*v*MON-240-4K+

12G/6G/3G/HD/SD-SDI, HDMI 4K Video Monitor

User Guide

Part Number 821858, Revision A

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Introduction

Overview

The *v*MON-240-4K+ is a full-featured 24-inch video monitor ideal for news and transmission control rooms, 4K production/post-production and video surveillance applications. It comes standard with in-monitor audio level metering, safe area and aspect ratio markers, IMD labeling, tally, and built-in color bars, as well as a variety of picture controls and production video features such as zoom controls and focus assist. It supports a large variety of professional broadcasting features such as Histogram and Vectorscope, making it a brilliant monitor in 4K production workflows.

The *v*MON-240-4K+ supports a variety of 12G/6G/3G/HD/SD-SDI and HDMI source inputs and outputs. Quad-link supports up to a 4096×2160 60p signal. The 4K HDR display supports PQ(ST2084) and HLG and is a cost effective 4K monitoring choice for a variety of 4K and FHD workflows.

All standard frame rates and resolutions are supported from 12G-SDI, 6G-SDI, 3G-SDI, and HDMI input sources, and the dual SDI inputs have a selected SDI looping output. Up to 16 audio channels may be selected for visual monitoring using on-screen bar graph style level meters. Front panel mounted stereo speakers provide monitoring audio.

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).

Important:

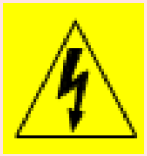
By design, the supplied AC mains power cord will only plug into a three-prong grounded outlet for your safety. If the plug does not fit into the outlet, contact an electrician to replace the obsolete outlet.

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

WARNING:



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.

Screen Maintenance

Please follow the guidelines below carefully to prevent discoloration, stains, and scratches on the screen:

- Avoid striking the screen with any object.
- Do not wipe the screen hard.
- Do not wipe the screen with solvents such as alcohol, thinner, or gasoline.
- Do not spray detergent or other cleaners on the monitor or LCD panel, as it may cause a fault because of water droplets entering the monitor.
- Do not write on the screen.
- Do not paste or stick any viscous markers on the screen.

The screen may be cleaned by gentle wiping with lint free cloth to remove dust. For the more thorough cleaning, use lint free cloth that has been very lightly dampened with detergent, and then dry any excess moisture from the monitor or LCD panel immediately to prevent damage.

LCD Display Care & Safety

Be gentle with the LCD screen. Do not let hard objects strike it or touch it.

- If the display screen should crack or break, causing the internal organic substance to leak out, do not inhale it or let it touch any part of your body.
- If the internal organic substance should touch your skin or clothing, immediately wash it off using soap and plenty of water.

LCD Display Cleaning

Do not use the following to clean the display screen. They may damage the polarizer.

- Water
- Ketone solvents (Ketone or acetone)
- Aromatic solvents (toluene or xylene)
- Ethyl alcohol
- Your breath

Wipe the screen with a very soft cloth or use Scotch 810 Magic Tape to adhere to the soiled surface of the LCD screen and then carefully peel it off along with the soil.

Mounting

Each 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: Clearance Recommendations

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).

Important

Heat generated by the power supplies and other components is vented by fans in the back of the unit. Therefore, as a safety precaution, you must allow proper ventilation on this surface.

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.

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. The internal circuitry ground is connected to the chassis.

Power

The *v*MON-240-4K+ monitor connects to an AC mains power source (100 to 240 VAC, 70W, 50/60Hz) using an IEC power cord. It may alternatively be powered via a 4-pin XLR connection by a 12V 6A battery (not supplied) or to 12V 6A power supply (not supplied) which connects to the AC mains power source (100 to 240 VAC, 70W, 50/60Hz) using an IEC power cord.

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 users 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

Operation

The *v*MON-240-4K+ In-Rack Series monitors can be operated easily and simply from controls on its front panel, as described in this chapter.

Front Panel

The front panel is shown in Figure 2-1.

Figure 2–1: *v*MON-240-4K+ Front Panel

1. **Power:** The **Power** indicator will be red when it is connected to power but the monitor is turned off. Pressing the **Power** button will turn on the monitor and this indicator will be lit blue. Pressing the **Power** button for 3 seconds will turn off the screen and return the indicator to red.
2. **LCD Screen**: The vMON-240-4K is equipped with a 24” high resolution (3840H x 2160V) LCD screen with high contrast (1000:1) and high luminance (1000 cd/m^2).

3. **Left/Right Speakers**: Local near field audio monitoring is achieved through the use of two (left/right) speakers. The speaker behavior may be adjusted with controls in the **Audio** menu. Refer to the **Front Panel Control Operation** section of this chapter.

4. **Function Keys**: There are five **Function Keys F1 – F5**. These keys are programmable buttons which may be set up to quickly turn a variety of display features and functions on or off. Refer to the **Function** descriptions in the **Menu and Options** section of this chapter.

5. **Menu**: This button allows you to enter or exit the monitor set up menus or return to a previous menu. All of the functions and features of the monitor can be adjusted within the menu structure. Refer to the **Menu and Options** section of this chapter.

6. **Volume L-R**: Rotate the **Volume/Mute** knob to adjust the level of the audio being heard in the speakers or in the headphone. Press the **Volume/Mute** knob to mute or unmute the audio.

   While the menus are activated after pressing the **Menu** button, rotate or press this knob to move left or right in the menu or to select various menu items. Refer to the **Menu Navigation** section of this chapter.

7. **Image Up-Dn**: Rotate this knob to adjust the image in various ways, as set up in the menus.

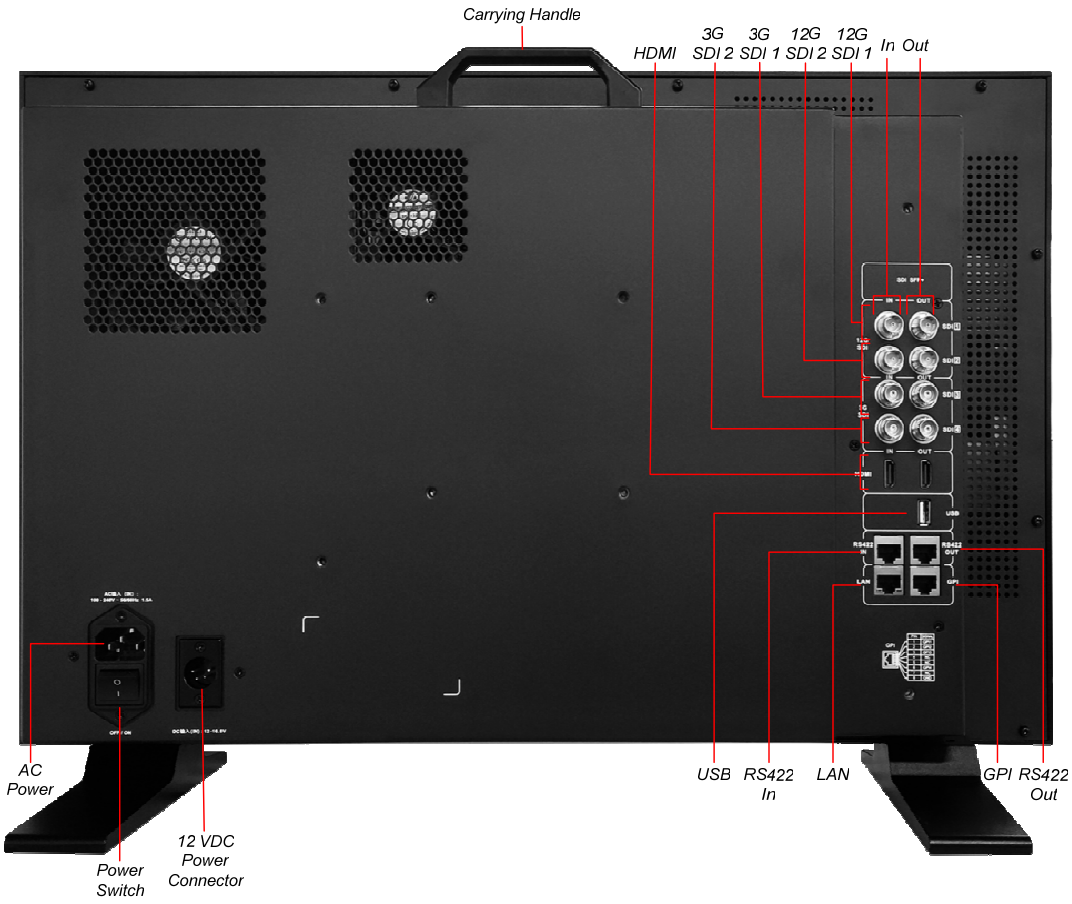
   While the menus are activated after pressing the **Menu** button, rotate or press this knob to move up or down in the menu or to select various menu items. Refer to the **Menu Navigation** section of this chapter.

8. **USB**: This USB 2.0 Type A connector allows you to use a flash drive (not supplied) to perform updates to the monitor FPGA, OSD, APP EDP software, or LUT file.
9. **Input SDI SDI HDMI**: This button is used to select which input is to be monitored.
10. **S-Mode**: Pressing the **S-Mode** key lights it blue. Following this press with the press of **Function Key F1** – **F5** with cause the User 1 – User 5 actions you have programmed in the menus to take effect.
11. **Headphone**: This analog stereo audio output may be used with a headphone or may provide a connection to an external stereo amplifier.
12. **Tally**: This indicator may be lit red, green, or yellow and is controlled by the GPI interface.

Rear Panel

A vMON-240-4K+ Rear Panel is shown in Figure 2-2.

