

# **FPM-8151H Series**

**15" XGA Industrial Monitor for  
Hazardous Location**

**User Manual**

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### **This Manual Covers the Following Models**

- FPM-8151H-R3AE 15" XGA Industrial Monitor for Hazardous Location, with 316L Stainless Steel Front Panel

Part Number: 2003815120

Edition 1 August 2011

## Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

All defective products under normal / standard operation will be serviced by Advantech's global RMA system. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

## **FCC Class A**

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## **Additional Information and Assistance**

1. Visit the Advantech web site at [www.advantech.com](http://www.advantech.com) where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
  - Product name and serial number
  - Description of your peripheral attachments
  - Description of your software (operating system, version, application software, etc.)
  - A complete description of the problem
  - The exact wording of any error messages

## **Safety Instructions**

1. Read these safety instructions carefully.
2. Keep this User's Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
  - a. The power cord or plug is damaged.
  - b. Liquid has penetrated into the equipment.
  - c. The equipment has been exposed to moisture.
  - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
  - e. The equipment has been dropped and damaged.
  - f. The equipment has obvious signs of breakage.
15. **DO NOT LEAVE THIS EQUIPMENT IN AN UNCONTROLLED ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS MAY DAMAGE THE EQUIPMENT.**

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70dB(A).

**DISCLAIMER:** This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.



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## **Introduction**

This chapter includes:

- Introduction
- Specifications
- LCD Specification
- Power Consumption
- Connectors
- Dimensions

# Chapter 1 Introduction

## 1.1 Introduction

---

The FPM-8151H is a particularly rugged and reliable 15" XGA wide temperature industrial monitor for a variety of industry applications. Equipped with a 316L Stainless Steel front panel, stainless steel chassis, and -20 to 60°C operating temperature, it can satisfy demands in a wide range of harsh industrial applications, especially for hazardous locations. This model also features a strong capacitor, and enhanced 5-wire resistive touch and system isolation to enhance the reliability.

## 1.2 Specifications

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### General

- Button Controls: OSD control pad on front side with lockable function
- Certification: CE, FCC, UL C1D2, CB, BSMI, CCC
- Dimension (W x H x D): 422 x 338 x 68 mm (16.61" x 13.31" x 2.68")
- Cut-Out (W x H): 396 x 296 mm (15.59" x 11.65")
- Enclosure: Front panel: 316L Stainless Steel  
Rear cover: Stainless steel
- Mounting: Panel, VESA, Wall, Desktop
- Power Input: Phoenix Jack - 19 ~ 30 V<sub>DC</sub> input  
DC Jack - Optional external 57 W power adapter,  
with 100 ~ 240 V<sub>AC</sub> input and +12 V<sub>DC</sub> @ 4.75 A output
- Power Consumption: 12W
- Video Port: VGA & DVI-D Port
- Weight (Net): 8.5 kg (18.74 lbs)

## **Touchscreen (Optional)**

- Sensor: AMT
- Driver: Penmount 6000
- Type: 5-wire resistive with enhanced ITO film
- Interface: USB & RS-232 (Combo)
- Life Span: 36 million with a silicone rubber of R8 finger, writing rate is by 250g at 2 times/s
- Light Transmission: > 80%
- Driver Support: Windows 7 / XP / Vista / XPE / CE, Linux
- Power Consumption: +5 V @ 100 mA
- Touch Resolution: Linearity

## **1.3 LCD Specifications**

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- Display Type: XGA TFT LCD
- Backlight Type: LED
- Display Size: 15"
- Max. Resolution: 1024 x 768
- Max. Color: 16.2M (RGB 8-bit) or 262k colors (RGB 6-bit)
- Viewing Angle (H/V°): 160/140
- Luminance (cd/m<sup>2</sup>): 350
- Operation Life (hrs): 50,000
- Contrast Ratio: 700:1

## **1.4 Power Consumption**

---

- Power Input: Phoenix Jack - 19 ~ 30 V<sub>DC</sub> input  
DC Jack - Optional external 57 W power adapter,  
with 100 ~ 240 V<sub>AC</sub> input and +12 V<sub>DC</sub> @ 4.75 A output
- Power Consumption: 12W (normal room temperature and humidity)

## 1.5 Environment

---

- Operating Temperature: -20~60°C (-4~140°F)
- Certificate Temperature: 0~50°C (32~122°F)
- Storage Temperature: -30 ~ 80°C (-22 ~ 176°F)
- Relative humidity: 10 ~ 95% non-condensing
- Waterproof: Front panel NEMA4X/IP65 compliant
- Shock: 11ms, 10G (Non Operating, Half Sine Wave)
- Vibration: 5 ~ 500 Hz, 1 Grms (Operating, Random)

## 1.6 Connectors

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### **VGA Port (DB-15)**

This DB-15 connector can be connected to the system via the external 15-pin DB-15 connector located on the left side of the system unit

### **DVI Port (DVI-D)**

Connected with a standard DVI connector thru I/O port of this unit. Only supports digital signals

### **DC 12V Power in (DC Power Jack)**

This connector is connected to the DC 12V Switching Power Supply.

