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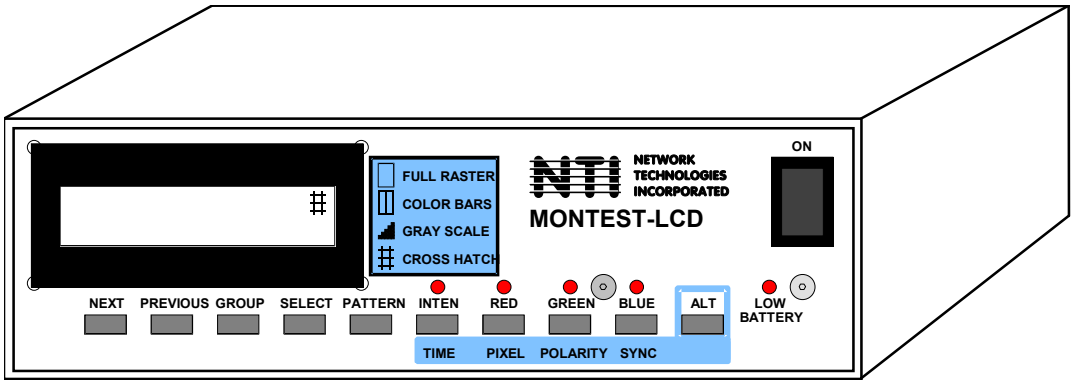
MONTEST-LCD

Computer Monitor Tester

Installation and Operation Manual



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CHANGES
The material in this manual is for information only and is subject to change without notice. Video Products Incorporated reserves the right to make changes in the product design without reservation and without notification to its users.

WARNINGS

Applying a scan format to a monitor that is beyond the specified frequency range of the monitor can damage the monitor. Refer to the monitor's manual or label to verify the frequency of operation for the monitor.

The pin out used for the 13W3 type connectors (SUN connector) varies between monitor manufactures. Insure that a monitor with a 13W3 connector matches the MONTEST-LCD pin out before connecting the monitor to the MONTEST-LCD.

TABLE OF CONTENTS

INTRODUCTION

The VPI MONTEST-LCD is an instrument for testing, repairing, and aligning analog computer monitors, LCD displays and video projection systems. The MONTEST-LCD has the following features:

- Easy to use push button operation with last setting memory. The last user settings selected are restored at power up.
- A microprocessor and programmable logic based design provides significant performance improvement over the common, memory based monitor testers.
- Over one hundred scan formats are selectable with the MONTEST-LCD. This includes VGA, MAC, and SUN scan formats. All current VESA standard and most fixed frequency monitor scan formats are also included.
- Four video output connections for direct connection to most monitors.
  VGA (15 pin HD), MAC II (15 pin D), SUN (13W3), and BNC (5).
- Versatile and selectable sync outputs for composite, sync on green and horizontal & vertical with selectable polarity.
- The LCD display clearly shows the user, the scan format, the pattern and the output options selected and the LED indicators show the status of the video output.
- The 4 video patterns with 16 colors and intensity control provide all the patterns and colors normally required to test and align any monitor.

Patterns Provided	Used to test
Raster	color purity
Color bars	color balance
Gray bars	intensification
Cross Hatch w/ Dots	convergence, focus & geometry

- Small portable unit with battery or AC adapter operation.
- Selectable 10 minute timeout on the video to prevent CRT burn-in.
- Selectable auto sequencing through the patterns to burn-in monitors.
- Selectable pixel size. (16 and 31 nanoseconds)

Materials

Materials supplied include:

- VPI MONTEST-LCD
- 2.1X5.5mm Plug (see page 13)
- This owner's manual

INSTALLATION

Signal Pin Assignments

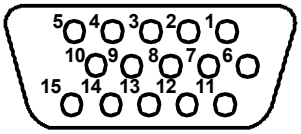
The table below shows the connector pins that the MONTEST-LCD output signals connect to.

Connector Pin Signal Assingments

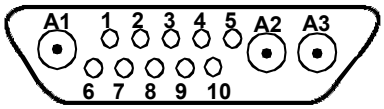
Output Signal	Connector Pins			
	MAC II	SUN	VGA	BNC
RED	2	A1	1	RED
GREEN	5	A2	2	GREEN
BLUE	9	A3	3	BLUE
HORIZ/COMP	15	6	13	HORIZ
VERT	12	2	14	VERT
COMP SYNC	3	5	-	-
GND	1, 6, 11 13, 14	1, 4, 7 10	4, 5, 6, 7 8, 10, 11	Shell

Note: ***When composite sync is selected the composite sync is available on both the HORIZ/COMP and the COMP SYNC outputs.***

