

CORONIS®



Medical grayscale
flat panel display system

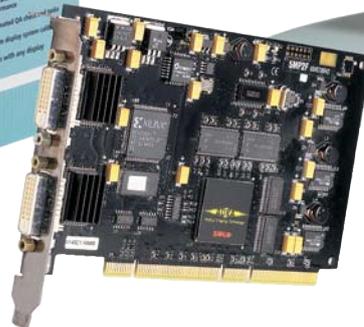
BARGO

Visibly yours

Filmless perfection in 1, 2, 3 and 5 MegaPixel

Building upon its vast expertise in providing high-resolution display solutions for medical imaging, Barco has developed its CORONIS® family of digital grayscale display systems. The compact, space-saving CORONIS® display systems offer unprecedented diagnostic confidence and lowest cost of ownership in 1, 2, 3 and 5 MegaPixel resolutions.

CORONIS® combines one or more grayscale flat panel displays with a high-speed, 10-bit display controller (1024 shades of gray), MEDICAL® soft-copy QA management software, display driver and digital cabling.





CORONIS® benefits:

- Integrated patent pending I-GUARD® technology for continuous and consistent DICOM-compliant viewing
- High contrast ratio and luminance for superior image quality in all environments
- Unique intervention-free softcopy QA concept
- Full range of configurations: available as single- and dual-head system
- All-inclusive display system, including display controller, QA software, portrait/landscape accelerator
- User-friendly, solid tilt and swivel base
- Lowest cost of ownership

 **CORONIS**

Continuous image quality, fidelity and consistency

Integrated I-GUARD® for continuous DICOM compliance

I-GUARD® is Barco's eye of filmless perfection. The compact I-GUARD® sensor in the corner guards and adjusts the luminance output of the actual diagnostic viewing area at the front of the CORONIS® display, thereby ensuring consistent image quality and continuous DICOM-consistency over time and across displays.

Barco's patent pending I-GUARD® sensor sees what you see, while it only requires a few square millimeters in the corner of the screen to do its job, unnoticed, without disturbing your work. Whether overnight, when the screen is not used, or during a busy day, while the screen is in use, I-GUARD® takes readings from a small, representative patch in the corner and adjusts your screen settings when necessary. The correlation between the luminance measured by the I-GUARD® and the luminance in the center of the display is stored in the device, ensuring reliable, representative results.

To learn more about I-GUARD®, read Barco's dedicated white paper, available at www.barcomedical.com

I-GUARD® in a nutshell:

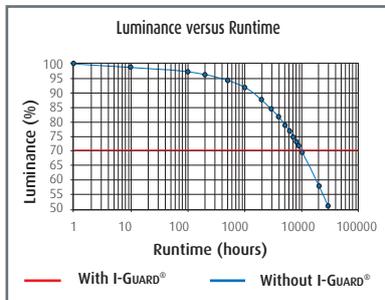
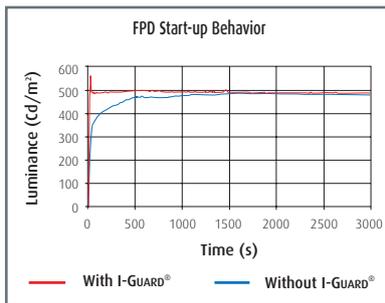
- Detects and corrects instabilities caused by the backlight, driving electronics, liquid crystal pixel cells, display controller and LUTs
- Guarantees continuous DICOM-compliant diagnostic confidence
- Performs continuous intervention-free QA
- Performs measurements with utmost precision

