, go to the row for the channel number you want to edit (you do not have to go sequentially, you can skip channel numbers if you so desire) and follow these steps:

1. Select the band.
2. Click in the RX Frequency field next to it and enter your receive frequency.
3. Click on the TX Frequency field, and the rest of the row should fill in automatically with default values (except for CH-Name which will be kept blank.) If you are adding a duplex channel, you can enter your transmit frequency directly.

4. Then add all the extra information and features needed for the channel based on your requirements.

When completed you can add an optional six character Channel Name in the CH-Name field. Repeat for all the channels you want to add.

To delete a channel, go to the RX Frequency field of that channel's row, erase it and click on another field. The row should then erase itself.

Once you are done adding and editing channels, you will need to write them to the radio. To write your information to the radio, go to “Program” then “Write to radio” and click “Write”. A green flashing LED indicates a successful write sequence and that it is receiving data. When all data has been sent from the computer the, radio will restart.

Radio to Radio Clone

The Baofeng UV-5R is capable of cloning between radios, meaning if you have one radio set up just the way you like it (the reference or "master" radio) and want another radio configured in exactly the same way (the "slave" radio), you just hook a cable between them and copy the information over.

How to Clone radios

1. Attach your cloning cable in much the same way you attach a programming cable, except you put the other end into another radio’s accessory port rather than a computer.
2. Turn on the slave radio (the radio you want to clone to).
3. Turn on the master radio (the radio you want to clone from) while holding down the [MONI] key. The master will show “COPING” in the display. Once it makes a successful connection to the slave, it will start flashing red to indicate it is transmitting data. The slave will then flash green to indicate it is receiving data.
4. When the LEDs turn off, the radios will restart and the cloning operation has completed.

Automatic Number identification

The Baofeng UV-5R uses DTMF signaling for its ANI implementation. This system allows radios to automatically identify themselves to dispatch.

This is known as Automatic Number Identification, or sometimes PTT-ID since the radio sends a data burst containing the ID code at the beginning or end of a transmission.

Setting ANI code

1. Attach the radio to your computer with a programming cable and open up the Baofeng programming software, see the section called “Computer programming” for details.
2. In the Edit menu, select DTMF. This will open up a window called DTMF Encode/Decode.
3. Go to the Program menu, select read from radio and the “Read Data From Radio” window will open.
4. Click the Read button. The status LED on the radio will flash red indicating it is transmitting data.
5. Locate the box named ANI code and enter your personal ID number that you were given. If you use group ID codes in addition to, or instead of personal ID codes, you can enter up to 15 of them in the list to the left in the DTMF Encode/Decode window. These can be assigned channel by channel in the Channel Information.
6. Check the “Press PTT to Send” box if you want to transmit your ID before you speak, or check the “Release PTT to Send” box if you want to transmit your ID after you speak.
7. In the Program menu, select “Write to Radio” and the “Write Data to Radio”, a window will open.
8. Click the Write button. The status LED on the radio will flash green indicating its receiving data.

Baofeng split related functions in the programming software, so in order to enable ANI we will have to open up yet another window and do some final configuration before the radio is ready for use.

1. In the Edit menu, select Optional Features. This will open up a very crowded looking window called Optional Features.
2. Go to the Program menu; select “Read from radio” and the “Read Data From Radio” window will open.
3. Click the Read button. The status LED on the radio will flash red indicating it is transmitting data.

4. In the lower left corner there is a nameless box with a number of drop-down lists, including but not limited to DTMF-ST and PTT_ID.
    a. Use the DTMF-ST drop-down list to select whether to send your personal ANI code (Send ANI DTMF Side Tone), the group code (KB DTMF Side Tone), or both (DTMFST + Send ANI DTMFST).
5. Use the PTT-ID drop-down list to select the position of your ANI data burst, BOT (Beginning of Transmit), EOT (End of Transmit) or BOTH. This is also the option that turns ANI completely off when set to OFF.
6. In the Program menu, select Write to radio and the Write Data to Radio window will open.
7. Click the Write button. The status LED on the radio will flash green indicating it is receiving data.

