User Manual

PAX-327 Series

27" FHD True-Flat Medical Monitor

ADVANTECH

Enabling an Intelligent Planet

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Disclaimer

Although every attempt has been made to achieve technical accuracy in this manual, we assume no responsibility for errors that may be found. Our goal is to provide you with the most accurate and usable documentation possible. To assist us with improving this manual, we welcome all comments and constructive criticism. Please send all feedback in writing to support@advantech.com.

Important

Please read this user manual carefully to familiarize yourself with the correct, safe, and effective usage procedures. Additionally, we recommend that you retain this manual for future reference.

Importante

Lea detenidamente este manual del usuario para familiarizarse con los procedimientos de uso eficaces y seguros. Conserve este manual para futuras consultas.

重要

ご使用前には必ず取扱説明書をよくお読みになり、正しくお使いください。 この取扱説明書は大切に保管してください。

Instructions for the User

The document combines text and illustrations, providing a comprehensive overview of the system. The information is presented as a sequential step of actions, allowing the user to learn directly how to use the device.

The text provides explanations and instructs the user step-by-step in the practical use of the product with short and clear instructions in an easy-to-follow sequence.

Additional Information and Assistance

Contact your distributor, sales representative, or an Advantech customer service center for technical support if you need additional assistance. Please have the following information ready before calling:

- 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

Note: This equipment is a source of electromagnetic waves. Before use, ensure that no EMI-sensitive devices that may malfunction are in the surrounding area.

Manufacturer

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Visit the Advantech website at www.advantech.com or www.advantech.com.tw for additional information.

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Chapter 1

Introduction

1.1 Introduction

PAX-327 is a 27-inch TFT LCD monitor designed for medical imaging display applications. With the digital imaging and communication in medicine (DICOM) grayscale standard display function (GSDF) and 10-bit gamma correction for white balance, PAX-327 is optimized for displaying high-quality medical images and videos.

1.2 Features

- True-flat design with AR filter
- High brightness and high contrast ratio
- Integral LED backlight
- FHD resolution (1920x1080)
- HDMI 2.0 supports up to 1920x1080 @ 60 Hz resolution
- DisplayPort 1.2 supports up to 1920x1080 @ 60 Hz resolution
- SDI supports up to 1920x1080 @ 60 Hz resolution
- DVI supports up to 1920x1080 @ 60 Hz resolution
- Multiple video standards supported: NTSC, PAL, and SECAM
- Video enhancement features include
  - 14-bit LUT processing
  - DICOM Part 14 GSDF compliance
  - DICOM clear and blue modes
- Variable gamma and DICOM (color temperature) modes
- Variable picture control
- Variable image size
- Variable multi-picture display mode
- IP-based monitor with Advantech AVAS built in (optional)
- Integrated touchscreen (optional)

1.3 Specifications

1.3.1 Display

	Model Name	
	PAX-327-C2B-HAS PAX-327-C2B-HAR PAX-327-C2F-HAS	PAX-327-C2B-LAS PAX-327-C2B-LAR
Screen Size (Active Area H x V)	27" (597.88 x 336.31 mm/23.53 x 13.24 in)	
Aspect Ratio	16:9	
Number of Pixels (H x V)	1920 x 1080	
Pixel Pitch (H x V)	0.3114 x 0.3114 mm/0.012 x 0.012 in	
Display Colors	1.07 billion (10 bit)	16.78 million (8 bit)
Brightness (typical)	1000 cd/m^2	300 cd/m^2
Contrast Ratio (typical)	1,000:1	
Display Mode	AHVA	
Response Time (typical)	14 ms (gray to gray)	
Viewing Angle (H/V)	178/178	
Touchscreen Control (optional)	Projected capacitive	

1.3.2 General

	Model Name	
	PAX-327-C2B-HAS PAX-327-C2B-HAR PAX-327-C2F-HAS	PAX-327-C2B-LAS PAX-327-C2B-LAR
Power Supply	24V$_{DC}$ 4.16A max.	
Power Consumption	80 W max.	
Dimensions (W x H x D) (without stand)	663.83 x 418.11 x 73.55 mm/ 26.13 x 16.46 x 2.9 in	
Net Weight (without stand)	8.9 kg/19.62 lb 8.9 kg/19.62 lb 9.2 kg/20.82 lb	8.9 kg/19.62 lb

1.3.3 Environmental

		Model Name	
		PAX-327-C2B-HAS PAX-327-C2B-HAR PAX-327-C2F-HAS	PAX-327-C2B-LAS PAX-327-C2B-LAR
Temperature	**Operating**	0 ~ 40 °C/32 ~104 °F	
	Storage	-20 ~ 60 °C/-4 ~ 140 °F	
Humidity	**Operating**	Ta = 40 °C, 90% RH (non-condensing)	
	Storage	5 ~ 90%	
Pressure	**Operating**	700 hPa to 1060 hPa	
	Storage	700 hPa to 1060 hPa	

1.3.4 AVAS - Advantech Video Archiving Solution (Optional)

LAN	1 x RJ45 jack	1 x GbE
SFP+	Module	SFP+ 10 Gbps

Built-in LEDs indicate the AVAS status, as explained below.
1. Blinking green: operating as normal
2. Blinking orange: warning notification
3. Continuous orange: FPGA is starting up
4. Blinking red: error notification
5. Off: no power supplied to the AVAS

> **Note!** *The plug of the power supply cord is the AVAS disconnecting device. The equipment should be installed near an outlet socket that is easily accessible.*
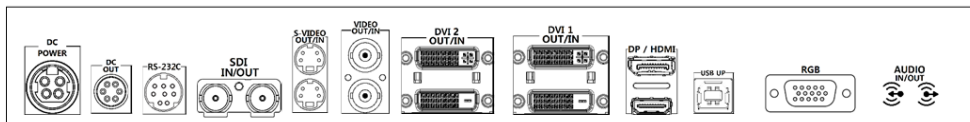
1.3.5 Input/Output Signal Connectors

