

# Coronis Fusion 10MP

## User Guide



**BARCO**

Visibly yours

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# Welcome!

Thank you for choosing this CORONIS FUSION 10MP display!






Equipped with proprietary 'SmoothGray' technology for a meticulously rendered grayscale curve, the CORONIS FUSION 10MP display makes subtle details and lesions more noticeable than ever before. Add to this exceptionally high brightness and contrast levels, truly dark blacks and perfect geometry and you begin to understand that supreme grayscale precision has a new meaning.

Thanks to the seamless 30-inch LCD screen, you can easily compare prior and current mammography images without the annoyance of a central bezel. Moreover, it allows you to review X-ray chest images or 40 full-resolution CT or MR images with superb diagnostic precision on a single screen.

The integrated I-Guard sensor makes Quality Assurance an easy job. Combined with the online MediCal QAWeb solution, I-Guard performs intervention-free DICOM calibrations, Quality Assurance tests and remote assessment of your display.

Use the instructions in this guide to install your CORONIS FUSION 10MP display and discover all these interesting features yourself!

Following symbols may be used throughout this guide:

	Warning: Risk of injury to human beings		Caution: Risk of damage to the product
	Important notice or remark		Note
	Hint, tip		Additional information

 Read all the safety information starting on page 47 before operating your CORONIS FUSION 10MP display.

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# What's in the box

Your CORONIS FUSION 10MP display comes with:

- this CORONIS FUSION 10MP display guide
- a system CD
- two DVI cables
- two DisplayPort cables
- a USB cable
- a set of AC power cords
- an external power supply

If you ordered a Barco display controller, it's also in the box together with its accessories and dedicated user guide.



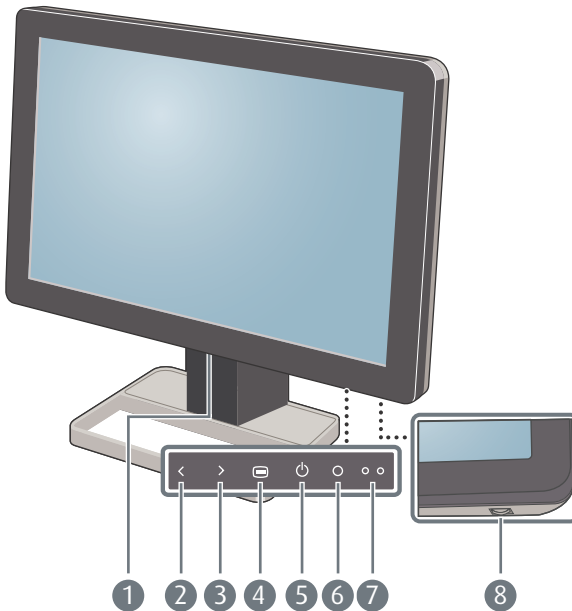
Keep your original packaging. It is designed for this display and is the ideal protection during transport.

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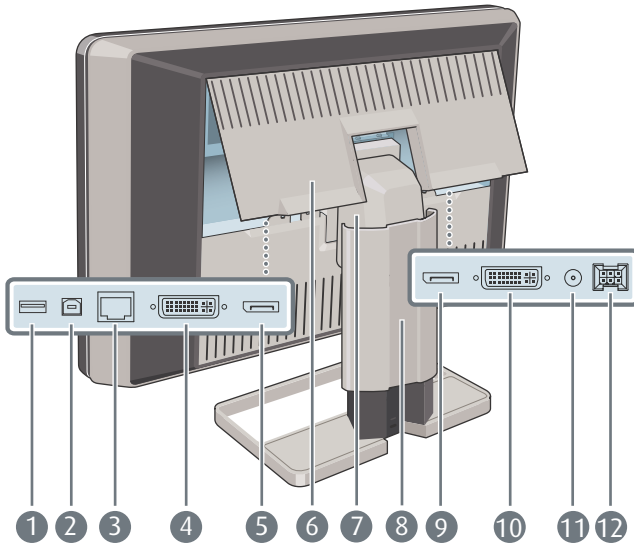
# Parts, controls and connectors

## Front view



- 
- |                                |                        |
|--------------------------------|------------------------|
| 1 USB downstream connectors    | 2 Left/Up key          |
| 3 Right/Down key               | 4 Menu/Enter key       |
| 5 Stand-by/Cancel key          | 6 Ambient light sensor |
| 7 Power status indicator light | 8 Control wheel        |
-

## Rear view



- |    |                                     |    |                             |
|----|-------------------------------------|----|-----------------------------|
| 1  | USB downstream connector            | 2  | USB upstream connector      |
| 3  | Ethernet connector (see note below) | 4  | DVI 1 video input           |
| 5  | DisplayPort 1 video input           | 6  | Connector compartment cover |
| 7  | Neck cover                          | 8  | Display stand cover         |
| 9  | DisplayPort 2 video input           | 10 | DVI 2 video input           |
| 11 | +5 VDC, 0.5 A power output          | 12 | +24 VDC power input         |



The Ethernet connection is used for maintenance purposes and is not supported for user application.

# Display installation



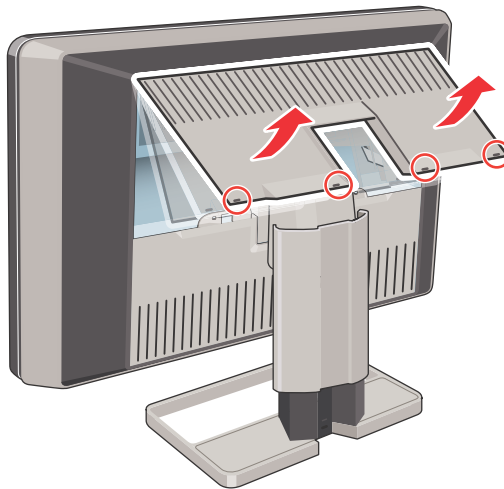
Prior to installing your CORONIS FUSION 10MP display and connecting all necessary cables, make sure to have a suitable display controller physically installed in your computer. If you are using a Barco display controller, please consult the user guide delivered with it to do this.

## Removing the covers

### CONNECTOR COMPARTMENT COVER

The connector compartment cover should be removed to get access to the connectors. To remove the cover, proceed as follows:

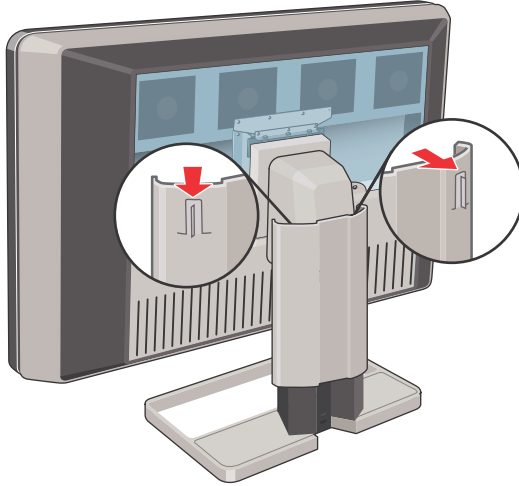
- 1 Gently lift the clips at one of the handles of the connector compartment cover to release that side of the cover.
- 2 Do the same at the other side of the cover.
- 3 Remove the cover.



