

Coronis 3MP



Installation & User Manual

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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.

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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

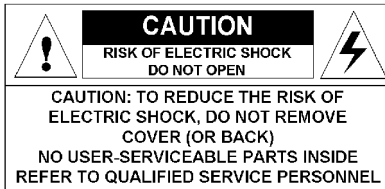
Read the safety and operating instructions before operating the display.

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).

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Display Controller Installation

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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 3MP 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.

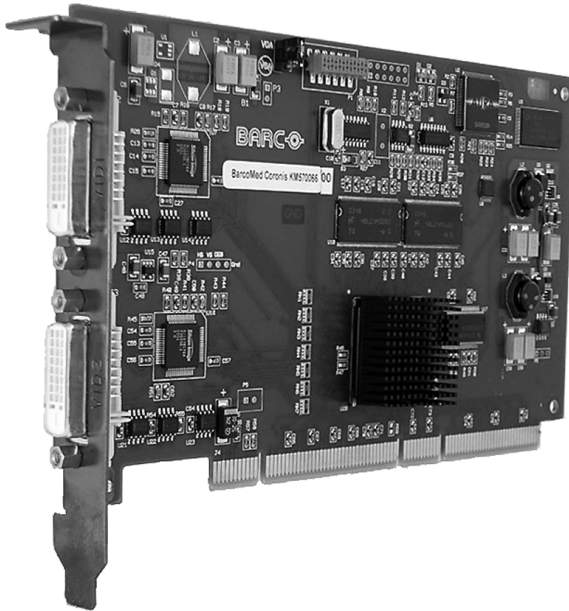


Figure 1: The BarcoMed CORONIS display controller

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.

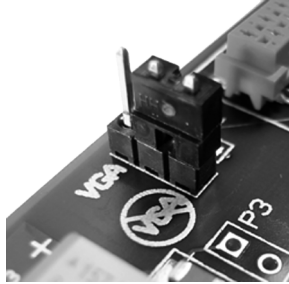


Figure 2: VGA Jumper Enlarged View

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.

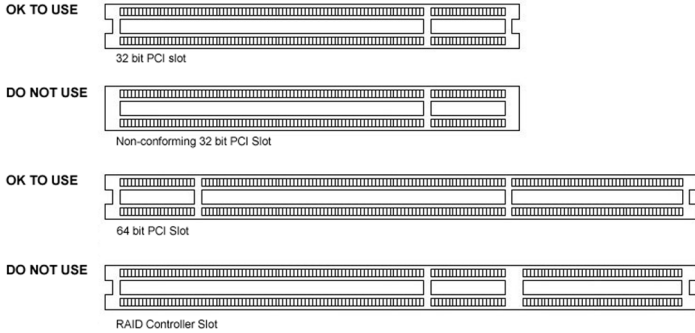


Figure 3: PCI and RAID Controller Slots

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 16), 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.

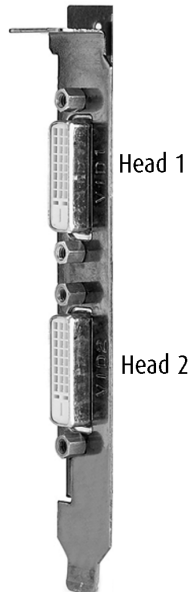


Figure 4: The Video Outputs.



Display Installation

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Overview

Introduction

The MFGD 3420, BARCO's 20" 3 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.

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.

Best resolution

The optimum and recommended resolution is **2048 x 1536** or **1536 x 2048**.

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.

Power saving (DPMS)

The MFGD 3420 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.

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 3420 display
- Power supply
- DVI cable
- Two velcro strips to bind the cables
- European power cord
- American power cord
- Chinese power cord
- This user manual

If the display is part of a Coronis system, the package contains more items.

Controls and connectors



Figure 5

Front

(1) 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.