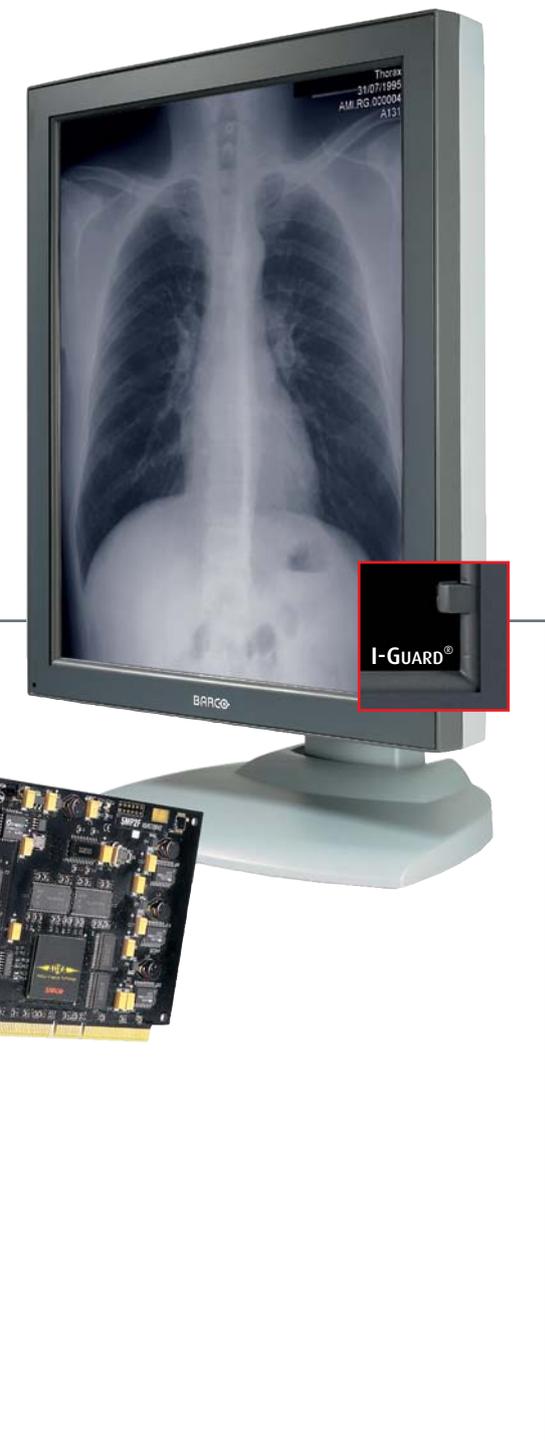
Automated intervention-free QA

Combined with the I-GUARD® sensor, Barco's MEDICAL® Pro softcopy QA software provides fully automated image Quality Assurance without the need for human intervention. MEDICAL® Pro tracks, maintains and logs display viewing performance, automates QA tasks, initiates display system calibration and sets up the most precise DICOM Look-Up-Table (LUT) calibration using 1024 shades of gray. With the MEDICAL® Pro software included, CORONIS® display systems are ready for integration into the hospital's softcopy QA management system, using Barco's MEDICAL® Administrator software.



History graph from automated QA check





High-speed image rendering

CORONIS® display systems come with Barco's BARCOMED® high-speed digital display controllers. The 10-bit display controllers render the complete DICOM conformance data set with 1024 simultaneous levels of gray. In addition, the dual-head display controllers feature Barco's proprietary AURA technology for ultra-fast image loading and realistic image rendition. BARCOMED® display controllers digitally drive the flat display (DVI standard), thereby eliminating unwanted image artifacts.

Protective front glass

CORONIS® LCD displays are equipped with a protective diagnostic front glass, which protects the panel against damage from intensive use in clinical rooms. Moreover, the front glass provides a film-like intensity and diagnostic look.

Portrait Accelerator

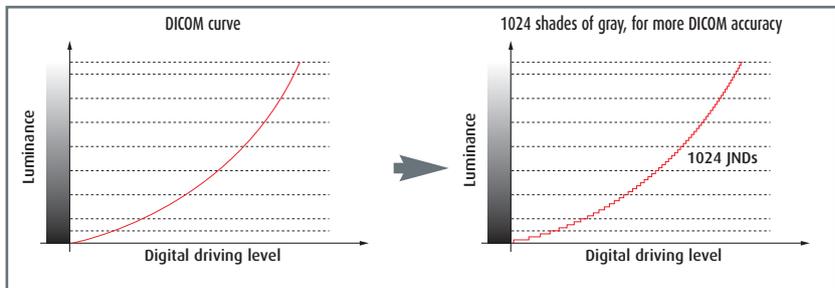
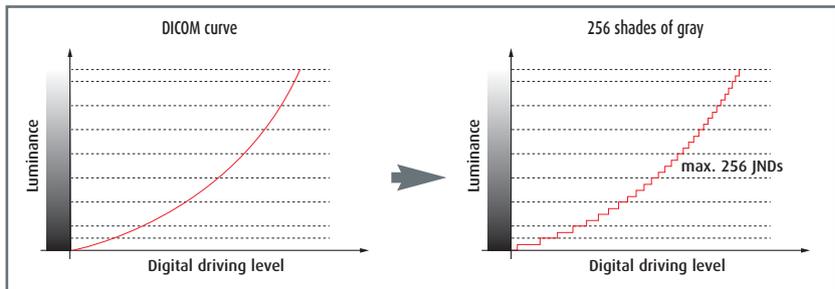
To enhance response speed in portrait viewing, Barco has developed the Portrait Accelerator, which eliminates software-related application slow-downs in portrait viewing. The Portrait Accelerator comes standard with CORONIS® 3MP and 5MP and is an option for CORONIS® 1MP and 2MP.

