Guide BlueDV 1.0 : Create a D-STAR C4FM DMR hotspot without PC or Raspberry

To date there are 2 way to access AND traffic in digital amateur radio D-Star, DMR or C4FM:

- Either you are close to a digital repeater and you can then traffic live with a walkie-talkie or mobile station, digital according to the chosen mode,

- Either you are in an uncovered area (and we are numerous in this case), and then have to use a personal hotspot to connect to digital networks via an internet connection and a walkie talkie digital.

A third way exists for listening only, via the website http://hose.brandmeister.network/

Having a hotspot like the **BlueDV pack** is one of the most convenient and fast ways to connect to amateur radio networks whether in DMR, D-Star or C4FM.

A new Bluetooth card, the Bluestack Micro+, compatible with the famous Dvmega, simplifies the creation of a hotspot for Digital Modes and thanks to a smartphone or a tablet (Android 4.x Or higher), **and without needing a computer or raspberry connected!**

Associated with an external USB battery, BlueDV Hotspot assembly allows to quickly have a radio hotspot digital, operational in portable and mobile.

The assembly consists of a DVMega board, to manage the connection with the D-Star / DMR / C4FM and the digital walkie talkie, then the Bluestack Micro+ board to manage the connection via Bluetooth with the Android smartphone (or the tablet) connected to a wi-fi or 3G/4G internet connection, to send radio trafic online.

The free application for hotspot management is called BlueDV (formerly BlueSpot) and can be downloaded at Google Play: https://play.google.com/store/apps/details?id=com.pa7lim.BlueDV

Tips for mounting the BlueDV pack

The assembly consists simply of fitting the two cards, taking care to cut or fold the tabs that protrude from the circuit board of the DV mega, so that they do not touch the metallic protection of the pushbutton of the BlueStack Micro+ , as showed on the picture:
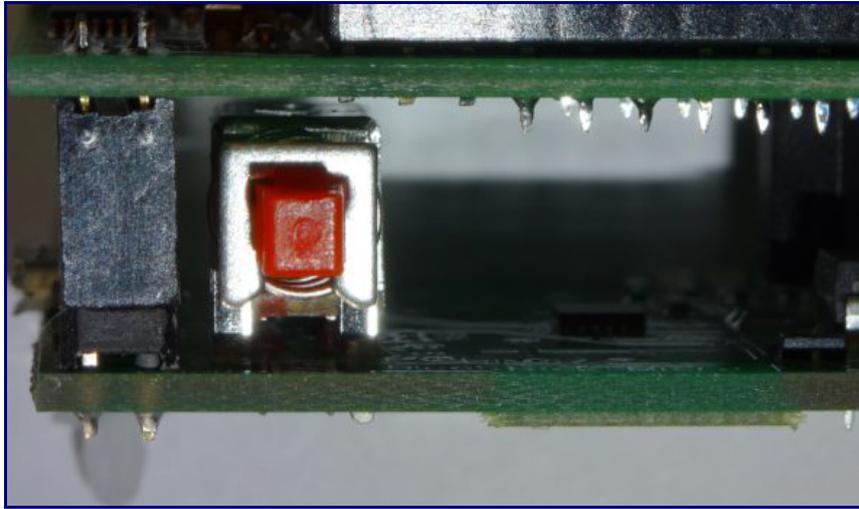
Video of mounting the BlueDV with transparent Plexiglas case: https://www.youtube.com/watch?v=HepWIhIALY4

Video of mounting the BlueDV with the case in 3D printing : https://www.youtube.com/watch?v=RlZ0WlMBSnI

Configuring the BlueDV application and the Hotspot

1 - Make sure the pushbutton is in the released position (not pressed),

2 - Connect the USB cable to power the assembled BlueDV hotspot

3 - Turn on Bluetooth mode on the Android smartphone or tablet

4 - Associate the new Bluetooth device with code 1234

5 - Download and launch the Android BlueDV application on the smartphone, then go to "Setup" to configure the hotspot:

Ham call: Your amateur call sign

DMR id: Your CCS7 identifier

Your Info: Your QTH locator

Enable APRS: To activate the APRS geolocation mode (Yes / No)

DSTAR freq: The frequency D-STAR RX / TX

DMR freq: The frequency used in DMR RX / TX

DMR QRG: Correction of the frequency offset (to be adapted according to the transceiver to correct errors)

