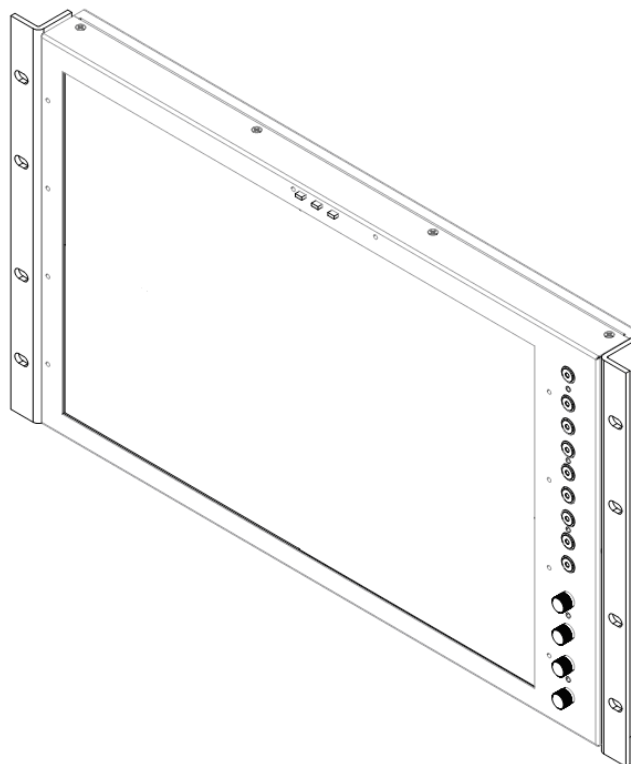


# Marshall Electronics

Model No. **V-R171X-DLW**

17" Full Resolution Dual Link / Waveform Monitor



## Operating Instructions

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# Contents

|   |    |
|---|----|
| <b>Features</b> .....                       | 4  |
| <b>Installation and Initial Setup</b> ..... | 5  |
| Unpacking.....                              | 5  |
| Installation.....                           | 5  |
| Connections and Power-On.....               | 5  |
| <b>Front Panel Features</b> .....           | 6  |
| Power Button.....                           | 6  |
| Input Channel Buttons.....                  | 6  |
| DVI Button.....                             | 6  |
| User-Definable Function Buttons.....        | 6  |
| Layout Button.....                          | 6  |
| RotoMenu™ Knob.....                         | 6  |
| Image Adjustment Knobs.....                 | 6  |
| <b>Rear Panel Features</b> .....            | 7  |
| RS-422/485 Serial Interface.....            | 7  |
| Tally Interface.....                        | 7  |
| 3G-SDI Inputs and Outputs.....              | 7  |
| Power Input.....                            | 7  |
| VESA 75mm and 200 mmHole Pattern.....       | 7  |
| Power Input.....                            | 7  |
| DVI-I Input Connector.....                  | 7  |
| <b>Compatible Input Formats</b> .....       | 8  |
| <b>DLW Monitor Layouts</b> .....            | 9  |
| <b>On-Screen Menu</b> .....                 | 11 |
| STRUCTURE OVERVIEW.....                     | 11 |
| MAIN MENU AND NAVIGATION.....               | 12 |
| Marker Setup Submenu.....                   | 12 |
| 16:9 Markers.....                           | 13 |
| 4:3 Markers.....                            | 13 |
| Marker Background.....                      | 14 |
| Center Marker.....                          | 14 |
| Video Config Submenu.....                   | 14 |
| Monochrome Mode.....                        | 15 |
| Blue-Only Mode.....                         | 15 |
| Pixel-to-Pixel Mode.....                    | 15 |
| Aspect Ratio Settings.....                  | 15 |
| Curtain Color.....                          | 16 |
| Ctemp/Gamma.....                            | 16 |
| Analog Phase.....                           | 16 |
| DVI-A CSC Mode.....                         | 16 |
| DVI-D CSC Mode.....                         | 17 |
| HDMI CSC Auto.....                          | 17 |
| Color Configuration Submenu.....            | 17 |
| System Configuration Submenu.....           | 17 |
| User-Definable Function Buttons.....        | 18 |
| Saving and Loading User Presets.....        | 18 |
| OSD Configuration Submenu.....              | 19 |
| IMD State.....                              | 19 |
| Status Display.....                         | 19 |
| OSD Tally.....                              | 20 |
| LED Tally.....                              | 20 |
| Ancillary Timecode.....                     | 20 |
| Audio Monitor.....                          | 21 |
| CC Monitor.....                             | 21 |
| OSD Timeout.....                            | 21 |
| IMD Configuration Submenu.....              | 22 |
| Overview.....                               | 22 |
| IMD ID#.....                                | 22 |
| IMD Group #.....                            | 22 |
| IMD Protocol.....                           | 22 |
| Tally Source.....                           | 23 |
| IMD Baud Rate.....                          | 23 |
| IMD Name (S/N).....                         | 23 |
| IMD Tally Mode.....                         | 24 |
| IMD Fixed Color.....                        | 24 |
| IMD Fixed Align.....                        | 24 |
| IMD Fixed String.....                       | 24 |
| Closed Captioning Submenu.....              | 25 |
| Wave/Vector Submenu.....                    | 26 |
| Ancillary Submenu.....                      | 28 |
| DID/SDID.....                               | 28 |
| SERVICE SUBMENU.....                        | 29 |
| Software Version Display.....               | 29 |
| <b>Specifications</b> .....                 | 30 |
| <b>Maintenance</b> .....                    | 31 |
| <b>Warranty</b> .....                       | 31 |

# Features

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The DLW (Dual Link / Waveform) Series is the latest addition to Marshall's expanding line of IMD-equipped monitors.

- **1920 x 1200 Full Resolution 17" Panel**

The V-R171X-DLW features an all-digital TFT-MegaPixel active matrix LCD system with 1920x1200 native resolution. The LCD panel features a brightness of 500 cd/m<sup>2</sup> and a 800:1 contrast ratio making it ideal in a variety of environments and lighting conditions.

- **Multi mode, Vectorscope and Waveform Monitor mode**

The DLW monitor series includes a real-time Waveform monitor and Vectorscope along with support for SDI, HD-SDI, 3G-SDI and Dual Link SDI. With the monitor in Multi mode, the monitor will break into four quadrants and display Signal Input information (Link Status), Embedded Audio levels, a Waveform monitor, a Vectorscope and live video simultaneously. Additional layouts provide the ability to view the Waveform monitor, Vectorscope, SDI Link status and Video individually.

- **Closed Captioning Decoding**

The DLW monitor allows for decoding of Closed Captioning in the EIA-608 or EIA-708.

- **In-Monitor Display**

In-Monitor Display allows on-screen text and tally indication, controlled locally or remotely via a variety of industry standard protocols.

- **OSD Features (On Screen Display)**

Embedded time code and an embedded audio presence indicator can be displayed on the screen in a variety of configurations. Closed Caption presence indication is also provided for 608/708 captions.

- **Advanced Features**

Color temperature adjustment, aspect ratio settings, blue-only mode, and monochrome mode are a few of the advanced features allowing the V-R171X-DLW to be at home in any broadcast environment. Pixel-to-Pixel mode also allows native display of any incoming image format.

- **Four User-Definable Function Buttons**

Four user-definable function buttons allow quick access to numerous settings and features including aspect ratio, monochrome mode, color temperature, and more.

# Installation and Initial Setup

## ■ Unpacking

Carefully unpack the V-R171X-DLW monitor and verify that the following items are included:

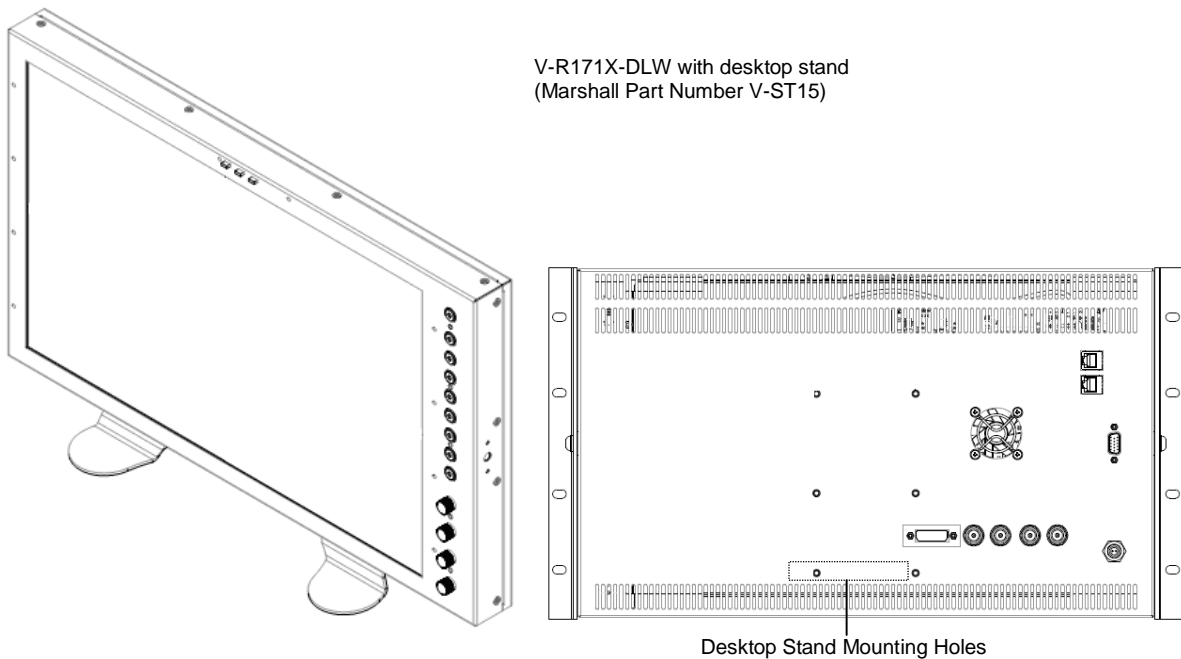
- V-R171X-DLW Monitor
- V-PS12-5V-1 Power Supply with Twist-Lock Connector
- Operating Instructions

Inspect the unit for any physical damage that may have occurred during shipping. Should there be any damage, immediately contact Marshall Electronics at (800) 800-6608. If you are not located within the continental United States, call +1 (310) 333-0606.

