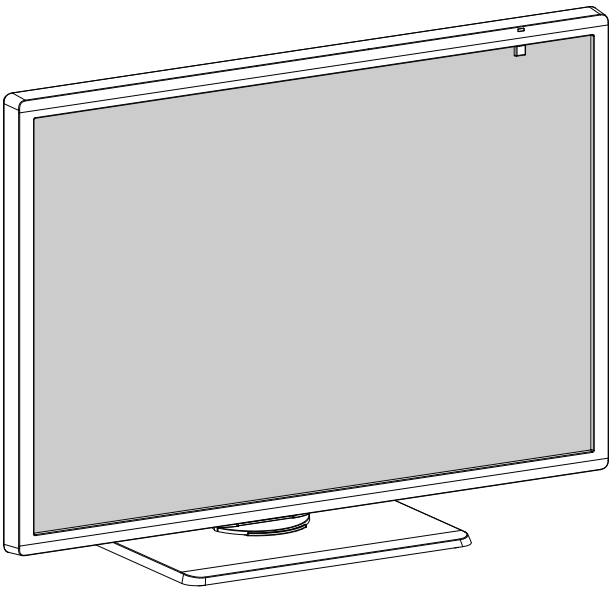
Nio Fusion 12MP



User guide

MDNC-12130

MDNC-12130 H

Barco NV
Beneluxpark 21, 8500 Kortrijk, Belgium
www.barco.com

Manufacturer: Barco NV
President Kennedypark 35, 8500 Kortrijk, Belgium

Copyright notice

This document is copyrighted. All rights are reserved. Neither this document, nor any part of it, may be reproduced or copied in any form or by any means - graphical, electronic, or mechanical including photocopying, taping or information storage and retrieval systems - without written permission of Barco.

© 2025 Barco NV all rights reserved.

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.

Barco software products are the property of Barco. They are distributed under copyright by Barco NV or Barco Inc., for use only under the specific terms of a software license agreement between Barco NV or Barco Inc. and the licensee. No other use, duplication, or disclosure of a Barco software product, in any form, is authorized.

The specifications of Barco products are subject to change without notice.

Trademarks

All trademarks and registered trademarks are property of their respective owners.

DisplayPort™ and the DisplayPort™ logo are trademarks owned by the Video Electronics Standards Association (VESA®) in the United States and other countries.

Technical assistance

For any technical assistance, please visit *www.barco.com/support*.

Patent protection

Please refer to *www.barco.com/about-barco/legal/patents*.

Product Security Incident Response

As a global technology leader, Barco is committed to deliver secure solutions and services to our customers, while protecting Barco’s intellectual property.

When product security concerns are received, the product security incident response process will be triggered immediately. To address specific security concerns or to report security issues with Barco products, please inform us via contact details mentioned on *https://www.barco.com/psirt*.

To protect our customers, Barco does not publicly disclose or confirm security vulnerabilities until Barco has conducted an analysis of the product and issued fixes and/or mitigations.

Table of contents

1 Welcome! 7
- 1.1 What's in the box 8
- 1.2 At a glance 8
- 1.3 Compatible Barco system components 11

2 Installation and setup 13
- 2.1 Single workstation setup 14
- 2.2 Dual workstation setup with KVM switch 15
- 2.3 QAWeb registration 18
- 2.4 VESA-mount installation 18
- 2.5 VESA-mount installation in portrait mode 21

3 Daily operation 23
- 3.1 Recommendations for daily operation 24
- 3.2 Shortcut bar 24
- 3.3 On/Off switching 25
- 3.4 SoftGlow light mode switching 25
- 3.5 KVM input switching 26
- 3.6 OSD menu access and use 26

4 Advanced operation 27
- 4.1 OSD menu language 29
- 4.2 OSD menu orientation 29
- 4.3 OSD menu automatic close function 29
- 4.4 Power lock function 29
- 4.5 SoftGlow Task light 30
- 4.6 SoftGlow Wall light 30
- 4.7 DPMS mode 31
- 4.8 Hibernate 31
- 4.9 Luminance target 32
- 4.10 Color presets 32
  - 4.10.1 Color temperature 33
  - 4.10.2 Color coordinates 33
- 4.11 Color space 33
- 4.12 Viewing modes 34
- 4.13 Display functions 34
- 4.14 sRGB 35

4.15 Ambient Light Compensation (ALC) 35
4.16 Reading rooms 35
4.17 Continuous Ambient Light Compensation (ALC) 36
4.18 Embedded QA 36
4.18.1 About Embedded QA 36
4.18.2 DICOM status report 37
4.18.3 DICOM compliance check 37
4.18.4 DICOM calibration 38
4.18.5 Reset DICOM calibration 38
4.18.6 DICOM error threshold 38
4.19 Image scaling 38
4.20 Image source selection 39
4.21 KVM switch 39
4.22 Grayscale conversion modes 40
4.23 DisplayPort standard version 40
4.24 EDID format 41
4.25 EDID timings 41
4.26 Display info 42
4.27 Display status 42
4.28 SteadyColor™ 42
4.29 Maximum luminance demo 42

5 Cleaning the display 45
5.1 Cleaning instructions 46

6 Repackaging instructions 47
6.1 Repackaging instructions 48

7 Important information 53
7.1 Safety information 54
7.2 Cybersecurity 55
7.3 Environmental information 57
7.4 Regulatory compliance information 59
7.5 EMC notice 60
7.6 Explanation of symbols 62
7.7 Open source license information 66
7.8 Technical specifications 67

1 Welcome!

1.1 What's in the box 8
1.2 At a glance 8
1.3 Compatible Barco system components 11

1.1 What's in the box

Overview

- Nio Fusion 12MP display
- 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 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

If your product arrived with shipping damage or missing parts, please refer to the instructions in our knowledge base article ‘3727’ at www.barco.com/support/knowledge-base/3727 for further assistance.

1.2 At a glance

Product overview

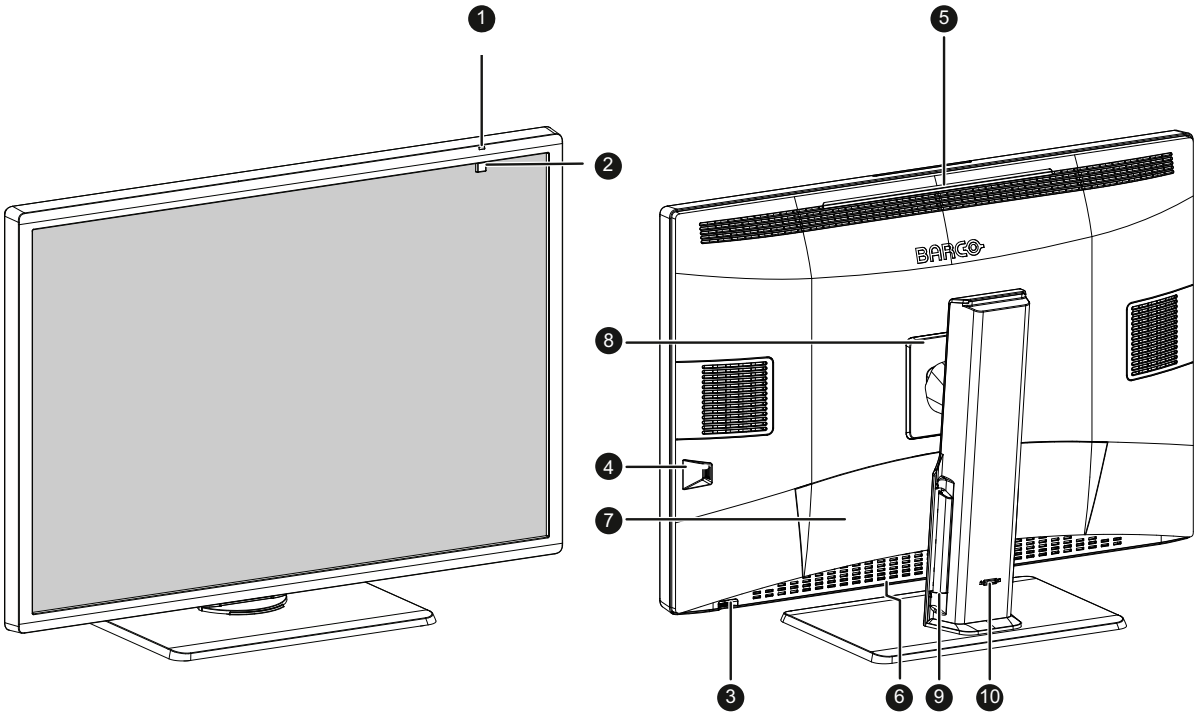


Image 1–1

1. Ambient light sensor and Power status LED
   - Off: Display not powered (mains cable unplugged or power switch in OFF position), or display is in normal operation
   - Fast blinking amber: Display is entering DPMS mode
   - Slow blinking amber: Display is in DPMS mode
   - Steady amber: Display manually switched off via the jog dial, or display is in hibernate mode
2. Front sensor

   CAUTION: To avoid permanent damage to the product, never use the front sensor to hold a paper, radiological film or any other object.
3. Jog dial
   - **Press:** Activate the shortcut bar, go into (sub)menus, confirm adjustments and selections
   - **Turn left/right:** Scroll through (sub)menus, change values, make selections
   - **Press and hold** for approximately 3 seconds: Cancel adjustments, exit (sub)menus
   - **Double-press:**
     - Cycle through the SoftGlow light modes (when the KVM switch is disabled)
     - Switch KVM inputs (when the KVM switch is enabled)
4. Side USB-A 2.0 downstream connector
5. SoftGlow Wall light
6. SoftGlow Task light
7. Connector cover
8. VESA mount cover
9. Cable routing channels
10. Stand locking mechanism

Connectors

One USB connector is available on the side of the display. To access the bottom connectors, gently pull the bottom of the connector cover away from the display.

