

D-Star and Programming

Dr. John A. Allocca, WB2LUA, www.WB2LUA.com, 5/5/12, updated 3/24/18

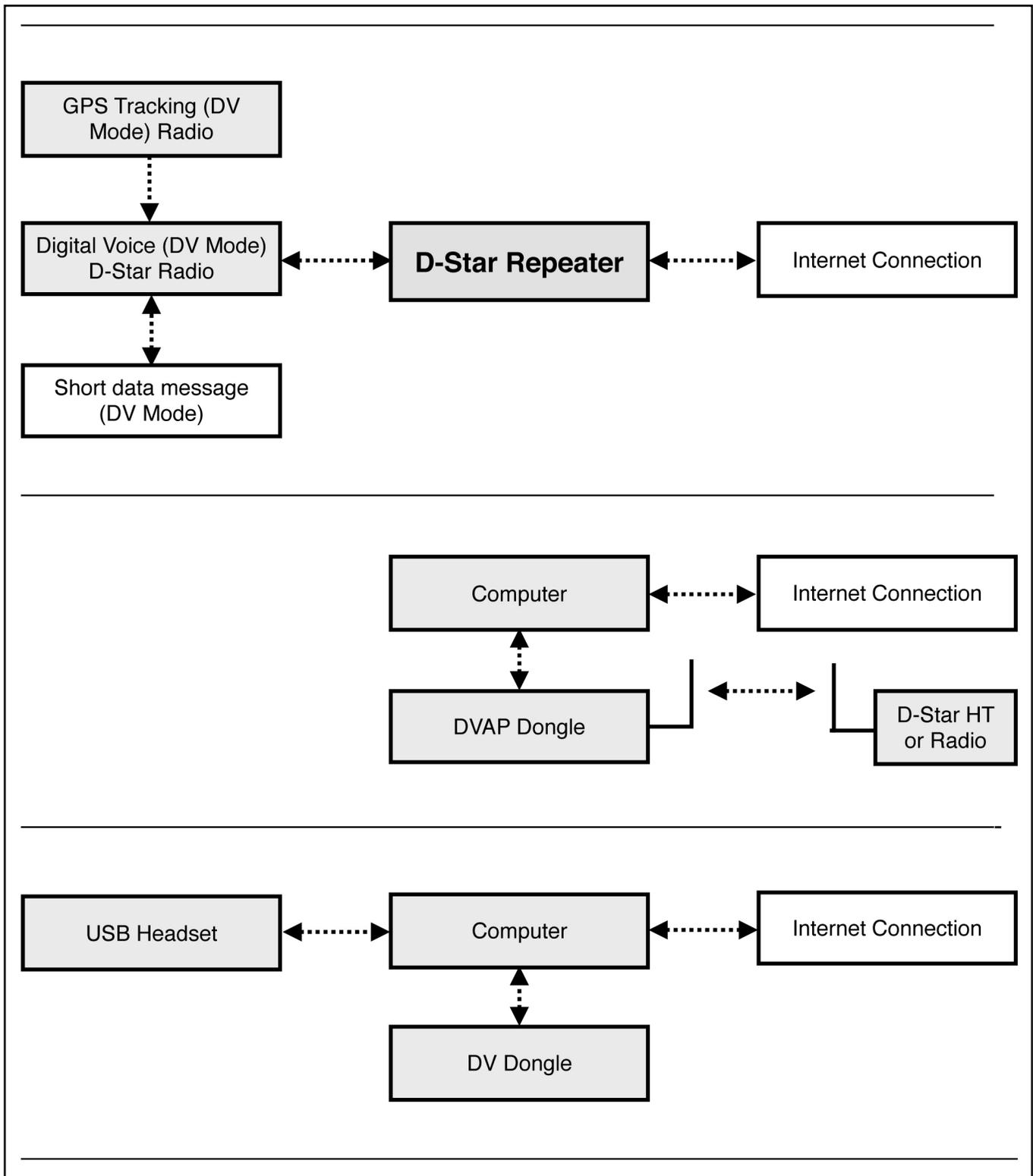


Figure 1 - D-Star Basic Configuration

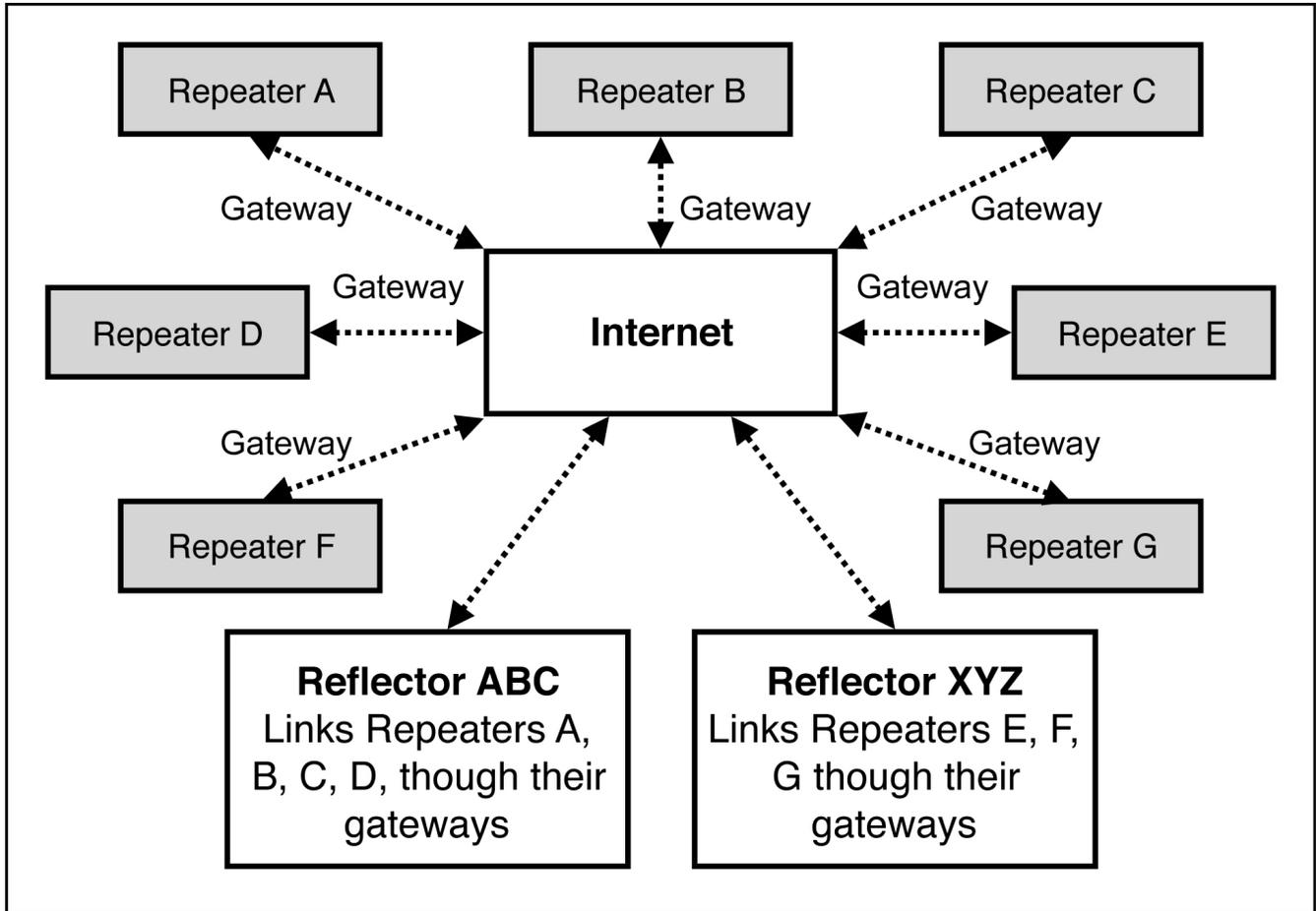


Figure 2 - D-Star Reflectors and Gateways

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D-Star

First, let us look at what an HF radio is. HF radio requires an expensive transceiver, a large antenna, and usually an antenna tuner. Then, one must pray for favorable propagation at specific times of the day or night. Often, contacts are noisy and hard to hear.

Now, let us talk about D-Star. D-Star is a digital voice and text mode, which enables it to make connections via the internet. With a simple VHF/UHF D-Star capable transceiver that costs about the same as most dual band VHF/UHF transceivers, one can talk to the world with crystal clear audio. The antenna is the same VHF/UHF antenna that we all commonly use. If cost is a major factor, a single band transceiver can be used.

Or, a DV Dongle, a Mac or PC computer with an internet connection, and a headset can be used. This is the least expensive and easiest way to get on the air with D-Star.

Or, a DVAP Dongle, a Mac or PC computer with an internet connection, and a D-Star radio can be used.

Once a D-Star connection is established, one can connect to reflectors and repeaters all around the world as seen in Figure 2.

There are repeater maps, repeater lists, and other information at: <http://www.dstarinfo.com>

D-Star Registration Steps

Make sure you register at one site and only one site. Follow ALL of the steps shown at http://www.dstargateway.org/D-Star_Registration.html This is a two-step process. After approval, further steps are required. Check your registration at: <http://dstar.info/query.html>

1. Find a D-Star repeater in your area that has a website that you can register with.
2. Follow the registration steps.
3. Wait for an email from the D-Star administrator approving your registration or try to log in periodically to check on the status of your registration at the same URL you used to register with using your callsign (IN UPPER CASE) and the password you entered during registration. If your registration is pending approval, you will see an Error that the registration has not yet been approved. If it is approved, you will be granted access and you will be able to log into the system and configure your personal information. **THIS NEXT STEP IS REQUIRED.** Once you are logged in, click on "Personal Information" at the right of the page.
4. Click on the checkbox next to the number "1". Then click inside the "Initial" box to the right of your callsign on the same line as the number "1". Type in a single space character. This will not show up but is very important. Do not click on the "RPT" check box. In the "pname" box, enter your callsign in lower case followed by a dash "-" followed by your type of radio, e.g. 2820 or dvdongle. All characters in the "pname" box should be lower case and there should be no spaces. When complete, click on "Update".