DMR Master: The Brandmeister DMR server to use (list of DMR Brandmeister Master Server)

FUSION freq: The frequency used in C4FM (Yaesu System Fusion)

Enable ser2net: Off = Bluetooth, On = Ser2net (not used, set to Off)

Ser2net IP: Ser2net IP address (not used)

RX TX colors: Changes the background color of the application to TX or RX mode

Then click on "Submit" to confirm the configuration. Finally, click on "Connect" to connect the Android BlueDV app to the hotspot in Bluetooth:
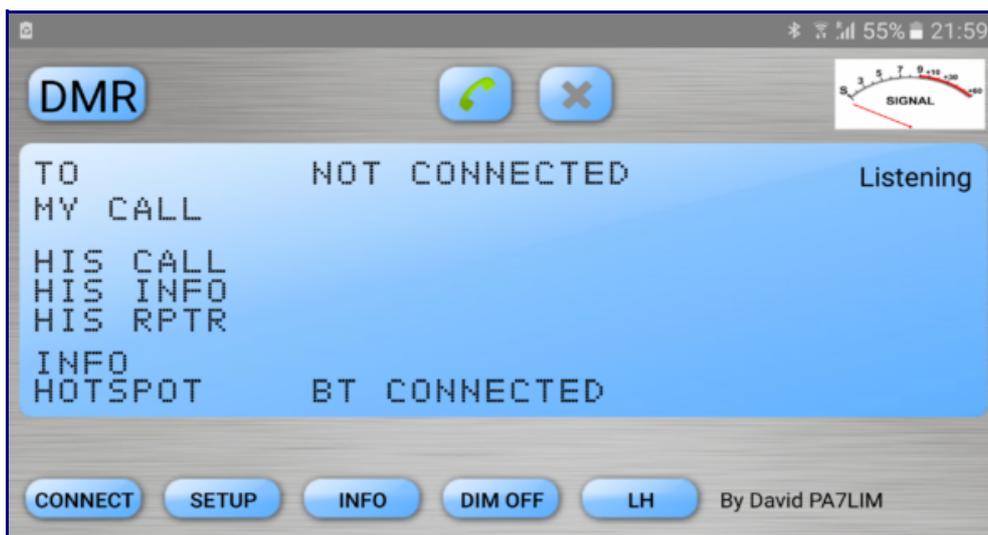
Note that it is not possible to use the BlueDV application in the background, which must always be on the screen. In the event of a disconnection problem, try to disable the smartphone or tablet power saving mode and close all unused Android applications.

Setting up the digital walkie talkie for the BlueDV

Depending on the brand and the digital mode used, the configuration of the channel dedicated to the Hotspot differs from one brand to another.

But general principle remains identical and here is the typical configuration for with a TYT MD-380 DMR walkie-talkie, with programming software TYT CPS 1.36 **to download here.**

Frequency RX / TX : The frequency used in to configure BlueDV apps
Color Code : 1
TimeSlot (TS) : 2
TalkGroup (TG) : 9

The typical configuration with the CPS Tytera software for the BlueDV channel:

Once the BlueDV hotspot is connected to the Brandmeister DMR server of your choice, you can connect to the TalkGroup (TG) of your choice, using the reflector principle and whose role is to match TG / Reflector.

To find your reflector in your country or language, go to the Brandmeister Wiki and BM country server information page : https://wiki.brandmeister.network/

Finally, call the reflector (recorded in contact in the talkie-walkie) to join the corresponding TalkGroup. Select the contact, then press PTT button.

To disconnect from a TG/Reflector send code 4000, before connecting to another reflector.

The reflector contacts must be configured in "Private Call" mode.

A parrot mode "Parrot" is also available with the reflector code 9990, when connected to it, in "Private Call", you can listen back your modulation. To disconnect from "Parrot" mode, use code 4000.

To obtain the status of the connected reflector, you can send a private call to the 5000 reflector.

Correction QRG

Only in DMR mode, the frequency offset is often to be corrected to be well transcribed on the DMR network.

The BlueDV application shows the error percentage via the BER indicator as a percentage.

The correction value varies from station to station and there is no universal setting, however +/- 300hz is usually found with TYT MD-380 and TYT MD-390.

To change the frequency or QRG correction, you must be disconnected from the DMR mode, and then reconnect.

DV mega update

To update the firmware of DV Mega and use the latest supported modes DMR, D-Star and C4FM, the version to use is 3.07 (November 2016).