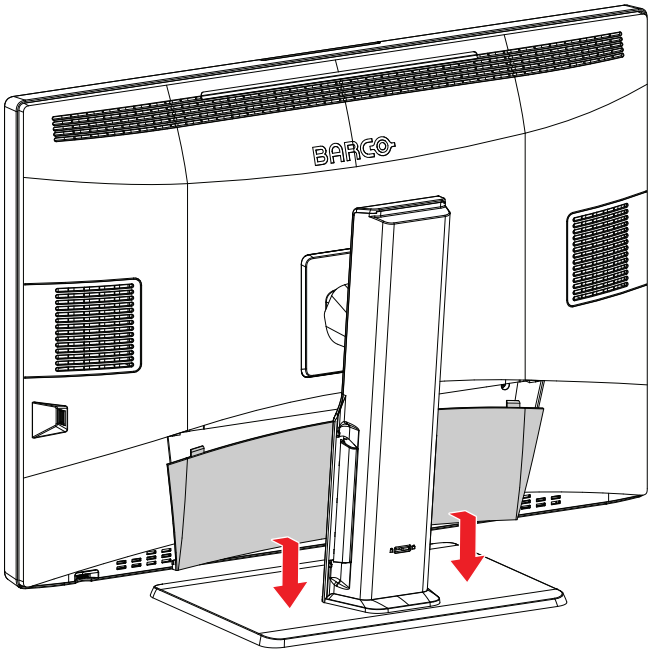


Image 1–2

Following connectors are available:

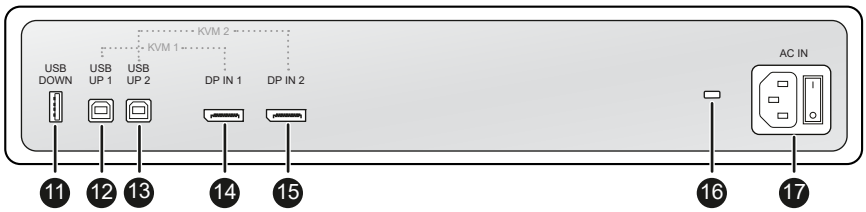


Image 1–3

11. Bottom USB-A 2.0 downstream
12. USB-B 2.0 upstream 1 (Main)
13. USB-B 2.0 upstream 2 (Secondary, used only with KVM switch enabled)
14. DisplayPort IN 1 (also Main for KVM switch)
15. DisplayPort IN 2 (also Secondary for KVM switch)
16. Kensington security slot
17. 100–240 VAC mains power input and power switch

Display position adjustment

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

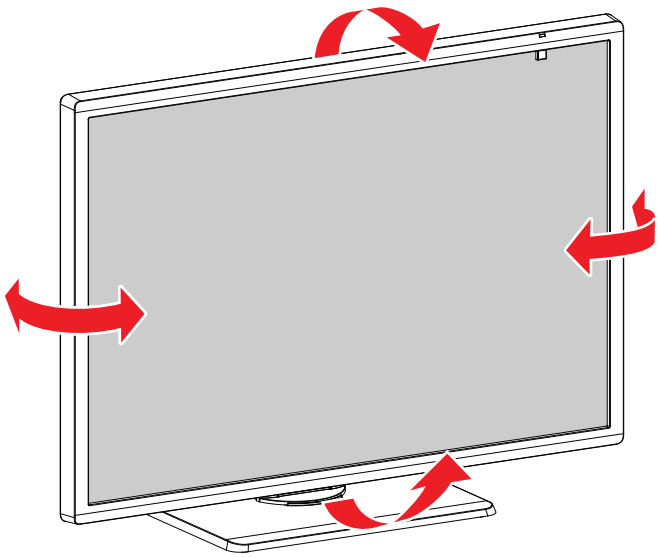


Image 1–4

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.

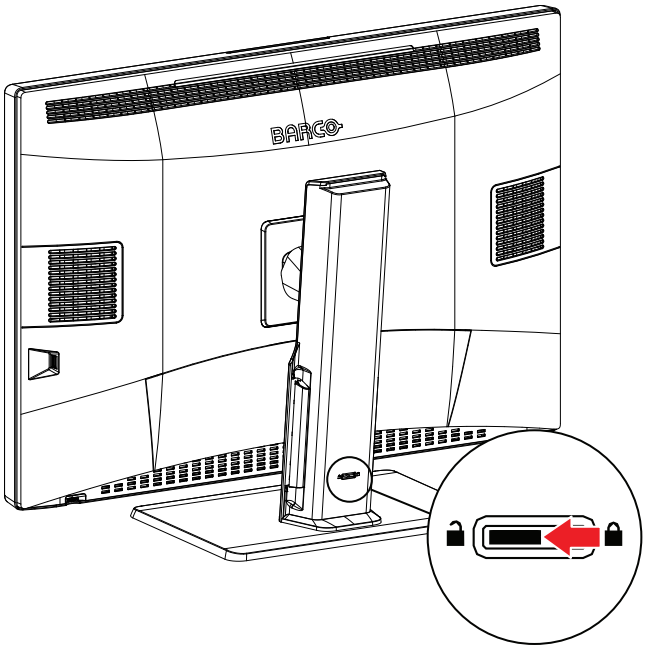


Image 1–5

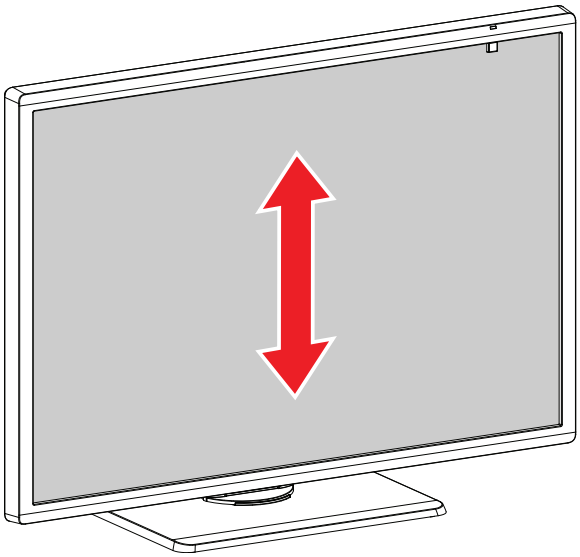


Image 1–6

The height can be locked only 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.

1.3 Compatible Barco system components

Overview

Following Barco components are compatible with your Nio Fusion 12MP display:

- QAWeb Enterprise version 2.5 or later
- MXRT-x700 range or later with compatible software package
- MXRV-x100 range or later with compatible software package

Compatibility can be checked in the matrices available at *https://www. barco. com/products/medical-display-controllers*. These matrices are updated on a regular basis.

Installation and setup

2

2.1 Single workstation setup 14
2.2 Dual workstation setup with KVM switch 15
2.3 QAWeb registration 18
2.4 VESA-mount installation 18
2.5 VESA-mount installation in portrait mode 21

2.1 Single workstation setup

About

In this setup, the display is connected to a single workstation with two DisplayPort cables, each driving one half of the screen. When connecting a USB cable from your display to the workstation, you can control the workstation with a keyboard and mouse connected to the display.

Using two DisplayPort cables to drive the image allows full 12MP resolution at full refresh rate making a single workstation setup most conventional and recommended for diagnostic purposes.

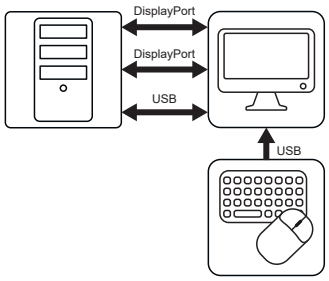


Image 2–1

Install the display controller

Before setting up your display, make sure to have a suitable display controller installed in the workstation. For a list of compatible display controllers, please refer to the compatibility matrix available at *https://www.barco.com/products/medical-display-controllers*

The Nio Fusion 12MP operates at its full potential when used with a **Barco display controller** and **Barco video driver**. These high-performing graphics cards have the power and capabilities to optimally render images for this display. Moreover, Barco display controllers enable the use of Barco's **Intuitive Workflow Tools** that are designed to increase visibility of subtle details, improve focus during reading sessions, and accelerate workflow. Please visit *www.barco.com/product/intuitive-workflow-tools* for more information.

Connect the cables

1. Remove the connector cover.
2. Connect the DisplayPort inputs (DP IN 1 and DP IN 2) with the DisplayPort outputs on the workstation.
3. Connect the main USB upstream connector (USB UP 1) with a USB host on the workstation to make use of QAWeb or a peripheral (keyboard, mouse, touchpad, etc.) connected to one of the display's USB downstream connectors.
4. Connect a keyboard and mouse (or another peripheral used to control the workstations) with the USB downstream connectors of the display. One USB downstream connector is available in the connector compartment, a second one at the side of the display.
5. Connect the supplied mains cable with the power input of the display.
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 all cables through the routing channels in the stand of your display.
9. Connect the supplied mains cable to a **grounded** power outlet.

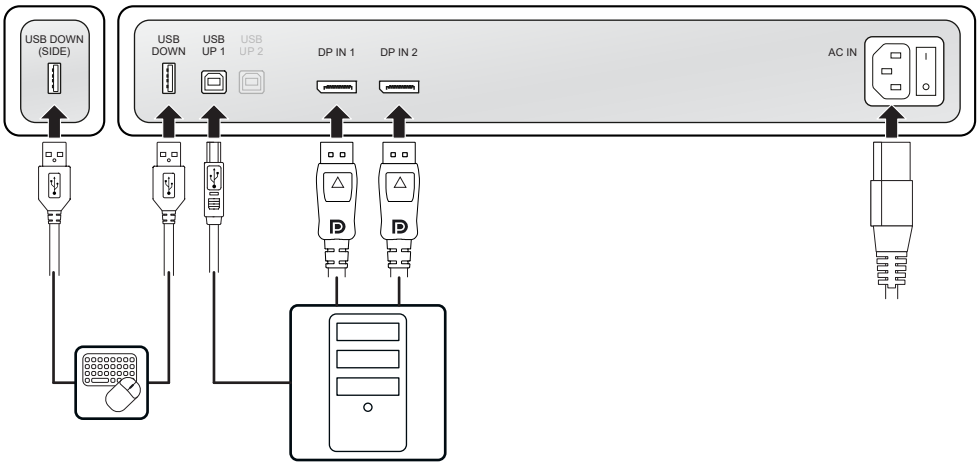


Image 2–2

Power on the display system

1. Set the power switch next to the mains power input connector in position “I” .
2. Press the jog dial to activate your display.
3. Switch on the workstations connected to your display.

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

Install the Barco display controller driver and Intuitive Workflow Tools

When you are using a Barco display controller, you can start up your Nio Fusion 12MP display system and install the **Barco display controller 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 Barco display controller driver and Intuitive Workflow Tools:

1. Switch on your Nio Fusion 12MP as described in “On/Off switching”, page 25.
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 Barco display controller driver and Intuitive Workflow Tools from *https://www.barco.com/products/medical-display-controllers*
4. Install the **Barco display controller driver** and Barco’s **Intuitive Workflow Tools** as described in the Barco “Display Controller and Intuitive Workflow Tools” user guide at *www.barco.com/support*.

