

Model : O-Series

January, 2009

Data sheet Revision 0.2

O-Series Digital

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The information presented in this document may form a part of quotation or contract under the agreement of both parties. Otherwise, this datasheet is subject to change without prior notice.

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1. Revisions of History

Revision No.	Date	Page	Description	Actionee
Ver. 0.1	Dec.17 '08	ALL	First Release	
Ver. 0.2	Jan.22 '09	7	Add Picture of Actual connectors location	

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2. General Descriptions

O-Series is an advanced TFT-LCD Monitor Control Board. The function of this design can replace a full conventional CRT monitor with a large size of TFT-LCD modules. It is suitable for video resolution up to WUXGA @ 60Hz and 1080i in all video modes, the full display Area of the module is used. The design is implemented as a single printed circuit board, the mainfunction of which will be analog and digital video interface.

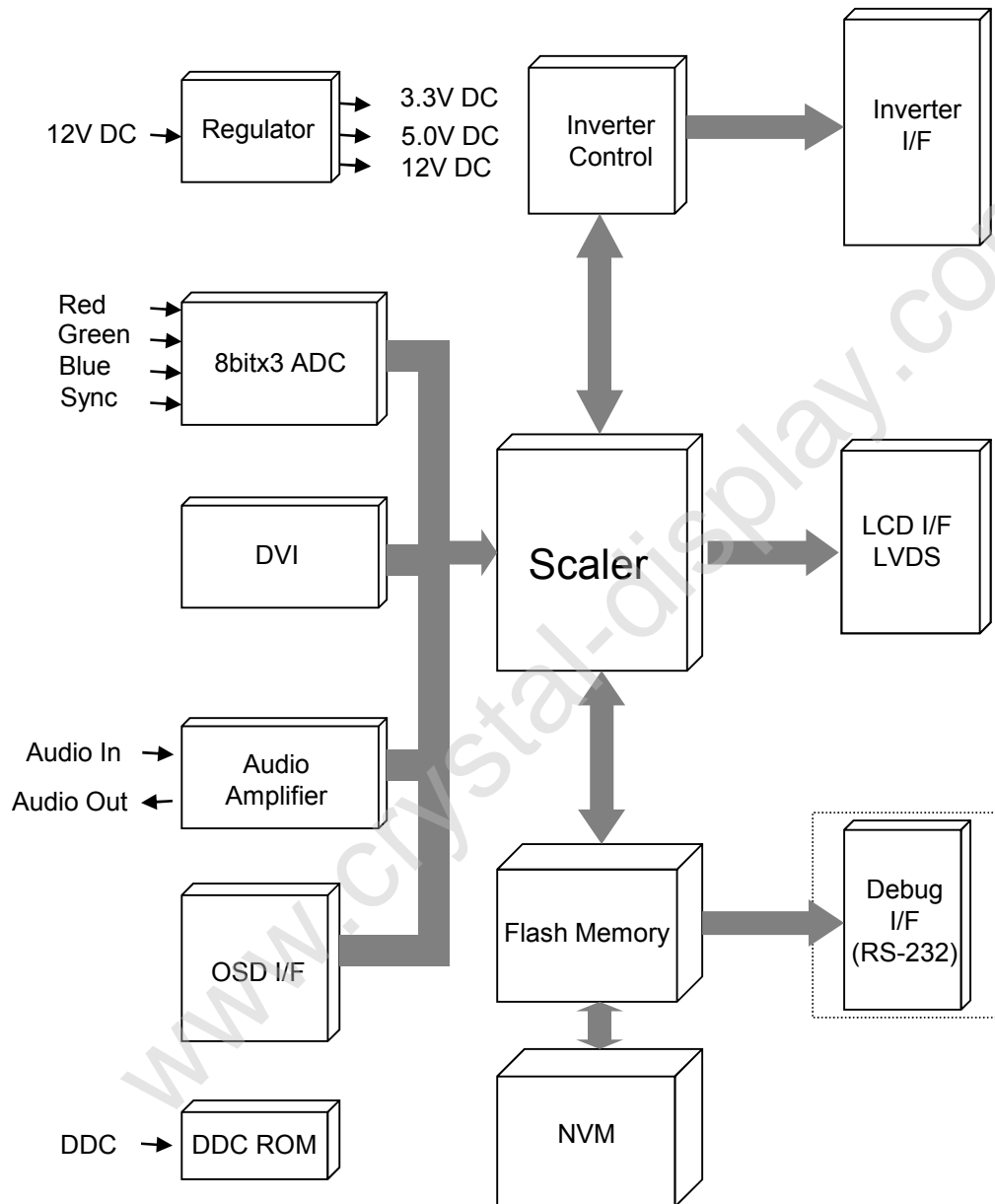
O-Series is designed to support various TFT LCDs up to WUXGA resolution by BIOS option.

