

# PATTERN GENERATOR



## USER MANUAL PG-MT1

V1.1

### Package Contents-

- 1 Multi-format pattern generator PG-MT1
- 1 power adapter DC 12V
- 1 user manual
- 1 HDMI 1.2M cable
- 1 YPbPr 1.2M cable
- 2 rack rails, 6 screws

Any thing missed, please contact with your vendor.

## Introduction

Through the use of Multi-format pattern generator PG-MT1, you are able to use **55 timings** and 31 build-in patterns; PG-MT1 also supports to play 24-bits BMP file in SD/SDHC card, user can store customized \*.BMP file in a simple SD card for different test needing.

PG-MT11 is ideal for:

- TV / Monitor production line
- HDMI image input devices

## Features

- Support Multi-format video output. (HDMI, VGA, YPbPr, CVBS, S-Video)
- Intelligent functionality.
- HDMI & HDCP & DVI compliant
- Support total 51 timings. (up to UXGA/1080p)
- Low cost.
- Single interface easily use.
- Provide total 31 patterns, Include: Color bar, Gray, Grid, Block...
- With SD/SDHC card reader to display \*.BMP file (customized by user) in stored in SD/SDHC card.
- By 20x2 Character LCM and key buttons, easily control.
- Support analog and digital audio out: 48KHz sample rate, 1KHz tone.

## Specifications

Function	PG-MT1
HDMI Output Connector	1 HDMI Type A
VGA Output Connector	1 HD-15 Female
YPbPr Output Connector	3 BNC
CVBS Output Connector	1 BNC
S-Video Output Connector	1 mini-DIN 4 Female
Select Switch	6
LCD Module: 20*2 Character Display With Backlight	1 Background: Blue Font: White
Max. Resolution	UXGA/1080p
Highest TMDS Frequency	225 MHz
Power Adapter (Min.)	DC 12V with lock
Housing	Metal
Weight	1885g
Dimensions (LxWxH)	384x173x45mm

### FRONT VIEW



- SD/SDHC card
- LCD Module: 20\*2 Character Display
- Function Keys
- LED: Indicate current selected resolution support video format.  
ON: support  
OFF: not support

### REAR VIEW



- Power Jack.
- USB for firmware upgrade.
- DIP setting for USB firmware upgrade.
- Video out: HDMI
- Video out: S-Video
- Video out: CVBS
- Video out: YPbPr
- Video out: VGA
- Audio out: Analog
- Audio out: Digital (S/PDIF)

## Installation

Before the installation, making sure the PG-MT1 and the monitor are turning off.

- Insert the external AC adaptor into AC outlet, Connect the power cord to PG-MT1 for charging.
- Switch off the monitor.
- Connect the video cable between the PG-MT1 and monitor.
- Switch on the power of the monitor.

## Operation

### A. "Main" function window

```
P 0 7 : 1 9 2 0 x 1 0 8 0 P @ 6 0
[ T i m ] P t n I n f o S e t u p
```

- After power on the PG-MT1, the LCM will display above message.
- Factory preset starting value:  
P07 1920x1080P@60  
P07 → Pattern 07  
1920x1080P@60 → Resolution 1920X1080  
P: progressive; i: interlaced  
@60 → Refresh rate 60Hz
- The second line message on the LCM shows four main setting function of PG-MT1.  
"Tim": Select the output timing (resolution).  
Like: 800x600, 1024x768, 1080P60...etc

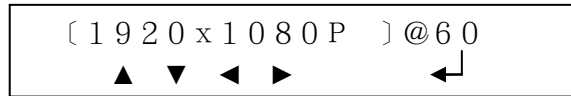
“Ptn”: Select the output pattern.  
 Like: Color bar, Gray, Grid...etc  
 “Info”: Display information includes timing info.  
 Like: H\_act, H\_total, H\_frontporch...etc  
 “Setup”: select various setting function.  
 Like: audio on/off, DVI mode switch, Picture shift function...etc

#### Operation in “Main window”

“◀”, “▶” button: Select another function, and the selected function is with [ ].  
 “Enter” button: Entering the selected function with [ ↵ ].

### B. “Timing” function window

Users can select different resolution and refresh rate here.



Path: Main -> Tim (Timing)

#### Operation in “Timing” window

“◀”, “▶” button: Switch the selection between the “resolution” and “refresh rate” with [ ].  
 “▲”, “▼” button: Change the value “↵”: Change the Video output timing.  
 “Menu/Back” button: Back to the “Main” function window

### C. “Pattern” function window

Users can select different video pattern here for various test environment.



Path: Main -> Ptn (Pattern)

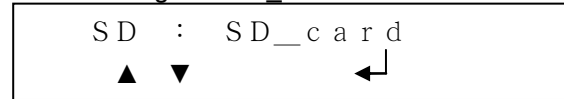
#### Operation in “Pattern” window

“▲”, “▼” button: Change the Pattern number “↵”: Output the selected Pattern.  
 “Menu/Back” button: Back to the “Main” function window

\*\*\* (Pattern No.00): select Picture file in SD card In “Pattern” window use “▲”, “▼” button to select no.0 (SD\_card).