Portrait/landscape rotation

CORONIS® has a solid tilt and swivel base, allowing users to adjust the panel's position to their preferred viewing angle or easily switch between portrait and landscape modes. Barco's I-SWITCH® technology automatically detects if a user has changed the display's orientation and optimizes the display settings accordingly.

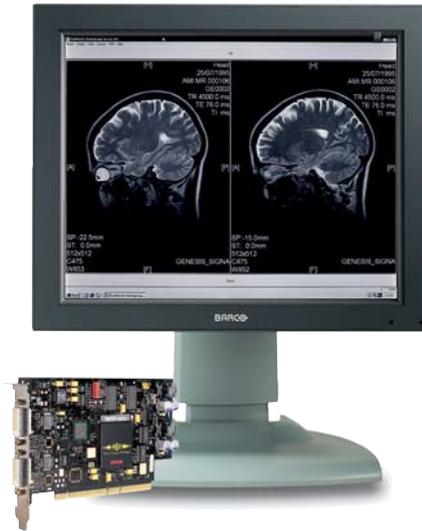
DICOM compliant image data

DICOM performance: 256 vs. 1024 shades of gray



CORONIS® 1MP - CORONIS® 2MP

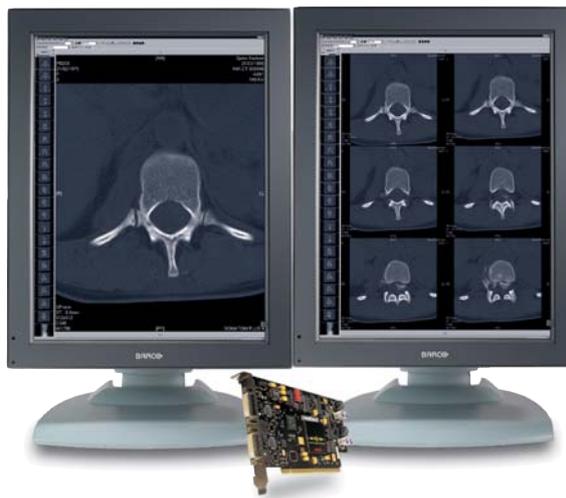
CORONIS® 1MP is an 18.1" grayscale flat panel display with a resolution of 1280 x 1024. CORONIS® 1MP complies with the DICOM/CIE viewing standards: it features correct grayscale tracking over the total luminance range as specified in the ACR/NEMA and DIN standards.



CORONIS® 1MP and 2MP feature both digital and analog inputs. For use in legacy applications with analog signals, the flat panel displays are also available as stand-alone units. Their accurate signal conversion and high brightness make them the perfect solution to upgrade existing CRT-based systems with state-of-the-art technology. To enhance response speed in portrait viewing, CORONIS® 1MP and 2MP can be equipped with Barco's Portrait Accelerator, which eliminates software-related application slowdowns in portrait viewing.



CORONIS® 2MP (1600 x 1200 resolution) offers softcopy performance without compromise. The 20.1" system's short response time and high contrast ratio (1000:1) make it ideally suited to display moving images.



