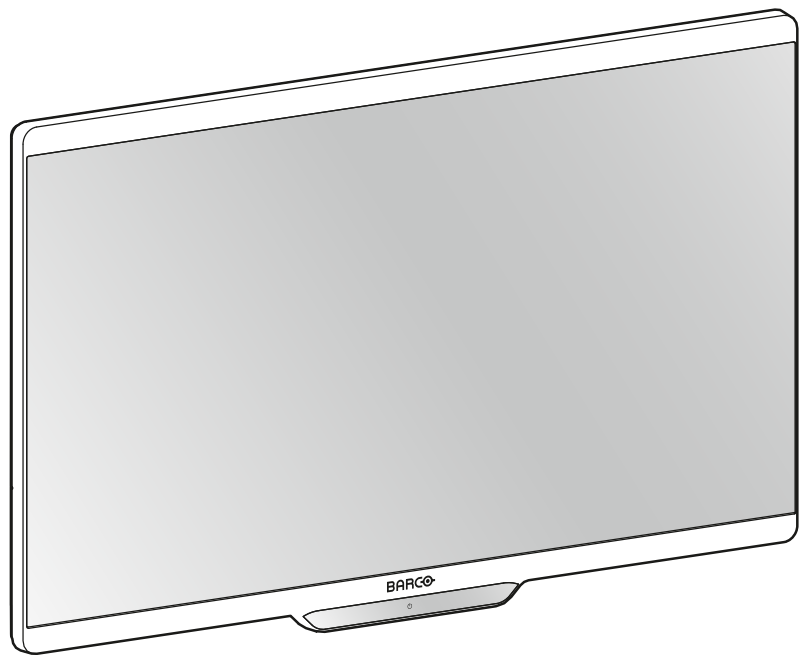


# MDSC-8532

32" 4K UHD surgical display



## User Guide

MDSC-8532 SSTP  
MDSC-8532 12GP

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# Welcome!

# 1

## Overview

The MDSC-8532 is an Ultra High Definition (UHD) surgical display. Purpose-built for the operating room, the MDSC-8532 offers an easy-clean design, smart mechanics and the most detailed images in the operating room today.

## True-to-life colors in the surgical suite

The MDSC-8532 has been designed for endoscopy imaging and the integrated operating room. The display has a wide color gamut and offers advanced color calibration algorithms. This results in the most accurate color reproduction, making it the preferred choice for real-time critical imaging.

Multi-source, multi-display imaging: With its broad input connectivity, the MDSC-8532 also offers flexible multi-modality imaging in new integrated operating rooms. Thanks to its high-bright LED backlight with light output stabilization (BLOS), the surgical display also ensures a long lifetime and low power consumption.

## Ease of installation

The MDSC-8532 comes with a smart cable management system that hides the cables for a clutter-free set-up. Equipped with VESA 100 interface to allow easy mounting on surgical booms and spring arms. Available in different models, this surgical display also features a host of connectivity options and remote control.


## User friendly

The dual user interface – there is one at the front as well as at the back – makes it easy to operate the display. The touch screen functions at the front can be programmed to meet the personal preferences of surgical staff. The intuitive user interface makes it easy to set up the screen or change the layout configurations of the display to fit the procedure. Three dedicated user keys enable fluent configuration of the display.

## Features

- Wide-screen LCD with UHD 4K resolution and 10-bit per color
- Full range of 4K-UHD signals accepted
- Wide viewing angle
- Wide color gamut and calibrated color spaces ITU709, DCI-P3 D65, BT. 2020
- High-brightness LED backlight
- Backlight Output Stabilization over time
- Advanced, full 10-bit image processing algorithms with 14-bit LUT
- UHD (3840x2160), FHD and legacy input accepted
- Easily mountable onto a boom

Innovative features, such as Failover Mode, are also available to give maximum flexibility when installing the display and ensures a backup signal is always available for safe surgery.



Welcome!

## 1.1 What's in the box

### Overview

- 1x MDSC-8532 display
- 1x DisplayPort cable
- 1x HDMI cable
- 1x coax high speed cable (12GP version only)
- 1x printed User Guide (English)
- 1x documentation disc, containing all translations of the User Guide
- 1x external power supply
- Mains cables



The user guide is available in other languages on [www.barco.com/support](http://www.barco.com/support)



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

## 1.2 About this user guide

### Overview

This manual provides support to the user during the installation, set up and utilization of the MDSC-8532 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.

## 1.3 Product overview

### Overview

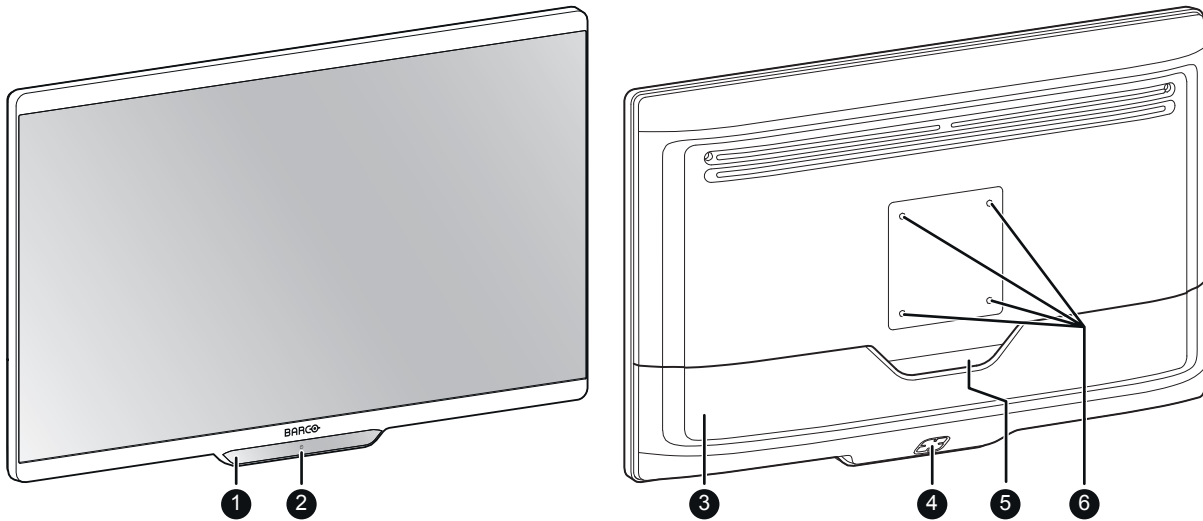


Image 1-1

1. 5-key capacitive front keyboard  
By default only the stand-by key (⏻) is visible. For keyboard activation please refer to [“Front keyboard locking/unlocking”, page 20](#)
2. Stand-by key and power status LED (see [“Power status LED”, page 21](#) for the behavior and different colors of the power status LED)
3. Connector compartment cover
4. Rear keyboard
5. Cable routing cutout
6. VESA mount screw holes (100 x 100 mm)

### Connections

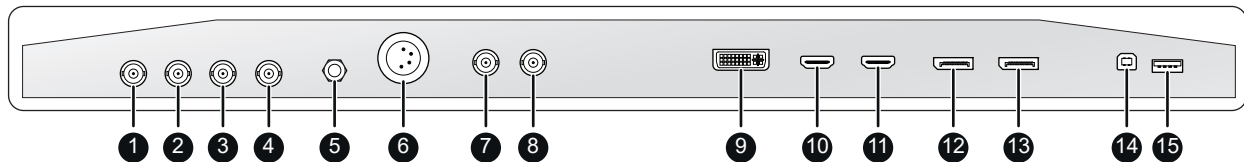


Image 1-2

1. BNC connector (\*)
2. BNC connector (\*)
3. BNC connector (\*)
4. BNC connector (\*)
5. Potential Equalization pin (POAG)
6. VDC in
7. 3G-SDI in (\*\*)
8. 3G-SDI out (\*\*)
9. DVI-D in
10. HDMI 2 in
11. HDMI 1 in
12. DisplayPort 1.2 in
13. DisplayPort 1.2 out
14. USB 2.0 type A interface
15. USB 2.0 type B interface

(\*) 12GP version only.

(\*\*) The BNC SDI connectors match the characteristic impedance of 75 ohm cables.

## 1.4 Connector pin assignments

### 1.4.1 Power input connector

#### Overview



Image 1–3

1. +25 VDC
2. +25 VDC
3. GND
4. GND



**CAUTION:** The ground and the shield connections on the power input connector have no Protective Earth function. A Protective Earth connection is provided via a dedicated pin (see “Power supply connection”, page 16).

### 1.4.2 DVI connector (DVI-D)

#### Overview

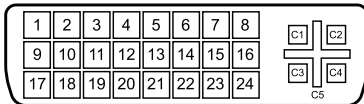


Image 1–4

1. D2\_Rx- (T.M.D.S.)
2. D2\_Rx+ (T.M.D.S.)
3. GND (data 2 shield)
4. Not connected
5. Not connected
6. SCL (for DDC)
7. SDA (for DDC)
8. Not connected
9. D1\_Rx- (T.M.D.S.)
10. D1\_Rx+ (T.M.D.S.)
11. GND (data 1 shield)
12. Not connected
13. Not connected
14. +5V output (\*)
15. GND (cable sense)
16. Hot plug detect (\*)
17. D0\_Rx- (T.M.D.S.)
18. D0\_Rx+ (T.M.D.S.)
19. GND (data 0 shield)
20. Not connected
21. Not connected
22. GND (clock shield)
23. CK\_Rx+ (T.M.D.S.)
24. CK\_Rx- (T.M.D.S.)

