WINMATE

Industrial LCD Monitor User Guide

(with G2A LCD Control Board)

Version 12

The specification is subject to change without notice.

Manufacturer assumes no responsibility for Error Contained.

Part No.91521112100F

Revision History

Revision	Author	Date	Description
	Jim Lin	Nov 12, 2004	Initial draft.
	Peter	Nov 18,2004	Update supported mode Updated OSD Keys and Menus
	Nelson	Oct 26, 2005	Updated OSD keys and menus
	Nelson	Feb 07, 2006	Added RS232 command code
	Nelson	Mar 07, 2006	Added hot key flipping image function
	Nelson	May 21, 2006	Added outline drawing and remote control description
	Nelson	July 17, 2006	Added scaling hot key function
	Nelson	Aug 23, 2006	Changed remote control
	Brian	Dec 18,2008	Gamma change 1.8 ,2.2 RS232 command code change
	Brian	Jun 26, 2009	Modify the PIP description
	Winnie	Jan,2014	Modify typesetting and OSD content

Contents

CHAPTER 1

Read Me First

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IMPORTANT SAFETY INSTRUCTIONS

1. Please read these instructions carefully before using the product and save for later reference.
2. Follow all warnings and instructions marked on the product.
3. Unplug this product from the wall outlet before cleaning. Clean the product with a damp soft cloth. Do not use liquid or aerosol cleaners as it may cause permanent damage to the screen.
4. Do not use this product near water.
5. Do not place this product on an unstable cart, stand, or table.
   The product may fall, causing serious damage to the product.
6. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered.
   The openings should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is provided.
7. This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
8. This product is equipped with a 3-wire grounding type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet.
   Do not defeat the purpose of the grounding-type plug.
9. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
10. If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord does not exceed the extension cord ampere rating. Also make sure that the total of all products plugged into the wall outlet does not exceed 15 amps.
11. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.

12. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks and will void the warranty. Refer all servicing to qualified service personnel.

13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

    a. When the power cord or plug is damaged or frayed.

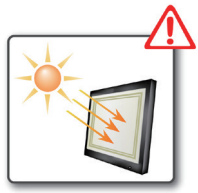
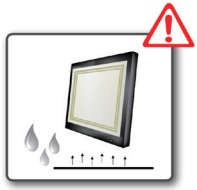
    b. If liquid has been spilled into the product.

    c. If the product has been exposed to rain or water.

    d. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.

    e. If the product has been dropped or the cabinet has been damaged.

    f. If the product exhibits a distinct change in performance, indicating a need for service.

CAUTION		
Read manual prior to installing the product. The operation of products depends on you reading and following the information in this manual. Re-check your work prior to operating the product.		
EVENT	**EFFECT**	**PREVENTION**
	Sunlight shines directly will cause the panel damage.	You should avoid placing the product under direct sunlight.
	If the product is close to the wet ground such as grassplot, the moisture between panel and glass will make the product malfunction.	You should avoid placing the product in wet environment.

CHAPTER 2

Getting Started

This chapter tells you will find instructions for the following procedures:

- Introduction
- Input /Output Overview
- Remote Controller
- G2A Kit Memo (Optional for 24V input DC solution)

2-1. Introduction

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.

Notice

1. Do not touch the LCD panel surface with sharp or hard objects.
2. Do not use abrasive cleaners, waxes or solvents for cleaning, use only a dry or damp, soft cloth.
3. Use only with a high quality, safety-approved, AC/DC power adapter.

Check List

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

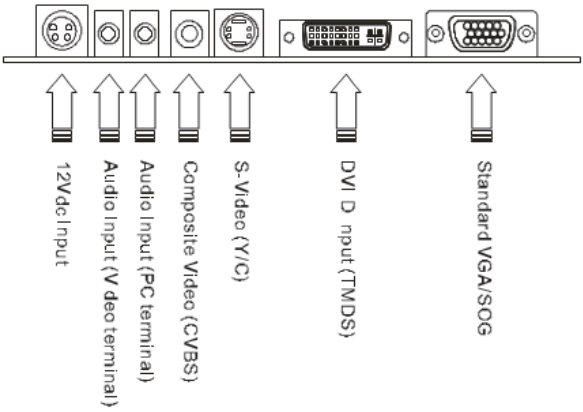
1. VGA cable	x1
2. AC to DC adapter	x1
3. Power cable	x1
4. User manual	x1
5. DVI cable (optional)	x1
6. Audio cable (optional)	x1
7. 24V to 12V transfer board(Optional)	X1

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

2-2. Input /Output 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

Power & Signal Connections

Power cable connection:

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

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.

