The Fusion Net

Contents:

Please read first.

These are Examples of what your Call sign should look like in the Yaesu radio's so You can take advantage of the entire Fusion Net experience.

Examples of what will work:

YOURCALL (Always your best choice) *Example:* **AC2AE**

YOURCALL YOURNAME (Space in between Call and Name) *Example:* **AC2AE JOE**

YOURCALLYOURNAME (No Space in between Call and Name) *Example:* **AC2AEJOE**

Examples of what will NOT work:

YOURCALL-YOURNAME (NO Hyphen or Dashes) *Example:* **AC2AE-JOE**

YOURCALL/YOURNAME (NO Forward/\ or back slashes) *Example:* **AC2AE/JOE**

Character that will NOT work:

! @ # $ % ^ & * ( ) _ - + = { } [ ] | \ / : ; " ' < > , . ?

The Fusion Net Guidelines

Operation and use of The Fusion Net and associated reflectors, simplex nodes, radio-less nodes, DMR, WIRES-X, D-STAR and any VoIP connection shall comply fully with the Amateur Radio Service (Part 97) regulations of the Federal Communications Private Radio Service.

Operators are required to pause a minimum of three seconds between transmissions to allow other stations to break in or let users disconnect from the reflectors. The only time a simplex node can disconnect by radio is when the system is idle.

At the beginning of each transmission, key your microphone two seconds before talking to let the system start. On a normal day you are keying several transmitters every time you push your microphone PTT button. Remember this is a linked system with many users.

There should be absolutely no communications containing obscene, indecent, or profane words, language, or meaning. Discussion of political, religious or potentially sensitive social issues should be avoided.

No one should cause or condone the malicious or intentional interference of anyone's communications on the system. In the spirit of Amateur Radio Service, users should respect and support each other in a courteous and positive manner.

Operators will not communicate with, or discuss the actions of, anyone who violates these rules. This is the responsibility of the The Fusion Net net control stations and they are required to terminate improper operation.

The Fusion Net reserves the right to forbid the use of any repeaters, links, remote bases or voice over internet protocol by anyone who repeatedly violates these rules, or anyone who facilitates or encourages others to do so.

Programming radios varies greatly among different DMR brands and models. Ensure that the following settings are correct on your radio for XLX DMR:

RX frequency set to match Pi-Star (for duplex RX on your radio should match TX on Pi-Star)

TX frequency set to match Pi-Star (for duplex TX on your radio should match RX on Pi-Star)

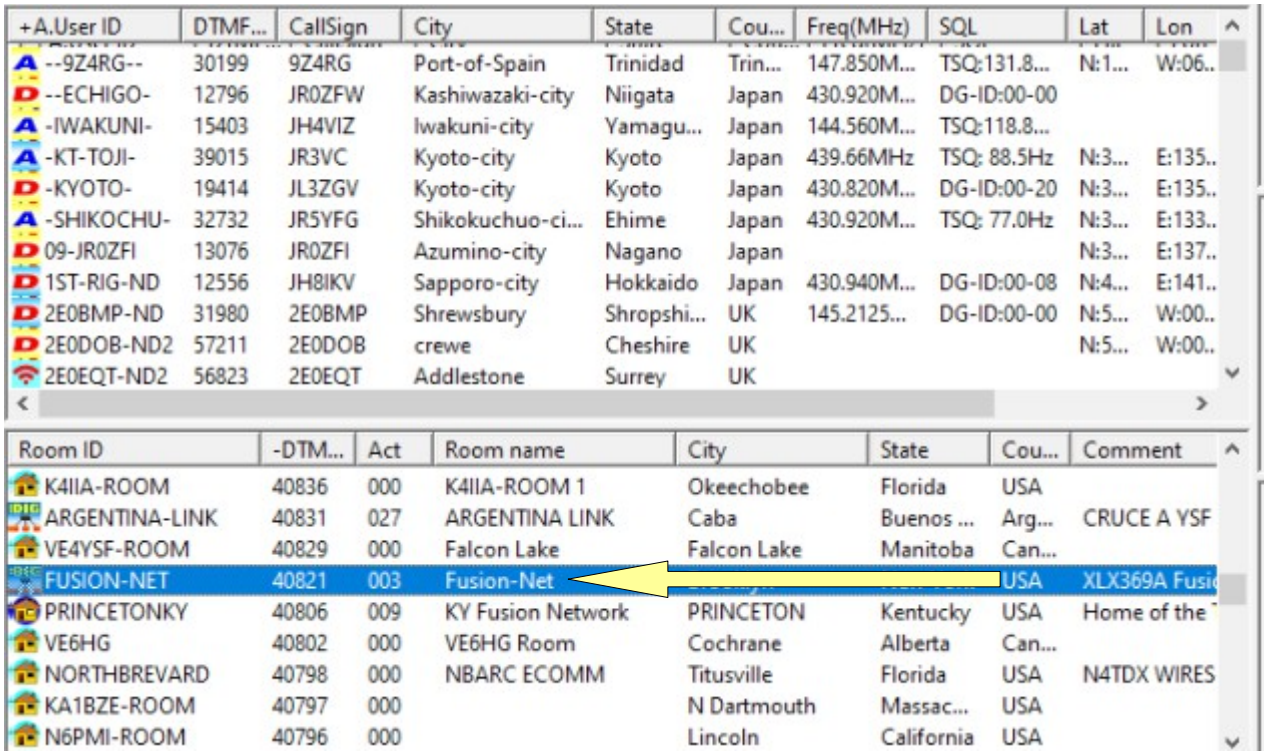
The talkgroup should be set to '6' group-call (a TG9 private-call will not work)
Use an RX group that includes TG6.

The timeslot should be set to 'TS2' (for simplex and duplex hotpots).
Color code should match Pi-Star (default is '1').

The DMR mode should be 'Simplex' for simplex hotspots and 'Repeater' for duplex hotspots.

Wires-X

1. Open your Wires-X software as usual, and allow all node's/room's to populate.



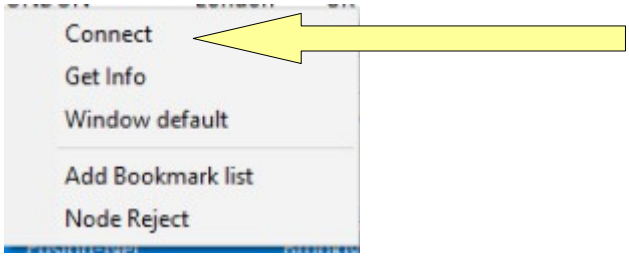
+A.User ID	DTMF...	CallSign	City	State	Cou...	Freq(MHz)	SQL	Lat	Lon
--9Z4RG--	30199	9Z4RG	Port-of-Spain	Trinidad	Trin...	147.850M...	TSQ:131.8...	N:1...	W:06..
--ECHIGO-	12796	JR0ZFW	Kashiwazaki-city	Niigata	Japan	430.920M...	DG-ID:00-00		
-IWAKUNI-	15403	JH4VIZ	Iwakuni-city	Yamagu...	Japan	144.560M...	TSQ:118.8...		
-KT-TOJI-	39015	JR3VC	Kyoto-city	Kyoto	Japan	439.66MHz	TSQ: 88.5Hz	N:3...	E:135..
-KYOTO-	19414	JL3ZGV	Kyoto-city	Kyoto	Japan	430.820M...	DG-ID:00-20	N:3...	E:135..
-SHIKOCHU-	32732	JR5YFG	Shikokuchuo-ci...	Ehime	Japan	430.920M...	TSQ: 77.0Hz	N:3...	E:133..
09-JR0ZFI	13076	JR0ZFI	Azumino-city	Nagano	Japan			N:3...	E:137..
1ST-RIG-ND	12556	JH8IKV	Sapporo-city	Hokkaido	Japan	430.940M...	DG-ID:00-08	N:4...	E:141..
2E0BMP-ND	31980	2E0BMP	Shrewsbury	Shropshi...	UK	145.2125...	DG-ID:00-00	N:5...	W:00..
2E0DOB-ND2	57211	2E0DOB	crewe	Cheshire	UK			N:5...	W:00..
2E0EQT-ND2	56823	2E0EQT	Addlestone	Surrey	UK				

Room ID	-DTM...	Act	Room name	City	State	Cou...	Comment
K4IIA-ROOM	40836	000	K4IIA-ROOM 1	Okeechobee	Florida	USA	
ARGENTINA-LINK	40831	027	ARGENTINA LINK	Caba	Buenos ...	Arg...	CRUCE A YSF
VE4YSF-ROOM	40829	000	Falcon Lake	Falcon Lake	Manitoba	Can...	
FUSION-NET	40821	003	Fusion-Net			USA	XLX369A Fusi
PRINCETONKY	40806	009	KY Fusion Network	PRINCETON	Kentucky	USA	Home of the
VE6HG	40802	000	VE6HG Room	Cochrane	Alberta	Can...	
NORTHBREVARD	40798	000	NBARC ECOMM	Titusville	Florida	USA	N4TDX WIRES
KA1BZE-ROOM	40797	000		N Dartmouth	Massac...	USA	
N6PMI-ROOM	40796	000		Lincoln	California	USA	

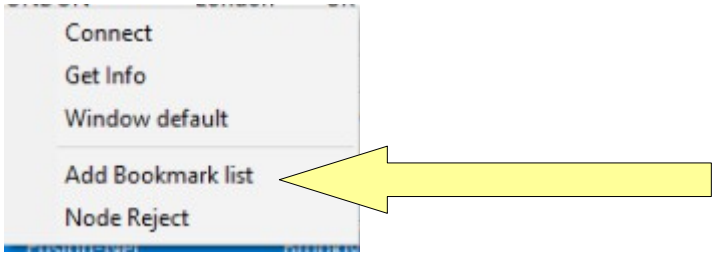
2. Select Fusion Net 40821.

FUSION-NET 40821 003 Fusion-Net Brooklyn New York USA XLX369A Fusi

3. Right click on Fusion Net. On the drop down menu click connect.



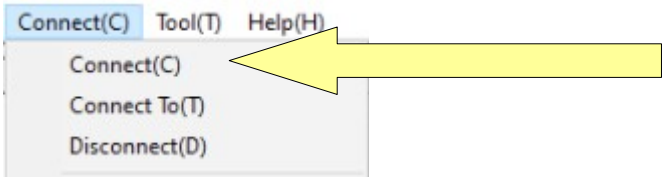
4. Don't forget to add us to your bookmark list as well.



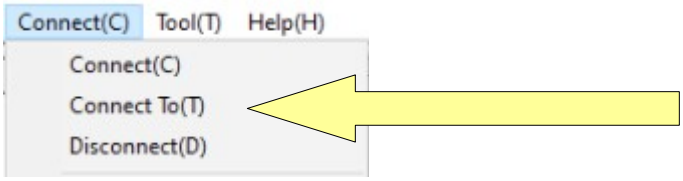
You can also use a more direct approach.

1. Go to the top right corner of your Wires-X software.

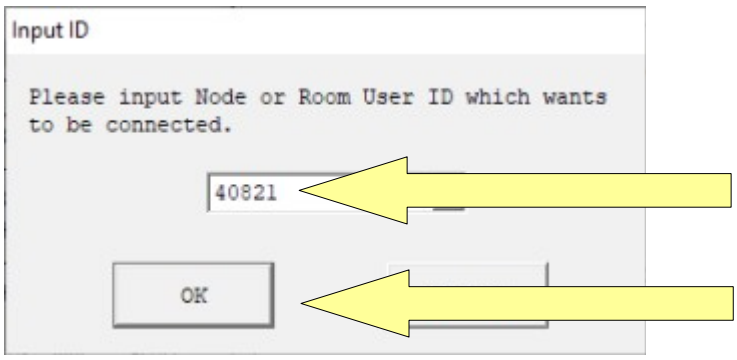
2. Click on Connect(C).



3. Click Connect to(T).



4. Then enter the Fusion Net node/room Id “40821” and click “OK”.



Pi-Star:

DMR: *XLX*

Talk Group 6 (TG6) *dont forget to program TG6 into your radio.

1. Turn on your Pi-Star device as usual and update it to the latest version

2. Go to “MMDVMHost Configuration” and select “ DMR Mode”

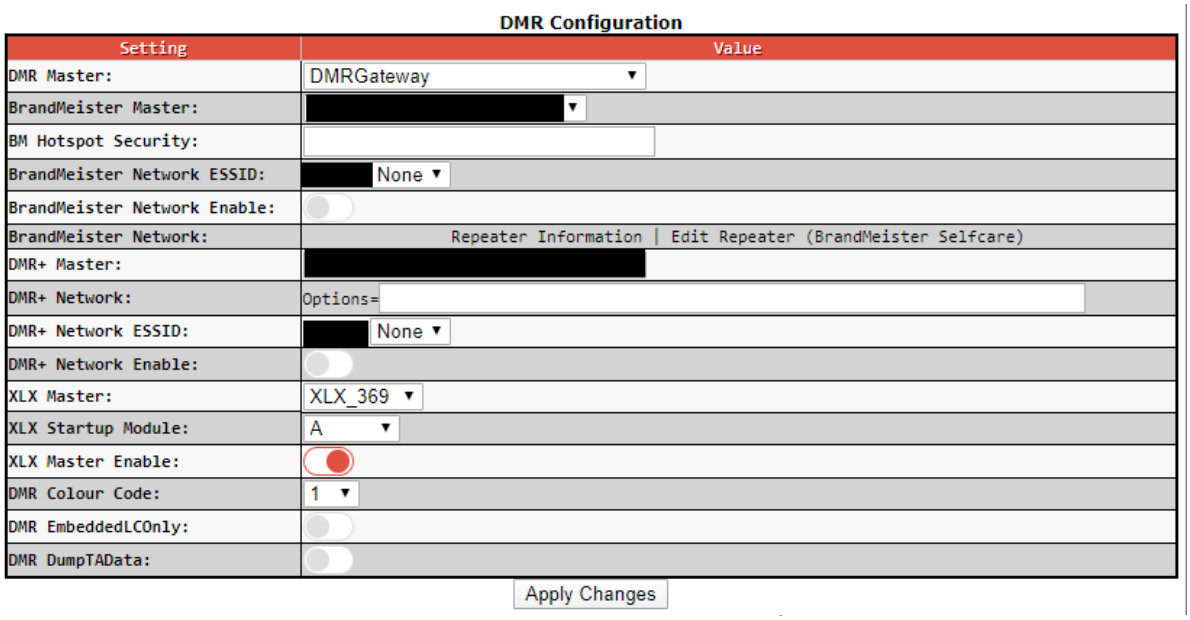
MMDVMHost Configuration

Setting	Value
DMR Mode:	et 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

Click “Apply Changes”.

