RM-4210WS Series

- RM-4210WS-3G2

4RU, 2-Screen, 10.1" Audio/Video Monitors User Guide

User Guide

Part Number 821814, Revision A

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Introduction

Overview

This 4RU rack-mounted RM-4210WS Series monitor sets a new standard in LCD monitors for broadcast and professional video applications. It provides two 10.1", 1920 x 1200 resolution, 16:9 format, anti-glare IPS LCD screens. All video formats are scaled to fit on screen in the highest quality using fully digital processing, precision scaling and gamma correction to produce the best images possible.

Features

The RM-4210WS-3G2 audio/video monitor is designed for confidence monitoring of 3G/HD/SD-SDI, HDMI, and CVBS composite analog video. Input signals are easily selected and displayed. Two to sixteen audio channels per screen may be selected for visual monitoring on bar graph style level meters. On screen markers, waveform, vector, Picture in Picture (PiP) and Picture by Picture (PbP) displays can be enabled on this full-featured monitor. Focus Assist and Luma Zoom modes can be engaged to assist with camera adjustments. A headphone jack allows audible stereo monitoring of the left/right channels on all models. Stereo speakers provide audio monitoring. When mounted in a rack, it can tilt forward and down for easy visibility.

Parameters are selected and adjusted using an On Screen Display (OSD) MENU. An RJ45 connector serves as the interface to the two tally lights on the front panel. Monitor settings can also be made with a web browser over Ethernet using the integral web server.

Safety

Instructions

1. Read, keep, and follow all of these instructions; heed all warnings.
2. Do not use this equipment near water.
3. Use only a dry cloth to clean the equipment.
4. Do not block any ventilation openings.
5. Do not install near any heat source such as a radiator, heat register, amplifier, or stove.
6. Do not attempt to plug the unit into a two-blade outlet (with only two prongs of equal width).

7. Protect the power cord from being walked on or pinched, particularly at plug connection on the equipment and at the socket.

8. Use only the attachments/accessories specified by the manufacturer.

9. Unplug the equipment during lightning storms or when unused for long periods of time.

10. Refer all servicing to qualified service personnel. Servicing will be required under all of the following conditions:

    a. The equipment has been damaged in any way, such as when the power-supply cord or plug is damaged.

    b. Liquid had been spilled or objects have fallen onto the equipment.

    c. The equipment has been exposed to rain or moisture.

    d. The equipment does not operate normally.

    e. The equipment has been dropped.

Safety Symbols

The symbol to the left warns of electric shock hazard inside the unit. Disconnect the power cord before removing access panels when installing upgrades. Only qualified service personnel are to operate the equipment with covers removed, and are to exercise caution to avoid personal injury.

Mounting

The unit is designed for a standard 19" rack. Install it at ear/eye level for best high frequency response and visual observation of the display screens. Please adhere to the following clearances:

Table 1-1: Recommended Clearances

Clearance	Surface
24"	Front
3"	Rear
2"	Sides
1.75"	Top and Bottom (if either radiates heat)
0"	Top and Bottom (if no heat)

Heat Dissipation

The ambient temperature inside the mounting enclosure should not exceed 40° Celsius (104° Fahrenheit). Adjacent devices can be rack mounted (or stacked) in

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proximity to the unit if this temperature is not exceeded. Otherwise, allow a 1RU (1.75"/44.45mm) space above and below the unit for air circulation.

Sympathetic Vibration

Sympathetic vibration from other equipment (cables, etc.) in the rack may be serious enough to interfere with the unit's sound quality. If you experience sympathetic vibrations, use thin card stock, felt, foam, or weather-stripping between the vibrating surfaces. Tie loose cables securely with cable ties.

Mechanical Bracing

The 4RU chassis is securely attached to the front panel. In addition, the chassis has mounting tabs through which you attach it to the rack rail. This feature will reduce or eliminate rear bracing requirements in many mobile/portable applications. The weight of internal components is distributed fairly evenly around the unit.

Electrical Interference

Be careful to avoid mismatched cable types and other similar causes of undesired reflections in digital signal systems. If severe enough, such reflections can result in corruption of the digital data stream. As with any audio equipment, maximum immunity from electrical interference requires the use of shielded cable; however, satisfactory results can sometimes be obtained without it. The internal circuitry ground is connected to the chassis.

Power

The unit comes with an external power supply module which connects to an AC mains power source (35W, 100 to 240 VAC, ±10%, 50/60Hz) through the IEC connector provided on the rear panel of the unit.

When the mains plug or appliance coupler is used as the disconnect device, the disconnect device should remain operable.

Compliance

FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the

instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their own expense.

ICES-003

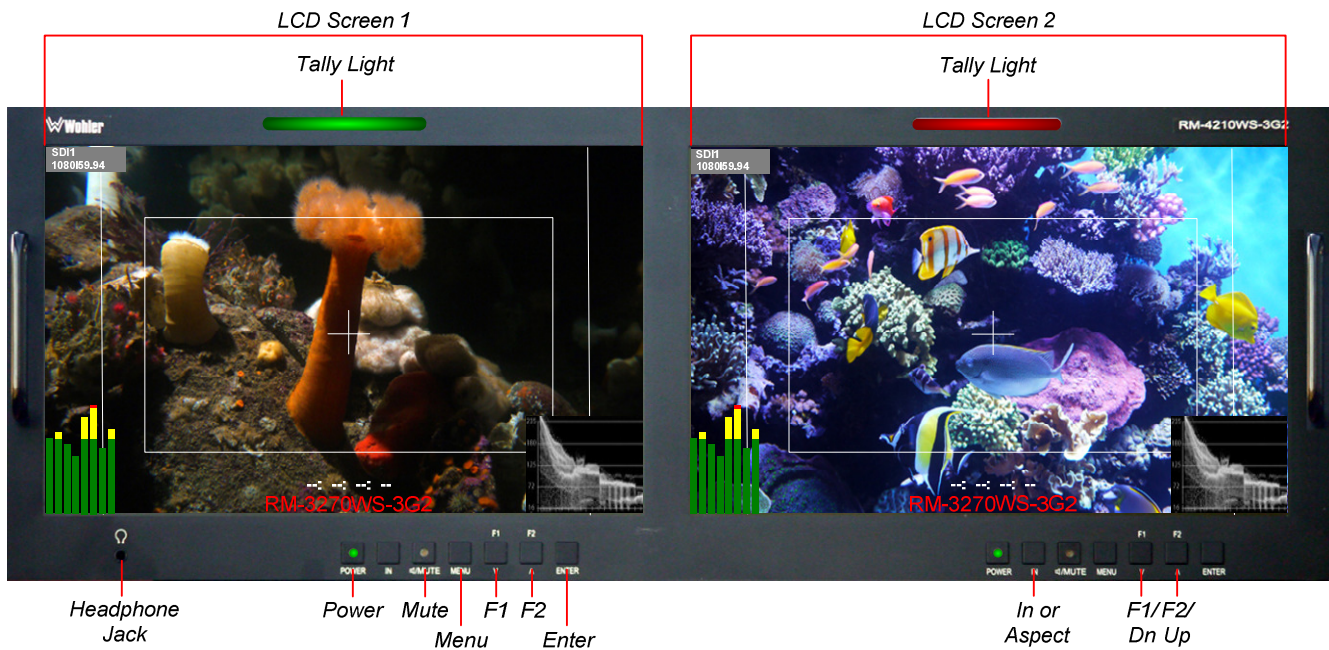This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

CHAPTER 2: Local Operation

The RM-4210WS-3G2 models front and rear panels are described in this chapter.