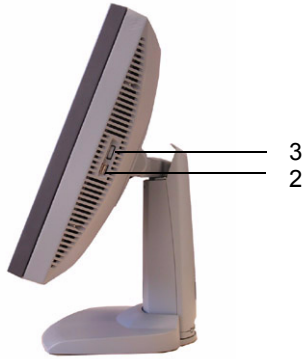


Figure 6

Side

- (2) USB downstream connector
- (3) Control wheel for navigating through the on-screen display (OSD) menus and changing values in the menus

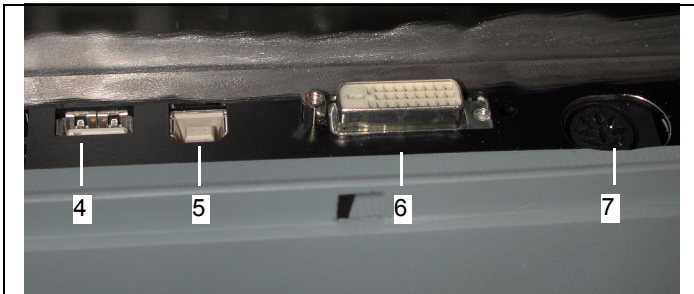


Figure 7

Rear

- (4) USB downstream connector
- (5) USB upstream connector
- (6) Digital DVI (video and data) input
- (7) 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.

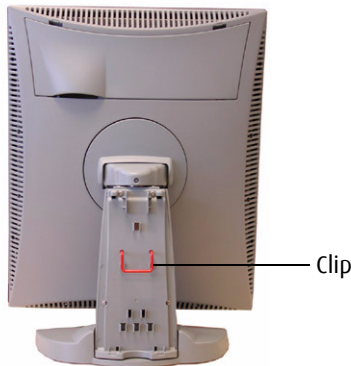


Figure 8

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").

To connect DVI cables:

1. Connect one end of the DVI cable to the DVI input (6) 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 the power:

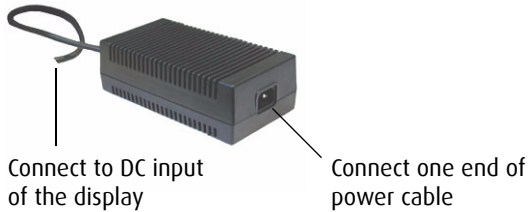


Figure 10

1. Connect the output of the 12V DC power supply to the DC input (7) 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 the foot

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 (5) to the USB port of the PC.
2. Connect any USB device to any of the display's USB downstream connectors (2) or (4).

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.

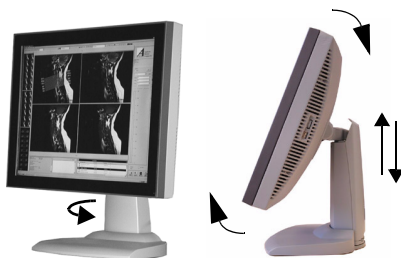


Figure 12

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

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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*.

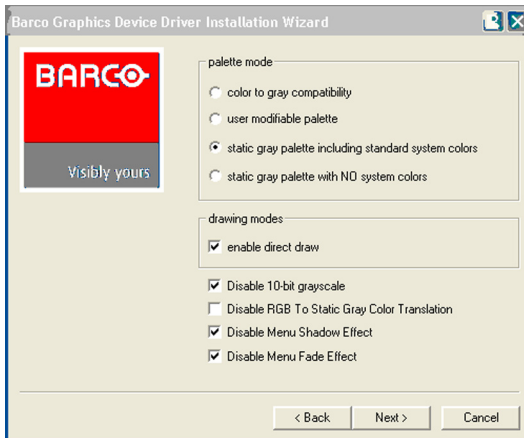


Figure 1

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 3MP display** on page 77 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 35 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.

