Marshall

V-R241-4K

12G-SDI / HDMI Multi Format LCD Monitor


User Manual

Table of Contents

1. Introduction

Welcome to the Marshall V-R241-4K multi-format monitor. This feature-rich design supports video formats up to 4K/UHD, wide color gamut, HDR calibration and much more. Video inputs include 12G SDI, quad 3G SDI and HDMI 2.0. Special features include quad display mode, IMD text and tally, timecode display, 16-channel audio bars, waveform monitor, vectorscope and programmable function buttons.

2. Features

- 2 - 12G SDI Inputs for 12G / 3G / HD SDI with looping outputs. Accepts up to 4K / UHD
- 2 - 3G SDI Inputs add Quad 4K/UHD, 2SI 4K/UHD and Quad View capabilities
- 1 - HDMI Input accepts up to 4096 x 2160p and 3840 x 2160 (4K/UHD)
- Waveform & Vector Scope (on SDI inputs)
- Time Code, Closed Caption and IMD displays
- Audio De-embedder & Internal Speaker + Headphone Jack for Confidence Monitoring
- Up 16 Channel Audio Level Meter Display
- Picture Flip / Mirror Modes
- 3D LUT Presets Including: BT.709 / SMPTE-C / EBU / NTSC / D-Cinema .
- Adjustable Backlight
- RS-232, RS-422, Ethernet and GPI control ports
- LED and on-screen tallies
- USB port for easy field updates

3. Front Panel Features
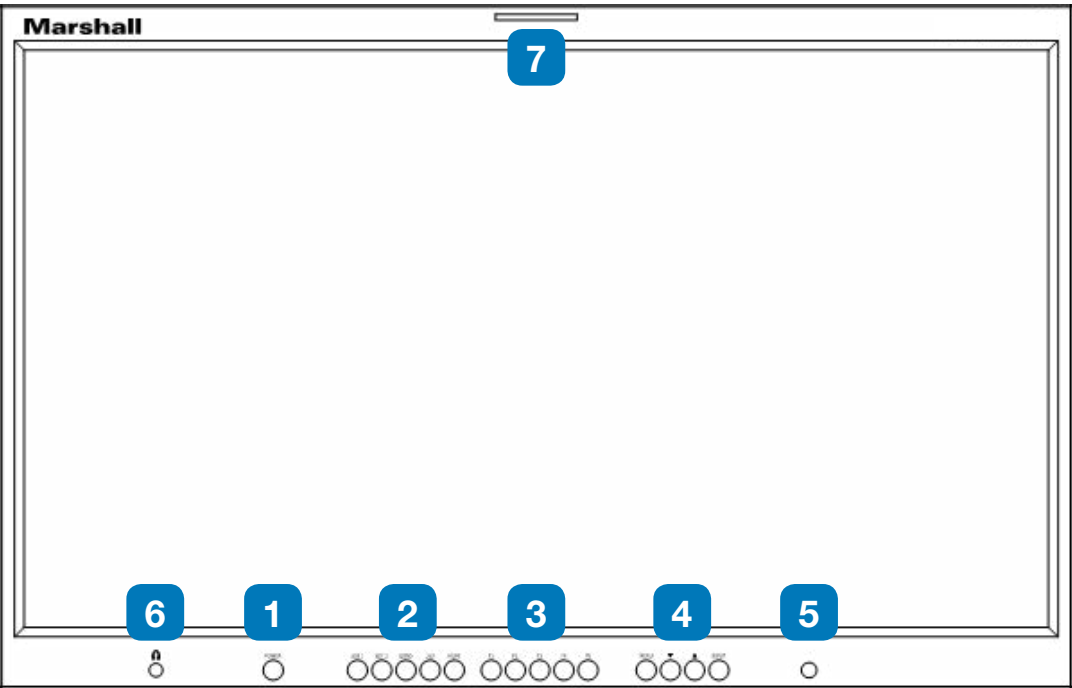
1. Power Button

Use the Power button to toggle the monitor between ON and STANDBY modes.

2. Input Select Buttons

Directly switch between input source and type, Choices are: SDI 1, SDI 2, QUAD, 2SI and HDMI.

3. User-definable function buttons

Five user-definable function buttons F1-F5 can be used for direct access to various settings. Functions are assigned through the menu system. Current aspect ratio selection.

4. Menu/Down/Up/Input

Menu: Enter or exist Main Menu.

Up: Move up or increase parameter values.

Down: Move down or decreases parameter values.

Input: Acts as Enter Key for menus or selects.

Video source when not in menu mode

Press and hold **Input** button for 5 seconds to display current monitor status including…

- Input source and video format
- Current white balance / color temperature
- Audio source monitored currently
- Current aspect ratio selection

