MONTEST-HDMI-LC

HDMI/DVI Video Pattern Generator

Chapter 1 Introduction

MONTEST-HDMI-LC is a test pattern generator designed for the new generation of digital video/monitor products. MONTEST-HDMI-LC supports up 27 resolutions and 34 patterns to test and calibrate a digital video/monitor. Furthermore, it can improve the quality of digital video/monitor with side-by-side comparisons. Through the friendly interface and smart design, you can easily to use the MONTEST and you can reduce your test expenditure.

⚠Caution

To avoid and minimize the risk of damage to MONTEST, please pay attention to the safety instructions even though the MONTEST has been tested for conformance to safety requirements and certified for international use.

- Follow all instructions marked on the device during use.
- Do not attempt to maintain the device by yourself, any faults, please contact your vendor.
- Provide proper ventilation and air circulation and do not use near water.
- It is better to keep it in a dry environment.
- Only using the power adapter and connection cables that are supported with the device.
- Before using the MONTEST for the first time, please charge it continuously for more than 16 hours.
- It is better to charge the battery when the battery power indicator indicates a low charge.
- The MONTEST will save the last setting values automatically.
- Do not use liquid or aerosol cleaners to clean the device.
- Always unplug the power to the device before cleaning.

1.1 Package Contents

- 1 HDMI pattern generator
- 1 power adapter DC 12V 1.25A, 4 replaceable plugs (for USA, UK, Europe and Australia DC plugs.)
- 1 user manual
- 1 HDMI 1.2M cable

All packages have been checked carefully for their completeness and functionality before shipped. Please contact with your vendor if any items listed as above are missed or damaged.

1.2 Resolution

- Use for test and calibrate a HDTV monitor.
- Use for test and calibrate HDMI image input devices.
- Use for test and maintain studio equipment as monitors, cabling and recording equipment.
- Use for test the arrangement of the circuit layout during the process of construction.

1.3 Features

- Intelligent functionality.
- HDMI 1.3, HDCP 1.2 and DVI 1.0 compliant.
- Support total 48 timings. (up to UXGA/1080P).
- Cost-down.
- Single interface easy to use.
- Portable design, working time up to 6~8 hours by inside Re-chargeable battery.
- Auto Power-off on battery mode.
- Provide total 34 patterns, Include: Color bar, Gray, Grid, Block…
- By 16x2 Character LCD and key buttons, easily control.

1.4 Specifications

| Function	MONTEST-HDMI-LC
Output Connector	HDMI Type A
Select Switch	7
LCD Module: 16*2 Character Display	1
Max. Resolution	1600x1200 @ 60 Hz
Highest TMDS Frequency	225 MHz
Cable Distance	5M
Power Adapter (Min.)	DC 12V 1.25A
Housing	Plastic
Weight	398 g
Dimensions (LxWxH)	180x95x35 mm

1.5 Front Panel
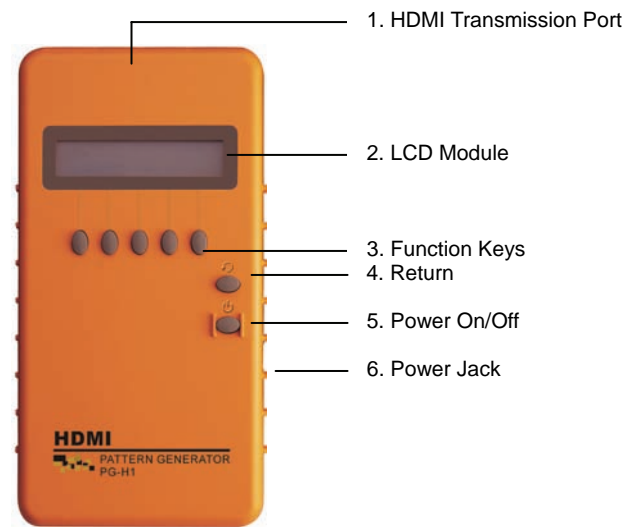
1. **HDMI Transmission Port:** Connect to the attached HDMI 3M cable.
2. **LCD Module:** 16*2 Character Display.
3. **Function Keys:** Depend on the different operation configuration will show you different functions of the keys.

4. "↺" **Return:** Return to up configuration page.

5. "⏻" **Power On/Off:** Press at least more than 3 seconds to power on/off the MONTEST.

