

Coronis 2MP



Installation & User Manual

(This page intentionally left blank.)

Copyright notice

This document is copyrighted. All rights are reserved. Nor 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

© 2007 Barco N.V. All rights reserved.

Preface

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.

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

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

FCC notice

This equipment has been tested and found to comply with the limits of a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canadian notice

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada.

Disposal Information

The lamps inside the display contain mercury. Do not throw the display in the trash. Dispose of it as required by local ordinances or regulations.

Safety Instructions

General Recommendations

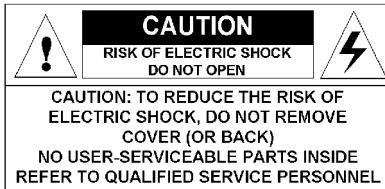
Read the safety and operating instructions before operating the display.

Retain safety and operating instructions for future reference.

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

Follow all instructions for operation and use.

Electrical shock



Type of protection (electrical):

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.

Power connection

- Power requirements: The display must be powered using the 12 VDC power supply that is supplied with the display.
- The 12 VDC power supply must be powered by the AC mains voltage.

- Power cords:



Power cord with CEE 7 plug: The colors of the mains lead are colored in accordance with the following code: Green-and-yellow: Earth (safety earth), Blue: Neutral, Brown: Line



Power cord with ANSI 73.11 plug: The wires of the power cord are colored in accordance with the following code: Green/yellow: ground, White: neutral, Black: line (live)

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

Water and moisture

Never expose the display to rain or moisture.

Never use the display near water - e.g. near a bathtub, washbasin, swimming pool, kitchen sink, laundry tub or in a wet basement.

Ventilation

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

Installation

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

More warnings in the Installation chapter.

This apparatus conforms to:

CE, IEC 60950, UL 60950, CAN/CSA C22.2 No. 60950 (c-UL), CCC.

National Scandinavian Deviations for Cl. 1.7.2 :

Finland: "Laitte on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"

Norway: "Apparatet må tilkoples jordet stikkontakt"

Sweden: "Apparaten skall anslutas till jordat uttag"



Operating precautions

Continuous operation of the display with the same screen may result in some image sticking on the LCD panel.

Over 10 hours operation with the same image content is not recommended.

Switching on the display DPMS may decrease the risk of image sticking (image retention).

Copyright notice.....	3
Preface	4
Safety Instructions.....	6
Display Controller Installation	13
BarcoMed CORONIS display controller overview	15
BarcoMed CORONIS display controller installation	17
Display Installation	21
Overview.....	23
Introduction	23
Package contents	25
Controls and connectors.....	26
Installation	29
Precautions	29
Before installing the display.....	29
Portrait or landscape position.....	30
Connecting the cables.....	31
Routing the signal cables	34
Using the USB hub.....	35
Tilt and swivel positioning.....	35
Starting up	35
How to avoid image retention	37
Software Installation	39
Installing the BARCOMED display controller drivers and software..	41
Display Controller Tools	47
BarcoMed control panel settings.....	51
Accessing the Barco tab.....	51
Advanced Properties	53
Device details	56

Display Operation	57
Operation	59
Switching to stand-by position.....	59
Controlling the display.....	59
Using the Autoset* functions.....	62
Controlling Video Contrast* and Video Brightness*	64
Setting the Luminance value.....	66
Making adjustments	67
Selecting inputs.....	69
Settings.....	70
Preset*	72
Getting information.....	73
Advanced functions.....	75
About this chapter.....	75
Advanced functions in the Adjustments menu	76
Advanced functions in the Settings menu.....	77
Advanced functions in the Preset menu.....	80
Advanced functions in the Information menu.....	81
Maintenance.....	83
Troubleshooting.....	85
Windows does not show the desired display settings.....	85
Pixel Faults.....	86
Technical specifications.....	87
GEOMETRY	87
VISUAL PERFORMANCE.....	87
INPUTS.....	88
SCANNING SYSTEM.....	88
CONTROLS.....	89
POWER SUPPLY.....	89
Dimensions (W x H x D).....	89

Net weight.....	89
Operating Temperature.....	89
Storage Temperature.....	89
MediCal Software	
Installation and Operation.....	91
MediCal Pro installation and operation.....	93
MediCal Pro software installation	93
Using MediCal Pro	93
Troubleshooting.....	95



Display Controller Installation

(This page intentionally left blank.)

BarcoMed CORONIS display controller overview

The BarcoMed CORONIS display controller delivers a quality image with 1024 simultaneous shades of gray for medical viewing applications.

Minimum system requirements

- Pentium II 266 MHz with 128 MB RAM (Pentium II 800MHz with 256 MB RAM for cineloops)



Important: Other hardware and software installed in the system may require more system memory for best performance.

- 64-bit/66Mhz PCI slot with no obstructions
- PCI 2.2 Compliant
- Windows® XP Professional Service Pack 1, Windows® 2000 Professional Service Pack 4 or Windows NT® 4.0 Service Pack 6

Features of the BarcoMed CORONIS display controller

- Dual Head Configuration
- 64MB Video Memory
- 10-bit performance on LCD
- 1024 Simultaneous shades of gray
- 10-bit in/10-bit out LUT
- Portrait or Landscape Mode
- Hardware cursor
- 64-bit/66MHz Single slot PCI card
- Displays VGA boot messages on CORONIS ZMP displays.

Supported resolutions for each head of the BarcoMed CORONIS display controller

For Coronis 3MP Displays

- 1536 x 2048 @ 60 HZ (primary)
- 2048 x 1536 @ 60 Hz

For all BarcoMed CORONIS display controllers

The following resolution is also available when the OS is booted in VGA mode.

- 640x480 @ Default Refresh Rate, 16 colors

System Configuration Guidelines

Because of the low power consumption and low heat generation of the BarcoMed CORONIS display controller, multiple controllers may be installed in adjacent PCI slots or adjacent to other PCI boards. Additionally there should be no need to modify either the PC's power supply and/or cooling system.

BarcoMed CORONIS display controller installation



Caution: Wear a **grounded**, protective ESD strap during installation or handling of the display controller. Electrostatic charges can damage the display controller.

Prior to installing your BarcoMed CORONIS display controller(s) in your PC please take a few minutes to familiarize yourself with both the display controller and the PCI slots in your computer.

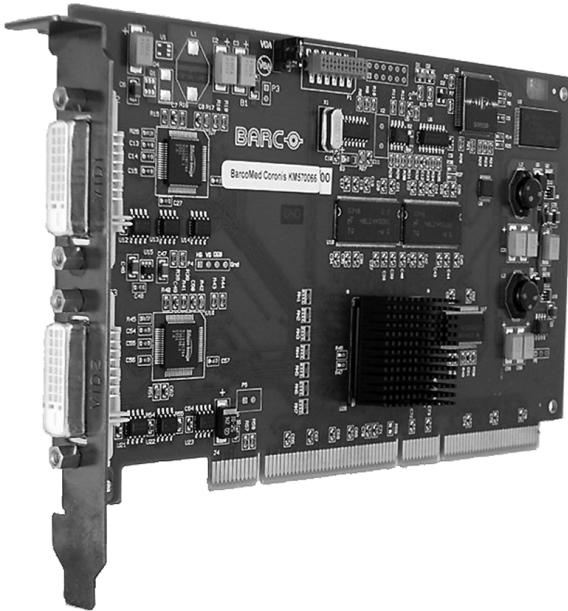


Figure 1: The BarcoMed CORONIS display controller

Jumper location

There is one user changeable jumper on the BarcoMed CORONIS. It is used to enable or disable the VGA capabilities of the display controller.

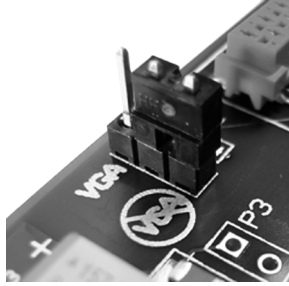


Figure 2: VGA Jumper Enlarged View

Using the VGA capabilities of the BarcoMed CORONIS

Prior to installing the BarcoMed CORONIS, decide if you are going to use its on-board VGA capabilities. If you are, check the setting of the Jumper at J-1 on the display controller (see figure 2 VGA Jumper Enlarged View). By default, VGA should be enabled, on the top two pins.



NOTE: To use multiple BarcoMed CORONIS display controllers in a single host with VGA enabled, you need to enable VGA on only ONE of the BarcoMed CORONIS display controllers and disable VGA on ALL other BarcoMed display controllers.

