

FM radio users are familiar with programming their favorite local repeaters into memory slots. It is simple to set up unless there are lots of repeaters in the area, then it takes longer. To use, dial up the repeater's memory and PTT.

D-STAR has more complexity and thus more to program due to its added user control features. The user may link the repeater to talk to hams elsewhere in the world. ICOM's early D-STAR radios required using a separate memory slot for each command for the repeater. This would use up memory channels quickly. Often ten or more per repeater. The user would need to scroll through dozens or hundreds of channels to find the desired repeater.

ICOM's newer D-STAR radios all have DR mode which has separate GPS searchable repeater memories (pre-programmed from the factory) and control features that makes operating D-STAR using the DR mode easier.

Pre-programmed repeater memories

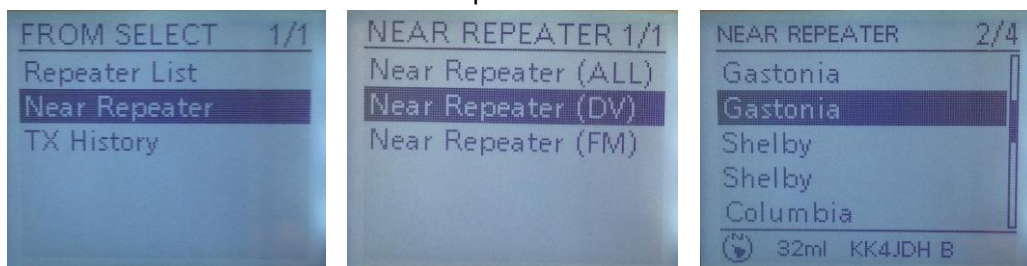
Let's begin by updating the data in the radio's DR memories. This should be done because repeater data changes over time. Some ICOM radios have as many as 1500 repeater memory slots and some can hold both D-STAR and FM repeater data. This daunting task is made easy by downloading a .csv file for your region and radio model from <http://www.dstarinfo.com/RepeaterDownloads.aspx> and then importing it into your radio. Kenwood D-74 format is also supported. You will need an SD card that fits into the slot on your radio. 8GB is sufficient. Format the card in the radio to create the file structure the radio recognizes. Refer to your radio's manual. Place the card into your PC's SD card reader and go to the above site. Select your geographic area and radio model. Select the number of empty memories desired (usually 5 is plenty). If your radio supports FM repeaters, select the percent FM. (There are more FM repeaters than D-STAR, so you probably want to use something like 70%. If you want to add some unique data such as your hot spot you may do so with any spreadsheet program such as Excel.) When ready, copy the file to the SD card's Csv folder. Place the card into your radio and select Import / Repeater List from the SD card menu as follows:



Tip: If you travel cross country, download several .csv files for different regions and keep them on your SD card.

Using DR Mode - Repeater Selection

To activate DR mode, press the DR button (long press on some radios). You will see a screen with a TO area on top and a FROM area below as in the image to the right. To select your desired repeater, navigate to the FROM area as shown and press Enter. You will be taken to the FROM SELECT screen (below left). If your GPS is turned on and has a good location, scroll to Near Repeater and press Enter. On the NEAR REPEATER screen (below center) select ALL, DV or FM and press Enter. You will be taken to a list of nearby repeaters on four numbered screens (below right) listed in order of closest to you. Notice the compass direction, distance and call sign at the bottom of the screen for each repeater.



Scroll to your desired repeater and press Enter. You will return to the main screen (above) with the repeater you selected ready to go.

