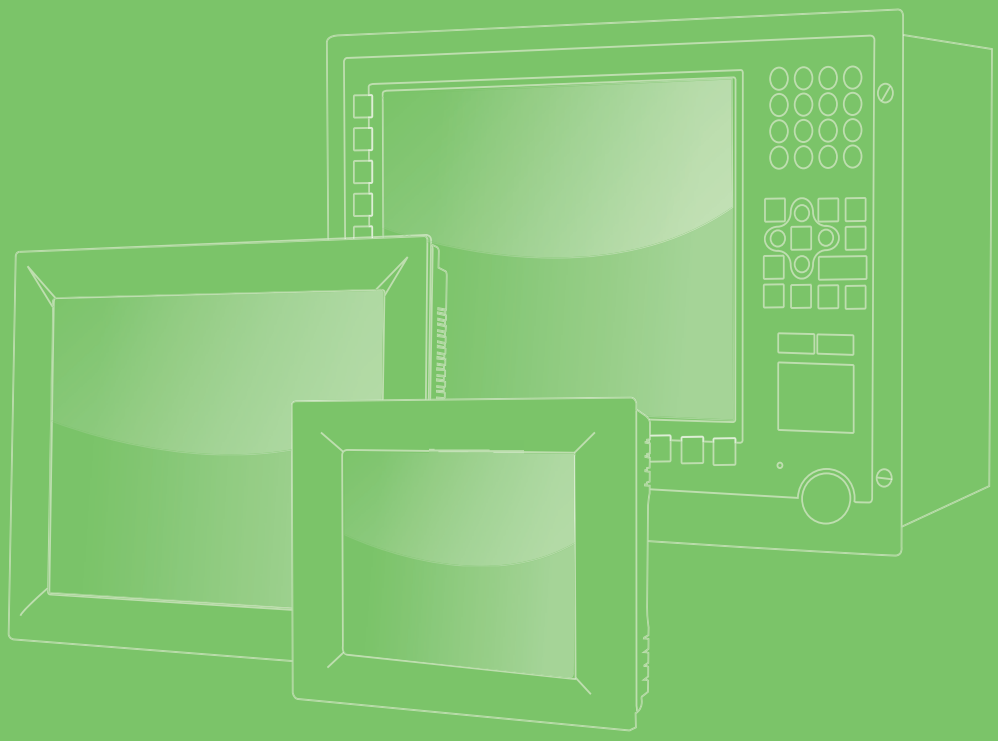
User Manual



FPM-2120G/2150G/ 2170G Series

12"XGA/15" XGA/17" SXGA Industrial LED Monitor with Resistive Touchscreen, VGA Display Port and DC12 V Input

顯示器

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This manual includes the following products:

FPM-2170G-R3BE;FPM-2150G-R3BE;FPM-2120G-R3BE;
FPM-2170GR3B1601-T;FPM-2170GR3B1701-T;FPM-2170GR3B1801-T;
FPM-2170GR3B1602-T;FPM-2170GR3B1702-T;FPM-2170GR3B1802-T;
FPM-2170GR3B1603-T;FPM-2170GR3B1703-T;FPM-2170GR3B1803-T;
FPM-2170GR3B1604-T;FPM-2170GR3B1704-T;FPM-2170GR3B1804-T;
FPM-2150GR3B1601-T;FPM-2150GR3B1701-T;FPM-2150GR3B1801-T;
FPM-2150GR3B1602-T;FPM-2150GR3B1702-T;FPM-2150GR3B1802-T;
FPM-2150GR3B1603-T;FPM-2150GR3B1703-T;FPM-2150GR3B1803-T;
FPM-2150GR3B1604-T;FPM-2150GR3B1704-T;FPM-2150GR3B1804-T;
FPM-2120GR3B1601-T;FPM-2120GR3B1701-T;FPM-2120GR3B1801-T;
FPM-2120GR3B1602-T;FPM-2120GR3B1702-T;FPM-2120GR3B1802-T;
FPM-2120GR3B1603-T;FPM-2120GR3B1703-T;FPM-2120GR3B1803-T;
FPM-2120GR3B1604-T; FPM-2120GR3B1704-T; FPM-2120GR3B1804-T

Part No. 2003215050 Edition 2
Printed in China January 2016

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.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. 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 merchandize 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.

[警告使用者：這是甲類資訊產品，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對策。]

Declaration of Conformity

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.

Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support 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 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:

- The power cord or plug is damaged.
- Liquid has penetrated into the equipment.
- The equipment has been exposed to moisture.
- The equipment does not work well, or you cannot get it to work according to the user's manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.

15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (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.

Warning! *If the customer user DC power by oneself for this product may cause the radio interference in which case, the customer must be to take adequate measures.*

Warning! *If the customer needs to use power adapter, please use the power adapter listed on the product datasheet. If the customer use the power adapter not listed on the product datasheet, it may cause the radio interference in which case, the customer must be to take adequate measures*

安全指示

1. 1. 請仔細閱讀此安全操作說明。
2. 請妥善保存此用戶手冊供日後參考。
3. 用濕抹布清洗設備前，請確認拔除電源線。請勿使用液體或去污噴霧劑清洗設備。
4. 對於使用電源線的設備，設備周圍必須有容易接觸到的電源插座。
5. 請勿在潮濕環境中試用設備。
6. 請在安裝前確保設備放置在可靠的平面上，意外摔落可能會導致設備損壞。
7. 設備機殼的開孔適用於空氣對，從而防止設備過熱。**請勿覆蓋開孔。**
8. 當您連接設備到電源插座前，請確認電源插座的電壓符合要求。
9. 請將電源線佈置在人們不易絆倒的位置，請勿在電源線上覆蓋任何雜物。
10. 請注意設備上所有的警告標示。
11. 如果長時間不使用設備，請拔除與電源插座的連結，避免設備被超標的電壓波動損壞。
12. 請勿讓任何液體流入通風口，以免引起火灾或短路。
13. 請勿自行打開設備。為了確保您的安全，請透過經認證的工程師來打開設備。
14. 如遇下列情況，請由專業人員維修：

- 電源線或插頭損壞；
- 設備內部有液體流入；
- 設備曾暴露在過度潮濕環境中使用；
- 設備無法正常工作，或您無法透過用戶手冊來正常工作；
- 設備摔落或損壞；
- 設備有明顯外觀損；

15. 請勿將設備放置在超出建議溫度範圍的環境，即不要低於 -25 ℃ （-13 ℉）或高於 70 ℃ （158 ℉），否則可能會造成設備損壞。
16. **注意：**若電池更換不正確，將有爆炸危險。因此，只可以使用製造商推薦的同一種或者同等型號的電池進行替換。請按照製造商的指示處理舊電池。
17. 根據 IEC 704-1:1982 規定，操作員所在位置音量不可高於 70 分貝。
18. **限制區域：**請勿將設備安裝於限制區域使用。
19. **免責聲明：**請安全訓示符合 IEC 704-1 要求。研華公司對其內容之準確性不承擔任何法律責任。

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Chapter 1

General Information

Sections include:

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

1.1 Introduction

Advantech's FPM-2120G/2150G/2170G is a 12"/15”/17” color TFT LED flat panel monitor built specifically for industrial applications. With the optional touchscreen, FPM-2120G/2150G/2170G is an excellent and user-friendly system control interface.

In addition to its usual application as an LED panel monitor,FPM-2120G/2150G/2170G comes standard with direct VGA control signal inputs, making it compatible with Industrial PCs and Workstations. Its OSD (On Screen Display) function allows you to adjust display factors such as brightness, contrast, colors and VGA signal information. Functions that are more and more critical as HMI users become aware of the benefits of flat panel monitors. The whole chassis is of stainless steel, and the front panel is of aluminum with NEMA4/IP65 compliance.

FPM-2120G/2150G/2170G also comes in a touch screen version (FPM-2120G-R/FPM-2150G-R/FPM-2170G-R). With an 5-wire resistive type touchscreen, this monitor can be immediately transformed into a remote control system. The Advantech FPM-2120G/2150G/2170G is the ultimate HMI solution for your industrial application.

