ALABAMA D★STAR

(Updated 14Aug08)

D-STAR Get-On-The-Air radio configuration

D-STAR, Digital Smart Technology for Amateur Radio opens up a vast new field for Amateur Radio use. Radio operation and linking are not exactly preformed as conventional FM or internet repeater link operations. This guide will help get you get started in understanding how to program your radio and make contacts on the air. There are at least four methods of digital user linking or routing with D-STAR, user, port, system and reflector linking. Have fun with the following six examples.

Example 1: Local conservation

Tom, W4WLF calls Ron, W4VM on the Huntsville local D-STAR 2 meter repeater.

Tom configures his **IC-91AD** radio as follows:

UR : CQCQCQ
R1 : KI4PPF C
R2 : NOT USE*
MY : W4WLF

Tom calls Ron stating that he is on Huntsville port C. The Digital Voice, DV data is only repeated on the local 2 meter port C repeater.

Ron hears Tom calling him on the Huntsville repeater port C.

Ron configures his **ID-800** radio as follows:

MYCALL : W4VM
UrCALL : CQCQCQ
PRT 1 C : KI4PPF C
RPT 2 C :

Ron returns the call and they have a local DV conversation. Note that both radios could have programmed ahead of time and stored in a memory channel.

Example 2: Local cross band conversation

Tom, W4WLF moves to the 1.2g port A, on the Huntsville local D-STAR repeater. Ron, W4VM remains on the 2 meter repeater.

Tom configures his **ID-1** radio as follows:

UR : CQCQCQ
RPT1 : KI4PPF A
RPT2 : KI4PPF C
MY : W4WLF

Tom calls Ron stating that he is on Huntsville port A. The DV data is now cross banding between 1.2g port A and 2 meters port C. DV is heard on both port A and C.

Ron hears Tom calling him on the Huntsville repeater port C.

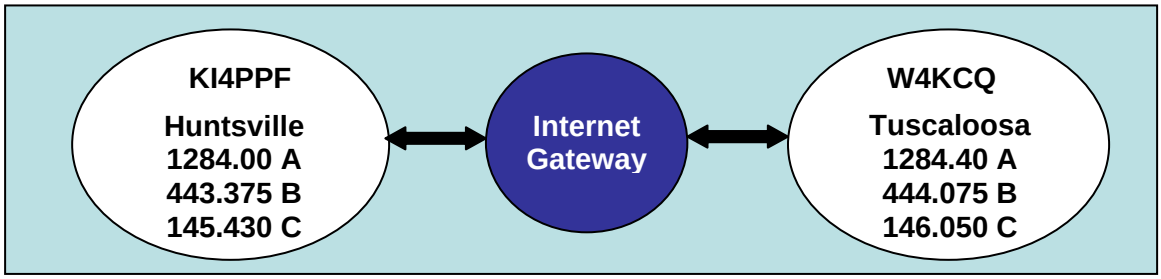
Ron configures his **ID-800** radio as follows:

MYCALL : W4VM
UrCALL : CQCQCQ
PRT 1 C : KI4PPF C
RPT 2 C : KI4PPF A

Ron returns the call and they are now cross banding between the two repeaters.

Note: If Tom did not state what port he is calling on, Ron thinks he is on the port he hears Tom on. Ron will call Tom on the port he is on, port C, but will not be heard by Tom. You do not have to state band or frequency, only the port. These configurations could be programmed in memory channels. He only needs to state Huntsville port A.

Example 3: User Linking over the Internet



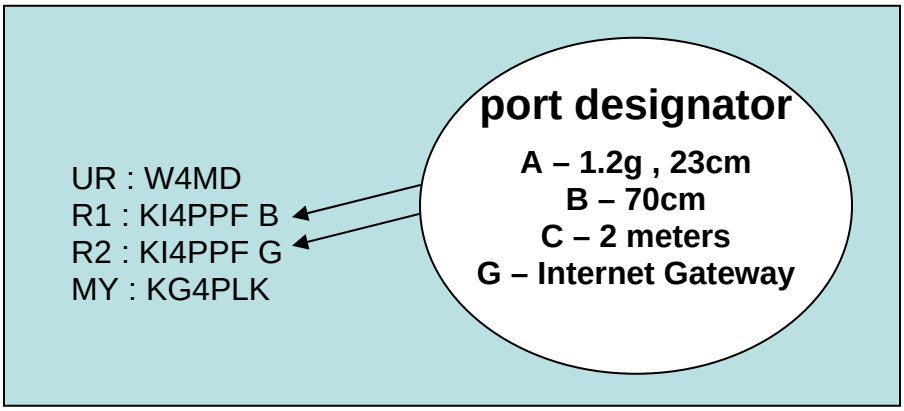
Actual configuration of two Alabama D-STAR repeaters

Robby, KG4PLK in Huntsville AL wants to call David W4MD on Digital D-STAR repeater in Tuscaloosa AL. KG4PLK is on 70cm repeater in Huntsville. The 70cm repeater is called "repeater port B". KG4PLK does not know or does he need to know where David, W4MD is located. This is called user linking.