   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.

2.2 Dual workstation setup with KVM switch

About

In this setup, the display is connected to two different workstations, each with one DisplayPort cable. When connecting a USB cable from your display to each of the two workstations, you can control both workstations with a single keyboard and mouse connected to the display. Switching the video and controls signals between the two workstations is done with the KVM switch operated via the OSD menu.

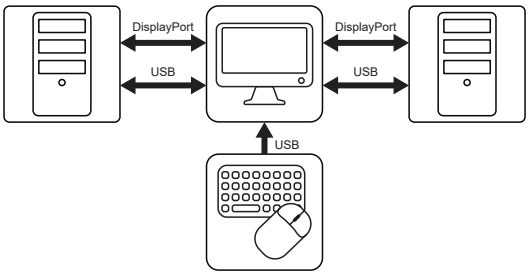


Image 2–3

With only one DisplayPort cable to drive the image, full 12MP resolution is possible but only at a limited refresh rate of 45 Hz (because of bandwidth limitations of the DisplayPort 1.2 standard). This may affect the smoothness of panned images and somewhat limits the speed that cine images can be displayed.

Barco suggests to have QAWeb installed on only one of both workstations. When both workstations would have QAWeb installed, switching KVM inputs would trigger a Configuration Change event, causing the display to disappear from the workstation in QAWeb.

Install the display controller

Before setting up your display, make sure to have a suitable display controller installed in the workstation. For a list of compatible display controllers, please refer to the compatibility matrix available at *https://www.barco.com/products/medical-display-controllers*

The Nio Fusion 12MP operates at its full potential when used with a **Barco display controller** and **Barco video driver**. These high-performing graphics cards have the power and capabilities to optimally render images for this display. Moreover, Barco display controllers enable the use of Barco's **Intuitive Workflow Tools** that are designed to increase visibility of subtle details, improve focus during reading sessions, and accelerate workflow. Please visit *www.barco.com/product/intuitive-workflow-tools* for more information.

Connect the cables

1. Remove the connector cover.
2. Connect DisplayPort input 1 (DP IN 1) with the DisplayPort output on workstation 1.
3. Connect the main USB upstream connector (USB UP 1) with a USB host on workstation 1.
4. Connect DisplayPort input 2 (DP IN 2) with the DisplayPort output on workstation 2.
5. Connect the secondary USB upstream connector (USB UP 2) with a USB host on workstation 2.

   Note: The USB UP 2 connector is covered by a plastic cap which has to be removed first.

6. Connect a keyboard and mouse (or another peripheral used to control the workstations) with the USB downstream connectors of the display. One USB downstream connector is available in the connector compartment, a second one at the side of the display.
7. Connect the supplied mains cable to the power input on the display.
8. Route all cables through the cable clips in the connector compartment.
9. 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.
10. Route some or all cables through the routing channels in the stand of your display.
11. Connect the supplied mains cable to a **grounded** power outlet.

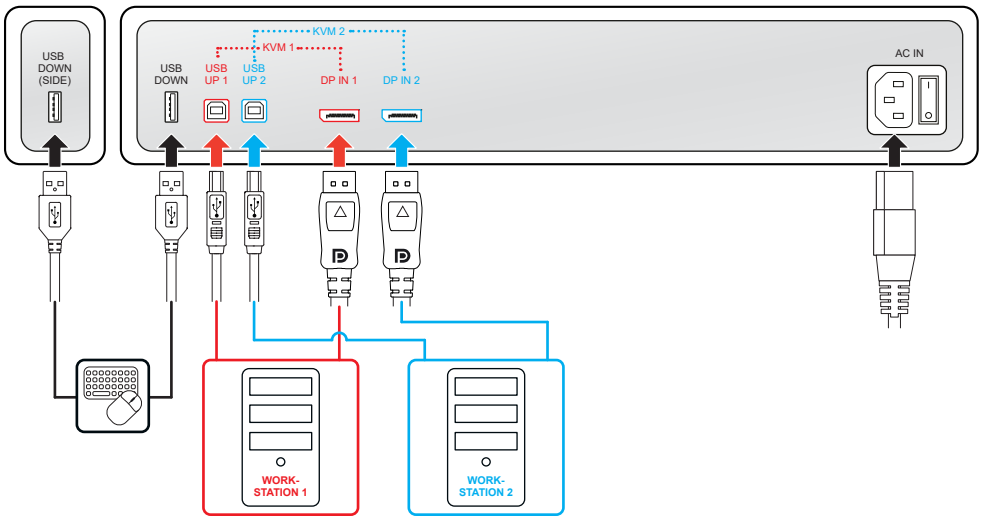


Image 2–4

Power on the display system

1. Set the power switch next to the mains power input connector in position “I” .
2. Press the jog dial to activate your display.
3. Switch on the workstations connected to your display.

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

Install the Barco display controller driver and Intuitive Workflow Tools

When you are using a Barco display controller, you can start up your Nio Fusion 12MP display system and install the **Barco display controller 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 Barco display controller driver and Intuitive Workflow Tools:

1. Switch on your Nio Fusion 12MP as described in “On/Off switching”, page 25.
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 Barco display controller driver and Intuitive Workflow Tools from *https://www.barco.com/products/medical-display-controllers*
4. Install the **Barco display controller driver** and Barco’s **Intuitive Workflow Tools** as described in the Barco “Display Controller and Intuitive Workflow Tools” user guide at *www.barco.com/support*.

   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.

Adjust EDID format and timings

The EDID format must be set to *DisplayID 1.3* and the EDID resolution timing must be set to *12MP* (i.e. 4200 x 2800) for both DisplayPort inputs in order to drive the full screen resolution from one DisplayPort video cable.

1. Bring up the OSD main menu.
2. Navigate to *Configuration* > *Image Sources* > *Input Settings* > *EDID format*.
3. Select *DisplayID 1.3* and confirm.
4. Navigate to *Configuration* > *Image Sources* > *Input Settings* > *DisplayPort 1* > *EDID* > *Resolution*.
5. Select *12MP* and confirm.
6. Navigate to *Configuration* > *Image Sources* > *Input Settings* > *DisplayPort 2* > *EDID* > *Resolution*.
7. Select *12MP* and confirm.

Enable the KVM switch

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Image Sources* menu.
3. Enter the *KVM Input Selection* submenu.
4. Select *Enabled* and confirm.

When enabling the KVM switch, the *Image Source Selection* menu will be inaccessible. In addition, *Hibernate* will be disabled to guarantee correct USB port switching also when one or both workstations are in sleep mode.

To switch KVM inputs

1. Press or turn the jog dial to activate the shortcut bar. The KVM switch icon () is now selected by default because the KVM switch is enabled.
2. Press the jog dial again to switch KVM inputs.

During normal operation, double-press the jogdial to switch KVM inputs more quickly. A first click will make the shortcut bar pop up, a second click will switch inputs (since the KVM switch icon is selected by default when the KVM switch is enabled).

When switching KVM inputs, the video is switched instantly while switching the USB signal might take a little longer (up to 2 seconds).

The DisplayPort standard must be *DP V1.2* for both DisplayPort inputs. This is the factory default. See “DisplayPort standard version”, page 40 to change the DisplayPort standard.

2.3 QAWeb 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 instructions, check the QAWeb Enterprise user guide on *www.barco.com/support/qaweb-enterprise*.

2.4 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.

CAUTION: Use a mount that is compliant with the VESA 100 mm standard.

Overview

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

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

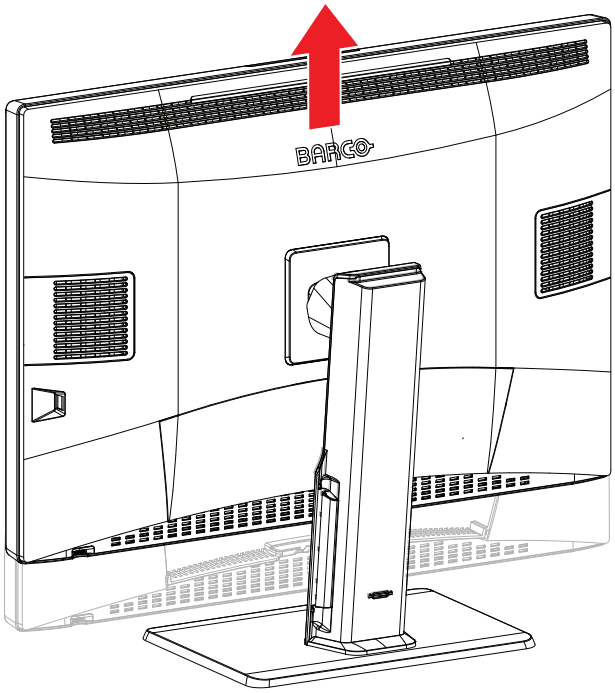


Image 2–5

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.