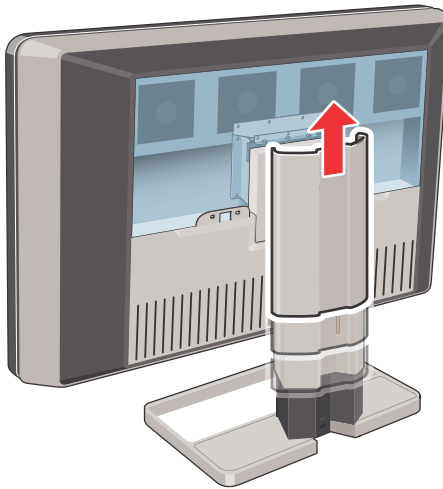
## DISPLAY STAND COVER

To get access to the cable routing channel, the display stand cover should be removed. This can be done as follows:

- 1 Gently press and hold the clips at the inside top of the cover.



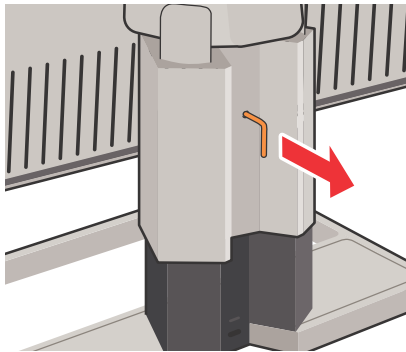
- 2 Slide the cover upwards while holding the clips pressed.



## Unlocking the height mechanism

In the factory, the height-positioning system in the display stand is locked with a red hook to prevent damage during transportation. You'll have to remove this hook before adjusting your display height position.

- 1 While holding the display panel pushed down, pull out the red hook in the display stand.



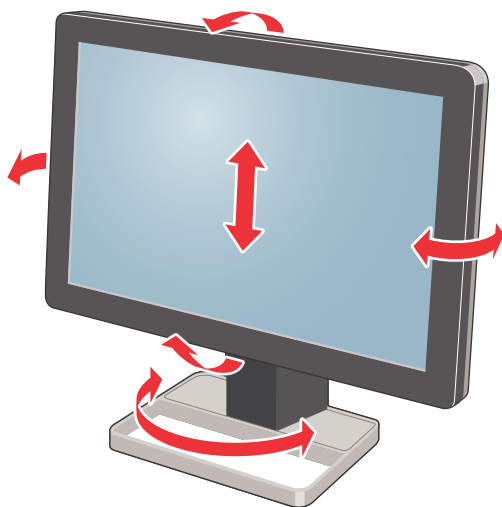
To retain the hook for possible future transportation, insert the short, red end of the hook back into the stand of your display.

## Adjusting the display position

Now that the height-positioning system of your display is unlocked, you can tilt, swivel, raise and lower the display as desired.



Do not try to pivot your display when attached to the stand. Trying to do so could cause serious damage to your display and its stand.

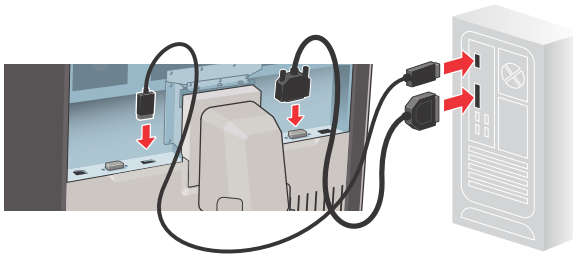


## Connecting the signal cables

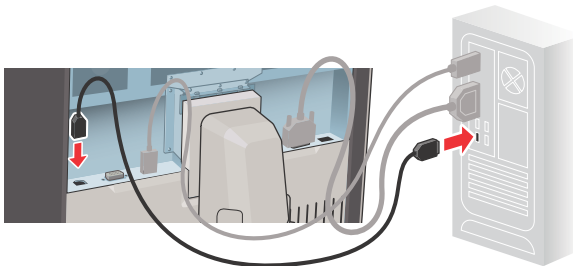
- 1 Connect one head of the display controller to the DVI 1 or DisplayPort 1 connector with one of the supplied DVI or DisplayPort cables.
- 2 Connect another head of the display controller to the DVI 2 or DisplayPort 2 connector with one of the supplied DVI or DisplayPort cables.



Each side of your display can have a different video input connected (one side can have DVI connected while the other side has DisplayPort connected). Both display sides can have the same video input connected as well but only one video input is allowed on each side of your display.

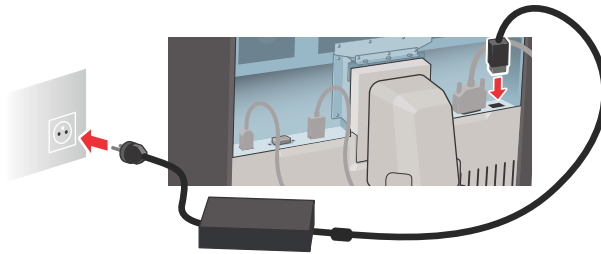


- 3 If you want to make use of your display's USB downstream connectors, connect a PC USB downstream connector to the display's USB upstream connector by means of the supplied USB 2.0 cable.



## Connecting the power cables

- 1 Connect the supplied external DC power supply to the +24 VDC power input of your CORONIS FUSION 10MP display.
- 2 Plug the other end of the external DC power supply into a **grounded** power outlet by means of the proper power cord delivered in the packaging.

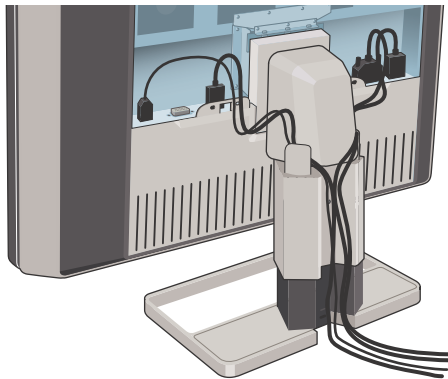


## Routing the cables

Route all connected cables through the cable routing channel in the stand of your display.



The cable straps at the inside of the connector compartment allow you to fix the cables for better shielding of the cables.





