

INSTALLATION & CONFIGURATION MANUAL

DVQAM-1 / DVQAM-2

Single and Dual Input QAM Encoders / Modulators

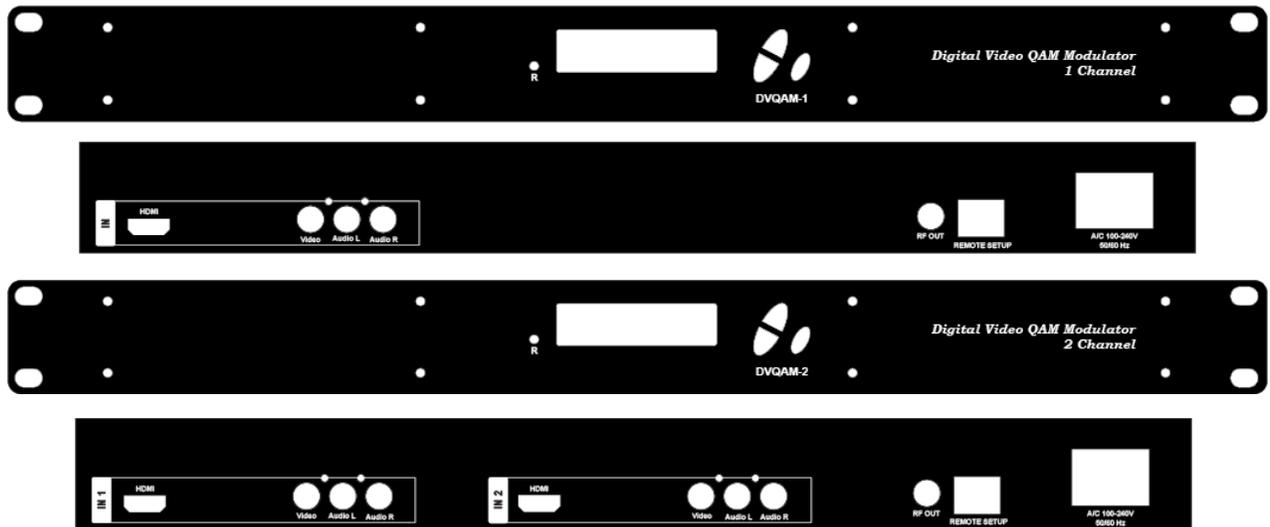


TABLE OF CONTENTS

SAFETY PRECAUTIONS 3

PACKAGE CONTENTS 4

PRODUCT DESCRIPTION 4

SPECIFICATIONS 5

UNPACKING and INSPECTION 6

PRODUCT PICTURES and DIAGRAMS 6

DVQAM-1 6

DVQAM-2 6

HARDWARE INSTALLATION and CONNECTIONS 7

MODULATOR SETUP AND CONFIGURATION 9

INITIAL SETUP 10

MODULATOR CONFIGURATION 10

Procedure to connect to the Encoder via the remote setup port 14

Procedure to connect to the Encoder for remote access and monitoring 19

DVQAM MODULATOR NOTES 20

SAFETY PRECAUTIONS



The presence of this symbol is to alert the installer and user to the presence of uninsulated dangerous voltages within the product's enclosure that may be of sufficient magnitude to produce a risk of electric shock.

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS DEVICE TO RAIN OR MOISTURE. DO NOT OPEN THE UNIT. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

- ❖ DO NOT apply power to the unit until all connections have been made, all components have been installed and all wiring has been properly terminated.
- ❖ DO NOT terminate, change or uninstall any wiring without first disconnecting the unit's power adapter from the device.
- ❖ This device is supplied with the appropriately rated 12VDC power supply with the center pin positive. The use of any other power supply could cause damage and invalidate the manufacturer's warranty.
- ❖ DO NOT connect the power cord to the device if the power cord is damaged.
- ❖ DO NOT cut the power cord.
- ❖ DO NOT plug the power cord into an AC outlet until all cables and connections to the device have been properly connected.
- ❖ The device should be installed in an environment consistent with its operating temperature specifications. Placement next to heating devices and ducts is to be avoided as doing so may cause damage. The device should not be placed in areas of high humidity.
- ❖ DO NOT cover any of the device's ventilation openings.
- ❖ DO NOT cover or obstruct the device's fan or fan openings.
- ❖ If the device has been in a cold environment allow it to warm to room temperature for at least 2 hours before connecting to an AC outlet.



PACKAGE CONTENTS

This package contains:

- ❖ One DVQAM-1 OR DVQAM-2 QAM Encoder / Modulator
- ❖ One power cable
- ❖ One installation / configuration manual

Inspect the package before starting installation to ensure there is no damage and all supplied contents are present. Contact your distributor or dealer should the device be damaged or package contents are incomplete.

PRODUCT DESCRIPTION

DVQAM Series of encoders / modulators convert Digital Video Broadcasting (DVB) Standard and High definition video and audio signals to a QAM RF output. The DVQAM series Encoders/Modulators single and dual intelligent inputs feature:

- ✓ Front panel LCD Display for easy installation
- ✓ High Resolution up to 1080i for MPEG2, 1080p for AVC
- ✓ Standard, IRD, HRC
- ✓ Composite and HDMI (unencrypted) inputs
- ✓ MPEG2 or MPEG4(AVC) Video Output
- ✓ QAM256/QAM64 Selectable
- ✓ Closed Captioning Support
- ✓ 40dBmV Output
- ✓ Adjustable attenuation
- ✓ Rack mountable 1RU height

The DVQAM-1 and DVQAM-2 are perfect for multi-video distribution solutions in the commercial market (hotels, motels, sports bars, restaurants, hospitals, casinos, business and university campuses, etc.) as well as home entertainment systems.

