Marshall

VMV-402-SH

4-Input 3G SDI Switcher with Quad Mode and Ethernet Control

User Manual

Table of Contents

1. Introduction

The Marshall VMV-402-SH is ideal for presentation systems, control rooms, and remote productions by providing seamless switching between four selectable inputs. Inputs can be a combination of mixed formats and frame rates. Simultaneous output is provided via 3G SDI and HDMI. The SDI output supports up to 1080p while the HDMI output may be scaled up to UHD. The Robust design makes the 402 at home on any rack mount or "throw-down box" application.

Inputs are automatically scaled / rate converted to match the selected output format. Mixed input formats and frame rates are easily accommodated. Output formats up to 1080p50/60 for SDI and UHD 50/60 (4:2:0 sampling) for HDMI are available.

2. Features

- Four 3G/HD/SD-SDI Inputs
- One 3G/HD/SD-SDI Output
- One HDMI Output
- Select each channel full screen or all four as quad display
- Seamless switching between inputs
- Audio bar overlay in full screen mode
- Tally function in quad mode
- Remote operation via Ethernet, IR or USB
- Supports Static or DHCP addressing
- Firmware upgradeable via USB

3. Applications

- 4 x 1 switcher for remote productions or AV applications
- Format "fixer/converter". Accepts mixed formats and conforms to a selected output format
- Monitor four sources in 'quad' mode. Take any quadrant "full" instantly.
- Use HDMI Output for local monitoring while SDI output transmits images up to 100 meters.
- Use as Mini Multi-viewer with active tallies. Tallies triggerable by GPI.

4. Package Contents

- 1x VMV-402-SH
- 2x 1U rack mounting-ears
- 1x 24V 5A power adapter
- 1x UL AC power cord
- 1x IR Remote Control
- 1x IR Receiver

5. Specifications

| Model Name	VMV-402-SH Quad-viewer/Switcher
Role of Usage	Quad-viewer or 4x1 Video Switcher
Video Input Support	[3G] 1080p @50/59.94/60Hz (4:2:2) [HD] 720p @50/59.94/60Hz, 1080i @50/59.94/60Hz, 1080p @24/30/60Hz
Audio Pass Through	Embedded surround sound (up to 7.1ch) or stereo digital audio
Input	4x BNC [SDI]
Program Output	1x HDMI + 1x BNC(SDI)
HDMI connector	Type A [19-pin female]
RJ-45 connector	WE/SS 8P8C
ESD Protection	Human body model — ±12kV [air-gap discharge] & ±8kV [contact discharge]

Mechanical	
Housing	Metal enclosure
Mounting	1U rack-mounting case with ears
Dimensions [L x W x H]	8.25" X 7" X 1.75" 209mm X 178mm X 44.5mm
Weight	1Kg (2.2 lbs) with rack ears
Power supply	12 - 24 Volts DC
Power consumption	12 Watts nominal 0.5 amp at 24 volts 1 amp at 12 volts
Operation Temperature	0~40°C [32~104°F]
Storage Temperature	-20~60°C [-4~140°F]
Relative Humidity	20~90% RH [no condensation]

6. Panel Descriptions

Front Panel
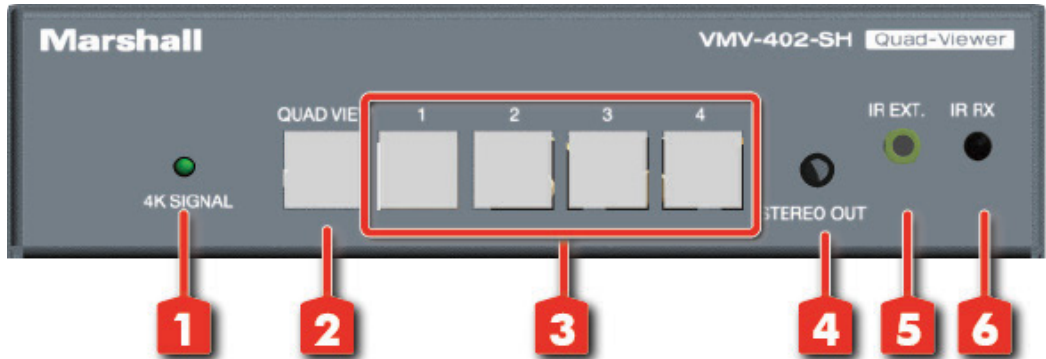
Rear Panel
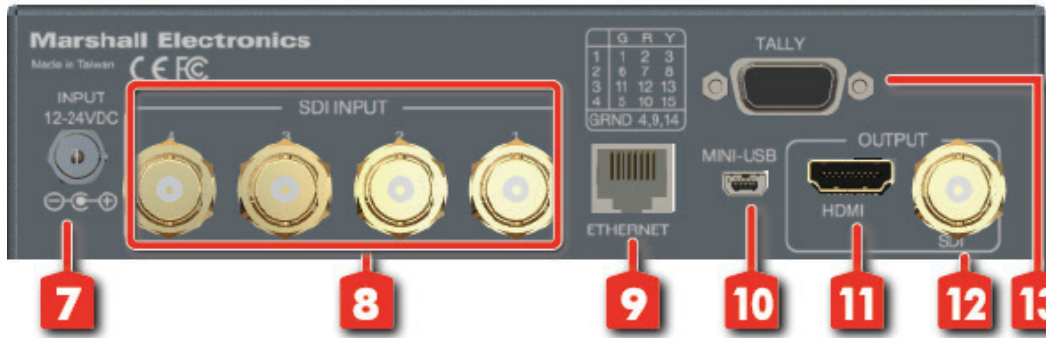
1. **4K Signal LED:** Lighted when output is set for 4K when HDMI output is set to UHD format (HDMI output).
2. **Quadview Button:** Changes output to quad view mode.
3. **3. Input Select Buttons:** Selects between sources. The button will illuminate when source is selected.
4. **Stereo out:** Stereo audio output.
5. **IR Extension:** 3.5mm jack for IR extension cable.
6. **IR Sensor:** IR sensor for receiving commands from IR remote.
7. **DC 24V Input:** Connects to the +12V or +24V DC power supply unit.
8. **Source 1-4:** 3G-SDI inputs.
9. **Ethernet:** Ethernet control port.
10. **Mini-USB Input:** USB control / update port.
11. **HDMI Output:** Program Out.
12. **SDI Output:** Program Out.
13. **Tally GPI connector**