Apply Changes

3 . Go to the DMR Configuration section, and change your DMR Master to “DMRGateway”.



DMR Configuration

Setting	Value
DMR Master:	DMRGateway
BrandMeister Master:	[redacted]
BM Hotspot Security:	
BrandMeister Network ESSID:	[redacted] None
BrandMeister Network Enable:	
BrandMeister Network:	Repeater Information | Edit Repeater (BrandMeister Selfcare)
DMR+ Master:	[redacted]
DMR+ Network:	Options=
DMR+ Network ESSID:	[redacted] None
DMR+ Network Enable:	
XLX Master:	XLX_369
XLX Startup Module:	A
XLX Master Enable:	
DMR Colour Code:	1
DMR EmbeddedLCOnly:	
DMR DumpTAData:	

Apply Changes

Click “Apply changes”

4 . Go back to the DMR Configuration section and select the following:

5 . XLX Master : XLX 369

6 . XLX Startup Module : A

7 . XLX Master Enable : ON

8 . DMR Color Code : 1

Click “Apply changes” and you're done.

*dont forget to program TG6 into your radio.

Pi-Star:

DMR: *DMR+ IPSC2-Quadnet*

Some general information on DMR+ servers is very relevant to what will follow.

DMR+ IPSC2 servers are capable of connections from Motorola repeaters, Hytera repeaters, MMDVM repeaters and hostpots, and DMR+ dongles. In addition to the links to all of these, the various DMR+ servers all over the world are also linked to each other.

With a DMR+ hotpsot, you can use a single configuration to connect to various talk groups (somewhat similarly to Brandmeister or TGIF). In your configuration, you can use dynamic TGs (keydown to connect with a 15 minute timeout), or static TGs. The Fusion Net TG is 369.

The server itself has two timeslots. All of the talkgroups are on TS1. (This will become very important later). [TS2 is used for DMR+ reflectors. DMR+ reflectors are a legacy feature that is likely to go away in the future, and is unimportant to this how-to].

Because the setup if very different for duplex vs. simplex hotspots, it is broken up into two sections.

DMR+ Duplex Configuration

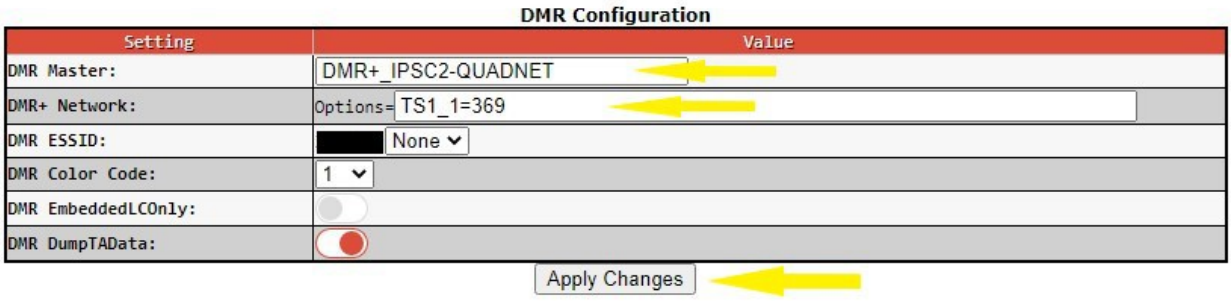
1 . Enable ‘DMR mode’ on the Pi-Star Configuration page.

2 . Select ‘DMR+_IPSC2-QUADNET’ as your DMR Master.

3 . [Optional] Enter ‘TS1_1=369’ into the options box to book TG369 as a static TG. This will make it so that your hotspot is always connected to TG369.

4 . If you have more than one hotspot, select a different ESSID for each hotspot.

5 . Apply Changes. You can check that you are connected at dmr.openquad.net



6 . Set your radio to the correct RX and TX frequencies.

7 . Set the TG to 369.

8 . Make sure that TG369 is included in your RX list.

9 . Set the timeslot to TS1.

DMR+ Simplex Configuration

1 . Enable ‘DMR mode’

2 . Select ‘DMRGateway’ as your DMR Master and Apply Changes.

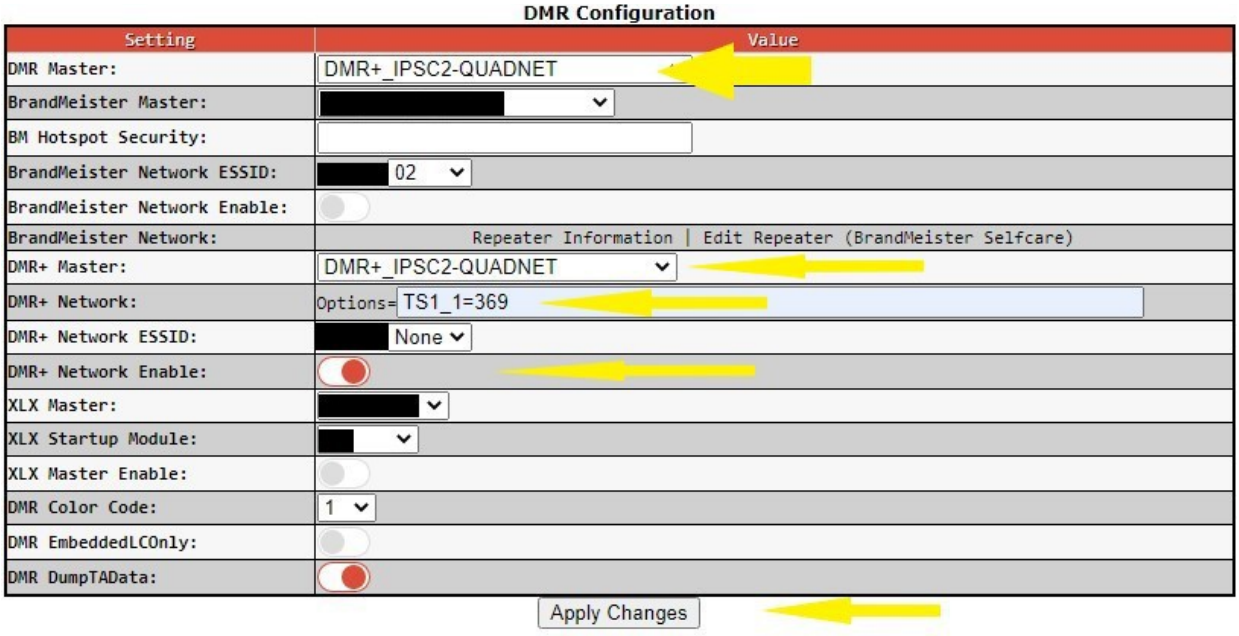
3 . Select ‘DMR+_IPSC2-QUADNET’ as your DMR+ Master.

4 . [Optional] Enter ‘TS1_1=369’ into the options box to book TG369 as a static TG. This will make it so that your hotpost is always connected to TG369.

5 . If you have more than one hotspot, select a different ESSID for each hotspot

6 . Select ‘DMR+ Network Enable’

Click “Apply Changes” and you're done.



As described above, the DMR+ talkgroups are all on TS1.
However, a simplex Pi-Star hotspot only uses TS2, and TS1 is completely disabled.

As such, with a simplex hotspot we have to do something called a talkgroup rewrite.

The TGRewrite translates TS2 on Pi-Star to TS1 on the DMR+ server.
This is accomplished by editing DMRGateway.ini.
The following is a minimal change that will allow access to TG369, The Fusion Net

1. While on the Configuration screen, select 'Expert' from the menu at the top.
2. After the Expert screen loads, select 'DMR GW' under 'Full Edit', NOT 'Quick Edit'.
3. Scroll down until you reach '[DMR Network 2]'.

Plain text is that which is already there. Highlighted text is that which is to be added.

[DMR Network 2]
Enabled=1
Address=168.235.109.210
Port=55555
TGRewrite0=2,8,2,9,1
TGRewrite1=2,369,1,369,1
PCRewrite0=2,84000,2,4000,1001
Password="PASSWORD"
Debug=0
Id=YOUR_DMR_ID&ESSID
Name=DMR+_IPSC2-QUADNET
Options="TS1_1=369"

After adding that line, click 'Apply Changes' at the bottom.

On your radio:

1. Set RX and TX frequencies to match that of Pi-Star.
2. Set TG to 369.
3. Make sure that TG369 is in your RX list.
4. Set timeslot to TS2.
5. Set DMR mode to 'simplex'

If you did not book 369 as a static talkgroup, keying up TG369 will connect you to the Fusion Net. 15 minutes after your last transmission, the talkgroup will drop.

Here is a short explanation of the TGRewrite that we added to DMRGateway.ini.

The TGRewrite follows this form:

TGRewrite=fromTimeSlot,fromTalkGroup,toTimeSlot,toTalkGroup,range
TGRewrite= 2, 369, 1, 369, 1

Setting the range means that the rule will apply to the talkgroup listed and a certain number above. So if the TG is '369' and the range is '1', only TG369 will be rewritten.

Here is another example:

TGRewrite=2,1,1,1,500

This rule will rewrite TGs 1-500 from TS2 to TS1. If you wish to use other DMR+ TGs on your simplex Pi-Star hotspot, use this rule instead of the more simple one we set above.

1 . Turn on your Pi-Star device as usual and update it to the latest version

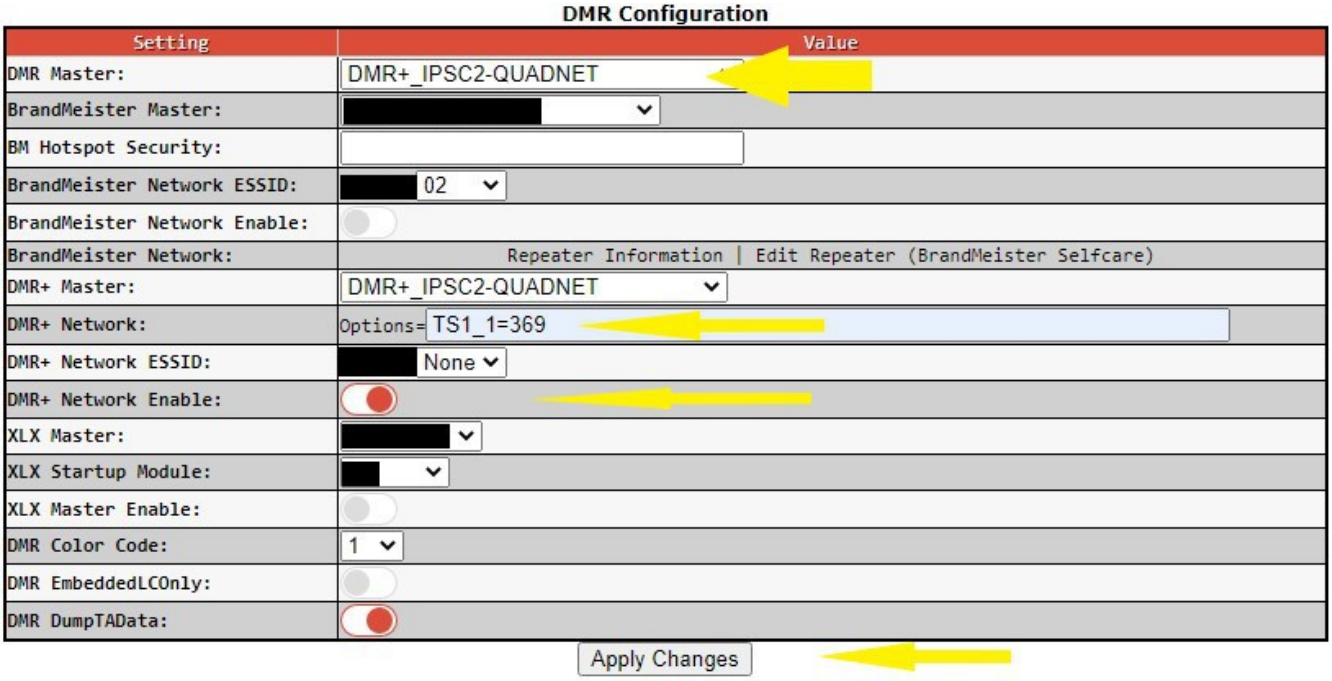
2 . Go to “MMDVMHost Configuration” and select “ DMR Mode”

MMDVMHost Configuration

Setting	Value
DMR Mode:	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

3 . Click Apply changes

4 . Go to the DMR Configuration section, and change your DMR Master to “ DMR+_IPSC2-QUADNET”.



5 . Select DMR+ Master : DMR+_IPSC2-QUADNET

6 . Enable DMR+ Network

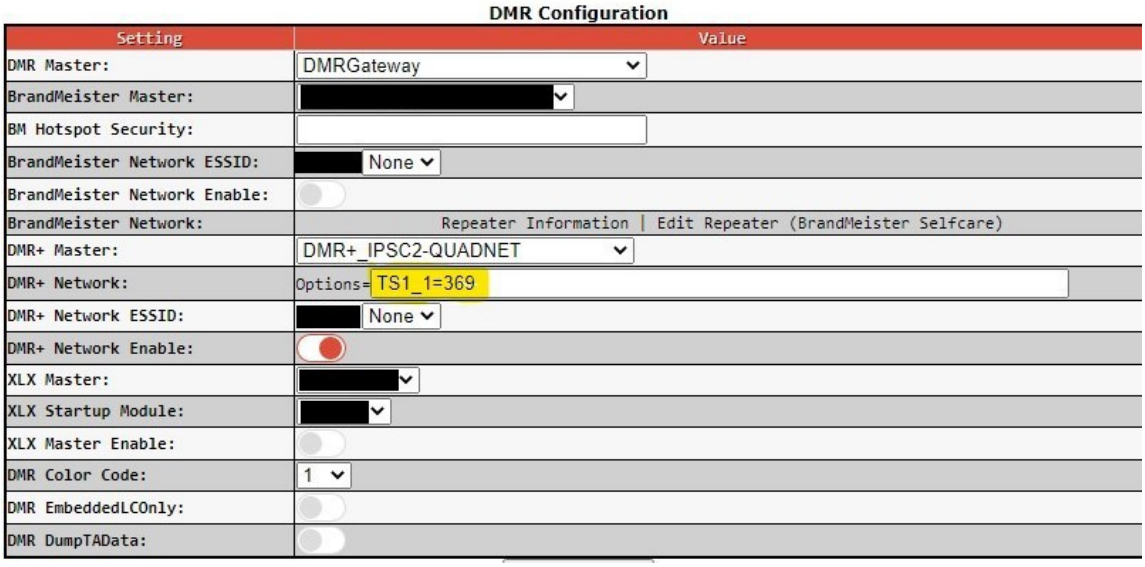
Click “Apply changes” and you're done.

