Instructions for Use



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.

indicates that death or severe personal injury will result if proper precautions are not taken.

indicates that death or severe personal injury may result if proper precautions are not taken.

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

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 RadiForce LX300W. 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

The RadiForce LX300W has been specifically designed for medical imaging.

The LX300W is intended to be used by health care professionals to display the video sources from various commercially-available devices commonly used in a medical environment, on a single video monitor.

The LX300W is not suited for mammography.

The LX300W is designed for use in the patient vicinity.

1.3 User

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 medical imaging technology, 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:

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.

Observe the safety requirements of EN 60601-1 (IEC 60601-1)

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".

Connecting the protective earth conductor

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 μ A.

The interruption of the device's protective conductor is considered a first fault event in accordance with EN 60601-1.

Use the following measures to ensure that the leakage currents remain below the specified limits:

- · Separators for signal input unit or signal output unit
- · Use of a safety isolating transformer
- Use of the additional protective ground terminal

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 μ A, even in the event of a single fault condition.

No unauthorized opening of the device / no unauthorized service or maintenance work

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.

No liability is accepted for death and injury to persons or damage to property resulting from work carried out by non-qualified personnel.

Do not touch components in the device

If the device is connected to the line power, components in the device are subjected to high voltages. Touching the components may be fatal.

No contact between device and patients

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.

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.

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

NOTICE

Medical System

Do not connect devices which are not part of the medical system.

NOTICE

Opening the device

The device must only be opened by service personnel.

• Disconnect the power supply plugs before opening the device

NOTICE

Radio interference

This is a class A device.

The device may cause radio interference or interfere with the operation of other devices in close proximity. In this case the user is encouraged to perform appropriate measures to correct the interference.

Careful installation of the stand

The tilt, position, and height of the monitor can be changed when the monitor is installed on a stand. Note the following to prevent injuries or damage when installing or adjusting the stand:

- Make sure that you do not pinch or injure your fingers or any other parts of the body.
- Make sure the monitor does not collide with the table or other objects, which could result in damage.

Ensure monitor stability

Stability must be ensured after installing the monitor on a stand. An unstable stand can cause the monitor to tip over and cause injuries or damage. Therefore make sure the stand is stable.

- Only use a stand that has been tested for the monitor's weight and that is approved for tilting up to 10°.
- The screw insertion depth into the monitor must be within the acceptable range.

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 RadiForce LX300W is a 4MP 29.8" LCD Monitor for installation in a ceiling or wall mount, or for installation in a stand. The RadiForce LX300W-P version has protective glass and the RadiForce LX300W-S version a stand. Otherwise, the versions are identical.

Product	Order number	Description
RadiForce LX300W	6GF62005LA01	Without stand, without protec- tive glass
RadiForce LX300W-P	6GF62005LA02	Without stand, with protective glass
RadiForce LX300W-S	6GF62005LA03	With stand, without protective glass

Components

The following components are included in the scope of delivery:

- Power cable for US (only RadiForce LX300W-S)
 - Power cable for Europe
 - Power cable for US
 - Power cable for Japan
- Signal cable (only RadiForce LX300W-S version)
 - DVI dual link cable, 2 m
- Safety information
- CD-ROM with the documentation

3.2 Monitor performance features

The RadiForce LX300W has the following features that permit a wide range of applications:

LED backlight

The LX300W is equipped with a white LED backlight. This means that a long service life can be achieved even with high luminance.

Perfect picture reproduction thanks to LCD technology

The use of state-of-the-art LCD technology allows distortion-free image geometry of the LX300W. The TFT panel used enables a very large viewing angle and high luminance.

The LX300W provides a flicker-free picture, even at low refresh rates. The monitor thus meets the strictest ergonomic requirements.

Fully Automated Stability

The LX300W has a Fully Automated Stability system that keeps luminance constant in accordance with medical standards such as DICOM or Gamma 2.2, for example. The integrated stability system ensures constant luminance using a built-in light sensor in the center of the backlight.

Intelligent cooling system (ICS)

The controlled air flow into the operating rooms ensures air that is as microbe and contaminant-free as possible, and is further directed by additional fans in the room. To limit interference with the air flow, the LX300W has a new cooling system called the "Intelligent Cooling System" (ICS).

ICS automatically measures the internal temperature of the monitor. Depending on its application area, the monitor can operate with a regulated fan set or no ventilation. At lower temperature ranges, the fans run with low power or not at all, as selected. Depending on the mode set, at high temperatures the fans can be started up if needed or the brightness of the monitor can be reduced in order to prevent overheating.

Communication interface

The communication interface is routed via the DVI, Display Port, or USB connection. The operating states of the monitor can be read and switched via the interface, e.g. in Power Safe Mode. In particular, the monitor functionality can be queried using the interface.

Flexible connection and operating options

The LX300W has flexible options for connection and operation:

- Two DVI-D inputs, one of which can process dual link and single link signals, and the other that processes single link signals.
- One Display Port 1.1 input.
- Rotation function for operating in portrait or landscape format.