SPECIFICATIONS

DVB-C J.83 Annex B	DVQAM-1	DVQAM-2
INPUT		
Input Connectors	HDMI input (Video +Audio) Composite input (Video) L / R_ channel Audio input (Audio)	HDMI input (Video +Audio) Composite input (Video) L / R_ channel Audio input (Audio)
Video Input Level	0.7 – 1.4V (peak-to peak)	0.7 – 1.4V (peak-to-peak)
Video Mode	480i,480p,576i,576p,720p50,720p60,1080i50,1080i60 (1080p50,1080p60 Optional for AVC Encoding Only)	480i,480p,576i,576p,720p50,720p60,1080i50,1080i60 (1080p50,1080p60 Optional for AVC Encoding Only)
Audio input	Stereo / Digital	Stereo / Digital
Audio Input Level	0.4 – 0.8V (peak-to peak)	0.4 – 0.8V (peak-to peak)
Input Impedance	75 ohm	75 ohm
OUTPUT		
Frequency Range	54-864MHz (CH2-CH135)	54-864MHz (CH2-CH135)
Output Level	40 dBmV	40 dBmV
Output Impedance	75 ohm	75 ohm
Channel Bandwidth	6 MHz	6 MHz
Channel Level Adjustment	1~10dB with +/-0.2dB accuracy, 11~20 dB is for reference	1~10dB with +/-0.2dB accuracy, 11~20 dB is for reference
MER	36dB minimum, 37dB typical	36dB minimum, 37dB typical
MODULATION		
Video Resolution	1080i/720p/576p/576i/480p/480i for all 1080p for AVC	1080i/720p/576p/576i/480p/480i for all 1080p for AVC
Video Compression	MPEG2, MP@HL / AVC, MP@Level4	MPEG2, MP@HL / AVC, MP@Level4
Audio Compression	MPEG1 Layer II / AAC AC3 Pass through	MPEG1 Layer II / AAC AC3 Pass through
Constellations	64/256 QAM	256 QAM
GENERAL		
Power Supply	12 VDC 3 Amp.	12 VDC 3 Amp.
Consumption	1300 mA	1700 mA
Languages	English	English
Dimensions	482.7mm x 240mm x 44.4mm (19" x9.45" x 1.75")	482.7mm x 240mm x 44.4mm (19" x9.45" x 1.75")
Weight	3.1 kgs	3.2 kgs

****Specifications subject to change without prior notice***

INSTALLATION



System Installer must adhere to Article 820-40 of the NEC that provides guidelines for proper grounding and specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as possible.

UNPACKING and INSPECTION

Each unit is shipped factory tested. Ensure all items are removed from the container prior to discarding any packing material.

Thoroughly inspect the unit for shipping damage with particular attention to connectors and controls. If there is any sign of damage to the unit or damaged or loose connectors contact your distributor immediately. Do not put the equipment into service if there is any indication of defect or damage.

PRODUCT PICTURES and DIAGRAMS

DVQAM-1



DVQAM-2



HARDWARE INSTALLATION and CONNECTIONS

It is highly recommended that quality cables and connectors be used for all video and audio source connections.

1. The unit is designed to be rack mounted in a standard EIA 19" rack.
2. The unit comes standard with HDMI, Component, and Composite video inputs.

The DVQAM encoder / modulator are intelligently designed to detect the video input from the video source. **HDMI Connection:** Connect the HDMI cable(s) from the video source(s) into the HDMI input(s). If using a **Composite Video** source, use a 75Ω coaxial cable with RCA connectors to connect the **video source** (e.g., CATV, DVD, VCR, Camera) to the unit's CVBS port (IN1...IN2 depending on the DVQAM model).

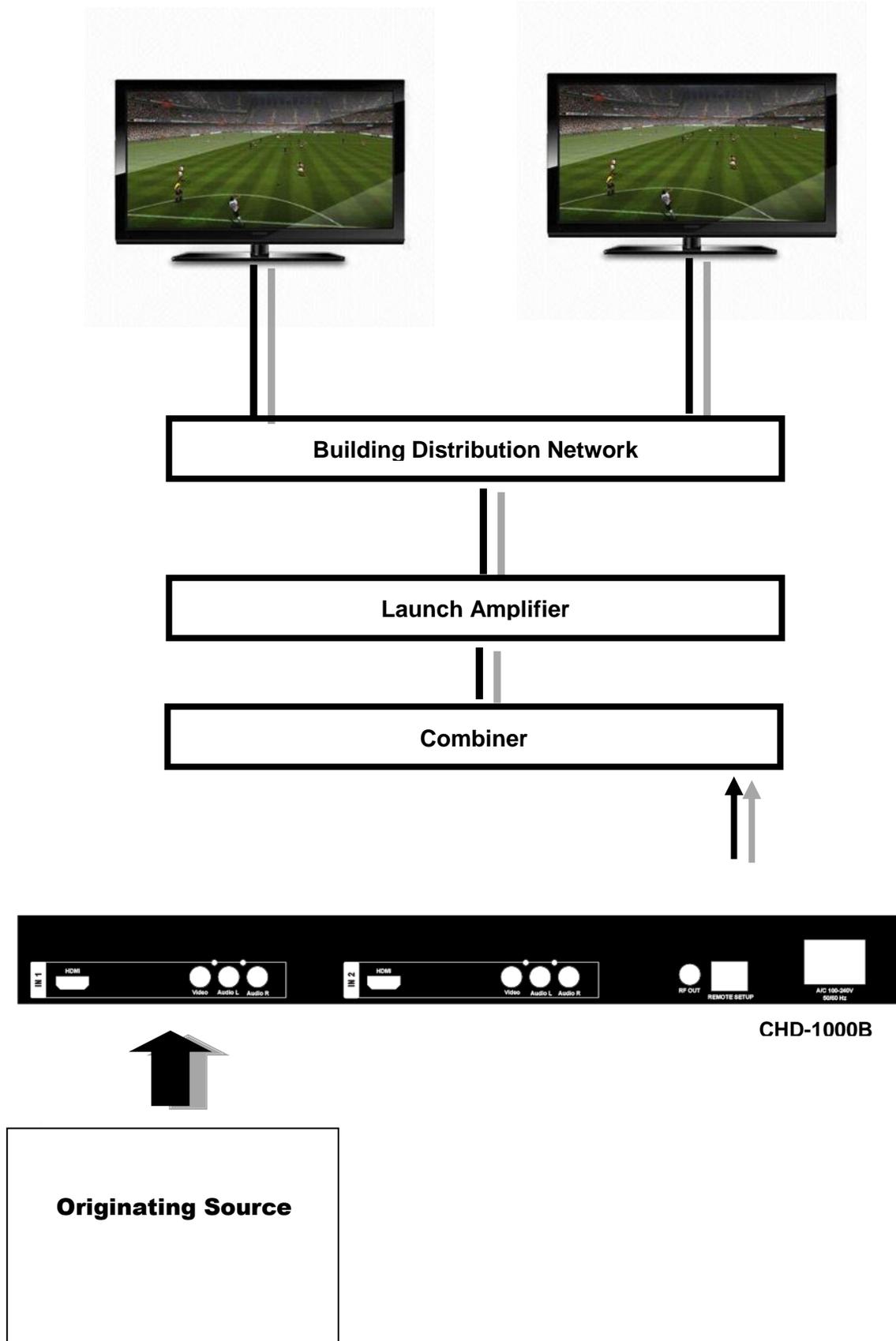
Repeat this step for each video source connection.

