

Instructions for Use

CuratOR[®] LX1910 / LS1910 1MP 19" LCD Monitor

Important




Please read the safety information and all information delivered with the product carefully to familiarize yourself with safe and effective usage.



Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.


 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
 CAUTION
indicates that minor personal injury can result if proper precautions are not taken.
NOTICE
indicates that material damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Use of EIZO products

 WARNING
EIZO products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by EIZO. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of their respective owners. Please refer to the trademarks listed in the appendix. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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1 Introduction

1.1 Contents of this document

This document explains the functionality and the approved use of the CuratOR LX1910 / LS1910. To ensure clarity, it does not contain all detailed information on this product.

The contents of this document are neither part of a previous or existing agreement, commitment or legal relationship, nor does it modify such.

Note
This documentation is available in electronic format only. It can be found on the CD-ROM provided and can be downloaded from www.eizo-or.com .

1.2 Intended use

Intended purpose

The CuratOR LX1910 / LS1910 is intended for the display of still images and moving images from various commercially available devices commonly used in a medical environment, in particular radiology. The monitor is optimized for the reproduction of grayscale X-ray images. The monitor is not suitable for mammography.

Intended patient population and medical conditions

The LX1910 / LS1910 can be used for the intended purpose irrespective of age, body weight and gender.

The LX1910 / LS1910 is intended to be used in combination with or mounted on medical devices. The monitor therefore has no direct contact with the patient.

The LX1910 / LS1910 is intended to display still images and moving images from various commercially available (medical) devices commonly used in a medical environment. The monitor cannot be used for direct diagnosis and as main device for monitoring live support equipment.

Intended users

The intended users for the LX1910 / LS1910 are qualified healthcare professionals.

Intended environment

The LX1910 / LS1910 is intended to be used in professional healthcare facilities such as clinics and hospitals. The monitor can be used in operating rooms (OR) or near patients, but is not limited to them. The monitor is not intended for direct patient contact!

The LX1910 / LS1910 is not suited for the following environments:

- Home-based healthcare facilities.
- Near short-wave therapy devices.
- Near an MRI-System.
- Built into vehicles, including ambulances.

Note

Serious incident

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.
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1.3 User groups

User

In the following, healthcare personnel such as surgeons or medical technicians are referred to as the "user".

Service / service personnel

"Service" or "Service personnel" identifies authorized personnel with knowledge of electrical and signal connection, local standards for image quality requirements, and safety of medical products, for example a hospital technician or manufacturer of medical devices.

Cleaning staff

"Cleaning staff" refers to personnel responsible for cleaning medical devices.


2 Safety information

2.1 General safety instructions

Correct and safe operation of EIZO devices assume professional transport, storage, installation, and connection, as well as careful operation and service.

The devices may only be used for applications for which they are intended.

For safety reasons, the following precautions must be observed:

 DANGER
<p>Please observe all warning information present on the device and in the instructions for use.</p> <p>There is a danger to life if warnings are not obeyed. Severe personal injury or damage to property may occur.</p> <p>Observe the safety requirements of EN 60601-1 (IEC 60601-1)</p> <p>To prevent injury to patients and users, connect the electrical system in accordance with the safety requirements of EN 60601-1 (IEC 60601-1) for "Safety requirements for medical electrical systems".</p> <p>Connecting the protective earth conductor</p> <p>If the device is connected to line power, the device must be connected to a protective ground conductor. This is the only way to ensure that the touch leakage current in a first fault event does not exceed 500 µA.</p> <p>The interruption of the device's protective conductor is considered a first fault event in accordance with EN 60601-1.</p> <p>Use the following measures to ensure that the leakage currents remain below the specified limits:</p> <ul style="list-style-type: none">• Separators for signal input unit or signal output unit• Use of a safety isolating transformer• Use of the additional protective ground terminal <p>Mounting of the monitor: The monitor's suspension arm must have its own protective ground conductor. This protective ground conductor guarantees, together with the protective ground conductor of the monitor, that the housing leakage current always remains less than 500 µA, even in the event of a single fault condition.</p> <p>No unauthorized opening of the device / no unauthorized service or maintenance work</p> <p>The device may only be opened by qualified personnel. Likewise, service or maintenance work may only be carried out by qualified personnel. There is a risk of electric shock.</p> <p>No liability is accepted for death and injury to persons or damage to property resulting from work carried out by non-qualified personnel.</p> <p>Do not touch components in the device</p> <p>If the device is connected to the line power, components in the device are subjected to high voltages. Touching the components may be fatal.</p> <p>No contact between device and patients</p> <p>The device is not suitable for direct contact with a patient. The device and patient must never be touched simultaneously. Otherwise there is a danger to life and limb.</p>

 **DANGER**

Please observe all warning information present on the device and in the instructions for use.

There is a danger to life if warnings are not obeyed. Severe personal injury or damage to property may occur.

Never use defective power cables

If a damaged or unsuitable power cable is used, it could result in a fire or electric shock. Only use power cables with PE contacts approved by the manufacturer.

Disconnect the power cable correctly

When disconnecting the power cable, always do so by holding the plug. Ensure that your hands are dry. There is a risk of electric shock.

Do not insert any objects into the housing

Objects inserted into the housing may result in an electric shock or damage to the device.

Do not place any objects on top of the device

If you place objects on top of the device, this can lead to overheating and fire.

Avoid penetration of liquid

Liquids seeping into the device may result in electric shock or device failure.

 **CAUTION**

Extensive damage to property may result if the device is not connected correctly

That is why you should observe the warning information:

Connection must be carried out by specialists

Please ensure that all steps are taken to avoid injuries or incorrect diagnoses.

- Only use the video cables specified by the manufacturer for the connection.
- Only use power cables with PE contacts.
- Only use power outlets with PE contacts.
- Do not connect too many devices to a power outlet or extension cable.
- Observe the information provided by the respective manufacturer.
- If required by the application or local regulations, QA software must be used for quality control and documentation.

Connection in the USA and Canada

Molded power supply plugs must comply with the requirements for "hospital grade attachments" CSA Std. C22.2 No. 21 and UL 498.

Connection in China

Only use power cables approved for China. These power cables are identified by the labels "CCC" or "CQC".

Observe the country-specific regulations

Observe all regulations of the country in which the device is used.

NOTICE

Extensive damage to property may result if the device is not connected correctly

That is why you should observe the warning information:

- Desktop installation:
Place the device on a solid and level surface. The attached stand, as well as the installation surface, must be suitable for the weight of the device.
- For mounting on a wall or ceiling suspension:
The mount unit must be suitable for the weight of the device.
- For installation in a rack:
Observe the installation sequence, and provide ventilation for the device.

Provide adequate air circulation

When installing the device, ensure that there is adequate air circulation for operation. The permissible ambient temperature range must not be violated. Otherwise, the device could be destroyed by overheating.

Avoid sources of heat

Do not install the device in the vicinity of sources of heat, such as radiators, heating appliances or other devices that can generate or emit heat.

Do not subject the device to jolting or shocks

The device contains sensitive electronic components that could be damaged by jolting or shocks.

Only switch on a cold device following adaptation to room temperature

If the device is brought into a room with a higher or rising temperature, condensed water will form in and on the device. Do not switch on the device until the condensed water has evaporated. Otherwise, the device could be damaged.

NOTICE

Extensive damage to property may result if the device is not connected correctly

That is why you should observe the warning information:

Transportation only in original packaging

Use the original packaging for transportation, and transport in the correct shipping position. Be sure in particular to protect the monitor LCD modules from shocks.

Care of device / cleaning agents

- Remove water drops immediately; extended contact with water discolors the surface.
- Only clean the surfaces using the cleaning agents referred to in the Instructions for Use.
- Monitor: The screen is extremely sensitive to mechanical damage. Absolutely avoid scratches, shocks, etc.

What to do if the device is faulty

If the following conditions exist, the device must be disconnected from the line power supply and checked by qualified personnel:

- Damage to the plug or power cable.
- After liquid seeps into the device.
- If the device has been exposed to moisture.
- If the device does not function or if a fault cannot be eliminated using the Instructions for Use.
- If the device has been dropped and/or the housing damaged.
- If the device smells of burning or makes peculiar noises.


Be aware of the monitors aging


Note that monitors can fail as a result of aging, and that image properties such as brightness, contrast, and color value can change.

Do not touch the monitor screen

Due to mechanical pressure or electrostatic discharges, touching the screen can result in brief disturbances to the image.

2.2 Product-specific safety instructions

 CAUTION
Setting the monitor height When the monitor is installed on a stand, setting the monitor height can result in injuries. <ul style="list-style-type: none">• Carefully change the monitor height.• When changing the height of the monitor, make sure that you do not trap your fingers or any other objects.

 CAUTION
Tilting the monitor Tilting the monitor can result in injuries or damage to the device. <ul style="list-style-type: none">✓ The attachment screw insertion depth into the monitor must equal max. 10 mm.• Ensure that the monitor is stable after installing a stand.

NOTICE
Subsequent installation of a stand If a stand is subsequently attached to the monitor, the stand must meet the requirements of standard EN 60601 so that the system, comprising the stand and monitor, meets the requirements.

Note
No zero error rate LCD monitors do not have a zero error rate. For this reason, the image parameters can change over time, e.g. reduced luminance or changing/fading colors.

Note
Image quality To maintain constant image quality, EIZO recommends cleaning the monitor on a regular basis and checking image properties in accordance with all applicable local regulations.

3 Description

3.1 Scope of delivery

The device and various components are included in the scope of delivery. After unpacking, check the scope of delivery for correctness and completeness.

Note
Keep the packaging material for subsequent transport of the device.

Device

The CuratOR LX1910 / LS1910 is a 1MP 19" LCD Monitor for installation in a ceiling or wall mount, or for installation in a stand. The CuratOR LX1910-S / LS1910-S version has a stand. Otherwise, the versions are identical.