Front Panel

Figure 2–1: Front Panel Layout

1. **Tally Lights**: These tri-color (red/green/amber) lights are controlled through a RJ45 connector on the rear panel. For more information about the RJ45 connector, refer to Figure 2-5 and Table 2-1. When first connected to power, the Tally Lights glow amber until the unit is ready for operation.

2. **LCD Screen**: The LCD screens display the audio meters, Picture in Picture (PiP) and Picture by Picture (PbP) screens, closed captioning, waveform/vector, menus, and OSD features over the video.

3. **Speakers** (located on rear panel): Audio may be selected for monitoring through the left and right speakers. Control the volume of the speakers using the **Volume** setting in the Quick Menu. Refer to the **Using the Quick Menu and the OSD Menus** section later in this chapter.

Note:

The left LCD must be turned on for audio to function from either the left or the right screen, because the audio amplifiers are powered from the left LCD. If only one screen is to be used, be certain that it is the left one.

4. **Headphone Jack**: Monitor the assigned left/right stereo audio channels with

stereo headphones from this mini-stereo connector. Control the volume of the headphones using the **Volume** setting in the Quick Menu. Refer to the **Using the Quick Menu and the OSD Menus** section later in this chapter.

5. **Power**: Each of the two **Power** buttons turn the associated LCD screen on and off; the LED glows green to indicate on. When the indicator above the power switch is green then the unit is receiving power. When the indicator is flashing, the unit is in stand-by mode.

6. **Mute**: The **Mute** button enables or disables the audio monitor, and the light in the button will indicate the status of audio monitoring. When the light is on, the audio is monitoring, and when the light is off, it is mute.

7. **Menu**: Press this button to display the OSD MENU. Refer to the **OSD Menus** section of this chapter for operation and content of these menus.

8. **Enter**: When the OSD MENU is displayed, pressing this button accepts selections in the menus and sub-menus. When the OSD MENU is not being displayed, pressing this button displays the QUICK MENU, which cycles through volume and image controls. Refer to the **Quick Menu** section of this chapter.

9. **In**: This button switches between the SDI 1, SDI 2, Line 1 CVBS, Line 2 CVBS, and HDMI signal inputs. Pressing the **IN** button will display a list of the possible inputs. It should then be pressed repeatedly to select the required input.

10. **F1/Down**: The **Down** function is on the same button as the **F1** function. When the OSD MENU or the QUICK MENU are displayed, this button navigates down through the menu and sub-menu selections and can be used to adjust the settings. When the OSD MENU is not displayed, pressing this button initiates **F1** function per its function key menu setting.

11. **F2/Up**: The **Up** function is on the same button as the **F2** function. When the OSD MENU or the QUICK MENU are displayed, this button navigates down through the menu and sub-menu selections and can be used to adjust the settings. When the OSD MENU is not displayed, pressing this button initiates **F2** function per its function key menu setting.

On-Screen Display Features

Functions and parameters can be selected and adjusted using the On Screen Display (OSD) MENU. Refer to the **OSD Menus** section of this chapter.

Overlays can be added by the operator for **Area & Safety Markers**, **Center Marker**, and to display names as **IMD** (**I**n **M**onitor **D**isplay) for identification.

Video effects such as **Monochrome**, **Blue Only**, **Focus Assist**, **H/V Delay** and other features can be used to assist setup.

Overscan, **Underscan and Native** modes control scaling and size of the video.

Audio level meter displays, for up to sixteen channels, can be displayed vertically or horizontally, positioned at various corners of the display. They can show VU, PPM (PK) or both with assignable -20db to -18db reference levels.

Waveform (Y or Line) or **Vectorscope** can be small (as shown) or full screen sizes.

Closed Captions from CVBS Line 21 (CEA-608) can be decoded and text is displayed across the screen bottom. The 'CC' logo at screen top center indicates captions are present in the SDI stream.

The de-embedded **Timecode** from the HD/SD-SDI source displays on the lower part of the screen. Choose LTC, VITC or D-VITC types in the Display Menu.

Figure 2-2: Display Features
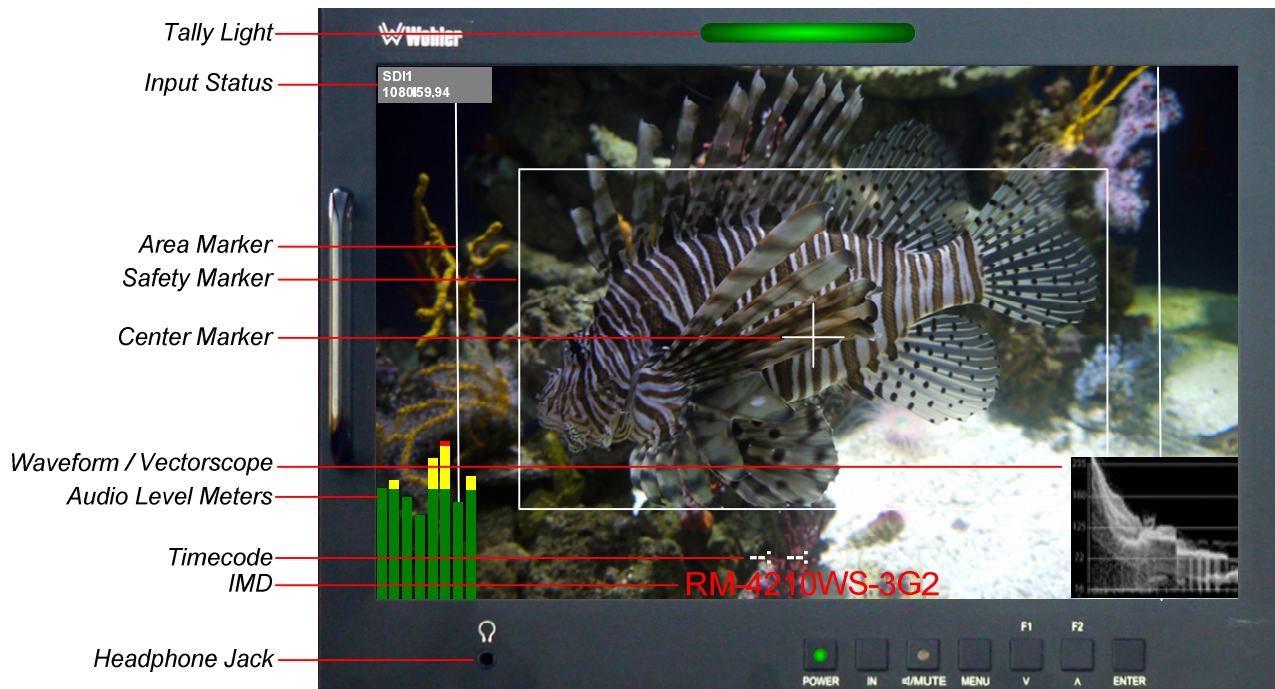
1. **Input Status**: Displays the selected input and video parameters of vertical active line count, (i)nterlaced or (p)rogressive, and field/frame rate in Hz.
2. **Area Marker**: Used to mark an alternate aspect ratio area of the image. You can set whether to display it, the display brightness, and the matte mode in the MARKER menu.
3. **Safety Marker**: This is used to mark a percentage area, inside of the image, safe for titles to be located. You can set whether to display it, as well as its display mode, in the MARKER menu.
4. **Center marker**: Cross hairs are displayed in the center of the screen, marking the center of the image. You can set whether to display it in the MARKER menu.
5. **IMD**: The OSD MENU provides settings to customize the IMD (In Monitor Display) text area to show a static line of characters, numbers, and some symbols or to receive dynamic messages to display.
6. **Audio Level Meters**: Levels for the audio channels are displayed on up to sixteen meters as left/right pairs. Up to sixteen meters can appear in various selectable positions on the screen. Refer to Table 2-7.
7. **Timecode**: The de-embedded timecode from the HD/SD-SDI source displays on the lower part of the screen.
8. **Waveform/Vectorscope**: This can be displayed only for SDI signal. The waveform and vector of the input signal display are configurable in the MAIN Menu.
9. **AFD/CC:** SDI **AFD** (Active Format Description) and **CC** (Closed Caption) information will display at the top of the screen as icons.