7. Hardware Installation

1. Connect display, recorder, etc. to SDI or HDMI output of the VMV-402-SH
2. Connect the SDI input sources to the inputs of VMV-402-SH
3. Securely attach the provided supply unit to the locking power jack
4. Use IR remote or computer software to switch between input channels

8. IR Remote Control
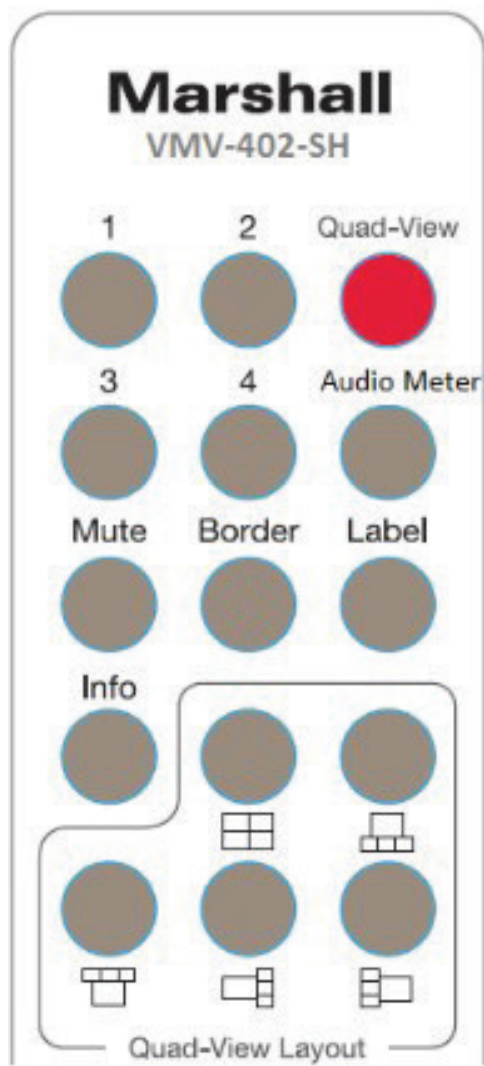
Button	Function
1	SDI input 1
2	SDI input 2
3	SDI input 3
4	SDI input 4
Quad-View	Select quad mode output
Audio Meter	Toggles audio meters on/off (Not on quad output)
Mute	Toggles audio pass through on/off
Border	Toggles quad mode border on/off
Label	Toggles quad mode labels on/off
Info	Show current status on Quad output
	Quad Layout 1
	Quad Layout 2
	Quad Layout 3
	Quad Layout 4
	Quad Layout 5

9. Configuration and Remote Operation

A control application is available for download from the Marshall-USA website at:

http://www.marshall-usa.com/software/VMV-402-SH-V4_4.zip

This application runs under Windows OS and provides several functions:

- Firmware Update
- Setup and Configuration
- Remote Operation via USB
- Remote Operation via Ethernet

9.1 Installing the application

Please follow the steps in order below.

1. Download the VMV-402 update file from the Marshall-USA website to a folder you can easily find on your computer. Unzip the file there.
2. If there is a previous version of the VMV-204-SH Control App installed on this computer, please uninstall it before continuing.
3. Connect a "USB type A to USB mini cable" between the computer and the switcher (USB micro cables will not fit)
4. Double click on the file that was unzipped to begin the installation. **Important:** Make sure to check the box "Create a Desktop Icon" during the installation

9.2 Updating the Firmware

It is strongly recommended that the firmware in the VMV-402-SH be updated before using the product.

