ZUMSPOT USB SETUP GUIDE FOR DMR

The Zumspot USB can utilise the BlueDV and Pi-Star software.

BlueDV

This software is available for Android, iOS, Linux and Windows – note that there are differences in the layout and setup of each version as well as different versions for each platform [standard, pre-BETA and TEST]. If you want to use it via a mobile phone, you will need to download the app from the Play Store or iTunes as well as purchase an OTG cable which will fit the charge port for your mobile phone.

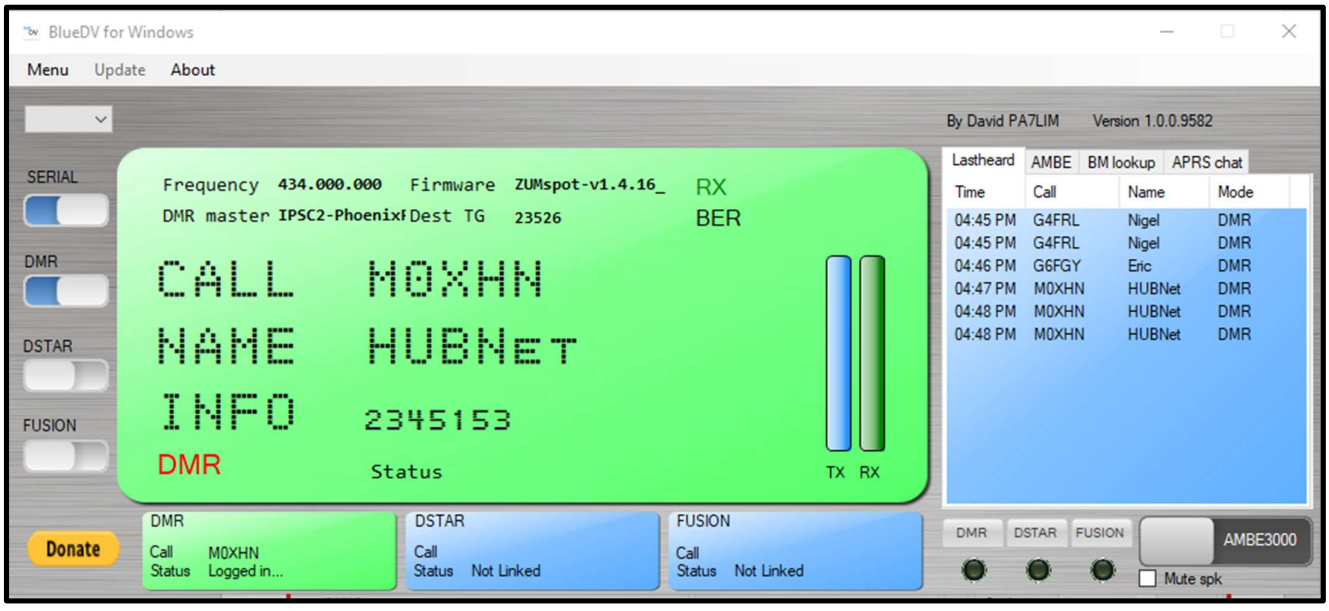
The software supports the Brandmeister network and has limited support for the DMR Plus network [which Phoenix uses for its servers]. I was successful in using IPSC2-PhoenixF on the Windows latest version [9582-TEST]. I tried the Linux version [09488-preBETA] without major success. I have limited Linux knowledge and found the instructions were not 100% useful. Also, to note, the website does state that BlueDV Linux is still Experimental. I therefore decided to try Pi-Star (which I have used many times before) which worked and even sounded better that BlueDV Windows.

Below are the links for each platform's website, which also contains various information and instructions.