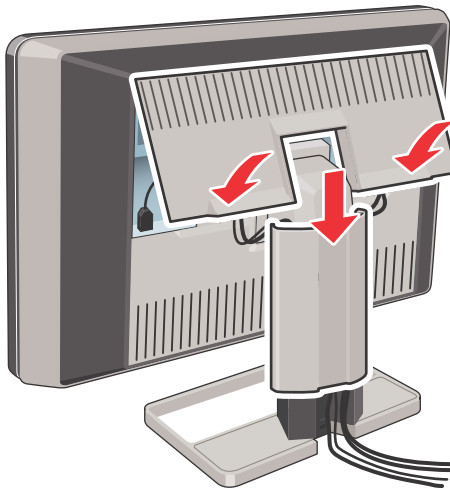
## Re-attaching the covers

- 1 Re-attach the display stand cover by sliding it downward. You'll hear a "click" sound of the cover's clips when the display stand cover is in position.



Pay attention that all cables stay in the cable channel while replacing the cover.

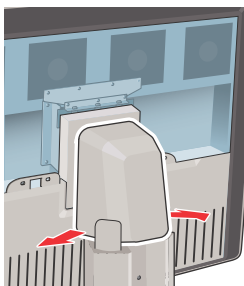
- 2 Re-attach the connector compartment cover by sliding the cover's top in position and then push the cover's bottom. You'll hear a "click" sound of the cover's clips when the connector compartment cover is in position.



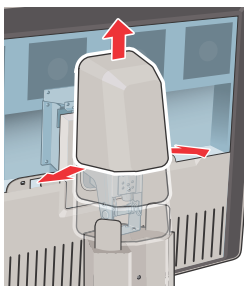
## VESA-mount installation

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.

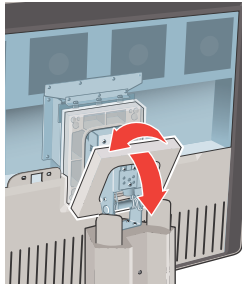
- 1 Gently pull open both lower sides of the cover.



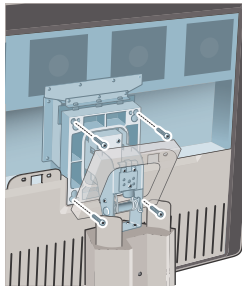
- 2 Slide the cover upwards while holding the lower sides pulled open.



- 3 Lift the plastic frame that covers the fixation of the panel to the stand. Turn it for 45 degrees to uncover the fixation screws.



- 4 Unscrew the four fixation screws fixing the panel to the stand.



- 5 Attach the panel **firmly** to the arm using 4 screws M4 x 10 mm. You should mount the panel in landscape position. Portrait position is not supported.



Use an arm that can support a weight of at least 18 kg (39.68 lbs). Failure to do so could make the panel fall, causing serious injury to a child or adult, and serious damage to the equipment.

# First time starting up

You are now ready to start up your CORONIS FUSION 10MP display system for the first time.

- 1 Switch on your CORONIS FUSION 10MP display as described in “**Stand-by switching**” on page 24.
- 2 Turn on the computer connected to your display.

If you have properly installed your display and display controller, the Windows start-up messages will appear once the boot procedure is finished.



Your CORONIS FUSION 10MP display will be running in a basic video mode at a default refresh rate when first time starting up.

If you are using a Barco display controller, please consult the user guide delivered with it to install the drivers, software and documentation. When this is done, your display will automatically detect the connected video input signal(s) and apply the correct video mode and refresh rate.

# Daily operation

## 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 “Power Options Properties” in the “Control Panel”.



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.

### 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.



To learn more about LCD technology and missing pixels, consult the dedicated white papers available at [www.barco.com/medical](http://www.barco.com/medical).

## ENHANCE USER COMFORT

Every Barco multi-head display system is color matched with the highest specification in the market.



Barco recommends keeping color-matched displays together. Furthermore, it is important to use all displays of a multi-head configuration at the same rate to preserve color matching throughout the economic lifetime of the system.

## MAXIMIZE QUALITY ASSURANCE

The 'MediCal QAWeb' system offers online service for high-grade Quality Assurance, providing maximum diagnostic confidence and uptime.



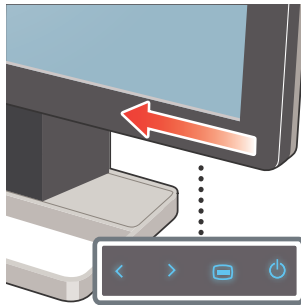
Learn more and sign up for the free MediCal QAWeb Essential level at [www.barco.com/medical/qa](http://www.barco.com/medical/qa)

# Keys indicator lights

By default, the keys indicator lights will be dimmed which makes them unavailable at that moment.

## TO MAKE THE KEYS LIGHT UP:

- 1 Gently sweep your finger over the bottom right hand side of your display.



As a result, the keys will light up and are now available for further actions. However, if no further actions are taken within the following 5 seconds, the keys indicator lights will dim again.




The keys indicator lights auto-dim function can be disabled in the OSD menu. Please refer to **“Keys indicator lights”** on page 29 for detailed instructions on how to do this.

# Stand-by switching

Switching on the display while it is in stand-by mode or vice versa can both be done by using the keys or by using the control wheel.

## To SWITCH YOUR DISPLAY ON/STAND-BY USING THE KEYS:

- 1 Light up the keys indicator lights as previously described.
- 2 While the keys are light up, touch the Stand-by/Cancel  key for approximately 2 seconds.

## To SWITCH YOUR DISPLAY ON/STAND-BY USING THE CONTROL WHEEL:

- 1 Press and hold the control wheel for approximately 2 seconds.

As a result, the display will switch on or will switch to stand-by mode. When the display is **switched on**, the power status indicator light is **dimmed**. When the display is in **stand-by mode**, the power status indicator light is **orange**.



The power status indicator light can be enabled in the OSD menu so that it will turn **blue** when the display is **switched on**. Please refer to **“Power status indicator light”** on page 28 for detailed instructions on how to do this.




In case of a power outage recovery, your display will always start-up in the power mode it was in before the power interruption (i.e. stand-by or on). This protects your display against inadvertent image retention problems.



# Bringing up the OSD menu

The OSD menu allows you to configure different settings to make your CORONIS FUSION 10MP 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 USING THE KEYS:

- 1 If not already done so, switch on the display as previously described.
- 2 Light up the keys indicator lights as previously described.
- 3 While the keys light up, touch the Menu/Enter  key.

## TO BRING UP THE OSD MENU USING CONTROL WHEEL:

- 1 If not already done so, switch on the display as previously described.
- 2 Shortly press the control wheel.

As a result, the OSD main menu comes up in the bottom right corner of the screen. If no further actions are taken within the following 90 seconds however, the OSD menu will disappear again.



The OSD menu automatic close function can be disabled in the OSD menu. Please refer to **“OSD menu automatic close function”** on page 28 for detailed instructions on how to do this.



The OSD menu position can be modified in the OSD menu. Please refer to **“OSD menu position”** on page 27 for detailed instructions on how to do this.






# Navigating through the OSD menus

## ABOUT OSD MENU NAVIGATION

Navigating through the OSD menu can be done by using the keys or by using the control wheel.

