AMBE Server board User Guide

The ZUM AMBE3000 server is a standalone board gives USB, Wi-Fi and Ethernet connectivity to do DSTAR/DMR/FUSION/P25/NXDN audio compression/decompression. It is supported by a number of apps and programs such as BlueDV, DummyRepeater, Buster and Peanut.



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Board specifications

The ZUM AMBE board uses an authentic AMBE3000R chip sourced directly from DVSI. This chip allows for audio transcoding for DSTAR, DMR, Fusion, P25 and NXDN.

Connection types

- Wi-Fi (2.4Ghz B/G/N)
- Serial (460800 baud)
- Ethernet (100Mbit/full duplex)

The board can be used with the following software.

- BlueDV http://www.pa7lim.nl/bluedv-windows/
- MMDVM (DummyRepeater) <u>https://github.com/g4klx/DummyRepeater</u>
- Peanut <u>http://www.pa7lim.nl/peanut/</u>
- Buster https://apps.apple.com/us/app/buster/id1060175273?mt=12

Configuration

• The configuration is stored on an SD card

Screen

• A 1.3" OLED screen can be attached to the board

Buttons

- RST hard resets the board
- AP a button to enable AP Host mode in a possible future release of the firmware

Board power

The AMBE server board is powered by the micro USB port.



When using Wi-Fi or Ethernet mode, it is recommended to use a 5V USB power supply with at least 1A current rating. When using USB UART mode, it is recommended to use a powered USB hub. After applying power, the STAT and XCODE LEDs will flash up two times.



Board configuration

All the configuration information for the board is contained in the root folder of the micro SD card in the file named zum.ini. The card must be formatted with a FAT32 partition.

To make setup easy there is an online tool which has a GUI to create the zum.ini file. The tool can be access at:

http://ambeboard.zumradio.com/configurator/

Ethernet (DHCP):

To use the Ethernet port, select ETHERNET for "WiFi/Ethernet". Also select Network for "Serial/Network". In this example the "Network/IP" is set for DHCP and the "AMBE port" is 2460.

Finally click on "Download ini file" and save the file on the micro SD card and put it into the AMBE Server board.

- wifi=0 (0=Ethernet, 1=wifi)
- dhcp=1 (0=static IP, 1=dhcp)
- ambeserver=1 (0=usb serial, 1=network)
- ambeport=2460 (number is the IP port used)

S ZUM AMBEServer config maker × +	^	🗐 zum.ini - Notepad — 🗆 🔿	×
\leftarrow \rightarrow C (i) Not secure ambeboard.zumradio.c \bigstar	J:	<u>F</u> ile <u>E</u> dit F <u>o</u> rmat <u>V</u> iew <u>H</u> elp	
Create configuration file ZUM		; ZUMBE board config	^
AMBEServer board		[network]	
		wifi=0	
WiFi/Ethernet:		dhcp=1	
ETHERNET	•	mac=b4:e6:2d:00:00:01	
		ip=192.168.1.10	
Network IP:		subnet=255.255.255.0	
		gateway=192.168.1.1	
DHCP		dns=8.8.8.8	
Serial/Network:		[wifi]	
	II	ssid=myWiFi	
Network	•	ssidpassword=mypassword	
		[ambe]	
AMBE port:		; ambeserver value 0=serial, 1=ambeserver	
2460		ambeserver=1	
		ambeport=2460	
Flip screen:		ambeautoreset=0	
False	•	[screen]	
		flipscreen=0	~
Download ini file		< 2	>
		Unix (LF) Ln 1, Col 100%	

Ethernet (Static IP):

To use the Ethernet port, select ETHERNET for "WiFi/Ethernet". Also select Network for "Serial/Network". In this example the "Network/IP" is set for STATIC and the "AMBE port" is 2460.

Finally click on "Download ini file" and save the file on the micro SD card and put it into the AMBE Server board.

- wifi=0 (0=Ethernet, 1=wifi)
- dhcp=1 (0=static IP, 1=dhcp)
- ambeserver=1 (0=usb serial, 1=network)
- ambeport=2460 (number is the IP port used)
- ip=192.168.1.10
- subnet=255.255.255.0
- gateway=192.168.1.1



🧾 zum.ini - Notepad		_		×
<u>File Edit Format View H</u> elp	•			
; ZUMBE board config				^
[network]				
wifi=0				
dhcp=0				
mac=04:e6:2d:00:00:01				
ip=192.168.1.10				
subnet=255.255.255.0				
gateway=192.168.1.1				
dns=8.8.8.8				
[wifi]				
ssid=myWiFi				
ssidpassword=mypassword				
[ambe]				
; ambeserver value 0=se	rial, 1=	ambes	erver	
ambeserver=1				
ambeport=2460				
ambeaucoresec=0				
[screen]				
flipscreen=0				~
<				>
	Unix (LF)	Ln 1, 0	Col 100%	

Wi-Fi (DHCP):

To use the Ethernet port, select WIFI for "WiFi/Ethernet". Also select Network for "Serial/Network". In this example the "Network/IP" is set for DHCP and the "AMBE port" is 2460. Also enter the SSID of your network router as well as the password for your router.

