D-STAR DIGITAL **Newsletter October 2016 – 15th Edition**

DVRPTR-V1 is discontinued. Read the following from the Canadian supplier VE2GZI.

After careful consideration, I have decided to discontinue the manufacture of the DVRPTR V1 boards, effective immediately.

As a replacement for the discontinued DVRPTR V1 boards, we will offer a much better alternative: the MMDVM (Multi-Mode Digital Voice Modem).

The MMDVM is a cheaper, faster and more versatile product capable of operating both in repeater and hotspot mode. The MMDVM is currently working with D-STAR, Fusion and DMR and there has been significant progress with P25.

Please visit the MMDVM site for more information: http://www.mmdvm.com

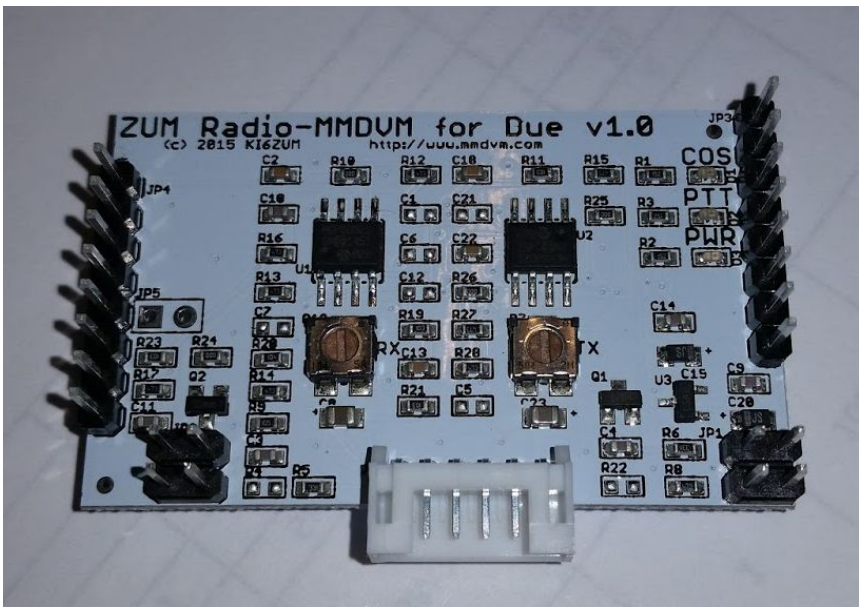
Also, you can follow us on Facebook : https://www.facebook.com/MMDVM/ or become a member of the MMDVM Yahoo Group

As always, I remain committed to providing with the highest quality products and service.

Sincerely, Bruce Given.

MMDVM MULTIMODE DIGITAL VOICE MODEM

Below is the KI6ZUM MMDVM V1.0 for Ardunio Due board.



NW Digital UDRC on RPi2 / RPi3 and testing - by John ZL2TWS Part 4

Discussed in last month's newsletter the UDRC HAT modem board has a problem.
NW Digital Radio has sent me three new MKII models for evaluation. More about this next month.
http://nwdigitalradio.com/product/udrc/

The following announcement from NW Digital Radio.

Posted on September 8, 2016 by k7udr in UDRC

The great thing about Software is that you can improve it continuously. Here at NW Digital Radio, we view Hardware the same way. Each time we build out a PCB Fabrication run, it's only engineering time and new solder-paste stencil charge to make any improvements. So we re-evaluate each product, looking for ways to make it better or appeal to a broader market.

Now that we've shipped hundreds of units, we've updated the UDRC based on feedback from the field.

UDRC-II Changes:

- PTT and SQL are now independent and buffered on both ports making it a true 2 port controller
- LEDs have been added to both PTTs and the 5V converter (only lights if wired to 12V)
- The 12V to 5V converter has an RFI Filter and Transient Protection for Mobile Applications
- The Audio Inputs and Outputs are now 100 ohms to improve cable matching
- The EEPROM version allows the driver to auto-configure for the UDRC or UDRC-II

The UDRC-II starts shipping once we have all the documentation updated. All existing backorders will ship UDRC-II. The original UDRC will be obsolete.

XRF063 New Zealand Cloud based Reflector and how to use it.