### TO NAVIGATE THE OSD MENU USING THE KEYS:

- Use the Right/Down > and Left/Up < keys to move through the (sub)menus, change values or make selections.
- To go into a submenu or confirm adjustments and selections, use the Menu/Enter  key.
- Use the Stand-by/Cancel  key to cancel adjustments or exit a (sub)menu.
- Exit the OSD menu by touching the Stand-by/Cancel  key for approximately 2 seconds.

### TO NAVIGATE THE OSD MENU USING THE CONTROL WHEEL:

- Rotate the control wheel to move through the menus, change values or make selections.
- To go into a submenu or confirm adjustments and selections, shortly click the control wheel.
- Click the control wheel for approximately 2 seconds to cancel adjustments or exit a (sub)menu.

# Advanced operation



## OSD menu position

### ABOUT THE OSD MENU POSITION

By default, the OSD menu comes up in the bottom right corner of the screen. This position can be modified however. There's choice from a number of predefined positions.

### TO CHANGE THE POSITION OF THE OSD MENU:

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



## 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 CORONIS Fusion 10MP display.

### 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.



## 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.



## Power status indicator light

### ABOUT THE POWER STATUS INDICATOR LIGHT

By default, when the display is switched on, the power status indicator light is dimmed. This behavior can be changed so that the power status indicator light will be **blue** when the display is switched on.



When the display is in stand-by mode, the power status indicator light will always turn orange, even when the power status indicator light is disabled.

#### TO ENABLE/DISABLE THE POWER STATUS INDICATOR LIGHT:

- 1 Bring up the OSD main menu.
- 2 Navigate to the **Configuration** > **User Interface** > **Indicator Lights** menu.
- 3 Enter the **Power Status** submenu.
- 4 Select **Enabled/Disabled** as desired and confirm.



## Keys indicator lights

### ABOUT THE KEYS INDICATOR LIGHTS

By default, after lighting up, the keys indicator lights will dim again if no further actions are taken within the following 5 seconds. However, this behavior can be changed so that the keys indicator lights are always on or always off.

### TO CONFIGURE THE KEYS INDICATOR LIGHTS:

- 1 Bring up the OSD main menu.
- 2 Navigate to the **Configuration** > **User Interface** > **Indicator Lights** menu.
- 3 Enter the **Keys** submenu.
- 4 Select **Automatic/Always On/Always Off** as desired and confirm.



## Power lock function

### ABOUT THE POWER LOCK FUNCTION

By enabling the power lock function, the CORONIS FUSION 10MP display is forced to remain switched on. This means that it can't be switched to stand-by mode until the power lock function is disabled again.

### 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.



## Keys sound

### ABOUT THE KEYS SOUND

By default, the keys will make a “beep” sound on every touch. However, this sound can be disabled so that no sound will be heard when using the keys.

### TO ENABLE/DISABLE THE KEYS SOUND:

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



## 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 properties” window of your workstation.



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

### 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.



# Luminance target

## ABOUT THE LUMINANCE TARGET

The luminance target of your CORONIS FUSION 10MP display 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.



# Viewing modes

## ABOUT VIEWING MODES

The CORONIS FUSION 10MP display can be used in two viewing modes:

<b>Diagnostic</b>	This mode provides the full calibrated luminance and is intended for using the display for diagnostic purposes.
<b>Text</b>	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.

### 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.



# Display functions

## ABOUT DISPLAY FUNCTIONS

Native, uncorrected panels will display all grayscale/color levels at an equal luminance. Studies have shown however, that in medical images certain grayscale/color parts contain more diagnostic information than 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.

<b>Native</b>	If you select Native, the native panel behavior will not be corrected.
<b>Dynamic Gamma 1.8</b> <b>Dynamic Gamma 2.2</b>	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.
<b>DICOM</b>	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. Barco recommends selecting the DICOM display function for most medical viewing applications.
<b>User</b>	This display function will be automatically selected when display functions are defined by MediCal QAWeb.
<b>Gamma 1.8</b> <b>Gamma 2.2</b>	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.



## 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.



# Ambient Light Compensation (ALC)

## ABOUT ALC



Ambient Light Compensation (ALC) can only be enabled on your display when the DICOM display function is selected. Therefore, please refer to “**Display functions**” on page 32 to correctly set the display function.

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**” on page 34.

## 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.



# Reading rooms

## ABOUT READING ROOMS



Reading rooms can only be selected when the DICOM display function is selected. Therefore, please refer to **“Display functions”** on page 32 to correctly set the display function.

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)”** on page 33 to enable ALC.

The available reading rooms for your CORONIS FUSION 10MP display are:

<b>CR/DR/MAMMO</b>	Corresponds to light conditions in diagnostic reading rooms for computed radiology, digital radiology or mammography. This setting has the lowest maximum ambient light.
<b>CT/MR/NM</b>	Corresponds to light conditions in diagnostic reading rooms for computed tomography, magnetic resonance or nuclear medicine scans.
<b>Staff Office</b>	Corresponds to light conditions in office rooms.
<b>Clinical Viewing Room</b>	Corresponds to light conditions in diagnostic reading rooms for clinical viewing.

<b>Emergency Room</b>	Corresponds to light conditions in emergency rooms.
<b>Operating Room</b>	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.



## Image orientation

### ABOUT IMAGE ORIENTATION

Your display automatically detects its physical orientation (portrait or landscape) and, by default, automatically adjusts the image orientation to this. This means that when your display is physically rotated, the image will rotate along.

The OSD menu however, allows to overrule this behavior and force the image orientation to portrait or landscape regardless of the physical orientation of the display. This may be especially useful when operating your display with the screen facing upwards.

### TO SET THE IMAGE ORIENTATION:

- 1 Bring up the OSD main menu.
- 2 Navigate to the **Configuration > Image Sources** menu.
- 3 Enter the **Orientation** submenu.
- 4 Select **Landscape/Portrait/Automatic** as desired and confirm.

## Image scaling

### ABOUT IMAGE SCALING

Enabling image scaling will multiply 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 Sources** menu.
- 3 Enter the **Scaling** submenu.
- 4 Select **Enabled/Disabled** as desired and confirm.

## Image source selection modes

### ABOUT IMAGE SOURCE SELECTION MODES

Your CORONIS FUSION 10MP display automatically detects the number of video input signals connected, attaches them to the correct display side and applies the correct video settings to it (resolution, video encoding mode, refresh rate,...). However, it may be needed to manually select the video input signal(s) to be displayed on a certain display side or to

adjust certain video settings yourself. The start to this is selecting one of the following image source selection modes available for your display:

<b>Automatic</b>	In this mode, your display automatically detects the connected video input signals, attaches them to the correct display side and applies the correct video settings to it (resolution, video encoding mode, refresh rate,...). No video settings are available when this mode is selected.
<b>One Image Source</b>	This mode is intended for displaying and manually configuring only one connected video input signal. When selecting this mode, the video settings become available for the selected video input signal.
<b>Two Image Sources</b>	This mode is intended for displaying and manually configuring two connected video input signals (one on each display side). When selecting this mode, the video settings become available for the selected video input signal on each side of the display.