Finally click on "Download ini file" and save the file on the micro SD card and put it into the AMBE Server.

- wifi=1 (0=Ethernet, 1=wifi)
- dhcp=1 (0=static IP, 1=dhcp)
- ssid=myWiFi
- ssidpassword=mypassword
- ambeserver=1 (0=usb serial, 1=network)
- ambeport=2460 (number is the IP port used)

S ZUM AMBEServer config maker × +		×		
\leftarrow \rightarrow C () Not secure ambeboard.zumradio.com/ \Rightarrow	ل ا ک	:		
Create configuration file ZUM AMBEServer board				
WiFi/Ethernet:				
WIFI	•	•]	🦳 zum ini - Notenad — 🔲 🔪	~
Wifi SSID:		- 1	File Felt Formet View Hele	
myWiFi		1	· 7UMBE board config	~
			[network]	
Wifi password:		- 1	wifi=1	
mypassword			dhcp=1	
Natural ID:		=	mac=b4:e6:2d:00:00:01	
			1p=192.168.1.10	
DHCP	•		gateway=192.168.1.1	
Serial/Network:			dns=8.8.8.8	
Network		a I	[wifi]	
			ssid=myWiFi	
AMBE port:			ssidpassword=mypassword	
2460			: ambeserver value 0=serial. 1=ambeserver	
Elin screen:			ambeserver=1	
			ambeport=2460	
False	•		ambeautoreset=0	
Download ini file			[screen]	
			TTTPSCIERI-0	× *
			Univ (LE) Lo 1 Call 100%	



Wi-Fi (Static IP):

To use the Ethernet port, select ETHERNET for "WiFi/Ethernet". Also select Network for "Serial/Network". In this example the "Network/IP" is set for STATIC and the "AMBE port" is 2460.

Finally click on "Download ini file" and save the file on the micro SD card and put it into the AMBE Server.

- wifi=0 (0=Ethernet, 1=wifi)
- dhcp=1 (0=static IP, 1=dhcp)
- ssid=myWiFi / ssidpassword=mypassword
- ambeserver=1 (0=usb serial, 1=network)
- ambeport=2460 (number is the IP port used)
- ip=192.168.1.10
- subnet=255.255.255.0
- gateway=192.168.1.1



USB UART

To use the USB UART port, select Serial for "Serial/Network". In this example the network related settings are not used.

Click on "Download ini file" and save the file on the micro SD card and put it into the AMBE Server board.

In the zum.ini file, those settings are specified as follows:

• ambeserver=0 (0=usb serial, 1=network)

S ZUM AMBEServer config maker × + − □ >	
← → C 🛈 Not secure ambeboard.zumradio.com/ ☆ 🥑	
Create configuration file ZUM	🗐 zum.ini - Notepad — 🗆 🗙
AMBEServer board	<u>F</u> ile <u>E</u> dit F <u>o</u> rmat <u>V</u> iew <u>H</u> elp
WiFi/Ethernet:	; ZUMBE board config ^ [network]
ETHERNET	wifi=0
Network IP:	dhcp=1 mac=b4:e6:2d:00:00:01 in=192 168 1 10
DHCP	subnet=255.255.255.0
Serial/Network:	gateway=192.168.1.1 dns=8.8.8.8 [wifi]
AMBE port:	ssid=mywiFi ssidpassword=mypassword [ambe]
2460	: ambeserver value 0=serial, 1=ambeserver
Flip screen:	ambeserver=0 ambeport=2460
False	ambeautoreset=0
Download ini file	flipscreen=0
	Unix (LF) Ln 1, Col 100%

Software configuration

The ZUM AMBE board is supported by a number of software products. Below are some quick start instructions to getting the software configured for use.

BlueDV for Windows

BlueDV is a Windows application that can be used to access to D-STAR, DMR and Fusion networks without needing a radio.

Download and install the app from:

http://www.pa7lim.nl/bluedv-windows/

Make sure that "Serial" is not turned on. Next, select "Menu", and then "Setup". Enter "Your Call", select "Use AMBE" and select "Use AMBE Server". Next enter the "Host/IP" address and "Port" number of the ZUM AMBE board. Finally, select "Save".