1.2 Specifications

1.2.1 General

Specifications	FPM-2120G	FPM-2150G	FPM-2170G
Construction	Heavy-duty aluminum and steel chassis		
Front panel	Aluminum, NEMA4 / IP65 Compliant		
Control	OSD (On Screen Display) control pad on rear panel		
Mounting	Panel, wall, desktop, VESA ARM		
Dimensions (W x H x D)	311 mm x 237 mm x 40.63 mm (12.24" x 9.33" x 1.60")	383 mm x 307 mm x 48.13 mm (15.08" x 12.09" x 1.89")	413.72 mm x 347.22 mm x 52.13 mm (16.29" x 13.67 x 2.05")
Weight	4 kg (8.81 lbs)	4.5 kg (9.9 lbs)	5.60 kg (12.34 lbs)

1.2.2 Touchscreen (Optional)

Specifications	FPM-2120G	FPM-2150G	FPM-2170G
Type	5 wire, analog resistive		
Resolution	2048*2048		
Light Transmission	80%		
Controller	USB & RS-232 interface		

1.3 LCD Specification

Specifications	12” LCD (LED Backlight)	15” LCD (LED Backlight)	17” LCD (LED Backlight)
Display Type	XGA TFT LCD	XGA TFT LCD	SXGA TFT LCD
Display Size	12”	15”	17”
Max. Colors	16.2 M	16.7 M	16.7 M
Max. Resolution	1024 x 768	1024 x 768	1280 x 1024
View Angle (H/V°)	160°(V), 140°(H)	160°(V), 140°(H)	140°(V), 160°(H)
Luminance	600 cd/m^2	400 cd/m^2	350 cd/m^2
Storage Temperature	-40 ~ 85°C	-40 ~ 80°C	-30 ~ 85°C
Operating Temperature	-30 ~ 80°C	-30 ~ 85°C	-30 ~ 85°C
Contrast Ratio	700:1 (Typical)	700:1 (Typical)	800:1 (Typical)
Lamp Life Time (MTBF)	50,000 hrs.	50,000 hrs.	50,000 hrs.

1.4 Connectors

The following connectors are situated on the bottom side of the FPM-2120G/2150G/2170G series:

- **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.
- **RS-232 Touchscreen Connector (DB-9)** (FPM-2120G/2150G/2170G-R)
  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.
- **Touchscreen Connector (USB)**
  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.
- **DC 12 V Power Input Connector**
  This connector must be connected to DC 12 V power switch.

Warning! *Please note before connect the monitor and PC with VGA cable:*

1. If PC has installed operation system, please confirm its portrait frequency is within the acceptable range.
2. If PC has installed operation system, users need to adjust the portrait frequency to be within the acceptable range.