#### **TO SELECT AN IMAGE SOURCE SELECTION MODE:**

- 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 source selection modes and confirm.



# Video input signals

## ABOUT VIDEO INPUT SIGNALS



Your CORONIS FUSION 10MP display automatically detects the connected video input signals. Manually selecting image source video input signals is possible, but then your display's image source selection mode should be set to allow this. Please refer to **"Image source selection modes"** on page 36 to do this.

The available input signals for your display are:

<b>DisplayPort 1</b>	This input corresponds to the DisplayPort 1 connector as shown in the <b>"Parts, controls and connectors"</b> section.
<b>DVI 1</b>	This input corresponds to the DVI 1 connector as shown in the <b>"Parts, controls and connectors"</b> section.
<b>DisplayPort 2</b>	This input corresponds to the DisplayPort 2 connector as shown in the <b>"Parts, controls and connectors"</b> section.
<b>DVI 2</b>	This input corresponds to the DVI 2 connector as shown in the <b>"Parts, controls and connectors"</b> section.

### TO MANUALLY SELECT A VIDEO INPUT SIGNAL:

- 1 Bring up the OSD main menu.
- 2 Navigate to the **Configuration > Image Sources > (Left/Right) Image Source** menu.
- 3 Enter the **Input Signal** submenu.
- 4 Select one of the available input signals and confirm.



# Video encoding modes

## ABOUT VIDEO ENCODING MODES



Your CORONIS FUSION 10MP display automatically detects the connected video input signals and applies the correct video encoding settings. Manually selecting a video encoding mode is possible, but then your display's image source selection mode should be set to allow this. Please refer to **"Image source selection modes"** on page 36 to do this.

Video encoding modes specify how the color and luminance information is encoded in the video signal. In consumer displays, this is usually done by a limited 8-bit encoding mechanism. Your CORONIS FUSION 10MP display however, features 10-bit encoding enabling it to better match the DICOM defined grayscale range. Such an extensive range is necessary to comply with the guidelines set forward by the latest medical guidelines.

The available video encoding modes for your display are listed below.



Please note that the display controller connected to your display might not always support all these video encoding modes.

<b>Standard</b>	This mode uses the standard 8 bit encoding mechanism.
<b>HDR1</b>	This mode features 10-bit video encoding following the High Dynamic Range (HDR) standard, usually used on color displays.
<b>HDR2</b>	HDR2 is a Barco specific mode featuring 10-bit video encoding following the High Dynamic Range (HDR) standard but allowing full refresh rate (which is not always possible with HDR1). This mode is usually used on color displays.

<b>Dual 10</b>	Dual 10 is a Barco specific 10-bit video encoding mode which is usually used on grayscale displays and which allows full refresh rate.
<b>Automatic</b>	When selecting this option, your CORONIS FUSION 10MP display will automatically assign the correct video encoding settings to the connected video input signals.

### TO MANUALLY SELECT A VIDEO ENCODING MODE:

- 1 Bring up the OSD main menu.
- 2 Navigate to the **Configuration > Image Sources > (Left/Right) Image Source** menu.
- 3 Enter the **Video Encoding** submenu.
- 4 Select one of the available video encoding modes and confirm.



## Grayscale conversion modes

### ABOUT GRAYSCALE CONVERSION MODES



Your CORONIS FUSION 10MP display automatically detects the connected video input signals and applies the correct grayscale conversion settings. Manually selecting a grayscale conversion mode is possible, but then your display's image source selection mode should be set to allow this. Please refer to **"Image source selection modes"** on page 36 to do this.

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

The available grayscale conversion modes are:

<b>Use Red Channel</b>	This mode is intended for grayscale displays where gray is sent over the red channel.
------------------------	---



<b>Use Green Channel</b>	This mode is intended for grayscale displays where gray is sent over the green channel.
<b>Use Blue Channel</b>	This mode is intended for grayscale displays where gray is sent over the blue channel.
<b>Use All Channels</b>	This mode is intended for grayscale displays where gray is sent over the red, green and blue channel. This done by means of a standard conversion mechanism where 30% red, 59% green and 11% blue are used to generate gray.

#### **TO MANUALLY SELECT A GRAYSCALE CONVERSION MODE:**

- 1** Bring up the OSD main menu.
- 2** Navigate to the **Configuration > Image Sources > (Left/Right) Image Source** menu.
- 3** Enter the **Grayscale Conversion** submenu.
- 4** Select one of the available color conversion modes and confirm.



## Video timings

### ABOUT VIDEO TIMINGS



Your CORONIS FUSION 10MP display automatically detects the connected video input signals and applies the correct timings. Manually configuring the video timings is possible, but then your display's image source selection mode should be set to allow this. Please refer to **"Image source selection modes"** on page 36 to do this.

Following video timings are available for your CORONIS FUSION 10MP display:

<b>Resolution</b>	Allows to manually modify the resolution of the image source video input signal.
<b>Refresh Rate</b>	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.
<b>Orientation</b>	Allows to change the orientation of the image source video input signal to landscape, portrait or to let the display automatically assign the correct orientation.

### TO MANUALLY SET VIDEO TIMINGS:

- 1 Bring up the OSD main menu.
- 2 Navigate to the **Configuration > Image Sources > (Left/Right) Image Source** menu.
- 3 Enter the **Timings** submenu.
- 4 Select **Resolution, Refresh Rate** or **Orientation**.
- 5 Select one of the available settings and confirm.



## Display info

### ABOUT DISPLAY INFO

Your display serial number, color type, 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.
- 3 Enter the **Display** or **Firmware** submenu as desired.



## 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 Source** or **Calibration** submenu as desired.

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# Cleaning your display

## Front glass



Before cleaning the front glass, unplug the power cable from the mains to prevent the keys from being activated inadvertently by sweeping over them.

Clean the front glass using a sponge, cleaning cloth or soft tissue, **lightly** moistened with one of the following tested products:

- Flux
- Windex Glass Plus
- Bohle glass cleaner
- Mr. Proper
- Pril
- Ajax glass cleaner
- Sidolin glass cleaner

In case none of the above cleaning products is available, use plain water.



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



Do not apply or spray liquid directly to the front glass as excess liquid may cause damage to internal electronics. Instead, apply the liquid to the cleaning cloth.



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

## Cabinet

- 1 Clean the cabinet using a soft cotton cloth, **lightly** moistened with a recognized cleaning product for medical equipment.

The cabinet has been tested for resistance to the following products:

- Cidex, Betadine
- Alcohol (Isopropyl and Ethyl)
- Ammonia-based cleaners (Windex)
- Aquasonic Gel

In case none of the above cleaning products is available, use plain water.