5. Adjustment Knob

Provides quick access to Volume, Back light Adjust, Brightness, Saturation, Tint, and Contrast of the image. Press in on knob to activate, turn knob to select, press knob again to confirm. Also use in Menus.
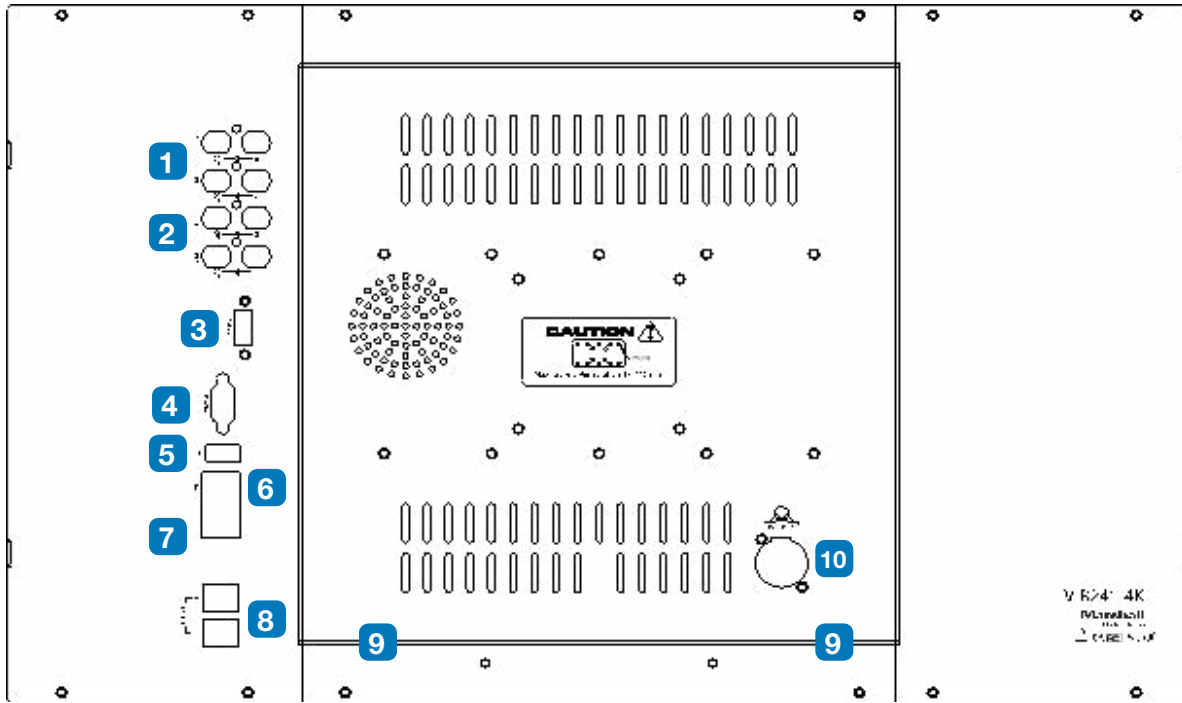
6. Headphone Output

Stereo 3.5mm jack allows monitoring two channels of audio from SDI or HDMI sources. Plugging headphones in will mute the built-in speakers.

7. Tally LED

Three color LED tally lights (Green/Red/Amber) are available above the screen. These are operated by GPI (contact closure) or IMD control protocol.

4. Rear Panel Features

1. Two 12G-SDI inputs / outputs

Two 12G-SDI inputs with active loop-through out.

2. Two 3G-SDI Inputs / outputs

Two additional 3G-SDI inputs support Quad 4k, 2SI 4K and Quad View Modes.

3. HDMI Input

HDMI Input Connector.

4. Serial / RS-232

For remote operation monitor calibration, etc.

5. USB Port

Firmware Upgrade port.

6. GPI (General Purpose Interface)

This dual purpose connector may be used to trigger LED Tally Lights and trigger preset functions.

7. Ethernet

Ethernet port for remote operation.

8. UMD/IMD RS-422 IN/OUT

The RS-422/485 port is used to control the IMD (In Monitor Display) features compatible with TSL Tally Man and Image Video. The second port can be used to loop multiple monitors in the same bus.

9. Speaker Outputs

Ethernet port for remote operation.

10. Ethernet

Connect the 5-pin XLR power input here. Power should only be supplied from the included power supply.

5. Compatible Input Formats

The following video standards are supported by the V-R241-4K monitor:

Items		Specifications
Supported Signals	Serial Digital Interface	12G, 3G, HD SDI (SMPTE ST-2082/SMPTE 425 / 295M / 292 / 296)
	HDMI	720p / 1080p / 2160p

SDI Input Detail

SMPTE ST 2082	3840 x 2160 (50/59.94/60p), 4096 x 2160 letterbox
SMPTE-428.1M	2048 x 1080P (23.98/24)
SMPTE-425M(3G)	1920 x 1080P (Level A & B)
SMPTE-260M	1920 x 1035i (60/59.94)
SMPTE-259M	1920 x 1080i (50)
SMPTE-274M	1920 x 1080i (50/59.94/60)
	1920 x 1080P (30Psf/25Psf/24Psf/30/25/24)
SMPTE-296M	1280 x 720P (24/25/30/50/59.94/60)

6. Main Menu and Navigation

The menu system provides many choices to customize the monitor operation. Most menus consist of just three levels to set up the options, but some require greater depth for the variety of settings available. When the **MENU** button is pressed, only the first and second level of the menu system will appear on the screen. The third level can be displayed by pressing **SEL/INPUT**. If a menu has more than three levels, a pop-up dialogue box will be displayed as the fourth or fifth level.

Menu ON/OFF

Press the **MENU** button to display the menu. A second press of the MENU button will return to normal viewing.

When the **MENU** is on screen, use the Up / Down buttons or turn the Adjust Knob to move from item to item.

To go to the next level

Press **SEL/INPUT** button or press the Adjust Knob.

To go back to the previous level

Press **MENU** button or select the Back menu choice.

Powering the Monitor

When power is first applied to the monitor, it will enter Power On mode (power LED is Green) and return to the operational mode it was in prior to power being removed.

Press the Power button to put the monitor into Standby eco mode (power LED is off).

Press the Power button again to put the monitor back into Power On Mode.

Volume Adjustment

Press the **Adjust Knob. Volume** will appear as the first option, turn the knob to change the volume.

Suggestion: It is often convenient to have a quick way to MUTE the audio quickly without turning a knob. This can be accomplished by programming MUTE to one of the Function buttons (F1… F5). (See Control Config section below).

Selecting a Video Source

Press one of the input direct access buttons (just to the right of the Power button) or…..