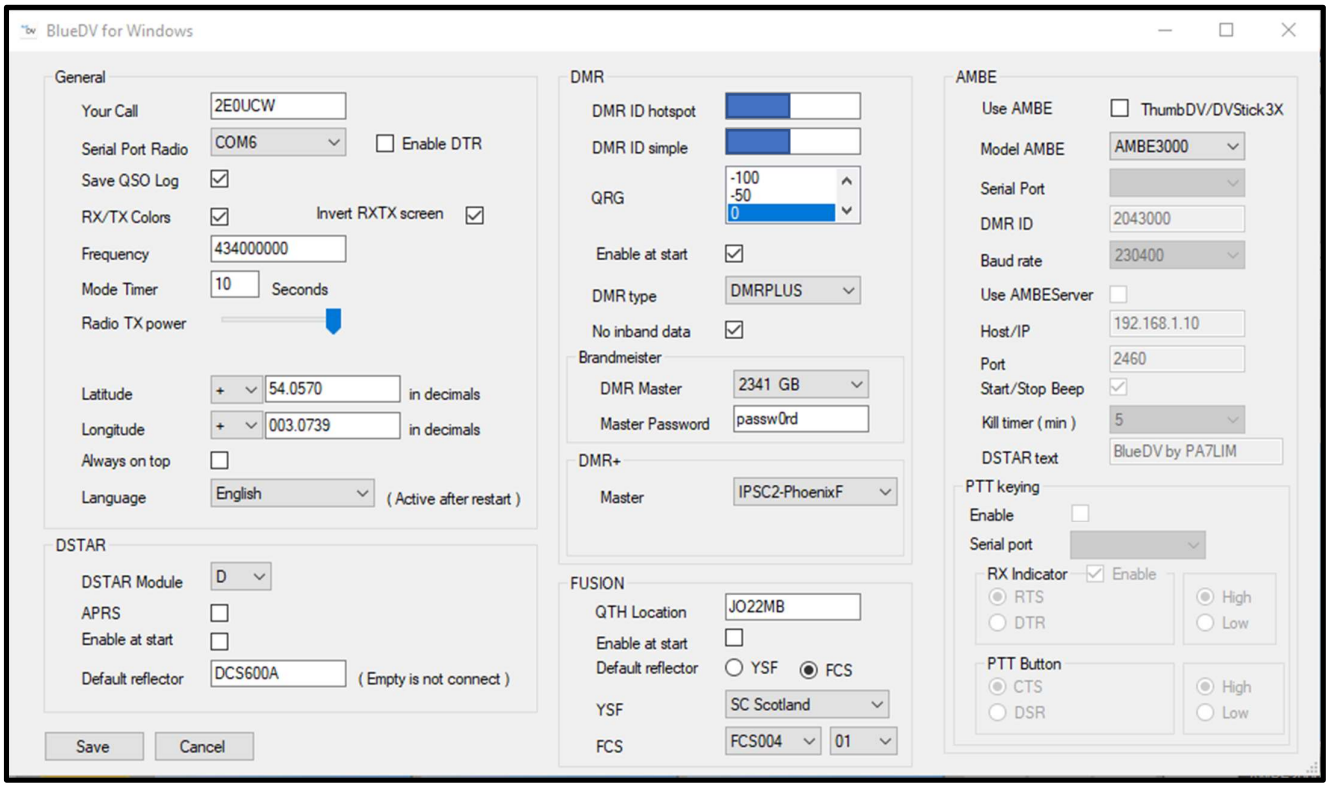
Android : https://www.pa7lim.nl/bluedv-android/
iOS : https://www.pa7lim.nl/bluedv-ios/
Linux : https://www.pa7lim.nl/bluedv-linux/
Windows : http://www.pa7lim.nl/bluedv-windows-radio/

BlueDV for Windows [v9582-TEST]

http://software.pa7lim.nl/BlueDV/BETA/Windows/



Above is the main screen for BlueDV Windows.
Start by clicking on "Update" then one by one, do the 3 updates [DSTAR Hosts, Call Database & DMR Masters].
After each one is done, there will be several dialogue boxes that need to be closed.
Once these are done, click on "Menu" and you will see the following:



There are 2 sections of settings to be completed (1) “General” and (2) “DMR”.

First, we look at the “General” settings:

- Add in your Call Sign
- Select which COM port the device is plugged into (you may need to check your Device Manager to see which COM port is the USB Serial Port – this is usually a lower number
- You then have a few tick boxes – these are optional settings
- Add your frequency – in the UK, we should use 434.000MHz or 438.800MHz as per the band plan.
- The rest of the section are optional settings but note, if you select “Always on top”, this could interfere with you doing other things on your computer, as BlueDV will want to remain the main item on the screen.

Then onto the “DMR” settings

- Start by adding your DMR ID into “DMR ID Hotspot” – add 01, 02… if you are using multiple hotspots
- Then add your DMR ID into “DMR ID Simple”.
- The QRG is the frequency offset and various by radio so you may have to tweak it until the device picks up the transmission.
- Enable at Start will default DMR to switch on when you switch on the “SERIAL” option on the main screen.
- The “DMR Type” is the network – Brandmeister, DMR Plus [Phoenix] or XLX – select which one you wish to use.
- Inband Data is Talker Alias – I prefer this to be off as if the receiving person has a radio that does not support Talker Alias, then your transmission may come through a bit broken up.
- Next, select the Brandmeister Master – this is usually 2341 GB [UK] or 2721 IE [Ireland] – do not alter the password as this is a default.
- Then select the DMR Plus [Phoenix] master – this should be “IPSC2-Phoenix F” (the hotspot server for the Phoenix network) or you can use “IPSC2-DVScotlan” which is used by the DV Scotland group.
- Once this is done, press “Save” – this will return you to the main screen – click on “Serial” and then “DMR” should automatically switch on if you selected “Enable at start”.

Pi-Star

Pi-Star is a well-known software used for hotspots and MMDVM repeaters via a Raspberry Pi. This software can be loaded onto various versions of Raspberry Pi and supports numerous devices including the "Zumspot USB Stick". Most of the hardware is available from https://thepihut.com/ or the likes of Amazon.