Preset Look Up Tables

The LX300W is precalibrated at the factory. A total of five practice oriented Look Up Tables (LUTs) have been preset. This calibration data makes installation and maintenance easier. As such, the monitor can be easily adapted to the respective application and local lighting conditions.

Fail-safe function

Using a separate DVI input (HDMI plug), a video signal with increased priority can be activated, for example, directly from a radiography system (live image).

This ensures that the attending physician always has an image on the monitor, even when there are errors or interruptions in the video transmission and processing path.

When there is an error the monitor receives an emergency signal, which is displayed in the upper left corner of the monitor. The operation in progress can thus continue uninterrupted.

3.3 Monitor operating modes

The following presents the screen layouts that can be selected in the OSD menu, with specification of the maximum resolution and possible connections.

Screen layout for one video source



DisplayPort or DVI-D (Dual Link)



DisplayPort or DVI-D (Dual Link)

Screen layout for two video sources (PaP)







Description 3.3 Monitor operating modes

Screen layout for two video sources (PiP)





Screen layout for three video sources



Screen layout with fail-safe function



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4 Setup and installation

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.

4.1 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.

• Wait until the condensed water has evaporated, including that inside the device, before you switch it on. This can take several hours.

NOTICE

Overheating

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 back and side of the monitor to the wall must be 10 cm, and at least 15 cm from other devices.
- The ambient temperature must be in the acceptable range of +5 °C to +40 °C.

NOTICE

Dusty environment

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.

4.2 Installing the monitor

Note

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.

Note

Shocks and impacts

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

• Ensure that such mechanical influences at the installation site are avoided.

Note

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.

Note

During transport, use the original packaging or service packaging.

4.2 Installing the monitor

The monitor has a VESA 100x100 adapter and a VESA 100x200 adapter.

Note the following during installation :

- The maximum torque for attaching to the holder in 3 Nm.
- The screws used for attaching to the holder must meet the following requirements:

Number	4
Thread	M4
Strength	8.8 in accordance with ISO 898-1
Insertion depth	8 11 mm

- Holders must be tested and approved by the manufacturer for the weight to be supported.
- An installed stand must be sufficiently stable such that tilting up to 10° does not result in the monitor toppling.

5 Connecting

5.1 Safety information for connection

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

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.

Shielding measures

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

Grounding

The permissible leakage current is not exceeded during the first fault event in accordance with EN60601-1. The device is grounded with an additional protective conductor to ensure the greatest possible electric safety.

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.

5.2 Device connections

NOTICE

Cable installation

Observe the following instructions:

- Only shielded cables are to be used for all signal connections.
- If the relevant facility is available on the connector, all plug connections must be screwed tight or locked.
- 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 connections

Opening the connector panel cover

Only service may open the connector panel cover. Patients must not be present when the cover is open.



5 V connections

The monitor has two 5 V outputs which can be used to supply external devices.

Display port

The monitor has a display port 1.1 connector. Digital signals can be processed using this connector.

DVI connectors

The monitor has two DVI connectors (1 and 2). See also DVI connection [> 21].

Grounding screw

The additional protective conductor is connected to the grounding screw.

HDMI connector

The HDMI connector transmits a DVI signal. If the Fail Safe function is active in the OSD of the LX300W, the DVI signal is the emergency signal of the connected system. The emergency signal is a video signal with increased priority and is activated directly, for example from a radiography system.

The emergency signal is transmitted when the system experiences an error or interruption on the image transmission and processing path. This is indicated in the upper left corner of the monitor. This ensures that the treating physician only sees one picture on the monitor at all times. The operation in progress can continue uninterrupted.

Kensington Lock opening

The Kensington Lock opening is used to secure the monitor where it is installed. The opening is located at the lower left corner on the back of the monitor.

Power connection

The device's power supply is connected using an appliance plug. See also Power connector [▶ 20].

Serial interface for photometer

The serial interface is freely accessible under the right fan.

NOTICE

Connecting a photometer

- Only service can connect or disconnect a photometer.
- Only photometers tested for calibrating the monitor may be connected to the serial interface.
- A photometer must not be connected in the presence of the patient.

Service connection

The service connection is used by Service for software updates.

Stereo jack connection

The two stereo jack connections are event inputs. For example, a footswitch that triggers a specific event in the device (toggle source, etc.) can be connected to the stereo jack connections. This is a future function. For this reason, the two connections are not active at this time.

USB downstream connections

The USB downstream connections enable communication with external devices.

USB upstream connections

The USB upstream connections enable communication between the monitor and a connected PC.

The USB upstream socket ④ next to the stereo jack connection is used for service purposes.

5.2.1 Power connector

The device power connector is located within the connector panel under a cover on the rear of the device. The power supply is connected using an appliance plug.

Connecting to line power

- The device is designed for line power with a grounded neutral conductor.
- To avoid risk of electric shock, this device must only be connected to line power with a protective conductor.
- Contact the responsible building technician or a qualified electrician if you are uncertain whether the line power is equipped with a protective conductor.

Risk of damage to the device

- Only use the power cord supplied with the device, or a connection cable with a protective conductor and an appliance plug in accordance with 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.

Connection in the USA and Canada

Molded power 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".