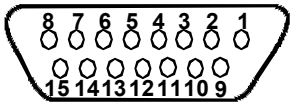
VGA
Mating face of a
15HD female



SUN
Mating face of a
13W3 female



MAC
Mating face of a
15DB female



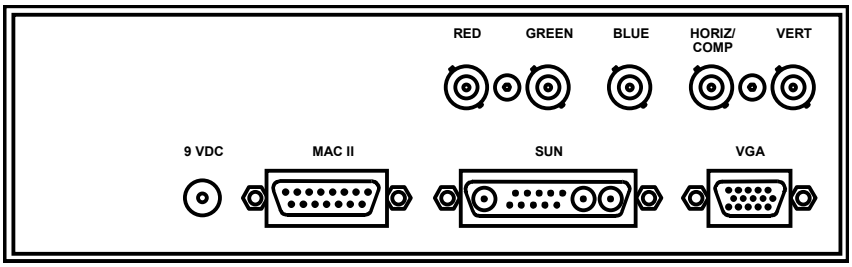
Output Connections

1. A common PC monitor connects to the VGA (15HD female) or the MAC II (15DB female) connectors.

2. A SUN monitor is connected to the SUN (13W3 female) connector. Other monitors with a 13W3 type connector may have a different pin out. Consult the monitor's manual for the monitor's pin out. Those monitors with a different pin out should be connected with an adapter.

3. A monitor with BNC connectors or an adapter cable can be connected to the BNC connectors on the MONTEST-LCD. Depending on the type of sync used the number of required connections to the MONTEST-LCD will vary.

Sync Type	Cables	Connections
SOG	3	RED GREEN BLUE
CMP	4	RED GREEN BLUE HORIZ/COMP
H & V	5	RED GREEN BLUE HORIZ/COMP VERT



REAR VIEW OF MONTEST-LCD

LCD DISPLAY FUNCTIONS

The LCD display shows a variety of information. During power up the model number is shown then the last scan format selected. Multiple screens of information are available for each scan format. The ALT button will step through the 4 screens of data for each scan format. The NEXT, PREVIOUS and GROUP buttons will display the data for the selected screen as you step through the scan formats. The following describes the screen information.

Main Screen

Scan Format Group	VGA, MAC, SUN, 30s - 110s
Scan Format Number	01 -
Screen	_ main a Alternate Screen b B Screen c C Screen
Number of lines	Number of horizontal lines in each vertical frame
Pattern Icon	The current pattern icon (#) is displayed when the scan format is selected. (Raster, Color bars, Gray bars, Hatch)
Frequency	Horizontal (KHz) and Vertical (Hz) scan frequency

Alternate Screen

No Timeout	NT is displayed if the 10-minute video display timeout is OFF. Selectable with the TIME button when the alternate screen is displayed
Pixel Width	16ns or 31ns. Selectable with the PIXEL button when the alternate screen is displayed.
Sync Polarity	+H +V, -H +V, +H –V and –H –V. Selectable with the POLARITY button when the alternate screen is displayed.
Sync Type	H&V, CMP and SOG. Selectable with the SYNC button when the alternate screen is displayed

B Screen

Resolution	Typical resolution used for scan format. The actual pixel size used may not match the horizontal resolution.

C Screen

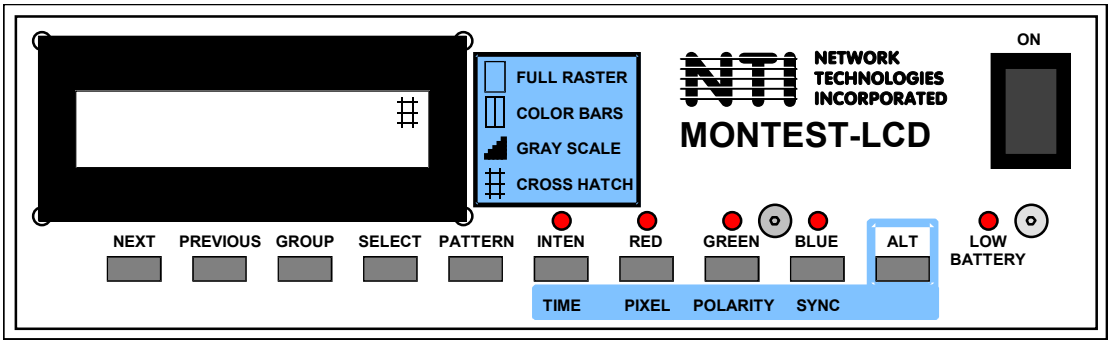
Optional Data	Additional information may be provided.

Examples of Display Screens

Main Screen	Alternate Screen	B Screen	C Screen
30s 01 480 Line # **31.5KHz 60Hz**	**30s 01a NT #** **31ns +H +V H&V**	**30s 01b #** **640 x 480 @ 60Hz**	**30s 01c #** ***Optional Data***

SWITCH & INDICATOR FUNCTIONS

FRONT VIEW OF MONTEST-LCD



ON/OFF Turns ON and OFF AC adapter and battery power to the MONTEST-LCD.