1. Double-click on the new desktop icon.
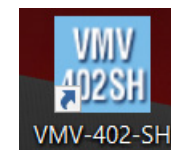
2. The Port Setting page will appear.
3. Check that "RS-232 over USB" is selected and that a COM Port number is available.
4. If no COM Port appears, recheck the USB connection, close and restart the Control App.
5. When there are several COM Ports available, the one at the bottom of the list is the most likely one.
6. Select the COM Port. Ignore the IP Address, it has no function in this process.
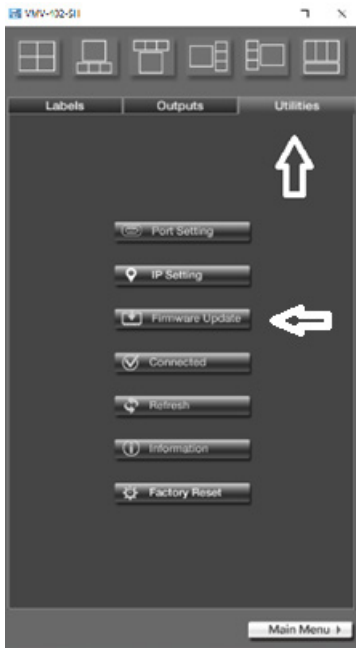
7. Click on the Connect button.
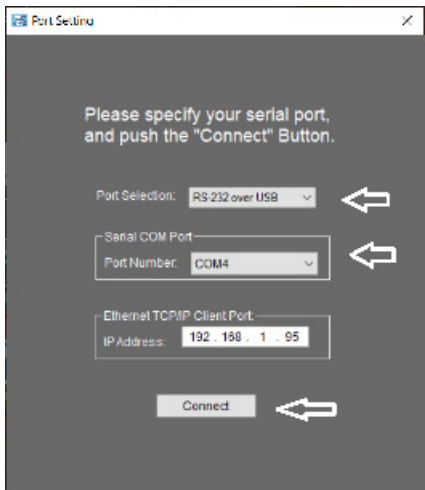
8. The Main page will appear. Click the Settings button.
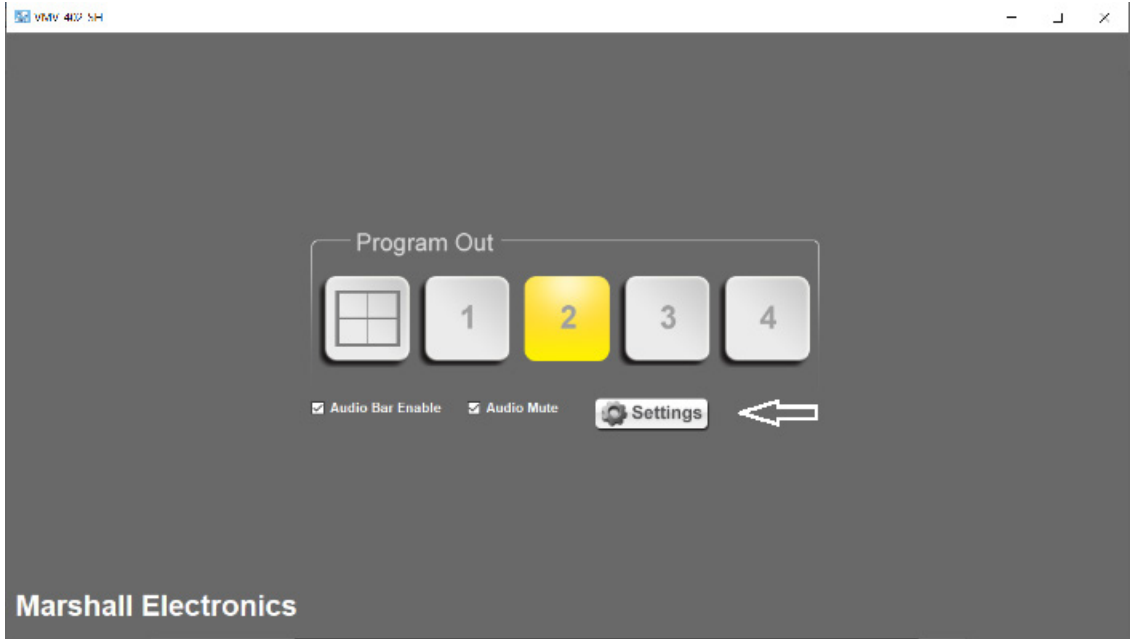
9. Click on the Utilities Tab on the Settings page

10. Then click on Firmware Update

The Update Page will appear.

11. Please confirm that the Update Version is newer or the same as the existing Device Version

12. Click on the Update button to begin the update process.

13. A short countdown will appear.

The NOTE at the bottom of the page means that user preferences like IP address, Quad mode labels, etc. will not be changed during the update process.