### **Touchscreen Connector (USB) (Optional)**

This connector will be present only if a touchscreen is installed. It must be connected to the USB port of the PC. The touchscreen cable is included with all orders which include the USB touchscreen option.

*Note: If RS-232 or USB touchscreen are used at the same time, only the USB touchscreen will be available.*

# 1.7 Dimensions

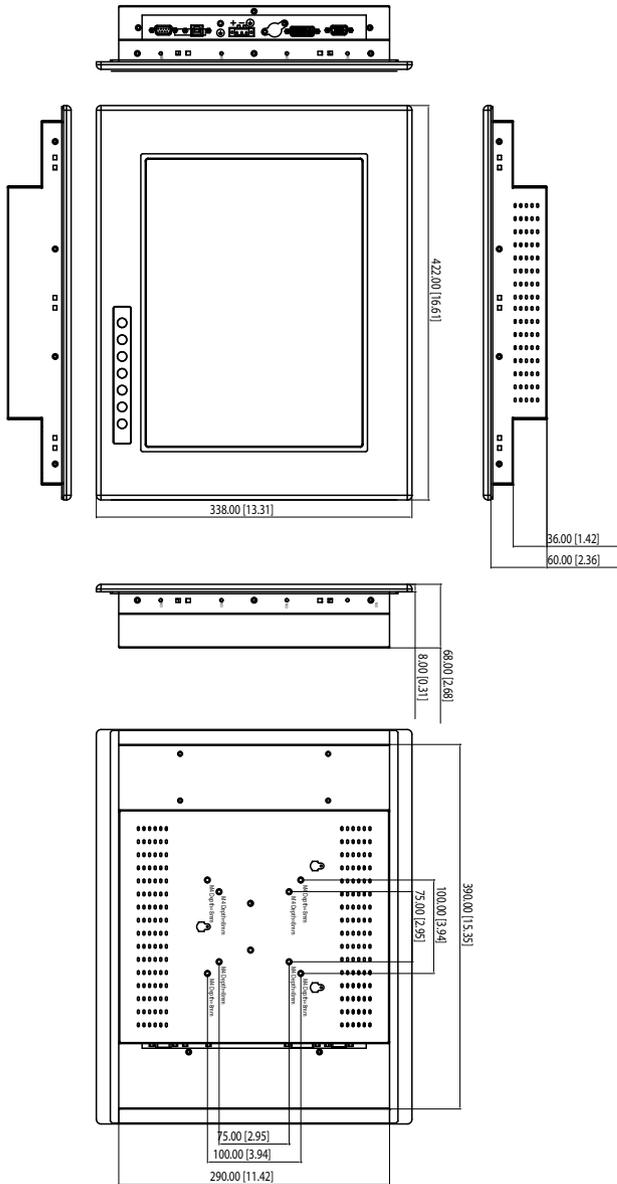


Figure 1.1: FPM-8151H Dimensions

## 1.8 Hazardous Locations

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This equipment (FPM-8151H) is suitable for use in Class I, Division 2 Groups A, B, C, and D; or non-hazardous locations only.

*Warning:* - *Substitution of components may impair suitability for Class I, Division 2.*

*Hazard* - *This product is rated from  $12V_{DC} / 4.75A$ ;  $24V_{DC} / 2.62A$ .*

*- Do not connect or disconnect equipment/cables/components unless power source has been removed or the area is free of ignitable concentrations of flammable gases or vapors.*

*- Peripheral devices must be suitable for the location in which it is used.*

## Mounting

- Wallmounting
- Panel Mounting
- Rack Mounting
- Desktop Mounting
- Swing Arm Mounting

# Chapter 2 Mounting

## 2.1 Mounting the Monitor

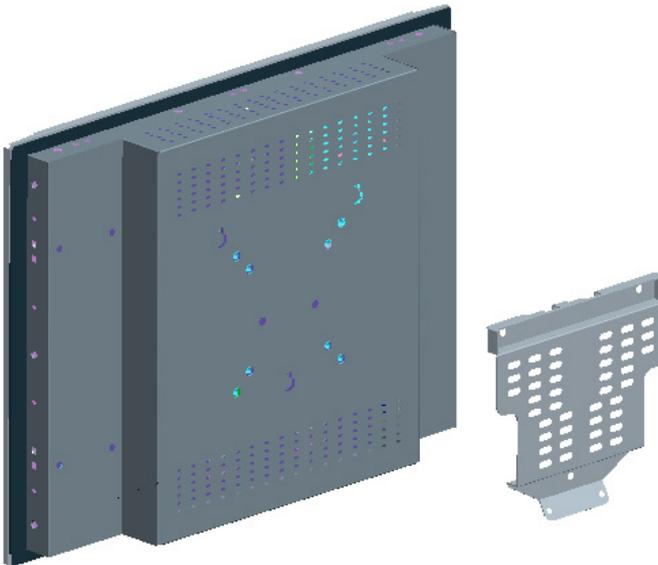
---

The FPM-8151H Series can be mounted in many different ways. The versatility of the FPM-8151H mounts enable it to be mounted on your desk or anywhere else.