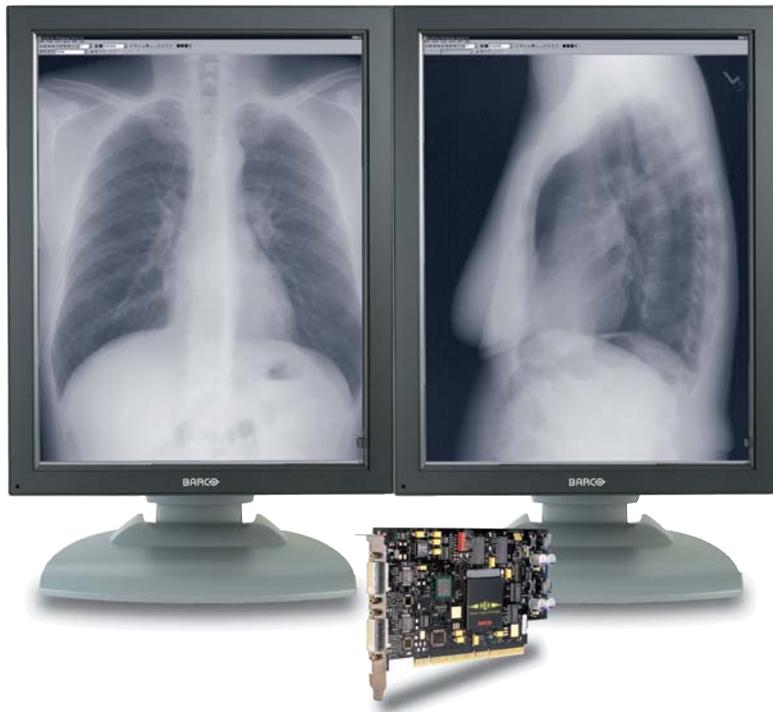
CORONIS® 3MP

CORONIS® 3MP was the first display system to combine diagnostic and flat panel display quality. Equipped with the I-GUARD® sensor for image stability and intervention-free calibration, true 10-bit resolution for 1024 simultaneous shades of gray and an ergonomic housing, CORONIS® 3MP has set new standards for medical imaging.

CORONIS® 3MP features a 20.8" grayscale flat panel with a resolution of 1536 x 2048 and a protective glass cover for perfect image representation. With its contrast ratio of 600:1 and high luminance, CORONIS® 3MP can be used

both in dark reading rooms as well as in ambient light environments. CORONIS® 3MP is fit with a solid tilt and swivel base, allowing users to adjust the panel's position to their preferred viewing angle or easily switch between landscape and portrait mode.

The BARCOMED® 3MP2FH digital display controller, designed for use with the CORONIS® LCD panel, features Barco's proprietary 10-bit driving scheme, generating 1024 simultaneous shades of gray. The compact, low power display controller integrates AURA technology for ultra-fast image loading.





Optional DURALIGHT®

Exceptionally long lifetime without compromise

DURALIGHT® is Barco's revolutionary long lifetime backlight option for CORONIS® 3MP display systems. Compared to conventional Cold Cathode Fluorescent Lamps (CCFL), the average lifetime of Barco's new DURALIGHT® backlights is prolonged by a factor of 3 to 5, without increasing power consumption or compromising visual performance of the LCD display system. On average, DURALIGHT® backlights last for 100,000 hours at 500 cd/m², compared to 22,000 hours for conventional CCFL lamps.

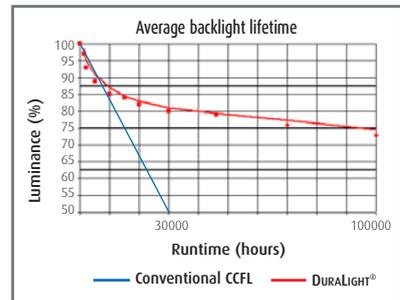
Thanks to the exceptionally long lifetime of Barco's innovative DURALIGHT® backlight, lamp replacement during the economic life span of the medical display becomes superfluous, which substantially reduces the system's cost of ownership.

Barco's DURALIGHT® technology offers uncompromised image quality and image uniformity at all viewing angles. Moreover, DURALIGHT® drastically reduces color shift during the LCD's lifetime, compared to conventional CCFL backlights. In addition, DURALIGHT®'s extended lifetime is combined with optimal energy-efficiency. Unlike other technologies, DURALIGHT®'s long lifetime does not have a negative effect on the system's power consumption. Barco's unique DURALIGHT® backlights come with a 5-year warranty.