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

- 2 Repeat with water only.
- 3 Wipe dry with a dry cloth.

# Important information

## Safety information

### GENERAL RECOMMENDATIONS

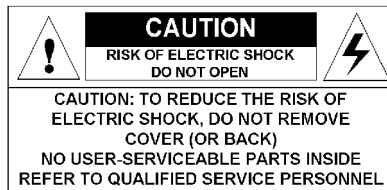
Read the safety and operating instructions before operating the display.

Retain safety and operating instructions for future reference.

Adhere to all warnings on the display and in the operating instructions manual.

Follow all instructions for operation and use.

### ELECTRICAL SHOCK



### TYPE OF PROTECTION (ELECTRICAL):

Display with external 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.

## **POWER CONNECTION - DISPLAY WITH EXTERNAL 24 VDC POWER SUPPLY**

- Power requirements: The display must be powered using the delivered medical approved 24 VDC SELV power supply.
- The medical approved DC power supply must be powered by the AC mains voltage (protective earth terminal).

### **POWER CORDS:**

- Utilize a UL-listed detachable power cord, 3-wire, type SJ or equivalent, 18 AWG min., rated 300 V min., provided with a hospital-grade type plug 5-15P configuration for 120V application, or 6-15P for 240V application.
- 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.

### **WATER AND MOISTURE**

Never expose the display to rain or moisture.

Never use the display 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 the ventilation openings in the cover of the set. When installing the display in a cupboard or another closed location, heed the necessary space between the set and the sides of the cupboard.

### **INSTALLATION**

Place the display on a flat, solid and stable surface that can support the weight of at least 3 displays. If you use an unstable cart or stand, the



display may fall, causing serious injury to a child or adult, and serious damage to the equipment.

**THIS APPARATUS CONFORMS TO:**

CE0120 (MDD 93/42/EEC class IIb product), CE - 2004/108/EC, CE - 93/42/EEC; A1:2007/47/EC class II b, UL 60601-1 1ST EDITION, CAN/CSA-C22.2 NO. 601.1-M90, IEC 60601-1 2ND ED:1988 + A1:1991 + A2:1995, IEC 60950-1:2005 2ND EDITION, DEMKO - EN 60601-1, CCC - GB9254-2008 + GB4943-2001 + GB17625.1-2003, VCCI, FCC class B, BSMI, FDA 510K, RoHS, KC

**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"

# Environmental information

## DISPOSAL INFORMATION (WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT)



This symbol on the product indicates that, under European Directive 2002/96/EC 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, your municipal waste disposal service or the shop where you purchased the product.

## MERCURY NOTICE

This Barco product consists of materials that may contain mercury, which must be recycled or disposed of in accordance with local, state, or country laws:

- Within this system, the backlight lamps in the monitor display contain mercury



## TURKEY RoHS COMPLIANCE



Republic of Turkey: In conformity with the EEE Regulation  
Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

## 中国大陆 RoHS (CHINESE MAINLAND ROHS)

根据中国大陆《电子信息产品污染控制管理办法》(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 "China Administration on Control of Pollution Caused by Electronic Information 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 or 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	0	0	0	0	0
液晶面板 LCD panel	X	X	0	0	0	0
外接电(线)缆 External cables	X	0	0	0	0	0
内部线路 Internal wiring	0	0	0	0	0	0
金属外壳 Metal enclosure	0	0	0	0	0	0
塑胶外壳 Plastic enclosure	0	0	0	0	0	0
散热片(器) Heatsinks	0	0	0	0	0	0
风扇 Fan	0	0	0	0	0	0

电源供应器 Power supply unit	X	0	0	0	0	0
文件说明书 Paper manuals	0	0	0	0	0	0
光盘说明书 CD manual	0	0	0	0	0	0
<p>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 SJ/T 11363-2006 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 SJ/T11363-2006.</p> <p>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 SJ/T 11363-2006 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 SJ/T11363 2006.</p>						

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《电子信息产品污染控制标识要求》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制定产品）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 "Electronic Information Products Pollution Control Labeling Standard" 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 "Standard of Electronic Information Products Environmental Friendly Use Period" of Chinese Mainland.



# Regulatory compliance information

## INDICATIONS FOR USE

The CORONIS FUSION 10MP display (MDCG-10130) is intended to be used in displaying and viewing digital images, including digital mammography, for review and analysis by trained medical practitioners.

Caution (USA): Federal law restricts this device to sale by or on the order of a physician or a practitioner trained on its use.

## 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 equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment 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 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 radio/TV technician for help.




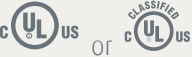







## CANADIAN NOTICE

This ISM device complies with Canadian ICES-001.

Cet appareil ISM est conforme à la norme NMB-001 du Canada.

## Explanation of symbols

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

	Indicates compliance to the essential requirements of the Directive 93/42/EEC
	Indicates compliance with Part 15 of the FCC rules (Class A or Class B)
	Indicates the display is approved according to the UL regulations
	Indicates the display is approved according to the c-UL regulations
	Indicates the display is approved according to the DEMKO regulations
	Indicates the display is approved according to the CCC regulations
	Indicates the display is approved according to the VCCI regulations
	Indicates the USB connectors on the display
	Indicates the manufacturing date
	Indicates the temperature limitations for the display to operate within specs
	Indicates the display serial no.

	Consult the operating instructions
	Indicates this apparatus must not be thrown in the trash but must be recycled, according to the European WEEE (Waste Electrical and Electronic Equipment) directive

## Legal disclaimer

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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# Technical specifications

Product acronym	MDCG-10130
Screen technology	TFT AM LCD Dual Domain IPS
Active screen size (diagonal)	761 mm (29.6")
Active screen size (H x V)	645 x 403 mm (25.4 x 15.9")
Aspect ratio (H:V)	16:10
Resolution	10MP (4096 x 2560)
Pixel pitch	0.1575 mm
Color imaging	No
Gray imaging	Yes
Number of grayscales (LUT in/LUT out)	1024 grey levels (10/12)
Viewing angle (H, V)	170°
Uniform Luminance Technology (ULT)	Yes
Per Pixel Uniformity (PPU)	No
Ambient Light Compensation (ALC)	Yes
Backlight Output Stabilization (BLOS)	Yes
I-Guard	Yes
Maximum luminance	1250 cd/m <sup>2</sup>
DICOM calibrated luminance (ULT off)	500 cd/m <sup>2</sup>
Contrast ratio (ULT off)	800:1
Response time (Tr + Tf)	35 ms



