

# Setting up Pi-Star DMR hotspot for local use

In this example I use a Raspberry Pi3 (because of the wired ethernet) and a MMDVM\_HS\_HAT clone.

Download the newest Pi-Star image and proceed with flashing the card.

Refer to: <http://pistar.uk>

default username: **pi-star**

default password: **raspberrypi**

## 1. Get Pi-Star running and configure for internet use

Enter data section after section and „Apply Changes“ each time.

Here is my sample configuration:

Pi-Star:3.4.16 / Dashboard: 20180806

## Pi-Star Digital Voice - Configuration

Dashboard | Admin | Expert | Power | Update | Backup/Restore | Factory Reset

### Gateway Hardware Information

Hostname	Kernel	Platform	CPU Load	CPU Temp
pi-star	4.9.35-v7+	Pi 3 Model B (1GB) - Sony, UK	0.89 / 0.5 / 0.21	41.9°C / 107.4°F

### Control Software

Setting	Value
Controller Software:	<input type="radio"/> DStarRepeater <input checked="" type="radio"/> MMDVMHost (DV-Mega Minimum Firmware 3.07 Required)
Controller Mode:	<input checked="" type="radio"/> Simplex Node <input type="radio"/> Duplex Repeater (or Half-Duplex on Hotspots)

### MMDVMHost Configuration

Setting	Value
DMR Mode:	<input checked="" type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
D-Star Mode:	<input type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
YSF Mode:	<input type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
P25 Mode:	<input type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
NXDN Mode:	<input type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
YSF2DMR:	<input type="checkbox"/>
YSF2NXDN:	<input type="checkbox"/>
YSF2P25:	<input type="checkbox"/>
DMR2YSF:	<input type="checkbox"/> Uses 7 prefix on DMRGateway
DMR2NXDN:	<input type="checkbox"/> Uses 7 prefix on DMRGateway
POCSAG:	<input type="checkbox"/> POCSAG Paging Features
MMDVM Display Type:	OLED ▼ Port: /dev/ttyAMA0 ▼ Nextion Layout: G4KLX ▼

### General Configuration

Setting	Value
Hostname:	da0not-dmr Do not add suffixes such as .local
Node Callsign:	DA0NOT
CCS7/DMR ID:	2627576
Radio Frequency:	433.625.000 MHz
Latitude:	48.99 degrees (positive value for North, negative for South)
Longitude:	8.34 degrees (positive value for East, negative for West)
Town:	Karlsruhe, JN48EX
Country:	Germany
URL:	http://www.qsl.net/db/da0not <input type="radio"/> Auto <input checked="" type="radio"/> Manual
Radio/Modem Type:	MMDVM_HS_Hat (DB9MAT & DF2ET) for Pi (GPIO)
Node Type:	<input type="radio"/> Private <input checked="" type="radio"/> Public
System Time Zone:	Europe/Berlin
Dashboard Language:	german_de

Apply Changes

### DMR Configuration

Setting	Value
DMR Master:	BM_Germany_2622
BrandMeister Network:	Repeater Information   Edit Repeater (BrandMeister Selfcare)
DMR Colour Code:	1
DMR EmbeddedLCOnly:	<input type="checkbox"/>
DMR DumpTADData:	<input checked="" type="checkbox"/>

Apply Changes

## General Configuration > Node Type = Public (every ID can use it)

Check out and enjoy...

There are plenty of tutorials out on youtube and several websites how to configure Pi-Star.

## 2. Create the local DMR network

Installing HBLink:

HBLink can run on a separate RasPi or Linux PC. Installing on a Pi-Star hotspot runs into difficulties because Pi-Star is using its own firewall. Access over AREDN discovered several problems during testing. HBLink may run parallel on a native MMDVM installation.

First update your system. Rename the RasPi using **raspi-config** (here: **DMRMaster**).

Updates:

```
sudo apt update
sudo apt upgrade
```

Install git:

```
sudo apt install git
```

Download the packages:

```
git clone https://github.com/n0mjs710/dmr_utils
git clone https://github.com/n0mjs710/HBLink
```

Auto install dmr\_utils:

```
cd dmr_utils
sudo ./install.sh
```

Change over to the HBLink folder:

```
cd ..
cd HBLink/
```

Copy and edit configuration:

```
cp hblink-SAMPLE.cfg hblink.cfg
nano hblink.cfg
```

Make changes:

```
[LOGGER]
...
LOG_LEVEL: INFO
...

[MASTER-1]
MODE: MASTER
ENABLED: True
REPEAT: True
EXPORT_AMBE: False
IP:
PORT: 62031
PASSPHRASE: s3cr37w0rd
GROUP_HANGTIME: 5
...

[REPEATER-1]
...
ENABLED: False
```

Make sure you edit the LOG\_LEVEL, the MASTER-1 port and disable the REPEATER-1.