(\*) +5 VDC output selectable on either pin 14 or 16 via the OSD menu. (+5V ± 10% @ 500mA (max))

### 1.4.3 USB type A connector

#### Overview

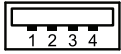


Image 1-5

1. +5 VDC @ 1A max
2. Data -
3. Data +
4. GND

### 1.4.4 USB type B connector

#### Overview



Image 1-6

1. Data -
2. +5 VDC
3. Data +
4. GND

### 1.4.5 DisplayPort connector

#### Overview (sink side pin-out)

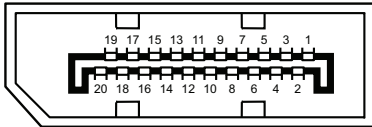


Image 1-7

1. ML\_Lane 3 (n)
2. GND
3. ML\_Lane 3 (p)
4. ML\_Lane 2 (n)
5. GND
6. ML\_Lane 2 (p)
7. ML\_Lane 1 (n)
8. GND
9. ML\_Lane 1 (p)
10. ML\_Lane 0 (n)
11. GND
12. ML\_Lane 0 (p)
13. CONFIG1
14. CONFIG2
15. AUX CH (p)
16. GND
17. AUX CH (n)
18. Hot Plug
19. Return
20. DP\_PWR (+3.3 VDC @ 500 mA max)

## 1.4.6 HDMI connector

### Overview

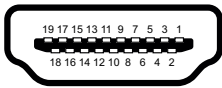


Image 1–8

1. T.M.D.S. Data2+
2. T.M.D.S. Data2 Shield
3. T.M.D.S. Data2-
4. T.M.D.S. Data1+
5. T.M.D.S. Data1 Shield
6. T.M.D.S. Data1-
7. T.M.D.S. Data0+
8. T.M.D.S. Data0 Shield
9. T.M.D.S. Data0-
10. T.M.D.S. Clock+
11. T.M.D.S. Clock Shield
12. T.M.D.S. Clock-
13. CEC
14. Not connected
15. DDC\_SCL
16. DDC\_SDA
17. DDC/CEC GND
18. +5VDC POWER (in)
19. HDP



Welcome!

# Display installation

# 2

## 2.1 Cover removal

### To remove the connector cover

1. Gently press and hold the clips at the bottom right and left side of the connector cover.
2. Slide the cover downwards while holding the clips pressed.



Either press the two clips at once, or press and release one side of the cover first and then press and release the other side.

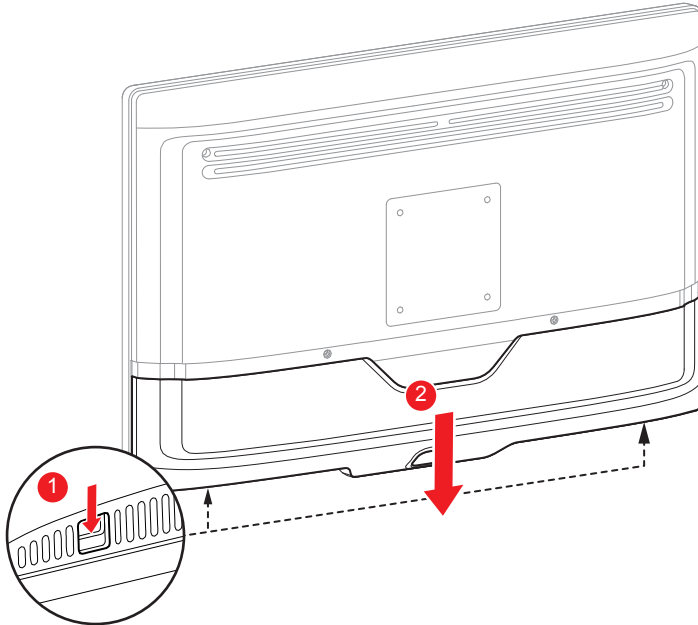


Image 2-1

## 2.2 Interface connection

### About

The MDSC-8532 can have multiple video inputs connected. Switching between the different inputs can be done easily with a programmable key on the front front keyboard.

Futhermore, if more than one video source is connected, the Picture-in-Picture and Picture-by-Picture (PIP/PBP) functionalities become available, allowing you to view two different video inputs at once. Please refer to [“Picture-in-Picture \(PIP\)”, page 33](#) and [“Picture-by-Picture \(PBP\)”, page 33](#) for more information.

Beside the video input connections, the MDSC-8532 also has video output capabilities allowing you to loop-through or duplicate all video inputs connected with the MDSC-8532 to another display, projector, video recorder, ...

This chapter describes how to connect the different video interface types to the MDSC-8532.

### 2.2.1 MDSC-8532 SSTP version

#### To connect the interfaces

1. Connect one or more video source(s) to the corresponding video inputs of the display. For a list of supported video inputs, see [“Technical specifications”, page 56](#).
2. SDI input loop-through: When the SDI video input is connected, an additional SDI video sink can be connected to the SDI output.
3. Video output: The entire active image on the screen (including OSD) can be duplicated to a FHD (1080p/1080i) signal on the DisplayPort output connector, to which an additional DisplayPort video sink can be connected.
4. Connect the USB2.0 type B interface with a workstation to use the remote control protocol.

- Connect the USB2.0 type B interface to a USB memory stick for in-field firmware updates. For more information, please refer to qualified service personnel.

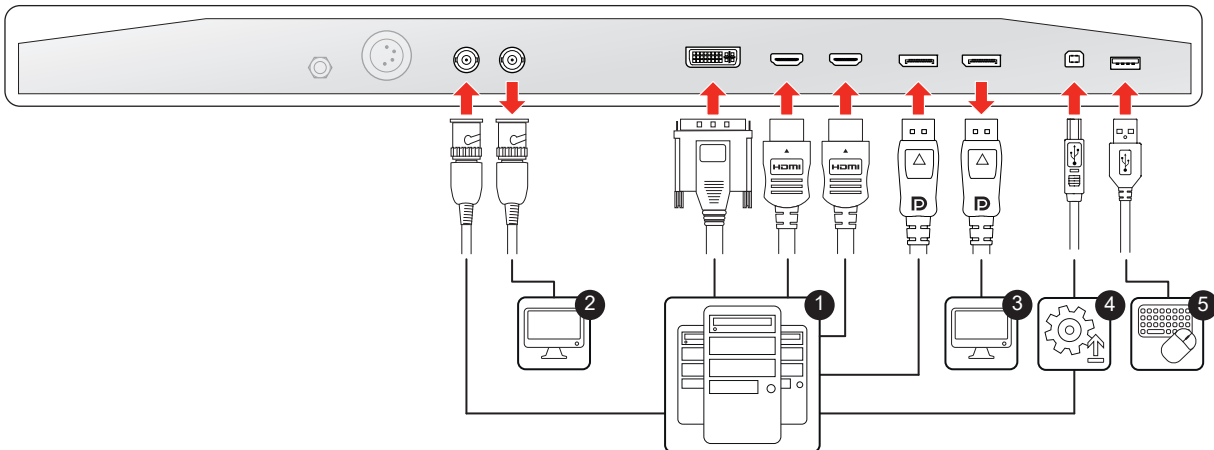


Image 2–2



DisplayPort VESA DP 1.2 certified cables for 5.4 Gbps HBR2 with a length of up to 3 m are recommended.



Premium certified HDMI 2.0 cables with a length of up to 3 m are recommended.



Use 3G-SDI Belden 1694A cables with a length of up to 50 m.



The video output must be enabled in the OSD menu (see “[Video out](#)”, page 38).



A subset of the commands of the remote control protocol is also available on a new DDC protocol on DVI and DisplayPort1 auxiliary channel.

## 2.2.2 MDSC-8532 12GP version

### To connect the interfaces

- Connect one or more video source(s) to the corresponding video inputs of the display. For a list of supported video inputs, see “[Technical specifications](#)”, page 56.
- SDI input loop-through: When the SDI video input is connected, an additional SDI video sink can be connected to the SDI output.
- Video output: The entire active image on the screen (including OSD) can be duplicated to a FHD (1080p/1080i) signal on the DisplayPort output connector, to which an additional DisplayPort video sink can be connected.
- Connect the USB2.0 type B interface with a workstation to use the remote control protocol.
- Connect the USB2.0 type B interface to a USB memory stick for in-field firmware updates. For more information, please refer to qualified service personnel.
- 4 BNC connectors available for Quad-link SDI or 2x 12G-SDI In and 2x 12G-SDI Out.

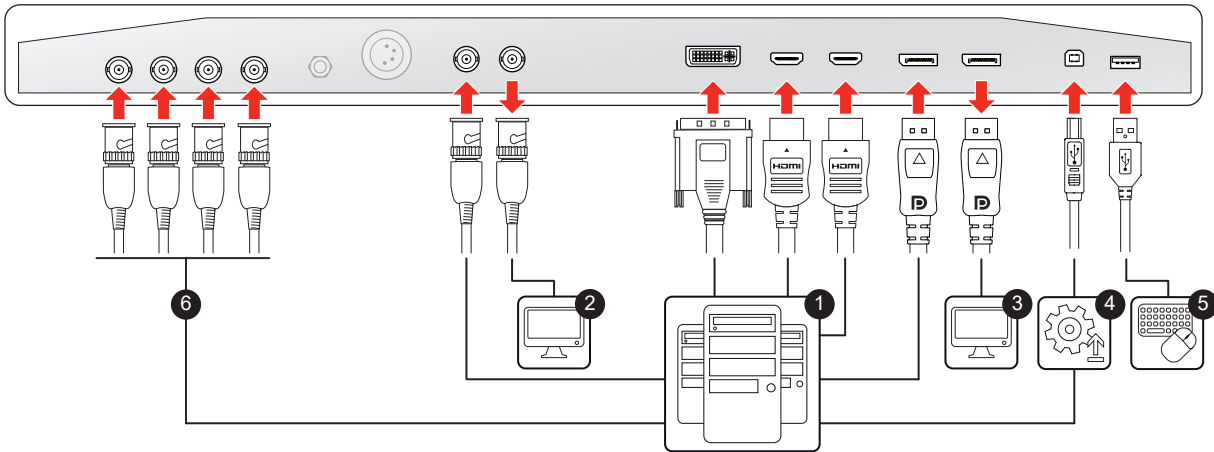


Image 2–3



DisplayPort VESA DP 1.2 certified cables for 5.4 Gbps HBR2 with a length of up to 3 m are recommended.



Premium certified HDMI 2.0 cables with a length of up to 3 m are recommended.



Use 3G-SDI Belden 1694A cables with a length of up to 50 m.



The video output must be enabled in the OSD menu (see “Video out”, page 38).



A subset of the commands of the remote control protocol is also available on a new DDC protocol on DVI and DisplayPort1 auxiliary channel.

## 2.3 Power supply connection

### To connect the power supply

1. Connect the supplied external DC power supply unit to the +25 VDC power input of your display.
2. Plug the other end of the external DC power supply into a **grounded** power outlet by means of the proper power cord delivered in the packaging.



