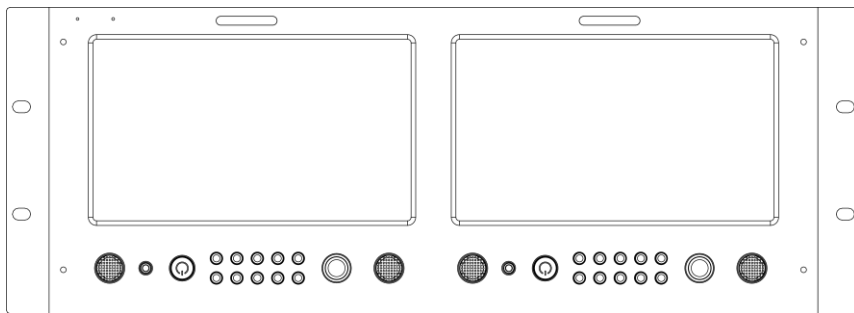


RMS 8424S



USER MANUAL

RGBlink

Article No: RGB-RD-UM-RMS 8424S E001
Revision No: V1.4

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Thank you for choosing our product!

This User Manual is designed to show you how to use this video processor quickly and make use of all the features. Please read all directions and instructions carefully before using this product.

Declarations

FCC/Warranty

Federal Communications Commission (FCC) Statement

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 may cause harmful interference, in which case the user will be responsible for correcting any interference.

Guarantee and Compensation

RGBlink provides a guarantee relating to perfect manufacturing as part of the legally stipulated terms of guarantee. On receipt, the purchaser must immediately inspect all delivered goods for damage incurred during transport, as well as for material and manufacturing faults. RGBlink must be informed immediately in writing of any complaints.

The period of guarantee begins on the date of transfer of risks, in the case of special systems and software on the date of commissioning, at latest 30 days after the transfer of risks. In the event of justified notice of compliant, RGBlink can repair the fault or provide a replacement at its own discretion within an appropriate period. If this measure proves to be impossible or unsuccessful, the purchaser can demand a reduction in the purchase price or cancellation of the contract. All other claims, in particular those relating to compensation for direct or indirect damage, and also damage attributed to the operation of software as well as to other service provided by RGBlink, being a component of the system or independent service, will be deemed invalid provided the damage is not proven to be attributed to the absence of properties guaranteed in writing or due to the intent or gross negligence or part of RGBlink. If the purchaser or a third party carries out modifications or repairs on goods delivered by RGBlink, or if the goods are handled incorrectly, in particular if the systems are commissioned operated incorrectly or if, after the transfer of risks, the goods are subject to influences not agreed upon in the contract, all guarantee claims of the purchaser will be rendered invalid. Not included in the guarantee coverage are system failures which are attributed to programs or special electronic circuitry provided by the purchaser, e.g. interfaces. Normal wear as well as normal maintenance are not subject to the guarantee provided by RGBlink either.

The environmental conditions as well as the servicing and maintenance regulations specified in this manual must be complied with by the customer.

Operators Safety Summary

The general safety information in this summary is for operating personnel.

Do Not Remove Covers or Panels

There are no user-serviceable parts within the unit. Removal of the top cover will expose dangerous voltages. To avoid personal injury, do not remove the top cover. Do not operate the unit without the cover installed.

Power Source

This product is intended to operate from a power source that will not apply more than 230 volts rms between the supply conductors or between both supply conductor and ground. A protective ground connection by way of grounding conductor in the power cord is essential for safe operation.

Grounding the Product

This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective-ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Use the Proper Power Cord

Use only the power cord and connector specified for your product. Use only a power cord that is in good condition. Refer cord and connector changes to qualified service personnel.

Use the Proper Fuse

To avoid fire hazard, use only the fuse having identical type, voltage rating, and current rating characteristics. Refer fuse replacement to qualified service personnel.

Do Not Operate in Explosive Atmospheres

To avoid explosion, do not operate this product in an explosive atmosphere.

Installation Safety Summary

Safety Precautions

For all RMS 8424S processor installation procedures, please observe the following important safety and handling rules to avoid damage to yourself and the equipment.

To protect users from electric shock, ensure that the chassis connects to earth via the ground wire provided in the AC power Cord.

The AC Socket-outlet should be installed near the equipment and be easily accessible.

Unpacking and Inspection

Before opening RMS 8424S processor shipping box, inspect it for damage. If you find any damage, notify the shipping carrier immediately for all claims adjustments. As you open the box, compare its contents against the packing slip. If you find any shortages, contact your sales representative.

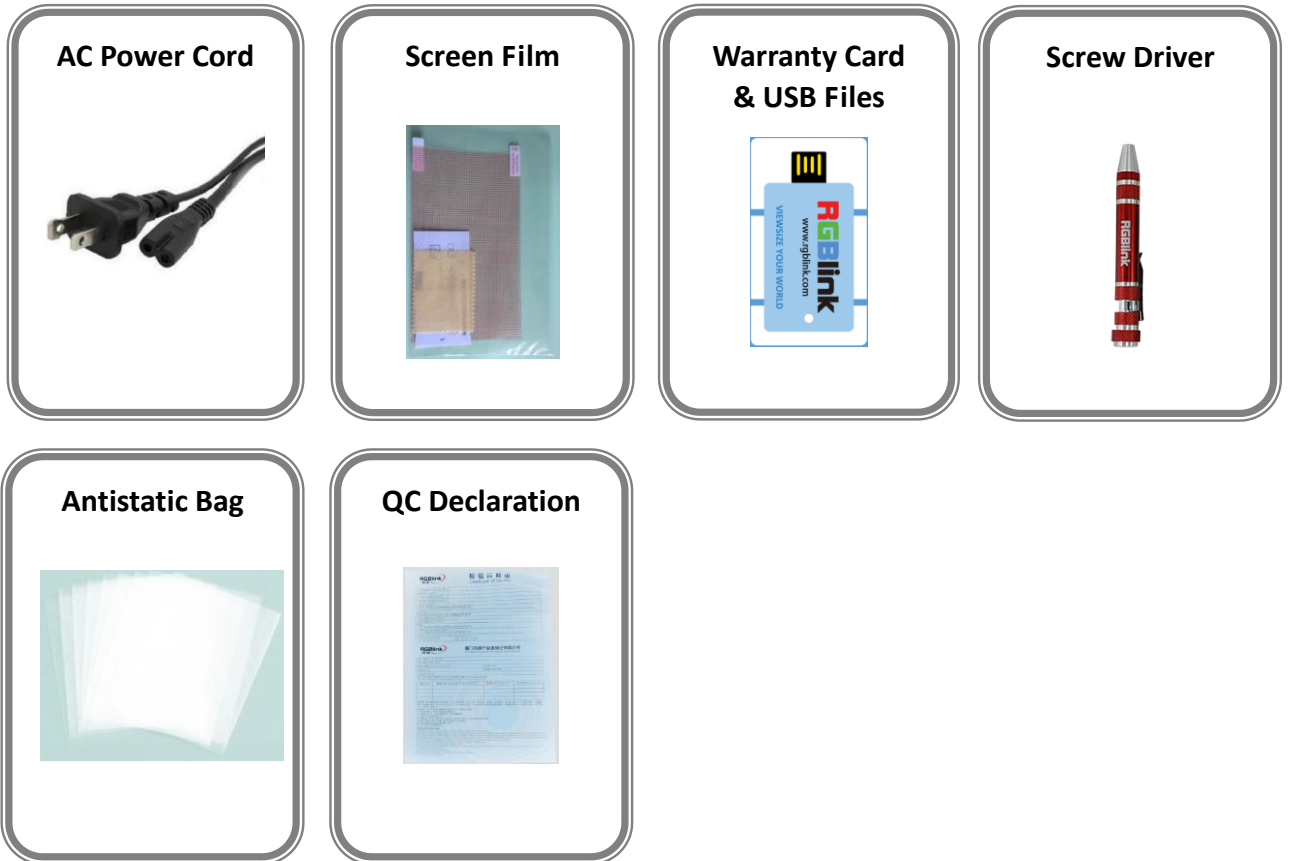
Once you have removed all the components from their packaging and checked that all the listed components are present, visually inspect the system to ensure there was no damage during shipping. If there is damage, notify the shipping carrier immediately for all claims adjustments.

