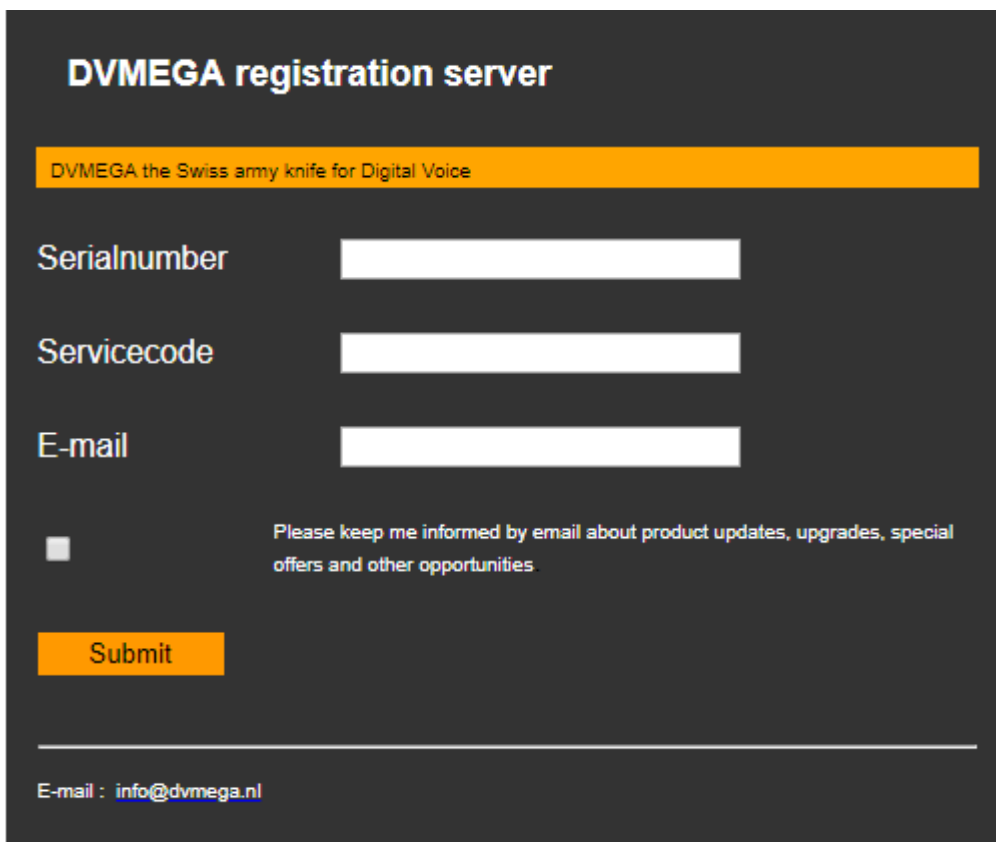# DVMEGA-CAST

Dear DVMEGA-Cast user,

Congratulations with your new device. In this manual we will show you how to configure, use and register your device. At the end of this manual you will also find a list of known items we are working on, including feature requests we have received from users. As you might already know, we love feedback so we can improve the units we build, and adjust them to your way of use.

1: Registration:

Why register? Simple question, and you do want to know why. Registration is required to get your newest firmware for your device. In the past we have put firmware online as download, but with this system you will receive the updates via email.

Please open http://registration.dvmega.nl and fill in the fields.

As you can see, we kept it simple and easy. Serialnumber and servicecode can be found at the rear-panel, and on the registration-card you received together with this unit. Once registered you will receive a confirmation via email.

So I am registered now, what happens now?

Your registration connects your email-address to this device. We are not bothering you with any unwanted emails, if you check keep me informed, we will send you info on updates, new devices and/or upgrades available.

2: Let's get started please!

We are now ready to start using the device. But we first need to configure it.

Please power the device (12 VDC typically), and touch the display. *Take care to use a good and clean powersupply, some powersupplies can generate interference/noise.* Make sure to use a PSU that can handle 1 or more Amps. Now you will get a screen that shows it connecting, and then the first screen appears

MODE1 DSTAR:
For D-Star you do need to enter all fields, skipping a field can result in D-Star not working.

Check if there is D-Star in the top left of the display, and click the little gear-symbol in the right bottom, then start by touching the top field. Confirm with the 'ok'-sign.

Example:

```
ID      2041234         (for ccs7 use)
CALL    PE1ABC
RPT1    PE1ABC B
RPT2    PE1ABC G
YOUR    CQCQCQ          note: please put 2 spaces behind it. (autoindentation in progress)
INFO    CAST            any 4 letter word will do here
```

Note: your = CQCQCQ[space][space], we added a button in the [123]-screen/menu

Please confirm these settings, and you will revert to the D-Star screen.