You will require several bits of hardware [with average prices]

- Raspberry Pi 3B+ (suggested) -> £34.00
- RPi 3B+ case with fan & heatsinks -> £11.99
- 5.1v 2.5amp micro USB charger (note that most mobile phone chargers are less than 2amps) -> £9.00
- Micro SD Card Class 10 (4Gb/8Gb) -> £8.99 [get a decent card to avoid corruption – I use Samsung]
- USB Card Reader (if you do not have an adaptor or card reader in the computer) -> £6.99

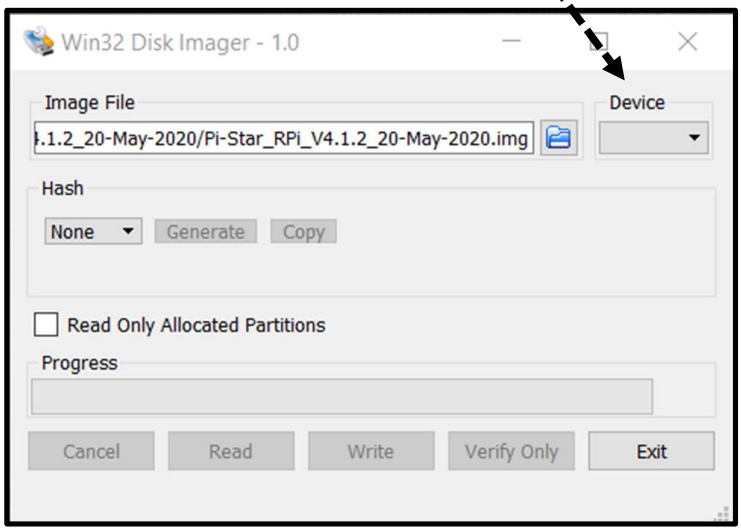
Software required

- Pi-Star Image file - https://www.pistar.uk/downloads/
- Unzip program - https://www.winzip.com/win/en/
- Disk Imager - https://sourceforge.net/projects/win32diskimager/
- IP Scanner - https://www.advanced-ip-scanner.com/

Getting started

- Download Pi-Star - https://www.pistar.uk/downloads/
- Choose the latest version of Pi-Star_RPi (currently V4.1.2_20_May-2-2020)

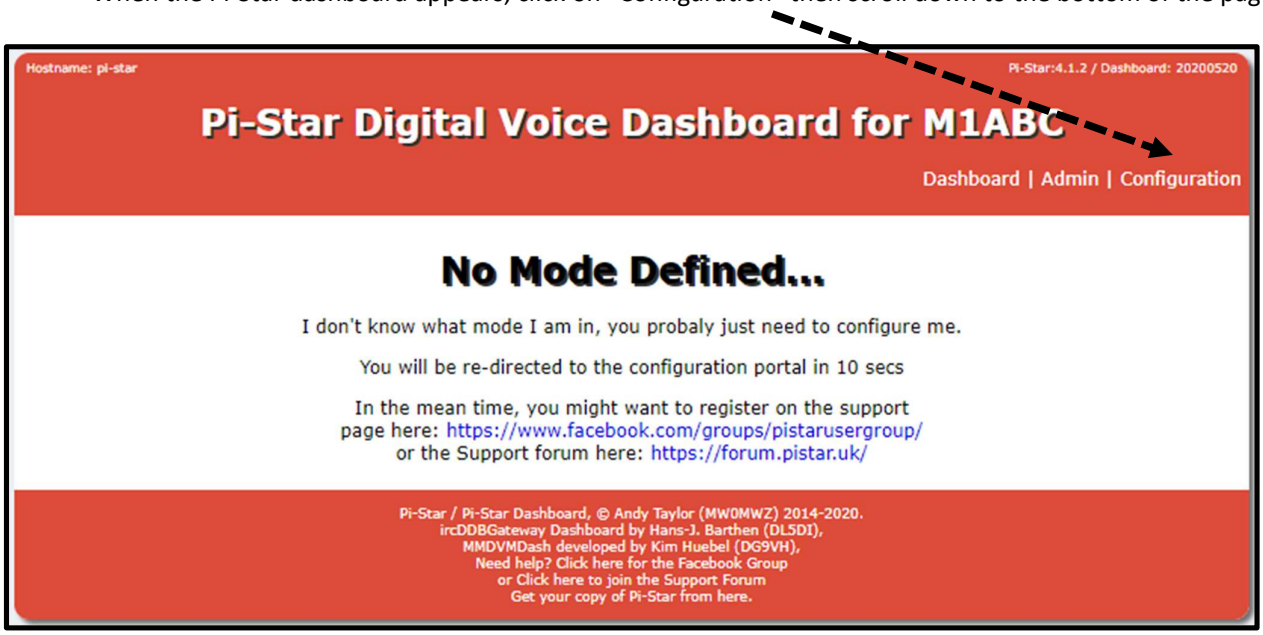
- Use WinZip to extract the image file from the zip file
- Insert the micro SD card into your computer
- Write the image file to the card using Win32 Disk Imager (do not copy and paste)
    - Locate the image file
    - Choose the device – make sure it is the correct drive for the card
    - Click on Write – this will take several minutes
    - Then safely eject the Micro SD Card