Examples of PCI slots

Although the BarcoMed CORONIS controller is a 64-bit board, it may be installed in either a 64-bit or 32-bit PCI slot. However, installing it in a 32-bit PCI slot will result in a decrease in performance. Figure Figure 3 illustrates the types of slots so that you can correctly identify which one to use for the BarcoMed CORONIS.

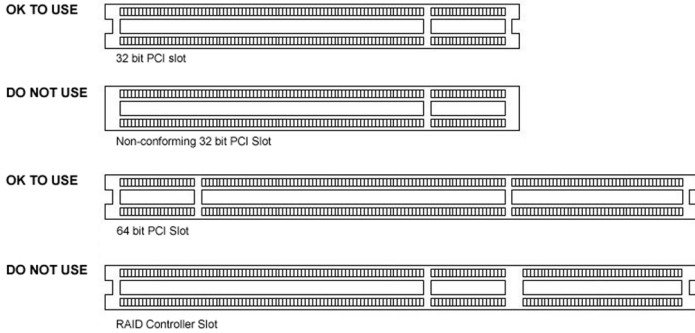


Figure 3: PCI and RAID Controller Slots

Install the BarcoMed CORONIS controller in your computer following these steps:

1. Turn off the power to your computer and disconnect the power cord, however make sure that the computer chassis is **still grounded**.
2. Remove the chassis cover according to the manufacturer's instructions. Be sure to observe safety warnings.
3. If you have decided to use the on-board VGA capabilities of the BarcoMed CORONIS (see **Using the VGA capabilities of the BarcoMed CORONIS** on page 18), you **must now remove** any VGA display controller(s) that are currently installed in the computer or **disable** any VGA controllers that are integrated into your PC's motherboard.
4. Install the BarcoMed CORONIS Controller into a free PCI slot, either 64-bit or 32-bit (see figure 3, for examples of slots). Be sure that the display controller is seated firmly in the slot.
5. Secure the card to the chassis with the PC's I/O panel mounting screw, and replace the chassis cover.
6. Connect the primary display (left most display in a linear configuration, top most in a vertical configuration) to the uppermost connector on the BarcoMed CORONIS (the output farthest from the motherboard – "**Head 1**" in figure 4

below) using the provided DVI cable. For a dual-headed BarcoMed CORONIS setup, connect the secondary display to the other connector on the display controller.

7. Replace the chassis cover, reconnect the power cord, turn on the power, and boot the system as usual.

Running multiple BarcoMed CORONIS display controllers in a single host

The physical order of the displays may vary when you are running multiple BarcoMed CORONIS display controllers. This is due to the PC's PCI bus control in the system BIOS, and not the BarcoMed display controller. It may become necessary, depending on how your PC's BIOS configures the PCI bus, to switch your DVI display connections to achieve a linear desktop configuration.



Figure 4: The Video Outputs.



Display Installation

(This page intentionally left blank.)

Overview

Introduction

The MFGD 2320, BARCO's 20" 2 megapixel grayscale LCD display, guarantees perfect image quality in medical imaging applications.

The display combines a TFT (thin film transistor) liquid crystal display panel structure and a built-in backlight with inverter for a better picture quality. It is designed to meet the users' needs for performance, consistency, and outstanding image quality through a streamlined development process.

If the Portrait Accelerator option is installed, the display can be used in portrait or landscape version, simply by turning the panel. The tilt & swivel foot allows ideal positioning of the panel, in height and viewing angle.

The panel can be adjusted by means of a control wheel on the display.

I-Guard

I-GUARD[®] is Barco's patent-pending, built-in calibration device, continuously maintaining image quality. With I-GUARD[®], QA checks no longer need to disturb normal radiology activities, as they can be performed while applications are running.

I-GUARD[®] allows radiologists or QA administrators to calibrate their viewing stations or adjust the panel's curve to DICOM standards without administrator intervention.

Autoset feature

The display has an Autoset feature that helps the user to adjust standard presets: With one single function, you can automatically adjust the display completely.

Autoscan

When you connect a video signal, the display checks in the internal memory if the signal has been adjusted before. If so, it selects the settings and parameters that match the connected signal.

When you connect a video signal that hasn't been connected before, and adjust the display to the signal, the adjustments and signal timing parameters are stored in a programmable preset.

Best resolution

The optimum and recommended resolution is **1600 x 1200** or **1200 x 1600** (if the Portrait Accelerator option is installed).

The recommended refresh rate is **60 Hz**.

Would you have trouble selecting a proper display setting in Windows, please refer to the Troubleshooting section further.

BARCO's BarcoMed Coronis imaging board is the best choice to drive the MFGD 2320 display.

Power saving (DPMS)

The MFGD 2320 is equipped with a power saving system. When left idle for a certain time, the computer connected to the display, will power down the display. The power saving system can be switched on or off using the on-screen menus. This system requires a computer imaging board that supports power saving management.

Ambient Light Compensation (ALC)

When enabled, the ALC system automatically adapts the display light output, depending on the ambient light in the room. The ambient light is measured by the ALC optical sensor located at the front of the display.

Package contents

The package should include the following items, please check. If some of the items are missing, please contact the reseller from whom you have purchased the unit.

- The MFGD 2320 display
- Power supply
- DVI cable
- Analog video cable
- USB cable
- Two velcro strips to bind the cables
- European power cord
- American power cord
- This user manual

If the display is part of a Coronis system, the package contains more items. Please refer to the packing list on the outside of the Coronis box.

Controls and connectors



Figure 5

Front

(1) Ambient Light Compensation (ALC) sensor

(2) Power LED

- The LED is off when the display is off.
- The LED is green when the display is on (when enabled in the on-screen menus).
- The LED is orange when the display is in Stand-by power-saving mode.

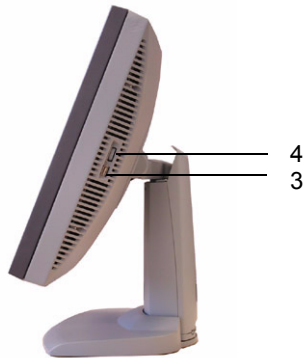


Figure 6

Side

(3) USB downstream connector

(4) Control wheel for navigating through the on-screen display (OSD) menus and changing values in the menus

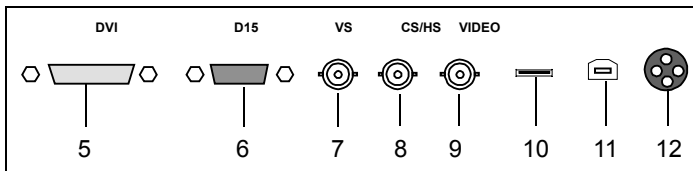


Figure 7

Rear

(5) Digital DVI (video and data) input

(6) D15 (VGA) video connector

(7) Vertical sync input

(8) Composite / Horizontal sync input

- (9) Composite video input
- (10) USB downstream connector
- (11) USB upstream connector
- (12) DC 12V power input

Installation

Precautions

- Keep your original packaging. It is designed for this display and is the ideal protection during transport.
- Avoid reflections in the flat panel to reduce eye strain.
- Place the display on a strong and stable table or desk.
- Keep the display away from heat sources and provide enough ventilation in case it is built in a rack or console.
- Make sure all equipment is switched off before connecting the signals.

Before installing the display

Important:

In the factory, the height-positioning system in the display foot is blocked with a clip to prevent damage during transportation.

Before installing the display, you must remove this clip.

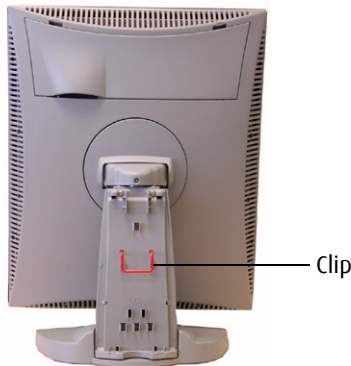


Figure 8

To remove the clip:

1. Position the display with its rear side facing you.
2. Lift up the 2 clips of the foot cover to release the cover from the foot.
3. Pull the lower side of the cover towards you and simultaneously slide the cover downward.
4. Pull the red clip out of the fixation holes in the foot.

You can better leave the cover off the foot while connecting the signal cables to the display.

Portrait or landscape position

You can change the orientation of the panel at any time, but it is more convenient to select landscape or portrait orientation before connecting the cables.

To change the panel orientation:

1. Stand at the front side of the panel and take the panel at both sides.
2. Very important: **Tilt the panel before changing the orientation.**



Figure 9

Should you change the panel orientation without tilting it first, you might irreversibly damage the tilt & swivel mechanism.