Some Common D-Star Repeaters

D-Star Repeaters connect to an internet gateway. Reflectors link specific gateways. All linked gateways hear all traffic from all of the gateways connected to the reflector. Reflectors provide a way to link multiple gateways together, providing an easy way to create a wide-area repeater, hold a multi-gateway net, etc. on the fly. Each reflector has three modules, A, B and C.

Some common US reflectors:

- REF069C (New England Repeaters)
- REF030C (Georgia/Southeast Repeaters)
- REF009C (Arizona Permalink Repeaters)
- REF014B (US West Coast Repeaters)

D-STAR (Digital Smart Technologies for Amateur Radio) is a digital voice and data protocol specification developed for use in amateur radio. D-Star compatible radios are available on VHF and UHF amateur radio bands. In addition to the over-the-air protocol, D-Star enables D-Star radios to be connected to the Internet or other networks. D-STAR is the result of research by the Japan Amateur Radio League to investigate digital technologies for amateur radio.

Call Sign Table Setup

To call a person (M1ABC) simplex:

UR: CQCQCQ

RPT1:

RPT2:

Push the PTT and speak: "M1ABC. This is WB2LUA."

To call CQ or a person on a local repeater only:

UR: CQCQCQ

RPT1: W2ABC B (the "B" is in the 8th position with 2 spaces before it)

RPT2: W2ABC G (the "G" is in the 8th position with 2 spaces before it)

Push the PTT and speak: "This is WB2LUA."

Push the PTT and speak: "M1ABC. This is WB2LUA."

If the repeater is not linked, the signal stays locally.

To call CQ on the entire D-star world wide gateway through a local repeater:

UR: CQCQCQ

RPT1: W2ABC B (the "B" is in the 8th position with 2 spaces before it)

RPT2: W2ABC G (the "G" is in the 8th position with 2 spaces before it)

Push the PTT and speak: "CQ CQ CQ. This is WB2LUA in Northport, New York."

If the repeater is not linked, the signal stays locally.

To call CQ on a distant repeater on the D-Star world wide gateway through a local repeater:

UR: /K6ABC B (the "B" is in the 8th position with 2 spaces before it)

RPT1: W2ABC B (the "B" is in the 8th position with 2 spaces before it)

RPT2: W2ABC G (the "G" is in the 8th position with 2 spaces before it)

Push the PTT and speak: "This is WB2LUA in Northport, New York through the W2ABC repeater port B Zone Routing"

To call a person on a distant repeater on the D-Star world wide gateway through a local repeater:

UR: /K6ABC B (the "B" is in the 8th position with 2 spaces before it)

RPT1: W2ABC B (the "B" is in the 8th position with 2 spaces before it)

RPT2: W2ABC G (the "G" is in the 8th position with 2 spaces before it)

Push the PTT and speak: "M1ABC. This is WB2LUA in Northport, New York through the W2ABC repeater port B Zone Routing"

You would need to know if this person was on the repeater.