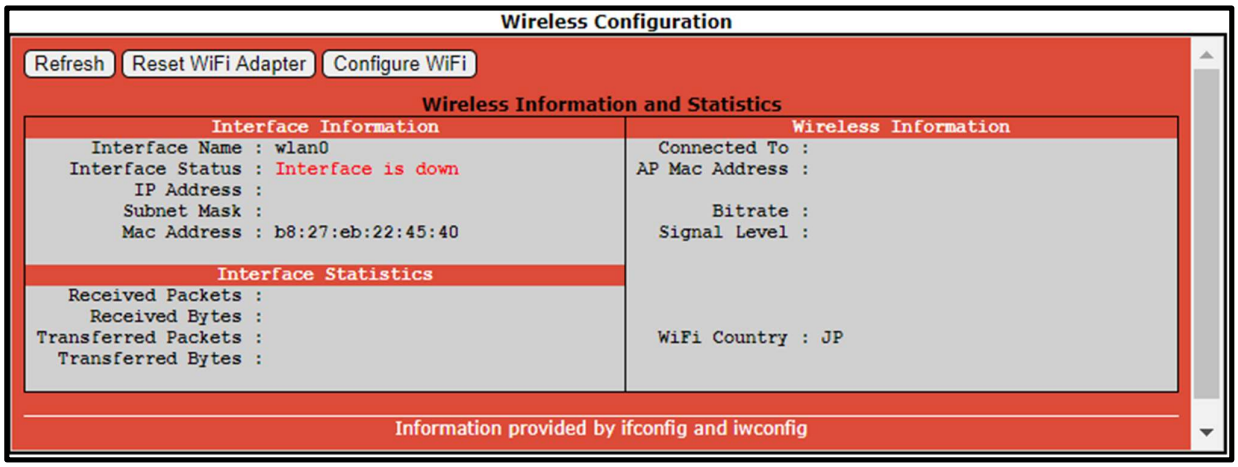
- Plug the card and Zumspot USB into the RPi 3B+ and power it up

Setting up Wi-Fi

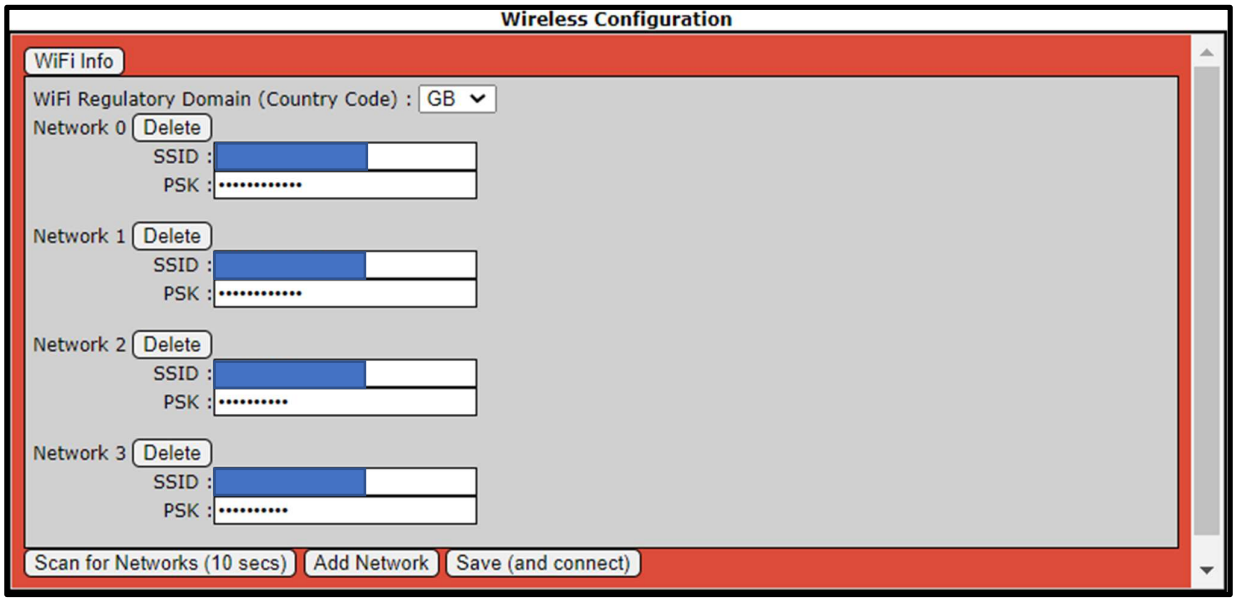
- A few minutes after powering up the RPi 3B+ you will see “Pi-Star-Setup” as a Wi-Fi hotspot
- Connect to this then open your web browser and type in 192.168.50.1 to connect to Pi-Star
- When the Pi-Star dashboard appears, click on “Configuration” then scroll down to the bottom of the page



- Go to the Wireless Configuration section at the bottom of the page
- Click on Configure Wi-Fi
- You will need to scan for Wi-Fi networks, connect to your network, put in the password
- Click “Save and Connect” then change the country code to GB
- After a minute, click on “Power” and reboot



- You can manually add in your wireless networks by clicking Add Network then filling in the SSID and PW
- Below, I have added in my laptop and mobile phone as wireless hotspots – it’s not always easy to connect to a hotel or public Wi-Fi network therefore I use my laptop which has a hotspot function as well as adding the phone for when I’m out portable or mobile.