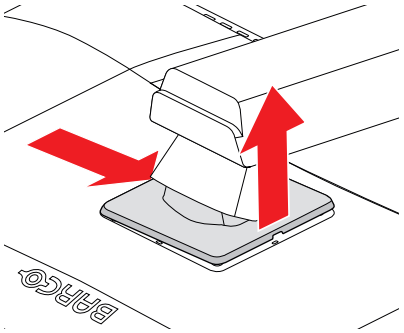


Image 2–6

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

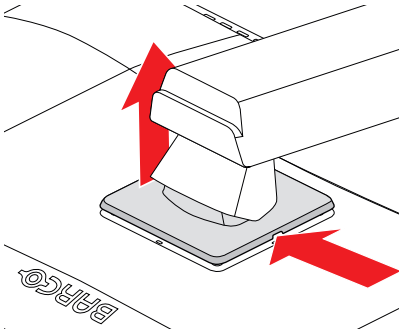


Image 2–7

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

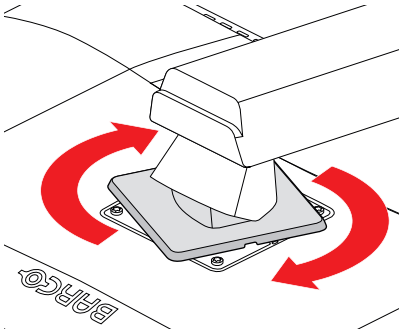


Image 2–8

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

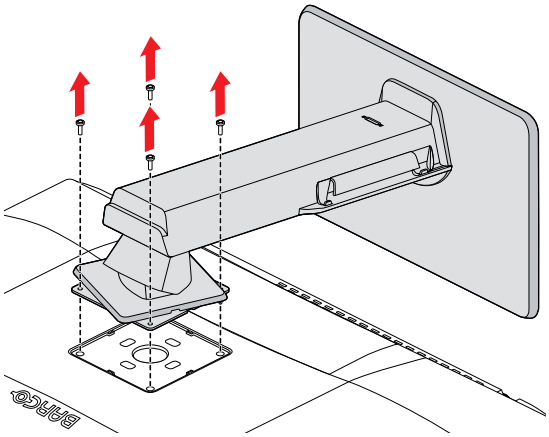


Image 2–9

7. Attach the panel **firmly** to the VESA mount 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

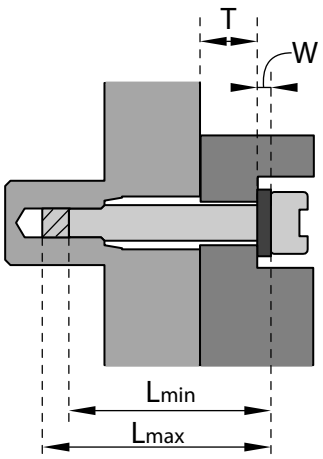


Image 2–10

2.5 VESA-mount installation in portrait mode

Introduction

By default, your Nio Fusion 12MP 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 18 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 at reduced 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 29.
4. In the EDID format menu of the OSD, change the format to *DisplayID 1.3*. For instructions, see “EDID format”, page 41.
5. In the *EDID timings* menu of the OSD, change the resolution to 12MP. For instructions, see “EDID timings”, page 41.
6. Rotate the Windows desktop in portrait mode.
   From Windows 7 onwards, an “Orientation” option is available in the display settings. For Windows 10, see *https://support.microsoft.com/en-us/help/4027186/windows-10-change-screen-orientation*.

3 Daily operation

3.1 Recommendations for daily operation 24
3.2 Shortcut bar 24
3.3 On/Off switching 25
3.4 SoftGlow light mode switching 25
3.5 KVM input switching 26
3.6 OSD menu access and use 26

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.

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.

Enhance user comfort

Every Barco multi-head display system is color matched to the tightest specifications 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

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 PACS 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 Shortcut bar

About the shortcut bar

The shortcut bar gives direct access to a number of OSD menu functions without having to browse the OSD menu:

- “KVM input switching”, page 26

- “SoftGlow light mode switching”, page 25
- “OSD menu access and use”, page 26
- “On/Off switching”, page 25

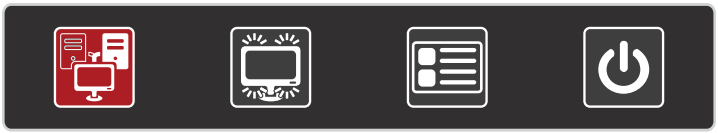


Image 3–1

To activate a shortcut bar function

1. During normal operation, press or turn the jog dial. The shortcut bar is activated.
2. Turn the jog dial left or right to select a function.
3. Press the jog dial to confirm your selection and to activate the function.

3.3 On/Off switching

To switch on your display

Press the jog dial to activate your display.

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

To switch off your display

1. Press or turn the jog dial to activate the shortcut bar.
2. Turn the jog dial and select the standby icon ( ).
3. Press the jog dial to confirm your selection.
4. Press the jog dial again to switch off the display.

3.4 SoftGlow light mode switching

About the SoftGlow lights

The SoftGlow Task light sheds a light on the desktop, while the SoftGlow Wall light provides ambient lighting for the reading room to reduce eye fatigue. The brightness of each is adjustable.

To switch the SoftGlow light mode

1. Press or turn the jog dial to activate the shortcut bar. The SoftGlow lights icon ( ) is selected by default when the KVM switch is disabled.
2. If not selected by default, turn the jog dial and select the SoftGlow lights icon.
3. Press the jog dial repeatedly to cycle through the different SoftGlow light modes:
   SoftGlow Task light ON → SoftGlow Wall light ON → SoftGlow Task + SoftGlow Wall light ON → SoftGlow lights OFF→ ...

To adjust the brightness of the SoftGlow lights, please refer to “SoftGlow Task light”, page 30 and “SoftGlow Wall light”, page 30.

The SoftGlow lights can also be enabled and configured in the Intuitive Workflow Tools. See the Barco “Display Controller and Intuitive Workflow Tools” user guide on the included documentation CD, or at www.barco.com/support.

3.5 KVM input switching

About the KVM switch

The Nio Fusion 12MP can be used in a dual workstation setup with KVM switch. This allows the display to be connected to two different workstations and control both with a single keyboard and mouse connected to the display. Switching the video and controls signals between the two workstations is done with the KVM switch operated via the OSD menu.

Your display system must be specifically set up and configured for KVM input switching. For instructions, see “Dual workstation setup with KVM switch”, page 15

To switch KVM inputs

1. Press or turn the jog dial to activate the shortcut bar. The KVM switch icon () is selected by default when the KVM switch is enabled.
2. Press the jog dial again to switch KVM inputs.

During normal operation, double-press the jogdial to switch KVM inputs more quickly. A first click will make the shortcut bar pop up, a second click will switch inputs (since the KVM switch icon is selected by default when the KVM switch is enabled).

When switching KVM inputs, the video is switched instantly while switching the USB signal might take a little longer (up to 2 seconds).

3.6 OSD menu access and use

About the OSD menu

The OSD menu allows you to configure different settings to make your Nio Fusion 12MP 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 access the OSD menu

1. Press or turn the jog dial to activate the shortcut bar.
2. Turn the jog dial and select the OSD menu icon ().
3. Press the jog dial to enter the OSD menu.
4. If the *OSD menu locked* message appears, turn and hold the jog dial **right for 5 seconds**, until the *OSD menu unlocked* message appears.

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.
- Press the jog dial to go into a submenu or confirm adjustments and selections.
- Press and hold the jog dial for approximately 3 seconds to cancel adjustments.
- Turn the jog dial left on a first (sub)menu item to exit the (sub)menu.

4 Advanced operation

4.1 OSD menu language 29
4.2 OSD menu orientation 29
4.3 OSD menu automatic close function 29
4.4 Power lock function 29
4.5 SoftGlow Task light 30
4.6 SoftGlow Wall light 30
4.7 DPMS mode 31
4.8 Hibernate 31
4.9 Luminance target 32
4.10 Color presets 32
4.11 Color space 33
4.12 Viewing modes 34
4.13 Display functions 34
4.14 sRGB 35
4.15 Ambient Light Compensation (ALC) 35
4.16 Reading rooms 35
4.17 Continuous Ambient Light Compensation (ALC) 36
4.18 Embedded QA 36
4.19 Image scaling 38
4.20 Image source selection 39
4.21 KVM switch 39
4.22 Grayscale conversion modes 40
4.23 DisplayPort standard version 40
4.24 EDID format 41
4.25 EDID timings 41
4.26 Display info 42
4.27 Display status 42
4.28 SteadyColor™ 42
4.29 Maximum luminance demo 42

About

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

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 Nio Fusion 12MP.

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 "On/Off switching", page 25. 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 SoftGlow Task light

About the SoftGlow Task light

The SoftGlow Task light sheds a light on the desktop. The brightness of the light is configurable.

To enable/disable the SoftGlow Task light

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



The SoftGlow lights can also be enabled more quickly via the shortcut bar. See “SoftGlow light mode switching”, page 25.



The SoftGlow lights can also be enabled and configured in the Intuitive Workflow Tools. See the Barco “Display Controller and Intuitive Workflow Tools” user guide on the included documentation CD, or at www.barco.com/support.

To adjust the SoftGlow Task light brightness

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Lights* menu.
3. Enter the *SoftGlow Task Light brightness* submenu.
4. Set a *SoftGlow Task Light brightness* value as desired and confirm.



The SoftGlow lights can also be enabled and configured in the Intuitive Workflow Tools. See the Barco “Display Controller and Intuitive Workflow Tools” user guide on the included documentation CD, or at www.barco.com/support.

4.6 SoftGlow Wall light

About the SoftGlow Wall light

The SoftGlow Wall light provides ambient lighting for the reading room to reduce eye fatigue. The brightness of the light is configurable.

To enable/disable the SoftGlow Wall light

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



The SoftGlow lights can also be enabled more quickly via the shortcut bar. See “SoftGlow light mode switching”, page 25.

The SoftGlow lights can also be enabled and configured in the Intuitive Workflow Tools. See the Barco “Display Controller and Intuitive Workflow Tools” user guide on the included documentation CD, or at www.barco.com/support.

To adjust the SoftGlow Wall light brightness

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Lights* menu.
3. Enter the *SoftGlow Wall Light brightness* submenu.
4. Set a *SoftGlow Wall Light brightness* value as desired and confirm.

The SoftGlow lights can also be enabled and configured in the Intuitive Workflow Tools. See the Barco “Display Controller and Intuitive Workflow Tools” user guide on the included documentation CD, or at www.barco.com/support.

4.7 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 31 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.

4.8 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 time-out.

DPMS mode must be enabled before hibernate can be enabled. See “DPMS mode”, page 31.

In a single workstation setup (see“Single workstation setup”, page 14), connect your keyboard, mouse, touchpad, etc. directly with your workstation (and not with the display) to be able to use them to awake your system from hibernate.

When your workstation and display don't awake from hibernate within 10 seconds after a keyboard or mouse trigger, press the jog dial to awake your system.

Hibernate will be automatically disabled on your display when enabling the KVM switch (see“KVM switch”, page 39).

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.

4.9 Luminance target

About the luminance target

The luminance target of your Nio Fusion 12MP 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.

4.10 Color presets

About color presets

The available color preset settings for your display are:

- **Clearbase:** Simulation of the clearbase film color temperature
- **Bluebase:** Simulation of the bluebase 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 a color temperature of 6500 Kelvin (D65)
- **Native White:** The native, unmodified 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.

4.10.1 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.

4.10.2 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.

