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FPM-2150G Series

Flat Panel Monitor with
15" Color TFT/LCD Display

User's Manual

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FCC Class B

This equipment has been tested and found to comply with the limits for a Class B 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 residential environment. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with this user's manual, it may cause harmful interference to radio communications. Note that even when this equipment is installed and used in accordance with this user's manual, there is still no guarantee that interference will not occur. If this equipment is believed to be causeing harmful interference to radio or television reception, this can be determined by turning the equipment on and off. If the interference is occurring, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment to a power outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

警告使用者

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

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Packing List

Before installing your equipment, make sure that the following materials have been received:

- FPM-2150G Series flat panel monitor
- Accessory pack, including:
  - AC/DC adapter
  - Power Chord
  - Video signal cable, 1.8m
  - Keyboard/mouse Y cable
  - AC/DC power adapter bracket
  - Hook wall-mounted bracket (in FPM-2150G)
  - Four fixed panel-mounted bracket
  - Mounting bracket (in FPM-2150G)
  - RS-232 cable, 1.8m (FPM-2150G-R only)
  - Keyboard/mouse 1.8m cable
  - Driver/manual CD-ROM

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Additional Information and Assistance

1. Visit the Advantech web site at **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

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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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Wichtige Sicherheishinweise

1. Bitte lesen sie Sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie Keine Flüssig-oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die NetzanschluBsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor überhitzung schützt. Sorgen Sie dafür, daB diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim. AnschluB an das Stromnetz die AnschluBwerte.
9. Verlegen Sie die NetzanschluBleitung so, daB niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
    a - Netzkabel oder Netzstecker sind beschädigt.
    b - Flüssigkeit ist in das Gerät eingedrungen.
    c - Das Gerät war Feuchtigkeit ausgesetzt.
    d - Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
    e - Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
    f - Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.

    Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weiger.

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CHAPTER 1

Introduction

This chapter includes:

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

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1.1 Introduction

Advantech's FPM-2150G Series is a 15" color TFT LCD flat panel monitor built specifically for industrial applications. With the optional touchscreen, the FPM-2150G Series is an excellent and user-friendly system control interface.

In addition to its usual application as an LCD panel monitor, the FPM-2150G comes standard with direct VGA control signal input making it compatible with Industrial PCs and Workstations. With the FPM-2150G, Advantech is taking a more aggressive initiative to penetrate the industrial HMI market. Its OSD (On Screen Display) function allows you to adjust the display factors and turn the back-light on and off for the front view, functions which become critical as more and more industrial HMI users become aware of the benefits of flat panel monitors. The whole chassis is of steel, and the front panel is of Al-Mg with NEMA4/IP65 compliance.

The FPM-2150G provides a touch screen version (FPM-2150G-R) for option. With an 8-wire resistive type touchscreen, the monitor can be immediately transformed into a remote control system. For remote control application, optional transmission cables are available for 5m, 10m, 20m, 30m and 50m. The Advantech FPM-2150G is the ultimate HMI solution for your industrial application.

1.2 Specifications

General

- **Construction:** Heavy-duty steel chassis
- **Front panel:** Al-Mg, NEMA4/IP65 compliant
- **Control:** OSD (On Screen Display) control pad on front side
- **Mounting:** Panel, wallmount, desktop or VESA Arm
- **Dimensions (W x H x D):** 383 x 307 x 48.13 mm (15" x 12.09" x 1..9")
- **Panel Mount Cut out Dimension (W x H):** 373.5 x 297.5 mm (14.7" x 14.71")
- **Weight:** 4.5 Kgs (8 lbs)
- **Vibration (operating):** 5 ~ 17 Hz, double-amplitude displacement; 17 ~ 500 Hz, 1.0 G peak to peak

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- **CE, FCC, BSMI, CCIB compliant**

Touchscreen (Optional)

- **Type:** 8 wire, analog resistive
- **Resolution:** continuous
- **Light transmission:** 75% (surface meets ASTM-D-3363-92A Standard, tabler abrasion test)
- **Controller:** RS-232 interface
- **Power Consumption:** +5 V @ 200 mA
- **OS support:** Windows 95/98, Windows NT/2000/XP, MS-DOS
- **Life span:** 100 million touches

1.3 LCD Specification

- **Display type:** XGA TFT- LCD
- **Display size:** 15"
- **Max. colors:** 262 K
- **Max. resolution:** 1024 x 768
- **View angle:** 120 ° (H), 100 ° (V)
- **Luminance:** 250 cd/m^2
- **Storage temperature:** -20 °C ~ 60 °C (-4 °F ~ 140 °F)
- **Operating temperature:** 0 °C ~ 50 °C (32 °F ~ 122 °F)
- **Contrast Ratio:** 400 : 1 (typ)
- **Lamp Life Time (MTBF):** 30,000 hrs.