To call to a person on the D-Star world wide gateway through a local repeater:

UR: M1ABC

RPT1: W2ABC B (the "B" is in the 8th position with 2 spaces before it)

RPT2: W2ABC G (the "G" is in the 8th position with 2 spaces before it)

Push the PTT and speak: "M1ABC. This is WB2LUA in Northport, New York through the W2ABC repeater port B call signRouting"

To connect a local repeater to a DPlus Reflector on the D-Star world wide gateway through:

To link the repeater to a reflector

UR: REF069CL

R1: W2ABC B (the "B" is in the 8th position with 2 spaces before it)

R2: W2ABC G (the "G" is in the 8th position with 2 spaces before it)

Push the PTT to link the repeater to a reflector

Reset as follows to talk

UR: CQCQCQ

R1: W2ABC B (the "B" is in the 8th position with 2 spaces before it)

R2: W2ABC G (the "G" is in the 8th position with 2 spaces before it)

Push the PTT and speak: "This is WB2LUA in Northport, New York

To unlink a repeater from a reflector

UR: U (the "U" is in the 8th position with 7 spaces before it)

R1: W2ABC B (the "B" is in the 8th position with 2 spaces before it)

R2: W2ABC G (the "G" is in the 8th position with 2 spaces before it)

Push the PTT to unlink the repeater from the reflector

Most repeater owners only allow administrators to link the reflector.

Reflectors allow multiple D-Star repeaters and Dongle users, from around the world, to be joined together and whatever information is transmitted across one of the repeaters is repeated across all of the connected repeaters. If you connect to a reflector, you will be able to talk to everyone on every repeater that is connected to that reflector

Some common US reflectors:

REF069C (New England Repeaters)

REF030C (Georgia/Southeast Repeaters)

REF009C (Arizona Permalink Repeaters)

REF014B (US West Coast Repeaters)

A complete listing of reflectors is available at www.dstarinfo.com

Icom ID-5100A Programming

Frequency

1. Touch VFO
2. Touch MHz
3. Touch F-INP for direct input

Repeater Offset (Menu F-3)

1. Press DUP and select the offset

Tone (Menu F-3)

1. Press TONE
2. Select TONE

Tone Frequency

1. Press main MENU
2. Press DUP/TONE
3. Change frequency

Memory In (Analog Menu F-1)

1. Press MW
2. Press WRITE to selected channel
3. Press CH SEL to select the memory channel
4. Press on the channel number
5. Press WRITE

Memory Recall (Analog Menu F-1)

1. Press V/M
2. Select the desired channel

D-Star - Call Sign Setup (one time setup)

1. Press MENU
2. Press My Call Sign
3. Press MY call sign memory channel 1 for 1 second
4. Press Edit
5. Enter call sign
6. Press ENT

D-Star - Entering a Text Message

1. Press MENU
2. Press My Station > TX Message
3. Press desired message memory number for 1 second
4. Press Edit
5. Enter message
6. Press ENT

D-Star Simplex Call

1. Press DR
2. Press FROM, opens FROM SELECT
3. Repeater List, opens REPEATER GROUP
4. Press Simplex
5. Press a desired frequency, which is displayed in FROM and CQCQCQ is displayed in TO

D-Star - Connecting to a Repeater (From)

1. Press DR
2. Press FROM, opens FROM SELECT
3. Touch Repeater List, opens REPEATER GROUP
4. Touch Repeater Group and select the appropriate group

D-Star - Connecting to a Repeater Direct (To)

1. Press TO (while in DR mode)
2. Press what is in the TO field
3. Press Local CQ. CQCQCQ should appear in the To field

D-Star - Connecting to a Reflector through a Repeater (To)

1. Press TO (while in DR mode)
2. Press what is in the TO field
3. Press REFLECTOR
4. Select Use Reflector

D-Star - Check if you can access a repeater

1. Hold down the PTT for 1 second
2. You will get a reply call such as UR? or RPT?

D-Star - DVAP

1. Press DR and set the frequency specified in the DVAP software
2. Press TO
3. Press Direct Input (UR)
4. Input Reflector code, such as REF069CL in the CQ field to link the DVAP to the Reflector.
Note the L stands for link. To unlink from the reflector, use U in the last field.
5. Press PTT.
6. Change the UR to CQCQCQ.

Memory In (D-Star)

1. In the DR screen, select the settings to be saved
2. Press the Function group icon to select MENU D3
3. Press MW
3. Press CH SEL to select the memory channel
4. Press on the channel number
5. Press WRITE

Memory Recall (D-Star)

1. Press DR to close the DR Screen
2. Press the Memory Channel Number
3. Press MR
4. Rotate DIAL to select a memory channel

Icom ID-51A Plus

Power Level

1. Press and hold V/MHZ for 1 second to select power level.

Frequency

1. Press V/MHZ to select 1 MHz or 10 MHz
2. Rotate DIAL

Squelch Level

1. Hold down SQL and rotate DIAL

Repeater Offset

1. Press QUICK
2. Press DUP
3. Select DUP- or DUP+

Tone

1. Press QUICK
2. Press TONE
3. Select TONE

Tone Frequency

1. Press main MENU
2. Press DUP/TONE
3. Press Repeater Tone
4. Change frequency

Memory In

1. Hold S.MW for 1 second
2. Rotate DIAL to select channel
3. Hold S.MW for 1 second. Three beeps will sound

Memory Recall

1. Press M/CALL, MR appears
2. Rotate DIAL to Select the desired channel

D-Star - Call Sign Setup (one time setup)

1. Press MENU
2. Select My Station
3. Select My Call Sign
4. Press ENT
5. Select MY Call Sign memory channel 1
6. Push QUICK, then select EDIT
7. Enter call sign
8. Press D-Pad (Ent)

D-Star - Entering a Text Message

1. Press MENU
2. Press My Station > TX Message
3. Press desired message memory number for 1 second
4. Press QUICK and Select EDIT
5. Enter message
6. Press ENT twice

D-Star Simplex Call

1. Press DR
2. Press FROM, opens FROM SELECT
3. Repeater List, opens REPEATER GROUP
4. Press Simplex
5. Press a desired frequency, which is displayed in FROM and CQCQCQ is displayed in TO

D-Star - Connecting to a Repeater (From)

1. Press and hold DR for 1 second
2. Select FROM, ENT
3. Select Repeater List, opens REPEATER GROUP
4. Select Repeater Group and select the appropriate group

D-Star - Connecting to a Repeater Direct (To)

1. Press and hold DR for 1 second
2. Press TO, ENT
3. Press Local CQCQCQ

D-Star - Connecting to a Reflector through a Repeater (To)