The Update process page will appear next
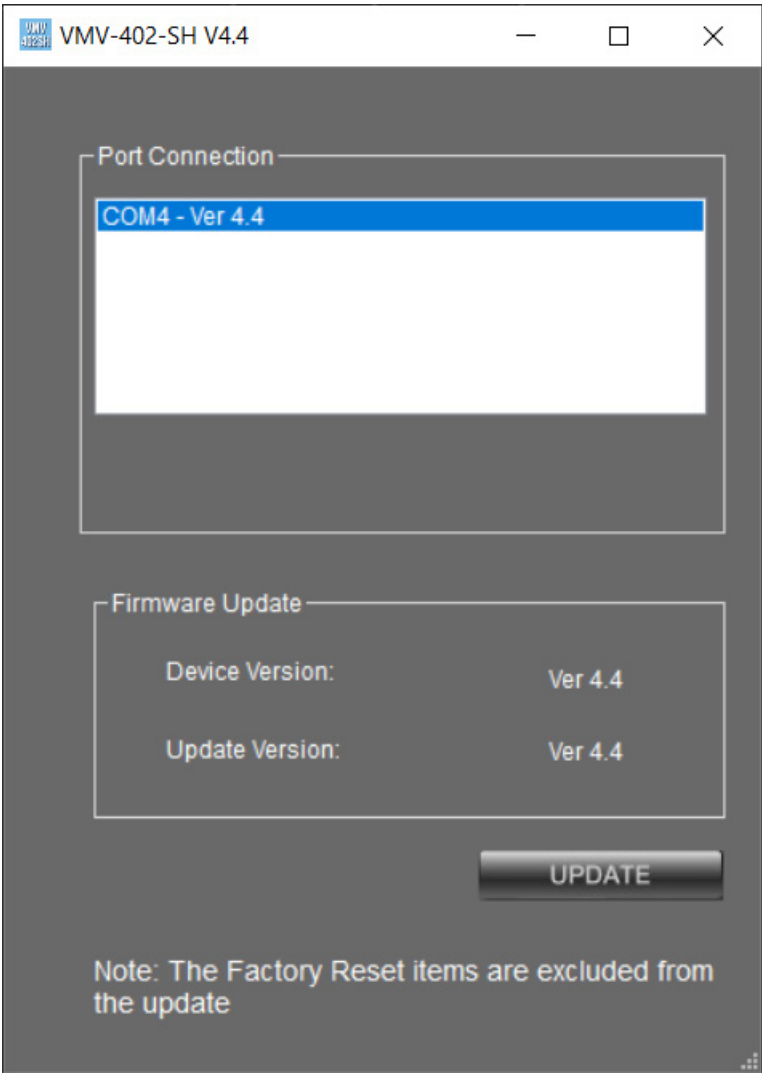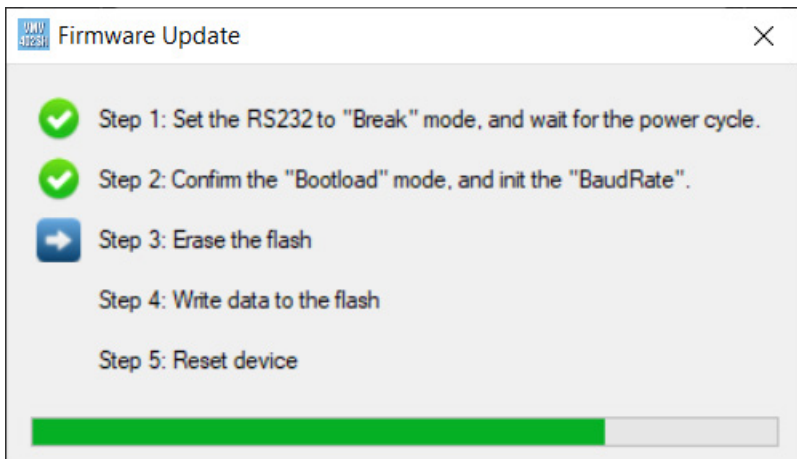
Important: The VMV-402-SH will restart at least twice during the update process.

Please allow at least 3 minutes from the time the process starts until you use the switcher as background processes may still be completing.
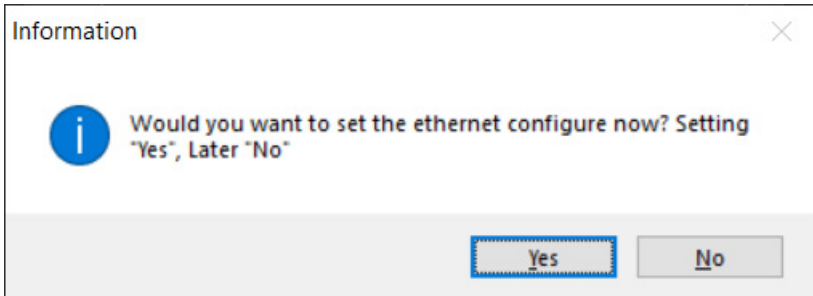

Select NO if this message appears

Close all windows and restart the Control App.