Power:

Switch on the power on both your monitor and your computer. The Power Switch is located at the leftmost button of the keypad.

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.

DVI cable connection (Optional):

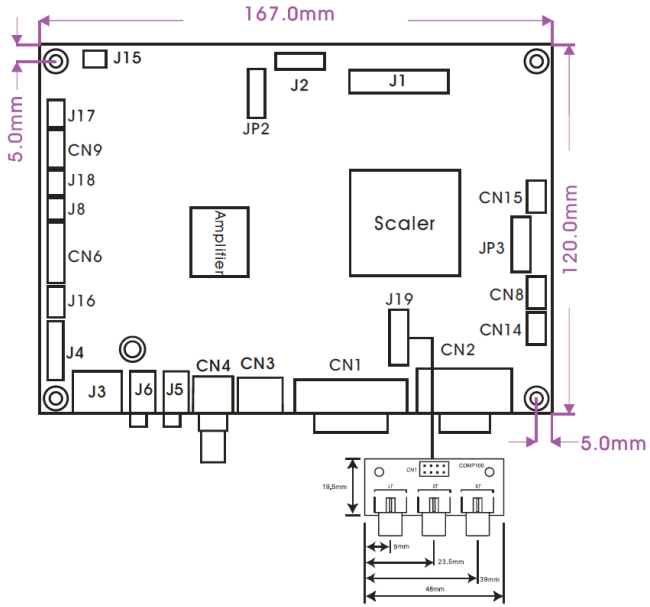
Plug the DVI signal cable to the DVI connector in the rear of the PC system, and plug the other end to the monitor. Secure cable connectors with screws.

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.

Component Board and Cable connection (Optional):

Plug the Component signal cable into J19 connector on G2A board and COMP100.



2-3. Remote Controller

Install Battery in the Remote Controller

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.

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

2-4 G2A 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. 24V to 12V Power transfer board installation guide:

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

CHAPTER 3

Useful Information

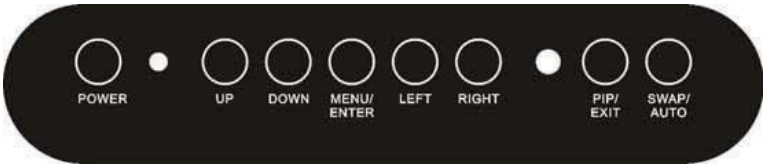
When using a device, be sure to read the instructions accompanying the device together with the relevant section in this chapter. This chapter gives guidelines on using these devices:

- Using the LCD Monitor
- Cleaning the Monitor
- Disclaimer

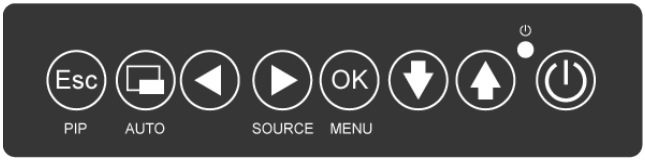
3-1. Using the LCD Monitor

OSD Key Definition

Type A.



Type B.



POWER

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

UP

Selects the previous item in the Item Menu.

DOWN

Selects the next item in the Item Menu.

ENTER/MENU

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

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

LEFT

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

RIGHT

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.

AUTO

Perform Auto Adjustment

Esc

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

OK/MENU

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

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

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.

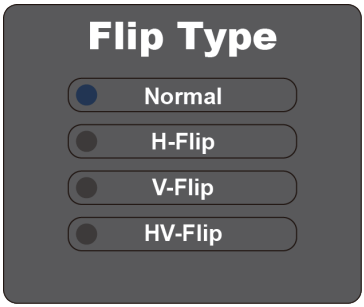
ii. When OSD is enabled, it returns to the previous menu level or closes the OSD if pressed at the Main Menu level.

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.

OSD Hot Keys (Flip image and Auto)



Function	Hot Key
Normal	Press "▼" to enter get a mirror image from the original source.
H-Flip	Press "▼" to enter get the opposite image from the original source.
V-Flip	Press "▼" to enter get an upside down image from the original source.
HV-Flip	Press "▼" to enter get the exact opposite image from the original source.