NEXT Steps up to the next scan formats in a group.
Note: Scan formats are in horizontal scan frequency order.

PREVIOUS Steps down to the previous scan formats in a group.

GROUP Steps through the groups of scan formats. The first scan format for each group is displayed after pushing the group button. The groups are organized by horizontal scan frequency. The VGA, MAC and SUN groups contain the common scan formats used for those platforms. The remaining groups contain the scan formats for each decade of horizontal scan frequencies.

Group	Range	Number in Group
VGA	31.5 - 75.0	7
MAC	31.5 – 74.9	7
SUN	50.0 – 71.7	7
30s	30.0 – 39.9	18
40s	40.0 – 49.9	7
50s	50.0 – 59.9	10
60s	60.0 – 69.9	19
70s	70.0 – 79.9	15
80s	80.0 – 89.9	12
90s	90.0 – 99.9	10
100s	100.0 – 109.9	9
110s	110.0 – 119.9	3
120s	120.0 – 129.9	2

SELECT Turns ON and OFF the video and sync output signals and the pattern icon. The current MONTEST-LCD settings are stored when a scan format is selected. These settings are recalled at power up, restoring the last settings selected.

PATTERN Steps through the four video output patterns. Full Raster, Color Bars, Gray Bars and Crosshatch. The Full Raster pattern is set when a new scan format is selected. The icon for the current pattern is shown on the LCD display when SELECT is ON.

Pushing the pattern button for 3 seconds will cause the MONTEST-LCD to sequence through the four patterns automatically with a five-second interval for each pattern. The automatic sequencing is stopped when the pattern button is pushed again for 3 seconds or, a new scan format is selected.

INTENSITY Alternates the video output between full and half intensity. The LED indicator is ON for full intensity.

RED Turns ON and OFF the red video signal. The LED indicator is ON when the red video is ON.

GREEN Turns ON and OFF the green video signal. The LED indicator is ON when the green video is ON.

BLUE Turns ON and OFF the blue video signal. The LED indicator is ON when the blue video is ON.

ALT The Alternate (ALT) button is used to display addition information on the LCD display.

When a scan format is displayed pushing ALT will display the default pixel and sync settings for the scan format. Pushing the ALT button additional times will display addition information for that scan format.

Pushing the ALT button for 3 seconds, at power up, during the display of VPI MONTEST-LCD, will display the MONTEST-LCD status. Pushing the ALT button additional times displays:

Number of scan formats in Groups 1 – 4
Number of scan formats in Groups 5 – 8
Number of scan formats in Groups 9 – 12
Number of scan formats in Groups 13 – 16

Back to normal operation, displaying the last selected scan format.

TIME When the alternate screen is displayed, the TIME button will alternate the video 10 minute timeout ON and OFF. NT on the LCD display indicates No Timeout is selected. When the timeout has occurred the video output signals are disabled, but the sync signals remain active. Also the LEDs are all OFF except the TIME (INTEN) LED is flashing. Pushing the TIME button will then turn ON the video and restart the timeout timer.

PIXEL When the alternate screen is displayed, the PIXEL button will alternate the pixel period setting between 16.25 ns and 31.50 ns.

POLARITY When the alternate screen is displayed, the POLARITY button will step through the four polarity options for the horizontal and vertical sync:

+H +V
–H +V
+H –V
–H –V

SYNC When the alternate screen is displayed, the SYNC button will step through the three sync options:

H & V	Horizontal and Vertical sync (Default)
CMP	Composite horizontal and vertical sync
SOG	Sync On Green

LOW BATTERY Indicates that the remaining battery power is low.

OPERATION

The following are the normal operational steps for using the MONTEST-LCD.

1. Connect the monitor to the MONTEST-LCD. See the section on "CONNECTIONS" (page 2) for details.

2. Turn **ON** the MONTEST-LCD power. The MONTEST-LCD can be used with the AC adapter, or the internal batteries.

3. Use the **GROUP** button to select the group of scan formats to be used. See the tables under SCAN FORMATS (pages 8 and 9), as required.

4. Use the **NEXT** and **PREVIOUS** buttons to step through the scan formats until the desired scan format is found.

5. The **ALT** button can be used to look at the additional screens of LCD data. Also the pixel time, sync type, and sync polarity can be reviewed or changed.

6. Once the desired scan format is displayed, pushing the **SELECT** button will turn ON the video and sync outputs. The raster icon will then be displayed on the LCD and the raster video pattern is output to your monitor.

7. Change the pattern, colors, and intensity as desired.

8. Pushing the **SELECT** button again will turn OFF the video and sync outputs. Also changing the scan format with **GROUP**, **NEXT** or **PREVIOUS** will turn OFF the video and sync outputs.