6. **Power Jack:** Connect to the DC 12V 1.25A power adapter.

1.6 Side Panel

1.6.1 HDMI Transmission Port

Use for HDMI 3M cable connector.
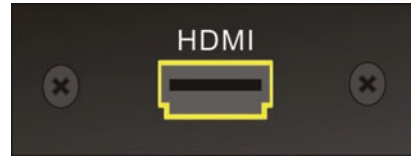
1.6.2 HDMI Type A Connector pin definition

Pin #	Signal	Pin #	Signal
1	TMDS Data2+	11	TMDS Clock Shield
2	TMDS Data2 Shield	12	TMDS Clock-
3	TMDS Data2-	13	NC
4	TMDS Data1+	14	NC
5	TMDS Data1 Shield	15	DDC-SCL
6	TMDS Data1-	16	DDC-SDA
7	TMDS Data0+	17	DDC-Ground
8	TMDS Data0 Shield	18	+5V Power
9	TMDS Data0-	19	Hot Plug Detect
10	TMDS Clock+		

1.6.3 Power Jack

Use for the DC 12V 1.25A power adapter. The **Power Jack** is on the right side of the device. PG-H1 supports 4 replaceable plugs (for USA, UK, Europe and Australia DC plugs.)

 Power Jack

Chapter 2 Connection
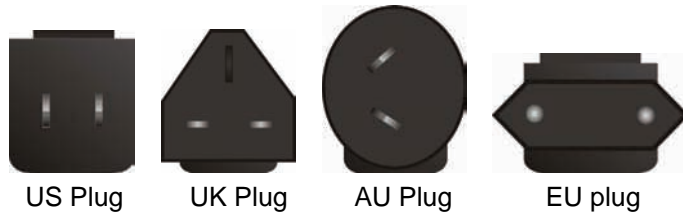
2.1 Preparation

⚠️Caution
Please power off the digital monitor and MONTEST before you begin the connection.

2.1.1 Plugs

MONTEST-HDMI-LC supports up to 4 replaceable plugs (for USA, UK, Europe and Australia DC plugs.). Please depend on where the location is to exchange the suitable plug.

| US Plug | UK Plug | AU Plug | EU plug |

2.1.2 Plug replacement

MONTEST-HDMI-LC supports a power adapter DC 12V 1.25A with a plastic ring to protect the connector. Before you connect the adapter, you have to dismantle the plastic ring first. Refer to the pictures below to dismantle the plastic ring.

⚠️Caution
Please also pull down the slider to exchange the suitable plug.

2.2 Connect MONTEST to Monitor
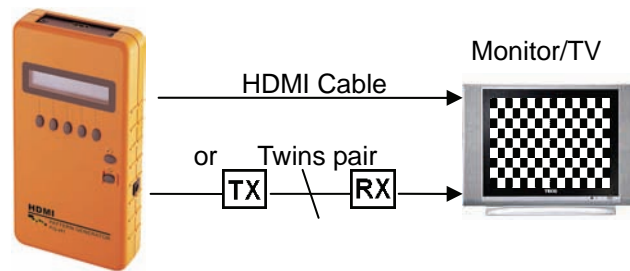
- Connect the attached DC adapter cable from MONTEST to the power source (outlet).
- Connect the HDMI 1.2M cable from MONTEST to the monitor.
- Power on the Monitor/TV.
- Press the power key of MONTEST for more than 3 seconds to power on/off the MONTEST.

⚠️Caution
Please power off the Monitor/TV before making the connection.

Chapter 3 Operation

☞ 1. After pressing the power On/Off key for 2~3 seconds to sound a long **"beep"**.
   2. A valid key must be pressed to sound a short confirmation **"beep"** after pressing the key.
   3. The chosen option will blink.
   4. After you had changed the values, remember to press "**Enter**" indicated key to take the changed values effectively.

3.1 Starting Status

After you pressing the **Powe**r key to power on the MONTEST, the LCD screen will show you the MONTEST version suddenly then show you the main screen as below (or previous setting values saved in the MONTEST's memory):
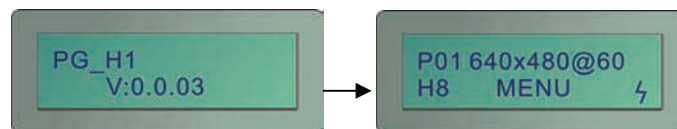
P01 640x480 @60

- **P01:** Pattern 01 (refer to Appendix B: **Pattern chart** chapter**)**
- **640x480:** Resolution is 640X480
- **@60:** Refresh rate is 60Hz
- "⚡": The power of battery is charging.