Figure 2-2: *v*MON-240-4K+ Rear Panel



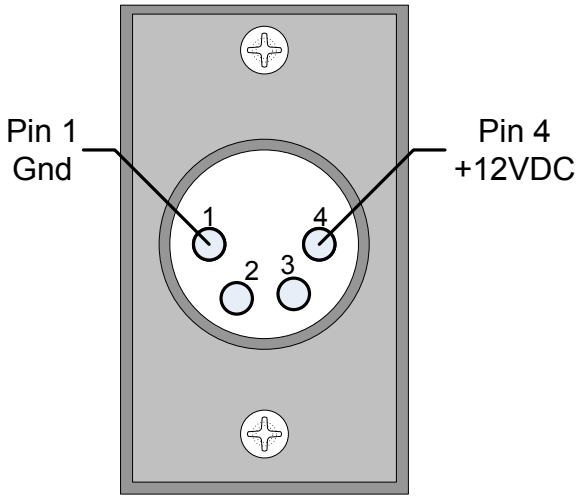
1. **AC Power**: The monitor receives power from the AC inlet, which is a standard IEC receptacle for 100 to 240 VAC ±10%, 50/60 Hz power connection. Four regional AC power cords, supplied according to shipping region, are available.

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.

2. **Main Power Switch**: This switch switches the power from the AC power connector. Normally the Power switch is kept in the "1" (On) position and the operation is controlled from the front panel controls.
3. **DC Power**: This is a 4-pin XLR-M jack. A 12V battery (not supplied) or a 12VDC 6A power supply (not supplied) can be connected to this connector for operation when not powered by the AC mains. The pinout of this connector is shown in Figure 2-3. Observe the polarity shown.

Figure 2-3: DC Power Connector Pinout



4. **12G SDI 1 In and 12G SDI 2 In**: These connectors receive two 12G/6G/3G/HD/SD-SDI signals to be monitored. Refer to the Tables and Block Diagrams in Chapter 3 of this manual.

5. **12G SDI 1 Out and 12G SDI 2 Out**: These connectors output the 12G/3G/HD/SD-SDI signals that are being monitored on the corresponding input connectors. Refer to the Tables and Block Diagrams in Chapter 3 of this manual.

6. **3G SDI 1 In and 3G SDI 2 In**: These connectors receive two 3G/HD/SD-SDI signals to be monitored. Refer to the Tables and Block Diagrams in Chapter 3 of this manual.

7. **3G SDI 1 Out and 3G SDI 2 Out**: These connectors output the 3G/HD/SD-SDI signals that are being monitored on the corresponding input connectors. Refer to the Tables and Block Diagrams in Chapter 3 of this manual.

8. **HDMI In**: An HDMI 2.0 input is provided. It will support a 4096x2160 60Hz (4K/60p) maximum signal.

9. **HDMI Out**: An HDMI 2.0 signal is output from this connector. It will support a 4096x2160 60Hz (4K/60p) maximum signal.

10. **RS-422 In**: A RS-422 connection is provided. This uses an adaptive TSL3.1, TSL4.0, or TSL5.0 protocol. This protocol supports a dynamic UMD/Tally control. The RS-422 interface operates at 38400 baud, 8-bit data, 1 stop bit and even parity. Refer to the pinout in Figure 2-4 and to the connection chart in Table 2-1.

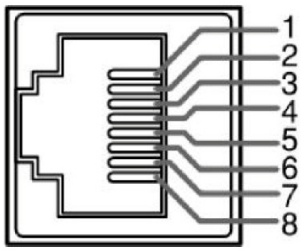
    Note: Use the RX+ and RX- pins for RS422 signal reception with TSL3.1 or TSL4.0 protocol for UMD and Tally control.

11. **RS-422 Out:** This provides a pass through for the signal connected to the **RS-422 In** connector.

Table 2-1: RS-422 Pin Descriptions

Pin	Function	Description
1	GND	Ground connection
2	GND	Ground connection
3	TX-	RS-422 TX-
4	RX+	RS422 RX+
5	RX-	RS422 RX-
6	TX+	RS-422 TX+
7	NC	No Connection
8	NC	No Connection

Figure 2-4: RS-422 Jack Pinout



12. **GPI**: A RS-422 connection is provided to provide external control or some of the monitor functions. Refer to the pinout in Figure 2-4 and to the descriptions in Table 2-2.

Table 2-2: GPI Pin Descriptions

Pin	Function	Description
1	GPI1	Enable GPI1 when low (GND). The GPI1 function can be set in a menu.
2	GPI2	Enable GPI2 when low (GND). The GPI2 function can be set in a menu.
3	GPI3	Enable GPI3 when low (GND). The GPI3 function can be set in a menu.
4	Null	Null (No Connection)
5	Null	Null (No Connection)
6	GPI4	Enable GPI4 when low (GND). The GPI4 function can be set in a menu.
7	Null	Null (No Connection)
8	GND	Ground connection

13. **LAN**: This Ethernet port can be used for color correction, upgrading, or remote network control UMD via TSL5.0. Please contact Wohler Technical Service for

further information.

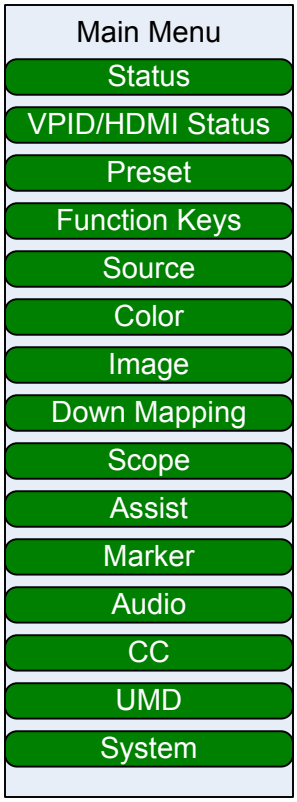
14. **USB**: This USB 2.0 Type A connector allows you to use a flash drive (not supplied) to perform updates to the monitor FPGA, OSD, APP EDP software, or LUT file.

15. **Carrying Handle**: This handle provides an easy way to carry the monitor between locations.

Menus and Options

You may set most options or view a variety of system information using the self-contained menus. Figure 2-5 is a diagram of the **Main Menu**. Press the **Menu** button to access the **Main Menu**.

Figure 2-5: Main Menu List



Menu Navigation

Press the **Menu** button to access the **Main Menu**, which is a list of the submenus. Press the **Menu** button again to exit the menu system when you are finished.

After the initial press of the **Menu** button, use the following steps to navigate through the main menu and submenus:

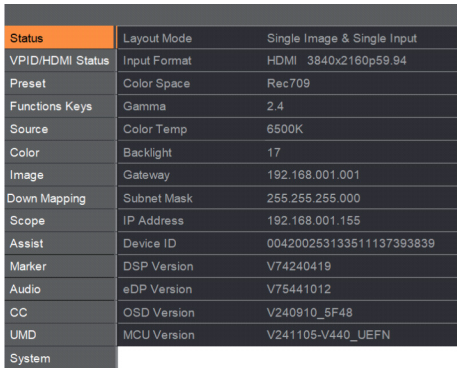
1. Rotate the **U-D (Up-Down)**knob to highlight the submenu of your choice. Press the **U-D** knob to enter the submenu.
2. Within the submenu, rotate the **U-D** knob to travel up or down in the submenu to find the item you would like to change and then press it. Then rotate the **U-D** or **L-R** knobs, depending upon the nature of the setting, to scroll through the list of available settings for that item. To select the needed setting, press the knob you used to adjust the setting. Repeat this process to make all of the changes you would like to make in that submenu.
3. When you have finished making changes to the submenu, press the **Menu** button to exit it. At this point, you may again rotate the **U-D** knob to travel up or down the list of submenus, as in Step 2.
4. When you are finished with the menu system, press the **Menu** button to exit.

Status Menu

Display the system status of layout mode, input format, color space, gamma, color temperature, backlight, network status, device ID and firmware version.

To review the **Status**:

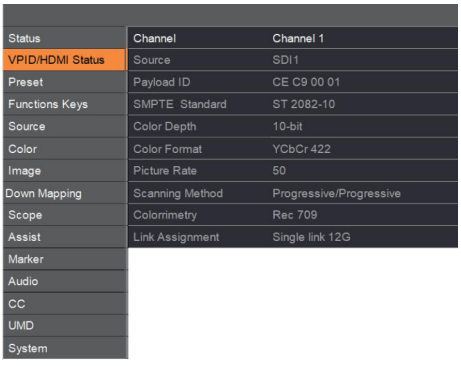
1. Press the Menu key.
2. Rotate the **U-D** knob and select the **Status** item. The screen shown at the right will appear.



VPID/HDMI Status

To review the **VPID/HDMI** Status:

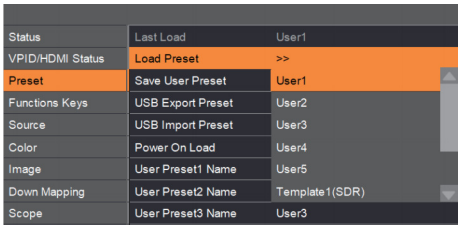
1. Press the Menu key.
2. Rotate the **U-D** knob and select **VPID/HDMI Status**. The screen shown at the right will appear.



Presets

To Load a **Preset**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **Preset** and open the submenu, as shown at the right.
3. Rotate the **U-D** knob again and press it to select a different configuration to load.



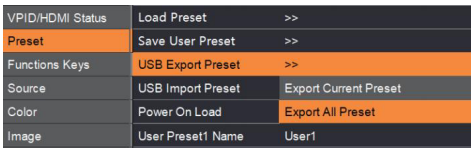
Presets can be saved as User1/2/3/4, which will correspond to S Keys 1/2/3/4. Use the same procedure to save the current configuration settings whenever changing them.

To rename a Preset, select the current name, press the **U-D** knob, and rotate the **L-R** knob to select the character position to be changed. Press the **L-R** knob to change the character. Repeat until you have completed the change.

USB Export/Import of Presets

Presets can be exported or imported using a USB drive. This will allow you to easily transfer settings from one vMON-240 to another. To export or import Presets, insert a USB drive into the jack on the front panel. Then follow these steps:

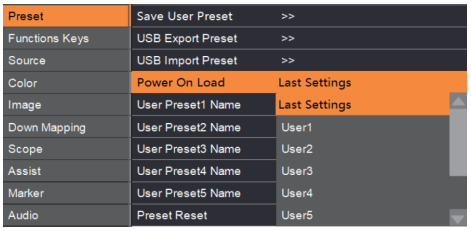
1. Press the Menu key.
2. Rotate the **U-D** knob and select **Preset**. A submenu will open.
3. Rotate the **U-D** knob and select **USB Export/Import Preset**.



