

TENMA[®]

PATTERN GENERATOR



Introduction

Through the use of portable HDMI pattern generator MODEL 72-7480, you are able to use 48 timings and 34 patterns, and operate it continuously for 6~8 hours after the battery has been fully charged or it can be operated by connecting with an external AC adaptor.

MODEL 72-7480 is ideal for:

- TV / Monitor production line
- HDMI image input devices

USER MANUAL MODEL 72-7480

Package Contents-

- 1 HDMI pattern generator MODEL 72-7480
- 1 power adapter DC 12V 1.25A
- 1 user manual
- 1 HDMI 1.2M cable

Any thing missed, please contact with your vendor.

Features

- Intelligent functionality.
- HDMI 1.3, HDCP 1.2 and DVI 1.0 compliant
- Support total 48 timings. (up to UXGA/1080p)
- Low cost.
- Single interface easily use.
- Portable design, working time up to 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 LCM and key buttons, easily control.
- Support audio 48KHz sample rate, 1KHz tone.

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Specifications

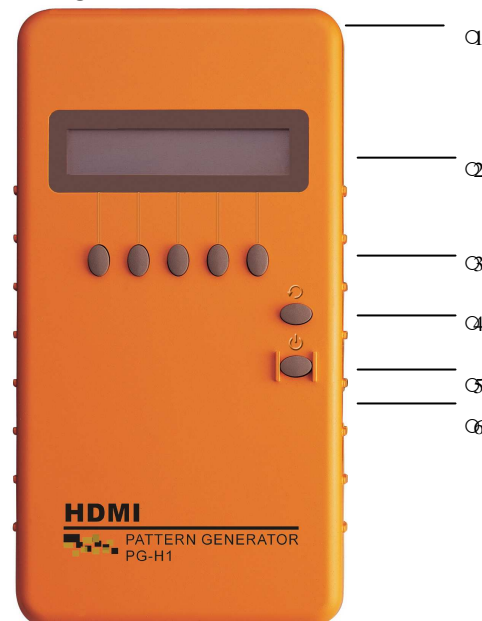
Function	MODEL 72-7480
Output Connector	1 HDMI Type A
Select Switch	7
LCD Module: 16*2 Character Display	1
Max. Resolution	UXGA/1080p
Highest TMDS Frequency	225 MHz
Cable Distance	5M
Power Adapter (Min.)	DC 12V 1.25A
Housing	Plastic
Weight	398 g
Dimensions (LxWxH)	180x95x35 mm

V1.0

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+		

FRONT VIEW



1. HDMI Output
2. LCD Module: 16*2 Character Display
3. Function Keys
4. "↻": Return
5. "⏻": Power On/Off
6. Power Jack

Installation

1. Insert the external AC adaptor into AC outlet, Connect the power cord to MODEL 72-7480 for charging.
2. Switch off the monitor.
3. Connect the HDMI cable between the MODEL 72-7480 and monitor.
4. Switch on the power of the monitor.
5. Press the MODEL 72-7480 power key for more than 3 seconds to switch on/off the MODEL 72-7480.

Operation

A. Starting status

P01 640x480 @60
H 8 MENU

1. After pressing power On/Off key for 2~3 seconds, it will sound a long "beep".
2. Only valid for the corresponding key found below the LCM. After confirming the press, it will sound a short confirm "beep".
3. Factory preset starting value:
P01 640x480 @60
P01 → Pattern 01
640x480 → Resolution 640X480
@60 → Refresh rate 60Hz
4. The bottom left corner of LCM will display the current MODEL 72-7480 status:
 - a. HDMI mode
DVI: MODEL 72-7480 output signal is DVI
H 8: MODEL 72-7480 output signal is HDMI 8bit
H10: MODEL 72-7480 output signal is HDMI 10bit
H12: MODEL 72-7480 output signal is HDMI 12bit
 - b. Video Type (Refer EIA/CEA-861B Standard)
RGB: RGB
Y444: YCbCr4:4:4
Y422: YCbCr4:2:2
If MODEL 72-7480 is operated on DVI mode, then Video type is RGB (4:4:4 with 8-bits/component)
 - c. HDCP:
MODEL 72-7480 has started the HDCP engine

B. Operation Guide:

a.

P01 640x480 @60
H 8 MENU

Start setting: Key → "MENU" Switch

b. After pressing "MENU" option →

P01 640x480 @60
Tim Ptn Func Hky

1> Tim: (Timing selector)

640x480 @60
▲ ▼ ◀ ▶ ↵

Note: The chosen option will blink

Key: "▲": Increasing
"▼": Decreasing
"◀", "▶":

rate

↵: Output

"": Choosing Resolution or Refresh

640x480 @60
Output ...