This is a DExtra and DPlus Protocol based reflector. DPlus is a default and typically always connects.
The IP connection information is required in either the DExtra_Hosts.txt or DPlus_Hosts.txt lists for ircDDBGateway to use them.

Many find that the standard entry into DExtra_Hosts.txt does not work for them.
What happens for example attempting to connect to XRF063 B?
The Hotspot, Dummy Repeater, WinDV or Gateway Repeater returns the message "**linking to XRF063 B**" The only time a connection is established is if "**linked to XRF063 B**" is reported back from ircDDBGateway. "**linking to**" message indicates it is attempting to connect but not established.

The DExtra protocol often requires router port forwarding to be setup in your home router on ports 30000 to 30007 and linked to the IP address that the hotspot is designated to use on those port forwards.

If you are not familiar with port forwarding or it is not working as expected the following is a good work around.

1) Close ircDDBGateway application as changes in host files are only loaded at start-up.
2) Open the default DExtra_Hosts.txt file with an administrator privilege enabled edit.
3) KiwiDstar and other images make this process automatic but if you don't have this feature read on.
4) Examples of these can be run once a Xterm, LXterminal terminal of choice window is opened.
5) Type sudo leafpad or sudo nano and navigate to the location of the host files to edit.
6) These can be found in many different places depending on the origin of the hotspot installation.
7) For example /usr/local/etc/ or /usr/shared/opendv/ and in the case of WinDV, C:/Program Files(x86)/MicroWalt Corporation/WinDV/
8) Open DExtra_Hosts.txt or dxhosts.txt in the case of WinDV and find the entry for XRF063 that looks like this: XRF063 162.248.141.148
9) Edit the line by placing a hash key # in front of this line like this #XRF063 162.248.141.148

10) Now save the file but before closing the file record the XRF063 entry for inclusion in the next step.
11) Open using the same method as above the DPlus_Hosts.txt and at the top of the list enter in XRF063 162.248.141.148 L (Note the L for Lock) This locks XRF063 as a DPlus user only.
12) Start ircDDBGateway and waiting until connected to ircDDB network.
13) Issue the command XRF063BL in your radio or XRF063 B for some hotspots. DTMF is B63B.
14) The hotspot or WInDv should report back "**linked to XRF063 B**" and after a time delay show on the XRF063 dashboard here: http://162.248.141.148 as a **Connected Client.**
15) Change your UR: back to CQCQCQ and get talking.
16) For those using port forwarding DExtra protocol will work.
17) Client connected DPlus and DExtra connected should be able to have a cross protocol QSO.

Yaesu System Fusion (YSF)

Nothing to report this month.

"LINKING TO" and "LINKED TO" – What is the difference?

Clarification of the XRF063 case but relating to Gateways and Hotspots.

This month we were asked about repeater gateway ZL2VH and ZL3TJH hotspot were reporting "**LINKING TO**" and not actually being "**LINKED TO**" any reflector or gateway using the ircDDB network.

Here is the answer: "**LINKING TO**" is reported back from the ircDDBGateway when an attempt to connect is being made or the link quality is poor. The message is sent if there is congestion on the network, the Gateway or Reflector connection limit has been reached or the internet router is down from the Telco side of the network.
Often this is heard first followed by **"LINKED TO"** and if the link is lost ircDDBGatway holds that linking request and continues to try it until sucessful. Ping – Pong results until the UR: U command is issued.
Only when "**LINKING TO**" is heard is a solid connection actually made.

This is very normal and accepted for D-Star connectivity.
Just try again later or investigate the Ethernet router traffic connections or configuration.

Note: G2 servers will return the message "**NOT LINKED**"……so ircDDBGateway gives you more information and at least you can determine why no link is established.
G2 Linked To message is **"LINK ESTABLISHED"**

XLX Multipurpose gateways

You can put the IP address or DNS address into your browser for viewing the XLX dashboard you choose or enter into the DExtra_Host.txt or DCS_Host.txt file for direct connection.
See this URL for the most up to date list: http://xrefl.net
To register your new number with John, K6KD, http://xrefl.boards.net
http://www.dstar101.com/XLXreflectors.htm
A lot of the XRF reflectors are linked to XLX so it is possible to simply choose an XRF reflector to connect to a multi-purpose XLX reflector.

A current list of XLX reflectors is updated at ZL2VH here: http://zl2vh.org.nz/d-star/hotspot/
If you find others please let the newsletter know so we can add them.