You have successfully set the radio for ANI usage.

Commercial Radio Setup

Although this radio is used mainly by Amateur Radio Operators, Baofeng has incorporated commercial radio features into the UV-5R

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.

Narrowband Mode Setup

1. Press the [VFO/MR] key to enter frequency mode.
2. Press the [MENU] key to enter the menu.
3. Enter [5] on the numerical keypad.
4. Press [MENU] to select.
5. Use the [UP] and [DOWN] keys to select between Wide and Narrow ("Narr").
6. Press [MENU] to confirm and save.
7. Press [EXIT] to exit the menu.

While in the frequency mode, you can switch by holding down the [5] key.

Amateur Radio Setup

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

Repeaters

Repeater Setup

1. Set the radio to Frequency (VFO) mode with the key.
2. Enter the repeaters output (your receiving) frequency by selecting the [UP] and [DOWN] keys, or by entering it directly on the numerical keypad.
3. Press [MENU] the key to enter the menu.
4. Enter [2] [6] on the numeric keypad to get to frequency offset.
5. Press [MENU] key to select.
6. Use the [UP] and [DOWN] keys on the numerical keypad to enter the specified frequency offset. See the section called “26 OFFSET - Frequency shift amount” for details.
7. Press [MENU] to confirm and save.
8. Enter [2] [5] on the numeric keypad to get to offset direction.
9. Use the [UP] and [DOWN] keys to select + (positive) or - (negative) offset.
10. Press [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 [EXIT] to exit the menu.

If experiencing problems making a connection to the repeater, check your settings and/or repeat the procedure again.

Menu Definitions

The Menu Definitions is formatted in a simple format as follows: the Menu # followed by the short description you will find on the display then a full name description

SQL – Squelch Level

Selects the squelch noise threshold

Values: 0-9	Default Value: 3

1 Step – Frequency Step

"Frequency steps" are regular intervals of frequency change or usage, also commonly known in some applications as "channels". Different steps are used on different bands, so there is no one step that will explain all. In general, most amateur HF bands are not channelized, but the VHF and UHF amateur bands are. Many digitally-synthesized shortwave radios and communications receivers have "step" buttons that cause the tuned frequency to “jump” up or down in fixed increments, such as 1 kHz and 5 kHz and some can be easily set to the user's preference. Some models have steps as large as 1 MHz.

Selects the step in frequency when using the [UP] and [DOWN] keys. This is also the interval the scanner will run at. (Only when in Frequency ZCFO) Mode.)

KEY	VALUE kHz	DEFAULT VALUE
0	2.5k	25.0k
1	5.0k	
2	6.25k	
3	10.0k	
4	12.5k	
5	15.0k	

2 TXP – Transmit Power

Transmit power can only be set in Frequency (VFO) Mode. In Memory (MR) Mode transmit power will set to the level programmed in memory for any given channel. There are only two settings: High (about 4.5 watts) and Low (about 1 watt). While operating you can toggle between High to Low without entering the menus by pressing the [#] key on the keypad.

KEY	VALUE (kHz)	WATTS	DEFAULT VALUE
0	HIGH	4W1W	HIGH
2	Low		

3 Save – Battery Save

This is the sampling ratio of the Receiver to acknowledge a signal.

VALUES	DEFAULT VALUE
1-10	OFF

4 VOX – Voice Operated TXA

A voice-operated switch (VOX) is a switch used in telecommunications that operates when a sound is detected and exceeds a certain threshold. It is often used to turn a transmitter or recorder on when a user speaks and off when a user stops speaking. Instead of using a push-to-talk switch, recording devices commonly use a VOX to save storage space. This term is also known as a voice operated exchange (VOX).

Adjust the sensitivity of the VOX feature, if enabled.

VALUES	DEFAULT VALUE
1-10	OFF

5 WN – Wide/Narrow Band

Sets the maximum band deviation.

KEY	VALUE	NOTES	DEFAULT VALUE
0	WIDE	5kHz	WIDE
1	NARR	2.5kHz	

6 ABR – Display Illumination Time

LCD Back-light Time-out.

