



PIM-21B Owner's Manual



High-performance DICOM calibrated
Medical & Dental Imaging monitor

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TABLE OF CONTENTS

1. Welcome!	3
1.1 About the product	3
1.2 Inside the box	4
2. Parts, controls and connectors	5
2.1 Front view	5
2.2 Rear view	6
3. Display installation	7
3.1 Installing the base (optional)	7
3.2 Removing the connector compartment cover	8
3.3 Connecting the cables	8
3.4 Re-attaching the connector compartment cover	8
3.5 Kensington security lock slot	9
3.6 VESA-mount installation	9
4. Daily operation	10
4.1 Recommendations for daily operation	10
4.2 On/Off switching	10
4.3 Bringing up the OSD menus	10
4.4 Navigating through the OSD menus	11
5. Advanced operation	12
5.1 Video input source selection	12
5.2 Brightness and contrast adjustment	12
5.3 Gamma selection	13
5.4 Color temperature selection	15
5.5 Analog video settings	15
5.6 OSD menu language	16
5.7 Factory reset	17
6. Cleaning your display	18
6.1 Cleaning instructions	18
7. Important information	19
7.1 Safety information	19
7.2 Regulatory compliance information	20
7.3 EMC notice	20
7.4 Technical specifications	20

1. WELCOME!

1.1 About the product

Consistent image quality

The Pragmatic PIM-21B display presents crisp, razor-sharp, high-contrast, vibrant and vivid images. This image consistency enhances collaboration: images always appear exactly like they are supposed to, on every display, which spurs confident clinical decisions. Furthermore, specialists looking at X-ray images will appreciate the built-in DICOM calibration settings.

Easily cleanable and smart design

The Pragmatic PIM-21B display meets or exceeds all safety certifications required in clinical environments. It features an integrated cable management system, making it safe to use in hospitals and private practices. The multiple mounting options and connections further add to the smart design typical of Pragmatic's PIM-21B display. Most unique, however, is the excellent cleanability of the white Pragmatic PIM-21B display. This display model can be disinfected, both front and back, with typical non-abrasive, non-corrosive, alcohol-based cleaning agents.

Features

- IPS panel ensures wide viewing angle
- Covered cables for safety and security
- Medical-grade design and components for product longevity
- Kensington lock makes the Pragmatic PIM-21B display safe for use in clinical environments
- Flexible VESA mount for easy arm, wall or cart mounting
- Bottom connections for easy and secure connections
- Multiple inputs (DVI, HDMI, VGA) ensure the display's flexible deployment
- Built-in stereo audio amplifier, high-performance speakers, PC audio input and output
- Built-in HDMI audio decoder

This manual further guides you through the different steps needed to install and use the Pragmatic PIM-21B display.

CAUTION: Read all the important safety information before installing and operating your Pragmatic PIM-21B display. Please refer to the dedicated chapter in this user guide.

1. WELCOME!

1.2 Inside the box

Overview

Your Pragmatic PIM-21B display box includes:

- the Pragmatic PIM-21B display
- this Pragmatic PIM-21B display user guide
- an AC power cord (depending on the region of operation)
- an external power supply with universal input 100VAC ~ 230VAC and 12VDC @ 4A output
- an optional monitor stand, if ordered separately
- cable cover