Power On Load

While the vMON-240 will automatically load its last settings when it is powered on, it can be convenient for the vMON-240 to instead load a known configuration when it is powered on. To set up a configuration to load when the vMON-240 is powered on, use the following steps:

1. Press the Menu key.
2. Rotate the **U-D** knob and select **Preset**. A submenu will open.
3. Rotate the **U-D** knob to select **Power On Load** and press the knob to select the various items.



Function Keys

Function keys can be used to quickly enable special functions of the monitor to promote the efficiency and convenience. **S Keys**, **F Keys** and **GPI** functions can be set in the Function keys menu.

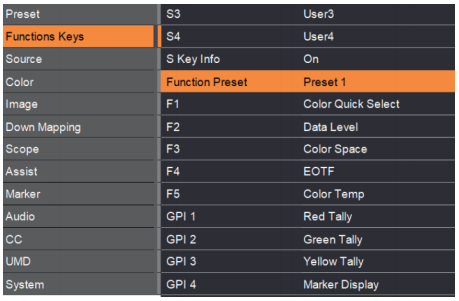
- **S Keys** can be set to User1/2/3/4/5.
- **F Keys** can be set to Waveform, Vector, Histogram, Data Level, Color

Space, EOTF, Color Temperature, Audio Meter, Focus Assist, False Color, Zebra, Blue Only, Mono, Red Only, Green Only, Timecode, Freeze, Audio Phase, Marker, Color Pattern, Color Quick Select, CC, Single SDI1/2/3/4, Quad SDI1-4, Darkness Check, or Highlight Check.

- **GPI** can be set to Marker, Red Tally, Green Tally, Yellow Tally, Blue Only, Mono, Red Only, Green Only, S Key1/2/3/4, Window1/2/3/4 Border, or Quad to Window1/2/3/4.

To set the **Function Preset**:

1. Press the Menu key.
2. Rotate the **U-D** knob and select **Function Preset** to open the submenu.
3. Rotate the **U-D** knob to select the S key, F key, or GPI and then press the **U-D** knob to select the desired operation.



Source

Layout Mode

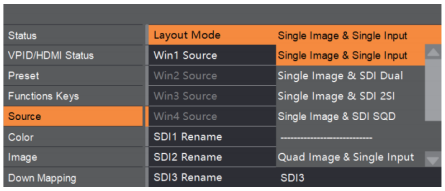
Layout mode can be set on multi-source input monitor to assign the image display in order. It is important for professional applications such as broadcast, postproduction and CCTV when the operator needs to monitor multiple images at the same time. The layout mode includes Single Image and Quad Image, the Single Image includes Single Input, SDI dual input, SDI 2SI input and SDI SQD input, and the Quad Image includes Single Input, SDI Dual Input and Quad Input.

The Layout Modes offered are:

- **Single Image**: Display and process the image of one signal to cover the entire screen.
- **Quad Image**: Display and process the images of four different input signals independently to monitor simultaneously.
- **Single Input**: Display a single 1G-SDI signal, with a resolution of up to 4K60P.
- **SDI Dual**: Uses a dual link input for wider bandwidth and higher image quality.
- **SDI 2SI**: This provides a two sample interleaved input.
- **SDI SQD**: This provides a Square Division input.

To select a different **Layout Mode**:

1. Press the Menu key.
2. Rotate the **U-D** knob and select **Source** to open its submenu.
3. Rotate the **U-D** knob to the desired **Layout Mode** and press the **U-D** knob to select it.

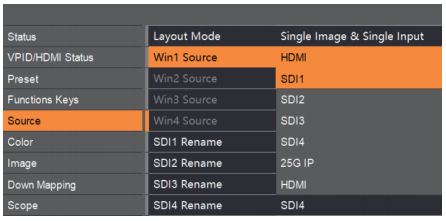


Window Source

The Window Source can receive a video signal from a camera and other video source to display in a window on the monitor. The window source can be set to SDI1/2/3/4, NDI, or HDMI. The source name, window border color and width can be changed as required.

To select a different **Window Source**:

1. Press the Menu key.
2. Rotate the **U-D** knob and select **Window Source** to open its submenu.
3. Rotate the **U-D** knob to the desired source and press the **U-D** knob to select it.



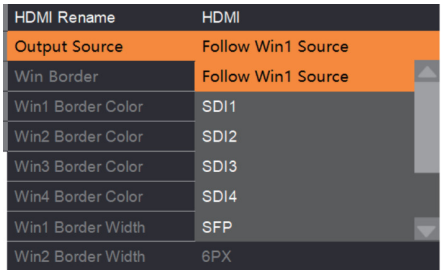
Note: Window Border Color and Width and Windows 2/3/4 are available choices only if the Layout Mode is set to Quad Image and Quad Input.

Output Source

You may select which input signal can be output to other devices. The Output Source can be set to Win1, SDI, NDI, HDMI.

To select an **Output Source**:

1. Press the Menu key.
2. Rotate the **U-D** knob and select **Output Source** to open its submenu.
3. Rotate the **U-D** knob to the desired source and press the **U-D** knob to select it.

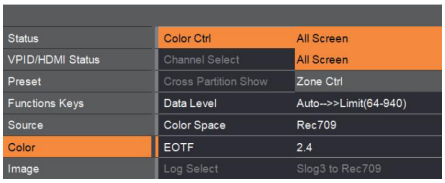


Color

The **Color Control** supports both full screen and area control.

To select a **Color Ctrl**:

1. Press the Menu key.
2. Rotate the **U-D** knob and select **Color** to open its submenu.
3. Rotate the **U-D** knob and select **Color Ctrl** to open its submenu.
4. Rotate the **U-D** knob to the desired feature and press the **U-D** knob to select it.



Channel Select

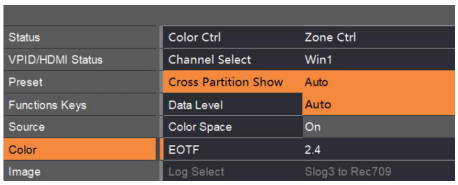
If the **Color Ctrl** item is set to **Zone Ctrl** then Channel Select is available.

Note: If the Layout Mode is set to Single Image & Single Input, the Zone Ctrl will be divided to four areas which can be scaled with a crosshair sign. Win1/2/3/4 will correspond to the upper-left/upper-right/bottom-left/bottom right of the screen. If the Layout Mode is set to Quad Image & Quad Input, Win1/2/3/4 will correspond to

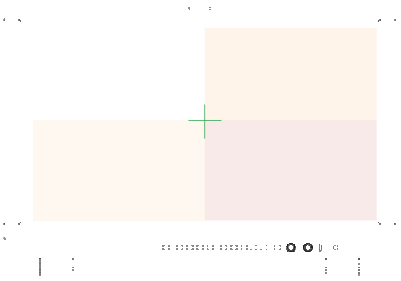
the four Window Sources.

Cross Partition Show

To set **Cross Partition Show**:



1. Press the Menu key.
2. Rotate the **U-D** knob and select **Color** to open its submenu.
3. Rotate the **U-D** knob and select **Cross Partition Show** to open its submenu.
4. Rotate the **U-D** knob to the desired feature and press the knob to select it.
5. To turn on the **Cross Partition Show**, press the **U-D** knob to set to the Cross Partition Show mode, rotate the **U-D** and **L-R** knobs to change the position of the crosshair to adjust the control areas. Press the **U-D** knob when complete.



Data Level

Data Level, also called Data Range, refers to the range of color and brightness information that is present in a video file. Including Limit (64-940), Extended (64-1019), Full (0-1023), and SMPTE Full (4-1019).

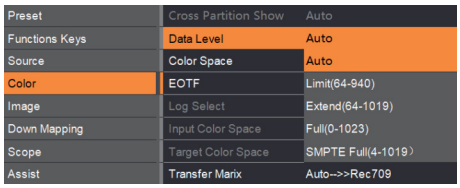
The available Data Range settings are as follows:

- **Auto:** Automatically recognize and set the data level of the input signal
- **Limit (64-940):** Data Range 64-940, usually set in SDR video signal processing
- **Extend (64-1019):** Extended Data Range Limit to increase the dynamic range of the image, especially the highlights and the shadows, compatible for more dynamic range but lower than Full range requirements, including some HDR production.
- **Full (0-1023):** Data Range 0-1023 includes every level of greyscale to provide more image details.
- **SMPTE Full (4-1019):** Compliance with SMPTE data range standards to ensure the accuracy and consistency of professional broadcast, high level film production and post production.

Data Level setting suggestions for various application environments:

- When working in professional film production, Full (0-1023) or SMPTE Full (4-1019) will provide the most accurate color and the widest dynamic range.
- For HDR monitoring, Extend (64-1019) may be a better choice, because it provides a wider dynamic range than Limit (64-940).

To select the Data Level:



1. Press the Menu key.
2. Rotate the **U-D** knob and select **Color** to open its submenu.
3. Rotate the **U-D** knob and select **Data Level** to open its submenu.
4. Rotate the **U-D** knob to the desired setting and press the knob to select it.

Color Space

Color Space is the specific array of colors that the monitor can display and process, as defined by various standards.