DURALIGHT® features and benefits:

- exceptionally long backlight lifetime
- uncompromised visual performance
- optimum energy-efficiency
- redundancy of lamp replacement
- lowest cost of ownership
- 5 year warranty on DURALIGHT® backlight
- BlueBase color temperature



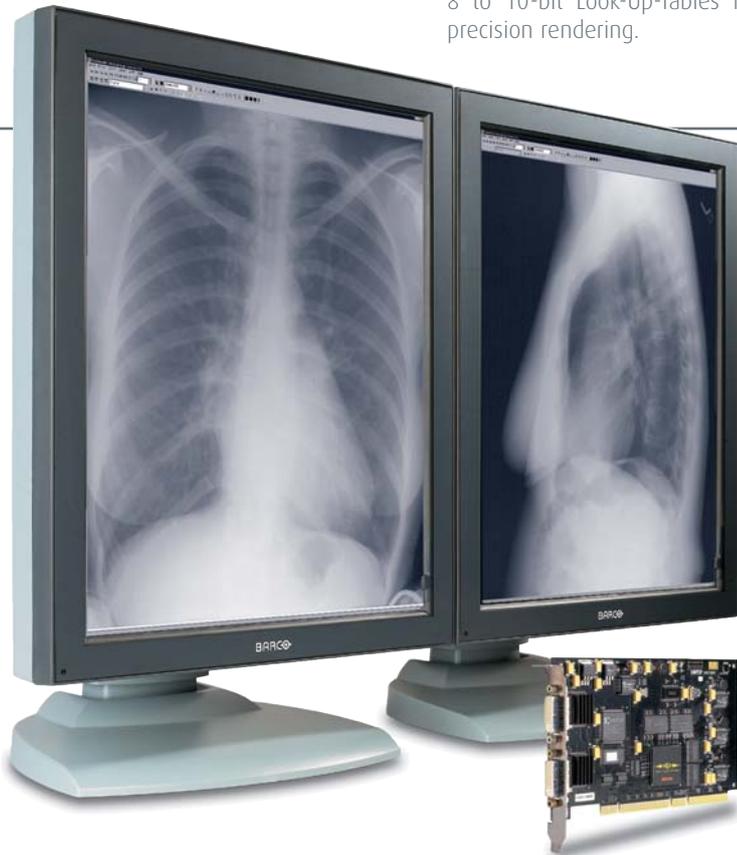
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CORONIS® 5MP

Barco's CORONIS® 5MP display station has been engineered for very demanding medical imaging applications. The high-grade 5MP system offers unsurpassed film-like images with ultra-high resolution (2048 X 2560) and MTF, high luminance and high contrast ratio. Furthermore, the 21.3" LCD provides unprecedented image quality without pixelization, a wide viewing angle and perfect geometry. Users can select between ClearBase and BlueBase backlights to diagnose in their preferred viewing mode.

Barco's state-of-the-art 5MP display system ensures low lifecycle cost, user-friendliness and increased productivity (high resolution reduces need for panning and roaming). CORONIS® 5MP is FDA-approved and can be used in portrait and landscape modes thanks to its user-friendly tilt and swivel base. In addition, the CORONIS® flat display is equipped with Barco's Portrait Accelerator for optimum performance in portrait mode.

CORONIS® 5MP is bundled with the dedicated BARCOMED® 5MP2F display controller, featuring Barco's AURA technology for ultra-fast image loading and 8 to 10-bit Look-Up-Tables for 10-bit precision rendering.



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Available in BlueBase and ClearBase viewing modes

BARCO's CORONIS® 5MP display system is available in BlueBase and ClearBase viewing modes, allowing radiologists to work in their preferred color temperature. Both color mode options provide filmless perfection for accurate softcopy imaging.