4.11 Color space

About color space

The available color space settings for your display are:

- **sRGB (standard Red Green Blue):** To match typical home and office viewing conditions. **Note:** This setting does not fully set your display to the sRGB color space. Refer to “sRGB”, page 35 to do this.
- **Native:** The native, unmodified color space of the LCD panel.
- **PrePriAS (Preserve Primaries And Secondaries):** To change the white (color) point (as explained in “Color presets”, page 32) without reducing red, green and blue primary colors and cyan, magenta and yellow secondary colors of the display's native color gamut.

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.

4.12 Viewing modes

About viewing modes

The Nio Fusion 12MP 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 Nio Fusion 12MP 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.

4.13 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. Barco recommends selecting the DICOM display function for most medical viewing applications.
- **sRGB:** The sRGB color space combines a display function, color space and white point selection, and is designed to match typical home and office viewing conditions. It is widely used in most computer applications. **Note:** This setting does not fully set your display to the sRGB color space. Refer to “sRGB”, page 35 to do this.
- **User:** This display function will be automatically selected when display functions are defined by QAWeb.
- **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.

4.14 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 32 for more info.
- **Color space:** sRGB. See “Color space”, page 33 for more info.
- **Display function:** sRGB. See “Display functions”, page 34 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.

4.15 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 34.

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 35.

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.

4.16 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 34

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 35 to enable ALC.

The available reading rooms for your Nio Fusion 12MP 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 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.

4.17 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 34.

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.

4.18 Embedded QA

4.18.1 About Embedded QA

About

Embedded QA allows you to run a display calibration or compliance test directly from the display using the OSD menus described in the next sections. Embedded QA will use the front sensor / I-Guard to measure the necessary luminance levels for either a calibration or 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.

Embedded QA or QAWeb?

Embedded QA is not a replacement for the Barco QAWeb solution.

Although Embedded QA is a reliable option to perform a simple calibration or compliance test, Barco still highly recommends QAWeb as the solution of choice for calibration and QA. QAWeb brings many benefits such as centralized asset management, the ability to schedule tasks, remote management, automated reporting, alerting and specific support of regional QA standards such as DIN 6868-57, JESRA and AAPM

TG18. That's why QAWeb Agent acts as the master for all supported displays from the moment it is installed and running. QAWeb Agent will take over from Embedded QA and overwrite any settings which were applied by Embedded QA.

4.18.2 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.

4.18.3 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.

4.18.4 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.

4.18.5 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.

4.18.6 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.

4.19 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.

4.20 Image source selection

About image source selection

By default, your Nio Fusion 12MP automatically detects the connected image sources and attaches them to the correct side of the screen. You can also manually select the image sources and control on which side of the screen they must be displayed.

The *Image source selection* menu is not available when the *KVM switch* is enabled (to disable, see "KVM switch", page 39).

To automatically select image sources

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Image Sources* menu.
3. Enter the *Image Source Selection* submenu.
4. Select the *Automatic* image source selection mode and confirm.

To manually select image sources

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 following image source selection modes and confirm:
   - **One Image Source:** Allows to select one image source to display.
   - **Two Image Sources:** Displays DisplayPort IN 1 on the left side and DisplayPort IN 2 on the right side of the screen.
   - **Expert mode:** Allows to select for the left and right side of the screen which image source to display: DisplayPort IN 1, DisplayPort IN 2 or None.

4.21 KVM switch

About the KVM switch

The Nio Fusion 12MP can be used in dual workstation setup with KVM switch. This allows the display to be connected to two different workstations and control both with a single keyboard and mouse connected to the display. Switching the video and controls signals between the two workstations is done with the KVM switch, which must be enabled as explained below.

Your display system must be specifically set up and configured for KVM input switching. For instructions, see "Dual workstation setup with KVM switch", page 15

To enable/disable the KVM switch

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

3. Enter the *KVM Switch* submenu.
4. Select *Enabled/Disabled* as desired and confirm.

When enabling the KVM switch, the *Image Source Selection* menu will be inaccessible. In addition, *Hibernate* will be disabled to guarantee correct USB port switching also when one or both workstations are in sleep mode.

To switch KVM inputs

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* > *Image Sources* menu.
3. Enter the *KVM Input Selection* submenu.
4. Select the desired KVM input and confirm.

When switching KVM inputs, the video is switched instantly while switching the USB signal might take a little longer (up to 2 seconds).

KVM input switching can also be done more quickly via the shortcut bar. See “KVM input switching”, page 26.

4.22 Grayscale conversion modes

Your Nio Fusion 12MP 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. Refer to “Image source selection”, page 39 to do this.

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.

4.23 DisplayPort standard version

About DisplayPort standard version

The Nio Fusion 12MP 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.

4.24 EDID format

About EDID format

Following EDID formats are available for your Nio Fusion 12MP:

- **EDID 1.4:** Factory default setting and advised for a single workstation setup (see “Single workstation setup”, page 14).
- **DisplayID 1.3:** Necessary to drive 12MP (i.e. 4200x2800) resolution over 1 video cable. Advised for a dual workstation setup with KVM switch (see “Dual workstation setup with KVM switch”, page 15).

To set the EDID format

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

4.25 EDID timings

About EDID timings

Following EDID timings are available for your Nio Fusion 12MP:

- **Resolution**: Allows to manually modify the resolution of the image source video input signal:
  - 5.8MP : 2096 x 2800
  - 6MP : 2100 x 2800
  - 12MP : 4200 x 2800, only available when the EDID format is set to *DisplayID 1.3*
- **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 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.

4.26 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.

4.27 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.

4.28 SteadyColor™

About SteadyColor

Barco's SteadyColor technology was created to achieve consistency and perceptual linearity in the display of color images. With multiple internal sensors, the display parameters are constantly monitored and adjusted to ensure that the perceptual difference between colors is proportional with their Digital Driving Level (DDL) difference.

To enable SteadyColor

SteadyColor is controlled via Barco's QAWeb Enterprise software.

To register to QAWeb Enterprise, see "QAWeb registration", page 18. The QAWeb Enterprise user guide describes how to enable and configure SteadyColor on your display.

4.29 Maximum luminance demo

About maximum luminance demo

The maximum luminance demo sets the luminance of the LCD panel to its maximum value for 60 seconds, or until the demo is manually cancelled. The actually measured luminance is shown on-screen.



While activated, the maximum luminance demo disables the display's uniformity correction and sets the *Color Preset* to *Native White*. When the maximum luminance demo is cancelled, the original settings are restored.

To activate the maximum luminance demo

1. Bring up the OSD main menu.
2. Navigate to *Enable Service mode*.

3. Enter the keycode: 9-0-0-1.
4. Enter the *Service* menu.
5. Navigate to the *Maximum Luminance demo* submenu and confirm. The maximum luminance demo is activated.
6. Press the jog dial to manually cancel the maximum luminance demo, or wait for 60 seconds after which the demo is automatically cancelled.

5 Cleaning the display

5.1 Cleaning instructions

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. Do not use abrasive cleaning material (e.g., abrasive sponge or cloth) for cleaning the protective cover of the display. Be careful with rings or other jewelry and do not apply excessive pressure on the front glass or LCD.

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: 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.

Repackaging instructions

6

6.1 Repackaging instructions

To repack your display

1. Put the display in the lowest position and lock the stand locking mechanism.

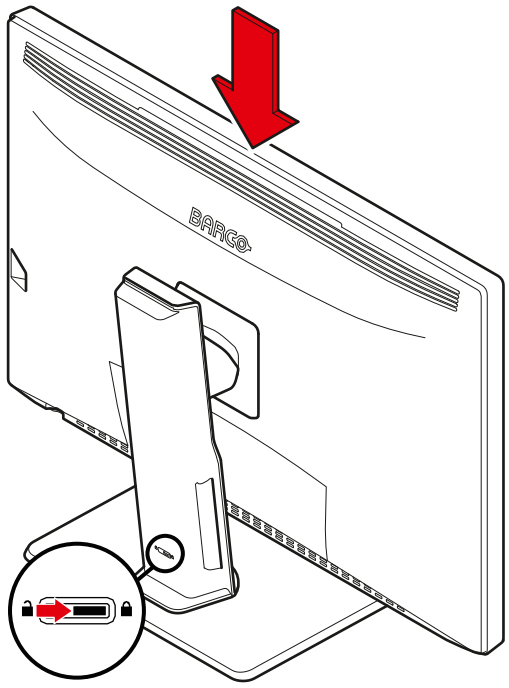


Image 6–1

2. Place the display in the bottom buffer on a stable surface.
   Caution: It takes 2 persons to safely execute this action.