*Note:

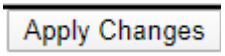
When you Press the PTT on TG369, you will be connected to the talkgroup. TX on 369 to talk as well. It will timeout after 15 minutes; so if you want a static connection to TG369, enter the following in the 'Options' box:

TS1_1=369

This makes 369 a static talkgroup on your hotspot, and it will be connected whenever the hotspot is on.



Click “Apply changes”



Pi-Star:

DMR: *Prime TGIF*

Talk Group 369 (TG369)

Please make note*

In the TGIF configuration setup, the changes need to be made for PRIME TGIF.

The default link in the current version of Pi-Star goes to the old TGIF.
(This will change in the coming months).

The two changes which are necessary are both in MMDVM.ini:

The Address needs to be changed from 'tgif.network' to 'prime.tgif.network'

The password needs to be changed to the password associated with your DMR ID,
found on the PRIME TGIF website.

1 . Go to “MMDVMHost Configuration” and select “ DMR Mode”

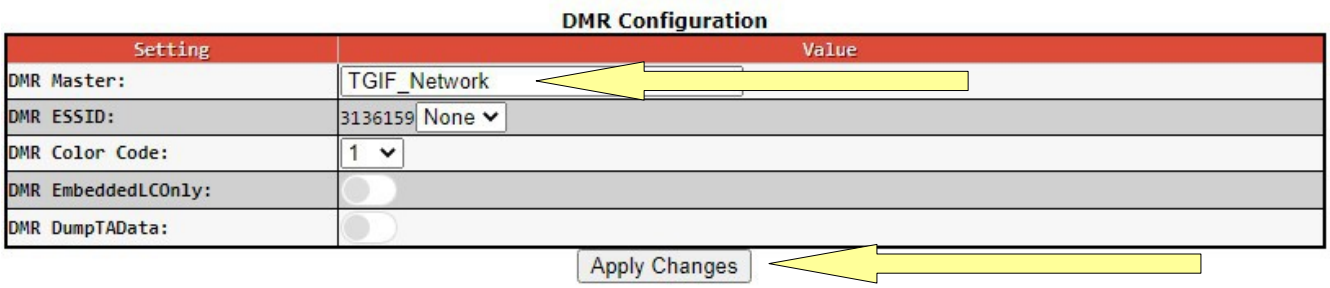
MMDVMHost Configuration

Setting	Value
DMR Mode:	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

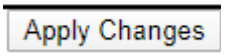
2 . Click “Apply Changes”.

4 . Go to the DMR Configuration section, and change your DMR Master to:

“TGIF_Network”



5. Click “Apply changes” and you're done.



***don't forget to program TG369 into your radio.**

Pi-Star:

D-Star:

1. Go to “MMDVMHost Configuration” and select “D-Star Mode:”

MMDVMHost Configuration

Setting	Value
DMR Mode:	RF Hangtime: 2 Net Hangtime: 2
D-Star Mode:	RF Hangtime: 2 Net Hangtime: 2
YSF Mode:	RF Hangtime: 2 Net Hangtime: 2
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:	Nextion Port: modem Nextion Layout: G4KLX

Apply Changes

2. Click “Apply changes”.

Apply Changes

3. Scroll down to the D-Star Configuration section and select the Default Reflector: Anyone of the following will work.

- DCS369 A
- REF369 A
- XRF369 A

D-Star Configuration

Setting	Value
RPT1 Callsign:	[redacted] A
RPT2 Callsign:	[redacted] G
Remote Password:	•••••••••
Default Reflector:	DCS369 A rtup Manual
ircDDBGateway Language:	English_(US)
Time Announcements:	
Use DPlus for XRF:	Note: Update Required if changed

Apply Changes

D-Star Configuration

Setting	Value
RPT1 Callsign:	[redacted] B
RPT2 Callsign:	[redacted] G
Remote Password:	•••••••••
Default Reflector:	REF369 A Manual
ircDDBGateway Language:	English_(US)
Time Announcements:	
Use DPlus for XRF:	Note: Update Required if changed

Apply Changes

D-Star Configuration

Setting	Value
RPT1 Callsign:	[redacted] B
RPT2 Callsign:	[redacted] G
Remote Password:	•••••••••
Default Reflector:	XRF369 A tup Manual
ircDDBGateway Language:	English_(US)
Time Announcements:	
Use DPlus for XRF:	Note: Update Required if changed

Apply Changes

4 . Click “Apply changes” and you're done.

Apply Changes

Pi-Star:

YSF :

1 . Go to “MMDVMHost Configuration” and select “YSF”

MMDVMHost Configuration

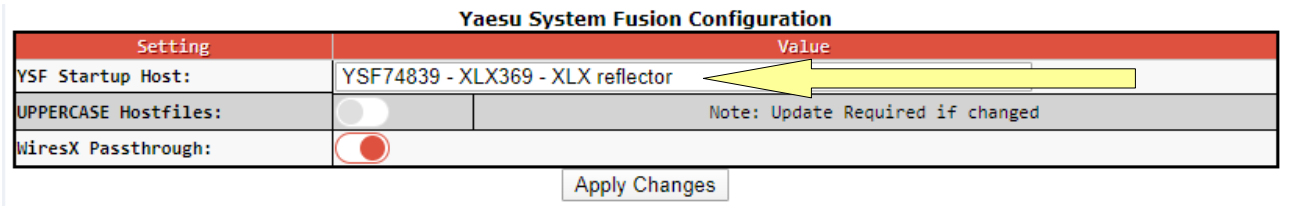
Setting	Value
DMR Mode:	RF Hangtime: 20 Net Hangtime: 20
D-Star Mode:	RF Hangtime: 20 Net Hangtime: 20
YSF Mode:	Net Hangtime: 20
P25 Mode:	RF Hangtime: 20 Net Hangtime: 20
NXDN Mode:	RF Hangtime: 20 Net Hangtime: 20
YSF2DMR:	
YSF2NXDN:	
YSF2P25:	
DMR2YSF:	Uses 7 prefix on DMRGateway
DMR2NXDN:	Uses 7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

2 . Click “Apply changes”.

Apply Changes

3 . Scroll down to the YSF Configuration section and select the YSF Startup Host:

“YSF74839-XLX369-XLX reflector”.



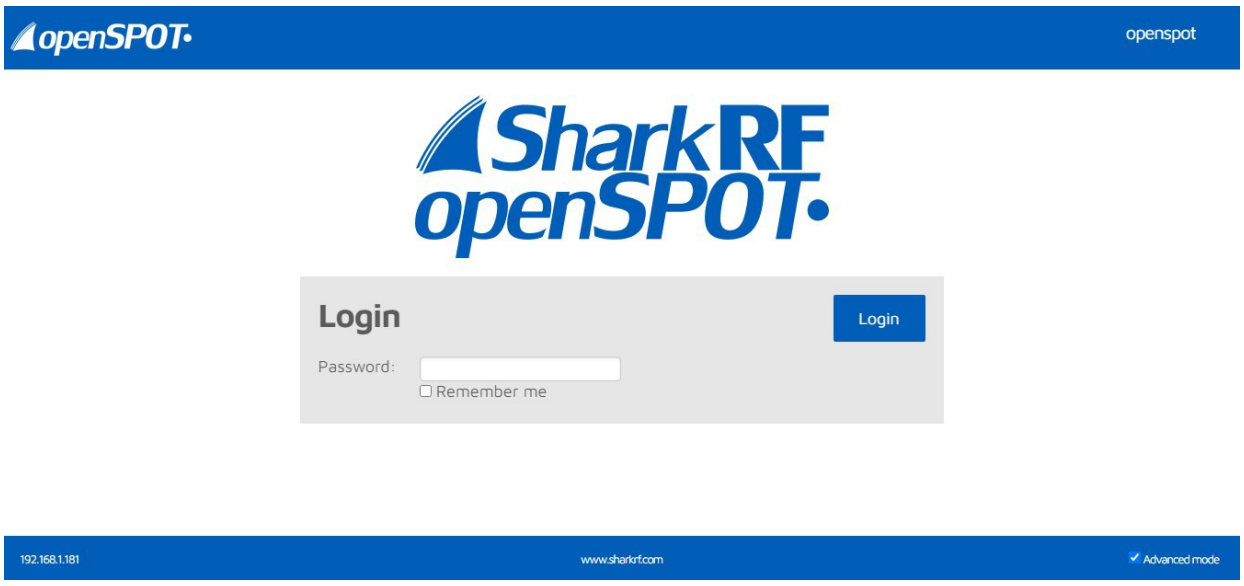
4 . Click “Apply changes” and you're done.

OpenSPOT.

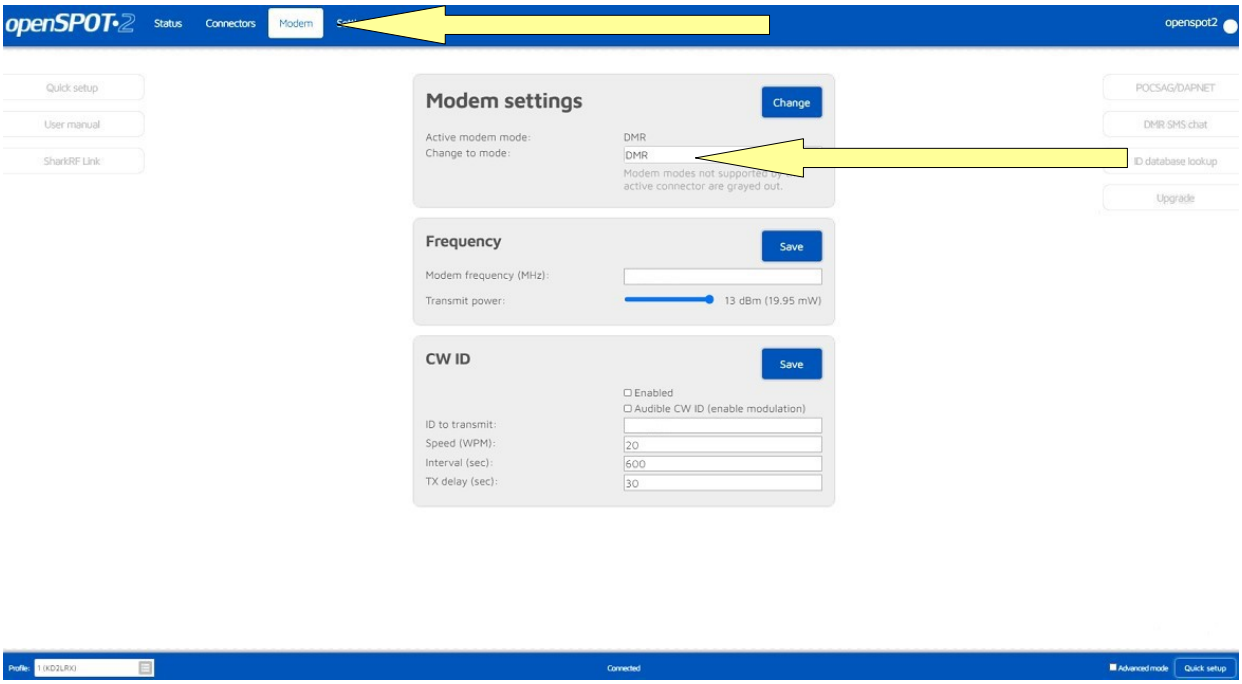
DMR: *XLX*

Talk Group 6 (TG6) ****don't forget to program TG6 into your radio.***

1 . Turn on your ***OpenSPOT*** as usual and update it to the latest version.

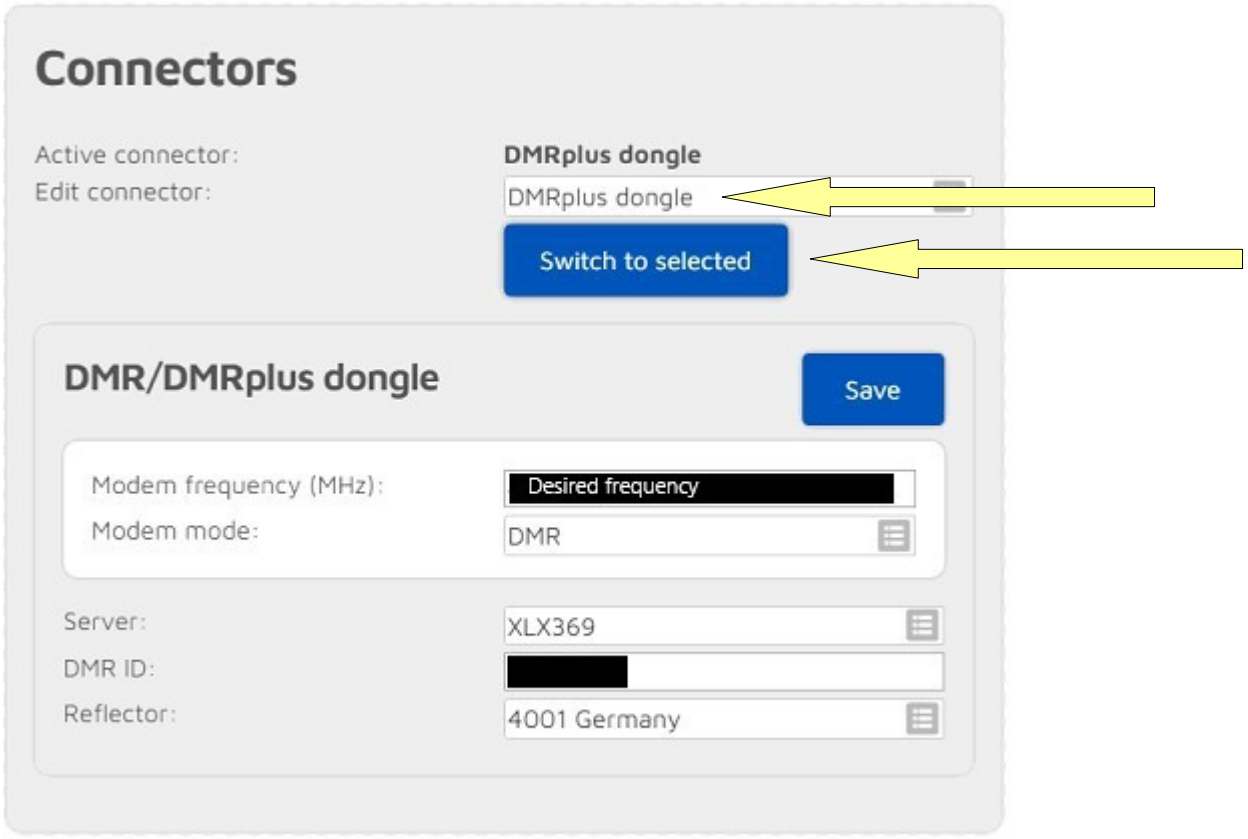


2 . Go to Modem setting and select: **DMR**



3 . Click “Change” to activate.