Image 2–4



**CAUTION:** To avoid risk of electric shock, the external DC power supply must be connected to a mains with protective earth. The ground connection on the display’s DC power input connector has no protective earth function. The MDSC-8532 display protective earth connection is provided via a dedicate pin (see next steps).

## Protective earth

Earth the MDSC-8532 by connecting the protective earth pin to a grounded outlet by means of a yellow/green AWG18 wire (maximum admitted cable length according to national regulation requirements).

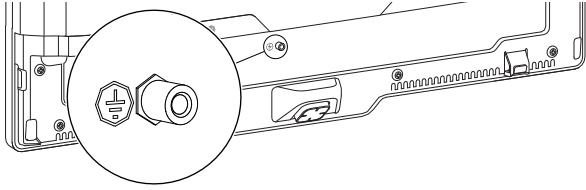


Image 2-5



**CAUTION:** The display must be earthed.

## Potential equalization

When potential equalization between the display and other devices is required then connect the potential equalization pin (POAG) to the potential equalization terminal of the equipment.

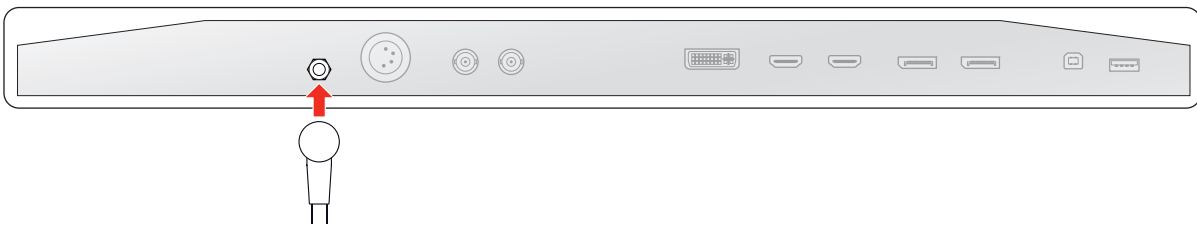


Image 2-6

## 2.4 Cable routing

### To route the cables

Route all cables through the cable routing cutout while reinstalling the connector compartment.

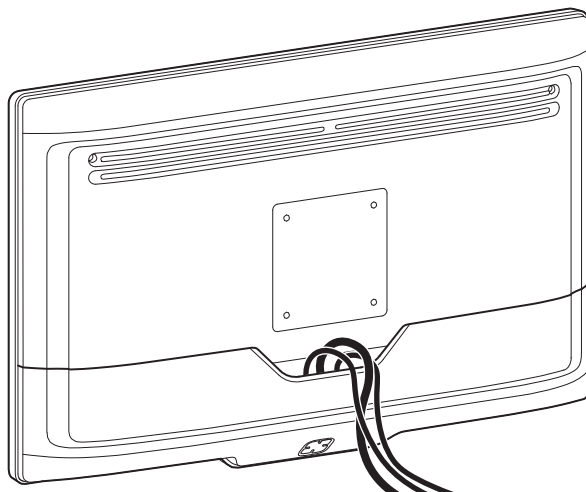


Image 2-7



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

## 2.5 VESA mount installation

### To install the display on a VESA mounting solution

The display can be attached to a VESA 100 mm arm or stand.

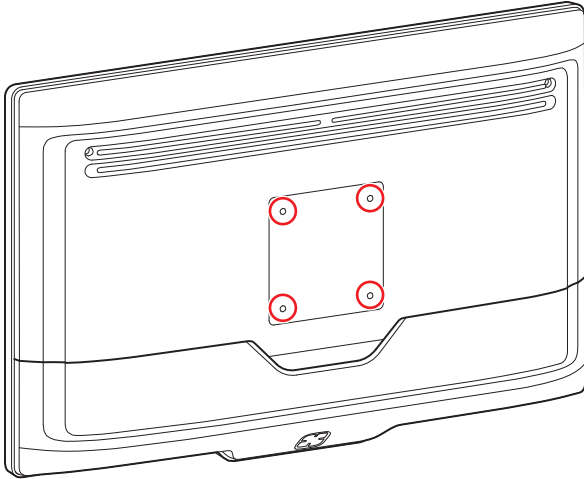


Image 2-8

The VESA mounting holes at the back of the display are provided with M4-type blind fasteners to fix the VESA mounting plate. Depending on the VESA plate thickness (T) and the thickness of possible washers (W), a different screw length (L) should be selected.

Please respect the following rule to select an appropriate screw length:

- $L_{min} = T + W + 16 \text{ mm}$
- $L_{max} = T + W + 19 \text{ mm}$

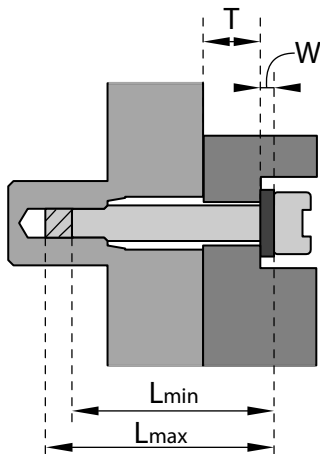


Image 2-9



**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).

# Daily operation

# 3

## 3.1 On/off switching



The procedures below consider that DC power is supplied to the display. Please check the status of the power mode LED to verify that your display is supplied with DC power (see [“Power status LED”, page 21](#)).





When the DC power is supplied to the display, all LEDs of the front keyboard will turn on for 1 second. After this, the front keyboard calibration is performed (all white LEDs will turn off and the central LED will turn orange).

Do not touch the front keyboard during calibration (less than 4 seconds). When the calibration is complete, the front keyboard is available and can be used (the central LED will turn steady green or blinking green / orange).

### To switch on your display

#### With the front keyboard:

1. Press and hold (3-4 seconds) the  key until the entire front keyboard starts blinking.
2. While the front keyboard is blinking, release the  key again (within 2 seconds, to avoid a keyboard re-lock) and the display will switch on.

#### With the rear keyboard:



1. Press and hold (3-4 seconds) the **center** button until the entire front keyboard starts blinking..
2. While the front keyboard is blinking, release the **center** button again (within 2 seconds, to avoid a keyboard re-lock) and the display will switch on.



When the keyboard backlight lights up, the power mode LED will turn full green indicating that the display is switching on and the logo will be visible for a few seconds.

### To switch off your display

#### With the front keyboard:


1. Unlock the front keyboard (see [“Front keyboard locking/unlocking”, page 20](#)).
2. With the keyboard unlocked, press and hold (3-4 seconds) the  key until the entire keyboard starts blinking.
3. While the front keyboard is blinking, release the  key again (within 2 seconds) and the display will switch off.

#### With the rear keyboard:

1. Press and hold (3-4 seconds) the **center** button until the entire front keyboard starts blinking.
2. While the front keyboard is blinking, release the **center** button again (within 2 seconds) and the display will switch off.

## 3.2 Front keyboard locking/unlocking

### About

In order to avoid unwanted or accidental activation of the front keyboard, a lock/unlock mechanism has been implemented. This means that the front keyboard needs to be unlocked before it can be used to change any of the display settings. By default, all keys except the  key will be dimmed to indicate that the front keyboard is locked.

After unlocking the front keyboard, all keys will light up. Touching any of these keys while the backlight is on will execute the function of the key. However, if no further action is taken within the time defined by the OSD time-out parameter, the keys will dim again and the keyboard will re-lock.

## To unlock the front keyboard

Two options are available to unlock the keyboard:

### With the front keyboard:

1. Press and hold (3-4 seconds) the  $\odot$  key until the entire front keyboard starts blinking.
2. While the front keyboard is blinking, release the  $\odot$  key again (within 2 seconds, to avoid a keyboard re-lock) and the front keyboard will be unlocked. Also the front menu will automatically appear.

### With the rear keyboard:

1. Press any key on the rear keyboard and the front keyboard will be unlocked.

## To lock the front keyboard

The front keyboard will automatically lock after the time of inactivity defined by the OSD time-out parameter, except while navigating the front or OSD menu, during which it remains unlocked.

## 3.3 Power status LED

### About the power status LED

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

- Off: Hard power OFF (power supply is unplugged)
- Blinking orange: Soft power OFF (switched off by using the stand-by key ( $\odot$ ))
- Steady orange: Display is in power save mode (backlight and LCD off)
- Blinking green / orange: Searching for signal  
Note: When Power save mode is enabled, the display will automatically go into power save mode after searching without signal for the period defined by the Power saving time-out parameter.
- Steady green: Display has a valid input signal.

## 3.4 Front menu

### About the front menu

The MDSC-8532 has a front menu which is used to activate the OSD main menu but which also supports 3 user key functions. These user keys allow to immediately activate a commonly used function without having to access and browse the OSD menus. Each user key is customizable in the OSD menus, where the associated function is defined (see “[Front menu user keys](#)”, page 36).

Example of front menu configuration:

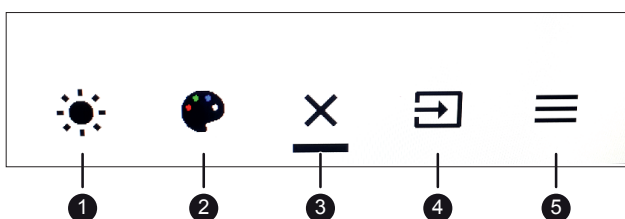


Image 3-1

1. *Brightness* adjustment (User key 1)
2. *Color space* selection (User key 2)
3. Exit
4. *Main source* selection (User key 3)
5. OSD main menu activation

When a function associated to a user key is not available for the current display configuration, it will be grayed out in the front menu. Example: If *Color space* was associated to user key 2 but the *Gamma* setting in the OSD menu is set to *DICOM*, then user key 2 will be grayed out in the front menu.



Image 3-2

When front menu functions have a submenu (eg. *Main source* selection), the submenu will be opened as new window on top of the front menu. The icon of the parent function and the currently selected option are shown in the top right corner of the new window. When the number of selectable options is greater than 4, the “select more” icon (...) will be visible and allows to see the remaining options.