NOTICE

Line voltage and frequency

Before connecting the device, make sure the line voltage and frequency correspond to the specifications on the name plate.

See also

Power supply [39]

5.2.2 DVI connection

The monitor can process digital DVI input signals. There are two DVI connections (1 and 2) available for this.

- DVI 1 can process both dual link and single link signals.
- DVI 2 can only process single link signals.
- Only use the dual link DVI cables specified by EIZO or the transmission links supplied by EIZO.

The picture quality, interference resistance, and electromagnetic interference of the entire system depend on the length and quality of the cables.

NOTICE

Video source settings

The monitor sends the correct settings to the video source via the DDC interface. If these settings are changed, the images will not be displayed correctly.

NOTICE

Do not kink the cables

The cables must not be kinked. The minimum bending radius of the cable is 30 mm.

5.3 Description of connection procedure

Opening the connector panel cover

Only service may open the connector panel cover. Patients must not be present when the cover is open.

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. Remove the cover from the connection panel by pressing the cover on the side and moving the cover toward you. The cover is permanently attached.
- 2. Connect the appliance plug to the monitor power socket.

Observe the instructions in section Power connector [> 20].

- 3. Connect the video signal cable to the monitor.
- 4. Tighten the screws to secure the video signal cables.
- 5. If necessary, connect the USB cable to the upstream and downstream USB ports of the monitor.
- 6. Place the cover back on the connection panel.
 - First, insert the latch on the top of the cover on the monitor.
 - The press the latches to the side again.
- 7. If necessary, secure the device with a Kensington Lock at the Kensington lock opening.

6 Commissioning

Note

Factory settings

All monitors are optimally preset in the factory, such that changes are not usually required.

6.1 Switching on the monitor and video source

The monitor and connected video source can be switched on in any order.

Switching on the monitor before the video source

1. Switch on the monitor.

The operation LED lights up yellow.

2. Switch on the video source.

If the connected signal can be displayed on the monitor, the operation LED will light green.

Switching on the video source before the monitor

- 1. Switch on the video source.
- 2. Switch on the monitor.

If the connected signal can be displayed on the monitor, the operation LED will light green.

Operation LED does not light green?

If the operation LED does not light green after the equipment has been switched on and a video signal has been applied:

 check the system for basic connection and operating errors before contacting service personnel.

6.2 Avoiding image sticking

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.

The following measures can reduce or prevent image sticking:

- Use a screen saver with regularly changing images
- Switch off the monitor when it is no longer needed.
- The monitor has an energy saving mode: If the application in use supports the energy saving mode, activate it.

Note

Energy saving (Power Management)

The monitor supports various energy saving settings, called Power Management (PM). When PM is active, the monitor backlight switches off automatically for example, if the monitor is without a video signal for an extended period.

Also observe the operating system manufacturer's instructions regarding power management settings.

6.3 Check for pixel defects

Pixel defects (small bright or dark dots) can occur in LCD monitors. During the manufacturing process, all monitors are checked for the permitted number of defective pixels.

Defective pixels cannot be corrected.

6.4 Graphics controller settings

When switching on the PC, the properties of the monitor are read and the graphics card initializes accordingly.

For this to occur, the graphics card must support communication via the Data Display Channel (DDC). The monitor's EDID data (Extended Display Identification Data) is transmitted via the DVI or DisplayPort connections, enabling Windows to detect the monitor as a "plug and play" device.

Operating the monitor with the desired resolution

- 1. To operate the monitor with the desired resolution, a driver must be installed that is designed specifically for the graphics card in use.
- 2. Once the driver has been installed successfully, the resolution can be configured using the driver- or operating system settings.

Note

Installation and parameterization of the graphics card

Please refer to the graphics controller manufacturer's manual for detailed information about installation and configuration of the graphics controller.

7 Operation

Once installed, operating the monitor consists mainly 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.

Note

Switching off the monitor

When the monitor is switched off, the counter for the warm-up time is reset. To ensure stable brightness, a warm-up time of 20 to 30 minutes is recommended, even if the monitor is switched off for a short period of time.

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



- ① Mode
- ② Menu
- ③ Down (down arrow)
- ④ Up (up arrow)
- 5 Enter
- 6 Power
- ⑦ Operation LED

Control panel

The LX300W has a touch-sensitive control panel. The keys are located at the lower center of the monitor on the front.

Operation

7.2 Locking or unlocking the OSD menu

Key functions

The keys have the following functions:

Кеу	Action
Mode	Start CAL switch
	Select LUT
Menu	Opens the main menu
	Returns to the higher level menu or closes the top OSD menu
	Jumps to the element to the left
Down ↓	Scroll down in the menu
(down arrow)	Reduce the selected entry
Up ↑	Scroll up in the menu
(up arrow)	Enlarge the selected entry
Enter	Opens the next submenu
	Jumps to the element to the right
	Performs the selected function
Power	Switches the device to standby mode and out of standby mode.

7.2 Locking or unlocking the OSD menu

Locking and unlocking the OSD menu

- 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.

The OSD is unlocked when delivered.

To lock or unlock the OSD menu, proceed as follows:



- 1. Press the "Enter" key (5) once.
- 2. Then press the "Down" key 3 three times.