3. Features

- Designed to give state-of-the-art picture quality
- Analog RGB / DVI (Digital Video Interface)
- Optional input combination, e.g., PC monitor only
- Full CRT multi-sync monitor compatibility
- Multi-sync capability up to WUXGA resolution @ 60Hz, compatible standard VGA,SVGA, XGA, SXGA and UXGA VESA timing
- Expand DOS, VGA, SVGA ,UXGA and WUXGA to full screen display
- True color (16.7M) data processing and display driving
- Single control operated & transparent On-Screen-Display (here after 'OSD') userinterface
- Full control of all relevant display and interface parameters via OSD
- Multi-language
- VESA DDC1/2B compliant
- Compatible with VESA DPMS power saving modes
- Form factor: 100(L) x 150(W) x 22(H)
- +12V DC single power: 48watts AC/DC power adapter recommended (p/n:SMLM060xx)
- Up to +24V DC single power available for large size panel (p/n: SMLM060xx)
- Operating temperature: 0°C to 50°C
- OSD & Power Switch Board

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4. Block Diagram

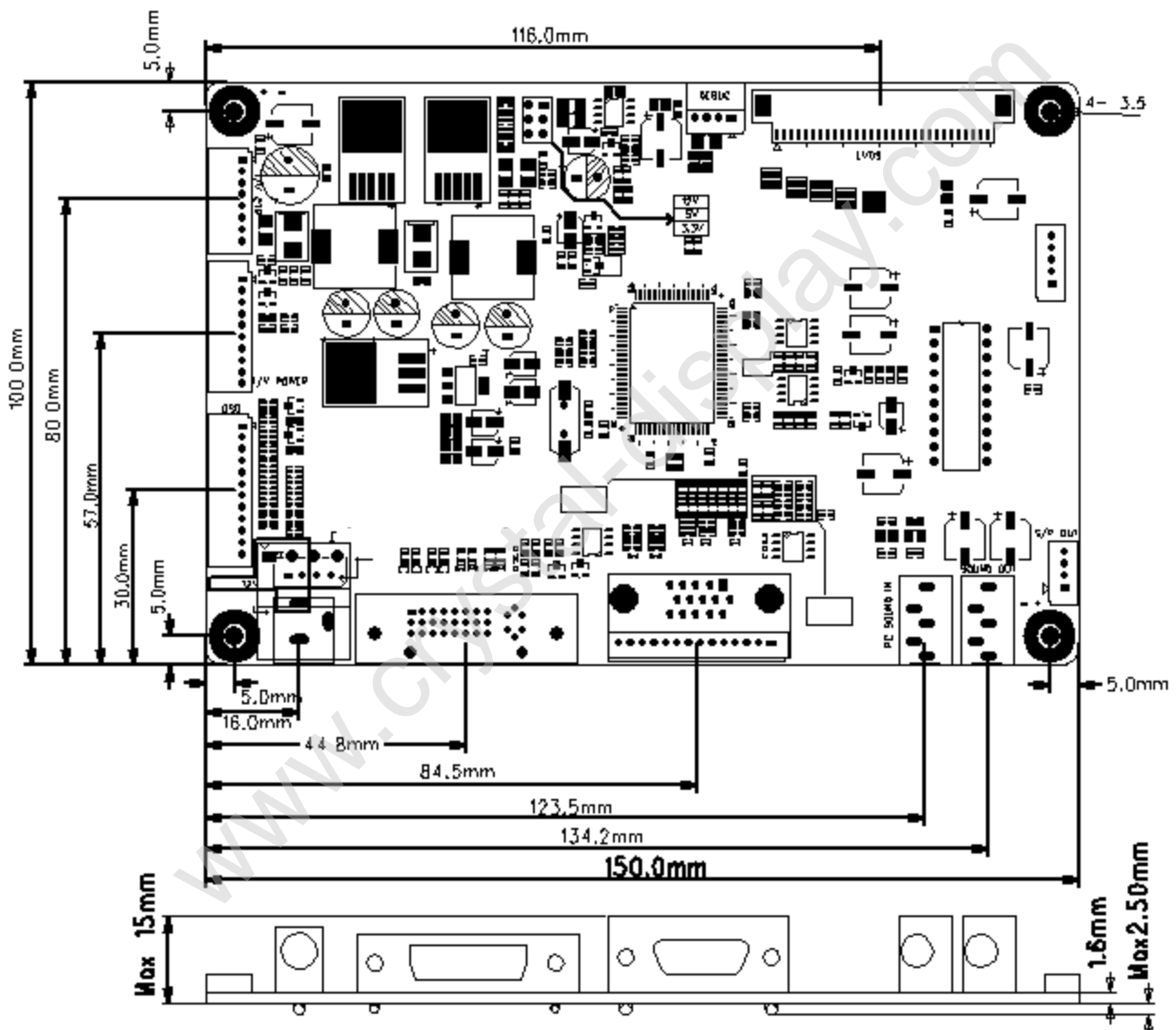


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5. Outline Dimensions

5.1 Standard Connectors for Power, DVI, Audio, OSD, Inverter

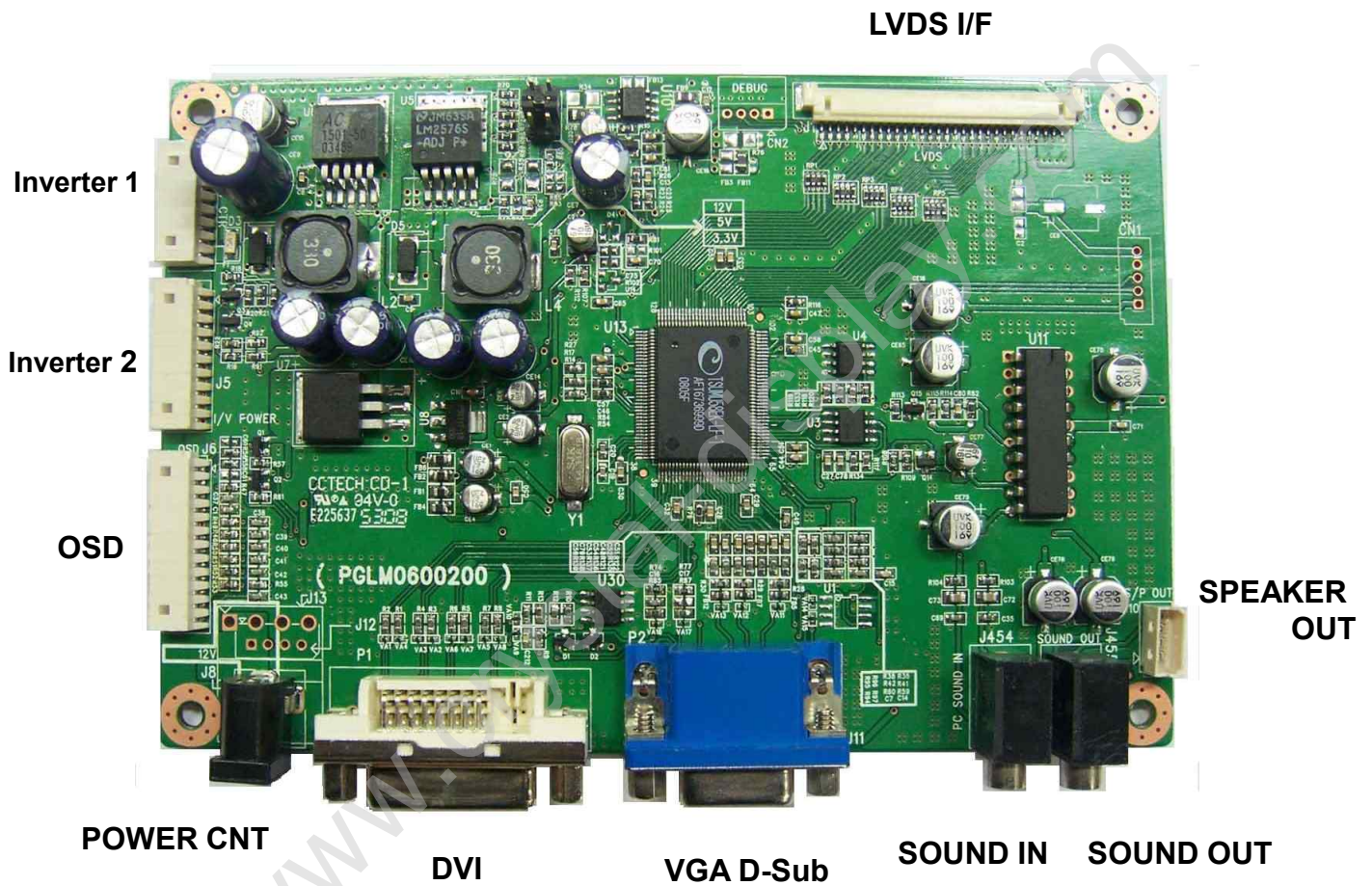
- Dimension : 100mm(L) x 150mm (W) x 22(H)



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5.1.1 Actual connectors location

- Analog, DVI and HDMI



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6. Connectors Information

6.1 Input Connectors

- Power Input Connector
Connector : DC12V Jack (J8)

Pin no.	Function	Pin no.	Function	Pin no.	Function
1	VCC (DC12V)	2	GND	3	GND

- Power Input Connector **(Alternative)**
Connector : Molex 5274-04 (J13)

Pin No.	Function	Pin No.	Function
1	POWER	3	GND
