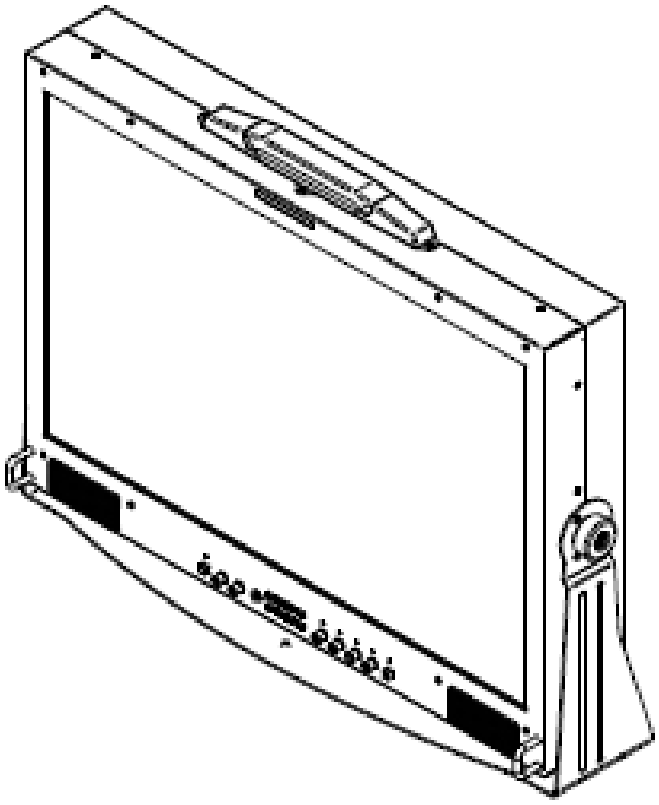
Marshall Electronics

orchid **OR-2410**

Fully Featured 24” Table Top Monitor

Directors, Camera Assist and Production Monitor



Operating Instructions

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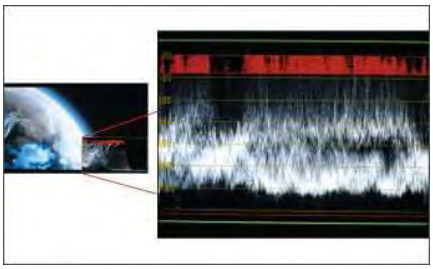
Product Overview

The Orchid OR-2410 is an 24” fully featured production; directors and video assist monitor system. The OR-2410 comes with multiple modes of Anaglyph 3D Production Tools, Waveform Monitor, Vectorscope, Audio Bars, Audio Phase display, Audio Log function, Built-In Speakers, Audio Output, and several other diagnostic tools. This monitor is ideal for use in OB vans, Production and Editing rooms. as a camera assist monitor and for the Director in the video village. The OR-2410 is equipped with two 3G/HD/SD-SDI inputs with switched outputs as well as analog Composite (CVBS) Component (Y, Pb, Pr) S-Video (Y, C) and DVI-I and HD-VGA inputs. Diagnostic tools include our exclusive ClipGuide feature, 16 Tri-Color Audio Bar Graph meters with peak hold and numeric display of headroom and peak levels, and real-time analysis of color space conversion gamut errors. Other standard features include factory calibrated screen, easy-to-navigate onscreen menus with RotoMenu control, 7 assignable function keys, adjustable color temperature, aspect ratio settings, a variety of screen markers, blue-only mode, monochrome mode, H/V delay, and 7 assignable GPI inputs.

High Resolution 24” IPS Panel

The OR-2410 features an all-digital 1920 x 1200 resolution, 8-bit (A-FRC) IPS panel that yields 10 bit performance. The LCD panel features a nominal brightness of 320 cd/m^2 and a contrast ratio of 1000:1 making this display ideal in a variety of environments and lighting conditions.



Waveform Monitor Function

The built-in Waveform Monitor (which includes adjustable white and black clip level indicators) can be displayed in various aspect ratios, positions, and transparency options. The Waveform Monitor can display luminance only or YUV in parade format. It can also warn the user for out-of-range conditions such as overexposure or “blacker-than-black” errors with fully user-adjustable upper and lower limits.

Real-Time Color Vectorscope

The built-in Vectorscope allows users to monitor color gamut range in real time. It displays in full color and can also be displayed in various sizes, positions, and transparency options. The Vectorscope has adjustable gain from 1x to 5x.

3D Production Tools

The ORCHID series now includes 3D Production Tools including four Anaglyph 3D modes as well as five 3D Analytic views. In order to make use of 3D features, the input source must be formatted as Single Channel, Side by Side, Half Horizontal view.

3D Side by Side View

3D Luminance Difference View View

3D Anaglyph Color

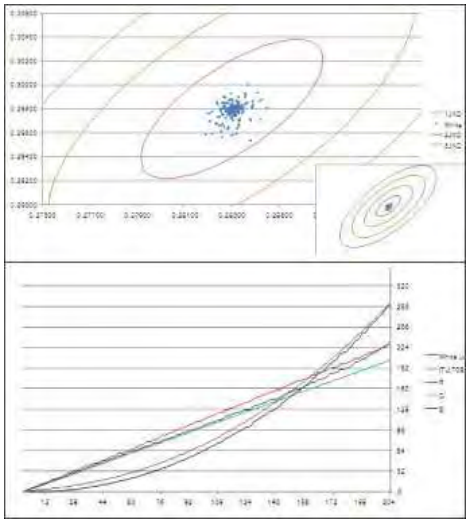
ClipGuide

The ClipGuide function operates with both the Waveform display and Monochrome/Color picture display. Both the upper and lower ClipGuide levels are user-adjustable to accurately display over-and-under exposures during different shooting conditions. For example, the upper ClipGuide limit may be set to 85 IRE and the lower limit to 10 IRE. With these settings, any exposures over the set limit of 85 IRE will display red on both the Waveform and picture (if selected). The same will be true for blacks under 10 IRE.

Precision Audio Level Meters

De-embeds and displays up to 16 channels of audio using sixteen 64-segment tri-color Audio Meters with user-adjustable reference levels. The Audio Level Meters provide numerical indicators and headroom levels, as well as peak hold function. Audio Channel Loss Warning prevents errors during monitoring.

Precision White Balance with Color Temperature Adjustment



White balance adjustment is essential in order to render colors correctly. To display colors correctly, gray scale should maintain identical color temperature. The white balance for ORCHID monitors defaults to D65 (6500K) so the user does not need to adjust white balance.

LCD monitors have color-matching issues because white balance can be affected by a change in luminance level. Our unique color management system solves this problem.

The ORCHID operating system includes an Automatic White Balance function that allows a “One Button” calibration procedure when used with a Minolta CA-210 color probe. All Orchid Series LCD panels are calibrated at the factory to ensure color conformity between screens.

Select Color Temperature and Gamma Mode

Color temperature presets may be selected between D65 or D93 as well as user-definable settings. Gamma settings are adjustable from 1.0 to 3.0 in 0.1 steps. The standard setting is 2.2.

Flexible Screen Markers

A variety of screen markers in 4:3, 16:9, and full screen modes allow accurate monitoring of the different aspect ratios used in broadcast environments.

User-Assignable Function Buttons

Seven user-assignable function buttons and one rotary encoder on the front panel allow quick access to numerous settings and features including the video Inputs, Waveform, Vectorscope, Audio Bars, Aspect Ratio, Screen Markers, Monochrome Mode, H/V Delay Mode, and more.

AUDIO Jacks

There are three 3.5mm AUDIO Jacks (one on the front panel for headphones and two on rear panel. One for an auxiliary audio input and one output to feed an external amplifier). It is possible to utilize both the front panel headphone connector and rear panel speaker connector simultaneously with individual volume controls. The Aux audio input may be selected as a source when the video input is set to SDI.

Installation and Initial Setup

Unpacking

Carefully unpack the OR-2410 monitor and verify that the following items are included:
• OR-2410 Monitor with attached desk stand
• Power cord.
• Operating Instructions (This Manual)
Inspect the unit for any physical damage that may have occurred during shipping. Should there be any damage, immediately call Marshall Electronics Customer Service at (800) 800-6608. If you are not located within the continental United States, call +1 (310) 333-0606.