The LED display brightness changes in response when the keys are pressed.

The OSD menu is now locked or unlocked, depending on its initial state.

7.3 Description of OSD menu

The OSD menu is used to make settings for operation of the monitor with up to three video sources.

The layout of the OSD menu is shown in the following figure.



Fig.: OSD menu layout

7.3.1 Display menu

Function	Adjustment / setting range	Description
CAL Switch	DICOM CIE 6174 CRT Gamma 2.2	Selecting the Look Up Table (LUT) The LUT determines the monitor's gamma curve. By using a different LUT for example, you can high light specific gray scale levels. Note: Select a DICOM LUT to view radio-
	Default: DICOM	graphic images.
Mode Presets	DICOM 1: "0" or "1" DICOM 2: "0" or "1" DICOM 3: "0" or "1" DICOM 4: "0" or "1" PAS 1054: "0" or "1" Default: 1 for all	Setting the Mode Preset This function enables you to make any LUT settings in the "CAL Switch" function se- lectable (1) or unselectable (0). The names of the selectable LUT settings are taken from the CAL Switch function. Note: An active LUT setting cannot be re- placed.
LCD Backlight	LUT BL Command Active Default: Active	Backlight Command Control If the command is marked, the brightness control based on the gamma curve is active. This means the maximum value of the gamma curve calibrated at the factory is set as the default. This ensures that the maxi- mum brightness fits with the gamma curve.
	Backlight 0 - 1023 <i>Default: 800</i>	Change the brightness of the backlight You change the backlight brightness here. If you adjust brightness, the gay scale values no longer correspond to the set DICOM curve. The calibrated values therefore cannot be guaranteed.

Function	Adjustment / setting range	Description
Orientation	Rotation: Disabled/Right/	Setting rotation
	Left Default: Disabled	You toggle the monitor operating mode be- tween portrait and landscape format here.
		Disabled: Monitor operates in landscape format.
		 Right: The monitor image turns from por- trait to landscape format in clockwise di- rection.
		 Left: The monitor image turns from por- trait to landscape format in counterclock- wise direction.
		Note: The graphics card used in the video source has to support portrait format. A list of operating modes is available in Monitor characteristics [▶ 39].
		Note: If a PC is used as a video source, it has to be restarted after changing the operating mode.
Bit Depth Model	Display port 1	Setting the color hue
		You can set an 8 or 10-bit color hue here for the display port connection. 8 bit is the de- fault.
Synchronization (DVI/	Double Buffer	Setting the synchronization
DP1)	Auto Off Status (display only)	• Double Buffer: Synchronization to the in- put signal so that tearing and image rolling does not occur. The picture is de- layed one frame.
	Default: Auto	 Auto: Automatically sets synchronization to "Line Buffer", "Double Buffer", or "Off". Line buffer is synchronization to an input signal, for which no tearing or image rolling occurs. The image delay is minimal and almost 0.
		• Off: No synchronization to the input sig- nal. As a result, tearing and image rolling can occur with video images. The picture is delayed up to one frame.
		• Status: Shows the active synchronization.
Fail Safe	On/Off	Activate / deactivate Fail Safe
	Default: Off	The Fail Safe function can be switched on here for the DVI3 input.
		As a result, in case of error the monitor re- ceives an emergency signal, whereupon the video signal of the DVI 3 input is displayed in the upper left corner.
		Note: Fail Safe can be switched on only when Single Source or Dual Source (PaP) is set in Picture Layout.

Operation

7.3 Description of OSD menu

Function	Adjustment / setting range	Description
Test Pattern	None	Select and display integrated test patterns
	TG18-OIQ	The monitor contains an internal test pattern
	Grayramp	generator to enable visual checks of the de-
	Special QC	Note: A selected test nattern remains visible
	White	until you select "None" again.
	50% Gray	
	Black	
	Default: None	

7.3.2 Picture Layout menu

With the LX300W you can simultaneously display up to three different video sources on the monitor.

Note
Display Port 1 and DVI 1 cannot be displayed simultaneously.

Establish the number of windows

Function	Adjustment / setting range	Description
Single Source		A single video source is displayed full screen
		By default, the video source connected to DVI 1 is displayed.
		Open the "Window Configuration" menu to change the video source or display size.
Dual Source (PaP)	Left Window (Upper Window)	Display in two windows of equal size next to one another
	Right Window (Lower Window)	Two video sources are displayed in two win- dows of equal size next to one another.
	Note: The entries in parentheses are displayed when the monitor is in portrait format.	By default, the "Left Window" ("Upper Win- dow") displays the DVI 1 input and "Right Window" ("Lower Window") displays the DVI 2 input.
		Open the "Window Configuration" menu for the respective window to change the video source or display size.
Note: If Fail Safe is active, the Dual Source (PiP) or Triple Source function cannot be selected. De- activate Fail Safe in the "Display" OSD menu.		