3. **Composite Audio inputs:** For A/V audio input (Left / Right Audio) use RCA cables to connect the **audio source** to the red / white **AUDIO L and AUDIO R INPUT jacks** (IN1...IN2 depending on the model).

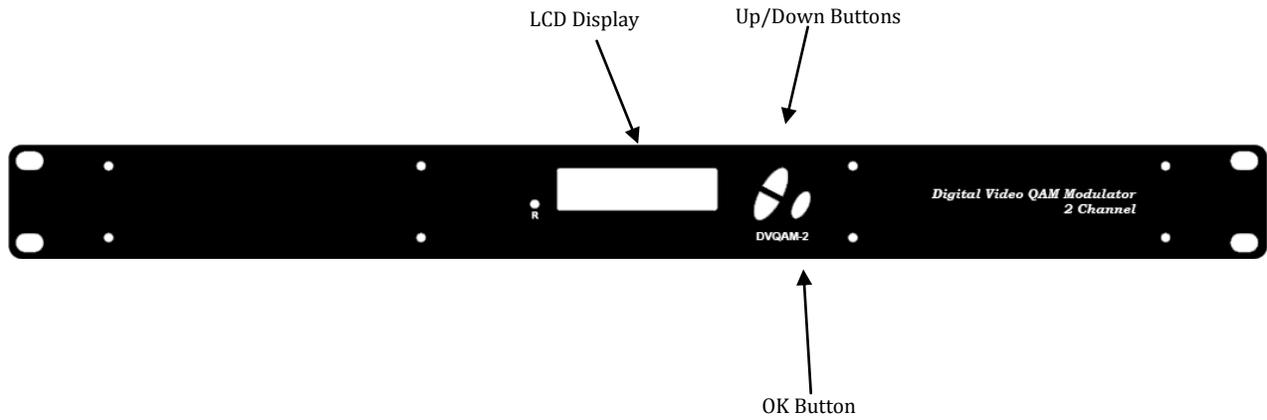
Repeat this step for each audio source connection.

Be sure the video and audio connections for each source are consistent with the unit's inputs (IN1...IN2 depending on the model).

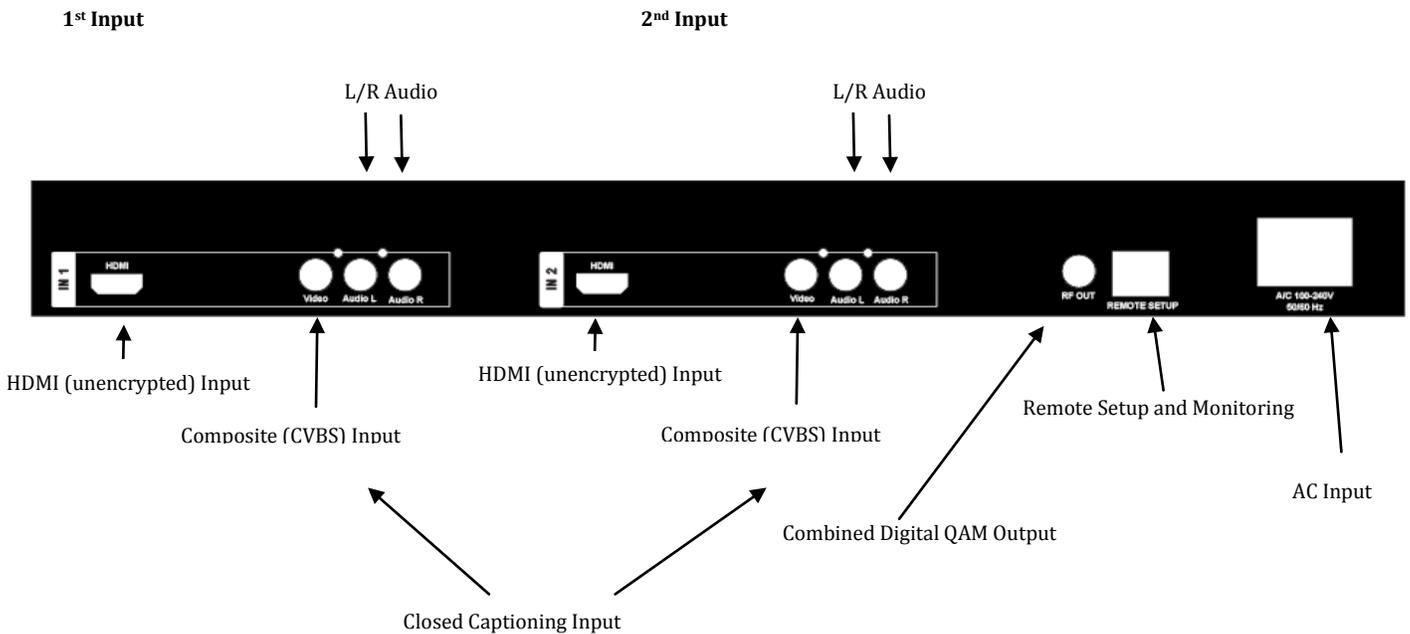
4. Use a quality 75Ω coaxial cable with "F" connectors from the unit's **RF OUT jack** to the **distribution system** (combiner or reverse splitter) or directly to a television.
5. Connect the included power cord to the unit's **POWER** plug.
6. Connect the power cord to an appropriately rated AC power outlet.



