Marshall

Broadcast A/V Division

ML-503

Triple 5” 2RU Rack Mount Monitor



Operating Instructions

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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.

CAUTIONS:

- To avoid scratching the LCD surface, do NOT place the monitor on its face
- 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 mounting heat-producing equipment 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 Description

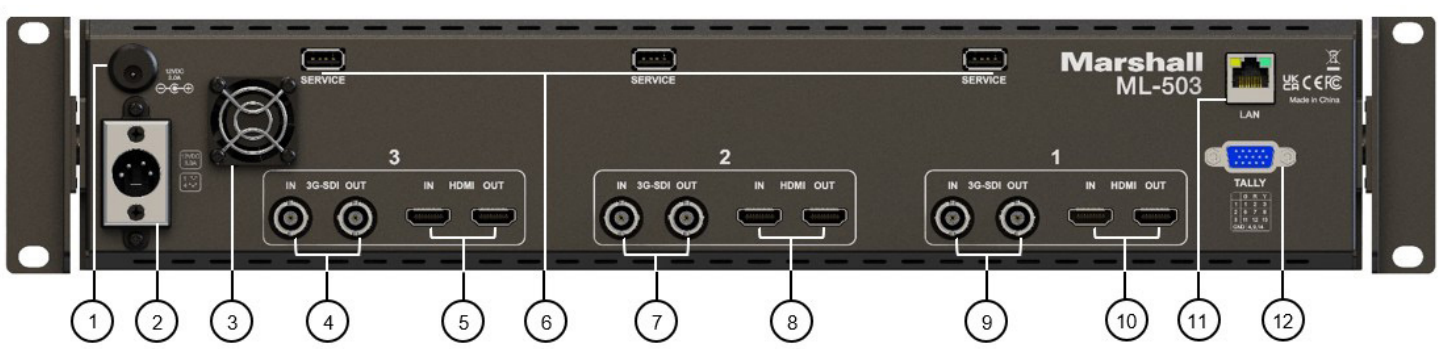
Front Panel Features



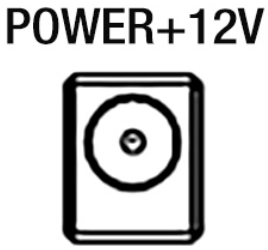
1. **Rackmount ears with tilt capability.** Tilt monitor for best visibility or improved ventilation.
2. **Headphone jack.** Accepts standard 3.5mm stereo mini-phone plug.
3. **Menu key:** Opens / Closes menu system
4. **"▼" key:** Selects menu options
   When the menu system is not open, the down arrow key lowers the headphone volume
5. **"▲" key:** Selects options
   When the menu system is not open, the up arrow increases the headphone volume
6. **F1** and **F2** user-defined shortcut buttons.
   Access the **SETTING** menu page to set user-defined functions.
7. **INPUT** select button cycles through SDI and HDMI inputs
8. **POWER** button (Lights red in standby mode; green when operating).

Product Description

Back Panel Features



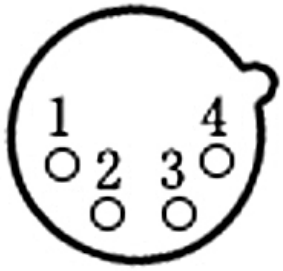
1. Barrel Power Connector



12V DC power input 5.5mm x 2.1mm barrel 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 Power 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. Ventilation Fan



The fan will run automatically as needed to dissipate heat. The fan speed can also be adjusted manually in the SETTING menu page.



4, 7, 9. Serial Digital “BNC” Connectors

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

5, 8, 10. HDMI Digital Video Connectors



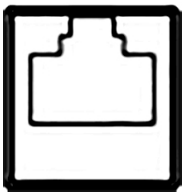
HDMI input and loop out. Embedded audio may be monitored at the Headphone jack and visually monitored on-screen.