1. Press TO, ENT
2. Select Reflector
3. Select and use Reflector

D-Star - Check if you can access a repeater

1. Hold down the PTT for 1 second
2. You will get a reply call such as UR? or RPT?

D-Star - DVAP

1. Press DR and set the frequency specified in the DVAP software
2. Set all Reflector and Repeater functions
3. Select MENU
4. Select Call Sign
5. In the UR Field:
6. Input Reflector code, such as REF069CL in the CQ field to link the DVAP to the Reflector.
Note the L stands for link. To unlink from the reflector, use U in the last field.
7. Press PTT.
8. Change the UR to Field to CQCQCQ.
9. Press PTT

Memory In (D-Star)

1. Set all DV settings
2. Press V/MHZ
3. Press S.MW for 1 second
4. Rotate DIAL to desired memory channel
5. Hold S.MW for 1 second

Memory Recall (D-Star)

1. Press DR to close the DR Screen
2. Press the Memory Channel Number
3. Press MR
4. Rotate DIAL to select a memory channel

Icom IC-2820H Programming

Selecting the operating frequency band

Push and hold the desired band's (left or right) **[MAIN BAND]** for 1 sec. then rotate the appropriate band's **[DIAL]**.

Tuning Step Selection for extra decimal places

1. Push **[F]** to display the function guide.
2. Push **[TS]** to enter the tuning step set mode.
3. Rotate **[DIAL]** to select 12.5 KHz. to obtain the extra decimal places.
4. Push **[F]** to exit turning steps.
5. Start at 444.2 MHz and go up one click, which will become 444.21250 MHz.

Repeater Offset

1. Set the receive frequency (repeater output frequency) on the main band.
2. Push **[DUP]** one or two times, to select minus duplex or plus duplex (DUP- or DUP+)

Repeater Offset Frequency

1. Push **[F]**. Then, **[MENU]**.
2. Rotate **[DIAL]** and select "DUP/TONE"
3. Select "OFFSET Frequency.
4. Push **[DIAL]** and change the frequency
5. Push **[BACK]** (Right band's) twice to exit DUP/TONE set mode.

Tuning Steps

1. Push **[F]** to display the function guide.
2. Press **[TS]** and change the frequency steps
3. Press **[F]** again to exit.

Repeater Tone

1. Push **[F]** to display the function guide.
2. Push **[TONE DTMF]** several times until "TONE" appears.
3. To turn OFF the sub-audible tone encoder, push **[TONE DTMF]** several times until no tone indicators appears.

Repeater Tone Frequency

1. Push **[F]**. Then, **[MENU]**.
2. Rotate the Tuning Dial **[DIAL]** to select "DUP/TONE" Then push the **[MAIN-BAND]** key.
3. Rotate **[DIAL]** to select "REPEATER TONE." Then push the **[MAIN-BAND]** key.
4. Rotate **[DAIL]** to select the sub-audible frequency, then push **[MAIN-BAND]** key.
5. Push **[BACK]** (Right band's) twice to exit DUP/TONE set mode.

Setting the Mode

1. Push **[F]** to display the function guide.
2. Push **[MODE]** until the desired mode is obtained.

Auto Repeater

1. Push [F] to display the function guide.
2. Push [MENU] (Right band's) to enter MENU screen.
3. Rotate [DIAL] to select "SET MODE" then push [MAIN BAND].
4. Rotate [DIAL] to select "AUTO REPEATER" then push [MAIN BAND].
5. Rotate [DIAL] to select the auto repeater setting.
USA version:
"RPT1" : Activates duplex only. (default)
"RPT2" : Activates duplex and tone.
"OFF" : Auto repeater function is turned OFF.
6. Push [BACK] (Right band's) twice to exit

GPS On-Off

1. Press the [F] button, then the [MENU] key
2. Rotate [DIAL] to select "SET MODE," then push [MAIN BAND].
3. Rotate [DIAL] to select "GPS," then push [MAIN BAND].
4. Rotate [DIAL] to turn GPS on or off, then push [MAIN BAND].
5. Push [BACK] twice to return to frequency indication.

Storing a Memory Channel

1. Push and hold the same band's [M/CALL] for 1 sec., then rotate the same band's [DIAL] to select the desired memory channel. "X" indicator and memory channel number blink.
3. Push and hold [S.MW] (Left band's) for 1 sec. to program. 3 beeps will sound and return to VFO mode
automatically after programming.

Store memory after D-Star repeaters are stored so that the frequency and call signs will be stored.

Programming My Call Sign into Memory

1. Press the [F] button, then the [MENU] key
2. Push [MENU] to enter MENU screen.
3. Rotate [DIAL] to select "CALL SIGN MEMORY." Then, push [MAIN BAND].
4. Rotate [DIAL] to select "MY CALL SIGN MEMORY" then push [MAIN BAND].
5. Rotate [DIAL] to select the desired call sign channel (M01 to M06), then push [MAIN BAND].
6. Rotate [DIAL] to select the desired character, then push [>] to move the cursor right. Push [<] to
to
move the cursor left.
Up to 8-character call signs can be entered.
Push [ABC] to select the character group from capital letter characters.
Push [12/] to select the character group from numbers or symbols.
Push [CLR] to clear the selected character.
7. Repeat step 6 until your own call sign is programmed.
8. Push [>] several times to move the cursor to "/" position.
A to Z, 0 to 9 and "/" characters are available.
Example: WB2LUA /John
9. Repeat step y to program the desired 4-character note.
10. Push [MAIN BAND] to store the programmed call sign.
11. Push [BACK] three times to return to frequency indication.

Programming Transmit Message into Memory

1. Push [F] to display the function guide.
2. Push [MENU] to enter MENU screen.
3. Rotate [DIAL] to select "DV MESSAGE," then push [MAIN BAND].
4. Rotate [DIAL] to select "TX MESSAGE MEMORY," then push [MAIN BAND].
5. Rotate [DIAL] to select the desired message memory channel, 01 to 05, then push [MAIN BAND]. Previously message is displayed if programmed.
6. Rotate [DIAL] to select the desired character.
 - Push [Aa] to turn the character group from alphabetical characters capital letters or lower case letters.
 - Push [1/] (Right band's) to turn the character group from numbers or symbols.
 - Push [>] or [<] (Left band's) to move the cursor right or left, respectively.
 - Push [CLR] to clear the selected character.
 - example: IC-2820H, John in Northport, NY
7. Repeat the step y to enter the desired message.
 - Up to 20-character messages can be set.
8. Push [MAIN BAND] to store the message.
9. Push [BACK] (Right band's) twice to exit from DV message screen.