The monitor supports the following Color Spaces:

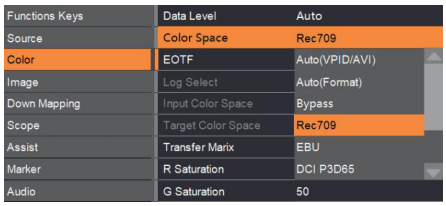
- **Auto(VPID/AVI)**: Automatically recognizes and sets the color space of the input signal.
- **Auto(Format)**: Automatically set the color space to Rec2020 when the input signal format is 4K and set the color space to Rec709 when the input signal format is 2K.
- **Bypass**: Bypass will display the image with the native color display capability of the screen, without any calibration or color processing.
- **Rec709**: Rec709 is a standard developed by ITU-R for image encoding and signal characteristics of HDTV, and is widely used in SDR content display.
- **EBU**: EBU is the standard color space recommended by the European Broadcasting Union. The color temperature usually sets to 6500K.
- **DCI P3 D65**: Standard P3 RGB primaries instead of the white point are calibrated to D65.
- **DCI P3**: DCI P3 was developed by the Digital Cinema Initiatives organization. It is a wide color gamut that displays more saturated color, especially enhancing red and green expression, provides more vivid visual experience, and is usually used in digital film production and postproduction.
- **Rec2020**: Rec2020 defines various aspects of UHDTV and HDR contents. Rec2020 supports 10bit and 12bit color ranges that provides wide color depth, and is used for advanced 4K and 8K television system and high end postproduction.
- **U1_/U2_/U3_/U4_/U5_/U6_**: User customized color spaces.

Color Space suggestions for various application environments:

- For work in the film production industry, select DCI P3 as a suitable standard.
- For professional design and postproduction, select BT2020 to provide an HDR display and wider color gamut.
- For consumers, BT709 or DCI P3 D65 could be considered.

To select a different **Color Space**:

1. Press the Menu key.
2. Rotate the **U-D** knob and select **Color** to open its submenu.
3. Rotate the **U-D** knob and select the desired **Color Space**. Press the knob to select it.



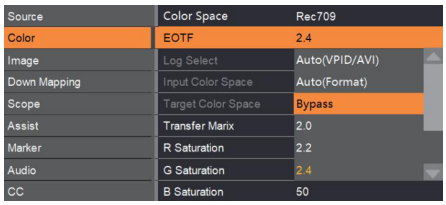
EOTF

Images and videos use specific transfer functions to describe the relationship between the electrical signal, the scene light and the displayed light. The EOTF is the transfer function converting the picture or video signal into the linear light output of the display. This is done within a display device.

This monitor supports the following EOTF functions:

- **Auto(VPID/AVI)**: Automatically recognize and setting the EOTF of the input signal.
- **Auto(Format)**: Automatically set the EOTF to HLG when the input signal format is 4K and set the EOTF to 2.4 when the input signal format is 2K.
- **Bypass**: Bypass will display the image with the native color display capability of the screen, without any calibration or color processing.
- **Gamma 2.0**: This is a balanced Gamma which enhances the shadow details, when a dark environment requires better shadow details.
- **Gamma 2.2**: The default gamma setting of the majority of graphic and visual software.
- **Gamma 2.4**: Enhances the detail in case of a little over-exposure, to improve the contrast and saturation. It is compatible with HDTV production and broadcast, especially in the Rec709 color space.
- **Gamma 2.6**: Enhances the contrast of color in highlight, compatible with film production and relatively high dynamic range content.
- **Gamma2.4 (HDR)**: This gamma is suitable for HDR content that provides wider contrast and color depth. It can be selected with BT2020 color space.
- **Rec.2100 HLG 1.03, Rec.2100 HLG, Rec.2100 HLG 1.11, Rec.2100 HLG 1.16, Rec.2100 HLG 1.20, Rec.2100 HLG 1.27, and Rec.2100 HLG 1.33**: This series has downward compatibility of SDR, provides a larger contrast and supports 10bit color depth. It can be selected with BT2020 color space for better color performance.
- **ST2084 PQ, ST2084 PQ (softroll)**: This EOTF PQ provides high contrast, compatible with 10bit and even 12bit color depth. It improves the highlight detail preserving and has great color performance when compatible with BT2020 color space, using for HDR10 and Dolby Vision content.
- **Log**: Slog, Clog, Vlog are used in camera recording, providing wide dynamic range for postproduction workflow, and is suitable for color grading.

To set a different **EOTF**:



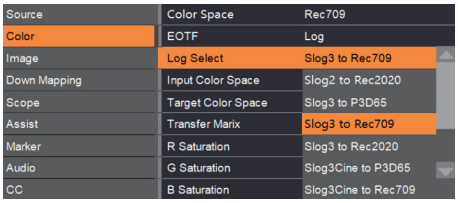
1. Press the Menu key.
2. Rotate the **U-D** knob and select the **Color** item to open the submenu.
3. Rotate the **U-D** knob and select the **EOTF** item to open the submenu.
4. Rotate the **U-D** knob, select the desired **EOTF**. Press the knob to select it.

Log Select

Transfer the camera log signal with specific LUTs to different color spaces and simplify the production workflow to display the expected image color on the monitor.

Note: EOTF must set to Log for the **Log Select** option to be available.

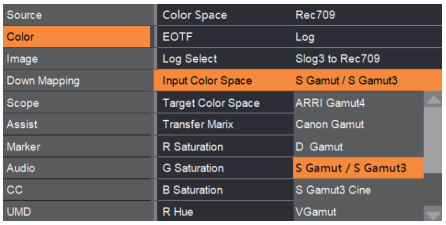
To set a different **Log Select**:



1. Press the Menu key.
2. Rotate the **U-D** knob and select the **Color** item to open the submenu.
3. Rotate the **U-D** knob, select the desired **Log Select**. Press the knob to select it.
4. Rotate the **U-D** knob, select the desired **Log**. Press the knob to select it.

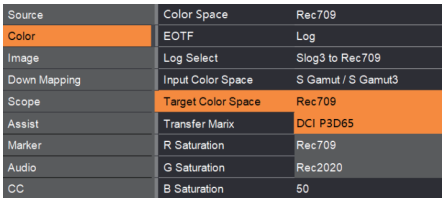
Color Space Transfer

Transfer the camera wide gamut signal to standard color spaces to unify color management and display the correct image on the monitor.



To adjust the **Color Space Transfer**:

1. Press the Menu key.
2. Rotate the **U-D** knob, select **Color** to open the submenu.
3. Rotate the **U-D** knob, select **EOTF** and press the knob to select Log.
4. Rotate the **U-D** knob, select **Input Color Space** item and press the knob to select your choice.



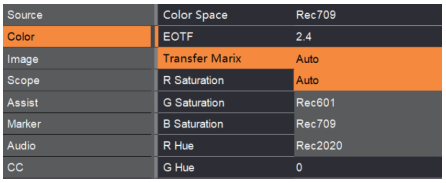
5. Rotate the **U-D** knob, select **Target Color Space** item and press the knob to select your choice.

Transfer Matrix

Transfer Matrix is the mathematic transfer relationship between different color spaces, through the matrix calculation to achieve different color space mapping to match the color display capability of different devices. The choices are as follows:

- **Auto**: From the recognized PayLoad ID, automatically match the color space.
- **Rec601**: Using for standardizing the color space transfer, definition, and frame rate of image processing of SDTV.

To set a different **Transfer Matrix**:



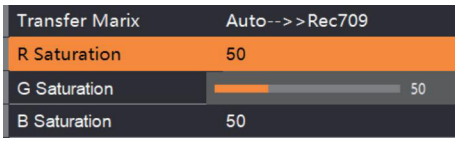
1. Press the Menu key.
2. Rotate the **U-D** knob, select **Color** to open the submenu.
3. Rotate the **U-D** knob, select **Transfer Matrix**, and press the knob to select your choice.

Saturation

Saturation is one of the three different aspects of chromatic intensity. Normally R/G/B saturation of the monitor is used to indicate color intensity, separately displaying red, green and blue. The Saturation range is from 0 to 100, and when the level is higher, the color is showier.

Adjust the level rationally for best display effect in each environment if the user has professional requirements for monitoring.

To set the **Saturation**:

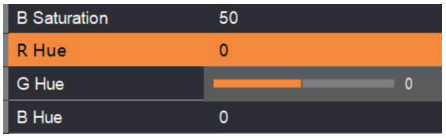


1. Press the Menu key.
2. Rotate the **U-D** knob and select **Color** to open the submenu.
3. Rotate the **U-D** knob, select a **Saturation** item. Press the knob and turn the **L-R knob** to adjust the Saturation level.

Hue

Hue is one of the main properties of a color, defined technically in the CIECAM02 model as "the degree to which a stimulus can be described as similar to or different from stimuli, usually adjust R/G/B hue of the monitor to indicate color tendency."

To set the **Hue**:



1. Press the Menu key.
2. Rotate the **U-D** knob and select **Color** to open the submenu.
3. Rotate the **U-D** knob, select a **Hue** item, press the knob and turn the **L-R knob** to adjust the level.

Sharpness

Sharpness refers to the clarity of the image. A high sharpness monitor provides vivid images, displays more sharp edges, clear text and smooth detail.

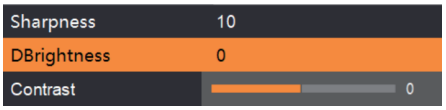
To set the **Sharpness**:

1. Press the Menu key.
2. Rotate the **U-D** knob and select **Color** to open the submenu.
3. Rotate the **U-D** knob, select **Sharpness**, press the knob and turn the **L-R knob** to adjust the level.

DBrightness

The DBrightness indicates how the monitor will process the brightness of the signal itself.

To set the **DBrightness**:

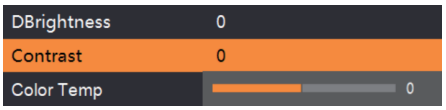


1. Press the Menu key.
2. Rotate the **U-D** knob and select **Color** to open the submenu.
3. Rotate the **U-D** knob, select **DBrightness**, press the knob and turn the **L-R knob** to adjust the level.

Contrast

The Contrast is the definition ratio between the ultra-brightness and black of the monitor.

To set the **Contrast**:



1. Press the Menu key.
2. Rotate the **U-D** knob and select **Color** to open the submenu.
3. Rotate the **U-D** knob, select **Contrast**, press the knob and turn the **L-R** knob to adjust the temperature.

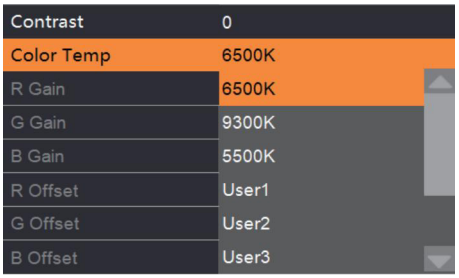
Color Temperature

If the level of color temperature is lower, the display is warmer, the color intends toward yellow or red. If the color temperature is higher, the display is colder, the color tends toward blue. The monitor includes color temperatures of: 6500K, 9300K, 5500K, User1/2/3/4.

