OSD PIP
User Manual

Distributed by:
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1. Introduction

1.1. About the Product

This product is a high quality TFT LCD panel. It is designed to meet the demanding performance requirements of today's business and industrial applications.

1.2. Notice

a. Do not touch the LCD panel surface with sharp or hard objects.

b. Do not use abrasive cleaners, waxes or solvents for cleaning, use only a dry or damp, soft cloth.

c. Use only with a high quality, safety-approved, AC/DC power adapter.

1.3. Check List

Before using this monitor, please make sure that all the items listed below are present in your package

1. VGA cable	x1
2. AC to DC adapter	x1
3. Power cable	x1
4. User manual	x1
5. DVI cable (optional)	x1
6. Audio cable (optional)	x1
7. 24V to 12V transfer board(Optional)	X1

If any items are missing or damaged, please contact your dealer immediately.

2. Remote Control

2.1. Install Battery in the Remote Control

Insert two AAA Alkaline batteries and match the (+) and (-) on battery to the marks inside the battery compartment.

Service life of battery:

1. The battery normally last for about one year although this depends on how often and for what operations the remote control is used.
2. If the remote control unit fails to work even then it's operated near the player, please replace the battery.

2.2. Remote Control Key Definitions

Key	Function	Description
	Power	Power on/off
AUTO	Auto	Auto Adjust
SOURCE	Source	Switch input source
SWAP	Swap	Swap images in PIP/PAP mode
MENU	Menu	Display OSD menu
/	Volume	Adjust volume
PIP	PIP	Perform PIP mode
FLIP	Flip	Flip image
EXIT	Exit	Return to the previous menu level
RESET	Reset	Factory reset
SCALING	Scaling	Change the scaling mode to 1:1, Fill or aspect
A-COLOR	Auto-color	perform Auto-Color Balance
MUTE	Mute	Mute
/ / /	Select	Navigating to Up/Down/Left/Right
ENTER	Enter	Execute
C1	C1	(optional) Switch to Component 1 mode
C2	C2	(optional) Switch to Component 2 mode
CVBS	CVBS	(optional) Switch to CVBS mode
VGA	VGA	(optional) Switch to VGA mode

3. Kit Memo (Optional for 24V input DC solution)

Warning:

1. See the instruction if the DC adapter is 12V or 24V. If the DC adapter is 24V DC, need to come with “24V to 12V power transfer board”.

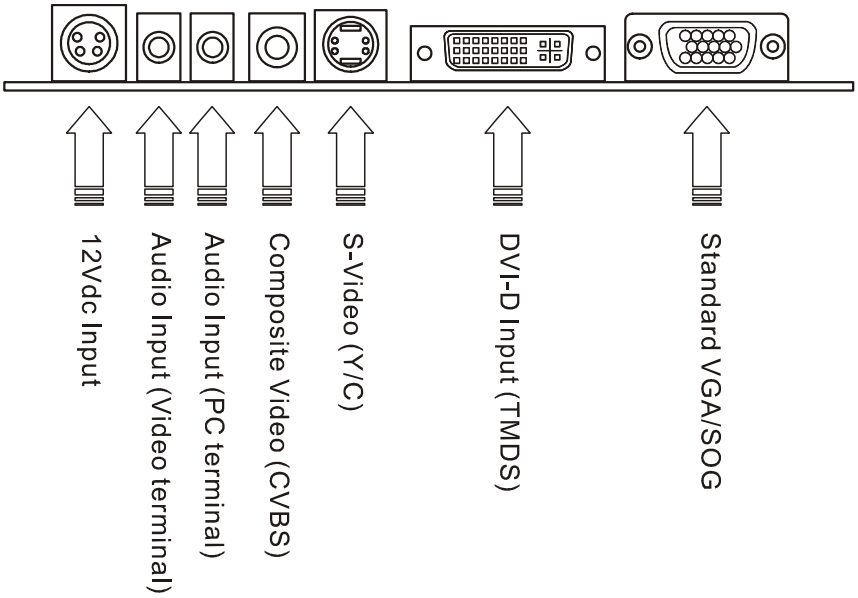
2. <u>24V to 12V Power transfer board installation Guide:</u>

<u>BEFORE</u> connecting power cord to AC outlet, please ensure **<u>ADAPTER CABLE</u>**, **<u>POWER CABLE to AD BOARD</u>** and **<u>INVERTER CABLE</u>** have been connected. This action prevents volt converter board (GAP-P0420) from noise issue. This issue does not influence any function.

4. Input Signals Overview

The default output signal is VGA for the main display and S-Video for PIP display. The LCD output can be configured to use any of the available input formats (VGA, DVI, S-Video, and Composite).

Monitor Connectors



****Please Note: Some connectors are optional depends on the product model****

4.1. Power & Signal Connections

4.1.1. Power:

Switch off the power on both your monitor and your computer.