- You can then link your computer to the home network again
- Open Advanced IP Scanner – do a scan and look for “Raspberry Pi Foundation” under the Manufacturers
- Use the IP address in your web browser to connect to Pi-Star

Using LAN

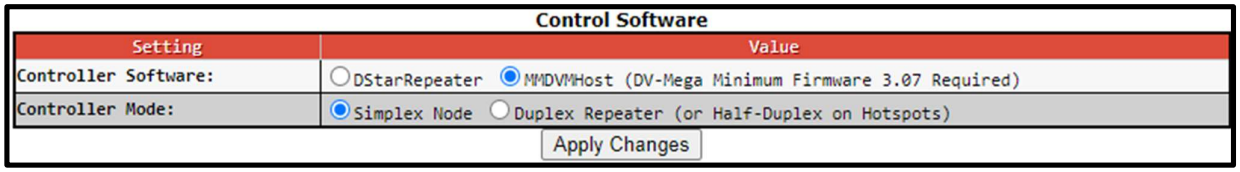
- Plug your LAN cable into the RPi 3B+ and power up
- Open Advanced IP Scanner – do a scan and look for “Raspberry Pi Foundation” under the Manufacturers
- Use the IP address in your web browser to connect to Pi-Star
- You can add in Wi-Fi details via the “Configure Wi-FI” button to setup wireless networks or mobile hotspots

Pi-Start “Configuration”

- There are several sections of settings that need to be done within the Configuration page
- You need to click “Apply Changes” after completing each section and wait a few moments for the settings to save before moving to the next section.
- The settings are not all done in order as they are presented on the Pi-Star dashboard

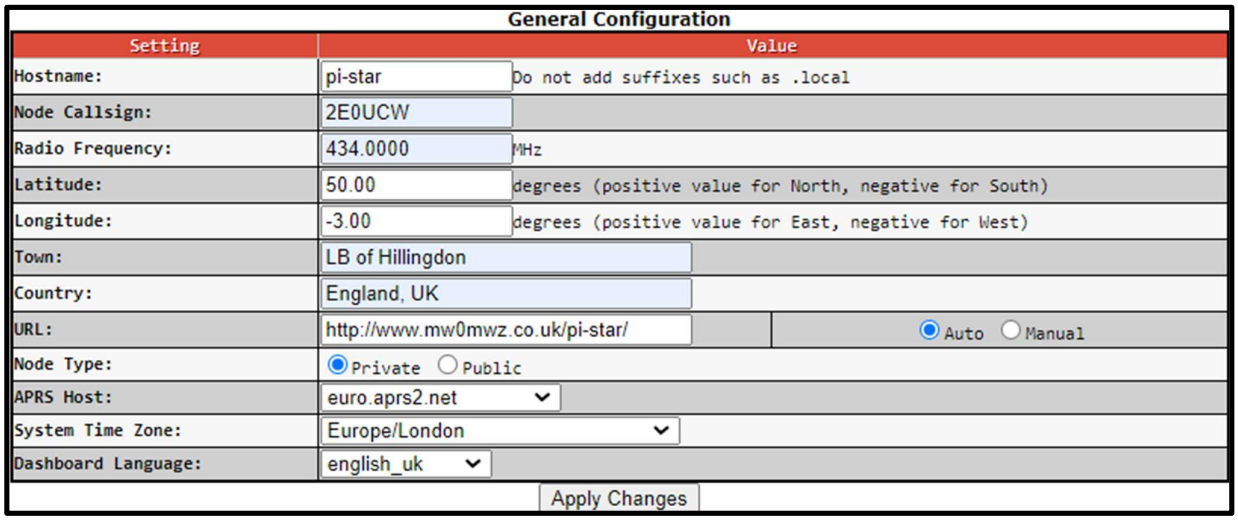
Control Software

- Use the settings as shown as this is a simplex hotspot



General Configuration

- Add in your Call Sign
- Add in the frequency (which must match the channel in the radio) – we use 434.00MHz or 438.800MHz
- Your longitude, latitude, town and country are optional settings
- You can set the URL to Auto so it picks up your QRZ.com data if available
- Set the Node Type to Private so that others can’t use it (you need a NoV to make it Public)
- Apply Changes