Press the **INPUT** button and then use **UP/DOWN** arrows or turn the **Adjust Knob** to highlight the desired source, then press **INPUT** or the **Adjust Knob** to complete the selection.
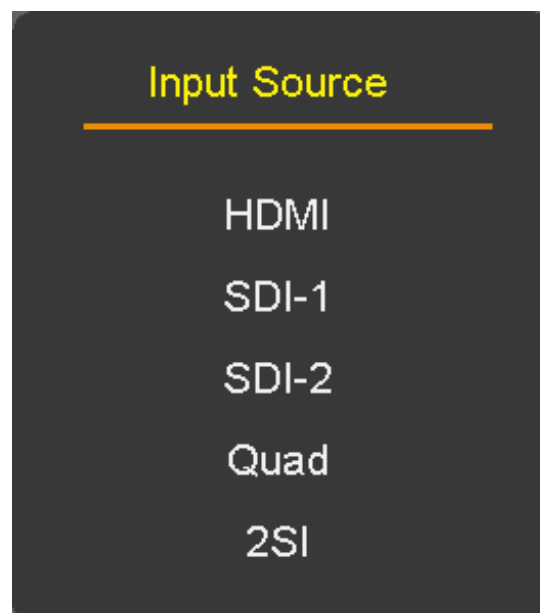
Press and hold the **INPUT** button for 5 seconds to see current monitor status.

Note: 4K / UHD may be input several ways:

Single cable 12G SDI to either SDI-1 or SDI-2.

Single cable HDMI to HDMI input, must conform to HDMI 2.0 spec.

Four cable in either Quad or 2SI formats to SDI- 1, 2, 3 & 4.

Two cable Dual 6G not supported.

Also, the monitor can accept four different sources, "Quad Viewer" style. Used this way, all sources must be synchronous, 1080p and same frame rate.

7. Marker Config

The Marker Config item allows selection of on-screen markers for Aspect Ratio, Center Mark as well as "safe action" and "safe area" type borders.
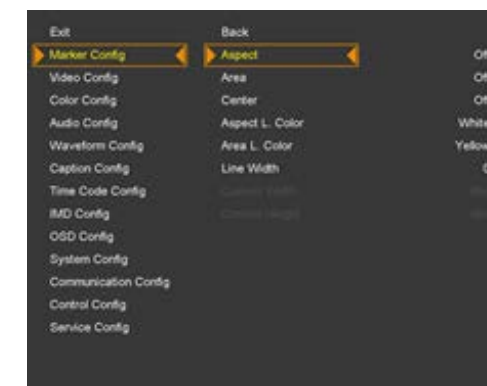
Aspect

Preset marker borders are available for these aspect ratios: Custom, 16:9, 4:3, 14:9, 13:9, 1.85:1, 2.35:1, 1:85/4:3. When Custom is selected, scroll down to Custom Width and Custom Height to create the desired marker.

Area

The Area setting creates a dotted-line marker showing picture area reductions by percentage:

- 16:9 format choices: **95, 93, 90, 88, 85, 80%** (set as desired for safe action/safe title)
- 4:3 format choices: **95, 93, 90, 88, 85, 80%** (set as desired for safe action/safe title)
- EBU Action choices: **16:9, 14:9, 4:3** (EBU recommendations for safe action)
- EBU Graphic choices: **16:9, 14:9, 4:3** (EBU recommendations for safe title)

Center Marker

Turns on a "**+**" Marker in center of screen.

Aspect L. Color

Selects color for Aspect marker (solid border). Choices are: **WHITE, YELLOW, BLUE, RED, BLACK.**

Area L. Color

Selects color for Area marker (dotted line border). Choices are: **WHITE, YELLOW, BLUE, RED, BLACK.**

Line Width

Provides adjustment of the marker line thickness. Range is 0 - 10.

Custom Width and Custom Height

These setting options appear when Aspect has been set to Custom.

8. Video Config

The Video Config setting provides control of a wide range of display functions and picture adjustments.

Aspect Ratio

The **Aspect Ratio** setting changes the way the width and height of the image is displayed on the monitor

Choices are: Full screen (the image is presented using all pixels in the display).

Or preset aspect ratios of: **16:9, 4:3, 14:9, 13:9, 1.85:1, 2.35:1, Pixel.**

"**Pixel**" means "Pixel-to-Pixel" mode where each pixel in the source image is mapped 1:1 to a pixel on the screen. The is the same as "no scaling". In this mode, a 1920 x 1080 image, for example, will not fill the screen but will instead fill only the 1920 x 1080 pixel area in the middle of the screen. A 720p image will be smaller still.

IMPORTANT NOTE: Aspect ratio choices are stored for each input format, they are not global. For example, setting the Aspect ratio to 4:3 while a 720p source is being displayed will affect only 720p sources.

Gamma Select

This setting selects the way the monitor will reproduce contrast "gray scale".

Adjustment is continuously variable from 0.80 to 3.00 in steps of 0.10. From 2.30 to 2.40 the steps are 0.05.

Common choices are 2.2 (reciprocal of camera gamma setting of 0.45) or 2.4 (mimics gamma of average color CRT which may be useful when viewing material originally color balance to CRT reference).

Color Only

This allows setting the monitor to Mono (black and white mode) or Blue Only to provide a quick check of Color and Tint settings when using standard color bars as a source.

HV Delay (SDI Only)

The video image can be shifted on the display horizontally (to the right), vertically (shifted down) or both (sometimes called "pulse cross" mode). This allows inspection of the Horizontal Ancillary Data (HANC) and Vertical Ancillary Data (VANC) spaces. Additional data such as audio, timecode, closed captioning, AFD and other information is embedded in these blank areas and transported along with the video.