OSD Menu System

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

Table 1: OSD Menu Description

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).

Main OSD Menu

Figure 3.1: OSD Main Menu

Main Display

Press "▼" to enter Main Display Source Menu.

Press "**ENTER**" to enter Main Display Sub Menu.

PIP Display

Press "▼" to enter PIP Display Source Menu.

Press "**ENTER**" to enter PIP 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. ***

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	Composite
VGA — Press "**ENTER**" to set VGA as input source.	Composite — Press "**ENTER**" to set Composite as input source.
DVI	**S-Video**
DVI — Press "**ENTER**" to set DVI as input source.	S-Video — Press "**ENTER**" to set S-Video as input source.

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 "▼".

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

Display Item Menu

Figure 3.3: 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.
Flesh-Tone		Press "◄" / "►" to select Off, Weak, Soft or Strong effect for the Main Display.
Hue	S-Video / Composite	Press "◄" / "►" to select hue to obtain the desired color settings.
Saturation		Press "◄" / "►" to select saturation to adjust the optimal color degree level.
Internal Brightness	VGA	Press "◄" / "►" to adjust the internal brightness of the screen.

OSD Image Item Menu

Figure 3.4: 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.

OSD Image Item Menu for Composite and S-Video

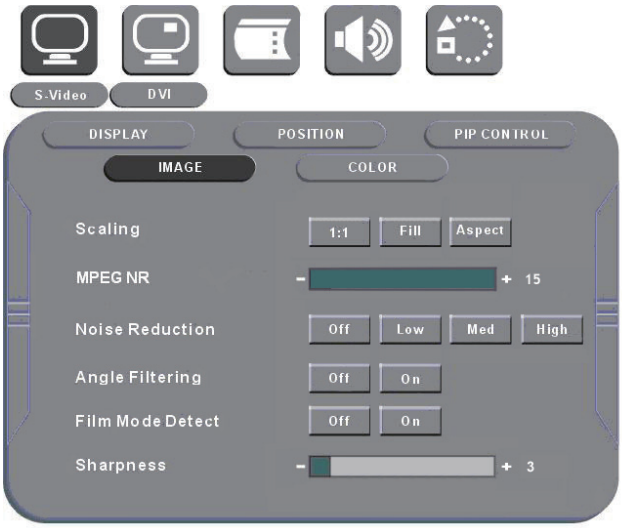


Figure 3.5 OSD Image Item Menu for Composite/S-Video

Image Item Menu for Composite and S-Video		
Menu	**Input Source**	**Description and Usage**
MPEG NR	Composite / S-Video	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 select off, Low, Med or High.
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.
Sharpness		The sharpness of the image may be optimized by using "◄"/"►" to change the value of the slider bar.

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.

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.
Zoom 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.
Zoom 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.

OSD Color Item Menu

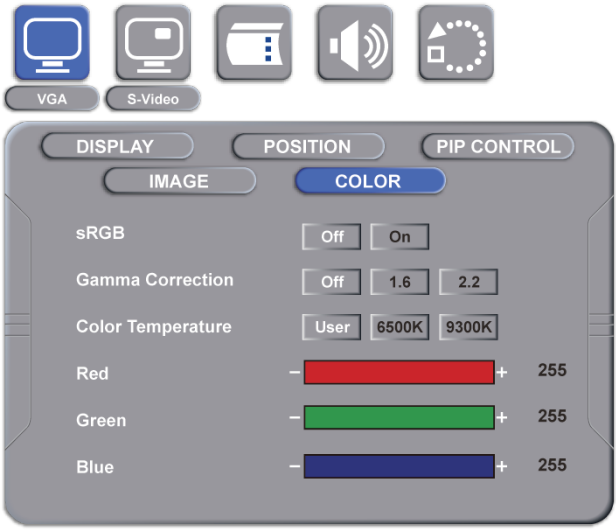


Figure 3.7: OSD Color Item Menu

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***

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 Component	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.

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.

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 on, or turned off.

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.

3-2. 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.

3-3. 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.