Image 3-3

### Front menu icons explained

Depending on where you are in the front menu and depending on the functions associated to the user keys, the following icons can be visible:

Icon	Description	Icon	Description
	Navigate right		Select a profile
	Navigate left		Select DVI as the main input source
	Navigate up		Select SDI as the main input source
	Navigate down		Select 4K SDI as the main input source
	Activate OSD main menu		Select HDMI 1 as the main input source
	Exit front/OSD menu		Select HDMI 2 as the main input source
	Exit the OSD menu and return to the front main menu.		Select DisplayPort as the main input source
	Select more (when the number of selectable options in the front menu is greater than 4)		Select a gamma preset
	Select a main input source		Enable/disable horizontal flip
	Adjust the brightness level		Select a Picture in Picture mode
	Select a color space preset		

## To activate the front menu

### With the front keyboard:

1. Unlock the front keyboard (see “[Front keyboard locking/unlocking](#)”, page 20). When the front keyboard is unlocked with the front keyboard itself, the front menu will automatically appear. When the front keyboard is unlocked with the rear keyboard, proceed to the next step.
2. With the keyboard unlocked, shortly press the  $\odot$  key.

### With the rear keyboard:

1. Shortly press the **center** button and the front menu will immediately appear.



If the *OSD lock* window appears then this means that the front menu and OSD menu is locked for access. Please refer to “[Control lock](#)”, page 24 for more information and instructions to unlock the menus.

## To navigate and use the front menu

### With the front keyboard:

Each function in the front menu is immediately activated by pressing the corresponding key on the front keyboard.

### With the rear keyboard:

- Press the **left** and **right** buttons to navigate through the front menu. The currently selectable function is underlined.
- Press the **center** button to confirm selections or adjustments.

## To customize the front menu user keys

Please refer to “[Front menu user keys](#)”, page 36

# 3.5 OSD menu

## About

Next to the front menu, the OSD menu allows to change more advanced settings of the display. Please refer to “[Advanced operation](#)”, page 25 for a detailed description of all OSD menu functions and settings.

Below is an example of the OSD menu structure:

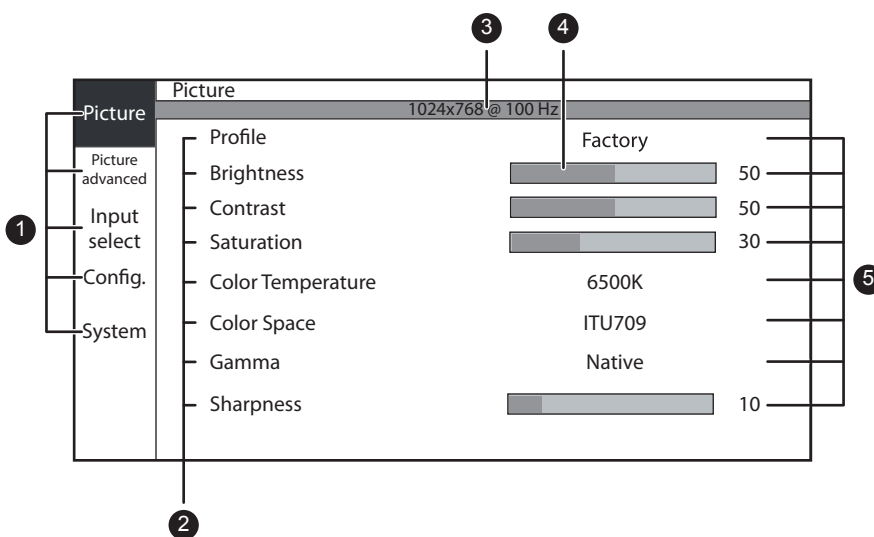


Image 3–4

1. Menu pages
2. Sub-menus (menu items)
3. Status bar

4. Selector/Slider
5. Item value/setting



Grayed out menu items are not available on the specific display version or configuration.

### To activate the OSD menu

1. Activate the front menu (see “[Front menu](#)”, page 21).
2. Select the OSD main menu function (≡).  
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*).

### To navigate through the OSD menu

#### With the front keyboard:

- When the OSD menu is activated, a separate navigation menu appears just above the front keyboard. Press the keys corresponding to the desired navigation option to navigate through the OSD menu.
- Press ✓ to confirm adjustments, press 🏠 to exit the OSD menu and return to the front main menu.

#### With the rear keyboard:

- Press the **up**, **down**, **right** and **left** buttons to navigate through the OSD menus. The **right** button is used to go into a submenu, the **left** button is used to return to a higher level menu.
- Press the **center** key to confirm adjustments (when ✓ is visible), or to exit the OSD menu and return to the front main menu (when 🏠 is visible).

## 3.6 Control lock

### About the control lock

As described in “[Control lock](#)”, page 37, the control lock can be enabled to avoid unwanted access to the front and OSD menu. When control is locked, the front menu cannot be accessed but will make the OSD lock window appear. Only after pressing the correct sequence of keys, the front menu can be accessed.

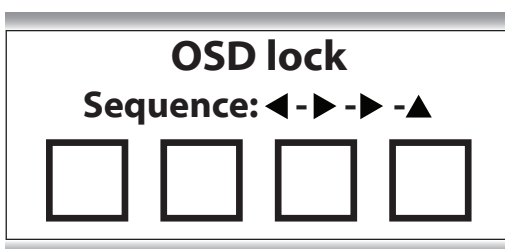


Image 3-5

### To unlock the menu

1. Unlock the front keyboard (see “[Front keyboard locking/unlocking](#)”, page 20).
2. When the *OSD lock* window appears, press the following key sequence to unlock the menu: **left - right - right - up**

# Advanced operation

# 4



Not all features described in the chapter “Advanced operation” are available. The features not available in specific software versions are shown on OSD menu in light-grey.

## 4.1 Picture menu

### 4.1.1 Profile

#### About profiles

To select a profile means to load a set of predefined video parameters like Brightness, Contrast, Saturation, Input selection (Primary & Secondary), Multi-image layout selection, etc.

The user can modify the default video parameters associated to each profile and save the new parameters setting under the User 1, User 2 or User 3 profile. The Factory and X Ray profiles can be temporarily modified, but the factory default can't be overwritten and can always be recalled through the recall profile menu item.

The available profiles for your display are:

- Factory
- X Ray: By selecting this profile, *Gamma* and *Color temperature* will be automatically set to *DICOM* and *Native* respectively
- User 1
- User 2
- User 3

#### To select a profile

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

### 4.1.2 Brightness

#### To adjust the brightness level

1. Bring up the OSD main menu.
2. Navigate to the *Picture* menu.
3. Enter the *Brightness* submenu.  
The command bar *Brightness* is highlighted.
4. Set the brightness level as desired and confirm.



The selected brightness is maintained at a constant level by the automatic backlight stabilization function.



Brightness level is adjusted by controlling the backlight illumination only.



If the selected value of each function is equal to the default value than it is highlighted in orange.

### 4.1.3 Contrast

#### To adjust the contrast level

1. Bring up the OSD main menu.
2. Navigate to the *Picture* menu.
3. Enter the *Contrast* submenu.  
The command bar *Contrast* is highlighted.
4. Set the contrast level as desired and confirm.

## 4.1.4 Saturation

### To adjust the saturation level

1. Bring up the OSD main menu.
2. Navigate to the *Picture* menu.
3. Enter the *Saturation* submenu.  
The command bar *Saturation* is highlighted.
4. Set the saturation level as desired and confirm.

## 4.1.5 Color temperature

### About color temperature presets

The available color temperature presets for your display are:

- 5600K
- 6500K
- 7600K
- 9300K
- Native
- User



Factory calibration – White point:

The White Color points associated with the Color Temperature: 5600K, 6500K, 7600K or 9300K are factory calibrated with a consequent reduction of the maximum luminance compared to Native Color Temperature.



Only in case the User preset has been selected it is possible to get access to the color regulation commands to adjust the gain of red, green and blue primary colors.

### To select a color temperature preset

1. Bring up the OSD main menu.
2. Navigate to the *Picture* menu.
3. Enter the *Color Temperature* submenu.
4. Select one of the available color temperature presets and confirm.



If you selected the User option, a new menu will be displayed allowing you to manually adjust the gain of red, green and blue.

## 4.1.6 Color space

### About color space presets

The available color space presets for your display are:

- Native (LCD primaries uncalibrated)
- ITU709
- BT.2020(\*)
- DCI-P3

(\*) BT.2020 reproducible colors are within the limit of the LCD panel color gamut.



Factory calibration – Color space:

RGB primary calibration, according to the selected standard, is performed within the physical limitation of the LCD panel used.



Combinations Color space / Gamma / Color temperature:

- Color space = Native: All combinations of Color temperature and Gamma are possible.
- Color space = ITU709: Gamma = 2.4, Color temperature = 6500K, Contrast = 50, Saturation = 50 fixed
- Color space = DCI-P3: Gamma = 2.6, Color temperature = 6500K , Contrast = 50 , Saturation = 50 fixed

## To select a color space preset

1. Bring up the OSD main menu.
2. Navigate to the *Picture* menu.
3. Enter the *Color Space* submenu.
4. Select one of the available color space presets and confirm.

## 4.1.7 Gamma

### About gamma presets

The available gamma presets for your display are:

- 1.8
- 2.0
- 2.2
- 2.4
- Video1: Transfer function equivalent to Gamma 2.2 with correction on low levels
- Video2: Transfer function equivalent to Video1 applied to Input Range 16-255
- Native: No correction curve is applied
- DICOM: Grayscale levels are following closely the DICOM curve – for reference only, not for diagnostic purposes

### To select a gamma preset

1. Bring up the OSD main menu.
2. Navigate to the *Picture* menu.
3. Enter the *Gamma* submenu.
4. Select one of the available gamma presets and confirm.

## 4.1.8 Sharpness

### About sharpness level

This command allows to smoothen or sharpen the image.

Following values apply:

- < 5: Smoothen image
- = 5: Neutral image (default)
- > 5 Sharpen image

### To adjust the sharpness level

1. Bring up the OSD main menu.
2. Navigate to the *Picture* menu.
3. Enter the *Sharpness* submenu.  
The command bar *Sharpness* is highlighted.
4. Set the sharpness level as desired and confirm.