*PAX-327-C2F-HAS (AVAS optional)
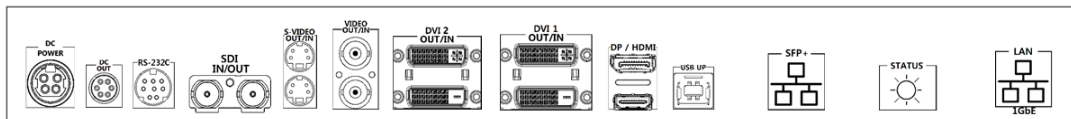
*PAX-327-C2B-HAS/PAX-327-C2B-HAR/PAX-327-C2B-LAS/PAX-327-C2B-LAR

Symbol	Signal	Connector	Specification
RS-232C	RS-232C	1 x Mini DIN jack (8 pin)	Service port
USB Up	USB up	1 x USB-B jack	Touch control (optional)
Video	Video input	2 x BNC jack	1V[p-p] (75 Ω) [NTSC/PAL/SECAM]
	Video output		
S-Video	S-video input	2 x Mini DIN jack (4 pin)	Y: 1V [p-p] (75 Ω), C: 0.286V [p-p] (75 Ω) [NTSC]
	S-video output		Y: 1V [p-p] (75 Ω), C: 0.300V [p-p] (75 Ω) [PAL/SECAM]
SDI 1	SDI input	2 x BNC jack	Serial input common mode: 2.2V [p-p] (75 Ω) 1920x1080 @ 60 Hz max.
	SDI output		
DVI 1 ~ 2	DVI input	2 x DVI jack (Type D)	Digital RGB: TMDS 1920x1080 @ 60 Hz max.
	DVI output		

HDMI	HDMI 1.4 input (for AVAS)	1 x HDMI jack (Type A) (internal connection)	
	HDMI 2.0 input	1 x HDMI jack (Type A)	Digital RGB: TMDS 1920x1080 @ 60 Hz max.
DP	DP 1.2 input	1 x DP jack	DisplayPort 1.2 1920x1080 @ 60 Hz max.
RGB	RGB input	1 x D-Sub jack	Analog RGB: 0.7V [p-p] (75Ω) H/CS/V: TTL (2.2 kΩ) SOG: 1V[p-p] (75Ω) MAX: 1920 x 1080@60Hz
Audio	Audio input	1 x Stereo jack	0.5V[rms](Normal) 2 Channel (L+R)
Audio	Audio output	1 x Stereo jack	0.5V[rms](Normal) 2 Channel (L+R)

Caution! *Do not touch the signal inputs, signal outputs, or other connectors while touching the patient.*

External equipment intended for connecting to the signal input, signal output, or other connectors must comply with the relevant IEC standard (e.g., IEC 60950 for IT equipment and IEC 60601-1 for medical electrical equipment). In addition, all such combination systems must comply with the IEC 60601-1 and IEC 60601-1-1 standard specifications.

If in doubt, contact a qualified technician or your local representative.

Note: The specifications of Advantech Kostec products are subject to change without notice.

1. Type of protection against electric shock: Class I equipment.
2. Degree of protection against electric shock: Not classified - no applied parts.
3. Classification according to the degree of protection against water ingress: IPX0, ordinary equipment.
4. This equipment is not suitable for use in the presence of flammable anesthetics or oxygen.
5. Mode of operation: continuous operation.

Chapter 2

Installation

2.1 Unpacking

Before unpacking the LCD monitor, prepare a suitable, level, and clean workspace near a power outlet. The LCD monitor should be installed in a location with sufficient airflow and away from direct sunlight. After unpacking the LCD monitor, check to ensure that the following items have been included in the shipment:

- 1 x PAX-327 LCD monitor
- 1 x PAX-327 user manual

If any of the above items are missing or damaged, contact your dealer or sales representative immediately. Retain the shipping carton and packing material for storing or transporting the monitor in the future.

2.2 System Controls

The LCD monitor is designed to provide easy and convenient access to all the control keys and peripheral ports. Before installation, take the time to familiarize yourself with the system controls and I/O ports.
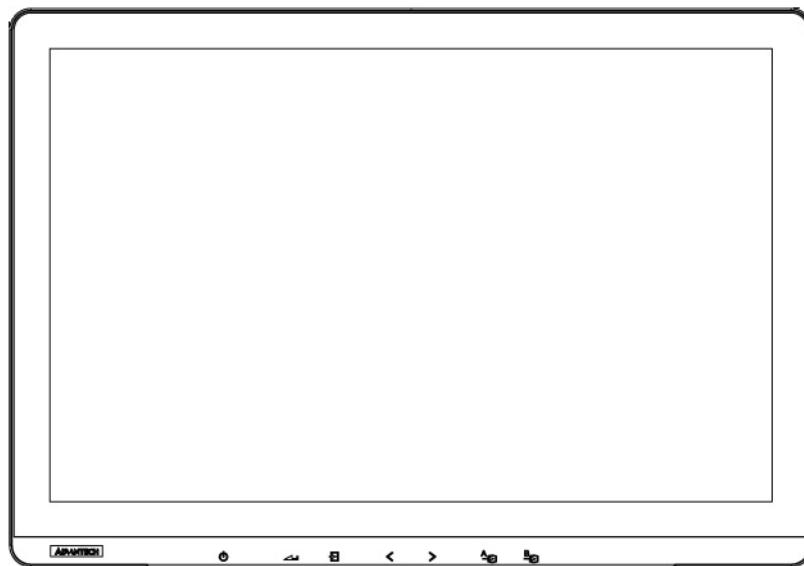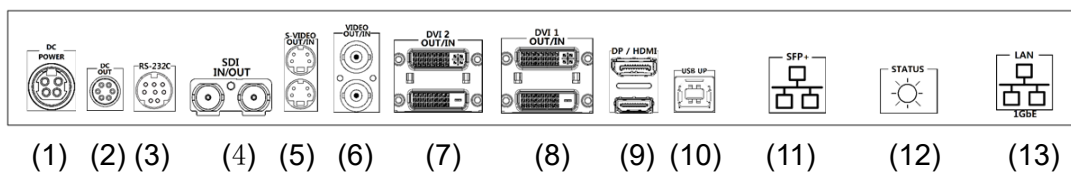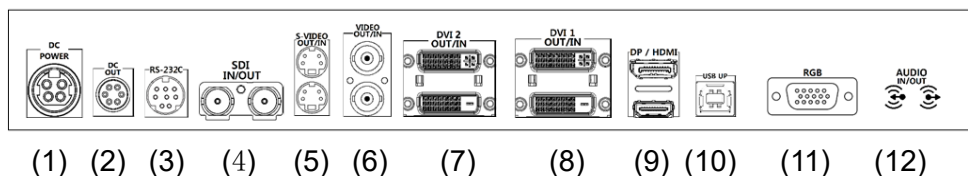