6. USB Service Ports



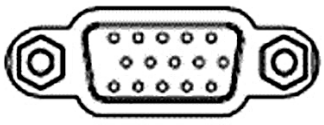
USB input - Used for firmware updates and Lookup Table “LUT” loading.

11. Ethernet LAN RJ-45 Connector



LAN port. The monitor can be operated from a Windows™ computer using the PCSet Terminal application available from the Marshall Electronics website.

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. **CAUTION:** External power should never be applied to the Tally connector.

Screen #1	Tally	Screen #2	Tally	Screen #3	Tally
1	Green Light	6	Green Light	11	Green Light
2	Red Light	7	Red Light	12	Red Light
3	Yellow Light	8	Yellow Light	13	Yellow Light
4	Ground	9	Ground	14	Ground

Menu Settings

Press the **MENU** key on the monitor and function menus will pop-up on the screen. Click "▼" or "▲" key to select an option. Then press the menu key again to open the sub-menu. When an arrow pointer appears in the menu, click "▼" or "▲" key again to access the item. Press the menu key to confirm a selection.

1. PICTURE

This page provides controls for typical picture adjustments.



ITEM	OPTIONS	
Brightness	0~100	
Contrast	0~100	
Saturation	0~100	
Sharpness	0~100	
Color Temp.	6500K / 7500K / 9300K / User*	
Red gain	0~128~255	*When User is selected, these Gain and Offset adjustments will appear in the menus.
Green gain	0~128~255	
Blue gain	0~128~255	
Red offset	0-256-511	
Green offset	0-256-511	
Blue offset	0-256-511	
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.

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

R/G/B Gain – Adjust the R/G/B Gain of the current Color Temperature from 0 to 255. Default value is 128.

R/G/B Offset – Adjust the R/G/B Offset of the current Color Temperature from 0 to 511. Default value is 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	Red / Green / Blue / White / Black
Grid	Off / On
Aspect Mat.	Off, 1 ~ 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 Video 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 here

Grid – On-screen grid lines are useful when matching camera shots or during editing. When Grid is turned on, Center, Aspect and Safety markers will not appear.

Aspect Mat – darkens the background behind the markers for visibility

Thickness – sets the width of the markers. Adjust as desired for best visibility

Menu Settings

3. VIDEO



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

ITEMS	OPTIONS
Scan	Aspect / Pixel-To-Pixel / Zoom
Aspect	Full / 1.85:1 / 2.35:1 / 4:3 / 3:2
Display scan	Fullscan / Overscan / Underscan
Check field	Off / Mono / Red / Green / Blue
Zoom	X1.5 / X2 / X3 / X4
Freeze	Off / On
Image flip	Off / H / V / H&V
Exit	

Scan – Selects various display methods. When Aspect is selected, the item below this one can adjust the aspect ratio of the displayed image.

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. This can be useful to determine where artifacts are occurring by eliminating monitor scaling. When this mode is on, Aspect, Display Scan, Zoom and Markers will be off.

Zoom – expands the picture digitally. It is normal for picture quality to become less sharp as the picture is expanded. When this mode is on, **Aspect**, **Display Scan** and **Markers** will be off.

Display Scan – Provides additional methods for viewing images

Full scan – Uses all pixels available in the display. This may not match the aspect ratio of the incoming signal.

Overscan – enlarge the image slightly to conceal image edges.

Underscan – shrinks the image slightly to allow viewing image edges

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

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. CAMERA AUX

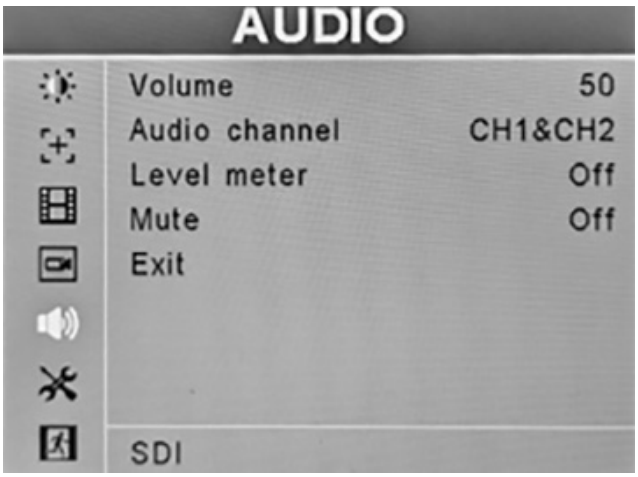
This page offers settings to assist with camera focus.