MODULATOR SETUP AND CONFIGURATION



DVQAM-2



INITIAL SETUP

The DVQAM's front panel can be used to configure the modulator as desired. Below find the advanced menu setup instructions.

MODULATOR CONFIGURATION

Once the modulator is powered up it will go through an internal booting process. When “**Running**” appears in the LCD Display the unit is ready for programming or operation. (The unit will display Bit rate information shortly after “Running” appears in the LCD display).

- ❖ **Password** – Press the OK button to select a 4-digit password. Use the Scroll Up/Down button to search and select individual numbers for the password. The default password is 0000. Press the OK button for each number to set the password.

*****NOTICE TO THE INSTALLER- SEVERAL INTERNAL FUNCTIONS ARE RESERVED OR SET ASIDE FOR FUTURE USE. SKIP OVER THESE 'RESERVE' MENUS WHEN SETTING UP THE ENCODER FOR YOUR APPLICATION**

- ❖ **Advanced Menu** – To access the Advanced Menu first enter the password by pressing the OK button. Once the correct password is entered press the OK button and the LCD Screen will display “Advanced Menu Output Channel”. The following configuration options are available under Advanced Menu:

- **Output Channel** – Use the Scroll Up/Down button to change the output channel. Channels 2 to 135 are available. Once the desired output channel is selected press the OK button to set the channel.

The LCD Display will show both the channel number and the frequency number of the output channel (example: 103 669.0000MHz)

If using physical channel number – the encoder's Major and Minor number will be set using the output channel. Example: Output Channel is set to Ch 103. This would result in the display channel of 103-1, 103-2 if installing a dual channel.

Enable VCN Menu for VCN Mapping- Scroll to VCN Menu.

- **Attenuation** – Use the Scroll Up/Down button to select Attenuation. Press the OK button to enter the Attenuation menu. Use the Scroll/Up down button to select the desired attenuation in 1dB increments from 0 to minus 10 dB accurately. Once the desired attenuation level is found press the OK button to set.
- **Constellation** – Use the Scroll Up/Down button to select Constellation. Press the OK button to enter the Constellation menu. Select QAM256 or QAM64. Select the desired Constellation then press the OK button to set. Factor Default: QAM256. DVQAM-2 is fixed at QAM 256.
- **Interleaver** - If needed, use the Scroll Up/Down button to select the appropriate Interleaver selection. Press the OK button to enter the Interleaver menu. Use the Scroll Up/Down button to select the desired Interleaver value and press the OK button to set. Factory default: I=128, J=8.
- **Channel Type** – Use the Scroll Up/Down button to select Channel Type. Press the OK button to enter the Channel Type menu. Menu options are STD, HRC and IRC. Factory default: STD. Use the Scroll Up/Down button to select the desired Channel Type and press the OK button to set.

- **RF Output** – Use the Scroll Up/Down button to select RF Output. Press the OK button to enter the RF Output menu. Options are Normal, Inverted, or C.W. Factory default: Normal. Use the Scroll Up/Down button to select the desired RF Output and press the OK button to set.
- **Brightness** – Use the Scroll Up/Down button to select Brightness. Press the OK button to enter the Brightness menu. Use the Scroll Up/Down button to select the desired Brightness value (0 to 255) and press the OK button to set. Factory default: 128.
- **Contrast** – Use the Scroll Up/Down button to select Contrast. Press the OK button to enter the Contrast menu. Use the Scroll Up/Down button to select the desired Contrast value (0 to 255) and press the OK button to set. Factory default: 128.
- **Saturation** – Use the Scroll Up/Down button to select Saturation. Press the OK button to enter the Saturation menu. Use the Scroll Up/Down button to select the desired Saturation value (0 to 255) and press the OK button to set. Factory default: 128.
- **Hue** – Use the Scroll Up/Down button to select Hue. Press the OK button to enter the Hue menu. Use the Scroll Up/Down button to select the desired Hue value (0 to 255) and press the OK button to set. Factory default: 128.
- **Device Address** – Use the Scroll Up/Down button to select Device Address. Press the OK button to enter the Device Address menu. Use the Scroll Up/Down to select the Desired Address ranging from 1 to 255 then press OK to set. **A unique device address is required if setting up more than 1 encoder per site. This allows the user to distinguish each device.**
- **Set TS ID.** Use the Scroll Up/Down button to set TS ID. Press the OK button to enter the TS menu. Use the Scroll Up/Down to select the TS ID ranging from 1 to 65535 then press OK to set.
- **Set Region Name: Note: Do not Change. Skip this function.**
- **Default Configuration –**



Caution: Once the OK button is pressed at the Default Config menu the unit will automatically reset to the factory default settings.

All settings or changes to the encoder/modulator will be lost.

If you wish to set the modulator back to the factory default settings use the Scroll Up/Down button to reach Default Configuration then press the OK button.

- **VCN-** To enable Virtual Channel Mapping Scroll to VCN Menu. Press OK to enter the VCN menu. Select Enable to turn on VCN functionality. If VCN is not enabled- the output channels will be dependent on the output channel/physical number. Factory default: **Disable.**
- **1 Video Input** – Use the Scroll Up/Down button to select 1 Video Input. Press the OK button to enter the 1 Video Input menu. Use the Scroll Up/Down button to select the Video Input option: Auto, Composite, Component*, HDMI, or ASI*. Factory default: Auto. Press the OK button to set.