Choices available are: **Off** (no shift), **H** (shift right), **V** (shift down), **H+V** (both).

NOTE: Despite the names, VANC appears on screen as the horizontal strip at the top of the image and HANC appears as the vertical bar to the right of the image.

Peaking Filter

The Peaking Filter function adds color to the sharpest details in the video image. This is intended as an aid in adjusting best focus in video cameras. Choices are:

Peaking Filter On/Off – Switch this function ON or OFF.

Peaking Color – Select the color that is overlayed on picture details. Select Red, Blue, White, or Violet.

Peaking Level – Adjust the amount of color that appears on the image detail. Range is 0 to 100.

False Color

The False Color function adds color to regions in the video image based on Luma level. This is intended as a quick way to compare portions of an image or to warn if levels from a video source are too high or too low. A colored strip to the right of the image shows the level that each color represents.

NOTE: As an alternative, the Waveform Monitor function serves the same level measurement purpose with more precision but without identifying specific regions of an image.

HDR Mode

The HDR Mode supports modern High Dynamic Range technology which allows extended contrast, color saturation, and gamut. Choices are:

ST 2084-300 / ST 2084-1000 / ST 2084-10000 "Perceptual Quantizer" function to reproduce PQ HDR video mastered for 300, 1000, or 10,000 Nit displays.

HLG "Hybrid Log Gamma" combines standard Gamma with extended white and specular levels for HLG mastered HDR video.

HDR Demo ON / OFF (Enhances color of Standard Dynamic Range image to simulate HDR).

9. Color Config

Back Light

This setting allows adjustment of the backlight of the LCD panel. This is typically set based upon ambient room lighting and/or as part of a monitor calibration. Range is: **0 – 100.** Default is: **50**

Brightness, Contrast, Color, Tint and Sharpness

Adjust the values of Brightness, Contrast, Color, Tint and Sharpness directly from **0 to 100**. Default is: 50

Contrast, Brightness, Sharpness, Color – allow calibration of monitor to normal viewing standards.

Tint – Tint can be adjusted for any input but the primary purpose is to correct subcarrier phase errors created from Composite video sources (NTSC / PAL). Tint adjustment is not recommended for digital sources as they do not possess subcarrier. The exception is when a source has been converted from composite video and errors remain.

Sharpness – Enhances edges of image detail. To be used sparingly……

NOTE – SHORT CUT: This group of adjustments is available for quick access through the front panel Adjust Knob. Press the Adjust Knob until the desired parameter shows up, then turn the knob to make the adjustment.

Color Temp

Select one of the preset Color Temperature choices or make manual adjustment of RGB Gain and Offset values.

Choices are:

Standard Presets of: **9300K, 6500K, 5400K, 3200K.**

Special purpose LUTS: **D65 (6504K), C (6674K), D-Cinema (6302K).**

USER (See Manual Color Balance below).

VAR (Select from 3200K to 9300K in 100K steps) The most common selection for video work is 6500K.

Common settings used for other applications are: 9300K, 5400K, 3200K.

Color Space (Color Gamut)

Color Space presets are provided to allow best reproduction of material acquired or color corrected for a particular color gamut. Choices are: Native / BT 709 (REC 709) / SMPTE-C / EBU / NTSC / D-Cinema.

Native is the maximum uncalibrated gamut of the display.

Manual color balance settings (User)

Selecting USER for Color Temp allows manual calibration of white and black balance. The adjustments consist of Red, Green, Blue **GAIN** and **OFFSET**. GAIN adjusts the overall level (amplitude) of a single primary color. OFFSET adjusts the brightness (pedestal/offset) of that color.

In practice, one of the above Color Temp presets is first selected (rather than USER), then Red and Blue GAINS are adjusted to achieve a particular white balance (color temperature). Finally, OFFSETS will need to be adjusted to create a neutral black color. It is normal to have to repeat these steps until the desired effect is achieved.

NOTE: Adjusting all three colors in the same direction will result in a brighter or darker picture with no color change, this is self-defeating. Adjustment range is: 0 – 255. Default for GAIN is 200, OFFSET is 128.

10. Audio Config

SDI Gr & SDI Ch (SDI sources only)

SDI inputs can carry up to 16 channels or 8 stereo pairs of digital audio embedded along with the video.

The 16 audio channels are divided into 4 Groups of 4 Channels each.

SDI Gr provides selection of the desired audio Group for monitoring.

Choices are: Group 1 through 4

SDI Ch provides selection of the individual audio channels for monitoring.

Choose from Channel 1 through Channel 16 or select OFF (silence). Channels may be monitors individually or in pairs, 1&2, 3&4, etc.

NOTE: Short-cut. Program one of the User Buttons (F1 – F5) to "Audio Channel" for quick selection of audio channels without opening the menu system. Seee Control Config section below.

Level Meter Enable

Turning this function **ON** causes audio level meter "bars" to appear superimposed over the picture.

Level meters are only available when monitoring SDI 1 or SDI 2 inputs or HDMI.

Level meters do not appear while the Menu is displayed on screen.

Type (SDI sources only)

Select the number of audio meter bars to be displayed.

Pair shows just a pair of audio meter bars typically representing Left and Right audio channels.

Group shows all four channels from a particular Group.

Level Meter Position

Select one of four meter display positions

Scale Meter Scale

Provides selection of the desired audio meter scale and response mode.

Choices are: **Digital (PPM), Nordic, BBC, EBU, DIN, Expanded DIN, SMPTE VU, EBU VU, France VU**

The most common setting is **Digital.**

Volume

Adjust the speaker or headphone Volume level here.

NOTE – SHORT CUT: This adjustment is available through the front panel Adjust knob. Press the Adjust knob then turn the knob to make Volume adjustment.