CHANGING BATTERIES

The MONTEST-LCD can be powered by 6 alkaline C-size batteries. To change the batteries, follow these steps:

1. Normal electrostatic discharge (ESD) handling precautions should be observed when the enclosure of the MONTEST-LCD is open. Touch a grounded surface before performing any hardware procedure.
2. Turn OFF the power and remove all connections to the MONTEST-LCD.
3. Place the MONTEST-LCD upside down on a work surface.
4. Remove the 2 Phillips head screws that hold the top and bottom of the enclosure together.
5. Carefully turn the MONTEST-LCD right side up, holding the enclosure together.
6. Lift off the top of the enclosure to expose the battery holder.
7. Install 6 new alkaline C-size batteries noting the battery polarity marked on the battery holder.
8. Reverse this procedure to reassemble the MONTEST-LCD.

Note: Dead batteries should be removed from the MONTEST-LCD to prevent damage caused by acid leaking from a battery.

TROUBLESHOOTING

Problem	Solution
LCD and indicators are OFF. No power.	• Check AC adapter connections. • Check batteries
Low battery indicator is ON.	Replace batteries NiCad batteries were factory installed. Replace with same or with alkaline batteries.
No video on monitor	• Check connections • Make sure scan format is selected. (see "SELECT" page 4) • Is timeout active? (see "TIME" page 5)
"INTEN" indicator is flashing	If timeout is active, this will flash. (see "TIME" page 5)
Video on monitor is dim	• Check intensity setting • Use only one output connector at a time.
Dots can not be seen	Change pixel to 31ns setting
Pattern keeps changing	Auto pattern sequencing is ON (see "PATTERN" page 4)
At power up the LCD displays "STATUS ERROR XX"	Contact VPI for solution.

SCAN FORMATS

Header	Description
FORMAT #	Group and number assignment for the MONTEST-LCD
TYPE	Format description
PIXELS	Horizontal resolution †
LINES	Vertical resolution
V Freq (Hz)	Vertical frequency
H Freq (KHz)	Horizontal Frequency
HS	Default horizontal sync polarity
VS	Default vertical sync polarity

VGA

Format #	Type	Pixels	x	Lines	V Freq (Hz)	H Freq (KHz)	HS	VS
VGA01	VGA480	640	x	480	60	31.5	-	-
VGA02	VGA350	640	x	350	70	31.5	+	+
VGA03	VGA400	720	x	400	70	31.5	+	+
VGA04	VESA35K	800	x	600	56	35.2	+	+
VGA05	VESA38K	800	x	600	60	37.9	+	+
VGA06	VESA48K	1024	x	768	60	48.4	-	-
VGA07	VESA75K	1600	x	1200	60	75.0	+	+

MAC

Format #	Type	Pixels	x	Lines	V Freq (Hz)	H Freq (KHz)	HS	VS
MAC01	MAC384	512	x	384	70	31.5	+	-
MAC02	MAC480	640	x	480	67	35.0	+	+
MAC03	MAC480	640	x	480	72	37.6	-	-
MAC04	MAC624	832	x	624	75	49.7	-	-
MAC05	MAC870	1152	x	870	75	68.6	-	-
MAC06	MAC1080	1920	x	1080	60	70.2	-	-
MAC07	MAC960	1280	x	960	75	74.9	+	+

SUN

Format #	Type	Pixels	x	Lines	V Freq (Hz)	H Freq (KHz)	HS	VS
SUN01	SUN800	1024	x	800	60	50.0	+	+
SUN02	SUN900	1152	x	900	66	61.8	+	+
SUN03	SUN900	1152	x	900	67	62.5	+	+
SUN04	SUN1024	1280	x	1024	60	64.0	+	+
SUN05	SUN1024	1024	x	1024	61	65.3	+	+
SUN06	SUN1024	1280	x	1024	67	71.7	+	+
SUN07	SUN864	1152	x	864	76	71.7	+	+

† The number of pixels listed in the table are the industry standard numbers for a given scan format. As with most monitor testers the MONTEST-LCD may not output exactly that number of pixels.

