Marshall

V-702W-12G

Dual 7" 3RU Rack Mount Monitor with 12G Input plus Waveform/ Vector and Analysis Features

User Manual

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TABLE OF CONTENTS

IMPORTANT SAFETY INSTRUCTIONS

• Please read Operating Instructions (this manual) before using the product.

• Keep the manual for future reference.

• Read the cautions below to prevent possible component failure or degradation

⚠ CAUTION ⚠

• The monitor should not be placed on its face to avoid scratching the LCD surface.

• Avoid heavy impact

• Do NOT use chemical solutions to clean this product. Simply wipe with a clean, soft cloth to maintain the brightness of the surface.

• Do not block vent holes. Be aware of heat-producing equipment mounted below this product.

• Use the following instructions and trouble-shooting section in the manual to adjust the product.

• Internal adjustments or repairs must be performed only by Marshall Electronics.

PRODUCT FEATURES
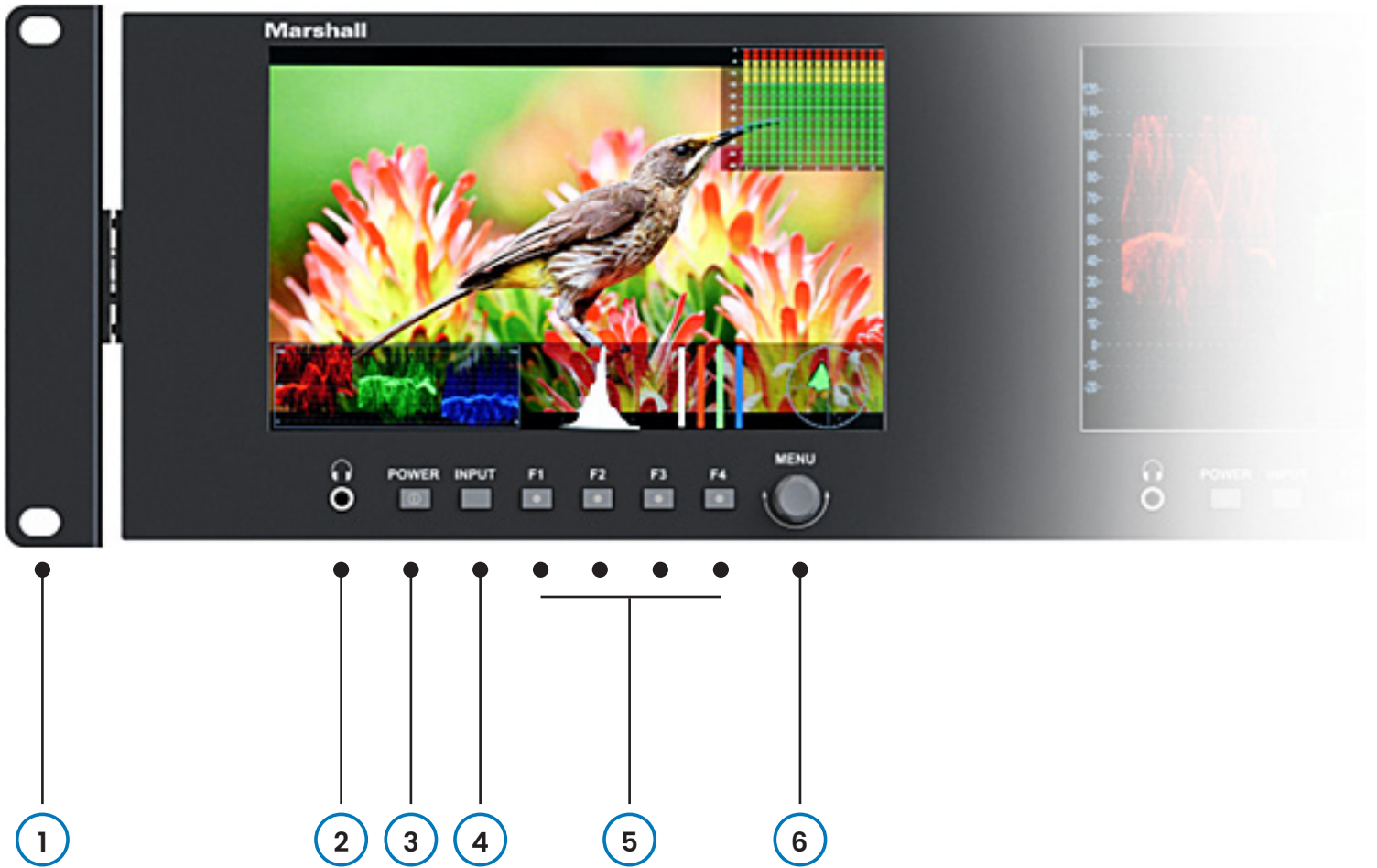
1. **Rackmount Ears** with tilt capability.

