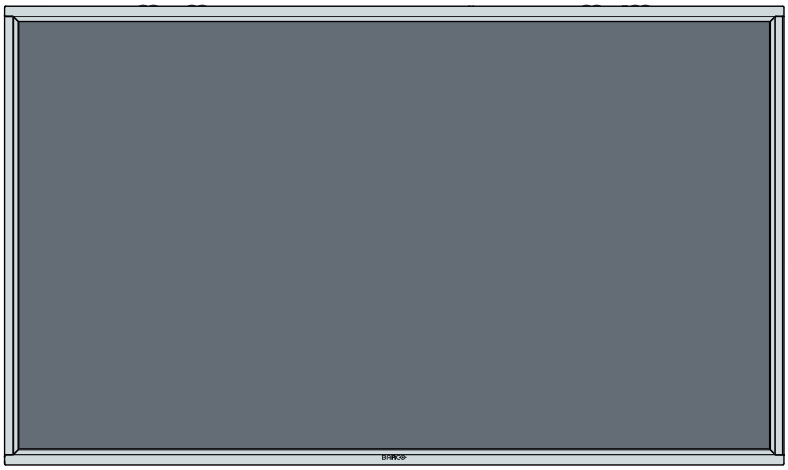
MDSC-8358



User Guide

MDSC-8358 RL
MDSC-8358 RLG

ENABLING BRIGHT OUTCOMES

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

Registered office: Barco NV
President Kennedypark 35, 8500 Kortrijk, Belgium
www.barco.com/en/support
www.barco.com

Table of contents

1 Welcome!

1.1 About the product

Overview

The Barco Medical Grade MDSC-8358 series are color high resolution liquid crystal displays especially designed for medical imaging applications.

The MDSC-8358 is a 58” Color Flat Panel Display, intended to replace typical multi-monitor arrays in medical applications, whenever a large display is needed in addition to high resolution, while offering the same good rendering in greyscale medical imaging thanks to the DICOM conformance. It has been designed to meet the specific need of typical monitor set-up in examination rooms, where monochrome and color pictures have to be displayed and freely positioned over the display, when processed by a suitable graphic engine.

The MDSC-8358 shall provide 8 MP screen resolution, high luminance and accept digital inputs, according to the DVI standard, with the native panel resolution of 3840 x 2160.

The MDSC-8358 can operate as a decoder or a Dual Link monitor.

Other important features like the very large viewing angle, the high brightness level, the backlight stabilization, the grayscale correction and the compliance with the DICOM standards, will help the users avoiding misinterpretation in medical diagnosis.

The MDSC-8358 is also suitable for viewing a large range of contents, as color temperature and color gamma adjustments are provided. The display can also be controlled by remote, through a serial or Ethernet communication link. The MDSC-8358 shall be supplied with VESA 400 mounting interfaces.

The MDSC-8358 is available in the following versions:

- MDSC-8358 RL: 2 power supplies, no glass, no DVI Splitter
- MDSC-8358 RLG: 2 power supplies, with glass, no DVI Splitter

1.2 What's in the box

Overview

- 1x MDSC-8358 display
- 2x hoist brackets
- 8x screws for the hoist bracket
- 8x o-rings for the screws of the hoist bracket, to be used in the display with the protection glass
- 8x plastic cap, to be used in the display without the protection glass
- 16x VESA mounting screws
- 16x o-rings for the VESA mounting screws
- 2x DVI dual link video cables
- 1x printed User Guide (English)
- 1x documentation disc, containing all translations of the User Guide
- Mains cables

The user guides are also available on *www.barco.com/support*

Keep your original packaging. It is designed for this display and is the ideal protection during transport and storage.

1.3 About this user guide

Overview

This manual provides support to the user during the installation, set up and utilization of the MDSC-8358 display. Depending on the specific version that has been purchased, some of the features and options described in this document may not apply to the display in user’s hands.

Warnings, cautions, notes and tips

There are four levels of precautionary or advisory statements that may be used in this user guide. In descending order of importance, they are:

WARNING: Describes hazards or dangers that might result in personal injury or death.

CAUTION: Describes hazards that could damage the product.

Gives additional information about the described subject.

Gives extra advice about the described subject.

Parts, controls and connectors

2

2.1 Front view

Overview

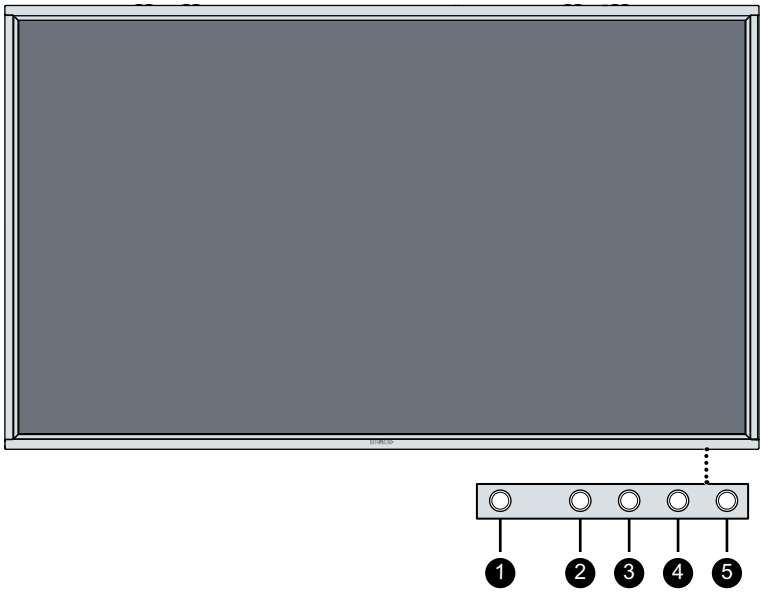


Image 2-1

1. Power On/Off
2. Enter key
3. Down key
4. Up key
5. Esc key

A 5-key keypad is located on the bottom of the display.

