



Instruction Manual

LM-404HDA
HD SDI Multiple Format
Quad Color LCD Monitors with Audio

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1.0 INTRODUCTION

The LM-404HDA is a high performance Multi-format, Quad Color LCD Monitor for the broadcast and professional market. A multitude of video signal formats may be accurately monitored. The high brightness, wide viewing angle, excellent contrast ratio and high definition color result in an outstanding image. Each monitor features 1x BNC input and 1x output for SDI (either SD or HD) which is active throughout, 1x HD-15 Analog RGBHV, 1x (3 BNC) YPbPr Component Video, 1x Y/C (4 Pin Mini-DIN) and 1x Composite Video. In addition, 1 channel of AES stereo audio and 1 channel of analog stereo audio inputs are available supplemented by 4 stereo channels of SDI audio and 1 channel of analog audio per monitor outputs. NTSC and PAL Television Standards are supported and automatically detected. Front panel Tally LED's for each monitor can be activated externally via the DB9 connector. Our professional video conversion products have been serving the industry for over twenty years. TV One offers a full line of high quality Seamless Switchers, Video Scalers, Up/Down/Cross Converters, Analog-Digital Converters (SD/HD-SDI, HDMI, DVI), Format Converters, Standards Converters, TBC/Frame Synchronizers, Matrix Routing Switchers, Signal Distribution Amplifiers and Cat.5 Transmission Systems.

1.1 Liability Statement

Every effort has been made to ensure that this product is free of errors. TV One cannot be held liable for the use of this hardware or any direct or indirect consequential damages arising from its use. It is the responsibility of the user of the hardware to check that it is suitable for his/her requirements and that it is installed correctly. All rights reserved. No parts of this manual may be reproduced or transmitted by any form or means electronic or mechanical, including photocopying, recording or by any information storage or retrieval system without the written consent of the publisher.

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1.2 Features

Each LM-404HDA monitor has many features that enabling superior performance:

- Inputs: SD/HD-SDI, Analog RGBHV, YPbPr, CV and YC (S-Video)
- Resolutions up to 1024x768, 1080p (16:9)
- High Brightness, Pro Grade LCD Panels
- Contrast Ratio = 400:1
- 16.7 Million Colors
- 130° Left/Right and 110° Up/Down Viewing Angles
- AES and Analog Audio In, SDI and Analog Audio Out

2.0 SPECIFICATIONS (Each Monitor)

LCD Panel

Display Size – Diagonal	4.3" (109.2mm)
Display Area	3.66"x 2.22" (93 x 55.8mm)
Panel Resolution	800x480 (16:10)
Dot Pitch	0.116mm
Color Resolution	16.7 Million Colors
Contrast Ratio	400:1
Brightness	200 cd/m ²
Response Time	20 msec
Left/Right View Angle	130°
Up/Down View Angle	110°
Aspect Ratio	4:3, 16:9 or 16:10

Video Inputs

SD/HD-SDI	1x via BNC with Active Output
Analog RGBHV	1x via HD-15 Female
Composite Video	1x via BNC Connectors
YC (S-Video)	1x via 4-Pin Mini-DIN Connector
YPbPr Component	1x via 3 BNC Connectors

SD/HD-SDI Input Range

SDTV (Bit Rate)	270Mbps, 525i (60/59.94), 625i(50)
HDTV (Bit Rate)	1.485, 1.4835Gpbs
HDTV Resolutions	1080P/30Hz, 1080P/29.97Hz, 1080P/25Hz, 1080P/24Hz, 1080P/23.98Hz 1080i/60Hz, 1080i/59.94Hz, 1080i/50Hz 1035i/60Hz, 1035i/59.94Hz 720P/60Hz, 720P/59.94Hz, 720P/50Hz

Audio Inputs

AES (1 Stereo Channel)	1x via BNC
Analog (1 Stereo Channel)	2x via BNC

Audio Outputs

SDI (4 Stereo Channels)	1x via BNC
Analog (1 Stereo Channel)	1x via 3.5mm Jack

Analog Component Input Range

SDTV – (CV, Y/C)	1V pp CVBS, 0.8Vpp Y/C
HDTV - YPbPr	480p, 576p, 720p, 1080i, 1080p