9.3 Setting Up the VMV-402-SH for the First Time

Configuring the VMV-402-SH the first time is most easily done using the USB connection and running the control application by following the steps as described above. It is recommended to use this method of connection BEFORE attempting an Ethernet connection.
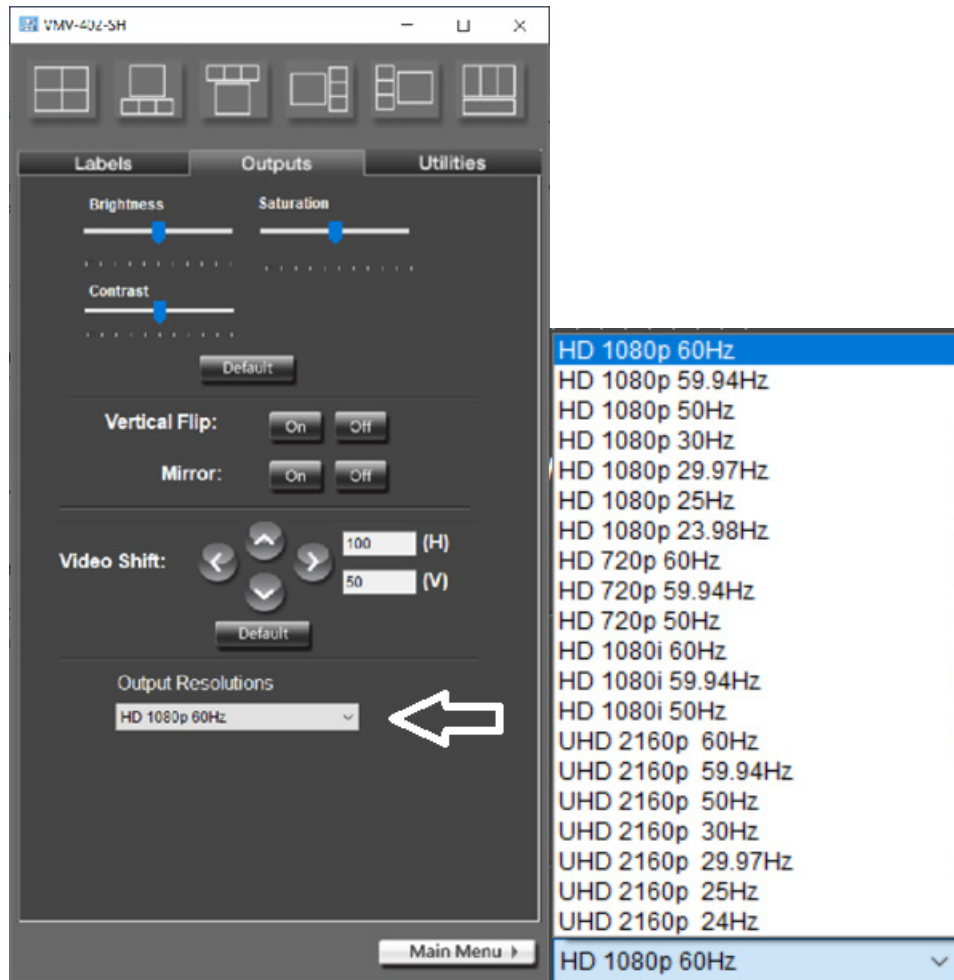
9.4 Most Common Settings

Easily the most important setting is to establish the system output **video format** and frame rate. From the main menu, click **Settings.**
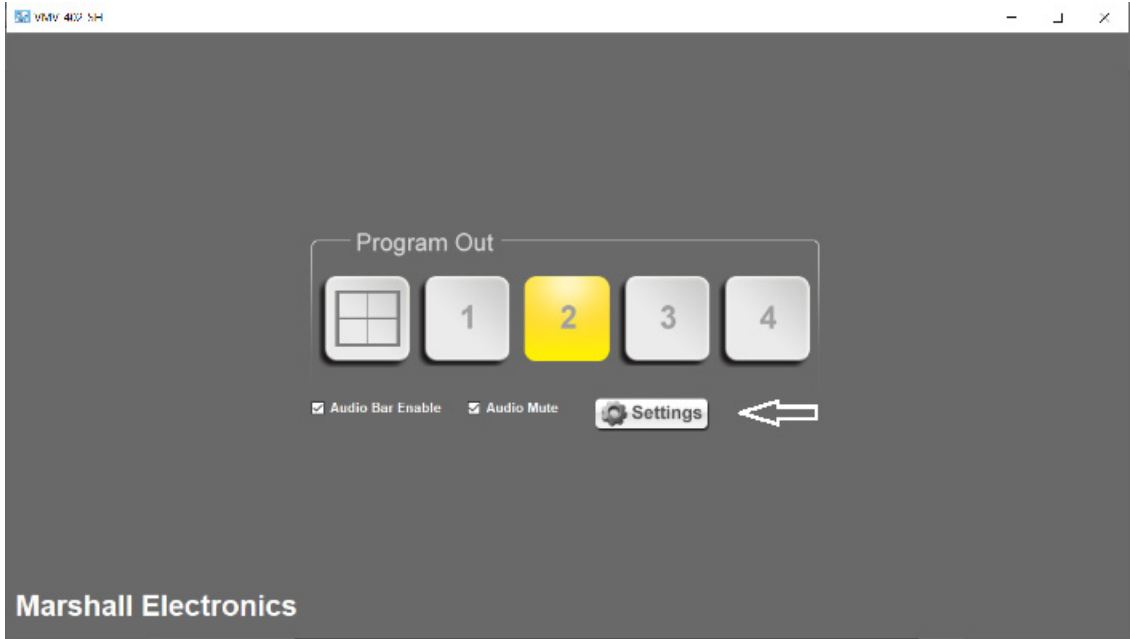
9.5 Select the Outputs Tab

At the bottom, click on the **Output Resolution.**

pulldown window and select an output format and frame rate.