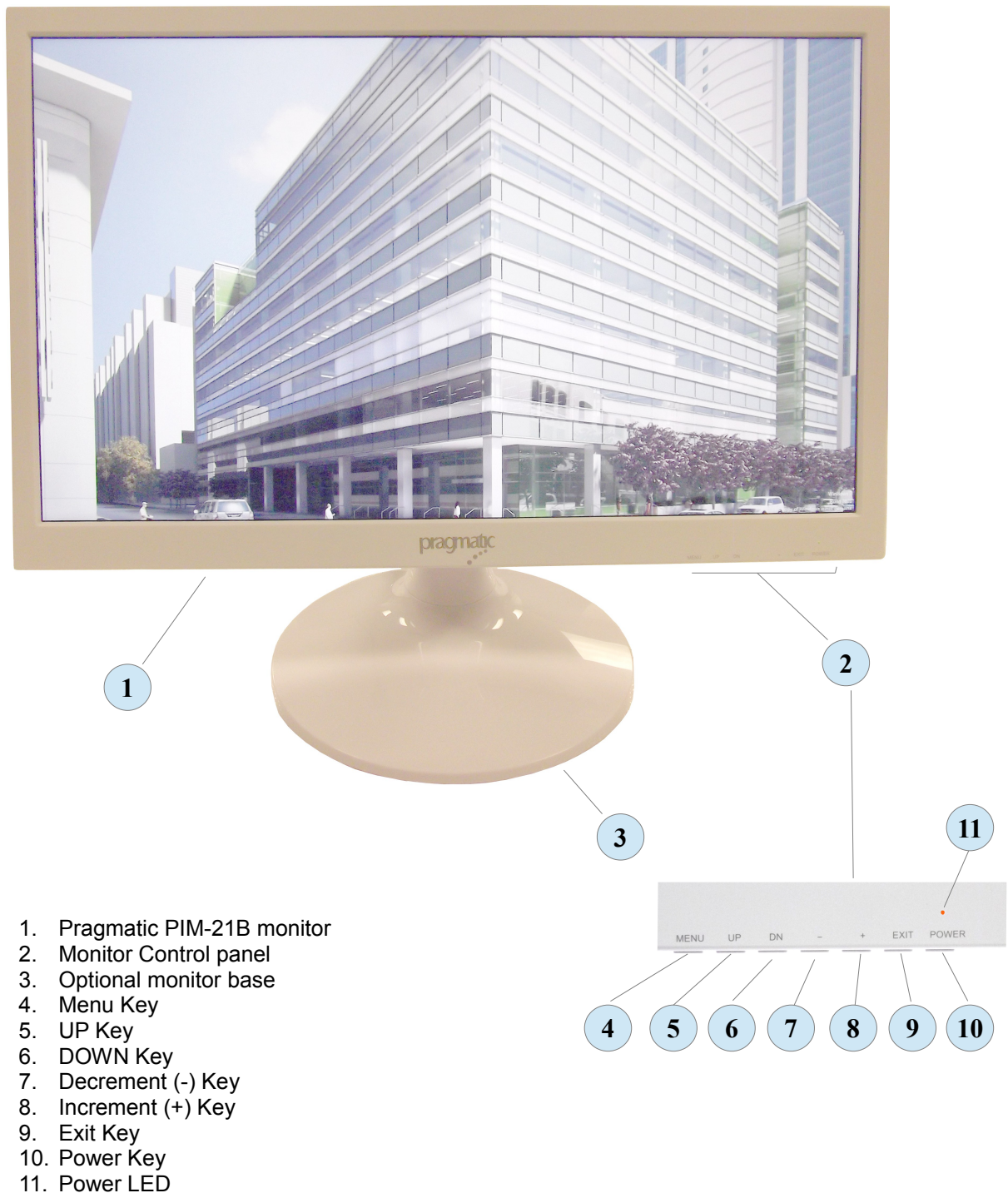


Keep your original packaging. It is designed for this display and is the ideal protection during transport and storage.

2. Parts, controls and connectors!

2.1 Front view

Overview



2. Parts, controls and connectors

2.2 Rear view

Overview



1. Kensington security lock slot
2. Control panel keys
3. Optional base stem removal screws
4. Optional base stem
5. HDMI input
6. DVI-D input
7. VGA input
8. Audio input for VGA and DVI-D signals
9. Audio output VGA, DVI-D and Decoded HDMI audio
10. +12V DC power input (Center Positive)
11. Integral audio speakers
12. VESA 100mm x 100mm mounting holes