The DVQAM series of Encoder/Modulators is designed with Intelligent Input Detection (IID) technology. If you select Auto, the unit will detect the video source. You can set the input source on any of the input types available on your unit. If the modulator has more than one video input scroll through the Advanced Menu for the additional video input menus. (2 Video Input for Dual Unit).

****Component and ASI connections are not present on model DVQAM-1 & DVQAM-2. Please skip the component or ASI input selection.***

- **1 Program Num.** Use the Scroll Up/Down button to set 1 Program Num(Number). Press the OK button to enter the 1 Program Num menu. Use the Scroll Up/Down to select the 1 Program Num ranging from 1 to 65535 then press OK to set. If the modulator has more than one video input scroll through the Advanced Menu for the additional **Program Num** menus. (2 Program Num for Dual Unit).
- **1 Short Channel Name** – Use the Scroll Up/Down button to select Short Channel Name. Press the OK button to enter the Short Channel Name menu. Use the Scroll Up/Down menu to select the first character of the desired Short Channel Name then press the OK button to set. Repeat the process until the Short Channel Name is completed. If the modulator has more than one video input scroll through the Advanced Menu for additional Short channel name menus.

The Short Name can be 7 characters long. Factory Default: MY-DVT1/MY-DVT2.

- **1 Long Ch Name** – Use the Scroll Up/Down button to select Long Channel Name. Press the OK button to enter the Long Channel Name menu. Use the Scroll Up/Down menu to select the first character of the desired Long Channel Name then press the OK button to set. Repeat the process until the Long Channel Name is completed. If the modulator has more than one video input scroll through the Advanced Menu for additional Long channel name menus. Factory Default: ATSC-Digital-TV1/ATSC-DIGITAL-TV2. The Long Name can be 16 characters long.
- **1 Source ID.** Use the Scroll Up/Down button to set 1 Source ID. Press the OK button to enter the 1 Source ID menu. Use the Scroll Up/Down to select the 1 Source ID. Range: 1 to 65535. Press OK to set. If the modulator has more than one video input scroll through the Advanced Menu for the additional **Source ID** menus. (2 Source ID for Dual Unit).
- **1 Aspect Ratio** – Use the Scroll Up/Down button to select 1 Aspect Ratio. Press the OK button to enter the 1 Aspect Ratio menu. Use the Scroll Up/Down button to select the desired Aspect Ratio option of 4:3 or 16:9 then press the OK button to set. Factory default: 4:3. If the modulator has more than one video input scroll through the Advanced Menu for additional Aspect Ratio menus.
- **1 Video Output** – The DVQAM Series of Encoder / Modulators is Dual MODE Capable. The user may select to output video in either MPEG2 or AVC (MPEG4). Use the Scroll Up/Down button to select 1 Video Output. Press the OK button to enter the 1 Video Output menu. Use the Scroll Up/Down button to select the 1 Video Output option: MPEG2 or AVC. Factory default: MPEG2. Press the OK button to set. If the modulator has more than one Video Output scroll through the Advanced Menu for the additional Video Output menus.

Note: The Dual Input Unit allows the installer to select a combination of Video Output formats. The DVQAM-2 can either have both outputs broadcasting in either MPEG2 or AVC(MPEG4) or a combination of both MPEG2 and AVC(MPEG4).

- **1 HDCP** - Use the Scroll Up/Down button to select HDCP. Press the OK button to enter the HDCP menu. Use the Scroll Up/Down button to select the proper control: Enable or Disable. The Factory default is Disable. If the modulator has more than one video input scroll through the Advanced Menu for additional HDCP menus.
- **1 Audio Input** – Use the Scroll Up/Down button to select. Press the OK button to enter the 1 Audio Input menu. Use the Scroll Up/Down button to select the 1 Audio Input option: Analog (L/R), Coaxial, or Optical. Factory default: Analog. Select the appropriate Input selection for your installation. Press the OK button to set. If the modulator has more than one Audio Input scroll through the Advanced Menu for the additional Audio Input menus.

****Coaxial and Optical connections are not present on model DVQAM-1 & DVQAM-2. Please skip the Coaxial or Optical input selection.***

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- **1 Audio Output** – Use the Scroll Up/Down button to select 1 Audio Output. Press the OK button to enter the Audio Output menu. Use the Scroll Up/Down button to select the Audio Output option: AC3 (AC-3 Pass Through), MP2 (**MPEG2 Layer I Audio**), or AAC. Factory default: MP2. Press the OK button to set. If the modulator has more than one Audio output scroll through the Advanced Menu for the additional Audio Output menus.
- **1 Closed Caption**- Use the Scroll Up/Down button to 1 Closed Caption. Press the OK button to enter the 1 Closed Caption menu. Enable / Disable 1 Closed Caption control. If the modulator has more than one Video Output scroll through the Advanced Menu for the additional Closed Caption menus.

NOTE: WHEN USING CLOSED CAPTIONING- USER MUST CONNECT FROM THE CONTENT SOURCE THE COMPOSITE OUTPUT OR CC OUTPUT SOURCE TO THE ENCODER'S VIDEO INPUT CONNECTOR

***** THE POSITION OF CLOSED CAPTIONING TEXT IS CONTROLLED BY THE BROADCASTER.**

VIRTUAL CHANNEL (VCN) MAPPING- The DVQAM Encoder offers virtual channel mapping capability.

*Example:*The output channel is set to 103(699.0000MHz). The user can set a VCN (Virtual Channel Number) by enabling the VCN function. The Integrator can map the Virtual Channel number to 57 The Virtual Channel Number displayed would be **57**. The VCN is independent of the output / physical channel.