All incoming video sources will be converted to this choice.

Special Note: When a UHD format is selected, it applies to the HDMI output only. The SDI output will be 1080p at the same frame rate.

9.6 Other Settings on this Page

Vertical Flip: Turn picture upside down

Mirror: Reverse picture left & right
These two settings affect the entire output frame including Quad mode.

Video Shift: Move output image Up/Down and Left/Right
Horizontal position may be moved in 200 increments. 100 is default center.
Vertical position maybe moved 100 increments. 50 is default center.
Click the Default button to reset both horizontal and vertical positions.

Brightness, Saturation and Contrast: Adjust video settings to match a projector or other display. These settings affect the entire output image including Quad Mode. Click the Default button to set all three back to normal.

9.7 Quad Mode Settings

Clicking on the Labels tab brings all settings for Quad Mode onto one page.

The icons across the top of the page represent the 6 different available Quad Mode patterns. Simply click on one of these to change the Quad pattern.

Each window in Quad Mode may have its own label. The labels may be independently set to one of six locations within the window.

Labels may contain up to 14 characters, numbers and symbols. To create a new label simply type over the existing label then click the Apply button.

If it is desired to have a clean "quad split" effect, all labels may be turned off by using the **Label: On/Off** buttons at the bottom of the page.
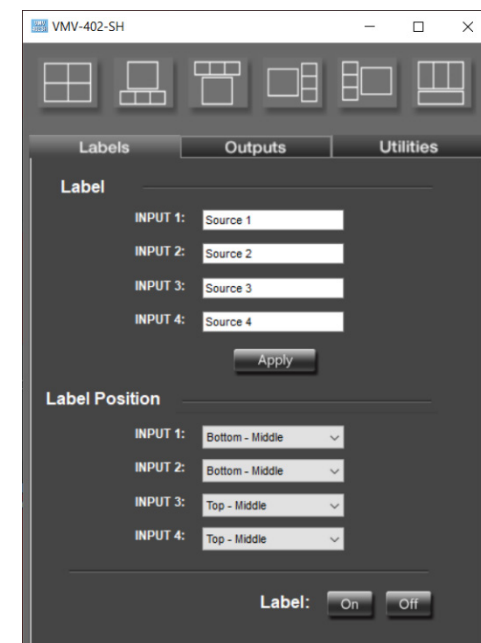
9.8 Using an Ethernet Connection with the Default Address

The VMV-402-SH maybe be setup with a **Static** (fixed) IP address or an automatically assigned IP address using DHCP mode. To use the control app in **DHCP** mode it should be connected to the unit using USB or Static Ethernet connection first. In this way, the app "learns" the specific MAC address of the unit and will be able to find it on a network.

The unit ships in **Static** address mode with IP address 192.168.1.110.

If no other device on the network has this address, it may be connected directly and accessed by the control application.

From the **Utilities tab**, select **Port Setting** then select **TCP/IP** and confirm that the

default address: 192.168.1.110 is displayed.