3. Display installation

3.1 Installing the base (optional)

Overview

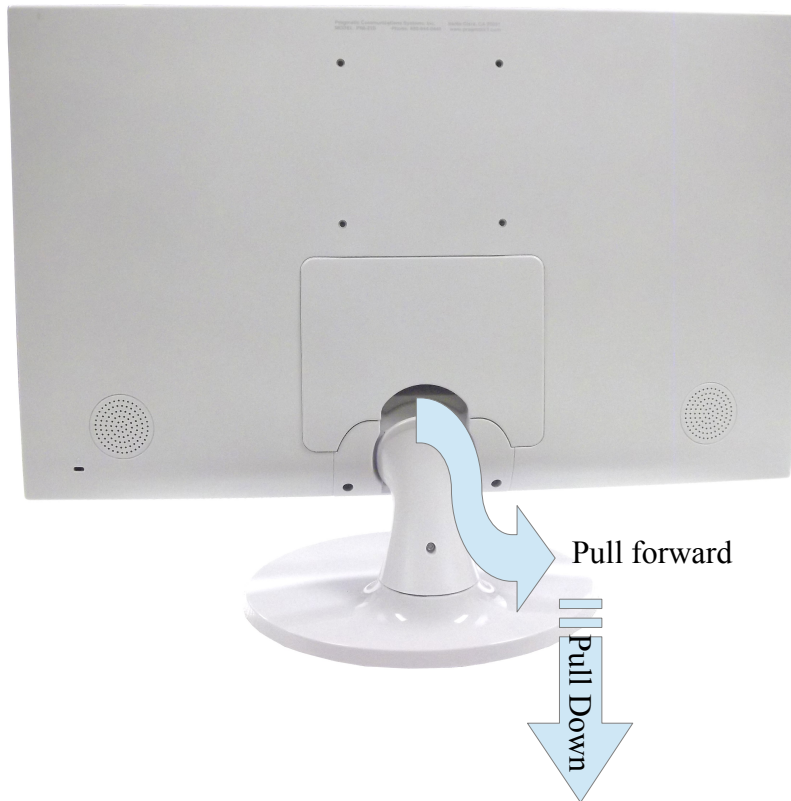


1. Please insert the base stem into the base.
2. Rotate the base clockwise until the lock snaps while holding the monitor firmly.
3. Please check the base and monitor for stability before use.

3.2 Removing the connector compartment cover

To remove the cable connector compartment cover

The connector compartment cover should be removed to get access to the connectors. To remove the cover, gently pull the connector compartment cover outwards, then slide downward and remove it from the display.



3.3 Connecting the cables

To connect the cables

1. Connect one or more of the video input connections of your display (HDMI, DVI or VGA) to the corresponding video outputs of your computer or any other video device.
2. Connect the audio cable from your PC audio line output or headphone output to the audio input on the monitor for VGA and DVI-D signals. For HDMI signals with embedded audio, the monitor will decode the digital audio signal internally. Monitor supports full analog and digital stereo signals.
3. To use an external audio amplifier and external speakers, connect the audio output from the monitor to your external audio amplifier inputs. When a cable is connected to the monitor audio output jack, the internal speakers are disabled.
4. Connect the DC power plug into the DC input jack. Finally, connect the AC adaptor to the wall-outlet.

3.4 Re-attaching the connector compartment cover

To re-attach the connector compartment cover

Put the cover back in position by sliding it upwards and inwards so that it is fixed to the display again.

3.5 Kensington security lock slot

To make use of the Kensington security slots

Your PIM-21B display has a Kensington lock slot located at the lower left corner of the rear side of the monitor. The lock secures your monitor to the workstation area. Please refer to section 2.2, identification # 1 on page 6 of this manual for the location of the slot.

3.6 VESA-mount installation

To mount the display on a VESA arm

The display panel, standard attached to a stand, is compatible with the VESA 100mx100mm standard.

1. Unscrew the two base stem removal screws to detach the base and stem assembly from the panel. Refer to page 6, identification # 3 for the location of the stem removal screws.
2. Use 4 M4 screws to attach the panel to a VESA approved arm. Please make sure that the length of the screws is 8mm + VESA plate thickness (tolerance of +/- 1 mm).

4. DAILY OPERATION

4.1 Recommendations for daily operation

Optimize the lifetime of your display

The Display Power Management System (DPMS) is enabled on your display and will optimize its lifetime by automatically switching off the backlight when the display is not used for a specified period of time. You will need to activate and enable your workstation DPMS by going to “Power Options Properties” in the “Control Panel”.

Pragmatic recommends setting DPMS activation on your computer after 15 minutes of inactivity to reduce the usage of the backlight and power consumption.

Use a screen saver to avoid image retention

Prolonged operation of an LCD with the same content on the same screen area may result in a form of image retention. You can avoid or significantly reduce the occurrence of this phenomenon by using a screen saver. You can activate a screen saver in the “Display properties” window of your workstation. Selecting a “black screen” mode will also reduce the usage of the backlight and extend the life of the display.

Pragmatic recommends setting screen saver activation after 5 minutes of inactivity on the workstation. A good screen saver displays black screen to reduce the usage of the backlight and power consumption.

Understanding LCD pixel technology

LCD displays use technology based on pixels. As a normal tolerance in the manufacturing of the LCD, a limited number of these pixels may remain either dark or permanently lit, without affecting the performance of the product. To ensure optimal product quality, Pragmatic applies strict selection criteria for its LCD panels to have very few inactive pixels only in non-critical area of the screen. This is normal and acceptable for monitors based on LCD pixel technology.

4.2 On/Off switching

To switch your display on or off

1. Press the Power Key momentarily to switch the display on or off.
2. Please refer to the key location on page 5, identification number 10.
3. When the display is on, the Power LED will be lit Green. Refer to identification number 11 on page 5.
4. When the display is in Standby mode, the Power LED will be lit Orange.
5. When the display is turned off, the Power LED will be turned off as well.

When an active video signal is present on any video inputs, the display will automatically become active and when no valid video signal is present on any of the video inputs, the monitor will enter Standby mode automatically.

4.3 Bringing up the OSD menus

About the OSD menu

The OSD menu allows you to configure different settings to make your PIM-21B display fit your needs within your working environment. Also, you can retrieve general information about your display and its current configuration settings through the OSD menu.