Rear Panel
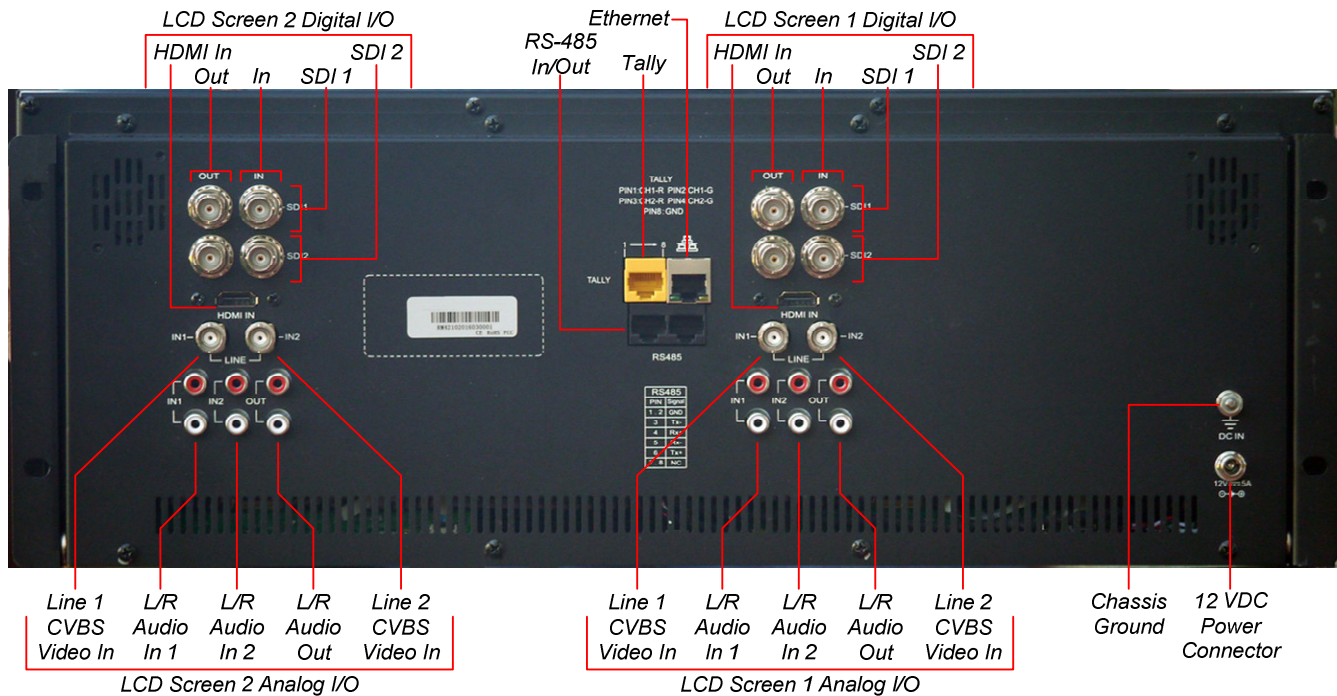
Note:

> The left LCD must be turned on for audio to function from either the left or the right screen, because the audio amplifiers are powered from the left LCD. So, if only one screen is to be used, be certain that it is the left one.

Important:

> By design, the supplied AC mains power cord will only plug into a three-prong grounded outlet for your safety. If the plug does not fit into the outlet, contact an electrician to replace the obsolete outlet. The symbol to the left warns of electric shock hazard inside or outside the unit. Disconnect the power cord before removing access panels.

Important:

> The monitor and power adapter have been tested as a combined apparatus to verify compliance with applicable safety and electromagnetic compliance standards. Use of another power adapter provided by the user may negate the compliance or not perform properly. Wohler Technologies cannot accept any responsibility for the outcome in such cases.

1. **SDI In 1**: This input connector accepts 3G/HD/SD-SDI video signals. It is compliant with SMPTE 424M, SMPTE 259M, SMPTE292M/ITU-R BT601. It can

be viewed using the SDI1 selection on the IN button menu.

2. **SDI Out 1**: This connector provides a re-shaped and re-clocked duplicate of the SDI In 1 signal. This connection is compliant with SMPTE 424M, SMPTE 259M, SMPTE292M/ITU-R BT601.

3. **SDI In 2**: This is the second 3G/HD/SD-SDI video signal input. This connection is compliant with SMPTE 424M, SMPTE 259M, SMPTE292M/ITU-R BT601. It can be viewed using the SDI2 selection on the IN button menu.

4. **SDI Out 2**: This connector provides a re-shaped and re-clocked duplicate of the SDI In 2 signal. This connection is compliant with SMPTE 424M, SMPTE 259M, SMPTE292M/ITU-R BT601.

5. **Line In 1 CVBS Video In**: This is the first input for an analog CVBS video signal. It can be viewed using the LINE1(CVBS) selection on the IN button menu.