Click the **Connect** button and the Main page should appear shortly.
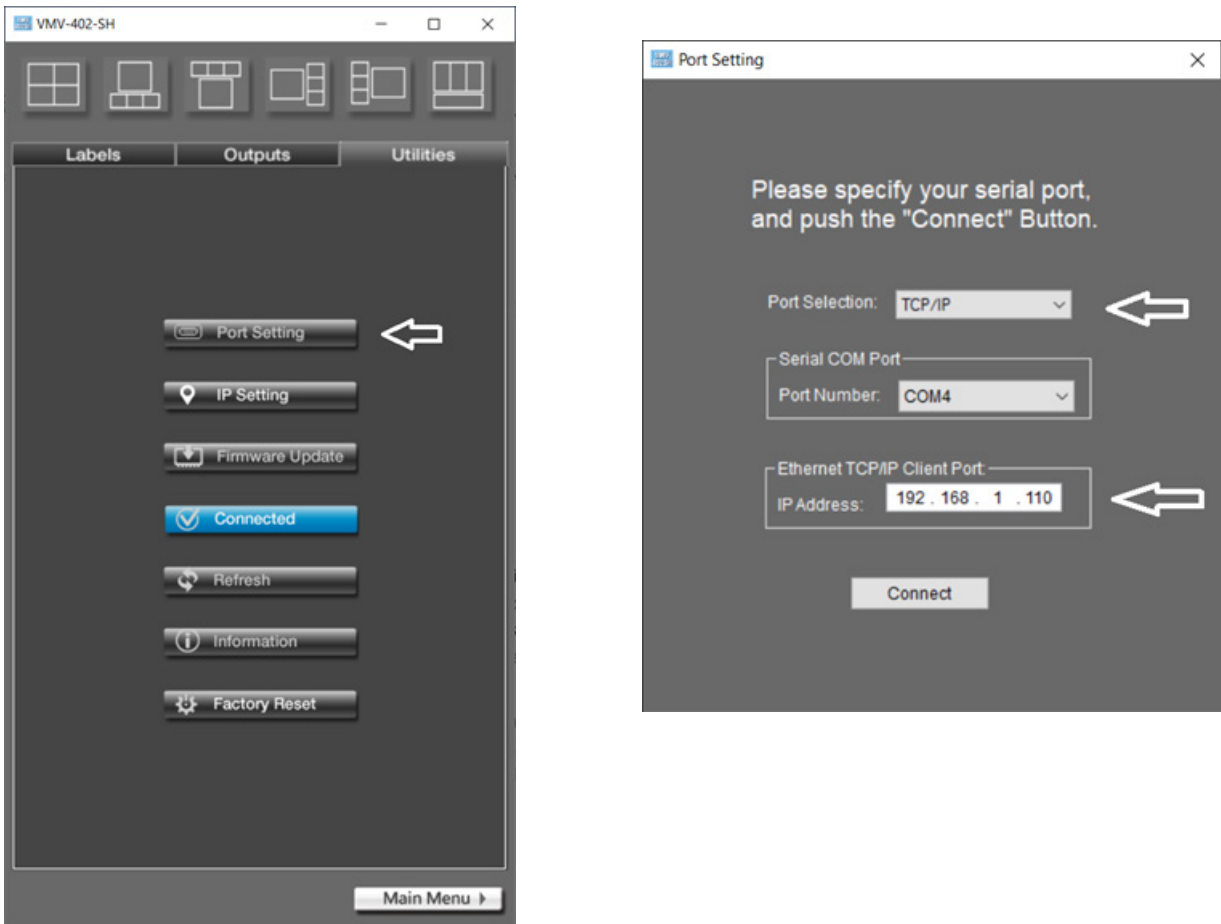

9.9 Establishing a New Static IP address

To change the Static address to a custom Static address, from the **Utilities** tab, first select **IP Setting** then fill out the fields for the new **IP Address**, **Subnet Mask** and **Gateway**. Confirm that **DHCP Enable is NOT checked** then click the **Apply** button.

At this point, the VMV-402-SH will restart (indicated by all front panel buttons lighting). <u>Close and restart the control app.</u> Allow at least one full minute before attempting to connect using the new address using the method described above.