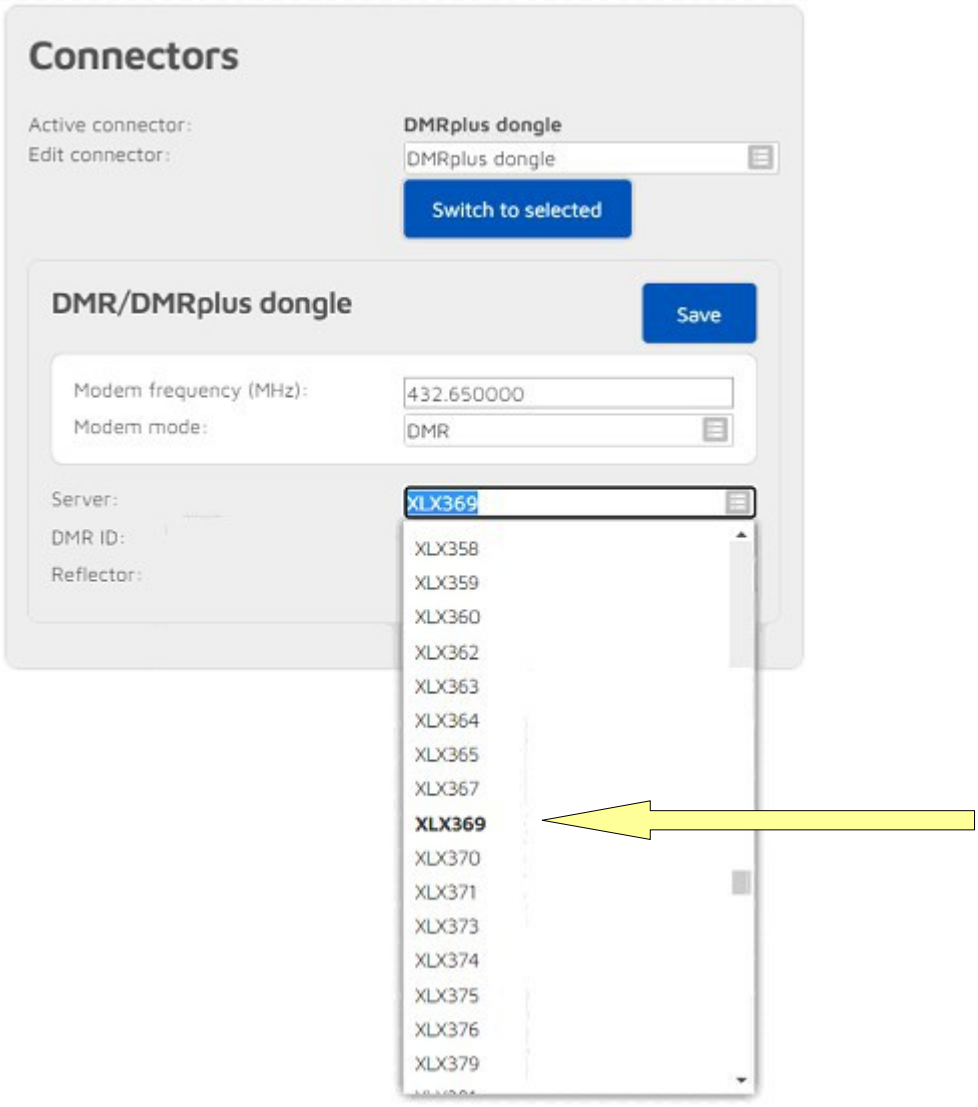
4 . Go to Connectors



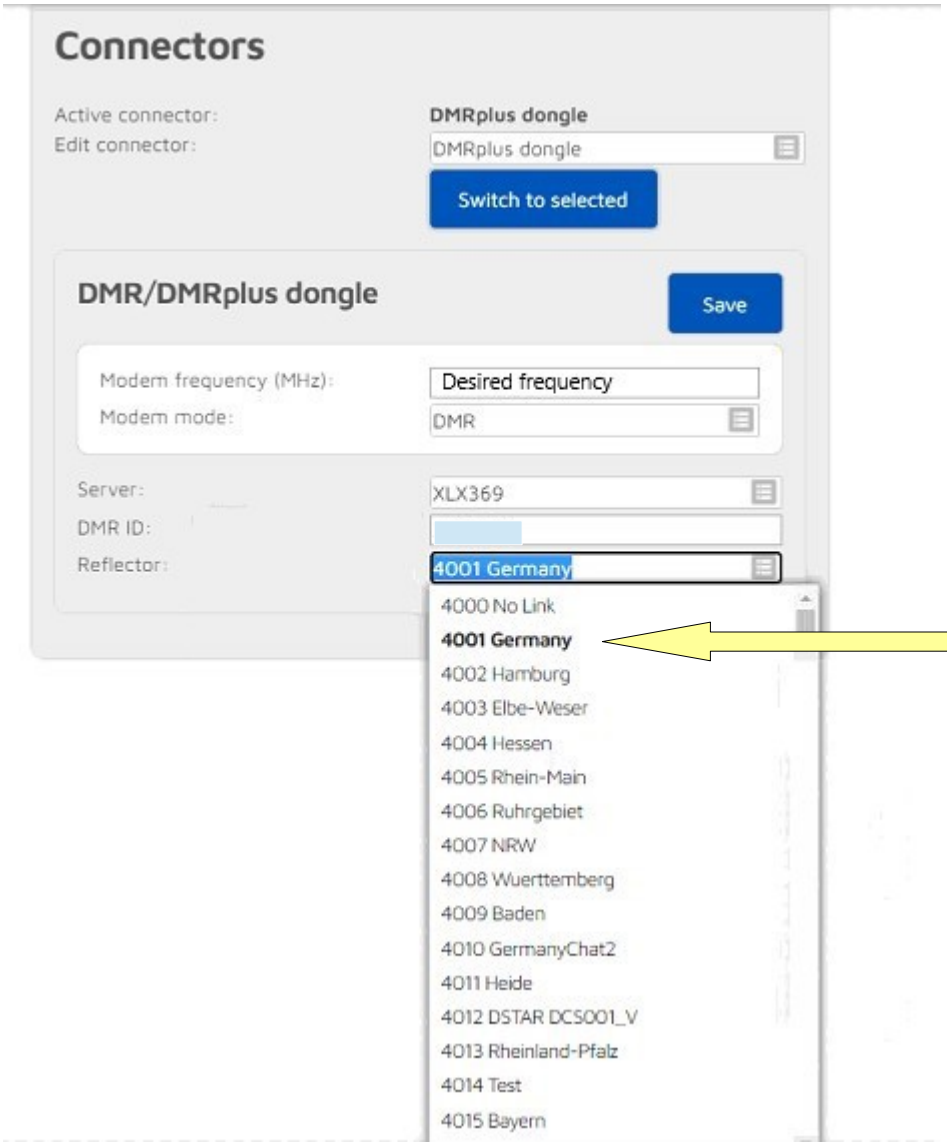
5 . Select " **DMRplus dongle"**

6 . Then click **"Switch to selected"**

7 . Select server **“XLX369”**



8 . Select Reflector: **“4001 Germany”**



9 . Click **“save”** and you're done.

OpenSPOT.

DMR: *IPSC2_QuadNet*

Talk Group 369 (TG369) ****don't forget to program TG369 into your radio.***

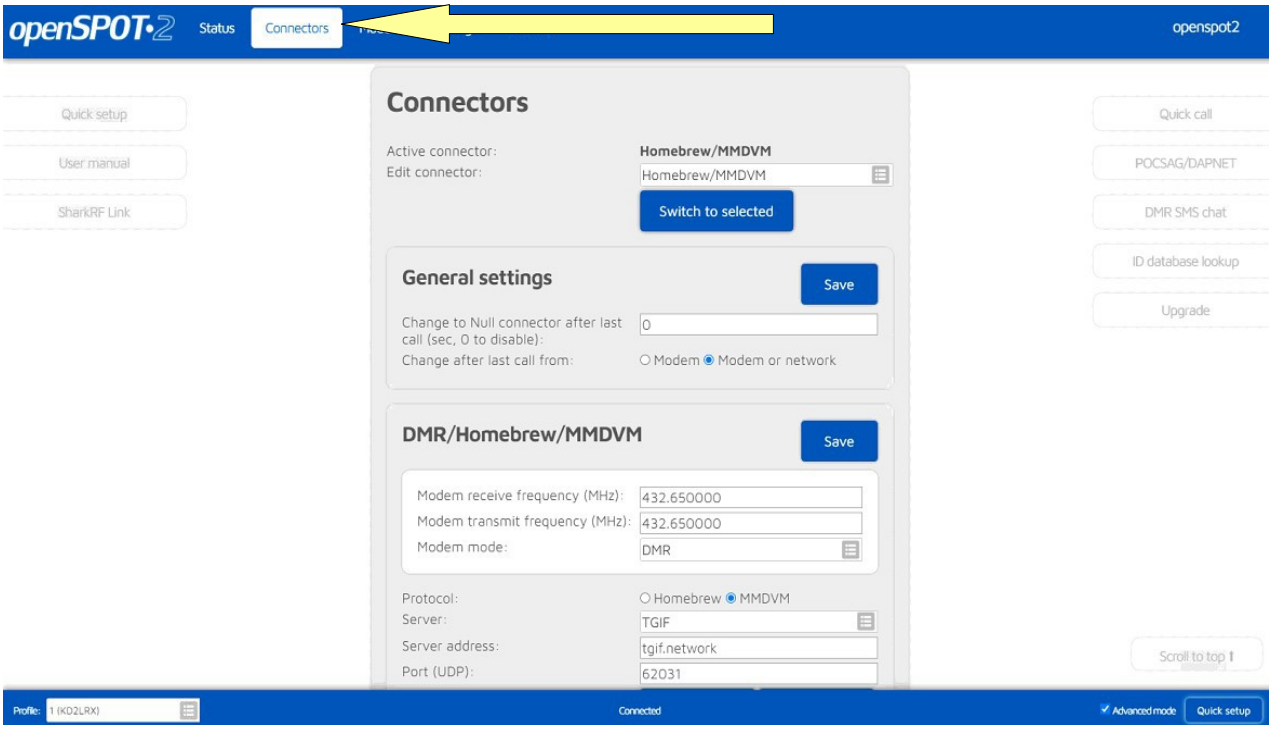
Coming Soon!

OpenSPOT.