Function	Adjustment / setting range	Description
Dual Source (PiP)	Main Window PiP Window	Display in two windows, one on top of the other
		Two video sources are displayed in two win- dows, one on top of the other.
		By default, the "Main Window" displays the DVI 1 input and "PiP Window" displays the DVI 2 input.
		Open the "Window Configuration" menu for the respective window to change the video source or display size.
Triple Source	Left Window	Display in three adjacent windows
	(Upper Window) Right Window (Right Lower Window)	Three video sources are displayed in three windows. One window takes one half of the monitor, and two windows of equal size are displayed, and above the other in the other
	Right Window (Left Lower Window)	half of the menu.
	Note: The entries in parentheses are displayed when the monitor is in portrait format.	By default, the "Left Window" displays the DVI 1 input, "Right Upper Window" displays the DVI 2 input, and "Right Lower Window" displays the DVI 3 input.
		Open the "Window Configuration" menu for the respective window to change the video source or display size.

"Window Configuration" menu

In the "Window Configuration" menu, the video source and display size are assigned to every window in the selected window arrangement.

Function	Adjustment / setting range	Description
Source Selection	DVI1 DVI2 Display port 1 DVI 3 (HDMI) Auto Search <i>Default: Auto Search</i>	Selecting the video source Here you set which video source should be displayed in the selected window. The video source is set automatically if you select "Auto Search". The setting remains even if you shut down and switch on the system again. Note: Display Port 1 and DVI 1 cannot be displayed simultaneously.
Zoom	1:1 Set To Aspect Fill All (PiP only) <i>Default: 1:1</i>	 Establishing the image display 1:1 : The picture is displayed in the window in its original size. Set To Aspect: The picture is zoomed to the maximum window area with retention of the aspect ratio. Fill All: The image fills the entire area of the PiP window. The aspect ratio is changed.

Operation 7.3 Description of OSD menu

Function	Adjustment / setting range	Description
Position / Size (PiP)	H-Position Default: 64 V-Position Default: 64 H-Size Default: 96 V-Size Default: 80	Establishing the PiP display You set the position and size of the picture- in-picture display here. The zero position is the upper left corner of the window.

7.3.3 Power Manager menu

Function	Adjustment / setting range	Description
DMPM	DMPM Lamp Dimmed	Setting the DMPM mode
	DMPM Lamp Off	Lamp Dimmed: Backlight brightness is re-
	DMPM Disabled	duced to a minimum. This saves energy
	Default: DMPM Lamp Dimmed	up time after being reactivated. In this mode, the energy saving mode time counts toward the operating hours.
		 Lamp Off: The backlight is shut down completely. The energy saving mode is increased compared to "Backlight Dimmed". Prior to diagnosing radiographic images however, the lamp requires a warm-up time after reactivation.
		Disabled: DMPM signals are ignored. The monitor does not change to energy saving mode.

Function	Adjustment / setting range	Description
ICS Fan Opera-	Standard	Fan control
tion	Operating Room Default: Standard	 In standard mode, the fans run at half speed. Above a specific ambient temperature, the fans run at full speed.
		• The fans are switched off in Operating Room mode. Above a specific ambient temperature, brightness is reduced by half.
OSD Settings	Horizontal 0 139 <i>Default: 75</i>	Setting the position and transparency of the OSD menu
	Vertical 0 41 <i>Default: 16</i>	Horizontal and vertical coordinates establish the po- sition of the OSD menu.
	Transparency 0 255 <i>Default: 255</i>	Note: The OSD menu cannot overlap a PiP window or an image from the Fail-Safe function. Corre- sponding entries are suppressed or the OSD menu position is corrected automatically.
		Use "Transparency" to change the transparency of the OSD background.
LED Brightness	Bright	Setting the brightness of the operation LED
	Dimmed Default: Dimmed	You can lower the brightness of the operation LED to prevent interfering stray light.
		Note: The brightness of the operation LED will increase automatically to indicate a monitor error when one occurs. The color of the operation LED indicates a possible cause of the error. [> 38]
LED Timeout	No Timeout	Setting the operation LED timeout
	Timeout (min) 1 <i>Default: No Timeout</i>	The operation LED can be switched off after a set wait time (in minutes) to prevent interfering stray light.
		Note: The operation LED switches on automatically to indicate a monitor error when one occurs. The color of the operation LED indicates a possible cause of the error. [▶ 38]
Service	Backlight Sensor Test	Backlight Sensor Test
	Reset To Factory Default	When you select this function, a series of brightness settings is checked using the internal sensor.
		• These values differ from the defaults, the mes- sage "Check with QA SW" is displayed. You can recalibrate the sensor using the QA software.
		• If the values do not differ from the defaults, "Nor- mal" status is displayed.
		Reset To Factory Defaults
		Selecting this function opens a dialog box where you can reset the device to the factory settings.

7.3.4 Other Options menu

Operation 7.3 Description of OSD menu

7.3.5 Information menu

Selecting this menu displays the following monitor data:

Indicator	Description
P/N ################	Order number
S/N ########	Serial number
AN #######	Asset number
Working hours #####	Number of operating hours
Temperature (°C) ##	Internal temperature in °C
Firmware #.###	Installed firmware
FPGA 1 #.###	Installed FPGA
OSD Version #.####	Installed OSD version

7.3.6 Signal menu

Indicator	Description
Input	Selecting this function displays information regarding the video signals
Width (Pixels) ####	at the inputs.
Height (Lines) ####	The inputs displayed by the monitor are highlighted in gray.