CHAPTER 4

Trouble Shooting

This chapter covers the following topics:

- Troubleshoot your LCD Monitor

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

4-1. Trouble Shooting

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. • You should check the current signal timing and turn off your computer before you connect the VGA Cable to this monitor. • 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.
3. The position of the screen is not in the center	• Adjust the H-position, and V-position, or Perform the Auto adjustment.
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

Appendix A: Supported Modes

A-1 Separate RGB Video Signal (VGA) Input Timing

Input Timing Range: H : 30-80KHz; V : 50-75Hz

Mode	Resolution	H-Freq.	V-Freq.(Hz)
Mode 1	640×350	31.5	70
Mode 2	640×400	31.5	70
Mode 3	640×480	31.5	60
Mode 4	640×480	37.9	72
Mode 5	640×480	37.5	75
Mode 6	720×400	31.47	70
Mode 7	800×480	31.5	60
Mode 8	800×600	35.1	56
Mode 9	800×600	37.9	60
Mode 10	800×600	48.1	72
Mode 11	800×600	46.9	75
Mode 12	1024×768	48.4	60
Mode 13	1024×768	56.5	70
Mode 14	1024×768	60.0	75
Mode 15	1280x768	48.4	60
Mode 16	1280x768	56.5	70
Mode 17	1280x768	60.0	75
Mode 18	1280x800	48.4	60
Mode 19	1280×1024	64.0	60
Mode 20	1280×1024	80.0	75
Mode 21	1600×1200	75	60
Mode 22	1680×1050	65.3	60
Mode 23	1920×1080	67.5	60

A-2 Composite Video Input; Y/C Video input (S-Video) (optional)

Video Format	Resolution	Frequency	County Support
NTSC-M	525X60	3.58MHZ	U.S., Japan, may others
PAL	625X50	4.43MHZ	China, Europe, may others

A-3 DVI Input Timing (optional)

Input Timing Range: H : 31.47-80 KHz; V : 60Hz

Mode	Resolution	H-Freq.(KHz)	V-Freq.(Hz)
Mode 1	640×480	31.47	60
Mode 2	800×600	37.87	60
Mode 3	1024×768	48.36	60
Mode 4	1280×1024	64.0	60
Mode 5	1600×1200	75	60
Mode 6	1680×1050	65.3	60
Mode 7	1920×1080	67.5	60

A-4 Supported HDMI Mode(optional)

Mode	Resolution
Mode 1	480i
Mode 2	576i
Mode 3	480p
Mode 4	576p
Mode 5	720p
Mode 6	1080i
Mode 7	1080p

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

NO.	Function	Length	Command	index	Value	Checksum(*1)
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

Command(Tx)					Acknowledgement(Rx)			
Function	Length	Command	index	Checksum(*1)	Length	index	Value	Checksum(*1)
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

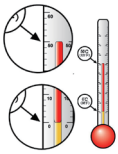
Example：0x04, 0x30, 0x00, 0xCC => Check Power status.

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

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

Appendix D : Caution on Handling Transflective(optional)

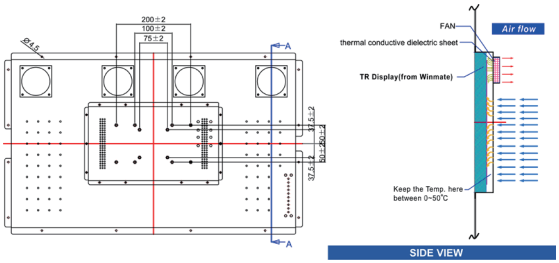
Operation & Storage Temperature Caution



Although transflective LCD is mainly used in outdoor environment and can increase the effective lights under sunlight, it is suggested that you should keep the LCD in appropriate temperature for operation and storage. To ensure the transflective LCD work stably, 0~50°C (32-121°F) operation and storage temperature is suitable, and **avoid direct sunlight on the display**.

Case 1: Capacious Space

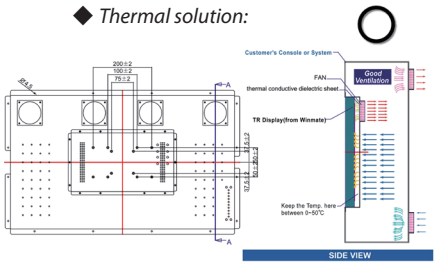
In order to improve the thermal issue, we add a thermal conductive dielectric sheet behind the LCD panel to gather thermal. There are fans to exhaust the thermal current, so it can be kept the temperature inside of the mechanical stably.