3. To change from portrait to landscape, turn the panel counterclockwise while tilting it slightly.
4. To change from landscape to portrait, turn clockwise.

Connecting the cables

To get access to the connectors, open the cover of the connector compartment by pulling down the 2 clips of the cover.

The signal cables can be routed inside the display foot. Therefore, remove the foot cover before connecting the cables (see "Before installing the display").

Important:

Do not connect video and sync cables to the BNC and D15 connectors at the same time.

To connect DVI cables:

1. Connect one end of the DVI cable to the DVI input (5) of the display.

2. Connect the other end of the DVI cable to the video output of your DVI signal source.
3. Route the cable so that it enters the connector compartment at the place where the cover is bulged.

To connect analog video & sync cables on BNC:

Connect the video & sync output of the signal source to the video and sync inputs (9), (8) and (7) of the display.

The inputs accept the following signals:

- Video with separate horizontal and vertical sync.
 - The connection consists of 3 cables.
 - Connect the video cable to the connector Video (9).
 - Connect the horizontal sync cable to the connector HS/CS (8).
 - Connect the vertical sync cable to the connector VS (7).
 - Make sure the signal connected to the HS/CS connector does not contain Composite sync.
- Video with external composite sync.
 - The connection consists of 2 cables.
 - Connect the video cable to the connector Video (9).
 - Connect the composite sync cable to the connector HS/CS (8).
 - Make sure no signal is connected to the VS connector.
- Video with internal composite sync (sync on video).
 - The connection consists of 1 cable.
 - Connect the video (with sync) cable to the connector Video (9).

Notes:

- The video inputs cannot be connected in loop-through (daisy-chain).
- The required video amplitude: 700 mV \pm 3 dB.
- The required sync. amplitude:
 - VS input: 700 mV to 4 V
 - HS/CS input: 500 mV to 4V
 - Video input (sync on video): 150 mV to 600 mV

To connect analog video & sync cables on D15:

1. Connect one end of the VGA cable to the D15 input (6) of the display.
2. Connect the other end of the VGA cable to the video output of your computer.
3. Route the cable so that it enters the connector compartment at the place where the cover is bulged.

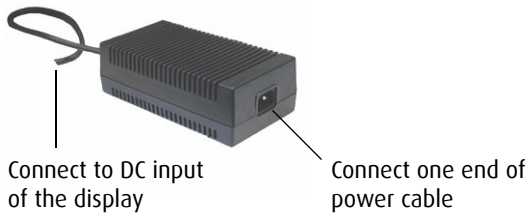
To connect the power:

Figure 10

1. Connect the output of the 12V DC power supply to the DC input (12) of the display.
2. Connect one end of the proper power cable to the AC input of the 12V DC power supply.

3. Connect the other end of the power cord to a grounded power outlet.
4. Route the cable so that it enters the connector compartment at the place where the cover is bulged.

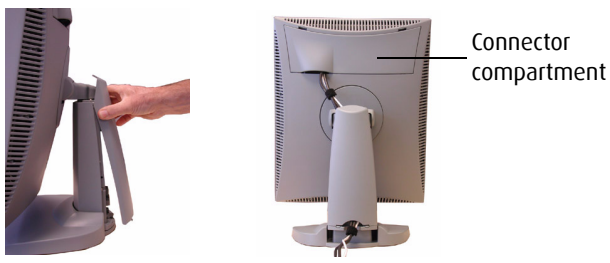
Routing the signal cables

After connecting all cables, fix them in the cable tie at the rear of the connector compartment. Bind the cables together above and under the foot, by means of the 2 velcro strips included in the package.

After fixing the cables, put the connector compartment cover back in place. Pay attention that the signal cables are positioned under the bulge in the cover.

Next, fix the cables in the plastic clamps on the foot. At last, put the foot cover back in place.

To put the foot cover in place:



Push the upper side of the cover onto

Signal cables routed under foot cover

Figure 11

1. Push the upper side of the cover onto the foot, so that the hooks on the cover are positioned right under the holes in the foot.
2. Slide the cover upward while moving the lower side of the cover towards the foot.

3. Press the cover to the foot so that both clips make a clicking sound.

Using the USB hub

The USB interface inside the display allows you to connect USB devices, such as a keyboard, mouse or digital camera, to the display.

To use the USB hub:

1. Connect the display's USB upstream connector (11) to the USB port of the PC.
2. Connect any USB device to any of the display's USB downstream connectors (3) or (10).

Tilt and swivel positioning

Adjust the position of the panel for best viewing conditions.

The display foot allows adjusting the horizontal viewing angle, vertical viewing angle and panel height.

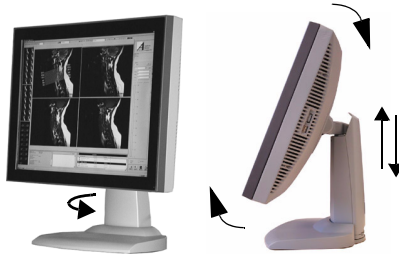


Figure 12

Starting up

Proceed as follows:

1. Switch on the signal source (E.g., PC).

2. If necessary, select a suitable resolution or signal format for the signal source.

How to avoid image retention

Image retention (image sticking, ghost image) is the phenomenon where an image, or a part of it, seems to be 'burnt' in the LCD panel. When you display e.g. a uniform light gray image you distinguish the ghost image in the background.

This phenomenon occurs on all types of LCD panels when a static image remains on the screen for a long time (unfortunately the exact period is not predictable). Also parts of the image that do not change often (e.g., toolbars, buttons, borders) are susceptible to image retention.

Image retention may be undone in some cases, but it may also damage the LCD panel permanently. So it is better to take precautions during product installation to avoid it.

Here are some countermeasures you can take:

Power off, power save mode, screen saver

Very important is to use screen savers and power saving modes as much as possible. If you do not need the display for a few hours, switch it off. If you only need to look at it when you actually do something on the screen, use a screen saver.

The amount of "relaxation" time should be considerable, the more you do it the better. "Flashing" the screen for a few seconds with a screen saver is not sufficient. Image retention is a slow process to build up, but it also disappears slowly.

Re-Layout

In most applications, a display is used to show a layout of several components with borders. Whereas the content in these windows can change continuously, the borders are static images and may cause boundary image retention. The layout of the windows (size, number of windows, etc.) should be changed as much as possible.

To activate appropriate screen saving, proceed as follows:

- 1.** In the display OSD menus, open the **Settings** menu and switch **DPMS** on. For more information, please consult the display operation chapter.
- 2.** In Windows, open the **Display** control panel. Open the **Screen Saver** tab.
- 3.** Select a screen saver from the **Screen saver** drop-down box.
- 4.** Set the **Wait** time to 10 minutes.
- 5.** Click the button **Power...** The Power Options Properties dialog opens.
- 6.** In the Turn off monitor drop-down box, select **After 20 mins**.
- 7.** Click **Apply**.
- 8.** Close the control panel.



Software Installation

(This page intentionally left blank.)

Installing the BARCOMED display controller drivers and software



Note: The installation dialog will display in English if your operating system's language is not supported.

This process applies to the following versions of Windows:

- Windows 2000 Professional,
- Windows XP Professional,
- Windows Professional x64 Edition,
- Windows Server 2003, and
- Windows Server 2003 x64 Edition.

You will need to install the BARCO MEDICAL IMAGING DISPLAY SYSTEM drivers and software in the following cases:

- After you have installed the display controller(s) for your BARCO MEDICAL IMAGING DISPLAY SYSTEM in your system for the first time.
 - After you have reinstalled or upgraded your operating system.
1. Start your system. When the *Found New Hardware Wizard* comes up, click **Cancel**. When the *System Settings Change* window asks you to restart your computer, click **No**.



Note: Both displays connected to a single display controller must have the same physical orientation and resolution in order to be attached to the Windows desktop.

2. Run the Barco Product Installation Wizard.

The Barco Product Installation Wizard should start automatically when you insert the Barco System CD-ROM into your CD drive *after* the operating system has started. If your CD drive's auto-run is not enabled or the Barco Product Installation Wizard does not start automatically, you can run the Barco Product Installation Wizard manually by following these steps:

- a) Click the **Start** button in the task bar.
- b) Click **Run**.

- c) Click **Browse** and browse to the root directory of the BARCO MEDICAL IMAGING DISPLAY SYSTEM CD-ROM and click on the file, **Setup.exe**, and click **Open**.
 - d) Click **OK**.
- or
- a) Browse to the root directory of the BARCO MEDICAL IMAGING DISPLAY SYSTEM CD-ROM and double click on the file, **Setup.exe**.
3. Click **Next** on the Welcome page.
 4. Click **Next** on the Components to be installed page.
 5. Follow the wizard's on-screen instructions to complete the installation.