## ■ Installation

The V-R171X-DLW can be combined with a desktop stand for desktop use. (Marshall Part V-ST15).

VESA standard 75mm hole patterns allows custom mounting installations. Marshall Electronics can provide an optional VESA stand with pivot and tilt as well. (Marshall Part VP-LCD171H-ST-01).



## ■ Connections, Power-On and Initial Setup

Plug the V-PS12-5V-1 power supply into an AC power source (100-240 V @ 50/60 Hz). Attach the Twist-Lock connector to the back of the monitor. Connect the required cables for video signals input and output. (Power must be applied to the V-R171X-DLW for the active loop-through output to be activated.) The monitor defaults to 'ON' when power is supplied.

# Front Panel Features



## ❶ **Power Button**

Turn the monitor off or on by pressing the power button. The LED on the power button is at maximum illumination when the unit is OFF. The LED is at minimum illumination when the unit is on.

## ❷ **Input Channel Buttons**

Pressing **SDI 1** or **SDI 2** will select HDSDI-SDI Video Inputs 1 or 2, respectively. When a channel is activated, the LED on the channel will illuminate. When displaying Dual Link formats, both LEDs will illuminate simultaneously.

## ❸ **DVI Button**

Pressing the **DVI** button selects the DVI-I input. When activated, the LED will light.

## ❹ **User-Definable Function Buttons**

Four user-definable function buttons can be used for direct access to various settings. Functions are assigned using the on-screen menu.

## ❺

## **Layout Button**

Use this button to switch between the four available layouts on the V-R171X-DLW.

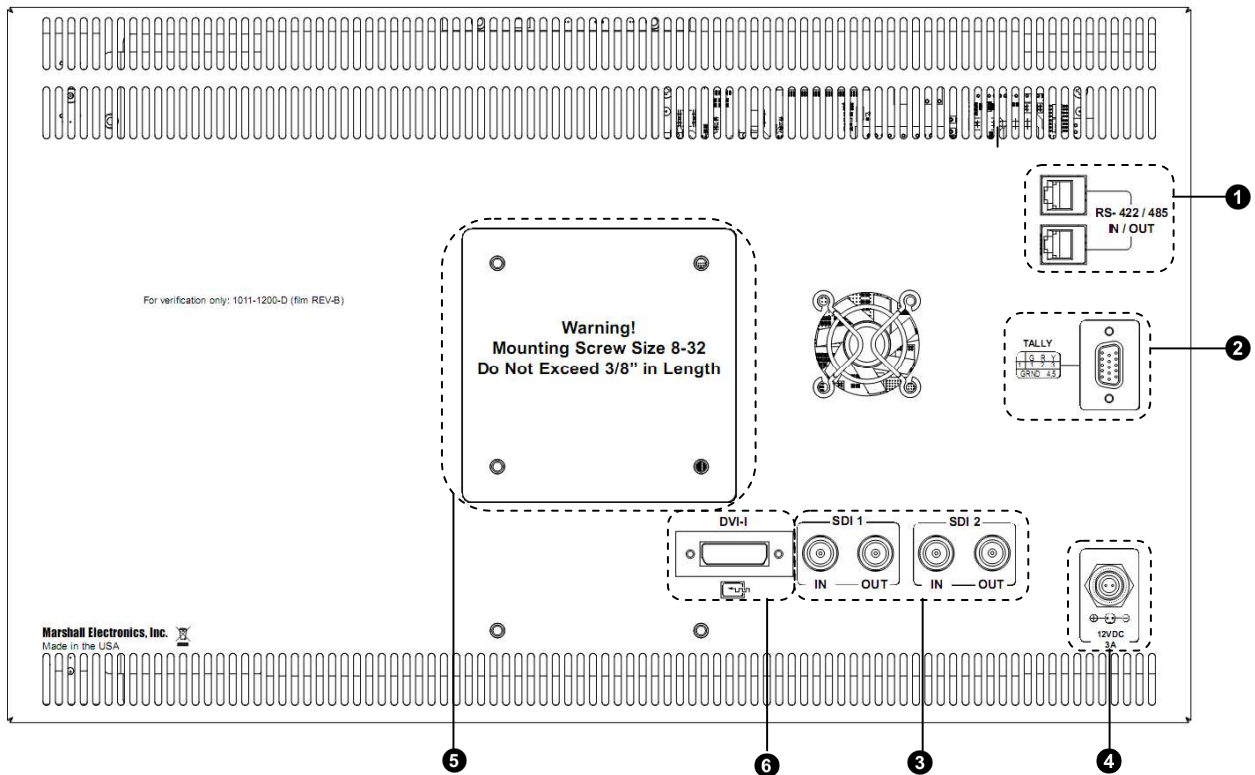
## ❻ **RotoMenu™ Knob**

The RotoMenu™ knob allows for accessing and navigating the main menu, using only a single control.

## ❼ **Image Adjustment Knobs**

Use the image adjustment knobs to adjust color saturation, brightness and contrast of the image. The status of each image adjustment parameter is shown on the top left of the screen, with values ranging from 0 to 100. Pressing a knob once displays the current value. Pressing a knob twice resets the corresponding adjustment to the default setting.

# Rear Panel Features



## 1 RS-422/485 Serial Interface

The RS-422/485 ports are used to remotely control the IMD or all V-R171X-DLW features, using a variety of industry standard protocols. **(Note: Connector/pin-out may need to be adapted depending on protocol and controlling device used.)** Only one connection to either port is needed to control the monitor. The second port can be used to loop multiple monitors in the same bus.

## 2 Tally Interface (HD-15)

THE OSD Tally can be activated via the HD-15 connector by connecting the corresponding pin to ground. A variety of external devices can be used to perform the contact closure. No additional power should be supplied at the HD-15 port.

## 3 3G-SDI Inputs and Outputs

The V-R171X-DLW has two 3G-SDI inputs and two active loop-through outputs. **SDI 1** and **SDI 2** can be used simultaneously to display Dual Link SDI signals.

## 4 Power Input

Connect the 12 VDC input to the Twist-Lock power input connector. Power can be supplied from the included power supply or from a variety of DC sources supplying at least 5.0 Amps at 12 Volts. **IMPORTANT:** If using a power source other than the included power supply, be sure that the polarity of the DC input is correct:

- Pin 1: +12 VDC
- Pin 2: GND

## 5 VESA 75mm and 200 mm Hole Pattern

VESA-standard 75 mm hole-patterns are provided to accommodate a variety of custom mounting options.

## 6 DVI-I Input Connector

Integrated DVI Digital and Analog VGA input. Includes EDID and HDCP for connection to Computers, DVD Players, Rasterizers, etc.

# Compatible Input Formats

The following SDI standards are supported by the V-R171-DLW:

525i, 625i  
720p (60, 59.94, 50)  
720p (30 / 29.97)  
1035i (60 / 59.94)  
1080i (60 / 59.94 / 50)  
1080psF (24 / 23.98)  
1080p (30 / 29.97 / 25 / 24 / 23.98)

The following 3G-SDI standards are supported by the V-R171-DLW

## **1080p (60 / 59.94 / 50)**

YCbCr – 4:4:4 – 10 Bit - Level A, B

## **1080i (60 / 59.94 / 50)**

YCbCr, RGB – 4:4:4 – 10 Bit, 12 Bit – Level A, Level B  
YCbCr, RGB – 4:4:4 – 12 Bit – Level A, Level B  
YCbCr+A, RGB+A – 4:4:4:4 – 10 Bit – Level A  
YCbCr+A – 4:2:2:4 – 12 Bit – Level B

## **1080p (30 / 29.97 / 25 / 24 / 23.98)**

YCbCr, RGB – 4:4:4 – 10 Bit, 12 Bit – Level A, Level B  
YCbCr, RGB – 4:4:4 – 10 Bit – Level A  
YCbCr, RGB – 4:4:4 – 12 Bit – Level A, Level B  
YCbCr+A, RGB+A – 4:4:4:4 – 10 Bit – Level A  
YCbCr – 4:2:2 – 12 Bit – Level B  
YCbCr+A – 4:2:2:4 – 12 Bit – Level B

## **1080sF (30 / 29.97 / 25 / 24 / 23.98)**

YCbCr, RGB – 4:4:4 – 10 Bit – Level A  
YCbCr+A, RGB+A – 4:4:4:4 – 10 Bit – Level A  
YCbCr – 4:2:2 – 12 Bit – Level B  
YCbCr+A – 4:2:2:4 – 12 Bit – Level B

## **2k Formats**

**RGB – 4:4:4 – 12 Bit – Level A, Level B**

2k p(23.98, 24, 25, 29.97, 30)

The following Dual Link standards are supported by the V-R171-DLW:

## **YCbCr (4:2:2)**

1080p (60 / 59.94 / 50)

## **YCbCr/RGB (4:4:4 / 4:2:2) 10 Bit / 12 Bit**

1080i (60 / 59.94 / 50)  
1080p (30 / 29.97 / 25 / 24 / 23.98)  
1080psF (24 / 23.98)

## **YCbCr+A/RGB+A (4:4:4:4) 10 Bit / 12 Bit**

1080i (60 / 59.94 / 50)  
1080p (30 / 29.97 / 25 / 24 / 23.98)  
1080psF (24 / 23.98)

## **Dual Link**

2k p(23.98 / 24 / 25 / 29.97 / 30)

The following VESA standards, for Analog and Digital modes, are supported by the V-R171-DLW's DVI-I Input:

640x480 @60Hz  
800x600 @60Hz  
1024x768 @60Hz  
1280x1024 @60Hz  
1600x1200 @60Hz