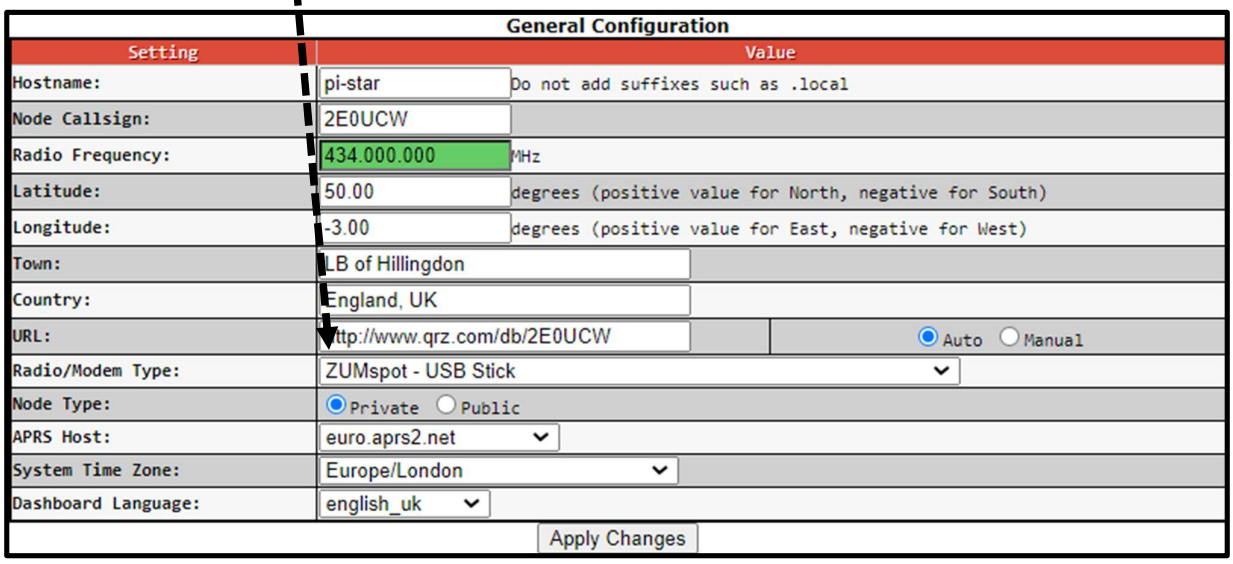


General Configuration

Setting	Value
Hostname:	pi-star — Do not add suffixes such as .local
Node Callsign:	2E0UCW
Radio Frequency:	434.0000 MHz
Latitude:	50.00 degrees (positive value for North, negative for South)
Longitude:	-3.00 degrees (positive value for East, negative for West)
Town:	LB of Hillingdon
Country:	England, UK
URL:	http://www.mw0mwz.co.uk/pi-star/ — Auto / Manual
Node Type:	Private / Public
APRS Host:	euro.aprs2.net
System Time Zone:	Europe/London
Dashboard Language:	english_uk

Apply Changes

- After saving, there is an additional field that appears – Radio/Modem Type
- Choose ZUMspot – USB Stick
- Apply Changes



General Configuration

Setting	Value
Hostname:	pi-star — Do not add suffixes such as .local
Node Callsign:	2E0UCW
Radio Frequency:	434.000.000 MHz
Latitude:	50.00 degrees (positive value for North, negative for South)
Longitude:	-3.00 degrees (positive value for East, negative for West)
Town:	LB of Hillingdon
Country:	England, UK
URL:	ttp://www.qrz.com/db/2E0UCW — Auto / Manual
Radio/Modem Type:	ZUMspot - USB Stick
Node Type:	Private / Public
APRS Host:	euro.aprs2.net
System Time Zone:	Europe/London
Dashboard Language:	english_uk

Apply Changes

- After the completion of the above step, you will have one more setting to add in the same section
- CCS7/DMR ID – Add in your 7 digit DMR ID number
- If you don't have a DMR ID, apply for one here - https://register.ham-digital.org/

General Configuration

Setting	Value
Hostname:	pi-star — Do not add suffixes such as .local
Node Callsign:	2E0UCW
CCS7/DMR ID:	2351487
Radio Frequency:	434.000.000 MHz
Latitude:	50.00 degrees (positive value for North, negative for South)
Longitude:	-3.00 degrees (positive value for East, negative for West)
Town:	LB of Hillingdon
Country:	England, UK
URL:	http://www.qrz.com/db/2E0UCW — (•) Auto ( ) Manual
Radio/Modem Type:	ZUMspot - USB Stick
Node Type:	(•) Private ( ) Public
APRS Host:	euro.aprs2.net
System Time Zone:	Europe/London
Dashboard Language:	english_uk

Apply Changes

MMDVMHost Configuration

- Select DMR Mode
- Apply Changes

MMDVMHost Configuration

Setting	Value
DMR Mode:	RF Hangtime: 20 Net Hangtime: 20
D-Star Mode:	RF Hangtime: 20 Net Hangtime: 20
YSF Mode:	RF Hangtime: 20 Net Hangtime: 20
P25 Mode:	RF Hangtime: 20 Net Hangtime: 20
NXDN Mode:	RF Hangtime: 20 Net Hangtime: 20
YSF2DMR:	
YSF2NXDN:	
YSF2P25:	
DMR2YSF:	Uses 7 prefix on DMRGateway
DMR2NXDN:	Uses 7 prefix on DMRGateway
POCSAG:	POCSAG Paging Features
MMDVM Display Type:	None — Port: /dev/ttyAMA0 — Nextion Layout: G4KLX