And press “↵” button to enter the directory of the SD\_card.

#### LCM message in P00\_SD



### C-1. “Pattern \_SD select dir“ function window

\*\*\* PG-MT1 can only support SD/SDHC card with “FAT32” file structure.



Path: Main -> Tim (Timing) -> SD (Pattern No.00)

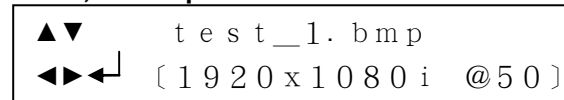
#### Operation in “SD select DIR” window

“▲”, “▼”: Change the other directory in SD card “↵”: entered the selected directory  
 “◀”: back to the upper level directory  
 “Menu/Back” button: Back to the “Pattern” function window  
 “▶”: enter the sub-directory  
 \*\*\* If selected directory have sub-directory inside, then it will show “▶” icon.



### C-2. “Pattern SD\_select file“ function window

\*\*\* PG-MT1 can only support \*.bmp file format with 24-bit, uncompressed.



Path: Main -> Tim (Timing) -> SD (Pattern No.00) -> Select directory

#### Operation in “SD select File” window

“▲”, “▼”: Change other \*.bmp file to output.  
 “◀”, “▶”: Change the resolution and refresh rate of the selected picture file.  
 “Menu/Back” button: Back to the “SD select dir” function window  
 “↵”: Output the picture with specified resolution and refresh rate.

### D. “Pattern SD\_slide show “function window

PG-MT1 can display all \*.bmp in the same directory as slide periodically. And the time to change another \*.bmp file can be setting by the user.

\*\*\* All “.bmp” files in “slidexxx” directory must have the same resolution.

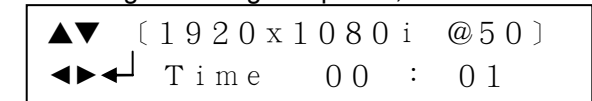
That means if you want to slide show 10 pictures ( \*.bmp file, and the resolution are all the same, like: 800x600, 1280x1024), you can create a directory like “slide\_800x600”, and then copy these 10 .bmp in the directory.

When the user enter the directory in SD card with dir name “slide” at beginning, the PG-MT1 will enter “Pattern SD\_slide show “function window, let the user to adjust related setting.

1. Select directory, name start with “slide” first.



2. Setting the timing and period, then start “slide show”



Path: Main -> Tim (Timing) -> SD (Pattern No.00) -> Select directory (directory name start with “slide”)

#### Operation in “SD select File” window

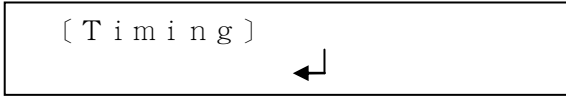
“◀”, “▶”:  
 Change the different setting of slide show:  
 - the output timing setting  
 - Period time(minute) adjust  
 - Period time(second) adjust  
 “▲”, “▼”:  
 Change value.

“Menu/Back” button: Back to the “SD select dir” function window, and stop the “slide show” procedure

“↵”: Start “slide show” procedure. PG-MT1 will display all \*.bmp in this directory with used defined period.

## E. "Info Timing" function window

PG-MT1 will display the current output's timing format on the LCM.



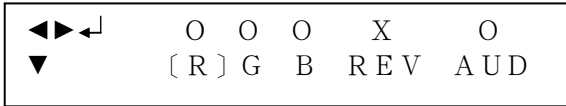
Path: Main -> Info-> Timing

Operation in "Info Timing" window

"▲", "▼" button: Change the value

"Menu/Back" button: Back to the "info" function window.

## E-1. "Setup #1" function window



Path: Main -> Setup

Operation in "Setup #1" window

"◀", "▶": Change the different setting:

R: Enable Red color output.

G: Enable Green color output.

B: Enable Blue color output.

Rev: Enable Pattern reverse

AUD: Enable audio out (HDMI + analog + coaxial).

"O": enable, "X":disable

"▼": Change to "Setup #2" page.

"Menu/Back" button: Back to the "Main" function window, and stop

"◀" : Change the value.

## E-2. "Setup #2" function window



Path: Main -> Setup

Operation in "Setup #2" window

"◀", "▶": Change the different setting:

MOD: Switching to HDMI mode.

- DVI: output DVI mode
- H8: output HDMI 8-bit mode
- H10: output HDMI 10-bit mode
- H12: output HDMI 12-bit mode

CSC: Switching to Video Type RGB/Y444/Y422

HDCP: Enable/Disable HDCP

'O': enable, "X":disable.

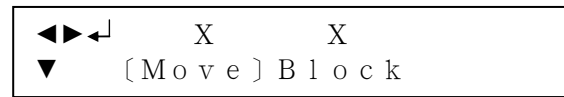
"▲": Change to "Setup #1" page.