The Power Switch is located at the leftmost button of the keypad.

4.1.2. Power cable connection:

Connect the power cord to the AC outlet, and connect the power to the monitor through the AC/DC adapter.

4.1.3. VGA cable connection:

Plug 15-pin VGA signal cable to the VGA connector in the rear of PC system, and plug the other end to the monitor.

Secure cable connectors with screws.

4.2. Optional Cable Connections

The LCD monitor is designed to work with a variety of compatible video sources. Due to the possible deviations between these video sources, you may have to make adjustments to the monitor settings from the OSD menu when switching between these sources.

4.2.1. DVI cable connection (Optional):

Plug the DVI signal cable to the DVI connector in the rear of the PC system, and plug the other end to the monitor.

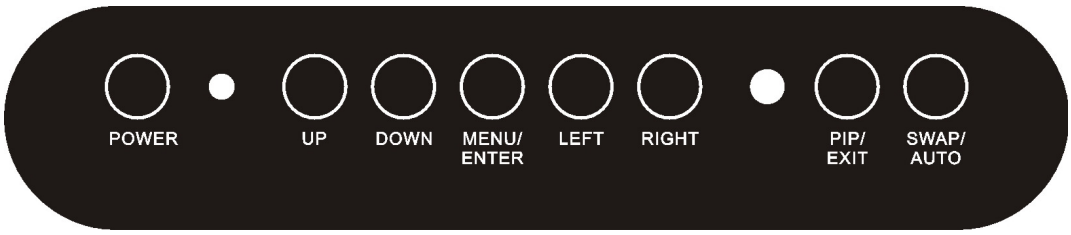
Secure cable connectors with screws.

4.2.3 RS232 cable connection (Optional):

You will be able to develop your own application software utilizing the built-in RS232 command code. The application software can send command from PC to LCD monitor via RS232 port to control LCD monitor. Please refer to Appendix B for built-in RS232 command code.

5. Using the LCD Monitor

5.1 OSD Key Definition



a. **POWER**

Initiates power-up sequence from low power mode or enters low lower mode from normal operation.

b. **SWAP/AUTO**

i. When PIP is disabled, this will perform Auto Adjustment.

ii. When PIP is enabled, it switches the image in the Main Display to the PIP Display and vice versa. When image side-by-side (PAP mode) is active, the SWAP key exchanges the left and right displays.

c. **PIP/EXIT**

i. When OSD is disabled, it cycles through the available PIP display modes. Repeated keystrokes will change the size of the PIP display to side-by-side (PAP) display, and then back to normal display.

ii. When OSD is enabled, it returns to the previous menu level or closes the OSD if pressed at the Main Menu level.

d. **ENTER/MENU**

i. When OSD is disabled, it displays the OSD Main Menu.

ii. When OSD is enabled, it confirms a selection.

e. **LEFT** ◀

Moves left when navigating the Main Menu and Sub Menu. It also decrements a slider bar.

f. **RIGHT/SOURCE** ▶

i. When OSD is disabled, it cycles through the available input sources for the Main Display.

ii. When OSD is enabled, it moves right when navigating the Main Menu and Sub Menu and increments a slider bar.

g. **UP** ▲

i. Selects the previous item in the Item Menu.

h. **DOWN** ▼

i. Opens the Main Display Source Menu, PIP Display Source Menu and Item Menu.

ii. Selects the next item in the Item Menu.

5.2 OSD Hot Keys (Flip image and Auto)

Function	Hot Key
Mirror Image	Press "◀" and "▶" simultaneously to get a mirror image from the original source.
Upside-down Image	Press "◀" and "▶" simultaneously twice to get an upside down image from the original source.
Mirror + Upside-down Image	Press "◀" and "▶" simultaneously three times to get a mirror + upside down image from the original source.
Auto-Color Balance	When the OSD menu is disabled, press "▼" and "▲" simultaneously to perform Auto-Color Balance.

5.3 OSD Menu System

The OSD menu system consists of four menu types: Main Menu, Source Menu, Sub Menu and Item Menu.

Menu	Description
Default / Normal	No menus are displayed.
Main Menu	The first level system control. Accepts "◀" "▶" to navigate, "▼" to access Source Menu, and "**ENTER**" to access Sub Menu.
Source Menu	Input sources are chosen at this level. Accepts "◀" "▶" and "**ENTER**" for selecting input source. Accepts "**EXIT**" key to return to Main Menu without changing input source.
Sub Menu	The second level system control. Accepts "▼" or "**ENTER**" to access the Item Menu. Accepts **EXIT** key to return to Main Menu.
Item Menu	The third level system control. Accepts "◀" "▶" and "**ENTER**" for adjusting control features. Accepts "**EXIT**" to return to previous menu (either Main or Sub Menu).