Programming D-Star Stations into Memory

1. Push [F] to display the function guide.
2. Push [MENU] to enter MENU screen.
3. Rotate [DIAL] to select "CALL SIGN MEMORY" then push [MAIN BAND].
4. Rotate [DIAL] to select "YOUR CALL SIGN MEMORY." Then push [MAIN BAND].
5. Rotate [DIAL] to select the desired call sign channel (U01 to Uxx), then push [MAIN BAND].
6. Rotate [DIAL] to select the desired character, then push [>] to move the cursor right. Push [<] to move the cursor left.
 - Up to 8-character call signs can be entered.
 - Push [ABC] to select the character group from capital letter characters.
 - Push [12/] to select the character group from numbers or symbol in the 8th position. ("C" 144 MHz. "B" 440 MHz.) Example: W9ABC B
 - Push [CLR] to clear the selected character.
 - Usually "YOUR CALL" is set to CQCQCQ
7. Repeat step 6 until the desired station call sign is programmed.
8. Push [MAIN BAND] to store the programmed call sign.
9. Push [BACK] three times to return to frequency indication.

Programming D-Star Repeaters into Memory

1. Push [F] to display the function guide.
2. Push [MENU] to enter MENU screen.
3. Rotate [DIAL] to select "CALL SIGN MEMORY" then push [MAIN BAND].
4. Rotate [DIAL] to select "RPT1." Then push [MAIN BAND].
5. Rotate [DIAL] to select the desired call sign channel, (R01 to Rxx) then push [MAIN BAND].
6. Rotate [DIAL] to select the desired character, then push [>] to move the cursor right. Push [<] to move the cursor left.
 - Up to 8-character call signs can be entered.
 - Push [ABC] to select the character group from capital letter characters.
 - Push [12/] to select the character group from numbers or symbol in the 8th position. ("C" 144 MHz. "B" 440 MHz.) Example: W9ABC B
 - Push [CLR] to clear the selected character.
7. Repeat step 6 until the desired station call sign is programmed.
8. Push [MAIN BAND] to store the programmed call sign.
9. Push [BACK] three times to return to frequency indication.
10. Repeat steps 1 to 9 for each repeater that is to be programmed into memory.

Call Sign Table Setup (When Ready to Transmit)

1. Push [F] twice to display the function guide.
2. Push [CS] to display the "CALL SIGN" screen.
3. Rotate [DIAL] to select "RPT1," then push [MAIN BAND].
 - RPT1 CALL SIGN screen is displayed.
4. Rotate [DIAL] to select the local repeater's call sign, then push [BACK].
5. Rotate [DIAL] to select "RPT2" then push [MAIN BAND].
 - RPT2 CALL SIGN screen is displayed.
6. Rotate [DIAL] to select the desired repeater's call sign.
7. Push [BACK] to exit "CALL SIGN" screen or remain in this screen.

Call Sign Squelch

Set the desired operating frequency in DV mode, Digital code and MY CALL SIGN.

1. Push [TONE DTMF] several times to activate the digital code or digital call sign squelch (DSQL or CSQL) Digital call sign squelch "DSQL," Digital call sign beep "DSQL," Digital code squelch "CSQL," Digital code beep "CSQL" and no tone operation are activated in order.
2. Operate the transceiver in the normal way.
3. When the received signal includes a matching call sign/code, the squelch opens and the signal can be heard. When the received signal's call sign/code does not match, digital call sign/digital code squelch does not open; however, the S/RF sign/code, the squelch opens and the signal can be heard. When the received signal's call sign/code does not match, digital call sign/digital code squelch does not open; however, the S/RF indicator shows signal strength.

Received Call Sign

When a call is received in DV mode, the calling station and the repeater call signs being used can be stored into the received call record. The stored call signs are viewable in the following manner. Up to 20 calls can be recorded.

Call Record

1. Display the RX call sign record screen;

Accessing from MENU screen:

- A. Push [F] to display the function guide.
- B. Push [MENU] to display the "MENU" screen.
- c. Rotate [DIAL] to select "RX CALL SIGN," then push [MAIN BAND].

Accessing from function guide 2:

- A. Push [F] twice to display the function guide 2.
- B. Push [CD] to display the "RX CALL SIGN" screen.

2. Rotate [DIAL] to select the desired record.
3. Push [MAIN•BAND] to display the received call details.

CALLER	The station call sign that made a call
CALLED	The station call sign called by the caller.
RXRPT1	The repeater call sign used by the caller station.
RXRPT2	The repeater call sign linked from RXRPT1.

4. Push [MAIN BAND] or [BACK] to return to the "RX CALL SIGN" screen.
5. Push [BACK] to exit from the "RX CALL SIGN" screen.

One-touch Call Reply

1. After receiving a call, push [F] twice to display the unction guide 2.
2. Push [R>CS] to set the received call sign a function guide 2. for the call.

When selecting a call record via MENU screen:

- A. Push [MAIN•BAND] to display the call record details.
- B. Push [R>CS] to set the received call sign to that of the call record.

Setting from function guide 2:

Push [R>CS] to set the received call sign to hat of the call record.

3. Push [PTT] to transmit; release to receive.

Set your own call sign (MY) in advance.

The call sign stored in "CALLER" is stored as "YOUR," "RXRPT1" is stored as

"RPT2" and

"RXRPT2" is stored as "RPT1."

Error beeps sound when a call sign is received incorrectly, and no call sign is set

in this

case.

Low-speed data communication

Turn OFF the GPS data communication to operate the low-speed data communication.

Connection:

Connect the transceiver to your PC using with the cable OPC-1529R

Low-speed data communication application settings:

Port: The same COM port number as IC-2820H's

Baud rate: 9600 bps (fixed value)

Data: 8 bit

Parity: None

Stop : 1 bit

Flow control : Xon/Xoff

Low-speed data communication operation:

Confirm that in AUTO, the computer controls when [PTT] is active, so that you can send data without pressing [PTT] on the radio.

1. Set your own, station call signs, etc. as described in "Digital voice mode operation" and "Digital repeater operation."
2. Refer to the instructions for the low-speed data communication application.
3. To transmit data: At the same time as voice audio, push and hold [PTT] to transmit while sending data from the PC. Release [PTT] to receive.

Transmission condition settings:

1. Push [F] to display the function guide.
2. Push [MENU] to display the "MENU" screen.
3. Rotate [DIAL] to select "DV SET MODE," then push [MAIN BAND].
4. Rotate [DIAL] to select "DV DATA TX," then push MAIN BAND].
5. Rotate [DIAL] to select the desired transmission condition.
 - PTT: The entered text data in the Terminal Window (buffer screen) is transmitted when [PTT] is pushed. (default)
 - AUTO : The entered text data in the Terminal Window (buffer screen) is automatically transmitted when text is entered.
6. Push [BACK] three times to exit from DV set mode screen.