“Homebrew” Hotspot and Gateway Repeater active watch - UPDATES:

Christchurch ZL3CHD – Cashmere now changed to **ZL3TJH** - 25W Tait Hotspot 144.550 MHz
The Dashboard can be viewed here: http://zl3tjh.ddns.net:83

This update from Blair ZL3TOY
ZL3CHD is now the Christchurch D-Star UHF duplex repeater frequency 439.2125 MHz -5 MHz (434.2125 MHz) and operating from the Christchurch Branch 05 clubrooms.

No internet connection at the moment.
Currently still testing various Duplexer / Cavity combinations for best performance.
Repeater is powered on and available for contacts with ZL3VP, ZL3HB, ZL3TAO, ZL3TFM and ZL3TOY all making use of it and submitting reports to Blair ZL3TOY.

Picture below shows the ZL3CHD rack including PC for G2 DPlus gateway.
The cream 4U 19" rack above the repeater is just a front panel that will host an interface for Rx Audio Out via the speaker and a BNC, Tx On/Off switch and Rx/Tx LED indicators.

ZL2TFG – Palmerston North Odroid C1 - VK4TUX edited version. Hotspot update – Warren ZL2JML
Below is the picture of my current setup. I will be working on it and making a few changes in the future but you can see the new power supply lead I purchased from hardkernel.com.
It is run from a battery system via a 13.8 - 5 volt 2 amp converter. i.e. No Break smooth supply.
Works well and the lead is around 40% the length of the original power supply.
Regards, Warren

ZL2ROR – Hastings Kiwi D-Star Version. Hotspot update
Phil has an Odroid C1 hotspot running a DVmega board.
There have been issues with lockups of the hotspot and Phil found two software problems that he was able to feedback to the Branch 63 Kiwi D-Star team.
A VNC remote control and Log File writing problem was discovered.

Thanks for your help Phil.

Corrections were made to fix both problems but they did not seem to be the cause of lock-ups.
Good to fix anyway.
The Ethernet port seems to get bad data from time to time especially when connected to REF001C.
Warren ZL2JML has witnessed the same problem when new DV4mini devices are active on the reflector.
We are not sure if that problem is related so suggested that Phil run the Odroid on a stable DC supply as Warren is doing in the above example. This prevents any power spikes causing the lock-ups.
The idea is to avoid using the AC adaptor supplied with the C1 and possible power fluctuations.
Battery backed smooth supplies are essential to an intended full time Hotspot reliable service.
Hardkernel.com provides a DC direct cable and also a USB to DC cable.
Phil is now building a battery backed stable 13.8VDC supply stepped down to 5VDC.

Kiwi D-Star Image Update
Simon ZL2BRG has offered to work some Linux magic with the /tty/ACM0 start-up problem for DVRPTR-V1 modems. This is the only thing left to do to make the Kiwi D-Star a perfect hotspot image.

Currently on test by ZL2SFM and ZL2NSA is the Pi3 DARC image with DG9VH dashboard.

D-Star Commander WiFi connect solution – Mark ZL2UFI

The following article by Phil VK3PG was sent to us by Mark ZL2UFI for publication.
It will be helpful to those of you using D-Star Commander images on Raspberry Pi.

Latch on to iPhone Wi-Fi hot spot
For those who have iPhone and want to latch on to iPhone hotspot through using Commander image and raspberry Pi may find this helpful.

If you find the iPhone Wi-Fi hot spot is not connecting to raspberry Pi on boot up through WIFI here are few solutions.

1. I have found here RJ45 land line to the raspberry pie works first time every time on boot up ircddbgateay is near instant use.
2. House WIFI being so strong or most are the same result as above.
3. With Commander image and raspberry Pi wanting to latch on to your iPhone may appear to sometimes work sometimes don't.

The best way for first time latch with iPhone in portable situation is to only switch on iPhone hot spot 2 minutes before booting up commander image and raspberry pie failing to do so will and can cause failure to latch to hot spot on iPhone.
It appears you can leave an iPhone hotspot on all the time but I am sure either:

The Raspberry Pi can't acknowledge to the iPhone hot spot or reading from previous article in another forum the iPhone on long durations of in activity may go in some hidden power save mode all though the beacon of iPhone shows different blue tooth seems to make it worse.