Table 1: OSD Menu Description

5.3.1. Main OSD Menu

Figure 3.1: OSD Main Menu

Main Display

a. Press "▼" to enter Main Display Source Menu.
b. Press "**ENTER**" to enter Main Display Sub Menu.

PIP Display

a. Press "▼" to enter PIP Display Source Menu.
b. Press "**ENTER**" to enter Main Display Sub Menu.

 **OSD Control**

Press “**ENTER**” to enter OSD Control Item Menu.

 **Audio (Optional)**

Press “**ENTER**” to enter Audio Item Menu.

 **Factory Reset**

Press “**ENTER**” to enter Factory Reset Item Menu.

****Please Note: The PIP function is active only when the Main Display is in VGA input. ****

5.3.2. OSD Source Menu

There are VGA, DVI, S-Video, and Composite ports on the monitor. The VGA port and DVI port both support PC graphics signals as well as 1080i video signals. The S-Video and Composite ports support only video signals.

When either the Main Display or PIP Display is selected, press “▼” to navigate the OSD Source Menu. Use “◀” / “▶” to select an input source In the Source Menu. Press “**ENTER**” to save the current selection. Press “**EXIT**” to return to the Main Menu without saving.

****Please Note: The Source Menus for both the Main Display and PIP Display are identical in appearance****

Figure 3.2: OSD Source Menu

VGA

Press "**ENTER**" to set VGA as input source.

DVI

Press "**ENTER**" to set DVI as input source.

Composite

Press "**ENTER**" to set Composite as input source.

S-Video

Press "**ENTER**" to set S-Video as input source.

5.3.3. OSD Sub Menu

When either the Main Display or PIP Display is selected in the Main Menu, press "**ENTER**" to access the Sub Menu. This Sub Menu gives the user access to **Display** / **Image** / **Position** / **Color** / **PIP Control** Item Menus. Note that the Image Item Menu is not accessible for the PIP Display. To access each of these Item Menus, press either the "**ENTER**" or "▼".

5.3.4. Item Menu

Press "◀" / "▶" to cycle through the Item Menu. Press "**ENTER**" or "▼" to access the Item Menu currently selected. Note that the contents of the Item Menu are dependent on the input source, which is currently active.

5.3.4.1. Display Item Menu

Figure 3.4: OSD Display Item Menu

Display Item Menu		
Menu	**Input Source**	**Description and Usage**
Brightness	VGA / Composite / S-Video / DVI	Press "◀" / "▶" to adjust screen brightness.
Contrast		Press "◀" / "▶" to adjust contrast.
Internal Brightness		Press "◀" / "▶" to adjust the internal brightness of the screen.
Hue		Press "◀" / "▶" to select hue to obtain the desired color settings.
Saturation		Press "◀" / "▶" to select saturation to adjust the optimal color degree level.
Flesh-Tone		Press "◀" / "▶" to select Off, Weak, Soft or Strong effect for the Main Display.