Figure 2.1 PAX-327 Monitor Front View

2.2.1 I/O Ports

*PAX-327-C2F-HAS (AVAS optional)

(1) (2) (3)   (4) (5) (6)   (7)   (8)   (9) (10)   (11)   (12)   (13)

*PAX-327-C2B-HAS/PAX-327-C2B-HAR/PAX-327-C2B-LAS/PAX-327-C2B-LAR

(1)   (2)   (3)   (4)   (5) (6)   (7)   (8)   (9) (10)   (11)   (12)

2.2.2 Display

PAX-327 features a 27-inch TFT LCD. The screen supports a maximum resolution of 1920x1080 @ 60Hz.

2.2.3 OSD Key Functions

Key Name	Function
Power Key	Power On/Off
Menu/Enter Key	Select main OSD menu. Select sub-menu. Apply adjustments (save).
Exit / Return Key	Exit/Return to previous menu in main OSD menu. Can be used to activate the Input hot menu when the main OSD menu is not displayed. Can be used to Lock/Unlock settings for key activation by holding the key for longer than 30 seconds when the main OSD menu is not displayed.
Left Key	Move between options and adjust values in the main OSD menu. Can be used to activate the Backup Source MSG On/Off hot menu by holding the key for longer than 3 seconds when the main OSD menu is not displayed.
Right Key	Move between options and adjust values in the main OSD menu. Can be used to activate the Display Mode hot menu by holding the key for longer than 3 seconds when the main OSD menu is not displayed.

Port A Key	**Full Screen Mode** Used to change directly to the backup source input specified in A. Used to display the selectable OSD menu for backup source input A by holding the key for more than 5 seconds. **PIP Mode** Main input selection function.
Port B Key	**Full Screen Mode** Used to change directly to the backup source input specified in B. Used to display the selectable OSD menu for backup source input A by holding the key for more than 5 seconds. **PIP Mode** Sub input selection function.

2.2.4 Input/Output Signal Ports

1. DC power input: +24V power connector
2. DC power output: +5/+12V power connector
3. RS-232C
4. SDI 1 output/input
5. S-video output/input
6. Video output/input
7. DVI 2 output/input
8. DVI 1 output/input
9. DP/HDMI input
10. USB up (available for SKU with touchscreen)
11. RGB input (SFP+ optional)
12. Audio input (Status optional)
13. Audio output (LAN optional)

2.2.5 Interface on AVAS Back Panel

Name	Function
SFP+	SFP+ port for SFP+ modules only.
Status LED	a. Blinking green: operating as normal b. Blinking orange: warning notification c. Continuous orange: FPGA is starting up d. Blinking red: error notification e. Off: no power supplied to the AVAS
1GbE	1GbE (RJ45) has no function yet.

> **Note!** *If the power supply cord is unplugged from the power outlet, the AVAS will be disconnected. The power outlet socket should be located near the equipment and easily accessible.*

2.3 Viewing Angle

The PAX-327 LCD monitor can be vertically adjusted to the preferred viewing angle for maximum comfort.

Caution! *Do not force the monitor past its maximum extension in any direction as this may damage the monitor and the monitor stand.*

2.4 Positioning

Before setting up your workstation, prepare a suitable installation space. This should be a stable, flat, dust-free surface with good surrounding ventilation. Position the monitor screen away from direct sunlight. The glare caused by reflected sunlight may render the screen difficult to read.

Caution! ■ When positioning the equipment, ensure that the main ports and sockets are easily accessible.
■ Do not place the monitor close to a heat source.
■ Do not place the monitor in direct sunlight or near a window. Exposure to direct sunlight or moisture can damage the monitor.

2.5 Connecting AC/DC Power

■ Plug the female end of the AC/DC power adaptor into the DC power connector.
■ Plug the female end of the power cord into the AC power connector on the adaptor.
■ Plug the male end of the power cord into a power outlet socket.
■ The power cable plug may differ according to the standards of each country.

2.6 Connecting Video

- Before connecting the monitor to a PC or other device, ensure all equipment is powered off.
- Connect one end of an HDMI 2.0 cable to the monitor's HDMI port and the other end to the HDMI port of the PC or other device. A DP 1.2 cable can be connected to the monitor's DP port and to the DP port of the PC or other device if equipped with a DP input port.
- Ensure that the cable is securely connected to both the monitor and the PC/other device. Tighten the connector screws to ensure a secure connection.
- The signal input source can be selected via the OSD menu. Refer to Section 3.1.7 for further details.