### 2.1.1 Wallmounting (Optional)

FPM-8151H can be mounted directly on a wall with panel mounting brackets. Customers must order the stand kit for FPM-8151H (Part Number: FPM-2150G-SMKE). Please refer to figure 2-1 and follow the following steps to mount FPM-8151H on a wall:

1. Screw the hook and desk-stand brackets on the wall.
2. Attach 4 screws around the bracket
3. Put the Industrial monitor into the screws around the bracket

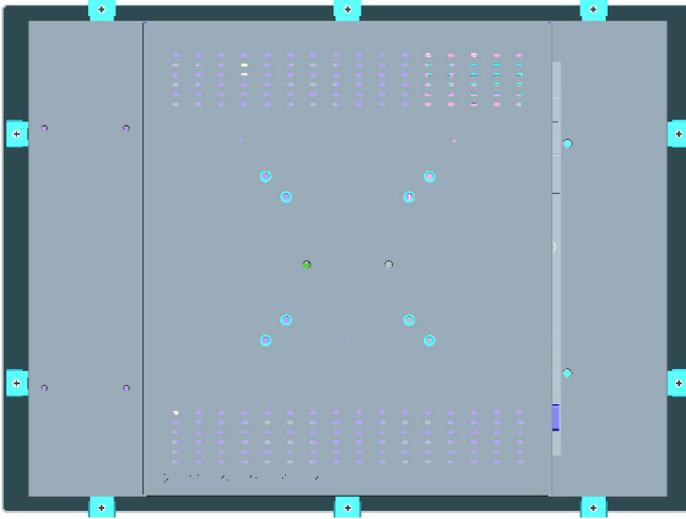


**Figure 2.1: Wall mounting**

### 2.1.2 Panel Mounting

FPM-8151H can be mounted directly on a panel with additional mounting brackets. Please refer to figure 2-2 and follow the following steps:

1. Fix 10pcs panel bracket around the industrial monitor
2. Fix into the panel by screw the bracket



*Figure 2.2: Panel Mounting*

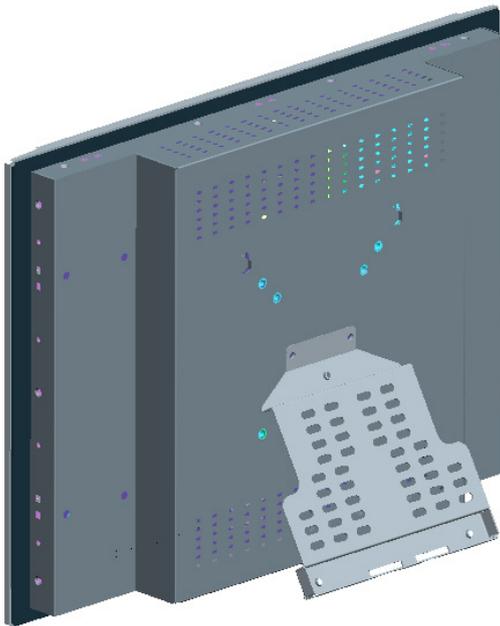
## 2.2 Desktop, Swing-ARM for FPM-8151H

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The FPM-8151H Series can be mounted in other ways, such as desktop and swing-arm.

### 2.2.1 Desktop Stand (Optional)

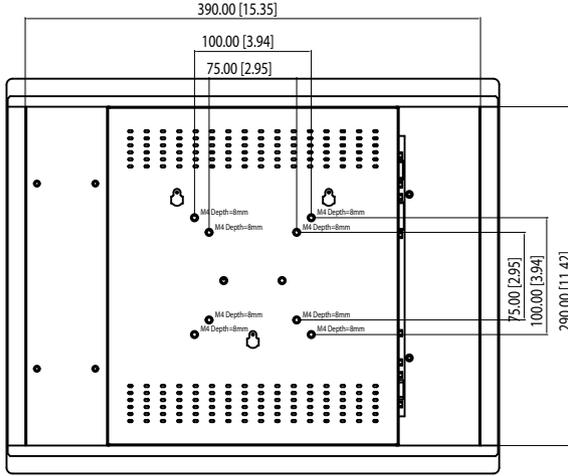
FPM-8151H can be mounted as stand in the desk directly by a additional mounting brackets. Customers must order the stand kit for FPM-8151H (Part Number: FPM-2150G-SMKE). Please refer to figure 2-4 and follow these steps:



*Figure 2.3: Desktop Stand*

## 2.2.2 Swing Arm (VESA Compliant)

FPM-8151H has been designed with support for the VESA Arm standard. Refer to figure 2.4. Supports both 75mm and 100mm VESA dimension.