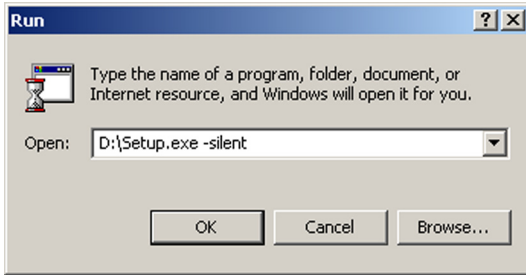


Figure 2



Display Controller Tools

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BarcoMed Control Panel Settings

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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 3MP 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

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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 (3) 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 (3) at the bottom (landscape orientation) or at the side (portrait orientation) allows you to perform controls.

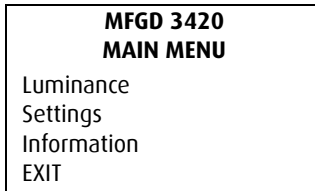
The control wheel is a rotation - click system. It provides the following functions:

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

Navigating through the menus

- The menu system has a hierarchical structure, with several levels. To display the on-screen menus, turn the wheel (3).

The Main Menu appears. This is the top level of the menu system.



- 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

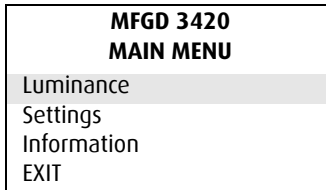
When you change a value, the change is automatically saved.

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.

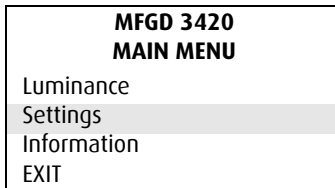


2. Click the control wheel. The Luminance menu appears.
3. Turn the control wheel to adjust the luminance target value.
4. Click the control wheel to return to the main menu.

Settings

To enter the Settings menu:

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



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:

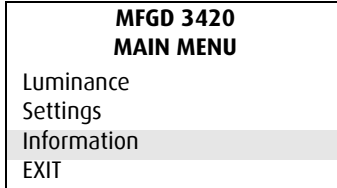
DPMS	Click the control wheel to switch on/off the automatic power saving system (DPMS)
Power LED	Click to switch the power LED on/off. Note: The LED's orange DPMS state is not influenced by this setting. So, when the display goes into power-saving mode, the LED will turn orange, even if it was switched off by this setting.
User Controls	Click to disable the control wheel functions so that the on-screen display cannot be used after quitting the OSD menus. To enable the control wheel functions again: 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. Actions b, c, d have to be performed in a sequence that takes no longer than 3 seconds.

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.



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 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

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.

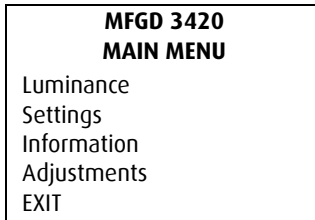
About the Advanced functions

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 Luminance menu

The Luminance menu contains the following advanced function:

Manual Backlight

This function allows to manually control the backlight luminance. When you control the Manual Backlight function, the Luminance target function and I-Guard control are disabled.

Important: Disabling the I-Guard results in an uncalibrated and not stabilized backlight.

After switching the power off and on again, the Luminance target and I-Guard control are activated again. This is also the case when you control the Luminance function again.

Advanced functions in the Settings menu

The Settings menu contains the following advanced functions:

Panel position	Click to select the desired option: <ul style="list-style-type: none">• Auto: Select if the display will be used in both portrait and landscape orientation.• Portrait: Select if the display is always used in portrait orientation.• Landscape: Select if the display is always used in landscape orientation.
Auto Rotation	When switched on, the image will be rotated automatically when switching between portrait or landscape orientation.
DVI input	Click to switch between normal DVI signal, Dual10 DVI signal or automatic detection of the DVI format.
Stabilizer	Click to switch the backlight stabilizer on/off
Patch	Click to hide/display the I-Guard patch. When you hide the patch, the I-Guard will not function properly anymore
Burn-In Mode	When switched on, the display will generate a white image when the video cable is unplugged

Important: Disabling the I-Guard results in an uncontrolled image performance.