Before you can update the firmware, it is necessary to solder a wire between 2 points on the card.

For the single-band DVmega version:
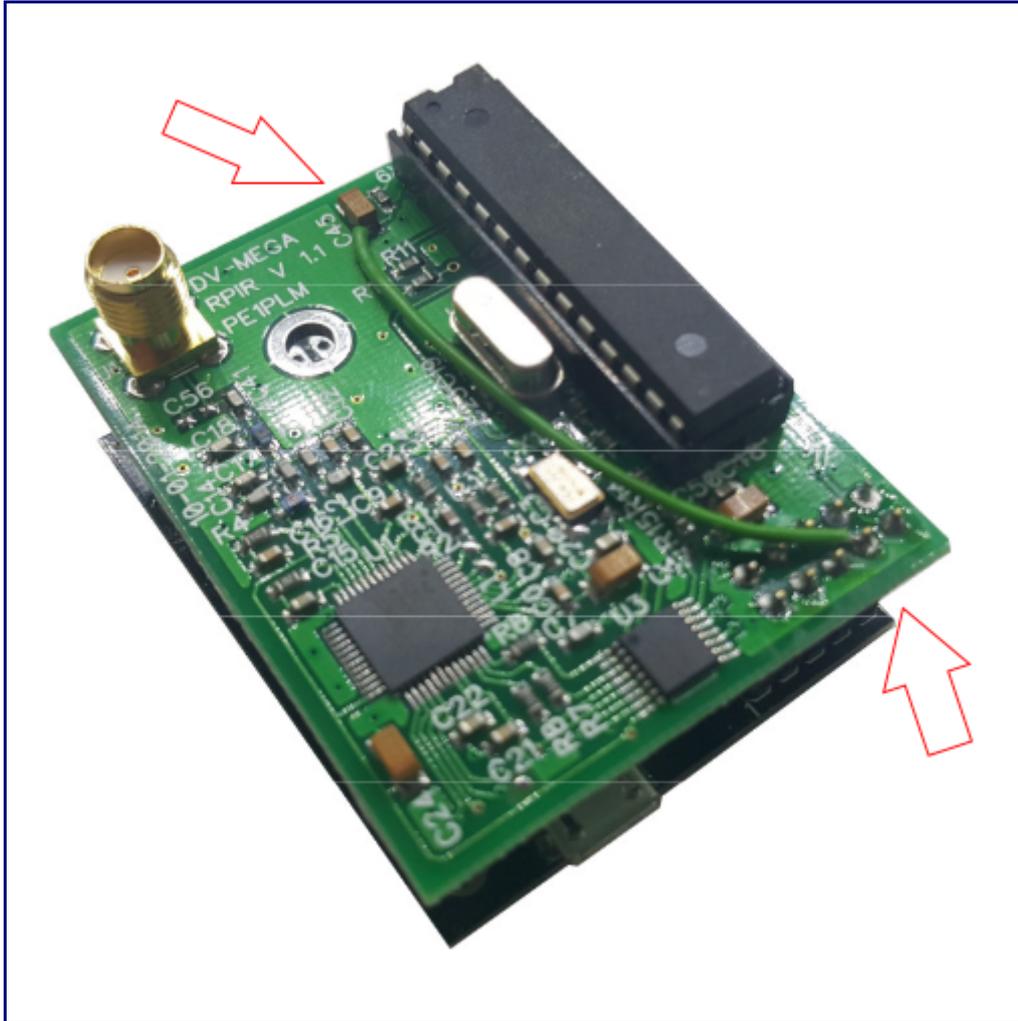
For the DV mega dual band version:
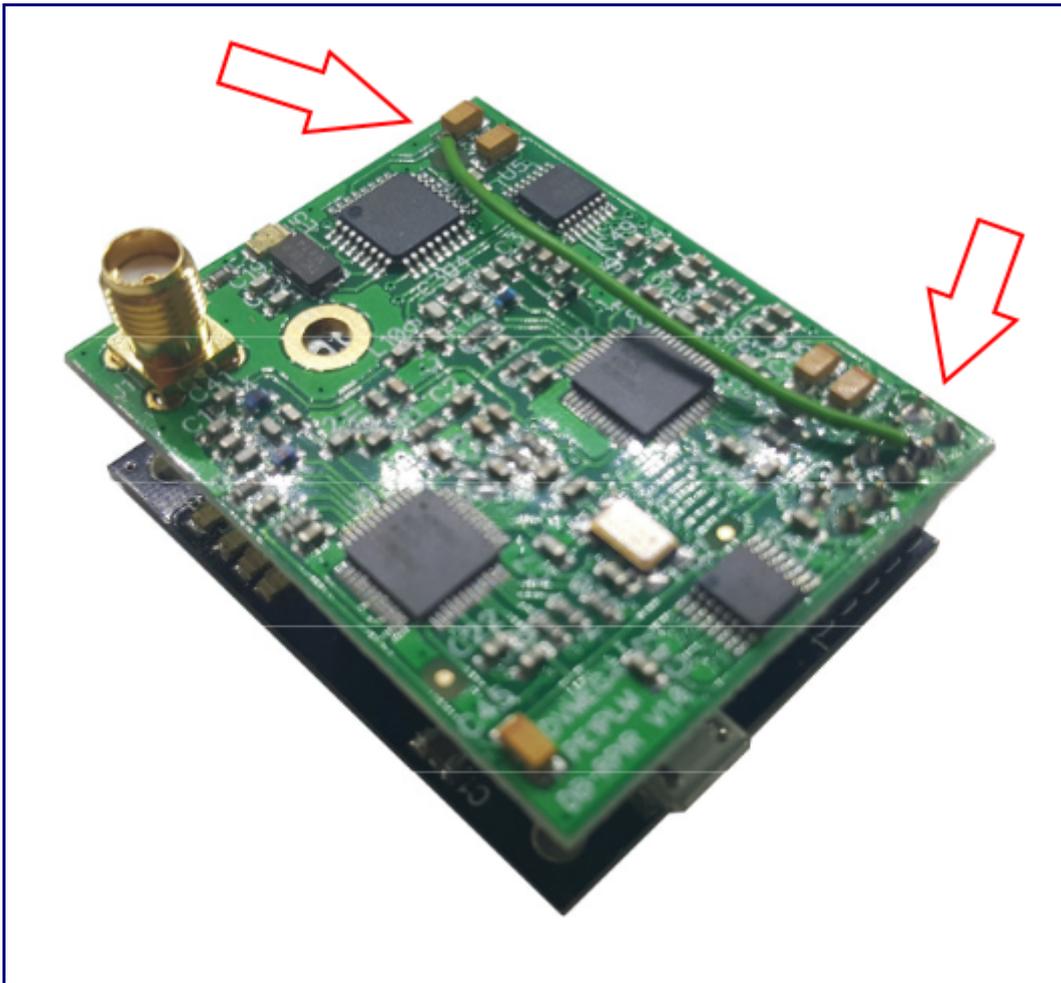
Once the cable is soldered properly, press the red button so that it is in the pushed position, then connect the BlueDV to a USB port on a Windows computer.