PAX-327-C2F-HAS (AVAS optional)
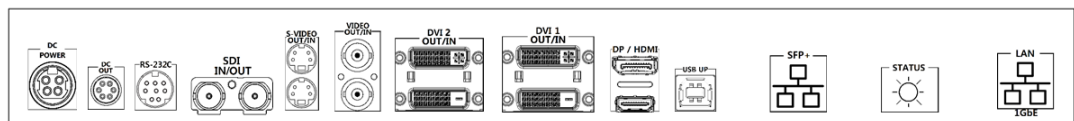
PAX-327-C2B-HAS/PAX-327-C2B-HAR/PAX-327-C2B-LAS/PAX-327-C2B-LAR
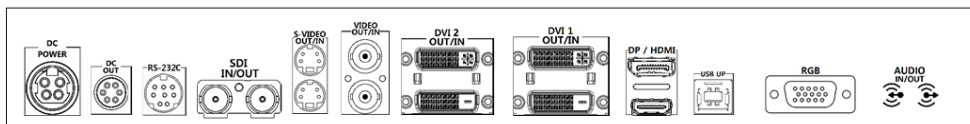
Chapter   3

OSD Menu

3.1 OSD Menu Controls

PAX-327 features onscreen display (OSD) controls that can be used to adjust the display contrast, brightness, clarity, color temperature, etc. Read the information in this chapter carefully to get the most out of your monitor.

3.1.1 Display Mode
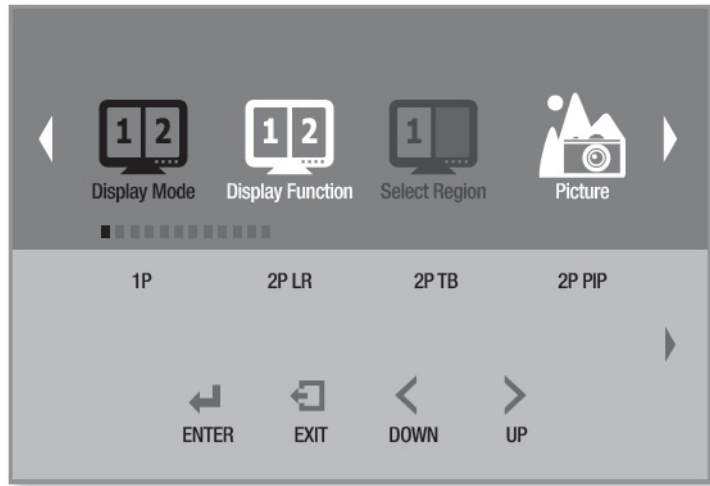
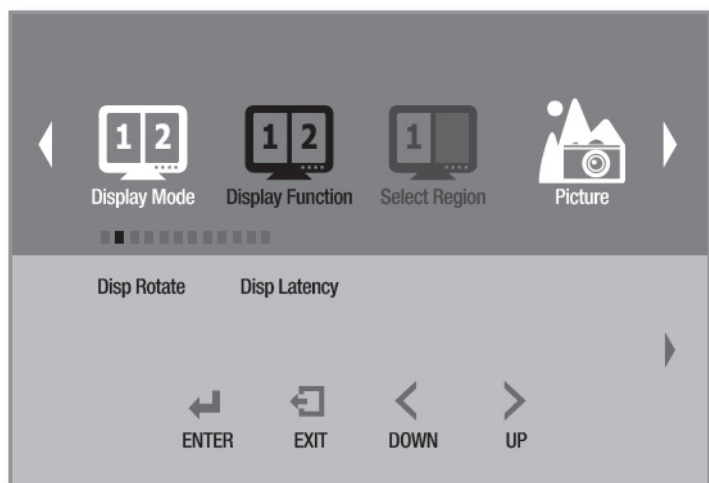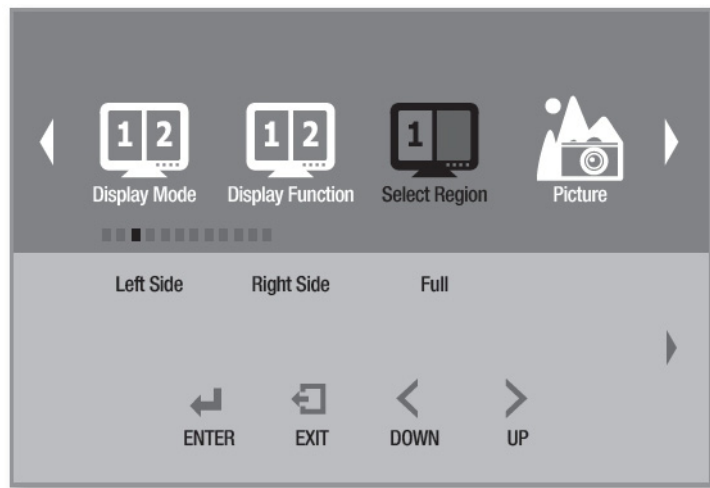| Menu	Description	Default	Remarks
Display Mode	Allows users to select the display mode [1P, 2P LR, 2P TB, 2P PIP, 4P].	1P	