To bring up the OSD menu

While the display is switched on, press the Menu Key. As a result, the OSD main menu comes up in the middle of the screen. If no further actions are taken within the following 10 seconds however, the OSD menu will disappear again. Page 5, identification number 4 shows the location of the Menu Key.

4.4 Navigating through the OSD menus

To navigate through the OSD menus

1. Use the Menu Key to enter the OSD menu, enter submenu and make selections of the menu items.
2. Use the Down Key and Up Keys to move through the (sub)menus.
3. Use the increment (+) Key and Decrement (-) Key to change values.
4. Use the Exit Key to confirm adjustments, selections and exit the OSD menu.

Refer to key identification numbers 4 through 10 on Page 5 of this manual for key locations.

5. ADVANCED OPERATION

5.1 Video input source selection

About video input source selection

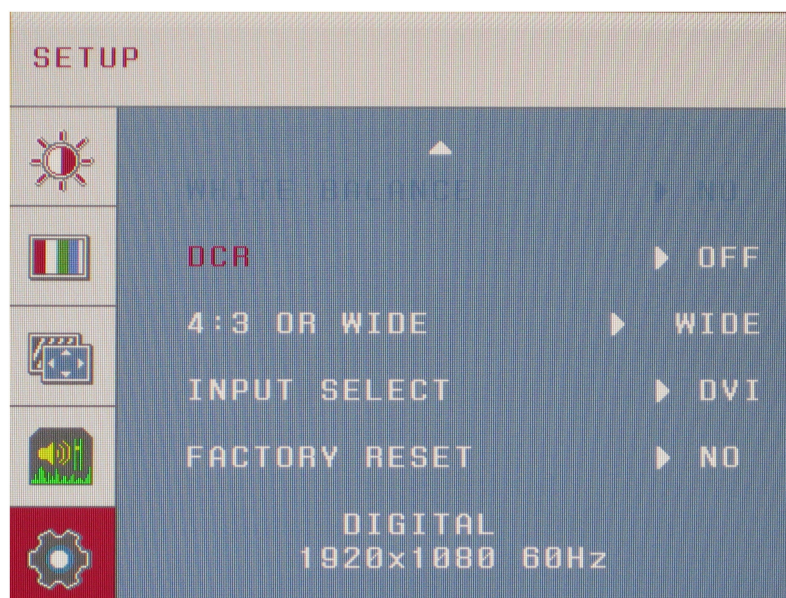
By default, your PIM-21B display automatically detects and shows the connected video input source. However, when for instance more than one video input source is connected, it may be needed to manually select the input source to be displayed. To switch through all the video input selections, press the UP Key on the control panel.

The available video input source selections for your display are:

- *Auto*: This is the default setting and will automatically detect and display the connected video input.
- *DVI*: This setting will display the video connected to the DVI input.
- *HDMI*: This setting will display the video connected to the HDMI input.
- *VGA*: This setting will display the video connected to the VGA input.

To select a video input source

1. Bring up the OSD main menu.
2. Navigate to the *Input Select* submenu under the main Setup menu.
3. Select one of the available video input sources.



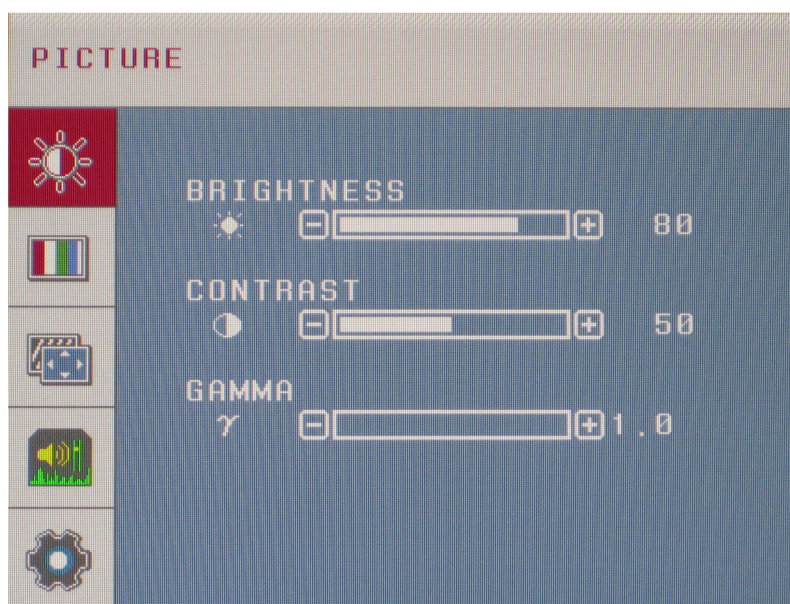
5.2 Brightness and Contrast adjustment

About brightness and contrast adjustment

The brightness and contrast of your PIM-21B display is adjustable over a predefined range. When you change the brightness, the display will adjust its backlight to reach the target.