Apply Changes

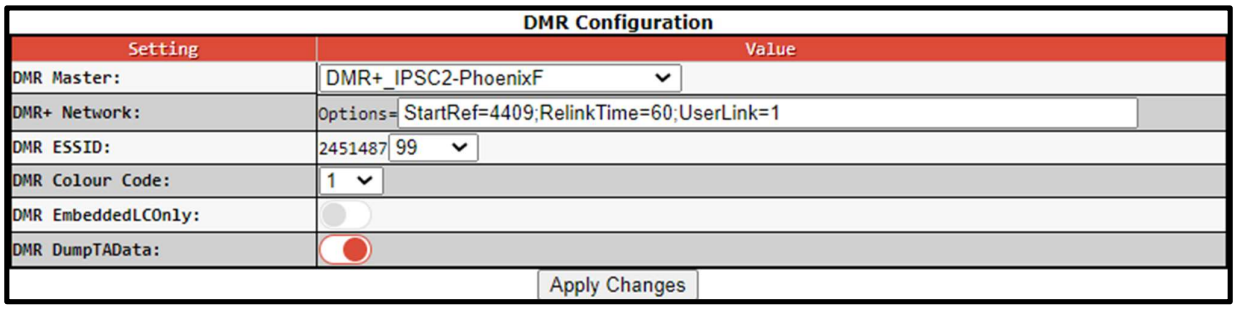
DMR Configuration

- This section only appears after completion of the previous setup
- Decide on a DMR Master for either Phoenix [DMR+], DV Scotland [DMR+] or Brandmeister
    - DMR+_IPSC2-PhoenixF
    - DMR+_IPSC2-DVScotland
    - BM_United_Kingdom_2341
    - BM_Ireland_2721

DMR+_IPSC2-PhoenixF [http://phoenix-f.opendmr.net/ipsc/]
DMR+_IPSC2-DVScotland [http://dmr1.dvscotland.net/ipsc/#]

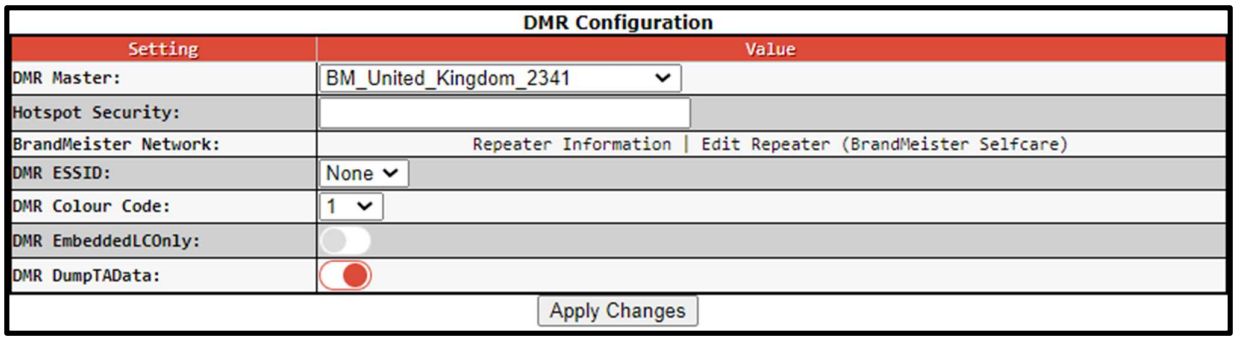
- You can have the hotspot auto connect to a reflector by adding the following on the DMR+ Network Line
    - StartRef=4xxxx;RelinkTime=60;UserLink=1
    - StartRef – Decide on a reflector to default to [http://www.dmr-uk.net/index.php/layout/]
    - RelinkTime – If you change reflectors, this is the amount of idle time before going back to the default reflector

- Note that you can use talk groups (group calls) and reflectors (private calls) –Ref 4000 to disconnect the active Reflector.
- DMRESSID – If you use more than one hotspot on a network, select different numbers to define each hotspot from 00 to 99
- DMR Colour Code – Make sure this matches the hotspot channel in your radio
- Remember to Apply Changes once done