3.1.2 Display Function

Menu		Description	Default	Remarks
Display Rotate		Allows users to rotate the screen [0°, 90°, 180°, 270°].	0°	
Display Latency		Not applicable		
Multi-Display Mode	2P LR	**LR Ratio** In 2P LR (2 input signals [left/right]) mode, this allows users to adjust the left and right display area ratios.		
		Input Swap In 2P LR (2 input signals [left/right]) mode, this allows users to swap the input sources for the left and right display areas.		
	2P TB	**Input Swap** In 2P TB (2 input signals [top/bottom]) mode, this allows users to swap the input sources for the top and bottom display areas.		
	2P PIP	**PIP Position** In 2P PIP (2 input signals picture-in-picture) mode, this allows users to select the position of the sub-screen [top-left, top-right, bottom-left, bottom-right, center, user defined].	Bottom right	
		PIP Transparency In 2P PIP mode, users can adjust the transparency of the sub-screen.	0	
		PIP Size In 2P PIP (2 input signals picture-in-picture) mode, this allows users to adjust the size of the sub-screen.	10	
		Input Swap In 2P PIP (2 input signals picture-in-picture) mode, this allows users to swap the input sources of the main screen and sub-screen.		
	4P	Not applicable		

3.1.3 Select Region

Menu		Description	Default	Remarks
Select Region		This allows users to select the screen/display area for configuration when more than one screen is displayed [left, right, full].	Full	
Multi-Display Mode	2P LR	In 2P LR (2 input signals [left/right]) mode, this allows users to configure the left and right screens [left, right, full].	Left	
	2P TB	In 2P TB (2 input signals [top/bottom]) mode, this allows users to configure the top and bottom screens [top, bottom, full].	Top	
	2P PIP	In 2P PIP (2 input signals picture-in-picture) mode, this allows users to configure the main screen and sub-screen [main, sub, full].	Main	
	4P	In 4P (4 input signals; quad display) mode, this allows users to configure all 4 screens simultaneously [4P full].	1P in	

3.1.4 Picture
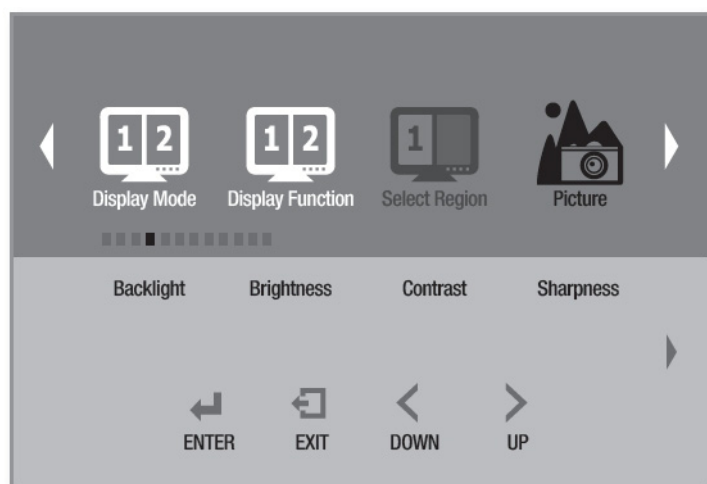
Menu	Description	Default	Remarks
Backlight	This allows users to adjust the backlight luminance.		
Brightness	This allows users to adjust the screen brightness [< or >].	50	
Contrast	This allows users to adjust the screen contrast [< or >].	50	
Sharpness	This allows users to adjust the screen sharpness [< or >].	5	

3.1.5 Color
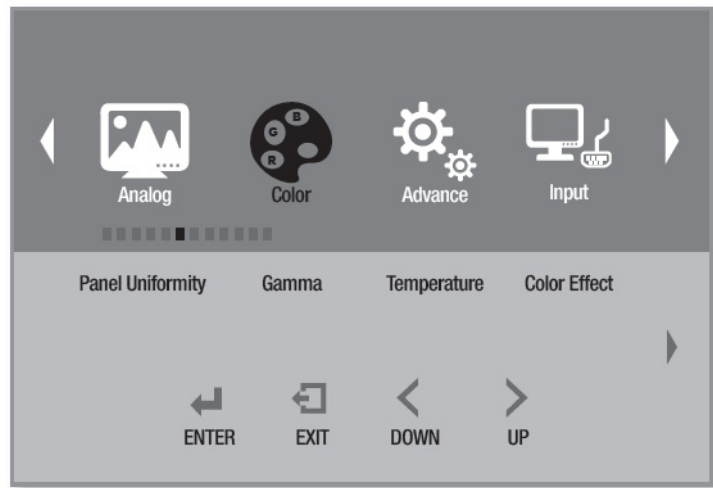
Menu	Description	Default	Remarks
Panel Uniformity	Not applicable		
Gamma	This allows users to set the variable gamma. [Off, custom, 2.0, 2.2, DICOM]	2.2	
Temperature	This allows users to adjust the color temperature [D95, D75, D65, blue, clear, user defined]. In user-defined mode, < and > can be used to adjust the red, green, and blue values.	Clear	
Color Effect	This allows users to select the screen color effect [standard, game, movie, photo, vivid, user defined].	Standard	
Demo	This allows users to select the demo type [Off, Type 1, Type 2, Type 3, Type 4, Type 5].	OFF	
Color Format	This allows users to select the screen color format [RGB, YUV].		
PCM	Not applicable		
Hue	This allows users to adjust the screen color hue.	50	
Saturation	This allows users to adjust the screen color saturation.	50	