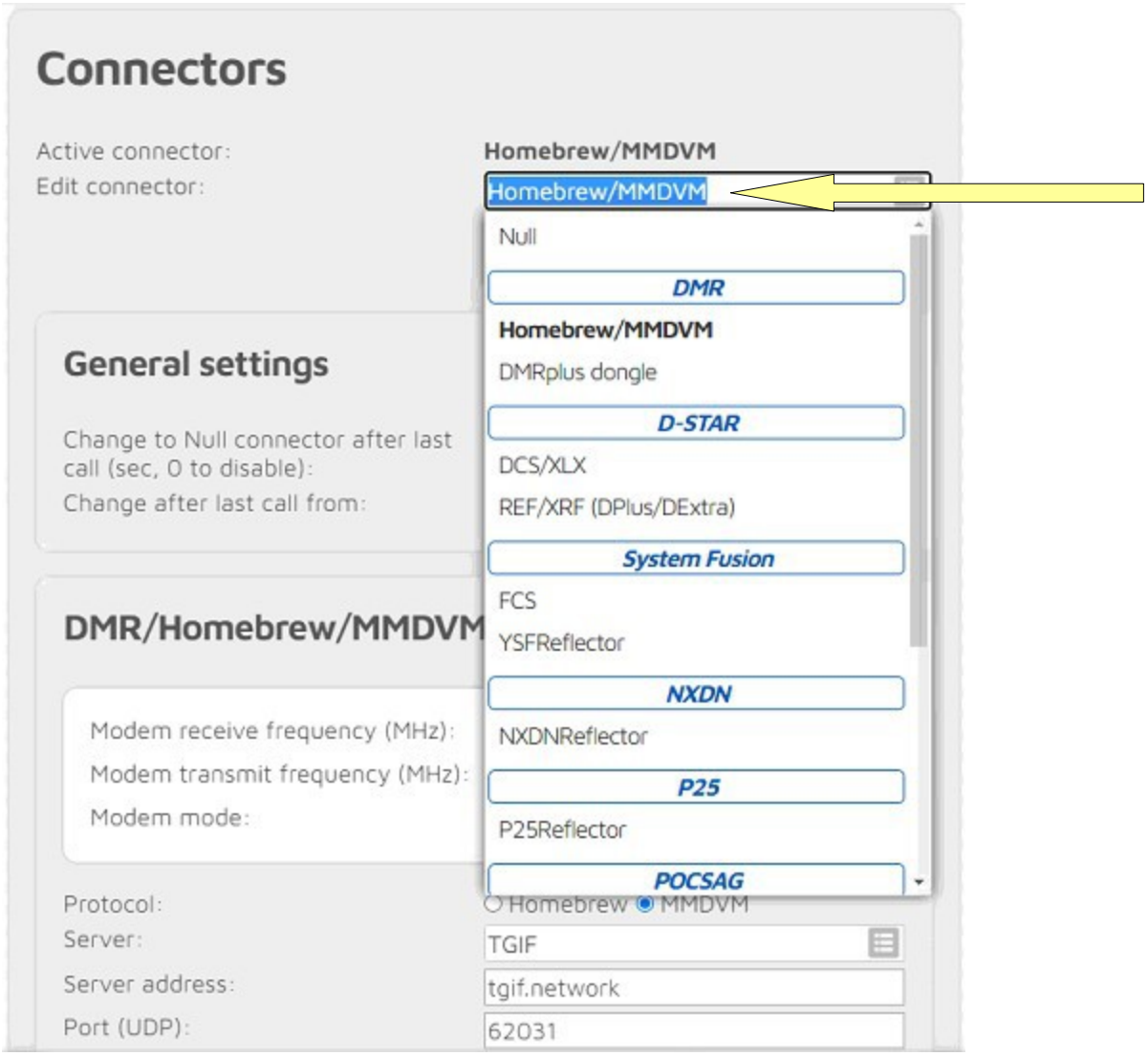
DMR: *TGIF*

Talk Group 369 (TG369) ****don't forget to program TG369 into your radio.***

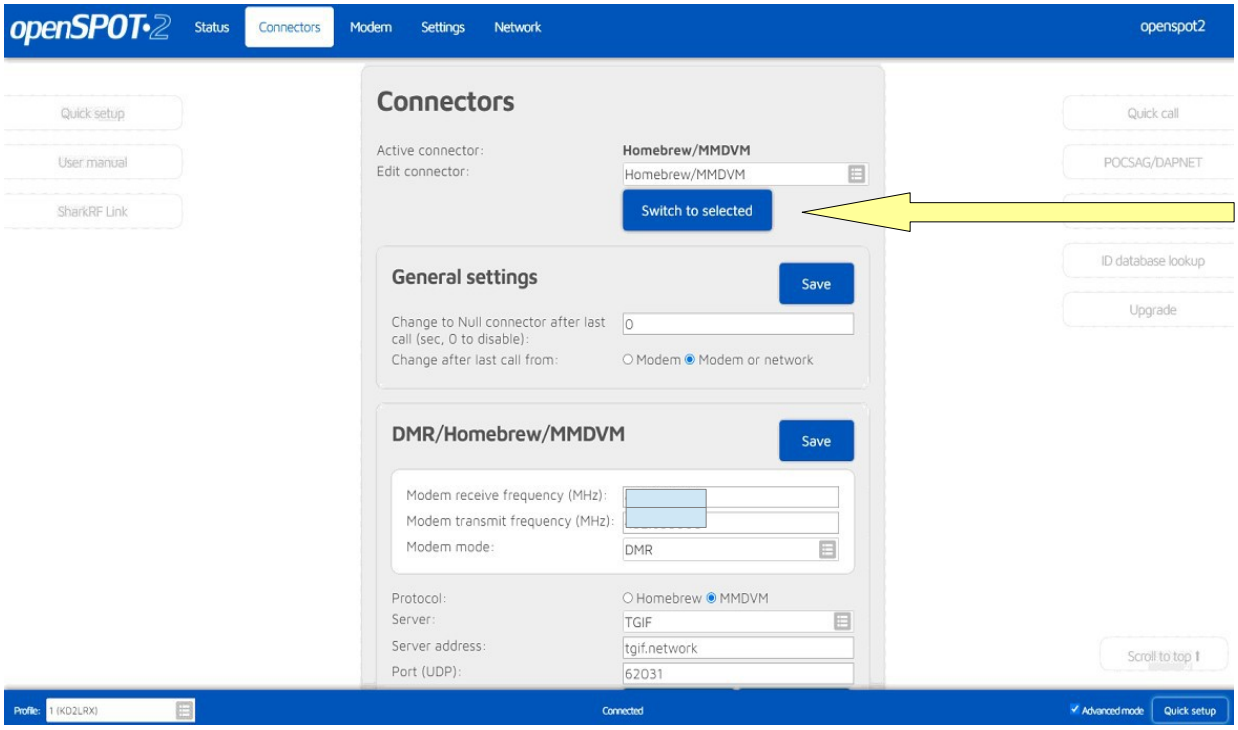
1 . Go to Connectors.



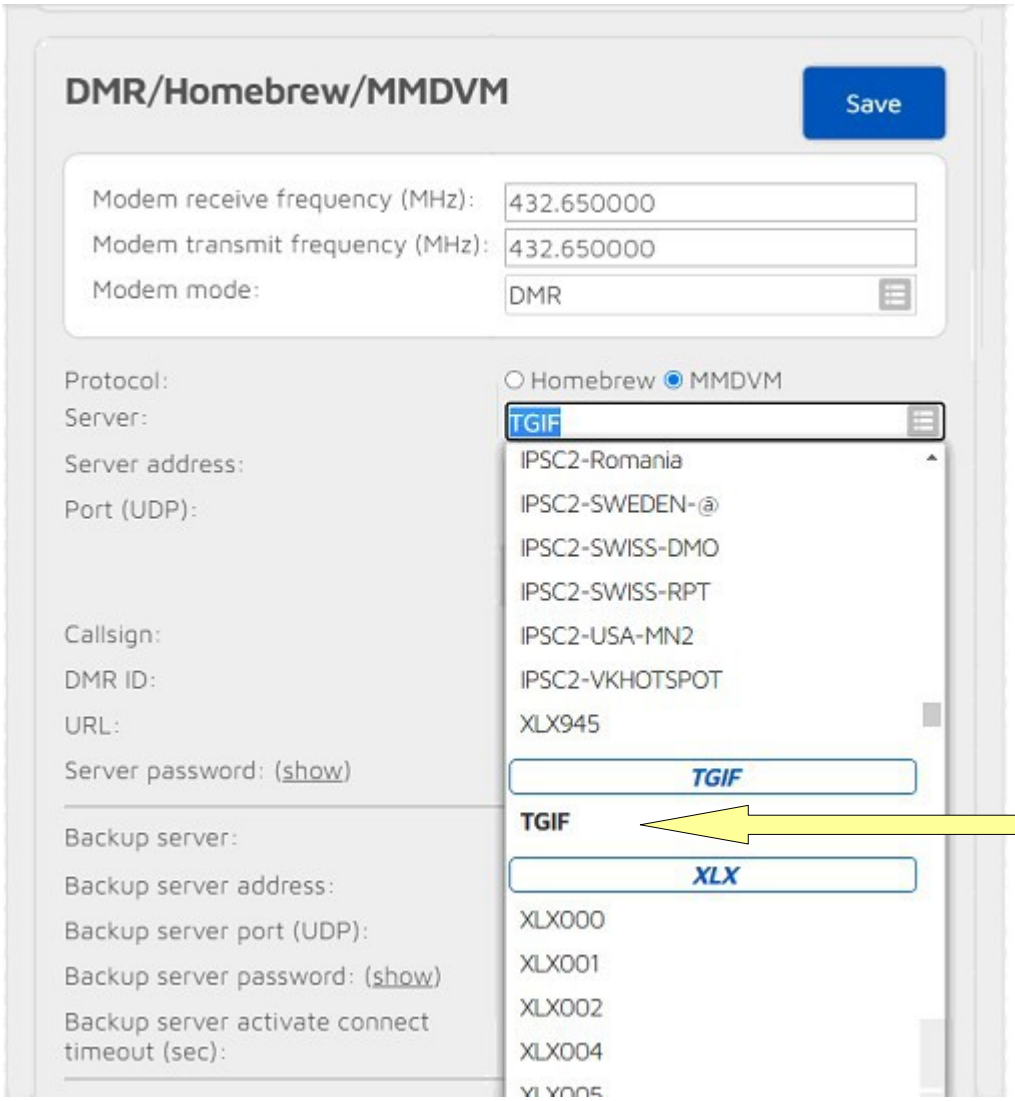
2 . Select **“Homebrew/MMDVM”**



3 . Then click **“Switch to selected”**



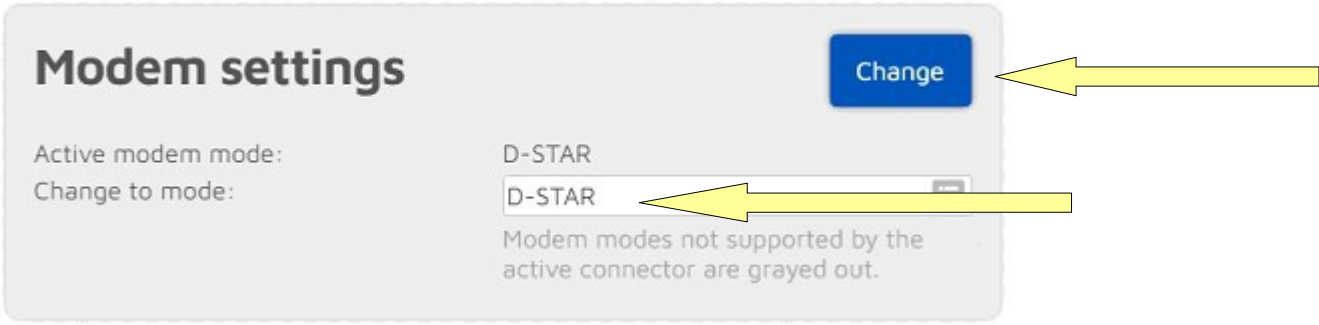
4 . Select server **“TGIF”**



5 . Click **“SAVE”** and you're done.