To the lower left of the LCD screen you will see the operating mode.

DVI/H8/H10/H12

- **DVI:** Process under DVI mode.
- **H8:** Process under HDMI 8bit mode.
- **H10:** Process under HDMI 10bit mode.
- **H12:** Process under HDMI 12bit mode.

RGB/Y444/Y422

- **RGB:** Process under RGB Color Space**.**
- **Y444:** Process under RGB Color Space.
- **Y422:** Process under YUV422 Color Space.
(When under the DVI mode, only support bypass mode)

HDCP: MONTEST supports HDCP. Enable this function to accept the high video resolution. (You can enable this function by press **MENU/Func/Setup** to **HDCP** item as switching to **"0"**.)

3.2 Power and Battery

The device is suited to the DC 12V 1.25A power adapter and 4 inside Re-chargeable batteries. The signals of MONTEST's battery on the lower right are described as below:

- "⚡"**:** The power of battery is charging.
- "▌"**:** The power of battery is in full charging.
- "☒"**:** The battery is fault.

☞ 1. When the device stands by for about 39 minutes, it will sound two short **"beep".** After the two short "beep" sounds (about 1 minute), the device will sound a long **"beep"** and shut down automatically.

2. When the battery is lower as "▐", a warning **"beep"** will be heard and the device will shut down immediately.
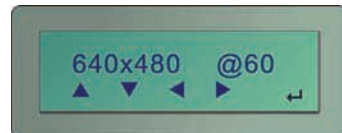
3.3 MENU Configurations

☞ The figures in this chapter are for **P01 FLAT 640x480 @60** mode reference

After you power on the MONTEST, please press the **MENU** indicated key. The **MENU** configuration screen will be shown as below:

3.3.1 Tim configuration

Press the **Tim** indicated key, the Tim configuration screen will be shown as below:

- "▲": Switch the **Resolution** and **Refresh Rate** values with up page. (refer to Appendix A: MONTEST output signal specification chart)
- "▼": Switch the **Resolution** and **Refresh Rate** values with down page. (refer to Appendix A: MONTEST output signal specification chart)
- "◄"," ►": Switch between **Resolution** and **Refresh Rate** options.
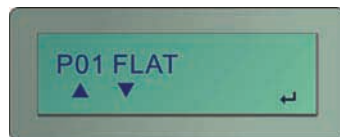- "◄┘": Confirm the changed value. (After press the "◄┘" indicated key the screen will be shown as below:)

```
640x480   @60
Output ...
```

☞ Under the H12 mode will not show the timing values as below:

> 1280x1024@85
> 1400x1050@75
> 1600x1200@60
> 1920x1200@60RB

3.3.2 Ptn configuration

Press the **Ptn** indicated key, the **Ptn** configuration screen will be shown as below:

```
P01 FLAT
   ▲    ▼              ↵
```

- "▲": Switch the **Pattern** mode with up page. (refer to Appendix B: Pattern chart)
- "▼": Switch the **Pattern** mode with down page. (refer to Appendix B: Pattern chart)
- "◄┘": Confirm the changed value. (After press the "◄┘" indicated key the screen will be shown as below:)

```
FLAT
Output ...
```

P02 Blinking mode configuration:

P02 BLINKING
▲ ▼   set ↵

Press the **set** indicated key to enter the black and white setting configuration as below (you can set the black and white blinking frequency (frames/value) here):

BLK:002 WHT:002
▲   ▼   ◄   ►   ↵

- "▲": Increase the **BLK** or **WHT** blinking frequency value. The value is up to 255.
- "▼": Decrease the **BLK** or **WHT** blinking frequency value.
- "◄","►": Switch between **BLK** and **WHT** options.
- "↵": Confirm the changed value.

☞ 1. Both **BLK/WHT** are the condensations for **Black/White**.
   2. The bigger Value is set, the lower blinking frequency is supported.
   3. When the value is 001, the "▼" indicated key is no any function.