1.5 Dimensions

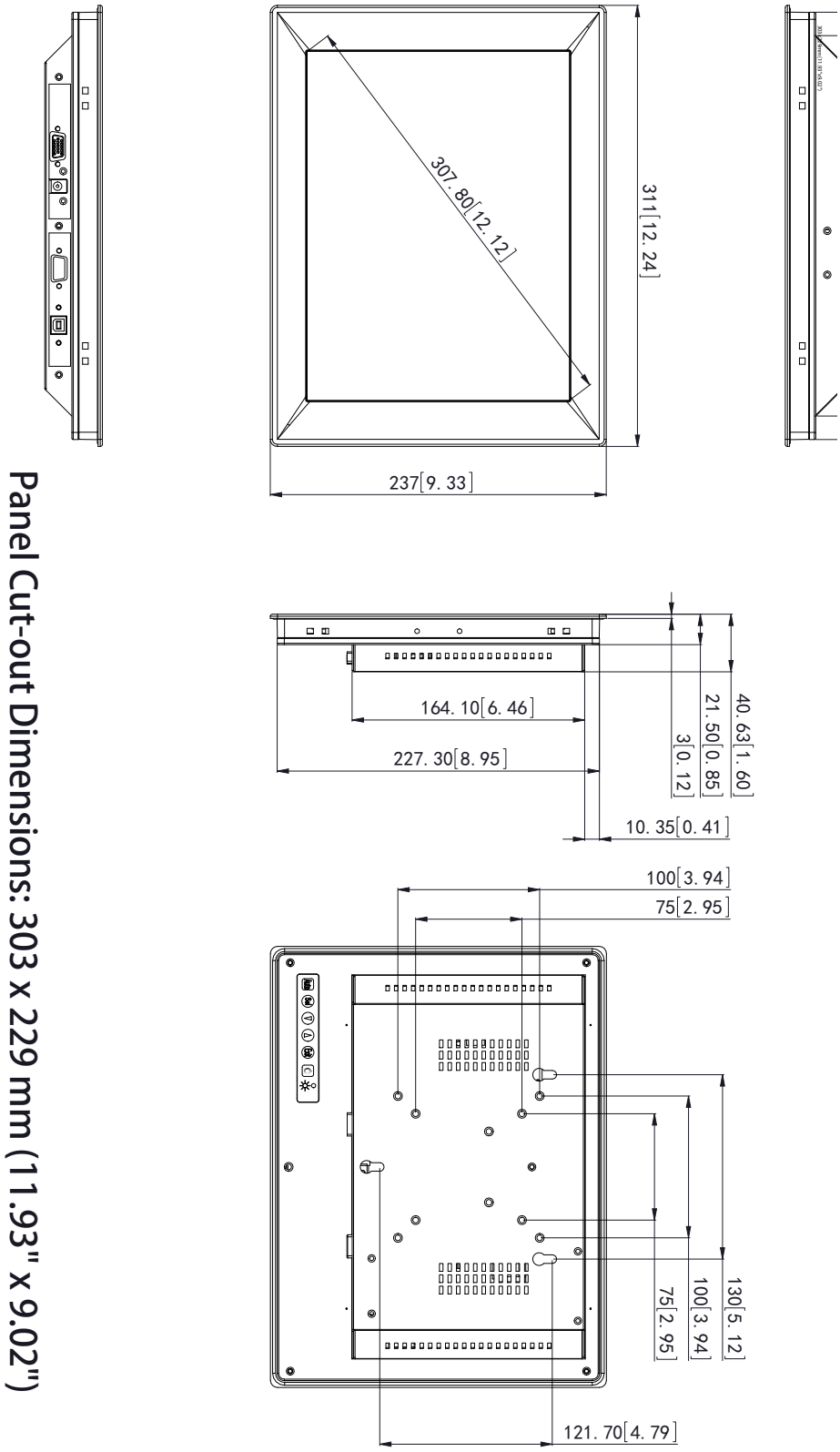