"▼": Change to "Setup #2" page.

"Menu/Back" button:Back to the "Main" function window, and stop

"◀" : Change the value.

## E-3. "Setup #3" function window



Operation in "Setup #3" window

"◀", "▶": Change the different setting:

Move: Video output keep scrolling

- ◀: video scroll to left direction
- ▶: video scroll to right direction
- X: video stop to scroll

Block: Video output a moving block pattern

- ◀: block pattern moving to left
- ▶: block pattern moving to right
- X: disable moving block

"▲": Change to "Setup #2" page.

"Menu/Back" button: Back to the "Main" function window, and stop

"◀" : Change the value.

## \*\*PG-MT1 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	1280x720	60 RB	64	P	N
20	1280x720	60	74.25	P	P
21	1280x720	75	95.75	N	P
22	1280x768	60 RB	68.25	P	N
23	1280x768	60	79.5	N	P
24	1280x768	75	102.25	N	P
25	1280x768	85	117.5	N	P
26	1280x800	60	83.5	N	P
27	1280x960	60	108	P	P
28	1280x960	85	148.5	P	P
29	1280x1024	60	108	P	P
30	1280x1024	75	135	P	P
31	1280x1024	85	157.5	P	P
32	1360x768	60	85.5	P	P
33	1366x768	60	85.5	P	P
34	1400x1050	60 RB	101	P	N
35	1400x1050	60	121.75	N	P
36	1400x1050	75	156	N	P
37	1440x900	60	106.5	N	P
38	1440x1050	60	125.25	N	N

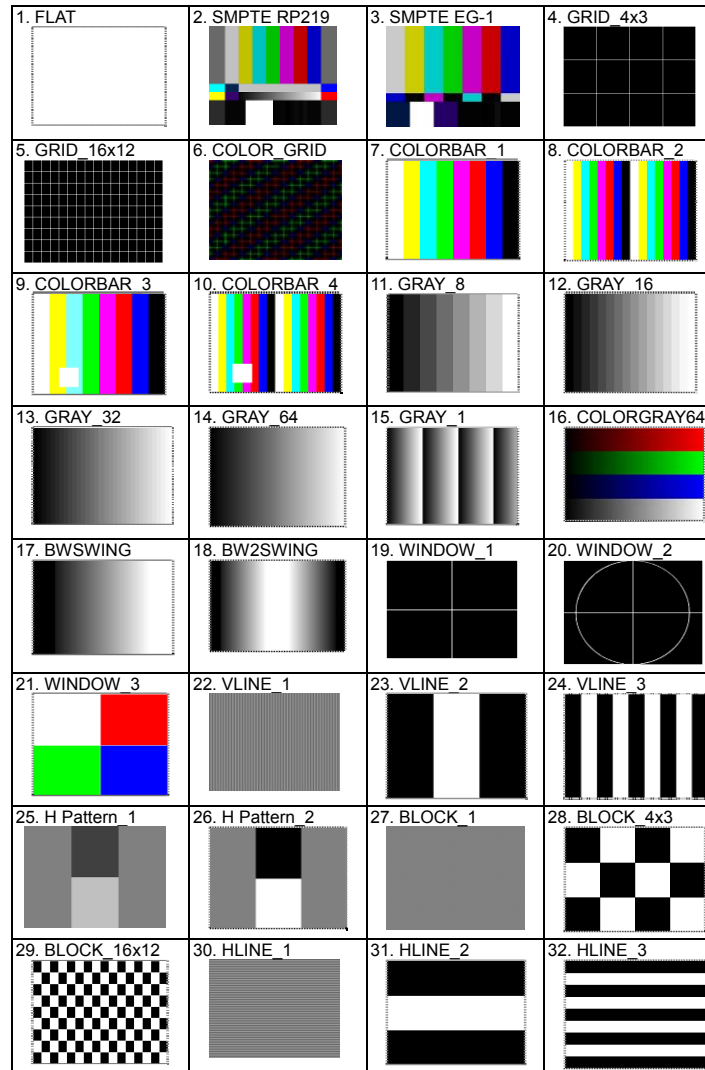
39	1600x1200	60	162	P	P
40	1680x1050	60	146.25	N	P
41	1920x1080	60 RB	138.5	P	N
42	1920x1200	60 RB	154	P	N
43	1440x480i	59	27	N	N
44	1440x576i	50	27	N	N
45	720x480	59	27	N	N
46	720x576	50	27	N	N
47	1280x720	50	74.25	P	P
48	1280x720	60	74.25	P	P
49	1920x1080i	50	74.25	P	P
50	1920x1080i	60	74.25	P	P
51	1920x1080p	24	74.25	P	P
52	1920x1080p	25	74.25	P	P
53	1920x1080p	30	74.25	P	P
54	1920x1080p	50	148.5	P	P
55	1920x1080p	60	148.5	P	P

RB: Reduced Blanking

P: Positive

N: Negative

**\*\*Pattern chart:**



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