3.3.3 Func configuration

Press the **Func** indicated key, the Func configuration screen will be shown as below:

P01 640x480 @60
        Setup   Info

a. **Setup:** Press the **Setup** indicated key, the **Setup** configuration screen will be shown as below:

DVI RGB   X
MOD CSC HDCP↵

Under the **Func/Setup** configurations allow you to set the **DVI** (mode)/**RGB** (color) and **HDCP** functions.

- **MOD:** Support **DVI/H8/H10/H12** modes, please press the indicated key to switch among these modes.
- **CSC:** Support **RGE/YUV444/YUV422** modes, please press the indicated key to switch among these modes.
- **HDCP:** Press the indicated key to **Enable/Disable** HDCP function.
- "↵": Confirm the changed value.

b. **Info:** Show you the status information of the MONTEST including **Timing Info/HTPLG Info/HDCP** Info. Please use the "▲" and "▼" function keys to switch the **Timing Info/HTPLG Info/HDCP** Info.
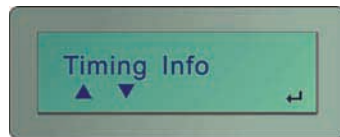
Under the **Timing Info** screen, please press the "↵" to enter the **Timing Info** configuration screen including:

Pixel Clock
Horizontal Total
Horizontal Active
Horizontal Front Porch
Horizontal Back Porch
Horizontal Sync Width
Horizontal Polarity
Vertical Total
Vertical Active
Vertical Front Porch
Vertical Back Porch
Vertical Sync Width
Vertical Polarity
Video Code (for EIA861B definition)

Under the **Info** configuration, use the "▲" and "▼" function keys to switch to the **HTPLG Info** option as below:
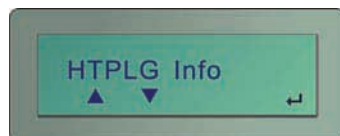
Under the **HTPLG Info** screen, please press the "↵" to enter the **HTPLG Info** configuration screen as below:

HTPLG Status
Not Detect
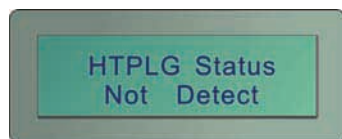
For the **HTPLG Info** will show you the **Hot Plug Pin** of **HDMI Connector** status.

Under the **Info** configuration, use the "▲" and "▼" function keys to switch to the **HDCP Info** option as below:
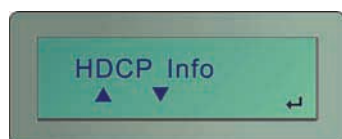
HDCP Info
▲   ▼   ↵

Under the **HDCP Info** screen, please press the "↵" to enter the **HDCP Info** configuration screen as below:

HDCP Status
Validate BKSV
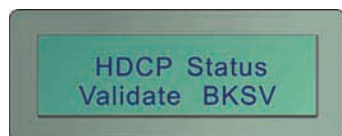
For the **HDCP Info** will show you the **HDCP** status including:

> Rx Attached
> Read EDID
> Transmit DVI/HDMI
> Validate BKSV
> Exchanges KSVs
> Encryption
> Ri = xxxx

3.3.4 Hky (Hot key) configuration

Press the **Hky** indicated key, the **Hky** page 1 configuration screen will be showed as below:

X   0   0   0
R   G   B   REV ⊻
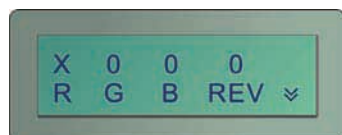
- **"0"**: Represent for **"Enable"**.
- **"X"**: Represent for **"Disable"**.
- **"R"**: Red component output.
- **"G"**: Green component output.
- **"B"**: Blue component output.
- **"Rev"**: Pattern reverse
- **"⩗"**: Next page.

Press the "⩗" to enter the **Hky** page 2 configuration screen as below:

- **"0"**: Represent for **"Enable"**.
- **"X"**: Represent for **"Disable"**.
- **"AVM"**: AV Mute.
- **"OUT"**: Video output On/OFF.
- **"⩗"**: Previous page.

Chapter 4 Troubleshooting

1. If there is no image when using the MONTEST, please ensure the following matters:

   a. If it is unable to switch on→there is a possibility of fault battery or inferior battery. Please connect it with the transformer.
   b. If it is able to switch on but there is no image→
      - Lower the resolution or change the resolution and vertical frequency.
      - Please ensure the compatibility of HDMI or HDCP mode of the monitor.

2. Which should be done before using the MONTEST the first time?

   Before using the MONTEST the first time, charge it continuously for more than 16 hours.