VALUES (seconds)	DEFAULT VALUE
1-5	5
OFF	

7 TDR – Dual Watch

Monitor two frequencies simultaneously, when enabled. We recommend turning off Dual Watch, especially while programming repeaters. Dual Watch will allow the radio to flip-flop between two programmed channels, or two entered VFO frequencies going to whichever has traffic. It can be confusing and annoying unless you are familiar with this feature.

KEY	VALUE	DEFAULT VALUE
1	ON	OFF
0	OFF	

Note: This radio does not possess a dual VFO, meaning that the Dual Watch feature is a time-sharing operation. The radio will switch between A and B

Channels at a fixed rate. This will not allow you to receive two frequencies in parallel.

8 BEEP – Keypad Beep

An audible tone will emit with every key pressed, when enabled.

KEY	VALUE	DEFAULT VALUE
1	ON	ON
0	OFF	

9 TOT – Transmission Time-Out Timer

This keeps you from transmitting too long if the PTT sticks, or you drop the radio between the seat and console. Also if you get long-winded, it will shut it off. Default is 60 seconds.

VALUE (seconds)	NOTES	DEFAULT VALUE
15-600	15 sec. increments	60

To use the numeric keypad for input, use the following formula: (T-15)/15 = X. T is the time in seconds that you want and X is a two-digit code on your keypad. Ex: To get 300 seconds, take (300-15)/15 to get 19.

10 R-DCS - Receiver DCS

Digital-Coded Squelch (DCS) will block out any signal that is not sent with a matching DCS code.

VALUE (seconds)	NOTES	DEFAULT VALUE
D023N – D7541		OFF
OFF		

11 R-CTCS – Receiver CTCSS

Continuous Tone-Coded Squelch System (CTCSS) will block out any signal that is not sent with a matching CTCSS sub-tone.

VALUE (Hz)	NOTES	DEFAULT VALUE
67.0-254.1		OFF
OFF		

12 T-DCS –Transmitter DCS

Sets the Digital-Coded Squelch (DCS) code for the transmitter.

VALUE (seconds)	NOTES	DEFAULT VALUE
D023N-D7541		OFF
OFF		

13 T-CTCS – Transmitter CTCSS

Sets the Continuous Tone-Coded Squelch System (CTCSS) sub-tone for the transmitter

VALUE (Hz)	NOTES	DEFAULT VALUE
67.0-254.1		OFF
OFF		

14 Voice – Voice Prompt

When enabled, the radio will "talk back" to you with audible confirmation when pressing keys and working the menu system.

KEY	VALUE	NOTES	DEFAULT VALUE
1	ENG	English	ENG
0	CHI	Chinese	

15 ANI-ID Automatic Number ID

This can only be set via Computer Linked programming. We recommend leaving this setting alone unless you are an advanced operator. The Default settings are OK.

VALUE	NOTES	DEFAULT VALUE
		80808

16 DTMFST – DTMF Tone of Transmit Code

Select if you should send your S-CODE(DT) or ANI code with the PTT-ID. We recommend leaving this setting alone unless you are an advanced operator. The Default settings are OK.

KEY	VALUE	NOTES	DEFAULT VALUE
1	DT-ST	S-Code Only	CT+ANI
2	ANI Code Only	ANI-ST	
3	DT+ANI	Both	
4	OFF		

17 S-Code – Signal Code

S-CODE sets your transceiver to one of the fifteen (15) group ID codes. The actual ID codes are only settable from a computer. We recommend leaving this setting alone unless you are an advanced operator. The Default settings are OK.

VALUE	NOTES	DEFAULT VALUE
1-15		1

18 SC-REV – Scanner Resume Method

Sets the behavior of the scanner upon finding active frequencies. We recommend leaving this setting alone unless you are an advanced operator.

The Default settings are OK.

KEY	VALUE	NOTES	DEFAULT VALUE
0	TO	Time Operation	TO
1	CO	Carrier Operation	
2	SE	Search Operation	

- Time Operation: The scanner will resume after a pre set time.
- Carrier Operation: The scanner will resume once the signal disappears.
- Search Operation: The scanner holds on the frequency with detected activity.