The new address will need to be manually entered in the Port Setting window

Note: The Factory Reset function does not change the IP address. In other words, the new address is now the default address.
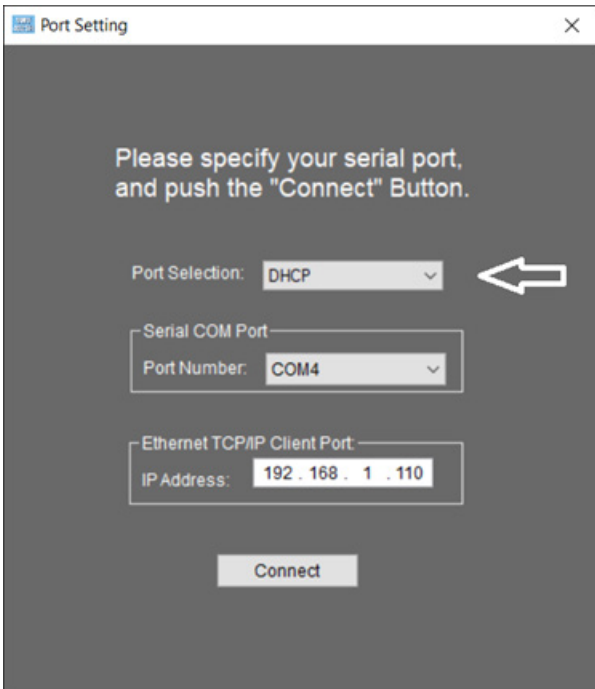
Marshall
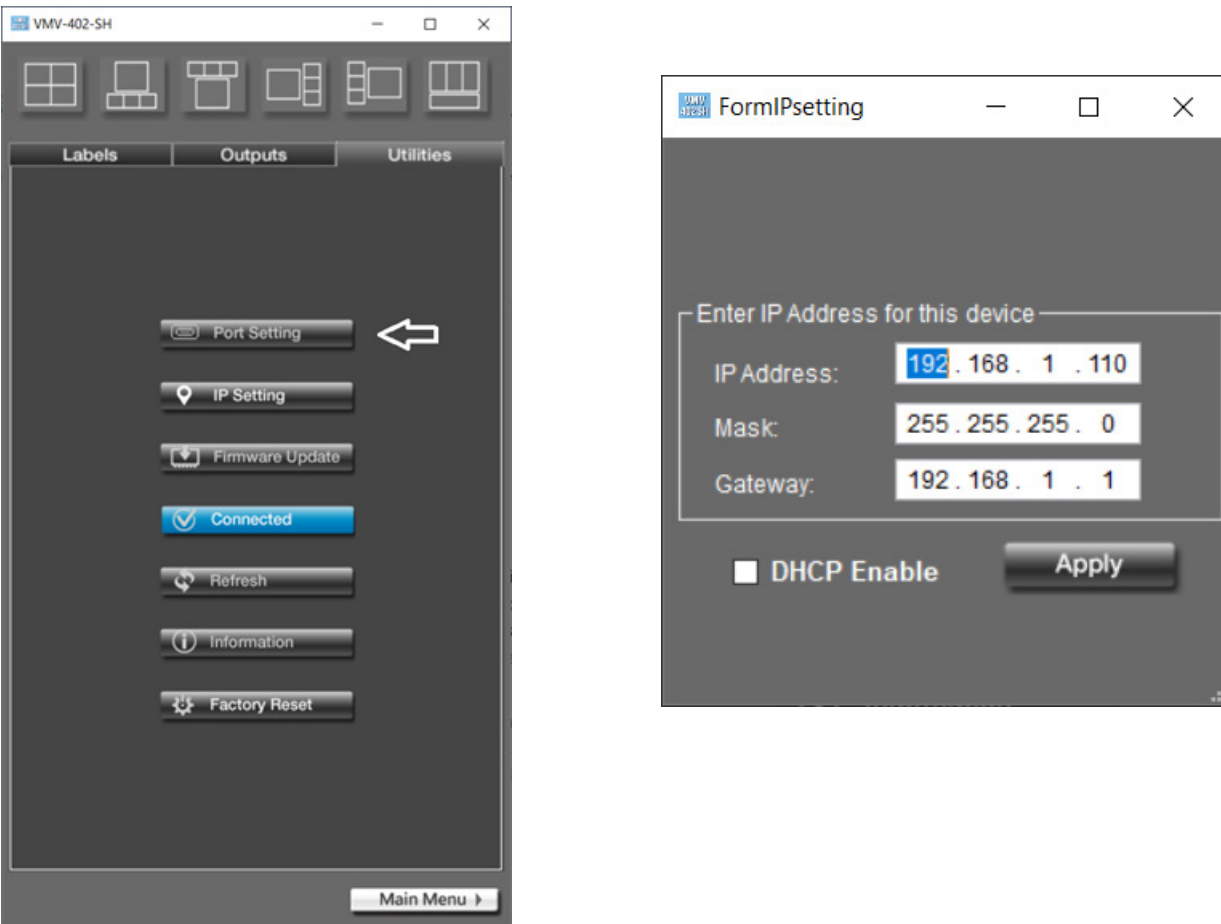
9.10 Setting DHCP Mode

The VMV-402-SH may be operated in DHCP mode. That is, the address is not Static but is, instead, set automatically by a router on the network. When DHCP mode is enabled, the current IP address may change. As mentioned in the sections above, it is best to connect to the unit first with a Static address. In this way, the control app learns the specific MAC address of this particular unit. Once it knows the MAC address, the control app will be able to find the device on a network even if the IP address has been changed by a router.

The procedure to change to **DHCP** mode is the same as setting a **Static** address except that the **DHCP Enable box** must be checked before clicking the **Apply** button.

At this point, the VMV-402-SH will restart (indicated by all front panel buttons lighting). Close and restart the control app. Allow at least one full minute for the mode change to complete.

On the Port Setting page, change **Port Selection** to **DHCP** and click **Connect**. At this point, the IP Address shown is unrelated to the address that is actually in use, the window does not update automatically.

9.11 Using 3rd Party Controllers

The VMV-402-SH may be controlled remotely via Ethernet, USB or IR optical.

Control codes and operational tips may be found on the Marshall-USA.com website at:

http://www.marshall-usa.com/pdf/VMV-402-Remote-Control-Protocol.pdf

Warranty

Marshall Electronics warranties to the first consumer that this device will, under normal use, be free from defects in workmanship and materials, when received in its original container, for a period of two years from the purchase date. This warranty is extended to the first consumer only, and proof of purchase is necessary to honor the warranty. If there is no proof of purchase provided with a warranty claim, Marshall Electronics reserves the right not to honor the warranty set forth above. Therefore, labor and parts may be charged to the consumer. This warranty does not apply to the product exterior or cosmetics. Misuse, abnormal handling, alterations or modifications in design or construction void this warranty. No sales personnel of the seller or any other person is authorized to make any warranties other than those described above, or to extend the duration of any warranties on behalf of Marshall Electronics, beyond the time period described above.

Due to constant effort to improve products and product features, specifications may change without notice.

Marshall