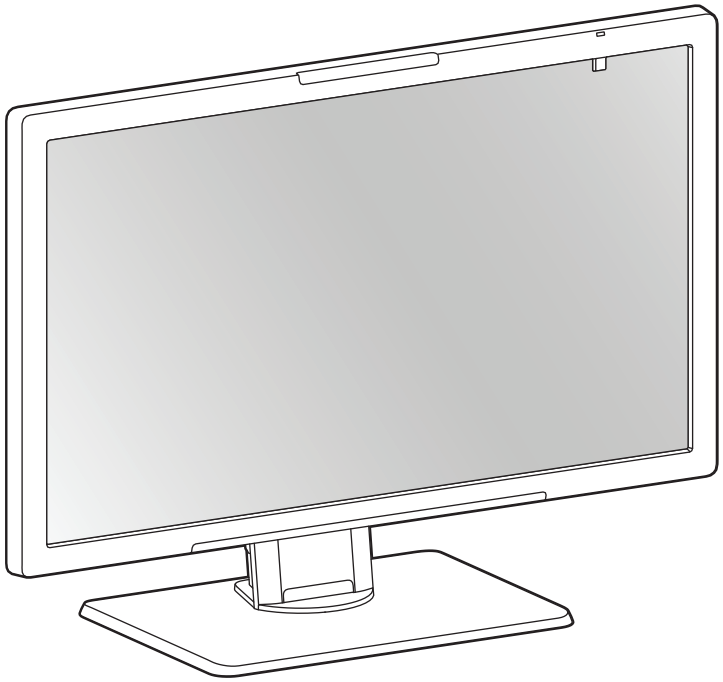
MDPC-8127

27” 8MP ultra-high definition digital pathology display



User guide

ENABLING BRIGHT OUTCOMES

Barco NV
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1 Welcome!

1.1 Regulatory compliance information

Indications for use

Barco digital pathology display is intended to display digital images of histopathology slides for review and interpretation by trained medical practitioners.

For USA specifically: The Barco MDPC-8127 device is intended for in vitro diagnostic use to display digital images of histopathology slides acquired from IVD-labeled whole-slide imaging scanners and viewed using IVD-labeled digital pathology image viewing software that have been validated for use with this device. It is an aid to the pathologist to review and interpret digital images of histopathology slides for primary diagnosis. It is the responsibility of the pathologist to employ appropriate procedures and safeguards to assure the validity of the interpretation of images using the MDPC-8127. The display is not intended for use with digital images from frozen section, cytology, or non-formalin-fixed, paraffin embedded (non-FFPE) hematopathology specimens.

Intended usage environment

The device is intended for surgical pathology tasks performed in the anatomic pathology laboratory or a physician's office.

Contra-indications

The device is not intended for use with frozen section, cytology, or non-formalin-fixed paraffin embedded (FFPE) hematopathology specimens.

Intended users

Barco pathology displays are intended to be used by trained medical practitioners.

The device is initially set up by trained integrators or medical IT staff.

Notice to the user and/or patient

Any serious incident that has occurred in relation to the device should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.

Factory addresses

- **Barco NV**, President Kennedypark 35, 8500 Kortrijk, Belgium
- **Fimi S.r.l.**, Via Saul Banfi 1, 21047 Saronno, VA, Italy

Manufacturing country

The manufacturing country of the product is indicated on the product label (**"Made in …"**).

Importers contact information

To find your local importer, contact one of Barco's regional offices via the contact information provided on our website (*www.barco.com*).

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.

FCC responsible: Barco Inc., 3059 Premiere Parkway Suite 400, 30097 Duluth GA, United States, Tel: +1 678 475 8000

Canadian notice

CAN ICES-001(B) / NMB-001(B)

1.2 Technical specifications

Overview

Screen technology	IPS LCD with LED backlight
Active screen size (diagonal)	684 mm (27")
Active screen size (H x V)	569 x 335 mm (22.4 x 13.2")
Aspect ratio (H:V)	16:9
Resolution	8MP (3840 x 2160 pixels @ 120 Hz)
Pixel pitch	0.155 mm
Color imaging	Yes
Gray imaging	Yes
Color depth	10 bit (1.07 billion possible colors)
Viewing angle (H, V)	178°
Screen surface treatment	Anti-Glare coating
Uniformity Technology	PPU
Color calibration	sRGB, SteadyColor (with QAWeb Enterprise), DICOM GSDF, Native
Color gamut NTSC	115% (typical)
Color gamut sRGB	132% (typical)
Color gamut DCI-P3	105% (typical)
Ambient light presets	Yes, reading room selection
Ambient light sensor	Yes
Front sensor	Yes, I-Guard
Maximum luminance (panel typical)	850 cd/m²
Calibrated luminance	450 cd/m²
Contrast ratio (panel typical)	1000:1
sRGB Delta E2000 (typical)	< 1 (average) < 3 (maximum)

Response time ((Tr + Tf)/2) (typical)	8 ms
Housing color	Black / White
Video input signals	2x DisplayPort 1.2
USB ports	1x USB 2.0 upstream (endpoint) 2x USB 2.0 downstream
Power rating	100-240 Vac, 50/60 Hz, 3.6-1.6 A
Power consumption	75 W (nominal) @ calibrated luminance of 450 cd/m² < 0.5 W (hibernate) < 0.5 W (standby)
Dimensions with stand (W x H x D)	651 x 482~582 x 238 mm
Dimensions w/o stand (W x H x D)	651 x 390 x 66 mm
Dimensions packaged (W x H x D)	800 x 650 x 295 mm
Net weight with stand	12.5 kg
Net weight w/o stand	7.9 kg
Net weight packaged	17.4 kg (without optional accessories)
Tilt	-5° to +25°
Swivel	-30° to +30°
Pivot	N/A
Height adjustment range	100 mm
Mounting standard	VESA (100 mm)
Recommended modalities	Digital Pathology and Whole Slide Imaging
Certifications	FDA 510(k) K203364 CE0123 (Medical Device Class IIa) CCC (China) Safety specific: • IEC 60950-1:2005 + A1:2009 + A2:2013 • EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013 • IEC 60601-1:2005 + A1:2012 • EN 60601-1:2006 + A1:2013 + A12:2014 • ANSI/AAMI ES 60601-1:2005 + R1:2012 • CAN/CSA C22.2 No. 60601-1:2014 • PSE EMI specific: • IEC 60601-1-2:2014 (ed.4) • EN 60601-1-2:2015 (ed.4) • FCC part 15 Class B • ICES-001 Level B • VCCI Environmental: China Energy Label, EU RoHS, China RoHS, REACH, Canada Health, WEEE, Packaging Directive

Supplied accessories	User guide Documentation disc Video cables Mains cables USB cable Barco Touchpad
Optional accessories	MXRT display controller
QA software	QAWeb Enterprise
Warranty	5 years, including 20000 hrs backlight warranty
Operating temperature	0 °C to 35 °C (20 °C to 30 °C within specs)
Storage temperature	-20 °C to 60 °C
Operating humidity	8% to 80% (non-condensing)
Storage humidity	5% to 85% (non-condensing)
Operating pressure	50 kPa minimum
Storage pressure	50 to 106 kPa

1.3 What's in the box

Overview

- MDPC-8127 display
- Barco Touchpad
- Printed user guide
- Documentation disc, containing different languages of this user guide and the Barco "Display Controller and Intuitive Workflow Tools" user guide
- System sheet
- Cables for Mains, Video and USB

If you ordered a Barco MXRT display controller, it is also in the box together with its accessories. A dedicated user guide is available on the documentation disc.