Robby configures his **IC-91AD** radio as follows:

UR : W4MD
R1 : KI4PPF B
R2 : KI4PPF G
MY : KG4PLK

Robby calls David. The system finds David who recently talked on Tuscaloosa repeater port C. He hears Robby calling.



David configures his **ID-800** radio as follows:

MYCALL : W4MD
UrCALL : KG4PLK
PRT 1 C : W4KCQ C
RPT 2 C : W4KCQ G

David returns the call to Robby and they have an Internet linked DV conversation.

Notice that Robby, has one space between his call and the "G" and David has two spaces. The port designator must always be in the 8th position.

Note: David could have used the "one touch reply" feature on his radio by simply pressing and holding the "BK" button for 1 second which temporarily copies Robbie's call (KG4PLK) into the URCALL of David's Radio. All other calls remain as above and the VFO or memory is returned to its previous state upon changing channels. Other radios have a similar feature. This method is safer while driving.

Example 4: Port Linking over the Internet

David, W4MD in Tuscaloosa AL wants to call anyone on 2 meters in Huntsville AL. David is on the 2 meter repeater of the Tuscaloosa repeater system. The 2 meter repeater is called "repeater port C". This is called port linking.

David configures his **ID-800** radio as follows:

MYCALL : W4MD
UrCALL : /KI4PPFC
PRT 1 C : W4KCQ C
RPT 2 C : W4KCQ G

David makes a general call, stating that he is on the W4KCQ repeater port C. The DV data mode from David is heard on the Huntsville repeater system, port C.
Robby, KG4PLK hears David calling on the Huntsville repeater port C and wants to talk with him.

Robby configures his **IC-91AD** radio as follows:

UR : /W4KCQ C
R1 : KI4PPF C
R2 : KI4PPF G
MY : KG4PLK

Port linking

OR

UR : W4MD
R1 : KI4PPF C
R2 : KI4PPF G
MY : KG4PLK

User linking

Robby returns the call to David and they have an Internet linked DV conversation. Robby's first configuration is port linking while the second is user linking.

Notice that Robby, KG4PLK has one space between the UR call and the C. Note also that David's URCall has no room for a space before the C (/KI4PPFC). The port designator always has to be in the 8th position.

In order for the basic D-STAR design to work well, users on both ends must program their radios correctly. The term "routing" is actually a closer description of what is happening. Each transmission is routed at its source and you are the source. By now you have noticed that in the previous examples, <u>each user determines the path his signal takes through the D-STAR system</u>.

Example 5: Multi-Cast

David, W4MD in Tuscaloosa wants to call a net with users on three different repeater systems in Birmingham, Tuscaloosa and Montgomery. A Multi-cast Group has been set up called "ALUHF1" System administrators set the group up to include the UHF or B ports from the repeaters in each city (K4DSO, W4KCQ and W4AP) Users in each city configure their radios as follows:

David configures his **ID-800** radio as follows:

MYCALL : W4MD
UrCALL : /ALUHF1
PRT 1 C : W4KCQ B
RPT 2 C : W4KCQ G

Rick, KG4PNL in Montgomery configures his **IC-91AD** radio as follows:

UR : /ALUHF1
R1 : W4AP B (Note that 3 spaces are needed here to get the B in the 8th position)
R2 : W4AP G (3 spaces here also)
MY : KG4PNL

Ken, WB4FAY in Birmingham configures his **IC-91AD** radio as follows:

UR : /ALUHF1
R1 : K4DSO B
R2 : KIDSO G
MY : WB4FAY

Users in all 3 cities have a net on the UHF (B ports) of each repeater system. The C ports are free for other traffic.

Example 6: Repeater System Reflector Linking

Most of us are familiar with the term linking and reflectors from FM repeater use. This example shows linking multiple repeaters together or establishing a reflector. In this example, the user has less control to determine where his signal is heard in the system.

This type of linking is becoming popular for wide area nets. Repeater reflectors are linked and unlinked (generally by system administrators) so that all users are heard on multiple systems.

