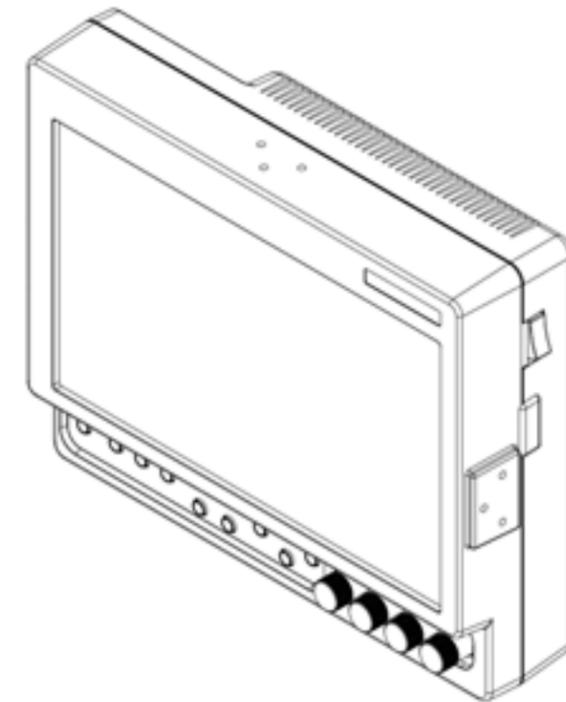# Marshall Electronics

Model No. V-LCD70XHB-HDA
Model No. V-LCD70XHB-HDMIPT
Model No. V-LCD70XHB-3GSDI

7" Portable Field / Camera-Top Monitor

Operating Instructions

Maintenance

■ **Screen Cleaning**

Periodically clean the screen surface using ammonia-free cleaning wipes (Marshall Part No. **V-HWP-K**). A clean micro-fiber cloth can also be used using only non-abrasive and ammonia-free cleaning agents. Do not use paper towels. Paper towel fibers are coarse and may scratch the surface of the polycarbonate faceplate or leave streaks on the surface. Antistatic and fingerprint resistant cleaning agents are recommended. Do not apply excessive pressure to the screen to avoid damaging the LCD.
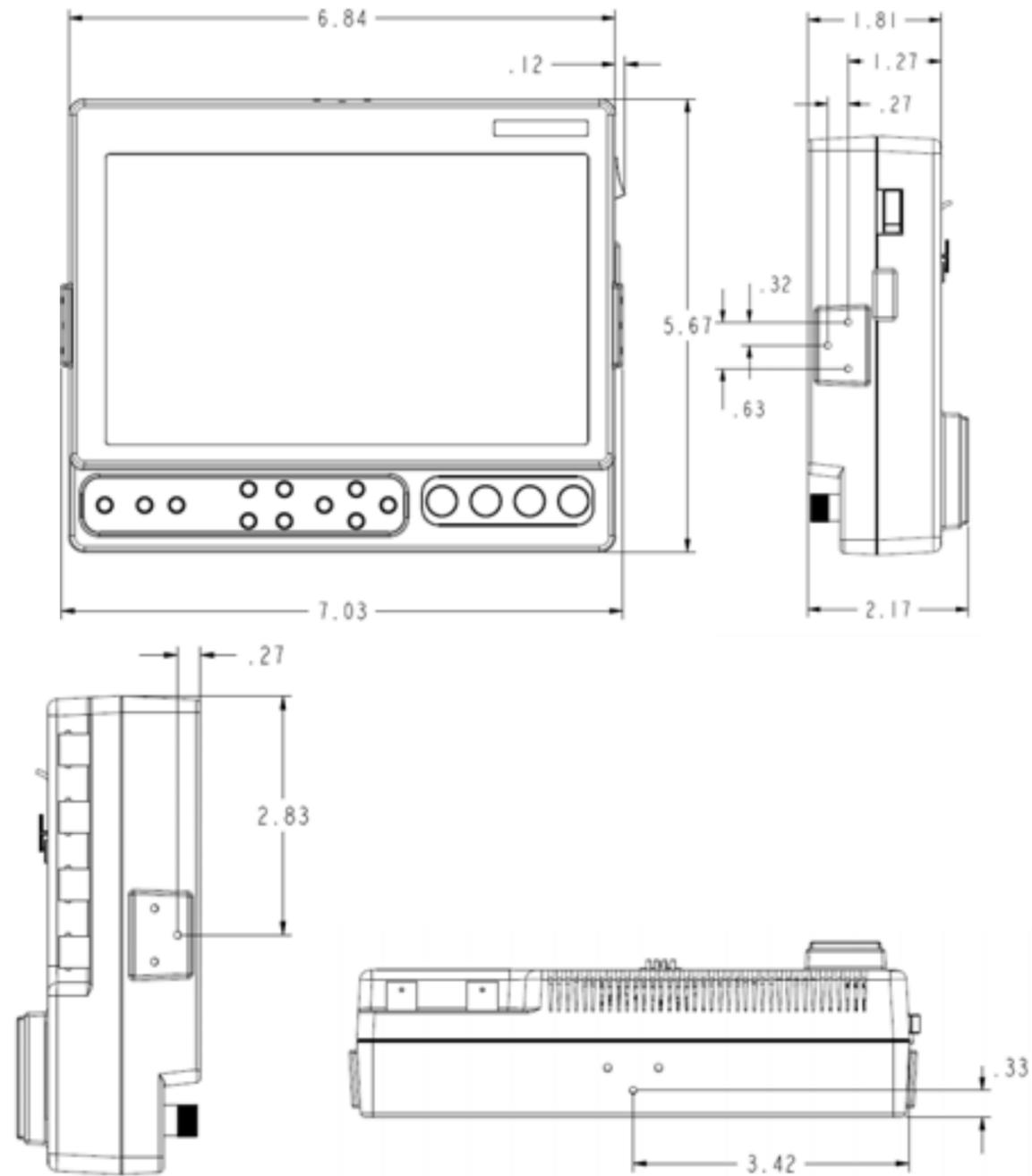
■ **Faceplate Dusting**

Dust the unit with a soft, damp cloth or chamois. Dry or abrasive cloths may cause electrostatic charge on the surface, attracting dust particles. Neutralize static electricity effects by using the recommended cleaning and polishing practice.