Site Preparation

The environment in which you install your RMS 8424S should be clean, properly lit, free from static, and have adequate power, ventilation, and space for all components.

Chapter 1 Your Product

1.1 In the Box



Note:

USB is contained on the Warranty/Registration Card. Please keep.

1.2 Product Overview

- **High Resolution LCD Panel**

Consists of two 8-inch, 16:9, 1024X3 (RGB) ×600LCD panel, with wide viewing angle and 19-inch 4U rack mount.
- **Underscan and Overscan**

Switch between underscan and overscan mode.
- **Pixel to pixel zoom-in**

The real time zoom-in function is to enlarge to the input video as pixel to pixel from the center.
- **Safe area**

The safe area is offered to mark an area of picture that can be seen on the television screens.
- **Multi Input/Output**

Support SDI, DVI, VGA and CVBS loop out.
- **3G-SDI Input**

Accept 3G/HD/SD SDI input.
- **SDI embed audio output**

Convert SDI embed audio to analog and output via 3.5mm earphone.
- **HDMI embed audio output**

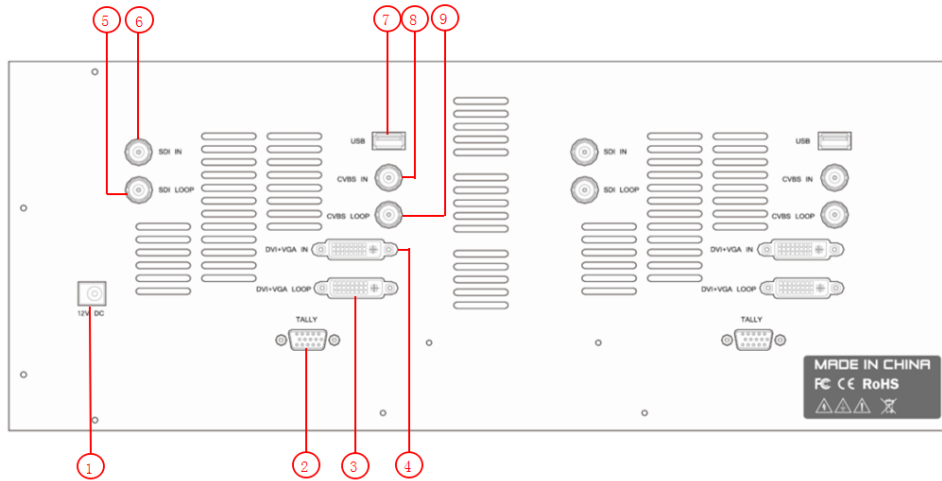
Convert HDMI embed audio to analog and output via 3.5mm earphone.
- **Image flip**

Rotate the image by 180°.
- **User defined function keys**

There are 2 function keys on the monitor front panel, and users could define the functions to achieve shortcut.
- **User defined video title**

User can edit a video title for the current camera, and the title will display on the top of screen.

1.2.1 Back Panel



Input Connectors

4	<p><u>DVI-I – DVI</u> Standard DVI signals can input. Additionally this DVI port supports VGA with the use of a DVI to VGA adapter. The DVI port supports up to HDMI 1.3 if the port format is set to HDMI.</p>
6	<p><u>BNC – 3G-SDI</u> Standard 3G-SDI signals can input.</p>
8	<p><u>BNC-CVBS</u> Standard CVBS signals can input.</p>

Output Connectors

3	<p><u>DVI-I – DVI LOOP</u> Connect to the DVI input of the next RMS 8424S or the device with DVI input.</p>
5	<p><u>BNC – 3G-SDI LOOP</u> Connect to the SDI input of the next RMS 8424S or the device with SDI input.</p>
9	<p><u>BNC – CVBS LOOP</u> Connect to the CVBS input of the next RMS 8424S or the device with CVBS input. Note: it is valid only when switch the signal to AV channel.</p>

Control Connectors

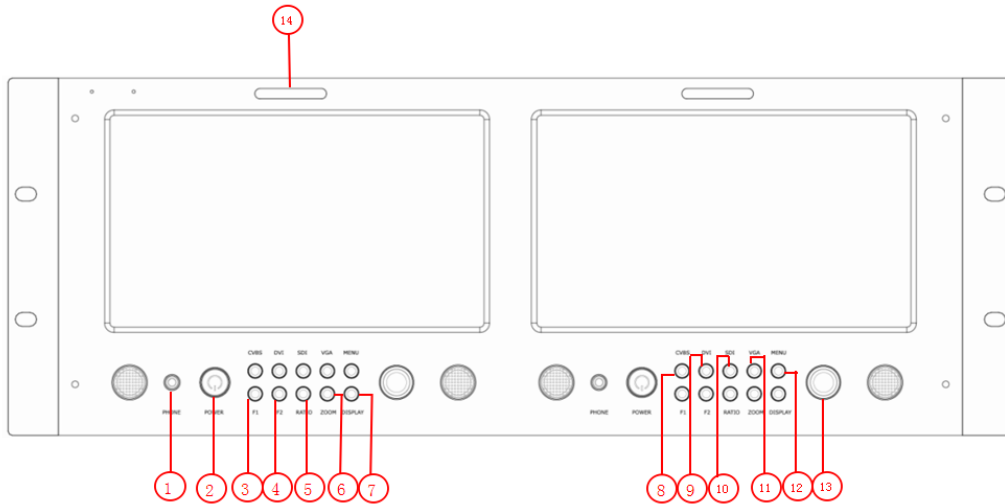
2	<u>TALLY</u>	
	TALLY control port (RS-232). The electrical level is as follows:	
	Electrical level: $\leq 5V$	
	Voltage	Tally light condition
	$\leq 0.5V$	ON
	$\geq 1.3V$	OFF

	0.5V-1.3V	Indeterminate state
7	<u>USB-B – USB</u> Used to software upgrade and video playing.	