Each Tuesday night at 8:30 pm local time a multi repeater Alabama D-STAR NET is conducted on the K4DSO repeater in Birmingham Alabama and is connected to Port C on multiple repeaters. The reflector is set up connecting or linking port C, on Birmingham (K4DSO), Tuscaloosa (W4KCQ), Montgomery (W4AP), Huntsville (KI4PPF), Magnolia Springs (KI4SAZ), and New Orleans (W5GAD). These repeaters are linked to a reflector so that everyone on all these repeaters can participate in the same net.

To participate in the NET, set your radio as follows:
RPT1 = your local repeater call port C
RPT2 = your local repeater call G (gateway)
YOURCALL = CQCQCQ
MYCALL : your personal call sign

For example, Robby is in Huntsville and configures his **IC-91AD** radio as follows:
UR : CQCQCQ
R1 : KI4PPF C
R2 : KI4PPF G
MY : KG4PLK

During the net, please disable all automatic beacons and refrain from using slow speed data messaging. Data transmissions almost guarantee doubling during a directed net. We have learned that digital transmissions are very unforgiving when it comes to doubling. The header information at the start of a transmission is critical for proper operation and this addressing information is sent only once at initial key up.

Additional repeaters are invited to join the net by having the local gateway administrator link the repeater and please send their information and questions to wb4fay@wb4fay.com.

Radio Configurations:

User radios have different descriptions for the call sign configuration but they are used the same way.

D-STAR Radio Call Sign Configurations

IC-91AD	ID-800	ID-1	IC-2820
UR : W4MD	UrCALL : W4MD	UR : W4MD	YOUR : W4MD
R1 : KI4PPF B	RPT 1 C : KI4PPF B	RPT1 : KI4PPF B	RPT1 : KI4PPF B
R2 : KI4PPF G	RPT 2 C : KI4PPF G	RPT2 : KI4PPF G	RPT2 : KI4PPF G
MY : KG4PLK	MYCALL : KG4PLK	MY : KG4PLK	MY : KG4PLK

UR: The person or repeater port call sign you want to call.
R1: The call sign of the repeater that you are talking on.
R2: The call sign of the repeater that you are talking on, plus port designator you want to cross link to or gateway designator.
MY: Your personal call sign

Digital Radio Display Status Indication:

Digital radios will give some indications of status on the display when you attempt to make a call.

IC-91AD
No repeater signal: no indication
UR?: Generally means that your call reached it's intended destination
RPT?: Can be an indication that you call did not go through either due to an error in call sign programming or a remote repeater being down. This is generally the case when performing User or port linking as in examples 3 and 4 where the URCALL contains something other than CQCQCQ. RPT? Is the normal response however when radios are configured as in example 6

ID-800
UR*: Generally means that your call reached it's intended destination
RPT*: Generally indicates the same conditions described for RPT? above

ID-1
RPT UP: When the receiving signal of another station accessing the repeater
UR?: Generally means that your call reached it's intended destination
RPT?: Generally indicates the same conditions described for RPT? above

Additional notes:

If you are not using Alabama repeaters as in these examples, simply replace your call sign and the repeater call sign in your radio digital call sign configuration area for the digital repeater that you want to use.

The users in example 3 through 6 must be pre-registered by their local repeater administration to use Internet linking. Amateurs that are not registered can only listen to the internet conversation, talk locally but not talk over the internet. Contact your local administrator to obtain the web address where you can apply for access to the system.

These examples do not use all the different configurations that are available to the operator. Consult the radio operator's manual and web documentation for full operation, programming, use, other options and short cuts for various forms of linking. Also, explore the digital messaging, data transfer, digital squelch, GPS operation and many other neat features.

Keep in mind that the radio manuals refer to some configurations which may not exist in your area, for example the 10GHz link systems, areas and zones. Think in terms of "Repeater System Ports" only such as KI4PPF Port C, for 2 Meters or KI4PPF Port B, for 440 MHz.

For D-STAR repeater frequencies in your area consult the ARRL repeater directory.

This technology is new and we are all learning, innovating and evolving this equipment. Practice controlling the radio and operating over the Internet will make your more proficient amateur operator. The radios can also be programmed manually, via front panel or with computer software. Programming software is a good investment which will make your operating more pleasurable, successful and repeatable.

This document was written to help users operate and have more fun with D-STAR. Contact D-STAR operators in your area or the web link below to learn more about D-STAR. If you find any errors or have comments on this document please let me know.

Enjoy operating D-STAR!

73,
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http://www.arrl-al.org/Alabama_link.htm

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