MODE2 DMR:

To select DMR please touch the 3 tiny-circle symbol in the right bottom once. In the top DMR appears. Now touch the gear-symbol again.

Example for these fields:

```
ID      2041234         your DMR-ID
TG1     204             your favorite TG (you can change later in the dmr-screen)
TG2 – TG5 are not used so far.
```

Please confirm these settings, and you will return to the DMR screen.

MODE3 Fusion:

To select Fusion please touch the 3 tiny-circle symbol in the right bottom once. In the top Fusion appears. In this mode we use the callsign as entered in D-Star, no need to configure.

Are we ready now? Well almost!

Please connect the device to your internet-connection via a cable. Once we have this we can start to do the settings in Pi-star which runs in the background.

On your pc, please open http://pi-star and you will get the configuration-screen.
Most settings are already done, you only need to enter your personal info, and nearest servers.

In the main menu click Configuration.

The Default Username and Password are : pi-star / raspberry

MMDVM Host configuration will look like this:

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: None ▼	Nextion Layout: G4KLX ▼	

Apply Changes

Here you are able to choose what modes are active. No other modes then shown are currently available. Please note, that the modes to use as 'transcoding' like YSF2DMR will not work for now. You can test with DMR2NXDN for example. As you can see no display is selected, we display in a different way. And apply to save.

General Configuration:

Setting	Value	
Hostname:	pi-star	Do not add suffixes such as .local
Node Callsign:	PE1MSZ	
CCS7/DMR ID:	204505309	
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:	Wernhout	
Country:	NL	
URL:	http://www.qrz.com/db/PE1MSZ	⊙ Auto ○ Manual
Radio/Modem Type:	DV-Mega Cast Base Radio (Main Unit) ▾	
Node Type:	⊙ Private ○ Public	
System Time Zone:	Europe/Amsterdam ▾	
Dashboard Language:	english_uk ▾	

Apply Changes

These settings are very important. Normal settings are shown here, ***do not alter the modem-type, it is set correctly for the DVMEGA-Cast***. Frequency is not used by the cast (we use internet), so do not mind the frequency. Just fill in Callsign, and DMR-ID here, and you can select you town and locator if you like. And apply to save.

There is another option now: Hotspot mode. If you mounted the radio-board in the back, you can switch to hotspot-mode by selecting 'DV-MEGA Cast Hotspot' (70 or dual) in the modem selection. To revert back, select 'DV-MEGA Cast Base Radio (Main Unit)'

DMR-configuration:

DMR Configuration

Setting	Value
DMR Master:	BM_United_Kingdom_2341 ▾
BrandMeister Network:	Repeater Information | Edit Repeater (BrandMeister Selfcare)
DMR Colour Code:	1 ▾
DMR EmbeddedLCOnly:	◯
DMR DumpTAData:	⬤

Apply Changes

For DMR you already entered your ID in the General screen. Please select your country's server for Brandmeister. Rest of the data is default. And apply to save.

D-Star settings:

As you can see here is your callsign again, and it is already correct in this screen. Just select the D-Star talkgroup you like to start with when you power-up. Changing talkgroup can be done by using the touch-screen as well later, or if you like over here. If you do not like time-anouncements, please disable them here. And Apply to save these settings again.
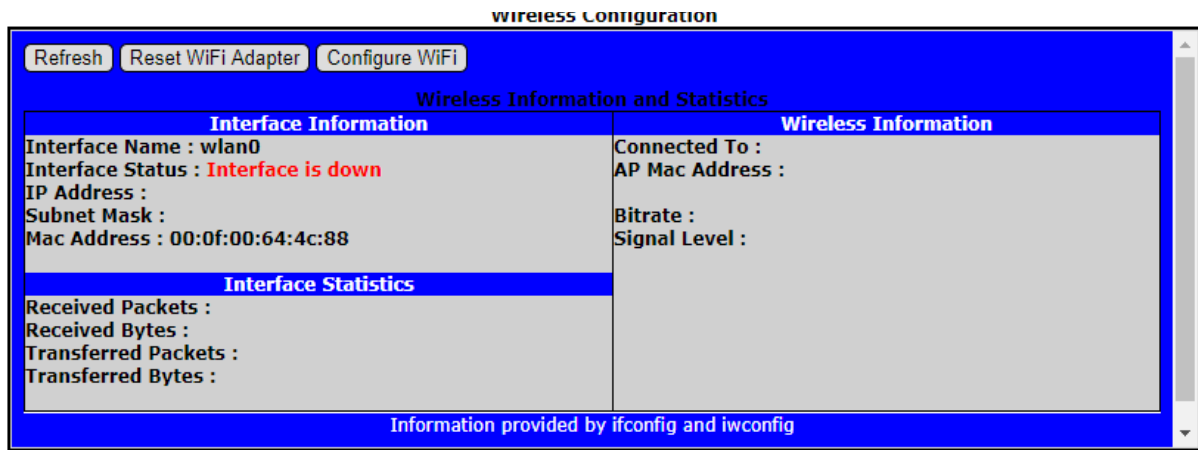
Yaesu System Fusion settings:

For Yaesu you need to select the YSF Startup Host you want to connect here. In a later version we will also include it in the display of the radio. Just select the host you like to connect and click Apply for saving the settings.