Mounting

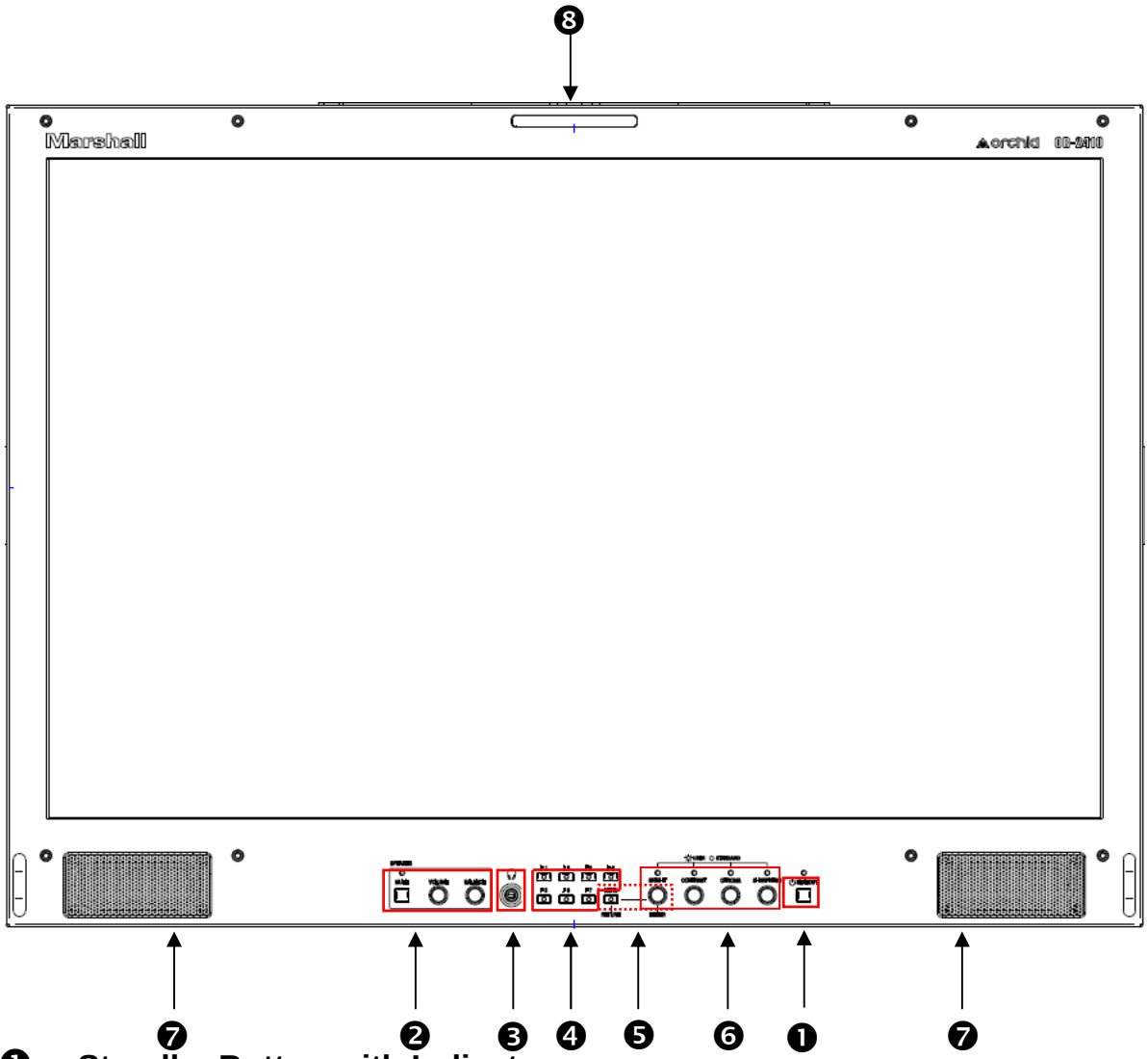
The OR-2410 is designed as a tabletop production monitor. It comes complete with tabletop stand and integrated carry handles.

Connections and Power-On

The OR-2410 can receive power from a standard AC power outlet (100~220VAC) or a 24VDC 4-pin XLR power supply.

Connect the required cables for video signal input and output (power must be applied to the OR-2410 for the active loop-outputs to be activated). All BNC connectors are rated at 75Ω.

Front Panel Features



❶ Standby Button with Indicator

Press the Standby button to turn the unit ON. The indicator LED will turn green. Press again to return to the Standby mode. (Note the main power switch is located on the rear of the unit)

❷ Front Panel Speaker Controls

Push the mute button to mute and un-mute the internal speakers. The led illuminates RED when muted and Green when Un-Muted. The rotary controls are for Volume and Balance.

❸ Headphone Jack

3.5mm stereo headphone jack. Left and Right source are selected from the on-screen menu.

❹ User-Assignable Function Keys

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

❺ Roto Menu Controls

Press the MENU Button to enter the Main Menu. Use the Rotary control to navigate the

menus and press the Rotary control to select menu items. Pressing the MENU button will return the screen to its previous state.

❻ Rotary Encoders

When not in the MENU mode these four encoders control:

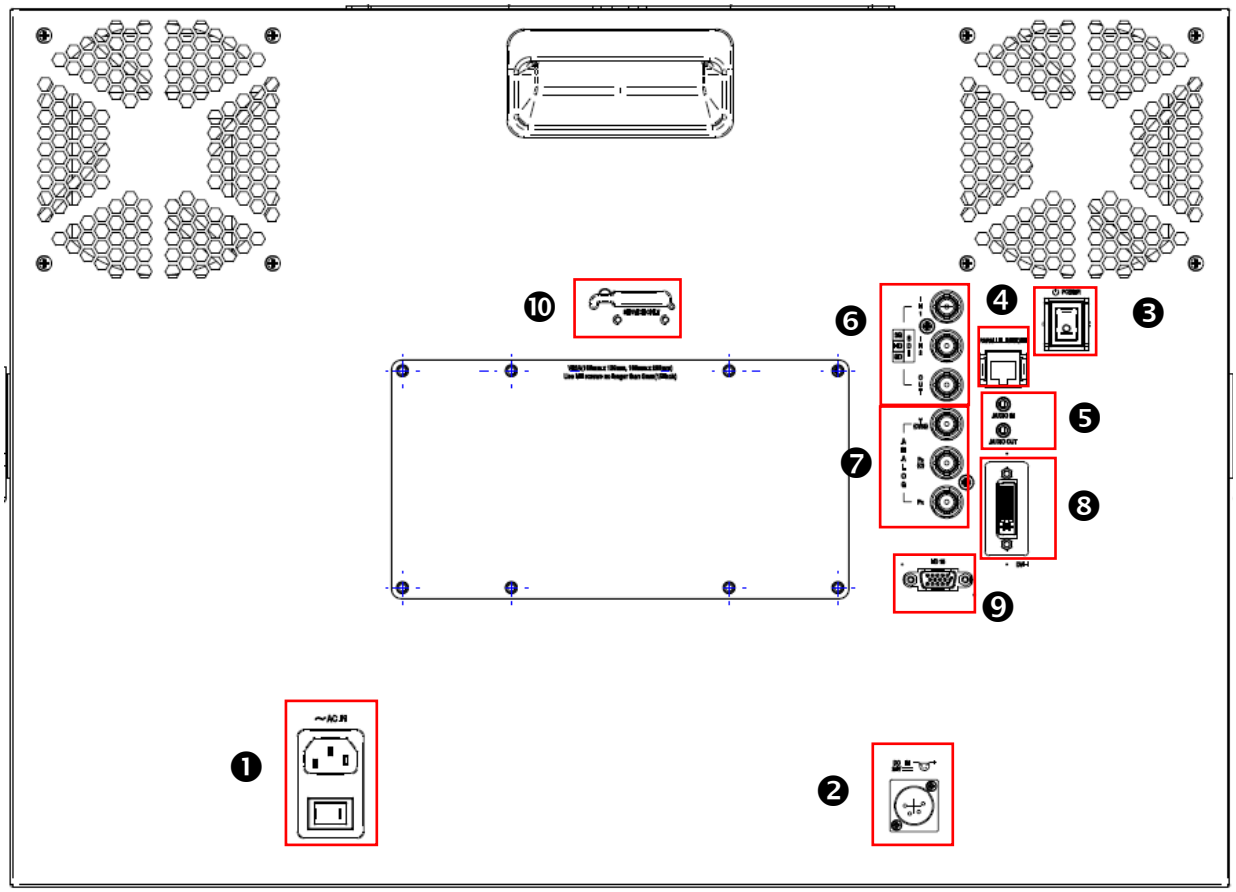
- BRIGHTNESS
- CONTRAST
- CHROMA
- SHARPNESS

❼ Front Panel Speakers

❽ Tri-Color Tally Light

60mm Tri-Color Tally Lamp controlled via the remote connector on the rear of the unit.