To adjust the brightness and contrast

1. Bring up the OSD main menu.
2. Navigate to the *Picture* menu.
3. Enter the *Brightness* or *Contrast* submenu as desired.
4. Set a desired value of brightness or contrast and confirm by pressing Exit Key.



5.3 Gamma selection

About gamma selection

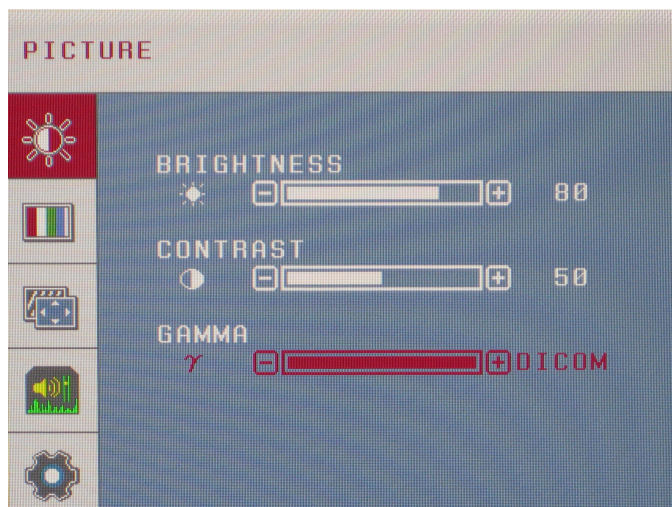
Native, uncorrected panels will display all grayscale/color levels with equal luminance increments. Studies have shown however, that in medical images certain grayscale/color parts contain more relevant information than others. To respond to these conclusions, gamma functions have been defined. These functions emphasize on these parts containing crucial information by correcting the native panel behavior. The available gamma functions for your display range from a 1.0 (native uncorrected) to 2.6 and DICOM calibrated gamma.

- *Gamma range 1.0 – 2.6*: If you select 1.0, the native panel behavior will not be corrected. Selection of 1.2 through 2.6 will provide you with various pre-defined grayscale/color luminance curves.
- *DICOM*: DICOM (Digital Imaging and Communications in Medicine) is an international standard that was developed to improve the quality and communication of digital images in radiology. In short, the DICOM gamma function results in more visible grayscales in the images. Pragmatic recommends selecting the *DICOM* gamma function for most medical viewing applications.
- *Gamma 2.2*: Select this function in case the display is to replace a CRT display with a gamma of 2.2.

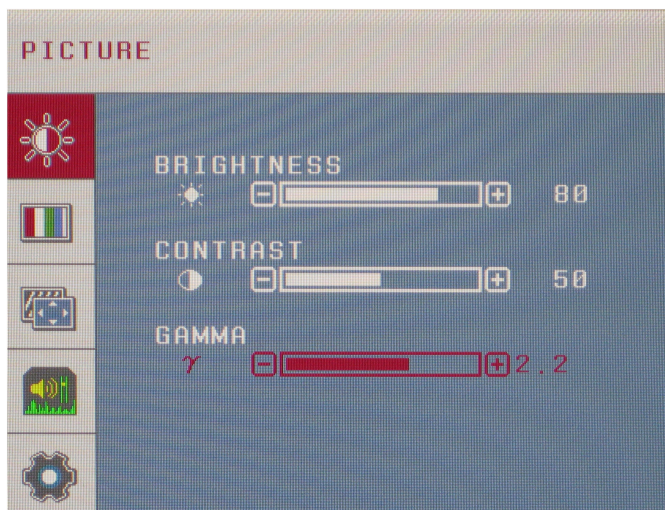
To select a gamma function

1. Bring up the OSD main menu.
2. Navigate to the *Picture* menu.
3. Enter the *Gamma* submenu.
4. Select one of the available gamma functions.
5. Confirm the selection by pressing Exit Key.