8 Cleaning and check settings

8.1 Cleaning

Recommended cleaning and disinfection agents

NOTICE

Device maintenance, cleaning and disinfecting

- 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.

Agent class	Tested cleaning agents and disinfectants	Further examples
Aldehyde	Melsitt	Aldasan 2000
		Kohsolin
		Gigasept FF
		Cidex
Chlorine derivatives	Terralin	Quartamon Med
Disinfecting agents	Mikrozid liquid	TaskiDS5001 (Di- verseylever Labs)
		Morning Mist
		Surfanios Fraicheur Citron (An- ios Labs)
Guanidine derivatives	Lysoformin	
Quaternary compounds	Incidur spray, undiluted	
Standard household washing-up liquid	such as	Fairy Ultra, Pril, Palmolive
Pyridine derivatives	Activ spray, undiluted	
Water	Tap water	
	Distilled water	

Note

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

Cleaning and check settings 8.2 Check the settings

Impermissible cleaning and disinfection agents

The following cleaning agents and disinfectants can bleach the finish after prolonged exposure.

Agent class	Tested cleaning agents and disinfectants	Further examples
Alcohol	Ethyl alcohol, 96%	Hospiset cloth
Peroxide compounds	Perform	Dismozon pur
Petroleum spirit	Boiling range gasoline	Petroleum ether

8.2 Check the settings

Checking the settings

- 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

The operation LED continuously lights up green when operating normally. In the event of a fault, localize it as follows, based on the screen display and the operation LED.

- 1. Check the device for the possible causes listed in the following.
- 2. Carry out the remedial measures before contacting service personnel.

9.1 No picture

LED	Cause	Remedy
Green	Video signal detected, but the monitor or graphics card is set up incorrectly	Check the monitor settings (e.g. LUT, brightness, no test pattern, etc.).
		• Check and adapt the graphics card settings.
	Video signal detected, but only a DVI or DisplayPort input connected	Signal cable on DVI or DisplayPort input not connected in pairs.
	Video signal detected but device de- fective	Inform service department
Yellow	No error, DMPM Power Management System active:	Deactivate energy saving mode
	Computer operating system switches to monitor into the mode that saves energy and protects the backlight	
	No input signal	Signal cable is not connected
	Incorrect timing is set	Apply supported timing
Red	Internal error	Inform service department
	Overtemperature threshold exceeded:	Switch off the monitor
	The nominal value for the backlight control is reduced by half. Brightness	Check the ventilation and improve these conditions if necessary.
	is reduced significantly to lower the temperature and avoid potential damage.	• Select a lower brightness level for standard operation.
Dark	Device is off	Switch on power switch
	Power cable is not inserted or incorrectly inserted.	Check the power cable
	Power cable is defective	Replace power cable
	Blown fuse	Inform service department

9.2 Picture displayed

LED	Cause	Remedy
Green	No error, correct operating status	-
Yellow	The monitor is in the warm-up.	 Select a lower brightness level for standard operation.
		 Wait for the warm-up period to expire. The LED turns green when the stable luminance level is reached.
Flashing yellow	The monitor has not reached the sta- ble luminance level.	 Select a lower brightness level for standard operation.
		Inform service department
	Monitor has reached an initial critical temperature level.	 Select a lower brightness level for standard operation.
		 Check the ventilation and improve condi- tions if necessary.
	Internal error	Inform service department
Red	Overtemperature threshold exceeded:	Switch off the monitor
	The nominal value for the backlight control is reduced by half. Brightness is reduced significantly to lower the temperature and avoid potential dam- age.	 Check the ventilation and improve condi- tions if necessary.
		 Select a lower brightness level for standard operation.
	Internal error	Inform service department
Dark	LED timeout activated	No error
		Switch off the LED timeout setting
	Operation LED is defective	Inform service department

9.3 Messages during operation

The following messages can be displayed when using or operating the monitor:

Message	Description	Remedy
Activate Fail Safe or PiP, Triple	File Safe and the Dual Source (PiP) or Triple Source picture layout cannot be operated simultaneously.	Deactivate Fail Safe or set the Dual Source (PaP) or Single Source pic- ture layout.
Check with QA SW	Backlight Sensor incorrect	Contact service.
No Signal	No valid video signal.	Check the video source connection.
OSD Locked	Attempts to open a locked OSD menu.	Locking or unlocking the OSD menu [▶ 26]
OSD Unlocked	Unlocking the OSD menu was suc- cessful	-
Sensor Status Normal	Blacklight sensor works problem-free	-
Wrong OSD version	The wrong OSD version is installed in the monitor.	Contact service.