Power Connection

1	<u>Power Input</u> Connect with DC12V power adapter. And the power polarity is negative inside and cathode outside.
---	---

1.2.2 Front Panel



3.5mm Earphone Jack

1	<p><u>PHONE</u></p> <p>3.5mm Earphone jack, for HDMI (supported by DVI input) and SDI embedded audio monitoring.</p>
---	---

Power

2	<p><u>POWER</u></p> <p>Power on/off indicator.</p> <p>Plug in the power cord, push “POWER” button and the power indicator is turned on, and after 10 seconds, the monitor will be switched on and get into working status.</p> <p>Push the “POWER” button again, the indicator is turned off and monitor is switched off. The monitor will memory the state before shutdown, and will keep the state when startup the computer next time.</p> <p>Note: Disconnect with power cable if the monitor will not be used for a period of time.</p>
---	---

Multi-Function Buttons

13	<p><u>Rotary Button</u></p> <p>This button used for menu selections and confirmation.</p> <p>Note: Push the knob to adjust volume when exit the menu system.</p>
----	---

Buttons

3.4	<p><u>F1/F2 Button</u></p> <p>User defined function key.</p>
5	<p><u>RATIO Button</u></p> <p>Push the button, user can choose the ration 16:9 or 4:3.</p>

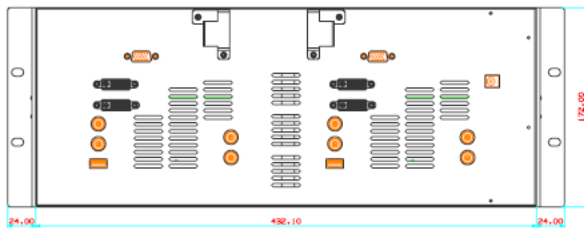
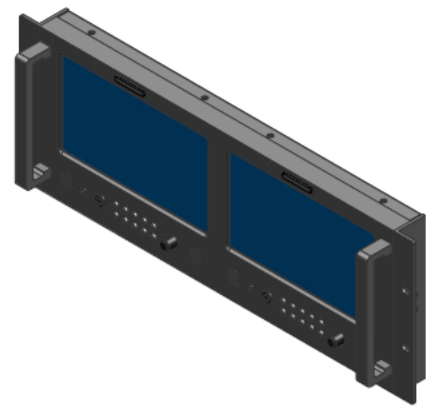
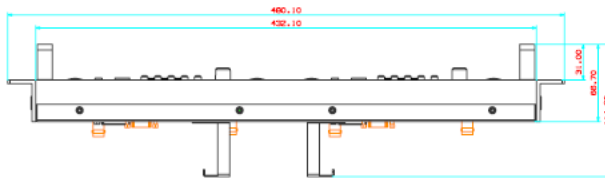
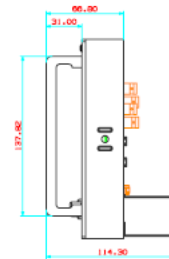
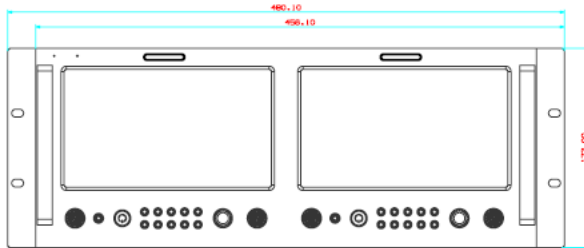
6	<u>ZOOM Button</u> Push the button, and turn the knob to zoom the pictures.
7	<u>DISPLAY Button</u> Push the button to display safety mark, title and the current input signal information.
8~11	<u>Dedicated Signal Buttons</u> For each of inputs on the back panel a dedicated backlit buttons are provided. Push the knob, the signal is selected.
12	<u>MENU Button</u> This button used for menu selections – refer to Using the Menu . Push the button again will return to the last level menu or exit the menu.

TALLY Light

14	<u>TALLY Light</u> Red, Green and Yellow TALLY indicator.
----	---

1.2.3 Dimension

Following is the dimension of RMS 8424S for your reference:



Chapter 2 Installing Your Product

2.1 Plugging in Signals

Connect signals to the product (ensure all devices are powered off first). Tighten connector screws/locks where provided.



2.2 Plugging in Main Power

Connect IEC cable to device and plug into wall socket. Turn on power at wall socket.

2.3 Turning on Your Product

Push "POWER" button and the power indicator is turned on, and after 10 seconds, the monitor will be switched on and get into working status.

Chapter 3 Using Your Product

3.1 Using the MENU Button

Language setting

The language in menu is optional, it includes Chinese, English, etc. English is the default language. Following is the operation for how to change English to Chinese, and the opposite applies as well.

1. Push the “MENU” button to enter to menu system.
2. Rotate the knob to select “OSD” and push the knob to confirm.
3. Enter to “OSD” option to select “LANGUAGE” and push the knob to confirm.
4. Rotate the knob to change “ENGLISH” to “CHINESE”.
5. Push the “MENU” button to return to menu system.

Submenu setting

1. Push the “MENU” button and it will display menu system.
2. Rotate the knob to select an item. The selected item will be highlighted display yellow.
Push the knob (select yellow) to enter the selected item, rotate the knob to select the parameter.
3. Under menu system, push the “MENU” button to back to previous menu, then push the “MENU” button to exit.

3.2 Using the Menu

3.2.1 System Submenu



The System Submenu includes:

1. **RATIO:** Aspect ratio has two options, 16:9 and 4:3.
2. **SCAN:** “UnderScan” / “OverScan” selection.
3. **ZOOM:** “OFF”, “Zoom1” and “Zoom2” selection.
 - Zoom1: Canon DSLR scale zoom-in.
 - Zoom2: Pixel to Pixel zoom-in.
4. **MARKER:** Select and set the safe area scale from 80%, 85%, 90% 95% and user. In user mode, user can adjust the width, height, POS X and POS Y of the marker.
5. **FLIP:** Select “ON” and push the knob to flip the picture by 180°.
6. **FAC RESET:** Select “ON” to recover all to factory setting.
7. **TITLE:** User defined title.

Yellow is the selected letters, rotate the knob to select the letters, and push the knob to input. Max 10 letters are supported. After setting, push the knob to confirm, the system will display the user defined title.