Note: When the page shown in figure 1 appears you may either click **Next** to accept the default settings or if you know the settings required for your viewing application, you may select them now and then click **Next**. You may change these settings later by using the Barco pages of the *Windows Display Control Panel*.

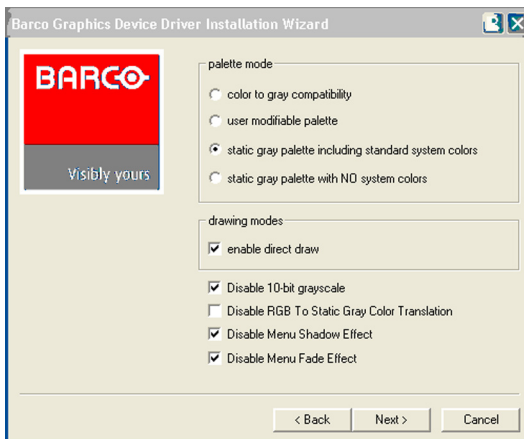


Figure 1

Please refer to your application manuals for information on the correct Palette and Drawing modes to select.

6. When the driver setup is complete, click the **Finish** button.

The Barco Product Installation Wizard will now guide you through the installation of MediCal QAWeb, MediCal Pro, or NioWatch, BarcoMed SelfExam, and the Barco on-line documentation.

7. When the Setup complete message appears, select **Reboot System Now** and click **Finish**.

Automated display configuration

Once the drivers, software and documentation have been installed and your system has been rebooted, the *Barco Monitor Plug and Play Software* should automatically detect your Barco displays and attach them to the desktop with the correct resolution. If the *Barco Monitor Plug and Play Software* fails to detect your Barco displays or fails to attach them to the desktop correctly please refer to the section, **Setting the resolution of your CORONIS ZMP display** on page 97 in the Troubleshooting section of this manual.

Reinstalling drivers

You can install new drivers or reinstall existing drivers at any time by using the Barco Set-up wizard on your Barco system CD-ROM, see **Installing the BARCOMED display controller drivers and software** on page 41 of this manual.

Uninstalling the drivers and software

To un-install the BARCO MEDICAL IMAGING DISPLAY SYSTEM drivers, software or documentation, please use the *Windows Add/Remove Programs* utility. This can be found in the Windows Control Panel.



Note: If you installed your BARCO MEDICAL IMAGING DISPLAY SYSTEM drivers with DualView enabled, the wizard may warn you that DualView must be disabled before the drivers can be

un-installed. This is normal, please follow the prompts from the wizard.

Command line (Silent) Install of Drivers and Software

Specifying the silent install option causes most of the GUI associated with the installer to disappear. A background progress window will still be visible, but no user input will be required.

The silent install behavior is dictated by the *SETUP.INI* file. Each application is allowed to have separate command-line parameters for normal and silent installs.

To install the drivers and software silently, please follow the steps below:

1. Insert the BARCO MEDICAL IMAGING DISPLAY SYSTEM CD-ROM into your CD/DVD drive. When the Barco Product Installation Wizard starts click "**Cancel**".
2. Click the **Start** button in the task bar.
3. Click **Run**.
4. Click **Browse** and
 - a) browse to the root directory of the BARCO MEDICAL IMAGING DISPLAY SYSTEM CD-ROM.
 - b) Click on the file, **Setup.exe**, and click **Open**.or
 - a) Browse to the root directory of the location where you saved the contents of your BARCO MEDICAL IMAGING DISPLAY SYSTEM CD-ROM.
 - b) Click on the file, **Setup.exe**, and click **Open**.
5. In the *Open* address window, place your cursor at the end of the line of text that appears and add the following text after *Setup.exe*, a space and *-silent*. Click **OK**.

Example (where D is the name of your CD/DVD drive):

D:\Setup.exe -silent

See figure 2 for an example of how the command line window should look when using the silent install from the BARCO MEDICAL IMAGING DISPLAY SYSTEM CD-ROM.

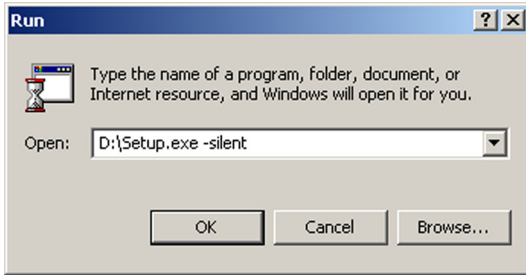


Figure 2



Display Controller Tools

(This page intentionally left blank.)

BarcoMed Control Panel Settings

(This page intentionally left blank.)

BarcoMed control panel settings

This chapter describes how to configure the displays in your Barco Medical Imaging Display System using the tools available through the *Advanced* button on the *Settings* tab of the *Windows Display Control Panel*.

Accessing the Barco tab



Note: You must have logged on to Windows using an account with administrator privileges in order to use the Barco portions of the “Windows Display Control Panel” to change any display settings.

1. Open the “Windows Display Control Panel” by one of the two methods below:

a) Start > Settings > Control Panel > Display

or

b) Open the “Display Properties Control Panel” by right clicking in an empty area on the desktop, then select “**Properties**”.

2. Click on the “**Settings**” tab.

3. Select the “**rectangle**” that represents the Barco display whose settings you wish to change.

4. Click on the “**Advanced**” button.

5. Select the “**Barco**” tab from the Properties screen.

Using the Barco tab

The Barco tab is divided into three sections. The first section provides information about the graphics controller and allows access to the graphics controller advanced configuration pages. The second section provides information about the display. The bottom section allows access to two Barco tools, Barco System Report and Barco’s softcopy QA solution, MediCal QAWeb, MediCal Pro or Niowatch, depending on which solution is

installed on your system. Also, there is a active link to the Barco Medical Imaging web site.



Figure 1 Barco Tab

Barco System Report

The Barco System Report, also known as BarcoMed SelfExam, is a wizard based tool which collects data about the components that are installed in your system. This information is used by the Barco MID Support team when trying to resolve customer issues.

MediCal QAWeb/MediCal Pro/NioWatch

Clicking on the MediCal QAWeb/MediCal/NioWatch Pro button will launch the softcopy QA application that is installed on your system. Please refer to the MediCal QAWeb, MediCal Pro, or NioWatch manual for information about this application.

Advanced Properties

To access the advanced properties configuration pages for your Barco display controller(s), click on the **Advanced** button in the Graphics Device Information section.

BarcoMed advanced configuration

There are two pages accessible from the advanced configuration button. They are:

- Barco Drawing Modes
- Device Details

These two pages replace the following three pages found in earlier versions of the BarcoMed display controller drivers.

- the BarcoMed Driver Tab,
- the BarcoMed Hardware Tab, and
- the BarcoMed Display Tab.

Barco Drawing Modes

The Barco Drawing Modes page of the Advanced Properties page is divided into four sections: Palette Mode, Drawing Modes, Monitor Configuration, Graphics Board.

Palette Mode

In the Palette Mode section you can choose one of the four following Palette Modes. If you are using a color display in conjunction with your Barco grayscale display(s), prior to selecting a palette mode please make certain that you have configured your Windows desktop correctly. (See the section **“Setting the resolution of your Coronis 2MP display”**.)

Color to Gray Compatibility

Use this palette option for applications, such as Java, which require True Color support. Such applications may not work correctly when using one of Barco's three “Standard 8-bit (256-color)” palette modes. All applications that are designed to work

correctly with 8-bit (256-color) modes should continue to work normally.



Note: Dithering is **not** used while in this mode. Also, direct access to the hardware through DirectDraw is **not** allowed in this mode.

User Modifiable Color Palette

This option allows applications to modify the palette contents dynamically. This mode reserves the first 10 and last 10 entries in the palette for the Windows operating system, but applications can manipulate the middle 236 entries. This is the standard palette mode as configured by Windows.

Static Gray Palette including standard system colors

This option sets the palette to be a static linear set of 236 gray values. The 20 standard system colors are converted from RGB to gray values and are added to the 236 static gray values. Applications are denied the ability to dynamically change or allocate palette entries.

Static Gray Palette with NO system colors

This option sets the palette to be a static linear ramp of 256 shades of gray. Applications are denied the ability to dynamically change or allocate palette entries.

Drawing Modes

In the Drawing Mode section you can choose from the following Drawing Modes. If any of the options in this section are grayed out, then they are not available for the model controller with which you are working.