2. **Headphone Jack** Accepts standard 3.5mm stereo mini-phone plug.

3. **POWER** button (Lights red in standby mode; green when operating).

4. **INPUT** select button cycles through HDMI and SDI.

5. **F1~F4** user-defined shortcut function buttons (lighted when selected).
   Short Cut: Long press on any function button (3-5 seconds) pops up menu for setting user-defined functions. Pressing the Menu knob confirms the selection.

6. **Menu Knob** Turn without pressing to adjust headphone volume.
   Press to open menu system.

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BACK PANEL FEATURES
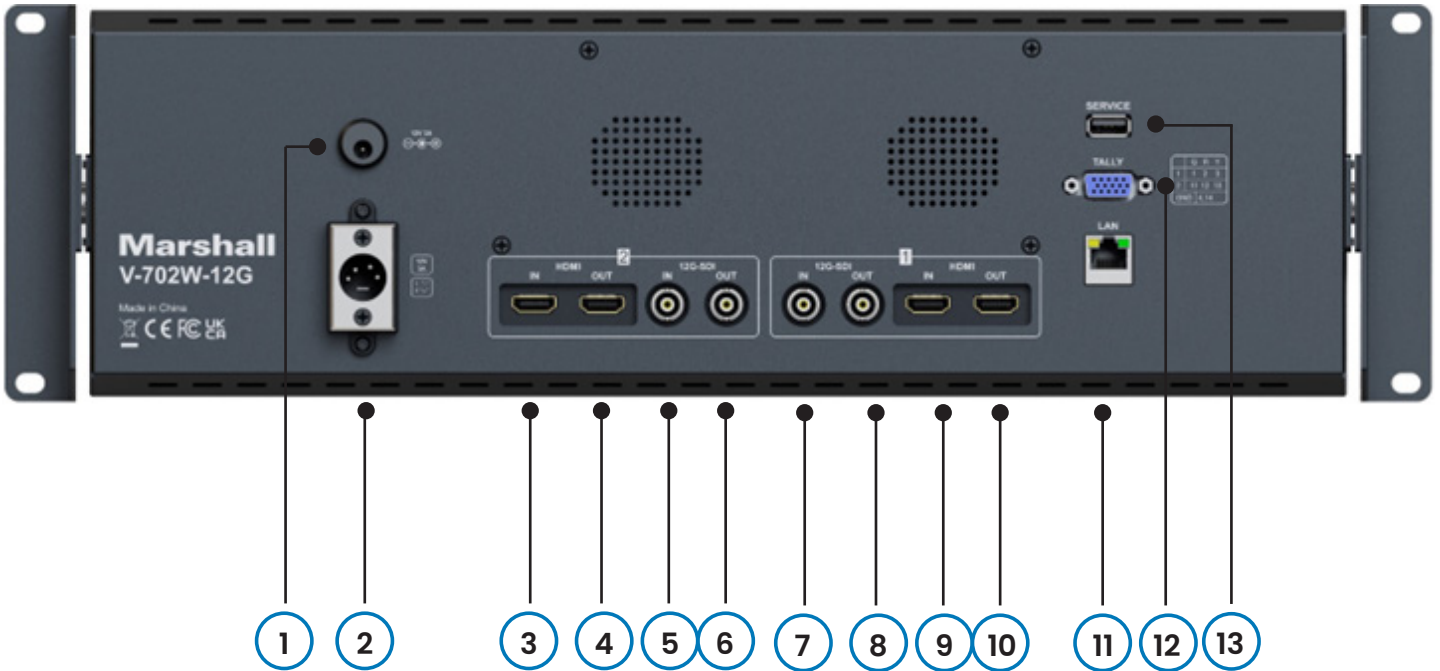
1. Barrel Power Connector

POWER+12V

12V DC power input 5.5mm x 2.1mm push-on connector.

