

Manual of configuration MMDVM Nano hotspot PRS with Pi-Star and Windows



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Pi-Star is a software MW0MWZ <https://www.pistar.uk/>

PiStar.UK - Pi-Star Digital Voice Software

Information and tutorials on the DMR in France Open-DMR.fr

OPEN-DMR.fr

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1 - Foreword

The nano Hotspot is a creation of the amateur HUANG BI7JTA, it is a digital multi-mode access point MMDVM type for D-Star modes, DMR, C4FM, POCSAG, P25 and NXDN.

The Nano Hotspot is available in Europe in the Passion Radio store:

<https://www.passion-radio.com/digital/nano-mmdvm-624.html>

It comes assembled and tested before shipment and works with BlueDV application for Windows, Linux and Android, as well as P-Star Linux.

The Nano Hotspot included: 1 card Nano mmdvm_ PCBhs_hat 433Mhz with welded ceramic antenna, one 3D printing casing, one fan, one NanoPi NEO 512M with 1 WIFI dongle, one USB cable, one OLED 2,4cm and a mini-SD card 16GB with edited image.

Warning :

Be sure to use ae food USB quality and stable 5V and 2A, improper diet will result in instability of the error rate (BER) and a overvoltage will burn the and NanoPi the map mmdvm_hs_hat !

2 - Connecting to the Admin Interface Nano hotspot PRS

The method described below requires no knowledge of Linux, Pi-Star software is already installed on the SD card Nano hotspot, and configuration can be performed directly from a Windows web browser.

The access address is the hotspot IP or via the URL Next enter in a web browser:

Via a web browser: <http://pi-star/>

Via a mobile browser: <http://pi-star.local>

Login: pi-star

Password: raspberry

There are 3 ways to connect the Pi-Star hotspot administration.

Method 1: Via LAN port RJ45 hotspot log in on the internet box or a router. The box or router will automatically allocate an IP address.

To connect the LAN port of the hotspot directly on the RJ45 port on a laptop, you must use a crossover cable RJ45 / reversed.

To access the administration interface, open a Firefox or Chrome on the IP hotspot.

In Windows, to find the IP address assigned to the Nano hotspot, install the software IPScan: <https://www.advanced-ip-scanner.com/>, then start a network scan and locate the IP address in front of the PI-STAR device.

Paste this IP address into a web browser to access the administration of PI-STAR.

Method 2: Via default WIFI access point, a wifi router, smartphone or tablet WiFi in access point mode.

You need to create a wireless access point from a cellphone, a tablet or a wifi router with the following information :

Name of the access point (SSID) : 888888-2G

Password: 0123456789

Turn off and on the hotspot to let him connect to the default access point 888888-2G.

Method 3: Via another wireless access point, copy the configuration file to be generated from the site http://www.pistar.uk/wifi_builder.php

Then copy this configuration file in the SDCard of Nano Pi in the root directory.

3 - Setting the Nano hotspot PRS with Pi-Star

Before first use, the default language of the interface may need to be changed. If you have a Chinese interface, don't panic, follow this simple guide to put in english or other language.

at) Changing the Interface Language

To change the language in english, visit <http://pi-star/admin/configure.php> or click on the last menu upper right (framed in blue):

Hostname: pi-star Pi-Star: 3.4.16 / 仪表盘: 20180926

Pi-Star 数字语音 仪表盘 -

仪表盘 | 管理 **配置**

启动的模式	
D-Star	DMR
YSF	P25
YSF XMode	NXDN

网关上最后 20 个呼叫								
时间 (CEST)	模式	呼号	目标	源	时长 (s)	丢失	误码率	
16:16:27 Oct 5th	DMR Slot 2		TG 208	Net	3.8	0%	0.0%	

最后 20 个本地呼叫							
时间 (CEST)	模式	呼号	目标	源	时长 (s)	误码率	RSSI

网络状态	
D-Star Net	DMR Net
YSF Net	P25 Net

Then enter the following login to connect to the admin:

User: pi-star

password: raspberry

Search in the page where the drop down menu is chinese_cn, then change it to english_uk or your favorite language.

节点类型:	<input checked="" type="radio"/> Private <input type="radio"/> Public
时区:	Europe/Paris
仪表盘语言:	chinese_cn

应用设置

Press the button below to apply the changes and go to the Pi-Star home.