Enable DirectDraw

This option allows the user to enable or disable DirectDraw. DirectDraw is a software interface that provides direct access to display devices while maintaining compatibility with the

Windows graphics device interface (GDI). DirectDraw is enabled by default.

More information about *DirectDraw* is available through the on-line help.

Enable Dithering

This option allows the user to enable or disable dithering. Dithering is a technique for increasing the perceived range of colors in an image at the cost of spatial resolution.



Note: This option is only available when the *User Modifiable Palette* mode is selected. If either the *Static Gray Palette including Standard System Colors* mode or the *Static Gray Palette with NO System colors* mode is selected, the “Enable Dithering” check box will be grayed-out, and dithering will be automatically disabled.

More information about *Dithering* is available through the on-line help.

Disable 10-bit grayscale

Use this option for standard Windows®-based applications that require 8-bit color support (256 colors), such as Internet Explorer, Excel, etc.

Do **not** use this option for applications that require 10-bit pixel support (1024 simultaneous shades of gray) and use extended depth graphic libraries such as WinBarco.

Description of 10-bit grayscale

To show 1024 simultaneous shades of gray all BarcoMed “H” series display controllers, such as the BarcoMed 5MP2FH or BarcoMed Coronis or example, run in extended depth (10-bit) mode by default.

Implications

When turned on the “Disable 10-bit grayscale” option causes a BarcoMed Coronis display controller to run in 8-bit mode, which

results in increased performance since the frame buffer is set to run with 8-bit pixels. While this option may be used with applications that normally require 10-bit support, there will be a loss of pixel depth, i.e. 256 shades of gray instead of 1024 simultaneous shades of gray.

Disable RGB To Static Gray Color Translation

Select *Disable RGB To Static Gray Color Translation* if you wish to have RGB values equally weighted, with 1/3 each. When not selected, then the International Commission on Illumination (CIE – Commission Internationale de l’Eclairage) model will be adapted, which weights the colors as 59% Green, 30% Red, 11% Blue.

Monitor Configuration

If the options in this section are grayed out, then they are not available for the model controller with which you are working.

Graphics Board

There is one option in this section, the *Update Firmware* button. Clicking this button will launch the *BarcoMed Hardware Configuration* utility. This program allows the user to flash update the firmware stored in the ROM of the currently selected BarcoMed display controller. The *BarcoMed Hardware Configuration* utility is implemented in a Wizard format, which guides the user through the flash update procedure. The user will be prompted to select a firmware update file to use for the update process. This file will be provided by Barco Medical Imaging if and when a firmware update is required.

Device details

The Device Details page provides detailed information about the display controller connected to the active display. This information is useful in debugging issues that may occur when using your Barco Medical Imaging Display System.



Display Operation

(This page intentionally left blank.)

Operation



Operating precautions

Continuous operation of the display with the same screen may result in some image sticking on the LCD panel.

Over 10 hours operation with the same image content is not recommended.

Switching on the display DPMS may decrease the risk of image sticking (image retention).

Switching to stand-by position

When the display is on and no on-screen menus are visible, press the control wheel (4) for a few seconds to switch the display in stand-by.

When the display is in stand-by, press or turn the control wheel to switch it back on.

Controlling the display

The control wheel (4) at the bottom (landscape orientation) or at the side (portrait orientation) allows you to perform controls.

The control wheel is a rotation - click system. It provides the following functions:

- Short click: Enter menus, confirm selections, and toggle between different options
- Rotate: Browse through menus, increase or decrease adjustment values

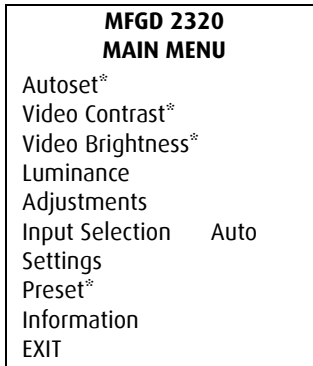
About the on-screen menus

- The content of the on-screen menus depends on the selected video input: Some of the functions are present in the analog modes (BNC and DB15) but are not present in DVI mode.

- The functions that are not present in DVI mode are indicated with an * throughout this manual.

Navigating through the menus

- The menu system has a hierarchical structure, with several levels. To display the on-screen menus, turn the wheel (4). The Main Menu appears. This is the top level of the menu system.



* Not in DVI mode

- To browse or scroll through the menus on the current level, turn the wheel clockwise or counterclockwise.
- To enter into a menu or move to a lower level of the menu structure, turn the control wheel to select the desired menu. Next, click the wheel shortly.
- To exit from a menu or move to a higher level of the menu structure, turn the control wheel to select EXIT. Next, click the control wheel shortly.
- If you do this when you are in the Main Menu, you exit the menu system.
- Some adjustments can be made by changing an adjustment value. To change an adjustment value:
 - Turn the control wheel to select the adjustment

- Click the wheel shortly. The adjustment name appears, as well as the current adjustment value
- Turn the wheel to change the value
- Click the wheel shortly to confirm the change and return to the menu
- Some adjustments can be made by selecting from a range of predefined settings. To change the selection:
 - Turn the control wheel to select the adjustment
 - Click the wheel until the desired setting appears in the menu.

Saving changes

When you have changed something and you wish to exit from the main menu, the display asks if you wish to save the changes.

<p style="text-align: center;">Save Changes?</p> <p>Yes</p> <p>No</p>
--

1. Turn the control wheel to select Yes (to save the changes) or No (if you do not wish to save the changes).
2. Click the control wheel to confirm the choice.

Info: The memory of the display contains maximum 200 fixed and 28 programmable presets.

When you connect a video signal, the display checks in the memory for a matching preset.

If it finds one, it selects the corresponding settings and parameters from the memory. If it does not find a matching preset, the display uses default settings to display the image.

When you make adjustments and save the changes, the current preset is saved as programmable preset. If this happens while all programmable presets are occupied, the oldest programmable preset is overwritten automatically.

Using the Autoset* functions

* Not in DVI mode

The Autoset menu provides a set of functions to adjust the display automatically.

When do you need to use the Autoset functions?

It is necessary to perform the Auto Gain and Auto Phase calibrations in the following cases:

- The first time you use the display on an analog video
- After connecting or selecting another analog video source

It is necessary to perform the Automatic Geometry function in case you notice the image geometry or positioning is not as desired.

Required test pattern

To obtain good results with the autoset functions, it is necessary to have a good image on which to perform the functions.

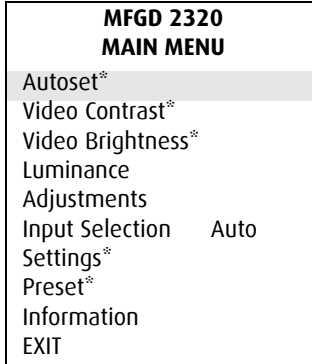
For Auto Geometry, the pattern should be an image that is filled up to the edges, from left to right and top to bottom. The edges of the image should have an intensity of at least 15% video amplitude. E.g., a maximized Windows Explorer window would be a good image.

For Auto Phase, the pattern should contain sharp black-white transitions, like a line pattern or characters.

For Auto Gain, the pattern should contain parts that are completely black (0% video amplitude) and parts that are full white (100% video amplitude).

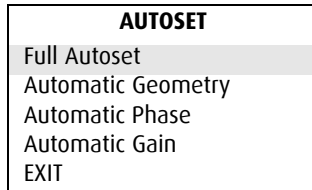
To enter the Autoset menu:

1. In the main menu, turn the control wheel to select the Autoset menu.



* Not in DVI mode

2. Click the control wheel. The Autoset menu appears.



3. Turn the control wheel to select the function you wish to execute.
4. Execute the function as described below.

The Autoset menu contains the following items:

Full Autoset	Click the control wheel to perform all Autoset functions (below) one after another.
Automatic Geometry	Click the control wheel to adjust the image geometry automatically. This function measures the start and the end of the incoming video signal. It displays the complete active video in the center of the screen and, if the active video is smaller than the native panel resolution and no scaling is selected (see further), it puts black borders around the active video window.
Automatic Phase	Click the control wheel to adjust the video sampling phase and frequency automatically
Automatic Gain	Click the control wheel to adjust the video levels (black and white) automatically

Controlling Video Contrast* and Video Brightness*

* Not in DVI mode

To enter the menu:

1. In the main menu, turn the control wheel to select the Video Contrast or Video Brightness menu.
2. Click the control wheel to enter the Video Contrast or Video Brightness menu. You can change the current setting manually or select the calibrated position.