WIFI-settings:

Wireless Configuration

| Refresh | Reset WiFi Adapter | Configure WiFi |

Wireless Information and Statistics

Interface Information

Interface Name : wlan0
Interface Status : Interface is down
IP Address :
Subnet Mask :
Mac Address : 00:0f:00:64:4c:88

Wireless Information

Connected To :
AP Mac Address :

Bitrate :
Signal Level :

Interface Statistics

Received Packets :
Received Bytes :
Transferred Packets :
Transferred Bytes :

Information provided by ifconfig and iwconfig

To add your wifi, simply click on configure wifi. Make sure the wifi-dongle is connected to the radio, this screen will only be shown when this dongle is available.

Now we can finally start using the system!

DVMEGA-Cast regular use hints:

Once you boot the unit, the speaker will be lit 'light-blue'. As soon as you touch the display, the color will change to blue-green and after the unit is communicating with the pi-star image (inside), it will be lit blue.

Blue Light   >   Waiting for RX or TX
Green Light   >   Receiving audio form either system
Red Light   >   You are Transmitting

1: in D-Star you can link and unlink to reflectors. Touch the small pencil, and fill in the reflector to connect. Same as on a D-Star radio, you enter it with an L at the end to link.

Example: REF001CL , confirm (you see the mainscreen again), press PTT, and you will be connected. Now touch the pencil again, and touch the cq button, and confirm. Now you can do your QSO on REF001C.

2: DMR uses the same method. Touch the pencil, enter the talkgroup, confirm and transmit. Do not change the talkgroup-ID during your QSO, just only when you want to change to another TG.

3: Fusion does not support the input of systems yet via the touchscreen. For this go in the web-interface, and set the system in the configuration-screen.

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Firmware update procedure:

Open the webpage http://pi-star/admin/fw and if requested enter the password (default:pi-star / raspberry, or use the user/password you have set up).

DVMEGA-Cast mainboard update procedure:

Once you received the new FW via email, you can upload and upgrade your radio like this.

- Click "Choose File", and select the zip-file for the mainboard. Typically it will look like:
  [version]_[yourserialnumber].**zip (upload the zip-file!)**
  Please note the firmware is personalized, and cannot work on any other device but yours.

- Click upload FW

The next screen shows the response, and make sure you act as requested in that screen.

Pi-Star Digital Voice – Confirm the Upgrade

Please push the volumeknob, and click the button to update the Display.

Run Upgrade

Please keep the volumeknop pressed for 15 sec.
Once the light in the speaker dims, you can release it
As soon as the update finishes, the unit restarts

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2018.
ircDDBGateway Dashboard by Hans-J. Barthen (DL5DI),
MMDVMDash developed by Kim Huebel (DG9VH),
Need help? Click here for the Support Group
Get your copy of Pi-Star from here.

- First press the volume-button in, and keep it pushed in.

- Click the **Run Upgrade** button on the screen (keep the volume-button pushed!) .

- Once the light in the speaker dims, you can release the volume-button.

  Note: upgrading can take up to a few minutes depending on the size of the file. Do not powercycle the unit during the process. The unit will restart itself after the upgrade has completed.you will be redirected to the dashboard.

Pi-Star Digital Voice – Update is Ready

Your update has been done

UPDATE HAS BEEN PROCESSED

Your unit has been updated, and will reboot now. We will revert to the dashboard in 50 seconds.

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2018.
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DVMEGA-Cast Display update procedure:

Open the webpage http://pi-star/admin/fw and if requested enter the (default:pi-star / raspberry, or use the user/password you set up here).

- Click 'choose file' in the DVMEGA-Cast Display section.

- Select the file you received. Typically a .zip-file (do not unzip!).

- After selecting it, click 'Upload Firmware'

- On the following screen click 'Run Upgrade'.

Pi-Star Digital Voice - Confirm the Upgrade

Please click the button to update the Display.