- **1 VCN Channel**- Use the Scroll Up/Down button to 1 VCN Channel in the Advanced Menu. Press the OK button to enter the 1 VCN Channel menu. Set the 1 VCN Channel using the Scroll Up/Down buttons. Set Virtual Channel from 1-16383. If the unit has more than 1 input Scroll to set 2 VCN Channel in the Advanced Menu. Press the OK button to enter the 2 VCN Channel menu. Set 2 VCN Channel using the Scroll Up/Down buttons. Set Virtual Channel from 1-16383

NOTE: We recommend setting a unique number for each program (1 VCN, 2VCN)

- ❖ To **exit the Advanced Menu** use the Scroll Up/Down button to select Exit then press the OK button. Exit Exit Menu will appear on the LCD screen. Press the OK button twice to exit.

***** **Important – Save the Settings** *****

- ❖ Once the settings are made and the modulator is programmed (a) remove power from the unit by disconnecting the power supply cable from the rear of the unit, (b) wait 5 seconds and (c) reconnect the power cable. This will allow the modulator to capture the new settings.

Procedure to connect to the Encoder via the remote setup port
 The following procedure will allow the installer to setup the Encoder via the GUI

(Intranet setup- closed LAN setup)

1. Power up the Encoder.
2. Press the OK button on the Front Panel.
3. Enter the Password 0000 to enter Advanced Menu Setup.
4. Scroll to the Device Address Menu.



5. Set a unique Device address for each encoder being installed in the system.
 Device Address ranges from 1~255



Warning: Setting the “DEVICE ADDRESS” to 0 will clear the network setting to the Factory Default value.

6. Connect each encoder using a standard CAT5e cable from the Remote Setup port (located on the rear panel of the encoder) to a switch. Connect a CAT5e cable from the switch a PC.

NOTE: To connect to the encoder directly to a PC use a CAT5e Crossover cable

7. Set the PC via the Control Panel to “Obtain an IP address automatically”

Start- Control Panel

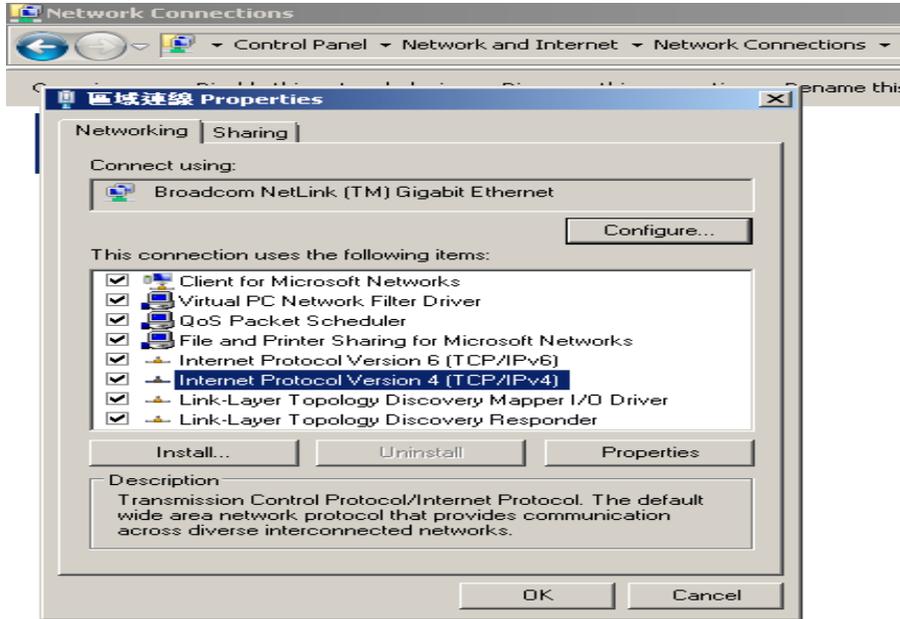
View Network Status and Tasks



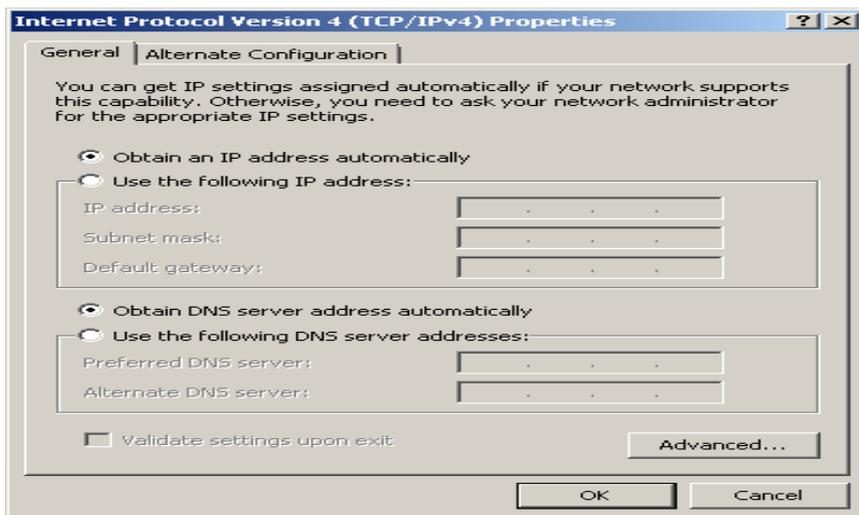
8. **Select** 'Change Adapter Settings' from the left plane