Rear Panel Features



❶ AC Power Input and On/Off switch

Connect to 100 ~ 220 VAC power source. The switch will turn the internal power supply on and off. When using an external 24vDC supply this switch will have no effect.

❷ 24VDC Power Input

Connect 24VDC to the 4-pin XLR power input connector. Power can be supplied a variety of DC sources supplying at least 1.7 Amp at 24 Volts.
IMPORTANT: When using a 24VDC supply be sure that the polarity of the DC input is correct:

- Pin 1: GND
- Pin 2: N/C
- Pin 3: N/C
- Pin 4: +24VDC

❸ Main Power Switch

This switch is the Main power switch. When using the internal supply or an external DC supply, this switch will control the On/Off status of the monitor. When using the internal power supply both switches must be on.

❹ GPI Input

RJ-45 connector for 7 user-assignable GPI inputs. Assignable using the on-screen menu.

❺ Audio Input and Output Jacks

3.5mm stereo line level input and outputs for monitoring analog or embedded audio channels. The desired audio channels are selected in the audio onscreen menu. The output level is also controlled through the audio onscreen menu.

Rear Panel Features

❻ 3G-HD-SDI Digital Video Input Connectors

Dual auto-sensing HDSDI BNC video inputs. Each input auto-detects 3G, HD and SD-SDI video signals.

❼ Analog Video Input Connectors

Analog BNC video inputs. These three connectors can be used to connect Composite (CVBS), S-Video (Y,C), or Component (Y,P_B,P_R) Analog video signals.

❽ DVI-I Input

❾ VGA HD15 Video Input

❿ Service Port

Proprietary connection used for firmware upgrades and LCD color balance calibration. An optional service module is required. (Part number OR-SM)

Compatible Formats

Video Format	SDI	SMPTE 425M-AB	YC_BC_R, 4:2:2, 10bit	1080p(60/59.94/50)
			YC_BC_R, 4:2:2, 12bit	1080p(30/29.97/25/24/23.98) 1080i(60/59.94/50) 1080PsF(30/29.97/25/24/23.98)
			YC_BC_R(RGB) 4:4:4, 10bit	1080p(30/29.97/25/24/23.98) 1080i(60/59.94/50) 1080PsF(30/29.97/25/24/23.98) 720p(60/59.94/50/30/29.97/25/24/23.98)
			YC_BC_R(RGB)4:4:4, 12bit	1080p(30/29.97/2524/23.98) 1080i(60/59.94/50) 1080PsF(30/29.97/25/24/23.98) 2048x1080p24, 2048x1080PsF24
			YC_BC_RA(RGBA)4:4:4:4 10bit	1080p(30/29.97/25/24/23.98) 1080i(60/59.94/50) 1080PsF(30/29.97/25/24/23.98) 720p(60/59.94/50p/30/29.97/25/24/23.98)
		SMPTE 274M	YC_BC_R, 4:2:2, 10bit	1080i(60/59.94/50) 1080p(30/29.97/25/24/23.98) 1080PsF(30/29.97/25/24/23.98)
		SMPTE 296M	YC_BC_R, 4:2:2, 10bit	720p(60/59.94/50/30/29.97/25/24/23.98)
		SMPTE 125M		525i(NTSC, 480i60)
		ITU-R BT.601		625i(PAL, 575i50)
	ANALOG	CVBS		NTSC, PAL, 480i60, 575i50
		COMPONENT		480i/480p/575i/576p/720p/1080i/1080p
				640x480/800x600/1024x768/1280x1024 @60Hz
	DVI	DDWG DVI1.0	IT Video format (VGA(IBM VGA), SGA, XGA, SXGA(VESA))	640x480/800x600/1024x768/1280x1024 @60Hz
			CE Video format	480p(60/59/94) 480i(60/59.94) 576p50 575i50 720p(60/59.94/30/29.97/25/24/23.98) 1080i(60/59.94/50) 1080p(60/59.94/30/29.97/25/24/23.98)

On Screen Menu Contents

INFO	MODEL NAME	OR-2410
	INPUT	SDI 1
	VIDEO FORMAT	1080i / 60
	COLOR MATRIX	709
	COLOR TEMP	D65
	3D REVIEW	OFF
	ANAGLYPH	OFF
	AUDIO PEAK LOG	OFF
	AUDIO PHASE MONITO	OFF
	SDI ERROR COUNT	0
	SDI LEVEL	
	UNKNOWN	
	VERSION	1.7.11
INPUT	RETURN	
	INPUT SELECT	SDI 1
		SDI 2
		CVBS
		Y-C
		COMP
		DVI-D
		DVI-A
		HD-15
	Analog Calibrate	>
PICTURE	RETURN	
	BRIGHT	0~100 [50] is Calibrated setting
	CONTRAST	0~100 [80] is Calibrated setting
	CHROMA	0~100 [50] is Calibrated setting
	SHARPNESS	0~100 [50] is Calibrated setting
	GAMMA	1.0 to 3.0 in 0.1 steps [2.2] is Calibrated Setting
	RESET TO DEFAULT	CANCEL / RESET NOW
COLOR	RETURN	
	COLOR MATRIX	AUTO
		RGB
		BT. 601
		BT. 709
	COLOR TEMP	FALSE COLOR MTF
		FALSE COLOR TG
		CIE D65
		JP D93
		USER
		CAL D65 & D93
		CAL D65
		CAL D93
	RED BIAS	-128 to 127 [0] is Calibrated Setting
	GREEN BIAS	-128 to 127 [0] is Calibrated Setting
	BLUE BIAS	-128 to 127 [0] is Calibrated Setting
	RED GAIN	0.500 to 1.992 [x1.00] is Calibrated setting
	GREEN GAIN	0.500 to 1.992 [x1.00] is Calibrated setting
	BLUE GAIN	0.500 to 1.992 [x1.00] is Calibrated setting

Menu Contents Continued

SCREEN	RETURN	
	SCAN	NORMAL, OVERSCAN, ZOOM
	ASPECT	AUTO
		4:3
		16:9
		PAYLOAD
	MONO / COLOR	RGB
		MONO
		RED
		GREEN
		BLUE
	H/V DELAY	ON / OFF
	SHIFT H	-128 to 127 [0] is Calibrated Setting (- = Right)
	SHIFT V	-128 to 127 [0] is Calibrated Setting (- = Down)
	3D REVIEW	OFF
		LEFT EYE
		RIGHT EYE
		BLENDING
		LUMINANCE DIFF.
		CHROMA DIFF.
	ANAGLYPH	OFF
		COLOR
		HALF COLOR
		OPTIMIZED
		GRAY
MARKER	RETURN	
	MARKER	ON / OFF
	CENTER	ON / OFF
	ASPECT RATIO	OFF
		4:3
		16:9
		1.85 :1
		2.35 :1
		4:3 & 1.85
		4:3 & 2.35
	SAFETY ZONE	80% to 100% (OFF) [95%] is normal setting
	CROSS HATCH	OFF
		SMALL
		MEDIUM
		LARGE
	MARKER MAT	CLEAR, HALFTONE, BLACK
	LINE THICKNESS	1, 2, 3
	LINE LEVEL	GRAY, HALFTONE, WHITE, INVERT