*Figure 2.4: Swing Arm*



APPENDIX  
**A**

# Touchscreen

# Appendix A Touchscreen

## A.1 Introduction

---

The FPM-8151H Series optional touchscreen uses advanced 5-wire resistive technology. It provides more accurate sensing capacity than other technologies. The touchscreen is specially designed for tough industrial environments, and has been approved to FCC Class B standards.

*Note: If RS-232 or USB touchscreen are used at the same time, only the USB touchscreen will be available.*

## A.2 Touchscreen Specifications

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### 1. Input Method and Activation Force

16mm dia. Silicon "finger" : Less than 1.00 N

### 2. Typical Optical Characteristics

2.1 Visible Light Transmission:  $81 \pm 3\%$

2.2 Haze:  $9.5 \pm 2.5\%$

### 3. Electrical Specifications

3.1 Operating Voltage: 5.5V or less

3.2 Contact current: 70mA (maximum)

3.3 Circuit close resistance: 30~300 $\Omega$

3.4 Circuit open resistance: > 10M $\Omega$  at 25VDC

3.5 Contact bounce: < 15ms

3.6 Linear Test : <1.5 %

3.7 Capacitance: 100nF(maximum)

3.8 Electrostatic Discharge Protection : (per EN 61000-4-2 )

The touch screen withstands of 15KV air discharge and 8KV contact discharge.

## 4. Linearity

### 4.1 Linear Test Specifications

Direction X: <1.5%

Direction Y: <1.5%

### 4.2 Linearity Test

Apply voltage (DC5V) to upper (or lower ) electrodes, output voltage  $V_x$  or  $V_y$  on the other electrodes is measured at every regular intervals.

Linearity is the value of max. error voltage

## 5. Environment Specifications

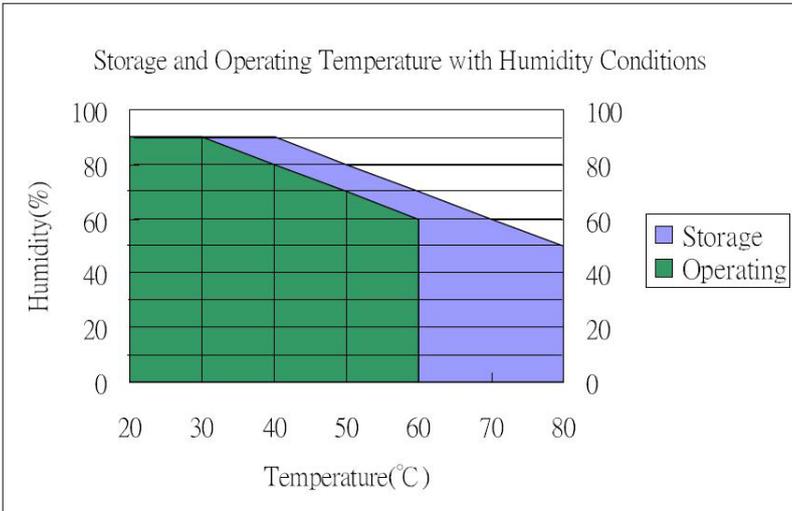
5.1 Operating Temperature:  $-10 \sim +60^{\circ}\text{C}$

5.2 Storage Temperature:  $-40 \sim +80^{\circ}\text{C}$

5.3 Humidity: if temp.  $< 20^{\circ}\text{C}$ , see Fig below

if temp.  $\leq 20^{\circ}\text{C}$ , humidity less than 90% RH

no condensation



## A.3 Installing Driver for Windows OS

---

The touchscreen has drivers for Windows 2000/XP/Vista. You should read the instructions in CD-ROM Disk Touchscreen section carefully before you attempt installation. The FPM-8151H needs to install the Penmount 6000 driver. Please find the Penmount 6000 folder and install the driver into your system.

*Note 1: The driver manual are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.*

*Note 2: USB & RS-232 interface driver is different, uninstall previous driver before installing a different driver.*

*:Note 3: If there is any others OS driver need, could download at the web site: <http://www.penmount.com.tw> (Penmount 6000)*

APPENDIX

# B

## **Setting Serial Data for Expansion**

# Appendix B Setting Serial Data for Expansion

## B.1 Setting Serial Data for Expansion

---

The twelve kinds of timings below are already programmed in this module. The input synchronous signals are automatically recognized.