Warranty

Marshall Electronics warranties to the first consumer that this **V-LCD70XHB series** LCD 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. *It is considered normal for a minimal amount of pixels, not to exceed three, to fail on the periphery of the display active viewing area.* Marshall Electronics reserves the option to refuse service for display pixel failure if deemed unobtrusive to effective use of the monitor by our technicians. 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. Due to constant effort to improve products and product features, specifications may change without notice.

Dimensions

Contents

Installation and Initial Setup

- **Unpacking**

Carefully unpack the V-LCD70XHB monitor and verify that the following items are included:

- V-LCD70XHB Monitor
- V-PS12-5V-XLR Power Supply with 4-Pin Female XLR Connector
- Operating Instructions

Inspect the unit for any physical damage that may have occurred during shipping. Should there be any damage, immediately call Marshall Electronics Customer Service at (800) 800-6608. If you are not located within the continental United States, call +1 (310) 333-0606.

Specifications

- **PANEL**

Screen Size	7.0" Diagonal
Display Area (h x v)	152.4 x 91.44 mm
Aspect Ratio	15:9 (16:9 / 4:3 Selectable)
Pixels	800 x 480
Color Depth	6-bit (262,114 Colors)
Viewing Angle (h x v)	170° x 170°
Brightness	800 cd/m^2
Contrast Ratio	600:1
Pixel Pitch (h x v)	0.1905 x 0.1905 mm

- **CONNECTORS**

Video Input

Video	1 x BNC Female (75 Ω)
YP$_B$P$_R$	3 x BNC Female (75 Ω)

HDMI Input

HDMI	1 x HDMI (Type A) Female

3G-SDI Video Input
1 x BNC Female (75 Ω)

HDMI Output

HDMI	1 x HDMI (Type A) Female

3G-SDI Video Output
1 x BNC Female (75 Ω)

Note: The HDMIPT module will NOT pass through HDCP protected content.
Also, the HDMIPT module will NOT pass through EDID information.

Video Output (Active Loop-Through)

Video	1 x BNC Female (75 Ω)
YP$_B$P$_R$	3 x BNC Female (75 Ω)
3G-SDI	1 x BNC Female (75 Ω)

Power Input
4-Pin Male XLR

Pin 1:	**GND**
Pin 2:	N/C
Pin 3:	N/C
Pin 4:	**+12VDC**

- **ELECTRICAL**

Power Consumption	1.20 Amp @ 12VDC (14W Max)
Voltage Requirement	12V DC (7.5V DC-18V DC)

V-PS12-5V-XLR Power Supply:

Input	100V-240V, 1.5A, 50-60Hz
Output	12VDC, 5A, 60W Max

- **BATTERY ADAPTER**

Field-Interchangeable Battery Adapter Options (Sold Separately):

Marshall Adapter	Battery Type	Battery Voltage	Recommended Battery
CM	Canon	7.4 V	Canon BP-970G
PM	Panasonic	7.2 V	Panasonic CGA-D54
JM	JVC	7.2 V	JVC BN-V438U
SB	Sony BP	14.4 V	Sony BP-460
SM	Sony NP-Q	7.2 V	Sony NP-QM91
SL	Sony NP-F	7.2 V	Sony NP-F970
IDX	V-Mount	14.4 V	IDX E7S
AB	Anton Bauer	14.4 V	Anton Bauer Hytron 50

- **MECHANICAL**

Dimensions (w x h x d): 7.03" x 5.67" x 2.17"

Additional Mounting: ¼"-20 Mounting Bracket

Weight (Monitor Only):	1.60 lbs
Operating Temperature	32°F to 95°F (0°C to 35° C)
Storage Temperature	-14°F to140°F (-10°C to 60° C)

RoHs	Do not dispose. Return to Manufacturer or Authorized Recycle Facility

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System Information Submenu
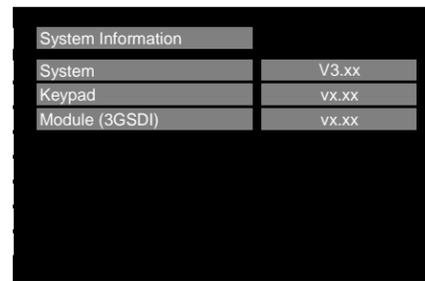
System Information Submenu

■ **System**

This shows the System firmware version of your monitor.

■ **Keypad**

This shows the Keypad firmware version of your monitor.

■ **Module**

This shows your module version (HDMIPT or 3GSDI) and the firmware version of your module.