Product	Order number	Description
CuratOR LX1910 / LS1910	6GF62102JL10 / 6GF62102JL50	Without stand
CuratOR LX1910-S / LS1910-S	6GF62102JL01 / 6GF62102JL51	With stand

Components

The following components are included in the scope of delivery:

- 1 x adapter, D-Sub to DVI
- 1 x adapter, BNC to D-Sub
- 1 x VESA screw kit (6GF62102JL10 / 6GF62102JL50 only)
- 1 x General safety instructions (22 languages)
- 1 x Manual CD

3.2 Features

The CuratOR LX1910 / LS1910 has the following features that permit a wide range of applications:

Perfect picture reproduction thanks to LCD technology

The use of LCD technology eliminates picture geometry distortions and color spots.

The monitor delivers flicker-free images even at low border rates (60 Hz). The monitor thus meets the strictest ergonomic requirements.

Screen resolution

The LX1910 / LS1910 is equipped with an active 19" TFT display that has an extremely wide viewing angle. The monitor offers maximum grayscale contrast across a very wide viewing angle.

The optimum screen resolution is 1280 x 1024 pixels. Video signals with other resolutions, as are common in medical technology, are automatically adapted to the screen size. Alternatively, they can be displayed in original size (1:1).

Digital and analog video signals

Digital or analog video sources can be connected via the DVI-I input.

Digital video sources can be connected via the DisplayPort input.

Use the On Screen Display (OSD) to adapt the monitor if necessary.

4 Setup and installation

⚠ CAUTION
Changes to device Do not make any mechanical or electric changes to the device. Otherwise the device warranty becomes invalid. The manufacturer is not liable for changes made to the device.
Note
The setup and installation may only be carried out by service personnel.

4.1 Installation site

Note the following conditions at the installation site.

NOTICE
The power switch and connections must be accessible at all times When installing and connecting the monitor, ensure that the power switch and the connections are accessible at all times.
NOTICE
Condensation If the device is brought into a warm environment from a cold one, condensation may form in the device. This could result in a short circuit when switching on the device, damaging it. <ul style="list-style-type: none">• Wait until the condensed water has evaporated, including that inside the device, before you switch it on. This can take several hours.

Sufficient ventilation

Ventilation holes are located on the rear of the housing.

If the ventilation holes are covered or closed, the heat generated in the monitor will not be dissipated sufficiently.

- Do not cover the ventilation holes.
- Do not close the ventilation holes.
- The minimum distance from the top, back, and side of the monitor to the wall must be at least 10 cm, and at least 15 cm from other heat-emitting devices.

Avoid dusty environments

The monitor is intended for use in the clean environment of medical diagnostics. In dusty environments, ventilation holes in the back can allow dust to penetrate into the monitor. In the worst case, deposits are possible which become evident as dark spots in a white picture and result in deterioration of the luminance.

- Protect the monitor from dust, for example through appropriate construction measures at the installation site.
- During transport, use the original packaging or service packaging.

Maintain the permissible ambient temperature

The ambient temperature should be in a range of +5 °C to +40 °C. If the ambient temperature exceeds this range it could result in overtemperature in the monitor. In this case the Operation LED initially flashes orange. If the temperature continues to rise the LED will flash red and brightness will be reduced to prevent overheating.

Avoid reflections on the screen

The monitor has an anti-glare surface that is only effective if the screen is clean and grease-free.

- Comply with the specifications for Cleaning.
- Position the monitor to avoid reflections on the display area. Reflections can be caused by lights, windows, furniture with shiny surfaces, or light-colored walls.
- In order to reduce reflections on the monitor, only use non-dazzling reflector bulbs for the ceiling lighting.

Avoid shocks and impacts

The monitor is sensitive to shock. Shocks and impacts on the panel surface can lead to total failure.

- Ensure that such mechanical influences are avoided.

Movable installation

If the monitor is installed such that it can move, make sure that persons or objects in the facility are not endangered by the monitor's range of movement.

4.2 Installing the monitor

Mounting on a pole or a monitor stand

Multiple monitors can be installed flush horizontally and vertically to one another. The monitor has a VESA 100 x 100 adapter.

Note the following during installation:

- The maximum torque for attaching to the holder is 1.2 ± 0.2 Nm.
- The screws used for attaching to the holder must meet the following requirements:

Number	4
Thread	M4
Solidity class	8.8
Insertion depth	max. 10 mm

- Mounts must be tested and approved by the manufacturer for the weight to be supported.
- An installed stand must be sufficiently stable to withstand tilting of up to 10° without toppling the monitor.

5 Connecting

Note

The connection may only be made by service personnel.

5.1 Safety information for connection

All safety information and warnings for the device must be observed to ensure danger-free operation.

CAUTION

Changes to device

Do not make any mechanical or electric changes to the device. Otherwise the device warranty becomes invalid.

The manufacturer is not liable for changes made to the device.

CAUTION

Shielding measures

Follow all shielding measures in accordance with local EMC directives. If these guidelines are not observed, device malfunction may result.

CAUTION

Grounding

The permissible leakage current is not exceeded during the first fault event in accordance with EN 60601-1. To ensure the greatest possible electrical safety, the device must be grounded with an additional protective earth conductor.

CAUTION

Excessive currents, short circuits, and ground faults

In accordance with national standards and regulations, protection against excessive currents, short circuits, and ground faults must be incorporated into the building installation.

NOTICE

Changes to device settings

Device settings may only be adjusted by service personnel.

NOTICE

Disconnecting from line power

Always set the power switch to "Off" before disconnecting the device from power. Otherwise the device could be destroyed.

NOTICE

Cable installation

Observe the following instructions:

- Only shielded cables are to be used for all signal connections.
- The connecting cables must not be kinked.
- The minimum bending radius of a connecting cable generally equals five times the cable diameter.
- Do not route signal cables and power cables next to one another. Otherwise, line power subject to heavy interference could result in reversible pixel errors.
- The device must not share a line power supply with motors or valves (interference!).
- Externally connected cables can represent a trip hazard. Make sure that all incoming cables are safely routed.
- If the device offers strain relief mechanisms for the cables, use them to prevent unintended loosening of connected cables.

5.2 Device connectors

NOTICE

Isolating the device from mains supply

Means of isolating the device from mains supply is by disconnecting the AC power line.

- Make sure that the AC power line is easily accessible.

5.2.1 Connector locations

The connectors and the main switch are located on the back of the device.

NOTICE
Disconnecting from line power
The device is disconnected from line power by turning off the power switch.
<ul style="list-style-type: none"> • Make sure that the main switch is easily accessible.

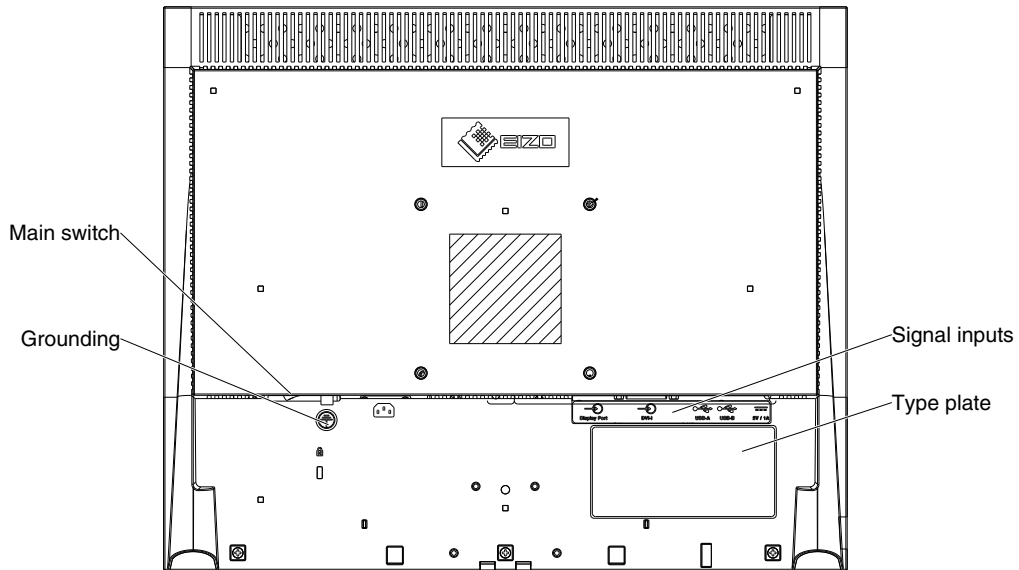
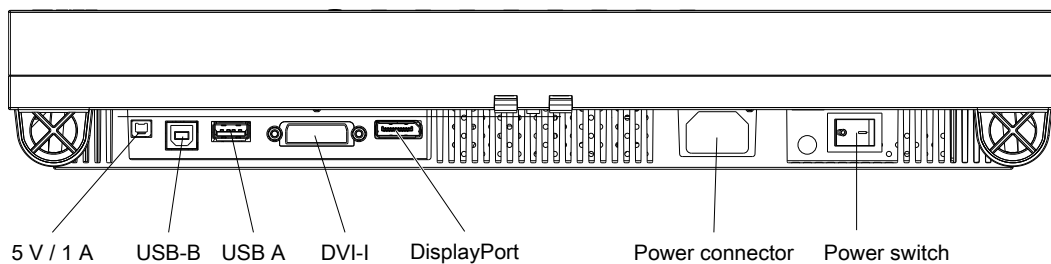


Fig.: Rear view CuratOR LX1910 / LS1910

5.2.2 Connection panel



5 V connector

The monitor has a 5 V output that can be used to supply external devices.

USB ports

The USB-A ports enable communication with external devices.

The USB-B port enables communication between the monitor and a connected PC, or can be used for service purposes

DVI-I connector

The monitor has a DVI-I connector, which can process digital and analog input signals.

DisplayPort (DP) connector

The monitor has a DisplayPort connector, which can process digital input signals.


Power connector

The device's power supply is connected using an appliance plug.

Power switch

The power switch is used to turn the device on and off.

5.3 Connecting the signal cable

 CAUTION
Connector Connectors may only be plugged in or removed by Service when the device is switched off.


Prerequisite


The monitor has to be installed in the ceiling suspension, wall mount, or stand.


Procedure

1. Connect the signal cable to the DVI-I connector or the DisplayPort connector of the monitor.
Note: All signal inputs can be connected at the same time.
2. Tighten the screws to secure the DVI-I signal cable.
3. If necessary, connect the USB cables to the upstream or downstream USB port of the monitor.