Menu Contents Continued

AUDIO	RETURN	
	FRONT VOLUME	0 TO 40
	HEADROOM START	-6 to -60 [-20] is SMPTE Standard
	HEADROOM END	0 to -20 [-6] is Normal setting
	LEFT CHANNEL	CHANNEL1 TO CHANNEL 16
	RIGHT CHANNEL	CHANNEL1 TO CHANNEL 16
	LOAD CH PRESET FROM >	PRESET 1 to PRESET 8
	SAVE CH PRESET TO >	PRESET 1 to PRESET 8
	CH PRESET	LOCK / UNLOCK
	SOURCE	EMBEDDED / AUDIO IN
AUDIO UTIL	RETURN	
	LEVEL METER	ON / OFF
	METER BACKGROUND	ON / OFF
	DECAY	FAST / MEDIUM / SLOW
	DISPLAY CHANNELS	1~16
	DISPLAY FILTER	ACTIVE / ALL
	COLUMNS	DUAL / QUAD / VERTICAL
	DISP TYPE	OVERLAP / OVERLAY
	AUDIO PEAK LOG	ON / OFF
	LOG SPEED	4S
		8S
		20S
		60S
		120S
		300S
	SIZE	LARGE / SMALL
	POSITION	LEFT TOP
		LEFT BOT
		RIGHT TOP
		RIGHT BOT
	AUDIO PHASE MON	OFF
		ON x1
		ON x2
		ON x4
		ON x8
	DISP PERSISTENCY	1 FRAME
		4 FRAME
		8 FRAME
		16 FRAME
	SIZE	SMALL / MEDIUM / LARGE
	POSITION	LEFT TOP
		LEFT BOT
		RIGHT TOP
		RIGHT BOT
	AUDIO SPECTRUM	ON / OFF
	DECAY	FAST / MEDIUM / SLOW
	SIZE	SMALL / MEDIUM / LARGE
	POSITION	LEFT TOP
		LEFT BOT
		RIGHT TOP
		RIGHT BOT
	DISP TYPE	OVERLAP / OVERLAY

Menu Contents Continued

WAVEFORM	RETURN	
	LAYOUT	NORMAL
		DECK
		QUAD
	WAVEFORM	OFF
		WHITE
		PARADE
	SIZE	SMALL, MEDIUM, LARGE
	POSITION	LEFT TOP
		LEFT BOT
		RIGHT TOP
		RIGHT BOT
	TYPE	OVERLAY / OVERLAP
	Y OVER LIMIT	[100.0%] % IRE 0% to 109.1%
	Y UNDER LIMIT	[100.0%] % IRE -7.3% to 109.1%
	HISTOGRAM	ON / OFF
	POSITION	LEFT TOP
		LEFT BOT
		RIGHT TOP
		RIGHT BOT
VECTORSCOPE	RETURN	
	LAYOUT	NORMAL
		DECK
		QUAD
	VectorScope	ON / OFF
	SIZE	SMALL, MEDIUM, LARGE
	POSITION	LEFT TOP
		LEFT BOT
		RIGHT TOP
		RIGHT BOT
	TYPE	OVERLAY / OVERLAP
	GAIN	X1.00 to X1.91 in .01 steps
ClipGuide	RETURN	
	ClipGuide	ON / OFF
	MODE	LUMA (Y)
		LUMA (Y) ON MONO
		CHROMA (C)
		CHROMA (C) ON MONO
		Y & C
		Y & C ON MONO
	DISPLAY TYPE	ZEBRA / FILL
	Y UPPER LIMIT	[100.0%] % IRE -7.3% to 109.1%
	Y UNDER LIMIT	[0.0%] % IRE -7.3% to 109.1%
	C UPPER LIMIT	0~255 [016 = 7.5 IRE, 235 = 100 IRE]
	C LOWER LIMIT	0~255 [016 = 7.5 IRE, 235 = 100 IRE]

Menu Contents Continued

USER ASSIGN	RETURN	
	F-1 THRU F-7	SDI 1
		SDI 2
		CVBS
		Y-C
		COMP
		DVI-D
		DVI-A
		HD15
		GAMMA 1.0
		GAMMA 1.8
		GAMMA 2.0
		GAMMA 2.2
		GAMMA 2.4
		GAMMA 2.6
		WHITEBALANCE D65
		WHITEBALANCE D93
		MONO
		COLOR CHANNEL
		SCAN
		ASPECT
		ZOOM
		HV DELAY
		MARKER
		USER MARKER
		AUDIO METER
		AUDIO PEAK LOG
		AUDIO PHASE MONITOR
		AUDIO SPECTRUM
		AUDIO PRESET 1
		AUDIO PRESET 2
		AUDIO PRESET 3
		AUDIO PRESET 4
		AUDIO PRESET 5
		AUDIO PRESET 6
		AUDIO PRESET 7
		AUDIO PRESET 8
		AUDIO MUTE
		LAYOUT DECK
		LAYOUT QUAD
		WAVEFORM MON
		VECTORSCOPE
		CLIPGUIDE
		TIMECODE
		HISTOGRAM
		FALSE COLOR TG
		FALSE COLOR MTF
		3D REVIEW
		ANAGLYPH
		FAN STOP
		HIDE ALL UTIL
		3D LEFT EYE
		3D RIGHT EYE
		3D BLENDING
		3D LUMA DIFF
		3D CHROMA DIFF
		GLYPH COLOR
		GLYPH 1/2 COLOR
		GLYPH OPTIMIZED
		GLYPH GRAY

Menu Contents Continued

REMOTE	RETURN	
	PIN 1 THRU 8 (Pin 5 is Ground)	SDI 1
		SDI 2
		CVBS
		Y-C
		COMP
		DVI-D
		DVI-A
		HD15
		GAMMA 1.0
		GAMMA 1.8
		GAMMA 2.0
		GAMMA 2.2
		GAMMA 2.4
		GAMMA 2.6
		WHITEBLANCE D65
		WHITEBALANCE D93
		MONO
		SCAN
		ASPECT
		ZOOM
		HV DELAY
		RED ONLY
		BLUE ONLY
		GREEN ONLY
		MARKER
		USER MARKER
		AUDIO METER
		AUDIO PEAK LOG
		AUDIO PHASE MON
		AUDIO SPECTRUM
		AUDIO PRESET 1
		AUDIO PRESET 2
		AUDIO PRESET 3
		AUDIO PRESET 4
		AUDIO PRESET 5
		AUDIO PRESET 6
		AUDIO PRESET 7
		AUDIO PRESET 8
		AUDIO MUTE
		LAYOUT DECK
		LAYOUT QUAD

Menu Contents Continued

REMOTE	PIN 1 THRU 8 (Pin 5 is Ground)	
		WAVEFORM MON
		VECTORSCOPE
		CLIPGUIDE
		TIMECODE LTC
		TIMECODE VITC 1
		TIMECODE VITC 2
		HISTOGRAM
		FALSE COLOR TG
		FALSE COLOR MTF
		3D LEFT EYE
		3D RIGHT EYE
		3D BLENDING
		3D LUMA DIFF
		3D CHROMA DIFF
		GLYPH COLOR
		GLYPH 1/2 COLOR
		GLYPH OPTIMIZED
		GLYPH GRAY
		HIDE ALL UTIL
		R TALLY
		G TALLY
		B TALLY
		LEFT R TALLY
		LEFT G TALLY
		LEFT B TALLY
		RIGHT R TALLY
		RIGHT G TALLY
		RIGHT B TALLY
		POWER SAVE

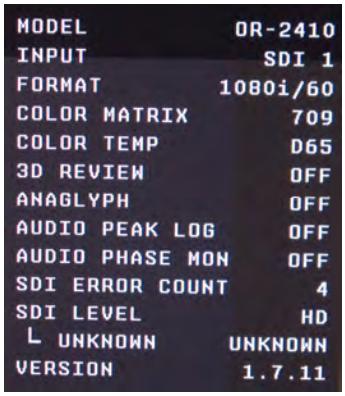
Menu Contents Continued

SDI STATUS	RETURN	
	ERROR COUNT	0 - 9999
	RESET COUNTER	
	DISPLAY	OFF / ON / AUTO
SETUP	RETURN	
	FORMAT DISPLAY	AUTO / ON / OFF
	TIMECODE	OFF
		LTC
		VITC 1
		VITC 2
	USERBIT	ON / OFF
	POWER SAVE	ALWAYS ON
		2 MIN
		5 MIN
		10 MIN
		30 MIN
		1 HOUR
		2 HOUR
	KEY LOCK	LOCK / UNLOCK
	PICTURE DELAY	NORMAL / FAST / FASTEST
	BACKLIGHT	MIN (25) TO 100
	RESET TO MFG DEFAULT >	RESET NOW / CANCEL
	BACKUP USER CONFIG >	BACKUP NOW / CANCEL
	RESTORE USER CONFIG	RESTORE NOW / CANCEL
	FAN CONTROL	AUTO, MAX, OFF

To access the menu system Press the MENU Button located next to F7.