The choices include:

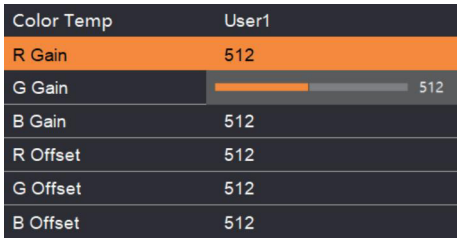
- **6500K**: This is the standard color temperature, widely used in image processing, video editing. It is a relative setting that balances reality and visual comfort.
- **9300K**: This is thee coldest color temperature in visual perception. The color display tends toward blue. The image appears brighter at this temperature, and may result in a sense of unnaturalness.
- **5500K**: This provides a relatively warm monitor display.

- **User1, User2, User3, User4**: Users can modify R/G/B GAIN or R/G/B OFFSET to customize the color temperature.



To set the **Color Temperature**:

1. Press the Menu key.
2. Rotate the **U-D** knob and select **Color** to open the submenu.
3. Rotate the **U-D** knob, select **Color Temperature**, press the knob and turn select the Color Temperature.
4. Alternatively you may select User1/2/3. In that case, rotate the **U-D** knob, select R/G/B Gain or R/G/B Offset. Then turn the L-R knob to adjust the Gain or Offset.

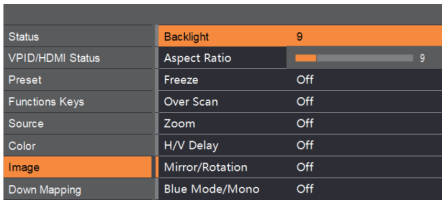


Image

Backlight

Backlight is the luminance of the backlighting source of the monitor. Setting a high backlight level can guarantee the display quality in a bright environment, and a low backlight level can be used in a darker environment to reduce the eyestrain.

To set the **Backlight Level**:



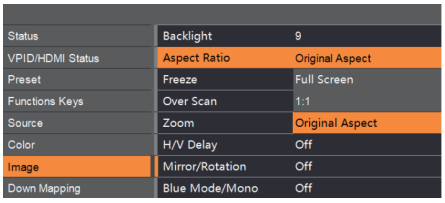
1. Press the Menu key.
2. Rotate the **U-D** knob, select **Image** and press the knob to open the submenu.
3. Rotate the **U-D** knob, select **Backlight** and press the knob, rotate the L-R knob to set the level.

Aspect Ratio

Set the image display ratio:

- Full Screen: Scale the image to fulfill the screen regardless its origin aspect ratio. This may cause deformation of the image.
- 1:1: Scale the image pixel to pixel.
- Aspect Original: Scale the image with its original ratio. This may produce black edges if the image ratio isn't the same as the monitor ratio.

To set the **Aspect Ratio**:



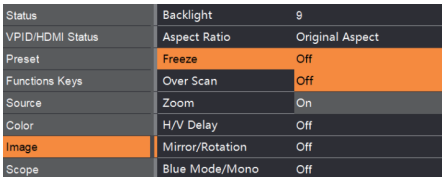
1. Press the Menu key.
2. Rotate the **U-D** knob, select **Aspect Ratio** and press the knob to open the submenu.
3. Rotate the **U-D** knob, select your choice and

press the knob.

Freeze

Freeze the image in a specific still.

To set **Freeze**:

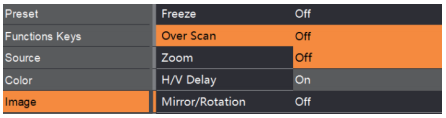


1. Press the Menu key.
2. Rotate the **U-D** knob, select **Image** and press the knob to open the submenu.
3. Rotate the **U-D** knob, select **Freeze** and press the knob to select On or Off.

Overscan

Overscan is a behavior in display devices in which part of the input picture is cut off by the bounds of the screen.

To set **Overscan**:

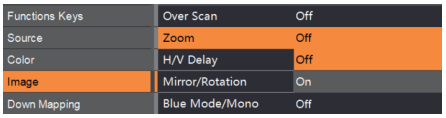


1. Press the Menu key.
2. Rotate the **U-D** knob to select **Image** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Overscan** and press the knob to select On or Off.

Zoom

Zoom into the central area of the image to observe the detail for further analysis and processing.

To set **Zoom**:

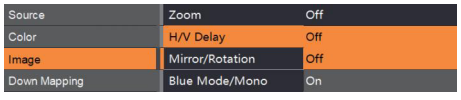


1. Press the Menu key.
2. Rotate the **U-D** knob to select **Image** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Zoom** and press the knob to select On or Off.

H/V Delay

The H/V Delay function accurately displays the time delay between the signal inputs to the monitor and the images displayed on the screen resulting from the processing of the video signal. The H/V delay may affect the synchronization and instantaneousness of the video content when multiple input sources demand synchronization or instant monitoring, such as audio-video synchronization.

To set **H/V Delay**:

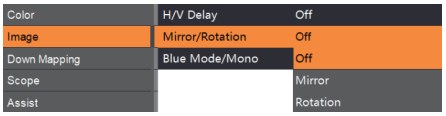


1. Press the Menu Key.
2. Rotate the **U-D** knob to select **Image** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **H/V Delay** and press the knob to select On or

Off.

Mirror/Rotation

Mirror will flip the image with vertical axis like the reflection in a mirror. Rotation will rotate the image 180°.



To set **Mirror/Rotation**:

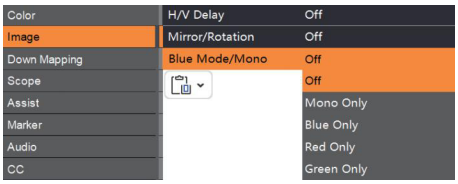
1. Press the Menu key/
2. Rotate the **U-D** knob to select **Image** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Mirror/Rotation**. Rotate the knob to select **Mirror** or **Rotation** and press to change.

Blue Mode/Mono

Blue Mode/Mono display the mono color channel of the image, compatible for checking the noise of the video signal, include Mono Only, Blue Only, Red Only, and Green Only:

- **Mono Only**: Only display the luminance information of the signal without chrominance information. The image will look like grey.
- **Blue Only**: Only the blue color channel will be activated.
- **Red Only**: Only the red color channel will be activated.
- **Green Only**: Only the green color channel will be activated.

To set **Blue Mode/Mono**:



1. Press the Menu key.
2. Rotate the **U-D** knob to select **Image** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select your choice and press the knob to change it.

Color Pattern

Color pattern displays various solid colors to evaluate and calibrate the monitor.

Note: Color Pattern can only be activated using the **F** Keys.

To set **Color Pattern**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **Function Keys** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select an F key, such as **F1**, and press the knob to select the **Color Pattern** item in the submenu.
4. Press **F1** to open and choose a Red, Green, Blue, White, or Black color.

Darkness Check

Darkness check can preview the dark area and detail performance to evaluate shadow and contrast ratio and visibility.

Note: Darkness Check can only be activated using the **F** Keys.

To set **Darkness Check**:

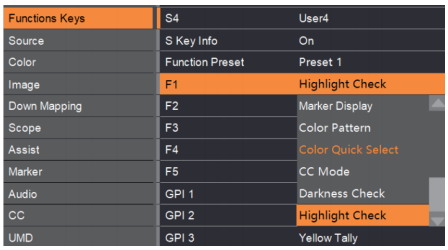
1. Press the Menu key.
2. Rotate the **U-D** knob to select **Function Keys** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select an F key, such as **F1**, press the knob and select the **Darkness Check** in the submenu.
4. Press **F1** to turn on/off the **Darkness Check** effect.

Highlight Check

Highlight check can preview the bright area and detail performance to evaluate highlight and contrast ratio and visibility.

Note: Highlight Check can only be activated using the **F** Keys.

To set **Highlight Check**:

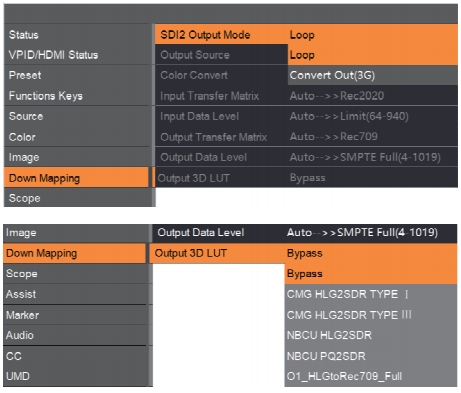


1. Press the Menu key.
2. Rotate the **U-D** knob to select **Function Keys** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select an F key, such as **F1**, press the knob and select the **Highlight Check** in the submenu.
4. Press **F1** to turn on/off the **highlight Check** effect.

Down Mapping

The vMON-240-4K supports outputting a signal, transferred to another form to display on other devices via SDI2. It allows transferring a 4K UHD resolution signal to a 2K HD resolution, data level and transfer matrix mapping, and 3D LUT output.

To set **Down Mapping**:



1. Press the Menu key.
2. Rotate the **U-D** knob to select **Function Keys** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **SDI2 Output Mode**, press the knob to set it to On.
4. Rotate the **U-D** knob, select **Color Convert**, press the knob and to set it to On.
5. Rotate the **U-D** knob to select different

choices as desired.

Scopes

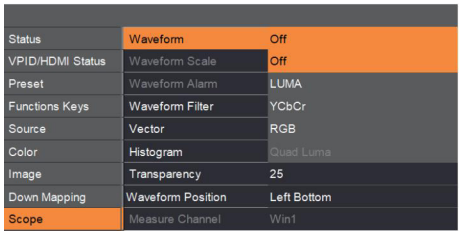
Waveform

The waveform display provides a digitally encoded waveform like traditional luminance waveform monitors. It is used to monitor and adjust the Luma, or brightness, levels of the video signal. Three waveforms, Luma, YCbCr and RGB, are displayed. When the layout mode is set to Quad Image & Quad Input, the Quad Luma menu selection will be available.