Plug the supplied DC power adapter here. (Center pin is +)

Important: Please connect only one type of power supply at a time to this monitor.

2. 4-Pin Connector

4-pin XLR DC power input compatible with typical broadcast television camera 12-volt power supplies. Caution: Some 4-pin power supplies provide 24 volts. These are **NOT** compatible with this monitor. Please check the label on the power supply before connecting.

Pin number	Signal
1	GND
2	No connection
3	No connection
4	+12V

3,4,9,10. HDMI Digital Video Connectors

HDMI input and loop out. Embedded audio may be monitored at the Headphone jack and visually monitored on-screen.

5,6,7,8. Serial Digital "BNC" Connectors

SDI input and loop out. Compatible with SD-SDI, HD-SDI, 3G-SDI and 12G-SDI inputs. Embedded audio may be monitored at the Headphone jack and visually monitored on-screen.

11. Ethernet LAN RJ-45 Connector

LAN port. The monitor can be operated from a PC using the application on the Marshall website. *See Page 16.*

12. TALLY Connector

A red, green, or yellow on-screen tally bar can be made to appear by grounding the appropriate pin on the Tally connector as shown in the table. It is compatible with "open collector" and "pull down" type GPI controls. Tally control is also possible via Ethernet. **Caution:** External power should never be applied to the Tally.

Screen #1	Tally	Screen #2	Tally
1	Green Light	11	Green Light
2	Red Light	12	Red Light
3	Yellow Light	13	Yellow Light
4	Ground	14	Ground

13. USB input -

Used for firmware updates and Lookup Table "LUT" loading

MENU SETTINGS

Press **MENU** knob on the monitor and function menus will pop-up on the screen. Rotate left or right to select an option. Then press the knob again to open the sub-menu. When an arrow pointer appears in the menu, turn the Menu knob again to access the item or to confirm a selection.

1. PICTURE

PICTURE

Brightness	50
Contrast	50
Saturation	50
Sharpness	0
RGB Range	Limited
HDMI EDID	4K
Color Space	Rec709
Camera Log	Off
Def. Log	SLog2ToLC-709
User Log	No Data

ITEMS	OPTIONS	
Brightness	0~100	
Contrast	0~100	
Saturation	0~100	
Sharpness	0~100	
RGB Range	Full / Limited	
HDMI EDID	4K / 2K	
Color Space	Native / SMPTE-C / Rec709 / EBU	
Camera Log	Off / Def. Log / User Log*	
Def. Log	SLog2 to LC-709 SLog2 to LC-709TA SLog2 to SLog2-709 SLog2 to Cine+709 SLog3 to LC-709 SLog3 to LC-709TA SLog3 to SLog2-709 SLog3 to Cine+709	
*User Log	No Data, User1 ~ User6	
Gamma	Off / 1.8 / 2.0 / 2.2 / 2.35 / 2.4 / 2.6 / 2.8	
HDR	Off / ST 2084-300 / ST 2084-1000 ST 2084-10000 / HLG	
Back Light	0 ~ 100	
Color Temp.	3200K / 5500K / 6500K / 7500K / 9300K / User**	
Red Gain	0~128~255	
Green Gain	0~128~255	**When User is selected, these Gain and Offset adjustments will appear in the menus.
Blue Gain	0~128~255	
Red Offset	0-256-511	
Green Offset	0-256-511	
Blue Offset	0-256-511	

1. PICTURE cont....

PICTURE

HDR		Off
Back Light		100
Color Temp.		6500K
Red Gain		128
Green Gain		128
Blue Gain		128
Red Offset		256
Green Offset		256
Blue Offset		256
Exit		

Brightness – used to establish the correct black level in the picture. Default value is 50.