6. **Line In 2 CVBS Video In**: This is the second input for an analog CVBS video signal. It can be viewed using the LINE2(CVBS) selection on the IN button menu.

7. **HDMI In**: An HDMI input is provided. It uses an HDMI Type-A connector. It can be viewed using the HDMI selection on the IN button menu.

8. **L/R Audio In1 and In 2**: Two pairs of analog audio inputs are provided on RCA jacks. They have a 47KΩ input impedance and will accept up to a 5dBu signal.

9. **L/R Audio Outputs**: A pair of analog outputs is provided on RCA jacks. They will output the audio from the selected video source. They have a 500Ω output impedance and will produce up to a 5dBu signal.

10. **Left and Right Speakers**: The left and right monitoring speakers for the unit are located on the rear panel.

11. **Power Connector**: The supplied 100 to 240VAC to 12VDC power supply plugs into this coax connector.

12. **Ethernet**: The 10/100M Ethernet connector is used to connect with a computer to modify the display settings remotely. CAT5 network cables are recommended for medium distances. CAT6 twisted pair shielded cables are recommended for longer distances.

13. **RS-485 In/Out**: These RJ-45 jacks are used for dynamic Tally/IMD controls. Two jacks are provided for in & out daisy chain arrangements. They are wired identically. Refer to Figure 2-5 below for the pinout and Table 2-2 for terminal connections. These connections are also used for system software upgrades. Either CAT5 or CAT6 cables may be used for these jacks.

14. **Tally**: This RJ45 jack controls the tally lights on the front panel. Refer to Figure 2-5 below for the pinout and Table 2-1 for the terminal connections. Either CAT5 or CAT6 cables may be used for this jack.

Rear Panel Connectors

The following figure and tables detail the connections of the Tally and RS-485 connectors on the rear panel. The tables are also silkscreened on the rear panel of the unit for your convenience.

Table 2-1: Tally Input Connections

Pin	Tally Terminal Name
1	CH1-Red
2	CH1-Green
3	CH2-Red
4	CH2-Green
5-7	NC
8	GND

To light a Tally in red, connect pin 1 (or 3) to ground. To light a Tally in green, connect pin 2 (or 4) to ground. To light a tally in amber, connect both pins 1 and 2 (or 3 and 4) to ground.
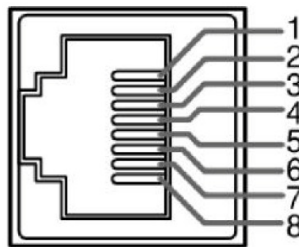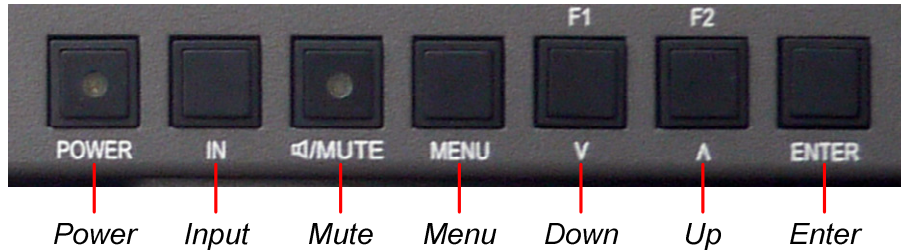
Figure 2-4: Tally Input & RS-485 I/O Pin-Out

Table 2-2: RS-485 I/O Connections

Pin	RS-485 Terminal Name
1, 2	GND
3	Tx- (pair A)
4	Rx+ (pair B)
5	Rx- (pair B)
6	Tx+ (pair A)
7, 8	NC

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Using the Quick Menu and the OSD Menus

In the following descriptions, refer to Figure 2-5 for the location of the control buttons.

Figure 2-5: Screen Control Buttons

Quick Menu

The Quick Menu provides quick access to a few commonly used features, as listed in Table 2-3. The quick menu appears as shown in Figure 2-6.

Figure 2-6: Quick Menu - Volume Setting

The following is a description of how to use the Quick menu:

1. Press the **Enter** button to display the Quick Menu and the first item that can be adjusted.

2. Use the **Up** and **Down** buttons to change the value for the item displayed.

3. Press the **Enter** button again to display the next adjustable item.

4. The Quick menu will time out with no button presses. Alternatively, you may press the **Enter** button repeatedly when finished until the menu disappears.

Table 2-3: Quick Menu

Parameters	Default Value	Domain Range
VOLUME	16	0 - 31
BRIGHTNESS	50	0 - 100
CONTRAST	50	0 - 100
CHROMA	50	0 - 100

OSD Menus

The OSD Menus allow you to adjust a wide variety of control parameters for the monitor. Refer to Table 2-4 through Table 2-14 for typical values and domain ranges. The following is a description of how to use the OSD Menus:

1. Press the **Menu** button to display the Main Menu.

2. Use the **Up** and **Down** buttons to navigate through the submenus.

3. Press the **Enter** button to enter the parameter selections in the chosen submenu.

4. Use the **Up** or **Down** buttons to cycle through the submenu selections.

5. When the desired option is highlighted, press the **Enter** button to select it.

6. Use the **Up** or **Down** buttons to adjust the parameter value up or down, make a selection, or turn a function on or off.

7. Press the **Enter** button to accept your parameter change -or- press the **Menu** button to cancel your change.

8. Press the **Menu** button to back out of any submenu, and finally to remove the OSD Menus from the screen.

OSD Menus

The following tables describe the information and settings available in the OSD Menu system. Use the instructions in the previous section to navigate the menus.

Table 2-4: Status Menu Structure

Status			
Parameters	**Default Value**	**Domain Range**	**Description**
INPUT	SD1	SDI1 SDI2 LINE1 LINE2 HDMI	Display only for the value of the parameter.
FORMAT	NO SIGNAL		
COLOR TEMP	D65	D32, D93, D65, D56, D50	
SCAN MODE	NORMAL	NORMAL, OVER, UNDER	
FAST MODE	OFF	OFF or ON	
MODEL	RM-4210WS-3G2		
SERIAL NUMBER	-		
IP ADDRESS	192.168.1.86		
COLOR VERSION	-		

Table 2-5: Input Select Menu Structure

Input Select			
Parameters	**Default Value**	**Domain Range**	**Description**
SDI1	ON	One ON at a time, all others OFF	Use this setting to select which input will be monitored.
SDI2	OFF		
LINE1	OFF		
LINE2	OFF		
HDMI	OFF		
NTSC SETUP	0	0, 7.5	
NTSC PHASE	0	-50 - 50	
FOCUS ASSIST	OFF	OFF STANDARD COLOR	OFF: Normal Video STANDARD: An image with sharpened edges is displayed. COLOR: An image with the color selected in FOCUS COLOR substituted for the intensified areas.
FOCUS LEVEL	50	0 - 100	Select the amount of edge sharpening in FOCUS ASSIST.
FOCUS COLOR	RED	RED GREEN BLUE	When FOCUS ASSIST: COLOR is selected, this selects which color will substitute.
LUMA ZOOM CHECK	OFF	OFF, ON	OFF: Normal Video ON: Compares the signal luminance with the LUMA ZOOM LEVEL setting and fills the higher luminance areas with a zebra pattern.
LUMAZOOM LEVEL	50	0 - 100	Set the luminance comparison level for the LUMA ZOOM CHECK.