5.4 Connecting the power cable

 DANGER
Connecting to line power <ul style="list-style-type: none">• The device is designed for line power with a protective earth conductor.• To avoid risk of electric shock, this device must only be connected to line power with a protective earth conductor.• Contact the responsible building technician or a qualified electrician if you are uncertain whether the line power is equipped with a protective earth conductor.

 CAUTION
Risk of damage to the device <ul style="list-style-type: none">• Only use power cables or connection cables with protective earth conductor and appliance plug according to DIN 49547, IEC 60320 (max. length 3 m, cable e.g. H05VV-F 3x1.0 mm²). The cable must comply with the safety regulations of the respective country.• Device fuses may only be replaced by authorized repair centers. The failure of a device fuse may result in a defect in the device. Do not use any other fuse.

 CAUTION
Connector <p>Connectors may only be plugged in or removed by Service when the device is switched off.</p>

Prerequisite

The monitor has to be installed in the ceiling suspension, wall mount, or stand.

Procedure

1. Connect the appliance plug to the monitor power connector.
2. The power cable can be secured using a cable grip.

6 Commissioning

Note

Commissioning may only be carried out by service personnel.

The following sections describe how to make the settings for optimum operation of the system, comprising the monitor and video source.

The video source for example can be a PC with graphics card, or a diagnostic imaging device.

6.1 Switching on the monitor

To switch on the monitor, proceed as follows:

- Switch on the monitor using the power switch.
Note: The power switch is located on the back of the monitor, next to the connection panel.
- Wait until the operation LED in the front panel of the monitor turns green.

6.2 Using a screen saver

Image sticking may occur with LCD monitors. Image sticking is an effect whereby a faint image of the previous screen contents can be seen after the display contents have changed. This occurs in particular when the same image content is displayed over an extended period of time.

You can prevent image sticking by using a screen saver with image content that changes regularly.

6.3 Selecting the LUT

Five LUTs (Look Up Tables) are predefined on the monitor. The requested LUT can be set with the function "LUT" in the OSD menu "image" or by quick link with the OSD menu closed by using the OSD button 1.

6.4 Adapting the monitor to an analog video source

Note

- | |
|--|
| <ul style="list-style-type: none">• To achieve optimum picture quality, the monitor must be operated with a graphics resolution of 1280 x 1024 pixels (1 MP). A corresponding setting for the graphics card of the video source must be made.• To set the monitor optimally, allow it to warm up at least 30 minutes. |
|--|

This section describes how to adapt the monitor to operate with an analog video source. The procedure is divided into the following steps:

- Adjust the position, phase and frequency.
- Adapt brightness and contrast.

6.4.1 Adjusting the position, phase, and frequency

Analog video sources deliver signals that have to be converted into digital signals by the LCD monitor using a video digitizer. Depending on the source, cable length, and video mode (e.g. VGA, SVGA, XGA), this conversion may cause certain deviations which cannot be corrected fully automatically by the monitor.

Comparison of position, frequency and phase

Note
The auto function for adjusting brightness and contrast is only available for analog signals. The picture quality for digital video signals is already optimized, and adjustment is not required.

If the image geometry is not shown correctly, proceed as follows:

1. Use the SMPTE test pattern for the display.
2. Select the function "Analog Settings" in the "Geometry" menu.
3. In the "Geometry > Analog Settings" menu, select the function "Auto Position/Frequency/Phase".
4. Start the autofunction with "Yes".
 - ⇒ The monitor recognizes the standard used, and has preprogrammed set-up values for each standard. However, depending on the graphics card used, fine adjustment may still be required for the selected standard.

Fine adjustment of the monitor

During fine adjustment, the monitor is adjusted manually to the respective video source. The fine adjustment encompasses settings for position, frequency, phase and image sharpness.

- In the menu "Geometry > Analog Settings" of the OSD, set the position, frequency and phase.

Note: By adjusting the image position, you ensure the full picture is displayed on the active area of the monitor, down to the last pixel. If the horizontal position is shifted 1 pixel too far to the right for example, a 1 pixel-wide edge on the right side of the picture is lost, and a 1 pixel-wide black column is displayed on the left side.
- Set the sharpness in the "Geometry" menu.

6.4.2 Adapting brightness and contrast

The brightness and contrast must be adjusted for the respective graphics card in the system on site due to different output levels.

Note
The exact brightness and contrast settings are only possible with a photometer.

Perform the following steps unless a specific procedure is specified for the system.

Adjustment of brightness and contrast

Note

The auto function for adjusting brightness and contrast is only available for analog signals. The picture quality for digital video signals is already optimized, and adjustment is not required.

1. Use the SMPTE test pattern for the display.
2. Select the function "Analog Settings" in the "Geometry" menu.
3. In the menu "Geometry > Analog Settings", select the function "Auto brightness/contrast".
4. Start the autofunction with "Yes".
 - ⇒ The automatic values for brightness and contrast are set. Optimization of brightness and contrast may be necessary depending on the graphics card. Therefore, perform the following steps.

Optimizing the values for brightness and contrast

1. Direct the photometer toward the black level (0% field) of the SMPTE test pattern.
2. Change to the "Geometry > Analog Settings" menu in the OSD.
3. Using the "Brightness" function, reduce the brightness value until the measured luminance no longer falls.
4. Increase the brightness value a little:
 - ⇒ This is the optimum brightness value.
5. Direct the photometer toward the white level (100% field) of the SMPTE test pattern.
6. Using the "Contrast" function, find the contrast value at which the luminance remains constant.
7. Lower the contrast value until there is an initial change in brightness.
 - ⇒ This is the optimum contrast value.
8. Exit the OSD to save the values.
 - ⇒ You have set the brightness and contrast for optimized display of the 5% and 95% squares of the SMPTE test pattern.

7 Operation

Once installed, user operation of the monitor consists of switching the power on and off.

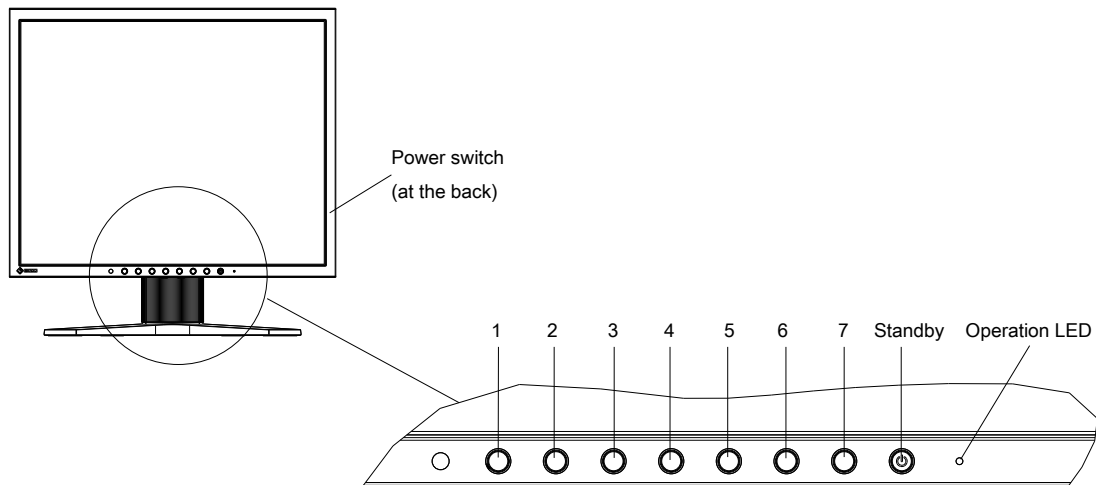
After switching on the monitor, the operation LED is lit green continuously. If the LED lights up with another color, the monitor is not operating within normal operation.

Measures in the event of a failure

Note
Device malfunction in operation
If the device is not working properly, check the system for basic connection and operating errors before contacting service personnel.

7.1 Operator controls

NOTICE
OSD operation by service personnel only
The following sections describe the operating elements and the OSD menu. The description is directed exclusively to service personnel.



The OSD keys and the operation LED are located on the front of the monitor.

The operation LED illuminates when power is supplied to the device and the power switch is turned on.


OSD keys

The OSD keys could be locked or unlocked.

The unlocked OSD keys have the following functions:

OSD key	Function
1	<ul style="list-style-type: none">• Changing the LUT
2	<ul style="list-style-type: none">• Switching the input signals
3	<ul style="list-style-type: none">• Without function
4	<ul style="list-style-type: none">• Open OSD menu• Execute menu functions• Open or leave menus
5	<ul style="list-style-type: none">• Navigate down in the OSD menu• Decrease/change values
6	<ul style="list-style-type: none">• Navigate up in the OSD menu• Increase/change values
7	<ul style="list-style-type: none">• Exit OSD menu

7.2 Lock or unlock OSD menu

 CAUTION
Locking and unlocking the OSD menu <ul style="list-style-type: none">• Only authorized service personnel may lock or unlock the OSD menu.• The OSD must be locked if inappropriate operation by the user can impact the intended use of the monitor.

Note
Unlock the OSD menu (prerequisites) <p>The OSD cannot be unlocked unless one of the following prerequisites is met:</p> <ul style="list-style-type: none">• A signal is present at the selected signal input. See also "Monitor settings" menu ▶ 32].• Searching for sources becomes active once the monitor is switched on. Searching for sources terminates after about 10 seconds if power saving mode has been set in OSD, otherwise it will run continuously.

Unlock OSD menu

- Press key 7 and then key 5 three times.
(Key 1 is the first key from the left)

Lock the OSD menu

- In the OSD menu "Monitor Settings" under "OSD settings", set the "OSD keylock" function to "On".
The OSD menu then becomes locked once power to the monitor is cycled.

7.3 Overview of the OSD menu

Note

- The OSD menu is only available if a video source is connected.
- All signal inputs may be connected simultaneously.

You can use the OSD menu to change monitor settings or display information about the monitor. The following sections present the menus and available settings.