🔤 BlueDV for Windows					- 0	×
General Your Call Serial Port Radio Save QSO Log RX/TX Colors Frequency Mode Timer Radio TX power Latitude Longitude Always on top	KI6ZUM COM1 Invert RXTX screen Invert RXTX screen 434300000 10 Seconds + 52.0570 in decimals + 005.0739 in decimals	DMR DMR ID hotspot DMR ID simple QRG Enable at start DMR type No inband data Brandmeister DMR Master Master Password DMR+	2040000 2040000 -100 -50 0 × BM × 2042 NL × passw0rd	AMBE Use AMBE Model AMBE Serial Port DMR ID Baud rate Use AMBEServer Host/IP Port Start/Stop Beep Kill timer (min) DSTAR text PTT keying	✓ Thumb DV/DVStick3 AMBE3000 ✓ ✓ ✓ 460800 ✓ 192.168.1.10 2460 ✓ ✓ 5 ✓ BlueDV by PA7LIM	X
DSTAR DSTAR Module APRS Enable at start Default reflector Save Ca	B v REF012A (Empty is not connect)	FUSION QTH Location Enable at start Default reflector YSF FCS	JO22MB O YSF FCS SC Scotland FCS004 V 01 V	Enable Serial port COM RX Indicator RX Indicator TT Button O CTS DSR	1 V Enable O High O Low	

New screen:

English

в ~

REF030C

 \checkmark

(Active after restart)

(Empty is not connect)

™ BlueDV for Windows General

Your Call

Serial Port Radio Save QSO Log

RX/TX Colors

Frequency

Mode Timer

Latitude

Longitude Always on top

Language

APRS

DSTAR Module

Enable at start

Default reflector

Save Cancel

DSTAR

Radio TX power

er user guide				ZL	JM r	(;)) Radio
						×
	DMR		AMBE			
KI6ZUM	DMR ID hotspot	3106892	Use AMBE	🗹 Thumbi	V/DVStic	k3X
COM1 V Enable DTR	DMR ID simple	3106892	Model AMBE	AMBE3000	\sim	
	0.50	-100	Serial Port		~	
Invert RXTX screen	QRG	0	DMR ID	3106892		
434600000	Enable at start		Baud rate	460800	\sim	
10 Seconds	DMR type	BM \sim	Use AMBES	erver 🗹		
	No inband data		Host/IP	192.168.1.4	4	
	Brandmeister		Port	2460		
+ ~ 52.0570 in decimals	DMR Master	2042 NL \sim	Start/Stop Be	eep 🗹		
+ ~ 005.0739 in decimals	Master Password	passw0rd	Kill timer (mir	5	\sim	
	DMR+		DSTAR/C4F	M text BlueDV by F	A7LIM	
English (Active after restart)	Master	DL-NORD ~	PTT keying			

DM13

○ YSF ● FCS

ZOMBIE-ALERT \sim

FCS004 ~ 01 ~

COM1 RX Indicator 🗹 Enable

) High

O Low

High

O Low

Enable

Serial port

RTS

PTT Button

CTS

O DSR

Now click on "AMBE" and select the preferred Microphone and Speakers for your machine.

Master

QTH Location

Enable at start

Default reflector

FUSION

YSF

FCS

🐄 BlueDV for Wi Menu Update	AMBE About	8 90 88 900 88 89 99 99					□ ×
~	Microphone (C-Media USI Speakers (C-Media USB He	B Headpho 🔹		By David P	A7LIM V	ersion 1.0.0.95	58
SERIAL	Frequency DMR master	Firmware Dest TG	LISTENING BER	Lastheard Time	AMBE BN Call	Name	RS chat Mode
DMR	CALL						
FUSION	INFO						
	Idle st	atus	TX RX				
	Call Status Not Connected	Call Status Not Linked	Call Status Not Linked	DS	k	A (MBE3000

To start using BlueDV, select "Serial". This will connect to the AMBE Server. Now select "DSTAR" which will enable DStar mode. Now you can select the reflector and module. You use the "Link" and "Unlink" buttons to connect to the reflector.