<b>VGA Port Resolution Support</b>				
Resolution	Vertical Frequencies			
	60Hz	70Hz	72Hz	75Hz
640 x 480	V		V	V
720 x 400		V		
800 x 600	V	V	V	V
1024 x 768	V	V		V
1280 x 1024	V		V	V

<b>DVI Port Resolution Support</b>				
Resolution	Vertical Frequencies			
	60Hz	70Hz	72Hz	75Hz
640 x 480	V			V
800 x 600	V		V	V
1024 x 768	V	V		V
1280 x 1024	V			V

**Note 1:** *Even if the preset timing is entered, a little adjustment of the functions are required. The adjusted values are memorized in every preset number.*

**Note 2:** *This module recognizes the synchronous signals with near preset timing of the frequency of the HS and Vsync, even in the case that the signals other than the preset timing that were entered.*

**Note 3:** *Because adjustments may not fit, such as differing magnifying ratios or, in the case that you use it except for the display timing that was preset.*

APPENDIX

C

## **OSD Operation Keypad**

# Appendix C OSD Operation Keypad

## C.1 OSD Board Overview

The OSD keypad, including six keys and a two color indicator, is designed as the OSD operation interface.

*Note: This sheet is only for reference, different models will has different styles, but the functionality is the same.*



### C.1.1 OSD Button Description

Buttons	Descriptions
Power	Turn the monitor power ON or OFF.
Auto/Exit	Automatically adjust the clock, phase, H-position and V-position. Exit menu.
Down/Right/ Increase	Activate the volume control. Move the selector to the next option. Increase the gauge value of the selected option.
Up/Left/ Decrease	Active volume control. Move the selector to the previous option. Decrease the gauge value of the selected option.
Menu/Sel	Activate the OSD menu. Enter/confirm the selected option.
Source	Changes Input video source

### C.1.2 LED Function

On	Green
StandBy/Off	Green Blinking
No Signals	Orange

## C.2 OSD Key Functions

---

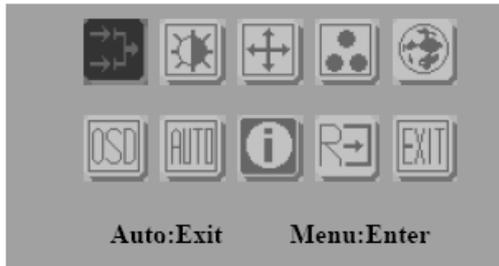
Each selected value is stored into LCD memory after SEL signal input or time out. The stored values are not affected if the power is turned off. But the selected value is not available in case a selected mode is changed before time out or power is turned off before time out. TIME OUT → 5-6 seconds ( Can be set in OSD Manager) The default definition of input keys is shown as following:

### C.2.1 Menu Start

Generate Main Menu

Press MENU Button in OSD function key

- Main Menu -- DISPLAY IN SCREEN



- Sub-Menu – DISPLAY IN SCREEN
- N/A
- Available Key Functions

	N/A		N/A
	Select to exit menu or wait for time out		N/A
	N/A		N/A

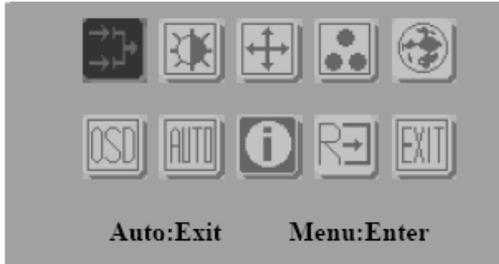
## C.2.2 Input Source Select

- Generate Main Menu

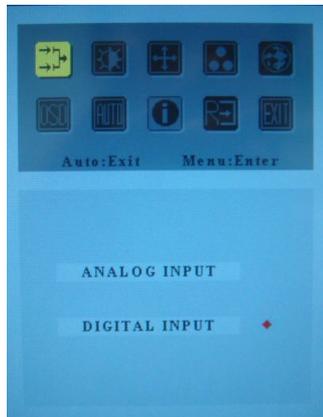


Select  by **Left** and **Right** Button, press **Menu** Button for selection confirmation

- Main Menu -- DISPLAY IN SCREEN



- Sub-Menu – DISPLAY IN SCREEN



- Available Key Functions

	Power Off the LCD Monitor		Increase the gauge value of the selected option.
	Return to last menu		Selected to confirm
	Decrease the gauge value of the selected option.		N/A

#### 4. Auto Select Input

- ON → start from default setting and scan the inputs by following sequence from ANALOG INPUT, DIGITAL INPUT, S-VIDEO INPUT, and CVBS INPUT.
- OFF → start from default setting