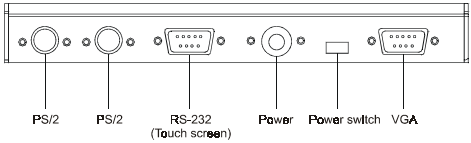
1.4 Power Consumption

- **Max Output Power:** 48 Watts
- **AC input voltage:** 90 ~ 270 V_{AC}
- **Output voltage:** + 12 V @ 4 A
- **Safety Standards:** UL/CSA/TUV/CB

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1.5 Connectors

The following connectors are situated on the buttom of the FPM-2150G Series:



VGA Port (DB-15)

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

Keyboard & mouse Connector (PS/2)

There are two PS/2 connectors which can ne connected to keyboard or mouse.

Touchscreen Connector (DB-9) (optional)

This connector will be present only if a touchscreen is installed. It must be connected to the RS-232 port of the PC. The touchscreen cable is included with all orders which include the touchscreen option.

DC 12V Power In

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

Extended Cable Transmission (optional)

A 5/20/30/50-meter VGA cable is provided for special applications. Another longer cable is also available. For more detailed information, please contact our dealers.

Warning:

Before you connect a VGA cable between FPM-2150G & a PC, please note the following issues.

1. If you have intalled operation system in the PC, make sure the verticle frequency falls within the range. (Refer to Appendix B)

2. If you do not install operation system, you have to adjust the verticle frequency to fall within the range.

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1.5.1 PS/2 connectors

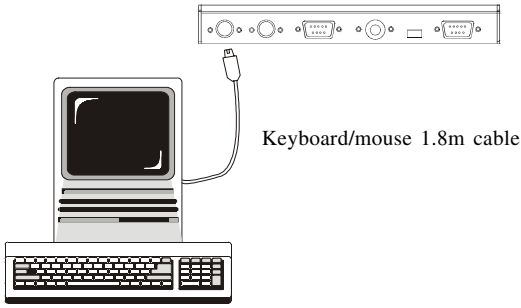
The FPM-2150G provides two PS/2 connectors in the buttom side. Please follow the steps to connect the keyboard /mouse cable.

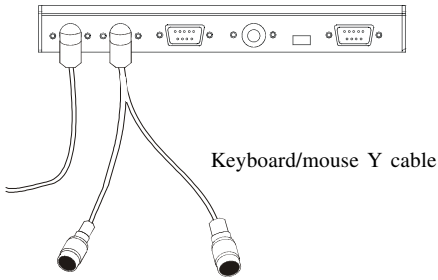
1. Connect 1.8m keyboard/mouse cable to one of the PS/2 port.

2. Connect other side of Keyboard/mouse 1.8m cable to PC

3. Connect Y cable to another PS/2 port in FPM-2150G

Note: You MUST select one PS/2 port to connect 1.8m cable to PC.





