

The Art of Programming a Modern Radio By Bryce Rumery, K1GAX

To some folks, there seems nothing more frustrating than having to program a new handheld or mobile transceiver or reprogramming a unit that you've had for a while. You look at a fairly large manual with seemingly endless pages of instructions and you feel like throwing the whole thing away and giving up. All of us, at times, have to program a new unit or reprogram a unit you already own. If approached in the correct manner, it doesn't have to be frustrating, at all.

There are three ways to approach programming a unit. **One**, you just pass it to a friend that knows how to program a radio and have them do it. The only problem with this is, your friend may not always be around when you need them to program a new unit or reprogram one that you already own. **Two**, you buy the programming software and cable for the unit and program from your computer. Problem is here, if you're in the field and have to change the programming, you'll have to carry a laptop computer with you or go back home to accomplish the reprogramming. **Three**, learn to program the handheld manually. This is the preferred method, because, no matter where you are, if you have the right materials, you can always program or reprogram the radio (and probably program someone else's and become a hero).

First, let's approach the whole project of manually programming a radio with the right attitude. Thomas Edison once said "Invention is ten percent inspiration and ninety percent perspiration. I would say that programming a handheld or mobile transceiver is "ten percent knowledge and ninety percent attitude". With the right attitude, you will succeed every time. With the wrong attitude, you will never be able to program the unit. **Step one** in getting the right attitude: **You are smarter than the radio!** If the radio were smarter than you, it would read your mind and program itself. **You** command the radio, not the other way around. All **you** have to do is learn to interface with the radio. **You** are the programmer! What **you** have to do is learn how to talk to the radio in a language it understands (instructions). **Step two: Keep telling yourself you can do it!** If you get frustrated, walk away and do something else and get your mind off the frustration. Come back to it when you have calmed down and are less frustrated. But always tell yourself **"I can do it!"** Believe me, **you can do it!** The minute you start telling yourself you can't do something, you'll never be able to do it. So, the two steps in getting the right attitude are remembering **you are smarter than the radio** and **I can do this thing**. **Never give up, you can do it!!!!**

Now that you have the right attitude, you need to get a few things together before you start to program. First, you'll need the list of frequencies you want to program into your radio. Be sure they include the repeater offsets, and CTCSS tones you want to program. Don't try to do it from memory, have a list. Make a new list of those frequencies you want to program into the memories and the order in which you want to put them in. I'm not going to tell you how to make the list, because there are so many ways. Some like to put the frequencies in by frequency order, some like to put them in by location and others just like to put them in by random order. The choice is up to you. Next, you want to

have *“your friend, the manual”*. Now, the manual may look imposing, but all the information you need is in there somewhere. You *don't* have to read and memorize the manual from cover to cover. Remember what Albert Einstein said “it’s not what you know, but rather if you know where to find it”. Sit down and look over the manual. First, look over the **Table of Contents**. Even better, if the manual has one, look over the **Index**. These two parts of the manual are most important to you in programming the radio. They’ll point you in the right direction. Perhaps you can highlight those areas that point you toward how to program your radio. Find what you want in the manual and know only those things for now. Time is available later on to find out other things about your radio! On a side note, make a copy of your manual to carry with you for reference. Notice I said a copy. It’s too easy to lose a manual out in the field and then, if you lose the original you’ll have to scout up a replacement. A tip, I recommend is to scan your manual into your computer. Print out the manual from your computer to carry with you. If you ever lose your original manual, you’ll always be able to print out a replacement from your computer. I do this for all my radio gear. One of the nicest things manufacturers ever did was publishing their current manuals on the web. You can download a copy for future reference. For older manuals, check the PAWA web site (<http://www.pawa-maine.org>) on the “Links” page for hints on finding a downloadable copy of your manual.

There are some general (and almost universal steps) in programming a radio. Some radios work from a menu (find out how to enter and exit the menu, as well as what’s contained in the menu) and other radios work from a function key and various keys on the front panel (learn what keys do what) while others use a series of keystrokes for programming.

The general steps in programming are:

1. Most programming is done from in the VFO mode. Enter the VFO mode first.
2. Set the desired receive frequency.
3. Set the correct offset (some radios have an automatic offset – **check the manual**).
Some common offsets for this area are: 1.00 MHz for six meters (usually always a minus offset), 600 kHz for 2 meters (usually a minus offset for repeaters up to 147.00 MHz and a plus offset for repeaters above 147.00 MHz), 1.60 MHz for 1 ¼ meters (222-225 MHz) (most always a minus offset), and 5 MHz for 70 centimeters (440-450 MHz) (plus offset for repeaters below 446 MHz and a minus offset for repeaters above 446 MHz). **Check your list of frequencies and repeaters.**
4. Set the transmit CTCSS tone (if needed) (**check the repeater list and your manual**).
If the repeater requires a CTCSS tone for access, not entering on will keep you from accessing the repeater.
5. Set the receive tone (if required) (**check the repeater list and your manual**).
Remember, if you enter a receive CTCSS tone, the repeater must transmit that tone for your radio to hear the repeater. When in doubt, don’t enter a receive tone.
6. Write the information to the desired memory in your radio.

Now, repeat the above steps for each entry to your memory channels.

That isn't all that hard, is it? Just a bit time consuming... Once programmed, the radio is ready to go. Keep in mind, though, repeaters come, go and change. Be ready to reprogram at any time...

Learn the general steps of programming your radio and they apply to most other radios, as well. Not only will you be able to program yours, but you can become a hero to others when they need their radios programmed.

73, Bryce, K1GAX