The waveforms are as follows:

- **Luma**: Luma waveform indicates the luminance information of the video signal, precisely processing each frame to the luminance graph that tells the dynamic range of the image, helps user analyze the contrast and exposure.
- **YCbCr**: Y is the luminance component. Cb and Cr are the blue-difference and red-difference chroma components. YCbCr shows the luma and the chroma information and is helpful for calibrating a video signal's chroma values. It is also compatible with the traditional black and white TV. The YCbCr waveform is widely used in digital video systems, as found in a TV station, and in video conferencing.
- **RGB**: The RGB waveform shows the luminance information of Red, Green, and Blue separately. Analyzing the three waveforms can assess the luminance balance of the three color channels in order to adjust the white balance and color accuracy.

To select and display each waveform:



1. Press the Menu key.
2. Rotate the **U-D** knob to select **Scopes** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Waveform** and press the knob to open the submenu where you may select the waveform of your choice.

Waveform Scale

Waveform Scale is a useful measurement and monitoring tool for luminance and chrominance information in the production and television industry. Read the information according to the waveform scale to assess the video quality and broadcast compliance.

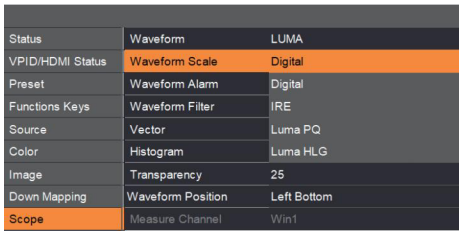
There are four Waveform Scales:

- **Digital**: This is the measurement for digital video, using 0-1023 range to represent the digital level. It is mainly used in digital video systems, including HD and UHD production.
- **IRE**: The IRE unit is used in the measurement of video signals. The scale ranges from 0 to 100, with 0-7.5 representing complete black and 100 representing the reference white. The part over 100, such as 110 or 120 IRE,

represents brightness of white The IRE scale can help assist with the exposure of SDR production. It is a commonly used exposure standard in TV production.

- **Luma PQ**: The Waveform Scale for ST 2084 EOTF, has ranges with a larger dynamic level, and is used for film and advanced TV production such as HDR10, HDR10+, and Dolby Vision.
- **Luma HLG**: This is the Waveform Scale for HLG, which is compatible with SDR content.

To select a **Waveform Scale**:

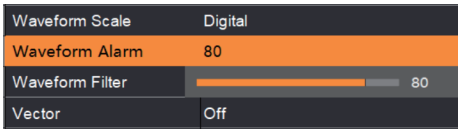


1. Press the Menu key.
2. Rotate the **U-D** knob to select **Scopes** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Waveform Scale** and press the knob to open the submenu where you may select the scale of your choice.

Waveform Alarm

You may set a safety range for the waveform. When the luminance and chrominance level are outside of the range, the alarm will be activated, displaying red on the waveform. Setting the alarm level to a useful value can help you adjust the exposure correctly.

To set the **Waveform Alarm**:

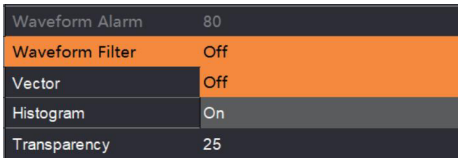


1. Press the Menu key.
2. Rotate the **U-D** knob to select **Scopes** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Waveform Alarm** and press the knob to set the value of your choice.

Waveform Filter

You may filter the noise and distortion of the signal in the waveform to display a clean and stable scope image.

To set the **Waveform Filter**:



1. Press the Menu key.
2. Rotate the **U-D** knob to select **Scopes** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Waveform Filter** and press the knob to set on/off.

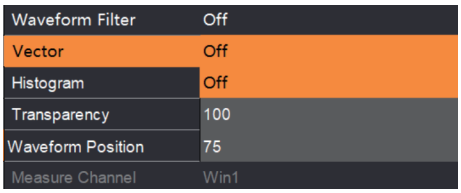
Vector

A Vectorscope shows the colors in a vector view. Professionals can assess color performance using a Vectorscope. A Vectorscope can indicate the color accuracy. Deviation in certain areas of vectorscope might indicate the head end device or the signal transmission are causing problems.

There are two vectorscope scales:

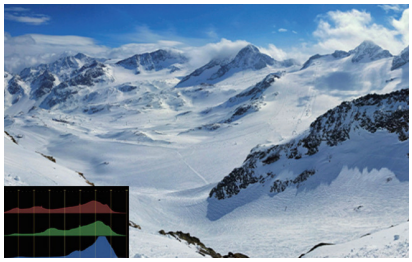
- **100%**: A 100% vectorscope setting is used indicates high saturation and maximum amplitude. Assessment of the color range of the signal can be achieved at any level. 100% vectorscope can also indicate color synchronizing signals more accurately, answering the need for strict demand of color accuracy, such as film production and editing. 100% vectorscope will indicate high saturation and maximum amplitude and assessment of the color range of the signal can be ascertained to any level. 100% vectorscope will indicate the color synchronizing signal more accurately, again answering the need for strict demand of color accuracy, such as film production and editing.
- **75%**: A 75% vectorscope setting reducing by 25% the amplitude, and is suitable for broadcast safe monitoring.

To change the **Vectorscope** setting:



- Press the Menu key.
- Rotate the **U-D** knob to select **Scopes** and press the knob to open the submenu.
- Rotate the **U-D** knob to select **Vector** and press the knob to set the value of your choice.

Histogram



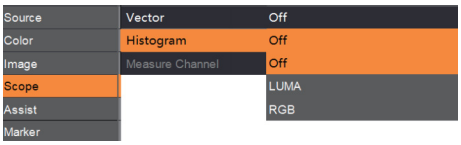
Histogram is an instantaneous indicator of luminance and chrominance for adjusting exposure and color. It shows the distribution of whites and blacks of the video.

There are two modes for the histogram:

- **Luma**: The Luma histogram shows the distribution of the luminance or the black to white information along a horizontal scale, and lets you monitor how close the detail is to being clipped in the blacks or whites of the video. The histogram also lets you see the effects of gamma changes in the video:
    - **Shadows**: The left edge of the histogram, if the graph is mostly centralized on the left side, indicates that the image is dark.
    - **Midtone**: The middle area of the histogram, if the graph is mostly centralized in the middle, indicates that the image has a good exposure.
    - **Highlight**: The right edge of the histogram, if the graph is mostly centralized on the right side, indicates that the image is bright.

- **RGB**: Three graphs are shown with one for each RGB color.

To select the **Histogram**:



1. Press the Menu key.
2. Rotate the **U-D** knob to select **Scopes** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Histogram** and press the knob to set the mode of your choice.

Waveform Transparency and Position

You may adjust the waveform transparency to 100%, 75%, 50%, or 25% (default) and set the waveform position to upper left, upper right, bottom left (default), or bottom right.

To select the **Transparency** or **Waveform Position**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **Scopes** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Transparency** or **Waveform Position** and press the knob to set your preference.

Assist

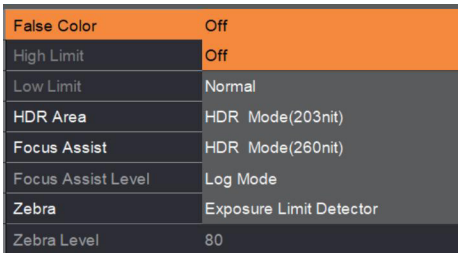
False Color

The false color feature displays color overlays on your image that represent exposure values. With a range of tonal values on the LCD simultaneously, this gives you a broader overview of your exposure which you can use to refine lighting on set or make exposure changes to compensate.

The settings are:

- **Normal**: SDR False Color.
- **HDR**: Exposure Assist for Log signal.
- **Log Mode**: Exposure Assist for Log signal.
- **Exposure Limit Detector**: Coloring the image areas under and over a specific data range to limit the exposure to a valid range.

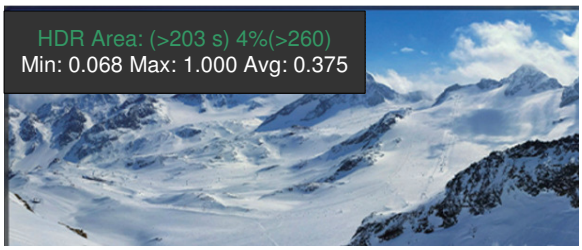
To set **False Color**:



1. Press the Menu key.
2. Rotate the **U-D** knob to select **Assist** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select False Color and press the knob to set your preference.

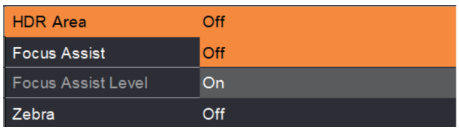
HDR Area

This function will analyze the HDR area over 203 Nits in the image and display it as a percentage.



To set the **HDR Area**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **Assist** and press the knob to open the submenu.



3. Rotate the **U-D** knob to select **HDR Area** and press the knob to set your preference.
4. When the EOTF is set to HDR, the data for the HDR area can be read.

Focus Assist

This setting provides assistance for manual focusing. It displays a color on the edge of the focusing item. The color can be red, green, or blue.

To set the **Focus Assist**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **Assist** and press the knob to open the submenu.

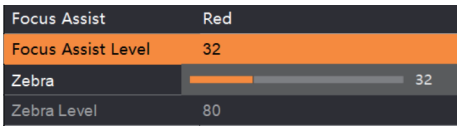
3. Rotate the **U-D** knob to select **Focus Assist** and press the knob to set on/off.

Focus Assist Level

You may set the sensitivity of the Focus Peaking detection.

Note: The Focus Assist Level can only be adjusted when Focus Assist is on.