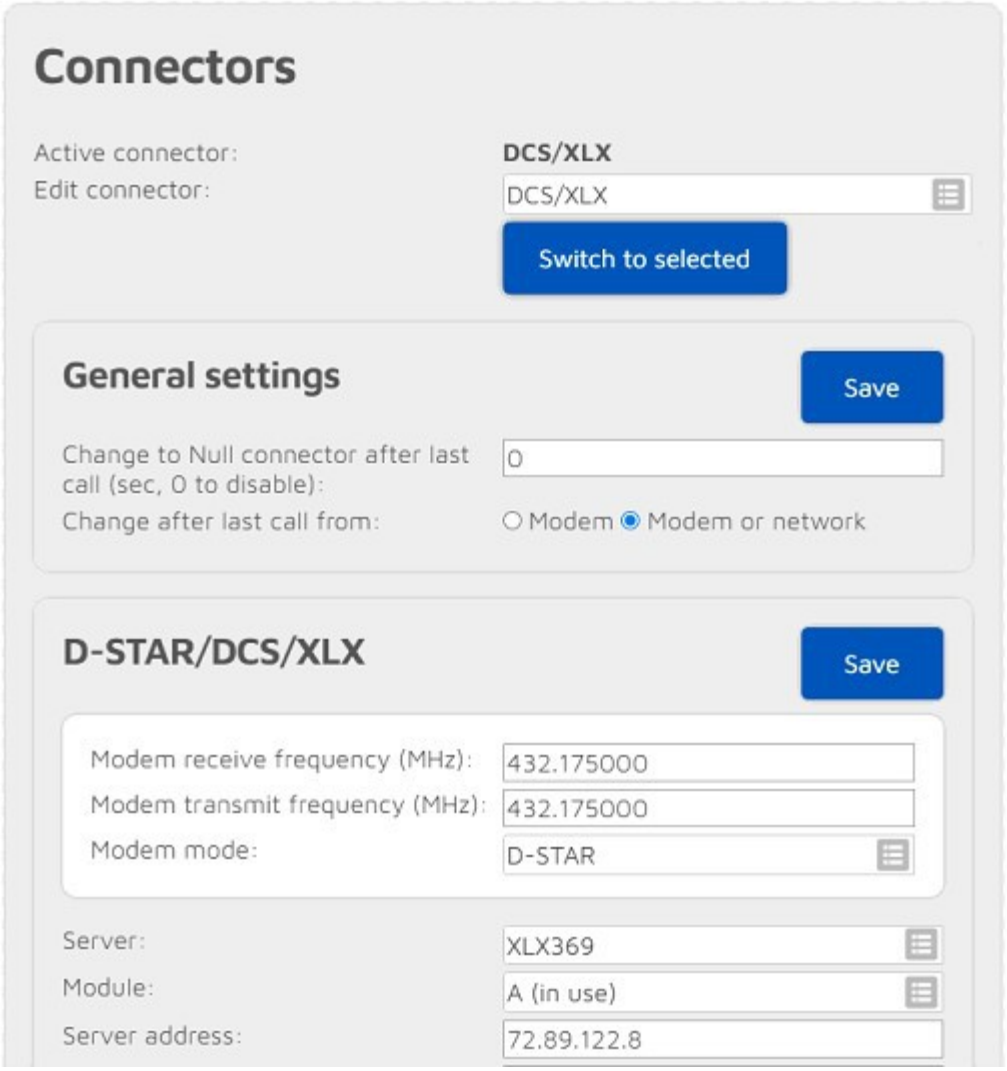
D-Star

1 . Go to Modem setting and select: “**D-STAR”**

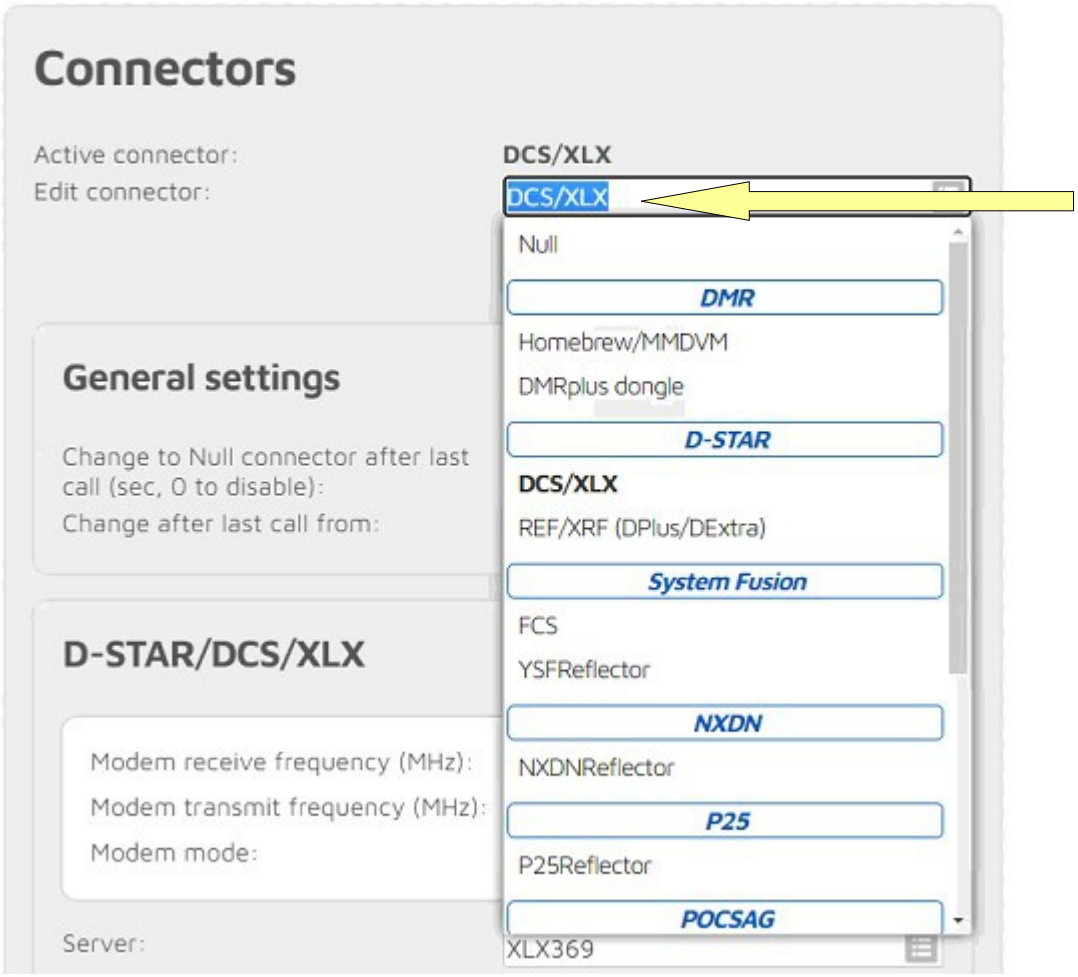


2 . Click **“Change”**

3 . Go to Connectors

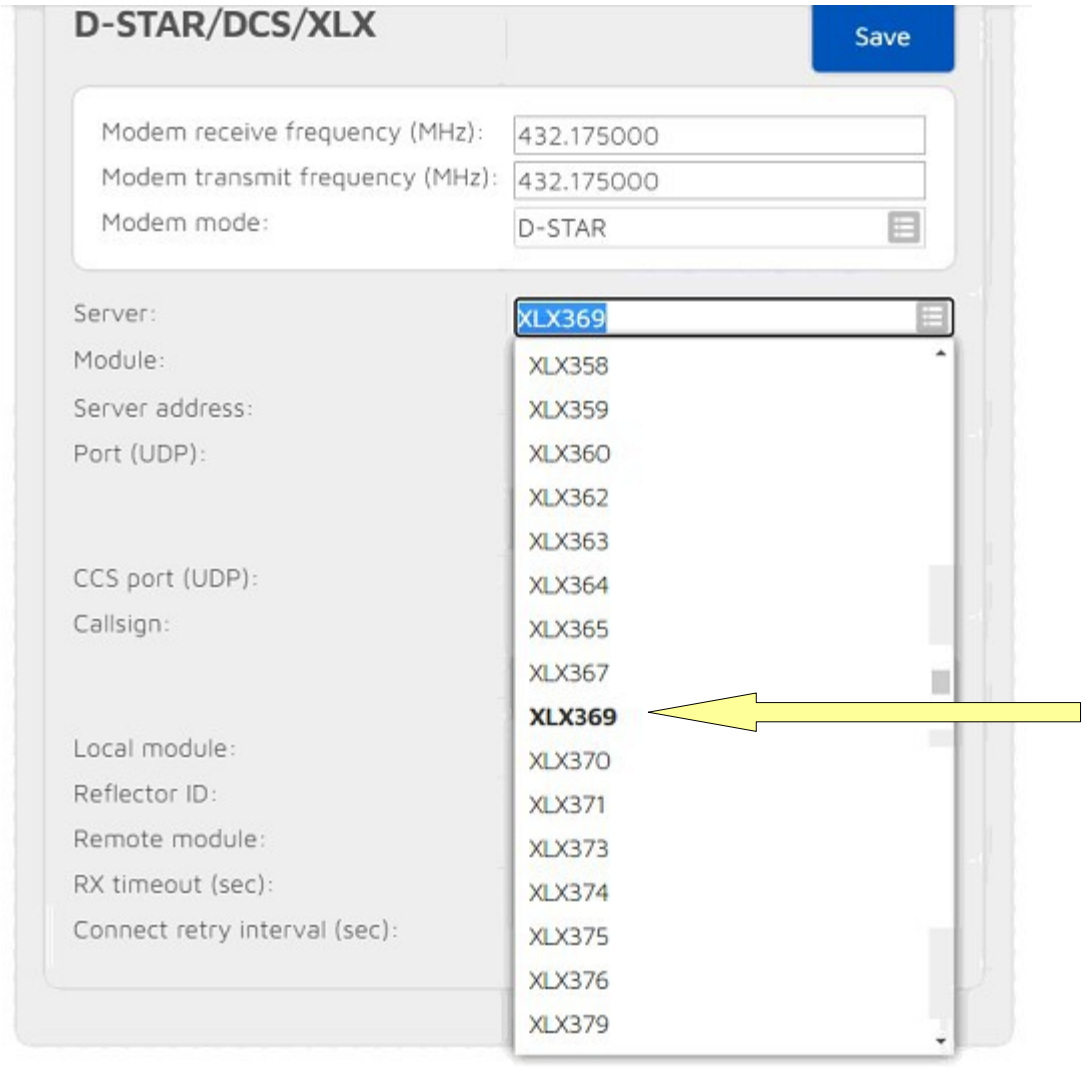


4 . Select **“DCS/XLX”**

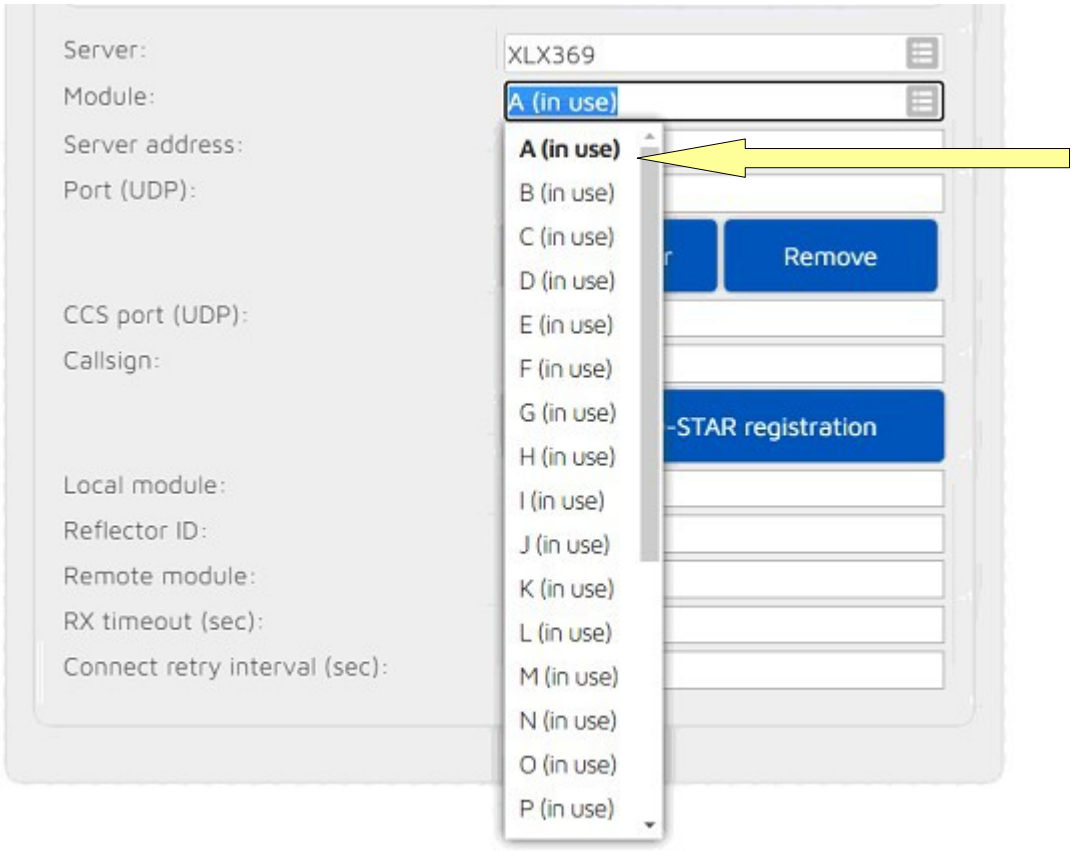


5 . Click **“Change”**

6 . Select server **“XLX369”**



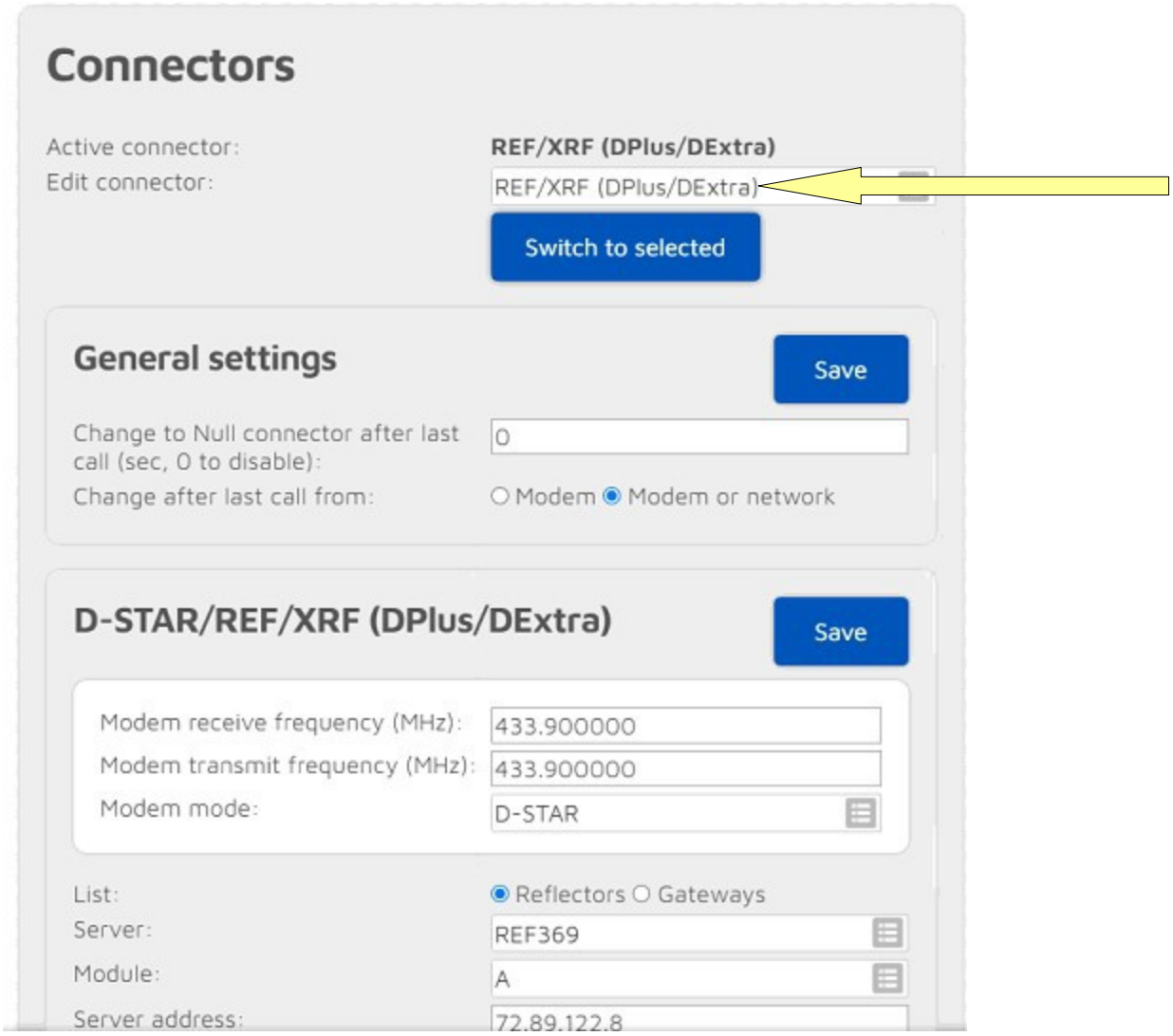
7 . Select Module **“A”**



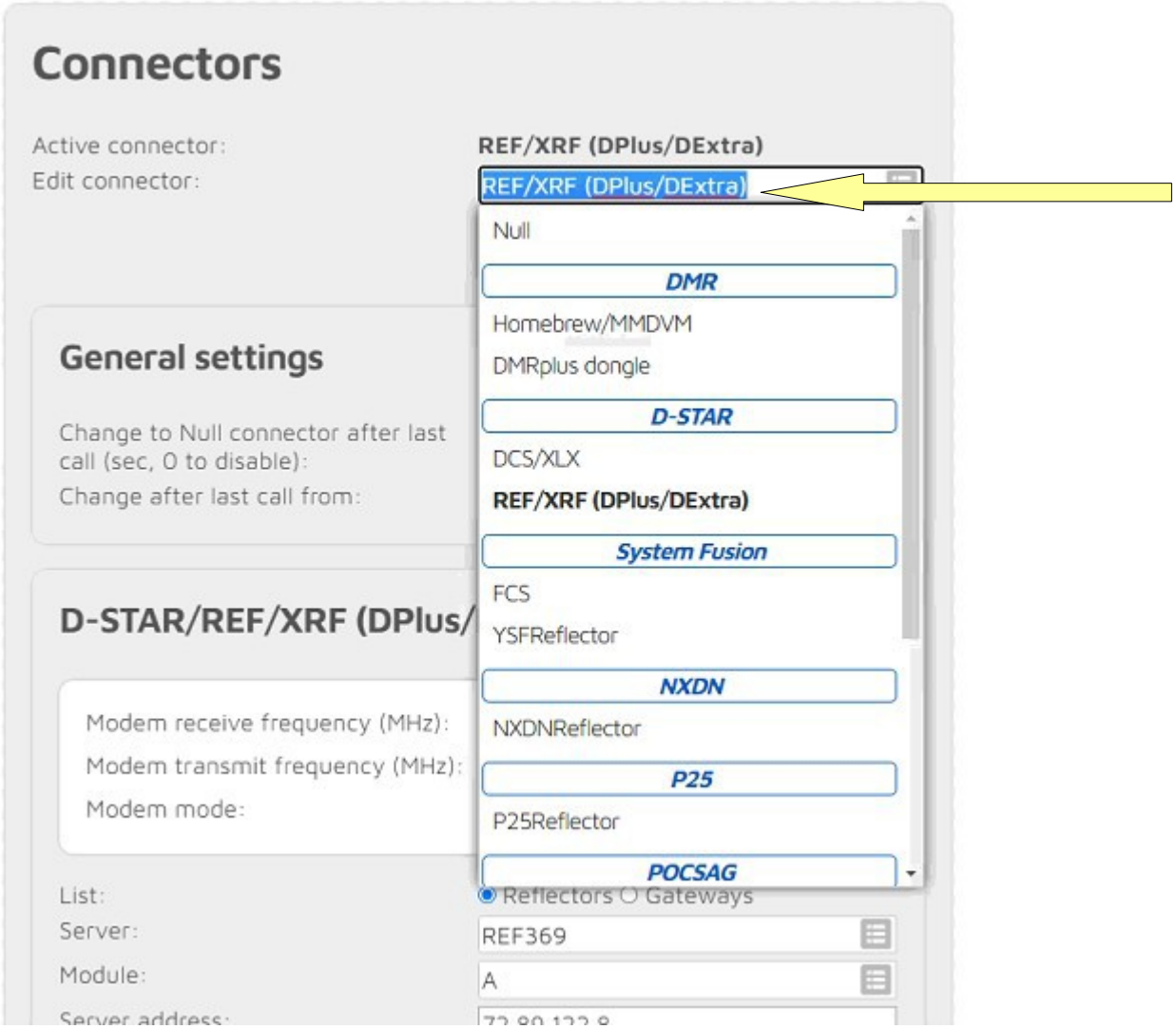
8 . Click **“SAVE”**

For those that want to use the REF or the XRF Reflectors