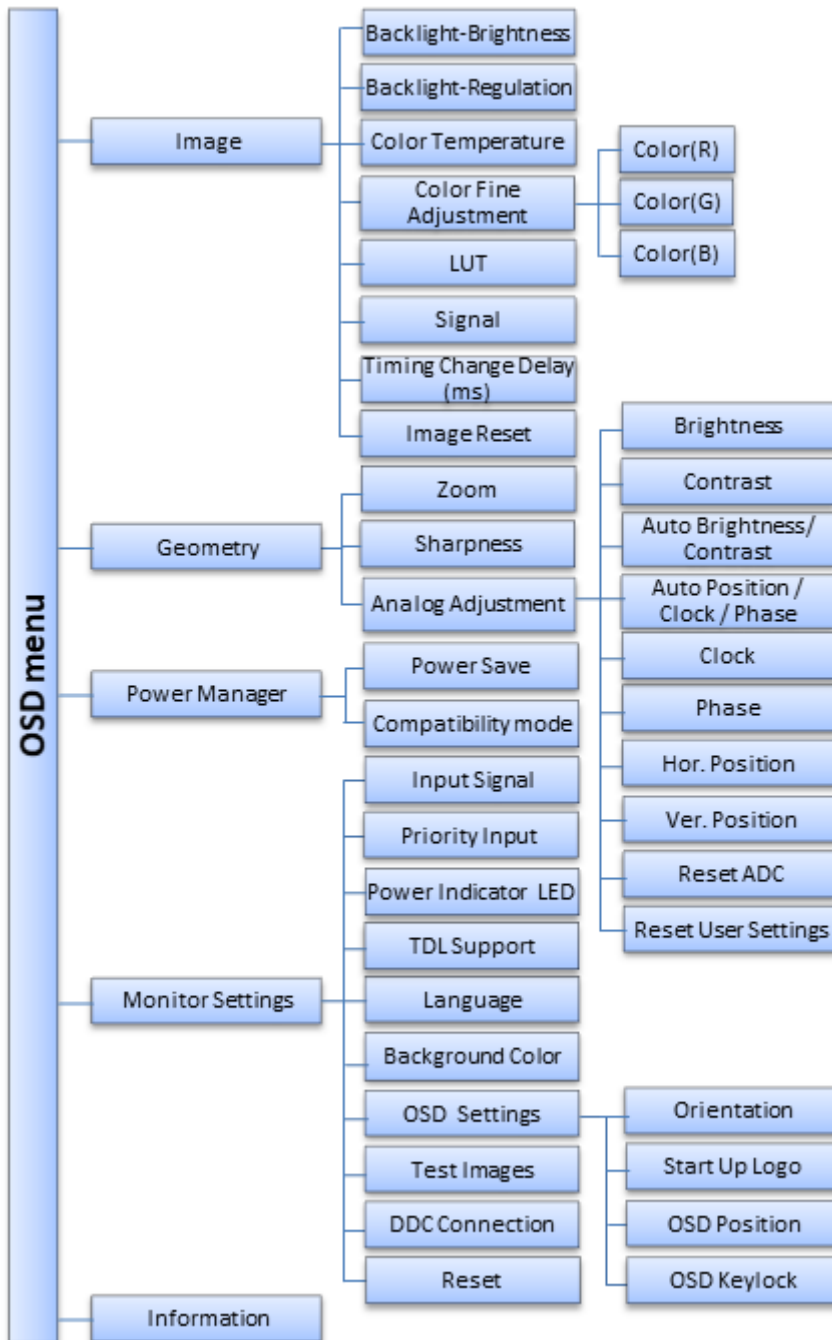
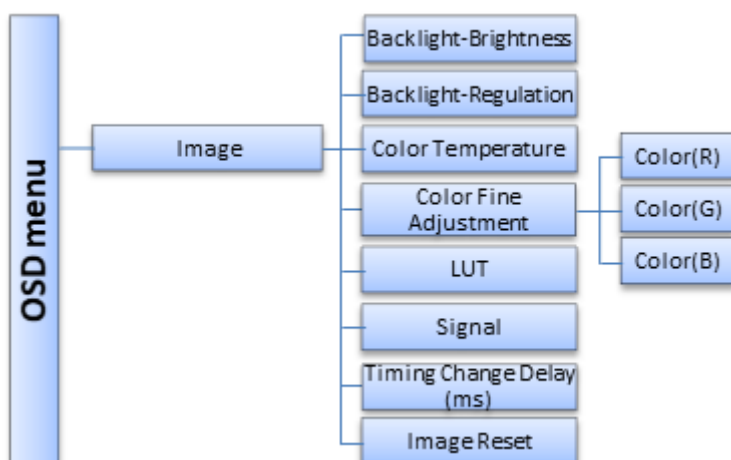


Fig.: Overview of the OSD menu

7.4 "Image" menu



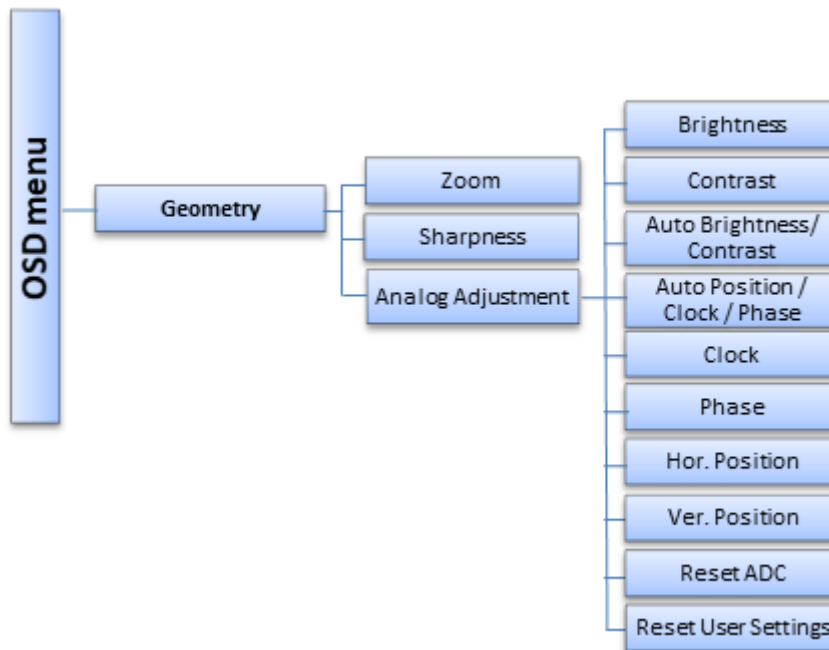
Function	Values	Description
Backlight-Brightness	With control enabled: -1023–1023 With control disabled: 409–4096	Set the brightness of the monitor backlight Correction value to adjust the overall brightness to the background lighting.
Backlight Regulation	On Off <i>Default: On</i>	Set backlight regulation If "On" is selected, the backlight brightness is changed to the set value using the backlight sensor. If "Off" is selected, backlight brightness is controlled using the set value and the backlight sensor is deactivated. Note: The "Off" setting is only saved until the monitor is next switched on again.
Color Temperature	Native LUT 6500K (x=0.313/ y=0.329) 7500K (x=0.299/ y=0.315) 9300K (x=0.285/ y=0.293) <i>Default: Native LUT</i>	Select color temperature Note: The value can only be set if "LUT" is not set to "No Correction". Note: "Native LUT" is using the LUT calibrated value.
Color Fine Adjustment	Red 0–255 Green 0–255 Blue 0–255 <i>Default: 255 each</i>	Set color manually Change the values for the red, green, or blue proportion of the set color temperature. Note: The value can only be set if "LUT" is not set to "No Correction".

Operation
7.4 "Image" menu

Function	Values	Description
LUT	<p>LX1910: 1 - DICOM (0.6–400) 2 - DICOM (0.8–400) 3 - CRT (0.8–400) 4 - CIE DIN6174 (0.8–400) 5 - Gamma 2.2 (0.8–400) No Correction <i>Default: 1 - DICOM (0.6-400)</i></p> <p>LS1910: 1 - DICOM (nat-250) 2 - DICOM (0.4–250) 3 - CRT (0.4–250) 4 - CIE DIN6174 (0.4–250) 5 - Gamma 2.2 (0.4–250) No Correction <i>Default: 1 - DICOM (nat-250)</i></p>	<p>Select the Look Up Table (LUT)</p> <p>The LUT determines the monitor's gamma curve. By using a different LUT for example, you can highlight specific grayscale levels.</p> <p>Note: Select a DICOM LUT to view radiographic images.</p> <p>Note: If "No Correction" is selected, the functions "Color Temperature" and "Color Fine Adjustment" are not available.</p>
Signal	<p>Color RGB Monochrome (RGB) Monochrome (R) Monochrome (G) Monochrome (B) <i>Default: Color RGB</i></p>	<p>Switch signal between color and monochrome</p> <ul style="list-style-type: none"> • Color RGB: Color setting • Monochrome (RGB): Red, green and blue are displayed as grayscale weights. • Monochrome (R): The red channel is displayed as a monochrome signal. • Monochrome (G): The green channel is displayed as a monochrome signal. • Monochrome (B): The blue channel is displayed as a monochrome signal.
Timing Change Delay (ms)	<p>Inactive 50–500 <i>Default: Inactive</i></p>	<p>Set the delay for timing changes</p> <p>Changing one of the following parameters corresponds to a timing change, and the monitor begins to resynchronize ("Auto in progress" displayed):</p> <ul style="list-style-type: none"> • H frequency • V frequency • V total <p>To prevent this from happening as a result of each and every signal disturbance, the value representing the permissible number of faulty or changed borders can be increased using the "Signal change delay" function. This is required in the case of unstable signal sources, for example.</p> <p>Note: Please note, however, that once the function is active, there will be a delay of several milliseconds even for desired timing changes. The higher the value of the function, the greater the delay.</p>

Function	Values	Description
Image Reset		<p>Reset the image parameter to the default settings</p> <p>All settings made in the “Image” menu, except for “color temperature”, are reset to the defaults. The monitor settings and settings of the AD converter remain in place.</p>