Pi-Star has its own firewall and is blocking many ports per default.  
Changing port to 62031 (Brandmeister) fixes this problem.

Save and exit (CTRL + X, Y, ENTER)

### 3. Make HBLink autostart

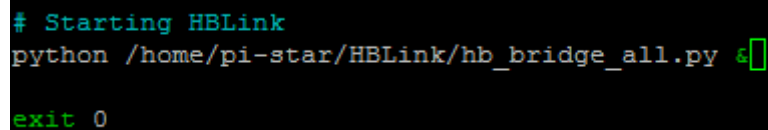
Edit the autostart file:

```
sudo nano /etc/rc.local
```

Add these lines before the exit 0:

```
# Starting HBLink  
python /home/pi-star/HBLink/hb_bridge_all.py &
```

It should look like this:



```
# Starting HBLink  
python /home/pi-star/HBLink/hb_bridge_all.py &  
  
exit 0
```

Don't forget the & at the end...

Save and exit (CTRL + X, Y, ENTER)

Restart the hotspot (sudo reboot) to get the configuration active.

## 4. Create AREDN DHCP Address Reservation

The screenshot shows the AREDN web interface for a Pi-Star Digital Voice Dashboard. The browser address bar shows 'dl4fly-052-mtrb.local.mesh:8080/'. The interface has a navigation menu with 'Port Forwarding, DHCP, and Services' selected. Below the menu are buttons for 'Help', 'Save Changes', 'Reset Values', and 'Refresh'.

**DHCP Address Reservations**

Hostname	IP Address	MAC Address	
da0not-dmr	10.97.253.57	[Redacted]	Del
DMRMaster	10.97.253.55	[Redacted]	Del
	- IP Address -		Add

**Advertised Services**

Name	Link	URL	
MeshCha	<input checked="" type="checkbox"/>	http://DL4FLY-052-MTRB:8080/meshchat	Del
	<input type="checkbox"/>	::DL4FLY-052-MTRB: /	Add

**Current DHCP Leases**

da0not-dmr	10.97.253.57	[Redacted]	Add
DL4FLY-CFF9	10.97.253.62	[Redacted]	Add
DMRMaster	10.97.253.55	[Redacted]	Add

**Port Forwarding**

Interface	Type	Outside Port	LAN IP	LAN Port	
WAN	TCP		- IP Address -		Add

The HBLink unit should now be visible on Mesh-Status page:

Local Hosts	Services
DL4FLY-052-MTRB.local.mesh (wan)	<a href="#">MeshChat-A12</a>
● DMRMaster.local.mesh	

## 5. Reconfiguring Pi-Star for local net

In Pi-Star go to **Configuration > Expert > MMDVMHost**

Scroll down to DMR Network. Make your changes according to your HBLink settings. You can activate both timeslots.

DMR Network	
Enable	1
Address	DMRMaster.local.mesh
Port	62031
Jitter	360
Password	s3cr37w0rd
Slot1	1
Slot2	1
Debug	0
ModeHang	20

System Fusion Network

### Test the connection:

You can gain access with putty or with the Pi-Star GUI

### Configuration > Expert > SSH Access

Pi-Star: 3.4.16 / Dashboard: 20180806

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Upgrade | Backup/Restore | Configuration

Quick Edit: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMR GW | YSF GW | P25 GW | NXDN GW

Full Edit: DMR GW | PiStar-Remote | WiFi | BM API | DAPNET API | System Cron | RSSI Dat | Tools: CSS Tool | SSH Access

It is possible to see if the connection is working by reviewing the logfile of Pi-Star. In a SSH shell you type:

```
tail -f /var/log/pi-star/MMDVM-2018xxxx.log
```

Pi-Star creates an individual logfile each day.

You should see something like this:

```
pi-star@da0not-dmr(ro):~$ tail -f /var/log/pi-star/MMDVM-2018-10-07.log
I: 2018-10-07 10:34:25.846 Call Hang: 3s
I: 2018-10-07 10:34:25.846 TX Hang: 4s
I: 2018-10-07 10:34:25.846 Mode Hang: 20s
I: 2018-10-07 10:34:26.030 Interfaces Info
I: 2018-10-07 10:34:26.031 IPv4: lo:127.0.0.1
I: 2018-10-07 10:34:26.031 IPv4: eth0:192.168.1.110
I: 2018-10-07 10:34:26.031 Default interface is : eth0
I: 2018-10-07 10:34:26.032 IP to show: eth0:192.168.1.110
M: 2018-10-07 10:34:26.032 MMDVMHost-20180802_Pi-Star is running
M: 2018-10-07 10:34:35.870 DMR, Logged into the master successfully
```

**Have fun... 73 Timm DL4FLY**