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1.6 Dimensions

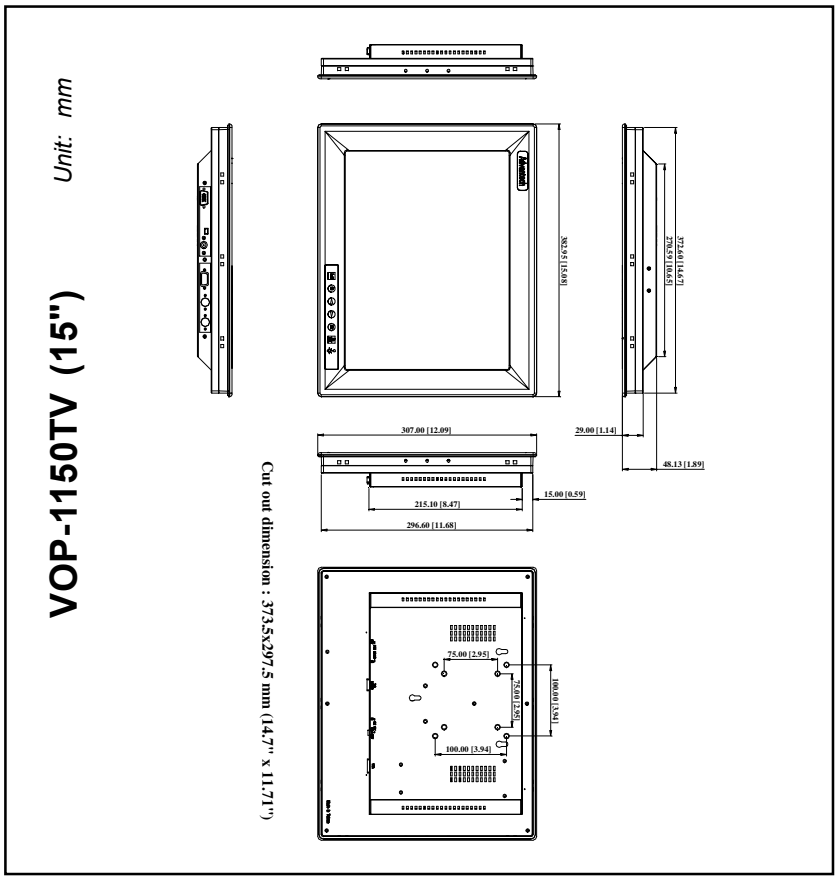


Figure 1-1: Dimensions

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CHAPTER 2

System Setup

- Mounting the Monitor
  - Wall/Panel mounting
  - Desktop Stand/Swing-ARM Mounting

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2.1 Mounting the Monitor

The FPM-2150G Series can be placed as you require. The versatility of the FPM-2150G mounts enable it to be mounted on your desk or anywhere else.

2.1.1 Wall Mounting

Please follow the steps to install FPM-2150G in the wall.

1. Screw the wall-mount bracket in the wall.

2. Put the FPM-2150G in the bracket.

3. Screw the second wall-mount bracket in the FPM-2150G

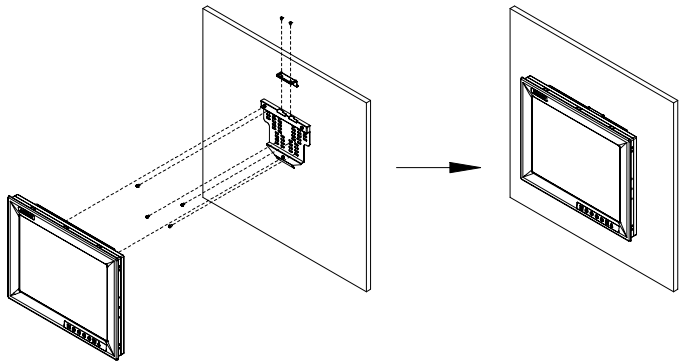


Figure 2-1: Wall Mounting

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2.1.2 Panel Mounting

If you need to install the FPM-2150G series on a panel mount, please release the mounting brackets by detaching screws on rear side and fix them on up and bottom side by screws.

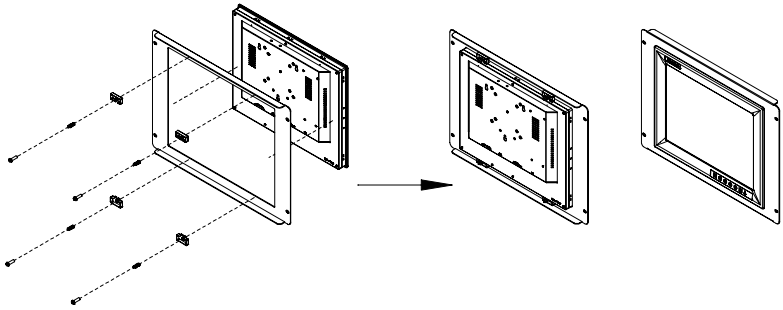


Figure 2-2: Panel Mounting

2.1.3 Rack Mounting

FPM-2150G series can be directly mounted in a standard 19" rack. Just mount the panelon the rack snd secure with four screws

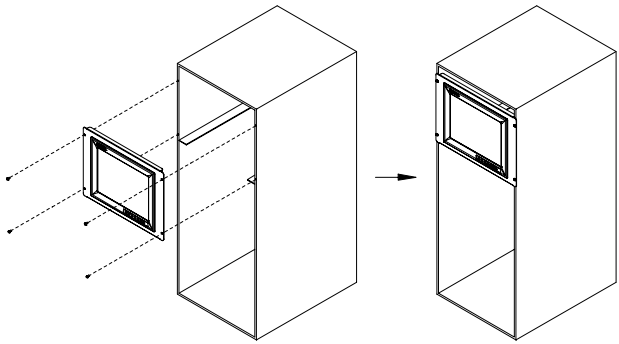


Figure 2-3: Rack mounting

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2.2 Desktop, Swing-ARM for FPM-2150G

The FPM-2150G Series can be mounted in other ways. You can place the desktop stand for desktop use or attach it on a swing-arm bracket.

2.2.1 Desktop Stand

The desktop stand bracket is attached to the rear of the FPM-2150G. Simply detach the small bracket at the rear side of the monitor by screwing the two screws. The bracket now becomes the desktop stand bracket.