Front and Side Monitor Features

❶ 　❷ 　❸ 　❹ 　❺
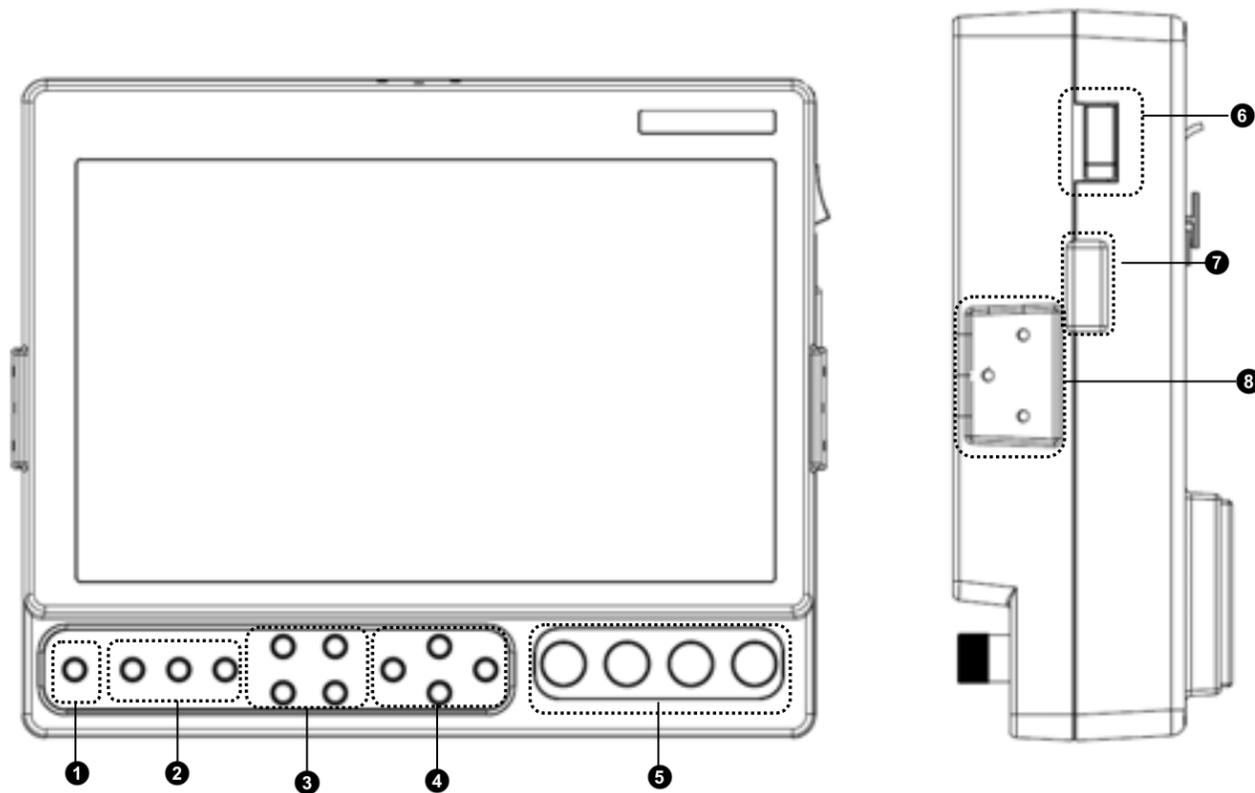
❶ **Power Button**
Use the power button to toggle between ON and STANDBY modes. In the STANDBY state, the LED on the button will illuminate bright green. In the ON state, the LED will dimly illuminate green.

❷ **Input Select Buttons**
Use the Input select buttons to select VIDEO, YPbPr, and HDMI or 3GSDI inputs. In the case of the V-LCD70XHB-HDA monitor, the third button will not be available. Video standards and formats (NTSC/PAL, etc.) are automatically detected.

❸ **User-Definable Function Buttons**
Four user-definable function buttons can be used for direct access to various settings. Functions are assigned using the on-screen menu.

❹ **Menu Navigation Buttons**
Use the Menu, ▲, ▼, and **Select** buttons to display and navigate the on-screen menu.

❺ **Image Adjustment Knobs**
Use the image adjustment knobs to adjust brightness, color saturation, and contrast of the image. The status of each image adjustment parameter is shown on the bottom left of the screen, with values ranging from 0 to 100. Default value is 50. Tint will adjust the hue of Composite inputs only.

❻ **Power Switch**
Use the hard power switch to supply power to the monitor, and choose the input from which the monitor draws power. The upper switch position uses the battery adapter, the lower switch position uses the 4-Pin XLR input, and the center position is OFF. Battery life can be preserved by setting this switch to the OFF position when the monitor is not in use.

❼ **Accessory / Service Connector**
This connector is for Marshall Electronics' line of V-LCD accessories and for monitor service. Please contact Marshall Electronics for more information.

❽ **Mounting Plate Attachment Area**
Use the Mounting Plate Attachment area to attach mounting brackets with ¼-20 mounting holes. This attachment area is available on the top and sides of the monitor as well.

■ **SDI Signal Strength** (V-LCD70XHB-3GSDI Model Only with *3GSDI-CLI* module)
Use this setting to enable an on screen indicator of your current SDI signal strength. Although this is not meant to be an absolute measurement of your SDI Signal Strength, this feature can be useful in determining the stability of the digital data along your cable run.
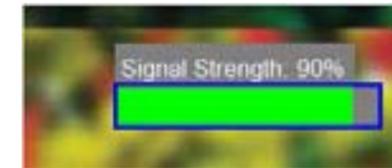
Function Presets Submenu

Function Presets Submenu

■ **User-Definable Function Buttons**

Use the **Function on F1, F2, F3 and F4** menu items to define each function button on the front panel of the monitor. The following options are available for each button:

- Ratio
- Check Field
- HDMI DSL Ratio
- Horizon Indicator*
- Image Flip
- Mosquito Filter
- Peaking Filter
- False Colors
- Freeze Input
- Aspect Markers
- Center Marker
- Marker Enable
- Underscan
- H/V Delay
- Pixel-to-Pixel

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HDMI DSLR Video Recording
3:2 Aspect Ratio

Use the **16:9** option to scale the HDMI DSLR video output to fit the 16:9 portion of the screen. This will also remove the portion of the on screen video that is NOT recorded by the DSLR camera due to sensor crop.