Format #	Type	Pixels x Lines	V Freq (Hz)	H Freq (KHz)	HS	VS
30s01	VGA480	640 x 480	60	31.5	-	-
30s02	VGA400	640 x 400	70	31.5	+	+
30s03	MAC384	512 x 384	70	31.5	+	-
30s04	VGA350	640 x 350	70	31.5	+	+
30s05	VGA400	720 x 400	70	31.5	+	+
30s06	VGA480	640 x 480	67	35.0	+	+
30s07	VESA35K	800 x 600	56	35.2	+	+
30s08	VESA35K	1024 x 768	87	35.5	+	+
30s09	SVGA600	800 x 600	60	37.3	+	+
30s10	MAC480	640 x 480	72	37.6	-	-
30s11	VESA37K	640 x 480	75	37.5	-	-
30s12	VESA38K	800 x 600	60	37.9	+	+
30s13	VESA38K	640 x 480	73	37.9	-	-
30s14	VESA38K	640 x 350	85	37.9	-	+
30s15	VESA38K	640 x 400	85	37.9	+	-
30s16	VESA38K	720 x 400	85	37.9	+	-
30s17	VGA350	720 x 350	88	39.4	+	+
30s18	VGA400	720 x 400	88	39.4	+	+
40s01	VESA43K	640 x 480	85	43.3	-	-
40s02	SVGA864	1152 x 864	89	43.9	+	+
40s03	SVGA720	960 x 720	60	44.7	-	+
40s04	VESA47K	800 x 600	75	46.9	+	+
40s05	VESA48K	800 x 600	72	48.1	+	+
40s06	VESA48K	1024 x 768	60	48.4	-	-
40s07	MAC624	832 x 624	75	49.7	-	-
50s01	SUN800	1024 x 800	60	50.0	+	+
50s02	VGA480	640 x 480	100	50.9	-	-
50s03	SVGA1024	1280 x 1024	87	51.0	+	+
50s04	VGA480	640 x 480	100	53.0	-	-
50s05	SVGA864	1152 x 864	60	53.5	-	-
50s06	VESA54K	800 x 600	85	53.7	+	+
50s07	SVGA600	800 x 600	85	55.8	-	-
50s08	SVGA720	960 x 720	75	56.4	-	+
50s09	VESA56K	1024 x 768	70	56.5	-	-
50s10	SVGA768	1024 x 768	72	58.1	+	+
60s01	VESA60K	1280 x 960	60	60.0	+	+
60s02	VESA60K	1024 x 768	75	60.0	+	+
60s03	SVGA768	1024 x 768	76	61.0	+	+
60s04	SVGA768	1024 x 768	76	61.1	+	+
60s05	VGA480	640 x 480	120	61.1	-	-
60s06	SUN900	1152 x 900	66	61.8	+	+
60s07	SVGA864	1152 x 864	70	62.4	+	+
60s08	SUN900	1152 x 900	67	62.5	+	+
60s09	SVGA768	1024 x 768	76	62.5	+	+
60s10	SVGA1024	1600 x 1024	60	63.7	-	+
60s11	VESA64K	1280 x 1024	60	64.0	+	+
60s12	SUN1024	1280 x 1024	60	64.0	+	+
60s13	SVGA600	800 x 600	100	64.0	-	-
60s14	SVGA1024	1280 x 1024	60	64.3	+	+
60s15	SVGA720	960 x 720	85	64.3	-	+
60s16	SUN1024	1024 x 1024	61	65.3	+	+
60s17	VESA68K	1152 x 864	75	67.5	+	+
60s18	MAC870	1152 x 870	75	68.6	-	-
60s19	VESA69K	1024 x 768	85	68.7	+	+

Format #	Type	Pixels x Lines	V Freq (Hz)	H Freq (KHz)	HS	VS
70s01	MAC1080	1920 x 1080	60	70.2	-	-
70s02	SVGA768	1024 x 768	85	70.2	-	-
70s03	SVGA864	1152 x 864	78	70.9	+	+
70s04	SUN1024	1280 x 1024	67	71.7	+	+
70s05	SUN864	1152 x 864	76	71.7	+	+
70s06	SVGA480	640 x 480	140	72.9	-	+
70s07	SVGA1200	1920 x 1200	60	74.6	-	+
70s08	SVGA1024	1280 x 1024	70	74.9	+	+
70s09	MAC960	1280 x 960	75	74.9	+	+
70s10	VESA75K	1600 x 1200	60	75.0	+	+
70s11	SVGA600	800 x 600	120	75.8	+	+
70s12	SVGA864	1152 x 864	84	76.0	+	+
70s13	SVGA864	1152 x 864	85	77.6	+	+
70s14	SVGA1024	1280 x 1024	74	78.9	+	+
70s15	VESA80K	1280 x 1024	75	79.9	+	+
80s01	SVGA768	1024 x 768	100	80.2	-	-
80s02	SVGA1024	1280 x 1024	76	81.1	+	+
80s03	SVGA1024	1600 x 1024	76	81.3	-	-
80s04	VESA81K	1600 x 1200	65	81.3	+	+
80s05	VESA84K	1792 x 1344	60	83.6	+	-
80s06	SVGA480	640 x 480	160	84.4	-	+
80s07	SVGA1080	1920 x 1080	72	84.4	-	-
80s08	SVGA1080	1920 x 1080	75	84.6	-	+
80s09	VESA86K	1280 x 960	85	85.9	+	+
80s10	VESA86K	1856 x 1392	60	86.3	+	-
80s11	VESA88K	1600 x 1200	70	87.5	+	+
80s12	SVGA864	1152 x 864	100	89.6	-	-
90s01	VESA90K	1920 x 1440	60	90.0	+	-
90s02	VESA91K	1280 x 1024	85	91.2	+	+
90s03	SVGA600	800 x 600	140	91.2	-	+
90s04	SVGA1024	1600 x 1024	85	91.4	-	+
90s05	VESA94K	1600 x 1200	75	93.8	+	+
90s06	SVGA1200	1920 x 1200	76	94.7	-	-
90s07	SVGA1536	2046 x 1536	60	95.5	+	+
90s08	SVGA1440	1800 x 1440	64	96.2	+	+
90s09	SVGA1080	1920 x 1080	85	96.4	-	+
90s10	SVGA768	1024 x 768	120	97.0	+	+
100s01	SVGA1200	1600 x 1200	80	100.0	+	+
100s02	SVGA1440	1800 x 1440	70	104.5	+	+
100s03	SVGA600	800 x 600	160	105.4	-	+
100s04	SVGA1200	1600 x 1200	85	105.8	+	+
100s05	VESA106K	1792 x 1344	75	106.3	+	-
100s06	VESA106K	1600 x 1200	85	106.3	+	+
100s07	SVGA1344	1792 x 1344	75	106.5	+	+
100s08	SVGA1024	1280 x 1024	100	107.1	-	-
100s09	SVGA1200	1920 x 1200	85	107.1	-	+
110s01	SVGA864	1152 x 864	120	111.2	-	+
110s02	VESA113K	1856 x 1392	75	112.5	+	-
110s03	VESA113K	1920 x 1440	75	112.5	+	-
120s01	SVGA1536	2046 x 1536	75	120.4	+	+
120s02	SVGA1200	1600 x 1200	100	127.1	-	+