### 3.1.6 Advanced
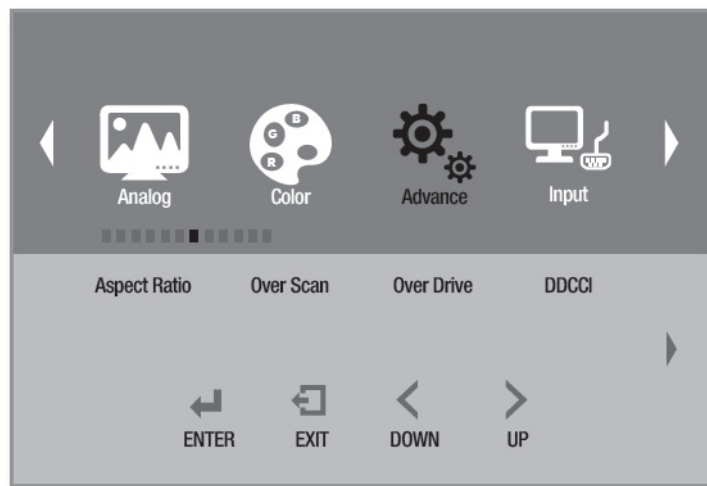
Menu	Description	Default	Remarks
Aspect Ratio	This allows users to adjust the screen aspect ratio. Use < or > to select the desired aspect ratio. RGB (optional) DP HDMI DVI 1, 2 SDI 1 AVAS (optional)	Full Auto Mode	RGB (optional) DP HDMI DVI 1, 2 SDI 1 AVAS (optional) Video S-Video
Overscan	This allows users to activate/deactivate the overscan function [on, off].	Off	RGB (optional) DP HDMI DVI 1, 2 SDI 1 AVAS (optional)
Switching Time	This allows users to set the screen switching time.	ON	Video S-Video
Overdrive	Not applicable		
DDCCI	This allows users to activate/deactivate the DDCCI function [on, off].	On	Display Data Channel Command Interface
Ultra Vivid	This allows users to configure the ultra vivid screen function [off, L, M, H].	Off	
Overscan Ratio	This allows users to adjust the screen overscan ratio when the overscan function is activated.	25	
DP Options	This allows users to select the DP version [D0, D1, D6].	D0	
DP MST	Not applicable		
DP EDID	Not applicable		
Clone Mode	Not applicable		
Free Sync	Not applicable		
Freeze	This allows users to activate/deactivate the screen freeze function [on, off].	Off	

3.1.7 Input
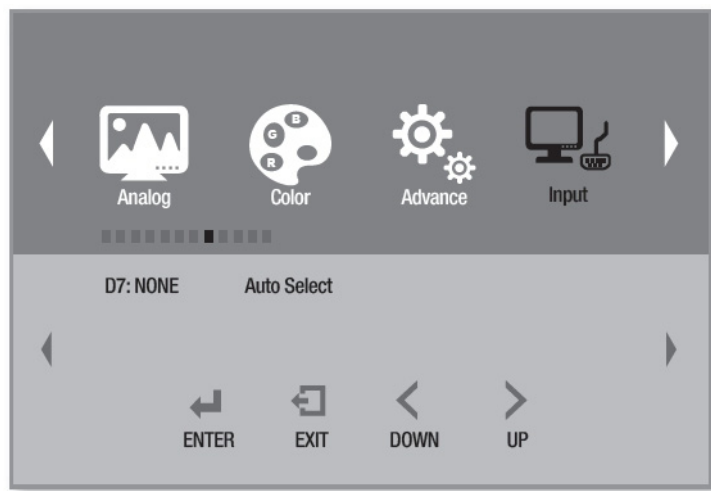
Menu		Description	Default
Input		This allows users to select the monitor's display input sources [RGB, DP, HDMI, DVI 1, DVI 2, SDI 1, AVAS, S-video, video, auto].	Auto
PIP Mode	2P LR	In 2P LR (2 input signals [left/right]) mode, this allows users to select the input sources for the left and right screens.	
	2P TB	In 2P TB (2 input signals [top/bottom]) mode, this allows users to select the input sources for the top and bottom screens.	
	2P PIP	In 2P PIP (2 input signals picture-in-picture) mode, this allows users to select the input sources for the main screen and sub-screen.	
	4P	In 4P (4 input signals; quad monitor) mode, this allows users to select the input sources for the 4 screens [1p In, 2p In, 3p In, 4p In].	

3.1.8 Audio
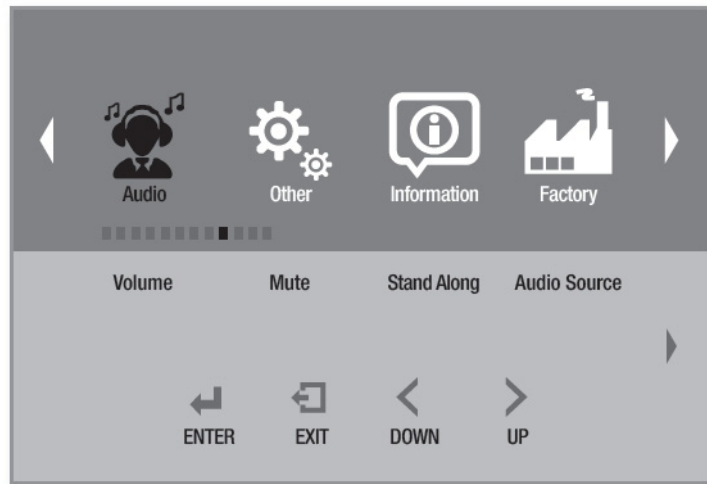
Menu	Description	Default	Remarks
Volume	This allows users to adjust the speaker volume on the monitor.	50	
Mute	This allows users to activate/deactivate the mute function [on, off].	Off	
Stand Alone	This allows users to activate/deactivate the stand alone sound function.	Off	
Audio Source	This allows users to select the audio input source [analog, digital region 1].	Analog	