Step through menu items by using the RotoMenu (Brightness) control.

- Choose a submenu or select a menu item by pushing the RotoMenu control.
- Return to the previous menu by pressing the Menu button.
- Exit the main menu by again pressing the Menu button.



INFO SUBMENU

The INFO Submenu is a read-only display that gives the user information about the current status of the monitor and selected input signal being viewed.
No adjustment can be made from this submenu.

INPUT SUBMENU

The Input submenu allows the user to select the input from any of the available sources:

PICTURE SUBMENU

The Picture submenu allows the user to make adjustments to Brightness, Contrast, Saturation, Sharpness and Gamma.

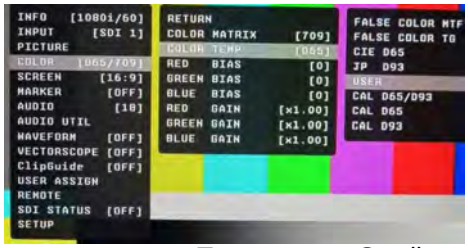
- **Brightness**
  - Varies between 0 and 100 (50 is standard).
  - 50 is default value with standard black level.
  - Increasing brightness level allows user to see BTB (Blacker-than-Black).
- **Contrast**
  - Varies between 0 and 100 (80 is standard).
  - 80 is default value with 100% gain of video signal.
- **Saturation**
  - Varies between 0 and 100 (50 is standard).
  - 50 is default value with nominal color saturation.
  - Setting to 0 should display as monochrome.
  - Increasing the value will increase color saturation.
- **Sharpness**
  - Varies between 0 and 100 (50 is standard).
  - 0 is default value with no scaling artifact.
- **Gamma**
  - Varies between 1.0 and 3.0 with 0.1 steps.
  - If White Balance is set to User Mode, changing gamma will have no effect.

COLOR SUBMENU

The Color submenu allows the user to access to the Color Management Controls.

■ **Color Matrix**

- Auto
  - System automatically selects correct matrix.
  - Typically, 601 for SD Formats, 709 for HD Formats.
- RGB
- User can manually set to RGB.
  - RGB should be used with GBR422 systems.
- 601
  - Conforms to ITU-R BT.601 matrix.
- 709
  - Conforms to ITU-R BT.709 matrix.



■ **Color Temp**

Use this setting to choose between color temperature presets and the two available False Color Filters:

- False Color MTF
  - False Color Filter based on Flesh Tone Values.
- False Color TG
  - False Color Filter based on Color Temperature Gradient.

- D65 (6500K). Conforms to CIE D65 White Point. x = 0.3127, y = 0.3290
- D93 (9300K). Conforms to Japanese D93 White Point. x = 0.2830 y = 0.2980
- USER (Adjustable Color Bias and Gain)
- CAL D65/D93
  - Used to activate the built in Automatic Color Calibration Program for both D65 and D93.
- CAL D65
  - Used to activate the built in Automatic Color Calibration Program for D65 only.
- CAL D93
  - Used to activate the built in Automatic Color Calibration Program for D93 only.

NOTE: When using the built in Color Calibration Program an optional OR-SM service module is required along with a Minolta® CA-310 color probe.

■ **RGB Bias and Gain**

- Select this submenu to fine-tune the monitor's color balance (R, G, B). This should only be done by someone experienced with video engineering, as this will alter the overall color shading of the screen. The purpose is to allow color matching to other types of monitors and/or displays. NOTE: The Color Temperature preset will automatically switch to CUSTOM when Color Bias or Gain settings are adjusted. It is normal for color bias adjustments to be very subtle. When selecting the RGB Bias and Gain submenus, changes to Gain and Bias will be seen in real time. Once the proper level is achieved, the user must save this setting by pressing the Menu Rotary Encoder. If the user leaves the setting menu before saving, the value will return to the original setting.

SCREEN SUBMENU

■ **Scan**

- Normal (Zero Scan)

The whole picture should be visible without any cropping. When in normal mode you should not see non-active areas such as SAV, EAV.

- Over (End-User TV Production Scan)

5% of the picture is cropped and zoomed to fill the screen. After cropping, it will maintain correct aspect ratio and center.

- Zoom

When in zoom mode, the center portion of the picture is magnified to fill the screen by approximately 4x.

■ **Aspect Ratio Settings**

Use to switch between Full Screen, 4:3 and 16:9 aspect ratios.
The 960 x 540 resolution panel was chosen to allow monitoring of HD 1920 x 1080 video formats without scaling artifacts.

■ **Mono / Color**

Use the Mono / Color modes for monitor calibration or to analyze individual color components of an image.

- RGB = displays all three colors (Normal display)
- Mono = displays as monochrome
- Red Channel = displays red channel only
- Green Channel = displays green channel only
- Blue Channel = displays blue channel only

■ **H/V Delay**

Use this setting to enable H & V Delay.
In H & V Delay mode, both horizontal sync and vertical sync are delayed, resulting in both horizontal and vertical blanking periods being shown at the center of the screen.

■ **Shift H**

Use the RotoMenu control to change the value of this setting which will shift the picture horizontally. Negative values will move the picture RIGHT, while Positive values will move the picture LEFT. [0] is center value.

■ **Shift V**

Use the RotoMenu control to change the value of this setting, which will shift the picture Vertically. Negative values will move the picture DOWN, while Positive values will move the picture UP.

■ **3D Review**

Use this to control the 3D monitoring modes.

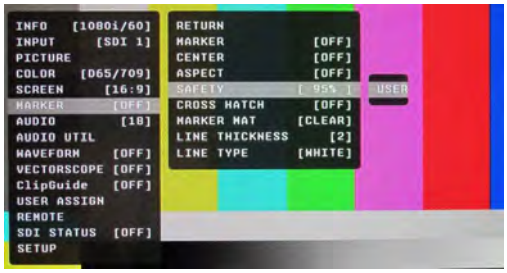
- OFF
- LEFT EYE
- RIGHT EYE
- BLENDING
- LUMINANCE DIFF
- CHROMA DIFF

■ **Anaglyph**

Use this for monitoring the 3D image using Anaglyph Glasses.

- OFF
- COLOR
- HALF COLOR
- OPTIMIZED
- GRAY

MARKER CONFIGURATION SUBMENU



Marker:

Use this setting to enable or disable all on-screen markers. This setting affects the Center marker, Aspect markers, and Safety marker.

Center Marker:

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

Aspect Markers:

Use these settings to superimpose one of 6 markers on the screen when in 16:9 mode.

- 4:3
- 16:9
- 1.85:1
- 2.35:1
- 4:3 and 1.85:1
- 4:3 and 2.35:1

Safety Marker:

Use this setting to adjust the safety marker from 80% to 100% (Off) in 1% steps and USER.

- User Marker
  - Selecting USER will display the last defined user configured marker when Marker is ON.

To configure a user marker, you must have User Marker assigned to one of the seven Function Keys

1. Press the assigned Function key to display the User Marker.
   a. You will see prompts in the upper left corner of the screen.
   b. If no action is taken within 5 seconds the prompt will disappear and no modifications can be made.
2. The prompts will ask you to make size and placement adjustments in the following order:
   a. Width X
   b. Height Y
   c. Move X (left or right)
   d. Move Y (up or down)
3. You can use any of the four rotary encoders to make these adjustments.
4. When the User Marker is in the proper location simply stop making any changes and the prompts will disappear after 5 seconds.

Cross Hatch:

Uses this to select one of the following grid patterns:

- OFF
- SMALL
- MEDIUM
- LARGE

Marker Mat:

Use this setting to change the format of the marker curtains between Clear, Halftone, or Black.