5.3.4.2. OSD Image Item Menu

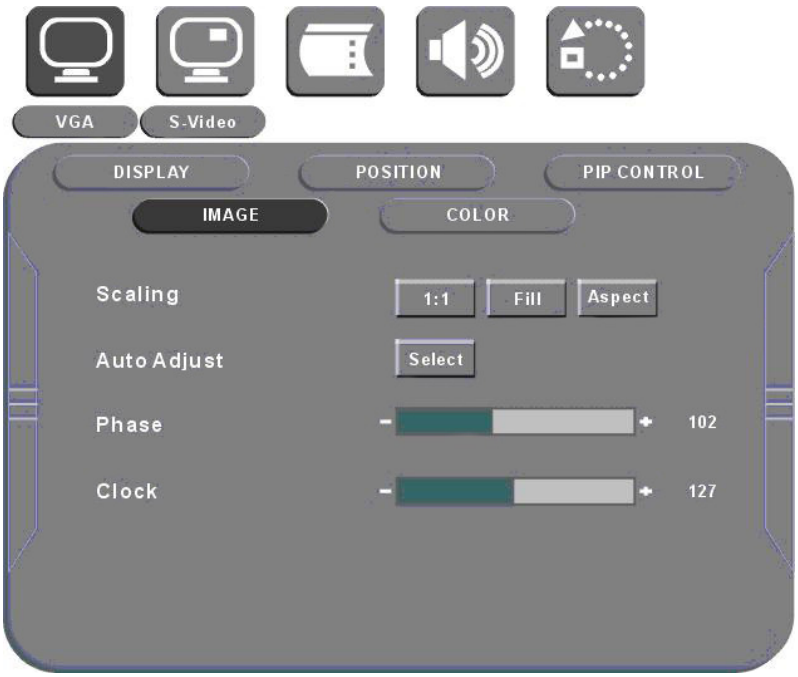


Figure 3.5: OSD Image Item Menu

Image Item Menu		
Menu	**Input Source**	**Description and Usage**
Scaling	VGA / Composite / S-Video / DVI	Change the scaling mode by using the "◄" / "►" buttons to select 1:1, Fill or aspect. Press "**ENTER**" to activate the selected Scaling mode. In **1:1** mode, the input image is centered on the screen. In **Fill** mode, the input image is stretched (or compressed) to fill the available display area. In **Aspect** mode, the input image is stretched (or compressed) by the same horizontal and vertical factor.
Auto-Adjust	VGA	Initiate this to have the monitor logic to choose the best settings for the current input signal. The only button available is "**SELECT**". Note this may change the values of Phase and Clock, and there is no 'undo' feature.
Phase		Adjust Phase to optimize the display quality by using "◄" / "►" to change the value.
Clock		Select Clock to adjust the horizontal screen size by using "◄" / "►" to change the value.

5.3.4.3. OSD Image Item Menu for Composite and S-Video

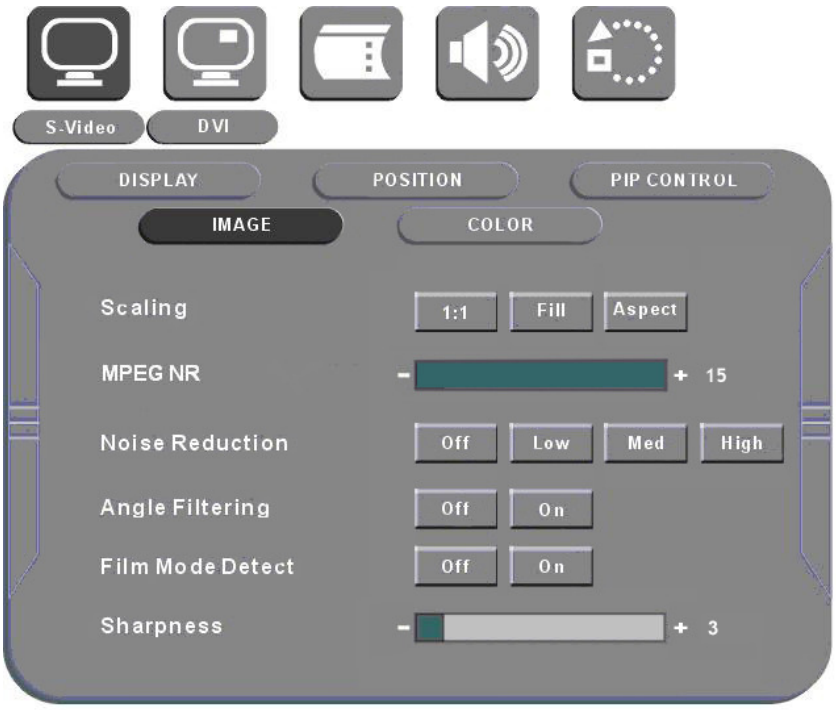


Figure 3.6: OSD Image Item Menu for Composite/S-Video

Image Item Menu for Composite and S-Video		
Menu	**Input Source**	**Description and Usage**
Sharpness	Composite / S-Video	The sharpness of the image may be optimized by using "◄" / "►" to change the value of the slider bar.
MPEG NR		To activate or deactivate MPEG noise reduction, use "◄" / "►" to change the value between 0-15.
Noise Reduction		To activate or deactivate noise reduction, use "◄" / "►" to change the value to either Off or On.
Angle Filtering		To activate or deactivate angle filtering, use "◄" / "►" to change the value to either Off or On.
Film Mode Detect		To activate or deactivate film mode detection, use "◄" / "►" to change the value to either Off or On.

Please Note:

Adaptive De-interlacing / Noise Reduction / Angle Filtering / Film Mode Detection are not available for progressive video inputs. For interlaced video inputs, Adaptive De-interlacing / Noise Reduction / Angle Filtering / Film Mode Detection can be configured only when the video signals are routed through video channel and pass the bandwidth checking.

5.3.4.4. OSD Position Item Menu

Figure 3.6: OSD Position Item Menu

Position Item Menu		
Menu	**Input Source**	**Description and Usage**
Vertical	VGA	Move the screen up or down by using "◄" / "►" to change the vertical position value.
Horizontal		Move the screen left or right by using "◄" / "►" to change the horizontal position value.
Zoom	VGA / DVI / Composite / S-Video	Change the current Zoom setting only to the Main Display, using "◄" / "►" to select either In or Out. Zoom is at a temporary setting and will be lost at power down.
Horizontal Pan		Horizontal Pan is unavailable until the user performs a Zoom In action. Using "◄" / "►" to select either Left or Right to change the current Horizontal Pan setting. Pan settings will be lost at power down.
Vertical Pan		Vertical Pan is unavailable until the user performs a Zoom In action. Using "◄" / "►" to select either Up or Down to change the current Vertical Pan setting and. Pan settings will be lost at power down.