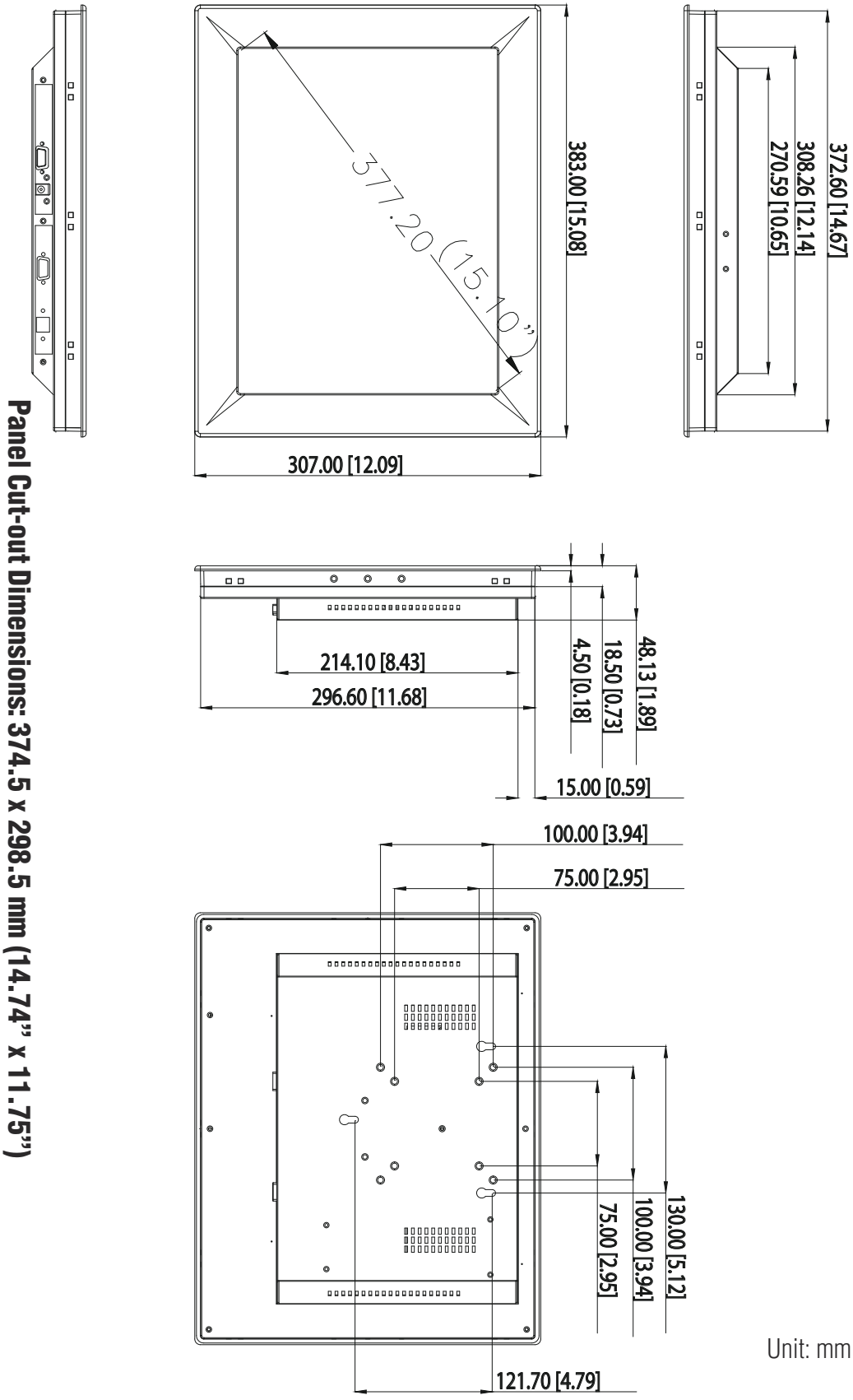