3.2.2 Picture Submenu

SYSTEM	PICTURE	OSD	DISPLAY	FKEY	VGA Setup
	CONTRAST		50		
	BRIGHTNESS		50		
	SATURATION		50		
	SHARPNESS		50		
	CLR TEMP		Medium		
	PIC MODE		Standard		
	HUE		50		

▲ ▼
↶ MENU
⊙ OK

The Picture Submenu includes:

1. CONTRAST: The adjustment range is 0~100.
2. BRIGHTNESS: The adjustment range is 0~100.
3. SATURATION: The adjustment range is 0~100.
4. SHARPNESS: The adjustment range is 0~100.
5. COLOR TEMP: Color temperature, the selections includes: cool, medium, warm and user.
6. PIC MODE: User defined and preset picture modes, including dynamic, standard, mild and user.
7. HUE: 0~100 (Only available under CVBS NTSC input, other signal display gray and can not be adjusted).

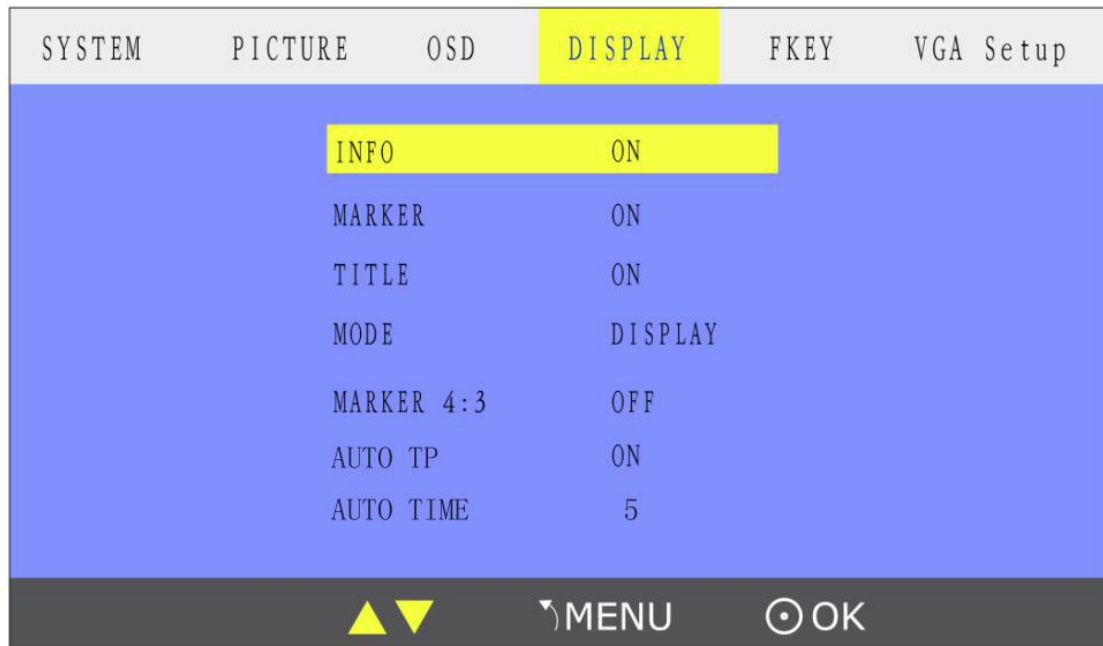
3.2.3 OSD Submenu



The OSD Submenu includes:

1. LANGUAGE: Can choose Chinese or English.
2. H-POSITION: Adjust the horizontal position of the menu window, the adjustment range is 0~100.
3. V-POSITION: Adjust the vertical position of the menu window, the adjustment range is 0~100.
4. DURATION: Menu timeout setting, the adjustment range is 5-60s, choose "Off", it will automatically exit if no operation, system default "Off".

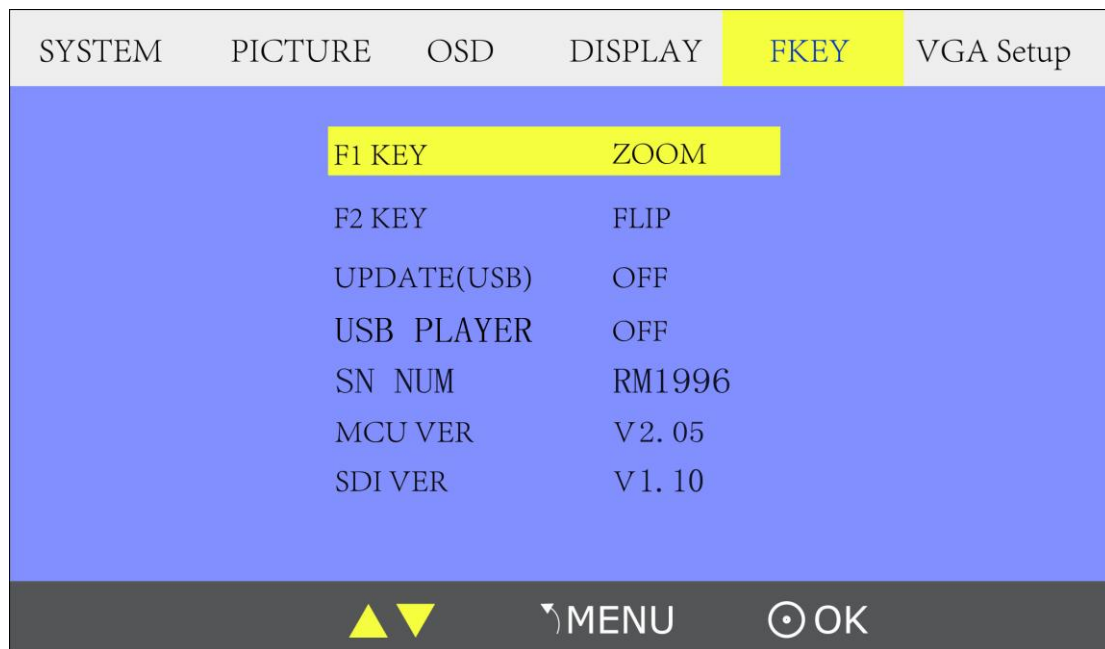
3.2.4 Display Submenu



Enter to "DISPLAY" submenu, to set the following items:

1. INFO: Select "ON", screen will display input signal, "RATIO", "SCAN", "MARKER", "FLIP", "ZOOM" and marker set information at the up-left.
Push the "F1" button to adjust the width of the marker, and push the "F2" button to adjust the height of the marker.
2. MARKER: Safe area. Select "ON", screen will display the safe area, and select "OFF" to close it.
3. TITLE: User edited title.
4. MODE: "DISPLAY" or "TP". Select and push "DISPLAY" option, screen will display the image.
Select "TP" and push "DISPLAY", screen will display test patterns to check if LCD screen operate normally.
5. MARKER 4:3: Choose "ON", then 4:3 scale mark on image.
6. AUTO TP: Choose "ON", and open the auto test pattern function.
7. AUTO TIME: The auto switch time adjustment range is 5 to 30S.