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

Property	Value
Туре	TFT, Dual Domain, IPS mode, amorphous silicon
Active Area	641.28 mm x 404.81 mm
Screen diagonal	29.8" (75.7 cm)
Resolution	2560 x 1600 pixels
Refresh rate	60 Hz
Pixel arrangement	RGB vertical stripes
Pixel spacing	0.2505 mm x 0.2505 mm
Contrast ratio	Typically 1100:1
Horizontal viewing angle	Typically 170°
Vertical viewing angle	Typically 170°
Backlighting	White LEDs
Screen brightness	Typically 750 cd/m ²
	Min. 620 cd/m ²

10.2 Power supply

Power connection	Non-heating appliance socket
Line voltage	AC 100 240 V (± 10 %)
Line frequency	50 60 Hz (± 5 %)
Current consumption	max. 1.5 A max. 0.7 A
Maximum current consumption	150 W
Energy saving mode	< 20 W
Standby mode	Typically 1 W

10.3 Inputs/Outputs

DVI 1	 1 x dual link DVI-I socket (analog pins are not used) - 2560 x 1600 at 60 Hz
	 Service and communication over DDC chan- nel of DVI socket
DVI 2	1 x single link DVI-I socket (analog pins are not used) - 1920 x 1200 at 60 Hz
DisplayPort 1	1 x DisplayPort – max. 2560 x 1600 at 60 Hz
HDMI connection (DVI 3)	1 x HDMI socket (transmits a DVI signal) – max. 1280 x 1024 at 60 Hz
4-pin mini-DIN socket (serial connection)	For connecting a photometer
2 x USB (downstream)	For connecting external USB devices
2 x USB (upstream)	For communicating with the PC and for service purposes
2 x DC 5 V/max. 1 A	For connecting external devices

10.4 Mechanical design

Housing components	Metal and plastic
Ventilation openings	In rear panel
Protection class	IP20 according to EN 60529
Connector panel	On rear panel, under cover
Weight (without stand)	RadiForce LX300W: 15.5 kg +/- 1 kg
	RadiForce LX300W-P: 18.5 kg +/- 1 kg
	RadiForce LX300W-S: 19.5 kg +/- 1 kg
Dimensions (W x H x D) in mm (without stand)	701.5 x 472.6 x 107.4

10.5 Climatic conditions

Operation	
Temperature range	+5 °C to +40 °C Ambient temperature
Temperature gradient	Max. 5°C/h, without condensation
Air pressure	700 1060 hPa
Transport and storage (packed)	
Temperature range	-20°C +60°C ambient temperature
Temperature gradient	Max. 5°C/h, without condensation
Humidity	10 90%, non-condensing, at 25°C
Air pressure	200 1060 hPa

10.6 Safety regulations

CE

This device bears a CE mark in accordance with the provisions of Council Directive 93/42/EEC and 2011/65/EU.

Safety regulations	
Safety standards	• IEC/EN 60601-1
	• CAN/CSA - C 22.2 No. 60601-1-08
	• CAN/CSA - C 22.2 No. 601.1-M90
	 GB4943.1 (non-tropical, altitude < 2000 m), safety specification T8AL, 250 V
Protection class	Protection class I
Degree of protection	IP20
Medical device classification	Class I according to 93/42/EEC Appendix IX

Dimension drawings 11.1 View from the front and above

11 Dimension drawings

All dimensions in mm

11.1 View from the front and above







11.2 View from behind, with cover

Dimension drawings

11.3 View with base

11.3 View with base













12 Spare parts / accessories

12.1 Accessories

DVI Transmission Link TDL3600

Using the digital transmission link, high-quality video data can be transmitted up to 36 meters with no loss of data. Transmission over Ethernet cables permits robust handling and easy installation. The cable can also be easily routed through small openings. Order no.: 6GF6010-2DB36

DVI-D Dual Link signal cable

EIZO recommended DVI-D Dual Link signal cable, 2 m in length. Order no.: 6GF6980-1TA10

13 Appendix

13.1 Information on electromagnetic compatibility (EMC)

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

Special EMC provisions are required for use of the RadiForce LX300W. Installation, assembly, and use must take place in compliance with the following instructions.

- 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/EN 60601-1-2.

Electromagnetic radiation

The RadiForce LX300W is intended for use in the electromagnetic environments noted below.

Customers and users of the RadiForce LX300W have to ensure that the device is used in such an environment.

Radiation test	Conformity	Information regarding the electromagnetic environment
RF radiation CISPR11/EN 55011	Group 1	The RadiForce LX300W 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/EN 55011 GB9254	Class B	The RadiForce LX300W is approved for use in a number of environments. This includes residential areas and areas con- nected directly to the public low-voltage grid, such as private homes
Harmonic currents IEC/EN 61000-3-2 GB17625.1	Class D	nomes.
Voltage fluctuations / flicker IEC/EN 61000-3-3	fulfilled	

Electromagnetic interference immunity

The RadiForce LX300W was tested with the following compliance levels in accordance with the test requirements for professional healthcare facilities, as established in IEC/EN 60610-1-2.

Customers and users of the RadiForce LX300W have to ensure that the monitor is used in such an environment.