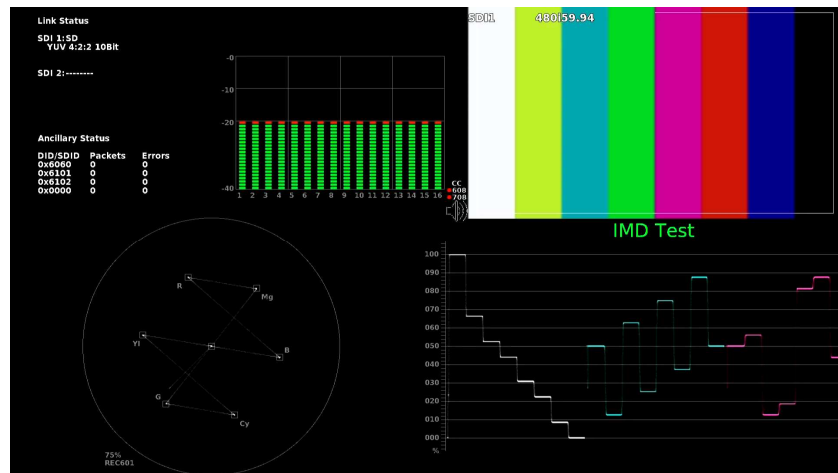
The following video standards, in Analog (RGB, YPbPr) and Digital (RGB, YCbCr) modes, are supported by the V-R171-DLW's DVI-I Input:

1080p/60, 1080p/59.94, 1080p/50  
1080i/60, 1080i/59.94, 1080i/50  
1080p/23.98, 1080p/24, 1080p/25, 1080p/29.97, 1080p/30  
720p/60, 720p/59.94, 720p/50

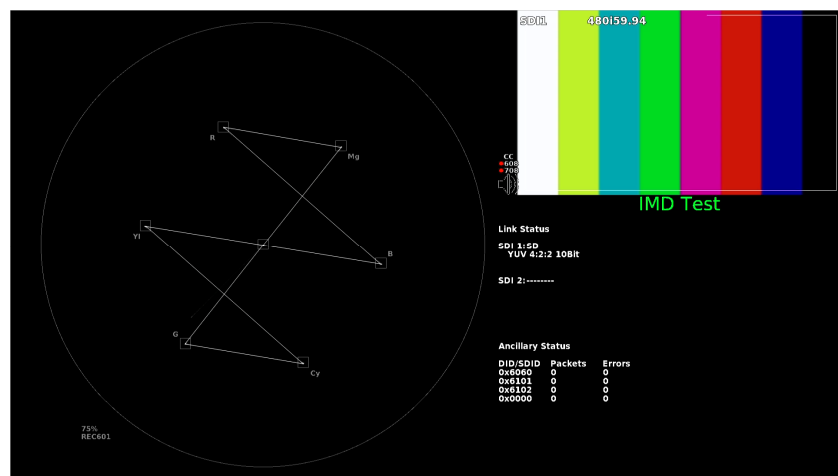


# DLW Monitor Layouts

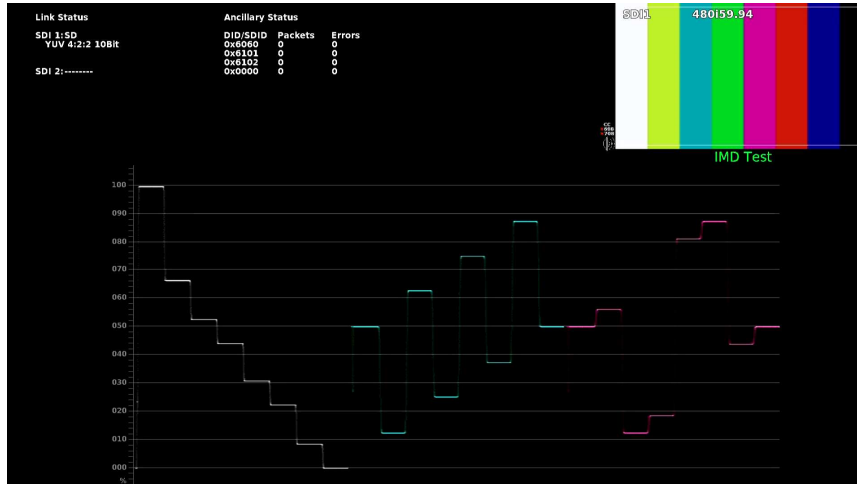
The V-R171X-DLW has 4 possible layouts, Multi mode, Vectorscope mode, Waveform mode and Full Screen Video mode. Each press of the LAYOUT Button will change the current mode to next available mode.



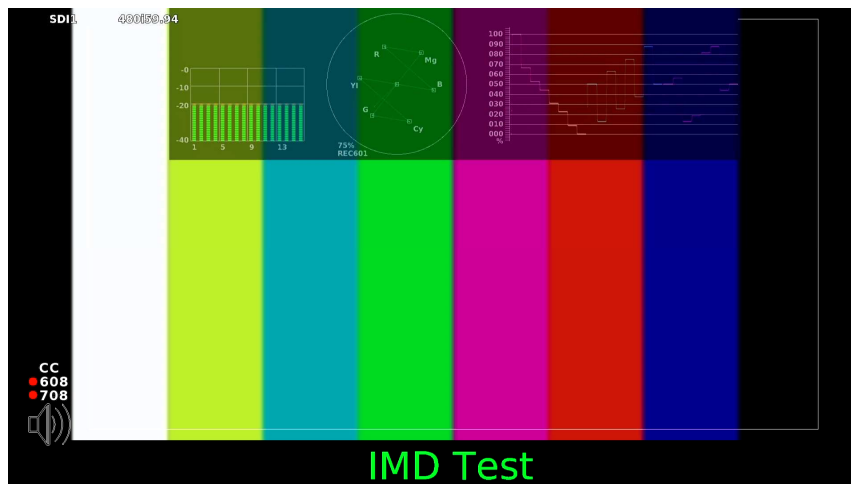
*Default Multi mode Layout*



*Vectorscope Mode*



Waveform Monitor Mode



Full Screen Video Mode

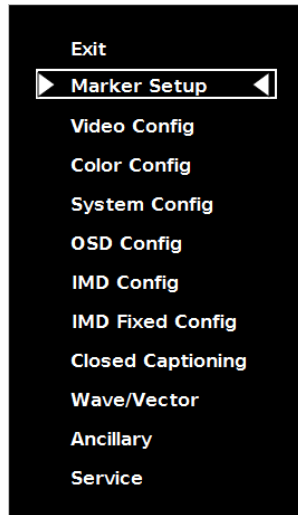
# On-Screen Menu

## STRUCTURE OVERVIEW

|                      |   |   |                            |   |   |
|----------------------|---|---|----------------------------|---|---|
| Marker Setup         | <b>Back</b>   | Return to Main Menu   | IMD Config                 | <b>Back</b>   | Return to Main Menu   |
|                      | <b>Marker 16:9</b>  | Off, 95%, 93%, 90%, 88%, 80%, 1.85:1, 2.35:1, 4:3, 14:9, 13:9 |                            | <b>IMD ID #</b>                                       | 000-255   |
|                      | <b>Marker 4:3</b>   | Off, 95%, 93%, 90%, 88%, 80%                                  |                            | <b>IMD Group #</b>                                    | 001-254   |
|                      | <b>Marker Backgrd</b>   | Off, 50% Gray, Black  |                            | <b>IMD Protocol</b>                                   | MEI, Image Video, TSL 4.0, MEI-Image Video                                |
|                      | <b>Center Marker</b>  | Off, On   |                            | <b>IMD Tally Source</b>                               | Standard, TSL/MEI 422, Image Video HW, Image Video 422, Standard + IV 422 |
| Video Config         | <b>Back</b>   | Return to Main Menu   | IMD Fixed Config           | <b>IMD Band Rate</b>                                  | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200             |
|                      | <b>Monochrome</b>   | Off, On   |                            | <b>IMD Name (S/N)</b>                                 | User Defined (16 chars max.)  |
|                      | <b>Blue Only</b>  | Off, On   |                            | <b>IMD Tally Mode</b>                                 | T1, T2, TIT2, T2T1, T1-, T2-, TIT2-, T2T1-                                |
|                      | <b>Pixel to Pixel</b>   | Off, On   |                            | <b>Back</b>   | Return to Main Menu   |
|                      | <b>Aspect Ratio</b>   | Full, 4:3, Scaled 4:3, 16:9                                   | <b>IMD Fixed Color</b>     | Green, Yellow, Red                                    |   |
|                      | <b>Curtain Color</b>  | Blue, Red, Green, White, Black                                | <b>IMD Fixed Align</b>     | Left, Center, Right                                   |   |
|                      | <b>Ctemp/Gamma</b>  | 55k, 65k, 93k, Linear   | <b>IMD Fixed String</b>    | User Defined (16 chars max.)                          |   |
|                      | <b>Analog Phase</b>   | 0-31 (DVI-Analog input only)                                  | Closed Captioning          | <b>Mode</b>   | Off, 608, 708, 708 (608 Comp.)  |
|                      | <b>DVI-A CSC Mode</b>   | RGB PC, YUV 601, YUV 709, RGB Studio                          |                            | <b>608 Service</b>                                    | CC1, CC2, CC3, CC4  |
|                      | <b>DVI-D CSC Mode</b>   | RGB PC, YUV 601, YUV 709, RGB Studio                          |                            | <b>708 Service</b>                                    | 1-63  |
| <b>HDMI CSC Auto</b> | On, Off   | <b>608 Color</b>  |                            | Auto, White, Green, Blue, Cyan, Red, Yellow, Magenta  |   |
| Color Config         | <b>Back</b>   | Return to Main Menu   | Waveform                   | <b>708 Color</b>                                      | Auto, White, Green, Blue, Cyan, Red, Yellow, Magenta                      |
|                      | <b>Red Offset</b>   | 0-100   |                            | <b>Back</b>   | Return to Main Menu   |
|                      | <b>Green Offset</b>   |   |                            | <b>Mode</b>   | Off, 608, 708, 708 (608 Comp.)  |
|                      | <b>Blue Offset</b>  |   |                            | <b>608 Service</b>                                    | CC1, CC2, CC3, CC4  |
|                      | <b>Red Offset</b>   |   | <b>708 Service</b>         | 1-63  |   |
|                      | <b>Green Offset</b>   |   | <b>608 Color</b>           | Auto, White, Green, Blue, Cyan, Red, Yellow, Magenta  |   |
|                      | <b>Blue Offset</b>  |   | <b>708 Color</b>           | Auto, White, Green, Blue, Cyan, Red, Yellow, Magenta  |   |
| <b>Reset</b>         | SDI, DVID, DVIA, All, Back  | System Config   | <b>Back</b>                | Return to Main Menu                                   |   |
| <b>Back</b>          | Return to Main Menu   |   | <b>Waveform Mode</b>       | YUV Overlay, YUV Parade, RGB Overlay, RGB Parade      |   |
| <b>Function 1</b>    | Monochrome, Marker, Center Marker, Marker Backgrd, IMD State, Anc. Timecode, OSD Tally, Audio Monitor, CC Monitor, Waveform Mode, CC Monitor, Waveform Mode, Overlay Position, Limits, Aspect Ratio, Pixel to Pixel, CTemp/Gamma, Blue Only |   | <b>Waveform Scale</b>      | Off, mV, % IRE, Auto                                  |   |
| <b>Function 2</b>    | Mfg, User 1, User 2, User 3, User 4, User 5, User 6, Back   |   | <b>Colorize Waveform</b>   | Off, On   |   |
| <b>Function 3</b>    |   |   | <b>Limits</b>              | Off, On   |   |
| <b>Function 4</b>    |   |   | <b>Limits Max</b>          | 0-1023  |   |
| <b>Load Config</b>   |   |   | <b>Limits Min</b>          | 0-1023  |   |
| <b>Save Config</b>   | User 1, User 2, User 3, User 4, User 5, User 6, Back  |   | <b>Vectorscope Targets</b> | Off, 75%, 100%  |   |
| OSD Config           | <b>Back</b>   |   | Return to Main Menu        | <b>Overlay Position</b>                               | Off, Bottom, Top  |
|                      | <b>IMD State</b>  |   | Off, On                    | <b>Overlay Transparency</b>                           | 0-100   |
|                      | <b>Status Display</b>   | Off, On   | Ancillary                  | <b>Back</b>   | Return to Main Menu   |
|                      | <b>OSD Tally</b>  | Off, RGY, RG, GR  |                            | <b>DID/SDID</b>                                       | 0x0000-0xFFFF   |
|                      | <b>LED Tally</b>  | Off, On   |                            | <b>DID/SDID</b>                                       |   |
|                      | <b>Anc. Timecode</b>  | Off, LTC, VITC1, VITC2  |                            | <b>DID/SDID</b>                                       |   |
|                      | <b>Audio Monitor</b>  | Off, On   | <b>DID/SDID</b>            |   |   |
|                      | <b>CC Monitor</b>   | Off, On   | <b>Reset Counters</b>      | Counter 1, Counter 2, Counter 3, Counter 4, All, Back |   |
|                      | <b>OSD Timeout</b>  | None, 5, 10, 15, 20, 25, 30                                   | <b>Service</b>             | <b>Version</b>  | Displays current firmware version   |