2	POWER	4	GND

- Power Input Connector **(Alternative)**
Connector : Molex 5268-04 (J12)

Pin No.	Function	Pin No.	Function
1	POWER	3	GND
2	POWER	4	GND

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- Analog RGB Input Connector

Connector : Mini D-Sub 15pin(P2)

Pin no.	Function	Pin no.	Function	Pin no.	Function
1	RED	2	GREEN	3	BLUE
4	N/C	5	GND	6	GND (RED)
7	GND (GREEN)	8	GND (BLUE)	9	N/C
10	GND	11	N/C	12	SDA
13	HSYNC	14	VSYNC	15	SCL

- DVI-I Input Connector

Connector : DVI-D (P1)

Pin no.	Function	Pin no.	Function	Pin no.	Function
1	DATA_E2-	2	DATA_E2+	3	GND
4	N/C	5	N/C	6	SCL
7	SDA	8	VSYNC	9	DATA_E1-
10	DATA_E1+	11	GND	12	N/C
13	N/C	14	5V	15	DVI DET
16	HOT PLUG	17	DATA_E0-	18	DATA_E0+
19	GND	20	N/C	21	N/C
22	GND	23	CLOCK+	24	CLOCK-

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- OSD, LED Interface Connector : OSD1

Connector : 53015-1210 Made by Molex (J6)