The **Focus Assist** feature is designed to help with camera focusing. The **Luma Zoom Check** feature can help when setting the camera exposure.
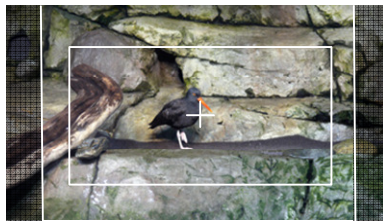
Table 2-6: Marker Menu Structure

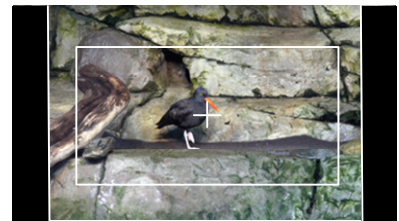| Marker			
Parameters	Default Value	Domain Range	Description
MARKER	OFF	ON or OFF	Turn **all markers** on or off.
AREA MARKER	OFF	If 16:9 aspect ratio: OFF (close area marker), 4:3, 13:9, 14:9, 15:9, 16:9, 1.85:1, 2.35:1 If 4:3 aspect ratio: OFF (close area marker), 16:9	Set area marker size according to the aspect ratio.
CENTER MARKER	OFF	ON or OFF	Turn center marker display on or off.
SAFETY MARKER	OFF	OFF, 80%, 85%, 88%, 90%, 93%, 95%	Set safety marker size according to the aspect ratio and scan mode.
MARKER LEVEL	1	1: 50%, 2: 75%, 3: 100%	Set the luminance of all of the markers.
MARKER MAT	OFF	OFF, HALF (*Background 50%*) BLACK	Set the transparency of the area marker mat.
CROSS HATCH	OFF	ON or OFF	Set whether to enable the cross hatch display.

Figure 2-7: Marker Mat Effect
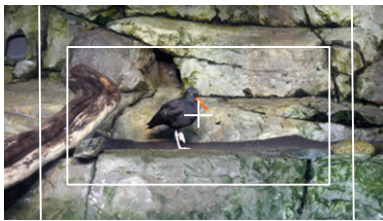
Marker Mat = OFF   *Marker Mat = HALF*   *Marker Mat = BLACK*

Table 2-7: Audio Menu Structure

Audio			
Parameters	**Default Value**	**Domain Range**	**Description**
AUDIO SOURCE	EBD	Analog: AUDIO1, AUDIO2 SDI: EBD UNDEF (none)	Select the audio source among the available signals.*
SPEAK OUT L	EBD CH1	EBD CH1-CH16	Select channel for the left speaker.
SPEAK OUT R	EBD CH2	EBD CH1-CH16	Select channel for the right speaker.
AUDIO METER	OFF	ON or OFF	Set whether to display the audio meters.
METER SELECT	CH1-2	CH1-2, G1, G2, G3, G4, G1+G2, G1+G3, G1+G4, G2+G3, G2+G4, G3+G4, G1-G4	Select channels or SDI groups to display on the meters.
METER DIRECTION	HORIZONTAL	VERTICAL, HORIZONTAL	Select whether you prefer vertical or horizontal meters.
METER POSITION	TOP	If METER DIRECTION is VERTICAL: BOTTOM LEFT, BOTTOM RIGHT, TOP RIGHT, TOP LEFT If METER DIRECTION is HORIZONTAL: BOTTOM, TOP	For vertical meters, select bottom left, bottom right, top right, or top left position. For horizontal meters, select bottom or top position.
METER DIS MODE	MODE1	MODE1: meter only MODE2: meter & channel numbers MODE3: meter, channel numbers, and dB value	Select the appearance of the meters.
REF LEVEL	-20DB	-18DB, -20DB	Set the meter reference level (green to yellow transition).
OVER LEVEL	-10DB	-2DB, -4DB, -6DB, -8DB, -10DB	Set the meter over level (yellow to red transition)

* Note: If there is no SDI or HDMI signal, only AUDIO1 and AUDIO 2 are available choices.

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Table 2-8: Display Menu Structure

Display			
Parameters	**Default Value**	**Domain Range**	**Description**
STATUS DISPLAY	AUTO	OFF, ON, AUTO	Turn status display off, on, or automatic. If automatic, it will display for 15 seconds after each change.
AFD DISPLAY	OFF	ON, OFF	Turn AFD display on only when status display is set to On or Auto, or else Off.
WFM FORM SIZE	NORMAL	FULL, NORMAL	Set display of waveform to full screen size or normal PiP size.
WFM FORM TYPE	OFF	OFF WAVEFORM VECT75 VECT100	Set the type of waveform / vector display.
LINE WAVE	OFF	ON, OFF	Set whether to display the line wave.
LINE WAVE NUMBER	---	Refer to Table 2-9.	Set the position of the waveform display.
WAVEFORM POSITION	BOT RIGHT	BOTTOM RIGHT BOTTOM LEFT TOP LEFT TOP RIGHT	Set the displayed position for the waveform display.
WAVEFORM OVER LIMIT	50	50 to 100	Set the over limit of the waveform.
WAVEFORM UNDER LIMIT	5	0 to 50	Set the under limit of the waveform.
TIME CODE	OFF	OFF, D-VITC, LTC, VITC	Select the mode for the time code display or disable it.

Table 2-9: Line Wave Number vs. Input Signal

Input Signal	Default Value	Domain Range
576i50	310	23 - 623
480i60	261	22 - 524
720p	386	26 - 745
1080i50	560	21 - 1123
1080i60/59.94		
1080sf23/23.97		
1035i60	557	41 - 1120
1080p	561	42 - 1121

Table 2-10: Closed Caption Menu Structure

Closed Caption			
Parameters	Default Value	Domain Range	Description
CLOSED CAPTION	CC1	OFF CC1 CC2 CC3 CC4 TEXT1 TEXT2 TEXT3 TEXT4	Set type of CVBS caption to display, or turn it off.
SDI CC LOG	OFF	('CC' Logo) ON or OFF	Set whether to display SDI closed caption information

Table 2-11: Config Menu Structure

Config			
Parameters	**Default Value**	**Domain Range**	**Description**
FAST MODE	OFF	ON or OFF	Enable or disable fast mode.
FILM MODE DETECT	OFF	ON or OFF	Enable or disable film mode detection.
SUB IN TYPE	OFF	PBP or PIP	Select Picture by Picture (PbP) or Picture in Picture (PiP).
SUB IN SELECT	SDI2	SDI2 LINE1 (CVBS) LINE2 (CVBS) HDMI WAVEFORM	Select the source for the PbP or PiP.
PIP SIZE	LARGE	LARGE, SMALL	Select the size of the PiP.
PIP POSITION	BOT RIGHT	BOTTOM RIGHT TOP RIGHT TOP LEFT BOTTOM LEFT	Select the position of the PiP.
BACK LIGHT	15	0* to 30	Set backlight timeout.
AUTO STANDBY	OFF	ON or OFF	Enable or disable auto standby mode.
APERTURE	0	0 to 24	Set picture sharpness.
LOCK NUMBER	-		Set lock number.
LANGUAGE	ENGLISH	ENGLISH, CHINESE	Set the menu language.