To change Video Contrast or Video Brightness manually:

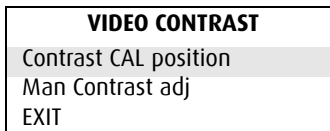
1. Turn the control wheel to select the manual Contrast (Brightness) control.



2. Click the control wheel to enter the control.
3. Turn the control wheel to change the Video Contrast or Video Brightness value.
4. Click the control wheel to confirm the change of the value.
5. Turn the control wheel to select EXIT. Next, click the control wheel shortly to return to the Main menu.

To select the calibrated position:

1. Turn the control wheel to select the "Set to Cal position" selection menu.



2. Click the control wheel to switch to the calibrated position.
3. Turn the control wheel to select EXIT. Next, click the control wheel shortly to return to the Main menu.

Additional information

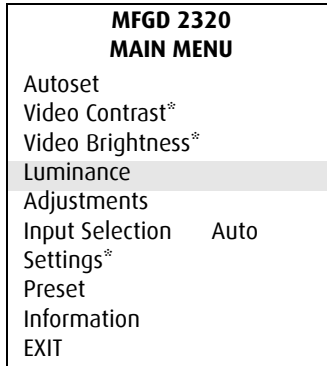
If you change Video Contrast or Video Brightness manually, the changed value is saved in the memory.

Setting the Luminance value

With this function, the backlight value is stabilized by the I-Guard sensor. The value you enter is the target backlight luminance, expressed in Cd/m².

Proceed as follows:

1. In the main menu, turn the control wheel to select the Luminance menu.

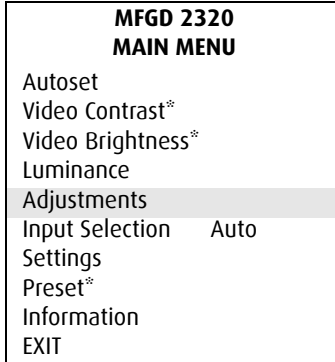


2. Click the control wheel. The Luminance menu appears.
3. Turn the control wheel to adjust the luminance target value.
4. Click the control wheel to return to the main menu.

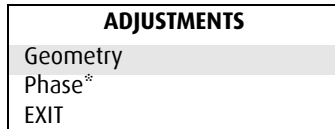
Making adjustments

How to make the adjustments?

1. In the main menu, turn the control wheel to select the Adjustments menu.



2. Click the control wheel. The Adjustments menu appears.



* Not in DVI mode

3. Turn the control wheel to select the adjustment menu you wish to enter: Geometry or Phase.
4. Click the control wheel to enter the menu.
5. Turn the control wheel to select the adjustment you wish to execute.
6. Click the control wheel.
7. Execute the adjustment as described below.

Geometry adjustments

The Geometry menu contains the following items:

Automatic Geometry*	This is the same function as in the Autoset menu. Please refer to the description of the Autoset functions above. After Automatic Geometry, the image is centered inside the active video window. Its size depends on the video resolution and the Scaling setting.
Hor Pos**	Turn the control wheel to position the image horizontally inside the active video window
Vert Pos**	Turn the control wheel to position the image vertically inside the active video window
Scaling	Click to select the desired scaling option: - None: The image is not scaled - Best Fit: The image is scaled proportionally to obtain the best fit - Full Screen: The image is scaled non-proportionally to fill the screen both horizontally and vertically
Orientation**	Click to select the desired option: - Auto: The display selects portrait or landscape reproduction automatically, depending on the orientation of the panel. - Portrait: The image is reproduced in portrait orientation. - Landscape: The image is reproduced in landscape orientation.

* Not in DVI mode

** Available only if the Portrait Accelerator option is installed

Phase adjustments*

* Not in DVI mode

Required test pattern

To obtain good results, it is necessary to have a good image on which to perform the functions.

For the Phase adjustments, the pattern should contain sharp black-white transitions, like a line pattern or characters.

The Phase menu contains the following items:

Automatic Phase	Click the control wheel to adjust the video sampling phase and frequency automatically
Frequency	Turn the wheel to adjust the video sampling frequency manually
Man Phase adj	Turn the wheel to adjust the video sampling phase manually

We recommend you use the automatic adjustment routine only. The manual controls are intended for advanced users who wish to fine-tune the result of the automatic routine.

Selecting inputs

To enter the Inputs menu:

1. In the main menu, turn the control wheel to select the Input Selection menu.

MFGD 2320 MAIN MENU	
Autoset	
Video Contrast*	
Video Brightness*	
Luminance	
Adjustments	
Input Selection	Auto
Settings	
Preset*	
Information	
EXIT	

* Not in DVI mode

2. Click the control wheel. The Input Selection control appears.
3. Turn the wheel to select the desired input setting.
4. Click the wheel to activate the input selection and return to the main menu.

You can select the following input selection settings:

Auto	If Automatic is selected, the display automatically selects the input to which a video signal is connected. If more than one video signal is connected, priority is given to DVI, followed by DB15 and BNC in this order.
DVI	Click the control wheel to select the DVI input. Consequently, the Automatic setting will be switched off.
DB15	Click the control wheel to select the DB15 (VGA) input. Consequently, the Automatic setting will be switched off.
BNC	Click the control wheel to select the BNC inputs. Consequently, the Automatic setting will be switched off.

Settings

To enter the Settings menu:

1. In the main menu, turn the control wheel to select the Settings menu.

MFGD 2320 MAIN MENU	
Autoset	
Video Contrast*	
Video Brightness*	
Luminance	
Adjustments	
Input Selection	Auto
Settings	
Preset*	
Information	
EXIT	

* Not in DVI mode

2. Click the control wheel. The Settings menu appears.
3. Turn the wheel to select the desired menu item.
4. Perform the settings as described below.

The Settings menu contains the following items

:

DPMS	Click the control wheel to switch on/off the automatic power saving system (DPMS)
Power LED	Click to switch the power LED on/off. Note: The LED's orange DPMS state is not influenced by this setting. So, when the display goes into power-saving mode, the LED will turn orange, even if it was switched off by this setting.
User Controls	<p>Click to disable the control wheel functions so that the on-screen display cannot be used after quitting the OSD menus.</p> <p>To enable the control wheel functions again:</p> <ol style="list-style-type: none"> a) Do not use the wheel for at least 3 seconds b) <u>Turn</u> the control wheel 1 click <u>clockwise</u> c) <u>Click</u> the control wheel 2 times d) <u>Turn</u> the control wheel 1 click <u>counterclockwise</u> e) Select the Settings menu and switch Local controls on again. <p>Actions b, c, d have to be performed in a sequence that takes no longer than 3 seconds.</p>

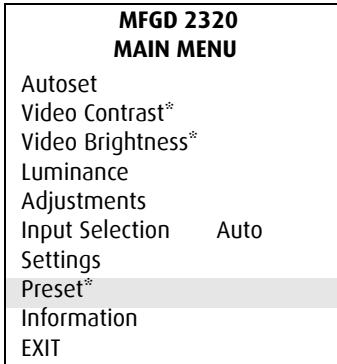
Ambient Light Compensation	Click to switch the Ambient Light Compensation system (ALC) on/off.
Automatic Menu Exit	Click to switch the automatic menu exit feature on/off. When switched on, the OSD menus automatically close when left idle for some time.

Preset*

*Not in DVI mode

To enter the Preset menu:

1. In the main menu, turn the control wheel to select the Preset menu.



* Not in DVI mode

2. Click the control wheel. The Preset menu appears.
3. Turn the wheel to select the desired menu item.
4. Perform the settings as described below.

The Preset menu contains the following items:

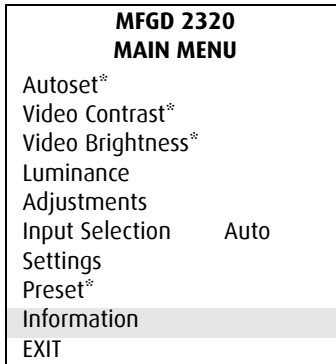
(Re)name	You can change the name of the preset in the programmable memory location only. Turn the control wheel to change the current character. Click the wheel to move to the next character.
Find next preset	Select if you wish to select another preset from memory that matches the incoming video and sync signals. The number displayed in the OSD is the number of the actual preset's memory location.

Getting information

The Information menu allows you to get information about the display and the connected signals.

To enter the Information menu:

1. In the main menu, turn the control wheel to select the Information menu.



* Not in DVI mode

2. Click the control wheel. The Information menu appears. You can select to view General information or Current Input Format information.
3. Turn the wheel to select the desired menu item.