New screen

™ BlueDV for V Menu Updat	Vindows e AMBE <mark>About</mark>			- 🗆 X
DSTAR 🗸	REF062 ~ A		CS O XRF O XLX	By David PA7LIM Version 1.0.0.9595
SERIAL	Frequency DMR master	Firmware AMBE3000R Dest TG	LISTENING BER	Lastheard AMBE BM lookup APRS chat help
DMR	CALL			DMR Fusion 204 P DG-ID 00 V Nederland
FUSION	NAME INFO			VOX Fusion Gain hang 3 spk 5 vox 1 mic -5
	DSTAR	Status Connected to AM	BEServer TX RX	DMR Gain DSTAR Gain spk 0 3 spk 0 -6 mic -5 mic 0 5
Donate	DMR Call Status Not Connected	DSTAR Call Status Linked to REF030 C	FUSION Call Status Not Linked	DMR DSTAR FUSION AMBE3000

Once you are connected to your Reflector or Talk Group, you can transmit by clicking on the "AMBE3000" button. To stop transmitting, click on the button again.

🐄 BlueDV for V	Vindows				- 🗆 X
Menu Updat	e AMBE About				
DSTAR ~	REF084 V C	V Link Unlink REF	O DCS O XRF O XLX	By David PA7LIM	/ersion 1.0.0.9558
SERIAL	Francisco	5-1		Lastheard AMBE B	M lookup APRS chat
	Prequency	FITHWATE AMDESOUGK	IX	Time Call	Name Mode
	DMK master	Dest IG	BER	02:15 PM	DSTAR La DSTAR
DMR	CALL	ECHEA P	ынт 🔲	02.101 M 13/1/1	La bonn
	L., 177 L., L.,		1101		
DSTAR	ЫАМ⊏	1 0			
	1111116	L			
	TNEN	2000221			
FUSION		2009251			
	DSTAR	Status Connected to AMB	EServer TX RX		
	DMR	DSTAR	FUSION	DSTAR	
	Call Status Not Connected	Call F5HFA Status Linked to REF084 C	Call Statue Not Linked	USTAN	AMBE3000
	Status Hot Sofficeted	Status Entrol to HEI 004 C		Mute spk	

Peanut

On the Peanut you can talk with HAM amateurs around the world via an Android device or network radio. Some of the ROOMS are connected to DSTAR reflectors (XRF076B, XRF076F, XRF070C etc.) or DMR reflectors/talkgroups. You only need the Windows app or an Android device to use DSTAR or DMR.

The software for Windows is available for download from: <u>http://www.pa7lim.nl/peanut/</u>

If you don't already have a "Peanut ID", request one from: <u>http://www.pa7lim.nl/peanut-request/</u>

Peanut × Country Room Off On NL About Setup Call Room PTT OFF Frequency 40 50 60 > Hardware rai i NAME Dutch room Not for commercial use. By David PA7LIM Version 2.2.1

Enter your call sign in the "Call" field. Next, click on "Query" so the app can determine your DMR ID. Next, enter in the "Code" field the "Peanut ID" you were given from the link above. Next, select your preferred Speaker and Microphone. Lastly click on "Save".

Setup	– 🗆 X
General	DVAP
Call KI6ZUM	DVAP serial COM1
DMR id 0 V Query	Frequency 145400000
Code	Frequency Tune 0
Device SOUNDCARD V	Power
Master Global V	Tower
Веер	Sound Card
Always on top	Speaker Microsoft Sound Mapper ~
SpaceBar PTT	Microphone Microsoft Sound Mapper ~
RX/TX Colors	
Save	DMR registration World DMR registration Europe

Install then launch the app and click on "Setup".

Select the host "Country" of the talk room or reflector you want to connect. Next select the "Room". Clicking on the "Off/On" switch will connect and disconnect from the "Room. Clicking on the slider will turn on transmit – speak clearly into your microphone. Clicking again on the slider will turn off transmit.



Once you are connected, you can also look at the Peanut Dashboard to see who else is connected to the system.

http://peanut.pa7lim.nl/

To set up your own XLX DSTAR reflector or DMR plus reflector, follow these instructions:

http://www.pa7lim.nl/ambeserver/

Once the server has been setup, you can have it added to the Peanut network by sending the details to David PA7LIM.

Buster

Buster is a Mac OSX application that allows you to connect to DSTAR reflectors, then listen and talk to people on the reflector. The application connects to the ZUM AMBE server over the local network to do the audio compression and decompression.

The app can be downloaded from the Apple App Store:

https://apps.apple.com/us/app/buster/id1060175273?mt=12

Once installed, several settings need to be configured.

Click on the "General" button to get to the user settings. Here, enter your call sign and 4 character message. The "BSTR" message shows you are connecting with Buster.

Preferences
General Audio Vocoder
My Info Call KM6ZJX / BSTR Message Buster 1.0
Transmit Key
F5 X

Click on the "Audio" button to get to the microphone and speaker/headphone settings. Here, set the "Output" and "Input" values to the preferred microphone and speaker/headphone devices on your computer.