7.5 “Geometry” menu



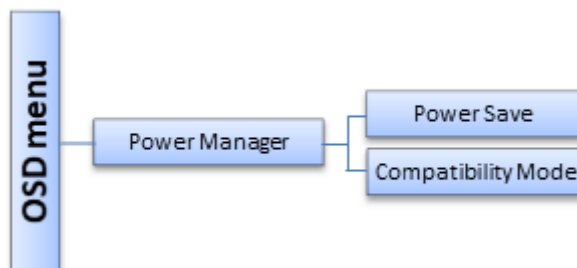
Function	Values	Description
<p>Zoom</p>	<p>Fill image</p> <p>Fill format</p> <p>One to one</p> <p><i>Default: Fill image</i></p>	<p>Select image size</p> <p>Fill image: The picture is displayed to fill the complete screen in the native resolution of 1280 x 1024 pixels.</p> <p>Fill format: The picture is zoomed to the maximum screen area with retention of the aspect ratio.</p> <p>One to one: The picture is displayed on screen in its original resolution.</p> <p>Note: It is available if the horizontal or vertical resolution is less than or equal to the native resolution.</p>
<p>Sharpness</p> <p>Note: The image sharpness can only be set if “One to one” is selected for “Zoom” and the input resolution is not “1280 x 1024 pixels”.</p>	<p>1–5</p>	<p>Set image sharpness</p> <p>Use this function for “softer” or “harder” display of the picture, or to reduce scaling artifacts.</p> <p>A smaller value generates a “softer” impression, a higher value a “harder” one.</p> <p>You have to determine the most suitable sharpness setting visually.</p>

"Analog Adjustment" menu

Note		
The "Analog Adjustment" menu is only displayed if an analog image source is connected to the DVI-I input.		
Function	Values	Description
Brightness	-99–99	Set brightness Adapting the representation of darker picture areas.
Contrast	-99–99	Set contrast Adapting the representation of brighter picture areas.
Auto Brightness/Contrast		Auto function Auto functions are used to automatically set the image parameters of analog signals. When you use the function, brightness and contrast are automatically set. Note: The quality of settings depends on the image content and type of synchronization. We recommend displaying an SMPTE test picture.
Auto Position/Clock/Phase		Auto function Auto functions are used to automatically set the image parameters of analog signals. When you use the function, the position, phase and clock are automatically set. Note: The quality of settings depends on the image content and type of synchronization. We recommend displaying an SMPTE test picture.
Clock		Set the input signal clock If vertical lines easily display blurred, this can be corrected by adjusting the clock. Note: To correct the clock, we recommend displaying a vertical line from the "Pixel On/Off" test pattern.
Phase	0–63	Set the input signal phase If vertical lines are slightly blurred, this can be corrected by adjusting the phase. Note: To correct the phase, we recommend displaying a vertical line from the "Pixel On/Off" test pattern.
Hor. Position		Shift the picture in the horizontal direction Note: The setting is optimal when the entire image to be displayed fills then entire display surface of the monitor, down to the last pixel (with the identical monitor and graphics card settings).
Ver. Position		Shift the picture in the vertical direction Note: The setting is optimal when the entire image to be displayed fills then entire display surface of the monitor, down to the last pixel (with the identical monitor and graphics card settings).

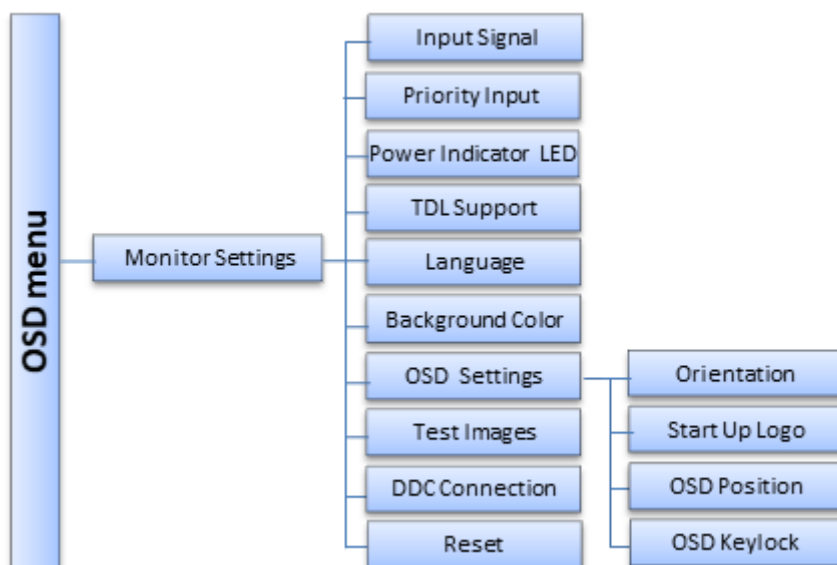
Function	Values	Description
Reset ADC		Reset analog settings If you perform this function, the brightness and contrast values will be reset to the values after the final adjustment.
Reset User Settings		Clear user settings The following settings are reset to default: <ul style="list-style-type: none"> • Brightness • Contrast • Position (horizontal and vertical) • Zoom • Clock • Phase • Sharpness • Color temperature

7.6 "Power Manager" menu



Function	Values	Description
Power Save	On Off <i>Default: On</i>	Set energy saving modes When you activate "Power Save", the backlight is switched off as soon as there is no input signal. This reduces energy consumption and increases the service life of the backlight. With "Power Save" disabled, the backlight is not switched off.
Compatibility Mode	On Off <i>Default: Off</i>	Set compatibility mode Depending on the PC and the graphics card used, the input signal may go undetected and the monitor may not be able to exit Power Save mode. Set this function to "On" if this occurs.

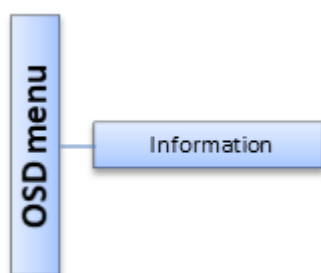
7.7 "Monitor settings" menu



Function	Values	Description
Input Signal	Automatic Manual <i>Default: Automatic</i>	Set the source scan When "Automatic" is set, the signal source is set automatically.
Priority Input	Off DVI-A <i>Default: Off</i>	Set priorities of analog sources When "DVI-A" is set, the monitor switches automatically from the digital input to an analog input as soon as there is an analog signal.
Power Indicator LED	On Off <i>Default: On</i>	Set the brightness of the operation LED.
TDL Support	On Off <i>Default: On</i>	Set TDL Support When set to "On", the DVI interface of the monitor will supply power to the TDL module.
Language	German English <i>Default: English</i>	Set the OSD menu language.
Background Color		Set border color Note: Can only be set if the image size is set to "One to one" in the "Geometry" menu. If the displayed image has a border, its grayscale can be set here.
OSD Settings: Orientation	Landscape mode Portrait format <i>Default: Landscape mode</i>	

Function	Values	Description
OSD Settings: Start Up Logo	On Off <i>Default: On</i>	Logo when starting the monitor If set to "On", the company logo is displayed when the monitor is started.
OSD Settings: OSD Position	Middle Top right Bottom right Bottom left Top left <i>Default: Bottom right</i>	Select the OSD menu position on the screen.
OSD Settings: OSD Keylock	On Off <i>Default: Off</i>	Set keylock If you select "On", the OSD keys are locked when you leave the OSD menu or reboot the monitor.
Test Images	Deactivated 0–8 <i>Default: Deactivated</i>	Select the test pattern to be displayed.
DDC Connection	Active input DVI-D DisplayPort <i>Default: Active input</i>	Set communication interface Serial communication is always active. It can take place either via the DVI-D or the Display-Port interface. "Active input" will enable communication via the selected input.
Reset	Yes No <i>Default: No</i>	Reset firmware to standard values The settings in the OSD menu "Image" and the AD converter remain in place.

7.8 "Information" menu



Function	Values	Description
Information	for display only	Displays the current monitor and operating data in the respective picture mode <ul style="list-style-type: none">• Serial number• Power on time (h)• Backlight on time (h)• Input signal (resolution and signal frequency)• Mode (for analog signals only)• Temperature in the monitor [°C]• Firmware version

8 Cleaning and check settings

8.1 Cleaning

NOTICE
<p>Device maintenance, cleaning and disinfecting</p> <ul style="list-style-type: none"> • Make sure liquids do not seep into the device. Liquids that seep into the device may result in an electric shock or failure of the device. • The screen is extremely sensitive to mechanical influences. Absolutely avoid scratches, shocks, etc. for this reason. • Clean the screen when dirty using a microfiber cloth and, if necessary, a recommended cleaning agent. Clean the housing parts with a recommended cleaning agent. • Use only tested disinfectants. • If a cleaning agent is sprayed directly onto the screen surface, use a microfiber cloth to remove drops which run down before they reach the edge of the panel. • Remove drops of liquid from the device immediately. Contact with liquids over a longer period can cause discoloration or allow calcium deposits to form on the surface.

8.1.1 Recommended cleaning agents and disinfectants

Agent class	Tested cleaning agents and disinfectants
Alkylamines	Incidin® PLUS, 8 vol. %
Quarternary compounds	Incidur®-Spray, undiluted
Pyridine derivatives	Octenisept®
Guanidine derivatives	Lysoformin® 2 Vol. % Biguanid® Fläche N undiluted
Chlorine derivatives	Terralin® 0.5 Vol. % Natriumhypochlorit (bleach) 10%
Peroxide compounds	Hydrogen peroxide 3%
Organic acids	Citric acid 1% (pH 2.3)
Phenol derivatives	Helipur®, undiluted
Alcohols	Isopropyl alcohol 70 %
Benzine	Petroleum benzine boiling range 100-120°C
Common household dishwashing liquids - detergent substances	Commercial detergent 1 vol. %
Aldehyde	Melsitt®, 10 vol. %
Desinfecting agents	Morning Mist (1:64) SURFANIOS® Premium, 0.25% Taski® Sprint DS 5001 0.5% 0.5% Chlorhexidine in 70% isopropyl alcohol

Agent class	Tested cleaning agents and disinfectants
Water	Tap water Distilled water
Cleaning agent	Ammonium solution 1,65 vol. %
Alkaline solution	Limewash, saturated Ca(OH) ₂ -solution


Note
Information on cleaning or disinfection of other system components can be obtained from the respective instructions for use.

8.1.2 Prohibited cleaning agents and disinfectants

The following cleaning agents and disinfectants can bleach the paint after a longer period of application:

Agent class	Tested cleaning agents and disinfectants
Light gasoline	Petroleum spirit Petroleum ether

8.2 Check the settings

 CAUTION
<p>Checking the settings</p> <ul style="list-style-type: none"> • The settings may only be checked by service personnel. • The settings must not be checked in the presence of patients.