### MAIN MENU AND NAVIGATION

Access and navigate the main menu using the RotoMenu™ knob:



*Main Menu*

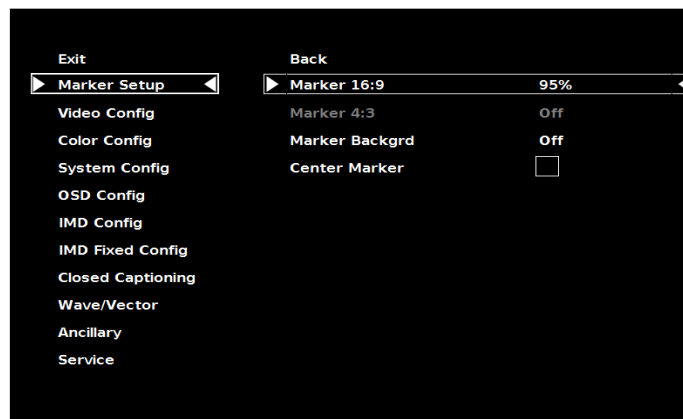
#### Using the RotoMenu knob

- Press the **RotoMenu™** knob to enter the main menu.
- Rotate the knob to scroll up or down in the main menu or each submenu.
- Press the **RotoMenu™** knob to enter a submenu or choose a setting.
- To return to main menu from submenu, select 'Back' and press the **RotoMenu™**.

The menu timeout can be set in the OSD Timeout section of the OSD Config submenu.

### Marker Setup Submenu

Use the Marker Setup submenu to select various on-screen markers, adjust the Marker Background, or toggle the Center Marker ON or OFF.



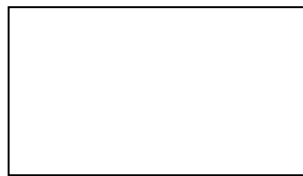
*Marker Setup Submenu*

## ■ 16:9 Markers

Use this setting to superimpose one of 10 markers on the screen when in 16:9 or Full Screen mode. This setting is disabled when the aspect ratio is set to 4:3, or when Pixel-to-Pixel mode is enabled. Note that in Full Screen mode, markers are vertically stretched along with the picture to fit the 16:10 screen.

- Off (No Marker)
- 95% Safe Area
- 93% Safe Area
- 90% Safe Area
- 88% Safe Area
- 80% Safe Area
- 1.85:1 Aspect Ratio
- 2.35:1 Aspect Ratio
- 4:3 Aspect Ratio
- 14:9 Aspect Ratio
- 13:9 Aspect Ratio

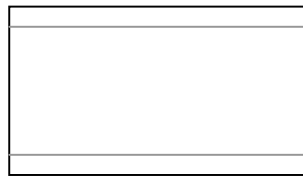
### 16:9 Marker Examples:



*OFF (No Marker)*



*90% Safe Area*



*2.35:1 Aspect Ratio*



*4:3 Aspect Ratio Marker*

## ■ 4:3 Markers

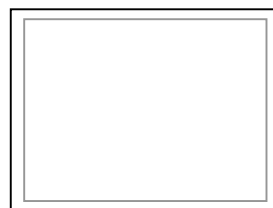
Use this setting to superimpose one of 5 markers on the screen when in 4:3 mode. This setting is disabled when the aspect ratio is set to 16:9 or Full Screen, and when Pixel-to-Pixel mode is enabled.

- Off (No Marker)
- 95% Safe Area
- 93% Safe Area
- 90% Safe Area
- 88% Safe Area
- 80% Safe Area

### 4:3 Marker Examples:



*OFF (No Marker)*



*90% Safe Area*

## ■ Marker Background

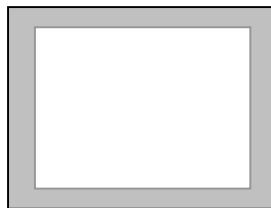
Use this setting to choose how selected markers are displayed on the screen:

- Off The marker is superimposed on the complete image.
- 50% Gray Screen area beyond the marker is shown at 50% intensity.
- Black Screen area beyond the marker is shown as black.

**Example (80% Marker in 4:3 Mode):**



*Background OFF*



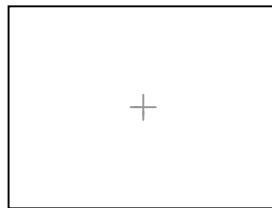
*50% Gray Background*



*Black Background*

## ■ Center Marker

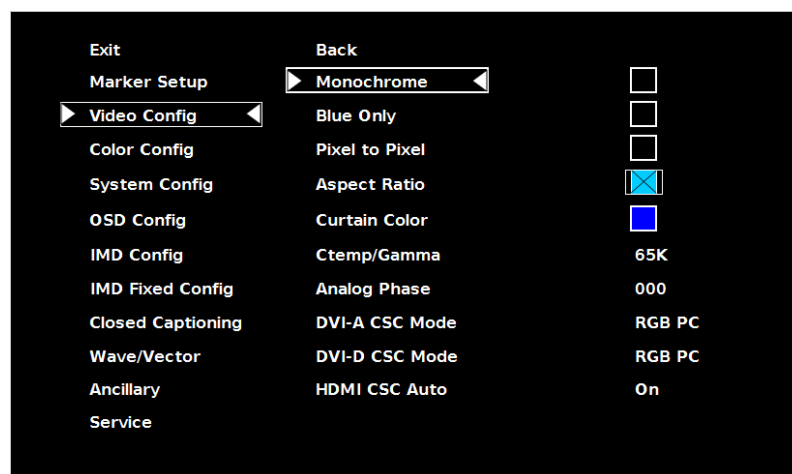
Use this setting to display a center marker on the screen.



*Center Marker*

## Video Config Submenu

Use the Video Configuration submenu to select various video settings such as monochrome mode or blue-only mode.



*Video Configuration Submenu*

## ■ Monochrome Mode

Use this setting to enable monochrome mode. Only the luminance of the image will be displayed as a grayscale picture.

## ■ Blue-Only Mode

Use this setting to enable Blue-Only mode. This mode displays only the blue color component of the image, switching off the red and green components. Use this mode when calibrating the monitor to SMPTE color bars with the following procedure:

1. Allow the monitor to warm up for at least 5-10 minutes.
2. Display SMPTE split-field color bars on the monitor using an external source.
3. Enable **Monochrome mode**.
4. Locate the pluge pattern (super black, black, and gray bars) at the lower-right corner of the screen. Adjust the **Brightness** knob until there is no visible difference between the super black and black bars, but the gray bar is still visible.
5. Adjust the **Contrast** knob until an even grayscale appears along the top bars.
6. Disable **Monochrome mode**.
7. Enable **Blue-Only mode** and adjust the **Color** knob so that the outermost bars (white and blue) appear to match in brightness.

## ■ Pixel-to-Pixel Mode

Use this setting to enable Pixel-to-Pixel mode.

This mode bypasses the monitor's internal scaling function and displays images in their native resolution and aspect ratio, with a one-to-one mapping of incoming image pixels to screen pixels:

- For incoming formats smaller than the native resolution of the window (or selected aspect ratio), the image will be displayed in the center of the window using only the necessary LCD pixels. For example, 480i images will only occupy exactly 640x480 pixels in a particular channel window in DLW mode, or if the channel is selected full screen, it will occupy exactly 640x480 pixels in the center of the screen. The surrounding screen area will be black.