## 4.2 Picture advance menu

### 4.2.1 Input range

#### About input range

This command sets the video signal range. Suggest to set the input range according to the input signal range.

The available input ranges are:

- Full: Input range = 0–255
- Limited: Input range = 16–235

#### To select the input range

1. Bring up the OSD main menu.
2. Navigate to the *Picture Advanced* menu.
3. Enter the *Input range* submenu.
4. Select one of the available input ranges and confirm.



Input range 16–255 is possible when Gamma is set to “Video2” (see “Gamma”, page 28).

### 4.2.2 Image size

#### About image size

The available image sizes for your display are:

- Fill Aspect: Fill the screen on largest dimension, no modification in image aspect-ratio
- 1:1: Native image, no scaling
- Vert Fill(\*)
- Hor Fill(\*)
- Fill All(\*)

(\*) With modification of image aspect-ratio

#### To select the image size

1. Bring up the OSD main menu.
2. Navigate to the *Picture Advanced* menu.
3. Enter the *Image Size* submenu.
4. Select one of the available image sizes and confirm.

### 4.2.3 Zoom



This function is not available when DisplayPort mode is set to DP 1.2 MST.

#### To adjust the zoom level

1. Bring up the OSD main menu.
2. Navigate to the *Picture Advanced* menu.
3. Enter the *Zoom* submenu.  
The zoom command bar is highlighted.
4. Adjust the zoom level as desired and confirm.

### 4.2.4 Pan



This function is not available when DisplayPort mode is set to DP 1.2 MST.



The Pan function is only available when the Zoom function is selected.

## To pan the image

1. Bring up the OSD main menu.
2. Navigate to the *Picture Advanced* menu.
3. Enter the *Pan* submenu.  
The pan command bar is highlighted.
4. Move the image as desired with the Up/Down/Left/Right arrows.

## 4.2.5 Image flip



This function is not available when DisplayPort mode is set to DP 1.2 MST.

### About image flip

This function allows you to flip the image on your display.

The available options are:

- Disabled (no image flip applied)
- Mirror (flips the image horizontally, making the left content appear on the right and vice versa)
- Rotation (rotates the image 180° = Hor + Ver flip)



When image rotation is selected, the latency will increase with 20 msec. Image mirroring does not cause any latency increase.

### To enable/disable horizontal flip

1. Bring up the OSD main menu.
2. Navigate to the *Picture Advanced* menu.
3. Enter the *Image Flip* submenu.
4. Select one of the available options and confirm.

## 4.3 Input select menu

### 4.3.1 Main source

#### About main sources

The available main sources for your display are:

- DVI
- SDI 4K (\*)
- SDI
- DisplayPort
- HDMI-1
- HDMI-2
- Auto Search

(\*) 12GP version only.



Available main source options may differ depending on display model.

### To select the main source

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

## 4.3.2 4K SDI mode (12GP version only)

### About 4K SDI mode

The available 4K SDI modes for your display are:

- Square-division (SQD) (\*)
- 2-sample interleave (2SI)

(\*) Available only with Quad-SDI.

### To select the 4K SDI mode

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

## 4.3.3 SDI config (12GP version only)

### About SDI config

The available SDI config modes for your display are:

- Quad-SDI (Quad link 3G-SDI)
- 12G SDI-1
- 12G SDI-2

### To select the SDI config mode

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

## 4.3.4 DisplayPort mode

### About DisplayPort mode

The available DisplayPort (DP) modes for your display are:

- DP 1.2 SST
- DP 1.2 MST L:R: MST stream 1 on Left side/ MST stream 2 on Right side
- DP 1.2 MST R:L: MST stream 1 on Right side/ MST stream 2 on Left side



Please refer to the technical specifications for an overview of accepted video formats.

### To select the DisplayPort mode

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

## 4.3.5 Failover input

### About failover input

This function allows the display to automatically switch to a failover (backup) source in case the 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:

- None
- DVI
- SDI 4K (\*)
- SDI
- HDMI-1
- HDMI-2

(\*) 12GP version only.



The failover input can only be selected when both

1. the *Auto search* function is disabled (see “[Main source](#)”, page 30), and
2. the *PIP/PBP Modes* function is disabled (see “[Picture-in-Picture \(PIP\)](#)”, page 33 and “[Picture-by-Picture \(PBP\)](#)”, page 33).

If any of both functions are enabled then failover will be disabled and made unavailable. As soon as both functions are disabled again, failover will be enabled and made available again with the selected failover input.



The failover input will be activated within about 7 seconds after the main source 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.

The available 4K main input / FHD failover input combinations can be found in the following table:

Main input 4K	FHD Failover input					
	DVI	3G-SDI	HDMI-1	HDMI-2	Quad SDI (*)	12-G SDI (*)
DP 1.2 SST	Yes	Yes	Yes	Yes	Yes	Yes
DP 1.2 MST	Yes	Yes	Yes	Yes	Yes	Yes
HDMI-1	Yes	Yes	No	Yes	Yes	Yes
HDMI-2	Yes	Yes	Yes	No	No	No
Quad-link SDI (*)	Yes	Yes	Yes	No	No	No
12G-SDI (*)	Yes	Yes	Yes	No	No	No

(\*) 12GP version only.

### To select the failover input

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

## 4.3.6 Picture-by-Picture (PBP)

### About Picture-by-Picture

This function allows the display to show a second input source on the right side of the display. The Primary input (main source) is still displayed on the left half of the screen.

The possible Picture-by-Picture combinations between the Primary input (main source) and the Secondary input (PBP image) is displayed in the following table.

Primary input	Secondary input					
	DP 1.2 SST	HDMI-1	HDMI-2	DVI	3G-SDI	4K-SDI (**)
DP 1.2 SST (*)	No	Yes	Yes	Yes	Yes	Yes
HDMI-1	Yes	No	Yes	Yes	Yes	Yes
HDMI-2	Yes	Yes	No	Yes	Yes	No
DVI	Yes	Yes	Yes	No	Yes	Yes
3G-SDI	Yes	Yes	Yes	Yes	No	Yes
4K-SDI (**)	Yes	Yes	No	Yes	Yes	No

(\*) No PBP with DP 1.2 MST

(\*\*) MDSC-8532 12GP version



Primary input up to 4K resized to half screen on left side. Secondary input up to 4K resized to half screen on right side.



The Video Parameters applied to the Primary input Source are also applied to the Secondary input.



The 2nd source keeps the same image size (Native/Aspect) as the Primary input Source.

### To select Picture-by-Picture input

1. Bring up the OSD main menu.
2. Navigate to the *Input Select* menu.
3. Enter the *PbP Input* submenu.
4. Select the value for each of the following options:
  - PBP Mode (ON / OFF)
  - PBP Source (select input)
  - PBP Swap (ON / OFF)

## 4.3.7 Picture-in-Picture (PIP)

### About Picture-in-Picture

This function allows the display to show a second input source as an inset window inside the main source.

The possible Picture-in-Picture combinations between the Primary input (main source) and the Secondary input (PiP image) is displayed in the following table.

Primary input	Secondary input					
	DP 1.2 SST	HDMI-1	HDMI-2	DVI	3G-SDI	4K-SDI (**)
DP 1.2 SST (*)	Yes	Yes	Yes	Yes	Yes	Yes
HDMI-1	Yes	Yes	Yes	Yes	Yes	Yes
HDMI-2	Yes	Yes	Yes	Yes	Yes	<b>No</b>
DVI	Yes	Yes	Yes	Yes	Yes	Yes
3G-SDI	Yes	Yes	Yes	Yes	Yes	Yes
4K-SDI (**)	Yes	Yes	<b>No</b>	Yes	Yes	<b>No</b>

(\*) No PIP with DP 1.2 MST

(\*\*) MDSC-8532 12GP version



Gamma and Color temperature for the PiP Source are always set to Native and 6500 K independently from the Transfer Function applied to the Primary input Source.

## To select Picture-in-Picture input

1. Bring up the OSD main menu.
2. Navigate to the *Input Select* menu.
3. Enter the *PiP Input* submenu.
4. Select the value for each of the following options:
  - PIP Mode (ON / OFF)
  - PIP Source (select input)
  - PIP Position (Bottom Right, Top Right, Bottom Left, Top Left)
  - PIP Size (Small, Medium, Large, Max)
  - PIP Swap (ON / OFF)
  - PIP Transparency (Range 0 – 10)

## 4.4 Configuration menu

### 4.4.1 Information

#### About information

The available information items for your display are:

- Model: commercial type identification
- Main board release: firmware identification
- Keyboard release: firmware identification
- SDI module release: hardware and firmware identification
- USB module revision
- DP splitter revision
- SW package ID

#### To access information

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* menu.
3. Enter the *Information* submenu.

## 4.4.2 Language

### About languages

The OSD menu of your display is available in multiple languages.

#### To select the language

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

## 4.4.3 OSD time-out

### About OSD time-out

The OSD menu can automatically close after a certain time of inactivity after the last selection was made.

The available OSD time-out values for your display are:

- 10 Sec.
- 20 Sec.
- 30 Sec.
- 60 Sec.
- Disabled (=10 minutes)

#### To adjust the OSD time-out

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* menu.
3. Enter the *OSD setting* submenu.
4. Select *OSD Time-out*
5. Select one of the available OSD time-out values and confirm.

## 4.4.4 Recall Profile

### About recalling profiles

To recall a profile means to restore the default factory settings (Factory and X Ray profiles) or recall the user defined profiles.

The available profiles to recall from your display are:

- Factory
- X Ray
- User 1
- User 2
- User 3

#### To recall a profile

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

## 4.4.5 Save Profile

### About saving profiles

The user can modify the default video parameters associated to each profile and save the new parameter settings under the User 1, User 2 or User 3 profile. The Factory and X Ray profiles can be modified, but the factory default can't be overwritten and can always be recalled through the recall profile menu item.

The available profiles to save in your display are:

- User 1
- User 2
- User 3

### To save a profile

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

## 4.4.6 Front menu user keys

### About front menu user keys

The MDSC-8532 has a front menu (see “[Front menu](#)”, page 21) which supports 3 user key functions. These user keys allow to immediately activate a commonly used function without having to access and browse the OSD menus. Each user key is customizable and can have any of the following functions associated to it:

Main source	(sub-menu)
Brightness	(slide bar)
Color space	(sub-menu)
DVI	(direct selection)
SDI	(direct selection)
HDMI 1	(direct selection)
HDMI 2	(direct selection)
DP	(direct selection)
4K-SDI	(direct selection) (*)
Gamma	(direct selection)
Image flip	(ON/OFF)
PiP mode	(ON/OFF)
Profile	(sub-menu)

(\*) 12GP version only.