Icom IC-92AD Programming

Selecting the operating frequency band

Push [MAIN.DUAL] to toggle between A and B band.

Setting the Squelch Level

While pushing and holding [SQL], rotate [DIAL] to select squelch level.

Tuning Step Selection for extra decimal places

1. Push [VFO] to select VFO mode.
2. Push [BAND] to select the desired frequency band.
3. Push [TS] for 1 second to display frequency steps.
4. Rotate [DIAL] to select 12.5 KHz. to obtain the extra decimal places.
5. Push [TS] for 1 second to store turning steps and exit

Repeater Offset

Push [DUP] for 1 second to select offset (DUP- or DUP+).

Repeater Offset Frequency

1. Push [MENU].
2. Rotate [DIAL] and select "DUP/TONE", then [5,]
3. Select "OFFSET Frequency, then [5,]
4. Rotate [DIAL] and change the frequency
5. Push [MENU] to exit.

Repeater Tone

Push [TONE] for 1 second to activate tone.

Repeater Tone Frequency

1. Push MENU
2. Rotate [DIAL] to select DUP/TONE, then [5,]
3. Rotate [DIAL] to select RPT TONE, then [5,]
4. Rotate [DIAL] to select the desired tone frequency.
5. Push [MENU] to exit.

Setting the Mode

Push and hold [MODE] for 1 second several times to select the desired mode. MY CALL should be programmed first to enter the DV mode.

Auto Repeater

1. Push MENU
2. Rotate [DIAL] to select AUTO RPT, then [5,]
3. Rotate [DIAL] to select:
 - "RPT1" : Activates duplex only. (default), then [5,]
 - "RPT2" : Activates duplex and tone, then [5,]
 - "OFF" : Auto repeater function is turned OFF, then [5,]

Storing a Memory Channel

1. Push and hold the same band's [S.MW] for 1 sec., then rotate the [DIAL] to select the desired memory channel.

3. Push and hold [S.MW] for 1 sec. to program.

Store memory after D-Star repeaters are stored so that the frequency and call signs will be stored.

Programming My Call Sign into Memory

1. Select B band by pushing [MAIN/DUAL].

2. Push MENU

3. Rotate [DIAL] to select CALL SIGN, then [5,]

4. Rotate [DIAL] to select MY, then [5,] and CALL SIGN screen is displayed

5. Rotate [DIAL] to select memory M01 to M06

6. Push > to enter programming mode.

7. Rotate [DIAL] to select the desired character. (Push A/a to change characters).

8. Push <> to select the next or previous digit.

Example: WB2LUA /John

9. Push enter to store the call sign.

10. Push [MENU] to return to frequency indication.

Programming Transmit Message into Memory

1. Select B band.

2. Push MENU

3. Rotate [DIAL] to select MESSAGE/POSITION, then [5,]

4. Rotate [DIAL] to select TX MESSAGE

5. Rotate [DIAL] to select memory CH01 to CH06

6. Push > to select message edit.

7. Push > to enter programming mode.

8. Rotate [DIAL] to select the desired character. (Push A/a to change characters).

9. Push <> to select the next or previous digit.

Example: 92,John,Northport, NY

10. Push [5] to store the call sign.

11. Push [MENU] to return to frequency indication.

Programming D-Star Stations into Memory

1. Select B band.

2. Push MENU

3. Rotate [DIAL] to select CALL SIGN, then [5,]

4. Rotate [DIAL] to select UR, then [5,] and YOUR CALL SIGN screen is displayed

5. Rotate [DIAL] to select memory U01 to U60

6. Push > to enter programming mode.

7. Rotate [DIAL] to select the desired character. (Push A/a to change characters).

Usually "YOUR CALL" is set to CQCQCQ

8. Push enter to store the call sign.

9. Push [MENU] to return to frequency indication.

Programming D-Star Repeaters into Memory

1. Select B band.
2. Push MENU
3. Rotate [DIAL] to select CALL SIGN
4. Rotate [DIAL] to select R1/R2
5. Push [MENU] and RPT1 or RPT2 CALL SIGN screen is displayed
6. Rotate [DIAL] to select memory R01 to R60
7. Push > to enter programming mode.
8. Rotate [DIAL] to select the desired character. (Push A/a to change characters).
Example: W9ABC B
9. Push enter to store the call sign.
10. Push [MENU] to return to frequency indication.

Call Sign Table Setup (When Ready to Transmit)

Set MY CALL (MY):

1. Set the desired frequency in B band.
2. Push MENU
3. Rotate [DIAL] to select CALL SIGN, then [5,]
4. Rotate [DIAL] to select MY, then [5,]
5. Rotate [DIAL] to select your own programmed call sign.
6. Push [5].

Set Station Call Sign or CQ (UR):

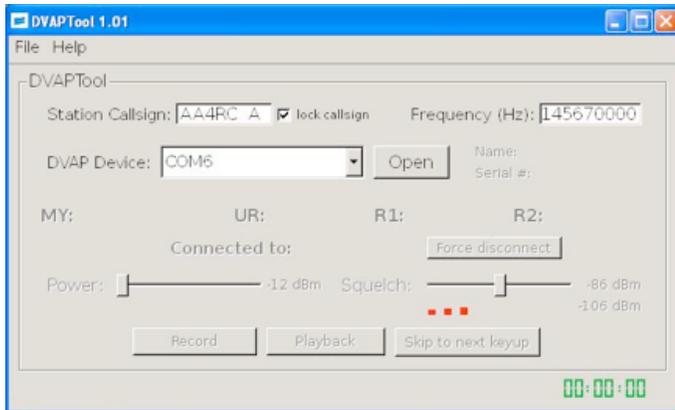
1. Set the desired frequency in B band.
2. Push MENU
3. Rotate [DIAL] to select CALL SIGN, then [5,]
4. Rotate [DIAL] to select UR, then [5,]
5. Rotate [DIAL] to select a programmed call sign.
6. Push [5].

Set Repeater Call Sign (R1 and R2)

1. Set the desired frequency in B band.
2. Push MENU
3. Rotate [DIAL] to select CALL , then [5,]
4. Rotate [DIAL] to select R1 or R2, then [5,]
5. Rotate [DIAL] to select a programmed repeater call sign.
6. Push [5].

DVAP Dongle Programming

The DVAP Dongle is used with a D-Star HT or other D-Star radio. It is essentially a mini D-Star repeater. Connect the DVAP to the USB port of the computer.