HDMI DSLR Video Recording
16:9 Aspect Ratio

Use the **Full Screen** to

HDMI DSLR Video Recording
3:2 Aspect Ratio

Rear Monitor Features
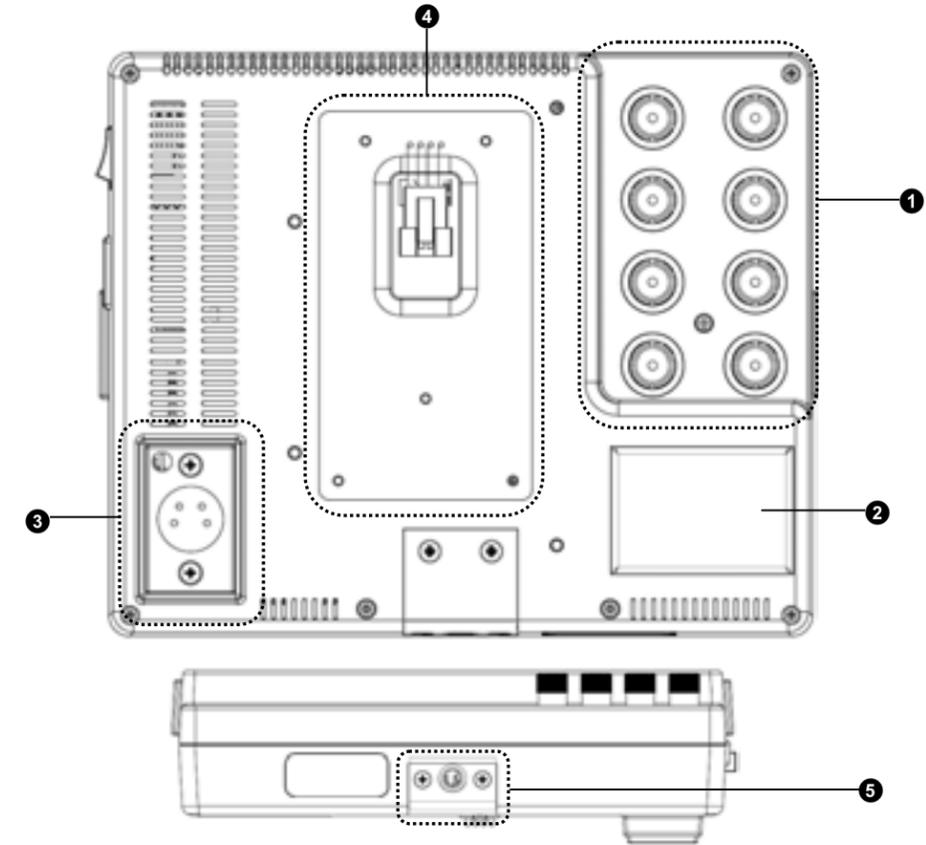
❶ **Component and Composite Input and Output**
The V-LCD70XHB has HD component (YPbPr), composite as well as active loop-through outputs for each analog input. See page 8 for supported video formats. The BNC inputs are internally terminated with 75 ohms.

❷ **Module Slot**
This area is intended for the Marshall Electronics' V-LCD70XHB modules, which are factory installed.

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V-LCD70XHB-HDMIPT

V-LCD70XHB-3GSDI
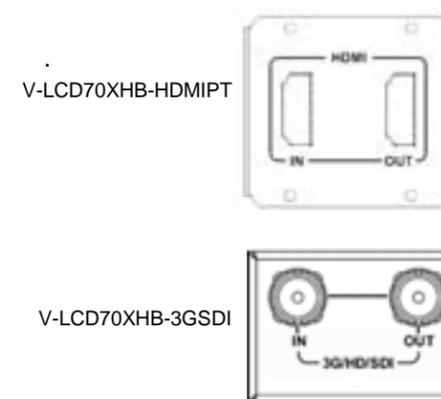
❸ **Power Input**
Connect 12VDC to the 4-Pin XLR power input connector. Power can be supplied from the included power supply, or from a variety of DC sources supplying at least 1 Amp at 12 Volts.

IMPORTANT: If using a power source other than the included power supply, be sure that the polarity of the DC input is correct:

Pin 1: GND
Pin 2: N/C
Pin 3: N/C
Pin 4: +12VDC

❹ **Battery Adapter**
The V-LCD70XHB can be powered from a variety of batteries. Several user-interchangeable battery adapters are available.

❺ **¼-20 Mounting Hole**
Use the ¼-20 mounting hole to attach the monitor to a camera or variety of mounting devices.

Compatible Input Formats

The following standards are supported by the V-LCD70XHB monitors:

Composite (CVBS)
NTSC, PAL

Component (YPbPr)
480i60, 576i50
720p (30, 29.97, 25)
720p (60 / 59.94 / 50)
1080p (30, 29.97, 25, 24, 24 sF, 23.98, 23.98 sF)
1080i (60 / 59.94 / 50)

3GSDI and HDMIPT Inputs

V-LCD70XHB-3GSDI – V-LCD70XHB monitor with Triple-Rate SDI Input / Output

SD-SDI –
480i 59.94, 576i 50
HD-SDI –
720p (60 / 59.94 / 50 / 30 / 29.97 / 25)
1080i (60 / 59.94 / 50)
1080p (30 / 29.97/ 25 / 24 / 24sF/ 23.98 / 23.98sF)
3G-SDI – YCbCr (4:2:2) 10 Bit – Level A and B
1080p (60 / 59.94 / 50)

YCbCr/RGB (4:4:4) 10 Bit – Level A and B
1080i (60 / 59.94 / 50)
1080p (30 / 29.97 / 29.97sF / 25 / 25sF / 24 / 24sF / 23.98 / 23.98sF)

YCbCr+A / RGB+A (4:4:4) 10 Bit
1080i (60 / 59.94 / 50)
1080p (30 / 29.97 / 29.97sF / 25 / 25sF / 24 / 24sF / 23.98 / 23.98sF)

V-LCD70XHB-HDMIPT – V-LCD70XHB monitor with HDMI Input and Pass Through

HDMI Video–
480p 59.94 , 576p 50
720p (60 / 59.94 / 50 / 30 / 29.97 / 25)
1080i (60 / 59.94 / 50)
1080p (30 / 29.97/ 25 / 24 / 24sF/ 23.98 / 23.98sF)
VESA –
640 x 480 (60 Hz / 72 Hz / 75 Hz)
800 x 600 (56 Hz / 60 Hz / 72 Hz / 75 Hz)
1024 x 768 (60 Hz / 70 Hz / 75 Hz)
1280 x 1024 (60 Hz / 75 Hz)

Note: The HDMIPT module will NOT pass through HDCP protected content.
Also, the HDMIPT module will NOT pass through EDID information.

■ **Contrast / Backlight**

Use this feature to choose between controlling the Contrast of the image or the intensity of the panel's Backlight with the CONTRAST knob on your monitor. **Note:** While the Contrast control moves up and down at intervals of 1, the Backlight control will move up and down at intervals of 2, from 0-100.

■ **Freeze Input**

Use the Freeze function to "freeze" the current image on the screen. Select this menu item again (Unfreeze) to return to the real-time video input.