Click on the "Vocoder" button to get to the AMBE device configuration. Select "Network DV3000" from the pulldown menu. Next enter the IP "Address" and "Port" number for the ZUM AMBE3000 board. Finally press "Test". The software should display the "Product ID AMBE3000R and the "Version" number of the board.

Preferences
General Audio Vocoder
Network DV3000 ᅌ
Address 192.168.0.190 Port 2460 Test
Product ID AMBE3000R
Version V120.E100.XXXX.C106.G514.R009.B0010411.C0020208

Click on the "+" sign in the bottom right corner to add a reflector. Next, enter the name of the reflector and set the module letter of the reflector. For example "REF030" and "C" specifies Reflector 30C. Finally click "Add".

🔘 😑 🕒 Buster								
O PTT	Status:				Volume		Q Search	Reflector
								REF030•C
Time	My	Your	RPT1	RPT2	Duration	Message		Loc REF084 • C
								_
								$+ - \mathcal{P} \mathcal{P}$
							-	
							DEE030	
							REF030	

To link to a reflector, select the preferred one from the "Reflector" list and click on the "Link" button. You will hear the audio when there is traffic on the reflector. To unlink, click on the "Unlink" button.

				Buster		
O PTT	Status:				Volume Q Searc	Reflector
Time	My	Your	RPT1	RPT2	Duration Message	Loc REF084 • C
						REF030•C
						Link Unlink
						$+ - \mathcal{R}\mathcal{R}$

To talk on the reflector, wait and listen until you hear a gap between people talking. Next click on the "PTT" button and speak clearly into your selected microphone. When done talking, press the "PTT" button again.

\bigcirc	•					Buster				
O DIT Statue: Linked to REERRA C					Volume O_Search			Reflector		
		orara	. Elince co							REF030•C
Time			My	Your	RPT1	RPT2	Duration	Message	Location	REF084•C
0ct 17	14:39:2	5 PDT	W3P0/PNUT	CQCQCQ	PA7LIM•D	REF084•C	38.6s			REF001•C
0ct 17	14:39:1	B PDT	F5HFA/PNUT	CQCQCQ	PA7LIM•D	REF084•C	5.5s			
0ct 17	14:37:5	2 PDT	F5HFA/PNUT	CQCQCQ	PA7LIM•D	REF084•C	86.2s			
										$+ - \mathscr{O} \mathscr{O}$

MMDVM (DummyRepeater)

The source code to build the Linux and Mac versions can be downloaded from G4KLX Jonathan's Github: <u>https://github.com/g4klx/ircDDBGateway</u>

https://github.com/g4klx/DummyRepeater

Configure DummyRepeater

After launching DummyRepeater, select "Edit->Preferences" to open the configuration window.

Dummy Repeater -	20150928					_		×
File Edit Help								
	<u>~</u>	RF	T1 <unused></unused>	~	RPT2	<unused></unused>		~
Tre	nemit					One Tr	uch Dool	hu -
IId	ansmit					Une-n	оост кер	iy .
Current		0074			0.070			
Your:		RPT1:			RP12:			
My:		Flags:						
Message:								
Status								
Message:		Status 1:			Status 2:			
Status 3:		Status 4:			Status 5:			
				1				
Date/Time	Your	Му	RPT1	RPT2	Message			
<								>

On the "Callsign" tab, enter your callsign and 4 character D-STAR note.

Dummy Repeater Preferences	×
Callsign Sound Card Dongle Network Controller Timeout Message	• •
Callsign KI6ZUM / DMYR	
OK Can	cel

On the "Sound Card" tab, select your microphone ("Input") and speaker ("Output") sound devices.

Dummy	Repeater Preferences	\times
Callsign	Sound Card Dongle Network Controller Timeout Message	• •
Input	Microphone (2- C-Media USB Headphone Set) $\qquad \sim$	
Output	Speakers (2- C-Media USB Headphone Set) $\qquad \sim$	
	OK Cance	I

On the "Dongle" tab, select "DV3000 Network" for the "Type". For the "Address", enter the IP address of the AMBE Server. For the "Port", enter the port number of the AMBE Server.

Dummy Repeater Preferences							
Callsign	Sound Card Dongle	Network	Controller	Timeout	Message	• •	
Туре	DV3000 Network		\sim				
Device	<none></none>	\sim					
Speed	230400 Baud	\sim					
Address	192.168.1.25						
Port	2460						
				ОК	Can	cel	

On the "Network" tab, leave the default values.

Dummy Repeater Preferences	<
Callsign Sound Card Dongle Network Controller Timeout Message	·
Gateway Address 127.0.0.1	
Gateway Port 20010	
Local Address 127.0.0.1	
Local Port 20011	
OK Cancel	

On the "Controller" tab, make sure the "Type" is set to "None".