When a function is not available for the current display configuration, it will be visible with a grey background.

### To customize the front menu user keys

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* menu.
3. Enter the *User Key 1/2/3* submenu.
4. Select one of the available user key functions and confirm.

## 4.4.7 Input signal name

### About input source name

This function allows to define a name for each input source.

## To customize the name of an input source

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* menu.
3. Enter the *Input Signal name* submenu.
4. Select one of the available input source and move right to the name definition area.
5. Use the up/down arrows to select characters for up to 6 positions.

## 4.4.8 Display name

### About display name

This function allows to define a name for the display device.

### To customize the name of the display device

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* menu.
3. Enter the *Display name* submenu.
4. Use the up/down arrows to select characters for up to 13 positions.

## 4.4.9 Profile name

### About profile name

This function allows to define a name for each user profile.

### To customize the name of a profile

1. Bring up the OSD main menu.
2. Navigate to the *Configuration* menu.
3. Enter the *Profile name* submenu.
4. Select one of the available profiles and move right to the name definition area.
5. Use the up/down arrows to select characters for up to 8 positions.

## 4.5 System menu

### 4.5.1 Control lock

#### About control lock

This setting allows you to avoid unwanted activation of any function through the front or rear keyboard. By enabling the Control lock function, the front menu and OSD menu can only be accessed after pressing a sequence of keys. Please refer to [“Control lock”, page 24](#).

The available options are:

- Disabled
- Full lock: Both front and rear keyboard are locked
- Front lock: Front Menu and OSD menu are accessible though the rear keyboard only

#### To enable/disable control locking

1. Bring up the OSD main menu.
2. Navigate to the *System* menu.
3. Enter the *Control Lock* submenu.
4. Select one of the available options and confirm.

## 4.5.2 Power saving

### About power saving

When the selected input(s) is (are) missing (main, 2nd and failover), this setting allows the display to switch off the backlight and enter a low power mode. As soon as the selected input(s) is (are) present again, the display will exit the power save mode and display the image. Also, by activating the OSD menu, the display will exit power save mode.

The available options are:

- Off
- 5 min
- 30 min
- 60 min



When the *Auto search* function is enabled (see “[Main source](#)”, page 30), the display will not enter the power save mode, even when the input(s) is (are) missing.

### To enable/disable power saving

1. Bring up the OSD main menu.
2. Navigate to the *System* menu.
3. Enter the *Power Saving* submenu.
4. Select one of the available options and confirm.

## 4.5.3 Video out

### About video out

This setting allows to enable or disable the Video output function of your display. Enabling Video output will copy the Main Source (only in case of DP SST, HDMI-1, HDMI-2, 4K-SDI) to the DisplayPort 1.2 SST output.

### To enable/disable video out

1. Bring up the OSD main menu.
2. Navigate to the *System* menu.
3. Enter the *Video output* submenu.
4. Enable/Disable Video out as desired and confirm.



Video out is always disabled when the Main Input = DP MST.

## 4.5.4 Display status

### About display status

This information shows the active values of the main display parameters.

### To consult display status

1. Bring up the OSD main menu.
2. Navigate to the *System* menu.
3. The display status information is shown.

# Troubleshooting

# 5

## 5.1 Troubleshooting list

### To diagnose a problem

Problem description	Action
Black bars visible on upper and lower or left and right positions of the display.	This happens when the signal aspect ratio is different from the one of the screen. This is not a display malfunction.
The OSD menu cannot be operated.	The Control lock function has been enabled. This is not a display malfunction. See <a href="#">“Control lock”, page 37</a> .
The screen is black, but the logo is visible after display switch on.	Check the input signal.
The screen is black, no logo is visible after display switch on, the front LED is visible.	Possible LCD panel failure.
The screen is black, no logo is visible after display switch on, the front LED is not visible.	The display is not powered or the unit is not working.
DP, HDMI, DVI input is available but no image is displayed.	Check if the input signal has HDCP revision > 1.4
The message “WARNING ! FAILSAFE MODE – check display settings” appears on screen during start-up of the monitor.	Reboot the monitor.
The message “WARNING ! FAILSAFE MODE – check display settings” appears on screen during firmware field upgrade.	Reboot the monitor and run the upgrade procedure again.
A permanent small text message on the top-right corner “Failsafe mode” is visible, even after rebooting the monitor.	The display can be used in failsafe mode as temporary backup, running a factory FW (see the FW version on OSD menu). Please contact the Service Center.

**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 external 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.

### 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 external 25 VDC power supply

- Power requirements: The equipment must only be powered using the delivered medical approved 25 VDC (≡) SELV power supply.
- The medical approved DC (≡) power supply must be powered by the AC mains voltage.
- The power supply is specified as a part of the ME equipment or combination is specified as a ME system.
- To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.
- The equipment should be installed near an easily accessible outlet.
- The equipment is intended for continuous operation.
- The compliance of this monitor with Medical Safety and EMC requirements has been evaluated using the external (optional) medical power supply model 'ATM200T-P250'. If a different power supply will be used, further investigation for safety and EMC requirements have to be performed at system level.

## 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 well shielded interface cables for the connection to peripheral devices.

## Power cords

- Europe: H05VV-F or H05VVH2-F PVC cord with appropriate EU plug.  
US and Canada: "hospital grade" cord-set has to be used, provided with instructions to indicate that grounding reliability can be achieved only when the equipment is connected to an equivalent receptacle marked hospital only or hospital grade. These instructions need to be marked either on the equip. or on a tag on the power cord
- Do not overload wall outlets and extension cords as this may result in fire or electric shock.
- Mains lead protection: 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.
- The power supply cord should be replaced by the designated operator only at all time.
- 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.
- Korea: Use KC certified products; Plug: 250 V~, 16 A; Power cord: 60227 IEC 53, 3G0.75 mm<sup>2</sup> / 60227 IEC 53, 3G1.0 mm<sup>2</sup>; Connector: 250 V~, 10 A

## Grounding reliability

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

## Water and moisture

- Never expose the monitor to liquids or moisture.
- Never use the monitor near water - e.g. near a bathtub, washbasin, swimming pool, kitchen sink, laundry tub or in a wet basement.
- The equipment is IP21 (IP45 front side only) compliant with a tilt of  $\pm 10^\circ$ . The PSU only is IP20 compliant.

## 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  $-10^{\circ}$  (backward) and  $+10^{\circ}$  (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: "Laitte on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"

Norway: "Apparatet må tilkoples jordet stikkontakt"

Sweden: "Apparaten skall anslutas till jordat uttag"

## 6.2 Cybersecurity

### Hospital IT security

To prevent unauthorized access to the device, the organization incorporating the MDSC-8532 in their IT network shall have the necessary state-of-the-art policies, processes, standards and other security measures in place to incorporate, support and protect the device into the IT network. This shall include the application of risk management (e.g. by following IEC 80001-1:2010 or equivalent standards).

## 6.3 Environmental information

### Disposal Information



Waste Electrical and Electronic Equipment (WEEE)

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	O	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
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.

## 6.4 Biological hazard and returns – Decommissioning

### Decommissioning

When a device becomes obsolete or unusable, or is no longer needed by the health care facility, it enters the final stage of its life cycle: decommissioning.

Decommissioning is the process of disposing a device, or removing a device from its originally intended use in the health care facility to an alternative use.

Every health care facility or institution shall have standard operating procedures in place to decommission a device according to the Occupational Safety and Health Administration (OSHA) regulations or/and the World Health Organization (WHO) Decommissioning Medical Devices Technical guideline.

The seller / manufacturer of the device has no legal obligation on the device sold in the event that the health care facility or institution decides to activate the decommissioning process.

### 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.

## 6.5 Regulatory compliance information

### Indications for use

The device is intended to display medical images from medical systems such as endoscopic or laparoscopic cameras, surgical microscopes, room and boom cameras, ultrasound, image guided therapy and intervention, PACS, anesthesiology, patient information and other compatible medical image systems.

The device is suitable for use in hospital operating rooms, surgical centres, clinics, doctors' offices and similar medical environments.

The device 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](http://www.barco.com)).

### **Factory address**

**Fimi S.r.l.**, Via Saul Banfi 1, 21047 Saronno, VA, Italy

### **FCC class B**

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.

This device 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 device generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device 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 device and receiver.
- Connect the device into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

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

## Canadian notice

CAN ICES-003 (B) / NMB-003(B)

## UKCA compliance

UK Responsible Person (UKRP): Barco UK Ltd, Building 329, Doncastle Road, Bracknell RG12 8PE, Berkshire, United Kingdom

# 6.6 EMC notice

## General information

This device is for use in professional healthcare facility environments only.

With the installation of the device, use only the delivered external cables and 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.



**WARNING:** Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.



**WARNING:** Use of accessories, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.



**WARNING:** Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the MDSC-8532, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

## Electromagnetic emissions

The MDSC-8532 is intended for use in the electromagnetic environment specified below. The customer or the user of the MDSC-8532 should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment – Guidance
RF emissions CISPR 11	Group 1	The MDSC-8532 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-8532 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-8532 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-8532 is intended for use in the electromagnetic environment specified below. The customer or the user of the MDSC-8532 should assure that it is used in such an environment.