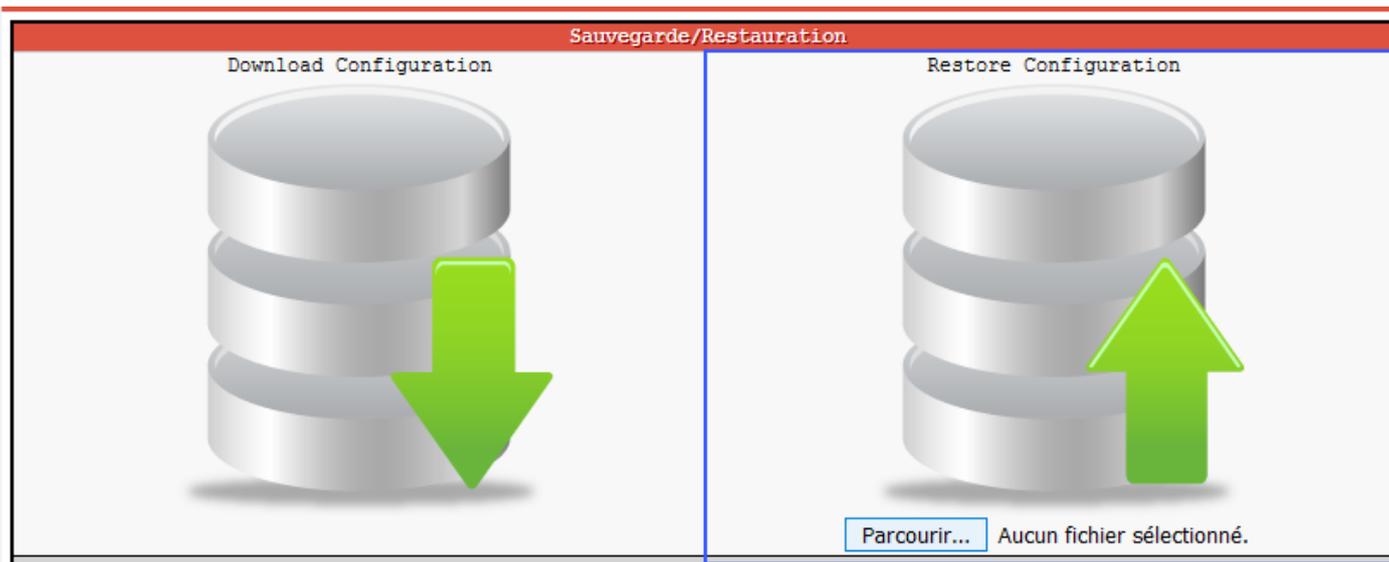
b) Installing the default configuration file

The image file that is mounted on the Nano Pi is pre-configured with the PI-Star software to run on the DMR Brandmeister network and the master server Brandmeister 2042 (NL).

The default configuration file to download to:

To install the default configuration file, visit http://pi-star/admin/config_backup.php or go to "Settings" then "Backup / Restore".

In the right column, click the "Browse" button to get the configuration file on the computer, then click the green arrow to send the file:



c) Setting the Nano Hotspot with PI-STAR

It remains to configure the information about callsign, radio frequency hotspot, QTH, locator, etc., as shown below.

To access the configuration page, visit: <http://pi-star/admin/configure.php>

Or from the "Configuration" menu at the top right:

The screenshot shows the Pi-Star Relais numérique Console interface. At the top, it displays 'Hostname: pi-star' and 'Pi-Star: 3.4.16 / Console: 20180902'. The main title is 'Pi-Star Relais numérique Console'. Below the title, there are navigation links for 'Console | Administration' and 'Configuration' (which is highlighted with a red box). The interface is divided into two main sections: 'Modes actifs' and 'Activité de la passerelle'.