Analog RGBHV Input Range

640x350	70, 85Hz
720x350	70, 85Hz
640x400	56, 70, 85Hz
720x400	70, 85Hz
640x480	60, 66, 72, 75, 85Hz
800x600	56, 60, 70, 72, 75, 85Hz
1024x768	60, 70, 72, 75, 85Hz

Composite & S-Video	
Input Range	
Vert. Frequency	NTSC 60Hz, PAL 50Hz
Horiz. Frequency	NTSC 15.75KHz, PAL 15.625KHz
Tally Control	
Tally Input	1x via DB9 Connector
General	
Display Element	Active Matrix TFT
Video Adjustments	Brightness, Contrast, Sharpness, Color Level (RGB)
TV Standards	NTSC/ PAL Auto-detect
Aspect Ratio Modes	16:9, 4:3
Front Panel Control	
Buttons	
Menu Navigation	Menu, Left, Right
Input Select	SDI, YPbPr, CV, SV, PC (RGBHV)
Power	On/Off
Limited Warranty	
Unit, except LCD	3 Year Parts and Labor
LCD Panel	Panel Manufacturer's Terms
Mechanical – With	
Rackmount	
Size (H-W-D)	132.0x483.5x175mm(5.2"x19"x6.9")
Weight (Net)	6.5 kg (14.3 lbs)
Rackmount	3RU - Tilt Up/Down
Environmental	
Operating Temperature	-10° to +50° C (+14° to +122° F)
Operating Humidity	10% to 90%, Non-condensing
Storage Temperature	-10° to +60° C (-14° to +140° F)
Storage Humidity	10% to 90%, Non-condensing
Power Requirement	
External Power Supply	12VDC@5A
Regulatory Approvals	
Monitors	FCC, CE, RoHS
Power Supplies	UL, CUL, CE, PSE, GS, RoHS
Accessories Included	
1x Power Adapter	US, UK or Euro
1x Operations Manual	
4x Rackmount Screws	

3.0 CHECKING PACKAGE CONTENTS

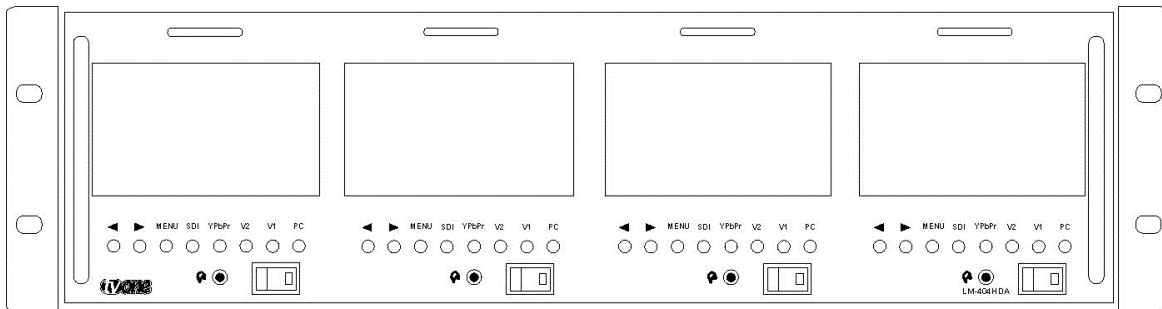
Before attempting to use this unit, please check the packaging and make certain the following items are contained in the shipping carton:

- 1x LM-404HDA Quad Color LCD Monitor
- 1x Operations Manual
- 4x Rackmount Screws
- 1x AC Power Adapter