Line Thickness:

Use this setting to choose the line thickness of the markers from 1, 2, or 3 pixels thick.

Line Type:

Use this setting to select the style of line used for markers between White, Halftone, and Invert.

AUDIO CONFIGURATION SUBMENU

■ Front Volume
Adjusts headphone and speaker volume on the front panel. This value is adjustable from 0 to 40. Setting to 0 will mute the output.

■ Headroom Start
Adjusts the point at which the level meters will change color from Green to Yellow. This is normally the level used for alignment. For digital audio in the US, the SMPTE standard is -20dBFS = 0VU = +4dBu. The European EBU standard is -18dBFS = 0VU. Other Alignment standards can be set using this menu.

■ Headroom End
Adjusts the point at which the level meters will change color from Yellow to Red. There is no official standard to where this point should occur. This is an arbitrary setting to give visual warning that the program level is peaking near the 0dBFS point at which there are no more bits and clipping will occur.

■ Left Channel / Right Channel
These menus are used to designate which one of the available 16 audio channels will be assigned to the Left, Right, or both outputs for listening. For example, the user can choose to send CH 1 to the left output and CH 2 to the Right output, or the user can assign CH 1 to both Left and Right for a mono feed.

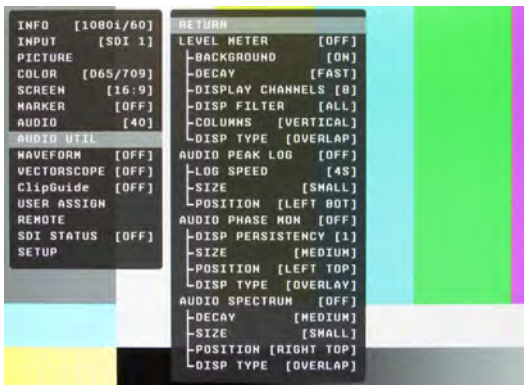
■ Load CH Preset From >
Use this menu to recall one of the 8 possible memory locations where the user previously stored channel output assignments. Use of this Load command will override the current channel output assignments.

■ Save CH Preset To >
Use this menu to select which one of 8 memory locations where the user wants to store the current channel output assignments.

■ CH Preset
Use this menu to Lock or Unlock the ability to save to the Ch Preset memory locations. This helps to prevent accidental overwriting of stored presets. When Locked, Ch Presets may still be recalled.

■ SOURCE
Use this menu to select the source of audio being monitored when the input is selected to SDI1 or SDI2. The default setting is EMBEDDED but there are times when you might want to listen to audio connected to the Aux Audio Input on the rear panel.

AUDIO UTILITY SUBMENU

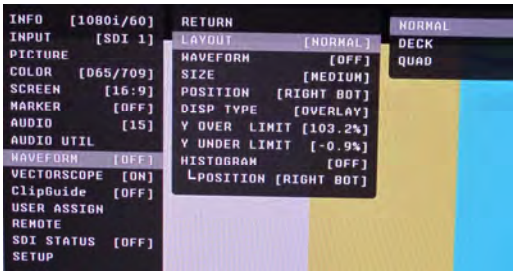


The Audio Utility Submenu contains a subset of control submenus for the various audio monitoring tools available.

- LEVEL METER
- AUDIO PEAK LOG
- AUDIO PHASE MONITOR
- AUDIO SPECTRUM

Please refer to the Audio Utility section of the On Screen Menu Contents section of this manual for details.

WAVEFORM SUBMENU



■ Layout:
Use this menu to choose from several available preset screen layouts. Choosing any of the available preset layouts will override the settings in the Waveform, Size and Position menus.

■ Waveform:
Use this menu to turn the Waveform display On or Off and select between White or Parade modes.

■ Size:
Use this menu to choose the size of the Waveform display in Normal mode. Choices are Small, Medium, and Large.

■ Position:
Use this menu to select the position you want the Waveform display to occupy on the screen when in the Normal mode. Choices are Left Top, Left Bottom, Right Top, and Right Bottom.

■ Display Type:
Use this menu to choose how to display the waveform. The choices are Overlay or Overlap. In the Overlay mode, the waveform will be semi-transparent and the user will be able to see the source video through the waveform. In the Overlap mode, the waveform will be Opaque and will block the source video.

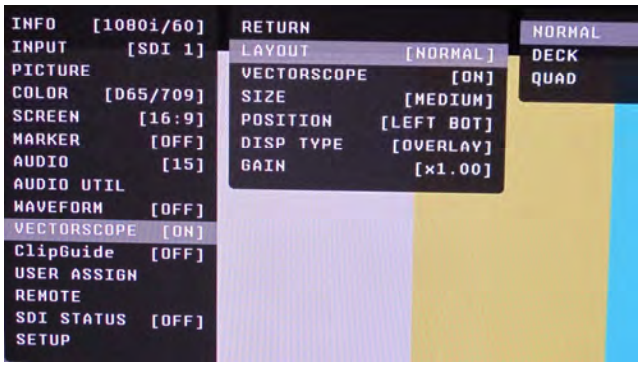
■ Y Over Limit:
Use this menu to set where you want the waveform to display Red when the video source exceeds the limit set. This value is adjustable from -7.3% to 109.1% IRE. This setting is shared with the ClipGuide Menu.

■ Y Under Limit:
Use this menu to set where you want the waveform to display Red when the video source below the limit set. This value is adjustable from -7.3% to 109.1% IRE. This setting is shared with the ClipGuide Menu.

- Limits
  - Internally, Y values ranges from 0 to 255.
  - -7.3 IRE is equal to 0 in digital.
  - 0 IRE is equal to 16 in digital.
  - 100 IRE is equal to 235 in digital.
  - 109.1 IRE is equal to 255 in digital

■ HISTOGRAM:
Use this menu to turn the Histogram function ON or OFF as well as set the Histogram display position.

VECTORSCOPE SUBMENU



■ **Layout**
Use this menu to choose from several available preset screen layouts. Choosing any of the preset layouts will override the settings in the Vectorscope, Size, and Position menus.

■ **Vectorscope**
Use this menu to turn the Vectorscope display On or Off when in the Normal mode.

■ **Size**
Use this menu to choose the size of the Vectorscope display in Normal mode. Choices are Small, Medium, and Large.

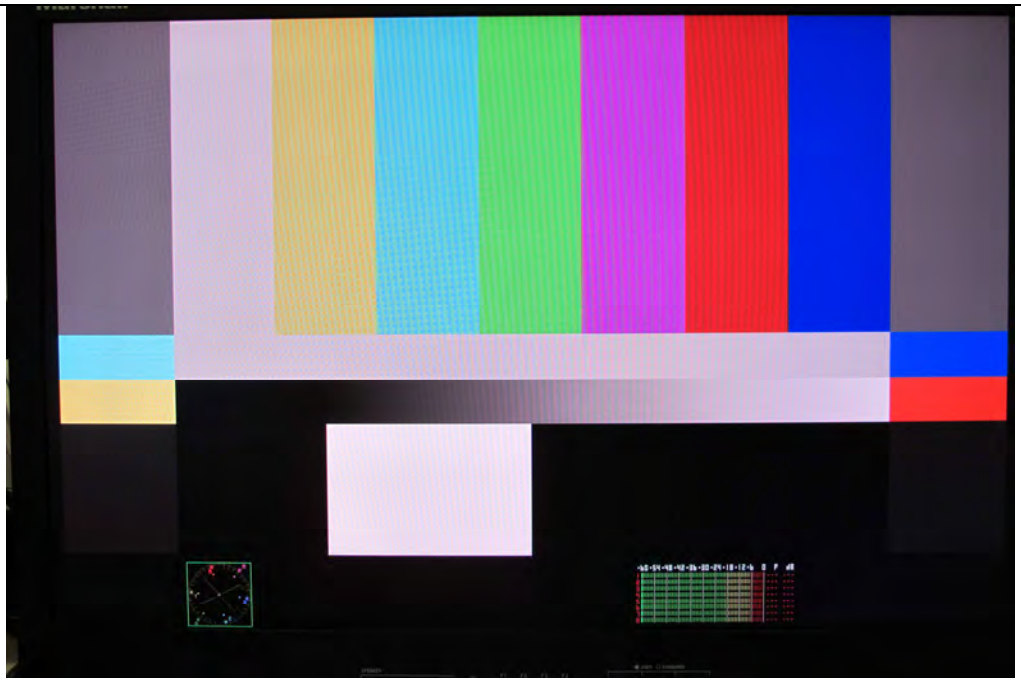
■ **Position**
Use this menu to select the position you want the Vectorscope display to occupy on the screen when in the Normal mode. Choices are Left Top, Left Bottom, Right Top, and Right Bottom.