Immunity test	IEC 60601 test levels	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV 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	± 2 kV for power supply lines ± 1 kV for input/ output lines 100 kHz repetition frequency	± 2 kV for power supply lines ± 1 kV for input/ output lines 100 kHz repetition frequency	Mains power quality should be that of a typical commercial or hospital environment
Surge IEC61000-4-5	Line to line: ± 0.5 kV, ± 1 kV Line to ground: ± 0.5 kV, ± 1 kV, ± 2 kV	Line to line: ± 0.5 kV, ± 1 kV Line to ground: ± 0.5 kV, ± 1 kV, ± 2 kV	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	0% residual voltage for 0.5 period at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0% residual voltage for 1 period at 0° 70% residual voltage for 25 periods at 0° Voltage interruptions: 0% residual voltage for 250 periods at 0°	0% residual voltage for 0.5 period at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0% residual voltage for 1 period at 0° 70% residual voltage for 25 periods at 0° Voltage interruptions: 0% residual voltage for 250 periods at 0°	Mains power quality should be that of a typical commercial or hospital environment. If the user of the MDSC-8532 requires continued operation during power mains interruptions, it is recommended that the MDSC-8532 be powered from an uninterruptible power supply or a battery
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	3 Vrms (6 Vrms in ISM bands) 150 kHz to 80 MHz	3 Vrms (6 Vrms in ISM bands)	-
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.7 GHz	3 V/m	

## Immunity to RF wireless communications equipment

Test frequency (MHz)	Band (MHz)	Service	Modulation	Maximum power (W)	Distance (m)	Immunity test level (V/m)
385	380 – 390	TETRA 400	Pulse modulation 18 Hz	1.8	0.3	27
450	430 – 470	GMRS 460, FRS 460	FM $\pm$ 5 kHz deviation 1 kHz sine	2	0.3	28
710	704 – 787	LTE Band 13, 17	Pulse modulation 217 Hz	0.2	0.3	9
745						
780						
810	800 – 960	GSM 800/ 900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation 18 Hz	2	0.3	28
870						
930						
1720	1700 – 1990	GSM 1800, CDMA 1900, GSM 1900, DECT, LTE Band 1/3/4/ 25, UMTS	Pulse modulation 217 Hz	2	0.3	28
1845						
1970						
2450	2400 – 2570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation 217 Hz	2	0.3	28
5240	5100 – 5800	WLAN 802.11 a/n	Pulse modulation 217 Hz	0.2	0.3	9
5500						
5785						

## 6.7 Cleaning instructions

### To clean the display

Apply a cleaning/disinfecting product to a soft lint-free cloth, such as a microfiber or gauze and rub the display surface thoroughly. In order to be effective, all surfaces must be cleaned for a certain amount of time (ranging from 30 seconds to 2 minutes).

Use a cleaning/disinfecting product that is alcohol-, alkali-, water- or chlorine-based. Common examples are:

- Isopropanol 90%
- Ethanol 70%
- 250 ppm Chlorine solution
- 1.6% aqueous ammonia
- “Green soap” (USP)
- 0.5% Chlorhexidine in 70% isopropyl alcohol
- Products similar to optical cleaning liquid (e.g. Wurth TFT-Reiniger)
- Flux
- Sodium hypochlorite 10%

## Important information

- Peroxide hydrogen 10%
- Ethanol 15% (e.g. Tanet interior)

When selecting an alternative cleaning/disinfecting product, it is recommended to always identify the active ingredients. In case of doubt about a certain cleaning product, use plain water.

Do not use any of the following products:

- Strong alkalis lye, strong solvents
- Acetone
- Toluene
- Acids
- Detergents containing fluoride
- Detergents containing ammonia
- Detergents containing abrasives
- Steel wool
- Sponge with abrasives
- Steel blades
- Cloths with steel thread
- Paper-based cloths (e.g. paper towels, facial tissues, toilet paper)



**CAUTION:** Read and follow all instructions on the label of the cleaning product.



**CAUTION:** Take care not to damage or scratch the front glass or LCD. Be careful with rings or other jewelry and do not apply excessive pressure on the front glass or LCD.



**CAUTION:** When a small object or dust is tucked between the front bezel and the LCD surface (for displays without front glass), carefully remove with a soft object such as a plastic card or finger nail. Do not use sharp objects such as paperclips or tweezers to avoid damage to the LCD.



**CAUTION:** Do not apply or spray liquid directly to the display as excess liquid may cause damage to internal electronics. Instead, apply the liquid to a cleaning cloth.




















**CAUTION:** The use of products on phenol base and fluids like ether, white spirit, turpentine, trichloroethylene, perchlorethylene and iodine, can cause damage to constituents of equipment (e.g. coated materials, plastics, etc.).







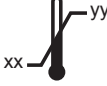









## 6.8 Explanation of symbols

### Symbols on the device








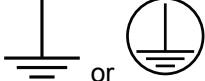
On the device or power supply, you may find the following symbols (nonrestrictive list):

	Indicates the device meets the requirements of the applicable EC directives/regulations.
	Indicates compliance with Part 15 of the FCC rules (Class A or Class B).
	Indicates the device is approved according to the UL Recognition regulations.
	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

	<p>Indicates the device is approved according to the UL regulations for Canada and US.</p>
	<p>Medical –general medical equipment as to electrical shocks, fire and mechanical hazards only in accordance with standards: ANSI/AAMI ES 60601-1:2005/(R)2012; CSA CAN/CSA-C22.2 NO. 60601-1:14; Also certified UL60950-1 (E92049).</p>
	<p>Indicates the device is approved according to the UL Demko regulations.</p>
	<p>Indicates the device is approved according to the CCC regulations.</p>
	<p>Indicates the device is approved according to the VCCI regulations.</p>
	<p>Indicates the device is approved according to the KC regulations.</p>
	<p>Indicates the device is approved according to the BSMI regulations.</p>
	<p>Indicates the device is approved according to the PSE regulations.</p>
	<p>Indicates the device is approved according to the RCM regulations.</p>
	<p>Indicates the device is approved according to the EAC regulations.</p>
	<p>Caution: Federal law (United States of America) restricts this device to sale by or on the order of a licensed healthcare practitioner.</p>
<p>IS 13252 (Part 1) IEC 60950-1</p>  <p>R-xxxxxxx www.bis.gov.in</p>	<p>Indicates the device is approved according to the BIS regulations.</p>
	<p>Indicates the device is approved according to the INMETRO regulations.</p>




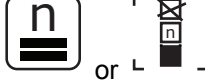


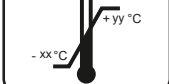
	Indicates the device meets the requirements of the UK MDR 2002 (as amended).
	Indicates the USB connectors on the device.
	Indicates the DisplayPort connectors on the device.
	Indicates the legal manufacturer.
	Indicates the manufacturing date.
	Indicates the entity importing the medical device into the locale.
	Indicates the temperature limitations <sup>1</sup> 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.
	Indicates the Authorised Representative for the European Union.
	Indicates the Authorised Representative for Switzerland.
	<b>Warning:</b> dangerous voltage
	<b>Caution</b>
	Consult the Instructions For Use.


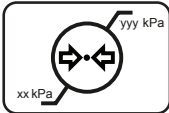
1. Values for xx and yy can be found in the technical specifications paragraph.

 eIFU indicator	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)

### 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.
	Indicates the maximum number of identical boxes which may be stacked on each other, where “n” is the limiting number.
	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 <sup>2</sup> to which the device can be safely exposed when being stored.

	<p>Indicates the range<sup>2</sup> of humidity to which the device can be safely exposed when being stored.</p>
	<p>Indicates the range<sup>2</sup> of atmospheric pressure to which the device can be safely exposed when being stored.</p>

## 6.9 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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### Product Security Incident Response

As a global technology leader, Barco is committed to deliver secure solutions and services to our customers, while protecting Barco's intellectual property.

When product security concerns are received, the product security incident response process will be triggered immediately. To address specific security concerns or to report security issues with Barco products, please inform us via contact details mentioned on <https://www.barco.com/psirt>.

To protect our customers, Barco does not publicly disclose or confirm security vulnerabilities until Barco has conducted an analysis of the product and issued fixes and/or mitigations.

## 6.10 Technical specifications

### Overview

Screen technology	TFT AM LCD / LED backlight
Active screen size (diagonal)	32" (813 mm)
Active screen size (H x V)	708 x 399 mm
Aspect ratio	16:9

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

<b>Resolution</b>	3840 x 2160 pixels
<b>Pixel pitch</b>	0.1845 mm
<b>Color support</b>	1 billion (10 bit color depth)
<b>Color gamut</b>	Native: 94% NTSC
<b>Color calibration</b>	ITU-709, DCI-P3, BT.2020 (BT.2020 reproducible colors are within the limit of the LCD panel)
<b>Viewing angle</b>	178° Hor / 178° Ver
<b>Luminance</b>	Native: 850 cd/m <sup>2</sup> (typical) Default setting: 550 cd/ m <sup>2</sup> stabilized @6500K & Native color space
<b>Contrast ratio</b>	1350:1 (Typical)
<b>Response time</b>	T <sub>on</sub> + T <sub>off</sub> = 18 msec (typical)
<b>White point</b>	Calibrated: 5600K, 6500K, 7600K, 9300K
<b>Gamma curve</b>	Native, 1.8, 2.0, 2.2, 2.4, Video1, Video2, DICOM (review level)
<b>Front protection screen</b>	2-side anti-reflective alkali-aluminosilicate glass with anti-fingerprint coating
<b>Keyboard</b>	Front: 5-key capacitive touch - user programmable Rear: 5-key membrane
<b>Video inputs MDSC-8532 SSTP</b>	<ul style="list-style-type: none"> <li>• 4K-UHD input <ul style="list-style-type: none"> <li>- 1x DP 1.2 SST / MST up to 3840 x 2160 @ 50/60 Hz (user configurable)</li> <li>- 2x HDMI 2.0 up to 3840 x 2160 @ 50/60 Hz</li> </ul> </li> <li>• FHD input (upscaled to UHD): <ul style="list-style-type: none"> <li>- 1x DVI</li> <li>- 1x 3G-SDI</li> </ul> </li> </ul> <p>Note: DP, HDMI and DVI all support HDCP 1.4<sup>3</sup></p>
<b>Video inputs MDSC-8532 12GP</b>	<ul style="list-style-type: none"> <li>• 4K-UHD input <ul style="list-style-type: none"> <li>- 1x DP 1.2 SST / MST up to 3840 x 2160 @ 50/60 Hz (user configurable)</li> <li>- 2x HDMI 2.0 up to 3840 x 2160 @ 50/60 Hz</li> </ul> </li> <li>• 4K SDI: <ul style="list-style-type: none"> <li>- Quad 3G-SDI up to 4x 1920x1080 @ 50/60 Hz</li> <li>- 2x 12G-SDI up to 3840 x 2160 @ 50/60 Hz</li> </ul> </li> <li>• FHD input (upscaled to UHD): <ul style="list-style-type: none"> <li>- 1x DVI</li> <li>- 1x 3G-SDI</li> </ul> </li> </ul> <p>Note: DP, HDMI and DVI all support HDCP 1.4<sup>3</sup></p>
<b>Video outputs MDSC-8532 SSTP</b>	<ul style="list-style-type: none"> <li>• DP 1.2 SST (main input copy)</li> <li>• 3G-SDI (loop-through)</li> </ul>
<b>Video outputs MDSC-8532 12GP</b>	<ul style="list-style-type: none"> <li>• DP 1.2 SST (main input copy)</li> <li>• 3G-SDI (loop-through)</li> <li>• 2x 12G-SDI (when 4K SDI input = 12G-SDI)</li> </ul>
<b>Other connectivity</b>	USB-A (Field FW update with USB stick)

3. HDCP (High-bandwidth Digital Content Protection) is a copyright protection technology using encryption technology of digital video signals.