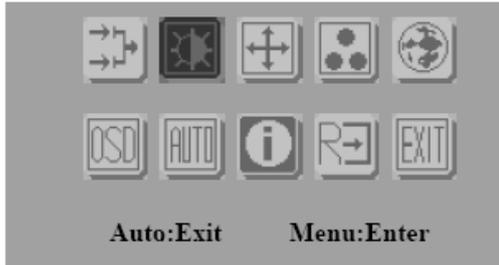
### C.2.3 Contrast/ Brightness Setting

- Generate Main Menu

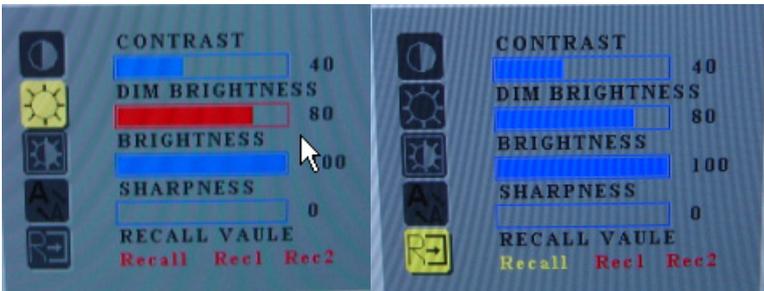


Select  by **Left** and **Right** Button, press **Menu** Button for selection confirmation

- Main Menu -- DISPLAY IN SCREEN



n Sub-Menu – DISPLAY IN SCREEN



- Available Key Functions

	Power Off the LCD Monitor		Increase the gauge value of the selected option.
	Return to last menu		Selected to confirm
	Decrease the gauge value of the selected option.		N/A

RECALL VALUE – User Define

- Rec1 → Pressed to record 1<sup>st</sup> setting as recall value followed by current screen setting
- Rec2 → Pressed to record 2<sup>nd</sup> setting as recall value followed by current screen setting
- Recall → Switch the setting change by Rec1 and Rec2 while pressed

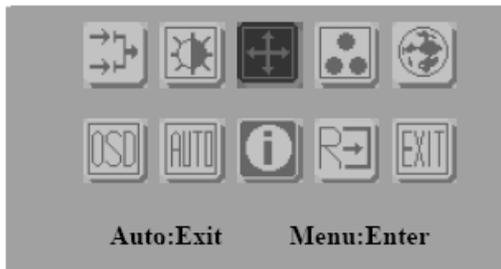
### C.2.4 Geometry Menu – For DVI Input

- Generate Main Menu



Select  by **Left** and **Right** Button, press **Menu** Button for selection confirmation

- Main Menu -- DISPLAY IN SCREEN



- Sub-Menu – DISPLAY IN SCREEN

	<b>FOCUS</b> <input type="text"/>	0~100
	<b>CLOCK</b> <input type="text"/>	0~100
	<b>H.POSITION</b> <input type="text"/>	0~100
	<b>V.POSITION</b> <input type="text"/>	0~100

- Available Key Functions

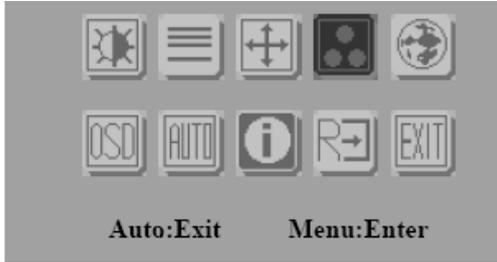
	Power Off the LCD Monitor		Increase the gauge value of the selected option.
	Return to last menu		Selected to confirm
	Decrease the gauge value of the selected option.		N/A

## C.2.5 Color Temperature Menu

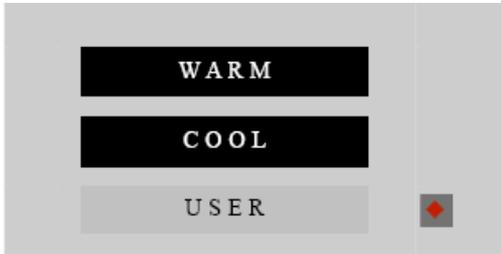
- Generate Main Menu

Select  by **Left** and **Right** Button, press **Menu** Button for selection confirmation

- Main Menu -- DISPLAY IN SCREEN



- Sub-Menu – DISPLAY IN SCREEN



- Available Key Functions

	Power Off the LCD Monitor		Increase the gauge value of the selected option.
	Return to last menu		Selected to confirm
	Decrease the gauge value of the selected option.		N/A