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

The user guides are also available on www.barco.com/support

1.4 Product overview

Overview

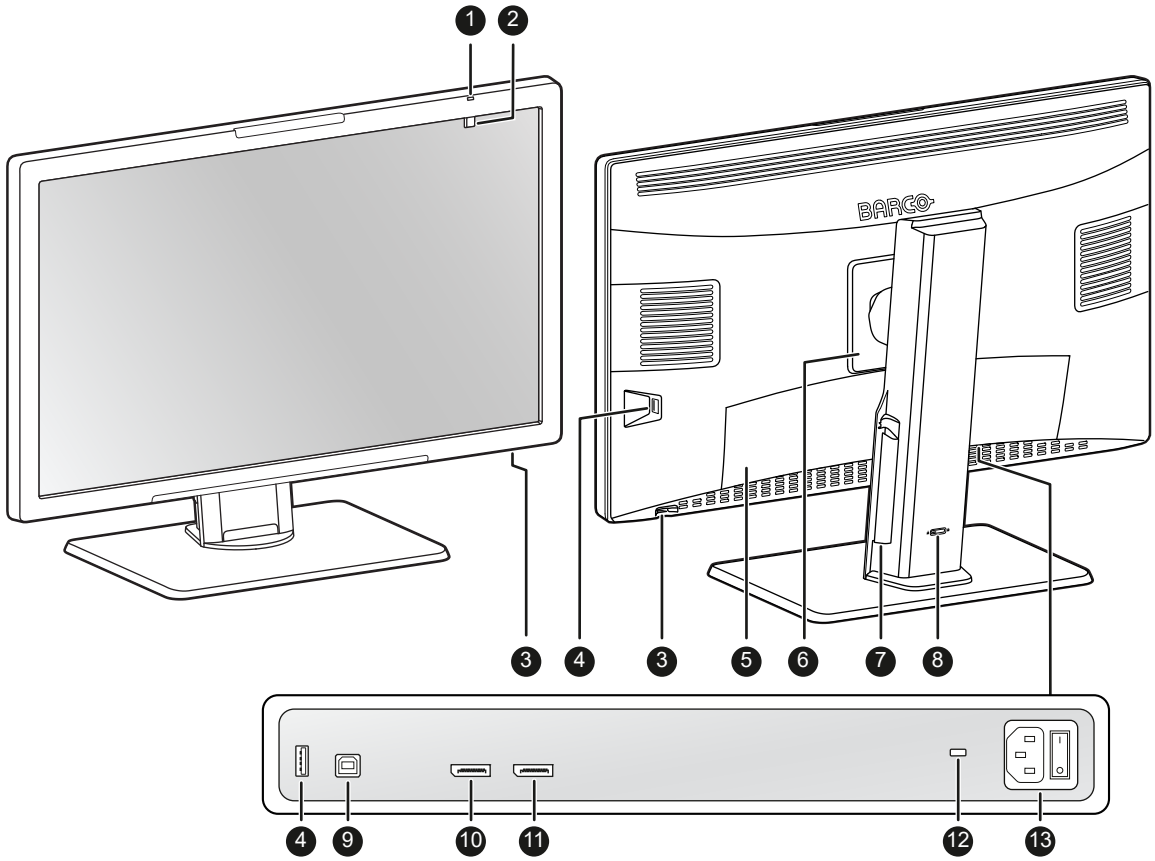


Image 1–1

1. Ambient light sensor and power status LED
   - Power status LED **off**: Display not powered (mains cable unplugged or power switch in OFF position), or display is in normal operation
   - Power status LED **fast blinking amber**: Display is entering DPMS[1] mode
   - Power status LED **slow blinking amber**: Display is in DPMS mode
   - Power status LED **steady amber**: Display manually switched off via the jog dial, or display in hibernate mode (requires DPMS and Hibernate to be enabled in the OSD menu)
2. Front calibration sensor
3. Jog dial
   - **Push**: Open shortcut menu, go into (sub)menus, confirm adjustments and selections
   - **Turn left/right**: Scroll through (sub)menus, change values, make selections
   - **Push and hold**: Cancel adjustments, exit (sub)menus
4. USB-A 2.0 downstream connector
5. Connector cover
6. VESA mount cover
7. Cable routing ducts
8. Stand locking mechanism
9. USB-B 2.0 upstream connector
10. DisplayPort IN 2 connector
11. DisplayPort IN 1 connector
12. Kensington security slot
13. 100–240 VAC mains power input and power switch

1. Display Power Management System

Barco Touchpad

The Barco Touchpad can control Barco's **Intuitive Workflow Tools** and allows you to control digital pathology, enterprise imaging and other viewing applications with configurable multi-touch gestures and touchpad function activation buttons.

Using the Barco Touchpad requires Barco's MXRT display controller and driver to be installed on your workstation. For more information about the setup, use and configuration of the Barco Touchpad, please check the Barco "Display Controller and Intuitive Workflow Tools" user guide on the included documentation CD, or at *www.barco.com/support*.

Installation and setup

2

2.1 Display controller installation

About

Before you install your display and connect it with the workstation, make sure to have a suitable[2] display controller installed in the workstation.

The MDPC-8127 display operates at its full specifications when driven by a Barco **MXRT display controller** and **MXRT driver** (which also includes the Barco **Intuitive Workflow Tools**). If you ordered a MXRT display controller, it is included in the box of your display.
For more information and installation instructions, please check the Barco “Display Controller and Intuitive Workflow Tools” user guide on the included documentation CD, or at www.barco.com/support.

2.2 Display position adjustment

To adjust the display position

After unpacking, you can safely tilt and swivel the display to your preferred position.

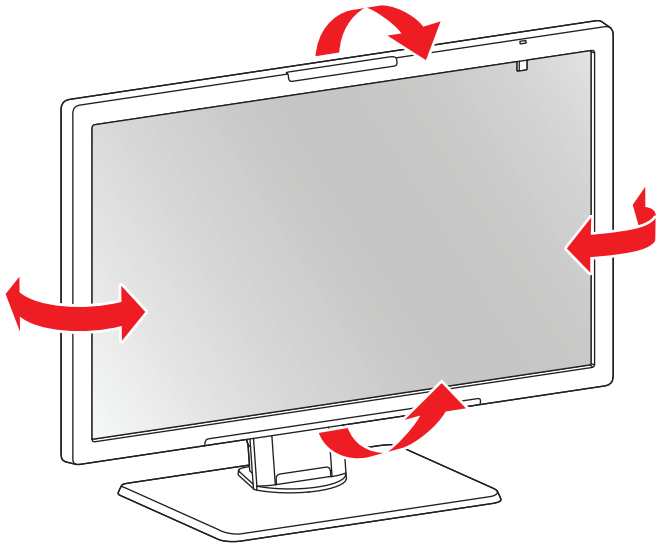


Image 2–1

To adjust the height of the display, first move the slider at the back of the stand to the **unlock** position. Then you can raise or lower the display as desired.

2. For a list of compatible display controllers, please refer to the compatibility matrix available at www.barco.com/mybarco/mysupport/healthcare/compatibility-matrices

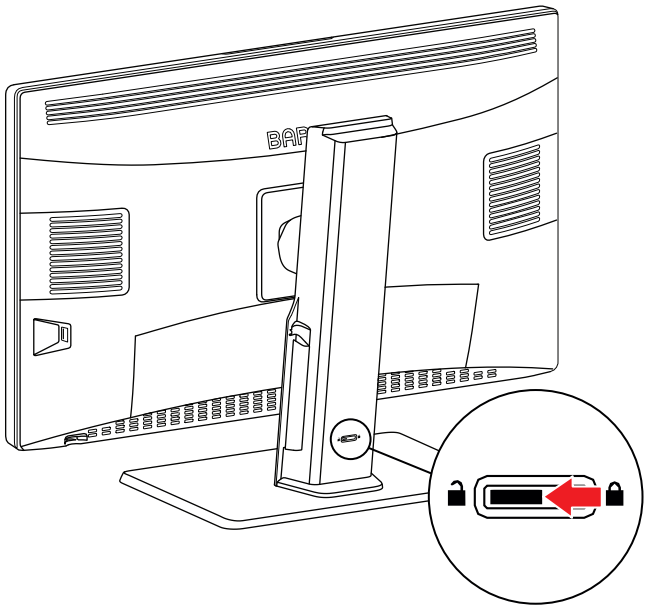


Image 2–2

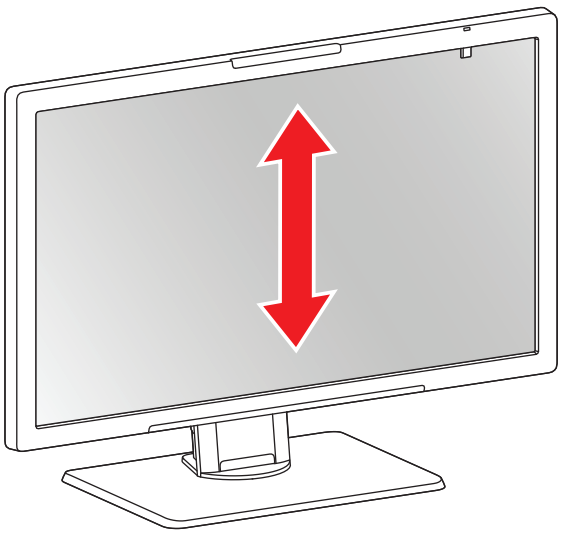


Image 2–3

WARNING: The height can be locked only when the display is in the lowest position, even though the slider at the back of the stand can be moved to the lock position at any height of the display.