Pin No.	Function	Pin No.	Function
1	LED GREEN	7	RIGHT
2	LED RED	8	LEFT
3	5VCC	9	DOWN
4	REMOTE	10	MENU
5	GND	11	SOURCE
6	POWER	12	UP

- RS-232 Connector : CN2

Connector : 53015-0410 Made by Molex(CN2)

Pin No.	Function
1	Ground
2	TxD
3	RxD
4	+5V DC

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6.2 Output Connectors

- LVDS Output Connector (J1) : Yeon-ho 12507WR-30

Pin No.	LVDS	Pin No.	LVDS
1	Tx0-(EVEN)	16	Tx1+(ODD)
2	Tx0+(EVEN)	17	GND
3	Tx1-(EVEN)	18	Tx2-(ODD)
4	Tx1+(EVEN)	19	Tx2+(ODD)
5	GND	20	TxCLK-(ODD)
6	Tx2-(EVEN)	21	TxCLK+(ODD)
7	Tx2+(EVEN)	22	Tx3-(ODD)
8	TxCLK-(EVEN)	23	Tx3+(ODD)
9	TxCLK+(EVEN)	24	GND
10	Tx3-(EVEN)	25	3.3V
11	Tx3+(EVEN)	26	GND
12	GND	27	VCC
13	Tx0-(ODD)	28	VCC
14	Tx0+(ODD)	29	VCC
15	Tx1-(ODD)	30	VCC

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- Backlight Connector

Connector : 53015-0810 made by Molex(J3)

Pin No.	Function	Pin No.	Function
1	Brightness Adjustment	5	GND
2	Back light on/off	6	GND
3	GND	7	INV POWER
4	5VCC	8	INV POWER

- Backlight Power Connector (For Large size panel)

Connector : 53015-0810 made by Molex(J5)

Pin No.	Function	Pin No.	Function
1	INV POWER	6	GND
2	INV POWER	7	GND
3	INV POWER	8	GND
4	INV POWER	9	GND
5	INV POWER	10	GND

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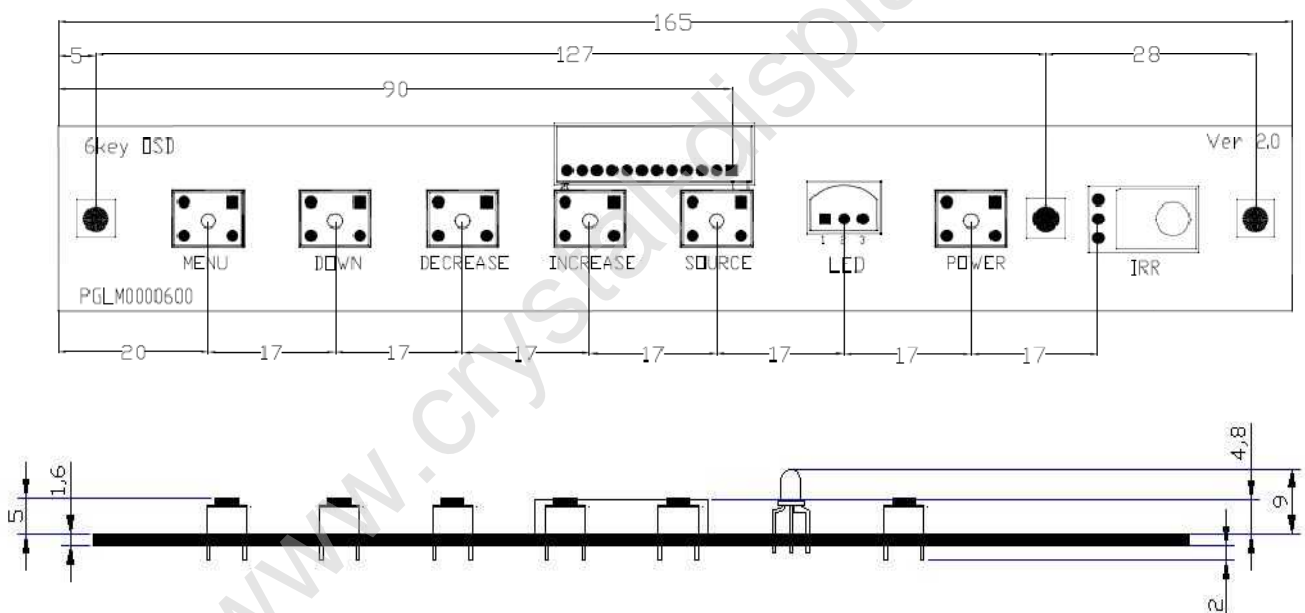
7. Supported input formats