## ■ Aspect Ratio Settings

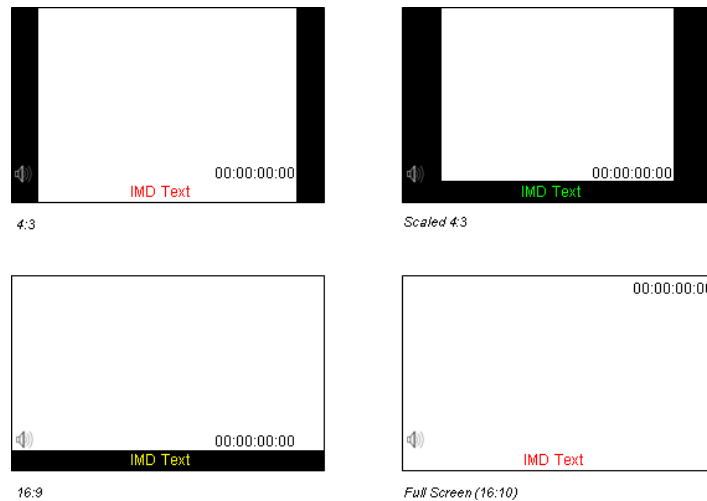
Use this menu option to switch between several aspect ratio settings.

As the V-R171X-DLW monitor has a native resolution of 1920x1200 RGB pixels, incoming images are automatically scaled to fit the screen:

- In **4:3** mode, images are scaled up or down to fill the maximum 4:3 portion of the screen (1600 x 1200). IMD text and time code are superimposed on the lower portion of the image. The audio presence indicator and on-screen tally are displayed at the bottom of the screen, outside the image.
- In **Scaled 4:3** mode, images are scaled to a smaller 4:3 portion of the screen, leaving space for IMD text, tally, and audio presence indicator to be displayed below or around the image. Time code is superimposed on the lower portion of the image.
- In **16:9** mode, images are scaled to fill the maximum 16:9 portion at the top of the screen (1920 x 1080). In this mode, IMD text and on-screen tally are displayed below the image. Time code and the audio presence indicator are superimposed on the lower portion of the image.

- In **Full Screen (16:10)** mode, images are scaled to fill the entire 16:10 screen (1920 x 1200). In this mode, all OSD features are superimposed on the image. **Note that when using a 16:9 input image in this mode, the image will be vertically stretched by approximately 10%.**

The diagrams on the following show how IMD text, timecode, and the audio monitor icon are simultaneously displayed on the screen in each aspect ratio setting. The white area represents the video image.



## ■ Curtain Color

Use this setting to choose the default color displayed on the screen when no video input is present. Available colors are **blue**, **red**, **green**, **white**, and **black**.

## ■ Ctemp/Gamma

Use this setting to choose one of three color temperature / gamma presets or to remove gamma settings:

- Linear (No gamma applied)
- 55K
- 65K
- 93K

## ■ Analog Phase (DVI-Analog or VGA input only)

Adjusts the analog phase value to improve picture quality on DVI-A or VGA Sources. This adjusts the signal phase (not color phase) of the analog-to-digital conversion.

- 0-31 (value)

## ■ DVI-A CSC Mode (DVI-Analog input only)

Use the DVI-A CSC Mode to accommodate for four different types of colorspace inputs. This setting will only affect your DVI-A inputs.



- RGB Studio: accommodates digital 480i video using the RGB limited range (16-235) inputs.
- RGB PC: accommodates full range RGB (0-255) inputs.
- YUV 601: accommodates for Rec. 601 SDTV YUV colorspace inputs.
- YUV 709: accommodates for Rec. 709 HDTV YUV colorspace inputs.

The monitor's default setting is RGB PC.

### ■ DVI-D CSC Mode (DVI-D input only)

Use the DVI-D CSC Mode to accommodate for four different types of colorspace inputs. This setting will only affect your DVI-D and HDMI inputs.

- RGB Studio: accommodates digital 480i video using the RGB limited range (16-235) inputs.
- RGB PC: accommodates full range RGB (0-255) inputs.
- YUV 601: accommodates for Rec. 601 SDTV YUV colorspace inputs.
- YUV 709: accommodates for Rec. 709 HDTV YUV colorspace inputs.

The monitor's default setting is RGB PC.

### ■ HDMI CSC Auto (HDMI input only, via the DVI-I interface)

The HDMI CSC Auto setting is used to accommodate newer HDMI interfaces that send colorspace signaling in the HDMI data stream. If this setting is set to **On**, the monitor will automatically determine which colorspace setting to use. If this setting is set to **Off**, or your HDMI signal does not contain colorspace signaling, the DVI-D CSC Mode described above will determine the colorspace configuration.

## Color Config Submenu

Use the Color Configuration submenu to adjust the Red, Green and Blue Offset and Gain values of the two SDI channels, the DVI-D input and DVI-A input.

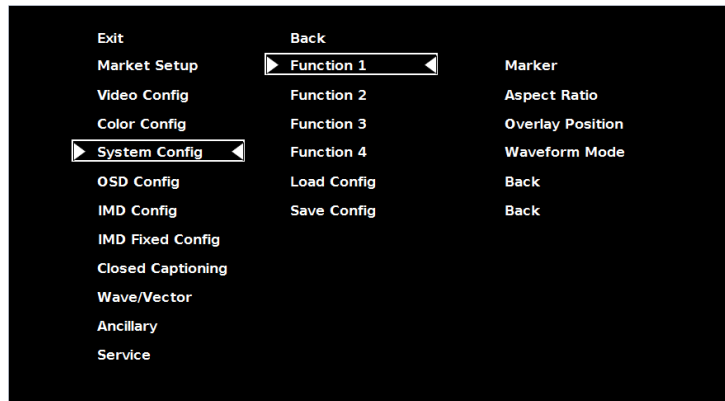


Each column adjusts a particular input channel, from SDI1 and SDI2 to the DVI-I input. For the DVI-I input, you can adjust the Offset and Gain for either a DVI-D or DVI-A input.

The Reset option allows you to return to the default settings for each individual channel.

## System Config Submenu

Use the System Configuration submenu to control various system parameters.



System Configuration Submenu

## ■ User-Definable Function Buttons

Use the **Function 1**, **Function 2**, **Function 3** and **Function 4** menu items to define each function button on the front panel of the monitor. The following options are available for each button:

- Marker                    Toggle between different Screen Markers
- Center Marker            Display/hide the Center Marker
- Marker Backgrd          Change how markers are displayed on the screen
- IMD State                 Display/hide IMD text
- Anc. Time Code            Display/hide time code
- OSD Tally                 Rotate amongst types of OSD Tally
- Audio Monitor             Display/hide audio presence indicator
- CC Monitor                Display/hide the Closed Caption Presence indicator
- Waveform Mode            Change the data displayed on the Waveform monitor
- Overlay Position         Change the position of the WFM Overlay in DLW Overlay Mode
- Limits                     Toggle the Limits option of the Waveform Monitor On or Off
- Aspect Ratio              Toggle between 4:3 and 16:9 aspect ratios
- Pixel to Pixel             Enable/disable Pixel-to-Pixel mode
- Ctemp/Gamma             Rotate amongst color temperature settings
- Blue Only                 Enable/disable Blue Only mode
- Monochrome              Enable/disable Monochrome mode

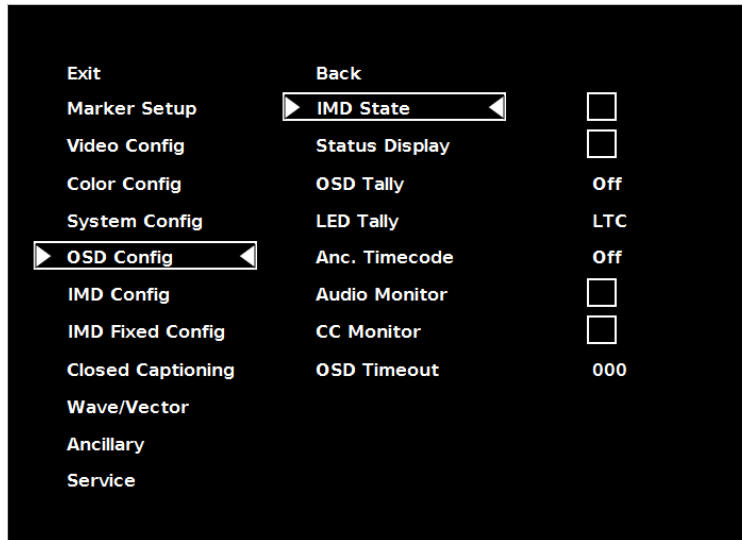
## ■ Saving and Loading User Presets

Use the SAVE CONFIG and LOAD CONFIG menus to save current settings to one of 6 presets, or load a preset. Each Preset saves all monitor settings except for IMD configuration.

- Use the LOAD CONFIG menu to load one of presets USR1 – USR6. Factory default settings can also be loaded by selecting MFG. (Factory defaults cannot be overwritten.)
- Use To perform a full system restore, which resets ALL adjustable fields on the monitor to their “fresh-from-factory” state, press the Power, F1 and F2 button simultaneously. **Note: You will lose ALL user adjustable settings on your monitor.**
- Use the SAVE CONFIG menu to save the current settings to a preset from USR1- USR6.

## OSD Config Submenu

Use the OSD Configuration submenu to select a variety of information to be displayed on the screen.



OSD Configuration Submenu

### ■ IMD State

Use this setting to turn the IMD text display on or off. This setting affects both fixed string IMD text and remote IMD text commands.

### ■ Status Display

Use this setting to enable or disable status display. When enabled, the current video input standard is displayed on the top left of the screen. When disabled, status is only displayed for 2 seconds when the monitor is powered on, when an input is applied, or when the input video standard changes. The status display reads "No Input" when no video input is present.