Modes actifs

D-Star	DMR
YSF	P25
YSF XMode	NXDN

État du réseau

D-Star Net	DMR Net
YSF Net	P25 Net
YSF2DMR	NXDN Net
YSF2NXDN	YSF2P25
DMR2NXDN	DMR2YSF

Activité de la passerelle

Heure (CEST)	Mode	Indicatif	Cible	Source	Durée (s)	Pertes	BER
17:21:36 Sep 23rd	DMR Slot 2			Net	TX		
17:19:33 Sep 23rd	DMR Slot 2			Net	121.0	0%	0.0%
17:10:56 Sep 23rd	POCSAG			Net	0.0	0%	0.0%
17:09:29 Sep 23rd	DMR Slot 2			Net	63.1	0%	0.0%
16:44:03 Sep 23rd	DMR Slot 2			Net	15.2	0%	0.0%
16:34:59 Sep 23rd	DMR Slot 2			Net	1.0	0%	0.0%
16:21:33 Sep 23rd	DMR Slot 2			Net	89.8	0%	0.0%
16:21:23 Sep 23rd	DMR Slot 2			Net	0.5	0%	0.0%
16:20:05 Sep 23rd	DMR Slot 2			Net	66.2	0%	0.0%
16:15:32 Sep 23rd	DMR Slot 2			Net	90.1	0%	0.0%

Step 1 : fill your callsign, ID CCS7, frequency of the hotspot, latitude, longitude, city, country, URL (address of your website), time zone and language of the console:

Configuration générale	
Paramètres	Valeur
Hostname:	pi-star <small>Do not add suffixes such as .local</small>
Indicatif du Node:	
Id CCS7/DMR:	
Fréquence radio:	433.450.000 MHz
Latitude:	degrees (positive value for North, negative for South)
Longitude:	degrees (positive value for East, negative for West)
Ville:	
Pays:	
URL:	<input type="radio"/> Auto <input checked="" type="radio"/> Manual
Modèle Radio/Modem:	STM32-DVM / MMDVM_HS - Raspberry Pi Hat (GPIO) ▾
Type de Node:	<input type="radio"/> Private <input checked="" type="radio"/> Public
Fuseau horaire:	Europe/Paris ▾
Langage de la console:	french_fr ▾

2nd step : Choice DMR server

By default the server DMR Brandmeister BM 2042:

Configuration DMR	
Paramètres	Valeur
Master DMR:	BM_France_2082 ▾
Réseau BrandMeister:	Repeater Information Edit Repeater (BrandMeister Selfcare)
Code Couleur DMR:	1 ▾
DMR LC intégré uniquement:	<input checked="" type="checkbox"/>
DMR DumpTAData:	<input checked="" type="checkbox"/>

EStep 3: Offset setting

Setting the offset is essential for the hotspot to function properly and must be adjusted according to the walkie-talkie and there is no "universal" settings.

The offset is used to adjust the reception frequency and transmission so that the signal match exactly the set frequency.

Default offset RX and TX is set to -500 in the Pi-Star version for the Nano Hotspot PRS.

To set and adjust the offset, go to the menu " **Expert** "Or via the address: http://pi-star/admin/expert/edit_mmdvmhost.php

Pi-Star: 3.4.16 / Console: 20180902

Pi-Star Relais numérique - Configuration

[Console](#) | [Administration](#) | Expert | [Arrêt/Redémarrage](#) | [Mise à jour](#) | [Sauvegarde/Restauration](#) | [Réinitialisation Usine](#)

To change the offset values RX and TX, go in the " **Modem** "Then the fields **RXOffset** and **TXOffset** :

Modem	
Port	/dev/ttyAMA0
TXInvert	1
RXInvert	0
PTTInvert	0
TXDelay	100
RXOffset	-500
TXOffset	-500
DMRDelay	0
RXLevel	50
TXLevel	50
RXDCOffset	0
TXDCOffset	0
RFLLevel	100
CWIdTXLevel	50
D-StarTXLevel	50
DMRTXLevel	50
YSFTXLevel	50
P25TXLevel	50
NXDNIXLevel	50
RSSIMappingFile	/usr/local/etc/RSSI.dat
Trace	0
Debug	0

Tip: To fine tune the RX & TXOffset, use a SDR receiver with TCXO to adjust the frequency correction.