Resolution	Refresh Rate	H-Freq.	Pixel Freq	Remarks
640 x 350	70Hz	31.469KHz	25.175MHz	IBM
720 x 400	60Hz	31.469KHz	28.322MHz	IBM
640 x 480	60Hz	31.469KHz	25.175MHz	IBM
640 x 480	66Hz	35KHz	30.24MHz	MAC
640 x 480	72Hz	37.861KHz	31.5MHz	VESA
640 x 480	75Hz	37.5KHz	31.5MHz	VESA
800 x 600	56Hz	35.156KHz	36MHz	VESA
800 x 600	60Hz	37.879KHz	40MHz	VESA
800 x 600	72Hz	48.077KHz	50MHz	VESA
800 x 600	75Hz	46.875KHz	49.5MHz	VESA
832 x 624	75Hz	49.726KHz	57.284MHz	MAC
1024 x 768	60Hz	48.363KHz	65MHz	VESA
1024 x 768	70Hz	56.476KHz	75MHz	VESA
1024 x 768	75Hz	60.023KHz	78.75MHz	VESA
1152 x 864	75Hz	67.5KHz	108MHz	VESA
1152 x 870	75Hz	68.681KHz	100MHz	MAC
1280 x 1024	60Hz	63.981KHz	108MHz	VESA
1280 x 1024	75Hz	79.976KHz	135MHz	VESA
1440 x 900	60~75Hz	55.9~70.5KHz	150MHz	Not Standard
1600 x 1200	60Hz	75KHz	162MHz	VESA
1600 x 1200	65Hz	91.25KHz	175.5MHz	VESA
1600 x 1200	70Hz	87.5KHz	189MHz	VESA
1600 x 1200	75Hz	93.75KHz	202.5MHz	VESA
1680 x 1050	60Hz	65.2KHz	146.25MHz	Not Standard
1920 x 1200	60Hz	74.52KHz	193.156MHz	WUXGA
720P	60Hz			SMPTE 296M & EIA-770.3
1080I	60Hz(Interlace)			SMPTE 274M & EIA-770.3

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8. OSD (On Screen Display)

8.1 OSD Board Dimension

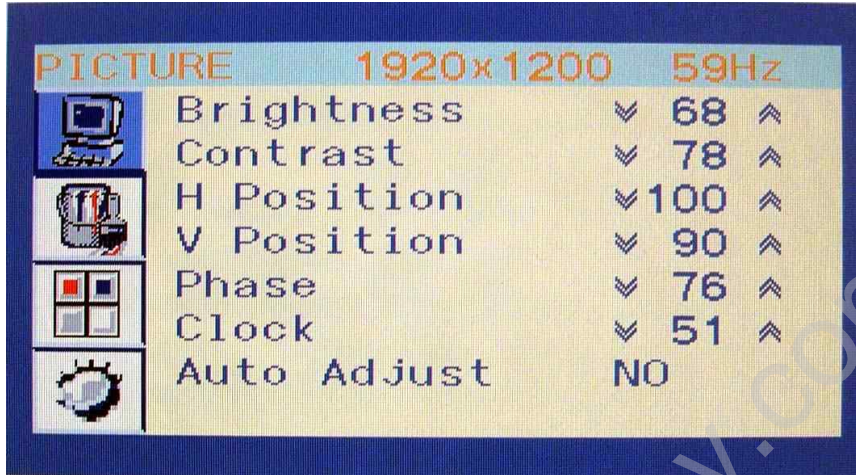


OSD Key Description

- MENU : Menu Key & Select Key
- DOWN (Auto) : Down Key (HOT Key : Auto Config.)
- DECREASE : Decrease Key, Left Key (Hot Key : Brightness Decrease)
- INCREASE : Increase Key, Right Key
- SOURCE/EXIT : Exit Key & Source Select HOT Key : Source Select [Analog – DVI]