2.2 Rear view

Overview

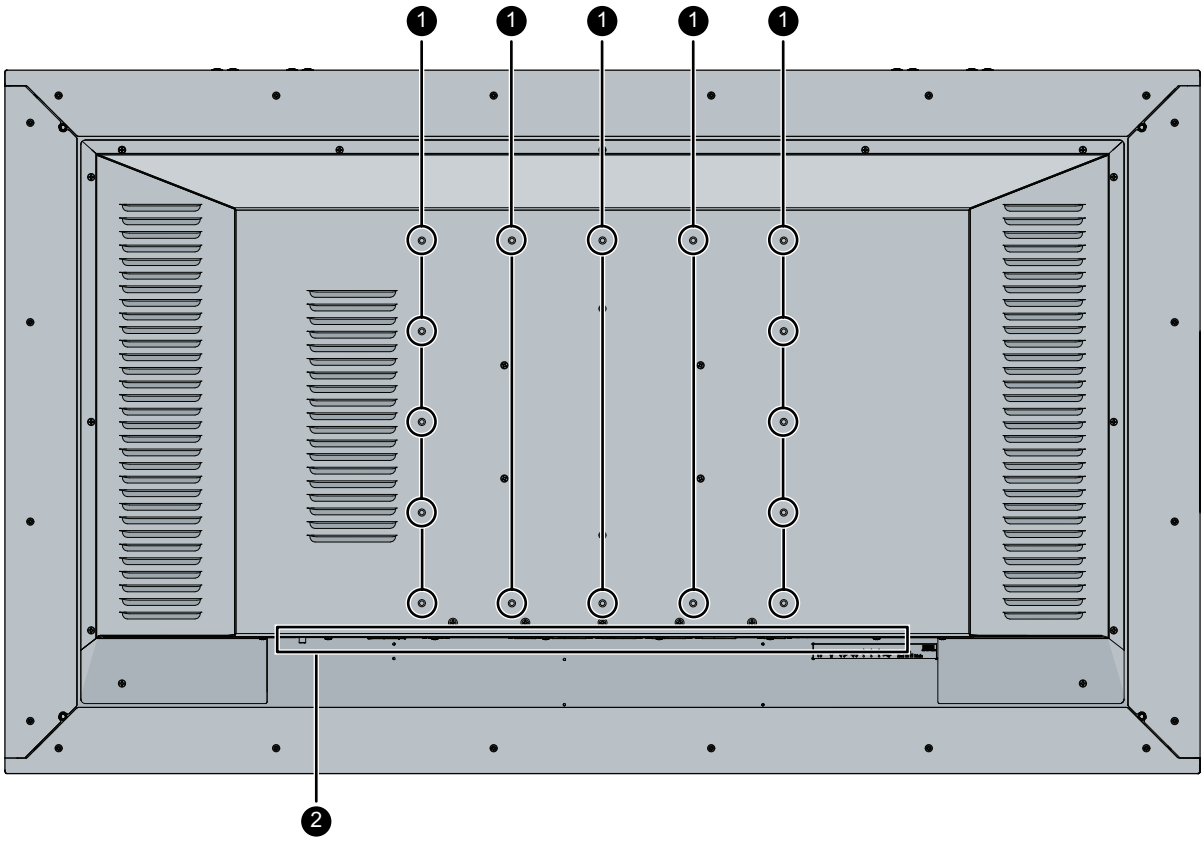


Image 2-2

1. VESA mount screw holes
2. Connector location

2.3 Connector view

Connectors

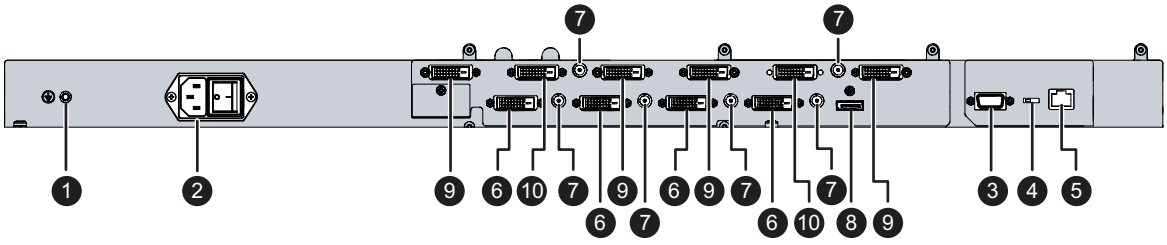


Image 2-3

1. Additional protective earth pin
2. Input power connector
3. RS-232 connector
4. Switch (between RS-232 & Ethernet)
5. Ethernet connector for monitor remote control
6. DVI-D single link / dual link connector (*)
7. +5V out connector
8. DisplayPort connector
9. DVI splitter output connector

10. DVI splitter input connector

(*) 4 DVI connectors, numbered from 1 to 4 from right to left; all connectors must be installed when in SL mode; DVIs 1 & 3 or 2 & 4 must be installed when in DL mode.

The 5V connections are available with the specific purpose to power an external DVI extender. No other uses of the +5V are allowed.

Every +5Vout connector is connected with the nearest jack, but every pair is independent (500mA max).

If a DVI pair is disabled, then there is no power on the connector and the jack, connected to the DVI connector.

2.4 Connector pin assignments

2.4.1 DVI–D single link / dual link connector

Overview

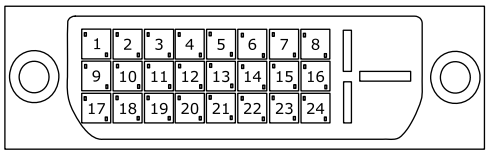


Image 2-4

Pin	Function
1	D2_Rx- (T.M.D.S.)
2	D2_Rx+ (T.M.D.S.)
3	GND (data 2 shield)
4	D4_RX- (T.M.D.S.)
5	D4_RX+ (T.M.D.S.)
6	SCL (for DDC)
7	SDA (for DDC)
8	N.C.
9	D1_Rx- (T.M.D.S.)
10	D1_Rx+ (T.M.D.S.)
11	GND (data 1 shield)
12	D3_RX- (T.M.D.S.)
13	D3_RX+ (T.M.D.S)
14	+5V input (form the video source system)
15	GND
16	+5V Power for DVI extenders
17	D0_Rx- (T.M.D.S.)
18	D0_Rx+ (T.M.D.S.)
19	GND (data 0 shield)
20	D5_RX- (T.M.D.S.)
21	D5_RX+ (T.M.D.S.)
22	GND (clock shield)
23	CK_Rx+ (T.M.D.S.)
24	CK_Rx- (T.M.D.S.)

2.4.2 RS232 connector

Overview

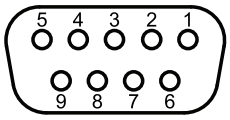


Image 2-5

Pin	Function
1	Not connected
2	Rx (driven by host)
3	Tx (driven by display)
4	Not connected
5	Ground
6	Not connected
7	Not connected
8	Not connected
9	Not connected

3 Display installation

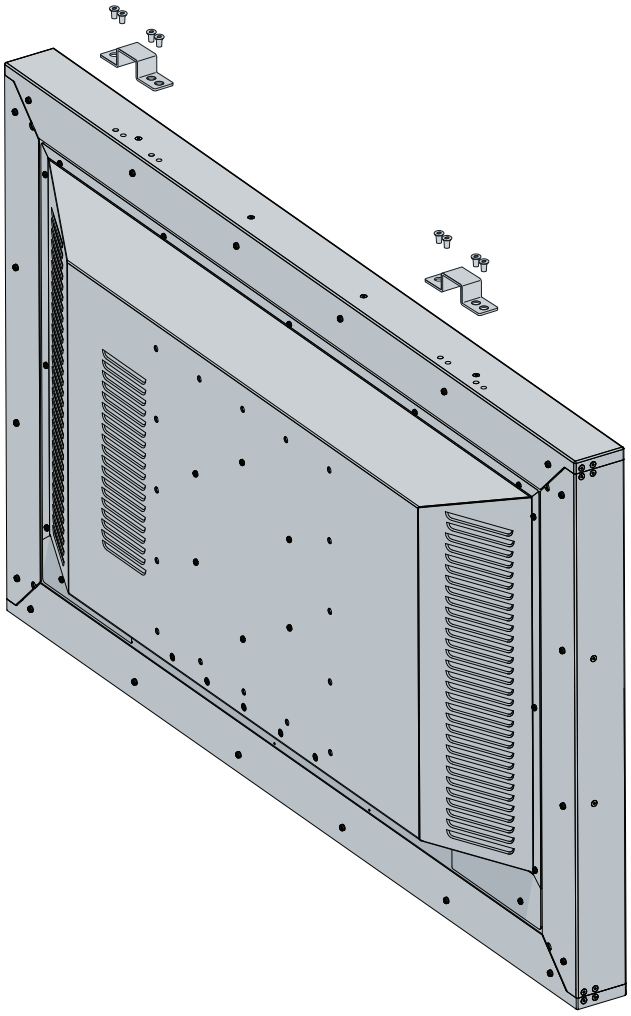
3.1 Hoist bracket installation

WARNING: Two brackets are provided in the accessory kit to be used for service personal only.

WARNING: The hoist brackets are intended to be used during the monitor's installation phase only.

To mount and use the hoist bracket to the display

1. Mount the brackets to the display using the screws provided in the accessory kit. Verify that the screwing operation is well done using a torque value of 4N/m.



2. Move your display as shown on the picture below.

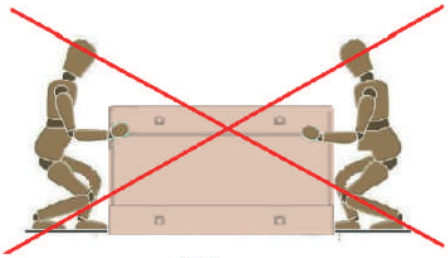


Fig. h

Fig. g

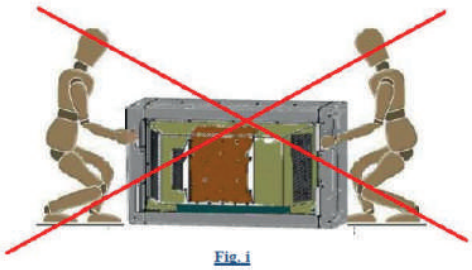


Fig. i

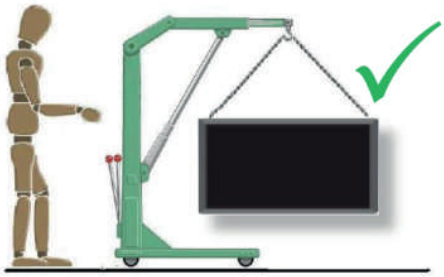
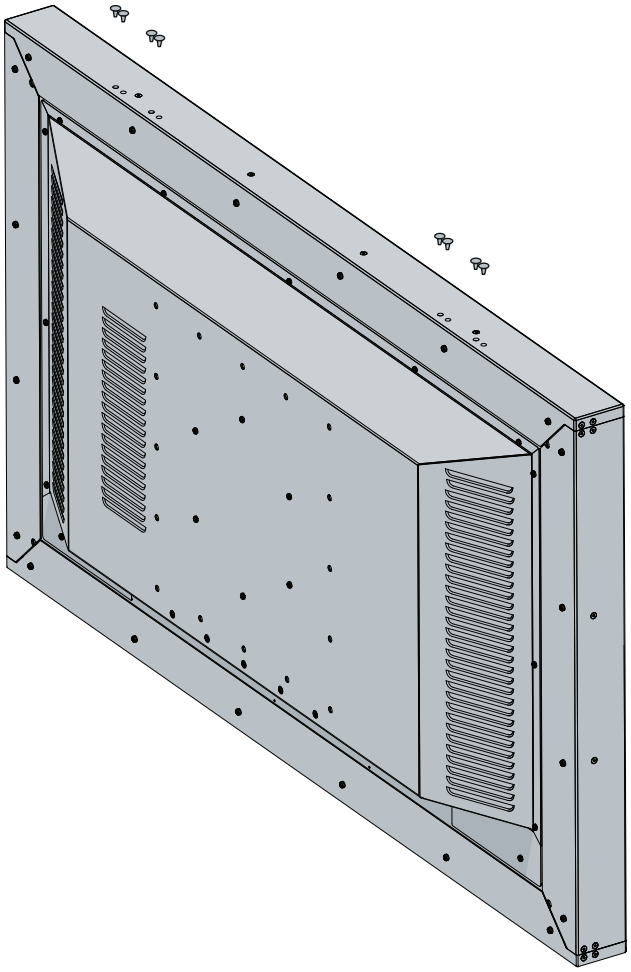


Fig. j

3. After transportation, you can remove the brackets and the 8 mounting holes can be closed, either with 8 plastic caps (version without the protection glass) or using the same screws adding the respective o-ring (version with the protection glass).



3.2 VESA mount installation

Overview

The display supports mounting arm & stands according to the VESA 400 mm standard.

CAUTION: Use an arm that is in compliance with VESA requirements.

CAUTION: The monitor VESA interface has been designed for a safety factor 6 (to support 6 times the monitor weight). In the medical system, use an arm with suitable safety factor (IEC60601-1).

CAUTION: The IP21 protection level (for version with protective glass) requires the all the VESA mount holes (on the back side of the display) are closed by the 16 screws (M6) and the 16 o-rings provided in the installation KIT

CAUTION: The arm or stand is not provided. The product stability must be verified in the specific usage (according to IEC 60601-1 Clause 9.4.2.2)

To mount the display to an arm stand

1. Attach the mounting arm or the stand **firmly** to the display using minimum 6 screws (M6) pointed out by the red arrows in the image below. The screws can be inserted maximum 11 mm and minimum 8 mm.

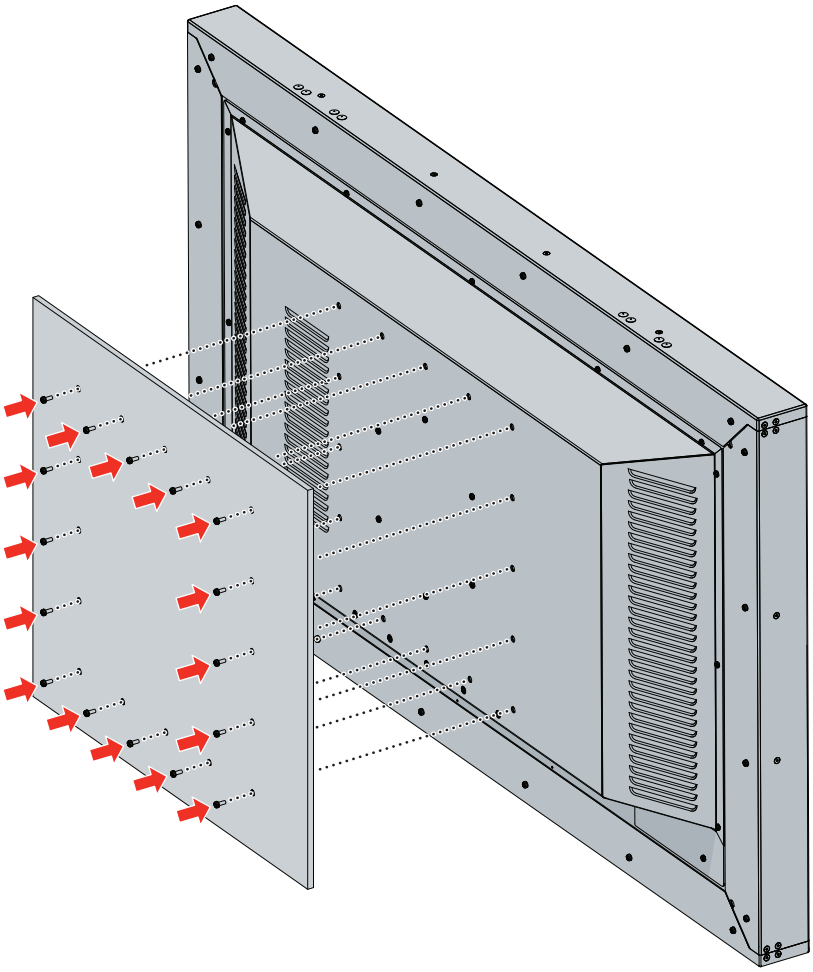


Image 3-1

3.3 Video input connection

WARNING: When the display is assembled in the medical system, take care of the anchorage of all cables, to avoid unwanted detachment.

To connect the video inputs

1. Connect the available display(s) to the corresponding video input(s) using the appropriate video cable(s).

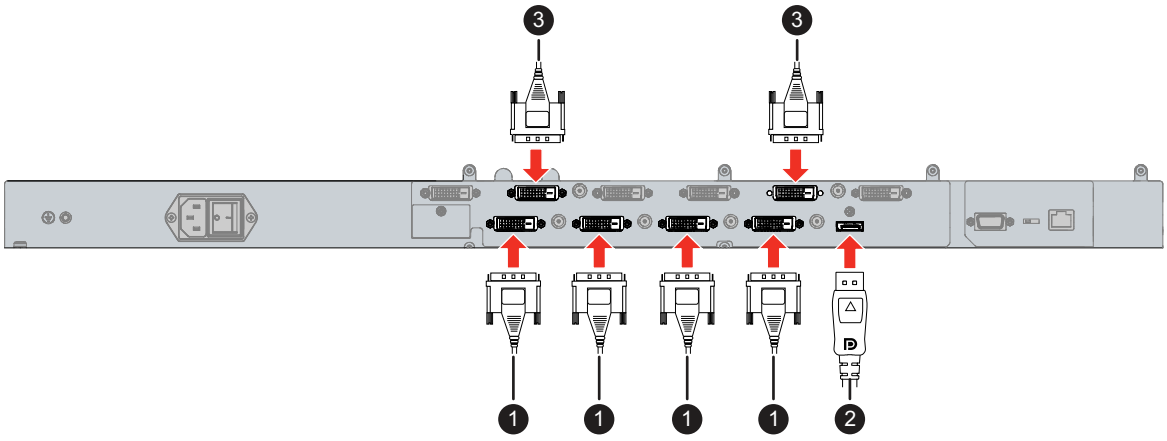


Image 3-2

Overview possible inputs

1. DVI
2. DisplayPort
3. DVI splitter

3.4 Video output connection

WARNING: When the display is assembled in the medical system, take care of the anchorage of all cables, to avoid unwanted detachment.

To connect the video outputs

1. Connect the available display(s) to the corresponding video output(s) using the appropriate video cable(s).

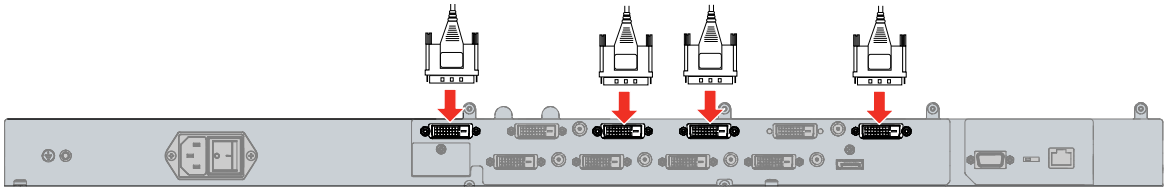


Image 3-3

Overview possible outputs

1. DVI splitter

The DVI single link connection cables 0.5m included in the box can be used to connect two outputs of the video splitter to two inputs of the monitor.

3.5 Power supply connection

To connect the power supply

1. Connect the power cord set into the AC power adapter
2. Plug the power connector of the adapter into the power port of the display.

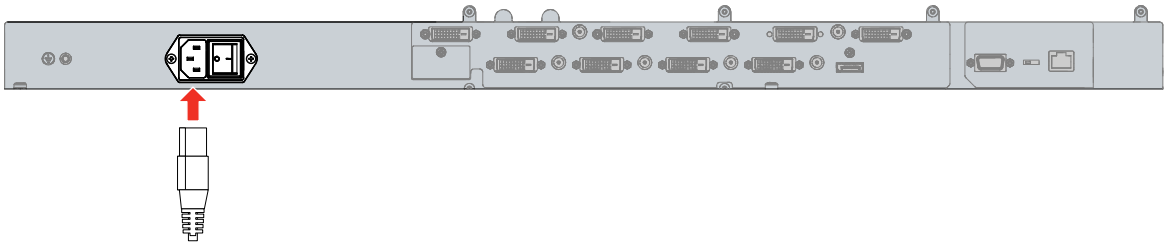


Image 3-4

3. For additional grounding, earth the display by connecting the protective earth pin to a grounded outlet by means of a wire with a minimum AWG18 size (according to national requirements regarding the maximum admitted cable length). Use the included M4 screw to attach the wire to the protective earth pin.

4 Daily operation

4.1 On/Off switching

About power management:

The display has 2 keys:

- Main power switch (to switch of all power to the display).
- Push button to enter/exit the Power Down Mode.

The display can go in three different statuses:

- On Line: The display is in this status when the video input is good and an image is displayed. In this status all circuits are powered and the power consumption depends from the backlight level.
- Standby: The display is in this status when the video input is gone, the backlight goes off. All circuits remain powered but the power consumption is low. This status needs to be enabled in the OSD menu (see “Time-out OSD”, page 29).
- Power Down: The display can be brought into power down mode by pushing the power on/off key. When the monitor is in Power Down, all circuits are shut down, backlight is off and the power consumption is low. Only the CPU remains active (to detect when the display needs to come out of this mode by pushing the power on/off key).

To change the status of your display:

1. Activate the power through the switch located on the back side of the display.
2. While your display is off, press the Power On/Off key once for 3 seconds.

   The display goes into On Line status. If no valid input is detected, the display will go into standby mode.

To switch on/off your display:

1. While your display is on, switch off the power with the main power switch.

   or

   while your display is off, switch on the power with the main power switch.

4.2 Power led status

About the power led status

The behavior of the power led shows the status of the unit:

- Led is GREEN: Correct video timing and calibration.
- Led is GREEN (blinking): Boot phase at switching on (approx 5 or 15 seconds if splash screen is enabled).
- Led is ORANGE: Out of calibration.
- Led is ORANGE: (blinking): Incorrect video timing (at least one of four inputs)
- Led is RED: Stand By
- Led is RED (blinking): Diagnostic error (PWS, Panel Temperatures) In this case of warning please contact the service assistance.

4.3 Brightness adjustment

To quickly adjust the brightness

1. While no OSD Menu is on the screen, press the Up/Down keys to adjust the brightness as desired. The brightness will be displayed in a window in the upper-left corner.

by pressing the Up/Down keys simultaneously, the default brightness will be restored (400 cd/m² in DICOM modes and 57% in COLOR modes).

brightness ranges from 40 cd/m² to 600 cd/m² in DICOM modes and from 5% (about 90 cd/m²) to 100% (about 700 cd/m²) in COLOR modes.

4.4 OSD menu activation

To activate the OSD menu

1. If not already done so, switch on the display.
2. Touch the Enter key.

   As a result, the OSD main menu comes up. If no further actions are taken within the following 30 seconds, the OSD menu will disappear again.

The time-out of the OSD menu automatic close function can be adjusted or disabled in the OSD menu (*OSD Time-out*).

The OSD menu position can be adjusted in the OSD menu (*OSD Hor. Pos.* and *OSD Vert. Pos.*).

The OSD menu can be locked for access, see “OSD menu lock”, page 29. To unlock the OSD menu by entering the password, see “OSD menu unlocking”, page 23.

4.5 OSD menu navigation

To navigate through the OSD menu

- Press the enter key to open the OSD menu.
- Use the up/down key to scroll to the desired menu page.
- When the desired Menu page is highlighted, press the enter key to select the top menu item that will be highlighted.
- Use the up/down key to move to other Menu Items, then press the enter key to select it.
- If the selected menu item is controlled by a slider use the up/down keys to adjust the item value, then press the enter key to confirm.
- If the selected menu item is a multiple choices menu use the up/down keys to select the desired option then press the enter key to confirm.
- Press the exit key to exit from the Menu page.

4.6 OSD menu unlocking

About the OSD menu lock

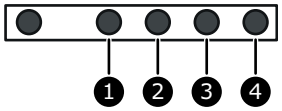
The OSD menu can be locked for access, see “OSD menu lock”, page 29. If the OSD menu lock is enabled, entering the OSD menu will display a ' Request for password' window.

To unlock the OSD menu

1. If not already done so, switch on the display.
2. Touch the Enter key.

   As a result, the dialog box as shown below comes up if the OSD menu is password protected, see “OSD menu lock”, page 29.

3. Enter the password by using the four right keys of the keyboard, you can label the four keys as 1, 2, 3 and 4 (from left to right). So, if i.e. keycode is '4444', it means you have to press four time the Esc key.



If the inserted password is not correct, the following message appears on the screen.

WRONG PASSWORD!

The default password is 1-3-3-4.

5 Advanced operation

5.1 Product info

About product info

The available information items for your display are:

- HWREL: Hardware release
- FWREL: Firmware release
- S/N: Serial number

To view the product info

1. Bring up the OSD main menu.
2. Navigate to the *Product info* menu.
3. Enter the *Product info* submenu.

5.2 Status info

About status info

The available information items for your display are:

- OUT MODE
- WORK HOURS
- BACKLIGHT HOURS
- SETUP: Factory or User

To view the status info

1. Bring up the OSD main menu.
2. Navigate to the *Status info* menu.
3. Enter the *Status info* submenu.

5.3 Brightness info

About brightness info

The available information items for your display are:

- MIN: Minimum brightness
- RECOM: Recommended brightness
- MAX: Maximum brightness
- CURRENT: Currently set brightness

To view the brightness info

1. Bring up the OSD main menu.
2. Navigate to the *Brightness info* menu.
3. Enter the *Brightness info* submenu.

5.4 Transfer function

About transfer function

There are different transfer function possibilities:

- Native: the transfer function is transparent (no correction is applied).
- DICOM (Factory): The output curve follows the DICOM transfer function and is automatically adapted to the current brightness.
- Gamma (Factory): The output curve follows the gamma transfer function; the value can be set between 1 and 4. The default value is 2.42.
- User LUT: The monitor output is corrected according to a predefined user LUT. which can be downloaded inside the monitor.

To select the transfer function

1. Bring up the OSD main manu.
2. Navigate to the *Transfer* menu.
3. Enter the *Transfer* submenu.
4. Select one of the available functions and confirm.

5.5 Color temperature settings

About color temperature settings

The current color temperature can be set from 2000°K to 12000°K in steps of 100°K.

To change the color temperature settings:

1. Bring up the OSD main menu.
2. Navigate to the *Color temp* menu.
3. Enter the *Color temp* submenu.
4. Change the Color Temp as desired with the Up/Down keys and confirm.

5.6 Color gamma settings

About color gamma setting

The current color gamma can be adjusted from 1 to 4 in steps of 0.1. This can be useful i.e. to adjust the gamma image depending on the type of content displayed on the monitor.

To change the color gamma settings:

1. Bring up the OSD main menu.
2. Navigate to the *Gamma* menu.
3. Enter the *Gamma* submenu.
4. Change the Gamma comp as desired with the Up/Down keys and confirm.

5.7 Input channel selection

5.7.1 Input channel menu

About input channel menu

Possibility to select the following inputs:

- DISPLAYPORT
- DISPLAYPORT FAILOVER
- DVI 1
- DVI 2
- DVI 3
- DVI 4
- 4 DVI Single Link
- 2 DVI Dual Link

To select an input

1. Bring up the OSD main menu.
2. Navigate to the *Input* menu.
3. Enter the *Input* submenu.
4. Select one of the available inputs and confirm.

5.7.2 Failover input

About failover input

This function allows the display to automatically switch to a failover (backup) source in case the DisplayPort input main source is missing. The display will automatically restore the main source once the signal is back.

The available failover inputs for your display are:

- DVI1
- DVI3

The failover input will be activated within about 1 second after the main input (DisplayPort) has been lost.

During the transition from main to failover input and vice versa, a text message is visible to inform the user.

The main source can be changed while the failover input remains unchanged. During the selection and synchronization of a new main source the failover function is temporary (7 sec) disabled.

To select the failover input

1. Bring up the OSD main menu.
2. Navigate to the *Input* menu.
3. Select one of the available failover inputs and confirm.

5.8 OSD setting menu

5.8.1 Time-out OSD

About time-out OSD

When the OSD menu is displayed and no key is pressed, it will disappear after the time set in this menu. It is possible to choose among the following values: 10”, 20”, 30”, 45”, 60”, 90” or disable. When the time-out is set to disable, the OSD menu won't disappear until the user exit the OSD menu pressing the Esc key.

WARNING: Image sticking is possible in case time-out disable is selected.

To adjust the OSD time-out:

1. Bring up the OSD main menu.
2. Navigate to the *OSD* menu.
3. Enter the *OSD* submenu.
4. Navigate to the *TIME-OUT* submenu.
5. Enter the *TIME-OUT* submenu.
6. Change the time-out of the OSD as desired with the Up/Down keys and confirm.

5.8.2 OSD menu lock

About OSD menu lock

The OSD menu lock allows to password protect the OSD at different menu levels.

The possible options are:

- OFF: Key lock is disabled, no password is required at any level.
- SERVICE: Password is required entering at Service sub menu level.
- FULL: Password is required entering at Main menu level.

If the OSD menu lock is enabled, entering the OSD menu will display a ' Request for password' window. For details on how to unlock the OSD, see“OSD menu unlocking”, page 23.

To adjust the OSD menu lock:

1. Bring up the OSD main menu.
2. Navigate to the *OSD* menu.
3. Enter the *OSD* submenu.
4. Navigate to the *Key Lock* submenu.
5. Enter the *Key Lock* submenu.
6. Change the status of OSD menu lock as desired and confirm.

5.9 Setup menu

About setup menu

The available information items for your display are:

- FACTORY: Factory settings
- USER: User settings

To select the setup:

1. Bring up the OSD main menu.
2. Navigate to the *Setup* menu.
3. Enter the *Setup* submenu.
4. Select one of the available profiles and confirm.

Important information

6

6.1 Safety information

General recommendations

Read the safety and operating instructions before operating the device.

Retain safety and operating instructions for future reference.

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

Follow all instructions for operation and use.

Electrical Shock or Fire Hazard

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

No serviceable parts inside. Refer servicing to qualified personnel.

Do not expose this apparatus to rain or moisture.

Modifications to the unit

Do not modify this equipment without authorization of the manufacturer.

Preventive maintenance

Periodic maintenance inspections are essential to keep the monitor in optimum condition and ensure safe operation.

With the monitor disconnected from the mains, perform the following periodic check:

- Check the integrity of the power cord and inspect its routing, so that it is not under the risk of being punched or cut.
- Check the integrity of the protective earth connection.
- Clean the area around the power plug. Dust and liquids may result in fire.
- Clean the ventilation slot of the monitor. Dust can obstruct the air flow and cause temperature increase of the electronics.

General recommendations:

- Keep the monitor clean to prolong its operational lifetime.
- LCD panel performance may deteriorate in the long term. Periodically check that it is correctly operating.
- Periodically check the tightness of the VESA mount screws. If not sufficiently tight, the monitor may detach from the arm, which may result in injury or equipment damage.
- In case the failover functionality is used, periodically check the OSD menu settings to verify the correct assignment of main and secondary input (backup) and perform a test to verify the correct activation of the backup input.

Type of protection (Electrical)

Equipment with internal power supply: Class I equipment

Degree of safety (flammable anesthetic mixture):

- Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.
- The equipment shall not be operable when the air oxygen content is above 25%.

Non-patient care equipment

- Equipment primarily for use in a health care facility that is intended for use where contact with a patient is unlikely (no applied part).
- The equipment shall not be used with life support equipment.
- The user should not touch the equipment, nor its signal input ports (SIP)/signal output ports (SOP) and the patient at the same time.

Mission critical applications

We strongly recommend there is a replacement monitor immediately available in mission critical applications.

Use of Electrical Surgical Knives

Provide as much distance as possible between the electrosurgical generator and other electronic equipment (such as monitors). An activated electrosurgical generator may cause interference with them. The interference can activate the OSD menu of the display and as such disrupt the functionality of the display.

Power connection – Equipment with internal power supply

- This equipment must be earthed.
- Power requirements: The equipment must be powered by the AC mains voltage.
- The equipment should be installed near an easily accessible outlet.
- The equipment is intended for continuous operation.

Transient over-voltage

To fully disengage the power to the device, please disconnect the power cord from the AC inlet.

Connections

- Any external connection with other peripherals must follow the requirements of clause 16 of IEC60601-1 3rd. Ed. or Table BBB.201 of IEC 60601-1-1 for the medical electrical systems.
- To maintain compliance with EMC Regulation, use only shielded interface cables for the connection to peripheral devices.

Power cords:

- Utilize a UL-listed detachable power cord, 3-wire, type SJ or equivalent, 18 AWG min., rated 250 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.
- Use a power cord that matches the voltage of the power outlet, which has been approved and complies with the safety standard of your particular country.

Grounding reliability

Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle.

Water and moisture

The equipment is IP20 compliant (IP21 for versions with protective glass).

Moisture condensation

- Do not use monitor under rapid temperature and humidity change condition or avoid cold air from air-conditioning outlet directly.
- Moisture may condense on the surface or inside of the unit, or create a mist residue inside the protection plate, this is not a malfunction of the product itself, although it may cause damage to the monitor.
- If condensation happens, let the monitor stand unplugged until there is no condensation.

Ventilation

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

Installation

- Place the equipment on a flat, solid and stable surface that can support the weight of at least 3 devices. If you use an unstable cart or stand, the equipment may fall, causing serious injury to a child or adult, and serious damage to the equipment.
- Do not allow to climb or rest on the equipment.
- The monitor has been designed to be used in landscape position with a tilt of -10° (backward) and +10° (forward)
- When adjusting the angle of the equipment, move it slowly so as to prevent the equipment from moving or slipping off from its stand or arm.
- When the equipment is attached to an arm, do not use the equipment as a handle or grip in order to move the equipment. Please refer to the instruction manual of the arm for instructions on how to move the arm with the equipment.
- Provide full attention to safety during installation, periodic maintenance and examination of this equipment.
- Sufficient expertise is required for installing this equipment, especially to determine the strength of the wall for withstanding the display's weight. Be sure to entrust the attachment of this equipment to the wall to licensed contractors of Barco and pay adequate attention to safety during the installation and usage.
- All devices and complete setup must be tested and validated before taking into operation.
- At end user application level it is necessary to foresee a backup unit in case the video falls away.
- Barco is not liable for any damage or injury caused by mishandling or improper installation.

Malfunctions

Disconnect the equipment’s power cord from the AC inlet and refer servicing to qualified service technicians under the following conditions:

- If the power cord or plug is damaged or frayed.
- If liquid has been spilled into the equipment.
- If the equipment has been exposed to rain or water.
- If the equipment does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
- If the equipment has been dropped or the cabinet has been damaged.
- If the product exhibits a distinct change in performance, indicating a need for service.

General warnings

- The device has no means to be incorporated in an IT-network in the clinical environment.
- The enclosure has to be checked upon collision damage, refer to qualified service personnel.
- The protective screen (if present) is made of tested high-resistance glass. Nonetheless there is the possibility that it may crack if subject to strong impacts. Evaluate and prevent the risk of possible breakages of the protective screen by correctly handling and positioning the monitor in the operating room.
- The monitor is intended for indoor use
- The monitor is not intended to be sterilized
- The monitor has not applied parts, but the front side of the LCD panel and the plastic enclosure have been treated as applied part because considered accidentally touchable by the patient for a time <1 minute.

National Scandinavian Deviations for CL. 1.7.2

Finland: "Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"

Norway: "Apparatet må tilkoples jordet stikkontakt"

Sweden: "Apparaten skall anslutas till jordat uttag"

6.2 Environmental information

Disposal Information

Waste Electrical and Electronic Equipment

This symbol on the product indicates that, under the European Directive 2012/19/EU governing waste from electrical and electronic equipment, this product must not be disposed of with other municipal waste. Please dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

For more information about recycling of this product, please contact your local city office or your municipal waste disposal service.

For details, please visit the Barco website at: *http://www.barco.com/AboutBarco/weee*

Turkey RoHS compliance

Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur.

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

中国大陆 RoHS (Chinese Mainland RoHS)

根据中国大陆《电器电子产品有害物质限制使用管理办法》（也称为中国大陆RoHS），以下部分列出了Barco产品中可能包含的有毒和/或有害物质的名称和含量。中国大陆RoHS指令包含在中国信息产业部MCV标准："电子信息产品中有毒物质的限量要求"中。

According to the "Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products " (Also called RoHS of Chinese Mainland), the table below lists the names and contents of toxic and/or hazardous substances that Barco's product may contain. The RoHS of Chinese Mainland is included in the MCV standard of the Ministry of Information Industry of China, in the section "Limit Requirements of toxic substances in Electronic Information Products".

零件项目(名称) Component name	有毒有害物质或元素 Hazardous substances and elements					
	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr6+	多溴联苯 PBB	多溴二苯醚 PBDE
印制电路配件 Printed Circuit Assemblies	X	O	O	O	O	O
液晶面板 LCD panel	X	O	O	O	O	O
外接电(线)缆 External Cables	X	O	O	O	O	O
内部线路 Internal wiring	X	O	O	O	O	O
金属外壳 Metal enclosure	O	O	O	O	O	O
塑胶外壳 Plastic enclosure	O	O	O	O	O	O
散热片(器) Heatsinks	O	O	O	O	O	O
风扇 Fan	O	O	O	O	O	O
电源供应器 Power Supply Unit	X	O	O	O	O	O
文件说明书 Paper Manuals	O	O	O	O	O	O

零件项目(名称) Component name	有毒有害物质或元素 Hazardous substances and elements					
	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr6+	多溴联苯 PBB	多溴二苯醚 PBDE
光盘说明书 CD manual	O	O	O	O	O	O

本表格依据SJ/T 11364的规定编制

This table is prepared in accordance with the provisions of SJ/T 11364.

o: 表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T 26572 标准规定的限量要求以下.

o: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in GB/T 26572.

x: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 标准规定的限量要求.

x: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in GB/T 26572.

在中国大陆销售的相应电子信息产品（EIP）都必须遵照中国大陆《电子电气产品有害物质限制使用标识要求》标准贴上环保使用期限（EFUP）标签。Barco产品所采用的EFUP标签（请参阅实例，徽标内部的编号使用于指定产品）基于中国大陆的《电子信息产品环保使用期限通则》标准。

All Electronic Information Products (EIP) that are sold within Chinese Mainland must comply with the “Marking for the restriction of the use of hazardous substances in electrical and electronic product” of Chinese Mainland, marked with the Environmental Friendly Use Period (EFUP) logo. The number inside the EFUP logo that Barco uses (please refer to the photo) is based on the “General guidelines of environment-friendly use period of electronic information products” of Chinese Mainland.

中国RoHS自我声明符合性标志 / China RoHS – SDoC mark

本产品符合《电器电子产品有害物质限制使用管理办法》和《电器电子产品有害物质限制使用达标管理目录》的要求。

This product meets the requirements of the “Management Rule on the Use Restriction of Hazardous Substances in Electrical and Electronic Products” and the “Management Catalogue for the Use Restriction of Hazardous Substances in Electrical and Electronic Products”.

绿色自我声明符合性标志可参见电子档文件

The green SDoC mark is visible in the digital version of this document.

RoHS

Directive 2011/65/EC on the restriction of certain hazardous substances in electrical and electronic equipment.

According to what declared by our components suppliers, this product is RoHS compliant.

6.3 Biological hazard and returns

Overview

The structure and the specifications of this device as well as the materials used for manufacturing makes it easy to wipe and clean and therefore suitable to be used for various applications in hospitals and other medical environments, where procedures for frequent cleaning are specified.

However, normal use shall exclude biological contaminated environments, to prevent spreading of infections.

Therefore use of this device in such environments is at the exclusive risk of Customer. In case this device is used where potential biological contamination cannot be excluded.

Customer shall implement the decontamination process as defined in the latest edition of the ANSI/AAMI ST35 standard on each single failed Product that is returned for servicing, repair, reworking or failure investigation to Seller (or to the Authorized Service Provider). At least one adhesive yellow label shall be attached on the top site of the package of returned Product and accompanied by a declaration statement proving the Product has been successfully decontaminated.

Returned Products that are not provided with such external decontamination label, and/or whenever such declaration is missing, can be rejected by Seller (or by the Authorized Service Provider) and shipped back at Customer expenses.

6.4 Cleaning and disinfection

Instructions

- Be sure to unplug the power cord from the mains when cleaning your LCD monitor.
- Take care not to scratch the front surface with any hard or abrasive material.
- Dust, finger marks, grease etc. can be removed with a soft damp cloth (a small amount of mild detergent can be used on the damp cloth).
- Wipe off water drop immediately.

Possible cleaning solutions

- 70 percent isopropyl alcohol
- 1.6 percent aqueous ammonia
- Cidex® (2.4 percent glutaraldehyde solution)
- Sodium hypochlorite (bleach) 10 percent
- “Green soap” (USP)
- 0.5 percent Chiorhexidine in 70 percent isopropyl alcohol.
- Like Cleansafe® optical cleaning liquid

6.5 Regulatory compliance information

Indications for use

This device is a color high-resolution liquid crystal display especially designed for medical imaging applications.

The monitor is used in a hospital environment and remain physically attached, upright, as part of a fixed, stationary, indoor system. For the use in control room an optional stand can be provided. It is not intended for diagnosis.

Intended usage environment

- Equipment primarily for use in a health care facility that is intended for use where contact with a patient is unlikely (no applied part).
- The equipment shall not be used with life support equipment.
- The user should not touch the equipment, nor its signal input ports (SIP)/signal output ports (SOP) and the patient at the same time.

Contra-indications

This display is not intended to be used for direct diagnosis and therapeutic interventional radiology.

Intended users

Surgical displays are intended to be used by trained medical practitioners.

Notice to the user and/or patient

Any serious incident that has occurred in relation to the device should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.

Manufacturing country

The manufacturing country of the product is indicated on the product label ("**Made in** …").

Importers contact information

To find your local importer, contact one of Barco's regional offices via the contact information provided on our website (*www.barco.com*).

FCC Class A

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.

FCC responsible: Barco Inc., 3059 Premiere Parkway Suite 400, 30097 Duluth GA, United States, Tel: +1 678 475 8000

Canadian notice

CAN ICES-3 (B)/NMB-3(B)

6.6 EMC notice

General information

No specific requirement on the use of external cables or other accessories except power supply.

With the installation of the device, use only the delivered power supply or a spare part provided by the legal manufacturer. Using another can result in a decrease of the immunity level of the device.

Electromagnetic emissions

The MDSC-8358 is intended for use in the electromagnetic environment (IEC 60601-1-2 4th edition) specified below. The customer or the user of the MDSC-8358 should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment – Guidance
RF emissions CISPR 11	Group 1	The MDSC-8358 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The MDSC-8358 is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class D	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

This MDSC-8358 complies with appropriate medical EMC standards on emissions to, and interference from surrounding equipment. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Interference can be determined by turning the equipment off and on.

If this equipment does cause harmful interference to, or suffer from harmful interference of, surrounding equipment, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna or equipment.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced technician for help.

Electromagnetic immunity

The MDSC-8358 is intended for use in the electromagnetic environment (IEC 60601-1-2 4th edition) specified below. The customer or the user of the MDSC-8358 should assure that it is used in such an environment.

Immunity test	**IEC 60601-1-2 4th edition (2014) Test levels**	**Compliance level**	**Electromagnetic environment – guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	± 8kV contact ± 15kV air	± 8kV contact ± 15kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%
Electrical fast transient/ burst IEC 61000-4-4	± 2kV for power supply lines ± 1kV for input/ output lines	± 2kV for power supply lines ± 1kV for input/ output lines	Mains power quality should be that of a typical commercial or hospital environment
Surge IEC61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	< 5% U_T [1](> 95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (>95% dip in U_T) for 5 seconds	< 5% U_T (> 95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (>95% dip in U_T) for 5 seconds	Mains power quality should by that of a typical commercial or hospital environment. If the user of the MDSC-8358 requires continued operation during power mains interruptions, it is recommended that the MDSC-8358 be powered from an uninterruptible power supply or a battery.

1: is the a.c. mains voltage prior to application of the test level.

Immunity test	IEC 60601-1-2 4th edition (2014) Test levels	Compliance level	Electromagnetic environment – guidance
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 V/m (150 kHz to 80 MHz) 9 to 28 V/m in communication service channels up to 6 GHz	3 V/m (150 kHz to 80 MHz) 9 to 28 V/m in communication service channels up to 6 GHz	Portable and mobile RF communications equipment should be used no closer to any part of the MDSC-8358, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance **d = 1.2√P** **d = 1.2√P** 80 MHz to 800 MHz **d = 2.3√P** 800 MHz to 2.5 Ghz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,[2] should be less than the compliance level in each frequency range.[3] Interference may occur in the vicinity of equipment marked with symbol: 

At 80 MHz and 800 MHz, the higher frequency range applies.

2: Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the MDSC-8358 is used exceeds the applicable RF compliance level above, the MDSC-8358 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the MDSC-8358.

3: Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Recommended separation distance

The MDSC-8358 is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer of the user of the MDSC-8358 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the MDSC-8358 as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter [4] W	Separation distance according to frequency of transmitter		
	150kHz to 80MHz d=1.2√P	80MHz to 800MHz d=1.2√P	800MHz to 2.5GHz d=2.3√P
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection form structures, object and people.

6.7 Explanation of symbols

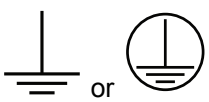
Symbols on the device

On the device or power supply, you may find the following symbols (nonrestrictive list):

CE	Indicates the device meets the requirements of the applicable EC directives/ regulations.
FC	Indicates compliance with Part 15 of the FCC rules (Class A or Class B).
c UL us E346057	Indicates the device is approved according to the UL Recognition regulations.
CLASSIFIED c UL us E346057	MEDICAL – GENERAL MEDICAL EQUIPMENT AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH ANSI/AAMI AS60601-1:2005/(R)2012, CSA CAN/CSA-C22.2 NO. 60601-1:14
UL CERTIFIED SAFETY US-CA E346057	Indicates the device is approved according to the UL regulations for Canada and US.

4: For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter. Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

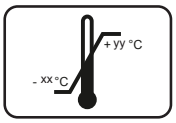
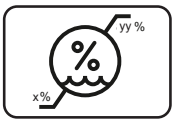
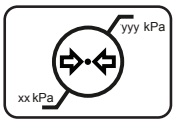
	Indicates the device is approved according to the UL Demko regulations.
	Indicates the device is approved according to the CCC regulations.
	Indicates the device is approved according to the VCCI regulations.
	Indicates the device is approved according to the KC regulations.
	Indicates the device is approved according to the BSMI regulations.
	Indicates the device is approved according to the PSE regulations.
	Indicates the device is approved according to the RCM regulations.
	Indicates the device is approved according to the EAC regulations.
	Caution: Federal law (United Stated of America) restricts this device to sale by or on the order of a licensed healthcare practitioner.
	Indicates the device is approved according to the BIS regulations.
	Indicates the device is approved according to the INMETRO regulations.
	Indicates the USB connectors on the device.
	Indicates the DisplayPort connectors on the device.
	Indicates the legal manufacturer.
	Indicates the manufacturing date.

	Indicates the temperature limitations[5] for the device to safely operate within specs.
	Indicates this is a Medical Device.
	Indicates the device serial number.
	Indicates the device part number or catalogue number.
	Indicates the Unique Device Identifier.
	**Warning**: dangerous voltage
	**Caution**
	Consult the Instructions For Use.
	Consult the Instruction For Use on website address that is provided as eIFU indicator.
	Indicates this device must not be thrown in the trash but must be recycled, according to the European WEEE (Waste Electrical and Electronic Equipment) directive.
	Indicates Direct Current (DC).
	Indicates Alternating Current (AC).
	Stand-by
	Equipotentiality
	Protective earth (ground)

5: Values for xx and yy can be found in the technical specifications paragraph.

Symbols on the box

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

	Indicates a device that can be broken or damaged if not handled carefully when being stored.
	Indicates a device that needs to be protected from moisture when being stored.
	Indicates the storage direction of the box. The box must be transported, handled and stored in such a way that the arrows always point upwards.
 or 	Indicates the maximum number of identical boxes which may be stacked on each other, where “n” is the limiting number.
 or 	Indicates the weight of the box and that it should be carried with two persons.
	Indicates that the box should not be cut with a knife, a cutter or any other sharp object.
	Indicates the temperature limits[6] to which the device can be safely exposed when being stored.
	Indicates the range[6] of humidity to which the device can be safely exposed when being stored.
	Indicates the range[6]of atmospheric pressure to which the device can be safely exposed when being stored.

6.8 Legal disclaimer

Disclaimer notice

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

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

Trademarks

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

6: Values for xx and yy can be found in the technical specifications paragraph.

Copyright notice

6.9 Technical specifications

Overview

Screen technology	a-si TFT active matrix
Active screen size (diagonal)	1473 mm (58.0")
Active screen size (H x V)	1270.08 x 721.44 mm (50 x 28.4")
Aspect ratio (H:V)	16:9
Resolution	8MP (3840 x 2160)
Pixel pitch	0.33075 mm (H) x 0.334 mm (V)
Color imaging	Yes
Color support	16 million
Viewing angle (H, V)	88°
Maximum luminance	700 cd/m² (typical)
Contrast ratio	typ. 4000:1
Response time	9.5ms (typical)
Housing color	Black
Audio	Headphones Microphone Audio line (in and out)
PC connection	Micro USB interface on the go Device mode: no max. power consumption defined Host mode: max. 2,5 W
Keyboard and mouse	USB-A interface (usb V2.0), max. 2,5 W (3)
Digital visual interface	DVI-D dual link output
Power source requirements for display power input (nominal)	100–240 Vac, 50/60Hz, 5.0A–2.0A
Power consumption (max.)	500 W
Power consumption (standby)	130 W
Power save mode	Yes
Dot clock80	260 MHz DVI dual link (preferred)
OSD languages	English
Grounding	Ground pin (M4 thread for grounding lug)
Display dimensions (W x H x D)	1326.5 x 778 x 153.7 mm
Dimensions packaged (W x H x D)	1540 x 413 x 940 mm
Net weight display	46 - 59 kg (depending on version)
Net weight packaged	68.5 - 83 kg (depending on version)
Mounting standard	VESA (400 mm)

Screen protection	Protective, non-reflective glass cover
Recommended modalities	Endoscopy, Laparoscopy, PACS, PM, US, CT, MR
Certifications	CE (Medical Device Class I) IEC 60601-1-2 (2014) EN 60601-1-2 (2015) IEC 60950-1:2005 +A1:2009 +A2:2013 (Second Edition) IEC 60601-1:2005 +CORR. 1:2006 +CORR.2:2007 +A1:2012 (Edition 3.1) EN 60601-1:2006 +A1:2013 +A12:2014 ANSI/AAMI ES60601-1: A1:2012 +C1:2009/(R)2012 +A2:2010/(R)2012 CAN/CSA-C22.2 NO. 60601-1:2014 FCC CFR 47 Part 15 Subpart B (Class A) CAN ICES-3 (B)/NMB-3(B) FDA Class I Device CCC: GB17625.1-2012; GB4943.1-2011; GB/T9254-2008 BIS (for RL version only): IS13252 (PART1):2010 +A1:2013 +A2:2015 Marks: DEMKO; UL; CCC; BIS
Supplied accessories	User Guide
Warranty	2 years
Operating temperature	10–35°C for performance / 0–40°C for safety (temperature change <1°C/min.; non condensing)
Storage temperature	20–60°C (temperature change <1°C/min.; non condensing)
Operating humidity	10%–90% RH (non condensing)
Storage humidity	10%–90% RH (non condensing)
Operating altitude	700hPa–1060hPa (3000m max.)
Storage and transport altitude	700hPa–1060hPa