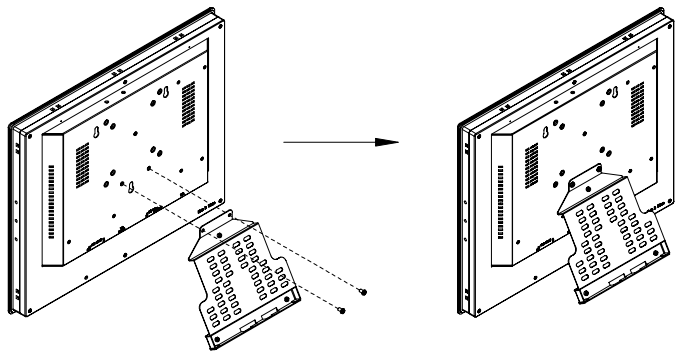


Figure 2-4: Desktop Stand for the FPM-2150G series

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2.2.2 Swing-ARM

Detach the mounting brackets on the rear side, then attach the FPM-2150G series onto the Swing-ARM mount.

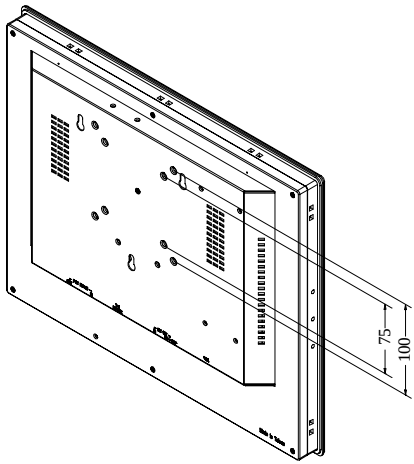
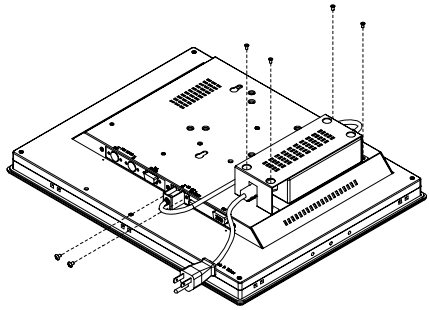


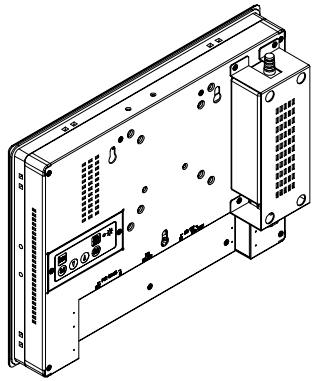
Figure 2-5: Swing-ARM for the FPM-2150G series

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2.2.3 Power adapter

The power adapter bracket is attached to the rear of the FPM-2150G. Simply detach the small bracket at the rear side of the monitor by screwing the four screws.





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Note:

If you find that the brightness of LCD is dark, please follow the steps to adjust it.

1. Find the OSD in the rear side of FPM-2150G
2. Press two buttons, "▼" & "▲" , at the same time.
3. The LCD will reset and get brighter.

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APPENDIX A

Display Timing Mode and OSD

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A.1 Supported Input Timing Modes

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

Table A.1: Supported Input Formats

	Vertical Frequencies				
Resolution	56 Hz	60 Hz	70 Hz	72 Hz	75 Hz
640 x 480		Yes		Yes	Yes
800 x 600	Yes	Yes		Yes	Yes
1024 x 768		Yes	Yes		Yes

Note 1: Even if the preset timing is entered, a little adjust-ment of the functions such as Horizontal period, CLK-delay and display position, are required. The adjusted values are memorized in every preset num-ber.

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.

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A.2 Keypad Interface

The keypad interface provides driver for a dual color LED for status indication.

AUTO	Press this button to execute auto adjustment process.
SEL	Presses to show the OSD screen or select an item for changing its setting.
◀ ▶	To move between items or increase item setting.
EXIT	To close the selected item or the whole OSD screen.
ON/OFF	Turn the display backlight ON and OFF.

PS, The green light means that the COMMON board detects the input signal and ends output signal to LCD panel .

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A.3 OSD Function

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.

The default definition of input keys is shown as following :

Main Menu	Sub Menu	Adjustment	Functionality
Language			English
Brightness		100 steps	Adjust brightness of the display
Contrast	Contrast	100 steps	Adjust contrast of RGB channel simultaneously
	Sub Contrast RGB	100 steps	Adjust color of selected RGB channel
Position	H.Size	32 steps	Adjust phase of ADC sample clock
	Clock Phase	+/-64 clock from VESA standard	Adjust number of clocks per line
	H.Postion	+/-50 pixel from VESA standard	Move input image capture window left or right
	V.Postion	+/-30 lines from VESA standard	Move the input image capture window up or down
Auto configuration		Yes.No	Automatically adjust image position, clock, and phase
All Reset	All Reset		Reset menu parameters to factory default setting
Information	Information		System input mode information
OSD	OSD Timeout	10s	Adjust the OSD Menu time out if there is no key pressed
	OSD Position		Fixed

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