* Note: Use caution when setting the Back light to a very low number. Setting the Back Light to 0 or a low number may make it impossible to see the menus to correct the situation.

Table 2-12: Color Temp Menu Structure

Color Temp			
Parameters	**Default Value**	**Domain Range**	**Description**
COLOR TEMP	D65	D32, D50, D56, D65, D93, USER1, USER2	Set the color temperature.
RED GAIN	128	0 to 256	Set the gain for each color.
GREEN GAIN			
BLUE GAIN			
RED BIAS	0	-127 to +127	Set the offset for each color.
GREEN BIAS			
BLUE BIAS			
COPY FROM	D93	D32, D50, D56, D65, D93	Copies this set of color parameters to USER.
RESET	Resets Gain and Offset to Factory Default		
COLOR SPACE	AUTO	OFF, EBU, SMPTE-C, ITU-709, AUTO	Select the color matrix.

Table 2-13: Function Key Menu Structure

Function Key			
Parameters	**Default Value**	**Domain Range**	**Description**
F1	SCAN	SCAN NATIVE ASPECT BLUE ONLY MONO MARKER H/V DELAY AUDIO METER FAST MODE	Set up the F1 Function key action.
F2	NATIVE	TC IMD MUTE CC FREEZE WIN SELECT FOCUS ASSIST LUMA ZOOM CHECK UNDEF (none)	Set up the F2 Function key action.

Table 2-14: IMD Menu Structure

IMD Menu			
Parameters	**Default Value**	**Domain Range**	**Description**
IMD DISPLAY	ON	ON or OFF	Set whether to enable the IMD.
IMD COLOR	RED	RED, GREEN, YELLOW, WHITE	Set the color of the IMD characters.
IMD CHARACTER	RM-3270WS-3G2	(Up to 16 characters of text for static LOCAL display)	Set the IMD message.*
IMD PROTOCOL	LOCAL	LOCAL TSL3.1, TSL4.0, TSL5.0 IMAGE VIDEO (1510 protocol) NETWORK	Select an IMD protocol.
IMD ID	0	0 to 255 (unit ID number for Dynamic IMD/Tally)	Set the ID number for the IMD.
IMD NAME	-	(Up to 16 characters of text for the IMD Name)	Set the ID Name for dynamic IMD/Tally.*
BAUD RATE	115200	2400, 4800, 9600, 19200, 38400, 57600, 115200	Set the BAUD rate for RS-485 communication.
LED TALLY	ON	ON or OFF	Enable / disable the Tally light.
OSD TALLY MODE	RG	OFF, RG: Red/Green, GR: Green only, RGY: Red/Green/Yellow	Select the OSD tally mode.
IMD TALLY MODE	T1	T1, T2, T1T2, T2T1, T1-, T2-, T1T2-, T2T1-	Select the IMD tally mode for Image Video.
TALLY SOURCE	STANDARD	STANDARD (rear Tally connector), IMAGE VIDEO, TSL	Select the tally source.

* To enter the characters for the IMD CHARACTER or IMD NAME SETTINGS, navigate to the setting and press Enter. Press Up or Down repeatedly to locate the first character and press Enter to move to the next character. Press Up or Down again repeatedly to locate the second character and press Enter. Repeat this process until all of the characters (up to 16) have been entered. Then press Menu to exit.

CHAPTER 3: Technical Info

Table 3–1: Specifications

Specification	Values/Domains
Power requirements	100 V to 240 VAC ± 10%, 50/60Hz
Power consumption	35 Watts
Dimensions; inches H x W x D (mm)	6.9" x 19" x 1.7" (176mm x 484mm x 43mm)
Weight	5 lbs. (2.25 kg)
Space Required	4RU in a standard 19" rack
Supplied Accessories	Power Adapter, AC Power Cord
Display Type	IPS-LCD with LED Backlight
Number of Displays	2
Screen Size	10.1" diagonal per screen
Screen Resolution	1920(H) x 1200(V)
Aspect ratio	16:10
Display Area (mm)	216.8(H) x 135.5(V)
Viewing Angle	178°(H) x 178° (V)
Color Depth	16.7M colors
Contrast Ratio	800:1
Brightness	400 cd/m^2, typical
Response Time	25 ms, typical
Video Inputs	CVBS: PAL/NTSC
	SD-SDI: SMPTE 259M, ITU-R BT.656
	HD-SDI: SMPTE 292M/274M/296M
	3G-SDI: SMPTE 425-Level A
	HDMI: 1.3a
Video Input Impedance	SDI and CVBS: 75Ω
Audio Inputs (per screen)	2 Stereo Pairs; Analog on RCA
Audio Input Impedance	20kΩ
Audio Outputs (per screen)	1 Selected Pair; Analog on RCA
Speakers (top rear)	5W x 2 (Stereo)
Headphones	Stereo; on 3.5mm jack
Dynamic Tally/IMD	RS-485; TSL/ImageVideo on RJ-45
Network Setup/Control	10/100M Ethernet; Web Server on RJ-45