■ **Image Flip**
Use the Image Flip function to turn the monitor's display 180°. **Note:** Both the image and all menus and On Screen Display text will be flipped.

■ **Manufacturer Default**
Select this menu item to reset all adjustments and menu settings to the factory default configuration.

■ **HDMI Color Space (HDMIPT Model Only)**
Use this setting to automatically detect (Auto) or select the color space (RGB or YCrCb) of incoming HDMI video. This should match the color space of the video output settings on your playback device. Note that this option is disabled when viewing VESA (Computer) formats.

■ **HDMI Aspect Ratio (HDMIPT Model Only)**
Use this setting to automatically detect (Auto) the proper Aspect Ratio settings of incoming HDMI video. Most HD signals will display in the 16:9 aspect ratio. SD signals (480P/576P) will display in the 4:3 aspect ratio.

■ **HDMI DSLR Ratio (HDMIPT Model Only)**
During video recording, the most popular DSLR cameras place "pillar" boxes around the image when outputting to an external HDMI video sink. The HDMI DSLR Ratio option allows you to size the scale of the image so that you can see only video in the appropriate aspect ratio or only video that is being captured by the camera's sensor.

DSLR HDMI Video output
during recording

The HDMI DSLR Ratio provides you with 3 options: **3:2**, **16:9** and **Full Screen**.

Use the **3:2** option to scale the HDMI DSLR video output to fit the screen vertically.

■ Peaking Filter (Focus assist)

The Peaking Filter is used to aid the camera operator in obtaining the sharpest possible picture. When activated, all color will be removed from the display and a black-and-white image will remain. The internal processor will display RED color on the screen where sharp edges appear. When the camera operator adjusts (racks) the focus control (on the camera lens), different parts of the image will have RED colored edges. This indicates that the portion of the image is sharp – or in focus. Final focus is achieved by racking the camera lens focus control back and forth until the desired portion of the image has RED colored edges. Please note that this feature is most effective when the subject is properly exposed and contains enough contrast to be processed.

■ Mosquito Filter

Use this setting to filter out "Mosquito Noise" – an artifact that appears as specs around edges of objects. This artifact is the result of video that has been compressed at some point. Video sources from DVD-Players, PDA's, Digital Cable Boxes, Camcorders, etc. often have this artifact.

System Configuration Submenu

System Configuration	
Input Format OSD	5 sec
Curtain Color	Green
Splash Screen	On
Contrast / Backlight	Contrast
Freeze Input	Off
Image Flip	Off
Manufacturer Default	
HDMI Color Space	Auto
HDMI Aspect Ratio	Auto
HDMI DSLR Ratio	Off

System Configuration Submenu

■ Input Format OSD

Use this option to enable on-screen display of input/format status in the upper-left corner of the screen.

■ Curtain Color

Use this option to change the curtain color on the monitor. This curtain color is what you see when there is no signal input to the monitor.

■ Splash Screen

Use this option to enable or disable the Marshall Electronics Inc. splash screen seen when the monitor is first powered on.

Menu Overview

v3.51

Video Configuration		
Color Temperature	User, Linear, D55, D65, D93
Gamma Correction	1.6, 1.8, 2.0, 2.2, 2.4
RGB Bias and Gain	R,G,B Bias (0-100) / R,G,B Gain (0-100)
Check Field	Off, Mono, Blue, Green, Red
Ratio	Full Screen, 4:3, 16:9
Pixel to Pixel	Off, Centered, User
H/V Delay	Off, H & V Delay, V Delay, H Delay
Underscan	Off, On
NTSC Black Level [1]	0 IRE, 7.5 IRE

Marker Configuration	
Marker Enable	Off, On
Center Marker	Off, On
16: 9 Markers	Off, 4:3, 13:9, 14:9, 1.85:1, 2.35:1, 95% Safe, 93% Safe, 90% Safe, 88% Safe, 85% Safe, 80% Safe, User
Full Screen Markers	Off, 95% Safe, 93% Safe, 90% Safe, 88% Safe, 85% Safe, 80% Safe, User
4:3 Markers	Off, 95% Safe, 93% Safe, 90% Safe, 88% Safe, 85% Safe, 80% Safe, User

Filter Configuration [2]	
False Colors	Off, On
Peaking Filter	Off, On
Mosquito Filter	Off, On

[1] Feature enabled in Composite NTSC Video only
[2] The False Color and Peaking Filter cannot be activated simultaneously

System Configuration		
Input Format OSD	On, Off, 5 sec	
Curtain Color	Blue, Green, Black	
Splash Screen	On, Off	
Contrast/Backlight	Contrast, Backlight	
Freeze Input	Off, On	
Image Flip	Off, On	
Manufacturer Default		
HDMI Color Space [3]	Auto, YCbCr, RGB	
HDMI Aspect Ratio [3]	Auto, Manual	
HDMI DSLR Ratio [3]	Off, 3:2, 16:9, Full Screen	
SDI Signal Strength [4]	Off, 5 sec, On	

| Function Presets [5]		
Function on F1	Ratio, Check Field, HDMI DSLR Ratio, Horizon Indicator, Image Flip, Mosquito Filter, Peaking Filter, False Colors, Freeze Input, Aspect Markers, Center Marker, Marker Enable, Underscan, H/V Delay, Pixel-to-Pixel	
Function on F2	Ratio, Check Field, HDMI DSLR Ratio, Horizon Indicator, Image Flip, Mosquito Filter, Peaking Filter, False Colors, Freeze Input, Aspect Markers, Center Marker, Marker Enable, Underscan, H/V Delay, Pixel-to-Pixel	
Function on F3	Ratio, Check Field, HDMI DSLR Ratio, Horizon Indicator, Image Flip, Mosquito Filter, Peaking Filter, False Colors, Freeze Input, Aspect Markers, Center Marker, Marker Enable, Underscan, H/V Delay, Pixel-to-Pixel	
Function on F4	Ratio, Check Field, HDMI DSLR Ratio, Horizon Indicator, Image Flip, Mosquito Filter, Peaking Filter, False Colors, Freeze Input, Aspect Markers, Center Marker, Marker Enable, Underscan, H/V Delay, Pixel-to-Pixel	