<b>Scanning frequency (H; V)</b>	30-150 kHz; 15-80 Hz
<b>Housing color</b>	Black/Silver
<b>Video input signals</b>	DVI-D Dual Link (2x) / DisplayPort (2x)
<b>Video inout terminals</b>	NA
<b>USB ports</b>	1 upstream (endpoint), 3 downstream
<b>USB standard</b>	2.0
<b>Power requirements (nominal)</b>	100-240V
<b>Power consumption (nominal)</b>	102W
<b>Power save mode</b>	Yes
<b>Power management</b>	DVI-DMPM / DP-DMPM
<b>Dot clock</b>	280 MHz
<b>OSD languages</b>	English, German, French, Dutch, Spanish, Italian, Portuguese, Polish, Russian, Swedish, Chinese (simplified), Japanese, Korean, Arabic
<b>Dimensions with stand (W x H x D)</b>	Portrait: NA Landscape: 731 x 580~670 x 270 mm
<b>Dimensions w/o stand (W x H x D)</b>	Portrait: NA Landscape: 731 x 485 x 125 mm
<b>Dimensions packaged (W x H x D)</b>	869 x 764 x 400 mm
<b>Net weight with stand</b>	24.2 kg
<b>Net weight w/o stand</b>	17.7 kg
<b>Net weight packaged with stand</b>	33.1 kg
<b>Net weight packaged w/o stand</b>	NA
<b>Height adjustment range</b>	96 mm

<b>Tilt</b>	-5° / +25°
<b>Swivel</b>	-30° / +30°
<b>Pivot</b>	NA
<b>Mounting standard</b>	VESA (100 mm)
<b>Screen protection</b>	Protective, non-reflective glass cover
<b>Recommended modalities</b>	CT, MR, US, DR, CR, NM, Film
<b>Certifications</b>	CE0120 (MDD 93/42/EEC class IIb product), CE - 2004/108/EC, CE - 93/42/EEC; A1:2007/47/EC class II b, UL 60601-1 1ST EDITION, CAN/CSA-C22.2 NO. 601.1-M90:2005, IEC 60601-1 2ND ED:1988 + A1:1991 + A2:1995, IEC 60950-1:2005 2ND EDITION, DEMKO - EN 60601-1:1990 + A1:1993 + A2:1995, CCC - GB9254-2008 + GB4943-2001 + GB17625.1-2003, VCCI, FCC class B, BSMI, FDA 510K, RoHS, KC
<b>Supplied accessories</b>	User Guide Quick-Installation Sheet Video cables (2 x DVI Dual Link, 2 x DisplayPort) Main cables (UK, European (CEBEC/KEMA), USA (UL/CSA; adaptor plug NEMA 5-15P), Chinese (CCC)) USB 2.0 cable External power supply
<b>Optional accessories</b>	NA
<b>QA software</b>	MediCal QAWeb
<b>Unit per pallet</b>	NA
<b>Pallet dimensions</b>	NA
<b>Warranty</b>	5 years
<b>Operating temperature</b>	0°C to 40°C (15°C to 35°C within specs)
<b>Storage temperature</b>	-20°C to 60°C
<b>Operating humidity</b>	8% - 70% (non-condensing)
<b>Storage humidity</b>	5% - 95% (non-condensing)
<b>Operating altitude</b>	2000 m

# Warranty statement

## BARCO MID GENERAL WARRANTY TERMS AND CONDITIONS

Applicable from Jan 1st 2008

### ARTICLE 1: PRODUCT WARRANTY

Barco nv, Medical Imaging Division warrants that the equipment will be free of defects in workmanship or material for the warranty period or the specific period of a warranty extension program.

Hardware: Barco warrants that upon delivery hereunder the Products shall (i) conform to its specifications in effect at the date of delivery and (ii) be free from defects in material and workmanship (the "Warranties").

Software: Barco warrants that software written by Barco shall perform substantially in accordance with the specifications in effect at the date of delivery. Software is inherently susceptible to bugs and errors. Barco makes no warranties with respect to the software which is provided to Customer on an "as-is" basis and does not warrant uninterrupted or error-free operation of the Products.

Unless otherwise indicated in Barco's Product manual or in the agreement between Barco and Customer, the Warranty Period shall be

- (a) Hardware: 12 months commencing on the Barco date of invoice.
- (b) Software: 3 months commencing on the Barco date of invoice.

Notwithstanding the provisions of clause 2, repair and replacement of defects in material and/or workmanship under this warranty shall be accomplished in our works according to the terms and conditions as set forth hereafter:

1.1 Any claim under the Warranties must be notified to Barco in writing within 8 days from the date the defect or failure has been discovered or noticed the first time. The Customer, upon the occurrence of any equipment failure, shall contact Barco nv, MID customer support centre (or an authorised service centre) by telephone, fax or e-mail and shall provide the applicable customer support person with a complete description of the problem being encountered, including the model and serial number of the equipment in which the problem has arisen.

1.2 The customer support person shall diagnose the problem experienced by the Customer and shall advise the Customer on how to proceed. Customer support may ask to return the faulty equipment or faulty subassemblies to the Barco nv, or a MID customer support centre (or an authorised service centre) for repair activities. In no event shall Customer return a defective Product or part thereof to Barco without Barco's prior written approval.

In the event the return to Barco of the defective Product is authorized by Barco, Barco shall issue to Customer an RMA (Return Material Authorization).

The Customer shall apply for an RMA number to the closest Barco nv, MID Customer support centre (or an authorised service centre) as listed at [www.barcomedical.com](http://www.barcomedical.com), unless otherwise indicated.

The one-way cost of packing, transport and insurance related to shipping the alleged defective Product or part to Barco for repair or replacement shall be borne by Customer. The one-way cost of packing, transport and insurance related to shipping of the repaired or replacement Product or part to Customer shall be borne by Barco.

1.3 The Customer shall return, freight prepaid, the defective equipment or subassemblies in its original packaging with the assigned RMA number for repair to the Barco nv, MID Customer support centre (or an authorised service centre).

1.4 Replacement parts used shall be new or equivalent to new parts for the revision level of the equipment. A replacement LCD panel will be new or similar run time. The warranty period for the replacement parts will expire at the same moment as the original warranty period of the equipment. All parts replaced hereunder and returned to Barco nv, MID (or an authorised service centre) shall become the property of Barco nv, MID (or the authorised service centre).

1.5 The repaired equipment shall be returned to the Customer, by regular freight, at Barco nv, MID's charge.

1.6 Barco nv, MID will replace a product that fails within 90 days after shipment from Barco with a new one, ensuring color matching in the event of a diagnostic multi head display configuration.

Barco aims to ship the new replacement product within 2 business days after receipt of the Customers notification in writing.