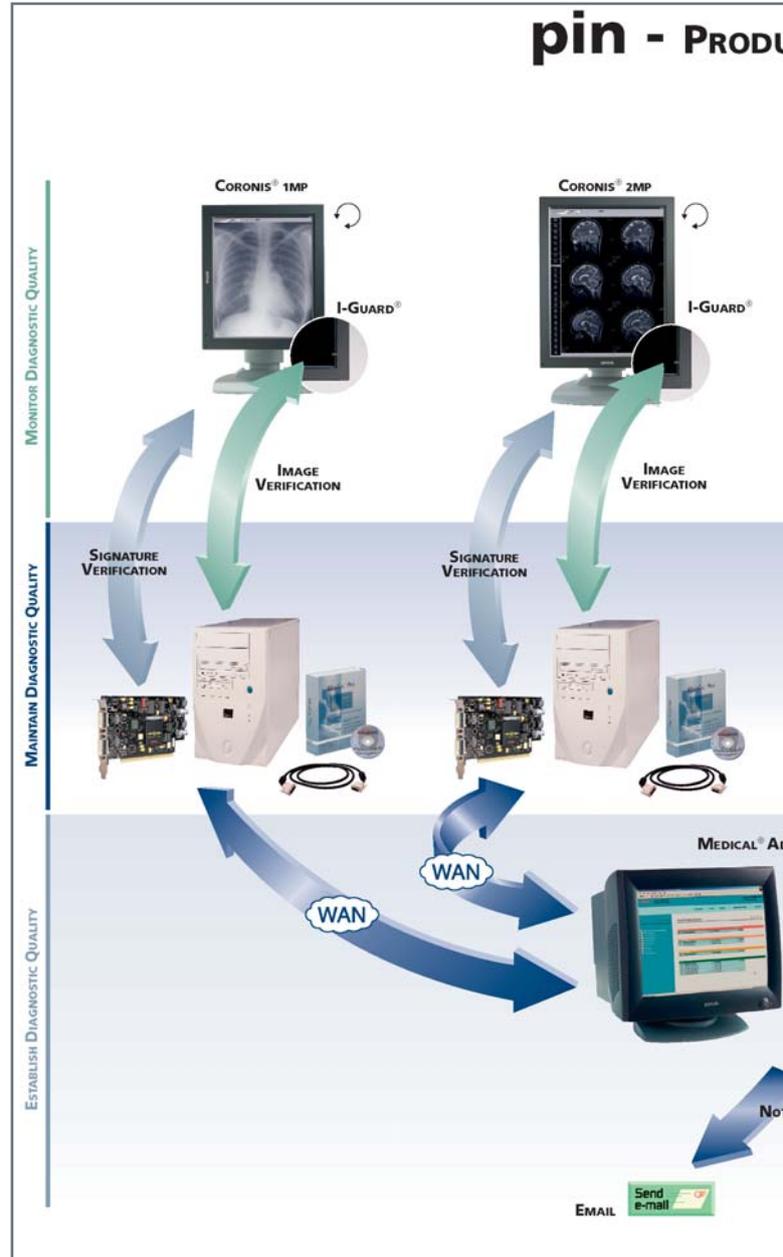


PIN: centralized QA management at your fingertips

Ambient intelligence for worry-free filmless perfection

CORONIS® display systems are fully compatible with Barco's revolutionary PIN (Product Intelligence) concept, which ensures worry-free diagnostic reading and image distribution by means of "intelligent" technology.

Barco's PIN-compatible PACS products form a distributed network of web-enabled, intelligent devices. The integrated I-GUARD® sensor constantly monitors image quality and the collected data is transparently processed and logged with Barco's MEDICAL® software. The surrounding network of invisible, intelligent devices keeps administrators informed about the display system's consistent quality. If the imaging chain fails, administrators can intervene from any location via user-friendly web interfaces, without disturbing normal radiology activities.