Contrast – establishes the range of dark to light areas in the picture. Default value is 50.

Saturation – sets the amount of color information in the picture. Default value is 50.

Sharpness – adds synthetic "detail" to the image. HD images should require very little added sharpness. Default value is 0.

RGB Range – choose the RGB range of the HDMI input between Full or Limited. This choice only applies to HDMI inputs. When viewing HD video based on television standards such as REC 709, Limited is the correct choice. When working with computer graphics Full may provide a wider range of color.

HDMI EDID – select the HDMI EDID from between 4K and 2K. This item enables PC, set top box, or other device to configure itself for best video quality. This choice only applies to HDMI inputs.

Camera Log – use this item to choose one of the camera Log modes among Def log, User log. Def. Log – Default (preset) Log modes. When viewing material from a camera that has a Log gamma curve applied, the pictures will not appear normal unless the matching Log mode is selected. **User Log** – use this item to install and apply a "User LUT" (Look Up Table) instead of one of the Default Logs

To install a User Log "LUT":
-   Check that the User LUT name ends with ".cube". (This is common).
-   Two types are accepted: 17×17×17 or 33×33×33, Data order is BGR, Table order is BGR.

1. Rename the LUT file as User1.cube up to User6.cube. (6 files may be stored in the monitor)

2. Copy the user LUT onto a formatted USB drive.

3. Insert the USB drive into the USB port on the rear panel of the monitor. The User LUT will be imported into the monitor automatically. If the User LUT does not load automatically, a message will appear with "no user data" or offering a choice to manually load the User LUT.   If "no user data" appears please check that the file meets all the requirements noted above.

Gamma – Gamma correction applies a non-linear "curve" to the displayed range between dark and light. Historically, 2.4 is chosen because it is the inverse of a standard camera Gamma of 0.45 producing a roughly "linear" match. Today, different camera Gamma values are often applied for creative purposes so a different monitor Gamma may be chosen for viewing. It is best practice that, once set, Gamma is not changed during a production shoot or an editing or color correction session. Gamma OFF would be used only during testing, calibration or when using an external video processor. Gamma range is 1.8 to 2.8. Gamma is not available if S-Log or User LUT has been selected.

HDR – HDR "High Dynamic Range" is used to properly view video that has been enhanced through one of the common HDR processes. Three SMPTE ST 2084 standard settings are available. These are calibrated to 300, 1000 and 10,000 NIT displays. (The only 10,000 NIT displays are projectors). A fourth setting is available, HLG, which is commonly used for broadcast. When HDR is activated, the display can reproduce greater dynamic range of luminosity. The best results will be obtained when the monitor setting matches the HDR emphasis that was applied to the video material. Using HDR mode with non-HDR material typically looks very unnatural.

Back Light – adjusts the brightness of the LCD backlight. This is different from the "Brightness" control. Backlight is adjusted to compensate for room lighting without upsetting Contrast and Brightness adjustments. It is generally best practice to set the Back Light level before changing other picture settings.

Color Temp – this setting provides four different presets for white balance approximating different common color "temperatures". The most common is 6500K. USER allows for custom calibration by adjusting Gains and Offsets. as desired:

R/G/B Gain – adjust the Red, Green, or Blue Gain of the current Color Temperature from 0 to 255. Default value: 128.

R/G/B Offset – adjust the Red, Green, or Blue Offset of the current Color Temperature from 0 to 511. Default value: 256.

2. MARKER

This page offers controls for setting various on-screen markers.

ITEMS	OPTIONS
Center Marker	Off / On
Aspect Marker	Off / 16:9 / 1.85:1 / 2.35:1 / 4:3 / 3:2
Safety Marker	Off / 95% / 93% / 90% / 88% / 85% / 80%
Marker Color	White / Black / Red / Green / Blue
Aspect Mat.	0ff / 1 / 2 / 3 / 4 / 5 / 6 / 7
Thickness	1 ~ 7
Exit	

Center Marker – places a "+" mark in the exact center of the display. (Useful for checking camera or graphics positioning.)