Figure 1.1 FPM-2120G Dimensions



Panel Cut-out Dimensions: 374.5 x 298.5 mm (14.74" x 11.75")

Figure 1.2 FPM-2150G Dimensions

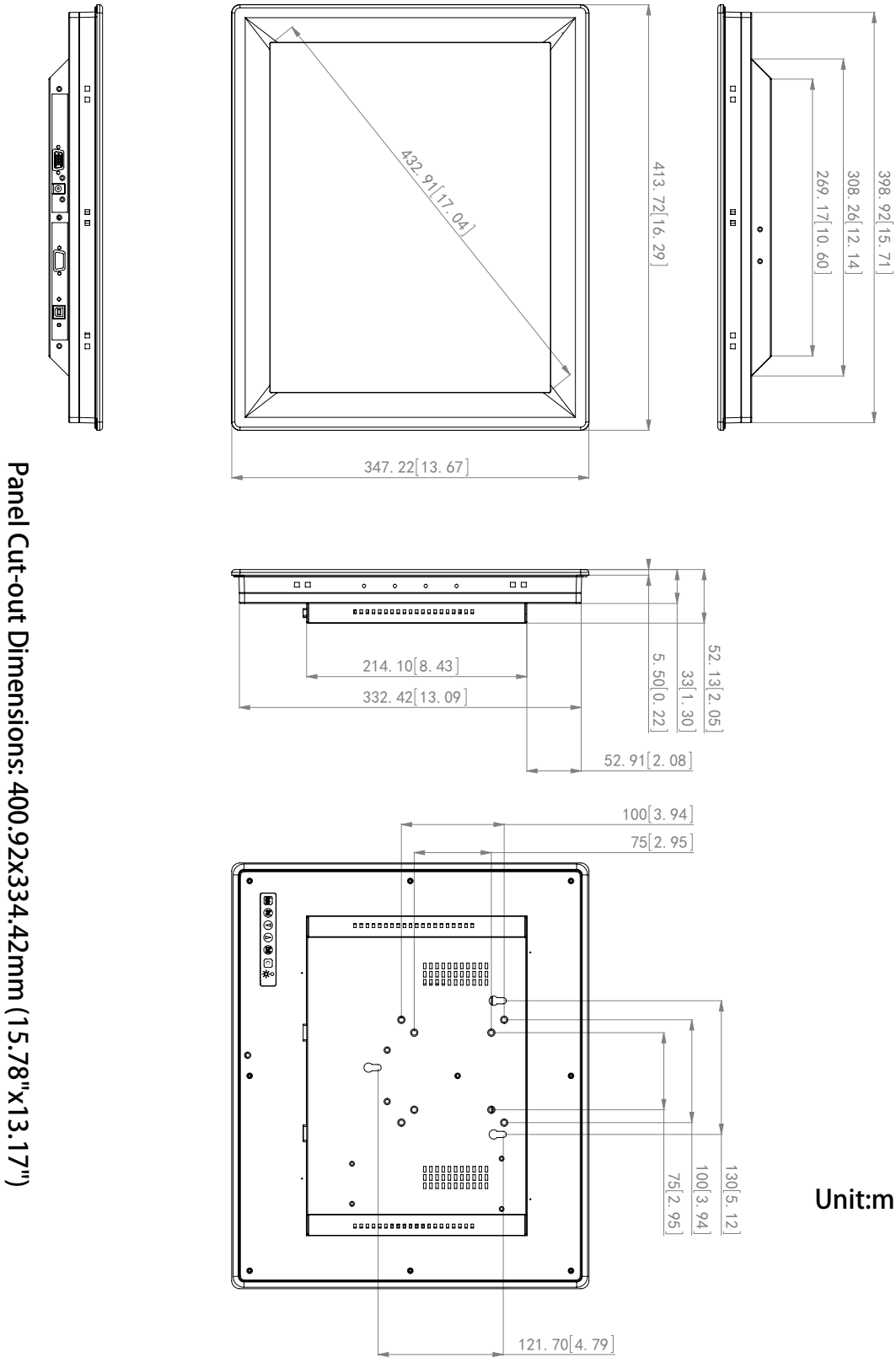


Figure 1.3 FPM-2170G Dimensions

Chapter 2

Mounting Methods

Sections include:

- Wall Mounting
- Panel Mounting
- Desktop Stand Mounting

2.1 Mounting the Monitor

The FPM-2000G Series can be mounted in many different ways. The versatility of the FPM-2000G enables it to be mounted on your desk or anywhere else.

2.1.1 Wall Mounting

The FPM-2000G can be mounted as a stand on the desk by additional mounting brackets. See figure 2.1 below for reference.

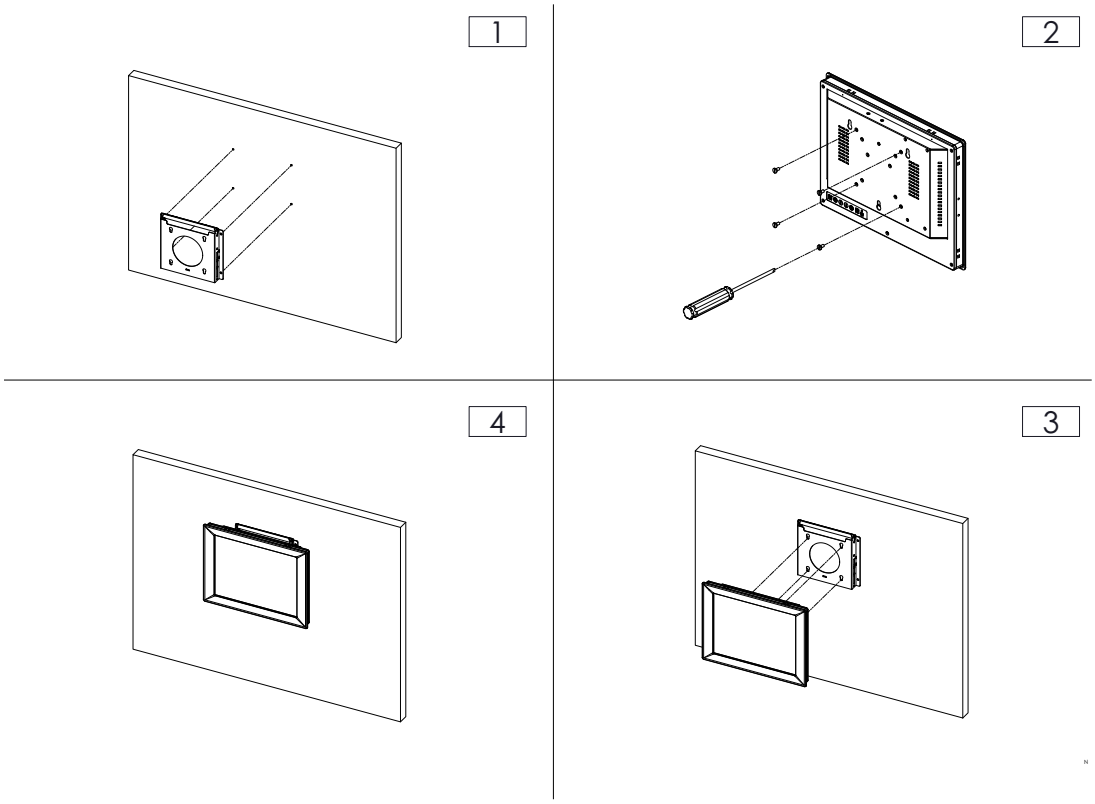


Figure 2.1 Wall Mounting with FPM-1000T-SMKE Kit

2.1.2 Panel Mounting

If you need to install the FPM-2000G series in a panel, release the mounting brackets by detaching four screws on rear side and fix them on the top and bottom with screws.