3.1.9 Other
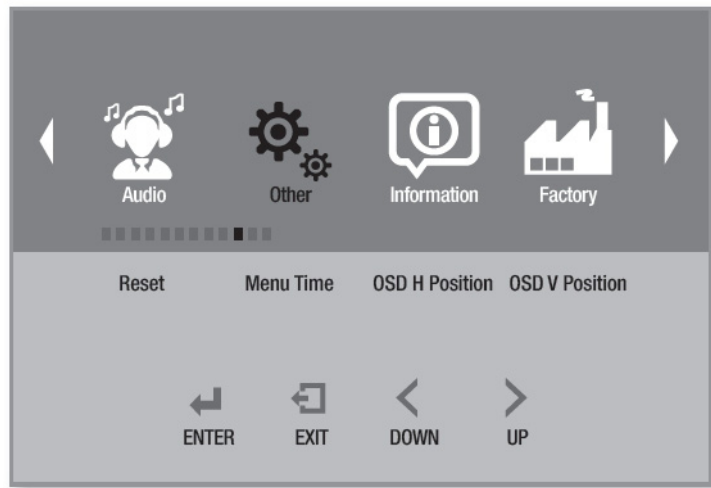
Menu	Description	Default	Remarks
Reset	This allows users to reset the monitor.		
Menu Time	This allows users to set the OSD menu display duration time.	20 seconds	
OSD H Position	This allows users to adjust the OSD menu's horizontal position.	50	
OSD V Position	This allows users to adjust the OSD menu's vertical position.	50	

3.1.10 Information
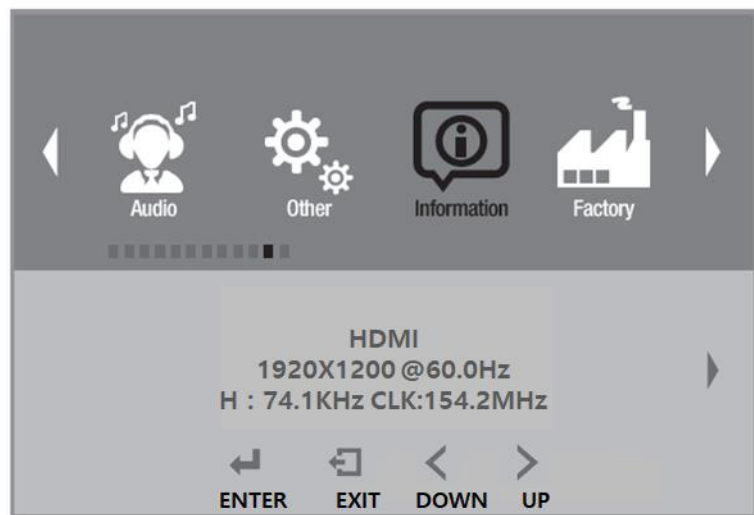
Menu	Description	Default	Remarks
Information	This allows users to access the monitor information.		

3.1.11 OSD Input Source

Main Source	RGB DP HDMI DVI 1 DVI 2 SDI 1 AVAS S-Video Video Auto Select	This allows users to select the main input source.

3.1.12 PIP Table

Sub \ Main	RGB	DP	HDMI	DVI 1	DVI 2	SDI 1	AVAS	S-Video	Video
RGB	O	O	O	O	O	O	O	O	O
DP	O	O	O	O	O	O	O	O	O
HDMI	O	O	O	O	O	O	O	O	O
DVI 1	O	O	O	O	O	O	O	O	O
DVI 2	O	O	O	O	O	O	O	O	O
SDI 1	O	O	O	O	O	X	O	X	X
AVAS	O	O	O	O	O	O	O	O	O
S-Video	O	O	O	O	O	X	O	X	X
Video	O	O	O	O	O	X	O	X	X

Chapter 4

Safety Information

4.1 Symbols

Symbol	Title
	This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions.
	This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" of sufficient magnitude to constitute a risk of electric shock.
	This symbol is intended to remind the user to follow the instructions for use, particularly with medical electrical equipment.
	This symbol denotes direct current.
	This symbol denotes the manufacturer.

4.2 FCC Compliance

 This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

4.2.1 Class A

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 such cases, users are required to correct the interference at their own expense.

However, any modifications not expressly approved by the manufacturer may void the user's authority to operate the equipment under the FCC Rules.

4.3 CE Marking

This marking is a declaration of conformity in accordance with Article 10(1) of the CE directive.
This product has passed the CE test for environmental specifications. Test conditions for passing include the equipment being operated within an industrial enclosure. To protect the product from damage due to electrostatic discharge (ESD) or electromagnetic interference (EMI) leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

4.4 VCCI (Voluntary Control Council for Interference)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

4.5 Disposal of Waste

- Products bearing this mark should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, separate this product from other types of waste and recycle it responsibly to promote the sustainable reuse of material resources.
- Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.
- Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial waste for disposal.

4.6 Safety and Maintenance

Caution! *To ensure optimum performance, follow the safety instructions outlined below when setting up or using the equipment.*

- Do not open the monitor. There are no user-serviceable parts inside. Opening or removing the cover may expose you to dangerous shock hazards or other risks. Refer all servicing to qualified service personnel.
- Do not spill liquid onto the equipment and do not operate the equipment near water.
- Do not insert objects of any kind into the equipment as they may touch dangerous voltage points, which can be harmful or fatal, or may cause electric shock, fire, or equipment failure.
- Do not place heavy objects on the power cord. Damage to the cord may cause shock or fire.
- Do not place the equipment on a sloping or unstable cart, stand, or table as it may fall and cause serious damage.
- To operate the equipment, use an AC power supply cord that complies with international safety standards.
- Do not place any objects on top of the equipment.
- Do not operate the equipment outdoors.
- The fluorescent tube inside the monitor contains mercury. Follow relevant local regulations when disposing of the tube.
- Do not use the equipment in very hot, humid, dusty, or oily environments.
- If the monitor screen is damaged or cracked, handle with care. Do not touch the liquid crystals.
- Ensure adequate ventilation around the equipment to allow heat dissipation. Do not block ventilated openings or place the equipment near a radiator or other heat sources.
- The power cable connector is the primary means of detaching the equipment from the power supply. The monitor should be installed close to a power outlet that is easily accessible.
- Handle with care when transporting. Save the original packaging for moving the equipment between locations.