You can if you wish use the USB cable from iPhone to the normal USB ports to the raspberry Pie it does work well and appears stable.
It maybe to the Raspberry pie has poor selectivity in WIFI if stronger hot spots are near but a perfect first-time latch with hot spot on an iPhone 2 minutes before booting up the commander image and raspberry pie.

A lot are saying if you reboot second time around a perfect latch takes place I found this to every time with my iPhone.
I can only speak from my experience that when using a mobile device, it takes a while for it to complete to the IRcddbgateway with RJ45 and reliable home internet it always faster.
If you haven’t got these commands, you should have them to control the Commander image and raspberry pie by

Talk
Reboot
Shutdown
Echo
Hostupdt
Cleanup

These are the commands to Commander image and raspberry pie in your call sign area only.
Special note: Shutdown is preferred method always of shutting down Commander image and raspberry pie it only takes 30 seconds to shutdown before turning off power and keep your image clean on SD card.

Best regards

Phil VK3PG

All about the DV4home! – This facebook article supplied my Mike ZL2NSA

Recently got a DV4home last week and have been doing a bit of playing around with it. I reported the numbered issues below to Wireless Holdings and they replied back that they sent them to the developer however I have not heard back anything else from them or the developer so I'm releasing my findings to the public so they might be better informed on this product.

Here is what I've found so far:

1) Audio quality is excellent both inbound and outbound.

2) Does not do Brandmeister "officially" - more on that later.

3) You can connect to both DSTAR and DMR at the same time however it will not play both at the same time - whichever one keys up first you'll hear.

4) On busy DSTAR reflectors the main display will crash after 10-15 minutes and the entire thing will be in an unusable state.

5) On busy DMR reflectors when not connected to a DSTAR reflector as well, eventually the main screen will stop displaying call signs and information. The green RX LED will also go solid. When it's in this state DMR still works, you can still transmit/receive however after about 10-15 hours in this state it will eventually stop working entirely.

6) The buttons on the handmic do nothing, just the PTT switch.

7) The rotary encoder is jittery - spin the knob "too fast", i.e. at any rate other than "dog slow" and it's either non-responsive or the counter starts going in the opposite direction.

8) The speaker in the box itself is only "OK". You're going to want to use to an external speaker. I use an old Kenwood comms speaker I had laying around.

9) On the web page interface the "unlink" option in the DCS menu doesn't work. The only way to unlink from a DMR reflector is to link to a different reflector. There is no "4000" option to hard unlink entirely.

10) No way to hard-reset the box back to factory defaults that I can find if you screw up entering your callsign and DMR ID so make sure you NEVER, EVER screw up the initial setup web page process.

Now for some internal discovery. This box runs both an SSH server as well as a mini-httpd webserver. The web server runs the webpages that allow you to connect to different reflectors.
Over the weekend I was able to guess the root SSH password and login to the box. What I found is:

SPECS: 128MB of RAM and 4GB of internal flash storage. I haven't opened the box to see if the flash is chip-based or card-based. There is also an internal 2-port USB hub. One USB port for the DV4mini and the other obvious port on the back for a future wifi USB adapter I guess. CPU is an ARM926EJ-S rev. 5 (ARMv5TEJ), all info taken from DMESG.

1) DV_SERIAL. That's right. When you plug in a DV4mini and power up the box, after the main process "sees" the DV4mini is plugged in it launches dv_serial and you control it using software on the desktop. There's no way to control it from the device itself neither from the front panel nor the built-in webserver. Same thing as if you had it plugged into a Raspberry Pi. DV_SERIAL does NOT control the rest of the box, just the DV4mini if you have it plugged in. This is the same dv_serial program that the Linux DV4mini software uses on the Raspberry Pi.

2) OLED - oled is the main process that controls the entire box, not just what is displayed on the screen. Upon power-on after the Debian Linux OS has booted up the oled program is launched and it launches two other additional programs - DCS and DMR. But the OLED program has a bit of a problem - it crashes with a segmentation fault after 10-15 of listening to a busy DSTAR reflector because it seems to not be able to handle

corrupted DSTAR packets very well. The OLED program also doesn't handle the display very well leading to corrupted characters on-screen after a while when connected to a DSTAR reflector.