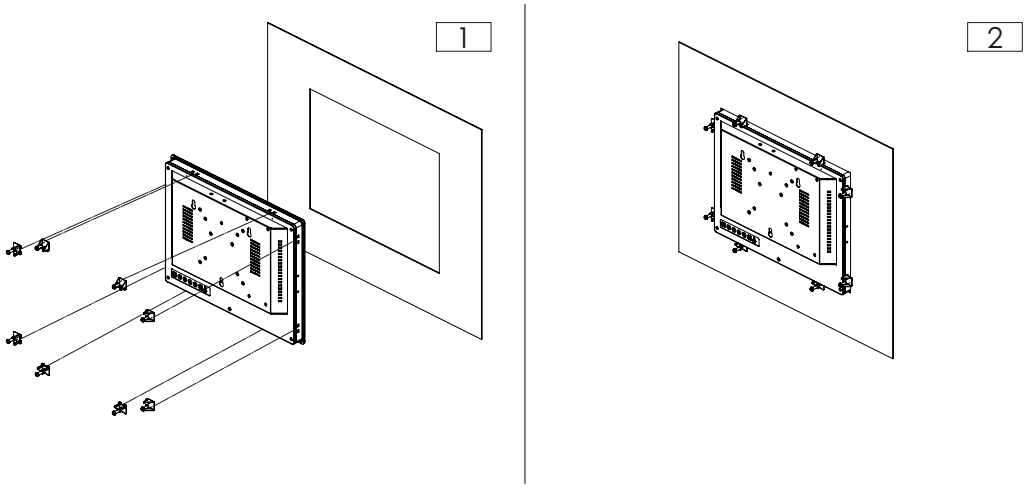


Figure 2.2 Panel Mounting

2.1.3 Desktop Stand Mounting

The FPM-2000G can be mounted as a stand on the desk by additional mounting brackets. See figure 2.3 below for reference.

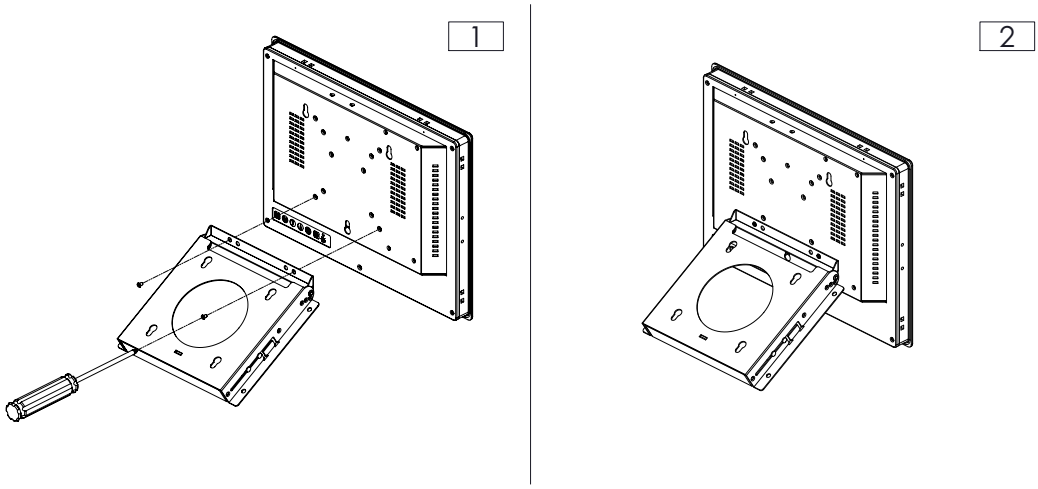


Figure 2.3 Desktop stand with FPM-1000T-SMKE Kit

Appendix A

Touchscreen

A.1 Introduction

The FPM-2120G/2150G/2170G Series 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 A standards.