Dummy Repeater	Preferences			\times
Callsign Sound Ca Type	ard Dongle	Network Controlle	r Timeout Mess	age ()
Config	1	\sim		
PTT Inversion	Off	\sim		
Squelch Inversion	Off	\sim		
		[OK	Cancel

On the "TImeout" tab, leave the default value.

Dummy Repeater Pre	ferences		×
Callsign Sound Card	Dongle Network	Controller Timeout	Message 💶
Timeout (secs) 0	180	240	
		ОК	Cancel

On the "Message" tab, enter your D-STAR "Message".

Dummy Repeater Preferences					×
Callsign Sound Card Dongle	Network	Controller	Timeout	Message	• •
dummy repeater					
			OK	Can	cel

On the "Bleep" tab, leave the default setting. Finally click on "OK" to save the settings.

Dummy Rep	eater Pre	ferences					×
Sound Card	Dongle	Network	Controller	Timeout	Message	Bleep	• •
End Bleep							
					OK	Car	cel
					UN	Cai	icei



Configure ircDDBGateway

Next run ircDDBGatewayConfig. On the "Gateway" tab, set the "type" to "Repeater". Enter your "Callsign". Leave the rest of the values as defaults.

ircDDB Gateway -	20180719 — 🗆 🗙
File Help	
Gateway Repeater	r 1 Repeater 1 Repeater 2 💶 🕨
Туре	Repeater 🗸
Callsign	KI6ZUM G
Gateway Address	5
Local Icom Address	5 172.16.0.20
Local Icom Por	t 20000
Local HB Address	5 127.0.0.1
Local HB Por	t 20010
Latitude	e 0.000000
Longitude	e 0.000000
QTH	I
URI	

On the first "Repeater 1" tab, set the "Band" to your preferred D-STAR band, eg. "B". Set "Type" to "Homebrew".

ircDDB Ga	teway - 20180719 — 🗆 🗙
File Help	
Gateway R	epeater 1 Repeater 2 • •
Band	в
Туре	Homebrew \lor
Address	127.0.0.1
Port	20011
Bands	0 0
Reflector	REF001 ~ C ~
Startup	Yes ~
Reconnect	Never ~

On	the	second	"Repeater 1	" tab.	leave the	default values
0.11	the	Jecona	incpeater 1	L (UD)		actual values

ircDDB Gateway -	20180719 — 🗆 🗙
File Help	
Gateway Repeater	1 Repeater 1 Repeater 2
Frequency (MHz)	0.00000
Offset (MHz)	0.0000
Range (kms)	0
Latitude	0.000000
Longitude	0.000000
AGL (m)	0
QTH	
URL	

On the "ircDDB 1st Network" tab, make sure "ircDDB" is "Enabled" and enter your callsign in the "Username" field.

ircDDB Ga File Help	teway - 20180719	-		×
Repeater 4	ircDDB 1st Network	ircDDB	2nd Ne	• •
ircDDB	Enabled		~	
Hostname	group1-irc.ircddb.ne	et	~	
Username	KI6ZUM			
Password]
				_

For the "ircDDB 2nd Network", "ircDDB 3rd Network" and "ircDDB 4th Network" tabs, make sure "ircDDB" is set to "Disabled".

■ ircDDB Gateway - 20180719 □ ×	📧 ircDDB Gateway - 20180719 🗆 🗙	📧 ircDDB Gateway - 20180719 🗆 🗙
File Help	File Help	File Help
ircDDB 1st Network ircDDB 2nd Network ircDE	ircDDB 2nd Network ircDDB 3rd Network cDI · · · ircDDB Disabled v	ircDDB 3rd Network ircDDB 4th Network D-PR · · ircDDB Disabled v
Hostname rr.openquad.net ~	Hostname	Hostname
Username	Username	Username
Password	Password	Password

On the "DExtra" tab, set "DExtra" to "Enabled".

💽 ircDD File Hel	B Gatew	ay - 20180	719	-		×
D-PRS	DExtra	D-Plus	DCS an	d CCS	XLX H	• •
	DExtra	Enabled		` ~		
Max. D	ongles	5		\sim		

On the "D-Plus" tab, set "D-Plus" to "Enabled. Enter your callsign in the "Login" field.

🔳 ircD	DB Gatewa	ay - 201807	719	_		×
File H	elp					
D-PRS	5 DExtra	D-Plus	DCS an	d CCS	XLX H	• •
0	D-Plus	Enabled		\sim		
Max.	Dongles	5		\sim		
	Login	KI6ZUM				
						1
						1
						1
						1
						1
						_

On the "DCS and CSS" tab, leave the settings default.