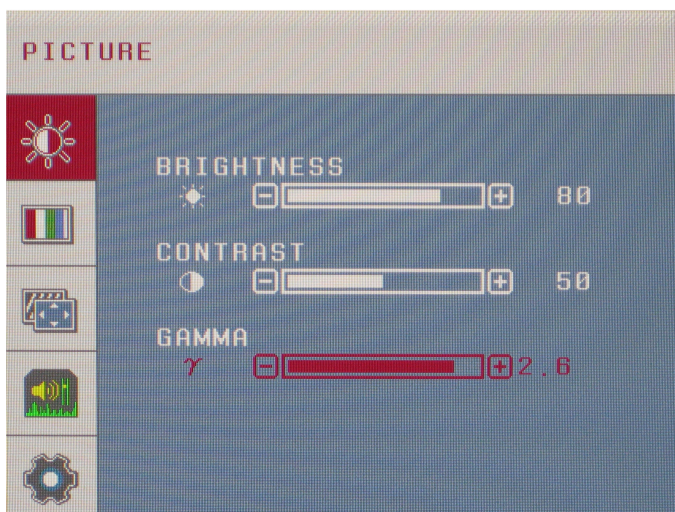
DICOM Selection



Gamma = 2.2 Selection



Gamma = 2.6 selection



5.4 Color temperature selection

About color temperature selection

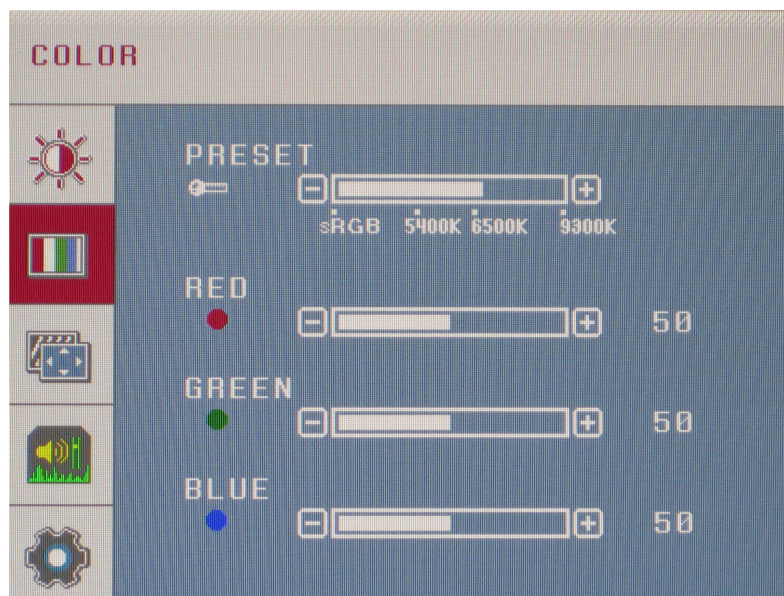
This setting allows you to modify the display color temperature, used as reference for all other colors to be displayed. The available color temperature settings for your display are:

- *sRGB*: Corresponds to the native panel color temperature.
- *5400K*: Corresponds to a color temperature of 5400 Kelvin (D54).
- *6500K*: Corresponds to a color temperature of 6500 Kelvin (D65).
- *9300K*: Corresponds to a color temperature of 9300 Kelvin (D93).

For normal operation of x-ray images and DICOM calibrated gamma settings, select 6500 Kelvin as the color temperature.

To select the color temperature

1. Bring up the OSD main menu.
2. Navigate to the *Color* menu.
3. Enter the *Preset* submenu.
4. Select the desired color temperature and confirm by pressing Exit Key.



5.5 Analog video settings

The following settings are only available when VGA video input source is selected.

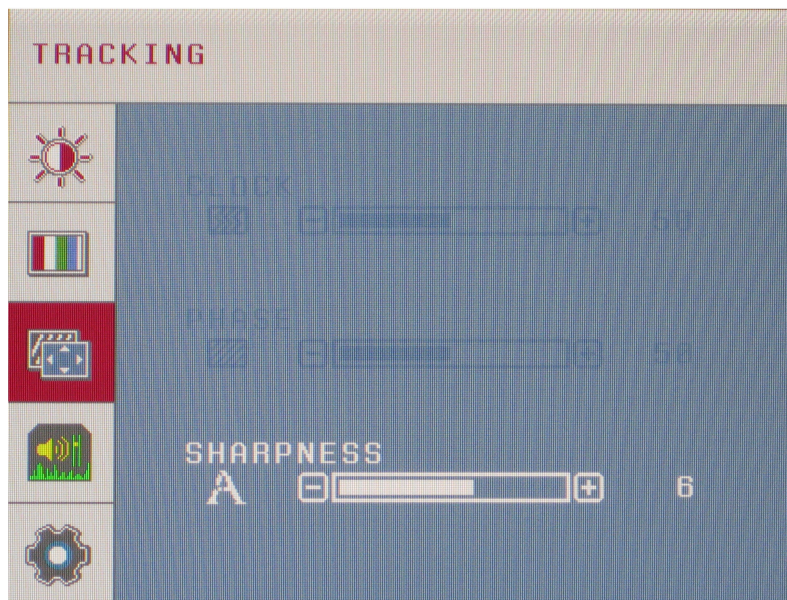
About analog video settings

When the VGA video input source is active, a number of analog video settings will become available:

- *Clock*: Allows to manually adjust the analog video by adjusting the clock frequency and clock phase
- *White Balance*: Allows to automatically adjust the white balance of the analog video
- *Sharpness*: Allows to adjust the sharpness of the analog video as well as HDMI and DVI digital video.