2.3 Cable connections

To connect the cables

1. Remove the connector cover. Do this by gently pulling the bottom of the connector cover away from the display.

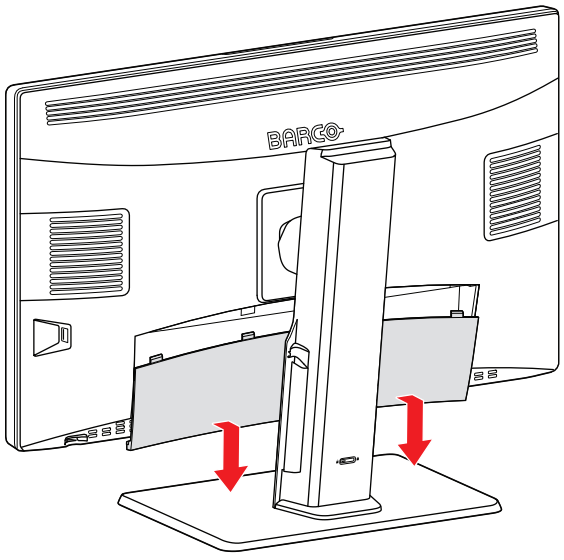


Image 2–4

2. Connect the DisplayPort input(s) (DP IN 1 and/or DP IN 2) with the DisplayPort output(s) on the workstation.
   Note: To obtain full resolution and full refresh rate, two DisplayPort video input cables must be connected to the display. If only one DisplayPort video input cable is connected the display will run at half of the specified refresh rate.
   Note: When two DisplayPort video inputs are connected you can easily switch between them in the OSD menu. See “Image source selection”, page 34 for more info.

3. Connect the USB upstream connector with the USB host of your workstation to make use of **QAWeb Enterprise** and to use the Barco Touchpad optimally.
4. Connect the **Barco Touchpad** with one of the USB downstream connectors. Other peripherals like a keyboard, mouse, etc. can also be connected.
5. Connect the supplied mains cable to the power input of the display.

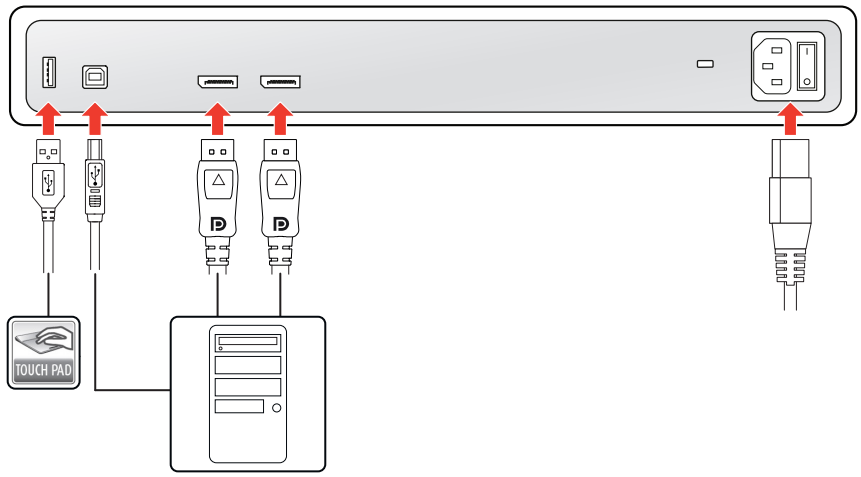


Image 2–5

6. Route all cables through the cable clips in the connector compartment.
7. Re-install the connector cover: slide the top of the cover in the available recesses, then push the bottom of the cover back into position.
8. Route some or all cables through the routing channels in the stand of your display.
9. Connect the supplied mains cable to a **grounded** power outlet.

2.4 MXRT driver and Intuitive Workflow Tools installation

About

When you are using a Barco MXRT display controller, you can start up your MDPC-8127 display system and install the **MXRT driver** and **Intuitive Workflow Tools** . Barco's Intuitive Workflow Tools are designed to increase visibility of subtle details, improve focus during reading sessions, and accelerate workflow.

To install the MXRT driver and Intuitive Workflow Tools

1. Switch on your MDPC-8127 as described in "Standby switching", page 22.
2. Turn on the workstation connected to your display.
   Your display will be running in a basic video mode at a default refresh rate when first time starting up.
3. Download the latest MXRT driver and Intuitive Workflow Tools from *www.barco.com/mxrt.*
4. Install the **MXRT driver** and Barco's **Intuitive Workflow Tools** as described in the Barco "Display Controller and Intuitive Workflow Tools" user guide on the included documentation CD, or at *www.barco.com/support*.
5. When the drivers are completely installed, your display will automatically detect the connected video input signal(s) and apply the correct video mode and refresh rate.

2.5 QAWeb Enterprise registration

About

QAWeb Enterprise helps you manage quality and assure compliance of your expanding healthcare enterprise with less effort, lower cost, and complete confidence. This fully automated and secure system

supports a consistent image quality and uptime for all registered imaging display systems within your facility and across your enterprise. Learn more at www.barco.com/qaweb.

To register your display system to your QAWeb Enterprise organization, the QAWeb Enterprise Agent must be installed and running on your workstation and it must be able to communicate with the QAWeb Enterprise cloud service.

For more information and installation instructions, please check the QAWeb Enterprise user guide on www.barco.com/support.

2.6 VESA-mount installation

CAUTION: Use suitable mounting apparatus to avoid risk of injury.

WARNING: Never move a display attached to an arm by pulling or pushing the display itself. Instead, make sure that the arm is equipped with a VESA compliant handle and use this to move the display.
Please refer to the instruction manual of the arm for more information and instructions.

WARNING: Use a mount that is compliant with the VESA 100 mm standard.
Use a mount that can support the weight of the display. Refer to the technical specifications of this display for the applicable weight.

Overview

The panel, standard attached to a stand, is compatible with the VESA 100 mm standard. Thus, it can be used with an arm that is approved by VESA. This chapter shows you how to release the panel from the stand and how to attach it to an arm. If you're not using an arm, you can skip this chapter.

1. Unlock the stand locking mechanism and put the display in the highest position.

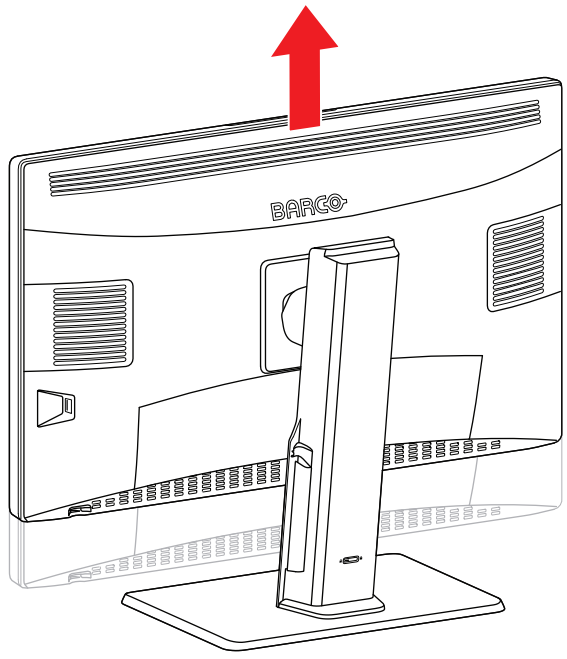


Image 2–6

2. Put the display face down on a clean and soft horizontal surface. Be careful not to damage the panel screen.
3. Push the VESA mount cover to the right and lift the cover on the right with your finger or a flathead screwdriver.