Status Display

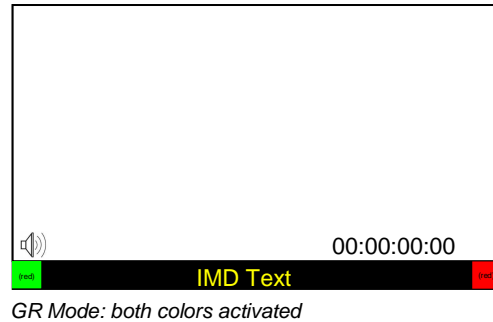
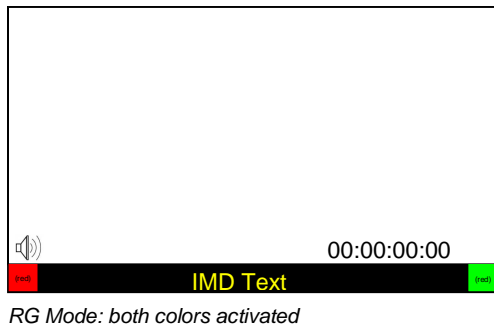
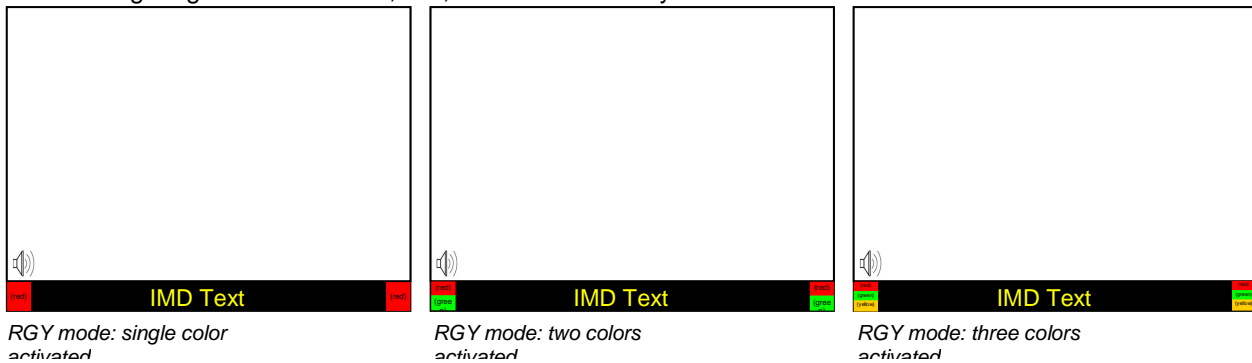
## ■ OSD Tally

Use this setting to choose how tally is displayed on the screen. The available OSD Tally options depend on the Tally Source selected in the IMD Configuration submenu

When the Tally Source is set to Standard (contact closure), OSD Tally can be set to **Off**, **RGY**, **RG**, or **GR**:

- Off On-screen tally is disabled
- RGY Red, yellow, or green tally signals are indicated at both the bottom left and bottom right corners of the screen. Two or three colors are shown simultaneously by subdividing each tally indicator
- RG Red tally is shown at the bottom left of the screen, and green is shown at the bottom right.
- GR Green tally is shown at the bottom left of the screen, and red is shown at the bottom right.

The following diagrams show RGY, RG, and GR OSD Tally modes:



When the Tally Source is set to TSL/MEI 422, OSD Tally can be set to **Off** or **IMD**:

- Off On-screen tally is disabled
- IMD Red, yellow, and green tally is displayed according the protocol commands. Green, red, and yellow colors are shown individually on either the bottom left or right of the screen.

## ■ LED Tally

Use this to enable or disable the physical LED tally on the top of the monitor.

## ■ Anc. Timecode

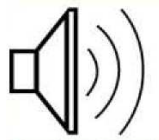
Use this setting to enable time code display on the screen. Time code is de-embedded from the vertical ancillary data (VANC) within the HD/SDI signal. Two types of time code can be selected to display on the screen: **LTC (linear time code)** or **VITC (vertical interval time code)**.

The position of the time code display varies based on the aspect ratio setting and presence of IMD text.



### ■ Audio Monitor

Use the Audio Monitor menu option to enable or disable the audio presence indicator icon. When enabled, this icon indicates whether embedded audio is present in the HD/SDI video input. A red circle and cross will flash on the icon if no embedded audio is present.



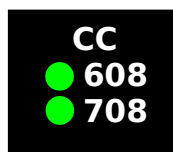
*Embedded Audio Present*



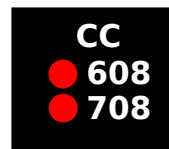
*No Embedded Audio*

### ■ CC Monitor (Closed Captioning)

Use the CC Monitor menu option to enable or disable the Closed Captioning presence indicator icon. When enabled, this icon indicates the presence of 608 and/or 708 embedded Closed Captioning in the SDI video input. A **green** dot indicates the presence of CC Data. A **red** dot indicates no captioning data.



*Both 608 and 708 CC Data present*



*No CC Data present*

### ■ OSD Timeout

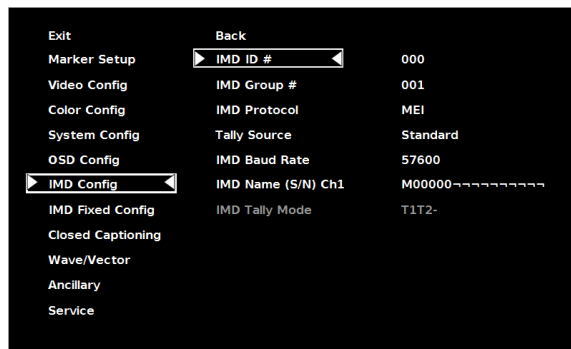
Use the OSD Timeout setting to set the amount of time you would like to see the Menu on screen. Selectable values range from **5 to 30 Seconds** in 5 second increments. A value of **None** allows the menu to stay on screen until it is manually exited.

## IMD Config Submenu

### ■ Overview

The V-R171X-DLW features an In-Monitor Display (IMD) with the ability to display on-screen text and tally in three colors. IMD text, color, and alignment can be assigned to each screen locally using menu options (see below). Alternately, IMD text and tally can be remotely controlled via the RS-422/485 serial interface using several industry-standard protocols, including TSL v4.0 and Image Video. Multiple V-R171X-DLW monitors can be looped together and each addressed individually via the protocol. All menu features of the V-R171X-DLW can also be controlled via the Marshall Network Controller box using MEI protocol. (Contact Marshall Electronics for additional information).

Use the IMD Configuration submenu to configure various IMD parameters as described below.



IMD Configuration Submenu

### ■ IMD ID #

The IMD ID # identifies each screen to the controlling device. When using the TSL protocol, the ID # of each screen should be manually set in conjunction with the controlling device. When using the Image Video protocol, the ID # may be set automatically by the controlling device, after each IMD is initially identified by IMD Name (see "IMD Name[S/N]" below). Available ID #s are **000-254**.

### ■ IMD Group #

Each screen can be assigned an IMD Group # when using the Marshall protocol. Available Group #s are **01-254**.

### ■ IMD Protocol

Use the IMD Protocol menu option to choose the protocol with which the V-R171X-DLW receives remote commands. Currently, four protocols are available. Contact Marshall Electronics for the latest protocol compatibility.

#### Image Video

Use the Image Video protocol setting when controlling the IMD from an Image Video tally controller (e.g. TSI-1000) or other controlling device which utilizes the Image Video protocol. The **IMD #**, **IMD Name(S/N)**, and **Baud Rate** parameters must be set for each screen in conjunction with the controlling device.

#### TSL v4.0

Use the TSL v4.0 protocol setting when controlling the IMD from a TSL tally controller, or other controlling device which utilizes the TSL v4.0 protocol. The **IMD #** must be set for each screen in conjunction with the controlling device.

### MEI

Use the MEI protocol setting when controlling the V-R171X-DLW using the Marshall Network Controller box. This protocol allows remote control of all features on the V-R171X-DLW, including marker setup, video configuration, system configuration, and image adjustments (brightness, contrast, etc.). The **IMD #**, **IMD Group #**, and **Baud Rate** parameters must be set in conjunction with the Network Controller Box.

### MEI-Image Video

This protocol setting accepts Image Video commands via MEI protocol, for use when an Image Video controller is connected to the Marshall Network Controller box.

## ■ Tally Source

The V-R171X-DLW OSD tally can be controlled in a variety of different ways. Use the Tally Source setting to choose how tally is controlled:

### Standard

Use the Standard setting to control tally via contact closure on the HD-15 tally interface.

### Image Video HW

Use the Image Video HW setting to control Image Video tally states via contact closure on the HD-15 tally interface. Contact closure of the **Red** pin corresponds to **Image Video Tally 1**, and the **Green** pin maps to **Image Video Tally 2**. Contact closure (ground) corresponds to a LOW state, and open circuit corresponds to a HIGH state. This mode requires the IMD Tally Mode parameter to be set. Consult Image Video documentation for further information.

### Image Video 422

Use the Image Video 422 setting to control Image Video tally states via the Image Video serial protocol. OSD tally will be disabled in this mode, as Image Video tally states are manifested in the text color and other

parameters. This mode requires the IMD Tally Mode parameter to be set. Consult Image Video documentation for further information.

### Standard + IV422

Use the Image Video 422 setting to control Image Video tally states via the Image Video serial protocol, while controlling OSD tally using contact closure on the HD-15 tally interface. This mode requires the IMD Tally Mode parameter to be set. Consult Image Video documentation for further information.

### TSL/MEI 422

Use the TSL/MEI 422 setting to control OSD tally via the TSL or Marshall serial protocols.

## ■ IMD Baud Rate

Use this setting to choose the baud rate. The baud rate must be set in conjunction with the controlling device. Available baud rates are **300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200**. The TSL v4.0 protocol is fixed at 38400 bauds.

## ■ IMD Name (S/N)

Use this setting to assign a name to each screen when using the Image Video or Marshall-IV protocols. **The IMD name is equivalent to the Image Video serial number and is used by the Image Video controlling device to identify each screen.** The default IMD Name(S/N) is "M00000." It is recommended to maintain this naming scheme in order to avoid serial number conflicts with other Image Video devices on the same serial bus. Each name can be up to 16 ASCII characters.

Press RotoMenu™ knob to edit the IMD Name. Rotate the RotoMenu™ knob to move the cursor. Press the RotoMenu™ knob with the cursor on the character to be changed, then rotate the knob to scroll through the character set. Press the RotoMenu™ knob to choose a character.

### ■ IMD Tally Mode

Use this setting when using Image Video tally control. Choose one of the following settings, in conjunction with the Image Video controlling device. **T1, T2, T1T2, T2T1, T1-, T2-, T1T2-, T2T1-**. Consult Image Video documentation for further information.