### ARTICLE 2: CONDITIONS PRECEDENT FOR WARRANTY AND ITEMS EXCLUDED FROM WARRANTY

- A. The Warranties shall apply only to the extent the Products or any parts thereof have
- (i) been transported and stored at all times in the original packaging in the conditions as specified by Barco (such as covered and secure location, minimum and maximum temperature, maximum humidity, ...) or, in absence thereof, at least in conditions consistent with generally accepted practice for this type of products;
  - (ii) been handled at all times in accordance with Barco's instructions or, in absence thereof, at least with the care and caution consistent with generally accepted practice for this type of products;
  - (iii) been installed strictly in accordance with the instructions and directions given by Barco (if and to the extent the

- Products have not been installed by Barco or its authorized subcontractors);
- (iv) not been subject to any unauthorized access, alteration, modification or repair or attempts thereto;
  - (v) been at all times "normally used" for the intended purpose and operated in strict accordance with the operating instructions set forth in the operating manual of the Product in question and shall not have been otherwise misused, abused, damaged. For the purpose hereof, "normally used" shall mean a regular, ordinary and routine usage of the Product in question as intended and/or recommended by Barco;
  - (vi) been maintained at all times in accordance with Barco's instructions or, in absence thereof, at least with intervals and in a manner consistent with generally accepted practice for this type of products;
- B. The warranty described herein shall not include the following:
- 2.1 Any hardware or software item procured from a source other than Barco nv, MID or their official agent or distributor and integrated by Customer or a third party into Barco nv, MID supplied equipment.
  - 2.2 Any host configuration not explicitly supported by Barco nv, MID.
  - 2.3 All software installed on the system, whether they are acquired from Barco nv, MID or third party. An exception is made for software delivered by Barco nv, MID that would prove to be a cause for the mal functioning of the hardware covered under this Agreement.
  - 2.4 Normal wear and tear, use under circumstances exceeding specifications, such as use in dusty environment or under excessive temperature conditions, abuse, unauthorised repair or alteration, lack of proper configuration or maintenance, damaged or modified or removed serial number, cosmetic refurbishment.
  - 2.5 Repair or replacement of consumables<sup>1</sup> or specific parts that by definition are subject to wear and tear, including but not limited to:
    - a. CRT's, LCD panels
    - b. Backlights in diagnostic LCD displays, when the backlight run time<sup>2</sup> is beyond the Guaranteed Backlight Lifetime<sup>3</sup> of that model, when used at the Factory Calibrated Luminance<sup>4</sup>
      - Eg1.
        - A display is used at 8 hours/day; ie. +/-2.920hours/year
        - The display system is covered with a warranty period of 5 year
        - The Guaranteed Backlight Lifetime of that model is 17.000hours.
        - The Factory Calibrated Luminance cannot be achieved anymore after 4 year, thus corresponding to +/- 11.680hours
        - Result: the backlight replacement is performed under warranty
      - Eg2.
        - A display is used at 24 hours/day; ie. 8.760hours/year
        - The display system is covered with a warranty program of 5 year
        - The Guaranteed Backlight Lifetime of that model is 17.000hours.
        - The Factory Calibrated Luminance cannot be achieved anymore after 2.5years, thus corresponding to +/- 21.900hours
        - Result: the backlight replacement does not make part of the warranty coverage.
    - (1): 'Consumable' is a part that can be replaced by the user
    - (2): 'Backlight run time' is the total time that an image (including use of a screen saver) has been applied to the screen; this value can be consulted via the OSD buttons (On Screen Display).
    - (3): 'Guaranteed Backlight Lifetime' is the number of backlight hours during which a predefined luminance value, ie. the Factory Calibrated Luminance, will be provided by a specific diagnostic display model. This figure is printed on the Warranty certificate of each display or can be requested at your local Barco office.
    - (4): 'Factory Calibrated Luminance': is the typical luminance value that a specific diagnostic display model is calibrated at during the production process. This figure is printed on the Warranty certificate of each display or can be requested at your local Barco office.
  - c. Lamps, optical components in projectors
  - d. Replacement because of:
    - i. image retention as a result of:
      - not correctly using screen saver and/or Display Power Management System (DPMS) as explained in the user manual
      - prolonged operation of the display with a static image on the same screen area
    - ii. a number of missing pixels that is lower than the total allowable number as mentioned in the product specifications.

- iii. difference in color temperature that is lower than the total allowable difference as mentioned in the product specifications
- iv. difference in color temperature as a result of not using all displays of a multi-head configuration at the same rate.
- v. LCD luminance uniformity that is in within the product specifications or luminance uniformity performance that is inherent to LCD technology.

Barco nv, MID does not warrant a minimum life time nor a performance of any of the consumables.

2.6 Replacement of moveable parts such as power cords, remote controls, ...

2.7 Any product disassembly and installation costs at the operation site, travel expenses and travel time to and from the operation site for the personnel in charge of the repair works and transport charges.

2.8 Any failures resulting from an accident, negligence (such as but not limited to removing or deleting system files & licensed software product files), misuse, circuit failure or any change, damage due to fire, water, thunder or lightning, power failure or fluctuation, disruption of communication lines or due to force majeure, or any reason foreign to the equipment.

2.9 Any specific services or procedures, asked for by Customer, related to verification of repaired equipment.

2.10 The evaluation cost in case of a returned product deemed functional is not covered under warranty and will be charged to the Customer, at Barco's sole discretion, based on a case-by-case evaluation.

### ARTICLE 3: OBLIGATIONS OF THE CUSTOMER

Customer hereby assumes the following obligations as partial consideration for Barco nv, MID performance of its requirements under the warranty condition; failure by Customer to meet its obligations under this paragraph shall excuse Barco nv, MID's performance hereunder:

3.1 Customer shall not expose Barco nv, MID personnel to any unsafe working conditions.

3.2 Repairs to equipment under warranty resulting from improper maintenance or repair performed by the Customer, or its officers, agents, employees, or representatives, shall be borne by the Customer at its additional cost and expense.

3.3 The Customer is responsible for installing the Barco nv, MID equipment in an environment for which it was intended. If there is an indication that the equipment was used – even temporary – outside its specifications, Barco nv, MID is entitled not to perform warranty repairs and terminate the warranty agreement. Any actions that have been taken by Barco nv, MID in this respect, may be invoiced to the Customer at normal pricing.

### ARTICLE 4: REMEDIES UNDER WARRANTY

(a) Hardware: If during the Warranty Period a Product or any part thereof, fails to meet any of the Warranties then, upon Customer's request, Barco shall, at its sole option and cost, promptly and within 20 working days, either: (i) repair or correct the Product or part in question; or (ii) replace the Product or supply part(s) or component(s) according to the terms and conditions contained in article 1. A replacement part shall be at least functionally equivalent to the original part. The replaced Product, parts and/or components shall become the property of Barco and shall, at Barco's request, be returned by Customer to Barco at Barco's cost.

(b) Software: Barco's sole obligation shall be to rectify substantial malfunctions of the software (to the extent technically reasonably possible) by amending the software or supplying an alternative version of the software.

(c) The repair or replacement under the Warranties covers the cost of material and labor.

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#### ARTICLE 8: GENERAL

8.1 Customer acknowledges its understanding that all software and electronic devices, including Barco nv, MID products are subject to possible error, mechanical or electrical failure, and should not be relied upon in inappropriate applications or without proper backup and/or other safety precautions whenever personal injury or property damage may result from failure or error of the product.

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**K5902031-00**

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