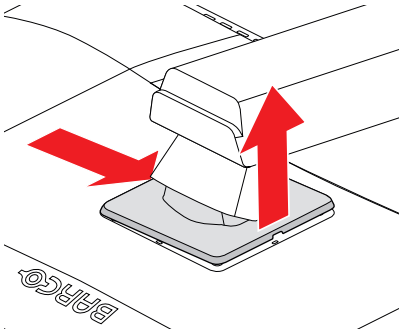


Image 2–7

4. Push the VESA mount cover to the left and release the cover on the left with a flathead screwdriver.

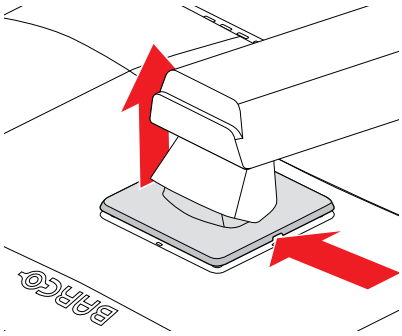


Image 2–8

5. Rotate the VESA mount cover to uncover the screws fixing the panel to the stand.

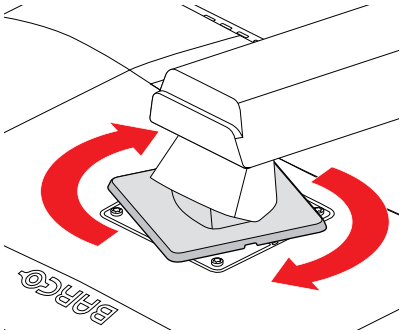


Image 2–9

6. Unscrew the 4 fixation screws while supporting the stand.

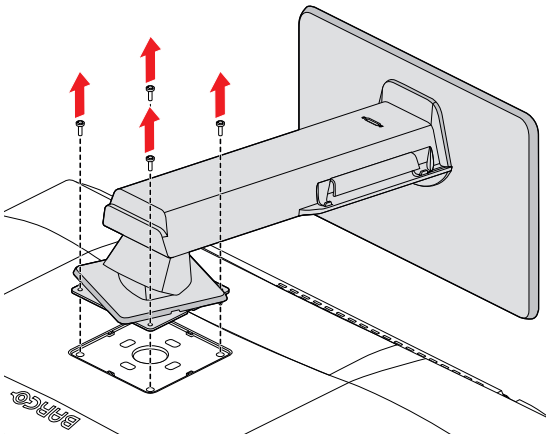


Image 2–10

7. Attach the panel **firmly** to the arm using 4 M4 screws.
   Respect the following rule to select an appropriate screw length:
   - L_{min} = T + W + 6.5 mm

- L_{max} = T + W + 10 mm

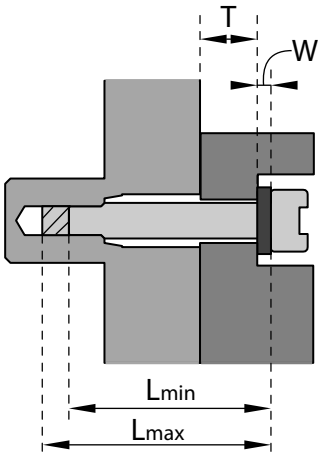


Image 2–11

2.7 VESA-mount installation in portrait mode

Introduction

By default, your MDPC-8127 display is mounted in landscape position but it can also be used in portrait position. This section explains how to install and use the display in portrait orientation. Carefully follow the instructions hereafter to ensure proper product operation and to avoid physical damage to the product.

Instructions

1. Physically mount the display in portrait position. Both clockwise and counterclockwise orientation are supported.
   You can choose to either mount the display on the existing stand, or on a compatible VESA mount.
   Follow the instructions as described in “VESA-mount installation”, page 17 to install the display on a VESA mount . These instructions can also be used to mount the display in portrait position on the existing display stand.
2. Connect the display to your workstation.
   When using the display in portrait position only one DisplayPort cable can be connected. This will give you the full resolution and refresh rate but with just one Windows taskbar at the bottom of the screen.
3. For your convenience, align the display's OSD menu orientation with the physical position of your display. For instructions, see “OSD menu orientation”, page 26.
4. In the *EDID timings* menu of the OSD, change the resolution to 8MP. For instructions, see “EDID timings”, page 35.
5. Rotate the Windows desktop in portrait mode.
   From Windows 7 onwards, an “Orientation” option is available in the display settings. For Windows 10, you can find instructions here: *https://support.microsoft.com/en-us/help/4027186/windows-10-change-screen-orientation*

3 Daily operation

3.1 Recommendations for daily operation

Optimize the lifetime of your display

Enabling the Display Power Management System (DPMS) of your display will optimize its diagnostic lifetime by automatically switching off the backlight when the display is not used for a specified period of time. By default, DPMS is enabled on your display, but it also needs to be activated on your workstation. To do this, go to the “Power Options” of your workstation.

Barco recommends setting DPMS activation after 20 minutes of non-usage.

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.

Barco recommends setting screen saver activation after 5 minutes of non-usage. A good screen saver displays moving content.

In case you are working with the same image or an application with static image elements for several hours continuously (so that the screen saver is not activated), change the image content regularly to avoid image retention of the static elements.

Avoid objects on the Barco Touchpad

When cables and other objects are left on the Barco Touchpad, these can be misinterpreted as fingers and may block DPMS and screen saver activation.

Barco recommends keeping the Barco Touchpad clear of other objects.

Understand 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 diagnostic performance of the product. To ensure optimal product quality, Barco applies strict selection criteria for its LCD panels.

Maximize quality assurance

QAWeb Enterprise helps you manage quality and assure compliance of your expanding healthcare enterprise with less effort, lower cost, and complete confidence. This fully automated and secure system supports a consistent image quality and uptime for all registered imaging display systems within your facility and across your enterprise.

Barco highly recommends to use QAWeb Enterprise. Learn more at *www.barco.com/qaweb*.

3.2 Standby switching

Make sure that the power switch next to the mains power input connector is in position “I” when switching on your display.

To switch on your display

Shortly push the jog dial to exit standby mode and switch on your display.

To switch off your display

1. Push or turn the jog dial during normal operation.
2. Turn the jog dial to select the standby icon (⏻), then push to confirm.
3. Push the jog dial again to power off the display.

3.3 OSD menu use

About the OSD menu

The OSD menu allows you to configure your MDPC-8127 so that it will fit your needs in many possible working environments. You can also find information about the current status and settings in the OSD menu.

To open the OSD menu

1. Push or turn the jog dial during normal operation.
2. Turn the jog dial to select the main menu icon.
3. Push the jog dial again to confirm the selection.

As a result, the OSD main menu comes up. If no further actions are taken within the next 90 seconds, the OSD menu will disappear again.

The OSD menu auto-exit function can be disabled in the OSD menu. Please refer to “OSD menu automatic close function”, page 26 for detailed instructions on how to do this.

To navigate through the OSD menus

- **Turn** the jog dial left or right to scroll through the (sub)menus, to change values or to make selections.
- **Push** the jog dial to go into a submenu or confirm adjustments and selections.
- **Push and hold** the jog dial for approximately 3 seconds to cancel adjustments or exit a (sub)menu.
- Continue to hold the jog dial to exit all OSD menus.

4 Advanced operation

About

This section describes all settings available in the OSD menu and how to change and configure them.

The factory default settings are optimized for reading digital pathology images with most diagnostic confidence. Barco highly recommends utilizing the following factory default settings when reading digital pathology images:

- **Color preset**: 6500K (see“Color presets”, page 28)
- **Color space**: sRGB (see “Color space”, page 29)
- **Display function**: sRGB (see “Display functions”, page 30)
- **Viewing mode**: Diagnostic (see “Viewing modes”, page 29)

Certain OSD menu settings affecting calibration can be managed by QAWeb. Manually changing these settings in the OSD menu is still possible but the changes will be overwritten at each sync with QAWeb. The OSD menu can also be locked/unlocked by QAWeb.

4.1 OSD menu language

About the OSD menu language

By default, the OSD menu comes up in English. However, there's a wide range of other languages available for the OSD menu of your MDPC-8127.