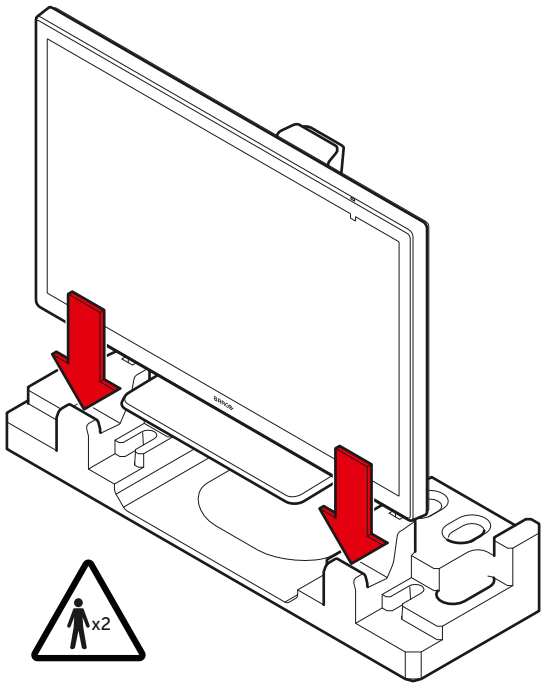


Image 6–2

3. Insert the rear buffer in the bottom buffer.

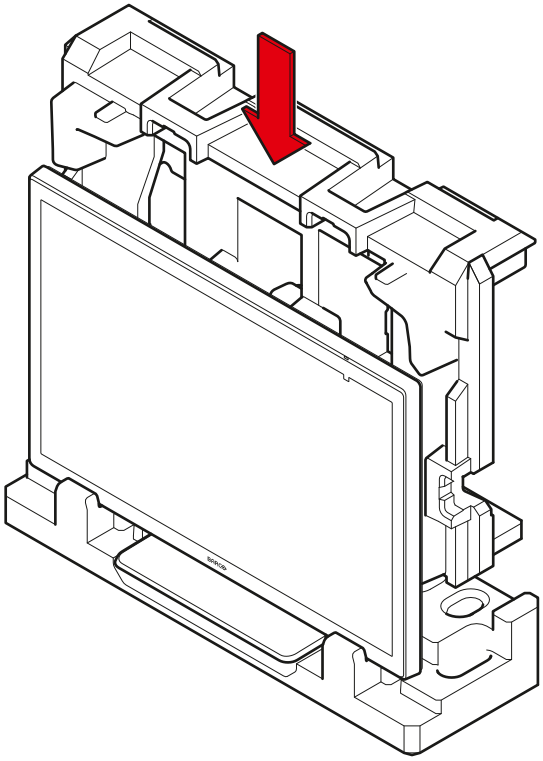


Image 6–3

4. Position the front buffer.

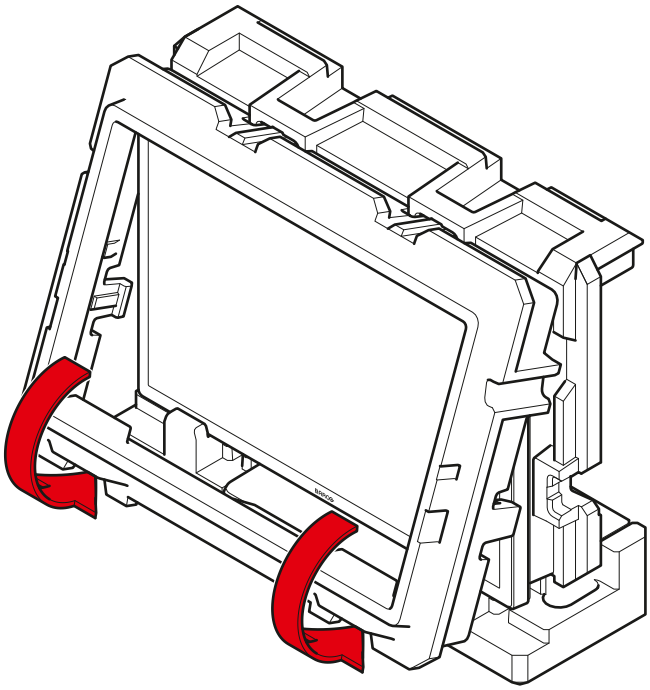


Image 6–4

5. Slide the accessory box(es) and all cables in the dedicated cavities.

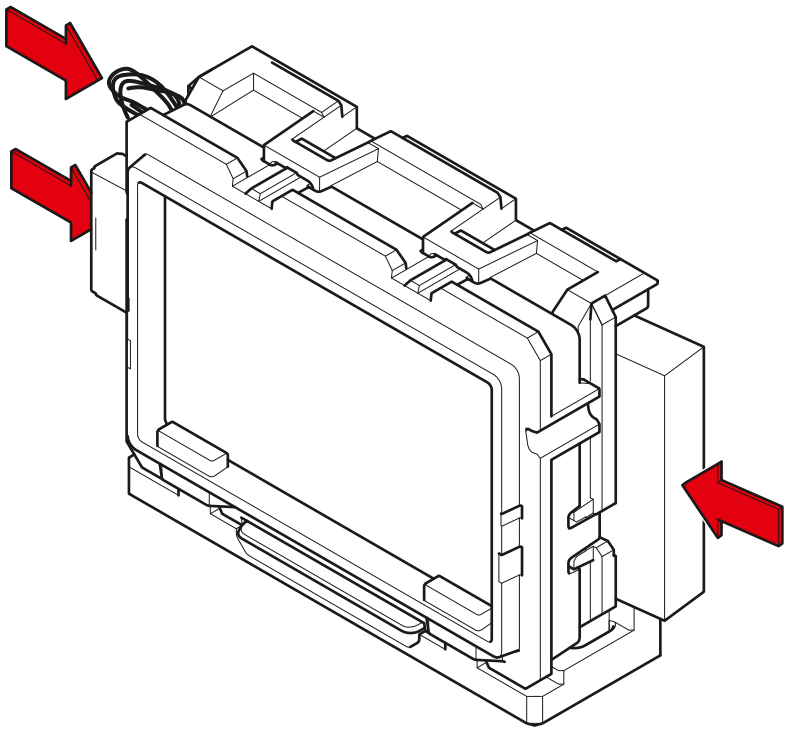


Image 6–5

6. Slide the display and the accessories in the box.

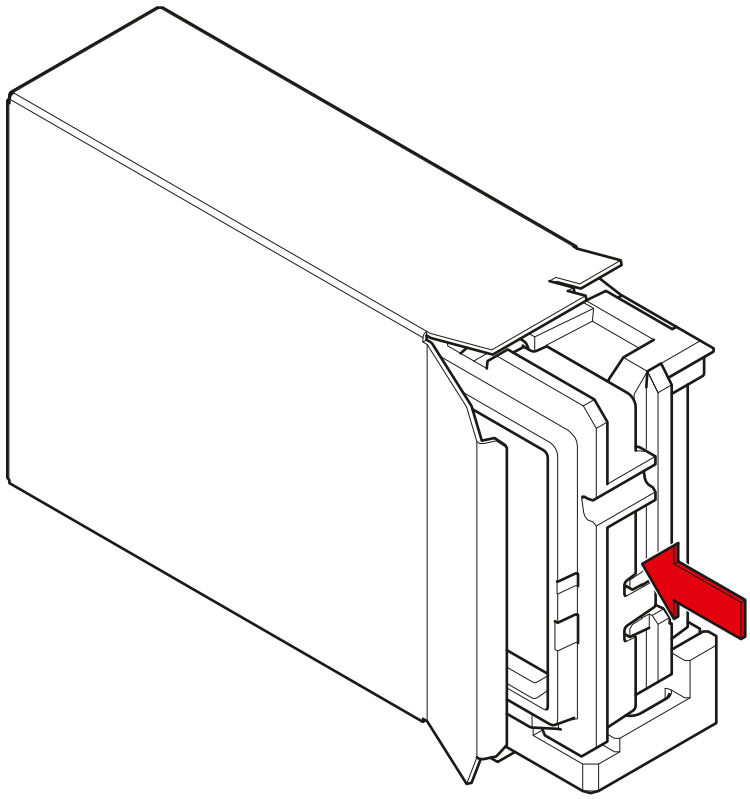


Image 6–6

7. Close and seal the box.

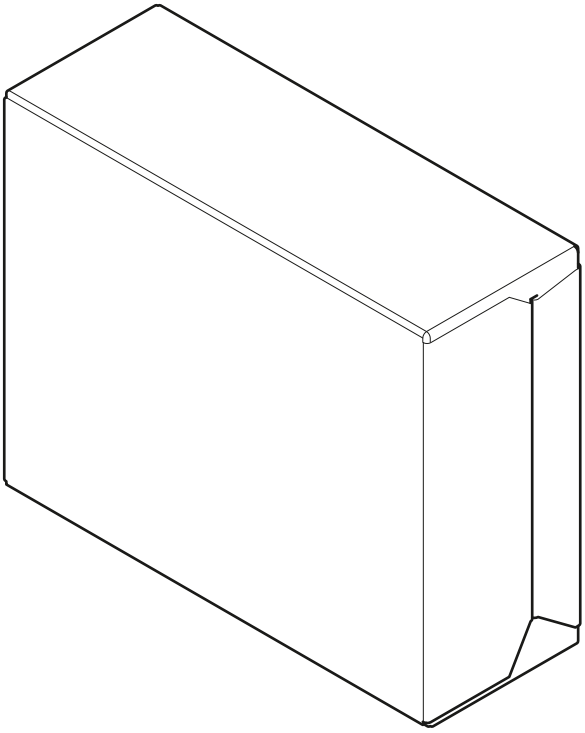


Image 6–7

Important information 7

7.1 Safety information 54
7.2 Cybersecurity 55
7.3 Environmental information 57
7.4 Regulatory compliance information 59
7.5 EMC notice 60
7.6 Explanation of symbols 62
7.7 Open source license information 66
7.8 Technical specifications 67

7.1 Safety information

General recommendations

Read the safety and operating instructions before operating the device.

Retain safety and operating instructions for future reference.

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

Follow all instructions for operation and use.

Electrical shock or fire hazard

To prevent electric shock or fire hazard, do not remove cover.

No serviceable parts inside. Refer servicing to qualified personnel.

Do not expose this apparatus to rain or moisture.

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.

Child safety

Equipment not suitable for use in locations where children are likely to be present.

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.

Medical electrical equipment

Medical - General medical equipment. As to electrical shock, fire and mechanical hazards only. In accordance with: AAMI ES60601-1 (2005) + AMD 1 (2012) + AMD 2 (2021) and CAN/CSA-C22.2 No. 60601-1:14 (Reaffirmed 2022).

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"

7.2 Cybersecurity

Security objectives

The Nio Fusion 12MP will be used for displaying and viewing digital images. Therefore, ensuring the availability of the digital images has been identified as the primary security objective of this product.

Nevertheless, the availability, integrity, and confidentiality of information processed by the product relies on the non-mandatory security recommendations described below.

The lack of storage or processing of patient or personal information, combined with the limited (network) connectivity, results in the Nio Fusion 12MP entailing a low cybersecurity risk profile.

Security recommendations

The security measures listed below should be considered as a non-exhaustive list of possible security controls for the operating environment. The operating environment must not hinder the application of security measures on the product or force the device to operate in a lower security setting.

The operator shall maintain the necessary state-of-the-art policies, processes, standards and other security controls to incorporate, support and protect the product. This shall include the application of risk management (e.g. by implementing relevant standards).

The operating environment should provide physical security via security measures such as:

- Regulated and authenticated physical access enforced via suitable technical measures (e.g. badges)
- Physical security policy defining roles and access rights, including for physical access to the product
- Use of segregated, secure areas with appropriate access controls

The operating environment should include appropriate security controls such as:

- User access management (credentials for accessing software applications or devices, user access policy, etc.)
- Antivirus / anti-malware software
- Firewall
- Application whitelisting / system hardening
- Exclusive use of genuine software and ban of all illegitimate software and applications
- Session management measures (e.g. session timeouts)

The operating environment should provide control and security of network traffic via appropriate measures, such as:

- Network segmentation & network access control
- Traffic filtering
- Encrypted communication

Specifically for workstations connected to the product, appropriate security measures include:

- Operating system hardening and application whitelisting
- Use of strong passwords
- Install only software necessary for the intended use of the operating environment.