Figure 3−1: RM-4210WS-3G2 Block Diagram
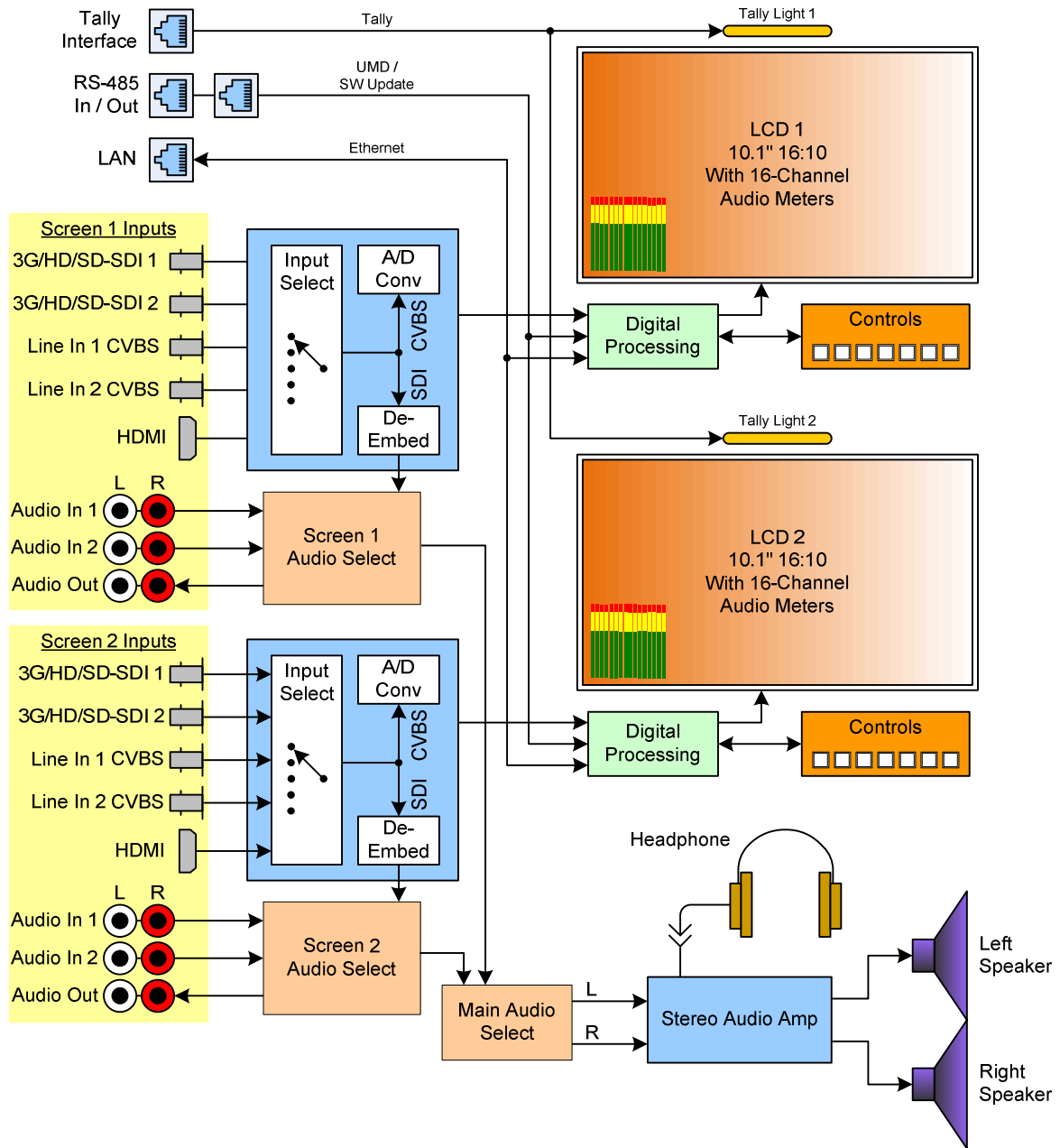
Supported Video Formats

The RM-4210WS-3G2 will display the video formats listed in Table 3-2.

Table 3-2: Video Formats

Format	SDI	Video	HDMI
PAL		X	
NTSC		X	
480i60/59.94	X		X
576i50	X		X
480p60/59.94			X
576p50			X
720p24/23.97	X		
720p25	X		X
720p30/29.97	X		X
720p50	X		X
720p60/59.94	X		X
1080sf24.23.97	X		X
1035i60/59.94	X		X
1080i50	X		X
1080i60/59.94	X		X
1080p24/23.97	X		X
1080p25	X		X
1080p30/29.97	X		X
1080p50	X		X
1080p60/59.94	X		X
VGA (640X480)			X
SVGA (800X600)			X
XGA (1024X768)			X
SXGA (1280X1024			X
WXGA (1360X768)			X
WXGA+ (1440X900)			X
WXGA+ (1400X1050)			X
UXGA (1600X1200)			X
UXGA+ (1680X1050)			X
WUXGA (1920X1080)			X
WUXGA (1920X1200)			X

CHAPTER 4: Using Network Control

The RM-4210WS Web GUI allows you to customize the monitor configuration to perfectly suit your needs. The following setup steps are not necessary if you intend to use the RM-4210WS in its default configuration or if you only make configuration changes using the OSD menus. However, the RM-4210WS Web GUI network control is ideal for configuring difficult to reach wall-mounted monitors.

Web Browser / Control Device

Any web browser application running on any networked device such as desktop or laptop computer, tablet, or smart phone can be used with the RM-4210WS Web GUI.

If a tablet without a physical network connector is to be used, it needs to be linked to a copper LAN through a Wi-Fi adaptor.

Phones are not recommended due to their smaller screen size, which would require more scrolling.

The Chrome® web browser is recommended for speed and compatibility.

First Time- IP Assignments

The RM-4210WS operates with a static (fixed) IPv4 address. The address will be **192.168.1.86** when received from the factory or when reset at the front panel. This is shown in Figure 4-2. The IP address will need to be changed to some other address to be compatible with the customer's network address assignments. Go to **System setup,** immediately after this host setup is done, to change the unit's address.

The surest way to do this, free of possible network conflicts, is to establish a direct peer-to-peer connection between the setup computer and the RM-4210WS. A 10/100/1000 MHz Ethernet switch may be used in between, but is not required.

Figure 4-1 shows an example of suitable address settings for the host computer in a Windows 7 control panel.

Figure 4–1: Host IP Settings
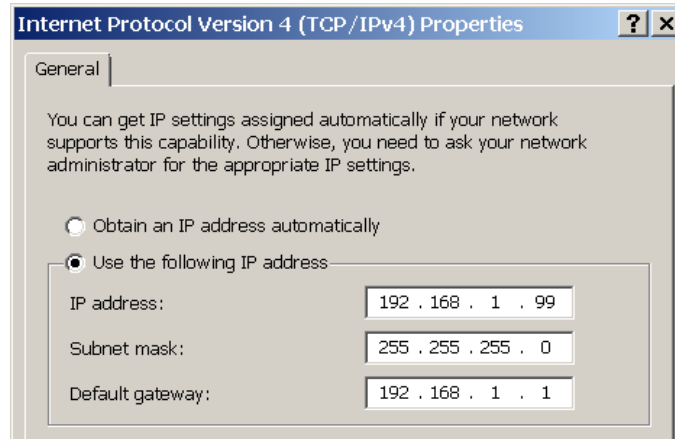
After making an IP address change such as this, close the control panel and reboot the host computer to be sure the change takes effect.

Make the final address, mask and gateway changes in the RM-4210WS **System setup** page.

Status Page

The full network control browser window is shown in Figure 4-2. Enter the monitor's IP Address into the browser's address bar and press the Enter key to access the web server.

Select whether **Monitor 1** or **Monitor 2** settings are to be changed in the upper left bar, or check the **Apply To All** box for global control.

Throughout the Web GUI, other pages are one click away in the menu at the left side of the screen. The currently selected page is highlighted in yellow.

Note that the IN1 and IN2 video input selection, which is present only on the RM-4210WS-3G2, only switches the input and does not create a separate setup for each input.