To change the language of the OSD menu:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *User Interface* > *Menu* menu.
3. Enter the *Language* submenu.
4. Select one of the available languages and confirm.

4.2 OSD menu orientation

About orientation

The orientation of the OSD menu can be set to landscape, portrait or inverse portrait. This is useful when physically mounting your display in another orientation.

To adjust the orientation

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *User Interface* > *Menu* menu.
3. Enter the *Orientation* submenu.
4. Select *Landscape*, *Portrait* or *Inverse Portrait* and confirm.

4.3 OSD menu automatic close function

About the OSD menu automatic close function

By default, the OSD menu will disappear automatically after approximately 90 seconds of inactivity. However, this function can be disabled so that the OSD menu remains on the screen until manually closed.

To enable/disable the OSD menu automatic close function:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *User Interface* > *Menu* menu.
3. Enter the *Automatic Close* submenu.
4. Select *Enabled/Disabled* as desired and confirm.

4.4 Power lock function

About the power lock function

When the power lock function is enabled, it is no longer possible to switch off your display via the jog dial as described in "Standby switching", page 22. DPMS mode is not affected by this setting.

To enable/disable the power lock function:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *User Interface* > *Controls* menu.

3. Enter the *Power Lock* submenu.
4. Select *Enabled/Disabled* as desired and confirm.

4.5 DPMS mode

About DPMS mode

Enabling the Display Power Management System (DPMS) mode on your display will optimize its diagnostic lifetime by automatically switching off the backlight when the display is not used for a specified period of time. By default, DPMS mode is enabled on your display, but it also needs to be activated on your workstation. To do this, go to the “Power options” of your workstation.

Barco recommends setting DPMS activation after 20 minutes of non-usage.

When DPMS mode is enabled, an additional power saving function becomes available: hibernate. See “Hibernate”, page 27 for more information.

To enable/disable DPMS mode on your display:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Power Management* menu.
3. Enter the *DPMS Mode* submenu.
4. Select *Enabled/Disabled* as desired and confirm.

4.6 Hibernate

About hibernate

When hibernate is enabled, not only the backlight, but also other functions will be disabled to reduce power consumption to a minimum. This happens after an adjustable period of time.

DPMS mode must be enabled before hibernate can be enabled. See “DPMS mode”, page 27.

Connect your keyboard, mouse, touchpad, etc. directly with your workstation (and not with the display) to be able to awake your workstation and display from hibernate.

To enable/disable hibernate

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Power Management* menu.
3. Enter the *Hibernate* submenu.
4. Select *Enabled/Disabled* as desired and confirm.

To adjust the hibernate time-out

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Power Management* menu.
3. Enter the *Hibernate Timeout* submenu.
4. Set the time-out value as desired and confirm.

4.7 Luminance target

About the luminance target

The luminance target of your MDPC-8127 is adjustable over a predefined range. When you change the luminance target, the display will adjust its backlight to reach the target.

To set the luminance target:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* menu.
3. Enter the *Luminance Target* submenu.
4. Set a luminance target value as desired and confirm.

The default, factory calibrated luminance value is available in the technical specifications table. The guaranteed backlight lifetime is valid for this setting.

4.8 Color presets

About color presets

The available color preset settings for your display are:

- **Clearbase:** Simulation of the clearbase film color temperature
- **User:** When selecting the User color preset, you will be able to manually define:
  - Color temperature (Kelvin)
  - Color coordinates (x, y)
- **6500K:** Corresponds to daylight illuminance (D65), (x,y) = 0.3128, 0.3292
- **Native White:** The native color temperature of the LCD panel

To select a color preset:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* > *Color Settings* menu.
3. Enter the *Color Presets* submenu.
4. Select one of the available color presets and confirm.

4.8.1 Color temperature

About color temperature:

It is possible to change the color temperature of your display.

Color temperature can only be changed when the Color preset is set to *User*.

To change the color temperature:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* > *Color Settings* > *Color Presets* menu.
3. Select *User* and confirm.
4. Enter the *Color Definition* submenu, select *Color Temperature* and confirm.
5. Enter the *Color Temperature* submenu, set the value as desired and confirm.

4.8.2 Color coordinates

About color coordinates:

It is possible to change the color coordinates of your display.

Color coordinates can only be changed when the Color preset is set to *User.*

To change the color coordinates:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* > *Color Settings* > *Color Presets* menu.
3. Select *User* and confirm.
4. Enter the *Color Definition* submenu, select *Color Coordinates* and confirm.
5. Enter the *x* and *y* submenus, set the values as desired and confirm.

4.9 Color space

About color space

The available color space settings for your display are:

- **sRGB:** A standard Red/Green/Blue color space that is most common for color monitors and is the default setting for the MDPC-8127. **Note:** This setting does not fully set your display to the sRGB color space. Refer to “sRGB”, page 30 to do this.
- **Native:** The native and widest color space gamut available on the MDPC-8127, for expanded color options in Digital Pathology.
- **PrePriAS (Preserve Primaries And Secondaries):** To change the white (color) point (as explained in “Color presets”, page 28) without reducing red, green and blue primary colors and cyan, magenta and yellow secondary colors of the display's native color gamut. Selecting the PrePriAS color space optimizes SteadyColor™, a color calibration technique that complements DICOM images by providing clear Just Notable Differences (JND’s) for both grayscale and color medical images. SteadyColor calibration is activated by Barco’s QAWeb Enterprise Quality Assurance and Compliance software solution.

To select a color space

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* menu.
3. Enter the *Color Space* submenu.
4. Select one of the available color space settings and confirm.

4.10 Viewing modes

About viewing modes

The MDPC-8127 can be used in 2 viewing modes:

- **Diagnostic:** This mode provides the full calibrated luminance and is intended for using the display for diagnostic purposes.
- **Text:** In this mode, the luminance is reduced to approximately half of the luminance. This is intended for using the display with office applications such as word processing.
  Please note that text mode is not persistent, once powered off, the unit will restart in diagnostic mode.

The diagnostic mode should always be selected when the MDPC-8127 is intended to be used in a diagnostic environment.

To select a viewing mode:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* menu.
3. Enter the *Viewing Mode* submenu.
4. Select *Diagnostic/Text* as desired and confirm.

4.11 Display functions

About display functions

Native, uncorrected panels will display all grayscale/color levels with luminance increments that are not optimal for crucial diagnostic information. Studies have shown however, that in medical images certain grayscale/color parts contain more diagnostic information then others. To respond to these conclusions, display functions have been defined. These functions emphasize on these parts containing crucial diagnostic information by correcting the native panel behavior.

The available display functions for your display are:

- **Native:** The native display panel behavior will not be corrected.
- **Dynamic Gamma 1.8** or **2.2**: These are gamma functions that are shifted to take into account the non-zero luminance of an LCD panel when driven with a “black” signal. They are especially useful in CT applications to improve the perception of low Hounsfield values.
- **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 display function results in more visible grayscales in the images.
- **sRGB:** The sRGB color space combines a display function, color space and white point selection, and is commonly used in digital pathology and is the default setting for the MDPC-8127. **Note:** This setting does not fully set your display to the sRGB color space. Refer to “sRGB”, page 30 to do this.
- **User:** This display function will be automatically selected when display functions are centrally defined by QAWeb Enterprise.
- **Gamma 1.8** or **2.2**: Select one of these display functions in case the display is to replace a CRT display with a gamma of 1.8 or 2.2 respectively.
- **Test:** For Barco service purposes only.

The settings of the display must be adapted to suit the requirements of the visualization software. In case of doubt, please contact the vendor of the visualization software.

To select a display function:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* menu.
3. Enter the *Display Function* submenu.
4. Select one of the available display functions and confirm.

4.12 sRGB

About sRGB

When sRGB is enabled, the display is set to an sRGB color space with the following settings:

- **Color preset:** 6500K. See “Color presets”, page 28 for more info.
- **Color space:** sRGB. See “Color space”, page 29 for more info.
- **Display function:** sRGB. See “Display functions”, page 30 for more info.

To enable sRGB:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* menu.
3. Select *sRGB* and confirm.

4.13 Ambient Light Compensation (ALC)

About ALC

Ambient Light Compensation (ALC) can only be enabled on your display when the display function is set to DICOM. Please refer to “Display functions”, page 30.