Caution! *If any of the conditions listed below occur, immediately unplug the monitor from the power outlet and have it serviced by qualified service personnel.*

- The power supply cord or plug is damaged.
- Liquid or objects have penetrated the monitor.
- The monitor has been exposed to rain or water.
- The monitor has been dropped or damaged.
- The monitor does not operate normally according to the operating instructions.

Warning! High Voltage

The AC/DC inverter is equipped with the caution label shown below to indicate the presence of high voltage current. Do not under any circumstances open the monitor to access the inverter. If servicing is required, contact a qualified service technician.

4.6.1 Radio Frequency

■ This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to other devices, which can be determined by turning the equipment off and on again, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving device.
– Increase the separation between the equipment.
– Connect the equipment into an outlet on a circuit different from that to which the other device(s) are connected.
– Consult the manufacturer or field service technician for assistance.

4.6.2 Keep Away From Windows

■ Exposure to rain, moisture, or sunlight can seriously damage the electrical components. To protect the monitor from damage, do not place it near a window.

4.6.3 Storage Temperature

■ Do not place the monitor in an environment with a storage temperature of below -20 °C (-4 °F) or above 60 °C (140 °F) as this can cause serious damage.

4.6.4 Image Persistence

■ Image persistence is when a residual or ghost image of a previous image remains visible on the screen. Unlike CRT monitors, with LCD monitors image persistence is not permanent, but constant images being displayed for a long period of time should be avoided.

■ To alleviate image persistence, turn off the monitor for as long as the previous image was displayed. For example, if an image was on the monitor for one hour and a residual image remains, the monitor should be turned off for one hour to erase the image.

Note! As with all personal display devices, Advantech recommends using a moving screen saver whenever the screen is idle and turning off the monitor when not in use.

4.6.5 Placement and Adjustment of the Monitor

- For optimum performance, a one hour warm-up time is recommended.
- Adjust the monitor height so that the top of the screen is at or slightly below eye level. Your eyes should look slightly downward when viewing the middle of the screen.
- Rest your eyes periodically by focusing on an object farther away and blinking often.
- Position the monitor at a 90 degree angle to windows and other light sources to minimize glare and reflections. Adjust the monitor tilt so that ceiling lights do not reflect on the screen.
- Use an anti-glare filter to improve viewing in the presence of reflected light.
- Use a lint-free, non-abrasive cloth for cleaning the surface of the LCD monitor. Do not use any cleaning solution or glass cleaner.
- Adjust the monitor's brightness and contrast setting to enhance readability.
- Avoid displaying fixed patterns on the monitor for long periods of time to avoid image persistence (residual image).

> *Note!* *For optimal viewing, maintaining a 20-inch distance from the screen is recommended.*

Appendix A

Cleaning

A.1 Cleaning the LCD Panel

- When the LCD panel becomes dusty or dirty, wipe it gently with a soft cloth.
- Do not rub the LCD panel with cloth of a hard or coarse material.
- Do not apply pressure to the LCD surface.
- Do not use an OA cleaner for cleaning as it may damage or discolor the LCD surface.

A.2 Cleaning the Cabinet

- First, unplug the power supply.
- Gently wipe the cabinet with a soft cloth.
- Dampen a cloth with water and neutral detergent and wipe the cabinet.
- Dry the cabinet using a soft cloth.

> *Note!* *Many plastics are used on the surface of the cabinet. Do not clean with benzene, thinner, alkaline detergent, alcohol-based system detergent, glass cleaner, wax, polish cleaner, soap powder, or insecticide. Do not place rubber or vinyl against the cabinet for long periods. These types of fluids and materials can cause the paint to deteriorate, crack, or peel.*

Appendix **B**

Troubleshooting

B.1 Non-Responsive Power Button

- Unplug the power cord from the AC outlet to power off and reset the monitor.

B.2 No Picture

- Check that the signal cable is securely connected to the monitor and the display source device.
- Check that the monitor and the display source device are powered on.
- Check that the monitor and display source device are configured to the correct display mode.
- Check that the monitor is compatible with the display card and the settings are all configured correctly.
- Check that the signal cable connector pins are not bent or pushed in.
- Check that the monitor's signal input settings are correctly configured.

B.3 No Video

- If no video is displayed onscreen, turn the monitor power off and on again.
- Ensure that the monitor and display source device are not in power-saving mode.

B.4 Image Persistence

- Image persistence refers to when a residual or "ghost" image of a previous image remains visible on screen. Unlike CRT monitors, with LCD monitors image persistence is not permanent. However, displaying constant images for long periods of time should be avoided.
- To alleviate image persistence, power off the monitor for the same length of time as the image was displayed. For example, if an image was displayed on the monitor for one hour and a residual image remains, the monitor should be powered off for one hour to erase the image.

> **Note!** *As with all personal display devices, Advantech recommends using a moving screen saver whenever the screen is idle and turning off the monitor when not in use.*

B.5 Unstable, Unfocused, or Swimming Image

- Check that the signal cable is securely connected to the monitor and the display source device.
- Check that the monitor is compatible with the display card and the settings are all configured correctly.
- If text is presented on screen in a garbled manner, change the display mode and set the refresh rate to 60Hz.

B.6 Incorrect Display Image Size

- Check that the monitor and display source device are configured to the correct display mode (refer to the display card or monitor user manual when changing graphics mode).

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