Technical specifications Coronis® displays

	MFGD 1318* (1MP)	MFGD 2320* (2MP)	MFGD 3420 (3MP)	MFGD 5421 (5MP)
LCD PANEL				
Technology	TFT AMOLED Dual Domain IPS Grayscale, 3 subpixels per pixel	TFT AMOLED VA Mode LCD Grayscale, 3 subpixels per pixel	TFT AMOLED Dual Domain IPS Grayscale, 3 subpixels per pixel	TFT AMOLED Dual Domain IPS Grayscale, 3 subpixels per pixel
Native resolution	1280 x 1024 / 1024 x 1280	1600 x 1200 / 1200 x 1600	2048 x 1536 / 1536 x 2048	2560 x 2048 / 2048 x 2560
Pixel pitch	0.2805 mm	0.255 mm	0.207 mm	0.165 mm
Active screen diagonal	459.7 mm (18.1")	510 mm (20.1")	528 mm (20.8")	540.9 mm (21.3")
Active screen area	359 x 287 mm (14.1 x 11.3")	408 x 306 mm (16.1 x 12")	423.9 x 318 mm (9.8 x 12.5")	422.4 x 337.9 mm (16.6 x 13.3")
Viewing angle (Hor./Vert.)	170° (at 10:1 contrast)	170° (at 10:1 contrast)	170° (at 10:1 contrast)	170° (at 10:1 contrast)
VISUAL CHARACTERISTICS				
Dark room contrast	550:1 typical	1000:1 typical	600:1 typical	600:1 typical
Luminance (typical)	400 cd/m ² (116.7 ft) calibrated, 600 cd/m ² (175.1 ft) max.	400 cd/m ² (116.7 ft) calibrated, 700 cd/m ² (204.3 ft) max. Typical ^(min)	500 cd/m ² (145.9 ft) calibrated, 700 cd/m ² (204 ft) max.	500 cd/m ² (145.9 ft) calibrated, 700 cd/m ² (204 ft) max.
Stabilization, calibration and automated QA	Embedded, patent-pending I-Guard®	Embedded, patent-pending I-Guard®	Embedded, patent-pending I-Guard®	Embedded, patent-pending I-Guard®
CONNECTIVITY				
Digital video input	DVI (complying to VESA DVI)	DVI (complying to VESA DVI)	Dual DVI (complying to VESA DVI)	Dual DVI (complying to VESA DVI)
Analog video input	VGA D-SUB15 connector, BNC	VGA D-SUB15 connector, BNC	No	No
Display control and communication	DDC (complying to DDC2Bi standard), EDID	DDC (complying to DDC2Bi standard), EDID	DDC (complying to DDC2Bi standard), EDID	DDC (complying to DDC2Bi standard), EDID
Digital video / DDC input connector	One physical DVI connector, one cable	One physical DVI connector, one cable	One physical DVI connector, one cable	One physical DVI connector, one cable
USB	USB-hub with 1 up- and 2 downstream ports	USB-hub with 1 up- and 2 downstream ports	USB-hub with 1 up- and 2 downstream ports	USB-hub with 1 up- and 2 downstream ports
Supported resolutions	1280 x 1024 (Landscape) 1024 x 1280 (Portrait, optional Portrait Accelerator) VGA boot	1600 x 1200 (Landscape) 1200 x 1600 (Portrait, optional Portrait Accelerator) VGA boot	2048 x 1536 (Landscape) 1536 x 2048 (Portrait, features Portrait Accelerator) VGA boot (1 to 1 pixel mapping)	2560 x 2048 (Landscape) 2048 x 2560 (Portrait, features Portrait Accelerator) VGA boot (1 to 1 pixel mapping)
POWER REQUIREMENTS				
Input	90 to 264 VAC, 45 to 65Hz, 64W max.	90 to 264 VAC, 45 to 65Hz, 70W max.	90 to 264 VAC, 47 to 65Hz, 79W max.	90 to 264 VAC, 45 to 65Hz, 72W max.
Power save	Supports DPMS	Supports DPMS	Supports DPMS	Supports DPMS
ENVIRONMENTAL				
Operating temperature range	0°C to +40°C (32°F to 104°F)	0°C to +40°C (32°F to 104°F)	0°C to +40°C (32°F to 104°F)	0°C to +40°C (32°F to 104°F)
Within specifications	+15°C to +35°C (59°F to 95°F)	+15°C to +35°C (59°F to 95°F)	+15°C to +35°C (59°F to 95°F)	+15°C to +35°C (59°F to 95°F)
APPROVALS				
Safety	CE, UL60950, CSA C22.2 No 60950 (c-UL), CB, IEC 60950, DEMKO EN 60950	CE, UL60950, CSA C22.2 No 60950 (c-UL), CB, IEC 60950, DEMKO EN 60950, UL 2601	CE, UL60950, CSA C22.2 No 60950 (c-UL), CB, IEC 60950, DEMKO EN 60950	CE, UL60950, CSA C22.2 No 60950 (c-UL), CB, IEC 60950, DEMKO EN 60950
Emission	EN 55022, EN 50082-1, FDA 510 k	EN 55022, EN 50082-1, FDA 510 k	EN 55022, EN 50082-1, FDA 510 k	EN 55022, EN 50082-1, FDA 510 k
PHYSICAL CHARACTERISTICS				
Dimensions (WxHxD)	L: 433 x 525 x 250 mm (17.0 x 20.7 x 9.8")	L: 433 x 525 x 250 mm (17.0 x 20.7 x 9.8")	P: 385 x 585 x 250 mm (15.2 x 23.0 x 9.8")	P: 408 x 592 x 217 mm (16.1 x 23.3 x 8.5")
Weight	11.8 kg (26 lbs.)	13.9 kg (30.6 lbs.)	11 kg (24.2 lbs.)	13.5 kg (29.7 lbs.)
Ergonomics	Tilt & swivel base with P/L rotation 100mm VESA mounting standard AR coated front cover	Tilt & swivel base with P/L rotation 100mm VESA mounting standard AR coated front cover	Tilt & swivel base with P/L rotation 100mm VESA mounting standard AR coated front cover	Tilt & swivel base with P/L rotation 100mm VESA mounting standard AR coated front cover
Display controls	Display on/off, backlight adjustment, OSD	Display on/off, backlight adjustment, OSD	Display on/off, backlight adjustment, OSD	Display on/off, backlight adjustment, OSD