3.2.5 F Key Submenu



Enter to “FKEY” submenu, user defined F1/F2 functions.

The available function items are:

- RATIO: Aspect ratio switch.
- SCAN: Underscan / Overscan switch.
- ZOOM: Picture Zoom-in.
- FLIP: Image flip.
- PIC MODE: Preset picture mode switch.
- CLR TEMP: Color-temperature switch.
- BW/COLOR: Color / Black & white switch.
- AUTO TP: Auto test patterns.

UPDATE (USB): Via USB input, enter to “Software Upgrade (USB)”, and select “ON” can achieve upgrade software.

USB PLAYER: “ON” or “OFF”, choose “ON”, user can open USB player.

SN NUM: Display the serial number (For read only).

MCU VER: Display the software version information (For read only).

SDI Version: Display the SDI version information (For read only).

3.2.6 VGA Setup Submenu



Enter to "VGA Setup" submenu to adjust VGA-HPOS (0~100), VGA-VPOS (0~100), CLOCK (0~100), PHASE (0~100). Also can select "ON" at "AUTO ADJUST" to adjust when input VGA signal.

3.3 Turn on/off the Monitor

1. Plug in the power cord.
2. Push the “POWER” button, key light lights, about 10 seconds later, the monitor begins to work.
3. Push the “POWER” button again, key light goes out, the monitor is in standby state.
4. Disconnect the power, the monitor is turned off.

The monitor will memory the state before shutdown, and will keep the state when start the computer next time.

Note

Disconnect with power cable if the monitor will not be used for a period of time.

3.4 Monitor the Audio

First, ensure the monitor power on and in normal operation.

Specific operations are as follows:

1. Push the “SDI” or “DVI” button, user can monitor SDI and HDMI (supported by DVI input) embedded audio.
2. Push the knob, (or wait for about 5 seconds when out of menu system), rotate the knob to choose the desired volume.



3.5 User Defined the Function Key

First, ensure the monitor power on and in normal operation.

Specific operations are as follows:

1. Push the "MENU" button, and enter to "MENU" system. Rotate the knob, and choose "FKEY" option, push the knob to confirm.



2. Rotate the knob, and choose "F1 KEY" or "F2 KEY", push the knob to confirm.
3. Rotate the knob to choose items, push the knob to confirm.



3.6 Display Aspect Ratio

First, ensure the monitor power on and in normal operation.

Specific operations are as follows:

1. Push the "RATIO" button.
2. Rotate the knob to choose the aspect ratio, aspect ratio has two options, 16:9 and 4:3.



3. Push the knob to confirm.

3.7 Display Current Settings

1. First, ensure the monitor power on and in normal operation.
2. Push the “DISPLAY” button, the LCD screen displays the current input signal information, including:

VGA

RATIO

SCAN

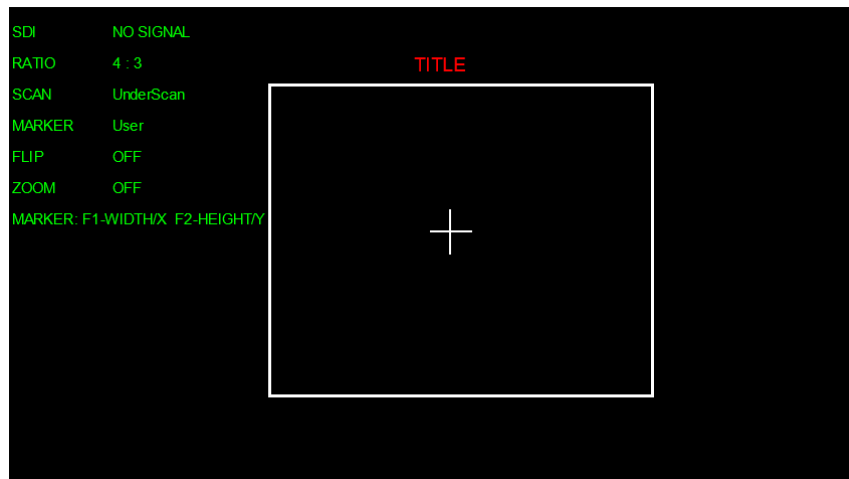
MARKER

FLIP

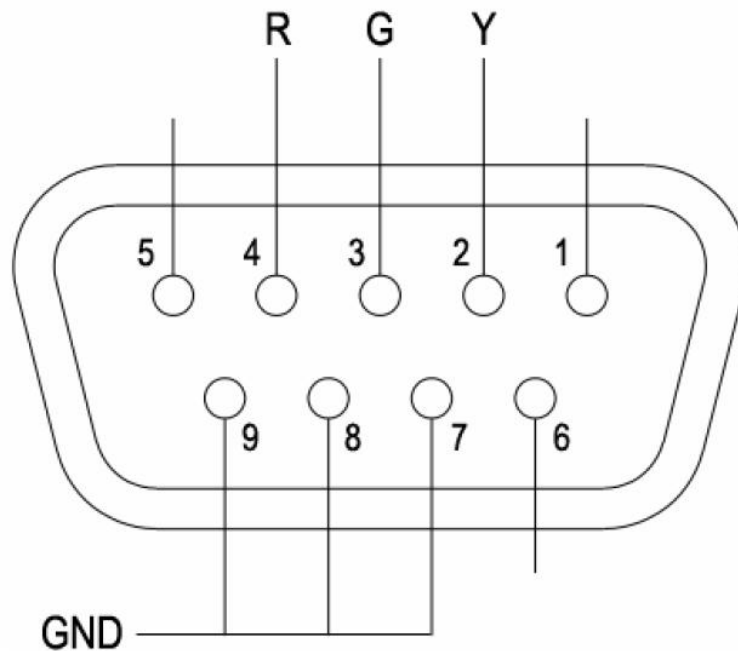
ZOOM

MARKER: Push the “F1” button to adjust the width of the marker, and push the “F2” button to adjust the height of the marker.

As shown below:



3.8 Using TALLY Light



Terminal	1	2	3	4	5	6	7	8	9
Description		Y	G	R			GND	GND	GND

1. There are front TALLY lights on each of the display units, which can display RED, GREEN and YELLOW signals.
2. The TALLY light controlling port is the RS-232 socket at the rear panel, and terminal description as above.
3. The RED light is on when connecting the terminal "R" with "GND", and goes out when disconnecting.
4. The GREEN light is on when connecting the terminal "G" with "GND", and goes out when disconnecting.
5. The YELLOW light is on when connecting the terminal "Y" with "GND", and goes out when disconnecting.