1 . Go to Connectors

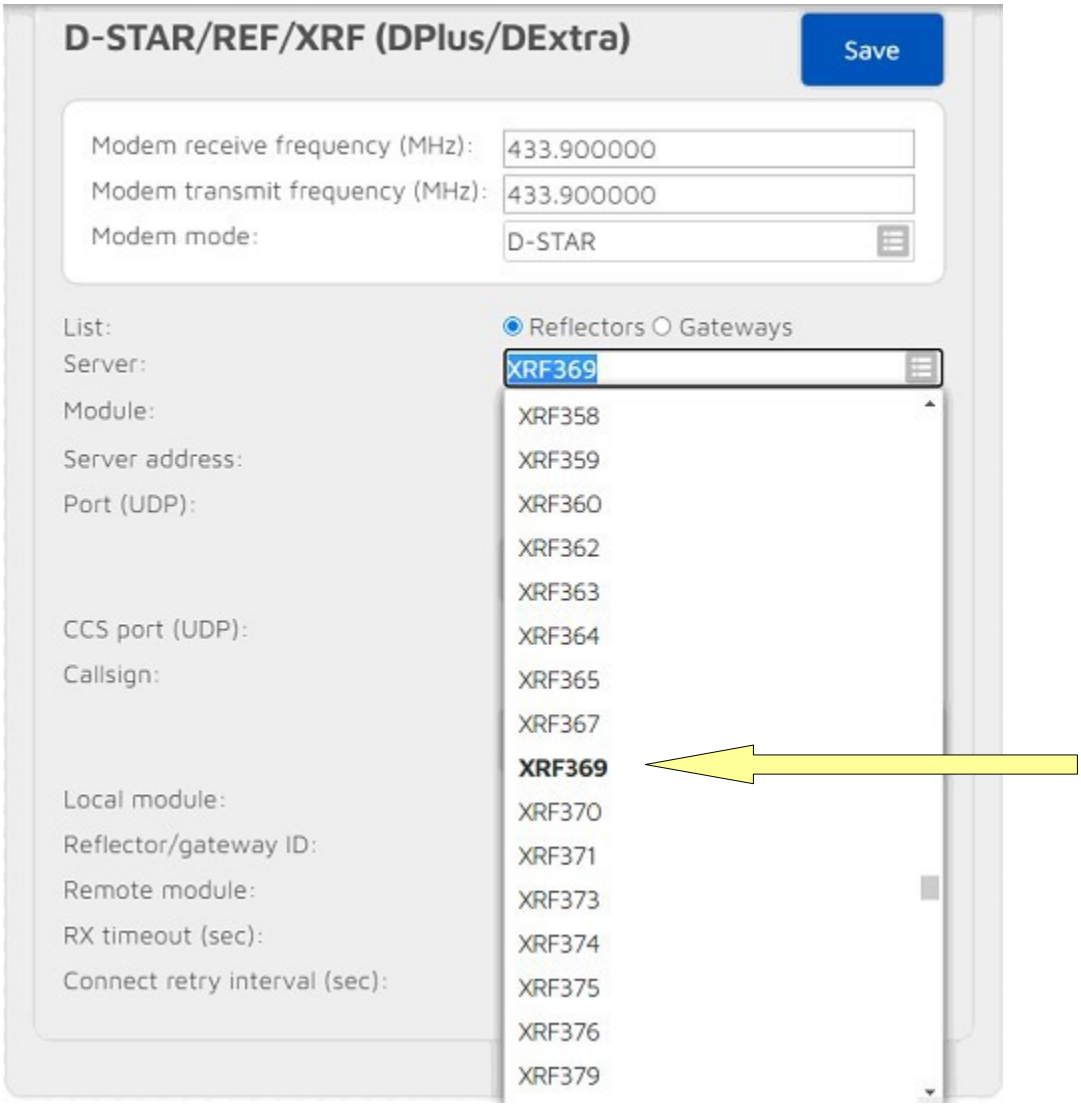


2 . Select REF/XRF **“(Dplus/DExtra)”**



3 . Click “**Switch to selected”**

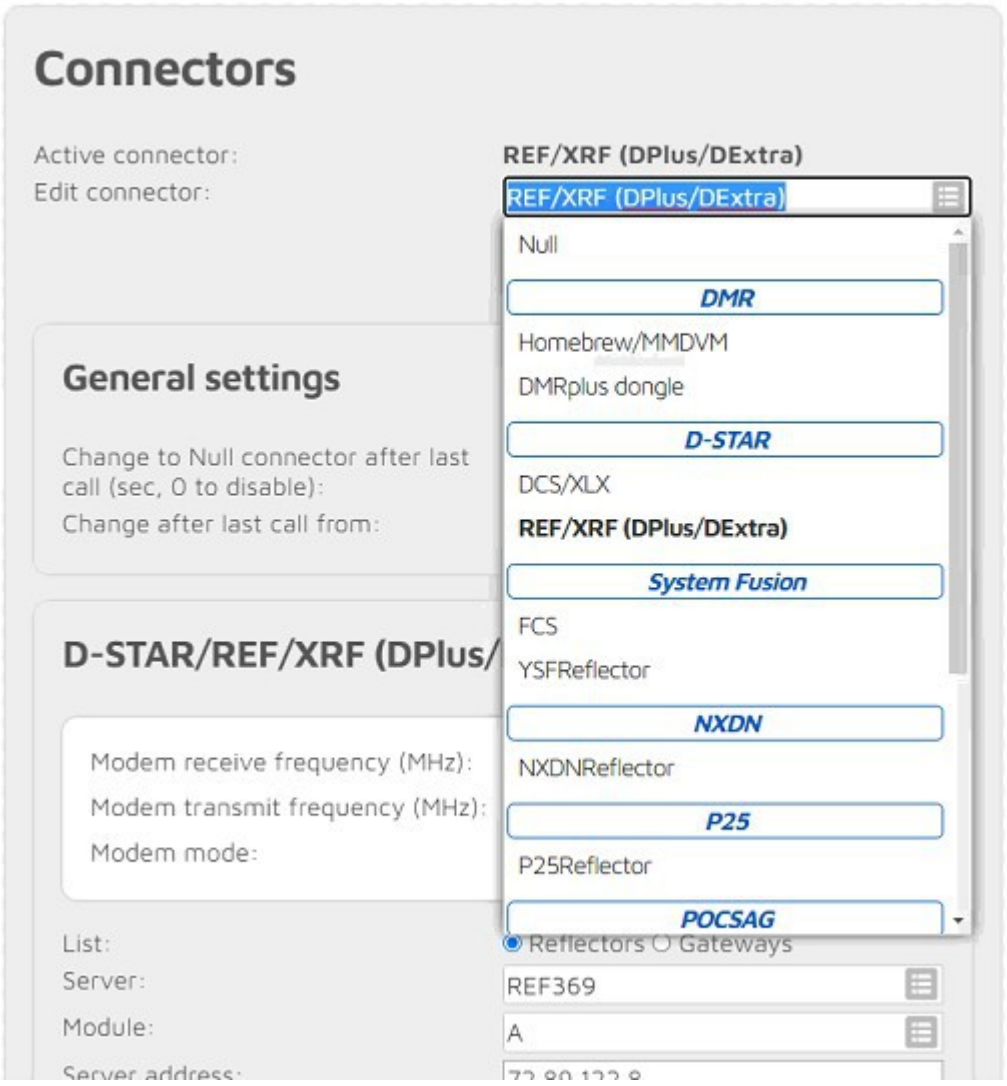
4 . Select server **“XRF369”**



5 . Click **“Save”**

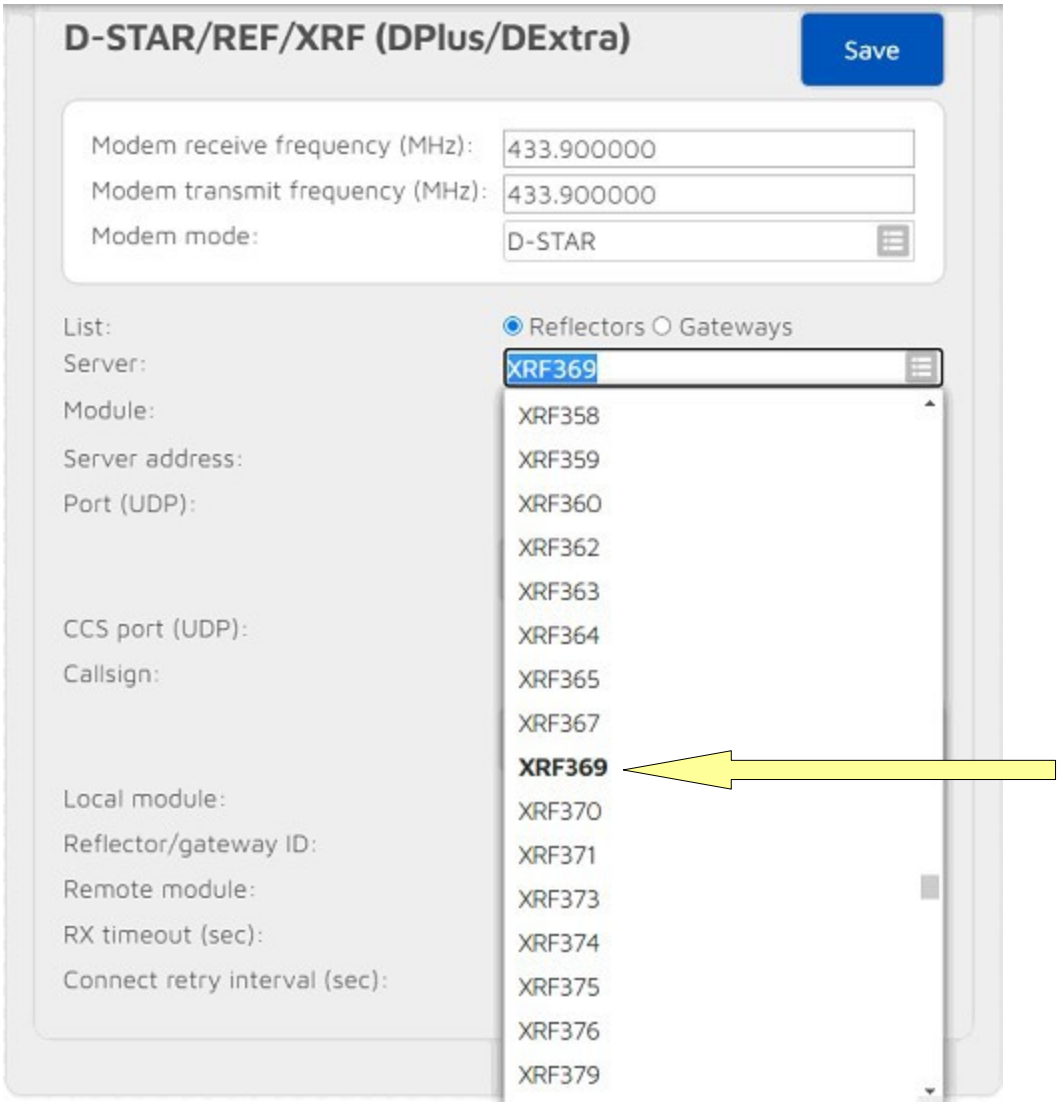
*Don't forget to use Module **A**

1 . Select REF/XRF **“(Dplus/DExtra)”**



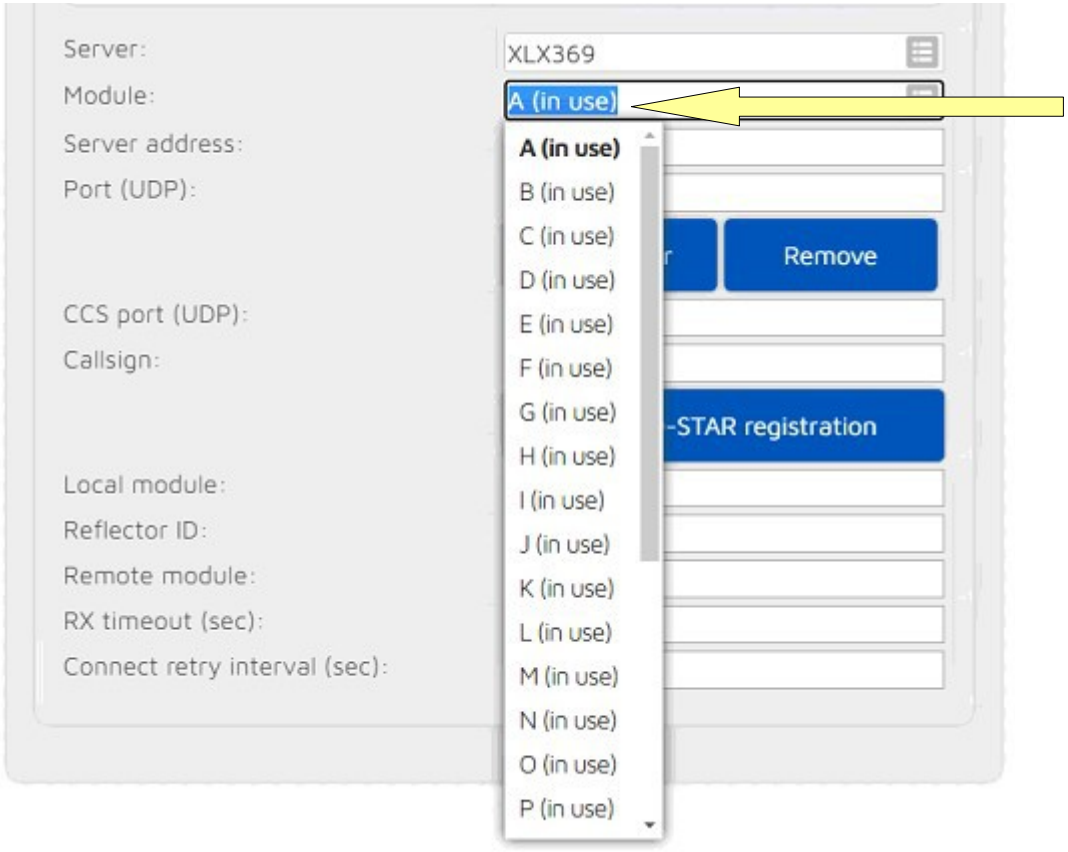
2 . Click “Switch to selected”

3 . Select server **“REF369”**



4 . Click **“Save”** and you're done.