When ALC is enabled, the DICOM display function will be recalculated taking a preset ambient light correction value into account. This value is determined by the selected reading room. Therefore, it is also important to select a realistic reading room when enabling ALC. This can be done by following the instructions in “Reading rooms”, page 31.

To enable/disable ALC:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* > *Ambient Light* menu.
3. Enter the *Ambient Light Compensation* submenu.
4. Select *Enabled/Disabled* as desired and confirm.

4.14 Reading rooms

About reading rooms

Reading rooms can only be selected on your display when the display function is set to DICOM. Please refer to “Display functions”, page 30

The American Association of Physicists in Medicine (AAPM) composed a list of pre-defined reading rooms. Each of these reading rooms are defined by following parameters:

- the maximum light allowed in this type of room
- the preset ambient light correction value for this reading room

These parameters are stored in your display and determine the preset ambient light correction value to take into account to recalculate the DICOM display function when Ambient Light Compensation (ALC) is enabled. Please refer to “Ambient Light Compensation (ALC)”, page 31 to enable ALC.

The available reading rooms for your display are:

- **CR/DR/ MAMMO:** Corresponds to light conditions in diagnostic reading rooms for computed radiology, digital radiology or mammography. This setting has the lowest maximum ambient light.
- **CT/MR/NM:** Corresponds to light conditions in diagnostic reading rooms for computed tomography, magnetic resonance or nuclear medicine scans.
- **Staff Office:** Corresponds to light conditions in diagnostic reading rooms for digital pathology and office rooms.
- **Clinical Viewing Room:** Corresponds to light conditions in diagnostic reading rooms for clinical viewing.
- **Emergency Room:** Corresponds to light conditions in emergency rooms.
- **Operating Room:** Corresponds to light conditions in operating rooms. This setting has the highest maximum ambient light.

To select a reading room:

1. Bring up the OSD main menu.

2. Navigate to the *Configuration* > *Calibration* > *Ambient Light* menu.
3. Enter the *Reading Room* submenu.
4. Select one of the available reading rooms and confirm.

4.15 Continuous Ambient Light Compensation (ALC)

About Continuous ALC

Enabling continuous ALC will continuously recalculate the DICOM display function taking the averaged ambient light, as measured by the integrated ambient light sensor, into account.

Continuous ALC can only be enabled on your display when the display function is set to DICOM. Please refer to “Display functions”, page 30.

To select continuous ALC:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* > *Ambient Light* menu.
3. Enter the *Continuous ALC* submenu.
4. Select *Enabled/Disabled* as desired and confirm.

4.16 Embedded QA

4.16.1 About Embedded QA

About

Embedded QA allows you to run a DICOM display calibration or DICOM compliance test directly from the display using the OSD menus described in the next sections. Embedded QA will use the front sensor to measure the necessary luminance levels for either a DICOM calibration or DICOM compliance test. Various settings for both actions can be selected from the display’s OSD menu. The last results of both actions can be consulted from the OSD.

When reading digital pathology images on the MDPC-8127, sRGB or Native are the recommended display functions. DICOM is an option, however this display function might be less relevant for your purposes.

4.16.2 DICOM status report

About DICOM status report

Following information is available:

DICOM Compliance Status (status since last compliance check)

- **Compliance status:** Shows if the current DICOM curve is compliant or not.
- **Maximum error:** Shows the maximum error of the current DICOM curve. This is the deviation compared to a perfect DICOM.
- **Error threshold:** Shows the error threshold. This is the maximum error allowed before a DICOM calibration is required.
- **Time elapsed since latest compliance check:** Shows the backlight runtime since last compliance check.
- **Display Function:** Shows the current display function.
- **Ambient light compensation:** Shows the ambient light compensation status.
- **Reading Room:** Shows the selected reading room.
- **Luminance:** Shows the measured luminance.

- **Black luminance:** Shows the measured black luminance.

DICOM Calibration Status

- **No calibration executed yet:** No other information is visible
- **Calibration executed:** When the calibration is executed, the following extra information is shown: Time elapsed since latest calibration, Display Function, Ambient Light Compensation and Reading Room.

Current DICOM Settings

- **Display Function:** Shows the current display function.
- **Ambient Light Compensation:** Shows the ambient light compensation status.
- **Reading room:** Shows the selected reading room.

To retrieve the DICOM status report:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* > *Embedded QA* menu.
3. Select *DICOM Status Report* to make the information visible on the screen.

4.16.3 DICOM compliance check

About DICOM compliance check

The DICOM compliance check will measure the DICOM curve of your display in different steps. After measurement, the DICOM status report is shown.

To start DICOM compliance check:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* > *Embedded QA* menu.
3. Select *DICOM Compliance Check* to start the compliance check.

Warning: Pressing a key during the compliance check will abort the check.

4.16.4 DICOM calibration

About DICOM calibration

The DICOM calibration will add a correction to the current DICOM curve to approach the perfect DICOM curve as well as possible.

To start DICOM calibration:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* > *Embedded QA* menu.
3. Select *DICOM calibration* to start the calibration.

Warning: Pressing a key during calibration will abort the calibration, previous values will be restored.

Note: After calibration, the compliance check will start automatically.

4.16.5 Reset DICOM calibration

About reset DICOM calibration

It is possible to restore the original (factory default) DICOM curve.

To reset the DICOM calibration:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* > *Embedded QA* menu.
3. Enter the *DICOM Preferences* submenu.
4. Select *Reset DICOM Calibration* to restore the original (not corrected) DICOM curve.

4.16.6 DICOM error threshold

About DICOM error threshold

The threshold to define the DICOM compliance can be modified in steps of 5% starting from 5 to 30%. When the maximum deviation is not bigger than the selected threshold, the compliance check will be OK.

To set the DICOM error threshold:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Calibration* > *Embedded QA* menu.
3. Enter the *DICOM Preferences* submenu.
4. Set *Error Threshold* as desired and confirm.

4.17 Image scaling

About image scaling

Enabling image scaling will copy each individual pixel to one or more adjacent pixels so that the size of the displayed image will be a multiple of the original image source video input signal.

Image scaling is only possible when the resolution of your display's video input signal is less than or equal to half the maximum resolution of the display.

To enable/disable image scaling:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Image Source* menu.
3. Enter the *Scaling* submenu.
4. Select *Enabled/Disabled* as desired and confirm.

4.18 Image source selection

About image source selection

The MDPC-8127 can have multiple image sources connected. Switching between the different sources can be done easily in the OSD menu.

When two display port cables are connected and the image source selection is on automatic, then the full resolution and refresh rate are obtained.

To select the image source

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Image Sources* menu.
3. Enter the *Image Source Selection* submenu.

4. Select one of the available image sources and confirm.

4.19 Grayscale conversion modes

About grayscale conversion modes

Grayscale conversion modes specify how color generated on the display controller is converted to grayscale in your display.

The available grayscale conversion modes are:

- **No conversion**
- **Use Red Channel:** This mode is intended for grayscale displays where gray is sent over the red channel.
- **Use Green Channel:** This mode is intended for grayscale displays where gray is sent over the green channel.
- **Use Blue Channel:** This mode is intended for grayscale displays where gray is sent over the blue channel.

To manually select a grayscale conversion mode:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Image Sources* > *Input Settings* > *DisplayPort 1/2* menu.
3. Enter the *Grayscale Conversion* submenu.
4. Select one of the available color conversion modes and confirm.

4.20 DisplayPort standard version

About DisplayPort standard version

The MDPC-8127 supports 2 DisplayPort standard versions: DP V1.1 and DP V1.2, the latter providing a higher video bandwidth.

To select the DisplayPort standard version

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Image Sources* > *Input Settings* > *DisplayPort 1/2* menu.
3. Enter the *Input Interface Standard Version* submenu.
4. Select one of the available versions and confirm.

To obtain full resolution and full refresh rate, DP V1.2 should be selected and two DisplayPort video input cables must be connected to the display.

4.21 EDID timings

About EDID timings

Following EDID timings are available for your MDPC-8127:

- **Resolution**: Allows to manually modify the resolution of the image source video input signal.
- **Refresh Rate**: Allows to manually select the refresh rate of the image source video input signal depending on the maximum refresh rate of the display controller connected to your display.
- **Color Depth**: Allows to change the color depth to 8 or to 10 bit.