3) DMR - DMR is the program that handles DMR reflectors. It's rock-solid except for one tiny issue - upon every transmission it receives it spawns local UDP ports that it never closes. Over time on a busy DMR reflector it will eventually spawn hundreds and hundreds (thousands?) of open UDP ports that never close and eventually ties up all the RAM causing the entire box to be non-responsive and stop working forcing you to power-cycle the box. On boot up it spawns 3 DMR processes.

4) DCS - DCS is the program it uses to connect to DSTAR reflectors. There seems to be conflict with the DCS program and the OLED program that initially calls it since on busy reflectors the DCS program causes the OLED program/process to crash out entirely leaving the control panel and display in an unresponsive state. Unlike the DMR process, the DCS process does not spawn a lot of UPD ports. Upon bootup 6 DCS processes are spawned and it keeps to that number over time.

5) DV4AMBE_1 and DV4AMBE_2. These two programs control the audio decoding/encoding. As you can see, there are two of them indicating there really are two AMBE chips in this thing. That's actually pretty cool.

5) LINK - Link is the program called by the user interface webpages that connects both DMR and DCS reflectors. you basically call "/media/data/system/link LG4369" and it will connect the DMR program to reflector 4369. "/media/data/system/link REF030C" will connect DCS to the famous reflector 30 Charlie. On the DMR side the link program is hard-coded to only be able to use 4-digits. More on that issue later.

6) USER - user is the program the initial setup webpage uses to populate the config.cfg file located in /media/data/system with your callsign and DMR ID. If you screwed up this setting in the beginning configuration page there's no way to edit this short of SSH'ing into the box and editing it using nano. Possibly by browsing directly to the config web page as well but I haven't tried that yet.

7) config.cfg - this file is located in /media/data/system and contains your callsign and DMR ID. It also contains the DMR_MASTER configuration, i.e. this is where it's setup to connect to a particular DMR_MASTER server located in Florida. It is possible to change this to point to a Brandmeister master server and I currently have mine pointing to the BM Dev server where it's working fine...well, as fine as the DMR and OLED and link programs allow.

I found a slew of leftover debugging and testing web files and other oddities while looking around in the box indicating the developer did not do proper cleanup prior to releasing the software.

Also, the link program itself is hard-coded to only use 4-digits meaning that after connecting it to a Brandmeister master server you can't go to a 5-digit talkgroup - at least as far as I've been able to find. Decompiling the link program itself didn't give me any clues either.

I find it very, very odd that they made the OLED program the main program that controls everything including the display. I feel the display controls should have been split out into a separate program entirely.

There is also no watchdog process in place to monitor the state of the running DMR, DCS, and OLED processes and re-start them if they crash. Once they crash - and the OLED process crashes a lot - you have to reboot/power-cycle the device to get it working again.

There is no real internal logging done on this device at all that I can see.

There are a few main things that really bug me about this box:

1) Every few minutes the device pings www.google.com for one ping - and one ping only. This is probably a way to do some sort of poor man's network connectivity test. But if your DNS servers ever go down for any reason, not sure what will happen when it tries this single ping to Google.

2) Upon bootup (really upon startup of the OLED main program) it connects to and pulls down and saves the list of Brandmeister master servers. It also contains a list of Brandmeister reflectors/talkgroups. It does not use these in any way whatsoever during operation so not sure why it does this unless it's leftover code from the Linux version DV4mini control program being used in the OLED program. Also finding traces of DVRPTR-NET all over the place including the hostname itself.

3) Compiler tools are already installed on the device to include git. I was able to successfully git clone and compile the MMDVMHost software even if it was very slow to compile.

4) If something happens to the Linux OS inside the box there is no way for a user to reflash the OS to it that I can find. I'm sure there's some sort of undocumented process to do so but we're not being told what that process is.

My bottom-line review of this device is that while the hardware itself has potential, the software is very poorly developed and very buggy. From my limited research on the matter it seems code that was on past hardware DG1HT has worked on has been repurposed for this box as well. That would be fine if not for the fact that the code is buggy and prone to memory leaks (DMR UDP ports) and seg faults (OLED/DCS not handling corrupted DSTAR data properly).

Until Wireless Holding fix these issues I would advise against anyone buying a DV4home at this time.