ITEMS	OPTIONS
Peaking	Off / On
Peaking color	Red / Green / Blue / White / Black
Peaking level	0-50-100
Exit	

Peaking - adds a colored edge to picture details making it easy to identify which areas are in sharpest focus.
This is a useful tool to use during camera lens adjustments.

Peaking color – Peaking colors may be changed as needed for best visibility. Available colors: red, green, blue, white, black. The default color is red.

Peaking level - Use this setting to adjust amount of edge peaking to suit user preference. Default level is 50.



5. AUDIO

This Page is used to adjust volume, audio channel selection, on-screen level meter and headphone mute.

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

Volume – controls the Headphone volume. Headphone volume can also be adjusted easily by using the up/down arrow keys when the menus are not on screen. Default volume setting is 50.

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

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

Mute – Disables the headphone audio output when turned ON.

Menu Settings

6. SETTING

The Setting page provides a collection of system-level functions including On Screen Display (OSD), backlight, Ethernet port settings (IP Config), short cut keys (F1/F2), and Factory Reset.



ITEMS	OPTIONS
Language	English / 中文
OSD timer	10s / 20s / 30s
Back light	0 ~ 100
DHCP	Off / On
IP	0.0.0.0
Mask	0.0.0.0
Gateway	0.0.0.0
F1 Conf.	Function button configuration. Select to show list of shortcuts
F2 Conf.	
Fan	Off / Auto / 1 - 7
Reset	Off / On
Exit	

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

OSD Timer – Adjusts the amount of time menus remain on screen.

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.

DHCP – Enable or disable DHCP. 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 Gateway

AVAILABLE SHORT CUTS F1-F2		
Center marker	Display scan	Image flip
Aspect marker	Scan	Peaking
Grid	Aspect	Mute
Check field	Freeze	Level meter

F1 Conf. – Configuration for short cut key **F1.** Default is Peaking.

F2 Conf. – Configuration for short cut key **F2.** Default is Level Meter.

Fan – Adjust the speed of the fan inside the monitor.

Reset – Sets all menu items back to the way the unit ships from the factory.

Specifications

Panel Size	3 x 5-inch screens
Panel Resolution	1920 × 1080 pixels
Brightness	460 cd/m^2
Contrast	1000: 1
Viewing Angle	170° / 170°(H/V)
Input Signal	HDMI, SDI
Supply Voltage	DC 12V
Power Consumption	≤27W
Operating Temperature	-10^{0}C ~ 50^{0}C
Storage Temperature	-20^{0}C ~ 60^{0}C
Dimension W/H/D	19" x 3.5" x 1.2" (484 × 88 × 29mm)
Weight	3.7lbs (1.65Kg)

Included Accessories

- **DC 12V 3A Universal 120/240 VAC 50/60 Hz Power adapter** with 5.5mm x 2.1mm push connector
- **TALLY kit** – Adapts 15-pin Tally 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 Video 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 HDMI the cables may cause a bad connection. Access the Camera AUX menu page. Check that Peaking is off.
4. **Picture is "stuck" on screen:**
   Access the Video 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 "SETTING" menu page, press the Menu key then press the "▲" and "▼" key to select "Reset". Press the menu key to cause the unit to reset.

PCSet 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-702, V-702-12G.**

Download the PCSet Remote Terminal Application with instructions here:

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

WARRANTY

Marshall Electronics warranties to the first consumer that this ML-503, Triple 5" Rack-mount 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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