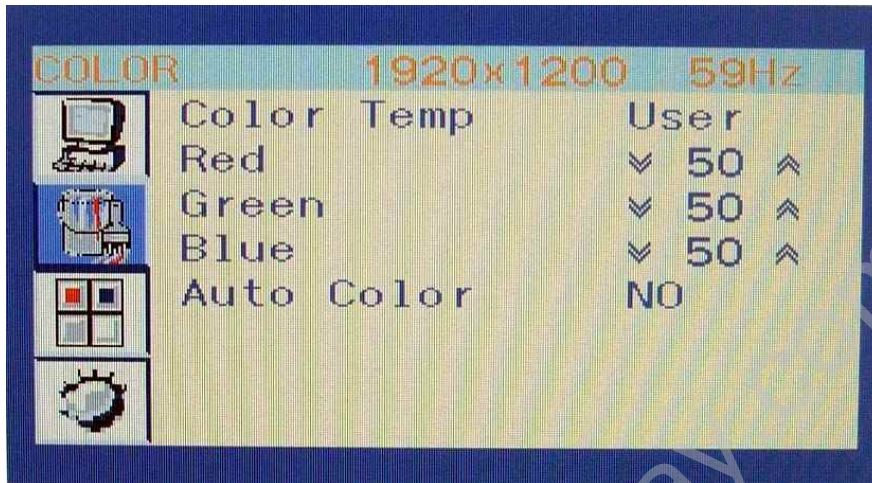
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8.2 OSD menu enables user to manipulate the image and settings.



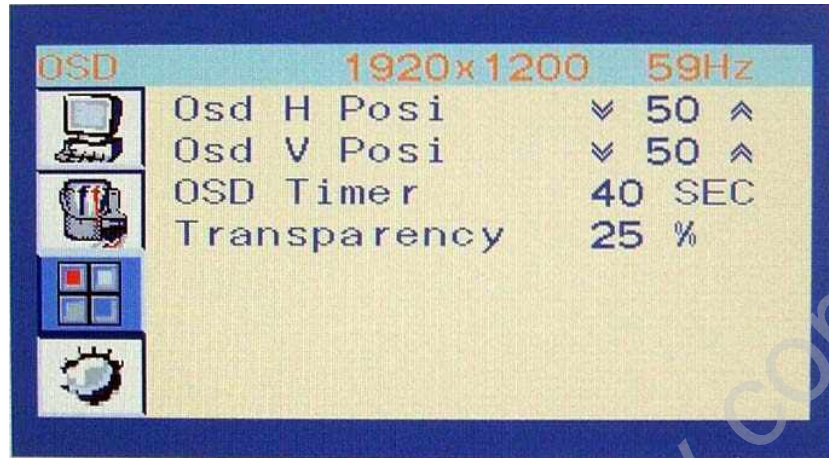
Main Menu	Sub Menu	Operation
PICTURE	Brightness	Adjust Brightness of the screen.
	Contrast	Contrast is ratio of luminance between black and white. Adjust distinction. (Analog RGB Only)
	H-Position	Move screen horizontally
	V-Position	Move screen vertically.
	Phase	Adjust Phase of screen. Used when noise or overlapped lines are shown on the screen. Caution : Do not make manual adjustment when the picture is in its normal Shape or you will create problem on it.
	Clock	Adjust horizontal size of the screen by increasing or decreasing the number of picture elements. Caution : Perform this adjustment just in the case of having horizontally Unmatched picture after operation the "Auto Adjustment"
	Auto Adjust (RGB Only)	Auto configuration of geometry. Automatically adjusted items are : 1) Clock 2) Phase 3) Position is centered