5.3.4.5. OSD Color Item Menu

Figure 3.7: OSD Color Item Menu

Color Item Menu		
Menu	**Input Source**	**Description and Usage**
Gamma Corrections	VGA / DVI / Composite / S-Video	To configure gamma correction, by pressing the **ENTER** key; the OSD should display three selectable items. Use "◄" / "►" to change the value to Off, 1.8, or 2.2. The setting will be saved in the NVRAM when exiting this control feature item.
Color Temperature		To configure color temperature, use "◄" / "►" to change the value to 9300 K, 6500 K, or User Preset to set a color temperature to suit your own preference. When User Preset is selected, the values of the Red, Green, and Blue sliders below are used to determine color settings.

**** SRGB function has been disabled****

5.3.4.6. OSD PIP Control Item Menu

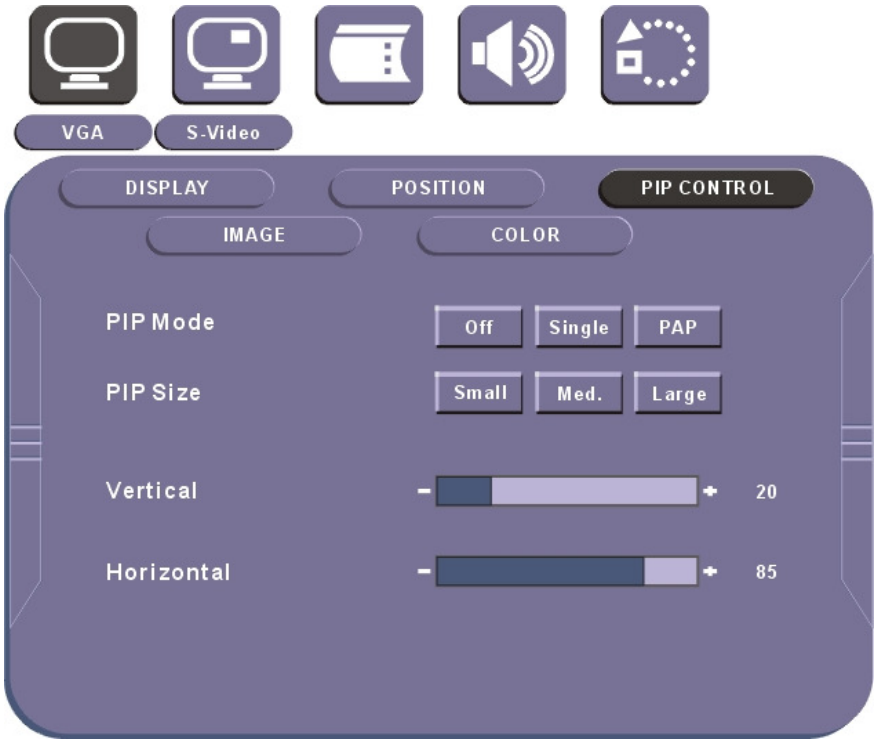


Figure 3.8: OSD PIP Control Item Menu

PIP Control Item Menu		
Menu	**Input Source**	**Description and Usage**
Mode	VGA / DVI / Composite / S-Video	Use "◄" / "►" to change the Mode value to be Off, Single, or PAP. In Off mode, the Main display fills the entire screen. In Single mode, a PIP display floats over the screen. In PAP mode, the screen is divided into two side-by-side display areas.
Size		PIP Size can be altered only when Single PIP mode is selected. To configure the PIP display size, use "◄" / "►" to change the value to Small, Medium or Large.
Vertical		Both vertical and horizontal PIP position can be altered only when Single PIP mode is selected. Configure the PIP Vertical and Horizontal Position, by using "◄" / "►" to change the value using the slider bar.
Horizontal		

To activate side-by-side (PAP) display, open the Main Menu, select Main Display or PIP Display. Navigate to the PIP control Item, and open the PIP Control Item Menu. Use "◄" / "►" to change to 'PAP' mode. The display area is now divided into two parts. The left window displays the Main output, while the right window displays the PIP output. Each window is half

size of the total display area. Each input is scaled down to fit the window.

To change the size and position of the PIP Display, use “◄” / “►” to change the Mode to ‘Single’. Select the Size item and use “◄” / “►” to change between Small, Medium, and Large displays. Select the Horizontal Position and Vertical Position sliders and use “◄” / “►” to adjust the screen position of the floating PIP Display.

Note that the PIP screen can have any position on the screen. This can be achieved by adjusting both Horizontal and Vertical positions.