	USB-B (remote control serial protocol)
<b>Display features</b>	User-programmable function keys, Picture-in-Picture, Picture-by-Picture, Image Mirror and Rotation, Zoom, Pan, Failover mode, User profiles, High quality upscaling from SD / FHD input to UHD, FW upload from memory stick
<b>Power consumption MDSC-8532 SSTP</b>	Max. 100W / 25V ± 10% Low power mode: < 2.0W typical
<b>Power consumption MDSC-8532 12GP</b>	Max. 110W / 25V ± 10% Low power mode: < 5.0W typical
<b>External power supply</b>	AC input: 100 – 240 VAC / 47-63 Hz auto-switch DC output: +25 VDC / 8 A Dimensions: 204 x 81 x 43 mm (8.0 x 3.2 x 1.7") Weight: 0.9 kg (2 lbs)
<b>DC power output</b>	DP connector: +3.3 V / 500 mA USB connector: +5 V / 1 A
<b>Dimensions (W x H x D)</b>	768 x 480 x 79 mm (30.2 x 18.9 x 3.1")
<b>Dimensions packaged (W x H x D)</b>	900 x 720 x 170 mm (35.4 x 28.3 x 6.7")
<b>Net weight (display only) MDSC-8532 SSTP</b>	12.0 kg (26.5 lbs)
<b>Net weight (display only) MDSC-8532 12GP</b>	12.2 kg (26.9 lbs)
<b>Net weight packaged MDSC-8532 SSTP</b>	19.0 kg (41.9 lbs)
<b>Net weight packaged MDSC-8532 12GP</b>	19.5 kg (43.0 lbs)
<b>Mounting standard</b>	VESA 100 x 100 mm
<b>Operating temperature</b>	0°C to 35 °C for performance 0 °C to 40 °C for safety
<b>Storage temperature</b>	-20 °C to 60 °C
<b>Operating humidity</b>	20% to 85% (non-condensing)
<b>Storage humidity</b>	10% to 85% (non-condensing)
<b>Operating altitude</b>	3000 m max. / 70 kPa
<b>Storage altitude</b>	5500 m max. / 50 kPa
<b>Certifications*</b>	<ul style="list-style-type: none"> <li>• Approvals/Marking: CE (Medical Device Class I), c-UL-us, DEMKO, CCC, BIS</li> <li>• Green compliance: ROHS-3, REACH, WEEE</li> <li>• ANSI/AAMI ES 60601-1:2005/(R)2012</li> <li>• CAN/CSA-C22.2 No. 60601-1: 14</li> <li>• IEC 60601-1: 2012 Edition 3.1</li> <li>• EN 60601-1: 2006 + A1:2013</li> <li>• IEC 60601-1-2 (2014)</li> <li>• EN 60601-1-2 (2015)</li> <li>• FCC CFR 47 Part 15 Subpart B (Class B)</li> <li>• ICES-003 (Class B)</li> </ul>

	<ul style="list-style-type: none"> <li>• GB17625.1-2012; GB4943.1-2011; GB/T9254-2008</li> <li>• IS 13252(Part 1):2010/ IEC 60950-1 : 2005</li> <li>• UL 60950-1, 2nd Edition (to make the equivalence with NOM-019)</li> </ul> <p>* Some of the listed certifications may still be pending. For the actual list of applicable certifications, please refer to the product page on <a href="http://www.barco.com">www.barco.com</a> or see the certification marks on the product label of your display.</p>
<b>Protection level</b>	IP21 (IP45 front side only)
<b>Warranty</b>	3 years

## Supported timings

Full HD and 4MP timings

<b>Format</b>	<b>SDI</b>	<b>DVI</b>	<b>HDMI</b>	<b>DP</b>
720x487@59.94Hz (NTSC)	Y	N	N	N
720x480p@59.94Hz	N	Y	Y	Y
720x480p@60.00Hz	N	Y	Y	Y
720x576i@50.00Hz (PAL)	Y	N	N	N
720x576p@50.00Hz	N	Y	Y	Y
800x600@60.00Hz	N	Y	Y	Y
800x600@75.00Hz	N	Y	Y	Y
1024x768@60.00Hz	N	Y	Y	Y
1024x768@70.00Hz	N	Y	Y	Y
1024x768@75.00Hz	N	Y	Y	Y
1152x864@75.00Hz	N	Y	Y	Y
1280x720p@50.00Hz	Y	Y	Y	Y
1280x720p@59.94Hz	Y	Y	Y	Y
1280x720p@60.00Hz	Y	Y	Y	Y
1280x1024p@60.0Hz	N	Y	Y	Y
1400x1050p@60.00Hz	N	Y	Y	Y
1600x1200p@60.00Hz	N	Y	Y	Y
1680x1050p@60.00Hz	N	Y	Y	Y
1920x1080p@29.97Hz	Y	Y	Y	Y
1920x1080p@30.00Hz	Y	Y	Y	Y
1920x1080p@50.00Hz	Y	Y	Y	Y
1920x1080p@59.94Hz	Y	Y	Y	Y
1920x1080p@60.00Hz	Y	Y	Y	Y
1920x1200p@60.00Hz	Y	Y	Y	Y

<b>Format</b>	<b>SDI</b>	<b>DVI</b>	<b>HDMI</b>	<b>DP</b>
2560x1440p@60.00Hz	N	N	Y	Y
2560x1600p@60.00Hz	N	N	Y	Y

UHD/4K timings

<b>Format</b>	<b>HDMI</b>	<b>DP 1.2 SST</b>	<b>DP 1.2 MST</b>
3840x2160@25.00Hz	Y	Y	Y
3840x2160@30.00Hz	Y	Y	Y
3840x2160@50.00Hz	Y	Y	Y
3840x2160@60.00Hz	Y	Y	Y

Available only with 12GP display version

<b>Format</b>	<b>SDI std</b>	<b>Square Division (SGD)</b>	<b>Sample-interleave (SI)</b>
3840x2160@50.00Hz	Quad-link	Y	Y
3840x2160@59.94Hz	Quad-link	Y	Y
3840x2160@60.00Hz	Quad-link	Y	Y
3840x2160@25.00Hz	Single-link (6G-SDI)	N	Y
3840x2160@29.97Hz	Single-link (6G-SDI)	N	Y
3840x2160@30.00Hz	Single-link (6G-SDI)	N	Y
3840x2160@50.00Hz	Single-link (12G-SDI)	N	Y
3840x2160@59.94Hz	Single-link (12G-SDI)	N	Y
3840x2160@60.00Hz	Single-link (12G-SDI)	N	Y
4096x2160@50.00Hz	Quad-link	Y	Y
4096x2160@59.94Hz	Quad-link	Y	Y
4096x2160@60.00Hz	Quad-link	Y	Y
4096x2160@25.00Hz	Single-link (6G-SDI)	N	Y
4096x2160@29.97Hz	Single-link (6G-SDI)	N	Y
4096x2160@30.00Hz	Single-link (6G-SDI)	N	Y
4096x2160@50.00Hz	Single-link (12G-SDI)	N	Y
4096x2160@59.94Hz	Single-link (12G-SDI)	N	Y
4096x2160@60.00Hz	Single-link (12G-SDI)	N	Y

## Dimensions

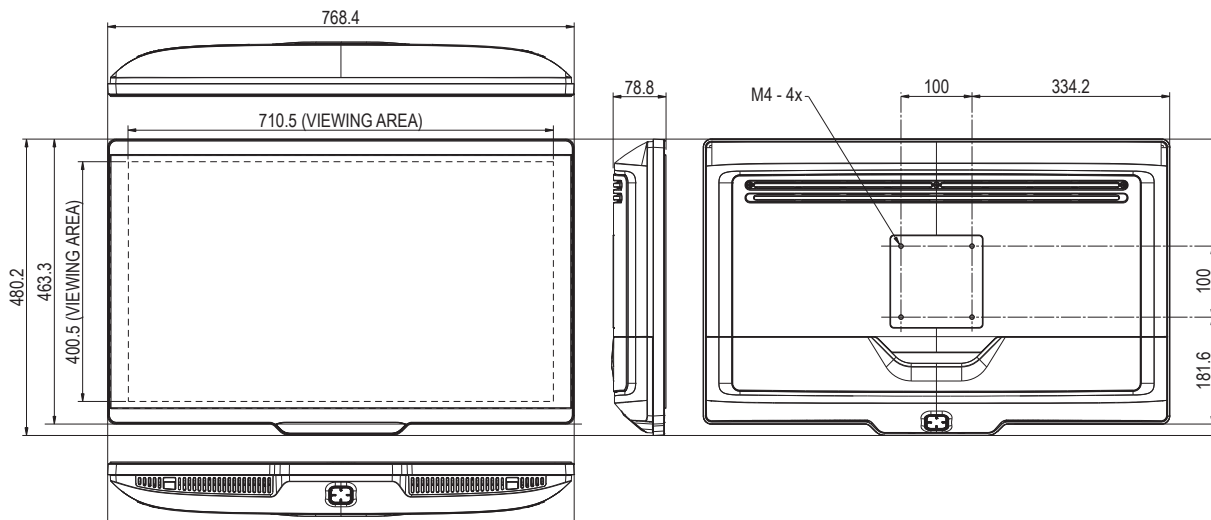


Image 6-1







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