SPECIFICATIONS

Size	8” W x 6.6” D x 2.7” H
Weight	2.8 lbs. with batteries 1.6 lbs. without batteries
Enclosure	Gray ABS plastic
Power Supply	9 VDC 500 mA AC adapter or 6 C-size alkaline batteries. DC plug 2.1 x 5.5 mm female center positive. Batteries are not required for operation. Alkaline batteries provide more than 6 hours of operation. Low battery indicator on panel.
Pixel Clock	Selectable with default settings 32 MHz 31.50 ns Pixels 64 MHz 16.25 ns Pixels
Horizontal Frequency Range	31.5 - 130 KHz
Vertical Frequency Range	56 – 160 Hz

Horizontal Timing Set with 31.25 ns resolution

Vertical Timing	Set with 1 horizontal line resolution
Sync Type	Selectable with default settings Horizontal and Vertical (H&V) Composite (CMP) Sync On Green (SOG)
H & V Sync Polarity	Selectable with default settings +H +V, –H +V, +H –V and –H –V

Patterns

Pattern	Description
Raster	Full color window
Color Bars	16 split bars with half intensity
Gray Scale Bars	16 bars
Cross Hatch with Dots	11x 11 lines with 10 x 10 dots

Selectable auto sequence of the patterns with a 5 second interval.

Video Selection	Red, Green and Blue are ON /OFF selectable with LED indication Intensity is full / half selectable with LED indication.
Video Timeout	A 10 minute timeout to prevent CRT burn-in, can be disabled to run continuously.

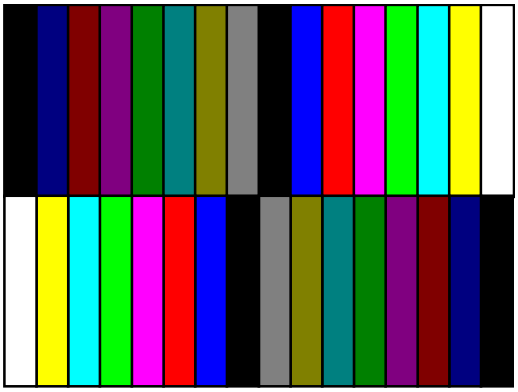
Scan Formats	105 different scan formats are selectable (see pages 8 and 9).	
Display	16 x 2 character back lit LCD display shows all scan format information.	
Outputs	RGB outputs	700 mVpp (terminated into 75 ohms)
	Sync On Green	-300 mV
	Horiz, Vert & Comp	TTL levels
	All outputs protected	(outputs limited to -.7 to +5.7 volts)

Note: Connect to only one output at a time. The output signals are wired to the connectors in parallel. Connecting multiple outputs simultaneously will reduce the output signal level with multiple terminations. See connection information on page 2.