Chapter 4 Ordering Codes

4.1 Product

400-8424-01-0	Dual LCD Preview Monitors
400-8424-02-0	Dual LCD Preview Monitors w/SDI

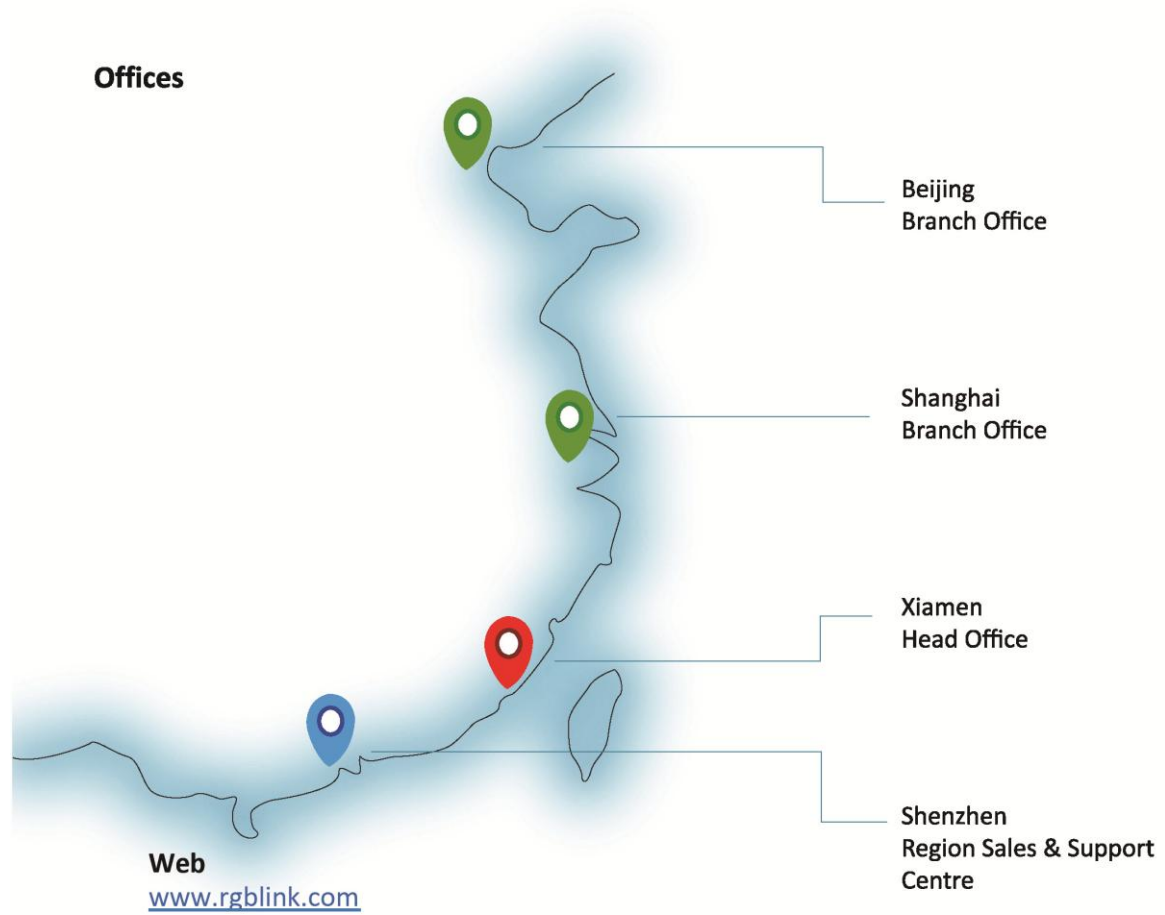
4.2 Options

4.2.1 Input Options

490-5353-01-0	SDI Input Module Option
---------------	-------------------------

Chapter 5 Support

5.1 Contact Us



Web
www.rgblink.com

Phone
+86-592-577-1197

Email
Sales sales@rgblink.com
Support support@rgblink.com

Social Media



@RGLINK



/rgblink



+rgblink



/rgblink



rgblink

Chapter 6 Appendix

6.1 Specification

LCD Displays	
Size	8"
Native Resolution	1024x600px
Native Display Ratio	16:9
Contrast	700:1
Viewing Angle	140°x140°
Brightness (max)	500cd/m ²
Display Refresh	15KHz – 120KHz
CVBS Input	
Number of Inputs	2
Connector	Standard BNC Socket
Supported Standards	PAL/NTSC
Signal Level	1Vpp±3db (0.7V Video+0.3v Sync) 75 ohm
Multiplex	480i,576i
3G-SDI Input	
Number of Inputs	2
Connector	Standard BNC Socket
Data Rate	2.97Gb/s, 2.97/1.001Gb/s, 1.485Gb/s, 1.485/1.001Gb/s and 270Mb/s
Supported Standard	SMPTE 422, SMPTE 259M-C, SMPTE 292M
Supported Resolution	480i@60 576i@50 720p@50/60 1080i@@50/60 1080p@50/60
Balance	Belden 1694A cable: 150m at 2.97Gb/s 250m at 1.485Gb/s 480m at 270Mb/s
DVI Input	
Number of Inputs	2
Connector	Standard DVI-I socket
Supported Resolution	SMPTE: 480i@60 480p@60 576p@50 720p@50/60 1080i@@50/60 1080p@50/60 VESA: 640x480@60 800x600@60 1024x768@60 1280x1204@60 1440x1440@60 1440x1530@60 1523x1536@60 1600x1200@60 1920x1200@60 2048x1152@60 2560x816@60 2688x896@60 2700x1000@60 2800x990@60 2900x959@60 2986x931@60 3840x670@60 3840x733@60
Signal Level	TMDS pwl, single pixel input,165MHz bandwidth
Format Standard	HDMI 1.3
VGA Input	

Number of Inputs	2
Connector	Standard DB15 Socket
Supported Standard	VGA-UXGA
Signal Level	R, G, B, Hsync, Vsync: 0 to1Vpp±3dB (0.7V Video+0.3v Sync) 75 ohm black level: 300mV Sync-tip: 0V
Supported Resolution	640x480@60 800x600@60 1024x768@60 1280x1204@60 1600x1200@60 1920x1200@60
DVI Loop Out	
Number of Loop Out	2
Connector	Standard DVI-I socket
Supported Resolution	SMPTE: 480i@60 480p@60 576p@50 720p@50/60 1080i@ @50/60 1080p@50/60 VESA: 640x480@60 800x600@60 1024x768@60 1280x1204@60 1440x1440@60 1440x1530@60 1523x1536@60 1600x1200@60 1920x1200@60 2048x1152@60 2560x816@60 2688x896@60 2700x1000@60 2800x990@60 2900x959@60 2986x931@60 3840x670@60 3840x733@60
Signal Level	TMDS pwl, single pixel input,165MHz bandwidth
Format Standard	HDMI 1.3
SDI Loop Out	
Number of Loop Out	2
Connector	Standard BNC Socket
Data Rate	2.97Gb/s, 2.97/1.001Gb/s, 1.485Gb/s, 1.485/1.001Gb/s and 270Mb/s
Supported Standard	SMPTE 422, SMPTE 259M-C, SMPTE 292M
Supported Resolution	480i@60 576i@50 720p@50/60 1080i@ @50/60 1080p@50/60
Extras	
Power	5.4mm DC Socket
Max Power	24W
Temperature	0°C~40°C
Humidity	10% to 85%
Product Warranty	3 years parts and labor warranty

6.2 Installing Input Options

SDI is the optional module for RMS 8424S Rack Mount Monitor, it can be installed based on user's requirements.