### ■ IMD Fixed Color

Use this setting to choose the color of the IMD Fixed String text (see below). Available colors are **red, green, and yellow**. This setting does not affect text color when using IMD text via the Image Video or TSL v4.0 protocols (text color is set via the protocols).

### ■ IMD Fixed Align

Use this setting to choose the horizontal alignment of the IMD text. IMD text can be justified on the **left, center or right** of the screen. This setting is overridden when using IMD text via the Image Video protocol (alignment is set via Image Video protocol).

### ■ IMD Fixed String

Use this setting to display static IMD text on the screen. This setting is used to enter IMD text locally, when a serial protocol is not used for remote control. The IMD Fixed String is saved after power cycle. *The IMD Fixed String will be overridden by serial protocol commands.*

Press RotoMenu™ knob to edit the IMD Fixed String. Rotate the RotoMenu™ knob to move the cursor. Press the RotoMenu™ knob with the cursor on the character to be changed, then rotate the knob to scroll through the character set. Press the RotoMenu™ knob to choose a character. The '-' character indicates an unused (NULL) value in the string. The string entered will be terminated by the first '-'. Characters to the right of a '-' character will be displayed in the menu, but will not be shown in the IMD string.



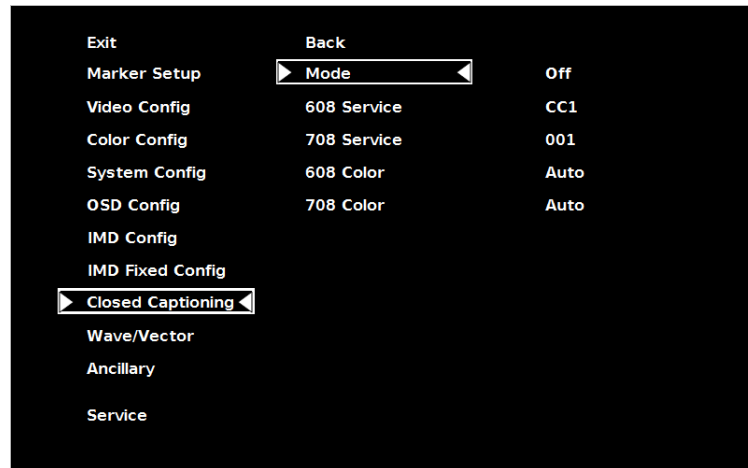
IMD Fixed Configuration Submenu



## On-Screen Menu (continued)

### Closed Captioning Submenu

Use the Closed Captioning submenu to select the type of captioning stream you would like to decode.



*Closed Captioning Submenu*

#### ■ Mode

The DLW monitor series provides support for three types of Closed Captioning Modes: 608, 708 and 708 (608 Comp.). Use this section to choose which type of stream you would like to decode.

#### ■ 608 Service

The EIA-608 caption protocol defines four channels of caption information. The V-R171X-DLW monitor can only display one of these four channels at any point in time. With the 608 Service selection, you can select which of the four streams to render on the screen.

#### ■ 708 Service

Similar to the EIA-608 caption protocol, the EIA-708 caption protocol can contain multiple streams of captions. These streams are labeled with a service ID. This menu option allows you to select which service to render on the screen.

#### ■ 608 Color

The EIA-608 caption protocol can define the color for the closed caption text. Use this setting to choose between using the color defined by the data stream or to override this data with any of the selected colors.

The default setting for option is Auto.

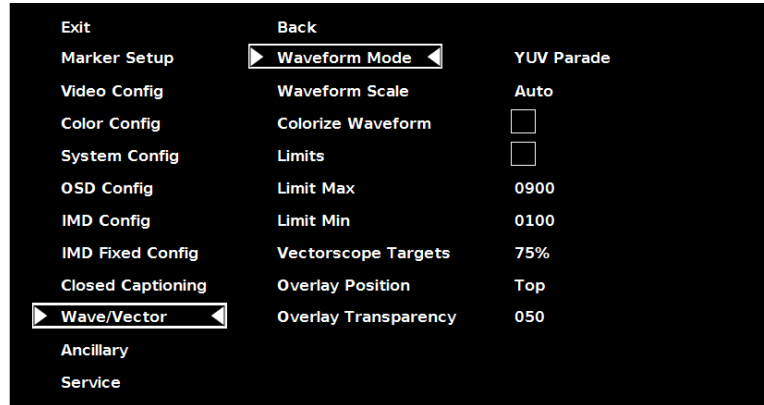
#### ■ 708 Color

The EIA-708 caption protocol can also define the color for the closed caption text. Use this setting to choose between using the color defined by the data stream or to override this data with any of the selected colors.

The default setting for option is Auto.

## Wave/Vector Submenu

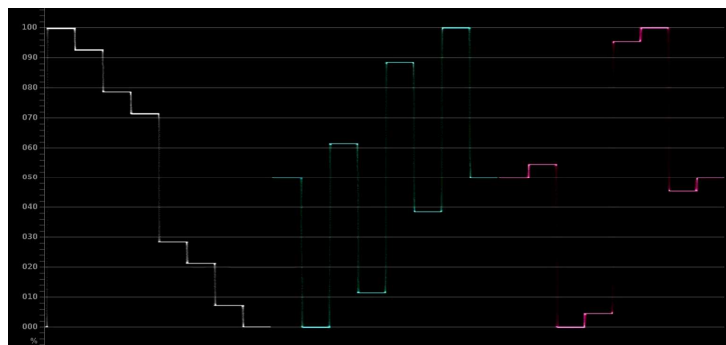
Use the Wave/Vector submenu to change the location of the Waveform Monitor and Vectorscope, as well as the data displayed on the Waveform monitor or the Vectorscope on the V-R171X-DLW monitor. The Waveform Monitor can also be customized to conform to different scales, to display different colors, differentiate data with Limits. The Vectorscope targets can also be changed in this menu.



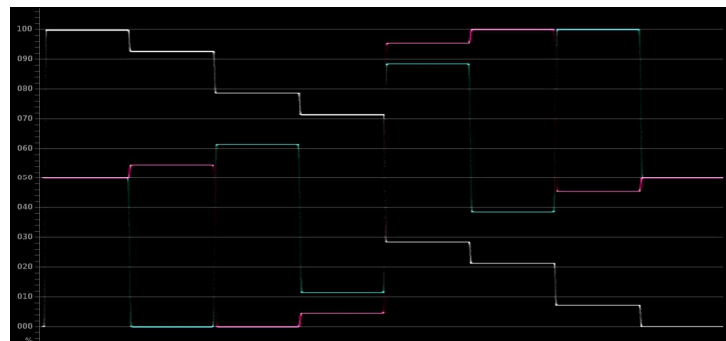
### ■ Waveform Mode

This option allows you to choose between different layouts for the Waveform monitor. Available options are YUV Parade, YUV Overlay, RGB Parade and RGB Overlay.

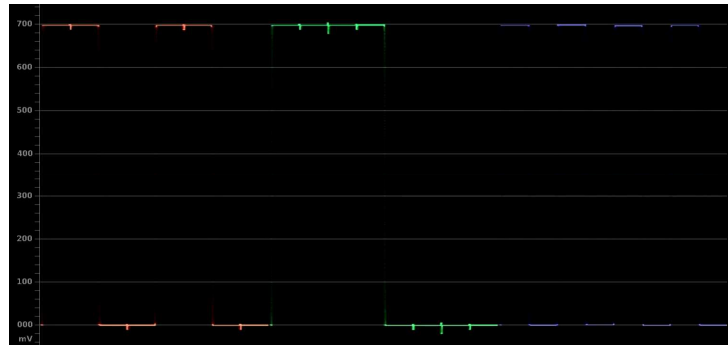
- YUV Parade The Y (Luminance, shown in white), U and V (Chrominance components, U is showed in cyan and V is shown in Magenta) components of the signal are displayed from left to right.



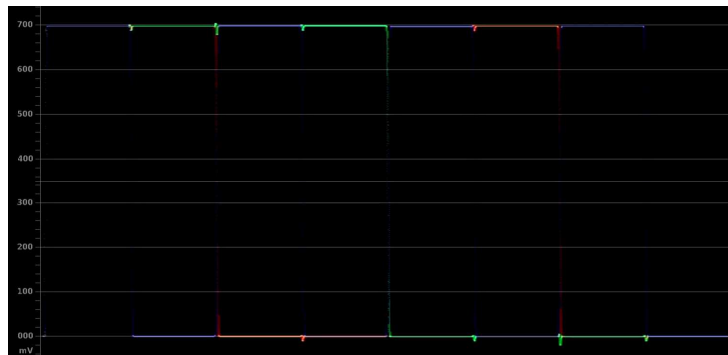
- YUV Overlay The YUV components of the signal are overlaid.



- **RGB Parade** The R (shown in Red), G (shown in Green) and B (shown in Blue) components of the signal are displayed from left to right.



- **RGB Overlay** The RGB components of the signal are overlaid.



## ■ **Waveform Scale**

Use the Waveform scale option to switch between different graticule units on the Waveform display. Available options are mV, %IRE, Auto and Off.

## ■ **Colorize Waveform**

Use the Colorize Waveform option to add or remove color from the Waveform display. When Colorize Waveform is ON, the YUV and RGB data components on the Waveform display will appear in different colors. When Colorize Waveform is OFF, all YUV and RGB data components will appear as white on the Waveform display.

## ■ **Limits**

Use the Limits option to differentiate data (indicated by a red highlight) on the Waveform display that goes above a Limit Max (maximum) and goes below a Limit Min (minimum) set in the Wave/Vector submenu. The Limit maximum and minimum can be set from 0000 to 1023. Note: Setting the Limits option to ON will override the Colorize Waveform option. All Waveform display data within the limits will appear in white.

## ■ **Limit Max**

Use this to set the desired maximum for the Limit display of the waveform monitor. Any Waveform data that goes beyond this Limit Max will be displayed in red.

## ■ **Limit Min**

Use this to set the desired minimum for the Limit display of the waveform monitor. Any Waveform data that goes below this Limit Max will be displayed in red.

### ■ Vectorscope Targets

Use the Vectorscope Targets option to set your Vectorscope targets up for 75% or 100% color bar signals. You can also set your Vectorscope Targets to the OFF position.