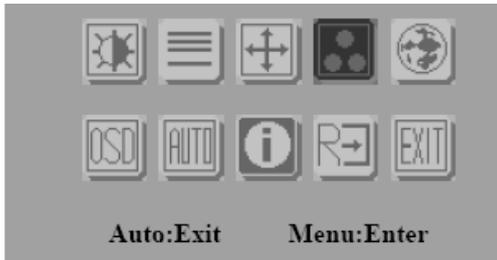
## C.2.6 RGB Color Menu

- Generate Main Menu

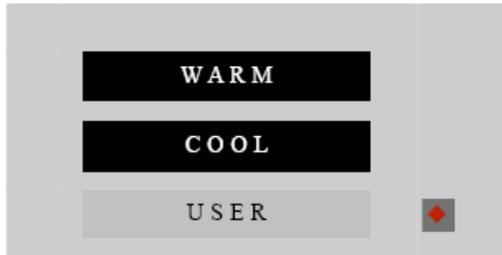
Select  by **Left** and **Right** Button, press **Menu** Button for selection confirmation

Select  by **Left** and **Right** Button, Press **Menu** Button for selection confirmation

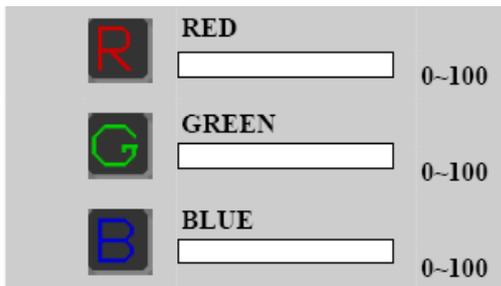
- Main Menu -- DISPLAY IN SCREEN



- Sub-Menu – DISPLAY IN SCREEN



- Sub-Menu – DISPLAY IN SCREEN



- Available Key Functions

	Power Off the LCD Monitor		Increase the gauge value of the selected option.
	Return to last menu		Selected to confirm
	Decrease the gauge value of the selected option.		N/A

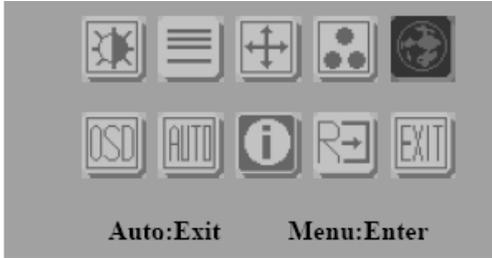
Customization setting for RGB colors

## C.2.7 Language Menu

- Generate Main Menu

Select  by **Left** and **Right** Button, press **Menu** Button for selection confirmation

- Main Menu -- DISPLAY IN SCREEN



- Sub-Menu – DISPLAY IN SCREEN



- Available Key Functions

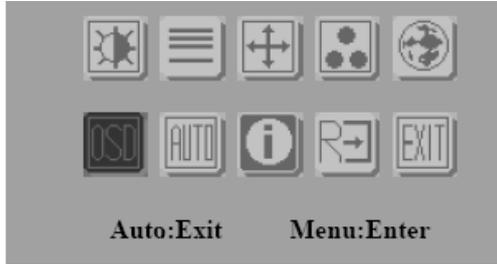
	Power Off the LCD Monitor		Increase the gauge value of the selected option.
	Return to last menu		Selected to confirm
	Decrease the gauge value of the selected option.		N/A

## C.2.8 OSD Manager

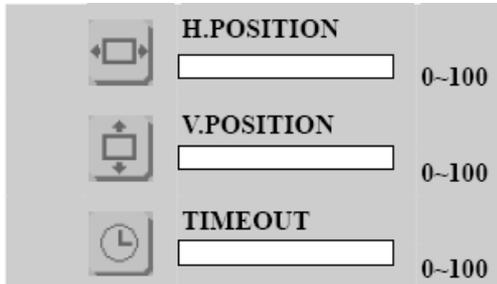
- Generate Main Menu

Select  by **Left** and **Right** Button, press **Menu** Button for selection confirmation

- Main Menu -- DISPLAY IN SCREEN



- Sub-Menu – DISPLAY IN SCREEN



- Available Key Functions

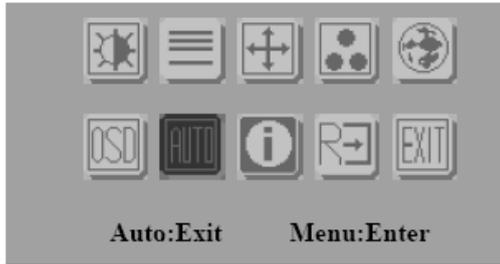
	Power Off the LCD Monitor		Increase the gauge value of the selected option.
	Return to last menu		Selected to confirm
	Decrease the gauge value of the selected option.		N/A

## C.2.9 Auto Configuration Menu

- Generate Main Menu

Select  by **Left** and **Right** Button, press **Menu** Button for selection confirmation

- Main Menu -- DISPLAY IN SCREEN



- Sub-Menu – DISPLAY IN SCREEN



- Available Key Functions

	Power Off the LCD Monitor		Increase the gauge value of the selected option.
	Return to last menu		Selected to confirm
	Decrease the gauge value of the selected option.		N/A

Auto configuration can be set in menu and also can press the  without any menu indication.