■ ircDD File Hel	B Gateway - 20180 p)719 —		×
D-PRS	DExtra D-Plus	DCS and CCS	XLX H	• •
DCS	Disabled	\sim		- 1
CCS	Disabled) ~		- 1
Server	CCS704	\sim		- 1
				- 1
				- 1

Skip the remaining tabs and leave their settings default. Select "File->Save" then "File->Exit".

Start ircDDBGateway. It will download the server addresses. Once it is done, select "File->Exit".

III ircDDB Gateway - 20180719 - DEBUG		_	×
File View Help			
Status			
ircDDB: Disconnected	D-PRS: Inactive		
Links			
Repeater 1: KI6ZUM B Not linked			
Repeater 2:			
Repeater 3:			
Repeater 4:			
Dongles			
Log			
M: 2019-11-12 22:56:39: DCS: DCS262	87.139.70.67		
M: 2019-11-12 22:56:39: DCS: DCS844	137.226.79.122		
M: 2019-11-12 22:56:39: DCS: DCS945	213.202.229.40		
M: 2019-11-12 22:56:39: DCS: DCS111	213.202.229.40		
M: 2019-11-12 22:56:39: Registered with dn	s.xreflector.net using callsign KI6ZUM		
M: 2019-11-12 22:56:39: Loaded 34 DCS ref	ectors from dns.xreflector.net		
M: 2019-11-12 22:56:39: Starting the Callsig	n Server thread		

If you wish to have ircDDBGateway automatically connect to a reflector, run ircDDBGatewayConfig, go to the "Repeater 1" tab and select the "Reflector". The drop down list should contain the newly downloaded names of all the servers. Finally select "File->Save" then "File->Exit".

File Help	
Gateway	Repeater 1 Repeater 2
Band	B ~
Туре	Homebrew ~
Address	5 127.0.0.1
Port	t 20011
Bands	5 0 0 0
Reflector	REF001 V C V
Startup	Yes ~
Reconnect	t Never ~

Running DummyRepeater

Start Dummy Repeater. Note Dummy Repeater needs to be started before ircDDBGateway.

Dummy Repeater	- 20150928					-		х
File Edit Help								
	<u>vco</u> ~	RP	T1 <unused></unused>	~	RPT2	<unused></unused>	>	\sim
T						One T	auch Daal	
	ansnin					One-In	ouch Kepi	У
Current								
Your:		RPT1:			RPT2:			
My:		Flags:						
Message:								
Status								
Message:		Status 1:		St	tatus 2:			
Status 3:		Status 4:		SI	tatus 5:			
Date/Time	Your	My	RPT1	RPT2	Message			
<								>

Then start ircDDBGateway. It should automatically connect to the reflector if you configured it that way.

💽 ircDDB Gateway - 20180719 - DEBUG			_		\times
File View Help					
Status					
ircDDB: Disconnected	D-PRS:	Inactive			
Links					
Repeater 1: KI6ZUM B Linked to REF001 C					
Repeater 2:					
Repeater 3:					
Repeater 4:					
Dongles					
Log					
M: 2019-11-12 23:00:56: D-Plus: REF087	119.59.116.122				
M: 2019-11-12 23:00:56: D-Plus: REF088	192.155.95.29				
M: 2019-11-12 23:00:56: D-Plus: REF089	68.49.95.72				
M: 2019-11-12 23:00:56: D-Plus: REF090	96.47.95.67				
M: 2019-11-12 23:00:56: D-Plus: REF091	103.251.175.56				
M: 2019-11-12 23:00:56: Registered with opendstar.org using callsign KI6ZUM					
E: 2019-11-12 23:01:17: Cannot connect the 1	ICP client socket, e	err=10060			

If you are connected to a reflector, you should now hear the audio when anyone else is talking.