11. On-Screen Features

The V-R241-4K monitor comes with several powerful on-screen display (OSD) features.

These include:

- Audio Meter Bars
- Waveform Monitor / Vectorscope display
- Closed Caption decode and text display
- Timecode decode and display
- IMD In Monitor Display of Tally and Text

Most of these may be used at the same time but there are limitations. Some will require position adjustment to avoid overlap. Others use the same resources and cannot appear on-screen at the same time.

**These combinations may appear on-screen together:**

- Timecode, Audio Bars, Waveform / Vector
- Timecode, Audio Bars, IMD
- Timecode, Audio Bars, Closed Caption

These items will conflict:

- Waveform / Vector and Closed Caption
- Waveform / Vector and IMD
- Closed Caption and IMD

Note: A useful trick is to assign Waveform to one of the Function buttons (F1 – F5). Waveform / Vector can be popped up when needed, interrupting IMD or Closed captioning only as long as necessary. They will reappear when the Waveform Function button is pressed again.

12. Waveform Config
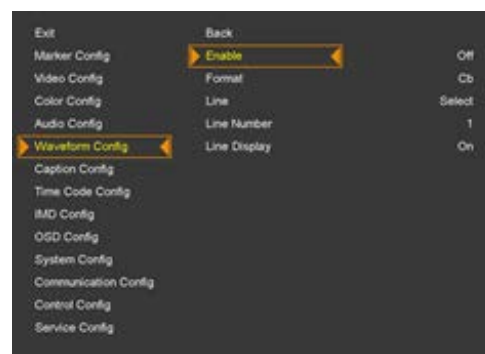
Enable

Selects Waveform Monitor & Vectorscope display.

NOTE: This feature is available only when an SDI input is selected. Waveform/Vector displays do not appear when a menu page is on screen.

Format

Select one of several Waveform monitor / Vectorscope display modes.

Choices are:

Y (Most common mode – standard Luma Waveform display)

Cb, Cr Display only Cb or Cr color difference signal

Y+Cb+Cr Display Luma and color difference components side-by-side

G, B, R Display one color primary signal

G+B+R (Displays all three primaries in "parade view", side-by-side)

Line

When this function is **ON**, the Waveform and Vectorscope will measure and display a single line from the video input. The single line that is being displayed on the Waveform Monitor and Vectorscope is highlighted in the picture as a white horizontal line. As the line number is changed, this highlight will move up or down the screen. This can be useful during troubleshooting or when it is desired to evaluate a particular area of an image.

Line Number select: Select video line to be displayed by the Waveform Monitor and Vectorscope.

Line display: OFF/ON/5 Sec Select how long the highlight indicator will remain on the picture display.

NOTE: The best way to use this feature is to set Line Display to ON, then exit out of the Menu. Use the Adjust Knob to move the white marker line up or down to select the exact line to be measured. The line number appears on the Waveform monitor display.

13. Caption Config

The V-R241-4K monitor can decode and display a variety of Closed Captioning that may be embedded in the video signal from the selected SDI input. **NOTE:** Closed captioning is never embedded in HDMI signals.

It is possible for more than one type of captioning to be embedded in the same digital stream. Unlike analog Closed Captioning that is found on "Line 21", digital captioning is not bound to a particular video line but, instead, is carried in the Ancillary Data space in the SDI stream. Captioning that is not properly identified or does not conform to standards will not be decoded and displayed by the monitor.

Caption

This selection turns caption decoding on and selects the type of captioning to decode.

Choices are: **608** Transcoded (original style that has been converted to 708 style)

708 (advanced style that was introduced with HDTV)

608 Caption

There are several sub-modes within the Closed Captioning standards that allow for multiple languages and text that is not captioning.

Choices are: **C/C1, C/C2, C/C3, C/C4** In most cases, the primary captioning will be found by selecting **C/C1**. The other choices, if present, typically represent additional languages.

TEXT1, TEXT2, TEXT3, TEXT4 Text messages that are not captions.

OFF Turns off caption decoding.

708 Caption

This selection turns on 708-style caption decoding which can include animations, colors and special fonts.

Choices are: Service 1 through Service 6. In most cases, the primary captioning will be found by selecting Service 1.

14. Time Code Config

SDI video may carry up to two embedded copies of Timecode. These correspond to Vertical Interval Timecode (VITC) plus a digital representation of analog Longitudinal Timecode (LTC).
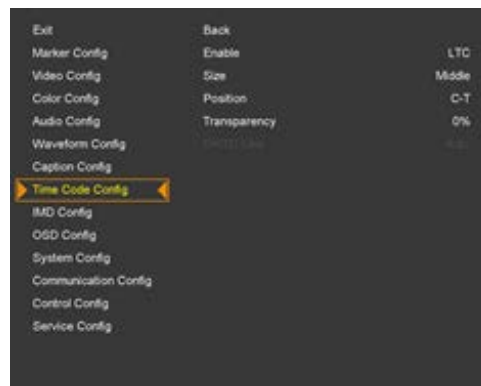
Enable

This selects which type of timecode will be decoded and displayed. Timecode that is corrupted or does not adhere to SMPTE standards will not be displayed. Choices are: **OFF, LTC, DVITC**

NOTE: Timecode decoding is available from SDI inputs only.

Size

This selection changes the size of the displayed timecode characters.

Choices are: **Small, Middle, Large**

Position

This selection allows placing the timecode on screen where it will not interfere with the displayed picture.

Choices are: L-T (left top), C-T (center top), R-T (right top), L-B (left bottom), C-B (center bottom), R-B (right bottom)

Transparency

This selection affects the visibility of the Time Code display. At 0%, the video image is visible through the Time Code characters. At 100%, there will be a black rectangle behind the characters.