5.3.4.7. OSD Item Menu

Figure 3.9: OSD Item Menu

OSD Item Menu		
Menu	**Input Source**	**Description and Usage**
Vertical	VGA / DVI / Composite / S-Video	Use “◄” / “►” to change the value of the slider bar to configure the OSD Vertical and Horizontal Position. The OSD itself is moved each time the value is adjusted.
Horizontal		
Blend		Use “◄” / “►” to change the value of the slider bar to configure the OSD Transparency Blend. The transparency of OSD icons is changed each time

		the value is adjusted. Some OSD elements may not be affected by Blend settings.
Time-Out		The OSD automatically closes itself if no buttons are pressed for a defined amount of time. To configure the OSD Time-Out, use "◄" / "►" to change the value of the slider bar. A value of 0 disables OSD Time-Out, causing the OSD to remain visible until closed by the user.
OSD Zoom		To increase the size of the OSD, select Yes for OSD zoom. By default, OSD zoom is set to No, or turned off. Changing this option to Yes increases the size of the OSD. On lower resolution panels, the OSD zoom feature may cause the OSD to extend beyond the screen.

5.3.4.8. OSD Audio Item Menu (Optional)

Figure 3.10: OSD Audio Item Menu

Audio Item Menu		
Menu	**Input Source**	**Description and Usage**
Volume	VGA / DVI / Composite / S-Video	To adjust the volume, use "◄" / "►" to change the value of the slider bar to increase or decrease the volume.
Balance		To configure the audio balance, either left or right, use "◄" / "►" to change the value of the slider bar to change the value.

Treble		Increase or decrease the audio treble by using “◄” / “►” to change the value.
Bass		To configure the bass, use “◄” / “►” to change the bass value.
Mute		To turn mute off/on, select either On/Off for Mute. By default, mute is set to No, or turned off.

5.3.4.9. Factory Reset Item Menu

Figure 3.11: OSD Factory Reset Item Menu

Factory Reset Item Menu		
Menu	**Input Source**	**Description and Usage**
Factory Reset	VGA / DVI / Composite / S-Video	To reset all settings to factory defaults, open the Factory Reset Item Menu. Use “◄” / “►” to select the “Yes” option, and press “**ENTER**“. WARNING: All user adjustments will be lost. Press “**EXIT**“ to return to the Main Menu without making changes.

6. Cleaning the Monitor

1. Make sure the monitor is turned off.
2. Never spray or pour any liquid directly on the screen or case.
3. Wipe the screen with a clean, soft, lint-free cloth. This removes dust and other particles.
4. The display area is highly prone to scratching. Do not use ketone type material (ex. Acetone), Ethyl alcohol, toluene, ethyl acid or Methyl chloride to clear the panel. It may permanently damage the panel and void the warranty.
5. If it is still not clean enough, apply a small amount of non-ammonia, non-alcohol based glass cleaner onto a clean, soft, lint-free cloth, and wipe the screen.
6. Don't use water or oil directly on the monitor. If droplets are allowed to drop on the monitor permanent staining or discoloration may occur.

7. Disclaimer

We do not recommend using any ammonia or alcohol-based cleaners on the monitor screen or case. Some chemical cleaners have been reported to damage the screen and/or case of the monitor. Seller will not be liable for damage resulting from the use of any ammonia or alcohol-based cleaner.

8. Troubleshooting

If your monitor fails to operate correctly, consult the following chart for possible solution before calling for repairs:

Condition	Check Point
1. The picture does not appear	● Check if the signal cable is firmly seated in the socket. ● Check if the Power is ON at the computer ● Check if the brightness control is at the appropriate position, not at the minimum.
2. The screen is not synchronized	● Check if the signal cable is firmly seated in the socket. ● Check if the output level matches the input level of your computer. ● Make sure the signal timings of the computer system are within the specification of the monitor. ● If your computer was working with a CRT monitor, you should check the current signal timing and turn off your computer before you connect the VGA Cable to this monitor.
3. The position of the screen is not in the	● Adjust the H-position, and V-position, or Perform the Auto adjustment.

center	
4. The screen is too bright (too dark).	● Check if the brightness or contrast control is at the appropriate position, not at the Maximum (Minimum).
5. The screen is shaking or waving	● Perform the Auto adjustment.. ● Moving all objects which emit a magnetic field such as motor or transformer, away from the monitor. ● Check if the specific voltage is applied. ● Check if the signal timing of the computer system is within the specification of monitor.

If you are unable to correct the fault by using this chart, stop using your monitor and contact your distributor or dealer for further assistance.