To set the **Focus Assist Level**:

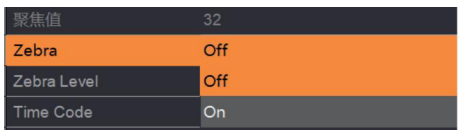


1. Press the Menu key.
2. Rotate the **U-D** knob to select **Assist** and press the **U-D** knob to open the submenu.
3. Rotate the knob to select **Focus Assist Level** and press the knob to set your preference.

Zebra and Zebra Level

The zebra feature helps you achieve optimum exposure by displaying diagonal lines over areas of the video that exceed your set zebra level.

To set the **Zebra Level**:



1. Press the Menu key.
2. Rotate the **U-D** knob to select **Assist** and press the knob to open the submenu.

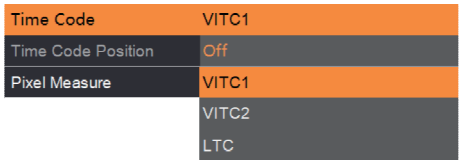
3. Rotate the **U-D** knob to select **Zebra** and press the knob to set on/off.
4. Rotate the **U-D** knob to select **Zebra Level** and press the knob. Rotate the **L-R** knob to set the Zebra Level. When the level is lower, there are more zebra lines and when the level is higher, there are fewer zebra lines.

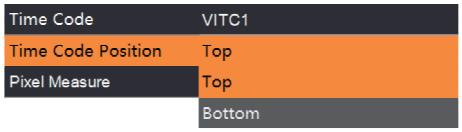
Time Code

The vMON-240-4K+ supports Time Code modes, VITC1, VITC2, and LTC. The Time Code display can be positioned at the top or the bottom of the screen.

Time Code modes:

- VITC1: A kind of Vertical Interval Time Code.
- VITC2: Another kind of Vertical Interval Time Code.
- LTC: Line in Time Code.



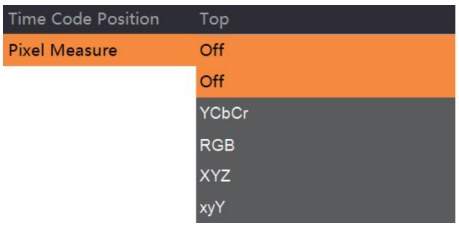


To set a different **Time Code** and **Time Code Position**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **Assist** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Time Code** and press the knob to set on/off.
4. Rotate the **U-D** knob to select **Time Code Position** and press the knob to set your preference.

Pixel Measure

Pixel measure samples color/value information from a single pixel or a group of pixels. It is important for image quality control and exposure adjustment, great for high end production and professional cinematography.



To set the **Pixel Measure**:

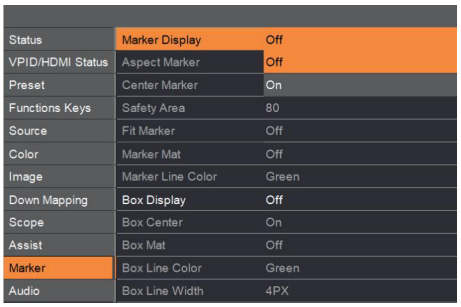
1. Press the Menu key.
2. Rotate the **U-D** knob to select **Assist** and press the **U-D** knob to open the submenu.
3. Rotate the **U-D** knob to select **Pixel Measure** and press the knob to set on/off.

Markers

Marker Display

The Marker provides aspect ratio frame guidelines overlay on the image.

1. To set the **Marker Display**:
2. Press the Menu key.
3. Rotate the **U-D** knob to select **Marker** and press the knob to open the submenu.
4. Rotate the **U-D** knob to select **Marker Display** item and press the knob to set on/off.



Aspect Marker

Aspect Marker ratios include: 4:3, 16:9, 15:9, 14:9, 13:9, 1.85:1, and 2.35:1.

4:3: Traditional television and displayer ratio.

16:9: HDTV and popular displayer ratio.

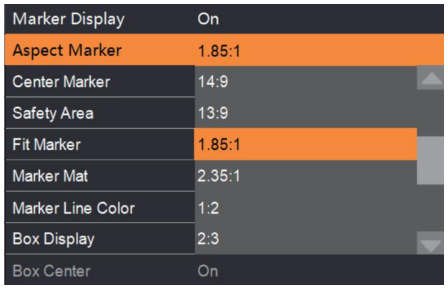
15:9, 14:9, 13:9: CCTV ratios.

1.85:1: Mainly used in film production.

2.35:1: Mainly used for anamorphic film production.

To set different **Aspect Marker**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **Marker** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Aspect Marker** and press the knob to set your choice.



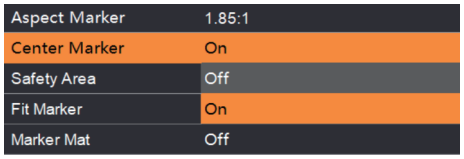
Note: The **Marker Display** must be set to On to activate the Aspect Marker.

Center Marker

This is a crosshair marker display denoting the center of the screen.

To set the **Center Marker**:

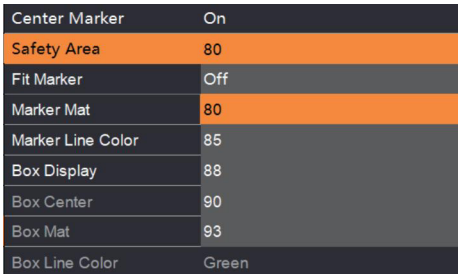
1. Press the Menu key.
2. Rotate the **U-D** knob to select **Marker** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Center Marker** and press the knob to set on/off.



Note: The **Marker Display** should be set to On to activate the Center Marker.

Safety Area

Guidelines for safety area to guarantee the image area could be displayed on various devices.

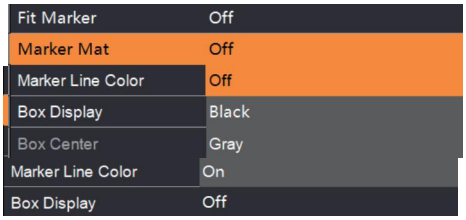


1. To set the **Safety Area**:
2. Press the Menu key.
3. Rotate the **U-D** knob to select **Marker** and press the knob to open the submenu.
4. Rotate the **U-D** knob to select **Safety Area** and press the knob to set the percentage.

Note: The **Marker Display** should be set to On to activate the Safety Area.

Fit Marker

Set the safety area display under a certain percentage to fit the ratio of aspect marker.



To set the **Fit Marker**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **Marker** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Fit Marker** and press the knob to set on/off.

Note: The **Marker Display** should be set to On to activate the Fit Marker.

Marker Mat

Marker Mat can set the area outside the marker to black or grey.

To set the **Marker Mat**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **Marker** and press the knob to open the submenu.
3. Rotate the **U-D** knob, select the **Marker Mat** item and press the knob to set on/off.

Note: The **Marker Display** should be set to On to activate the Marker Mat.

Marker Line Color

The color of the Marker Line can be set to a variety of colors.

To set the **Marker Line Color**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **Marker Mat** and press the knob to open the submenu.
3. Rotate the **U-D** knob, select **Marker Line Color** item and press the knob to set the color.

Note: The **Marker Display** should be set to On to activate the Marker Line Color.

Box Display

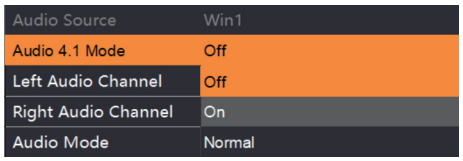
Box display supports line colors of white, green, blue, cyan, red, yellow, box center display on/off, supports Box Mat and adjusting Box size and location.

Audio

Audio 4.1 Mode

Audio 4.1 Mode includes 4 main audio channels and an LFE channel to assist the engineer in controlling the spatial layout and dynamic range of the audio.

How to set **Audio 4.1 Mode**:

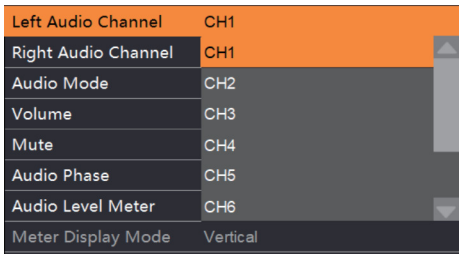


1. Press the Menu key.
2. Rotate the **U-D** knob to select **Audio** and press the knob to open the submenu.
3. Rotate the **U-D** knob, select **Audio 4.1 Mode** and press the knob to set on/off.

Audio Channel

Each Audio Channel can receive CH1 to CH16 audio. When an audio channel is assigned to the Left Channel, the corresponding channel number under the audio meter will turn green. If a channel is assigned to the Right Channel, its number under the audio meter will turn purple.

To assign **Audio Channels**:



1. Press the **Menu** key.
2. Rotate the **U-D** knob to select Audio and press the knob to open the submenu.
3. Rotate the **U-D** knob, select an **Audio Channel** and press the knob to select the desired audio channel.

Audio Output Mode

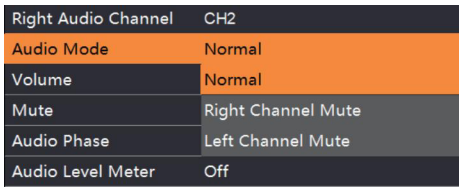
The Audio Output Mode can be set to normal, right channel mute, or left channel mute.

Normal: Audio output with both channels.

Right Channel Mute: Mutes the right channel.

Left Channel Mute: Mutes the left channel.

How to set **Audio Output Mode**:

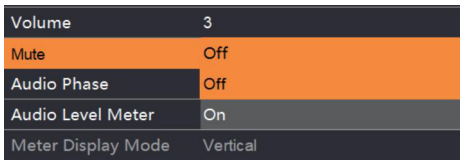


1. Press the Menu key.
2. Rotate the **U-D** knob to select **Audio** and press the knob to open the submenu.
3. Rotate the **U-D** knob, select an **Audio Output Mode** and press the knob to select the desired mode.

Mute

To mute the audio, simply press the Volume knob. To unmute, press it again. It is possible to always mute the audio, if necessary such as when audio is monitored externally from the vMON-240-4K. The Mute setting in the Audio menu accomplishes this.