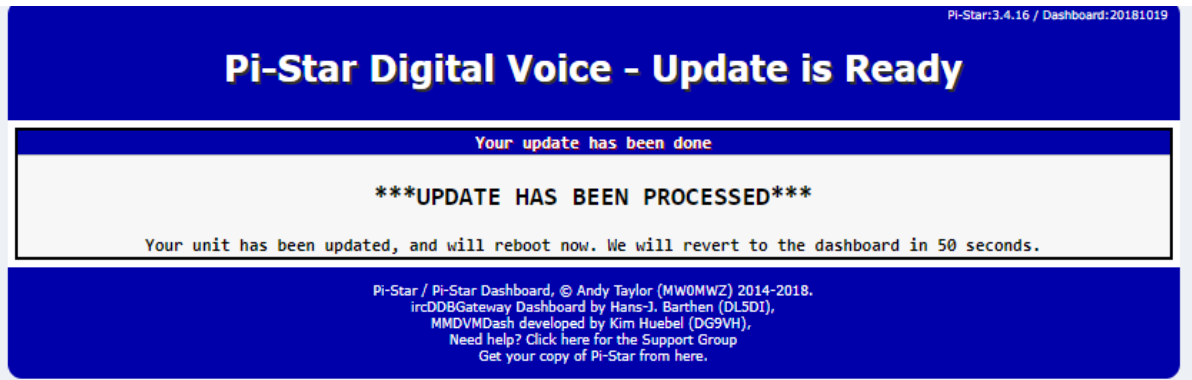[Run Upgrade]

As soon as the update finishes, the display restarts

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Once the update has finished you get the following screen:

Pi-Star Digital Voice - Update is Ready

Your update has been done

UPDATE HAS BEEN PROCESSED

Your unit has been updated, and will reboot now. We will revert to the dashboard in 50 seconds.

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2018.
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You will get the dashboard once the unit has restarted.

DVMEGA radio-board Upgrade procedure:

The DVMEGA-Cast can also be equipped with a single or dual-band raspberry-pi radio. Special instructions will be available soon. This way the radio is also able to act as a hotspot for your portable radio.

To upgrade the radio-module open the webpage http://pi-star/admin/fw and if requested enter the password (default:pi-star / raspberry).

In the DVMEGA radio-board section do the following:

- Click Choose file, and select the standard DVMEGA pi-radio firmware (free downloadable from http://dvmega.auria.nl)

- Click Upload Firmware

- In the following screen click Run Upgrade, and wait until the radio restarts.

As the update finished you will get the next page:

Once the radio has restarted you will be redirected to the dashboard.

Pi-Star update/upgrade

- In the config menu click update, and wait to finish.

- In the config - expert menu now click upgrade.

Repeating these steps can be done until no more updates/upgrades are available.

Known things we know and like to do soon:

- Callsign setup from display auto-sync to pi-star config.

- Off function does not switch off all functions, needs changing.

- Option to enable/disable modes from display

- *Volume is not able to be set to totally quiet. (low level stays) FIXED*

- Callsign/DMR-ID showing in the display during receive.

- Option to select Fusion systems in the display

- Update the display for a uniform setup-menu (all in one screen)

- Implement more modes like NXDN and/or P25

- Display sometimes cannot start if audio came in first (needs a tiny fix)

- External GPS-unit for aprs and location service.

Important note:

We love to hear from you, so if you have a great idea, or an issue, or feature request, please contact the DVMEGA-team. We take our hobby seriously like you do!

I created a tracker-webpage to track feature-requests and questions. Please register at:
https://tracker.pe1msz.nl

How to recover the microSD when corrupted.

Suppose for some reason you do need to re-image your microSD-card, then read below on what and how to do this.

1. Disconnect the unit, and remove the top-cover of the radio (4 tiny screws)

2. near the back of the speaker, the small microSD-card is visible at the edge of the nano-pi. Please remove that.

3. Download the image-file from our website, and unzip it. Please remember the file-location.

4. Insert the SD card into your SD card reader. You can use the SD card slot if you have one, or an SD adapter in a USB port. Note the drive letter assigned to the SD card. You can see the drive letter in the left hand column of Windows Explorer, for example **G:**

5. Download the Win32DiskImager utility from the [Sourceforge Project page](#) as an installer file, and run it to install the software.

6. Run the Win32DiskImager utility from your desktop or menu.

7. Select the image file you extracted earlier.

8. In the device box, select the drive letter of the SD card. Be careful to select the correct drive: if you choose the wrong drive you could destroy the data on your computer's hard disk! If you are using an SD card slot in your computer, and can't see the drive in the Win32DiskImager window, try using an external SD adapter.

9. Click 'Write' and wait for the write to complete.

10. Exit the imager and eject the SD card.

11. Carefully put the microSD-card back in the NanoPi.

12. Close the cover, and power up the unit.

Note: all settings in the nanopi are now default again, and is prepared as if you just received the unit. Please follow above instructions to set pi-star again to your preferences.