Dimensions

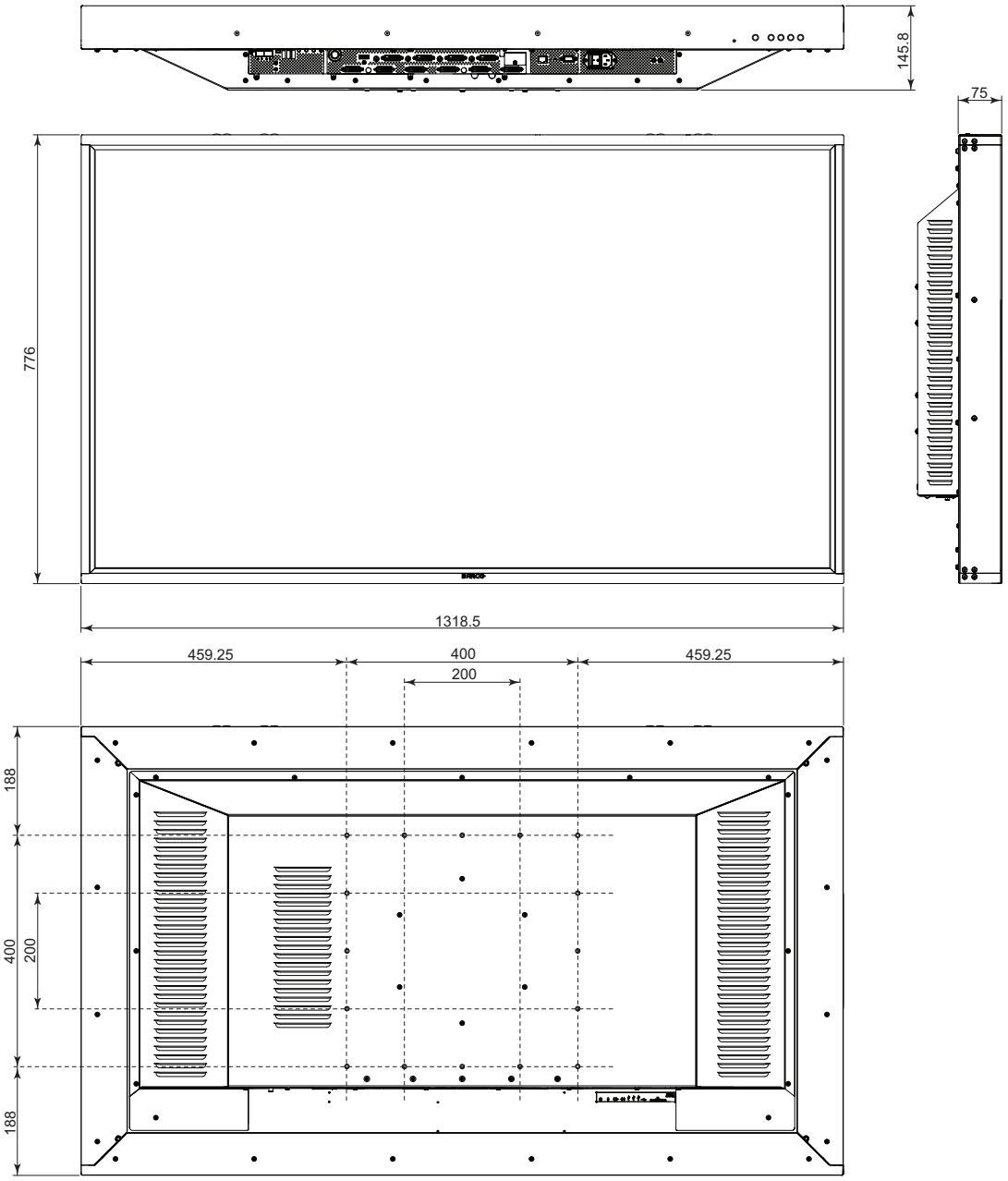

Image 6-1

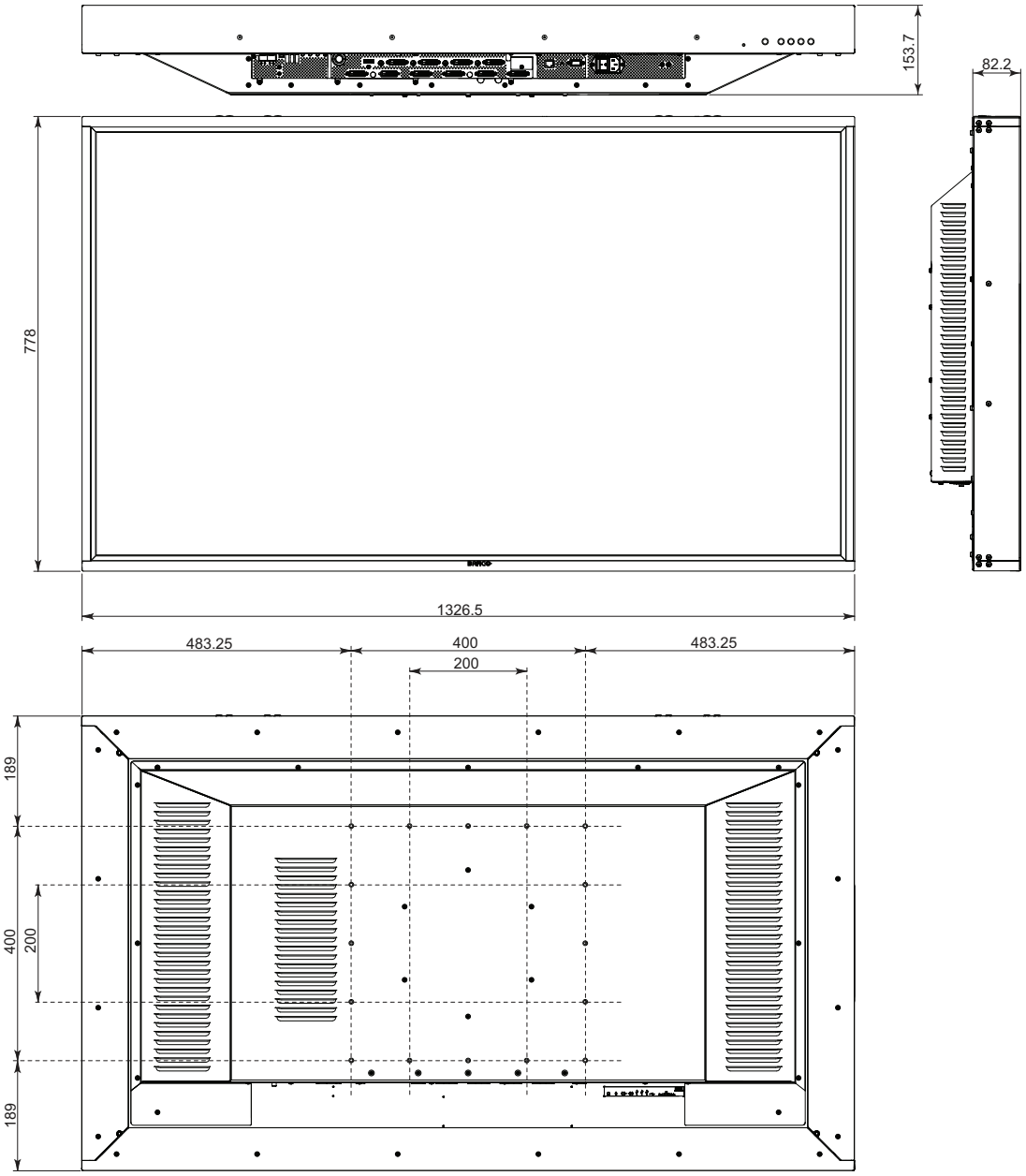

Image 6-2

6.10 Open source license information

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Appendix A 7

7.1 RS-232 protocol

About RS-232 protocol

The communication protocol of the monitor is based upon user oriented commands and factory oriented commands. The following description is related to the user oriented commands and is based on the MDSC-8358 monitors user commands.

Notes:

<ESC> stands for the ASCII code 1B hex

<ACK> stands for the ASCII code 06 hex

<NACK> stands for the ASCII code 15 hex

<CR> stands for the ASCII code 0D hex

<LF> stands for the ASCII code 0A hex

Communication settings:

- Baud rate 9600
- Data bits 8
- Parity none
- Start bits 1
- Stop bits 1
- Handshake none

Available commands:

1a) Get Model Number:

PC > monitor: **<ESC> rh**

monitor > PC: "**string**" **<ACK>**

where "string" is: 12 digits ASCII string with 12NC model number (example: "991932051391").

1b) Get Serial Number:

PC > monitor: **<ESC> rs**

monitor > PC: "**string**" **<ACK>**

where "string" is: 14 digits ASCII string with 14NC serial number (example: "AN000631000001").

1c) Get Hardware Release:

PC > monitor: **<ESC> r1 <CR>**

monitor > PC: "**string**" **<CR><LF>**

where "string" is: an ASCII string with the hardware release (example: "VEGA-LP1").

1d) Get Firmware Release:

PC > monitor: **<ESC> r2 <CR>**

monitor > PC: "**string**" **<CR><LF>**

where "string" is: an ASCII string with the firmware release (example: "FW 1.05").

2a) Get Current Transfer Function:

PC > monitor: **<ESC> O <CR>**

monitor > PC: **(character) <CR><LF>**

where (character) has the following meaning:

(character)	Current Transfer Function
0 (zero)	NATIVE
1	DICOM
2	GAMMA 1
3	GAMMA 2

the character O in the command sequence is the letter “o” in uppercase.

2b) Set Transfer Function:

PC > monitor: **<ESC> O (character)**

monitor > PC: **<ACK>**

where (character) has the following meaning:

(character)	Current Transfer Function
0 (zero)	NATIVE
1	DICOM
2	GAMMA 1
3	GAMMA 2

3a) Get Current Backlight Brightness:

PC > monitor: **<ESC> b?**

monitor > PC: “**string**” **<ACK>**

where “string” is a 3 character ASCII string with the current backlight brightness in the range from 200 to 350 (cd/m²) (example: “300”).

3b) Set Backlight Brightness:

PC > monitor: **<ESC> b** “**string**”

monitor > PC: **<ACK>**

where “string” is a 3 character ASCII string with the desired backlight brightness in the range from 200 to 350 (cd/m²) (example: “300”).

4a) Keylock enable/disable:

PC > monitor: **<ESC> k (character)**

monitor > PC: **<ACK>**

where (character) has the following meaning:

(character)	Keylock
0 (zero)	Disable
1	Enable

4b) Keylock status:

PC > monitor: **<ESC> k?**

monitor > PC: (character)

where (character) has the following meaning:

(character)	Keylock
0 (zero)	Disable
1	Enable

4c) Keylock code:

PC > monitor: **<ESC> v????**

monitor > PC: **<ACK>**

where “?” is a number between 1 and 4 which codifies the key according to the following table:

“?” character	key
1	▼
2	▲
3	☼–
4	☼+

5) FPGA Release:

PC > monitor: **<ESC> r3 <CR>**

monitor > PC: “**string**” **<CR><LF>**

where “string” is: an ASCII string with the FPGA release (example: “FPGA REV: 3”).

6) Working hours of the monitor:

PC > monitor: **<ESC> rWH <CR>**

monitor > PC: “**string**” **<CR> <LF>**

where “string” is: an ASCII string with the working hours number (example “67”).

7a) Power supplies status:

PC > monitor: **<ESC> sP <CR>**

monitor > PC: “**string**” **<CR> <LF>**

where “string” is: an ASCII string with the power supplies status (example: “OK”).

7b) Fans status:

PC > monitor: **<ESC> sF <CR>**

monitor > PC: “**string**” **<CR> <LF>**

where “string” is: an ASCII string with the fans status (example: “OK”).

7c) Internal temperature status:

PC > monitor: **<ESC> sT <CR>**

monitor > PC: “**string**” **<CR> <LF>**

where “string” is: an ASCII string with the temperature sensor status (example: “OK”).

Barco NV
President Kennedypark 35
8500 Kortrijk
Belgium

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