A.2 Touchscreen Specifications (12”/15”/17”)

A.2.1 Typical Optical Features

Specification	12”	15”	17”
Light Transmission	> 80%		
Haze	< 13%		

A.2.2 Electrical Specifications

Specification	12”	15”	17”
Operation Voltage	5.5 V or below		
Contact Current	70 mA (Maximum)		

A.2.3 Environment Specifications

Specification	12”	15”	17”
Operating Temperature	-10 ~ +60°C		
Storage Temperature	-40 ~ +80°C		
Humidity	≥20°C, humidity < 80% RH		
	<20°C, humidity < 90% RH, Non-condensing		

A.3 Installing Driver for Windows OS

The touchscreen has drivers for Win 7/8. You should read the instructions in CD-ROM Disk carefully before you attempt installation. The FPM-2120G/2150G/2170G-R series need to install Penmount 6000 driver. Please find Penmount 6000 folder and install the driver into your system.

Note! *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.*

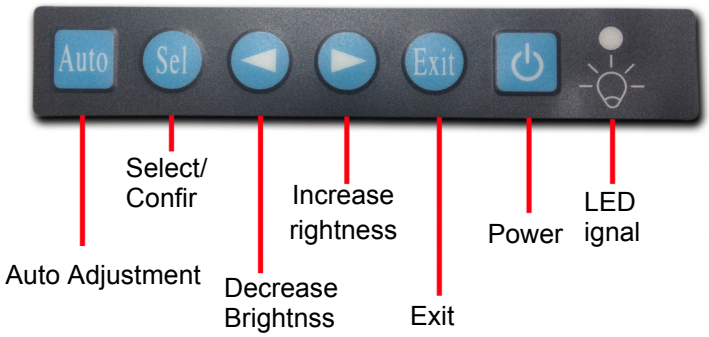
Note! *If there is any other OS driver need, you could download at the web site: http://support.advantech.com/Support/DownloadSRDetail_New.aspx?SR_ID=1-WQR-PJM&Doc_Source=Download*

Appendix B

OSD Operation
Keypad

B.1 OSD Board Overview

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



B.1.1 OSD Button Description

Table B.1: OSD Button Description	
Power	Turn the monitor power ON or OFF.
Exit	Exit menu.
Increase Brightness	Increase the monitor backlight brightness.
Decrease Brightness	Decrease the monitor backlight brightness.
Select/Confirm	Enter/confirm the selected option.
Auto Adjustment	Automatically adjust the monitor brightness.

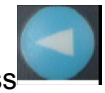
B.1.2 LED Function

Table B.2: LED Function	
ON	Green
StandBy/OFF	Green Blinking
No Signals	Orange

B.1.3 Hot Keys

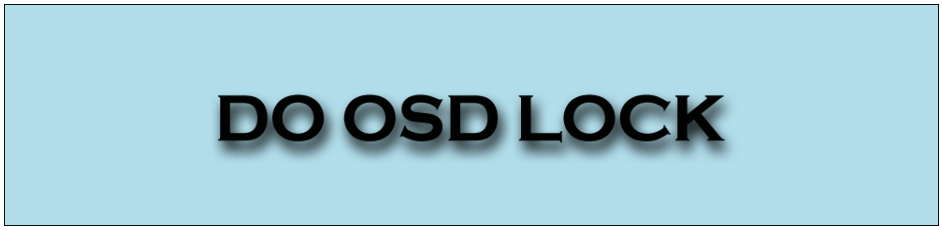
OSD LOCK/UNLOCK

HOT KEYS

First press  then press to change this setting. Follow this sequence of button presses for OSD LOCK and UNL:OCK settings.

B.1.3.1 Enter OSD Lock Mode

Press **HOT KEY**, the screen will show this action first

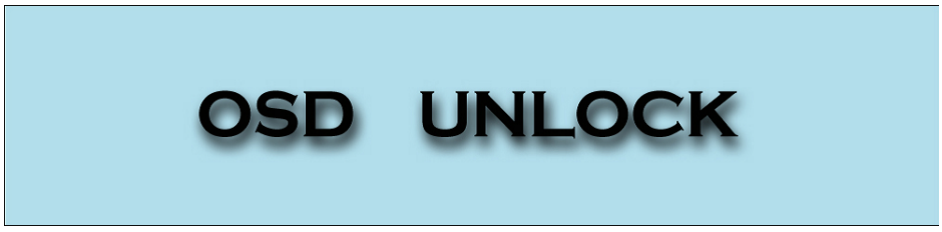


Don't press the **HOT KEY** until the screen indicated this task is finished.

B.1.3.2 Enter OSD UNLOCK MODE

Press the **HOT KEY** and the screen will show this action first

Don't remove the **HOT KEY** until the screen indicate this task is finished.



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