The picture quality of the monitor changes due to aging of the LCD unit and the backlight.

- Check the monitor settings at regular intervals in accordance with the local guidelines.
- Correct the settings if necessary.

9 Troubleshooting

9.1 Fault correction

Fault	Cause	Remedy
Operation LED dark No picture is displayed	Blown fuse	<ul style="list-style-type: none"> Contact service.
	Power cable not connected or connected incorrectly	<ul style="list-style-type: none"> Check the power cable. Is the power switch in the "On" position?
Operation LED green A picture is displayed	The applied video signal was recognized. No error.	
Operation LED flashes green No picture is displayed	<p>The monitor scans for a suitable video signal:</p> <ul style="list-style-type: none"> No sync signal or video signal The video source is not sending a video signal, or is sending an unknown timing. The video source is sending an unknown timing 	<p>Measures:</p> <ul style="list-style-type: none"> Check the video cable. Check the video source. Set a different timing for the video source.
Operation LED lights up orange No picture is displayed	The monitor or video source is in energy saving mode.	<ul style="list-style-type: none"> Exit the energy saving mode(s) If no picture is still displayed and the operation LED is flashing green, perform the measures listed there.
Operating LED lights up orange A picture is displayed	Overtemperature: The temperature threshold exceeded 42 °C.	<p>Check the following:</p> <ul style="list-style-type: none"> Is the ambient temperature in the acceptable temperature range? Are the housing cooling fins free and open? Was the required distance between the monitor and other objects maintained during installation? Is there a heat source near the monitor?
Operating LED flashes orange A picture is displayed	<p>Overtemperature: The temperature threshold exceeded 47 °C. Brightness is reduced.</p> <p>Brightness returns to the regular value as soon as the temperature falls sufficiently.</p>	
Picture is without contrast and has a strong green shading	The video source is only transmitting a green signal	<ul style="list-style-type: none"> Switch to "Monochrome (G)" in the OSD menu.
Miscellaneous	Loose plug	<ul style="list-style-type: none"> Connect the loose plug and secure it.
	Defective cable	<ul style="list-style-type: none"> Replace the defective cable.

10 Technical specifications

Note
Applicability of technical specifications All technical specifications are valid after a warm-up period of 30 minutes.

10.1 Monitor characteristics

Feature	Value
Type	Color, TFT (similar to IPS)
Active Area	376.32 mm x 301.06 mm
Screen diagonal	480 mm (19")
Resolution	1280 x 1024 pixels
Pixel arrangement	3 subpixels per pixel
Contrast ratio	1000:1 (typically), 700:1 (minimum)
Screen brightness	LX1910: 630 cd/m ² (minimum), LS1910: 270 cd/m ² (minimum) LX1910: 700 cd/m ² (typically), LS1910: 330 cd/m ² (typically)
Horizontal viewing angle	Typically ± 89°
Vertical viewing angle	Typically ± 89°
Backlight	White LED

10.2 Voltage supply

Power connector	Non-heating appliance socket
Line voltage	AC 100 - 240 V (± 10%)
Line frequency	50 - 60 Hz (± 5%)
Current consumption	max. 1.0 A
Maximum power consumption	< 45 W (LX1910), < 35 W (LS1910)
Energy Saving Mode	< 2 W

Output supply

Note	
The total maximum current output is 1 A.	
USB	5V/500mA
Hirose 5V	5V/1A

10.3 Electronics

Multi-standard technology	Video modes with resolutions less than 1280 x 1024 can be expanded to the TFT resolution, and thus utilize the full display area.
Timing recognition	H frequency, V frequency, number of horizontal lines.

10.4 Inputs/Outputs

Analog/digital signal input

Analog	DVI-I connector (DVI-A)
Digital	DVI-I connector (DVI-D), Single Link DisplayPort connector

USB interface

Upstream	Via USB-B socket
Downstream	Via USB-A socket

10.5 Controls and connectors

Front	<ul style="list-style-type: none"> • Keys for OSD menu • Operation LED
Back	<ul style="list-style-type: none"> • Power switch • Power connection socket • 1 DVI-I socket • 1 DisplayPort socket • 1 USB-B, 1 USB-A • 5 V connector

10.6 Mechanical design

Housing components	ABS
Ventilation slots	In rear panel
Degree of protection	IP20 in accordance with DIN 40050
Connection panel	On the back
Weight in kg	4.3 ± 0.5 kg (CuratOR LX1910 / LS1910) 6.1 ± 0.5 kg (CuratOR LX1910-S / LS1910-S)
Dimensions (W x H x D) in mm	405 x 334 x 61 (CuratOR LX1910 / LS1910) 405 x (407 ~ 507) x 204 (CuratOR LX1910-S / LS1910-S)

10.7 Climatic conditions

In operation

Temperature range	5 °C - 40 °C ambient temperature
Temperature gradient	Max. 5 °C/h, no condensation
Air pressure	700 hPa ~ 1060 hPa or 3000 m ~ -384 m height
Humidity	20 - 80 %

For transport and storage (packed)

Temperature range	-20 °C - +60 °C ambient temperature
Temperature gradient	Max. 5 °C/h, no condensation
Air pressure	200 hPa ~ 1060 hPa or 11800 m ~ -384 m height
Humidity	10 - 90 %

10.8 Safety specifications

Safety standards	<ul style="list-style-type: none"> • IEC/EN 60601-1 • CAN/CSA - C22.2. No. 60601-1 • UL60601-1 • GB 4943.1, fuse T3.15A 250V
Protection class	Protection class I
Degree of protection according to DIN 40050	IP20
Medical device classification (EU)	Class 1

10.9 Supported timing

VESA timings supported: DisplayPort, DVI-I (DVI-D, DVI-A)

Mode	Resolution (H) x (V)	H Freq. (Hz)	V Freq. (Hz)	Pixel clock (MHz)
VGA	640 x 480	31.5 37.9 37.5	60 72 75	25.175 31.5 31.5
SVGA	800 x 600	37.9 48.1 46.9	60 72 75	40 50 49.5
XGA	1024 x 768	48.4 56.5 60.0	60 70 75	65 75 78.75
SXGA	1280 x 1024	64.0 80.0	60 75	108 135
HD720	1280 x 720	45	60	74.25
WXGA	1280 x 768	47.8	60	79.5
WXGA+	1280 x 800	49.7	60	83.5
SXGA-	1280 x 960	60	60	108
SXGA+	1400 x 1050	65.3	60	121.75
UXGA	1600 x 1200	75	60	162.0
HD1080	1920 x 1080	67.5	60	148.5

Further timings: DVI-A

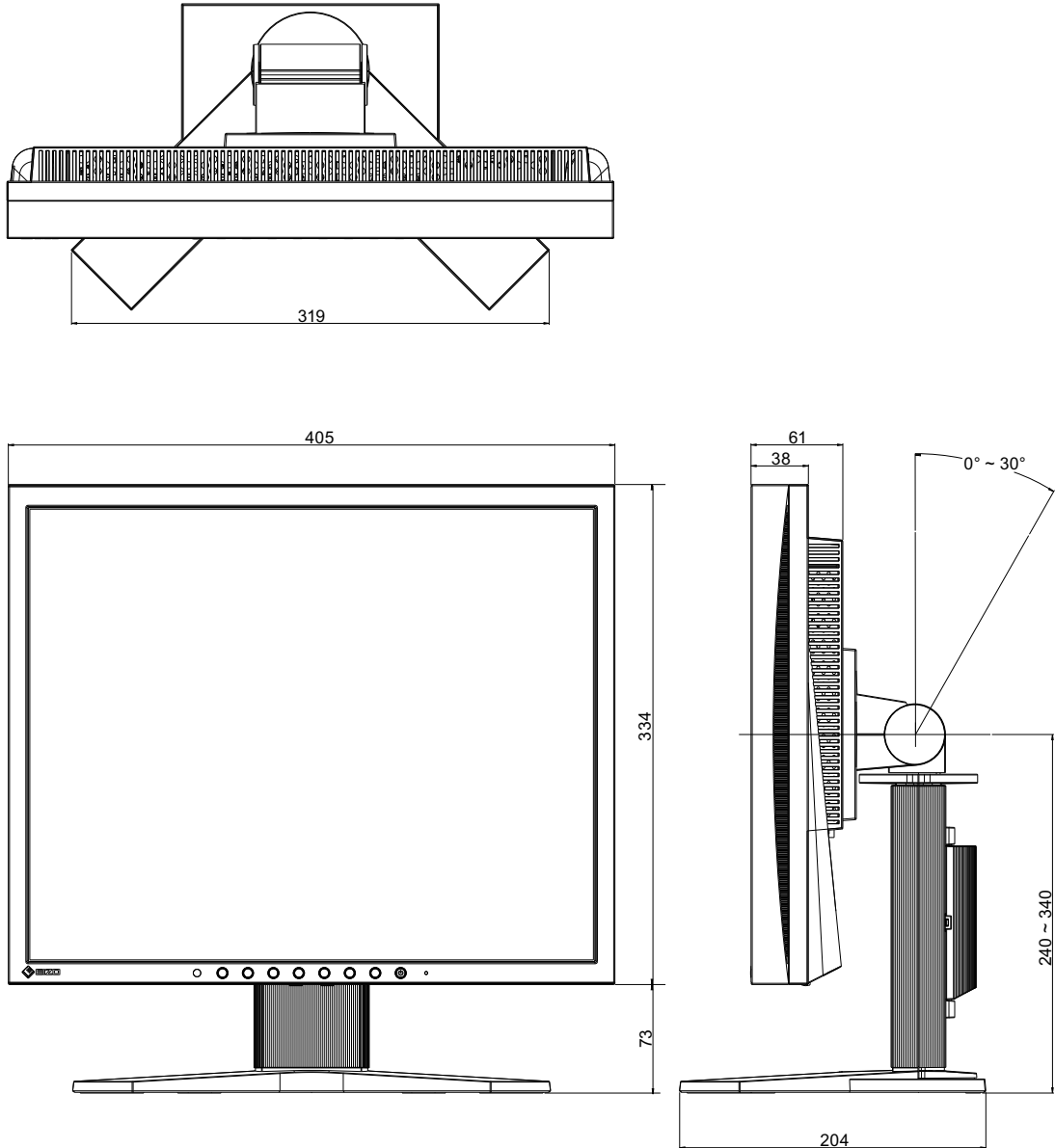
Resolution (H) x (V)	H Freq. [kHz]	V Freq. [Hz]	Pixel clock [MHz]	Interlaced/ Non-interlaced
512 x 512	15.625	50	13.25	Interlaced
497 x 510	31.25	100	19.875	Interlaced*
510 x 440	31.5	120	20.034	Interlaced*
640 x 480	31.5	60	25.175	Non-interlaced
640 x 512	33.72	60	28.055	Non-interlaced
720 x 400	31.5	70	28.322	Non-interlaced
1460 x 496	15.823	60	29.874	Interlaced
884 x 884	30.695	60	36.956	Interlaced
1014 x 1014	33.75	60	43.407	Interlaced
1092 x 1092	31.216	50	44.889	Interlaced*
1214 x 1080	31.217	25	44.952	Interlaced*
1280 x 960	31.44	60	52.314	Interlaced
1125 x 970	61.88	120	84.408	Interlaced
1214 x 1080	62.44	100	90.413	Interlaced
1280 x 960	62.94	60	104.727	Non-interlaced
1280 x 1024	66.37	60	113.89	Non-interlaced
1280 x 1024	66.43	60	114	Non-interlaced
1280 x 1024	67.5	60	116.1	Non-interlaced
1280 x 1024	77.46	73	131.06	Non-interlaced
1280 x 1024	76.7	72	135	Non-interlaced
1280 x 1024	81.13	76	135	Non-interlaced
1280 x 1024	78.13	72	135.009	Non-interlaced