A new USB serial port should appear in the device manager, locate the COM port number and check that the baud rate is 115000 baud.

Download the latest **firmware version 3.07 DVmega** then the **X-Loader software** which allows to transfer the new firmware to the DVmega card.
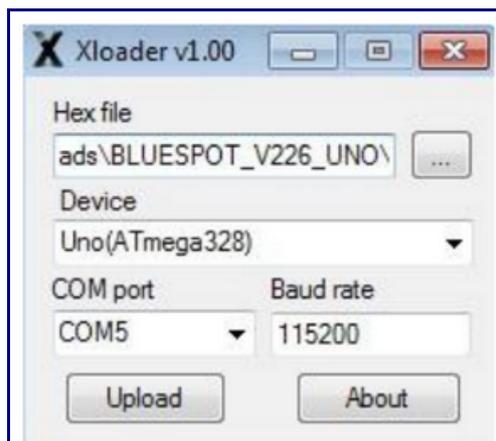
Then search for the firmware file by clicking the "..." button, select Uno (ATmega328), and the COM port on which the BlueDV appears, then click "Upload".

When the update is complete, press the red button in the released position. The welded wire can remain in place after the update.

Test the Bluetooth connection with the smartphone and the version installed in BlueDV.

To know more :

Official DVmega website: http://www.dvmega.auria.nl/Downloads.html

Official BlueDV website: http://www.pa7lim.nl/bluedv/

BlueStack website: http://pe1msz.nl/

Find the latest version of the BlueDV guide online and the BlueDV Pack at :
https://uk.passion-radio.com/gb/d-star/kit-bluespot-dvmega-420.html