Advanced functions in the Information menu

In Advanced mode, the Information menu contains the following additional submenus: Service, Firmware, Runtime, Measurements and Scan Measurements.

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 Ser No	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
Transpose Version	The version of the internal Transpose circuit code

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 is reset to 0 after 1092 minutes.

Measurements

The Measurements info menu contains the following items:

Internal Temperature	The temperature measured inside the display
Sensor Temperature	The internal temperature measured on the I-Guard board
FAN speed	A value indicating the speed of the fans. Minimum speed is 0, maximum speed is 1000
Sensor Y value	The luminance measured by the I-Guard, expressed in nit (Cd/m ²)
Sensor DAC value	The luminance measured by the I-Guard, expressed in DAC values

Scan Measurements

The Scan Measurements info menu contains the following items:

DVI Input:	The current DVI input format
Resolution:	The resolution of the current input signal
Clock Frequency:	The current clock frequency
Hor.Total:	The total number of dots, horizontally, of the input signal
Hor.Active:	The number of active dots, horizontally, of the input signal
Hor.Blanking:	The horizontal blanking of the input signal
Hor.Front Porch:	The horizontal front porch of the input signal
Hor.Sync:	The horizontal sync length of the input signal
Hor.Back Porch:	The horizontal back porch of the input signal
Hor.Frequency:	The horizontal frequency of the input signal

Vert.Total:	The total number of lines, vertically, of the input signal
Vert.Active:	The number of active lines, vertically, of the input signal
Vert.Blanking:	The vertical blanking of the input signal
Vert.Front Porch:	The vertical front porch of the input signal
Vert.Sync:	The vertical sync length of the input signal
Vert.Back Porch:	The vertical back porch of the input signal
Vert.Frequency:	The vertical frequency of the input signal

Advanced functions in the Adjustments menu

In Advanced mode, the main menu contains an additional menu, Adjustments. This menu contains the submenu Miscellaneous.

Miscellaneous Adjustments

The Miscellaneous menu contains the following items:

RS232 Address	Turn the control wheel to change the internal display address.
---------------	--

Maintenance

Panel

Take care not to damage or scratch the panel. Clean with a soft woolen or cotton towel lightly moistened with plain water.

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 lightly 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).

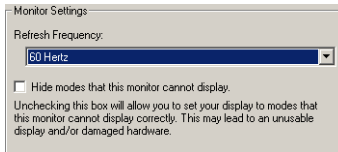


Figure 3

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. 20 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

Picture panel

20.8-inch diagonal viewable screen TFT (thin film transistor) active matrix, greyscale liquid crystal display

Resolution

Native: 2048 x 1536

Other VESA resolutions possible, not scaled

Display area (H x V)

423.9 x 318 (mm)

Pixel Pitch

0.207 mm (H) x 0.207 mm (V)

Viewing angle (@ 10/1 contrast)

Vertical: 170°

Horizontal: 170°

Native color resolution

8 bits / sub-pixel

Signal system

DVI dual channel

Luminance

500 cd/m² (calibrated)

700 cd/m² (maximum)

Contrast ratio

900/1 (in dark environment)

Response time

25 ms (@ 25° C after 30 min warmup)

Controls

Push / turn control wheel for stand-by switching and brightness control

Input connectors

DVI dual channel

Power source

Input for 12 VDC power supply unit: 90 ~ 264 VAC

Input for display: 12 VDC. (The supplied 12VDC power supply must be used)

Power consumption

80 watts (max.)

Dimensions (W x H x D)

In perpendicular vertical position, highest position, tilt = 0°, swivel = 0°:

385 x 590 x 240 mm

Net weight

13 kg

Operating Temperature

0°C to 40°C

Storage Temperature

-20°C to 60°C

Humidity

(Relative, non condensing)

Operation: 8% - 80%

Storage: 5% - 95%

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

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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

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Setting the resolution of your CORONIS 3MP display



Note: In order to set the resolution of your CORONIS 3MP 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 3MP 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 3MP 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.

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