Choices are: 0%, 25%, 50%, 75%, 100%

DVITC Line

Vertical Interval timecode may be embedded in any line in the SDI VANC (Vertical Ancillary Data) space. There may be, in some cases, more than one VITC code embedded. The line location of the VITC code may be selected here. Choices are:

- **Auto** The monitor will decode the first copy (lowest line number).
- **Line 1 ~ 31** (manually select the line number to be decoded).

15. IMD Config

IMD stands for "In Monitor Display" and consists of large font text which can represent a source name, a person's name, or other arbitrary text. In this monitor, IMD text may be input manually by the user or electronically from an IMD/UMD controller such as those from Image Video® or TSL®.
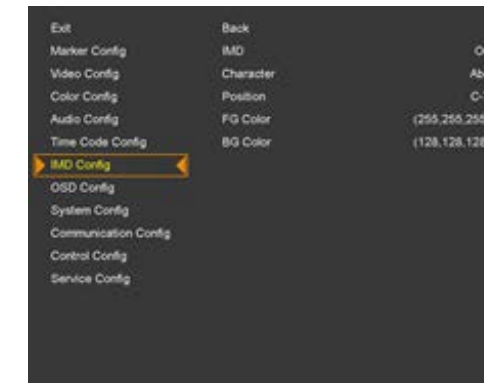
Manual Text Input Method

IMD

Turn IMD text display **ON** or **OFF** here.

NOTE: This item should be set to **ON** when when using manual or external **IMD** control however, in most cases, Image Video control will turn it ON when text is sent.

See Communications Config section below for details.

Character (Manual IMD)

Use the front panel Adjust knob or arrow keys to type the desired manual (fixed) IMD message up to 16 characters in length. IMD text appears in the bottom center of the display area.

FG Color & BG Color

Select the color of the IMD text (foreground) and background with these two items.

Numbers represent the amount of Red, Green and Blue to be mixed. 255 = maximum, 0 = minimum.

For example, menu choice: (255, 0, 0) = Red Select Transparent = no color to make text invisible.

	R	G	B		R	G	B
Red	255	0	0	Dark Red	128	0	0
Green	0	255	0	Dark Green	0	128	0
Yellow	255	255	0	Dark Yellow	128	128	0
Blue	0	0	255	Dark Blue	0	0	128
Magenta	255	0	255	Dark Magenta	128	0	128
Cyan	0	255	255	Dark Cyan	0	128	128
White	255	255	255	Gray	192	192	192
Dark Gray	128	128	128	Black	0	0	0

16. OSD

This function controls the appearance of the OSD (On Screen Display) menus.
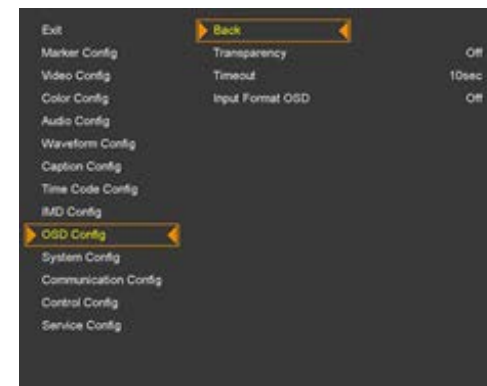
Transparency

Sets whether the OSD menus have a black background or are simply superimposed over the image.

Timeout

Sets how long the Menus will be on screen after menu choices have been completed.

Choices are: **ON** OSD stays ON until manually turned off by pressing the Menu button.

5sec, 10sec, 20sec, 30sec, 40sec, 50sec, 60sec OSD menus disappear after the selected number of seconds.

Input Format OSD

Sets how long the Input Format message remains in the upper left corner of the screen. Input Format includes the name of the source currently in use, the video format and the video frame rate.

Choices are: **ON** Input Format message remains on screen constantly

5sec The Input Format message appears on screen when a new source is selected and disappears after 5 seconds.

OFF The Input Format message does not appear.

17. System Config

GPI Control & GPI#

GPI (General Purpose Interface) is the simplest type of remote interface requiring only a button or switch connected from one of the control pins on the GPI connector to the Ground or Common pin. This type of interface is sometimes called a "pull down", or "contact closure" interface. It is compatible with relay and "open collector" outputs, for example from video production switchers. Pins 1 - 6 on the GPI connector can each be assigned to different functions. Pin 8 is the "ground" or "common" pin.
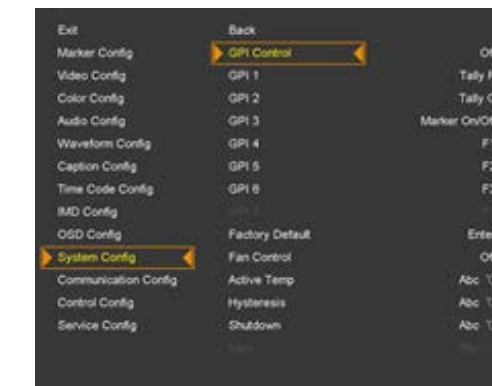
NOTE: Pin 7 when triggered, operates the same as the front Power button. It will cycle the power between Operate and Standby modes. Pin 7 cannot be assigned for other functions.

Functions that can be assigned to GPI triggers:

Tally R, Tally G: Turn Red or Green tally LED on. Turn both on for Amber tally (use two GPI's for Amber).

Marker On/Off: Toggle Aspect & Area markers on/off, does not change marker settings.

F1, F2, F3, F4 or F5: Same effect as pressing on the front panel button F1 through F5.

Aspect: Cycles through aspect ratio options. "Not available" will appear when video is not connected.

Aspect Marker: Cycles through aspect ratio Marker options.

Area Marker: Cycles through Area Marker options.