Aspect Marker – places borders on screen representing various typical video and cinema aspect ratios. This does not change the displayed aspect ratio. That setting is in the Display menu.

Safety Marker – places a border around the edge of the screen to be used as a guide during video production.

Marker Color – the Center, Aspect and Screen marker colors can be changed.

Aspect Mat – darken the background just behind the markers.

Thickness – sets the width of the markers.

3. DISPLAY This page provides controls for picture size, Zoom, check field, image freeze and Overscan.
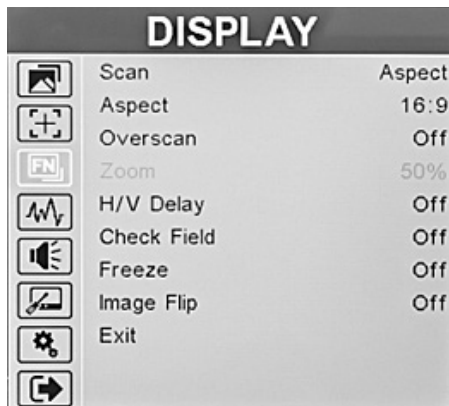
ITEMS	OPTIONS
Scan	Aspect / Pixel To Pixel / Zoom
Aspect	Full/16:9 / 1.85:1 / 2.35:1 / 4:3 / 3:2
Overscan	Off / On
Zoom	10% ~ 90%
H/V Delay	Off / H / V / H/V
Check Field	Off / Red / Green / Blue / Mono
Freeze	Off / On
Image Flip	Off / H / V / H/V
Exit	

Scan – Adjust the scan mode among [Aspect], [Pixel To Pixel], [Zoom].

Aspect – allows changing the aspect ratio (shape) of the picture to match the incoming video. Settings are available for various video and cinema styles.

Pix to pix – displays the incoming video with a 1:1 pixel match. This provides the clearest resolution but usually changes the size of the image. This turns off up/down "scaling". For example: a video input that has fewer pixels than the LCD display will appear to shrink while a video input that has more pixels will appear to expand. In either case, the image is shown in it's "true" resolution.

Zoom – expands the picture digitally. It is normal for picture quality to degrade as the picture is expanded.

Overscan – enlarge the image slightly to reduce image edge distortion.

H/V delay – shifts the picture vertically and horizontally to allow viewing the vertical and horizontal "blanking areas" which contain the HANC and VANC ancillary data.

Check Field – displays the picture in monochrome (black & white) or in individual primary colors. Useful for color analysis and trouble shooting.

Zoom – expands the picture digitally. It is normal for picture quality to degrade as the picture is expanded.

Image Freeze – holds the current picture on screen.

Image Flip – the picture can be reversed top to bottom, left to right or both. This can be a useful tool when viewing images shot through mirrors or from cameras mounted upside-down.

4. WAVE The Wave page offers adjustments for the on-screen Waveform monitor, Vector scope displays, and video assist functions like focus peaking, exposure "zebras", false color luminance level check.

ITEMS	OPTIONS
Full Mode	Off / Y / YCbCr / RGB / Vector / Histogram / Audio
Waveform	Off / Y / YCbCr / RGB
Vector	Off / On
Transparency	Off / 25% / 50%
Peaking	Off / On
Peaking Color	Red / Green / Blue / White / Black
Peaking Level	1 ~ 100
False Color	Off / Default / Spectrum / ARRI / RED
False Color Table	Off / On
Exposure	Off / On
Exposure Level	50 ~ 100 IRE
Histogram	Off / Y / RGB / Color
4 Bar Display	Off / On
Time code	Off / LTC / VITC
Exit	

Full Mode – The following analysis functions are full-sized and fill the entire display. In this mode, Video is not displayed

Waveform – Selecting Waveform instead of Full Mode places a compact version of the Waveform Monitor function as an overlay at the bottom of the display. Overlays are limited to Y, YCbCr, RGB presentations.

Y – a graphic representation of the brightness from left to right across the picture. This is the most common setting and is particularly useful for adjusting lenses and lighting.

YCbCr – a graphic representation of the Luminance plus the color components in the video signal. Useful for equipment adjustment and confirming proper operation.