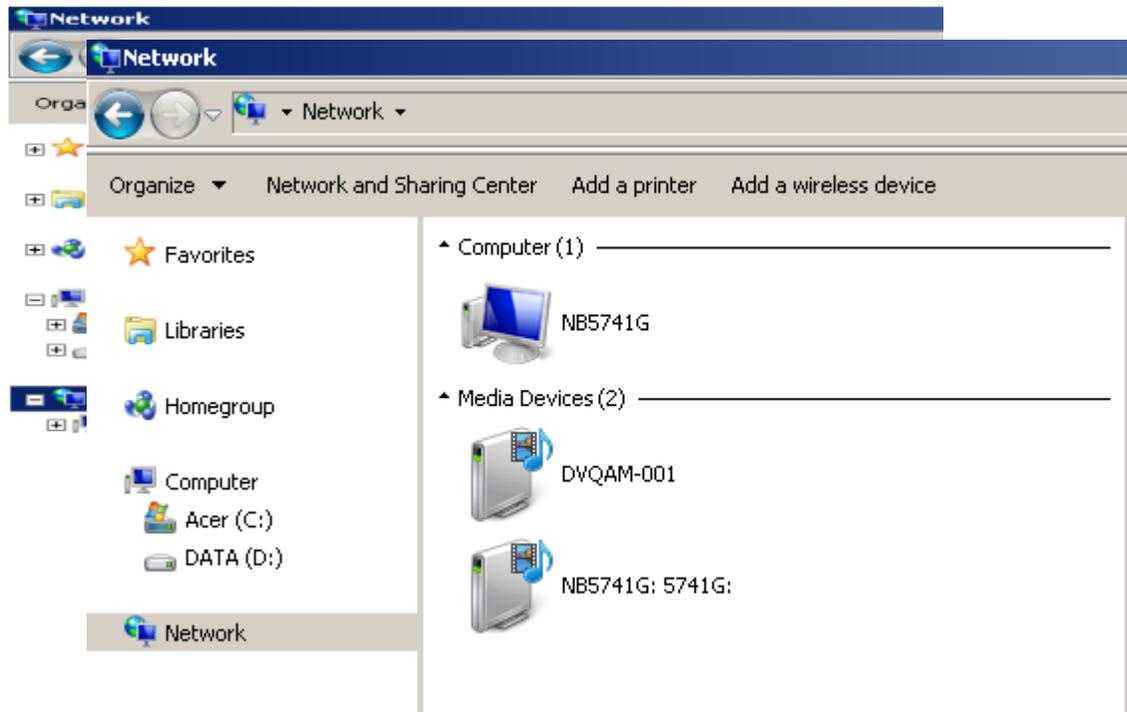
9. **Select** Local Area Connection Icon
The Right Click – Select Properties
 Internet Protocol Version 4(TCP/IPv4) Properties



10. **Select** “Obtain an IP address automatically” & “Obtain DNS server address automatically”



11. After setting the PC to obtain IP address & Obtain DNS server automatically

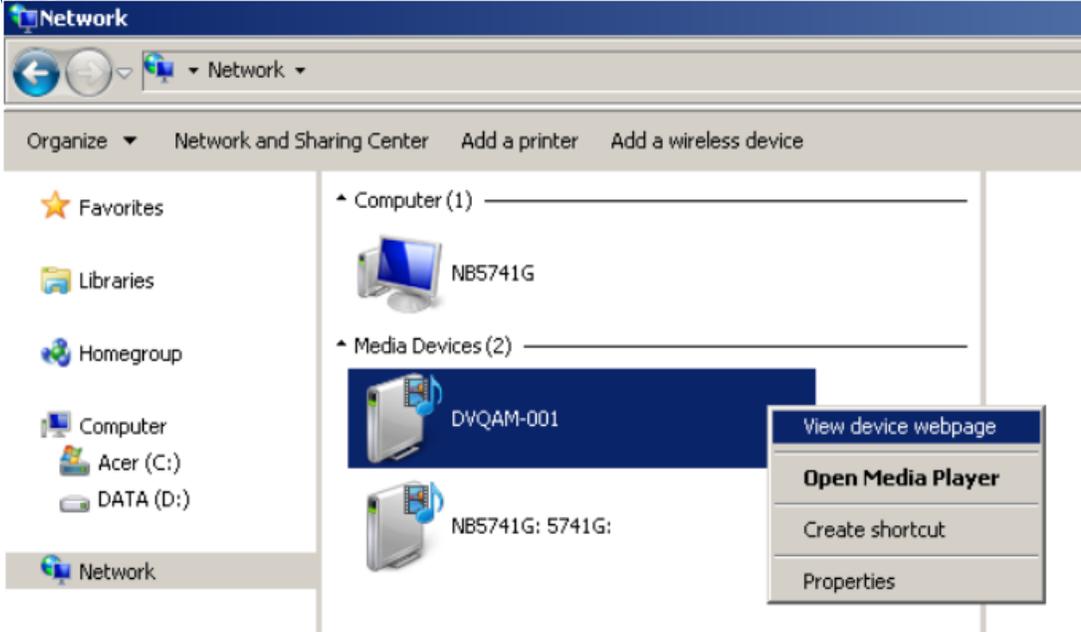


Select Start- Computer- Network

12. After selecting Network- the encoders will show up on the right side under Media Devices. Each device will show up by Device Address. (ex. DVQAM-001, 002, 003...)

Right Click on the icon for the Encoder you want to setup.

Select 'View Device Webpage'



13. Welcome page will be displayed as shown (figure for example)

DVQ HD encoder/modulator

Overview

Common Setup

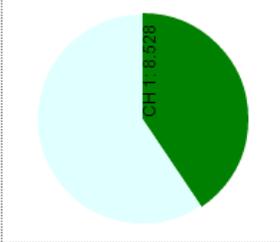
Encoder Setup

Network Configuration

Administration

Welcome!

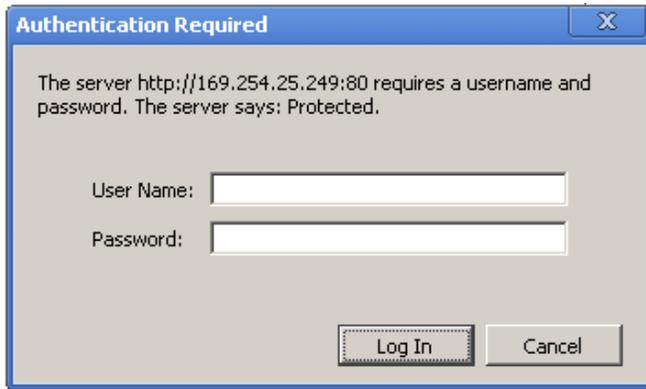
Device Name: DVQAM-001
Model Number: DVQAM-1
Output Channel: 103 (667.7833 MHz)
Device Address: 1
System: DVB-C J.83B
Net Version: 20130328



Channel 1	
Channel Name	MY-DTV1
Video Source	Auto
Video Output	MPEG2
Audio Source	Analog
Audio Output	MP2
Input Bitrate	8.528

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14. **Select** the Common Setup tab. User will be presented with encoders '**Authentication Required**' screen.