Appendix A: Supported Modes

Graphics

No.	Resolution	Frequency (Hz)	Note
1	640x350	70	IBM
2	640x350	85	VESA
3	640x400	56	
4	640x400	70	IBM
5	640x400	85	VESA
6	640x480	72	VESA
7	640x480	75	VESA
8	640x480	80	VESA
9	720x350	70	IBM
10	720x400	70	IBM
11	720x400	85	VESA
12	800x600	56	VESA
13	800x600	60	VESA
14	800x600	72	VESA
15	800x600	75	VESA
16	800x600	85	VESA
17	1024x768	60	VESA
18	1024x768	70	VESA

No.	Resolution	Frequency (Hz)	Note
19	1024x768	72	IBM
20	1024x768	75	VESA
21	1024x768	85	VESA
22	1280x768	60	
23	1152x864	70	
24	1152x864	75	
25	1280x960	60	VESA
26	1280x960	85	VESA
27	1280x1024	60	VESA
28	1280x1024	60	HP
29	1280x1024	67	IBM
30	1280x1024	70	NCD
31	1280x1024	72	HP
32	1280x1024	75	VESA
33	1280x1024	85	VESA
34	1600x1200	60	VESA
35	1920x1200	60	VESA
36	1366x768	60	

Video

No.		
1	NTSC / 480I / 525I	720 x 240 x 60I
2	PAL / 576I /625I	720 x 288 x 50I

Not all modes will be supported, due to different panel brands

Appendix B: Using RS-232 Command Code to set system (Optional)

RS232 setting:

Baud Rate = 115200, Data Bits=8, Parity = None, Stop Bits=1

NO.	Function	Length	Command	index	Value	Checksum(*1)
1	Power	0x05	0x40	0x00	0=Power On 1=Power Off	0xBB=Power On 0xBA=Power Off
2	Auto	0x05	0x40	0x01	0=Auto	0xBA=Auto
3	Recall	0x05	0x40	0x02	0=Recall	0xB9=Recall
4	WhiteBalance	0x05	0x40	0x03	0=WhiteBalance	0xB8=WhiteBalance
5	Main Input Source	0x05	0x40	0x04	0=VGA 1=DVI 2=CVBS 3=Svideo 4=Component 1 5=Component 2	0xB7=VGA 0xB6=DVI 0xB5=CVBS 0xB4=S-Video 0xB3=Component 1 0xB2=Component 2
6	Pip Input Source	0x05	0x40	0x05	0=VGA 1=DVI 2=CVBS 3=Svideo 4=Component 1 5=Component 2	0xB6=VGA 0xB5=DVI 0xB4=CVBS 0xB3=S-Video 0xB2=Component 1 0xB1=Component 2
7	Brightness	0x05	0x40	0x10	0x00~0x64	0xAB=00 ~ 0x47=100
8	Contrast	0x05	0x40	0x11	0x00~0x64	0xAA=00 ~ 0x46=100
9	Hue	0x05	0x40	0x12	0x00~0x2D (0~45) 0x81 ~0xAD(-1~-45)	0xA9=00 ~ 0x7C=45 0x28= -1 ~ 0xFC= -45
10	Saturation	0x05	0x40	0x13	0x00~0x64	0xA8=00 ~ 0x44=100
11	InterBright	0x05	0x40	0x14	0x00~0x64	0xA7=00 ~ 0x43=100
12	PIP	0x05	0x40	0x20	0=PIP Off 1=PIP 2=PAP	0x9B=PIP Off 0x9A=PIP 0x99=PAP
13	PIP Size	0x05	0x40	0x21	1=Small 2=Middle 3=Large	0x99=Small 0x98=Middle 0x97=Large
14	Scaling	0x05	0x40	0x22	0=1:1 1=Fill 2=Aspect	0x99=1:1 0x98=Fill 0x97=Aspect

15	sRGB	0x05	0x40	0x30	0=Off 1=On	0x8B=Off 0x8A=On
16	Gamma	0x05	0x40	0x31	0=OFF 1=Gamma 1.8 2=Gamma 2.2	0x8A=OFF 0x89=Gamma 1.8 0x88=Gamma 2.2
17	Color Temp	0x05	0x40	0x32	0=user 1=9300K 2=6500K	0x89=User 0x88=9300K 0x87=6500K
18	Color-R	0x05	0x40	0x33	0x00-0xFF	0x88=00 ~ 0x89=255
19	Color-G	0x05	0x40	0x34	0x00-0xFF	0x87=00 ~ 0x88=255
20	Color-B	0x05	0x40	0x35	0x00-0xFF	0x86=00 ~ 0x87=255
21	Volume	0x05	0x40	0x50	0x00-0x64	0x6B=00 ~ 0x07=100
22	Balance	0x05	0x40	0x51	0x00~0x64	0x6A=00 ~ 0x06=100
23	Treble	0x05	0x40	0x52	0x00~0x0E	0x69=00 ~ 0x5B=14
24	Bass	0x05	0x40	0x53	0x00~0x0E	0x68=00 ~ 0x5A=14
25	Mute	0x05	0x40	0x54	0=Mute On 1=Mute OFF	0x67=Mute On 0x66=Mute Off
26	Flip	0x05	0x40	0x60	0=Normal 1=HFlip 2=VFlip 3=HVFlip	0x5B=Normal 0x5A=HFlip 0x59=VFlip 0x58=HVFlip

Reply Value：

ACK	3 C F1	Transmission PASS
NSP	3 D F2	Transmission FAILED

Format： Length, Command, index, Value, Checksum

Example：0x05, 0x40, 0x00, 0x01, 0xba => Power Off system.