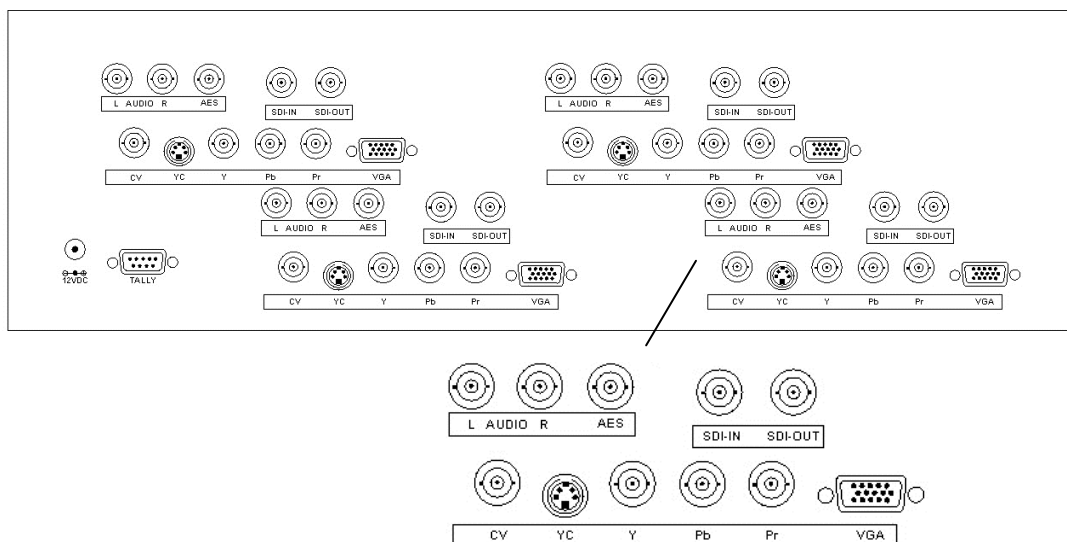
Note: Please retain the original packing material should the need ever arise to return the unit. If you find any items are missing, contact your reseller or TV One immediately. Have the Model Number, Serial Number and Invoice available for reference when you call.

4.0 CONNECTING THE HARDWARE

Refer to the illustrations below. The first drawing is the front view of the LM-404HDA. This drawing will allow familiarization with the overall layout the unit.



The next drawing shows the Input and Output connectors plus the DC Power Input.



Connect the cables from the desired source to the appropriate input of each monitor then connect the furnished AC adapter and gently twist it 90 degrees to lock in position. Lastly, if tally operation is desired, wire a mating DB-9 plug for the tally connector and connect it to the monitor. To turn on the tally for display 1, connect pin 1 to pin 6 on the connector, to turn on the tally for display 2, connect pin 2 to pin 7 on the connector and to turn on tally for display 3, connect pin 3 to pin 8 on the connector and the tally for display 4 is turned on by connecting pin 4 to pin 9.

5.0 OPERATION OF THE LM-404HDA

After mounting the LM-404HDA in a rack and connecting the appropriate cables and the AC adapter, press the power button on each monitor and select the appropriate inputs. Adjust the vertical viewing angle if desired and then use the On Screen Display (OSD) and Menu structure to make any changes you desire to the functionality of the individual monitors.

Input selection is made by pressing the appropriate button on the front panel of each monitor. The possible selections are SDI, YPbPr, V1 (Composite Video) V2 (Y/C) or PC.

Once the input selection has been made, you may choose the image's aspect ratio, and/or adjust image and audio parameters via the menu function using the On Screen Display (OSD).

5.1 Using the On Screen Display Menus

Beyond simple use of the monitors, users should acquaint themselves with the On Screen Display (OSD) and Menu structure. Within this functionality the user can fine tune the operation of the unit and often make improvements to the appearance of the displayed image. Using the OSD Menu is not difficult and allows you to adjust the picture quality of the monitors. Each monitor has its own OSD Menu.

5.1.1 Menu Navigation:

To utilize the menu and the (OSD), press the Menu button. This makes the Menu list appear and you will then use the two arrow buttons to navigate the list and make adjustments. Move within the Menu using the arrow buttons and select the item you wish to change or adjust by pressing the Menu button. Once selected, use the arrow buttons again to make the function change or adjustment and press the Menu button again to confirm your selection or adjustment. The Reset function saves your changes and exits the OSD Menu. The Menu List and Functions are as shown on next page.