To set **Mute**:



1. Press the Menu key.
2. Rotate the **U-D** knob to select **Audio** and press the knob to open the submenu.
3. Rotate the **U-D** knob, select **Mute** and press the knob to set on/off.

Audio Phase

Audio Phase refers to the timing relationship between multiple sound waves and indicates how these waves align or misalign when interacting. It's a crucial element in sound reproduction and impacts the overall quality, depth, and clarity of audio.

To set **Audio Phase**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **Scopes** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Audio Phase** and press the knob to turn it on or off.

Closed Captions

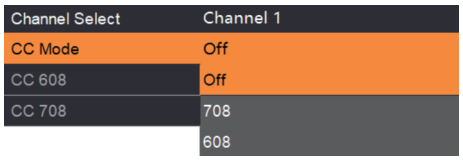
Closed Caption Mode

Closed captioning (CC) is a form of subtitling, a process of displaying text on a television, video screen, or other visual display to provide additional or interpretive information. The term closed indicates that the captions are not visible until activated by the viewer, usually via a remote control or menu option.

There are two types of common CC:

- **708**: CC 708 is the standard developed by the Consumer Technology Association for television viewing in the US, provides more captions including text, graphs and color.
- **608**: CC 608 is a standard for closed captioning for NTSC TV broadcasts. This standard only provides basic captions such as text and simple location information.

To set the Closed Caption type:



1. Press the Menu key.
2. Rotate the **U-D** knob to select **CC** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **CC Mode** and press the knob to select your choice.

UMD

UMD Protocol

The monitor supports following UMD protocols:

Local: Local UMD is compatible for applications that do not need advanced network control or long distance transmission.

TSL3.1: TSL3.1 is the basic standard serial protocol to ensure the stability of signal transmission and image quality.

TSL4.0: A higher-level standard that extends the basic TSL3.1, enhances transmission and compatibility, and is suitable for a high resolution and quality image transmission environment.

TSL5.0: This is the newest protocol. It supports advanced image processing and the highest transmission speed, compatible with high-end image transmission such as 4K/8K or high level post production.

To the **UMD Protocol**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **UMD** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **UMD Display** and press the knob to set on/off.
4. Turn on the **UMD Display**, rotate the **U-D** knob, select **UMD Protocol** and

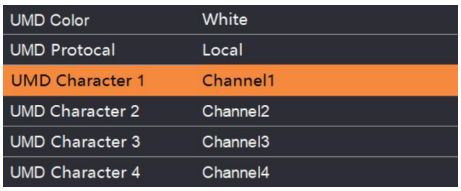
press the knob to select the desired UMD protocol.

UMD Character and Color

When the multiple signals are input into the monitor, they can be uniquely identified using UMD characters and display colors.

The UMD color can be set to White, Red, Green, and Yellow.

To set the **UMD Characters**:



1. Press the Menu key.
2. Rotate the **U-D** knob to select **UMD** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **UMD Display** and press the knob to set on/off.
4. Turn on the **UMD Display**, and rotate the **U-D** knob to select **UMD Character** and press the knob to select each character.
5. Rotate the **L-R** knob to select letters of your choice and press the knob to set each one.

Note: To customize UMD Characters, UMD Protocol must be set to Local.

UMD Parameters

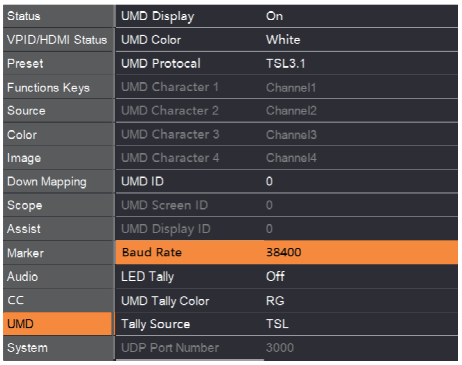
Set different UMD Parameters to control the monitor remotely, including Baud Rate, Parity Bit, UMD ID, UMD Screen ID and UMD Display ID.

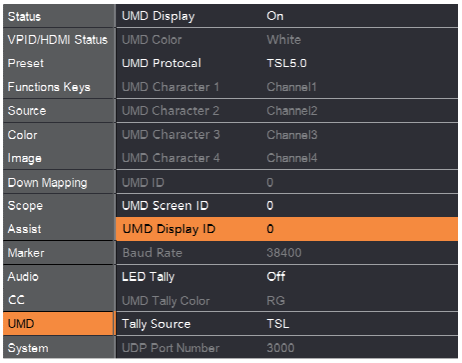
Table 2-3 – UMD Parameters

Sub Menu	Range	Limitation
UMD ID	0-126	Only can be set when UMD Protocol is TSL3.1 or TSL4.0.
UMD Screen ID	0-65534	Only can be set when UMD Protocol is TSL5.0
UMD Display ID	0-65531	Only can be set when UMD Protocol is TSL5.0.
Baud Rate	4800bps 9600bps 19200bps 38400bps 57600bps 115200bps	Only can be set when UMD Protocol is TSL3.1 or TSL4.0.

To set the **UMD Parameters**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **UMD** and press the knob to open the submenu.
3. Rotate the **U-D** knob to **UMD Protocol** and select a submenu to set the various items.





Tally

The vMON-240-4K supports UMD Tally control by TSL3.1 Protocol. The color can be set to Red/Green, Green/Red, or Red/Green/Yellow.

To set the **UMD Tally**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **UMD** and press the knob to open the submenu.
3. Select TSL3.1 Protocol, then rotate the **U-D** knob to the **LED Tally** item, and press the knob to set on/off.
4. Rotate the **U-D** knob to **UMD Tally** item and set your color preference.

System

Language

The System Language can be set to Chinese or English. The default is English.

To set the **Language**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **System** and press the knob to open the submenu.
3. Rotate the **U-D** knob, select the **Language** item and press the knob to select your language choice.

Menu Display Timeout

The menu display will disappear after a while if no operation occurs within its timeout to avoid the burning the menu image into the screen. The default timeout is 30 seconds, but it may be customized up to 60 seconds.

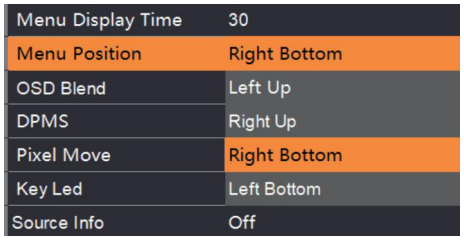
To set the **Menu Display Timeout**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **System** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select the **Menu Display Time** and press the knob. Then rotate the knob to adjust the timeout.

Menu Position

The menu position can be set to upper left, upper right, lower right, or lower left.

To set the **Menu Position**:

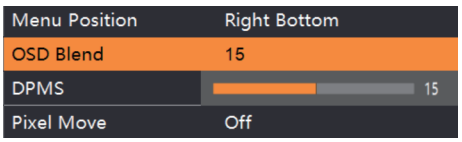


1. Press the Menu key.
2. Rotate the **U-D** knob to select **System** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **Menu Position** and press the knob to select the various positions.

OSD Blend

The OSD Menu transparency or blend can be adjusted to allow video to still be monitored when the menus are open.

To set **OSD Blend**:



1. Press the Menu key.
2. Rotate the **U-D** knob to select **System** and press the knob to open the submenu.

3. Rotate the **U-D** knob to select **OSD Blend** and press the knob. Then rotate the **L-R** knob to adjust the transparency level.

DMPS Power Saver

DMPS can save power when no video is being monitored. The settings are as follows:

- **Always On**: Keep the monitor on.
- **Light Sleep**: Turn off the backlight when there is no signal input over 5 minutes.
- **Deep Sleep**: Entering standby mode when there is no signal input over 5 minutes.

To set **DMPS**:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **System** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **DMPS** and press the knob to select your choice.

USB Update

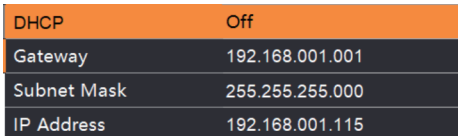
To update the FPGA, LUTs, OSD, EDP, or APP please contact Wohler Technical Service.

Ethernet

The Ethernet setting supports DHCP and manual settings. When DHCP is set to off, user can manually set the Gateway, Subnet Mask and IP Address.

To set the network parameters:

1. Press the Menu key.
2. Rotate the **U-D** knob to select **System** and press the knob to open the submenu.
3. Rotate the **U-D** knob to select **DHCP** and press the knob to turn it on or off.
4. If you set DHCP to Off, set the Gateway, Subnet Mask and IP Address.



CHAPTER 3: Technical Info

Table 3–1: *v*MON-240-4K+ Specifications

Specification	Values/Domains
Power Requirements	100 VAC to 240 VAC ± 10%, 50/60Hz or 12 VDC
Power Consumption	70 Watts
Dimensions (H x W x D)	15.8” x 22.8” x 3.8” (402mm x 578mm x 97mm), standard 19” rack mounting
Shipping/Net Weight	11 lbs (5.0 kg) / 7 lbs (3.2 kg)
Supplied Accessories	AC Power Cord
Display Type	24" diagonal 526mm (H) x 296mm (V)
Aspect Ratio	16:9
Screen Resolution	3840H x 2160V
Luminance / Contrast	1000 cd/m^2 / 1000:1
Audio Meter Channels	2-16 per screen
Color Depth	1.07 billion
Video Processing	12-bit, no image delay
Backlight	LED
Video Inputs	• 2 x 12G-SDI • 2 x 3G/HD/SDI • 4K 12G-SDI single link, up to 4096x2160 60p • 4K signal: 2SI, SQD • 1 x HDMI 2.0 • 1 x SDI SFP+ module optical input cage • 4K Mode, Quad-Split Mode, FHD single picture mode • 4 x SDI/HDMI Quad-View: mixed inputs & frequency rates
Video Outputs	• 2 x BNC 12G-SDI • 2 x BNC 3G/HD/SD-SDI • HDMI
Audio Output	• 1 x 3.5mm stereo headset jack per screen • Stereo Speakers, 2.5W x 2

Figure 3–1: *v*MON-2440-4K Block Diagram