To adjust the analog video settings

1. Bring up the OSD main menu.
2. Navigate to the *Tracking* menu.
3. Enter the *Clock or Phase* submenu.
4. Adjust to the desired setting and confirm selection by pressing Exit Key.



5.6 OSD menu language

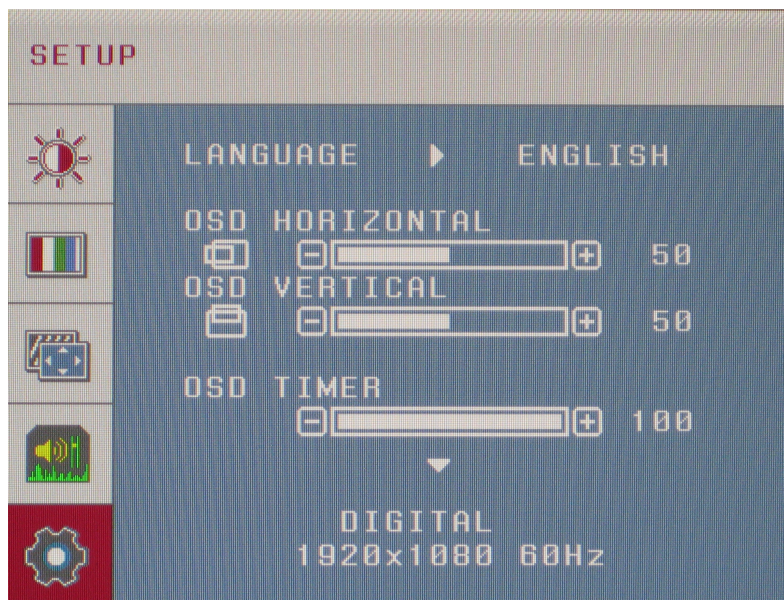
About the OSD menu language

By default, the OSD menu comes up in English. However, there is a wide range of other languages available for the OSD menu of your PIM-21B display:

- English
- French
- German
- Russian
- Ukranian
- Svenska
- Spanish
- Italian
- Portugese
- Traditional Chinese
- Simplified Chinese
- Korean

To select the language of the OSD menu:

1. Bring up the OSD main menu.
2. Navigate to the *Setup* menu.
3. Enter the *Language* submenu.
4. Select one of the available languages.
5. Confirm the selection by pressing the Exit Key.



5.7 Factory reset

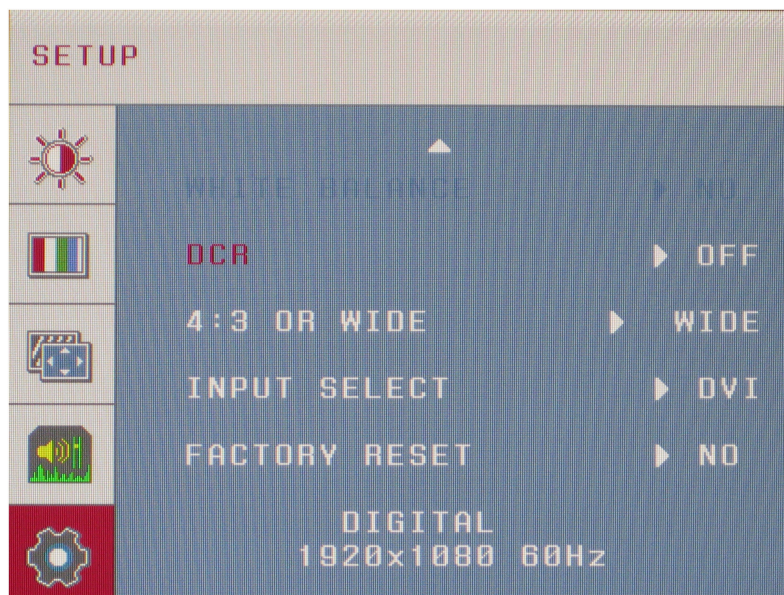
About factory reset

A factory reset allows you to fully restore the display to its original factory setting.

CAUTION: DO NOT PERFORM FACTORY RESET UNLESS YOU HAVE DICOM CALIBRATION EQUIPMENT AVAILABLE TO RECALIBRATE THE DISPLAY TO DICOM GAMMA SETTINGS. FACTORY RESET CLEARS ALL SETTINGS AND RESTORES THE DISPLAY TO VIRGIN PRODUCTION UNIT.