Display Mode	4:3 and 16:9 video mode for user selection
Brightness	Adjust the brightness of screen. (Adjustment range 0~15)
Contrast	Adjust the contrast of screen. (Adjustment range 0~127.)
Color Mode	Adjust independent R.G.B. Color level
Saturation	Adjust the Saturation of screen. (Adjustment range 0~255)
Blue Only	Select only Blue channel for display of image
H/V delay	Used for displaying Sync and Blanking timing
Marker	Select 4:3/16:9 Safe Area Marker (SDI Only)
VU Meter	Select OSD VU Meter Display
Audio Out	Turns Headphone Jack On/Off
Audio Out Ch1 – 4	Selects SDI Embedded Stereo Audio channels for Monitoring
Audio Out AES	Selects AES Audio Channel for Monitoring
Audio Out L/R	Selects Analog Stereo Audio Channels for Monitoring
Reset	Resets the settings back to the factory default

6.0 TROUBLESHOOTING

If any of the LM-404HDA's LCD Monitors do not appear to be functioning properly, be certain that the source and any other device connected to the unit is functioning correctly by connecting each device currently connected to the LM-404HDA to another monitor. (In other words, bypass the individual LM-404HDA to insure that the problem is not with the source device.) If the signal is present under those conditions, make certain that power is present to the LM-404HDA. If it is, check all cables for damage. Cables should be undamaged, as short as possible and should be premium quality.

Note: It is strongly recommended that you use premium cables in order to achieve maximum distance cable runs and the best performance possible.

After trying the above suggestions should the problem still persist, contact your dealer for additional suggestions before contacting TV One. Should the dealer's technical staff be unable to assist you, contact TV One via our support website:

<http://tvone.crmdesk.com>. Create a technical support request on the site and our support team will respond within a short period of time.

7.0 LIMITED WARRANTY

TV One warrants the original purchaser that the equipment it manufactures or sells will be free from defects in materials and workmanship for a fixed term from the date of purchase. The warranty term for specific product lines is defined below.

1. TV One branded products based on TV One's CORIO technology are warranted for a period of five years from the date of purchase. This includes products with the model number prefix of C2, 1T-C2, CX, A2 or S2.

2. TV One-task branded products, other than those based on TV One's CORIO technology mentioned above, are warranted for a period of three years from the date of purchase. This includes products with the model number prefix of 1T, with the exception of 1T-C2.

3. LCD Monitors are warranted for a period of three years from the date of purchase, with the exception of the LCD panels integrated into the monitors that are supplied by third parties. LCD panels are limited to the term and conditions of the warranty offered by the respective LCD panel manufacturer. Such specific LCD panel warranties are available upon request to TV One.

Should a product, in TV One's opinion, prove defective within this warranty period, TV One, at its option, will repair or replace this product without charge. Any defective parts replaced become the property of TV One. This warranty does not apply to those products which have been damaged due to accident, unauthorized alterations, improper repair, modifications, inadequate maintenance and care, or use in any manner for which the product was not originally intended.

If repairs are necessary under this warranty policy, the original purchaser must obtain a Return Authorization Number from TV One and return the product to a location designated by TV One, freight prepaid. After repairs are complete, the product will be returned, freight prepaid.

LIMITATIONS - All products sold are "as is" and the above Limited Warranty is in lieu of all other warranties for this product, expressed or implied, and is strictly limited to two years from the date of purchase. TV One assumes no liability to distributors, resellers or end-users or any third parties for any loss of use, revenue or profit.

TV One makes no other representation of warranty as to fitness for the purpose or merchantability or otherwise in respect of any of the products sold. The liability of TV One with respect to any defective products will be limited to the repair or replacement of such products. In no event shall TV One be responsible or liable for any damage arising from the use of such defective products whether such damages be direct, indirect, consequential or otherwise, and whether such damages are incurred by the reseller, end-user or any third party.

8.0 REGULATORY COMPLIANCE

The LM-404HDA Quad Monitor has been tested for compliance with appropriate FCC and CE rules and regulations. The Power Adaptor/Supply has been tested for compliance with appropriate UL, CUL, CE, PSE, GS Rules, Regulations and/or Guidelines. This Product and Power Adapter is RoHS Compliant.

9.0 CONTACT INFORMATION

Should you have questions or require assistance with this product in areas not covered by this manual, please contact TV One at one of these locations.

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