The percentage of error correction (BER) must be as low as possible (Below 1%) and can be check from the dashboard: [http:// pi-star /](http://pi-star/) or <https://brandmeister.network/?page=lh>

Activité de la passerelle							
Heure (CEST)	Mode	Indicatif	Cible	Source	Durée (s)	Pertes	BER
17:51:19 Sep 23rd	DMR Slot 2	F5	TG 20811	Net	33.1	0%	0.0%
17:50:15 Sep 23rd	DMR Slot 2	F4	TG 20811	Net	54.1	0%	0.0%
17:48:12 Sep 23rd	DMR Slot 2	W6	TG 20811	Net	0.5	0%	0.0%
17:46:30 Sep 23rd	DMR Slot 2	F6	TG 20816	Net	2.2	0%	1.0%
17:45:55 Sep 23rd	POCSAG	DA	DAPNET User	Net	0.0	0%	0.0%

Step 5: Configuring TG and reflector from Pi-Star

From the "Administration" menu or from this address: <http://pi-star/admin/>

It is possible to configure the reflectors and talkgroup request directly through the PI-Star web interface:

Modes actifs	
D-Star	DMR
YSF	P25
YSF XMode	NXDN

Active BrandMeister Connections						
Master BrandMeister	Default Ref	Timeout (s)	Active Ref	Static TGs	Dynamic TGs	
BM France 2082	REF0	0 (s)	None	TG2087 TG20811	None	

BrandMeister Manager				
Tools		Active Ref	Link / Unlink	Action
<input type="button" value="Drop QSO"/>	<input type="button" value="Drop All Dynamic"/>	None	<input type="radio"/> Link <input checked="" type="radio"/> UnLink	<input type="button" value="Modify Reflector"/>
Static Talkgroup		Slot	Add / Remove	Action
<input type="text"/>		<input type="radio"/> TS1 <input checked="" type="radio"/> TS2	<input checked="" type="radio"/> Add <input type="radio"/> Delete	<input type="button" value="Modify Static"/>

to use this function, you need to get an API key requested from Brandmeister website and the selfcare :

Then, copy the API key in the "BM API" menu from the "Expert" menu or via the address: http://pi-star/admin/expert/fulledit_bmapikey.php

Pi-Star: 3.4.16 / Dashboard: 20180902

Pi-Star Digital Voice - Expert Editors

Console | Administration | Mise à jour | Upgrade | Sauvegarde/Restauration | 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

key	
apikey	<input style="width: 90%;" type="text"/>

As with all other changes to, click "Apply Changes" for the change are taken into account.

4 - Configuration walkie-talkie with nano hotspot PRS

For DMR equipment and according to the kind of material/brand, configuration are nearly the same.

Channel name: HOTSPOT TG9

Timeslot: 2

Color code: 1

RX Frequency: 433.45000 (or your customized frequency)

Frequency TX: 433.45000 (or your customized frequency)

Talkgroup (contact): TG9

Example channel configuration hotspot for TYT MD-380/390/2017:

Channel Information

Digital/Analog Data

Channel Mode: Digital

Band Width: 12.5kHz

Scan List: None

Squelch: []

RX Ref Frequency: Low

TX Ref Frequency: Low

TOT[s]: 300

TOT Rekey Delay[s]: 0

Power: Low

Channel Name: HOTSPOT TG9

RX Frequency(MHz): 433.45000

TX Frequency(MHz): 433.45000

Admit Criteria: Color Code

Auto Scan: []

Rx Only: []

Lone Worker: []

VDX: []

Allow Talkaround: []

Send GPS Info: []

Receive GPS Info: []

Digital Data

Private Call Confirmed: []

Emergency Alarm Ack: []

Data Call Confirmed: []

Allow Interrupt: []

DCDM Switch: []

Leader/MS: MS

Emergency System: None

Contact Name: TG 9 Local

Group List: RX ALL

Color Code: 1

Repeater Slot: 2

In Call Criteria: Follow Admit Criteria

Privacy: None

Privacy No.: 1

GPS System: None

With the principle of talkgroups and reflectors " **on demand** " it is not necessary to configure a channel by TG.

From the walkie-talkie, you can dial the talkgroup or reflector, then press the PTT to activate the connection to the TG or reflector.

It is also possible to change talkgroup from a web browser or via the administrative console Pi-Star: <http://pi-star/admin/> either via the Selfcare Brandmeister: <https://brandmeister.network/index.php?page=selfcare> and the hotspot left menu:

