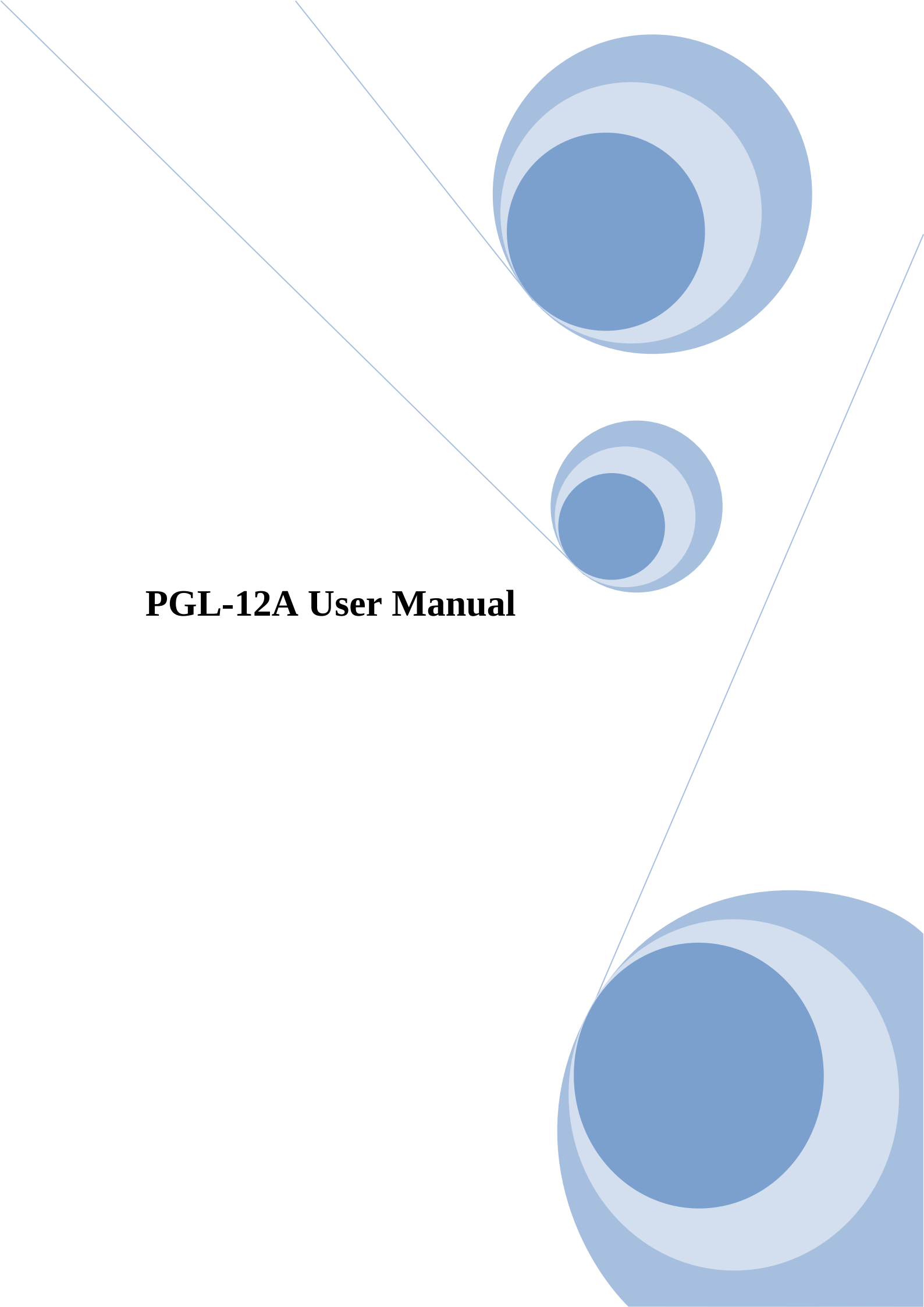


The background features three large, overlapping blue circles in the corners (top-right, middle-right, and bottom-right) and two thin blue diagonal lines crossing the page from the top-left towards the center.

PGL-12A User Manual

1. Outline

This product is a test pattern generation module to test LCD modules and it adopts a 4-channel, up to 10-bit LVDS interface. PGL-12A is a smaller version of previous pattern generators but provides excellent functions, thereby enhancing convenience. Particularly designed to minimize EMI, this device can be used as a pattern generator to test EMI of LCD modules.

2. Product Composition

This product comprises PGL-12A equipment and S/W which controls some functions. The 12V adapter and LVDS cable are sold separately.

3. Function and Operation Method of Each Part

PGL-12A is operated either by the value set in H/W or by controlling using S/W.

3.1 Function and Operation Method of H/W



1. LCM Model Indicator (Hex code)

This indicator is a 3-digit 7-segment LED that displays horizontal resolution data of the LCD module selected by the DIP switch. The displayed horizontal resolution data indicates LCD module_horizontal resolution/ number of LVDS channels as Hex.

2. Pattern Number Indicator

Displays pattern number outputted on the current screen.

3. LCM Model Select

This is used to select an LCM model.

No.	LCD Model	Resolution (Pixel)	Number of LVDS Channels	Frequency (MHz)	DIP Switch (S1)							
					S1	S2	S3	S4	S5	S6	S7	S8
1	LM170E	1280*1024	2	54	On	On	On	On	On	On	On	Off
2	LM171WX	1440*900	2	53.25	On	On	On	On	On	On	Off	On
3	LM185WH	1366*768	1	77	On	On	On	On	On	On	Off	Off
4	LM190WX	1440*900	2	54	On	On	On	On	On	Off	On	On
5	LM190E	1280*1024	2	51.9	On	On	On	On	On	Off	On	Off
6	LM200WD	1600*900	2	48.9	On	On	On	On	On	Off	Off	On
7	LM201U	1600*1200	2	64	On	On	On	On	On	Off	Off	Off
8	LM215WF	1920*1080	2	72	On	On	On	On	Off	On	On	On
9	LM220WE	1680*1050	2	59.6	On	On	On	On	Off	On	On	Off
10	LM230WF	1920*1080	2	72	On	On	On	On	Off	On	Off	On
11	LM240WU4	1920*1200	2	77	On	On	On	On	Off	On	Off	Off
12	LM240WU5	1920*1200	2	77	On	On	On	On	Off	Off	On	On
13	LM250WF	1920*1080	2	72	On	On	On	On	Off	Off	On	Off
14	LM260WU	1920*1200	2	77	On	On	On	On	Off	Off	Off	On
15	LM270WF	1920*1080	2	72	On	On	On	On	Off	Off	Off	Off
16	LM270WQ	2560*1440	4	60.38	On	On	On	Off	On	On	On	On
17	LP089WS	1024*600	1	50.4	On	On	On	Off	On	On	On	Off
18	LP101WH1	1366*768	1	72.3	On	On	On	Off	On	On	Off	On
19	LP101WSA	1024*600	1	50.4	On	On	On	Off	On	On	Off	Off
20	LP116WH1	1366*768	1	76.5	On	On	On	Off	On	Off	On	On
21	LP121WX3	1280*800	1	69.3	On	On	On	Off	On	Off	On	Off
22	LP133WH2	1366*768	1	69.3	On	On	On	Off	On	Off	Off	On
23	LP133WX	1280*800	1	72.5	On	On	On	Off	On	Off	Off	Off
24	LP140WD1	1600*900	2	50.67	On	On	On	Off	Off	On	On	On
25	LP140WH1-TLB1	1366*768	1	72.3	On	On	On	Off	Off	On	On	Off
26	LP141WP1	1440*900	2	48.1	On	On	On	Off	Off	On	Off	On
27	LP141WX3	1280*800	1	69.3	On	On	On	Off	Off	On	Off	Off
28	LP141WX5	1280*800	1	69.3	On	On	On	Off	Off	Off	On	On
29	LP141WXV	1280*800	1	72.17	On	On	On	Off	Off	Off	On	Off
30	LP154WE2	1680*1050	2	61	On	On	On	Off	Off	Off	Off	On
31	LP154WP3	1440*900	2	44.375	On	On	On	Off	Off	Off	Off	Off
32	LP154WU1	1920*1200	2	75.4	On	On	Off	On	On	On	On	On
33	LP154WX4	1280*800	1	69.3	On	On	Off	On	On	On	On	Off
34	LP156WD	1366*768	1	72.3	On	On	Off	On	On	On	Off	On
35	LP156WF1	1920*1080	2	69.25	On	On	Off	On	On	On	Off	Off
36	LG Cinema	2560*1080	4	95.5	On	On	Off	On	On	Off	On	On
37	LP156WG1	2176*1224			On	On	Off	On	On	Off	On	Off
38	LP171WE2	1680*1050	2	59.5	On	On	Off	On	On	Off	Off	On
39	LP171WP4	1440*900	2	54.1	On	On	Off	On	On	Off	Off	Off
40	LP171WU5	1920*1200	2	77	On	On	Off	On	Off	On	On	On
41	LP171WX2	1440*900	2	48.105	On	On	Off	On	Off	On	On	Off
42	LP173WD1	1600*900	2	48.875	On	On	Off	On	Off	On	Off	On

43	LP173WF1	1920*1080	2	74.9	On	On	Off	On	Off	On	Off	Off
44	LC320WXGA	1366 *768	1	72.4	On	On	Off	On	Off	Off	On	On
45	LC420WUL	1920*1080	2	74.25	On	On	Off	On	Off	Off	On	Off
46	LC420WUD	1920*1080	4	74.25	On	On	Off	On	Off	Off	Off	On

A particular LCD model of LGD was taken as an example. However, any LCM model of other brands, such as Samsung and AUO, may also be used by adjusting the DIP switch if its resolution, number of LVDS channels and frequency are the same as or similar to those of this model.

4. Pattern Change Button

Press the up/down button to change patterns.



1. Power Input Terminal

Flick the switch on the left after power is supplied through the DC 12V input terminal, and LED is on.

2. Autorun Operation Switch

In the case of LCM aging, patterns change automatically. Turn the switch to adjust the pattern change time. It is off when the figure is "0", and time can be adjusted from 1 to 9 seconds. When patterns change, LED is on.

3. LCM EEPROM Read Button

Press the button, and the value in the LCM EEPROM is read to display the checksum value on the LCM model select window. This is an option and the current version does not provide this function.

4. PC Control Terminal (Programs for PCs are supplied separately)

This terminal is utilized to control the device using a PC and to alter LCM bits or VESA/JEIDA modes. Also, it is used to change and save the H/V total and blank value from timing of the basic model. The RS-232C standard accepts 8 bits, 115,200 bps, no parity, 1 stop bits, and non flow control.



1. LC Pin NO. 1 Jumper Pin NO. 1

This is used to select LCM voltage. The user may choose between 2V, 5V and 3.3V. Be sure to select voltage before testing an LCM.

2. LCM EEPROM Connection Terminal

This terminal is used by being connected with an external LCM EEPROM. Currently, this function is not supplied.

3. Output Terminal of LVDS Channels 1&2

The device is connected to HD LCM or FHD LCM through output of LVDS channels 1 and 2.

4. Output Terminal of LVDS Channels 3&4

The device is connected to FHD 120Hz LCM through output of LVDS channels 3 and 4.

- LVDS Channel 1, 2 Pin Map
- Mating Connector: FI-R51HL

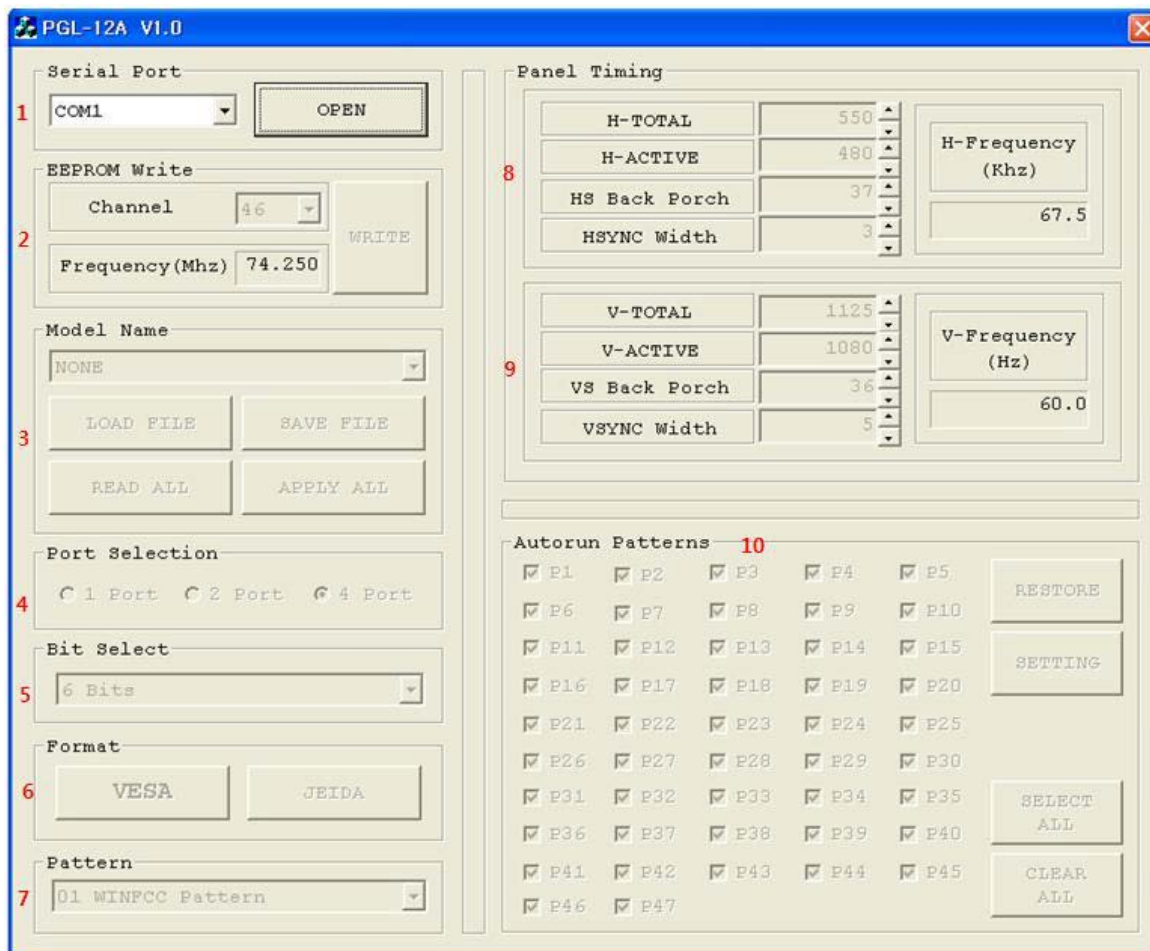
No	Symbol	Description	No	Symbol	Description
1	VLCD	LCM VCC	27	T1EP	1 st LVDS Tx Signal(E+)
2	VLCD	LCM VCC	28	T1EM	1 st LVDS Tx Signal(E-)
3	VLCD	LCM VCC	29	T1DP	1 st LVDS Tx Signal(D+)
4	VLCD	LCM VCC	30	T1DM	1 st LVDS Tx Signal(D-)
5	NC	No connection	31	GND	Ground
6	GND	Ground	32	T1CLKP	1 st LVDS Tx Clock Signal(+)
7	GND	Ground	33	T1CLKN	1 st LVDS Tx Clock Signal(-)
8	GND	Ground	34	GND	Ground
9	NC	No connection	35	T1CP	1 st LVDS Tx Signal(C+)
10	NC	No connection	36	T1CM	1 st LVDS Tx Signal(C-)
11	T2EP	2 nd LVDS Tx Signal(E+)	37	T1BP	1 st LVDS Tx Signal(B+)
12	T2EM	2 nd LVDS Tx Signal (E-)	38	T1BM	1 st LVDS Tx Signal(B-)
13	T2DP	2 nd LVDS Tx Signal(D+)	39	T1AP	1 st LVDS Tx Signal(A+)
14	T2DM	2 nd LVDS Tx Signal(D-)	40	T1AM	1 st LVDS Tx Signal(A-)
15	GND	Ground	41	GND	Ground
16	T2CLKP	2 nd LVDS Tx Clock Signal(+)	42	NC	No connection
17	T2CLKN	2 nd LVDS Tx Clock Signal(-)	43	NC	No connection
18	GND	Ground	44	NC	No connection

19	T2CP	2 nd LVDS Tx Signal(C+)	45	NC	No connection
20	T2CM	2 nd LVDS Tx Signal(C-)	46	NC	No connection
21	T2BP	2 nd LVDS Tx Signal(B+)	47	LVDS Select	'H' = JEIDA , 'L' or NC = VESA
22	T2BM	2 nd LVDS Tx Signal(B-)	48	NC	No connection
23	T2AP	2 nd LVDS Tx Signal(A+)	49	NC	12V Out(VCC for LED Drive)
24	T2AM	2 nd LVDS Tx Signal(A-)	50	NC	12V Out(VCC for LED Drive)
25	Bit Select	'H' = 10bit(D) , 'L' = 8bit	51	NC	12V Out(VCC for LED Drive)
26	NC	No connection			

- LVDS Channel 3,4 Pin Map
- Mating Connector : FI-R41HL

No	Symbol	Description	No	Symbol	Description
1	NC	No connection	27	T3EP	3 rd LVDS Tx Signal(E+)
2	NC	No connection	28	T3EM	3 rd LVDS Tx Signal(E-)
3	NC	No connection	29	T3DP	3 rd LVDS Tx Signal(D+)
4	NC	No connection	30	T3DM	3 rd LVDS Tx Signal(D-)
5	NC	No connection	31	GND	Ground
6	GND	Ground	32	T3CLKP	3 rd LVDS Tx Clock Signal(+)
7	GND	Ground	33	T3CLKN	3 rd LVDS Tx Clock Signal(-)
8	GND	Ground	34	GND	Ground
9	GND	Ground	35	T3CP	3 rd LVDS Tx Signal(C+)
10	GND	Ground	36	T3CM	3 rd LVDS Tx Signal(C-)
11	T4EP	4 th LVDS Tx Signal(E+)	37	T3BP	3 rd LVDS Tx Signal(B+)
12	T4EM	4 th LVDS Tx Signal (E-)	38	T3BM	3 rd LVDS Tx Signal(B-)
13	T4DP	4 th LVDS Tx Signal(D+)	39	T3AP	3 rd LVDS Tx Signal(A+)
14	T4DM	4 th LVDS Tx Signal(D-)	40	T3AM	3 rd LVDS Tx Signal(A-)
15	GND	Ground	41	GND	Ground
16	T4CLKP	4 th LVDS Tx Clock Signal(+)	42	NC	No connection
17	T4CLKN	4 th LVDS Tx Clock Signal(-)	43	NC	No connection
18	GND	Ground	44	NC	No connection
19	T4CP	4 th LVDS Tx Signal(C+)	45	NC	No connection
20	T4CM	4 th LVDS Tx Signal(C-)	46	NC	No connection
21	T4BP	4 th LVDS Tx Signal(B+)	47	NC	No connection
22	T4BM	4 th LVDS Tx Signal(B-)	48	NC	No connection
23	T4AP	4 th LVDS Tx Signal(A+)	49	NC	No connection
24	T4AM	4 th LVDS Tx Signal(A-)	50	NC	No connection
25	GND	Ground	51	NC	No connection
26	GND	Ground			

4. Function and Operation Method of S/W



4.1 Serial Port Connection

- As serial communication (RS-232C) ports, COM1 to COM9 are supported.
- The RS-232C standard accepts 8 bits, 115,200 bps, no parity, 1 stop bits, and non flow control.
- Adjust the COM port set in the PC, and then press the OPEN button to connect the device with the PC.

4.2 EEPROM Write

- This is used to change the timing value of the LCM model registered in the PGL-12A EEPROM.
- Channel means the value set in the PGL DIP S/W. Set the DIP S/W value before changing it.
- Note that it's impossible to change the dot clock in panel timing. Therefore, it is required to set DIP S/W of a model close to the dot clock of a new LCM to be used, and then to select the value for the channel.
- After changing panel timing, press the Write button and turn the power off and on again, and the value set in DIP S/W is altered.

4.3 Model Name Box

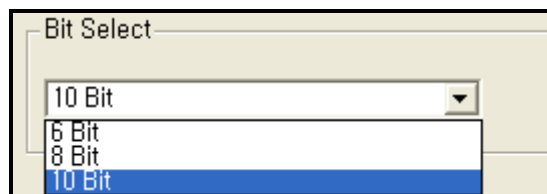
- It is used to save the set data in the PC.
- Press the Save File button, and the data is saved as *.emi file in the PC.
- The Load button is used to import the emi file saved.
- The Read All button is utilized to import the values in PGL-12A set by the DIP S/W.
- The Apply All button is used to apply loaded files to PGL. The files are not saved in PGL, but applied only temporarily. To save files in PGL, adjust the DIP S/W and then use the Write button above.

4.4 Port Selection

- Means the number of LVDS channels.

4.5 BIT Selection

- Selects LVDS channel data bits (6bits, 8bits or 10bits)



4.6 Format

- Used to change VESA and JEIDA modes of the LCM.

4.7 Pattern

- Used to change patterns of PGL-12A.

4.8.9 Panel Timing

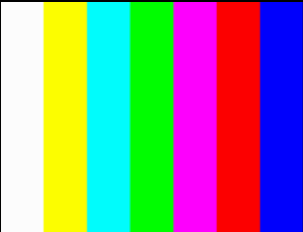
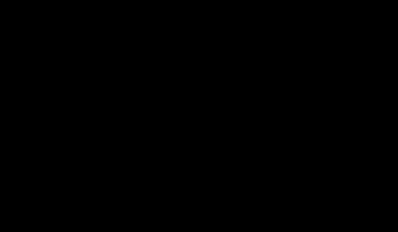
- Used to alter the panel timing value set in PGL.
- Note that it's impossible to change the clock value.

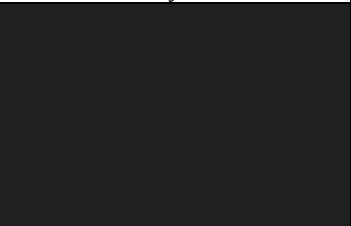
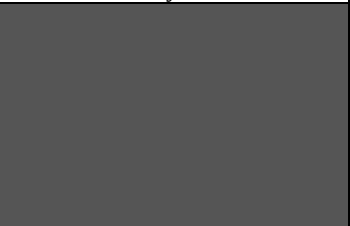
4. 10 Autorun Patterns

- Used to select a pattern to be applied to Autorun.

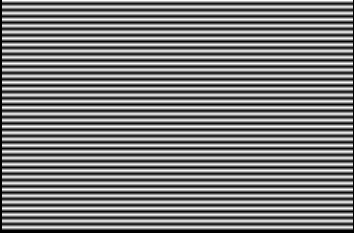
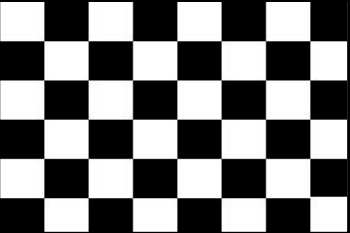
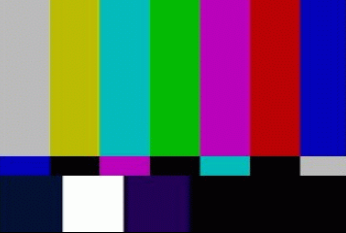
5. Type and Order of Patterns (possibly different from the current version)

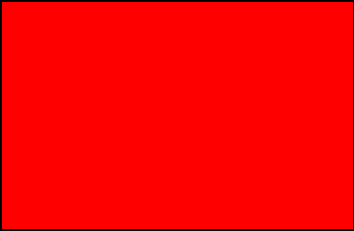
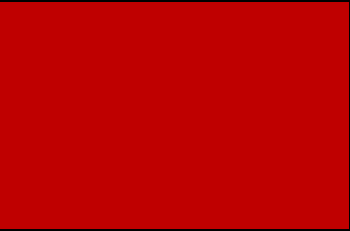
Order of pattern	No.1	No.2	No.3
Pattern name	WINFCC Pattern	LG Pattern	Dell Pattern
Shape of pattern			
Pattern code (Note 1)	000(HEX)	010(HEX)	020(HEX)