15. **Enter** User Name and Password.

User Name: **admin**

Password: **Admin123**

16. Change settings of the encoder via the Common Setup, Encoder Setup, Network Configuration, and Administration Tabs.

17. **Select** Network Configuration Tab.

18. Confirm '**Enable DHCP**' check box is selected for closed in-house network.

(If using internet to connect to the Encoder see Internet setup procedure)

19. **Save all changes.** The user is required to do a local save if any changes are made on the Common / Encoder Setup tabs. Once all changes have been made and are complete- use the **Upload and Reboot function** to apply changes.

'Waiting for device rebooting' will appear as unit reboots and save the changes.

After the encoder recovers from rebooting- we recommend you save/ backup the configuration file for each encoder.

20. **Select** Administration Tab- then **Backup.** A **config.hex** file will be created. The file will be located in My Computer->C Directory->Documents and Settings->User->My Documents->Downloads>configs.hex

NOTE TO INTEGRATOR-

WE HIGHLY RECOMMEND YOU RENAME THE CONFIG.HEX FILES FOR EACH ENCODER DEVICE

EXAMPLES: config_single_dev1_sitename.hex , config_dual_dev2_sitename.hex

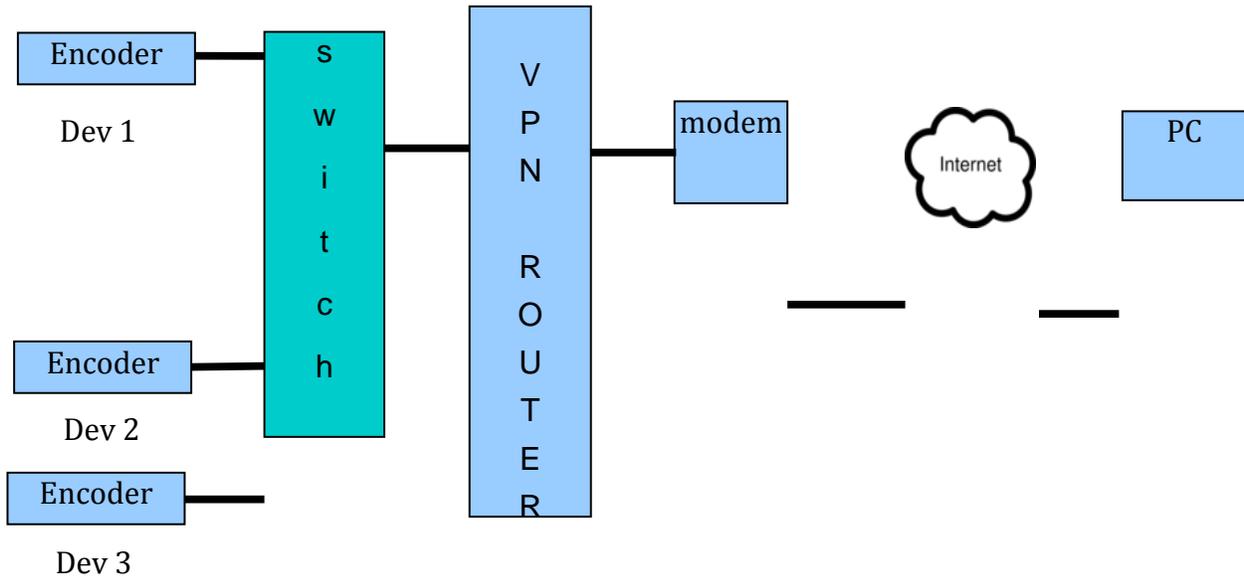
CONFIGURATION FILES FOR THE SINGLE AND DUAL ENCODERS ARE DIFFERENT AND ARE NOT INTERCHANGEABLE.

Procedure to connect to the Encoder for remote access and monitoring

The following procedure will allow the integrator to access the encoder via the GUI for remote status monitoring and control.

Overview of Setup

Accessing the Encoders via the internet will require a VPN device with a Static IP



Static IP

1. Using the instructions located in **Procedure to connect to the Encoder via the remote setup port** enter a unique Device Address for each encoder.
2. Setup each encoder's output channel and other parameters as required.
3. Select the Network Configuration Tab.
4. Deselect 'Enable DHCP'

MAC Address:	00:04:A3:00:01:10
Host Name:	ZyCast000### ZyCast000001
	<input type="checkbox"/> Enable DHCP
IP Address:	192.168.1.209
Subnet Mask:	255.255.255.0
Gateway:	192.168.1.254
	<input type="button" value="Save Config"/>

5. Enter a unique Static IP address for each encoder.
6. Enter the Subnet Mask.
7. Enter the Gateway IP address from VPN device.
8. **Save** Configuration of Network settings by selecting Save Config button.
9. Connect the ethernet switch to the VPN Device (Static IP Required) connected to the internet.

Contact your network administrator for the VPN device setup

10. Establish a VPN connection from a PC or laptop from an external internet connection.
11. Once the VPN tunnel has been established- Enter the Specific IP address of the Encoder you which to monitor in your internet browser (example: 192.168.100.10)
12. Save any changes made to the encoder and reboot encoder.

DVQAM MODULATOR NOTES

PRODUCT NOTES:

ITEM	VALUE
PASSWORD	
SERIAL NUMBER	
INSTALLATION DATE	
PURCHASE DATE	
VIDEO 1 INPUT	
VIDEO 2 INPUT	