Center Marker: Toggle Center "+" marker on/off.

Input SDI1, Input SDI2, Input Quad, Input 2SI, Input HDMI: Has same effect as pressing these front panel buttons.

Menu Key, Enter Key, Up Key, Down Key, Left Key, Right Key: Has same effect as pressing these front panel buttons.

H/V Delay: Cycles through four choices of OFF (no shift), H (Shift image left), V (Shift Image down), H+V (both shifts).

Undefined: No function / disabled.

Factory Default

Sets the monitor menus back to Factory original settings. User settings will be erased.

Choices: **ON** reset to factory settings, **OFF** do not reset.

NOTE: Pressing the Adjust Knob or Input button initiates reset.

Fan Control

The internal cooling fan my be controlled through this function.

Choices are:

Auto: The fan turns ON as needed if the temperature is higher than the temperature set as Active Temp (Celsius).

The fan turns OFF when the temperature drops by the amount shown as Hysteresis (1 – 10 degrees).

The monitor POWER will turn OFF if the temperature exceeds the amount shown in Shutdown.

ON: The fan runs constantly. Recommended when the ambient temperature is expected to be high.

OFF: The fan will not run. This is not recommended except for short durations. For example, when live audio is being recorded and the fan noise would be picked up by a microphone. Prolonged operation with the fan forced OFF may lead to unwanted color changes in the displayed image as well as reduced monitor life.

18. Communication Config

The Communication Config section provides settings for three control interfaces:

LAN - Ethernet Network Port. General purpose control. Capabilities depend on 3rd party control applications.

Can be used for IMD text, changing inputs and most other parameters.

Serial - RS-232 Port. Primarily used with monitor calibration applications.

422 - RS-422/485 Port for IMD and general purpose control. Capabilities depend on 3rd party applications.

Set I.D (01~254)

Select the ID number for the serial ports. This ID number applies to both RS-232 and RS-422/485 control connections. ID numbers must be in the range **1 to 254**. **0 = OFF** Assigning an ID number is useful when more than one monitor or other device will be controlled on a shared serial connection. Default ID number = 1.

Serial Baud Rate (RS-232 Port)

Select the Baud rate (data rate) for the RS-232 serial port.

Choices are: **2400, 4800, 9600, 19200, 38400, 57600, 115200** Default = 9600

IP Protocol

Select the protocol type for the Ethernet port. The protocol choice depends on the particular controlling device.

Choices are:

Remcon (Remote Control).

TSL 5.0 – TSL Tallyman Version 5.0 (IMD Control).

TSL 4.0 – TSL Tallyman Version 4.0 (IMD Control).

NOTE: For IMD Control to operate via the Ethernet port set **IMD** to ON (see **IMD Config** section above).

422 Baud Rate

Select the Baud rate (data rate) for the RS-422 serial port (Compatible with RS-485).

Choices are: **2400, 4800, 9600, 19200, 38400, 57600, 115200** Default = 38400

422 Protocol

Select the protocol type for the RS-422/485 serial port. The protocol choice depends on the particular controlling device. Choices are:

Remcon (Remote Control)

TSL 4.0 – TSL Tallyman Version 4.0 (IMD Control)

Image Video (IMD Control)

NOTE: For IMD Control to operate via the RS-422 port set IMD to ON (see IMD Config section above).

Read IP Settings

Select Read IP Settings and press INPUT to display the current Ethernet IP address.

In DHCP mode, the current address will appear Gray. When DHCP is OFF, the address will appear bright White.

ID

Type a name or number to identify the monitor.

DHCP

Set **DHCP ON** to allow a network router to automatically assign an IP address to the monitor.

Set **DHCP OFF** to manually enter a "fixed" or "static" IP address.

IP Address, Gateway, Subnet

When DHCP is OFF, fill out these three fields then confirm by selecting **APPLY** and press the **Adjust Knob.**

NOTE: Depending on the network characteristics, it may be necessary to turn Power OFF and back ON (front panel Power button) for an address change to be recognized.

19. Control Config

Front LED

This function turns the lights in the front panel buttons OFF. This may be useful when the monitor is operating in a darkened environment where the front panel lights might be distracting. Choices are:

ON Front Panel function is normal.

OFF The Power and input selection buttons are dark. (Does not affect Tally lights).

Off after 15 S The button light turns on when any button is pressed and turns off after 15 seconds

Local Enable

This is a lockout function for the front panel input selection. It can be used to prevent accidental changes.

Local Enable **ON** – Input selection is locked

Local Enable **OFF** – Input selection may be changed

Auto Key Lock

This is a variation on Local Enable. It causes all buttons and knobs to be disabled after 10 minutes of non-use. Useful where the monitor might be subject to being touched accidentally. Pressing and holding any button for about 2 seconds enables the front panel controls.

Auto Key Lock **ON** – Front panel controls will disable after 10 minutes

Auto Key Lock **OFF** – The front panel works normally

Source Key (Front "Input" Button)

This function affects how the front panel INPUT button operates.

Menu: When this choice is set to MENU and the INPUT button is pressed, a list appears on screen and the desired input may selected from that list. This is the Default mode.

Rotate: In this mode, pressing the INPUT button will cycle through all of the inputs in this order:

SDI 1, SDI 2, QUAD, 2SI, HDMI

Patterns

This function controls the internal test pattern generator. All patterns are full screen. Choices are:

OFF: Normal monitor operation.

Auto Run: Each color test pattern will be displayed for approximately 5 seconds.

White, Black, Red, Green, Blue, Yellow, Cyan, Magenta: Full screen of a solid 100% saturated color.

White is 100% Luma 0% Chroma, Black is 0% Luma 0% Chroma.