■ **Display Type**
Use this menu to choose how to display the Vectorscope. The choices are Overlay or Overlap. In the Overlay mode, the Vectorscope will be semi-transparent and the user will be able to see the source video through the Vectorscope. In the Overlap mode, the Vectorscope will be Opaque and will block the source video.

■ **Gain**
Use this menu to change the gain of the Vectorscope display. Normally, the Vectorscope displays x1.00. In order to allow a magnified view, the gain is adjustable from x1.00 to x4.98 in .01 steps. Changing this value has no effect on the source material.

LAYOUTS

LAYOUT QUAD



LAYOUT DECK

CLIPGUIDE SUBMENU

■ CLIPGUIDE
Use this menu to turn the ClipGuide function On or Off.

■ Mode
Allows the choice of which ClipGuide function you want to display. There are 6 modes to choose from:
• Luma (Y) displayed over Color Video
• Luma (Y) displayed over Mono Video
• Chroma (C) displayed over Color Video
• Chroma (C) displayed over Mono Video
• Luma (Y) and Chroma (C) displayed over Color Video
• Luma (Y) and Chroma (C) displayed over Mono Video

■ Display Type
ClipGuide will display over and under values in two ways when monitoring the video signal. In the Zebra mode, over and under conditions are indicated in a Zebra (diagonal stripe) pattern. In the Fill mode, over and under conditions are indicated by a solid fill. In either Zebra or Fill mode, Red is the indication for Luma and Yellow is the indication for Chroma.

■ Y and C LIMITS
These values are shared with WFM settings

Y Limits:
Set luminance upper and lower limits to be monitored.
- Limits are displayed in IRE unit
- Varies between -7.3 IRE and 109.1 IRE
- This value will be shown in WFM window as red line
- Any data exceeding these values will be displayed as red on the picture
- These values are shared with WFM settings
- Internally, Y values ranges from 0 to 255
- -7.3 IRE equals to 0 in digital
- 0 IRE equals to 16 in digital
- 100 IRE equals to 235 in digital
- 109.1 IRE equals to 255 in digital

C Limits:
Sets the chrominance levels to be monitored.
- Displayed in 8-bit digital video representation
- Any data exceeding these values will be displayed as Yellow in the picture
- The factory preset for C limits are 16 and 240 according to ITU-R BT.709
- Typically these values should not be exceeded during normal video production

USER ASSIGN SUBMENU

■ **F-1 thru F-7**
There are Seven Function Keys and One Rotary Encoder on the front panel of the OR-2410. Each of these F-keys may be assigned to any one of 31 different functions as required by the job or individual user.

These functions are listed in the USER ASSIGN section of the Menu Overview section of this manual.

There are three types of User Assigned Functions:

One-Way Functions

- Pressing the assigned key will activate the feature
  - When it is enabled, the indicator of the key will illuminate
  - Pressing again will have no effect

  FOR EXAMPLE: Selecting an Input, Selecting Audio Preset, Selecting White Balance

Two-Way Functions

- Pressing the assigned key will active the feature
  - When it is enabled, the indicator of the key will illuminate.
  - Pressing again will deactivate the feature and the indicator will go out.

  FOR EXAMPLE: Scan, WFM, ALM, Layout, HV Delay

Sequential Functions

- Pressing the assigned key will rotate features in sequence.
  FOR EXAMPLE: Timecode, Color Channel
  - TimeCode will change its state for OFF->LTC->VITC1->VITC2->OFF
  - Color Channel will change its state for RGB->R Only->G Only … -> RGB

REMOTE SUBMENU

■ Pin 1 through Pin 8

The RJ-45 Remote connector on the rear panel has 8 pins. Pin 5 is Ground, while the remaining 7 pins are pulled high to 3.3VDC and may be used for Tally or other Remote Commands. A list of available Commands and Tally configurations can be found in the REMOTE section of the Menu Overview section of this manual. The command or Tally is activated by connecting the corresponding Pin (1-4 and 6-8) to Pin 5 (Ground).

Event Triggers

Two types of events are allowed: Falling and Rising Events

- The Falling Event is when you pull down to ground, and the rising event is when you remove the
  ground and the pin returns to the normal high state.
- Falling Events occur only once and on the event of power up sequence.
  - This means a falling event will occur only once regardless of whether its pin is repeatedly grounded such as when selecting an input source.
- The Rising Event can only occur once a pin has been pulled down to ground to activate the command such as turning on a tally and then releasing ground (open circuit) to turn off.
- Priority
  - The lower pin numbers have higher priorities over higher pin numbers during the power up sequence.

Tally System

The Tally System can be used in a non-separated mode and separated mode.

- Non-Separated Mode
  - Supports R/G/B tallies.
  - Can mix any channels. FOR EXAMPLE: Mix Red and Green for Amber.
  - Cannot mix R/G/B for White (it will be pink due to white balance).
  - Cannot be assigned with separated tallies.

- Left/Right Separated Mode
  - Supports R/G/B tallies on each Left and Right.
  - Can mix any channels for each Left and Right.
  - Cannot mix R/G/B for White (it will be pink due to white balance).
  - Cannot be assigned with non-separated tallies.

SDI STATUS SUBMENU

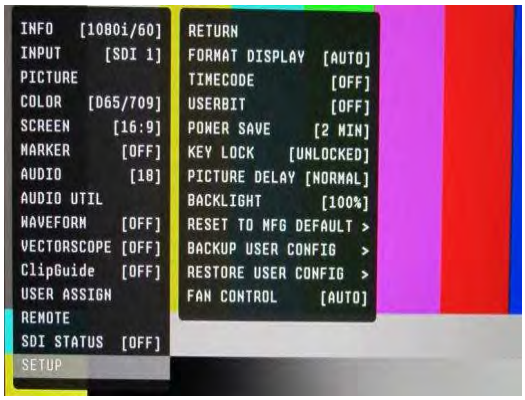
The SDI submenu shows the SDI Error Count, allows you to reset the counter and sets up how you would like to display the SDI Error counter. The Choices are OFF – ON – AUTO.

The SDI Error Counter will count the following types of errors:

- Line-based CRC error
- Line number error
- TRS error
- EDH CRC error
- ANC data checksum error

An error count of more than 1 could be considered as abnormal. There is no particular scale to the number of errors counted. The max number of errors displayed is 9999. For example assume that there is a problem with a source and it is outputting a SDI signal with invalid CRC for each line. The Orchid Error counter will result in a count of 9999 within 9 frames (150ms). However, if the source is not bad and the Error counter occasionally counts up these are mostly caused by poor connections or bad SDI cables.

SETUP SUBMENU



■ **Format Display**

- Auto - This mode will display the video format information for about 8 seconds whenever video format is changed.

- Off - This mode will not display any video format information.

- On - This mode will always display current video format information.

■ **Timecode**

Selects among to following options: OFF / LTC / VITC1 / VITC2. In the most cases, the value of LTC and VITC1 will be identical to each other.

■ **Power Save**

- When enabled, the monitor will go to sleep when the selected amount of time has passed after a loss of picture occurs.
- When a valid video format is detected, the monitor will wake up from the sleep state.
- Pressing any front panel keys will wake up the monitor.
- In the sleep state, all lights (including the backlight and front key indicators) are turned off.
- Any change in parallel remote status will wake up the monitor.
- Tally status is not affected by sleep mode.

■ **Key Lock**

In the locked mode all front panel keys are disabled except for accessing the menu.