To manually set EDID timings:

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Image Sources* > *Input Settings* > *DisplayPort 1/2* menu.

3. Enter the *EDID* submenu.
4. Select one of the available settings and confirm.

4.22 Display info

About display info

Your display serial number, native resolution, firmware versions, etc. are available in a dedicated submenu of the OSD menu.

To retrieve info about your display:

1. Bring up the OSD main menu.
2. Navigate to the *About this Display* menu to make the information visible on the screen.

4.23 Display status

About display status

The Status submenu of the OSD menu provides info on the current status of your display (runtimes, temperatures, etc.), the status of the connected image sources (video encoding mode, timings, etc.) and the current calibration status of your display (display function, luminance, ALC, etc.).

To retrieve the status of your display:

1. Bring up the OSD main menu.
2. Navigate to the *Status* menu.
3. Enter the *Display, Image Sources* or *Calibration* submenu as desired.

5 Cleaning the display

5.1 Cleaning instructions

To clean the display

Apply a cleaning/disinfecting product to a soft lint-free cloth, such as a microfiber or gauze and rub the display surface thoroughly. In order to be effective, all surfaces must be cleaned for a certain amount of time (ranging from 30 seconds to 2 minutes).

Use a cleaning/disinfecting product that is alcohol-, alkali-, water- or chlorine-based. Common examples are:

- Isopropanol 100%
- Ethanol 70%
- 0.5% Chlorehexidine in 70% ethanol/isopropanol
- Ortho-Phthalaldehyde (OPA) 0.55%
- Haemo-sol, 1% in water
- 250 ppm Chlorine solution
- 1.0% Iodine in 70% ethanol
- 1.6% aqueous ammonia
- “Green soap” (USP)
- 0.5% Chlorehexidine in 70% isopropyl alcohol
- Products similar to optical cleaning liquid
- Bacillol AF
- Flux
- Sodium hypochlorite 10%

When selecting an alternative cleaning/disinfecting product, it is recommended to always identify the active ingredients. In case of doubt about a certain cleaning product, use plain water.

Do not use any of the following products:

- Alcohol in concentrations > 70%
- Strong alkalis lye, strong solvents
- Acetone
- Toluene
- Acids
- Detergents containing fluoride
- Detergents containing ammonia
- Detergents containing abrasives
- Steel wool
- Sponge with abrasives
- Steel blades
- Cloths with steel thread
- Paper-based cloths (e.g. paper towels, facial tissues, toilet paper)

CAUTION: Read and follow all instructions on the label of the cleaning product.

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: When a small object or dust is tucked between the front bezel and the LCD surface (for displays without front glass), carefully remove with a soft object such as a plastic card or finger nail. Do not use sharp objects such as paperclips or tweezers to avoid damage to the 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.

Important information

6

6.1 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.

Modifications to the unit

Do not modify this equipment without authorization of the manufacturer.

Type of protection (Electrical)

Equipment with internal power supply: Class I equipment

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 shall 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 internal power supply

- This equipment must be earthed.
- Power requirements: The equipment must be powered by the AC mains voltage.
- 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 inlet to avoid damage by transient over-voltage.

To fully disengage the power to the device, please disconnect the power cord from the AC inlet.

High magnetic environment

- The device shall not be used in the high magnetic environment of an MRI scanner.
- The installer shall assess the magnetic environment before installation or use of the device.

Power cords

- Do not overload wall outlets and extension cords as this may result in fire or electric shock.
- Mains lead protection (U.S.: Power cord): Power cords should be routed so that they are not likely to be walked upon or pinched by items placed upon or against them, paying particular attention to cords at plugs and receptacles.

- Use a power cord that matches the voltage of the power outlet, which has been approved and complies with the safety standard of your particular country.
- Korea: Use KC certified products; Plug: 250 V~, 16 A; Power cord: 60227 IEC 53, 3G0.75 mm² / 60227 IEC 53, 3G1.0 mm²; Connector: 250 V~, 10 A

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.

Ventilation

Do not cover or block any ventilation openings in the cover of the set. When installing the device in a cupboard or another enclosed location, heed the necessary space between the set and the sides of the cupboard.

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.

Malfunctions

Disconnect the equipment's power cord from the AC inlet and refer servicing to qualified service technicians under the following conditions:

- If the power cord or plug is damaged or frayed.
- If liquid has been spilled into the equipment.
- If the equipment has been exposed to rain or water.
- If the equipment does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
- If the equipment has been dropped or the cabinet has been damaged.
- If the product exhibits a distinct change in performance, indicating a need for service.

National Scandinavian Deviations for CL. 1.7.2

Finland: "Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"

Norway: "Apparatet må tilkoples jordet stikkontakt"

Sweden: "Apparaten skall anslutas till jordat uttag"

6.2 Cybersecurity

Hospital IT security

To prevent unauthorized access to the device, the organization incorporating the MDPC-8127 in their IT network shall have the necessary state-of-the-art policies, processes, standards and other security measures in place to incorporate, support and protect the device into the IT network. This shall include the application of risk management (e.g. by following IEC 80001-1:2010 or equivalent standards).

6.3 Environmental information

Disposal Information

Waste Electrical and Electronic Equipment (WEEE)

This symbol on the product indicates that, under the European Directive 2012/19/EU governing waste from electrical and electronic equipment, this product must not be disposed of with other municipal waste. Please dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

For more information about recycling of this product, please contact your local city office or your municipal waste disposal service. For details, please visit the Barco website at: http://www.barco.com/AboutBarco/weee

Turkey RoHS compliance

Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur.

[Republic of Turkey: In conformity with the WEEE Regulation]

中国大陆 RoHS

Chinese Mainland RoHS

根据中国大陆《电器电子产品有害物质限制使用管理办法》（也称为中国大陆RoHS），以下部分列出了Barco产品中可能包含的有毒和/或有害物质的名称和含量。中国大陆RoHS指令包含在中国信息产业部MCV标准：“电子信息产品中有毒物质的限量要求”中。

According to the “Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products ” (Also called RoHS of Chinese Mainland), the table below lists the names and contents of toxic and/or hazardous substances that Barco’s product may contain. The RoHS of Chinese Mainland is included in the MCV standard of the Ministry of Information Industry of China, in the section “Limit Requirements of toxic substances in Electronic Information Products”.

零件项目(名称) Component name	有毒有害物质或元素 Hazardous substances and elements					
	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr6+	多溴联苯 PBB	多溴二苯醚 PBDE
印制电路配件 Printed Circuit Assemblies	X	O	O	O	O	O
液晶面板 LCD panel	X	O	O	O	O	O
外接电(线)缆 External Cables	X	O	O	O	O	O
内部线路 Internal wiring	O	O	O	O	O	O
金属外壳 Metal enclosure	O	O	O	O	O	O
塑胶外壳 Plastic enclosure	O	O	O	O	O	O
散热片(器) Heatsinks	O	O	O	O	O	O
风扇 Fan	O	O	O	O	O	O
电源供应器	X	O	O	O	O	O

零件项目(名称) Component name	有毒有害物质或元素 Hazardous substances and elements					
	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr6+	多溴联苯 PBB	多溴二苯醚 PBDE
Power Supply Unit						
文件说明书 Paper Manuals	O	O	O	O	O	O
光盘说明书 CD manual	O	O	O	O	O	O

本表格依据SJ/T 11364的规定编制

This table is prepared in accordance with the provisions of SJ/T 11364.

O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T 26572 标准规定的限量要求以下.

O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in GB/T 26572.

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 标准规定的限量要求.

X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in GB/T 26572.

在中国大陆销售的相应电子信息产品（EIP）都必须遵照中国大陆《电子电气产品有害物质限制使用标识要求》标准贴上环保使用期限（EFUP）标签。Barco产品所采用的EFUP标签（请参阅实例，徽标内部的编号使用于指定产品）基于中国大陆的《电子信息产品环保使用期限通则》标准。

All Electronic Information Products (EIP) that are sold within Chinese Mainland must comply with the “Marking for the restriction of the use of hazardous substances in electrical and electronic product” of Chinese Mainland, marked with the Environmental Friendly Use Period (EFUP) logo. The number inside the EFUP logo that Barco uses (please refer to the photo) is based on the “General guidelines of environment-friendly use period of electronic information products” of Chinese Mainland.