The following is the picture of SDI input module:



Specific installation steps are as follows:

Step 1: Unscrew the screw above the rear panel with the screwdriver, take the rear panel apart.



Step 2: Take two circuit boards inside apart respectively, the red box in circuit board is the area for SDI input module installation.



Step 3: Install the SDI input module in the area as shown above, then tighten the screws, install it one by one.



Step 4: When SDI input module installation complete, assemble the two circuit boards, and lock the rear panel, adding SDI input module finished.



6.3 Terms & Definitions

The following terms and definitions are used throughout this guide.

- **“ASCII”**: American Standard for Information Interchange. The standard code consisting of 7-bit coded characters (8 bits including parity check) used to exchange information between data processing systems, data communication systems, and associated equipment. The ASCII set contains control characters and graphic characters.
- **“Aspect ratio”**: The relationship of the horizontal dimension to the vertical dimension of an image. In viewing screens, standard TV is 4:3, or 1.33:1; HDTV is 16:9, or 1.78:1. Sometimes the “:1” is implicit, making TV = 1.33 and HDTV = 1.78.
- **“AV”**: Audio visual, or audio video.
- A **“Background”** is an unscaled source, typically originating from a computer. A background source appears at the system’s lowest priority — visually in back of all other sources.
- **“Baudrate”**: Named of J.M.E. Baudot, the inventor of the Baudot telegraph code. The number of the electrical oscillations per second, called baud rate. Related to, but not the same as, transfer rate in bits per second (bps).
- **“Blackburst”**: The video waveform without the video elements. It includes the vertical sync, horizontal sync, and the chroma burst information. Blackburst is used to synchronize video equipment to align the video output. One signal is normally used to set up an entire video system or facility. Sometimes it is called House sync.
- **“BNC”**: Bayonet Neill-Concelman. A cable connector used extensively in television and named for its inventors. A cylindrical bayonet connector that operates with a twist-locking motion. To make the connection, align the two curved grooves in the collar of the male connector with the two projections on the outside of the female collar, push, and twist. This allows the connector to lock into place without tools.
- **“Brightness”**: Usually refers to the amount or intensity of video light produced on a screen without regard to color. Sometimes called “black level.
- **“CAT 5”**: Category 5. Describes the network cabling standard that consists of four unshielded twisted pairs of copper wire terminated by RJ-45 connectors. CAT 5 cabling supports data rates up to 100 Mbps. CAT 5 is based on the EIA/TIA 568 Commercial Building Telecommunications Wiring Standard.
- **“Color bars”**: A standard test pattern of several basic colors (white, yellow, cyan, green, magenta, red, blue, and black) as a reference for system alignment and testing. In NTSC video, the most commonly used color bars are the SMPTE standard color bars. In PAL video, the most commonly used color bars are eight full field bars. In the computer, the most commonly used color bars are two rows of reversed color bars.
- **“Color burst”**: In color TV systems, a burst of subcarrier frequency located on the back porch of the composite video signal. This serves as a color synchronizing signal to establish a frequency and phase reference for the chroma signal. Color burst is 3.58 MHz for NTSC and 4.43 MHz for PAL.
- **“Color temperature”**: The color quality, expressed in degrees Kelvin(K), of a light source. The higher the color temperature, the bluer the light. The lower the temperature, the

redder the light. Benchmark color temperature for the A/V industry include 5000°K, 6500°K, and 9000°K.

- **“Contrast ratio”**: The ratio of the high light output level divided by the low light output level. In theory, the contrast ratio of the television system should be at least 100:1, if not 300:1. In reality, there are several limitations. In the CRT, light from adjacent elements contaminate the area of each element. Room ambient light will contaminate the light emitted from the CRT. Well-controlled viewing conditions should yield a practical contrast ratio of 30:1 to 50:1.
- **“DVI”**: Digital Visual Interface. The digital video connectivity standard that was developed by DDWG (Digital Display Work Group). This connection standard offers two different connectors: one with 24 pins that handles digital video signals only, and one with 29 pins that handles both digital and analog video.
- **“EDID”**: Extended Display Identification Data – EDID is a data structure used to communicate video display information, including native resolution and vertical interval refresh rate requirements, to a source device. The source device will then output the optimal video format for the display based on the provided EDID data, ensuring proper video image quality. This communication takes place over the DDC – Display Data Channel.
- **“Ethernet”**: A Local Area Network (LAN) standard officially known as IEEE 802.3. Ethernet and other LAN technologies are used for interconnecting computers, printers, workstations, terminals, servers, etc. within the same building or campus. Ethernet operates over twisted pair and over coaxial cable at speeds starting at 10Mbps. For LAN interconnectivity, Ethernet is physical link and data link protocol reflecting the two lowest layers of the OSI Reference Model.
- **“Frame”**: In interlaced video, a frame is one complete picture. A video frame is made up of two fields, or two sets of interlaced lines. In a film, a frame is one still picture of a series that makes up a motion picture.
- **“Gamma”**: The light output of a CRT is not linear with respect to the voltage input. The difference between what you should have and what is actually output is known as gamma.
- **“HDMI” - High – Definition Multimedia Interface**: An interface used primarily in consumer electronics for the transmission of uncompressed high definition video, up to 8 channels of audio, and control signals, over a single cable. HDMI is the de facto standard for HDTV displays, Blu-ray Disc players, and other HDTV electronics. Introduced in 2003, the HDMI specification has gone through several revisions.
- **“HDSDI”**: The high-definition version of SDI specified in SMPTE-292M. This signal standard transmits audio and video with 10 bit depth and 4:2:2 color quantization over a single coaxial cable with a data rate of 1.485 Gbit/second. Multiple video resolutions exists including progressive 1280x720 and interlaced 1920x1080 resolution. Up to 32 audio signals are carried in the ancillary data.
- **“JPEG” (Joint photographic Expects Group)**: Commonly used method of lossy compression for photographic images using a discreet cosine transfer function. The degree of compression can be adjusted, allowing a selectable tradeoff between storage size and image quality. JPEG typically achieves 10:1 compression with little perceptible loss in image quality. Produces blocking artifacts.
- **“MPEG”**: Motion Picture Expects Group. A standard committee under the auspices of the

International Standards Organization working on algorithm standards that allow digital compression, storage and transmission of moving image information such as motion video, CD-quality audio, and control data at CD-ROM bandwidth. The MPEG algorithm provides inter-frame compression of video images and can have an effective compression rate of 100:1 to 200:1.