To ensure that the security posture of the operating environment and of the product itself remain at a suitable level, appropriate provisions regarding patch management should be in place, such as:

- The operating environment should support patching without compromising interoperability/compatibility
- The operator should have appropriate patch management processes to ensure that security patches for the product are deployed in a timely manner
- The operator should have appropriate patch management processes to ensure that the operating environment (e.g. operating systems, applications) is up-to-date in terms of security

7.3 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: https://www.barco.com/about/sustainability/waste-of-electronic-equipment-customers

Turkey RoHS compliance



Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur.

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

产品中有害物质的名称及含有信息表（China RoHS Compliance）

List of names and information on harzardous substances in product

根据中国人民共和国《电器电子产品有害物质限制使用管理办法》规定，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。

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”.

部件名称 Component name	有害物质 Hazardous Substances or Elements									
	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr^{6+}	多溴联苯 PBB	多溴二苯醚 PBDE	邻苯二甲酸二正丁酯 DBP	邻苯二甲酸二异丁酯 DIBP	邻苯二甲酸丁基苄酯 BBP	邻苯二甲酸二(2-乙基）己酯 DEHP
印制电路配件 Printed Circuit Assemblies	X	O	O	O	O	O	O	O	O	O
液晶面板 LCD panel	X	O	O	O	O	O	O	O	O	O
外接电(线)缆 External Cables	X	O	O	O	O	O	O	O	O	O
内部线路 Internal wiring	O	O	O	O	O	O	O	O	O	O
金属外壳 Metal enclosure	O	O	O	O	O	O	O	O	O	O
塑胶外壳 Plastic enclosure	O	O	O	O	O	O	O	O	O	O
散热片(器) Heatsinks	O	O	O	O	O	O	O	O	O	O

部件名称 Component name	有害物质 Hazardous Substances or Elements									
	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr^{6+}	多溴联苯 PBB	多溴二苯醚 PBDE	邻苯二甲酸二正丁酯 DBP	邻苯二甲酸二异丁酯 DIBP	邻苯二甲酸丁基苄酯 BBP	邻苯二甲酸二(2-乙基)己酯 DEHP
风扇 Fan	O	O	O	O	O	O	O	O	O	O
电源供应器 Power Supply Unit	X	O	O	O	O	O	O	O	O	O
文件说明书 Paper Manuals	O	O	O	O	O	O	O	O	O	O
光盘说明书 CD manual	O	O	O	O	O	O	O	O	O	O

注1：○：表示该有害物质在该部件所有均质材料中的含量均不超出电器电子产品有害物质限制使用国家标准要求。

×：表示该有害物质至少在该部件的某一均质材料中含量超出电器电子产品有害物质限制使用国家标准要求。

注2：以上未列出的部件，表明其有害物质含量均不超出电器电子产品有害物质限制使用国家标准要求。

Note 1:

○: indicates that the content of the hazardous substance in all homogeneous materials of the component does not exceed the national standard requirements for the restricted use of hazardous substances in electrical and electronic products.

X: indicates that the content of the hazardous substance in at least one homogeneous material of the component exceeds the national standard requirements for the use of hazardous substances in electrical and electronic products.

Note 2:

The components not listed above indicate that their harmful substance content does not exceed the national standard requirements for the restricted use of harmful substances in electrical and electronic products.



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.

7.4 Regulatory compliance information

Indications for use

The display is intended to be used in displaying and viewing digital images, including standard and multiframe digital mammography, for review, analysis, and diagnosis by trained medical practitioners. It is specially designed for breast tomosynthesis applications.

Intended usage environment

- The display is not in contact with patients.
- The display is not in the same environment as the patient.
- The display is intended to be used in a dedicated diagnostic reading room.

Caution (USA): Federal law restricts this device to sale by or on the order of a physician. (Details & exemptions are in the Code of Federal Regulations Title 21, 801 Part D).

Contra-indications

Not applicable

Intended users

Barco diagnostic and mammography displays are intended to be used for primary diagnosis by trained medical practitioners. The device is initially set up by trained integrators or medical IT staff.

Factory addresses

- **Barco NV**, President Kennedypark 35, 8500 Kortrijk, Belgium
- **BARCO S.R.L.**, Via Saul Banfi 1, 21047 Saronno, VA, Italy
- **巴可（苏州）医疗科技有限公司**, 苏州工业园区苏桐路111号
  Barco (Suzhou) Healthcare Technology Co., Ltd., No.111, Sutong Road, Suzhou Industrial Park, 215021 Suzhou China

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 (B) / NMB (B)

Brazilian local representative

Barco Ltda, Av. Ibirapuera, 2332 - Andar 8 - Bloco 2 - Conj 82, Bairro:Ibirapuera, Distrito:Moema, 4028-002, São Paulo, Brasil

7.5 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 Nio Fusion 12MP, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

Electromagnetic emissions

Emissions test	Compliance
RF emissions (CISPR 11)	Group 1
RF emissions (CISPR 11)	Class B
Harmonic emissions (IEC 61000-3-2)	Class D
Voltage fluctuations/ flicker emissions (IEC 61000-3-3)	Complies

This Nio Fusion 12MP 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

Test	60601-1-2 Test level	Compliance level according TR 60601-4-2
Electrostatic discharge Immunity (IEC 61000-4-2)	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air	± 4 kV contact ± 2 kV, ± 4 kV, ± 8 kV air
Electrical fast transient/burst Immunity (IEC 61000-4-4)	± 2 kV/100kHz (power) ± 1 kV/100kHz (signal) All cables >3m	±2kV (5kHz or 100kHz power) ±0.5kV (5kHz or 100kHz signal) All cables >3m
Surge Immunity (IEC61000-4-5)	±0,5kV, ±1kV line-to-line ±0,5kV, ±1kV, 2kV line-to-ground	±0,5kV, ±1kV line-to-line ±0,5kV, ±1kV, 2kV line-to-ground
Voltage dips, short interruptions and voltage Variations Immunity (IEC 61000-4-11)	0% UT 0,5 cycle at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0% UT 1 cycle 70% UT 25/30 cycles at 0° 0% UT 250/300 cycles	0% UT 0,5 cycle at 0°, 180° 70% UT 25/30 cycles at 0° 0% UT 250/300
Power frequency magnetic field Immunity (IEC 61000-4-8)	30 A/m 50Hz or 60Hz	3 A/m 50Hz or 60Hz
Immunity to conducted disturbances induced by RF fields (IEC 61000-4-6)	3V/ 150kHz-80MHz 6V in ISM bands 80% AM 1kHz All cables >1m	3V/ 150kHz-80MHz (ISM bands N.A.) 80% AM 1kHz All cables >3m
Radiated RF electromagnetic field Immunity (IEC 61000-4-3)	3V/m 80MHz-2,7GHz 80% AM 1kHz	3V/m 80MHz-2,7GHz 80% AM 1kHz
Immunity to proximity fields from RF wireless communications equipment (IEC 61000-4-3)	385 MHz 18Hz PM 27V/m 450 MHz 1kHz FM 28V/m 710 MHz 217Hz PM 9V/m 745 MHz 217Hz PM 9V/m 780 MHz 217Hz PM 9V/m 810 MHz 18Hz PM 28V/m 870 MHz 18Hz PM 28V/m 930 MHz 18Hz PM 28V/m 1720 MHz 217Hz PM 28V/m 1845 MHz 217Hz PM 28V/m 1970 MHz 217Hz PM 28V/m 2450 MHz 217Hz PM 28V/m 5240 MHz 217Hz PM 9V/m 5500 MHz 217Hz PM 9V/m 5785 MHz 217Hz PM 9V/m	385 MHz 18Hz PM 6V/m 450 MHz 1kHz FM 9V/m 710 MHz 217Hz PM 3V/m 745 MHz 217Hz PM 3V/m 780 MHz 217Hz PM 3V/m 810 MHz 18Hz PM 9V/m 870 MHz 18Hz PM 9V/m 930 MHz 18Hz PM 9V/m 1720 MHz 217Hz PM 9V/m 1845 MHz 217Hz PM 9V/m 1970 MHz 217Hz PM 9V/m 2450 MHz 217Hz PM 9V/m 5240 MHz 217Hz PM 6V/m 5500 MHz 217Hz PM 6V/m 5785 MHz 217Hz PM 6V/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

Test frequency (MHz)	Band (MHz)	Service	Modulation	Maximum power (W)	Distance (m)	Immunity test level (V/m)
710	704 – 787	LTE Band 13, 17	Pulse modulation 217 Hz	0.2	0.3	9
745						
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						

7.6 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.

Indicates compliance with Part 15 of the FCC rules (Class A or Class B).

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 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 limits to which the device can be safely exposed when being stored.



Indicates that the device is a Medical Device.



Indicates the device Serial Number.



Indicates the device part number or catalogue number.



Indicates the Unique Device Identifier.



Indicates the Authorised Representative for Switzerland.



Warning: dangerous voltage



Caution



Consult the Instructions For Use.



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).



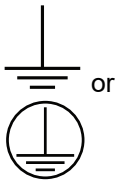
Indicates Alternating Current (AC).



Stand-by



Equipotentiality



Protective earth (ground)

or

Symbols on the box

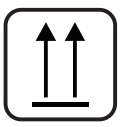
On the box of the device, you may find the following symbols (nonrestrictive list):



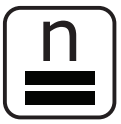
Indicates a device that can be broken or damaged if not handled carefully when being stored.



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.



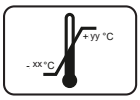
Indicates the weight of the box and that it should be carried with two persons.

or

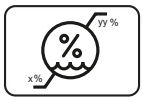




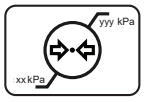
Indicates that the box should not be cut with a knife, a cutter or any other sharp object.



Indicates the temperature limits to which the device can be safely exposed when being stored.



Indicates the range of humidity to which the device can be safely exposed when being stored.



Indicates the range of atmospheric pressure to which the device can be safely exposed when being stored.

7.7 Open source license information

Open source license information

This product contains software components released under an Open Source license. You acknowledge living up to the conditions of each separate Open Source Software license.

A list of the Open Source Software components used is available in the applicable EULA, through the “My Barco” section of the Barco website or through other (online) means.

Copyright on each Open Source Software component belongs to the respective initial copyright holder, each additional contributor and/or their respective assignee(s), as may be identified in the respective Open Source Software documentation, source code, README file, or otherwise. You shall not remove or obscure or otherwise alter the respective copyrights.