*reduced image quality

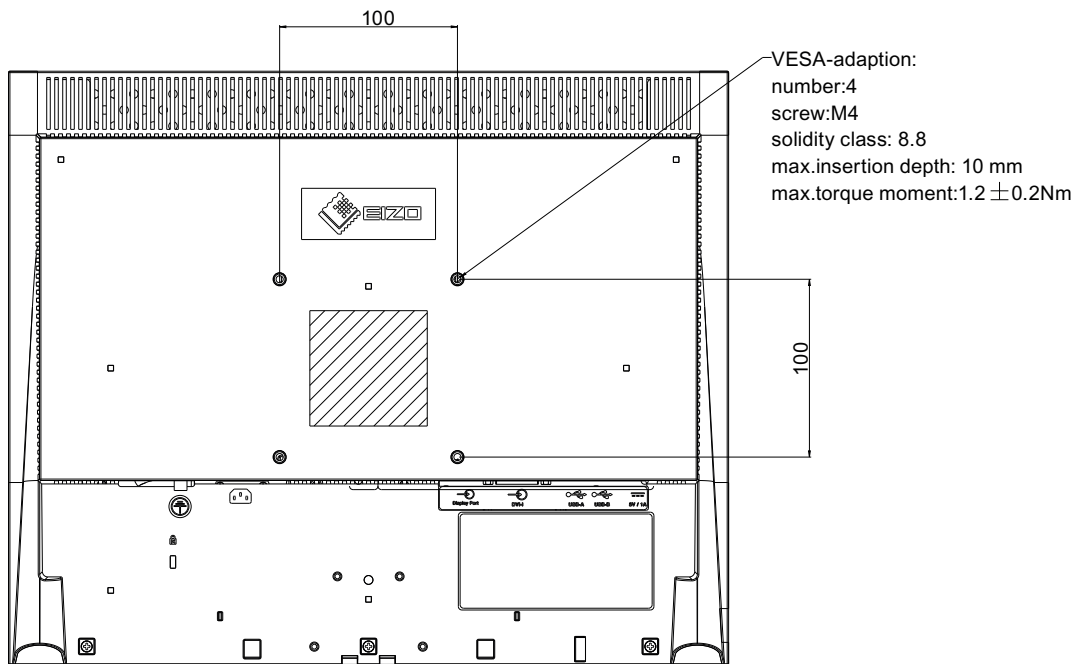
11 Dimension drawings

All dimensions in mm

11.1 View from front, top, and side (with stand)















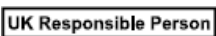



11.2 Rear view




12 Appendix

12.1 Markings and symbols

Marking/symbol	Description
	Symbol for "Caution, observe accompanying documents".
	Symbol for "Dangerous voltage".
	CE marking (EU conformity mark).
	UKCA marking (UK conformity mark).
	Medical device in accordance with the European medical device regulation.
	MET marking, in accordance with U.S. and Canadian national regulations.
	RCM marking for conformity with Australian and New Zealand EMC standards.
	U.S. FCC marking for communication devices.
	CCC marking, in accordance with for Chinese national regulations (pending).
	BIS marking, in accordance with Indian national regulations.
	Symbol for the manufacturer of medical devices, supplemented by the date of manufacture.
	WEEE marking: Product must be disposed of separately; materials may be recycled.
	Marking according to ACPEIP (China-RoHS).
IP20	Symbol for degree of protection according to DIN EN 60529.
	"On" symbol (voltage)
○	"Off" symbol (voltage)
	Symbol "Comply with the instructions for use".
	UK Responsible Person
	Swiss authorized representative (CH-REP)

12.2 Information on electromagnetic compatibility (EMC)

EIZO monitors were designed for the display of images and normal monitor operation.

 WARNING
<p>Special EMC provisions are required for use of the CuratOR LX1910 / LS1910. Installation, assembly, and use must take place in compliance with the following instructions.</p> <ul style="list-style-type: none"> • Only use the cables included in the scope of delivery or recommended by the manufacturer. The use of other cables can result in increased electromagnetic radiation and reduced electromagnetic interference immunity of the device, as well as improper use. Cable length: max. 3 m • The monitor should not be placed on other devices or positioned in their immediate vicinity. If devices have to be operated on or in the immediate vicinity of one another, the monitor or system must be monitored to ensure proper operation for the defined configuration. • When using a portable RF communications device, maintain a distance of at least 30 cm from all parts of the monitor, including cables. Otherwise, problem-free function of the device cannot be guaranteed. • Persons connecting additional devices to the signal input or output when configuring a medical system are responsible for ensuring compliance with standard IEC 60601-1-2.

Electromagnetic radiation

The CuratOR LX1910 / LS1910 is intended for use in the electromagnetic environments noted below.

Operators or users of the CuratOR LX1910 / LS1910 have to ensure that the device is used in such an environment.


Radiation test	Conformity	Information regarding the electromagnetic environment
RF radiation CISPR11	Group 1	The CuratOR LX1910 / LS1910 generates RF for its internal function only. For this reason, the RF radiation is very low and is therefore unlikely that it will result in interference in electronic devices in the immediate vicinity.
RF radiation CISPR11 GB9254	Class B	The CuratOR LX1910 / LS1910 is approved for use in a number of environments. This includes residential areas and areas connected directly to the public low-voltage grid, such as private homes.
Harmonic currents IEC 61000-3-2 GB17625.1	Class D	
Voltage fluctuations / flicker IEC 61000-3-3	fulfilled	

Electromagnetic interference immunity

The CuratOR LX1910 / LS1910 was tested with the following compliance levels in accordance with the test requirements for professional healthcare facilities, as established in IEC 60610-1-2.

Operators or users of the CuratOR LX1910 / LS1910 have to ensure that the monitor is used in such an environment.

Interference immunity test	Measurement level	Compliance level	Information regarding the electromagnetic environment
Electrostatic discharge (ESD) IEC 61000-4-2	±8 kV contact ±2, 4, 8, 15 kV air	±8 kV contact ±2, 4, 8, 15 kV air	It is recommended to use the device on wood, concrete, or ceramic floors. If the floor is made of synthetic material, the relative humidity should be at least 30%.
Fast transient electric disturbances (bursts) IEC 61000-4-4	±2 kV power lines ±1 kV input / output lines	±3 kV power lines ±2 kV input / output lines	The power supply quality has to correspond to that of typical industrial environments or hospitals.
Surge voltage IEC 61000-4-5	±1 kV line against line ±2 kV line against ground	±2 kV line against line ±4 kV line against ground	The power supply quality has to correspond to that of typical industrial environments or hospitals.
Voltage dips, brief interruptions, and fluctuations of power supply lines IEC 61000-4-11	0 % V_T for 0.5 periods and 1 period 70 % V_T for 25 / 30 periods at 50 / 60 Hz 0 % V_T for 250 / 300 periods at 50 / 60Hz	0 % V_T for 0.5 periods and 1 period 70 % V_T for 25 periods at 50 Hz 0 % V_T for 250 periods at 50 Hz	The power supply quality has to correspond to that of typical industrial environments or hospitals. If the monitor has to continue operation even if the power supply is interrupted, it is recommended to connect the device to an uninterruptible power supply or battery.
Magnetic fields with energy technology frequencies IEC 61000-4-8	30 A/m (50 / 60 Hz)	30 A/m (50 Hz)	The magnetic fields with energy technology frequencies must be in an area that is representative of a typical location in a typical industrial environment or hospitals. The device should be used at least 15 cm away from the source of magnetic fields with energy technology frequencies.