4. Click the wheel to select the menu item.

The General Information menu contains the following items:

Product	The display type
Serial No	Indicates the display serial number
SW Version	Displays the current internal software version
Display Lifetime	Indicates the total time the display has been operating, including the time in stand-by
Backlight Lifetime	Indicates the total time the display has been operating, excluding the time in stand-by

The Current Input Format information menu contains the following items:

Input Source	Displays the currently selected input
Preset	Displays the currently selected memory preset
Preset Name	The name of the current memory preset
Hor Frequency	The currently measured horizontal sync frequency
Vert Frequency	The currently measured vertical sync frequency
Resolution	Displays the actual video signal resolution

Advanced functions

About this chapter

Important

The functions described in this chapter are intended for trained service staff only!

Improper use of these functions may disorder the display. BARCO cannot be held responsible for the results or damage caused by improper use of these functions.

This chapter describes only the Advanced functions in the OSD menus. For a description of the other functions (standard functions), please refer to the previous chapter, Operation .

In this chapter, we assume the advanced user knows how to use the OSD system: How to browse through the menus, how to enter menus and sub-menus, how to select and change values.

These actions are described in the previous chapter.

About the Advanced functions

The advanced functions are extensions of the OSD menus. A standard user browsing through the OSD system sees only the standard functions. When logged in in advanced mode, the user sees the standard and advanced functions in the OSD menus.

To log in as advanced user:

1. Enter the main menu.
2. Turn the control wheel to select the menu item EXIT.
3. Click and hold the control wheel for a few seconds until the OSD main menu is refreshed on the screen.

You have now logged in as advanced user.

Advanced functions in the Adjustments menu

Geometry

In Advanced mode, the Geometry menu additionally contains the following functions:

Hor Active	Allows you to change the horizontal size of the active video window around the image, expressed in pixels. If you decrease this size, you may blank a part of the image.
Vert Active	Allows you to change the vertical size of the active video window around the image, expressed in pixels. If you decrease this size, you may blank a part of the image.

Ambient Light Compensation

Ambient Light Compensation is sometimes abbreviated to ALC. See Introduction.

The Ambient Light Compensation menu contains the following items:

Min ALC	Contains two functions to set the minimum point of the ALC control system: <ul style="list-style-type: none">- Measure Min Ambient Light: Decrease the light in the room to the minimum possible level you are likely to work in. Next, execute this function.- Min Luminance: Adjust this value until the luminance is at the level you wish to work with when the ambient light is at the minimum level you have set in the above function.
---------	--

Max ALC	<p>Contains two functions to set the maximum point of the ALC control system:</p> <ul style="list-style-type: none"> - Measure Max Ambient Light: Decrease the light in the room to the maximum possible level you are likely to work in. Next, execute this function. - Max Luminance: Adjust this value until the luminance is at the level you wish to work with when the ambient light is at the maximum level you have set in the above function.
---------	--

Low Pass Filter*

* Not in DVI mode

The display electronics provide 4 different low-pass filters to filter possible high-frequent distortion from an **analog** video signal.

Select a different filter in case the image contains high-frequent noise or distortion. Select the filter that gives the best result.

Readjustment of sample phase is necessary after selection of a different filter.

Advanced functions in the Settings menu

The Settings menu contains the following advanced functions:

Display function

The display contains a number of factory-defined and user-defined Display functions (LUTs).

Turn the control wheel to select a display function.

- Select a **DICOM** display function for most medical viewing applications. The DICOM function results in more visible grayscales in the images.
- Select a **CRT (gamma)** display function in case the display is used to replace a CRT display.
- LUT 3 and LUT 4 are user-programmable display functions (dedicated software needed).

- If you select **None**, no display function will be selected.
- The selection **Test LUT** is meant for internal test purposes. It should not be selected for normal operation.

Input Mode*

*Not in DVI mode

To change the Input Mode setting, click the control wheel. Turn the wheel to select Standard or Extended input mode. Then click the wheel again to enter the selected submenu.

The following input mode settings can be selected:

Standard input mode

RGB->Y	The RGB video signals from the imaging board are calculated and transformed into a single luminance value according to the formula " $0.3R + 0.59G + 0.11B$ ". This single luminance signal drives the RGB sub-pixels of the panel equally. Use this setting in case the imaging board is a color board.
RGB->RGB	The R video signal drives the R sub-pixels, the G video signal drives the G sub-pixels and the B video signal drives the B sub-pixels. This is the preferred setting for grayscale imaging boards that have the luminance signal on all 3 video channels, because it ensures the most levels of gray.
G->Y	The Green video signal from the imaging board is used as luminance value to drive the RGB subpixels of the panel equally.
B->Y	The Blue video signal from the imaging board is used as luminance value to drive the RGB subpixels of the panel equally.
R->Y	The Red video signal from the imaging board is used as luminance value to drive the RGB subpixels of the panel equally.

Note: The LCD panel used in this display is originally an RGB panel, of which the colors are disabled. All RGB subpixels are used for grayscale reproduction.

Extended input mode

The submenu Extended contains all the items from the Standard submenu, plus the following possibilities:

GRB->Y	The RGB video signals from the imaging board are calculated and transformed into a single luminance value according to the formula " $0.3G + 0.59R + 0.11B$ ". This single luminance signal drives the RGB sub-pixels of the panel equally.
--------	---

GBR->Y	The RGB video signals from the imaging board are calculated and transformed into a single luminance value according to the formula " $0.3G + 0.59B + 0.11R$ ". This single luminance signal drives the RGB sub-pixels of the panel equally.
BRG->Y	The RGB video signals from the imaging board are calculated and transformed into a single luminance value according to the formula " $0.3B + 0.59R + 0.11G$ ". This single luminance signal drives the RGB sub-pixels of the panel equally.
BGR->Y	The RGB video signals from the imaging board are calculated and transformed into a single luminance value according to the formula " $0.3B + 0.59G + 0.11R$ ". This single luminance signal drives the RGB sub-pixels of the panel equally.
RBG->Y	The RGB video signals from the imaging board are calculated and transformed into a single luminance value according to the formula " $0.3R + 0.59B + 0.11G$ ". This single luminance signal drives the RGB sub-pixels of the panel equally.

OSD position

With the OSD function you can select where on the screen the OSD menu text will appear. You can select between center position, top left, top right, bottom left or bottom right.

Advanced functions in the Preset menu

The Preset menu contains the following advanced functions:

Clear user presets*

*Not in DVI mode

Click the control wheel if you wish to reset all the settings of all user presets. In the menu that appears next, click on Proceed to reset the settings.

Advanced functions in the Information menu

The following advanced functions are situated in the General information menu.

Service

The Service information menu contains the following items:

Display Name	The display type
Display Ser No	Indicates the display serial number
Display Stock No	Indicates the display order number
Panel	Indicates the flat panel serial number
Panel Prod Date	Indicates the flat panel production date

Firmware

The Firmware information menu contains the following items:

Boot Code Version	The version of the internal boot code
Run Code Version	The version of the internal run code
CPLD Code Version	The version of the internal CPLD code
FPGA Version	The version of the internal FPGA code
Transpose Version	The version of the internal Transpose circuit code
Preset Table Version	The version of the predefined preset table

Runtimes

The Runtimes information menu contains the following items:

Display Lifetime	Indicates the total time the display has been operating, including the time in stand-by
Backlight Lifetime	Indicates the total time the display has been operating, excluding the time in stand-by (so, the total backlight lifetime)

Backlight Runtime	Indicates the time the backlight has been on since the last time it was switched off (e.g., in stand-by). This counter stops after 1092 minutes.
-------------------	--

Maintenance

Panel

Take care not to damage or scratch the panel. Clean with a soft woolen or cotton towel moistened with water. Wipe dry with a dry cloth.

Cabinet

Do not use chemical cleaning products, benzene, toluene, xylene or other solvents. Clean with a soft cloth dampened with mild detergent and water. Repeat with water only and wipe dry with a dry cloth.

Removing dust from the rear of the glass panel

It may be possible that dust particles have entered the display and are stuck to the rear of the glass.

We recommend to let this cleaning procedure be done in a BARCO service center.

However, when really necessary, you can perform the cleaning on site if you can work in conditions that are as clean and dust-free as possible. This is to avoid more dust entering the display when opening it.

To remove the glass panel:



Figure 2

1. Switch off the display.

2. Tilt the panel.
3. Unscrew the 4 sunken screws at the rear, fixing the glass panel and bezel.
4. Unplug the cable plugged in on the bezel.
5. Remove the bezel with glass panel.