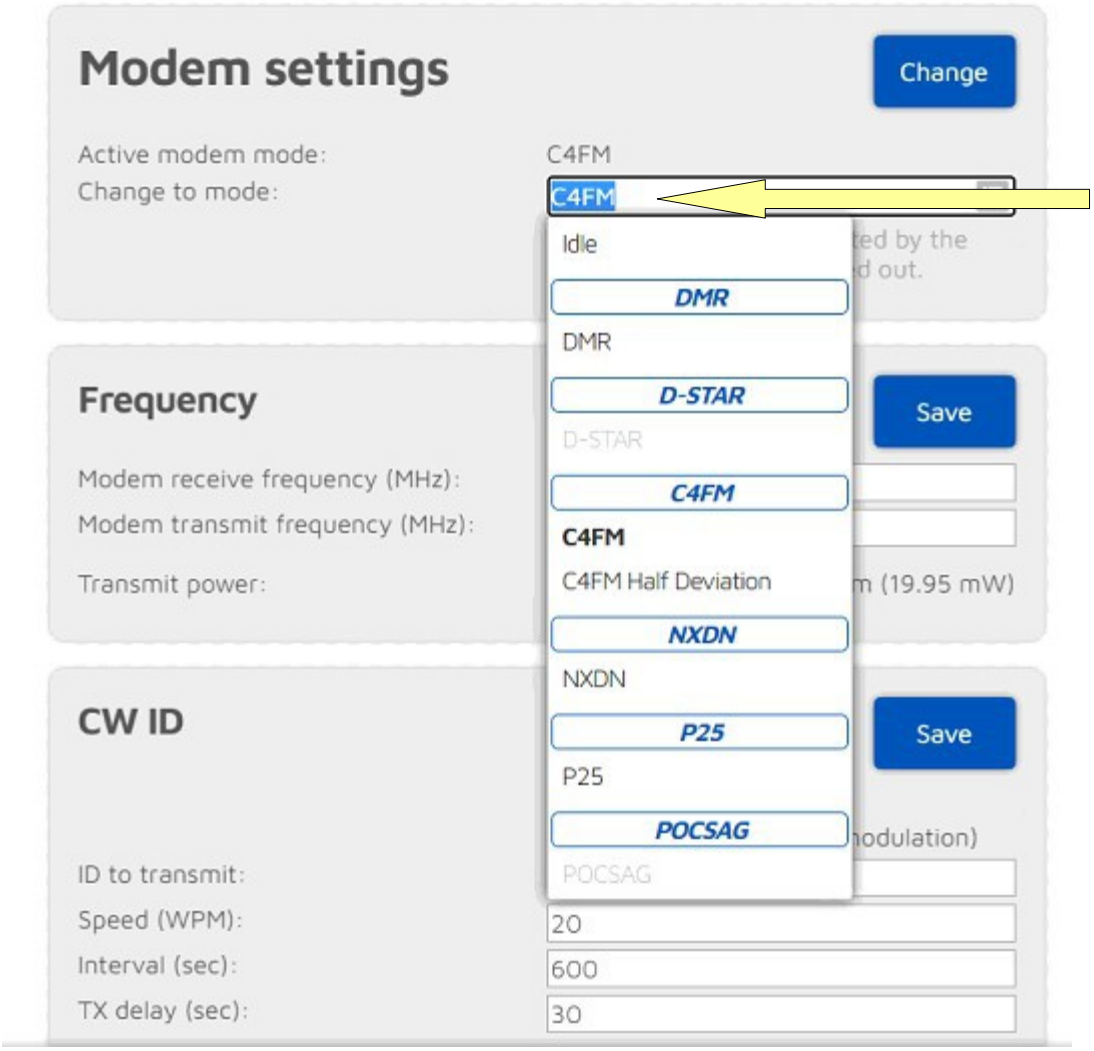
5 . Select Module **“A”**



6 . Click **“SAVE”** and you're done.

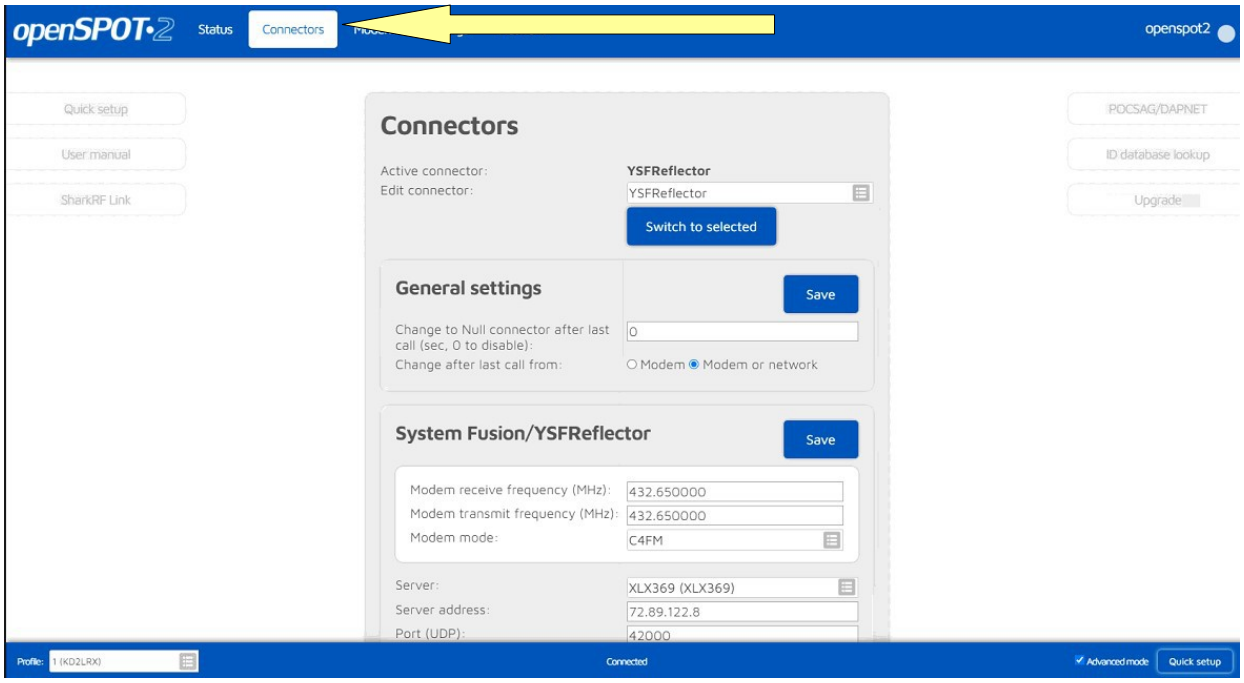
YSF

1 . Go to Modem setting and select: **“C4FM”**

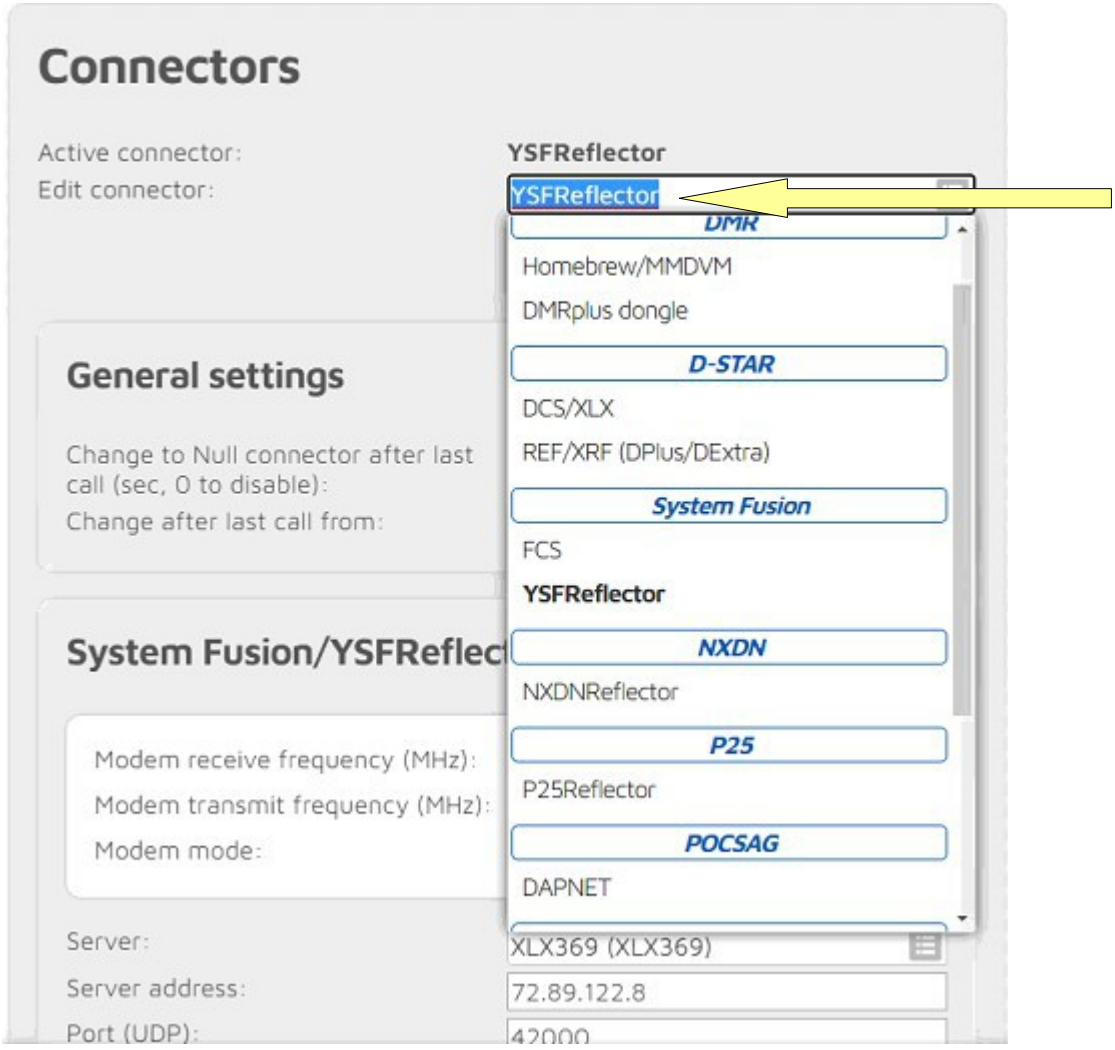


2 . Click **“Change”.**

3 . Go to Connections

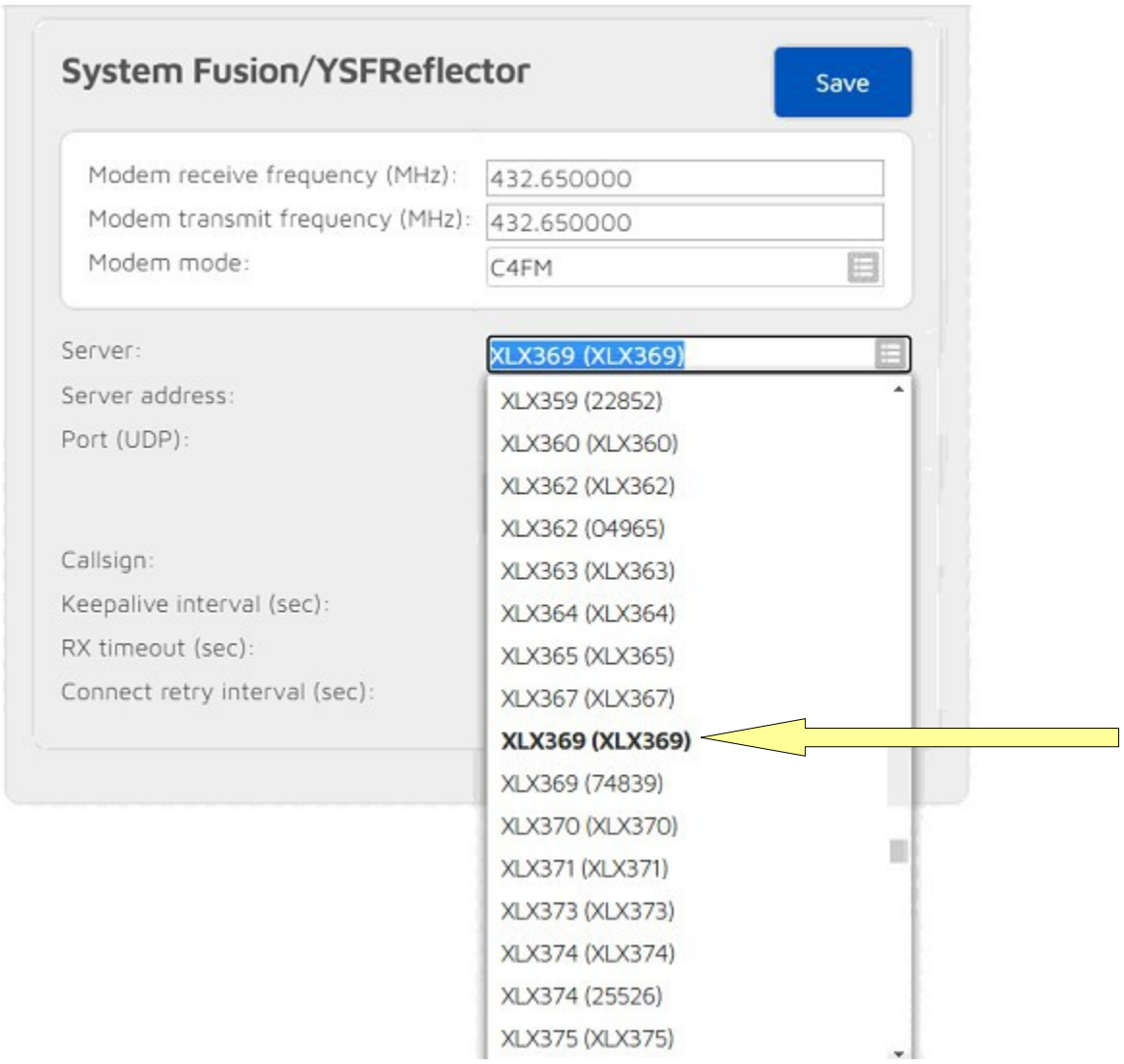


4 . Select **“YSFReflector”**



5 . Click **“Switch to select”**

6 . Select server **“XLX369 (XLX369)”**



7 . Click **“SAVE”** and you're done**.**

Welcome to The Fusion Net

Enjoy and have fun !

Special Thanks

to

Jay KD2LRX
&
Ryan W4EAE