Registration

The first step is to GET REGISTERED! If you are not already registered on the D-STAR network, you need to get registered. It is very important that you register with ONE gateway only. Once you are registered on one gateway, you are registered on them all. Follow the instructions at <http://www.dstargateway.org> for registration. Until you are registered, you will only be able to listen to connected systems. No transmission is allowed for unregistered call signs.

It is recommended that you go to the gateway where you registered and add a terminal entry with an "A" in the initial field (it may take several hours for the update to propagate to all gateways).

Computer Setup

Next, make sure you are connected to the Internet. All communications between the DVAP (Digital Voice Access Point) and a gateway or reflector use your Internet connection.

To start using the DV Access Point Dongle, double click on the DVAPTool icon on your desktop. DVAPTool will start and display a dialog window similar to the picture below.

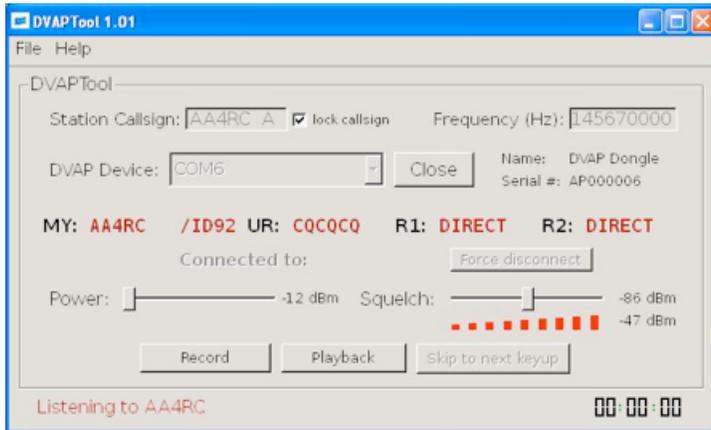
There are two text entry boxes that require input, the station call sign and the Frequency box. Enter your personal callsign in the Station call sign text box. Use the "A" in the eighth character of your call sign as shown above.

Enter a simplex frequency for operation in the Frequency box. Consult the frequency band plan for your country/area for appropriate frequencies. Enter the entire frequency in Hz (e.g. 146550000 for 146.550 MHz).

The “lock call sign” checkbox next to your Station call sign will allow you to limit the radio users of your DVAP to only your call sign or any call sign. This is the way you can prevent others from using your DVAP.

The DVAP Device drop down selection lists devices that use the FTDI chip used in the DV Access Point Dongle device and other serial to USB devices. Select the appropriate device.

Click on the “Open” button to connect to the DV Access Point Dongle. (www.dvapdongle.com)



Once the DV Access Point Dongle is opened, the Device Name and Serial Number fields should show data specific to the hardware you have opened. If it does not, you may need to select a different device in the DVAP Device box.

DVAPTool then makes a request to an Internet based D-STAR gateway name server. If DVAPTool has problems connecting to the server, a message box will pop up letting you know that there was a problem. Check your Internet connection and try again.

Set the Power level slider to maximum (10dBm or 10mW) and set the Squelch level slider to half way between your current noise level (the red bars below the slider) and the max level (similar to the pic above).

Record and playback conversations by clicking the "Record" and "Playback" buttons. While playing back, you can click the "Skip to next keyup" to skip to the next person talking. Note that playback is done only to your radio, not to a connected gateway or reflector.

You can walk away from the PC/Mac now since all control commands are issued from your D-STAR radio.

The DV Access Point Dongle has four LED's which indicate the current operating status. They are colored green, red, yellow, and blue (in that order from left to right).

The green LED shows the mode of operation, slow pulsing indicating idle and solid green shows the DVAP is receiving RF from a radio.

The red LED shows that the DVAP is transmitting to your radio.

The yellow LED shows data under runs from the connected gateway/reflector or missed D-STAR packets from your radio.

The blue LED shows data is being sent from the PC/Mac to the DVAP.

Status Indicators Operating Notes

The DV Access Point Dongle is a high speed, real time device. It communicates with the PC/Mac at 230Kbps and needs adequate CPU speed and time to operate properly. Many operations on the PC/Mac can interfere with normal operations. These include screen savers, web browsers, instant messengers, etc. For best operation, avoid running CPU intensive applications when operating the DV Access Point Dongle.

To start using the DV Access Point Dongle, double click on the DVAPTool icon on your desktop. DVAPTool will start and display a dialog window similar to the picture below.

There are two text entry boxes that require input, the station call sign and the Frequency box. Enter your personal call sign in the station call sign text box. It is recommended (but not required) that you add an "A" terminal in your gateway registration and that you use the "A" in the eighth character of your call sign as shown below.

Enter a simplex frequency for operation in the Frequency box. Consult the frequency band plan for your country/area for appropriate frequencies. Enter the entire frequency in Hz (e.g. 146550000 for 146.550 MHz).

The "lock call sign" checkbox next to your station call sign will allow you to limit the radio users of your DVAP to only your call sign or any call sign. This is the way you can prevent others from using your DVAP.

The DVAP Device drop down selection lists devices that use the FTDI chip used in the DV Access Point Dongle device and other serial to USB devices. Select the appropriate device.

Click on the "Open" button to connect to the DV Access Point Dongle.

Enter your call sign into the MYCALL field of your radio. Select DV mode and configure simplex operation, usually by holding down the "DUP" key until there is no "dup+" or "dup-" on the radio display. You do not need to enter RPT1 nor RPT2 since the radio will place "DIRECT" in both when in simplex mode. All commands are entered into the URCALL field as detailed below. Enter the following values in the URCALL field on your radio:

"DVAP I" (request voice ID from the DVAP)

"DVAP E" (key down and speak for echo test)

"CQCQCQ "(transmit to a connected system)

"xxxxxxmL" (to link, replace XXXXXX with the gateway or reflector call sign making sure to use 6

characters filling the end with spaces as needed.
Replace the "m" in the 7th character with the module to which you wish to link. Use "L" in the 8th character to indicate the Link command. For example, to link to Reflector 001 module C, use "REF001CL" in URCALL. To link to gateway W4DOC module A, use "W4DOC AL" in URCALL)

- " U" (unlink from a linked gateway/reflector. Make sure the "U" is in the eighth position of URCALL)

Note that, other than "CQCQCQ ", the commands above are processed locally and not transmitted to a connected system.