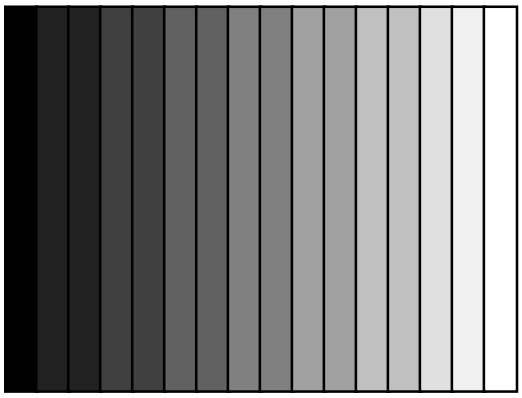
Connectors	R G B H V	BNC (5)
	VGA	15 pin HD Female
	MAC II	15 pin D Female
	SUN	13W3 D Female

RASTER

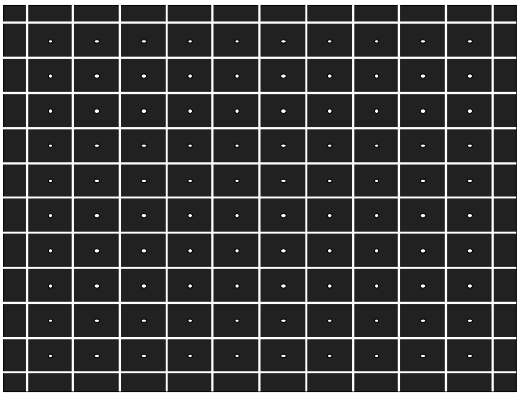
COLOR BARS



GRAY BARS

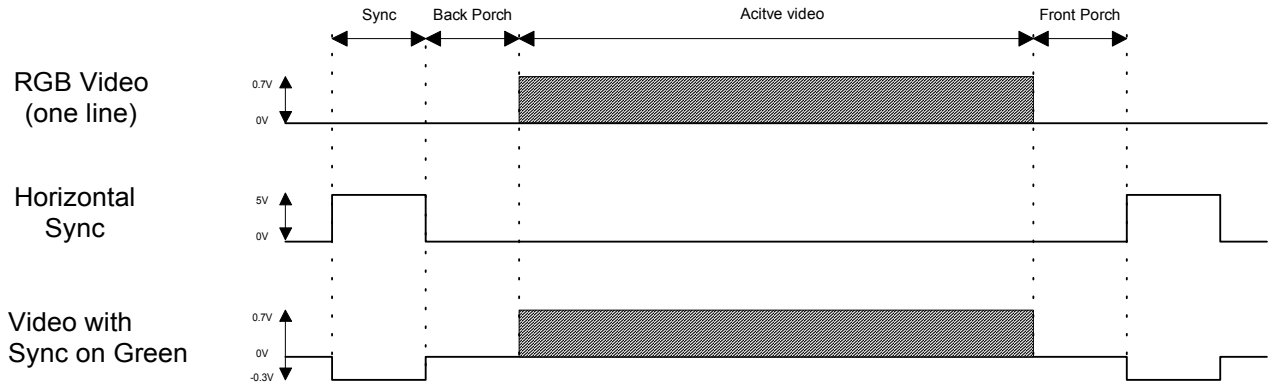


CROSS HATCH

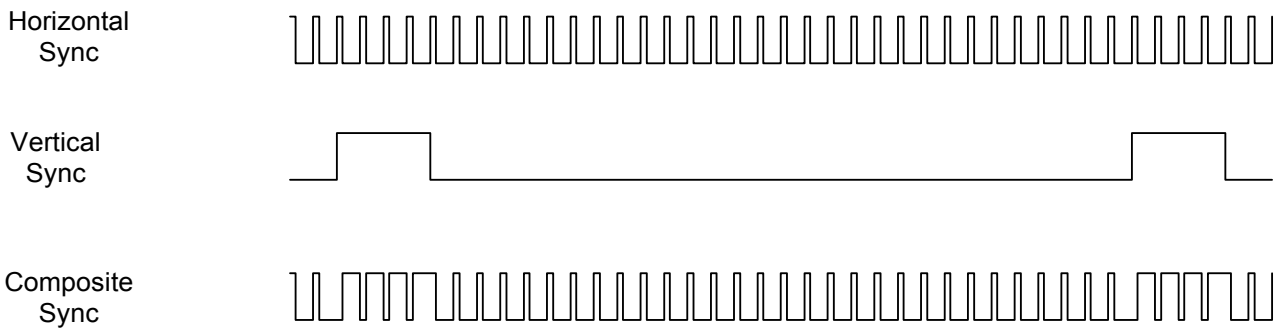


SIGNAL WAVEFORMS

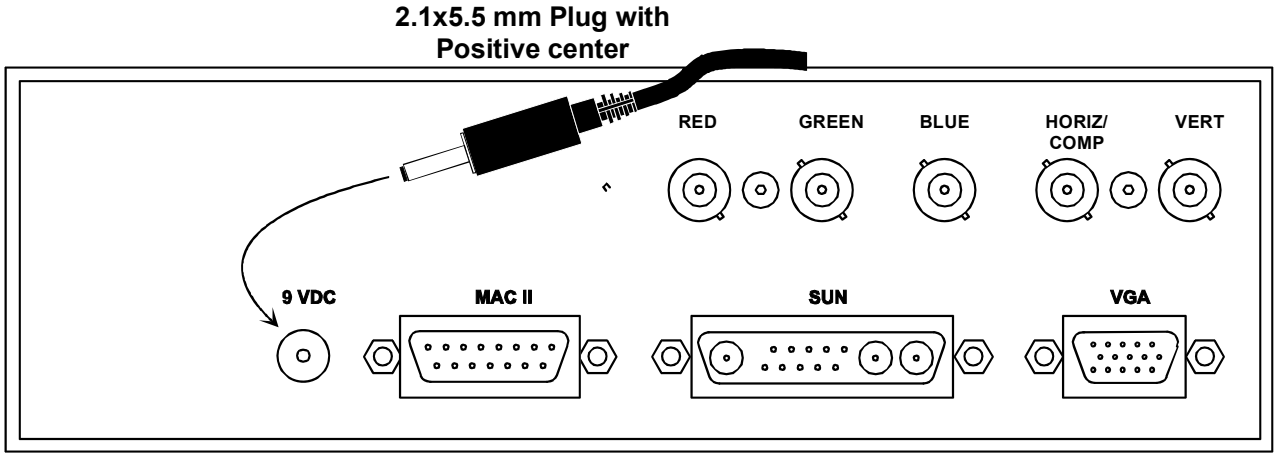
Horizontal Timing:



Vertical Timing :



AC ADAPTER CONVERSION INSTRUCTIONS



Introduction

The VPI MONTEST-LCD has a 2.1x5.5 mm male, center positive jack. The MONTEST-LCD can accept power from either 6 "C" size batteries or an AC adapter. To use an AC adapter, one with the following specifications must be purchased::

- output voltage from 9 to 15 VDC
- output current of 500 ma
- 2.1x5.5 mm female plug with positive center

If an AC adapter that meets these specifications cannot be found, VPI has provided a 2.1x5.5 mm female plug that can be used to replace the tip of another AC adapter that you have purchased.

WARNING! YOU MUST FOLLOW THESE INSTRUCTIONS CAREFULLY! REVERSING THE POLARITY OF THE AC ADAPTER BY ATTACHING THE POSITIVE AND NEGATIVE WIRES TO THE WRONG TABS WILL CAUSE PERMANANT DAMAGE TO YOUR VPI SWITCH. VPI is not responsible for units damaged due to polarity reversal, which will void your Warranty. If you purchased an adapter with a 2.1x5.5mm female plug – make sure the PLUG CENTER is POSITIVE.

Plug Installation