To perform a factory reset

1. Bring up the OSD main menu.
2. Navigate to the *Setup* menu.
3. Enter the *Factory Reset* submenu.
4. Select *Yes* or *No* as desired and confirm by pressing the Exit Key.



6. CLEANING YOUR DISPLAY

6.1 Cleaning instructions

To clean the display

Clean the display using a sponge, cleaning cloth or soft tissue, lightly moistened with a recognized cleaning product for medical equipment. Read and follow all label instructions on the cleaning product. In case of doubt about a certain cleaning product, use plain water.

Do not use following products:

- Alcohol/solvents at higher concentration > 5%
- Strong alkalis lye, strong solvents
- Acid
- Detergents with fluoride
- Detergents with ammonia
- Detergents with abrasives
- Steel wool
- Sponge with abrasives
- Steel blades
- Cloth with steel thread

CAUTION: Take care not to damage or scratch the front glass or LCD. Be careful with rings or other jewelry and do not apply excessive pressure on the front glass or LCD.

CAUTION: Do not apply or spray liquid directly to the display as excess liquid may cause damage to internal electronics. Instead, apply the liquid to a cleaning cloth.

7. IMPORTANT INFORMATION

7.1 Safety information

General recommendations

Read the safety and operating instructions before operating the device.
Retain safety and operating instructions for future reference.
Adhere to all warnings on the device and in the operating instructions manual.
Follow all instructions for operation and use.

Electrical Shock or Fire Hazard

To prevent electric shock or fire hazard, do not remove cover.
No serviceable parts inside. Refer servicing to qualified personnel.
Do not expose this apparatus to rain or moisture.

Degree of safety (flammable anesthetic mixture):

Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.

Non-patient care equipment

- Equipment primarily for use in a health care facility that is intended for use where contact with a patient is unlikely (no applied part).
- The equipment may not be used with life support equipment.
- The user should not touch the equipment, nor its signal input ports (SIP)/signal output ports (SOP) and the patient at the same time.

Power connection – Equipment with external 12 VDC power supply

- Power requirements: The equipment must be powered using the supplied 12 VDC power supply.
- To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth ground.
- The equipment should be installed near an easily accessible outlet.
- The equipment is intended for continuous operation.

Transient over-voltage

If the device is not used for a long time, disconnect it from the AC outlet to avoid damage by transient over-voltage. To fully disengage the power to the device, please disconnect the power cord from the AC outlet.

Water and moisture

Never expose the device to rain or moisture. Never use the device near water - e.g. near a bathtub, washbasin, swimming pool, kitchen sink, laundry tub or in a wet basement.

Installation

Place the device on a flat, solid and stable surface that can support the weight of at least 3 devices. If you use an unstable cart or stand, the device may fall, causing serious injury to a child or adult, and serious damage to the device.

Essential performance

Pragmatic states that the PIM-21B display is only used for reviewing medical digital images. These reviews are done in rooms where the equipment is unlikely to be in contact with patients. With this information, if the display fails, the patient is not in direct danger for harm. If, by some reason, the display would fail there would be no danger towards the operator working with it. Also the PIM-21B display has no artificial intelligence and doesn't manipulate the image information. If something would fail in the display, ex. No image on the screen, the medical staff will notice this directly. Some other risks are less obvious, for example image artifacts

introduced by the display. However, as the display is only intended to be used for reviewing medical digital images, indirect danger towards the patient isn't there. With this information, the PIM-21B display has no essential performance.

7.2 Regulatory compliance information

Indications for use

This display is an AMLCD display designed for viewing medical X-ray images. This unit should not be used near patients (where patients are likely to be in unconscious condition) and should be kept outside of 1.83 m perimeter and 2.29 m vertical.

FCC class B

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. This device 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 in a residential installation. This device generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, 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 device and receiver.
- Connect the device into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

7.3 EMC notice

General information

No specific requirement on the use of external cables or other accessories except power supply. With the installation of the device, use only the delivered power supply or a spare part provided by the legal manufacturer. Using another can result in a decrease of the immunity level of the device.

7.4 Specifications

Viewable Image Size	21.5"
Contrast Ratio	1000:1 (typical)
Resolution	1920 x 1080 @ 60 Hz
Brightness	250 nits (typical)
Colors	> 16 Million
Signal input	DVI-D / HDMI / Analog RGB (VGA)
Viewing angle	Horizontal 178° / Vertical 178°
Power supply	12VDC @ 4 A
Calibration / Regulations	DICOM / FCC / cULus / RoHS / Energy Star ®
Dimensions (without optional base or VESA mount)	20.1" Wide x 12.24" High x 0.75" Deep
Weight (without optional base)	5.64 lbs