19 PTT-ID – When to Send PTT-ID

Sets when to send the PTT-ID (ANI and/or S-CODE) code(s). Note: You cannot set PTT-ID while in channel/memory mode. We recommend leaving this setting alone unless you are an advanced operator. The Default settings are OK.

KEY	VALUE	NOTES	DEFAULT VALUE
1	BOT	Beginning of TX	OFF
2	EOT	End of TX	
3	BOTH	Both BOT/EOT	
0	OFF		

20 PTT-LT – Signal Code Sending Delay

Delay before sending the PTT-ID. We recommend leaving this setting alone unless you are an advanced operator. The Default settings are OK.

VALUE (ms)	NOTES	DEFAULT VALUE
0-3-		5

21 MDF-A – Channel Mode A Display

Sets the display mode for the upper display. Note: Channel name can only be set via Computer.

There are two frequency/channel lines in the display, the upper line is A and the lower line is B. You choose between them with the blue [A/B] button.

In CHANNEL Mode, you have three choices of how the channel appears, CH number (reads as CH-000, CH-001, CH-002, etc), NAME ("alpha tags" can only be entered with software), or FREQ. Even if you choose NAME or FREQ the channel number will appear on the side in small digits. If you choose NAME and no alpha tags are entered, it will read as CH-001, CH-002, etc.

KEY	VALUE	NOTES	DEFAULT VALUE
0	CH	Channel Number	FREQ
1	NAME	Channel Name	
2	FREQ	Frequency	

22 MDF-B – Channel Mode B Display

Sets the display mode for the lower display. Note: Channel name can only be set via Computer.

KEY	VALUE	NOTES	DEFAULT VALUE
0	CH	Channel Number	FREQ
1	NAME	Channel Name	
2	FREQ	Frequency	

23 BCL – Busy Channel Lock-Out

If enabled the radio will prevent you from transmitting on active frequencies.

KEY	VALUE	NOTES	DEFAULT VALUE
1	ON		OFF
0	OFF		

24 AUTOLK – Automatic Keypad Lock

If enabled keypad will automatically lock after eight (8) seconds of inactivity.

KEY	VALUE	NOTES	DEFAULT VALUE
1	ON		OFF
0	OFF		

25 SFT-D – Frequency Shift Direction

Sets the transmit direction offset relative receive frequency. Default is off. You can leave it off for now. This setting is does not affect repeater channels saved in Channel Mode.

KEY	VALUE	NOTES	DEFAULT VALUE
1	+	TX Freq. = RX + Offset	OFF
2	-	TX Freq. = RX - Offset	
0	OFF		

26 OFFSET – Frequency Shift Amount

Sets the amount of offset on the transmit frequency relative the receive frequency. Please Note: This setting is does not affect repeater channels saved in Channel Mode.

VALUE	NOTES	DEFAULT VALUE
00.000-69.990		00.000

To input an offset frequency with the numeric keypad, enter the frequency in 10 megahertz with leading zeroes.

For a 2MHz shift, enter [0] [2].

For a 600kHz shift, enter [0] [0] [6].
Use the [UP] and [DOWN] keys to set offsets below 100kHz.

Quick Tip: 0.600 MHz (for 2 meters) or 5.0 MHz (for 70 cm)

27 MEM-CH – Store a Memory Channel

Stores current settings in memory to the specified channel number. This is used for setting up repeaters or other frequencies in Channel Mode.

VALUE	NOTES	DEFAULT VALUE
000-127		000

28 DEL-CH – Delete a Memory Channel

Deletes a memory channel at the specified channel number. This is used to delete channels already in the radio. You cannot edit a channel once programmed. You must delete it and start over.

VALUE	NOTES	DEFAULT VALUE
000-127		000

29 WT-LED – Display Back-Light Color, Standby

Sets the backlight color in standby. Standard Color from the factory is purple.

KEY	VALUE	NOTES	DEFAULT VALUE
1	BLUE		PURPLE
2	ORANGE		
3	PURPLE		
4	OFF		

30 RX-LED – Display Back-Light Color, Receive

Sets the backlight color while receiving a signal. Standard Color from the factory is blue.