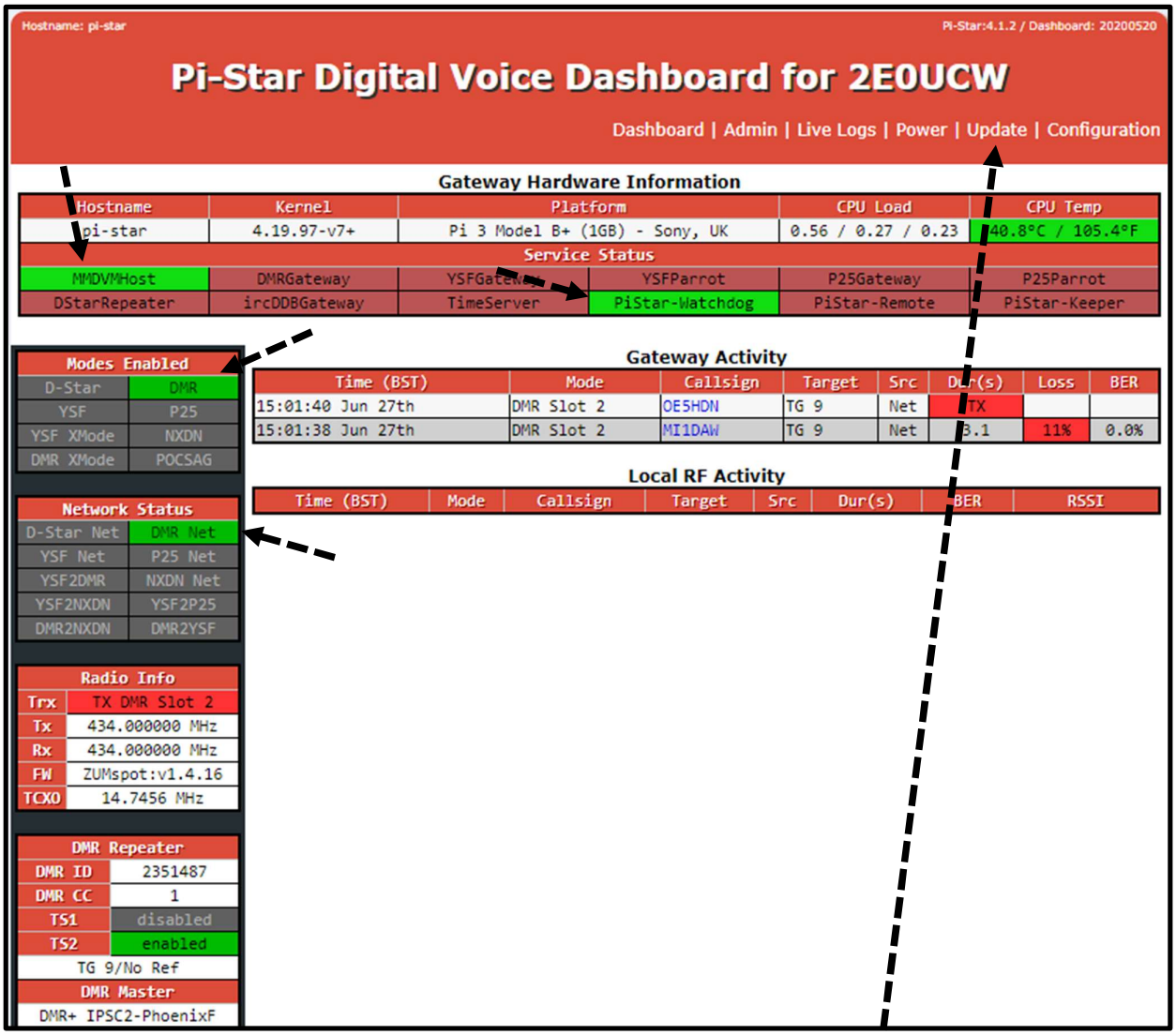


BM_United_Kingdom_2341 / BM_Ireland_2721

- The settings are nearly identical to the DMR+ IPSC2 page
- Two exceptions
    - Hotspot Security – this is linked to the BM Selfcare page on the BM website
    - BM Network – no need to do anything here
- Remember to Apply Changes once done



- Once you have completed all the above, click on “Admin” at the top of the page
- This page will show all incoming and outgoing transmissions with the duration and BER rate
- Ensure the Service Status shows MMDVMHost & PiStar-Watchdog in green
- Ensure the Modes Enabled shows DMR in green
- Ensure the Network Status shows DMR Net in green



- If you do not run this hotspot/pi 24/7, then before powering off, press the Update button
- This will update various parts of the Pi-Star software including the DMR ID database
- After completing this, press the Power button then Shutdown – read the notice that appears
- Not using the proper shutdown procedure can lead to corruption of the Micro SD card
- If you leave Pi-Star running 24/7, the software will automatically download and install the updates during the early hours of the morning, so no user intervention is required.

NOTES

- If you get asked for a Username and Password, it is User “pi-star” and Password “raspberry”

- If you are new to using a RPi, do not worry about the temperature block going amber – these devices are ok up to around 80C/85C – over the hot days in late June 2020, mine ran around 55C which is ok.

- You can run the RPi anywhere where it can get decent Wi-Fi signal (or use LAN) however keep it in the open to allow a decent Rx/TX signal between the Zumspot and radio.

- Remember to power down your Raspberry Pi before removing the power or removing the Zumspot USB