3. What is the Pattern Generator's function?

   a. Use to test and maintain studio equipment, such as monitor, cabling, and recording equipment.
   b. For a TV engineer or technician wants to test and calibrate a DTV monitor during repair.
   c. A home-theater user wants to get the best results out of the DTV equipment.
   d. A studio installer wants to test cables and equipment so that can get the best effect.
   e. For the DTV sets seller to show side by side comparisons of quality.
   f. For teacher to train their students about the latest DTV quality test technologies.
   g. To test a new DTV set whether compatibility with the ATSC standards.

4. How to save the changed setting values?

   The MONTESTseries will save the last changed setting values automatically.

5. When should I have to charge the battery?

   We suggest you to charge the battery only when the battery power indicator indicates a low charge.

Appendix A

MONTEST output signal specification chart:

NO	Resolution	Refresh Rate (Hz)	Pixel Freq (MHz)	Sync Polarity	
				Hor	Ver
1	640x350	85	31.5	P	N
2	640x400	85	31.5	N	P
3	640x480	60	25.175	N	N
4	640x480	72	31.5	N	N
5	640x480	75	31.5	N	N
6	640x480	85	36	N	N
7	720x400	85	35.5	N	P
8	800x600	56	36	P	P
9	800x600	60	40	P	P
10	800x600	72	50	P	P
11	800x600	75	49.5	P	P
12	800x600	85	56.25	P	P
13	848x480	60	33.75	P	P
14	1024x768	60	65	N	N
15	1024x768	70	75	N	N
16	1024x768	75	78.75	P	P
17	1024x768	85	94.5	P	P
18	1152x864	75	108	P	P
19	1280x768	60 RB	68.25	P	N
20	1280x768	60	79.5	N	P
21	1280x768	75	102.25	N	P
22	1280x768	85	117.5	N	P
23	1280x960	60	108	P	P

24	1280x960	85	148.5	P	P
25	1280x1024	60	108	P	P
26	1280x1024	75	135	P	P
27	1280x1024	85	157.5	P	P
28	1360x768	60	85.5	P	P
39	1400x1050	60 RB	101	P	N
30	1400x1050	60	121.75	N	P
31	1400x1050	75	156	N	P
32	1600x1200	60	162	P	P
33	1920x1200	60 RB	154	P	N
34	1280x800	60	83.5	N	P
35	1366x768	60	80	N	N
36	1440x900	60	106.5	N	P
37	1440x1050	60	125.25	N	N
38	1680x1050	60	146.25	N	P
39	1440x480i	59	27	N	N
40	1440x576i	50	27	N	N
41	720x480P	59	27	N	N
42	720x576P	50	27	N	N
43	1280x720P	50	74.25	P	P
44	1280x720P	60	74.25	P	P
45	1920x1080i	50	74.25	P	P
46	1920x1080i	60	74.25	P	P
47	1920x1080P	50	148.5	P	P
48	1920x1080P	60	148.5	P	P
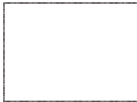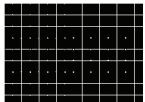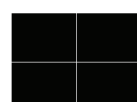
RB: Reduced Blanking
P: Positive
N: Negative
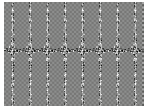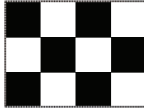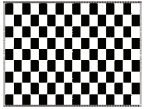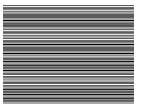
Appendix B

Pattern chart:

1. FLAT	2. Blinking	3. BW_GRADUALLY	4. GRID_4x3
5. GRID_16x12	6. COLOR_GRID	7. COLORBAR_1	8. COLORBAR_2
9. COLORBAR_3	10. COLORBAR_4	11. GRAY_8	12. GRAY_16
13. GRAY_32	14. GRAY_64	15. DYNAGRAY	16. GRAY_1
17. COLORGRAY64	18. BWSWING	19. BW2SWING	20. WINDOW_1
21. WINDOW_2	22. WINDOW_3	23. WINDOW_4	24. VLINE_1
25. VLINE_2	26. VLINE_3	27. H Pattern_1	28. H Pattern_2

29. BLOCK_1	30. BLOCK_4x3	31. BLOCK_16x12	32. HLINE_1

33. HLINE_2	34. HLINE_3