Interference immunity test	Measurement level	Compliance level	Information regarding the electromagnetic environment
Line-based disturbances caused by RF fields IEC 61000-4-6	3 V _{rms} 150 kHz to 80 MHz 6 V _{rms} ISM bands between 150 kHz and 80 MHz	6 V _{rms} 6 V _{rms}	Portable and mobile RF communications devices may only be operated in the vicinity of the monitor and its components (including cables) when in compliance with the recommended minimum distance. It is determined using the formula for calculating the frequency of the transmitter. Recommended minimum distance d = 0.6 √P, 150 kHz to 80 MHz d = 2 √P, ISM bands between 150 kHz and 80 MHz d = 0.35 √P, 80 MHz to 800 MHz d = 0.7 √P, 800 MHz to 2.7 GHz In this case, "P" stands for the measured maximum nominal output power in watts (W) of the transmitter recommended by the transmitter manufacturer, and "d" for the recommended minimum distance in meters (m). The field strengths of fixed transmitters according to electromagnetic location measurement ^{a)} have to be less than the compliance level in each individual frequency range. Interference can occur when used in the vicinity of devices identified with the following symbol. 
Electromagnetic RF fields IEC 61000-4-3	3 V/m 80 MHz to 2.7 GHz	10 V/m	
Radiated fields in close proximity IEC 61000-4-39	30 kHz Modulation: CW, 8 A/m 134,2 kHz Pulse modulation ^{c)} 2.1 kHz, 65 A/m ^{d)} 13.56 MHz, Pulse modulation ^{c)} 50 kHz, 7.5 A/m ^{d)}	30 kHz Modulation: CW, 8 A/m 134,2 kHz Pulse modulation ^{c)} 2.1 kHz, 65 A/m ^{d)} 13.56 MHz, Pulse modulation ^{c)} 50 kHz, 7.5 A/m ^{d)}	Immunity to proximity magnetic fields in the frequency range 9 kHz to 26 MHz.
Note			
<ul style="list-style-type: none"> • V_T is the alternating current voltage before application of the measurement level. • At 80 MHz and 800 MHz, the higher frequency range applies. • Guidelines regarding conducted disturbances induced by RF fields or radiated RF fields may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people. • The ISM bands between 150 kHz and 80 MHz are 6.765 MHz to 6.795 MHz, 13.553 MHz to 13.567 MHz, 26.957 MHz to 27.283 MHz, and 40.66 MHz to 40.70 MHz. 			

- a) The field strengths of fixed transmitters, for example the base station for cordless and mobile telephones, radio, land mobile radio, ham radio, and television cannot be determined precisely in advance. To evaluate the electromagnetic environment using fixed transmitters, an electromagnetic location measurement should be included. If the measured field strength in the environment where the device is used exceeds the applicable RF compliance level, observe the monitor to ensure its proper operation. If improper operation is observed, in some circumstances additional measures may be necessary, such as reorienting or repositioning the device.
- b) Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.
- c) The carriers are modulated with a square wave signal with a 50% duty cycle.
- d) r.m.s., before modulation is applied.

Recommended minimum distance between portable or mobile RF communications devices and the CuratOR LX1910 / LS1910 based on the output power of the transmitter

The CuratOR LX1910 / LS1910 is intended for use in an electromagnetic environment in which interference due to electromagnetic radiation is controlled. For other portable and mobile RF communication devices (transmitters), the recommended minimum distance between the portable and mobile RF communication devices (transmitters) and the monitor applies as listed below. This is based on the maximum output power of the communication device.

Maximum nominal output power of the transmitter (W)	Recommended minimum distance according to the frequency of the transmitter (m)		
	150 kHz to 80 MHz $d = 0.6 \sqrt{P}$	80 MHz to 800 MHz $d = 0.35 \sqrt{P}$	800 MHz to 2.7 GHz $d = 0.7 \sqrt{P}$
0.01	0.06	0.04	0.07
0.1	0.19	0.11	0.22
1	0.60	0.35	0.70
10	1.90	1.11	2.21
100	6.00	3.50	7.00

For transmitters whose maximum nominal output power is not shown above, the recommended minimum distance "d" in meters (m) can be determined using the formula for calculating the frequency of the transmitter. "P" here stands for the transmitter's maximum measured nominal output power in watts (W), as recommended by the transmitter's manufacturer.

Note: For 80 MHz and 800 MHz, the recommended minimum distance for the higher frequency range applies.

Note: This information may not be applicable in all situations. Absorption and reflection by structures, objects, and people impact the propagation of electromagnetic waves.

Recommended minimum distance between portable or mobile RF communications devices and the CuratOR LX1910 / LS1910 – tested immunity interference

The CuratOR LX1910 / LS1910 is intended for use in an electromagnetic environment in which interference due to electromagnetic radiation is controlled. The operator or user of the monitor can help prevent electromagnetic interference by maintaining the recommended minimum distance between portable and mobile RF communications devices (transmitters) and the monitor.

The interference immunity regarding adjacent fields has been confirmed for the following wireless RF communications devices:

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

^{a)} For some radio services, only the frequencies for the radio contact from the mobile communications device to the base station ("uplink") is included in the table.
^{b)} The carrier is modulated by a square wave with 50% duty cycle.

12.3 FCC Declaration of Conformity

For U.S.A. , Canada, etc. (rated 100-120 Vac) Only
FCC Declaration of Conformity
We, the Responsible Party
EIZO Inc. 5710 Warland Drive, Cypress, CA 90630 Phone: +1 (562) 4 31 50 11
declare that the product
<ul style="list-style-type: none">• Trade name: EIZO• Model: CuratOR LX1910 / LS1910
is in conformity with Part 15 of the FCC Rules. Operation of this product 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 equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.
<ul style="list-style-type: none">• Reorient or relocate the receiving antenna.• Increase the separation between the equipment and receiver.• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.• Consult the dealer or an experienced radio/TV 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.
Note
Use the specified cable below or EIZO signal cable with this monitor so as to keep interference within the limits of a Class B digital device.
<ul style="list-style-type: none">• AC Cord• Shielded Signal Cable
Canadian Notice
This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

12.4 China RoHS (Restriction of Hazardous Substances)

根据SJ/T11364-2014《电子电气产品有害物质限制使用标识要求》特提供如下有关污染控制方面的信息。

The following product pollution control information is provided according to SJ/T11364-2014 Marking for the restriction of the use of hazardous substances in electrical and electronic product.

电子电气产品有害物质限制使用标志说明 Explanation of Marking for Restriction of Hazardous Substances



该标志表明本产品含有超过中国标准GB/T26572-2011《电子电气产品中限用物质的限量要求》中限量的有毒有害物质。标志中的数字为本产品的环保使用期，表明本产品在正常使用的条件下，有毒有害物质不会发生外泄或突变，用户使用本产品不会对环境造成严重污染或对其人身、财产造成严重损害的期限。单位为年。

为保证所声明的环保使用期限，应按产品手册中所规定的环境条件和方法进行正常使用，并严格遵守产品维修手册中规定的定期维修和保养要求。

产品中的消耗件和某些零部件可能有其单独的环保使用期限标志，并且其环保使用期限有可能比整个产品本身的环保使用期限短。应到期按产品维修程序更换那些消耗件和零部件，以保证所声明的整个产品的环保使用期限。

本产品在使用寿命结束时不可作为普通生活垃圾处理，应被单独收集妥善处理。

This symbol indicates the product contains hazardous materials in excess of the limits established by the Chinese standard GB/T26572-2011 Requirements of concentration limits for certain restricted substances in electrical and electronic products. The number in the symbol is the Environment-friendly Use Period (EFUP), which indicates the period during which the toxic or hazardous substances or elements contained in electronic information products will not leak or mutate under normal operating conditions so that the use of such electronic information products will not result in any severe environmental pollution, any bodily injury or damage to any assets. The unit of the period is "Year".

In order to maintain the declared EFUP, the product shall be operated normally according to the instructions and environmental conditions as defined in the product manual, and periodic maintenance schedules specified in Product Maintenance Procedures shall be followed strictly.

Consumables or certain parts may have their own label with an EFUP value less than the product. Periodic replacement of those consumables or parts to maintain the declared EFUP shall be done in accordance with the Product Maintenance Procedures.

This product must not be disposed of as unsorted municipal waste, and must be collected separately and handled properly after decommissioning.

产品中有害物质的名称及含量 Name and Concentration of Hazardous Substances

部件名称 Component Name	有害物质 Hazardous substances					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
液晶纯平屏幕 LCD Flat Screen	O	O	O	O	O	O
背光逆变器 Backlight LED Driver	O	O	O	O	O	O
控制板 Controller Board	O	O	O	O	O	O
电源 Power Supply	X	O	O	O	O	O
其他 电路板 Other Circuit Boards	O	O	O	O	O	O
其他 (电缆等) Others (cables, etc.)	O	O	O	O	O	O
机架、底盘 Housing, Chassis	O	O	O	O	O	O
附件 (信号电缆、输电线等) Accessories (signal cable, power line, etc.)	O	O	O	O	O	O
<p>本表格依据SJ/T 11364 的规定编制。 O: 表示该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 X: 表示该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</p> <ul style="list-style-type: none"> • 此表所列数据为发布时所能获得的最佳信息。 • 由于缺少经济上或技术上合理可行的替代物质或方案，此医疗设备运用以上一些有害物质来实现设备的预期临床功能，或给人员或环境提供更好的保护效果。 <p>This list is based on SJ/T 11364. 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: 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.</p> <ul style="list-style-type: none"> • Data listed in the table represents best information available at the time of publication. • Applications of hazardous substances in this medical device are required to achieve its intended clinical uses, and/or to provide better protection to human beings and/or to environment, due to lack of reasonably (economically or technically) available substitutes. 						

产品中有害物质的名称及含量 Table of hazardous substances' name and concentration.

12.5 Declaration of compliance with India RoHS

We, EIZO Corporation, hereby declare and guarantee that this product has been designed and manufactured in compliance with the E-Waste management rule 2016 which prohibit the inclusion of the following substances except for the exemptions listed in schedule II.

- Lead, Mercury, Hexavalent Chromium, Polybrominated Biphenyls or Polybrominated Diphenyl Ethers exceeding a concentration of 0.1% by weight in homogeneous materials
- Cadmium exceeding a concentration of 0.01% by weight in homogeneous materials

For information on proper disposal and recycling of the product, please refer to the following website.

eizo.co.in/e-waste.php

12.6 Environmental protection

Comply with all local requirements and laws pertaining to the disposal of devices.

The device is in compliance with directive 2011/65/EU for limiting the use of specific hazardous materials in electric and electronic devices.

12.7 Warranty

Opening of the housing, or electrical or mechanical changes on or in the device, result in cancellation of the warranty. For warranty details, please contact the sales partner from whom you purchased the product. These warranty conditions are neither extended nor limited by the contents of this instruction manual.

12.8 Repairs

Please contact the sales partner from whom you purchased the product. The repair may only be carried out directly at EIZO or at a location expressly authorized by EIZO for this purpose.

12.9 Additional devices

Connected devices must meet the relevant safety standards.

12.10 Contact

Support during installation and for technical questions


www.eizo-or.com

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Instructions for Use, 05/2024

CuratOR LX1910 / LS1910

1085755-003