Radio Command Reference Customizing Voice Message Playback

You can replace the included files that are played to indicate command actions. The files are:

alreadylinked.dvrec (played when you try to link when linked)

alreadyunlinked.dvrec (played when you try to unlink when unlinked)

dvap-id.dvrec (played when "DVAP I" is issued)

gatewayunknown.dvrec (played when the requested gateway is unknown)

remotesystemlinked.dvrec (played when the requested system is linked)

remotesystemlinkedro.dvrec (played when the requested system is linked receive only)

remotesystemunlinked.dvrec (played when the linked system is unlinked)

To record a file, make sure the DVAP is open and not connected to a remote system. Click the "Record" button. Key down and speak your announcement. Click "Stop recording". Listen to your recording by clicking on "Playback". You may record the announcement as many times as you like until you are happy with it. DVAPTool places the recording in the file dvaptool.dvrec in the folder from which it was started. Simply rename "dvaptool.dvrec" to one of the above file names to have DVAPTool use it instead of the default.

Support and Updates

Please make sure to join the DVAPDongle yahoo group for program update announcements. Go to <http://groups.yahoo.com/group/DVAPDongle> to join.

Send support questions/issues or suggestions to support@dvapdongle.com

Connecting and Talking

It is said that reflectors have better bandwidth than the individual repeaters. Therefore, it is better to connect to a reflector than to an individual repeater.

Set your radio to low power so the dongle is not overloaded.

Step 1 - Set UR to a reflector and push the PTT once to establish the link. For example, REF001C. The DV Tool program will show the link and the reflector should return an audio saying "Link Established."

Step 2 - Set UR to CQCQCQ and talk. The DV Tool should show "transmitting to gateway" at the bottom of the window.

Some common US reflectors:

REF069C (New England Repeaters)

REF030C (Georgia/Southeast Repeaters)

REF009C (Arizona Permalink Repeaters)

REF014B (US West Coast Repeaters)

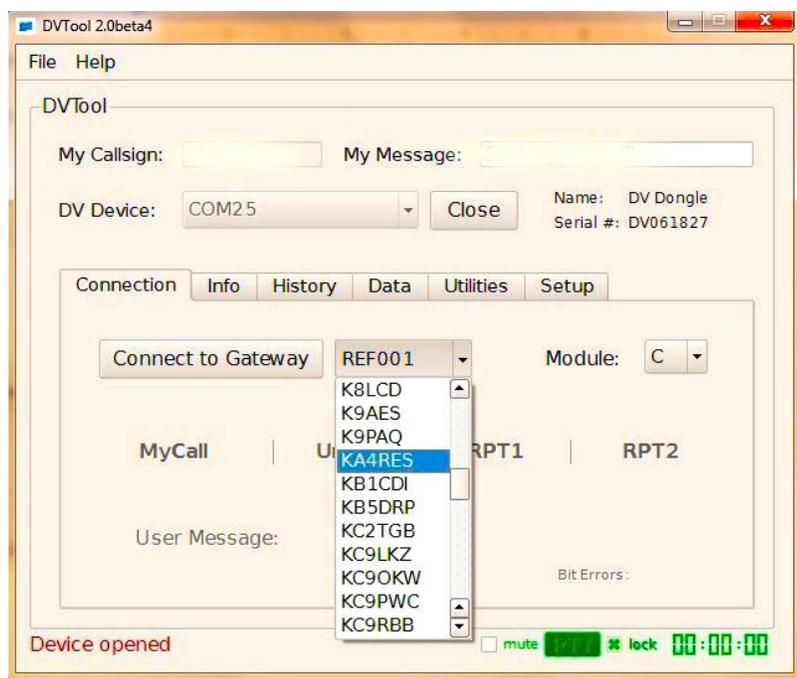
Testing

Connect to the remote system "E" module to run an echo test completely through the network. Connect to "REF030EL" and key up and talk for a few seconds. The audio and data should appear on the screen in a few seconds.

DV Dongle Programming

A DV Dongle is a D-star device that is used with a computer that is connected to the internet and a headset. Connect the DV Dongle to the USB port of the computer and the headset to the audio jacks. After much trial and error, it seems that the sound card headsets don't work well with the DV Tool software. I got very poor audio reports. USB headsets works well with the DV Tool Software. The one recommended is the Logitech USB Comfort headset.

Download the latest **DV Tool** software from www.dvdongle.com



Connect the headset to a USB port.

Install the DV Dongle .exe software. To start using the DV Dongle, double click on the file DV Tool icon. DVTool will start and display a dialog windows similar to the picture above.

Under setup, choose the USB headset audio device. The Audio Input and Output drop down lists allow for the selection of multiple audio devices if they exist.

In Windows control panel or settings for Mac, select sound. Then, adjust the USB microphone sensitivity. Maximum should work well.

Adjust the speaker volume to what is comfortable in the headset. Medium is a setting to start with.

Enter your call sign and message at the top of the screen.

Click on "Open" to connect to the DV Dongle.

Once the DV Dongle is opened, the Device Name, Serial Number, Boot Version, and Firmware Version fields should show data specific to the hardware you have opened.

DVTool then makes a request to an internet based D-Star gateway name server. The D-Star gateways that are available for DVTool connections are listed in the drop down selection box next to "Connect to Gateway".

Connect to a D-Star gateway for receiving and/or transmitting voice. The gateway drop down selection box lists all gateways that are currently running the required software and have IP ports forwarded correctly.

The PTT button (green box in the lower right corner) behaves similar to the PTT button on a radio. When you click and hold, your mic audio is transmitted to the gateway/module selected. When you unclick, the transmission ends.

The DV Dongle has four LED's which indicate the current operating status. The blue LED shows data is being transmitted from the PC/Mac to the device. The yellow LED shows data is being transmitted from the device to the PC/Mac. The green LED shows the mode of operation, slow pulsing indicates idle and fast blinking indicates running. The red LED shows overruns or underruns between the PC/Mac and the device and should normally be off. If you notice frequent red LED activity, your PC/Mac may not be sufficiently fast to operate with the device or you may have other programs running that are taking CPU cycles away from the DVTool application.

The DV Dongle is a high speed, real time device. It communicates with the PC/Mac at 230Kbps and needs adequate CPU speed and time to operate properly. Many operations on the PC/Mac can interfere with normal operations. These include screen savers, web browsers, instant messengers, etc. For best operation, avoid running CPU intensive applications when operating the DV Dongle.

Some common US reflectors:

- REF069C (New England Repeaters)
- REF030C (Georgia/Southeast Repeaters)
- REF009C (Arizona Permalink Repeaters)
- REF014B (US West Coast Repeaters)

Testing

Connect to the remote system "E" module to run an echo test completely through the network. Connect to "REF030EL" and key up and talk for a few seconds. The audio and data should appear on the screen in a few seconds.