■ **Picture Delay**

Allows the user to select the processing delay time:

- Normal — Typically 3 frame delay with best picture quality
- Fast — Typically 1.5 frame delay at good picture quality
- Fastest — Typically 0.5 frame delay with some picture artifacts

■ **Backlight**

Allows user to dim the backlight from 100% to 25% in order to compensate for ambient lighting conditions or to extend the life of the BLU.

■ **Reset to MFG Default**

- This will restore all configuration values and functions to the default factory state.
- This will not change Model Name, Serial Number, or White Balance Data.
- Requires Confirm action by selecting Confirm again.

(Select Reset -> Press Enter -> Select Confirm -> Press Enter)

- Resetting default will not effect backed up data.

■ **Backup User Configuration**

- This command backs up all user information to the secondary EEPROM (User settings)
- Requires action by selecting Confirm again.

(Select Backup -> Press Enter -> Select Confirm -> Press Enter)

■ **Restore User Configuration**

This will restore all information previously stored to the secondary EEPROM (User settings) and overwrites all Current settings. Requires Confirm action by selecting Confirm twice. (Select Restore -> Press Enter -> Select Confirm -> Press Enter). After restoration, the system exits the OSD menu.

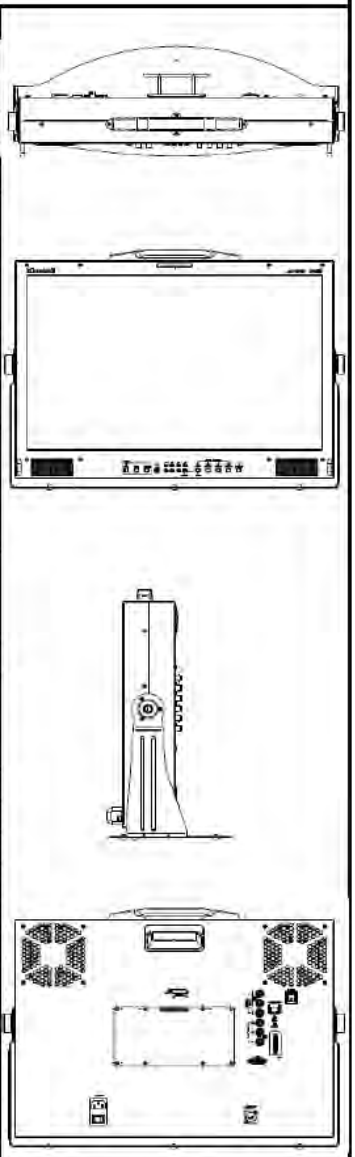
■ **Fan Control**

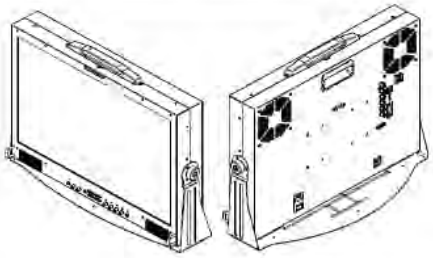
Allows the user to select the status of the cooling fan from three options:

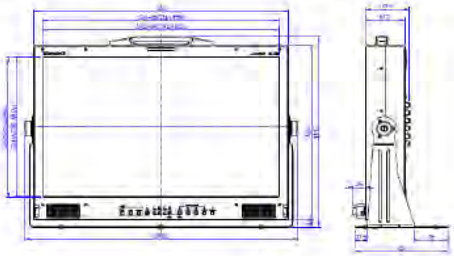
- OFF Turns fan off for quiet operation while shooting a scene
- AUTO The fan will operate only when the internal temperature requires cooling
- MAX The fan will operate continuously at Max speed

Specifications

OR-2410				
PANEL	LCD			TFT-LCD
	Active Screen Size	24.1"(Diagonally)		518.4 x 324.0 (mm) 20.4 x 12.75 (in)
	Resolution			1920(H)x1200(V),WUXGA
	Pixel Pitch(mm)			0.270(H)x0.270(V)
	Color Depth			1.07B(8bit+A-FRC), 30bit true color
	Gammut	CIE-1931	NTSC 1953	102%
	Luminance (cd/m^2)			320
	CR(Contrast Ratio)			1000:1
	Response Time(ms)			13(6ms+7ms)
INPUT	ANALOG	COMPOSITE	CVBS	3xBNC, 1xHD15
		S-VIDEO	Y/C	
		COMPONENT	YPbPr	
		RGB	Sync on Green	
	SDI	SMPTE-424M	3G(2.970Gb/s)	2xBNC
		SMPTE-292	HD(1.485Gb/s)	
		SMPTE-259M	SD(270Mb/s)	
	DVI			1xDVI-I
OUTPUT	SDI	SMPTE-424M	3G(2.970Gb/s)	1xBNC(Loop through)
		SMPTE-292	HD(1.485Gb/s)	
		SMPTE-259M	SD(270Mb/s)	
General	Power	Operating(V)		100 ~ 240VAC@50~60Hz Or DC 24V
		Consumption(W)		Approx. 90W(24V, 3.8A)
	Operating	Temperature		0° ~ 40°C (32° ~ 104°F)
		Humidity(%)		30% ~ 85% (Non-Condensing)
	Storage	Temperature		-20° ~ 60°C (-4° ~ 140°F)
		Humidity(%)		0% ~ 90%
	Weight(Kg)			11Kg
	Dimension W x D x H			602.0 x 405 x 100.6 (mm) 23.7 x 16 x 4.1 (in)
Audio	INPUT		3.5Ø stereo jack	1(Rear)
	OUTPUT	+4dBu(1.228mVrms)	3.5Ø stereo jack	1(Rear)
		+4dBu(1.228mVrms)	3P XLR	N/A
		Headphone	3.5Ø stereo jack	1(Front)
	Speaker			Built-in(3W+3W, Stereo Speaker)







Maintenance / Color Calibration / Upgrade Procedure

■ 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

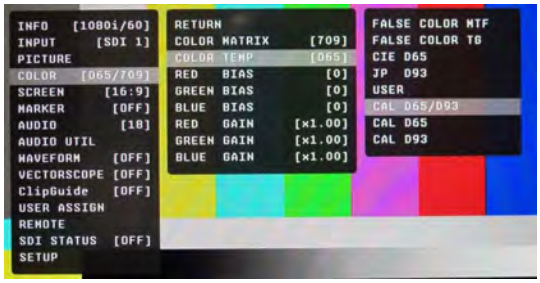
Dust the unit with a soft, damp cloth or chamois. Dry or abrasive cloths may cause electrostatic charge on the surface, attracting dust particles. Neutralize static electricity effects by using the recommended cleaning and polishing practice.

■ Color Calibration

An optional OR-SM Service Module is required for this procedure.

Allow the unit you want to calibrate and the Minolta® CA-310 to warm up for a minimum of 20 minutes.

- Attach the CA-310 color probe to the update dongle.
- With the unit still turned on, insert the update dongle into the service port at the rear of the screen you wish to calibrate.
- Use the menu navigation Rotary encoder and go to:
  - Color Menu
  - Color Temp
- Cal D65/D93 to calibrate both
- Cal D65 to calibrate only D65
- Cal D93 to calibrate only D93



Press the Rotary encoder to select and again to confirm.

- Follow the on-screen instructions

Notes:

1. If there is no color probe attached or you make a mistake and try to calibrate the incorrect screen, you will get an error message and the screen will default to previous settings.
2. If the calibration process is interrupted while in progress, the current screen settings will be corrupted and the calibration process will have to be repeated.

Firmware Update

An optional OR-SM Service Module and connection to the internet is required for this procedure.

1. Download the Orchid updater software package from the Marshall web site
2. Unzip the included files from the zip folder to a known location on your computer
3. Double-click the un-zipped Orchid updater program and the firmware package to install on your computer
4. Turn on the Orchid unit to be upgraded
5. Connect the OR-SM module to your computer
6. Insert the OR-SM module into the service port
7. Run the Orchid update program
8. Click Update
   - The Updater will check for available software
   - Compare it to the current version
   - Perform the update.

Notes:

- The update process will take approximately 8 minutes.

• If the update program does not automatically detect your Orchid model you will be asked to choose the appropriate model from a drop down list then click update again.
• Clicking on details allows you to monitor the update process

Warranty

Marshall Electronics warranties to the first consumer that this OR-2410 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.

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