F1, F2, F3, F4, F5 (Function Button config)

Function buttons provide quick access to commonly used features without having to access the OSD menus.

Any item in the list below may be assigned to any one of these front panel buttons to create a short-cut.

Choices are:

Aspect Ratio: Cycle through display aspect ratios each time button is pressed

Color Only: Select between Mono (black and white) or Blue Only

Level meter: Set Audio Level meter "bars" on / off

Audio Group: Cycle through SDI audio groups 1, 2, 3, 4

Audio Channel: Selects which audio channel or channel pair to monitor

Audio mute: Turns speaker/headphone sound on/off

H/V Delay: Select picture shift Off (normal) , H shift , V shift , H+V shift "pulse cross"

Flip: Off (normal), H Flip (mirror), V Flip (upside down), HV Flip (both)

Marker On/Off: Displays Aspect & Area markers on the screen using most recent settings

Aspect Marker: Cycles through all available Aspect Markers (solid line) including User marker

Area Marker: Cycles through all available Area Markers (dotted line)

Gamma Select: Cycles through all display Gamma choices. (2.2 and 2.4 are most common)

Waveform: Waveform Turns Waveform and Vectorscope display on/off

Undefined: No function set

20. Service Config

This function is informational only. When selected, these items appear on the screen:

Model Number

Firmware Version (F/W)

FPGA Version

Operating Time (total hours)

Calibration ID (Cal. ID)

21. Specifications

Panel

Screen Size	23.8"
Display Area	527.04 x 296.46 mm
	20.7"H x 11.67"V
Pixel Arrangement	3840 x 2160
Brightness	350 cd/m^2
Contrast Ratio	1000 : 1

Connector

12G-SDI Input #1 & 2 2 x BNC Female

Support SDI HD, 3G, 12G (75Ω)

QUAD / 2SI Only Input #3 & 4 2 x BNC Female

Supports SDI HD, 3G-SDI (75Ω)

SDI Loop Output 4 x BNC Female

HDMI Input

HDMI 1 x HDMI Female

Power Input 5 Pin XLR

RS-232c 1 x D-Sub 9-pin Male

GPI Interface 1 x RJ-45

ETHERNET 1 x RJ-45

RS422 IN/OUT 2 x RJ-11

RS422 Interface

Pin	Function
1	Tx-
2	Ground
3	Rx+ (Receive from host)
4	Rx- (Receive from host)
5	N/C
6	Tx+

GPI Interface

Control Terminal: 1 ~ 7 Pin

Pin	Function
1	GPI 1
2	GPI 2
3	GPI 3
4	GPI 4
5	GPI 5
6	GPI 6
7	GPI 7 (Power Standby on/off)
8	GROUND / COMMON

Electrical

Power Consumption	3.75A @
	24VDC (~90W)
Voltage Requirement	24VDC

Mechanical

Weight	19.84lbs, 9Kg
Operating Temperature	32°F to 104°F (0°C to 40°C)
Storage Temperature	-4°F to 120°F (-20°C to 50°C)

22. dimensions

VESA HOLE : 75x75, 100x100, 200x100 mm
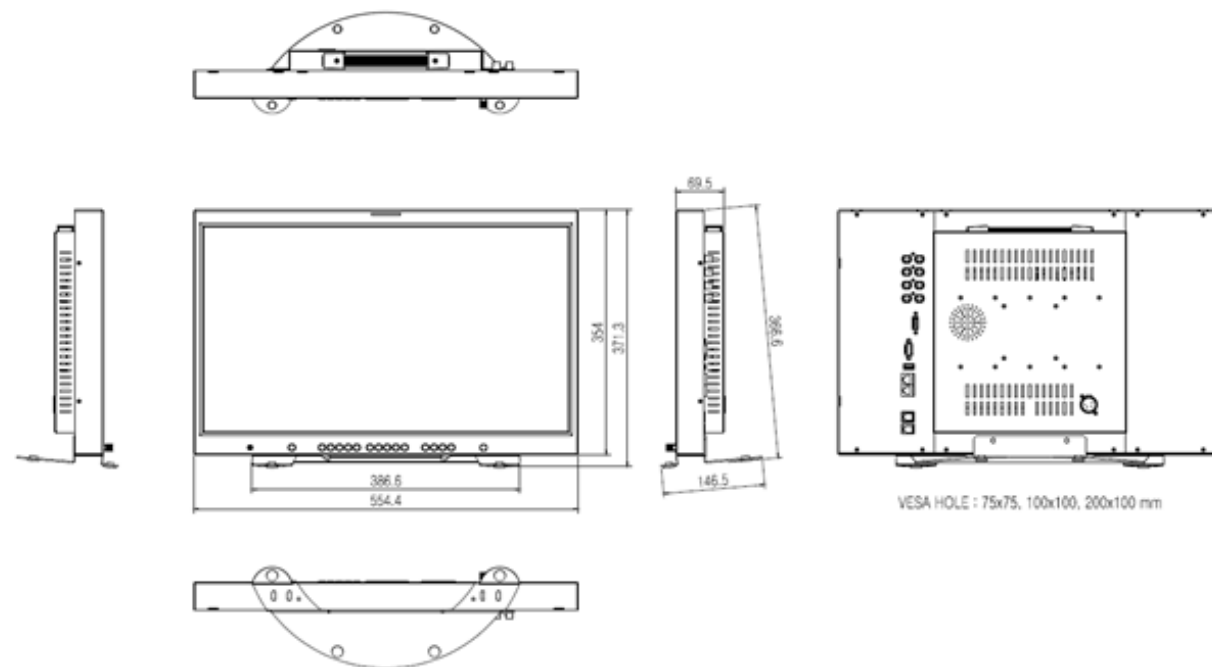
Warranty

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.

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