[3] Feature enabled for HDMIPT models only
[4] Feature enabled for 3GSDI model only
[5] Horizon Indicator option is only applicable when you have the V-LCD-HI accessory connected to your monitor

Filter Configuration Submenu

■ False Colors

The V-LCD70XHB has a false color filter to aid in the setting of camera exposure. As the camera Iris is adjusted, elements of the image will change color based on the luminance or brightness values. This enables proper exposure to be achieved without the use of costly, complicated external equipment. To best utilize this feature, you must understand the color chart below and have a basic understanding of camera exposure. Normally, when shooting subjects like people, it is common practice to set exposure of faces to the equivalent of approximately 56 IRE. The false color filter will show this area as the color PINK on the monitor. Therefore, as you increase exposure (open the IRIS), your subject will change color as indicated on the chart: PINK, then GREY, then a few shades of YELLOW. Over exposed subjects (above 101 IRE) on the monitor will be shown as RED. In addition, underexposed subjects will show as DEEP-BLUE to DARK–BLUE, with clipped-blacks indicated with a FUCHSIA-like color. Lastly, the color GREEN is used to indicate elements of the image that are approximately 45 IRE. This represents a 'neutral' or 'mid-level' exposure commonly used for objects (not people).
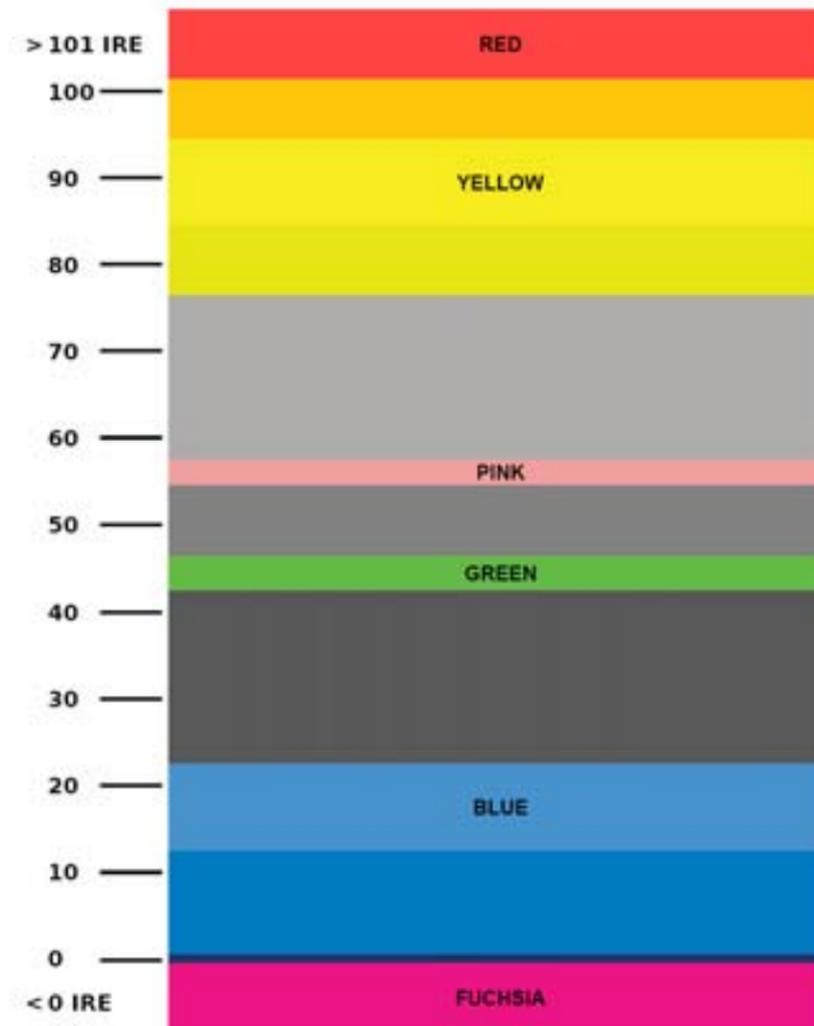
False Color Key

2. Use the BRIGHT, COLOR, TINT and CONTRAST knobs to move the LEFT, RIGHT, TOP and BOTTOM borders of the safe area to your desired position. When you have reached the desired location for the borders, press the MENU button. If you began the marker adjustment using one of the predefined safe areas and made an adjustment, the marker selection will automatically convert to the User marker setting.


## ■ Marker Background

Use this setting to choose how selected markers are displayed on the screen. :

- 0%   The marker is superimposed on the complete image.
- 25%   Image area beyond the marker is shown at 25% intensity.
- 50%   Image area beyond the marker is shown at 50% intensity.
- 75%   Image area beyond the marker is shown at 75% intensity.
- 100%   Image area beyond the marker is shown at 100% intensity (black).

Example (80% Marker in 4:3 Mode):


Normal Background   *Black Background*
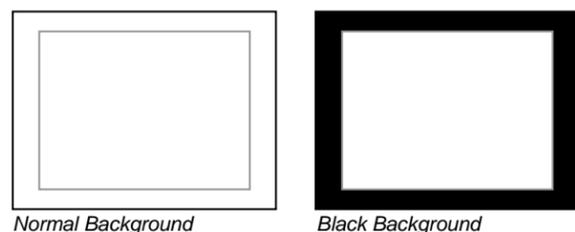
Main Menu and Navigation
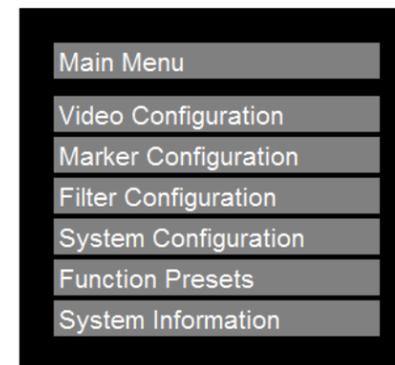
Main Menu

Access the main menu by pushing and holding the **MENU** button on the front panel of the monitor.
- Step through menu items using the ▲ and ▼ buttons.
- Choose a submenu or select a menu item by pressing **SELECT**.
- Return to the previous menu by pressing **MENU**.
- Exit the main menu by pressing **MENU**. The menu will automatically time out after 15 seconds.