RGB – a graphic representation of the three primary color components of video picture. Useful for making equipment adjustments.

Audio – shows an on-screen bar graph of audio channels (typically Left and Right) from either an HDMI or SDI digital source.

Vector – a graphic representation of the colors in a picture. Brightness levels are not shown. The vector display is used with color charts or test signals.

Transparency – change the visibility of the chart on the screen. Adjust as desired for best visibility.

Peaking – adds a colored edge to picture details making it easy to identify which areas are in sharpest focus.

Peaking Color – Select one of the peaking colors: Red, Green Blue, White, Black.

Peaking Level – adjust the amount of peaking color. The range is 1 - 100.

False Color – a method to show each brightness in the picture with a different color. It provides a quick way to tell if one part of a picture is too bright or too dark. There are 10 colors representing 10% steps. Default mode matches the False Color feature in other Marshall monitors. Additional modes are provided to match color modes used by RED and ARRI.

False Color Table – Places a color guide on screen. This guide shows what level from 0 – 100% each color represents.

Exposure – creates "zebra" lines in the brightest areas of the picture. This mimics a feature that is commonly found in broadcast camera viewfinders which provides a quick way to check for over-exposure.

Exposure Level – to adjust the level of peaking. The exposure level can be set to [50]-[100].

Histogram – use this item to activate or deactivate histogram.

Y – a graphical representation of the tonal distribution within a picture.

RGB – a graphic representation of the three primary color components of video picture. Useful for making equipment adjustments.

COLOR – a graphical representation of the mixed RGB distribution within a picture.

4 Bar Display – a graphical representation of the peak value of YRGB.

Time Code – The Time Code display supports embedded Longitudinal time code (LTC) and Vertical interval time code (VITC) types. Time Code display is only available with SDI input. HDMI does not have time code.

5. AUDIO   This Page used to adjust volume, audio channel, lever meter and mute.

ITEMS	OPTIONS
Volume	0~100
Level Meter	Off / On
Audio Vector	Off / On
Vector Ch	CH1&CH2 / CH3&CH4 / CH5&CH6 CH7&CH8 / CH9&CH10 / CH11&CH12 CH13&CH14 / CH15&CH16
Audio CH	CH1&CH2 / CH3&CH4 / CH5&CH6 CH7&CH8 / CH9&CH10 / CH11&CH12 CH13&CH14 / CH15&CH16
Exit	

Volume – controls the Headphone volume.
Volume can also be controlled by turning the menu knob when menus are not on screen.
Default level is 50.

Level Meter – shows an on-screen bar graph of audio channels (typically Left and Right) from either an HDMI or SDI digital source.

Audio Vector – this is the traditional "oscilloscope" pattern comparing left and right audio channels. When a tone is present, a straight line will appear if both channels are "in-phase".
A circle will appear if the channels are 180-degrees "out of phase" or reverse polarity.

With normal audio, there will be a pattern of constantly moving lines.

Vector CH – With SDI input, channel pairs may be selected from 1 – 16.
With HDMI input, channels 1 & 2 will be used.

Audio CH – With SDI input, channel pairs may be selected from 1 – 16.
With HDMI input, channels 1 & 2 will be used.

This setting selects what appears in the audio bar display and what is heard in the headphone output.

6. REMOTE   This page offers adjustments for Ethernet port settings
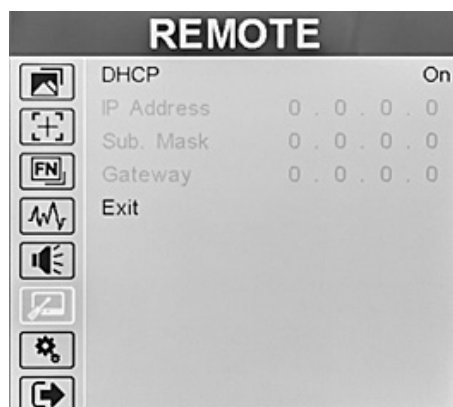
ITEMS	OPTIONS
DHCP	Off / On
IP Address	0.0.0.0
Sub. Mask	0.0.0.0
Gateway	0.0.0.0
Exit	

DHCP – Enable or disable Ethernet DHCP mode. When DHCP is on, the monitor will automatically get an IP address from the network. The address will appear in the IP, Mask, and Gateway fields below.