Cleaning instructions:

- Dust, fingerprints, grease etc. can be removed by using a soft damp cloth moistened with plain water.
- Do not apply liquid directly to the LCD surface as excess liquid may cause damage to internal electronics.
- Take care not to touch the I-guard light sensor on the LCD panel.

Troubleshooting

Windows does not show the desired display settings

Should you have problems selecting display settings for portrait oriented displays in the Windows Display Properties control panel, disable the option **Hide modes that this monitor cannot display** in the control panel (see below).

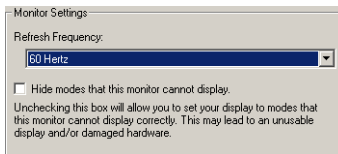


Figure 3

Information:

The display contains a special memory chip that contains information about the display's scanning capabilities. When Windows starts up, it reads the contents from this memory and presents a number of display settings in the Display Properties control panel, based on this information.

The memory of this display contains the information the display can handle scanning systems up to 120 Hz. That is why Windows will propose a display setting with a high refresh rate. However, it is best to select a refresh rate of 60 Hz.

The information that the display can be used in portrait mode, is also stored in the display memory. However, Windows does not recognize this and presents only default landscape modes if the option Hide modes that this monitor cannot display in the control panel is enabled.

Pixel Faults

Permanently dark or bright pixels can happen to TFT displays. 10 or less permanently dead pixels do not make out a good case for exchanging the unit.

Please contact our Customer Service Department if the number of pixel faults exceeds the above-mentioned figure.

Technical specifications

GEOMETRY

- Screen size: 51 cm (20.1")
- Display area: 408 mm x 306 mm (16.1" x 12")
- Aspect ratio: 4:3

VISUAL PERFORMANCE

General

- Pixel arrangement: sub-pixel vertical stripes
- Pixel pitch: 0.255 mm x 0.255 mm (0.010" x 0.010")
- Panel contrast ratio: 1000:1 (typical)
- Panel viewing angle: 170° H/V (at CR = 10:1)

Panel

- Thin film transistor active matrix grayscale LCD
- PVA technology
- Amorphous silicon TFT
- Backlight: 6 cold cathode fluorescent lamps

Luminance

- Calibrated: 400 cd/m² (116.7 fL)

Resolution

- 1600 x 1200 (1.9 MegaPixel)

INPUTS

DVI

- Complies to DVI Rev. 1.0 spec up to UXGA 60 Hz

Video

- Connector type: BNC / D15
- Inputs provided: composite video
- Video input voltage: nominal 0.7Vpp
- Termination: 75 Ohm

Sync

- Connector type: BNC / D15
- Inputs provided: HS/CS and VS
Sync input voltage:
 - VS input: 700 mV to 4 V
 - HS/CS input: 500 mV to 4V
 - Video input (sync on video): 150 mV to 600 mV
- Termination: 75 Ohm

SCANNING SYSTEM

- Horizontal Frequency: 15 - 110 kHz
- Vertical Frequency: 50 - 120 Hz
- Max. sampling clock:
165 MHz (DVI), 170 MHz (analog)
- Interlaced / Non-interlaced signals
- Multi-sync

CONTROLS

- On-Screen Display (OSD)
- Rotary / push control wheel to navigate through the OSD
- USB
- DDC

POWER SUPPLY

Power source

- Input for external 12 VDC power supply unit:
90 ~ 264 VAC
- Input for display:
12 VDC. (The supplied 12 VDC power supply must be used)

Power consumption

70 watts (max.)

DIMENSIONS (W X H X D)

P: 385 x 585 x 250 mm

(In perpendicular vertical position, highest position,
tilt = 0°, swivel = 0°)

NET WEIGHT

13.9 kg

OPERATING TEMPERATURE

0°C to 40°C

STORAGE TEMPERATURE

-20°C to 60°C

Due to our policy of continuous product improvement, the above specifications are subjected to change without notice. Barco shall not be liable for technical or editorial errors or omissions contained herein; nor for incidental or consequential damages whatsoever resulting from furnishing, performance or use of this material.



Medical Software Installation and Operation

(This page intentionally left blank.)

MediCal Pro installation and operation

MediCal Pro software installation

Install MediCal Pro on the PC. Follow the instructions from the MediCal Pro User Guide.

Important: Do not forget you have to have Administrator privileges to install or uninstall MediCal Pro.

Using MediCal Pro

You can now use MediCal Pro to configure the complete configuration and set up the Q/A tasks.

Proceed as follows:

1. Start MediCal Pro. If appropriate, you can connect to MediCal Administrator.
2. Set up the configuration in MediCal Pro by using the Configuration Setup wizard.
3. If necessary, align the displays' geometry settings.
4. For all the displays in the system, check if the DPMS setting is turned on. Therefore, right-click on the display icon and select Properties... from the drop-down menu. Then click on Details...

Check if the Powersave option is checked. If not, check it. This is necessary to use the DPMS possibilities of the display controller.

5. For all the displays in the system, define (if necessary) and select a Preset.
6. After selecting the Preset, MediCal Pro starts consistency calibration automatically.
7. Define the Q/A task schedule.

8. Run the due tasks.

Please refer to the MediCal Pro User Guide for more information.



Troubleshooting

(This page intentionally left blank.)

Setting the resolution of your CORONIS 2MP display



Note: In order to set the resolution of your CORONIS 2MP you must be logged in using an account with administrator privileges.

1. Open the “*Windows Display Control Panel*” by one of the two methods below:
 - a) Start > Settings > Control Panel > Displayor
 - b) Open the “*Display Properties Control Panel*” by right clicking in an empty area on the desktop, then select “**Properties**”.
2. Click on the “**Settings**” tab.
3. Select the **rectangle** that represents the Barco Coronis display whose settings you wish to change.



Note: If you are using the VGA capabilities of your BarcoMed CORONIS display controller, the resolution for the first display may be set to a VGA resolution of “640 x 480” pixels with 16 colors and a default refresh rate. If your BarcoMed CORONIS controller is not running VGA, the display may not be enabled yet. To enable the display, check the “Extend my Windows desktop onto this monitor” **checkbox**, but do **NOT** click the “**Apply**” button at this time.

If you installed your BARCO CORONIS Display System drivers in *SingleView* mode (default for Windows 2000) there will be one rectangle for the virtual display representing the two heads controlled by each BarcoMed CORONIS display controller.

If you installed your BARCO CORONIS Display System drivers in *DualView* mode (default for Windows XP) there will be a rectangle representing each head controlled by each BarcoMed CORONIS display controller. This will be true even if you have only one display connected to your BarcoMed CORONIS controller. Both displays of a display controller cannot be enabled at the same time unless their display properties match. If necessary detach the second

display of the BarcoMed CORONIS display controller you are working with by right clicking on the **rectangle** that represents it, deselect **“Attached”** and click the **“Apply”** button.



Note: Since Windows will not let you detach the primary display connected to a particular controller, you may need to temporarily make another display the primary display

4. For the display which is still attached click Click on the **“Advanced”** Button.
5. Select the **“Adapter”** tab and then click on the **“List All Modes”** button. Select the resolution and refresh rate that your Coronis 2MP display supports from the dialog box and click **“OK”**.



Note: In the Adapter box, the Adapter string shows if this display is the First View or the Second View attached to the display controller. Please make a note of this, so that you can arrange the displays in the correct order later if necessary.

6. Click **“OK”** on the bottom of the Adapter Control Panel. If the **“OK”** button on the bottom of the Adapter Control Panel is not visible, press the **“TAB”** key once and then press **“CTRL”+“Enter”** to select **“OK”**.
7. Click **“OK”** in the **“Windows will now apply your new desktop settings”** dialog box. Your Coronis 2MP display should now synchronize and display the Windows desktop.
8. Click **“Yes”** when asked, **“Your desktop has been reconfigured. Do you want to keep these settings?”**

To set the resolution of the second display attached to the BarcoMed display controller you are working with, go back to the **“Settings”** tab of the **“Display Properties Control Panel”**. If necessary attach the second display you detached in step 2 above, by right clicking on the rectangle that represents it and selecting **“Attached”**.

Now repeat steps 5-8 above for this display.

If you are using a Quad-Head Configuration repeat all of the above steps for the two displays on the second display controller.



Note: If you have a single display configuration and you have enabled DualView, Windows will not allow you to attach the second head. This is normal and not a bug.

After enablingDualView and setting the resolutions in a Quad-Head Configuration you may need to drag the heads into the proper position in the window on the “Settings” tab, so that the arrangement in the window on the “Settings” tab matches the physical arrangement of your configuration.

B4100522-02

March 2007

www.barco.com