Video Configuration Submenu
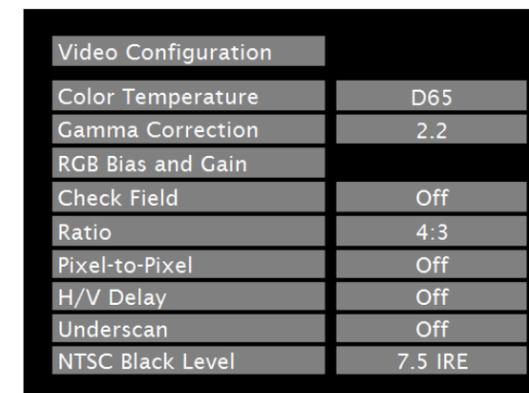
*Video Configuration Submenu*

■ Color Temperature
Use this setting to choose one of three color temperature presets:

- D55 (5500K)
- D65 (6500K)
- D93 (9300K)
- USER (Adjustable Color Bias and Gain)
- Linear (No processing is applied to the panel)

■ Gamma Correction
Use the Gamma Correction setting to adjust the value of the gamma applied to incoming video signals. The default gamma value is 2.2. Gamma correction represents the relationship between the pixel levels from your incoming video

and the luminance of your monitor. The lowest gamma level available, 1.6, will cause the image to appear brighter. The highest gamma level available, 2.4, will cause the image to appear darker. The chart below shows this on a scale.

Gamma Correction
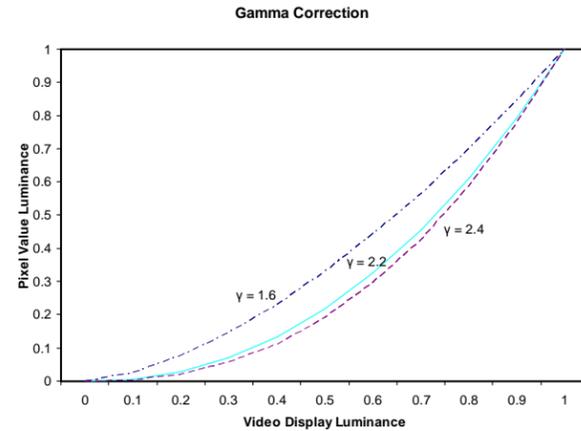
■ RGB Bias and Gain

Select this submenu to fine-tune the monitor's color balance (R, G, B). This should only be done by someone experienced with video engineering, as this will alter the overall color shading of the screen. The purpose is to allow color matching to other types of monitors and/or displays. Note: The Color Temperature preset will automatically switch to USER when Color Bias settings are adjusted. It is normal for color bias adjustments to be very subtle.

When selecting the RGB Bias and Gain submenu, gain adjustment indicators will appear at the top of the screen, and bias adjustment indicators will appear at the bottom of the screen:

RGB Bias and Gain

Use the ▲ and ▼ buttons to select each individual bias or gain control. Press SELECT to begin adjusting the control. Use the ▲ and ▼ buttons to increase or decrease the value.

Alternately, the image adjustment knobs (Brightness, Color, Tint, Contrast) can be used to easily adjust the bias and gain settings as shown below. The knobs affect whichever row of controls (gain or bias) is currently selected.
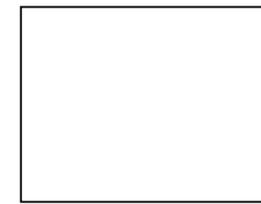

RED GREEN BLUE ALL
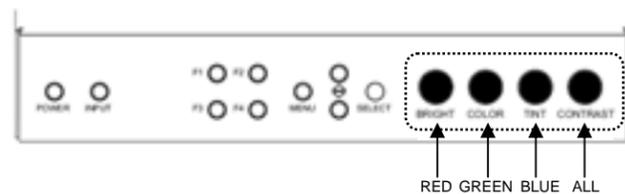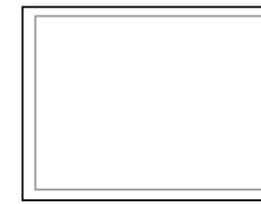
■ Full Screen Markers

Use this setting to superimpose one of 7 markers on the screen when in Full Screen mode. This setting is disabled when the aspect ratio is set to 16:9 or 4:3, or when Pixel-to-Pixel, Underscan, or H/V Delay is enabled.

• 95% Safe Area
• 93% Safe Area
• 90% Safe Area
• 88% Safe Area
• 85% Safe Area
• 80% Safe Area
• User Safe Area

Full Screen Marker Examples:

OFF (No Marker)

90% Safe Area

■ 4:3 Markers

Use this setting to superimpose one of 7 markers on the screen when in 4:3 mode. As with the other modes, this setting is disabled when the aspect ratio is set to Full Screen or 16:9, or when Pixel-to-Pixel, Underscan, or H/V Delay is enabled..

• 95% Safe Area
• 93% Safe Area
• 90% Safe Area
• 88% Safe Area
• 85% Safe Area
• 80% Safe Area
• User Safe Area

User Markers

User markers enable the user to create their own safe areas on the screen.

1. Choose the User option for your selected aspect ratio (Full Screen, 4:3 or 16:9) in the Marker Configuration submenu and press the SELECT button. You may also begin with an already predefined safe area (95%, 93%, 90%, etc.) and make your adjustments from there by highlighting a particular safe area and pressing the SELECT button.

Marker Configuration	
Marker Enable	On
Center Marker	Off
16:9 Marker	Off
Full Screen Markers	User
4:3 Markers	Off
Marker Background	100%

Marker Configuration Submenu

Marker Configuration Submenu

■ Markers

Use this setting to enable or disable all on-screen markers. This setting affects the center marker, full screen markers, 16:9 markers and 4:3 markers.

■ Center Marker

Use this setting to display a center marker on the screen.