Order of pattern	No.4	No.5	No.6
Pattern name	8 Color Bar	Gray_0	Gray_16
Shape of pattern			
Pattern code (Note 1)	030(HEX)	040(HEX)	050(HEX)

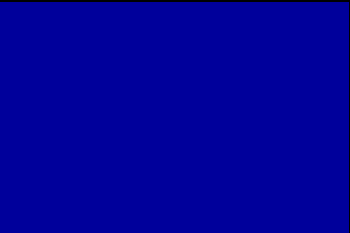
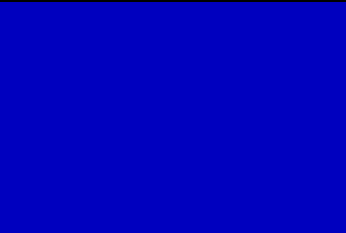
Order of pattern	No.7	No.8	No.9
Pattern name	Gray_32	Gray_64	Gray_85
Shape of pattern			
Pattern code (Note 1)	060(HEX)	070(HEX)	080(HEX)

Order of pattern	No.10	No.11	No.12
Pattern name	Gray_127	Gray_200	Gray_255
Shape of pattern			
Pattern code	090(HEX)	0A0(HEX)	0b0(HEX)

(Note 1)			
Order of pattern	No.13	No.14	No.15
Pattern name	Line Black_White	Check 8x6	SMPTE Color Bar
Shape of pattern			
Pattern code (Note 1)	0C0(HEX)	0d0(HEX)	0E0(HEX)

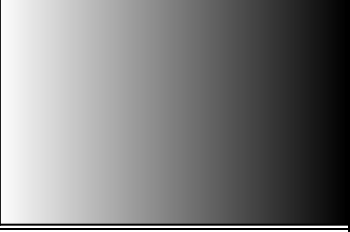
Order of pattern	No.16	No.17	No.18
Pattern name	Red_255	Red_191	Red_127
Shape of pattern			
Pattern code (Note 1)	0F0(HEX)	100(HEX)	110(HEX)

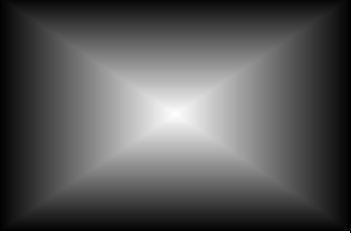
Order of pattern	No.19	No.20	No.21
Pattern name	Green_255	Green_191	Green_127
Shape of pattern			
Pattern code (Note 1)	120(HEX)	130(HEX)	140(HEX)

Order of pattern	No.22	No.23	No.24
Pattern name	Green_64	Blue_255	Blue_191
Shape of pattern			
Pattern code (Note 1)	150(HEX)	160(HEX)	170(HEX)

Order of pattern	No.25	No.26	No.27
Pattern name	Blue_127	Gray_64	Red 255 Bar
Shape of pattern			
Pattern code (Note 1)	180(HEX)	190(HEX)	1A0(HEX)

Order of pattern	No.28	No.29	No.30
Pattern name	Green 255 Bar	Blue 255 Bar	RG255 Bar
Shape of pattern			
Pattern code (Note 1)	1b0(HEX)	1C0(HEX)	1d0(HEX)

Order of pattern	No.31	No.32	No.33
Pattern name	RB 255 Bar	GB 255 Bar	RGB 255 Bar
Shape of pattern			
Pattern code (Note 1)	1E0(HEX)	1F0(HEX)	200(HEX)

Order of pattern	No.34	No.35	No.36
Pattern name	Concentric BW	Gray64_Black	Gray127_Black
Shape of pattern			
Pattern code (Note 1)	210(HEX)	220(HEX)	230(HEX)

Order of pattern	No.37	No.38	No.39
Pattern name	Gray191_Black	Gray255_Black	Gray0_White
Shape of pattern			
Pattern code (Note 1)	240(HEX)	250(HEX)	260(HEX)

Order of pattern	No.40	No.41	No.42
Pattern name	Gray64_White	Gray127_White	Gray191_White
Shape of pattern			
Pattern code (Note 1)	270(HEX)	280(HEX)	290(HEX)