Under H12 mode, there is no output for the following timings:

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

2> Ptn: (Pattern selector)

P01 FLAT
▲ ▼ ↵

Note: Pattern Index option will blink

Key: "▲": Increasing
"▼": Decreasing
↵: Output

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P02 Blinking setup guide

P02 Blinking
▲ ▼ set ↵

Set: Setting black and white blinking frequency (frames/number)

BLK:001 WHT:001
▲ ▼ ◀ ▶ ↵

Note: The chosen option will blink

BLK: Black, WHT: White

Key: "▲": Increasing

"▼": Decreasing

"◀", "▶": Choosing BLK or WHT

↵: Enter

3> Func: (Function Selector)

P01 640x480 @60
Setup Info

In Function Selector menu, there are two options of Setup and Info, under Setup option, it is provided with Mode, Video Type and HDCP Function for functional set up; and under Info option, it is provided with Timing Info, HTPLG Info and HDCP Info for observation of MODEL 72-7480 status.

【Setup】

H 8 Y444 X
MOD CSC HDCP ↵

MOD: Switching to HDMI mode DVI/H 8/H10/H12

CSC: Switching to Video Type RGB/Y444/Y422

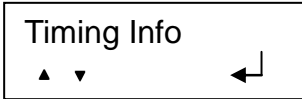
HDCP: Enable/Disable HDCP

↵: Output

The following timings do not support H12 mode:

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

【Info】

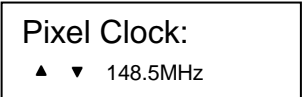


Key: “▲”, “▼”: Choosing Timing Info, HTPLG Info or HDCP Info

“↵”: Enter

a. Timing Info

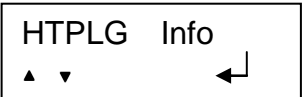
Press “↵” to enter Timing Info menu, MODEL 72-7480 will display the current output’s timing format on the LCM.



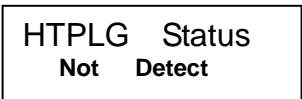
Under Timing Info, it features the following functions:

- Pixel Clock
- Horizontal Freq
- Horizontal Total
- Horizontal Active
- Horizontal Front Porch
- Horizontal Back Porch
- Horizontal Sync Width
- Horizontal Sync Polarity
- Vertical Freq
- Vertical Total
- Vertical Active
- Vertical Front Porch
- Vertical Back Porch
- Vertical Sync Width
- Vertical Sync Polarity
- and Video Code defined by EIA861B

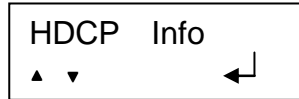
b. Hot Plug Info



Press “↵” to enter HTPLG Info menu, MODEL 72-7480 will display the status of Hot Plug Pin on HDMI connector on the LCM.



c. HDCP Info



Press “↵” to enter HDCP Info menu, MODEL 72-7480 will display the current HDCP STATUS on the LCM.

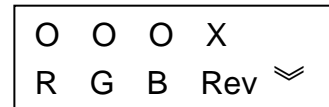


The HDCP Status features the following functions:

- a. Rx Attached/No Rx Attached
- b. Read EDID
- c. Transmit DVI/HDMI
- d. Validate BKSv
- e. Exchanges KSVs
- f. Encryption
- g. Ri = xxxx

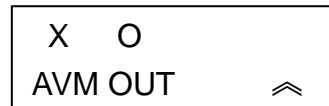
4> Hky: (Hot key selector)

Hot Key page1



O: Enable X: Disable
 R: Red component output
 G: Green component output
 B: Blue component output
 Rev: Pattern reverse
 ≧: Next page

Hot Key page2

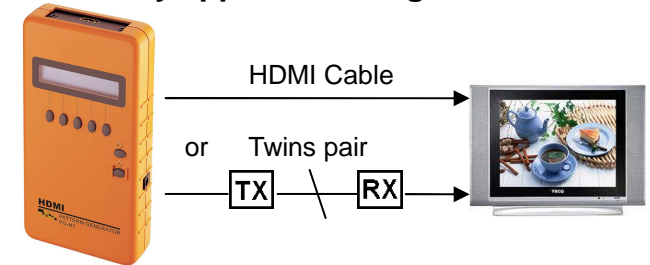


O: Enable X: Disable
 AVM: AV Mute
 OUT: Video output ON/OFF
 ≧: Previous page

Note:

1. After purchasing and before using the MODEL 72-7480 first time, please charge it continuously for more than 16 hours.
2. If there is no image while using the MODEL 72-7480, please ensure the following matters:
 - a. If it is unable to switch on→there is a possibility of dead 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.
3. We suggest you to charge the battery when the battery power indicator has become low.
4. The MODEL 72-7480 will save the last setting automatically.

Assembly application diagram:



****MODEL 72-7480 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
29	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	720x480	59	27	N	N
42	720x576	50	27	N	N
43	1280x720	50	74.25	P	P
44	1280x720	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

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****Pattern chart:**

