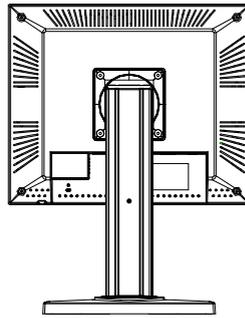
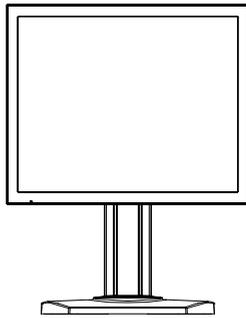


MDRC Series



User manual

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Preface

Important notice

Notice

Although every attempt has been made to achieve technical accuracy in this document, we assume no responsibility for errors that may be found. Our goal is to provide you with the most accurate and usable documentation possible; if you discover errors, please let us know.

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

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

Trademarks

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

Environmental information

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.

This equipment has required the extraction and use of natural resources for its production. It may contain hazardous substances for health and environment.

In order to avoid the dissemination of those substances in the environment and to diminish the pressure on natural resources, we encourage you to use the appropriate take-back systems.

Those systems will reuse or recycle most of the materials of your end-of-life equipment in a sound way.



The crossed-out wheeled bin symbol invites you to use those systems.

If you need more information on the collection, reuse and recycling systems, please contact your local or regional waste administrator.

You can also contact us for more information on the environmental performances of our products.

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



Warning-

To prevent the risk of fire or shock hazards, do not expose this product to rain or moisture



Warning-

Please do not open or disassemble the product as this may cause electric shock.

Classification:

Electrical Shock Protection: Class I.

Disconnect Device: Connect / Remove power cord plug directly.

Degree of Protection Against Electric Shock: No applied part.

Degree of Protection Against Harmful Ingress of Water: Ordinary equipment (IPX0).

Degree of Safety in the Presence of Flammable Anesthetic Mixture with Air or with Oxygen or Nitrous Oxide: Not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.

Mode of Operation: Continuous.

Intended use

This display is an AMLCD display designed for viewing medical X-ray images. This unit should not be used near patients and should be kept outside of 1.83 m perimeter and 2.29 m vertical.

Power connection

Power requirements: The display must be powered using a medical approved 12VDC power supply (MDRC-1119) or a 24VDC power supply (MDRC-2120).

The medical approved DC power supply must be powered by the AC mains voltage.

Power cords

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

Do not overload wall outlets and extension cords as this may result in fire or electric shock.

Mains lead protection (U.S.: Power cord): Power cords should be routed so that they are not likely to be walked upon or pinched by items placed upon or against them, paying particular attention to cords at plugs and receptacles.

External equipment

External equipment intended for connection to signal input/output or other connectors, shall comply with relevant UL/ EN/ IEC standard (e.g. UL/EN/IEC 60950 for IT equipment and UL/EN 60601-1 / IEC 60601 series for medical electrical equipment). In addition, all such

combinations – systems – shall comply with the standard IEC 60601-1-1, Safety requirements for medical electrical systems. Equipment not complying with UL/EN / IEC 60601-1 shall be kept outside the patient environment, as defined in the standard.

Equipment not complying with IEC 60601 must be kept outside the patient environment, as defined in the standard as at least 1.5 meters from the patient or the patient support.

Any person who connects external equipment to signal input, signal output, or other connectors has formed a system and is therefore responsible for the system to comply with the requirements of IEC 60601-1-1. If in doubt, speak with a qualified technician.

In locations where 240V outlets are used, connect this display only on a center-tapped, 240V, single-phase supply.

Water and moisture

Never expose the display to rain or moisture.

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

Ventilation

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

Installation

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

Recommendations for using your display system

1. Optimize the lifetime of your display

Enabling the Display Power Management System (DPMS) of your display (in the display's Settings menu) will optimize its diagnostic lifetime by automatically switching off the backlight when the display is not used for a specified period of time. By default, DPMS is enabled on your display, but it also needs to be activated on your workstation. To do this, go to "Power Options Properties" in the "Control Panel".

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

2. Use a screen saver to avoid image retention

Prolonged operation of an LCD with the same content on the same screen area may result in a form of image retention.

You can avoid or significantly reduce the occurrence of this phenomenon by using a screen saver. You can activate a screen saver in the "Display properties" window of your workstation.

Barco recommends setting screen saver activation after 5 minutes of non-usage. A good screen saver displays moving content.

In case you are working with the same image or an application with static image elements for several hours continuously (so that the screen saver is not activated), change the image content regularly to avoid image retention of the static elements.

3. Understand pixel technology

LCD displays use technology based on pixels. As a normal tolerance in the manufacturing of the LCD, a limited number of these pixels may remain either dark or permanently lit, without affecting the diagnostic

performance of the product. To ensure optimal product quality, Barco applies strict selection criteria for its LCD panels.

To learn more about LCD technology and missing pixels, consult the dedicated white paper available at www.barcomedical.com.

4. Enhance user comfort

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

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

5. Maximize Quality Assurance

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

Learn more and sign up for the free MediCal QAWeb Essential level at www.barcomedical.com/qa

Unpacking and handling tips

The MDRC display is a precision instrument that requires proper care to maintain product operation and adherence to specification. Unpack the display and components carefully, then set up and handle the unit properly to avoid damage to the LCD panel.

- Use both hands to grasp the display case when lifting it from the shipping carton, but avoid touching the screen.
- Do not apply pressure to the screen or touch the screen with bare fingers or objects. Pressure can affect image quality.

Cosmetics and oils on the skin are both detrimental to the screen and difficult to remove.

- Allow the display to warm up to room temperature before turning it on. Avoid sudden temperature changes in the environment, as this may cause condensation, which damages the display.
- Do not set up the display near strong light or heat sources.
- Do not block the vents on the back of the display or install the display in a built-in enclosure. Blocked vents cause excessive heat to build up inside the display, increasing risk of fire.
- When installing components, turn off your computer, but leave it plugged into a grounded outlet.
- Do not remove the back cover or disassemble the display. There are no user-serviceable parts inside.

Preventing fire and injury

- Replace the power supply or cables if damaged.
- Use only the power source indicated in this guide or listed on the display.
- Do not plug the power supply into an overloaded AC outlet or extension cord. Overloaded AC outlets and cords can result in electric shock or fire.
- Do not drop or push objects into the display case. Internal components contain high voltage.
- Unplug the power cord from the wall outlet during thunderstorms.
- Do not place magnetic devices, such as motors, near the display.

Cleaning the display

Observe the following guidelines to maintain display and LCD screen.

- Use a clean, lint-free, absorbent cotton cloth to clear off any residual glue from removal of the protective film or to remove surface dust. Apply light pressure to remove the dust.
- Dampen a clean cloth with a small amount of isopropyl alcohol to remove glue or dust if the screen is still not clean. Do not saturate the cloth; otherwise, alcohol may seep into the display case and collect in the enclosure. Use a clean, dry cloth to completely remove the alcohol residue.
- It is advised to clean the display on weekly basis.
- Do not use chemically treated dust cloths, acetone, toluene, or harsh solvents on the display case or the screen. They can damage the polarizer and the display case.
- Do not expose the display to water or excessive moisture. Do not allow water or other stains to stand on the unit. Wipe liquids off immediately to prevent damage to the display case and the screen.

Shipping/storing the display

Keep the display in its shipping container until installation. Return the display to its original container whenever you need to store the unit, move it to another location, or return it for repair. The packaging supplied by the manufacturer protects the display while it is in transit. See environment specifications for more information.

Before returning the display to the container, do the following:

- 1 Swivel the display panel in landscape mode.
- 2 Push the panel down to the lowest position.

3 Use the stand lock to anchor the panel.

Explanation of symbols



DISPOSAL. Do not use household or municipal waste collection services for disposal of electrical and electronic equipment. EU countries require the use of separate recycling collection services.



CAUTION. Read the accompanying text carefully for proper operation and maintenance of the display system.



DIRECT CURRENT



ALTERNATING CURRENT



RELATIVE HUMIDITY

Storage & transport: 5%~ 90% (No condensation)
Operating: 8% ~ 80%



TEMPERATURE

Storage & transport: -20° to 60°
Operating: 0°~35°C

Introduction

About the product

Thank you for choosing Barco.

The MDRC series are LCD displays with an active matrix, thin-film transistor (TFT) liquid crystal display (LCD). These products also demonstrate the following outstanding features:

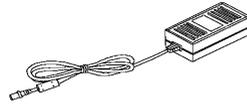
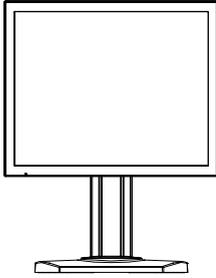
MDRC-1119

- Dual Analog and Digital signal.
- 19" diagonal Screen.
- 1280x1024 high resolution.
- Wide Viewing Angle Technology.
- 31.5 ~ 80 kHz horizontal scan.
- 56 ~ 75 Hz refresh rate.
- Auto Adjustment and Re-scaling function.
- High quality full screen re-scaling capability.
- Multilingual OSD user controls.
- VESA DPM power saving.
- Kensington lock capability

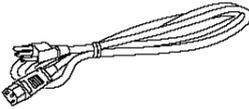
MDRC-2120

- Dual Analog and Digital signal.
- 20.1" diagonal Screen.
- 1600x1200 high resolution.
- Wide Viewing Angle Technology.
- 31.5 ~ 93.75 kHz horizontal scan.
- 59 ~ 61 Hz refresh rate.
- Auto Adjustment and Re-scaling function.
- High quality full screen re-scaling capability.
- Multilingual OSD user controls.
- VESA DPM power saving.
- Kensington lock capability

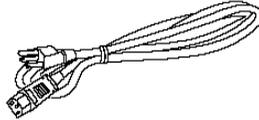
Package Overview



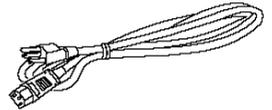
Power Adapter



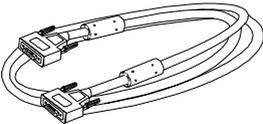
USA Power Cord



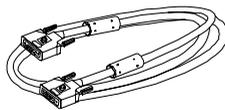
EUR Power Cord



China Power Cord



VGA Signal Cable



DVI-D Cable

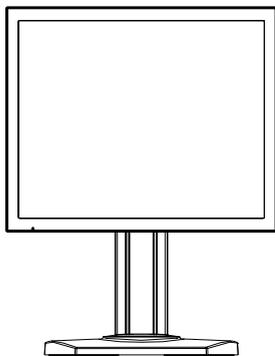


User's Manual

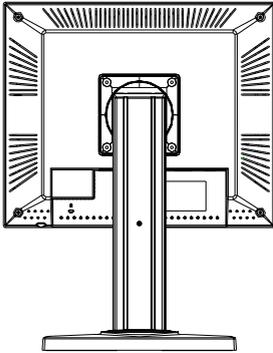
Installation

Product Overview

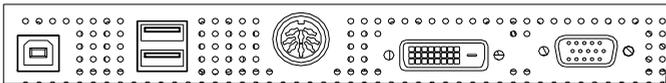
Front View



Back View



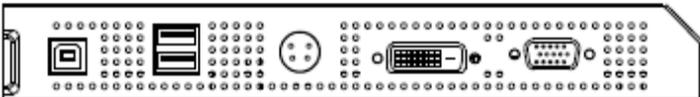
MDCR-1119



USB Ports

DC Power-In DVI-D Input VGA Input

MDCR-2120

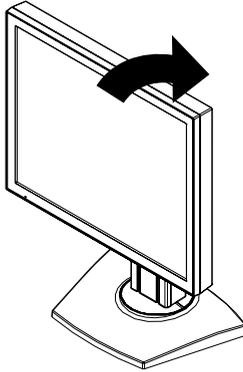


USB Ports

DC Power-In DVI-D Input VGA Input

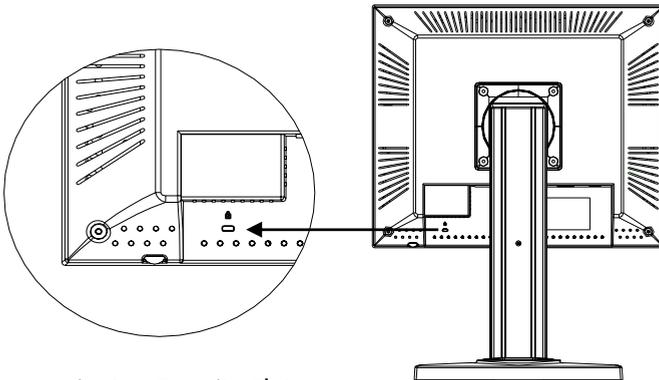
Tilt

Grasp the LCD Display with both hands and adjust the tilt as desired.



Kensington Security Slot

The Monitor can be secured to your desk or any other fixed object with Kensington lock security products. Kensington lock is not included.



Kensington Security Slot

Start Your Installation

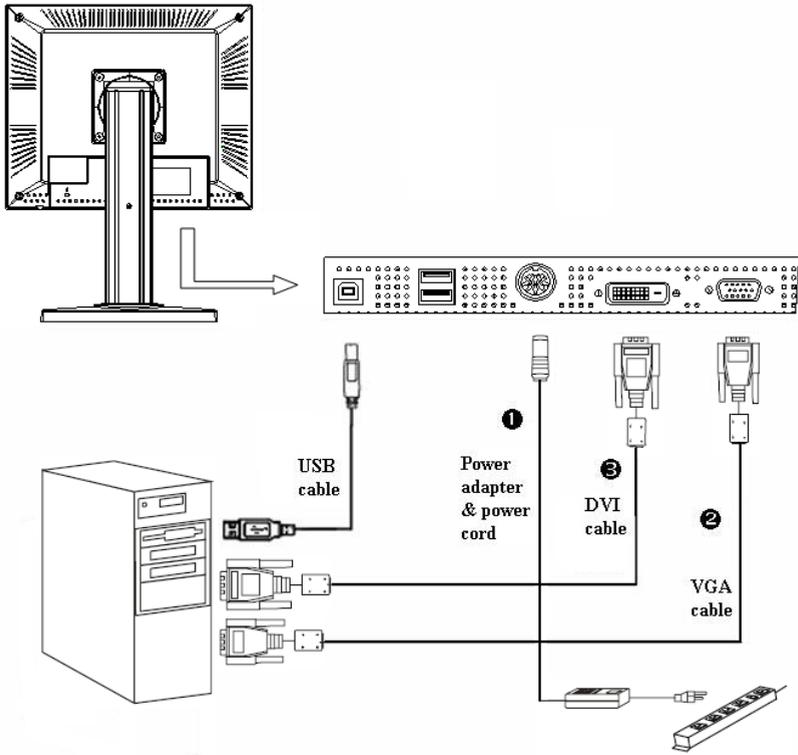
Connecting the Display

Use only the power adapter, power cord, and the video cable shipped with this display. For MDRC-1119 :The universal external 12V DC/ 5.0A power adapter (100-240V~, 1.5A, 50-60Hz for power adapter rating) is the AULT (JMW160KB1200F04). For MDRC-2120, the universal external 24V DC/ 2.7A power adapter (100-240V~, 1.5A, 50-60Hz for power adapter rating) is the AULT (JMW160KA2400F04)

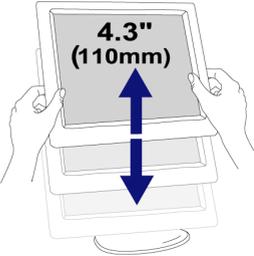
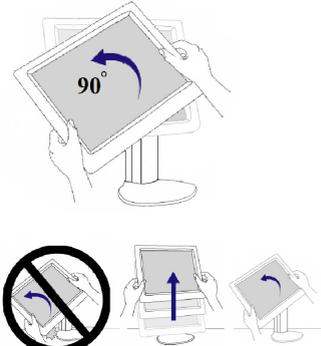
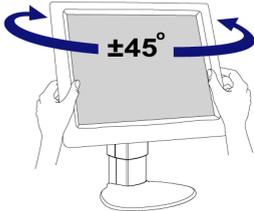
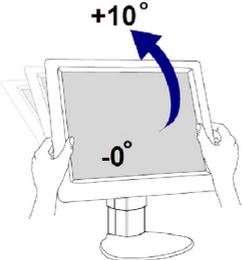
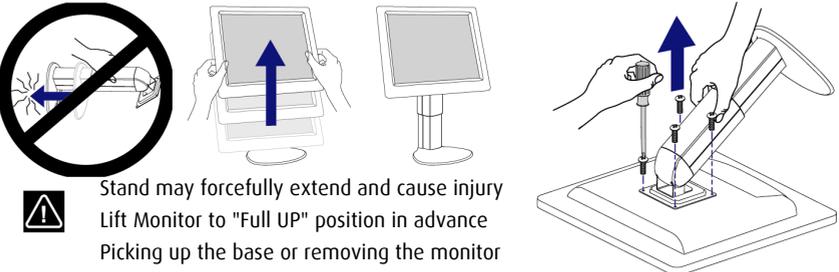
To setup this display, please refer to the following figure and procedures.

1. Be sure all equipment is turned off.
2. Connect the DC power cord to the power connector; plug one end of the AC power cord into the power adapter, and the other end into an electrical outlet. (1).
3. For a PC with Analog output: Connect the VGA signal cable from display VGA input connector to the 15-pin connector of your host computer and tighten the screws. (2).
4. For a PC with DVI digital output: Connect the DVI signal cable to the connector of the display card in your computer, connect the other side to the DVI-D input port of your display. Tighten the screws (3).
5. Turn on your computer, display and video source.

Note: To ensure the LCD Display will work well with your computer, please configure the display mode of your graphics card to make it less than or equal to the native resolution, and make sure the timing of the display mode is compatible with the LCD screen. We have listed the "Compatibility Modes" of this LCD screen in appendices for your reference.

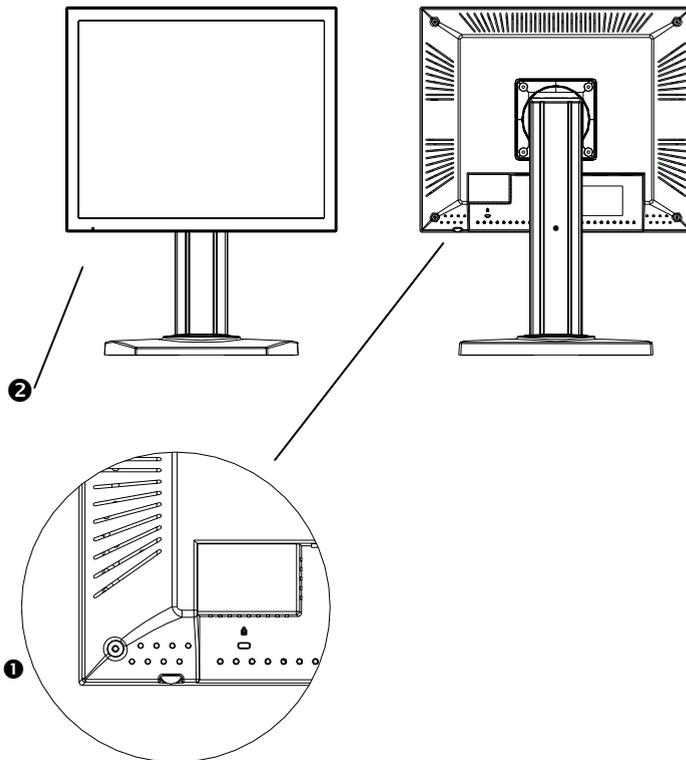


Adjusting the screen position

<p>Vertical Height</p> 	<p>Portrait/Landscape</p> 
<p>Left to Right Pan</p> 	<p>Front to Back Tilt</p> 
<p>Remove Monitor</p>  <p> Stand may forcefully extend and cause injury Lift Monitor to "Full UP" position in advance Picking up the base or removing the monitor</p>	

User Controls

Jog Dial Controls



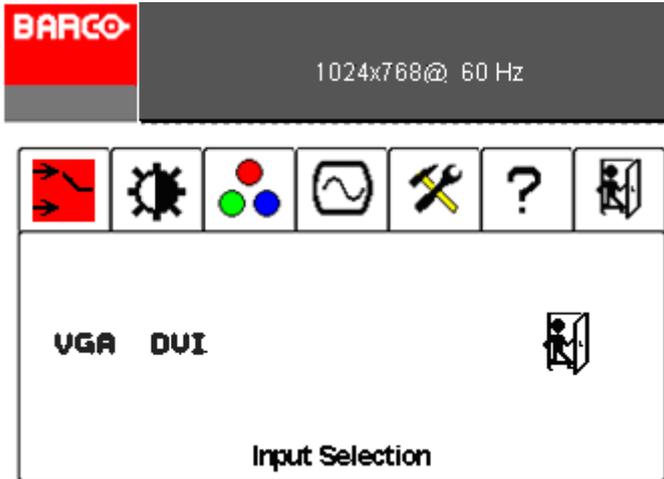
No./ Icon	Control	Function
①  Jog Dial button	- Power Switch - Menu	1. Press the jog dial button for 1 sec to power off to the LCD Display. 2. Swivel jog dial button for OSD menu
② LED	Power LED	1. Green indicates the display is turned on. 2. Orange indicates the display is in stand-by mode.

How to Use the OSD Menu

1. Swivel the Jog dial button to pop up the "on-screen menu" and to scroll among the six Main Menus.
2. Choose the adjustment items by pressing the jog dial button.
3. Adjust the value of the adjustment items by swiveling the jog dial button.
4. After a period of inactivity *(based on a user setting), the OSD menu will automatically disappear.

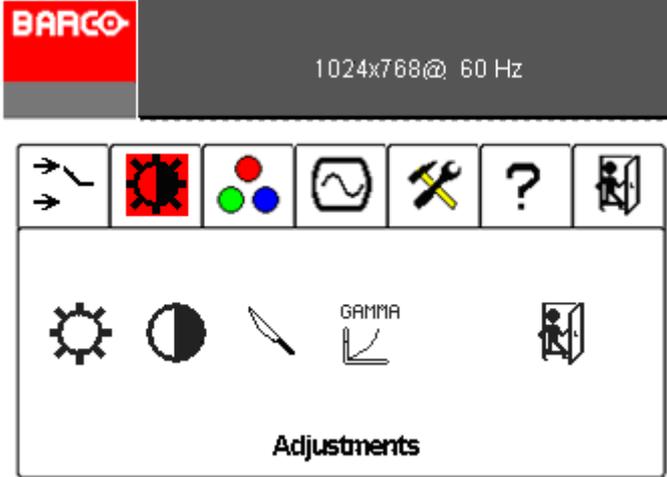
On-Screen Display Menus

Input selection Menu



Function	Description
VGA	Analog input selection
DVI	Digital input selection
Exit	Exit Menu

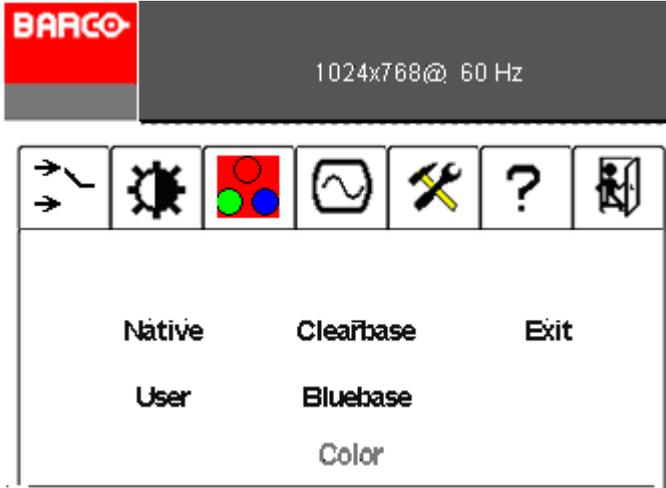
Adjustments Menu



Function	Description	
Brightness	To adjust the overall image and background Brightness level.	
Contrast*	To adjust the image brightness in relation to the background (only applicable if VGA is selected)	
Sharpness*	Manual adjustment of the image sharpness (only applicable if VGA is selected)	
Gamma	Gamma selection	
	Native	Linear gamma selection

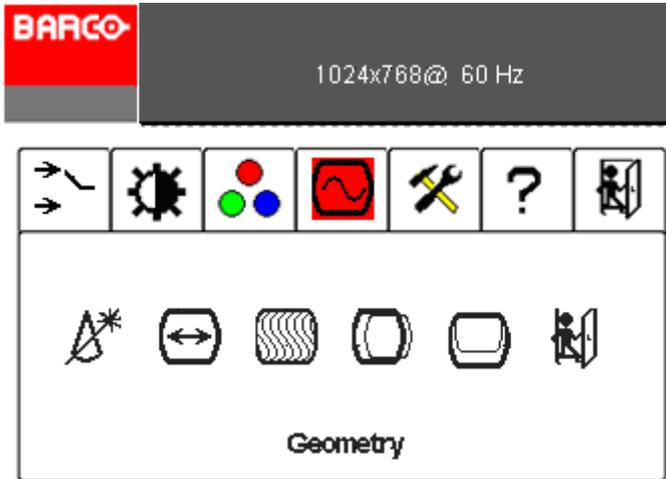
	Dynamic Gamma 1.8	Dynamic Gamma 1.8 selection
	Dynamic Gamma 2.2	Dynamic Gamma 2.2 selection
	Dicom	Dicom selection
	User	User definable table via QAWeb Agent
Exit	Exit Menu	

Color Menu



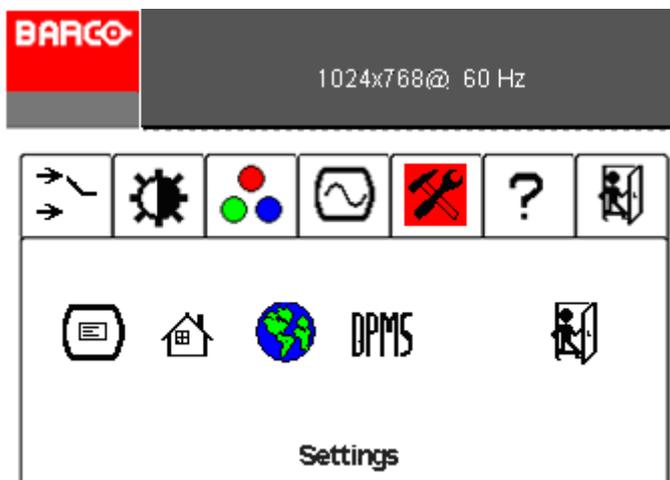
Function	Description
Native	Set the image color temperature to the LCD panel's native, uncorrected color temperature
Clearbase	Set the image color temperature to Clearbase
Bluebase	Set the image color temperature to Bluebase
User	User definable color temperature. Can be changed manually
Exit	Exit to main menu

Geometry Menu



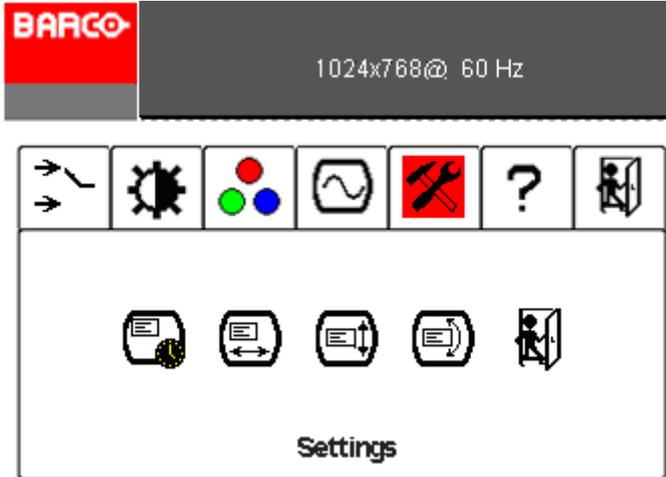
Function	Description
Auto set*	Automatically adjusts the image parameters to obtain a correctly aligned image
clock*	Manually adjust the internal clock frequency. Increasing this value makes the image wider. Decreasing this value makes the image Smaller.
Phase*	Manually adjusts the internal clock phase. When not adjusted correctly, vertical bands with alternate intensity appear in the image.
Horizontal*	Manually adjust the image horizontal position
Vertical*	Manually adjust the image vertical position
Exit	Exit to main menu

Setting Menu



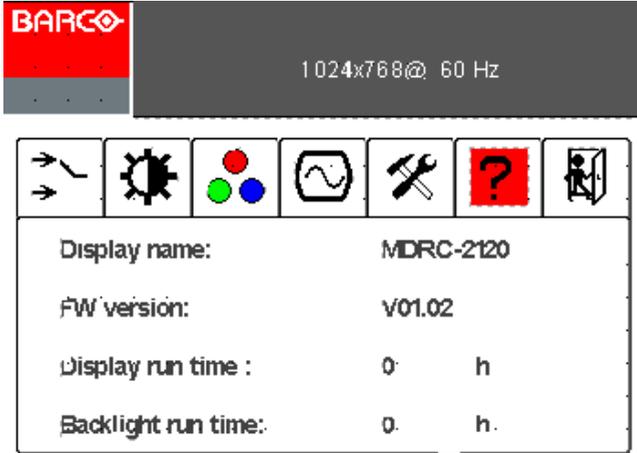
Function	Description
OSD setting	OSD settings menu
Factory init	Select this function to reset all display parameters to the factory settings
Language	Select the OSD language
DPMS	DPMS menu
Exit	Exit menu

OSD Settings Menu



Function	Description
OSD Time out	Set time when OSD will disappear
OSD Horizontal	OSD horizontal alignment
OSD Vertical	OSD vertical alignment
OSD direction	Rotate OSD to Landscape or portrait
Exit	Exit menu

Information Menu



Function	Description
Display Name	MDRC- 1119 or MDRC-2120
Firmware version	Firmware version
Display run time	Display run time
Backlight run time	Backlight run time

Notes: Symbol (*) means only analog signal is used.

Appendix

Troubleshooting

If you are experiencing trouble with the LCD display, refer to the following troubleshooting. If the problem persists, please contact your local dealer or our service center.

Problem: No image appears on screen.

- Check that all the I/O and power connectors are correctly and well connected as described in the “Installation” section.
- Make sure the pins of the connectors are not crooked or broken.

Problem: Partial image or incorrectly displayed image.

- Check to see if the resolution of your computer is higher than that of the LCD Display.
- Reconfigure the resolution of your computer to make it less than or equal to the native resolution MDRC-1119(1280 x 1024)
MDRC-2120(1600 x 1200)

Problem: Image has vertical flickering line bars.

- Use “Clock” to make an adjustment.
- Check and reconfigure the display mode of the vertical refresh rate of your graphics card to make it compatible with the LCD Display.

Problem: Image is unstable and flickering

- Use “Phase” to make an adjustment.

Problem: Image is scrolling

- Check and make sure the VGA signal cable (or adapter) is well connected.
- Check and reconfigure the display mode of the vertical refresh rate of your graphics card to make it compatible with the LCD Display.

Problem: Vague image (characters and graphics)

- Use “Clock” to make an adjustment. If this problem still exists, use “Phase” to make an adjustment.

Warning Signal

Sometimes you may see warning messages for this LCD Display. This means that the LCD Display cannot correctly receive the signal from the computer graphics card.

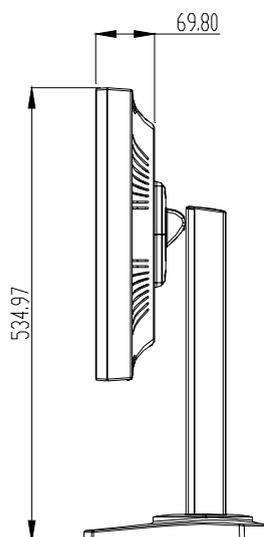
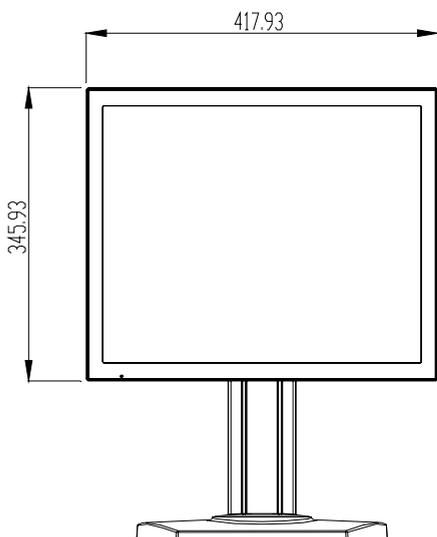
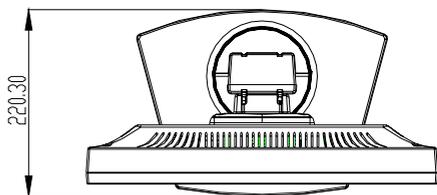
No Signal

This message means that the LCD Display has been powered on but it cannot receive any signal from the computer graphics card. Check all the power switches, power cables, and VGA signal cable.

Out Of Range

This message means that the signal of the computer graphics card is not compatible with the LCD Display. When the signal is not included in the compatibility mode we have listed in the Appendices of this manual, the LCD display will show this message.

Product Dimensions MDRC-1119



Technical specifications MDRC-1119

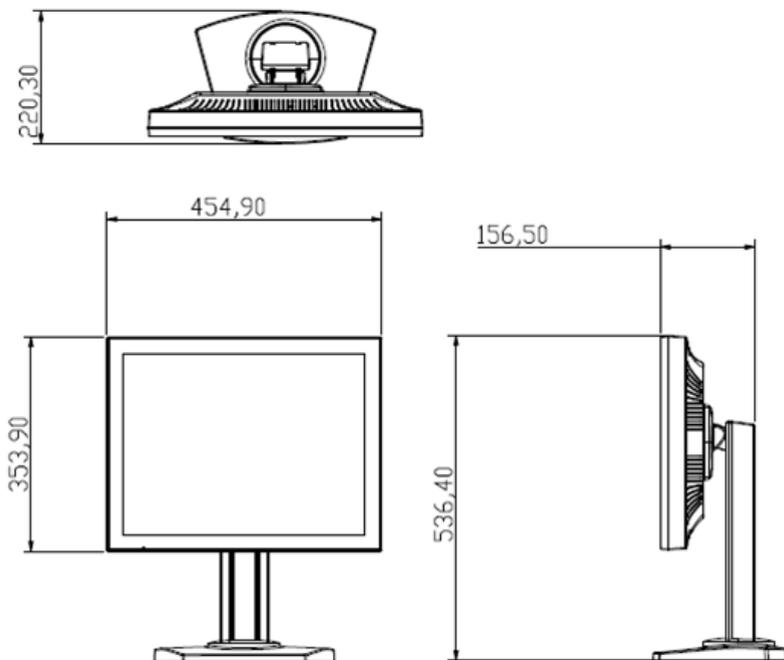
LCD Panel	MDRC-1119
Technology	TFT Color LCD (VA)
Native resolution	1280 x1024
Active screen diagonal	19" (483 mm)
Active screen area	376 x 301 mm
Pixel Pitch	0.294 x 0.294
Visual Characteristic	
Maximum luminance	300 cd/m ²
DICOM calibrated luminance	180 cd/m ²
Image stabilization	BLOS (Backlight sensor)
Contrast ratio	1300:1
Aspect ratio	5:4
Viewing angle (CR>10)	178°/178°
Display LUT	10 bit
Response time (G-G)	8 ms
Display Functions	Gamma, Dicom
Colors	16.8 million
Connectivity and control	
Video Input	DVI
	VGA (DB15)
	USB (1 upstream, 2 downstream)

OSD languages	English, French, German, Spanish, Italian, Dutch, Simplified Chinese, Traditional Chinese, Korean.
Options	
Protective Cover	Yes
Touch Screen	Yes
Landscape/Portrait	Yes
Approvals	
EMC	EN 60601-1-2; FCC-B; ICES-001, VCCI, KETI, CCC, BSMI
Safety	CE EN60601-1; UL 60601-1, c-UL, CCC, KETI, PSE, BSMI
Mechanical characteristics	
Display dimensions (W x H x D) Landscape, w/o pedestal	418 x 346 x 70 mm
Display weight	With Stand : 8.75 kg (W/ Touch)
	Without Stand : 5.65 kg
Display stand	Tilt, height & swivel
Mounting	VESA 100
Power requirements	
External DC Power Supply	90V-264V (50Hz-60Hz)
Standby Power	< 6 W
Power consumption	50 Watts
Environmental	
Operating T (min-max)	0° to 35°C (° to °F)
Humidity	5% - 90% (no condensation)

Compatibility Modes MDRC -1119

Standard	Resolution	Vertical Refresh (Hz)	Horizontal Scan (KHz)
IBM VGA	640x350	70	31.5
IBM VGA	640x480	60	31.5
IBM VGA	720x400	70	31.5
VESA VGA	640x480	72	37.9
VESA VGA	640x480	75	37.5
VESA SVGA	800x600	56	35.1
VESA SVGA	800x600	60	37.9
VESA SVGA	800x600	72	48.1
VESA SVGA	800x600	75	46.9
VESA XGA	1024x768	60	48.4
VESA XGA	1024x768	70	56.5
VESA XGA	1024x768	75	60.0
VESA XGA	1152 [*] 870	60	54.36
VESA XGA	1152 [*] 864	75	68.1
VESA SXGA	1280 [*] 1024	60	63.96
VESA SXGA	1280 [*] 1024	75	79.95
Apple Mac II	640x480	67	35.0
Apple Mac	832x624	75	49.7
Apple Mac	1024x768	75	60.2

Product Dimensions MDRC-2120



Technical specifications MDRC-2120

LCD Panel	MDRC-2120
Technology	TFT Color LCD (IPS)
Native resolution	1600 x1200
Active screen diagonal	20.1" (510.54 mm)
Active screen area	432 x 331.5 mm
Pixel Pitch	0.255 x 0.255
Visual Characteristic	
Maximum luminance	300 cd/m ²
DICOM calibrated luminance	180 cd/m ²
Image stabilization	BLOS (Backlight sensor)
Contrast ratio	800:1
Aspect ratio	4:3
Viewing angle (CR>10)	178°/178°
Display LUT	10 bit
Response time (G-G)	5 ms
Display Functions	Gamma, Dicom
Colors	16.8 million
Connectivity and control	
Video Input	DVI
	VGA (DB15)
	USB (1 upstream, 2 downstream)

OSD languages	English, French, German, Spanish, Italian, Dutch, Simplified Chinese, Traditional Chinese, Korean.
Options	
Protective Cover	Yes
Touch Screen	No
Landscape/Portrait	Yes
Approvals	
EMC	EN 60601-1-2; FCC-B; ICES-001, VCCI, KETI, CCC, BSMI
Safety	CE EN60601-1; UL 60601-1, c-UL, CCC, KETI, PSE, BSMI
Mechanical characteristics	
Display dimensions (W x H x D) Landscape, w/o pedestal	455 x 354 x 70 mm
Display weight	With Stand : 9.8 kg
	Without Stand : 6.0 kg
Display stand	Tilt, height & swivel
Mounting	VESA 100 x 100 mm
Power requirements	
External DC Power Supply	90V-264V (50Hz-60Hz)
Standby Power	< 6 W
Power consumption	55 Watts
Environmental	
Operating T (min-max)	0° to 35°C (° to °F)
Humidity	5% - 90% (no condensation)

Compatibility Modes MDRC-2120

Standard	Resolution	Vertical Refresh (Hz)	Horizontal Scan (KHz)
VGA	640x480	60	31.50
SVGA	800x600	60	37.68
XGA	1024x768	60	48.36
	1152*870	60	54.36
SXGA	1280*1024	60	63.96
1MP2FH	1280*1024	60	62.50
	1024*1280	59	77.78
UXGA	1600*1200	60	75.00
2MP2FH	1600*1200	59	72.81
	1200*1600	59	95.84

Regulatory Compliance

Canada, European Union, United States



MEDICAL EQUIPMENT
WITH RESPECT TO ELECTRIC SHOCK,
FIRE AND MECHANICAL HAZARDS ONLY
IN ACCORDANCE WITH UL 60601-1 . AND
CAN/CSA C22.2 NO. 601.1

This display has been tested and found to comply with IEC/UL/EN 60601-1 and IEC 60601-1-2 standards, and is certified to meet medical

standard UL 60601-1 and CAN/CSA C22.2 No 601.1(C US Mark) which are related to electrical shock, fire and mechanical hazards only as shown on right UL mark on this page.

The medical display, in addition to meeting medical requirements, has been tested and found to comply with the limits for Federal Communications Commission (FCC) Class B computing devices in a typically configured system since many medical offices are located in residential areas. It is the system integrator’s responsibility to test and ensure that the entire system complies with applicable electromagnetic compatibility (EMC) laws.

Barco NV has made great efforts to support the medical device industry, in particular, medical device manufacturers and medical device system integrators. We offer state-of-the-art color displays that are compliant with worldwide accepted medical device safety standards, and for the European market, CE-marked displays based on compliance with counsel directive 93/42/EEC—commonly referred to as the Medical Device Directive (MDD). The following summarizes our qualification of these displays as it relates to compliance with the MDD.

The European Medical Device Directive requires that the intended use of the device be defined. The intended use of these displays is “to display alphanumeric, graphic, and image data as inputted from any type of medical device.” These displays do not provide a measurement function in any way, and it is the device and systems manufacturer’s responsibility to verify its function in the integrated device or system.

The display was classified as required by the MDD according to Annex IX of the directive and the medical device (MEDDEV) guidance available at the time of classification. Because the display uses electrical energy and has no direct patient connections and—by itself—no medical utility, the display is classified according to Rule 12 as an MDD Class I device, component, or accessory. The MDD states that manufacturers of Class I medical devices or accessories shall satisfy the requirements in regard to design and manufacturing controls, that is, the applicable assessment route to be used for CE-marking under the MDD, and it shall carry the CE mark according to Annex XII of the directive, with no notified body annotation.

In the opinion of Barco NV registration required to put this device into commerce is the responsibility of the medical device/system manufacturer, and Barco supports this requirement by providing a European Commission (EC) declaration of conformity. If Barco supplies a display to an end user, rather than a device manufacturer, it is the end user's responsibility to ensure continued compliance with the MDD of the system in which the display is integrated.

The supplier will make available on request, circuit diagrams, component part lists, etc.

For vigilance reporting as required under Article 10 of the MDD, Barco NV will provide any information requested by competent authority to support any reported incident investigation by such an authority.

EU Declaration of Conformity for Medical Application

A Declaration of Conformity has been filed for this product. For additional copies of the Declaration of Conformity document, contact Barco NV

The MDRC series digital flat-panel display meets the essential health and safety requirements, is in conformity with, and the CE marking has been applied according to the relevant EU Directives listed below, using the relevant section of the following EU standards and other normative documents;

EU EMC Directive 89/336/EEC

EU Electromagnetic Compatibility Directive

EN 60601-1-2 (2001)	Collateral standard electromagnetic compatibility requirements
Medical Electrical Equipment	compatibility requirements
EN 55011 (Class B)	Limits and methods of measurements for radio interference characteristics of industrial, scientific, and medical equipment
IEC 61000-3-2	Harmonic emissions
IEC 61000-3-3	Voltage fluctuations/flicker emissions
IEC 61000-4-2	Electrostatic discharge requirements for industrial process measurement and control equipment
IEC 61000-4-3	Radiated electromagnetic field requirements for industrial process measurement and control equipment
IEC 61000-4-4	Electrically fast transients for industrial process measurement and control equipment
IEC 61000-4-5	Surge requirements
IEC 61000-4-11	Voltage variations/dips/interrupts

IEC 61000-4-6	Conducted immunity
IEC 61000-4-8	Magnetic field immunity
	Conformance to the Medical Device Directive 93/42/EEC
EN 60601-1 Medical Part 1	General requirements for safety Electrical Equipment.

U.S. FCC Compliance Statement

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

-
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technical for help.

CAUTION: Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Other countries

Japan VCCI level B

Korea KETI level B

PRC CCC level B

Taiwan BSMI level B

BARCO MID GENERAL WARRANTY TERMS AND CONDITIONS

Applicable from Jan 1st 2008

ARTICLE 1: PRODUCT WARRANTY

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

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

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

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

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

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

1.1

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

1.2

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

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

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

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

1.3

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

1.4

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

1.5

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

1.6

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

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

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

A. The Warranties shall apply only to the extent the Products or any parts thereof have

(i) been transported and stored at all times in the original packaging in the conditions as specified by Barco (such as covered and secure location, minimum and maximum temperature, maximum humidity, ...) or, in absence thereof, at least in conditions consistent with generally accepted practice for this type of products;

(ii) been handled at all times in accordance with Barco's instructions or, in absence thereof, at least with the care and caution consistent with generally accepted practice for this type of products;

(iii) been installed strictly in accordance with the instructions and directions given by Barco (if and to the extent the Products have not been installed by Barco or its authorized subcontractors);

(iv) not been subject to any unauthorized access, alteration, modification or repair or attempts thereto;

(v) been at all times "normally used" for the intended purpose and operated in strict accordance with the operating instructions set forth in the operating manual of the Product in question and shall not have been otherwise misused, abused, damaged. For the purpose hereof, "normally used" shall mean a regular, ordinary and routine usage of the Product in question as intended and/or recommended by Barco;

(vi) been maintained at all times in accordance with Barco's instructions or, in absence thereof, at least with intervals and in a manner consistent with generally accepted practice for this type of products;

B. The warranty described herein shall not include the following:

2.1

Any hardware or software item procured from a source other than Barco nv, MID or their official agent or distributor and integrated by Customer or a third party into Barco nv, MID supplied equipment.

2.2

Any host configuration not explicitly supported by Barco nv, MID.

2.3

All software installed on the system, whether they are acquired from Barco nv, MID or third party. An exception is made for software delivered by Barco nv, MID that would prove to be a cause for the

mal functioning of the hardware covered under this Agreement.

2.4

Normal wear and tear, use under circumstances exceeding specifications, such as use in dusty environment or under excessive temperature conditions, abuse, unauthorised repair or alternation, lack of proper configuration or maintenance, damaged or modified or removed serial number, cosmetic refurbishment.

2.5

Repair or replacement of consumables¹ or specific parts that by definition are subject to wear and tear, including but not limited to:

- a. CRT's, LCD panels
- b. Backlights in diagnostic LCD displays, when the backlight run time² is beyond the Guaranteed Backlight Lifetime³ of that model, when used at the Factory Calibrated Luminance⁴

Eg1.

- A display is used at 8 hours/day; ie. +/-2.920hours/year
- The display system is covered with a warranty period of 5 year
- The Guaranteed Backlight Lifetime of that model is 17.000hours.
- The Factory Calibrated Luminance cannot be achieved anymore after 4 year, thus corresponding to +/-11.680hours
- Result: the backlight replacement is performed under warranty

Eg2.

- A display is used at 24 hours/day; ie. 8.760hours/year
- The display system is covered with a warranty program of 5 year
- The Guaranteed Backlight Lifetime of that model is 17.000hours.
- The Factory Calibrated Luminance cannot be achieved anymore after 2.5years, thus corresponding to +/-21.900hours
- Result: the backlight replacement does not make part of the warranty coverage.

(1): 'Consumable' is a part that can be replaced by the user

(2): 'Backlight run time' is the total time that an image (including use of a screen saver) has been applied to the screen; this value can be consulted via the OSD buttons (On Screen Display).

(3): 'Guaranteed Backlight Lifetime' is the number of backlight hours during which a predefined luminance value, ie. the Factory Calibrated Luminance, will be provided by a specific diagnostic display model. This figure is printed on the Warranty certificate of each display or can be requested at your local Barco office.

(4): 'Factory Calibrated Luminance': is the typical luminance value that a specific diagnostic display model is calibrated at during the production process. This figure is printed on the Warranty certificate of each display or can be requested at your local Barco office.

c. Lamps, optical components in projectors

d. Replacement because of:

i. image retention as a result of:

- not correctly using screen saver and/or Display Power Management System (DPMS) as explained in the user manual
- prolonged operation of the display with a static image on the same screen area

ii . a number of missing pixels that is lower than the total allowable number as mentioned in the product specifications.

iii. difference in color temperature that is lower than the total allowable difference as mentioned in the product specifications

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

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

2.6

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

2.7

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

2.8

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

2.9

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

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

ARTICLE 3: OBLIGATIONS OF THE CUSTOMER

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

3.1

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

3.2

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

3.3

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

ARTICLE 4: REMEDIES UNDER WARRANTY

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

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

version of the software.

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

ARTICLE 5: DISCLAIMER OF WARRANTIES

BARCO NV, MID DISCLAIMS ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

ARTICLE 6: LIMITATION OF LIABILITY

BARCO NV, MID SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO CUSTOMER OR ANY THIRD PARTY FOR DIRECT, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES, SUCH AS BUT NOT LIMITED TO, DAMAGE TO OR LOSS OF TANGIBLE OR INTANGIBLE PROPERTY OR EQUIPMENT, LOSS OF PROFITS OR REVENUES, COST OF CAPITAL, COST OF PURCHASE OF REPLACEMENT GOODS, OR CLAIMS OF CUSTOMERS OF USER FOR SERVICE INTERRUPTIONS. THE LIABILITY OF BARCO NV, MID FOR MANUFACTURING, SALE, DELIVERY, RESALE, INSTALLATION, OPERATION OR SUITABILITY FOR USE OF ANY PRODUCTS OR SERVICES COVERED BY OR FURNISHED UNDER THIS WARRANTY CONDITION, WHETHER ARISING OUT OF CONTRACT, NEGLIGENCE, STRICT TORT, WARRANTY OR OTHERWISE, SHALL BE LIMITED TO THE REPAIR OR REPLACEMENT OF THE PRODUCT OR ANY PART THEREOF WHICH SHALL BE AT CUSTOMER'S SOLE OPTION AND COST. BARCO'S LIABILITY SHALL NOT EXCEED THE PRICE OF THE ITEM OR ITEMS OF GOODS OR SERVICES UPON WHICH SUCH LIABILITY IS BASED.

ARTICLE 7: FORCE MAJEURE

Either party shall be released from performance of its obligations under this agreement to the extent, and for so long as, the performance of this agreement is impeded by reason of force majeure. For the purposes of this clause the expression "force majeure" means, but shall not be limited to, industrial dispute, fire, mobilisation, requisition, embargo, currency transfer prohibitions, insurrection, lack of means of transport, restrictions of the use of energy, and generally any circumstances which are beyond the control of the parties and hinder performance by one party of his obligations.

ARTICLE 8: GENERAL

8.1

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

8.2

Barco nv, MID shall not be responsible for machine failure and/or its failure to render service or maintenance due to causes beyond its reasonable control.

V1.02

August 2008