*1: Checksum is 2's complement of sum of length and all messages.

Appendix C : Using RS-232 Command Code to check system status (optional)

	Command(Tx)				Acknowledgement(Rx)			
Function	**Length**	**Command**	**index**	**Checksum(*1)**	**Length**	**index**	**Value**	**Checksum(*1)**
Power	0x04	0x30	0x00	0xCC	0x04	0x00	0=Power On 1=Power Off	0xFC=Power On 0xFB=Power Off
Main Input Source	0x04	0x30	0x04	0xC8	0x04	0x04	0=VGA 1=DVI 2=CVBS 3=Svideo 4=C1 5=C2	0xF8=VGA 0xF7=DVI 0xF6=CVBS 0xF5=Svideo 0xF4=Component 1 0xF3=Component 2
PIP input source	0x04	0x30	0x05	0xC7	0x04	0x05	0=VGA 1=DVI 2=CVBS 3=Svideo 4=C1 5=C2	0xF7=VGA 0xF6=DVI 0xF5=CVBS 0xF4=Svideo 0xF3=Component 1 0xF2=Component 2
Brightness	0x04	0x30	0x10	0xBC	0x04	0x10	0x00-0x64	0xEC=0 ~ 0x88=100
Contrast	0x04	0x30	0x11	0xBB	0x04	0x11	0x00-0x64	0xEB=0 ~ 0x87=100
Hue	0x04	0x30	0x12	0xBA	0x04	0x12	0x00~0x2D 0xAD~0x81	0xEA=0~0xBD=45 0x3D=-45~0x69=-1
Saturation	0x04	0x30	0x13	0xB9	0x04	0x13	0x00-0x64	0xE9=0 ~ 0x85=100
InterBright	0x04	0x30	0x14	0xB8	0x04	0x14	0x00-0x64	0xE8=0 ~ 0x84=100
PIP	0x04	0x30	0x20	0xAC	0x04	0x20	0=Pip Off 1=PIP 2=PAP	0xDC=PIP Off 0xDB=PIP 0xDA=PAP
PIP Size	0x04	0x30	0x21	0xAB	0x04	0x21	1=Small 2=Middle 3=Large	0xDA=Small 0xD9=Middle 0xD8=Large
Scaling	0x04	0x30	0x22	0xAA	0x04	0x22	0=1:1 1=Fill 2=Aspect	0xDA=1:1 0xD9=Fill 0xD8=Aspect

sRGB	0x04	0x30	0x30	0x9C	0x04	0x30	0=Off 1=On	0xCC=OFF 0xCB=ON
Gamma	0x04	0x30	0x31	0x9B	0x04	0x31	0=OFF 1=Gamma 1.8 2=Gamma 2.2	0xCB=OFF 0xCA=Gamma 1.8 0xC9=Gamma 2.2
Color Temp	0x04	0x30	0x32	0x9A	0x04	0x32	0=user 1=9300K 2=6500K	0xCA=user 0xC9=9300k 0xC8=6500k
Color-R	0x04	0x30	0x33	0x99	0x04	0x33	0x00-0xFF	0xC9=0 ~ 0xCA=255
Color-G	0x04	0x30	0x34	0x98	0x04	0x34	0x00-0xFF	0xC8=0 ~ 0xC9=255
Color-B	0x04	0x30	0x35	0x97	0x04	0x35	0x00-0xFF	0xC7=0 ~ 0xC8=255
Volume	0x04	0x30	0x50	0x7C	0x04	0x50	0x00-0x64	0xAC=0 ~ 0x48=100
Balance	0x04	0x30	0x51	0x7B	0x04	0x51	0x00-0x64	0xAB=0 ~ 0x47=100
Treble	0x04	0x30	0x52	0x7A	0x04	0x52	0x00-0x0E	0xAA=0 ~ 0x9C=14
Bass	0x04	0x30	0x53	0x79	0x04	0x53	0x00-0x0E	0xA9=0 ~ 0x9B=14
Mute	0x04	0x30	0x54	0x78	0x04	0x54	0=Mute On 1=Mute OFF	0xa8=Mute On 0xa7=Mute OFF
Flip	0x04	0x30	0x60	0x6C	0x04	0x60	0=Normal 1=HFlip 2=VFlip 3=HVFlip	0x9C=NORMAL 0x9B=HFlip 0x9A=VFlip 0x99=HVFlip

Reply Value：

ACK	Acknowledgement code	Transmission PASS
NSP	3 D F2	Transmission FAILED

Format： Length, Command, index, Checksum / Length, Index, Value, Checksum

Example：0x04, 0x30, 0x00, 0xCC => Check Power status.

If Reply is 0x04, 0x00, 0x00, 0xFC=> System power on

***1**： Checksum is 2's complement of sum of length and all messages.