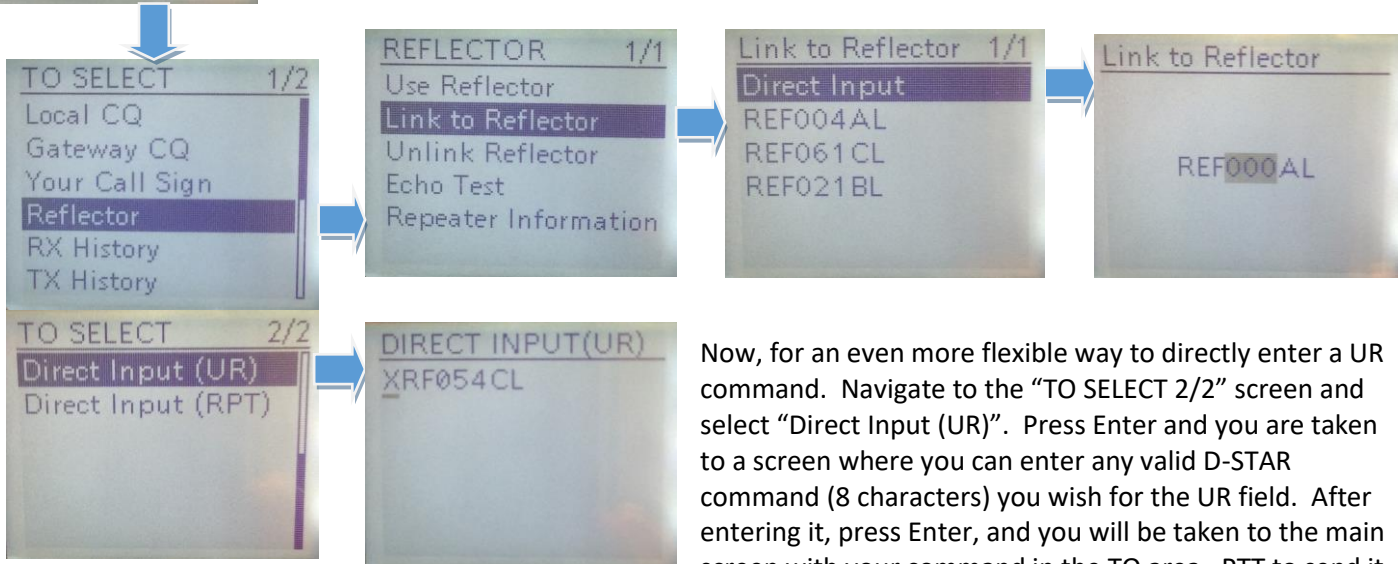
Using DR Mode – Selecting UR Commands in the TO Area

The DR screen's TO area is used to populate D-STAR's UR field from a list of Your Call Sign memories. Set up these memories with your most used commands for easy access. There is also a way to directly enter any other UR command.

First, let's look at the Your Call Sign memories using ICOM's programming software. There's room for hundreds of entries, but limit it to just the ones you use frequently so you are not forever scrolling through memories. The single letter commands illustrated are preceded by 7 spaces, so the letter command is in the 8th position. Without those 7 spaces the repeater will ignore the command. "I" and "W" is for Info. "E" is for Echo Test. "U" is to unlink REF reflectors. "T" is to unlink XRF reflectors. ("T" unlinks XRF on ICOM repeaters, but on hotspots "U" unlinks both REF and XRF.) The "link to ..." commands ("L" for REF and "O" for XRF*) tell the repeater to link to the designated reflector. Once the link is established, dial to "Use Reflector – CQCQCQ" to talk. Do not use "Local CQCQCQ", which limits your signal to just the repeater's coverage area and does not pass your signal through the internet to the linked reflector.

Your Call Sign (Remain 184 memories)		
No.	Name	Call Sign
1	Use Reflector	CQCQCQ
2	Unlink REF	U
3	REF Status	I
4	Echo Test	E
5	link to REF001C	REF001CL
6	link to REF004A	REF004AL
7	link to REF030C	REF030CL
8	link to REF038A	REF038AL
9	link to REF054C	REF054CL
10	link to REF061B	REF061BL
11	Unlink XRF	T
12	XRF Status	W
13	link to XRF002A	XRF002AL
14	link to XRF021B	XRF021BL
15	link to XRF038A	XRF038AL
16	link to XRF054B	XRF054BL
New		

Now, let's see how to enter data for a command not in the Your Call Sign list. On the main screen (left) highlight TO and press Enter. You will be on a screen titled "TO SELECT 1/2" (below left). Select "Reflector" and press Enter. You will be on a screen titled "REFLECTOR". Select "Link to Reflector" and press Enter. Select "Direct Input" and press Enter. You will be on a screen (far right) where you can dial in a REF reflector number and a module letter (A, B, C, etc.) Press Enter and you will be on the main screen with your selected link command in the TO area. PTT to send it. Note: on the Link to Reflector screen below "Direct Input" prior entries are saved so you can reselect them without navigating to the screen on the far right.



Now, for an even more flexible way to directly enter a UR command. Navigate to the "TO SELECT 2/2" screen and select "Direct Input (UR)". Press Enter and you are taken to a screen where you can enter any valid D-STAR command (8 characters) you wish for the UR field. After entering it, press Enter, and you will be taken to the main screen with your command in the TO area. PTT to send it.

Tips

The description and images are for an ID-51A HT. The menus of other DR equipped radios should be similar, but may differ. Consult your radio's manual. Touch screen radios should allow you to navigate faster, but if you are navigating the Your Call Sign list in the TO area just turn the dial to select another command and then PTT. It saves a few button presses.

* "O", "T", "W" are set by the repeater's administrator, who you should contact to see how your local repeater is configured.