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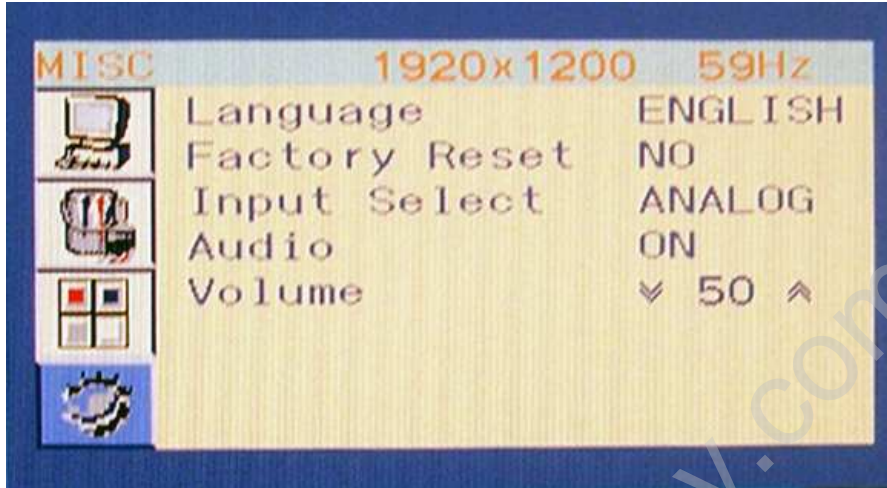
Main Menu	Sub Menu	Operation
COLOR	Color Temp	Choice of Bluish, Reddish and user's option is chosen, RGB can be adjusted. - User : Able to adjust the color by controlling Red, Green, and Blue. - Bluish : Blue-tinged screen. - Reddish : Red-tinged screen.
	Red	Adjust Red value of color temperature
	Green	Adjust Green value of color temperature
	Blue	Adjust Blue value of color temperature
	Auto Color	Color automatically set from strange input signal.

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Main Menu	Sub Menu	Operation
OSD	OSD H-Posi	Adjust horizontal position of OSD menu by value.
	OSD V-Posi	Adjust vertical position of OSD menu by value.
	OSD Timer	The range of controlling the duration time of the OSD menu (OSD turn-off time).
	Transparency	Choose OSD Transparent level

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Main Menu	Sub Menu	Operation
MISC	Language	Select the language of OSD menu. ENGLISH / DEUTSCH / FRANÇAIS / ITALIANO / KOREA
	Factory Reset	Initial set-up, preset by the factory before forwarding.
	Input Select	Select input signal source. Analog RGB / DVI
	Audio	Choose audio On or Off
	Volume	Choose volume level

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9. Operation Message

Auto Adjust (Analog RGB mode)

- Execute Auto Adjust Function

AUTO ADJUST

Self Diagnostics (Analog RGB mode)

- Input Signal or Cable is not present after power on with power switch. This message is disappeared after 10 sec or activity of input signal

NO SIGNAL /
NO CABLE

Auto Color (Analog RGB mode)

- Execute Auto Color Function

AUTO COLOR

Out of Range

- Input Signal is over the supporting range

VIDEO MODE NOT SUPPORTED

10. Customization

Based on a customer's request, we customize the board configuration, Harness connection & length, Remote Controller, DDC and OSD menu. Generally, it requires MOQ (minimum order quantity) and a 1 month lead time after finalizing customization of the specification. Details should be agreed by both parties.

www.crystal-display.com

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11. Supportable Panel List

O Series board can support the BIOS and harness settings for the TFT-LCD models as followings:

Manufacturer	Size	Part Number	Resolution	Brightness (cd/M2)	Viewing Angle (Deg)
SEC	24"	LTM240W1-L01	1920X1200	220	80/80/80/80