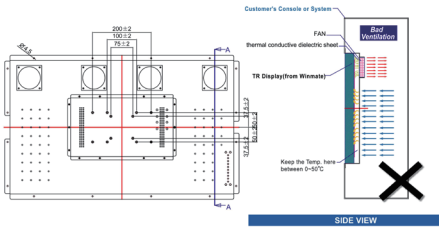
Case 2: Airtight space

If the LCD panel set up in the customer's console or system, like cabinet, in order to improve the thermal issue, it is necessary to use more fans or other thermal design on the system to exhaust the thermal current and have good ventilation, so it can be kept the temperature inside of the mechanical stably.

◆ *Thermal solution:*



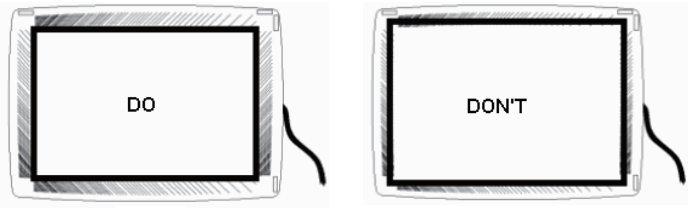
No thermal solution: (no commendation)



MAKE SURE HAVE THERMAL SOLUTION ON YOUR CONSOLE OR SYSTEM, OR IT WILL CAUSE THE DISPLAY SHUT DOWN.

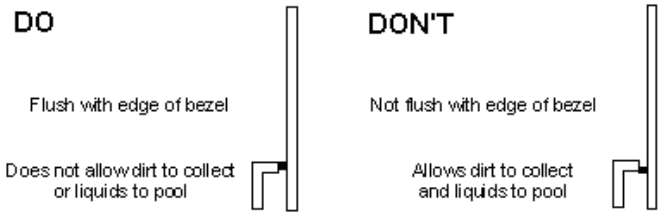
Appendix E : SAW Touch Caution Notice (optional)

1. Rolls are 1/4 in. wide x 1/8 in. thick x 75 ft. long (6 mm x 3 mm x 23 mm), black. Position the seal just inside the reflector stripes in the active area on the front of the touch screen.

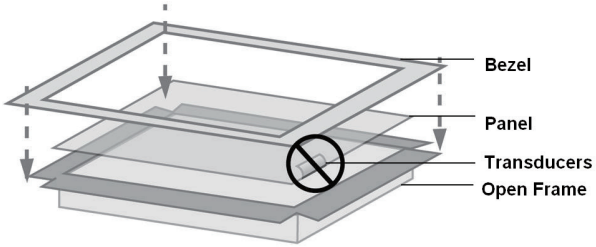


2. The seal must be fully compressed all the way around. This provides a splash-proof seal which will not allow liquids to wick behind the seal. It also creates a stable signal, even if a user presses hard on the bezel.

3. Place the seal flush with the bezel. Do not create a cavity where water and dirt cannot

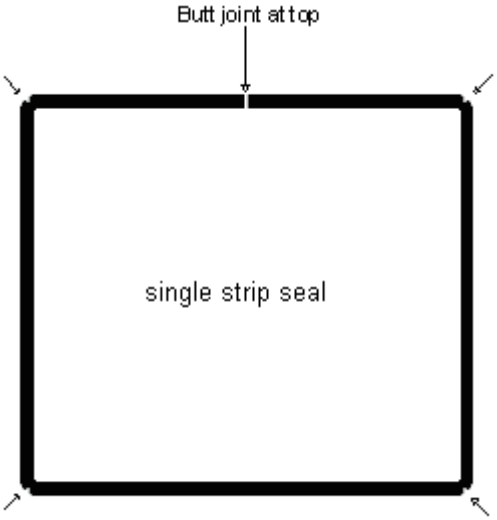


4. Also be sure that the transducers are not touched by the bezel. be easily wiped away.



Notice: *Don't press transducers by Bezel.*

5. Use a single strip seal, bending around the corners. Make the seam at the top and score each corner to relieve tension. The adhesive should be on the bezel side.



Note: *The strip can touch the reflector stripes if absolutely necessary, but by no more than 1 mm. If more than 1 mm contact is necessary, a hard bezel material such as ABS plastic can be used instead of strip, but this will not make a splash-proof seal. Firm contact with the touch screen glass is required as a minimum dust seal.*