■ 16:9 Markers

Use these settings to superimpose one of 12 markers on the screen when in 16:9 mode. This setting is disabled when the aspect ratio is in Full Screen or 4:3 mode, or Pixel-to-Pixel, Underscan, or H/V Delay is enabled.

- 4:3
- 13:9
- 14:9
- 1.85:1
- 2.35:1
- 95% Safe
- 93% Safe
- 90%Safe
- 88% Safe
- 85% Safe
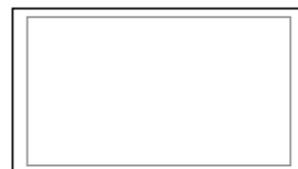- 80% Safe
- User

16:9 Marker Examples:

OFF (No Marker)   2.35:1 Aspect Ratio   4:3 Aspect Ratio Marker   90% Safe Area

■ Check Field

Use the check field modes for monitor calibration or to analyze individual color components of an image. In Monochrome mode, all color is disabled and only a grayscale image is shown. In Blue, Green, and Red check field modes, only the selected color will be shown.

Use the following procedure when calibrating the monitor to SMPTE color bars with the following procedure:

1. Allow the monitor to warm up for at least 5-10 minutes.

2. Display SMPTE split-field color bars on the monitor using an external source.

3. Enable **Monochrome mode**.

4. Locate the pluge pattern (super black, black, and gray bars) at the lower-right corner of the screen. Adjust the **Brightness** knob until there is no visible difference between the super black and black bars, but the gray bar is still visible.

5. Adjust the **Contrast** knob until an even grayscale appears along the top bars.

6. Disable **Monochrome mode**.

7. Enable **Blue Check Field mode** and adjust the **Color** knob so that the outermost bars (white and blue) appear to match in brightness.

8. Composite NTSC only: Adjust the **Tint** knob until the third bar from the left (cyan) and the third bar from the right (magenta) appear to match in brightness.

9. Disable **Blue Check Field mode**.

■ Ratio

Use to switch between Full Screen, 4:3 and 16:9 aspect ratios.

As the V-LCD70XHB-HDA monitor has a native resolution of 800 x 480 RGB pixels, incoming images are automatically scaled to fit the screen:

- In Full Screen mode, images are scaled to fill the entire screen (800 x 480).

- In 4:3 mode, images are scaled to fill the center 4:3 portion of the screen (640 x 480). With a 16:9 source, images will be centered with a black letter-box added on the left and right sides.

- In 16:9 mode, images are scaled to a 16:9 portion of the screen (800 x 450), with a black letter-box added top and bottom.

Note: The aspect ratio setting is ignored when Pixel-to-Pixel mode is enabled.

■ Pixel-to-Pixel Mode

Use this setting to enable Pixel-to-Pixel mode. You have the option of viewing the center 800 x 480 (Centered Pixel-to-Pixel mode) or selecting any 800 x 480 area on the screen (User Pixel-to-Pixel mode). The User Pixel-to-Pixel option is not available when the incoming image is 800 x 480 or lower - only the Centered Pixel-to-Pixel mode can be used in this case.

This Pixel-to-Pixel mode bypasses the monitor's internal scaling function and displays incoming images in their native resolution and aspect ratio, with a one-to-one mapping:

- For incoming formats smaller than the native resolution of the LCD panel (800 x 480), the image will be displayed in the center of the screen using only the necessary LCD pixels. For example, NTSC images will occupy exactly 720 x 480 pixels. The surrounding pixels will be black.

- For incoming formats exceeding 800 x 480 pixels, only the center 800 x 480 of the incoming image will displayed occupying the whole screen, with the remainder of the picture cropped. For example, 1080i formats will both be cropped to 800 x 480 and displayed full-screen.

Note: Pixel-to-Pixel mode disables aspect ratio control and H/V Delay.

The User Pixel-to-Pixel mode is available with High Definition (720P or greater) formats only, and is enabled in the following way:

1. Toggle to the User option in the Pixel-to-Pixel section of the Video Configuration Menu. Press Select.
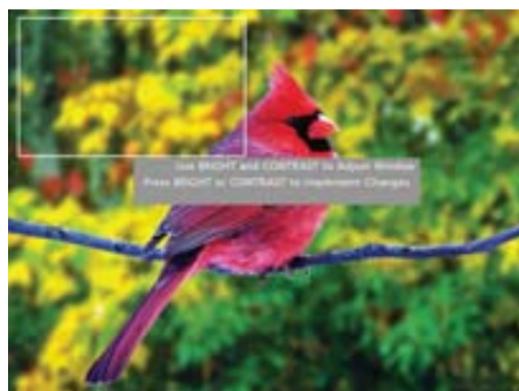
2. Using the BRIGHT and CONTRAST knobs, select the portion of the image you would like to view with scaling turned off. The BRIGHT knob will move your selected area left and right, and the CONTRAST knob will move your selected area up and down.

3. Press the BRIGHT or CONTRAST knob to confirm your selection. The selected portion of the screen will automatically fill the display area.

■ **H/V Delay**
Use this setting to enable one of three delay modes (H & V Delay, V Delay, H Delay):

- In H & V Delay mode, both horizontal sync and vertical sync are delayed, resulting in both horizontal and vertical blanking periods being shown on the screen.

- In V Delay mode, vertical sync is delayed so that the vertical blanking period is displayed on screen.

- In H Delay mode, horizontal sync is delayed so that the horizontal blanking period is displayed on the screen.

■ **Underscan**

Use this setting to enable or disable Underscan mode:

- When Underscan is OFF, the active portion of the video signal is displayed on the screen, with 0% overscan.

- When Underscan is ON, the image size is slightly reduced. This allows the user to clearly view the edges of the active video area.

■ **NTSC Black Level**

Set the NTSC Black Level according to the type of NTSC composite video input:

- 7.5 IRE: Use this setting for standard NTSC-M signals which use a 7.5 IRE setup (black level).

- 0 IRE: Use this setting for NTSC-J signals which have no setup, or a black level of 0 IRE.

Note: This setting is disabled for PAL composite input and all component/HDMI formats.