KEY	VALUE	NOTES	DEFAULT VALUE
1	BLUE		BLUE
2	ORANGE		
3	PURPLE		
4	OFF		

31 TX-LED – Display Back-Light Color, Transmit

Sets the backlight color while transmitting a signal. Standard Colors from the factory is orange.

KEY	VALUE	NOTES	DEFAULT VALUE
1	BLUE		ORANGE
2	ORANGE		
3	PURPLE		
4	OFF		

32 AL-MOD – Alarm Mode

If the Alarm button is pressed, by default the radio will transmit the tone over the air. There is no choice for Off, so set this it to: “SITE,” meaning it will only make an audible noise on site, your radio, but will not transmit the alarm tone over the air.

KEY	VALUE	NOTES	DEFAULT VALUE
0	SITE	Cycling Tone over Air	SITE
1	TONE	Radio Speaker Only	
2	CODE	Transmits 5s tone by Morse	

33 BAND – Band Selection

Sets the current operating band.

KEY	VALUE	NOTES	DEFAULT VALUE
0	VHF		VHD
1	UHF		

34 TDR-AB – Transmit Selection while in a Dual Watch Mode

If enabled, this will force the radio to transmit on the selected frequency when in Dual Watch mode.

KEY	VALUE	NOTES	DEFAULT VALUE
1	A	Upper Display	OFF
2	B	Lower Display	
0	OFF		

35 STE – Squelch Tail Elimination

A Squelch Tail is the short burst of white noise heard on an FM receiver between the time a signal ceases to be received and the squelch circuit silences the audio output. While monitoring a repeater and the person talking into the repeater un-keys his transmitter, the short burst of white noise you hear is the squelch tail from the repeater's receiver.

The repeater's transmitter remains keyed anywhere between 1/2 second and 5 seconds; in other words the transmitter <hangs> on before it <drops out>, this is what is known as the hang time, you may also hear it called drop out delay.

Some repeaters insert a beep, different tone, or multiple tones during the hang time. These tone or tones are referred to typically as "courtesy tone". It can also be telemetry signaling that certain links or other devices are connected.

At the end when the repeater's transmitter un-keys, you will hear a squelch tail from the radio's receiver.

When operating simplex with another station, every time the station(s) transmitting to you, un-keys,
you will hear a squelch tail from your receiver. The purpose of the hang time or drop out delay on a repeater is to eliminate the repeater's transmitter from chattering on & off when the repeater's receiver is receiving a noisy, choppy signal. In the early days of tube type repeaters that used mechanical relays, this saved much wear and tear on those relays. Todays solid-state repeaters do not have this issue, but a chattering transmitter combined with an already choppy fluttering signal into a repeater is even more difficult to hear.

KEY	VALUE	NOTES	DEFAULT VALUE
1	ON		ON
0	OFF		

36 RP-STE – Squelch Tail Elimination Through a Repeater

KEY	VALUE	DEFAULT VALUE
1-10		5
OFF		

37 RPT-RL – Delay the Squelch Tail of a Repeater

KEY	VALUE	DEFAULT VALUE
1-10		OFF
OFF		

38 PONMGS – Power On Message

When enabled it, this displays a 2-line message on the display. This message can only be set via computer programming.

KEY	VALUE	NOTES	DEFAULT VALUE
0	FULL	Flash entire LCD	MSG
1	MSG	Display a 2 line	

		welcome msg.	

39 ROGER – Roger Beep

The Roger Beep will transmit an audible tone after you release the PTT switch, which indicates the user has concluded speaking.

KEY	VALUE	NOTES	DEFAULT VALUE
1	ON		OFF
0	OFF		

40 RESET – Restore Defaults

This feature will RESET the radio to factory defaults, with some exceptions.

KEY	VALUE	NOTES	DEFAULT VALUE
1	VFO	VFO Settings Only	OFF
0	ALL	Total Reset*	

* RESET - ALL resets everything with the exception of:

1. The Power On Message.
2. The VIP software band limits.
3. On some firmware it may reset the language to Chinese.

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