When DHCP is off, a Static address may be created manually using the menu knob and arrow keys.

> **IP** – Configures or displays IP address
>
> **Mask** – Configures or displays Subnet Mask
>
> **Gateway** – Configures or displays the IP Gateway

7. SYSTEM

This page provides a collection of system-level functions including On Screen Display (OSD), reset unit to Factory settings (Reset) and Color Calibration.
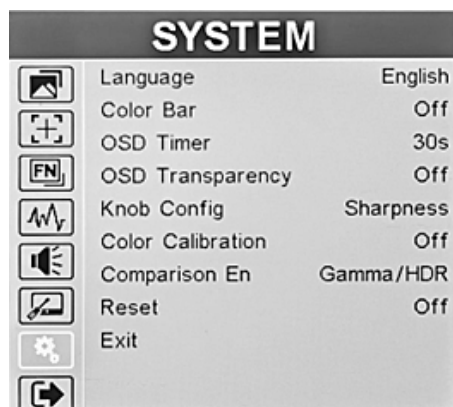
ITEMS	OPTIONS
Language	English / 中文
Color Bar	Off / 100% / 75%
OSD Timer	10s / 20s / 30s
OSD Transparency	Off / 25% / 50%
Knob Config	Back Light/ Brightness/ Contrast/ Saturation/ Sharpness/ Volume
Color Calibration	Off / On
Comparison En	Off / Gamma & HDR / Color Space / Camera Log
Reset	Off / On
Exit	

Language – sets on-screen messages to either English or Chinese.

Color Bar – places color bars on screen to check the monitor operation.

OSD Time – adjusts the amount of time menus remain on screen.

OSD Transparency – adjusts the Transparency of menus for visibility

Knob Config – customize the functions of Menu Knob.

The default operation of the menu knob, when menus are not on screen is as the headphone volume control.

Each press after that will bring up a different function. The first, or default, function can be changed so that it is Back Light, Brightness, Contrast, Saturation or Sharpness.

Color Calibration – when it is turned on, all picture modifications will be turned off and the image will be restored to its native, uncalibrated, state.

Comparison En – When Comparison Mode is enabled, one half of the display will show an uncorrected image the other half will show the effect of Log, HDR or Gamma settings (whichever ones are turned on at the time). This is a useful tool for analyzing the effects of these image modifiers.

Reset – sets all menu choices back to the way the unit ships from the factory.

8. EXIT   This page provides some information about the signal input parameters and the system version for reference

The EXIT page displays the current state of the monitor. There are no selections on this page.
Pressing the Menu Knob closes the menu screen.

ITEMS	OPTIONS
Source	SDI / HDMI
SDI Mode	SD / HD / 3G Level (A)
Resolution	H x V
Frame Rate	i or p / xx Hz
Color Space	RGB/ YCbCr422/ YCbCrA422/ YCbCr444/ YCbCrA444
MCU Version	V1.2
FPGA Version	V1.9

Source – The currently selected input

SDI Mode – The current SDI signal type. (HDMI type is not displayed).

Resolution - The pixel structure of the current input signal. Horizontal x Vertical

Frame Rate – The frame rate of the current input signal and whether the signal is interlace or progressive Color Space – The sampling structure of the SDI signal.

"A" Indicates the presence of an Alpha or "Key" channel

MCU Version – The version of MCU firmware

FPGA Version – The version of SFPGA firmware.

The version numbers may be useful when contacting Customer Support

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9. USER FUNCTION SHORT CUT (F1 – F4) MENU SELECTIONS

The monitor front panel has four special function keys marked F1 through F4. These are pre-programmed as short cuts keys per this table:

FUNCTION KEY	STANDARD SHORT CUTS
F1	Color Space
F2	Full Mode
F3	Waveform
F4	Level Meter

These function keys may be re-programmed at any time by first pressing the function key for about three seconds. The function key menu will appear at the right side of the screen. Simply rotate the Menu knob to the desired function short cut and press the Menu knob to make the selection.