EACH SEPARATE OPEN SOURCE SOFTWARE COMPONENT AND ANY RELATED DOCUMENTATION ARE PROVIDED "AS IS" WITHOUT EXPRESS OR IMPLIED WARRANTY INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL THE COPYRIGHTHOLDER OR ANY OTHER CONTRIBUTOR BE LIABLE FOR DIRECT, INCIDENTAL, SPECIAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY. MORE INFORMATION/DETAILS IS TO BE FOUND IN EACH SPECIFIC OPEN SOURCE LICENSE.

With respect to GPL, LGPL or similar licenses with regard to corresponding source code access and automatic license terms applicability:

- You acknowledge living up to the conditions of each such specific applicable Open Source Software license. You are responsible for your own additions, changes or modifications without any recourse or claim towards Barco whatsoever. You further acknowledge that any such additions, changes or modifications may impair the ability of Barco – at Barco’s sole discretion - to continue to provide service, warranties, software updates, fixes, maintenance, access or such similar abilities, without any recourse or claim towards Barco whatsoever.

- Barco offers to provide the corresponding source code, and shall make the corresponding source code available to you via email or download link, except where the applicable license entitles you to require Barco to provide you the corresponding source code on a tangible medium, in which case Barco will charge you for the actual costs of performing such distribution, such as the cost of media, shipping and handling. You may exercise this option upon written request to Barco N.V, attn. legal department, Beneluxpark 21, 8500 Kortrijk (Belgium). This offer is valid for a period of three (3) years from the date of the distribution of this product by Barco.

7.8 Technical specifications

MDNC-12130

Screen technology	LCD
Active screen size (diagonal)	784 mm (30.9")
Active screen size (H x V)	653 x 435 mm (25.7 x 17.1")
Aspect ratio (H:V)	3:2
Resolution	Native 12MP (4200 x 2800 pixels) Configurable to 2 x 5.8MP (2100 x 2800 pixels)
Pixel pitch	0.1554 mm
Color imaging	Yes
Gray imaging	Yes
Bit depth	30 bit
Viewing angle (H, V)	178°
Uniformity correction	ULT
SteadyGray	Yes (in display), when used with system components as outlined in the user guide
SteadyColor	Yes (in display), when used with system components as outlined in the user guide
Ambient light presets	Yes, reading room selection
Ambient light sensor	Yes
Front sensor	Yes
Maximum luminance (panel typical)	1200 cd/m²
DICOM calibrated luminance	MDNC-12130: 600 cd/m²
Contrast ratio (panel typical)	1500:1
Response time ((Tr + Tf)/2) (typical)	10 ms (average, with all single transitions within 1 frame period)
Housing color	Black / White
Video input signals	2x DisplayPort 1.2
Video output signals	N/A
USB ports	2x USB-B 2.0 upstream (switchable endpoint) 2x USB-A 2.0 downstream

KVM switch	Yes
Power rating	100-240 Vac, 50/60 Hz, 3.6-1.6 A
Power consumption	105 W (nominal) < 0.5 W (hibernate) < 0.5 W (standby)
Dimensions with stand (W x H x D)	695 x 528~628 x 239 mm
Dimensions w/o stand (W x H x D)	695 x 483 x 74 mm
Dimensions packaged (W x H x D)	800 x 650 x 295 mm
Net weight with stand	16.6 kg
Net weight w/o stand	12.0 kg
Net weight packaged	21.3 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)
Screen protection	N/A
Recommended modalities	All digital images, including digital mammography and breast tomosynthesis
Certifications*	CE0123 (Medical Device) FDA 510(K) K203106 CCC (China) KC (Korea) BIS (India) EAC (Russia, Kazakhstan, Belarus, Armenia and Kyrgyzstan) Safety specific: IEC 60950-1:2005+A1:2009+A2:2013 EN 60950-1:2006+A1:2010+A11:2009+A12:2011+A2:2013 IEC 62368-1:2018 EN IEC 62368-1:2020+A11:2020 IEC 60601-1:2005+A1:2012+A2:2020 EN 60601-1:2006+A1:2013+A12:2014+A2:2021 AAMI ES 60601-1:2005+A1:2012+A2:2021 CAN/CSA C22.2 No. 60601-1:2014 (Reaffirmed 2022) EMI specific: IEC 60601-1-2:2014+A1:2020 (Ed.4.1) EN 60601-1-2:2015+A1:2021 (Ed.4.1) FCC part 15 Class B ICES-001 Level B VCCI (Japan) Environmental:

	EU RoHS, China RoHS, Korea e-Standby, REACH, Canada Health, WEEE, Packaging Directive *Some of the listed certifications may still be pending. For the actual list of applicable certifications, please refer to the product page on www.barco.com or see the certification marks on the product label of your display.
Supplied accessories	User guide Documentation disc System sheet Video cables USB cables Mains cables
Optional accessories	Display controller
QA software	QAWeb
Warranty	5 years, including 40000 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	10% to 70% (non-condensing)
Storage humidity	10% to 70% (non-condensing), max. 70% at max. 40 °C
Operating pressure	62 kPa minimum
Storage pressure	50 to 106 kPa

MDNC-12130 H

Screen technology	LCD
Active screen size (diagonal)	784 mm (30.9")
Active screen size (H x V)	653 x 435 mm (25.7 x 17.1")
Aspect ratio (H:V)	3:2
Resolution	Native 12MP (4200 x 2800 pixels) Configurable to 2 x 5.8MP (2100 x 2800 pixels)
Pixel pitch	0.1554 mm
Color imaging	Yes
Gray imaging	Yes
Bit depth	30 bit
Viewing angle (H, V)	178°
Uniformity Technology	ULT
SteadyColor Calibration	Yes (in display), when used with system components as outlined in the user guide
Ambient light presets	Yes, reading room selection
Ambient light sensor	Yes
Front sensor	Yes

Maximum luminance (panel typical)	1200 cd/m²
DICOM calibrated luminance	800 cd/m²
Contrast ratio (panel typical)	1500:1
Response time ((Tr + Tf)/2) (typical)	10 ms (average, with all single transitions within 1 frame period)
Housing color	Black / White
Video input signals	2x DisplayPort 1.2
USB ports	2x USB-B 2.0 upstream (switchable endpoint) 2x USB-A 2.0 downstream
Power rating	100-240 Vac, 50/60 Hz, 3.6-1.6 A
Power consumption	135 W (nominal) < 0.5 W (hibernate) < 0.5 W (standby)
Dimensions with stand (W x H x D)	695 x 528~628 x 239 mm
Dimensions w/o stand (W x H x D)	695 x 483 x 74 mm
Dimensions packaged (W x H x D)	800 x 650 x 295 mm
Net weight with stand	16.6 kg
Net weight w/o stand	12.0 kg
Net weight packaged	21.3 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)
Screen protection	N/A
Recommended modalities	All digital images, including digital mammography and breast tomosynthesis
Certifications*	CE0123 (Medical Device) FDA 510(K) K203106 CCC (China) KC (Korea) BIS (India) Safety specific: IEC 60950-1:2005+A1:2009+A2:2013 EN 60950-1:2006+A1:2010+A11:2009+A12:2011+A2:2013 IEC 62368-1:2018 EN IEC 62368-1:2020+A11:2020 IEC 60601-1:2005+A1:2012+A2:2020 EN 60601-1:2006+A1:2013+A12:2014+A2:2021

	AAMI ES 60601-1:2005+A1:2012+A2:2021 CAN/CSA C22.2 No. 60601-1:2014 (Reaffirmed 2022) EMI specific: IEC 60601-1-2:2014+A1:2020 (Ed.4.1) EN 60601-1-2:2015+A1:2021 (Ed.4.1) FCC part 15 Class B ICES-001 Level B VCCI (Japan) Environmental: EU RoHS, China RoHS, Korea e-Standby, REACH, Canada Health, WEEE, Packaging Directive *Some of the listed certifications may still be pending. For the actual list of applicable certifications, please refer to the product page on www.barco.com or see the certification marks on the product label of your display.
Supplied accessories	User guide Documentation disc System sheet Video cables USB cables Mains cables
Optional accessories	Display controller
QA software	QAWeb
Warranty	5 years, including 10000 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	10% to 70% (non-condensing)
Storage humidity	10% to 70% (non-condensing), max. 70% at max. 40 °C
Operating pressure	62 kPa minimum
Storage pressure	50 to 106 kPa

Relation of storage and operating humidity and temperature

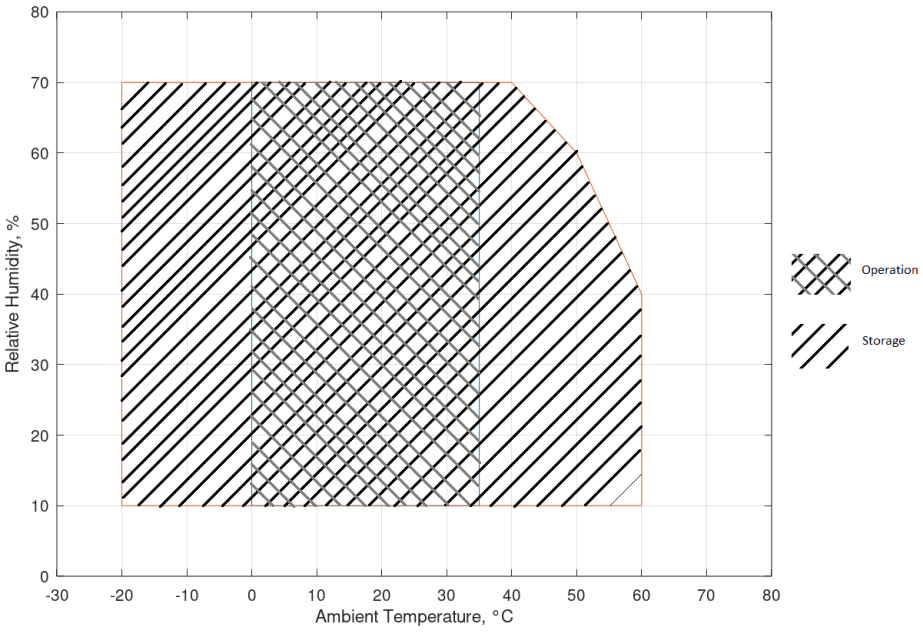


Image 7–1

CE
0123

Barco NV
President Kennedypark 35
8500 Kortrijk
Belgium

R5913350 /09 | 2025-09-25

www.barco.com