* = Available as standalone unit

** = Available with UL 2601 approval. Max. Luminance 700 Cd/m² (204.3 ft) (typical)

Technical specifications CORONIS® display controllers

	BARCOMED® 1MP2FH	BARCOMED® 2MP2FH	BARCOMED® 3MP2FH	BARCOMED® 5MP2F
SYSTEM REQUIREMENTS				
Bus	PCI 2.1 & 2.2, universal signaling			
Bus clock speed	33 MHz	33 MHz	33 MHz	33 MHz
Bus width	32 bit	32 bit	32 bit	32 bit
Power consumption	< 15 Watt	< 15 Watt	< 15 Watt	< 15 Watt
Form factor	106 x 197 x 16 mm (4.2 x 7.6 x 0.6")	106 x 197 x 16 mm (4.2 x 7.6 x 0.6")	106 x 197 x 16 mm (4.2 x 7.6 x 0.6")	106 x 197 x 16 mm (4.2 x 7.6 x 0.6")
Operating system	Microsoft Windows NT4, 2000, XP			
Platforms	Pentium class and up			
CHARACTERISTICS				
Display configuration	Single- or dual-head, portrait or landscape			
Graphics processor	Proprietary AURA technology	Proprietary AURA technology	Proprietary AURA technology	Proprietary AURA technology
Display memory	32 MB	32 MB	32 MB	32 MB
VGA	Integrated VGA controller Also compatible with external VGA cards	Integrated VGA controller Also compatible with external VGA cards	Integrated VGA controller Also compatible with external VGA cards	Integrated VGA controller Also compatible with external VGA cards
Pixel clock rate	85 MHz	120 MHz	200 MHz	330 MHz
Look-Up-Table	10 bits in/10 bits out	10 bits in/10 bits out	10 bits in/10 bits out	8 bits in/10 bits out
Electrical standard	Dual DVI complying to VESA DVI Rev. 1.0 spec	Dual DVI complying to VESA DVI Rev. 1.0 spec	Dual DVI complying to VESA DVI Rev. 1.0 spec	Dual DVI complying to VESA DVI Rev. 1.0 spec
VIDEO OUTPUT				
Supported resolutions/refresh rates	1280 x 1024 @ 60 Hz 1024 x 1280 @ 60 Hz VGA at boot-up	1600 x 1200 @ 60 Hz 1200 x 1600 @ 60 Hz VGA at boot-up	2048 x 1536 @ 60 Hz 1536 x 2048 @ 60 Hz VGA at boot-up	2560 x 2048 @ 60 Hz 2048 x 2560 @ 60 Hz VGA at boot-up
Connectors	Two DVI connectors (one per head)			
TEMPERATURE				
Operational	+10°C to +60°C (50°F to 140°F)	+10° to +60°C (50°F to 140°F)	+10°C to +60°C (50°F to 140°F)	+0°C to +60°C (32°F to 140°F)
Storage	-40°C to +85°C (-40°F to 185°F)	-40° to +85°C (-40°F to 185°F)	-40°C to +85°C (-40°F to 185°F)	-40°C to +85°C (-40°F to 185°F)
HUMIDITY				
Operational	80%	80%	80%	80%
Storage	100%	100%	100%	100%
EMI				
EMI	FCC class A, CE EN 55022 A, EN 50082-1	FCC class A, CE EN 55022 A, EN 50082-1	FCC class A, CE EN 55022 A, EN 50082-1	FCC class A, CE EN 55022 A, EN 50082-1

Technical specifications are subject to change without prior notice

Barco medical imaging systems

Many years of experience in all areas of display technology gives Barco a unique advantage as it continues to expand its color and grayscale display technology for a variety of imaging applications. Barco has established a solid reputation in the medical imaging market with high-performance display technology for X-ray, digital radiography, PACS, ultrasound and magnetic resonance viewing applications.

Barco's expertise in providing high performance display systems is supported by a worldwide network of research, development and support services. A global sales organization, with regional support people who understand your language and requirements, complements Barco's partnership approach.



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