### ■ Overlay Position

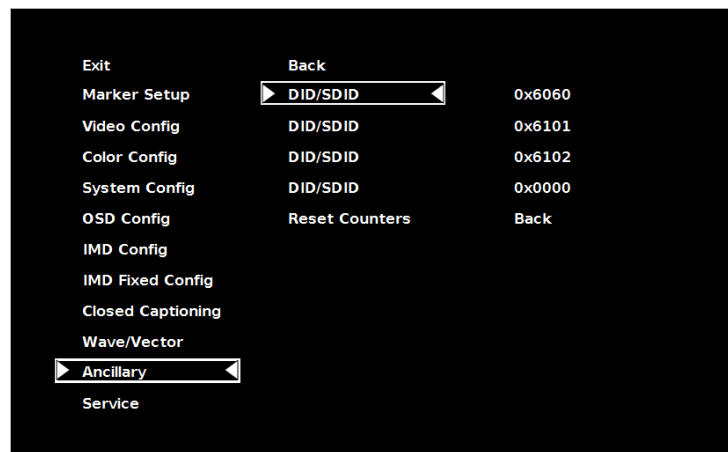
Use the Overlay Position option to place the Waveform, Vectorscope and Audio Level display on the Top or Bottom of the screen while in the DLW Overlay display mode. You can also set your Overlay display to OFF.

### ■ Overlay Transparency

Use the Overlay Transparency option to set the transparency of the Waveform, Vectorscope and Audio Level display while in DLW Overlay mode. Choose a value from 000-100. A low value will cause the Waveform, Vectorscope and Audio Level data to blend into the background, while a high value will make the data appear more visible against the video display in the background.

## Ancillary Submenu

Use the Ancillary submenu to determine which ancillary packet IDs should be counted in the Ancillary Status portion of the DLW monitor display.



### ■ DID/SDID

Use this section to select which packet IDs should be counted on the DLW monitor display. For example, 0x6060 would count the Timecode data packets, 0x6101 would count the EIA-708 CC data packets and 0x6102 would count the EIA-608 CC data packets. Any ancillary packet ID can be chosen, from 0000 to FFFF.

## SERVICE SUBMENU

### ■ Software Version Display

The Main Board, Keypad, and FPGA software version numbers are displayed.



*Service Menu*

The following information is displayed:

- rel: Release Package version number
- ipa Input processor firmware
- dlw FPGA Version
- ipap Product Type
- kp Keypad version number

# Specifications

## ■ PANEL

|                       |                               |
|-----------------------|-------------------------------|
| Screen Size           | 17" Diagonal                  |
| Display Area (h x v)  | 367.20 x 229.50 mm            |
| Aspect Ratio          | 16:10 Native (4:3/16:9 Modes) |
| Pixels                | 1920 x RGB x 1200             |
| Color Depth           | 8-bit                         |
| Viewing Angle (h x v) | 140° x 120°                   |
| Brightness            | 400 cd/m <sup>2</sup>         |
| Contrast Ratio        | 600:1                         |
| Dot Pitch (h x v)     | 0.064 x 0.191 mm              |
| Pixel Pitch (h x v)   | 0.191 x 0.191 mm              |

|    |        |
|----|--------|
| 4  | Ground |
| 5  | Ground |
| 6  | N/C    |
| 7  | N/C    |
| 8  | N/C    |
| 9  | N/C    |
| 10 | N/C    |
| 11 | N/C    |
| 12 | N/C    |
| 13 | N/C    |
| 14 | N/C    |
| 15 | N/C    |

## ■ VIDEO INPUT/OUTPUT

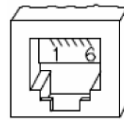
### HD-SDI Input / Output

Supports ITU-R BT.656, SMPTE 259M, 292M, 274M, 424M, 425M

### DVI-I Video/VESA input

## ■ RS-422/485 SERIAL INTERFACE (RJ12)

Protocols: Image Video, TSL v4.0, MEI



| Pin No. | Signal                  |
|---------|-------------------------|
| 1       | Tx-                     |
| 2       | Ground                  |
| 3       | Rx+ (Receive from host) |
| 4       | Rx- (Receive from host) |
| 5       | N/C                     |
| 6       | Tx+                     |

## ■ CONNECTORS

### 3G-SDI Video Input

2 x BNC Female (75 Ω)

### 3G-SDI Video Output (Active Loop-Through)

2 x BNC Female (75 Ω)

### DVI-I Video/VESA input

1 x DVI-I Female connector

### Power Input

2-Pin Twist Lock Connector

### Tally Hardware Interface

HD-15 Female

### RS-422/485 Interface

2 x RJ12 (Modular 6P6C)

## ■ ELECTRICAL

|                     |        |
|---------------------|--------|
| Power Consumption   | 35 W   |
| Voltage Requirement | 12 VDC |

### V-PS12-5V-1 Power Supply:

|        |                           |
|--------|---------------------------|
| Input  | 100V-240V, 2.5A, 50-60 Hz |
| Output | 12-17VDC, 5A, 60W Max     |

## ■ MECHANICAL

Dimensions (w x h x d): 18.9" x 10.45" x 1.40"

Weight (with rack ears): 6.40 lbs.

|                       |                               |
|-----------------------|-------------------------------|
| Operating Temperature | 32°F to 120°F (0°C to 50 °C)  |
| Storage Temperature   | -4°F to 120°F (-20°C to 50°C) |

Compliance CE, FCC-Class A, ANSI-63.4 (Certificates on file)

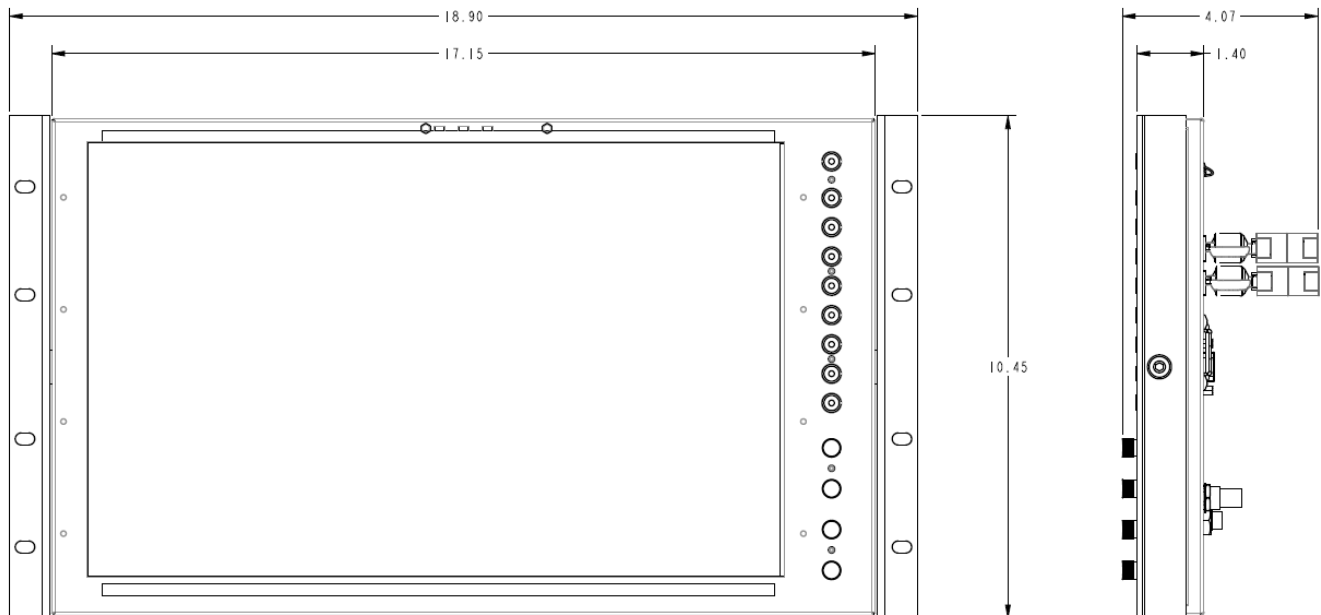
RoHs Do not dispose. Return to Manufacturer or Authorized Recycle Facility.

## ■ TALLY HARDWARE INTERFACE (HD-15)

Activation requires contact closure of pin to ground on the HD-15 connector:

| Pin No. | Signal           |
|---------|------------------|
| 1       | Channel 1 Green  |
| 2       | Channel 1 Red    |
| 3       | Channel 1 Yellow |

## Specifications (continued)



## Maintenance

### ■ Screen Cleaning

Periodically clean the screen surface using ammonia-free cleaning wipes (Marshall Part No. **V-HWP-K**). A clean micro-fiber cloth can also be used using only non-abrasive and ammonia-free cleaning agents. Do not use paper towels. Paper towel fibers are coarse and may scratch the surface of the polycarbonate faceplate or leave streaks on the surface. Antistatic and fingerprint resistant cleaning agents are recommended. Do not apply excessive pressure to the screen to avoid damaging the LCD.

### ■ Faceplate Dusting

Dust the unit with a soft, damp cloth or chamois. Dry or abrasive cloths may cause electrostatic charge on the surface, attracting dust particles. Neutralize static electricity effects by using the recommended cleaning and polishing practice.

## Warranty

Marshall Electronics warranties to the first consumer that this **V-R171X-DLW** LCD monitor will, under normal use, be free from defects in workmanship and materials, when received in its original container, for a period of one year 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. *It is considered normal for a minimal amount of pixels, not to exceed three, to fail on the periphery of the display active viewing area.* Marshall Electronics reserves the option to refuse service for display pixel failure if deemed unobtrusive to effective use of the monitor by our technicians. 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.

# Burn-In Warning

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This monitor uses a high quality TFT LCD panel. However, if a static image is left on the screen for 48 hours, there may be a 30 second to 10 minute recovery period for the panel. During recovery, a very faint image may be retained on the display. Put up a white curtain for 30 minutes to eliminate the retained image.



**Marshall Electronics, Inc.**  
1910 East Maple Ave.  
El Segundo, CA 90245  
Tel: (800) 800-6608 / (310) 333-0606 • Fax: 310-333-0688  
[www.LCDRacks.com](http://www.LCDRacks.com) • [sales@lcdracks.com](mailto:sales@lcdracks.com)

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