- **“NTSC”**: The color video standard used in North America and some other parts of the world created by the National Television Standards Committee in the 1950s. A color signal must be compatible with black-and-white TV sets. NTSC utilizes an interlaced video signals, 525 lines of resolution with a refresh rate of 60 fields per second (60 Hz). Each frame is comprised of two fields of 262.5 lines each, running at an effective rate of 30 frames per second.
- **“Operator”**: Refers to the person who uses the system.
- **“PAL”**: Phase Alternate Line. A television standard in which the phase of the color carrier is alternated from line to line. It takes four full pictures (8 fields) for the color-to-horizontal phase relationship to return to the reference point. This alternation helps cancel out phase errors. For this reason, the hue control is not needed on a PAL TV set. PAL, in many transmission forms, is widely used in Western Europe, Australia, Africa, the Middle East, and Micronesia. PAL uses 625-line, 50-field (25 fps) composite color transmission system.
- **“PIP”**: Picture-in-Picture. A small picture within a larger picture created by scaling down one of the images to make it smaller. Each picture requires a separate video source such as a camera, VCR, or computer. Other forms of PIP displays include Picture-by-Picture (PBP) and Picture-with-Picture (PWP), which are commonly used with 16:9 aspect display devices. PBP and PWP image formats require a separate scaler for each video window.
- **“Polarity”**: The positive and negative orientation of a signal. Polarity usually refers to the direction or a level with respect to a reference (e.g. positive sync polarity means that sync occurs when the signal is going in the positive direction).
- **“RJ-45”**: Registered Jack-45. A connector similar to a telephone connector that holds up to eight wires, used for connecting Ethernet devices.
- **“RS-232”**: An Electronic Industries Association (EIA) serial digital interface standard specifying the characteristics of the communication path between two devices using either DB-9 or DB-25 connectors. This standard is used for relatively short-range communication and does not specify balanced control lines. RS-232 is a serial control standard with a set number of conductors, data rate, word length, and type of connector to be used. The standard specifies component connection standards with regard to the computer interface. It is also called RS-232-C, which is the third version of the RS-232 standard, and is functionally identical to the CCITT V.24 standard.
- **“Saturation”**: Chroma, chroma gain. The intensity of the color, or the extent to which a given color in any image is free from white. The less white in a color, the truer the color or the greater its saturation. On a display device, the color control adjusts the saturation. Not to be confused with the brightness, saturation is the amount of pigment in a color, and not the intensity. Low saturation is like adding white to the color. For example, a low-saturated red looks pink.
- **“Scaling”**: A conversion of a video or computer graphic signal from a starting resolution to a new resolution. Scaling from one resolution to another is typically done to optimize the

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- signal for input to an image processor, transmission path or to improve its quality when presented on a particular display.
- **“SDI”**: Serial Digital Interface. The standard based on a 270 Mbps transfer rate. This is a 10-bit, scrambled, polarity independent interface with common scrambling for both component ITU-R 601 and composite digital video and four channels of (embedded) digital audio.
 - **“Seamless Switching”**: A feature found on many video switchers. This feature causes the switcher to wait until the vertical interval to switch. This avoid a glitch (temporary scrambling) which normally is seen when switching between sources.
 - **“SMPTE”**: Society of Motion Picture and Television Engineers. A global organization, based in the United States, that sets standards for baseband visual communications. This includes film as well as video and television standards.
 - **“S-Video”**: A composite video signal separated into the luma (“Y” is for luma, or black and white information; brightness) and the chroma (“C” is an abbreviation for chroma, or color information).
 - **“Sync”**: Synchronization. In video, sync is a means of controlling the timing of an event with respect to other events. This is accomplished with timing pulses to insure that each step in a process occurs at the correct time. For example, horizontal sync determines exactly when to begin each horizontal scan line. Vertical sync determines when the image is to be refreshed to start a new field or frame. There are many other types of sync in video system.(Also known as “sync signal” or “sync pulse.”)
 - **“TCP/IP”**: Transmission Control Protocol/Internet Protocol. The communication protocol of the Internet. Computers and devices with direct access to the Internet are provided with a copy of the TCP/IP program to allow them to send and receive information in an understandable form.
 - **“USB”**: Universal Serial Bus. USB was developed by seven PC and telecom industry leaders (Compaq, DEC, IBM, Intel, Microsoft, NEC, and Northern Telecom). The goal was easy plug-and-play expansion outside the box, requiring no additional circuit cards. Up to 127 external computer devices may be added through a USB hub, which may be conveniently located in a keyboard or monitor. USB devices can be attached or detached without removing computer power. The number of devices being designed for USB continues to grow, from keyboards, mice, and printers to scanners, digital cameras, and ZIP drives.
 - **“VESA”**: Video Electronics Standards Association. A nonprofit number organization dedicated to facilitating and promoting personal computer graphics through improved standards for the benefit of the end-user. www.vesa.org
 - **“VGA”**: Video Graphics Array. Introduced by IBM in 1987, VGA is an analog signal with TTL level separate horizontal and vertical sync. The video outputs to a 15-pin HD connector and has a horizontal scan frequency of 31.5 kHz and vertical frequency of 70 Hz (Mode 1, 2) and 60 Hz (Mode 3). The signal is non-interlaced in modes 1, 2, and 3 and interlaced when using the 8514/A card (35.5 kHz, 86 Hz) in mode 4. It has a pixel by line resolution of 640×480 with a color palette of 16 bits and 256,000 colors.
 - **“YCrCb”**: Used to describe the color space for interlaced component video.
 - **“YPbPr”**: Used to describe the color space for progressive-scan (non-interlaced) component video.

6.4 Revision History

The table below lists the changes to the Video Processor User Manual.

Format	Time	ECO#	Description	Principal
V 1.0	2014-04-14	0000	Release	Vira
V 1.1	2015-01-12	0001	Add "MARKER" in Display menu.	Vira
V 1.2	2015-08-14	0002	<ol style="list-style-type: none"> 1. Add the "Hardware Installation". 2. Add the electrical level of tally light. 3. Update the company logo. 	Vira
V 1.3	2015-10-27	0003	<ol style="list-style-type: none"> 1. Update the product picture. 2. Update the front and back panel. 3. Update the dimension drawing. 	Vira
V 1.4	2016-10-17	0004	<ol style="list-style-type: none"> 1. Update the style and structure of the user manual. 2. Update the specification. 	Vira