1. Cut the small adapter plug off of the end of your AC adapter.
2. Unscrew the plastic housing from the VPI supplied 2.1x5.5mm female plug and slide it over the wire on the end of the adapter (see Fig 1).
3. Strip the wires back about 1/8".
4. Using a voltmeter, determine which wire is positive and which is negative. Label the wires to ensure they do not get crossed.
5. Solder the positive wire to TAB "A" per Fig 2. Solder the negative wire to TAB "B".
6. Squeeze the strain relief tabs on TAB "B" (see Fig 2) around the two wires. Make sure they are as tight as possible since they will prevent the solder connections from being pulled apart.
7. Slide the plastic housing up to the plug and screw it on.

Using a voltmeter, plug the adapter in and verify that the voltage reads POSITIVE (+) on the CENTER.

Fig 1

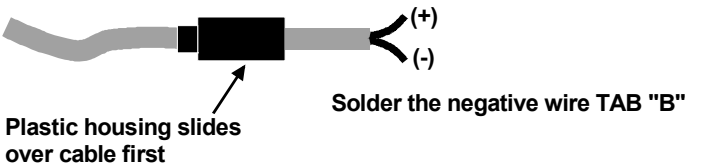
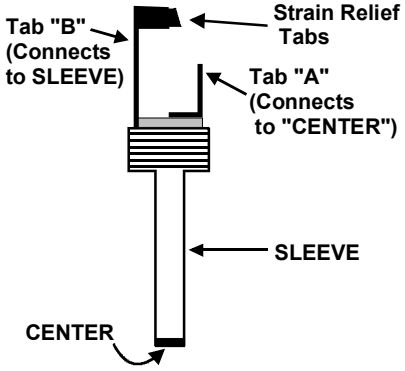


Fig 2



WARRANTY INFORMATION

The warranty period on this product (parts and labor) is one (1) year from the date of purchase. Please contact Video Products Incorporated at **(800) 626-7801** or **(330) 562-2622** for information regarding repairs and/or returns. A return authorization number is required for all repairs/returns.

MONTEST-LCD

SERIAL NO.: _____

DATE: _____

INSPECTED BY: _____

Video Products Inc
1275 Danner Drive • Aurora, OH 44202
800-626-7801 or 330-562-2622
http://www.montest.com