One of the following shortcuts may be programmed to each function key:

OPTIONAL SHORT CUTS		
Center Marker	Camera Log	Exposure
Aspect Marker	Check Field	Histogram
Safety Marker	H/V Delay	Full Mode
Overscan	Freeze	Waveform
Scan	Image Flip	Time Code
Aspect	Color Bar	Mute
Color Space	Peaking	Level Meter
Gamma	False Color	Audio Vector

Please refer to the individual menu pages above for details about these functions.

SPECIFICATIONS

Panel Size	2 x 7-inch screens
Panel Resolution	1920 × 1200 pixels
Brightness	450 cd/m^2
Contrast	1100: 1
Viewing Angle	160° / 160°(H/V)
Input Voltage	DC 12V
Input Signal	HDMI, SDI up to 12G SDI
Power Consumption	≤24W
Operating Temperature	-10^{0}C~50^{0}C
Storage Temperature	-20^{0}C~60^{0}C
Dimension W/H/D	19" x 5.3" x 1.3" (482×133×33mm)
Weight	5.4lbs (2.43Kg)

INCLUDED ACCESSORIES

• **DC 12V 3A** Universal 120/240 VAC 50/60 Hz Power adapter with 5.5mm x 2.1mm push connector

• **TALLY kit** – plug in module adapts 15-pin connector to solderless terminal block

TROUBLESHOOTING

1. **Power on but no picture:**
   Check whether the cables are correctly connected. Also, please use the standard power adapter coming with the product package or other power supply with the correct voltage and pin configuration.

2. **Only black-and-white display:**
   Check whether the color saturation and brightness are properly set.
   Access the DISPLAY menu and make sure Check Field is Off.

3. **Wrong or abnormal colors:**
   Check whether the cables are correctly connected. Broken or loose pins of the cables may cause a bad connection. Access the WAVE menu page and check that the False Color mode is OFF.

4. **Picture is "stuck" on screen:**
   Access the DISPLAY menu page and check that IMAGE FREEZE is off.

5. **Solving Other problems:**
   The monitor can be reset to Factory original settings. This is sometimes useful to eliminate the possibility that an improperly set menu item is interfering with the operation. To reset the monitor, access the "SYSTEM" menu page, press the Menu knob then rotate left or right to select "Reset". Press the knob once then rotate the knob to cause the unit to reset.

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PC SET REMOTE TERMINAL APPLICATION

PCSet Remote Terminal is a convenient software tool for controlling multiple monitors from a single computer. PCSet will run on any Windows™ based computer (XP or later) and installs quickly by creating a desktop icon. Simply double-click the desktop icon and the control screen will appear. PCSet discovers the monitors on the network and adapts the control function display accordingly. Currently works with models ML-503, ML-702, V-702W, V-702W-12G.

Download the PCSet Remote Terminal Application here:

https://marshall-usa.com/software/PCSet-Remote-Terminal.zip

POWER SUPPLY INFORMATION

Replacement power supplies are available by contacting Marshall Electronics and specifying part #V-PS12V-5A-XLR-1.

This model has the 4-pin XLR connector and is rated 12Volts DC at 5 Amps.

WARRANTY

Marshall Electronics warranties to the first consumer that this V-702W-12G, dual 7" rackmount-monitor will, under normal use, be free from defects in workmanship and materials, when received in its original container, for a period of one year from the purchase date. This warranty is extended to the first consumer only, and proof of purchase is necessary to honor the warranty. If there is no proof of purchase provided with a warranty claim, Marshall Electronics reserves the right not to honor the warranty set forth above. Therefore, labor and parts may be charged to the consumer.

This warranty does not apply to the product exterior or cosmetics. Misuse, abnormal handling, alterations or modifications in design or construction void this warranty.

No sales personnel of the seller or any other person is authorized to make any warranties other than those described above, or to extend the duration of any warranties on behalf of Marshall Electronics, beyond the time period described above.

Note: Due to constant effort to improve products and product features, specifications may change without prior notice.

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