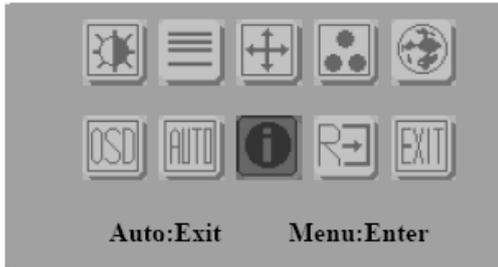
## C.2.10 Mode Information Menu

- Generate Main Menu

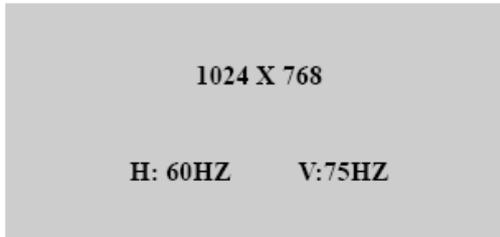


Select  by **Left** and **Right** Button, press **Menu** Button for selection confirmation

- Main Menu -- DISPLAY IN SCREEN



- Sub-Menu – DISPLAY IN SCREEN



- Available Key Functions

	Power Off the LCD Monitor		Increase the gauge value of the selected option.
	Return to last menu		Selected to confirm
	Decrease the gauge value of the selected option.		N/A

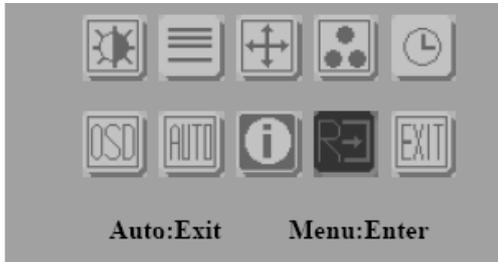
## C.2.11 Memory Recall Menu

- Generate Main Menu

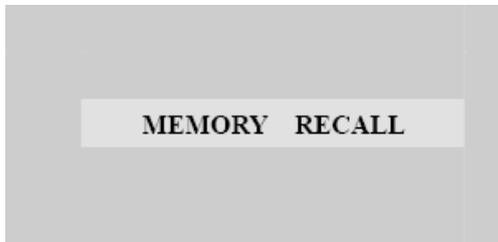


Select  by **Left** and **Right** Button, press **Menu** Button for selection confirmation

- Main Menu -- DISPLAY IN SCREEN



- Sub-Menu – DISPLAY IN SCREEN



- Available Key Functions

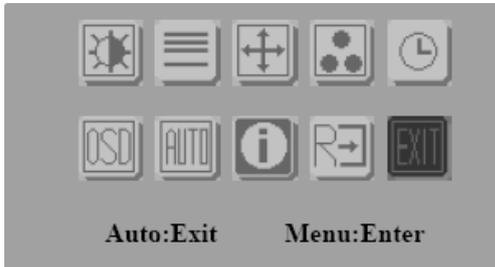
	Power Off the LCD Monitor		Increase the gauge value of the selected option.
	Return to last menu		Selected to confirm
	Decrease the gauge value of the selected option.		N/A

### C.2.12 Exit Menu

- Generate Main Menu

Select  by **Left** and **Right** Button, press **Menu** Button for selection confirmation

- Main Menu -- DISPLAY IN SCREEN



- Sub-Menu – DISPLAY IN SCREEN



- Available Key Functions

	Power Off the LCD Monitor		Increase the gauge value of the selected option.
	Return to last menu		Selected to confirm
	Decrease the gauge value of the selected option.		N/A

## C.2.13 Hot Keys

### OSD LOCK/UNLOCK

#### HOT KEYS

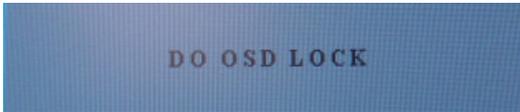


Press  first then press  for change this setting, Followed this sequence for the button press so that you can have OSD LOCK and UNLOCK setting

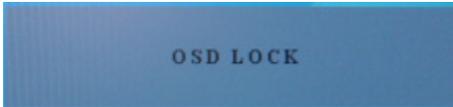


#### Entry OSD LOCK MODE

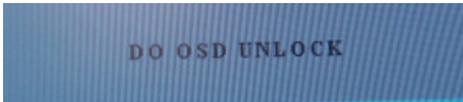
Press HOT KEY, the screen will show this action first



- Don't remove the HOT KEY until the screen indicated this task is finished.



- Entry OSD UNLOCK MODE
- Press HOT KEY, the screen will show this action first



- Don't remove the HOT KEY until the screen indicated this task is finished.