📧 Dummy Repeater -	20150928				- 🗆 X		
File Edit Help							
	<u></u>	RI	PT1 <unused></unused>	~	RPT2 <unused> ~</unused>		
Transmit One-Touch Reply					One-Touch Reply		
Current							
Your:		RPT1:			RPT2:		
Mari							
My:		Flags:					
Message:							
Status							
Message: Link	ed to REF001 C	Status 1:			Status 2:		
Status 3:	Status 3:		Status 4:		Status 5:		
Date/Time	Your	My	RPT1	RPT2	Message		
2019-11-12 15:15:17	cococo	KI6N /74A	KI6ZUM G	KI6ZUM B	5		
2019-11-12 15:14:35	CQCQCQ	M7ATE /COL	KI6ZUM G	KI6ZUM B			
2019-11-12 15:13:45	CQCQCQ	HL5BBD /IVAN	KI6ZUM G	KI6ZUM B	Ulsan KOREA		
2019-11-12 15:13:21	CQCQCQ	HL5BBD /IVAN	KI6ZUM G	KI6ZUM B	Ulsan KOREA		
2019-11-12 15:12:57	CQCQCQ	VE3IU /Rick	KI6ZUM G	KI6ZUM B	Pickering ON D74		
2019-11-12 15:11:00	CQCQCQ	HL5BBD /IVAN	KI6ZUM G	KI6ZUM B	Ulsan KOREA		
2019-11-12 15:09:30	CQCQCQ	VE3IU /Rick	KI6ZUM G	KI6ZUM B	Pickering ON D74		
2019-11-12 15:07:47	CQCQCQ	HL5BBD /IVAN	KI6ZUM G	KI6ZUM B	Ulsan KOREA		
2019-11-12 15:06:43	CQCQCQ	VE3IU /Rick	KI6ZUM G	KI6ZUM B	Pickering ON D74		
2019-11-12 15:04:47	CQCQCQ	HL5BBD /IVAN	KI6ZUM G	KI6ZUM B	Ulsan KOREA		
2019-11-12 15:04:10	CQCQCQ	VE3IU /Rick	KI6ZUM G	KI6ZUM B	Pickering ON D74		
2019-11-12 15:03:41	CQCQCQ	HL5BBD /IVAN	KI6ZUM G	KI6ZUM B	Ulsan KOREA		
<					> >		

Support for using DummyRepeater can be found on the OpenDV groups.io group:

https://groups.io/g/OpenDV/topics

XLX Reflector

Modify the [DV3000] section of the DMR Analog Bridge configuration file to use the network connected AMBE board, as opposed to the USB device. Comment out the USB device and un-comment the AMBE server section and setting the IP address and rxPort as shown below:

[DV3000]	
address = 192.168.1.243	; IP address of AMBEServer
rxPort = 2460	; Port of AMBEServer
;;address = /dev/ttyUSB0	; Device of DV3000U on this machine, DMR is on /dev/ttyUSB0
;;baud = 460800	; Baud rate of the dongle
;;serial = true	; Use serial (DV3000U) or IP

xlxd

https://github.com/LX3JL/xlxd

xlxd doesn't currently support the ZUM AMBE Server board when connected by USB. Support can be included by adding two lines to the cftdidevicedescr.cpp file.

https://github.com/LX3JL/xlxd/blob/master/ambed/cftdidevicedescr.cpp

add the bolded lines in this section of code:

```
// single channel devices
 if ((::strcmp(m_szDescription, "USB-3000") == 0) ||
                                                        // DVSI's USB-3000
    (::strcmp(m_szDescription, "DVstick-30") == 0) ||
                                                        // DVMEGA AMBE3000 device
    (::strcmp(m_szDescription, "ZUM_AMBE3000") == 0) || // ZUM AMBE Server
    (::strcmp(m szDescription, "ThumbDV") == 0))
                                                        // ThumbDV
  {
And in this section of code:
 // intstantiate the proper version of USB-3000
  if ( (::strcmp(descr->GetDescription(), "USB-3000") == 0) ||
                                                               // DVSI's USB-3000
    (::strcmp(descr->GetDescription(), "DVstick-30")== 0) ||
                                                              // DVMEGA AMBE3000 device
    (::strcmp(descr->GetDescription(), "ZUM_AMBE3000") == 0) || // ZUM AMBE Server
    (::strcmp(descr->GetDescription(), "ThumbDV") == 0))
                                                              // ThumbDV
 {
```

Recompiling the code should add support for the ZUM AMBE Server board.

OLED Screen

The ZUM AMBE board supports the 1.3" OLED screen. There are 4 wires that need to be connected from the board to the screen. The software on the board automatically uses the display when it is connected.

The most common displays look like this. There are 4 pins (GND, VCC, SCL and SDA).



The ZUM AMBE3000 board has an OLED port with 4 pins (GND, 3V3, SCL and SDA). A 4 pin header should be soldered to the board. The 4 pins should be connected together:

- GND to GND
- VCC to 3V3
- SCK to SCK
- SDA to SDA



Support

OpenDV groups.io group: https://groups.io/g/OpenDV/topics

Pi-Star support forum: https://forum.pistar.uk/

Pi-Star Facebook support group: https://www.facebook.com/groups/pistar/

Pi-Star Wiki: http://wiki.pistar.uk

ZUM Radio Facebook group: https://www.facebook.com/groups/249802742395450/

ZUM Radio email: support@zumradio.com