中国RoHS自我声明符合性标志 / China RoHS – SDoC mark

本产品符合《电器电子产品有害物质限制使用管理办法》和《电器电子产品有害物质限制使用达标管理目录》的要求。

This product meets the requirements of the “Management Rule on the Use Restriction of Hazardous Substances in Electrical and Electronic Products” and the “Management Catalogue for the Use Restriction of Hazardous Substances in Electrical and Electronic Products”.

绿色自我声明符合性标志可参见电子档文件

The green SDoC mark is visible in the digital version of this document.

6.4 EMC notice

General information

This device is for use in professional healthcare facility environments only.

With the installation of the device, use only the delivered external cables and 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.

WARNING: Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.

WARNING: Use of accessories, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.

WARNING: Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the MDPC-8127, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

Electromagnetic emissions

The MDPC-8127 is intended for use in the electromagnetic environment specified below. The customer or the user of the MDPC-8127 should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment – Guidance
RF emissions CISPR 11	Group 1	The MDPC-8127 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The MDPC-8127 is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class D	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

This MDPC-8127 complies with appropriate medical EMC standards on emissions to, and interference from surrounding equipment. 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.

Interference can be determined by turning the equipment off and on.

If this equipment does cause harmful interference to, or suffer from harmful interference of, surrounding equipment, the user is encouraged to try to correct the interference by one or more of the following measures:

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

Electromagnetic immunity

The MDPC-8127 is intended for use in the electromagnetic environment specified below. The customer or the user of the MDPC-8127 should assure that it is used in such an environment.

Immunity test	IEC 60601-1-2 test levels	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%
Electrical fast transient/ burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/ output lines 100 kHz repetition frequency	± 2 kV for power supply lines ± 1 kV for input/ output lines 100 kHz repetition frequency	Mains power quality should be that of a typical commercial or hospital environment
Surge IEC61000-4-5	Line to line: ± 0.5 kV, ± 1 kV Line to ground: ± 0.5 kV, ± 1 kV, ± 2 kV	Line to line: ± 0.5 kV, ± 1 kV Line to ground: ± 0.5 kV, ± 1 kV, ± 2 kV	Mains power quality should be that of a typical commercial or hospital environment
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0% residual voltage for 0.5 period at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0% residual voltage for 1 period at 0° 70% residual voltage for 25 periods at 0° Voltage interruptions: 0% residual voltage for 250 periods at 0°	0% residual voltage for 0.5 period at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0% residual voltage for 1 period at 0° 70% residual voltage for 25 periods at 0° Voltage interruptions: 0% residual voltage for 250 periods at 0°	Mains power quality should be that of a typical commercial or hospital environment. If the user of the MDPC-8127 requires continued operation during power mains interruptions, it is recommended that the MDPC-8127 be powered from an uninterruptible power supply or a battery
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	Not applicable [3]	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment
Conducted RF IEC 61000-4-6	3 Vrms (6 Vrms in ISM bands) 150 kHz to 80 MHz	3 Vrms (6 Vrms in ISM bands)	-
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.7 GHz	3 V/m	

Immunity to RF wireless communications equipment

Test frequency (MHz)	Band (MHz)	Service	Modulation	Maximum power (W)	Distance (m)	Immunity test level (V/ m)
385	380 – 390	TETRA 400	Pulse modulation 18 Hz	1.8	0.3	27
450	430 – 470	GMRS 460, FRS 460	FM ± 5 kHz deviation 1 kHz sine	2	0.3	28
710	704 – 787	LTE Band 13, 17	Pulse modulation 217 Hz	0.2	0.3	9
745						

3. MDPC-8127 doesn't contain components that are susceptible to magnetic fields.

Test frequency (MHz)	Band (MHz)	Service	Modulation	Maximum power (W)	Distance (m)	Immunity test level (V/m)
780						
810	800 – 960	GSM 800/ 900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation 18 Hz	2	0.3	28
870						
930						
1720	1700 – 1990	GSM 1800, CDMA 1900, GSM 1900, DECT, LTE Band 1/3/4/ 25, UMTS	Pulse modulation 217 Hz	2	0.3	28
1845						
1970						
2450	2400 – 2570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation 217 Hz	2	0.3	28
5240	5100 – 5800	W LAN 802.11 a/n	Pulse modulation 217 Hz	0.2	0.3	9
5500						
5785						

6.5 Explanation of symbols

Symbols on the device

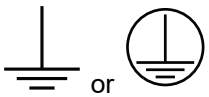
On the device or power supply, you may find the following symbols (nonrestrictive list):

CE 0123	Indicates the device meets the requirements of the applicable EC directives/ regulations.
FC	Indicates compliance with Part 15 of the FCC rules (Class A or Class B).
CLASSIFIED UL	Indicates the device is approved according to the UL regulations
CLASSIFIED C UL US	Indicates the device is approved according to the UL regulations for Canada and US
UL CERTIFIED SAFETY US-CA E352529	Indicates the device is approved according to the UL regulations for Canada and US

	Indicates the device is approved according to the UL Demko regulations.
	Indicates the device is approved according to the CCC regulations.
	Indicates the device is approved according to the VCCI regulations.
	Indicates the device is approved according to the KC regulations.
	Indicates the device is approved according to the BSMI regulations.
	Indicates the device is approved according to the PSE regulations.
	Indicates the device is approved according to the RCM regulations.
	Indicates the device is approved according to the EAC regulations.
	Caution: Federal law (United Stated of America) restricts this device to sale by or on the order of a licensed healthcare practitioner.
	Indicates the device is approved according to the BIS regulations.
	Indicates the device is approved according to the INMETRO regulations.
	Indicates the USB connectors on the device.
	Indicates the DisplayPort connectors on the device.
	Indicates the legal manufacturer.

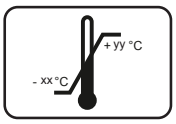
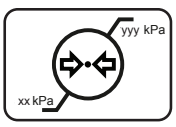
	Indicates the manufacturing date.
	Indicates the entity importing the medical device into the locale.
	Indicates the temperature limitations[4] for the device to safely operate within specs.
MD	Indicates that the device is a Medical Device.
SN	Indicates the device Serial Number.
REF	Indicates the device part number or catalogue number.
UDI	Indicates the Unique Device Identifier.
EC REP	Indicates the Authorised Representative for the European Union.
CH REP	Indicates the Authorised Representative for Switzerland.
	**Warning**: dangerous voltage
	**Caution**
	Consult the Instructions For Use.
 eIFU indicator	Consult the Instruction For Use on the website address that is provided as eIFU indicator.
	Indicates this device must not be thrown in the trash but must be recycled, according to the European WEEE (Waste Electrical and Electronic Equipment) directive.
	Indicates Direct Current (DC).
	Indicates Alternating Current (AC).

4. Values for xx and yy can be found in the technical specifications paragraph.

	Stand-by
	Equipotentiality
	Protective earth (ground)

Symbols on the box

On the box of the device, you may find the following symbols (nonrestrictive list):

	Indicates a device that can be broken or damaged if not handled carefully when being stored.
	Indicates a device that needs to be protected from moisture when being stored.
	Indicates the storage direction of the box. The box must be transported, handled and stored in such a way that the arrows always point upwards.
 or 	Indicates the maximum number of identical boxes which may be stacked on each other, where “n” is the limiting number.
 or 	Indicates the weight of the box and that it should be carried with two persons.
	Indicates that the box should not be cut with a knife, a cutter or any other sharp object.
	Indicates the temperature limits[5] to which the device can be safely exposed when being stored.
	Indicates the range[5] of humidity to which the device can be safely exposed when being stored.
	Indicates the range[5]of atmospheric pressure to which the device can be safely exposed when being stored.

5. Values for xx and yy can be found in the technical specifications paragraph.

6.6 Legal disclaimer

Disclaimer notice

Although every attempt has been made to achieve technical accuracy in this document, we assume no responsibility for errors that may be found. Our goal is to provide you with the most accurate and usable documentation possible; if you discover errors, please let us know.

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