Figure 4–2: Status Page

IP Address

Adjust Page

An **(S)** icon following a parameter name indicates that the parameter is only local for the currently selected monitor screen. Otherwise, the parameter is global and the setting applies to both screens.

Click the **SET** button to change a parameter value.

Figure 4–3: Adjust Page

Video Display Page

Input Setup Page

Marker Page

The **MARKER OFF/ON** setting enables or disables the visibility of all markers on the screen. The settings of each marker are retained as the last change made from either the OSD Menu or this Network Control Page.

Figure 4–6: Marker Page

Audio Page

First select the **AUDIO SOURCE**. Then select **SPEAK(er) OUT** selections for **LEFT** and **RIGHT** channels. These also apply to headphone and AUDIO OUT outputs.

METER SELECT controls which and how many channels are metered, independently of the SPEAK(er) OUT selections.

An **(S)** icon following a parameter name indicates that the parameter is only local for the current selected monitor. Otherwise, the parameter is global and the setting applies to both screens.

Figure 4–7: Audio Page

Close Caption Page

CLOSE CAPTION	
CLOSE CAPTION	CC1 ▾ SET
SDI CC LOG	⚪ OFF 🔘 ON

Config Page

An **(S)** icon following a parameter name indicates that the parameter is only local for the current selected monitor. Otherwise, the parameter is global and the setting applies to both screens.

CONFIG	
FAST MODE (S)	🔘 OFF ⚪ ON
FILM MODE DET (S)	🔘 OFF ⚪ ON
BACKLIGHT	15 SET
AUTO STANDBY	⚪ OFF 🔘 ON
APPERTURE (S)	0 SET
LANGUAGE	🔘 ENGLISH ⚪ 中文

Color Temperature Page

As with the OSD Color Temp Menu, **COPY FROM** specifies a USER profile is to be made from it. The USER color profile can be modified as desired from within the OSD Menu.

In Figure 4-10, Color Space has been expanded to show the choices available.
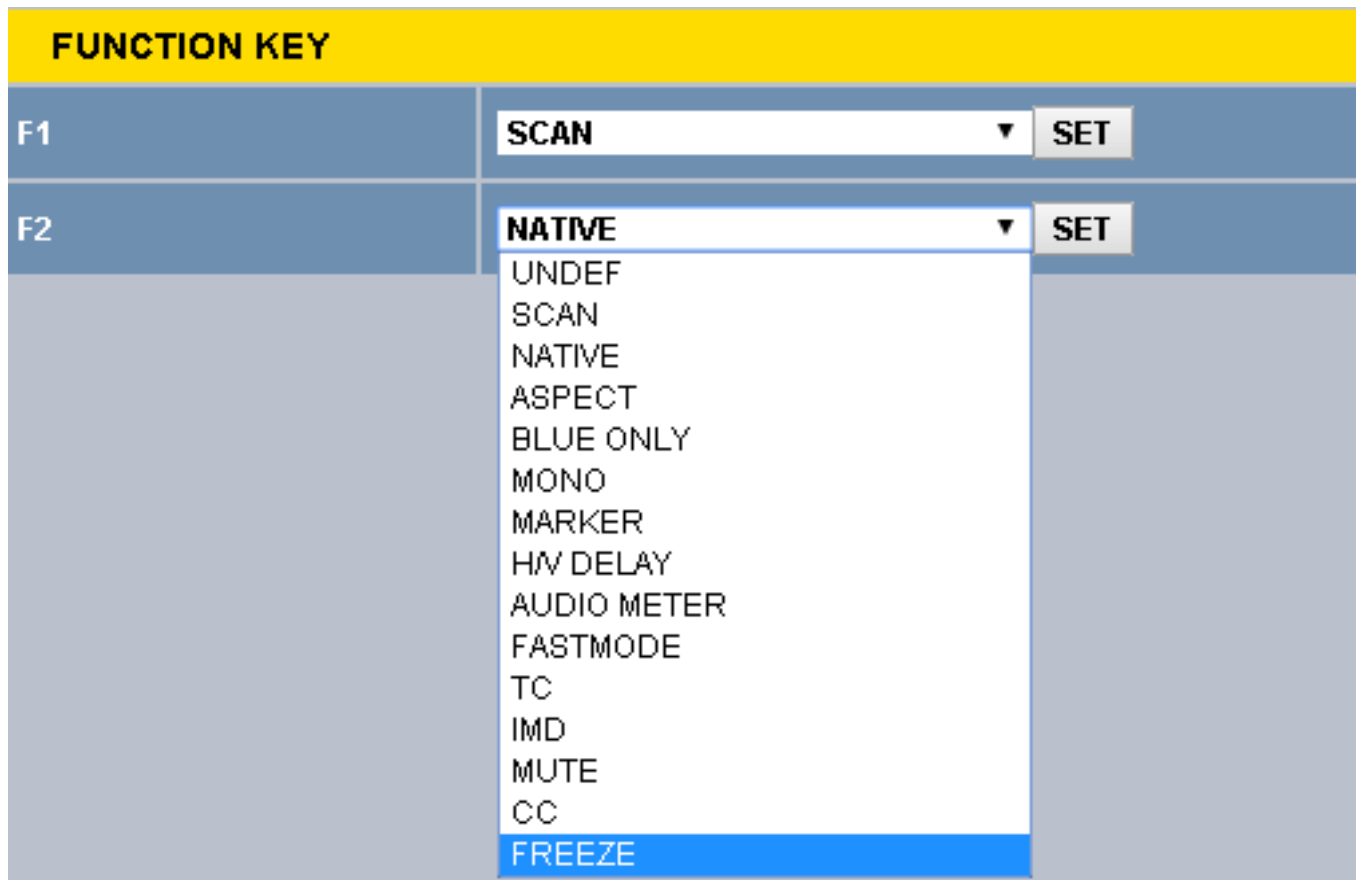
Figure 4–10: Color Temperature Page

Function Key Page

In Figure 4-11, F2 is shown expanded to see choices available for either function key's assignment. Some functions, such as FREEZE, can only be initiated by a function key if there is no menu setting for enabling the function.

Figure 4–11: Function Key Page

IMD Page

There are two ways to enter static IMD character strings, via the network with this page, or with the OSD IMD Menu. Both are retained in the monitor's memory, and **IMD PROTOCOL** settings of **LOCAL** vs. **NETWORK** decides which one is displayed.

In Figure 4-12, Tally Source has been expanded to show the available choices.

Figure 4–12: IMD Page

System Page

Set a unique **IP ADDRESS** for each RM-4210WS monitor to be used in a local area network (LAN).

The **MASK** is usually set as shown, but can be altered to suit your IT configuration and administration needs.

The first three **GATEWAY** number blocks usually match the first three number blocks of the IP ADDRESS, and the last number is usually 1.

The **LOCK NUMBER** is only needed in certain software installation situations. Do not change it unless instructed by Wohler Customer Service.

Version numbers are additional information that may be useful when consulting with Wohler Customer Service.

Figure 4−13: System Page