Editor Note: Some people might want to purchase these units. (USA shipping only) and give them a go. The review seems to me to be fair and by a competent person who knows how the equipment is supposed to work. I am sure that in time, like with most other DV open source devices, (Exception being InterNetLabs that are 100% out of the box) the DV4 Home will be an excellent device.

CCS7 (Call Connection System 7)

The following list of stations that are working at the time of publication.
Please try them. You can check each hotspot dashboard to verify your connection.

ZL2ARN (530)1082
ZL1SB (530)1091
ZL2JML (530)2009
ZL2SFM (530)1072
ZL2RO (530)1109
ZL2ROR (530)1125
ZL2NSA (530)2018
ZL3CHD (530)3049
ZL1HN (530)1074
ZL2TWS (530)1011
ZL2TWT (530)1073

NOTE: If your call sign is missing from this list and you want to be included please let us know.
Hint: Each month useful links will be placed on the last two pages of the newsletter so you always know where to go quickly to find them.

facebook page called ZL DSTAR https://www.facebook.com/groups/184445028555391/

Repeater Gateways with Dashboards:

Auckland Klondyke ZL1VLD. https://zl1vhd.dstar.org.nz/ (Dplus)
Auckland ZL1ZLD. https://zl1hk.dyndns.org (Dplus)
Auckland Henderson ZL2AKD. http://zl1akd.ddns.net:82 (ircDDB)
Hamilton. http://zl1cct.d-star.nz (ircDDB) **CCS7 8530100**
Tauranga ZL1TPD. http://222.154.227.90:81 (ircDDB) **CCS7 8530001**
Te Puke. https://zl1ibd.dstar.org.nz (Dplus)

~~**Hawke's Bay Mt Treave.** http://zl2hbd.ddns.net:82 (ircDDB) **CCS7 8530002 (not currently working)**~~
Wellington ZL2VH. http://123.255.47.67 (dual dashboard with Dplus below the ircDDB) **CCS7 8530304**
Wellington ZL2VH. https://123.255.47.67 (Dplus only dashboard)
New Zealand Reflector XRF063. http://162.248.141.148

Examples of these hotspots with dashboards that you can view and connect to this month:

ZL1AKD (http://zl1akd.ddns.net:82)
ZL2TFG (http://zl2tfg.ddns.net:82)
ZL2NSA (http://zl2nsa.ddns.net:82)
ZL2SFM (http://zl2sfm.ddns.net:82)
ZL3TJH (http://zl3tjh.ddns.net:83)
ZL2ROR (http://zl2ror.ddns.net:82)
ZL1AMK (http://zl1akm.ddns.net:82)

Other sites for reference information:

ZL2VH Web site. http://zl2vh.org.nz/d-star/

http://zl2vh.org.nz/d-star/gateway/

KiwiD-Star group. https://groups.yahoo.com/neo/groups/KiwiD-STAR/info (No longer supported)

ZL Host lists

ZL gateways and hotspots.
On the Branch 63 site you can retrieve the host files at any time. They are small text files.
http://zl2vh.org.nz/d-star/hotspot/
Title is "ZL Gateways and Hotspot Host files"
Alternatively here. http://zl2vh.org.nz/assets/d-star-hosts/

ircDDB Visibility

For those who want to be visible on the ircDDB "live" list.
http://www.ircddb.net/live.htm
Do the following from this URL:
http://ircddb.net/live-vis.html
UR:VIS ON and then transmit once.
Then revert the UR:CQCQCQ
Once you transmit via an ircDDB enabled gateway using RF your call sign will be seen to be live on the dashboard and also listed on the ircDDB "last heard" list on the local dashboard.

Previous issues of this newsletter are available from http://zl2vh.org.nz/d-star/newsletter/
or the KiwiD-Star Yahoo group.
https://groups.yahoo.com/neo/groups/KiwiD-STAR/files/D-Star Newsletters/ (No longer supported)

D-Star Net to join

http://www.dstarinfo.com/nets.aspx
Friday afternoon at 16:00 XRF002A **PAPA D-Star round table net** is a technical net and well worth joining.
Note: This time depends on Daylight saving in either country.
Dashboard and DExtra_Host.txt files entry is here: XRF002 xrf002.dstar.club
The net runs for 3 hours or more and has a "shout box" type web forum you can also contribute to here:
http://d-star-roundtable.boards.net/

73 and good DV. John ZL2TWS.Branch 63 NZART.