Interference im- munity test	Measurement level	Compliance level	Information regarding the electromag- netic environment			
Electrostatic dis- charge (ESD) IEC/EN 61000-4-2	±8 kV contact ±15 kV air	±8 kV contact ±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 distur- bances (bursts) IEC/EN 61000-4-4	±2 kV power lines ±1 kV input / out- put lines	±2 kV power lines ±1 kV input / out- put lines	The power supply quality has to corre- spond to that of typical industrial environ- ments or hospitals.			
Surge voltage IEC/EN 61000-4-5	±1 kV line against line ±2 kV line against ground	±1 kV line against line ±2 kV line against ground	The power supply quality has to corre- spond to that of typical industrial environ- ments or hospitals.			
Voltage dips, brief interrup- tions, and fluctu- ations of power supply lines IEC/EN 61000-4-11	$\begin{array}{c} 0 \ \% \ V_{T} \ for \ 0.5 \ periods \\ and \ 1 \ period \\ 70 \ \% \ V_{T} \ for \ 25 \ / \\ 30 \ periods \\ at \ 50 \ / \\ 60 \ Hz \\ 0 \ \% \ V_{T} \ for \ 250 \ / \\ 300 \ periods \\ at \\ 50 \ / \ 60 Hz \end{array}$	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 corre- spond to that of typical industrial environ- ments 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 bat- tery.			
Magnetic fields with energy technology fre- quencies IEC/EN 61000-4-8	30 A/m (50 / 60 Hz)	30 A/m (50 Hz)	The magnetic fields with energy technol- ogy frequencies must be in an area that is representative of a typical location in a typical industrial environment or hospi- tals. The device should be used at least 15 cm away from the source of magnetic fields with energy technology frequen- cies.			
Note: V_T is the alt	Note: V_T is the alternating current voltage before application of the measurement level.					

Appendix

13.1 Information on electromagnetic compatibility (EMC)

Electromagnetic interference immunity					
The RadiForce LX300W was tested with the following compliance levels in accordance with the test requirements for professional healthcare facilities, as established in IEC/EN 60601-1-2. Customers and users of the monitor have to ensure that the monitor is used in such an environment.					
Interference immunity test	Measure- ment level	Compliance level	Information regarding the electromagnetic envi- ronment		
Line-based dis- turbances caused by RF fields IEC/EN 61000-4-6	3 V _{rms} 150 kHz to 80 MHz	3 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 com-		
	6 V _{rms} ISM bands	6 V _{rms}	pliance with the recommended minimum distance. It is determined using the formula for calculating the frequency of the transmitter.		
	150 kHz and		Recommended minimum distance		
	80 MHz		d = 3.5/3 √P = 1.2 √P, 150 kHz to 80 MHz		
Electromagnetic	3 V/m	3 V/m	d = 2 \sqrt{P} , ISM bands between 150 kHz and 80 MHz		
RF fields	80 MHz to 2.7 GHz		d = 3.5/3 √P = 1.2 √P, 80 MHz to 800 MHz		
1EC/EN 61000-4-3			d = 7/3 √P = 2.3 √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 me- ters (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.		

Note: The higher frequency range applies at 80 MHz and 800 MHz.

Note: Guidelines with respect to line-based interference due to RF fields or electromagnetic RF fields may not apply in all situations. Absorption and reflection by structures, objects, and people impact the propagation of electromagnetic waves.

^{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.

Recommended minimum distance between portable or mobile RF communications devices and the RadiForce LX300W

The RadiForce LX300W 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	Recommended minimum distance according to the frequency of the transmitter (m)				
the transmitter (W)	150 kHz to 80 MHz d = 1.2 √P	80 MHz to 800 MHz d = 1.2 √P	800 MHz to 2.7 GHz d = 2.3 √P		
0.01	0.12	0.12	0.23		
0.1	0.38	0.38	0.73		
1	1.2	1.2	2.3		
10	3.8	3.8	7.3		
100	12	12	23		

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.

Appendix

13.1 Information on electromagnetic compatibility (EMC)

Recommended minimum distance between portable or mobile RF communications devices and the RadiForce LX300W

The RadiForce LX300W is intended for use in an electromagnetic environment in which interference due to electromagnetic radiation is controlled. The customer 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 fre- quency (MHz)	Band- width ^{a)} (MHz)	Service ^{a)}	Modula- tion ^{b)}	Maximum power (W)	Minimum distance (m)	Measure- ment level (V/m)	Compli- ance level (V/m)
385	380 - 390	TETRA 400	Pulse modu- lation ^{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,	Pulse modu-	0.2	0.3	9	9
745		17	217 Hz				
780							
810	800 - 960	GSM 800/900	Pulse modu-	2	0.3	28	28
870		iDEN 820	18 Hz				
930		CDMA 850 LTE band 5					
1720	1700 -	GSM 1800;	Pulse modu- lation ^{b)} 217 Hz	2	0.3	28	28
1845	1990	GSM 1900					
1970		DECT LTE band 1, 3, 4, 25 UMTS					
2450	2400 - 2570	Bluetooth WLAN 802.11 b/g/n RFID 2450 LTE band 7	Pulse modu- lation ^{b)} 217 Hz	2	0.3	28	28
5240	5100 -	WLAN 802.11	Pulse modu-	0.2	0.3	9	9
5500	5800	a/n	lation [®] 217 Hz				
5785							
^{a)} For som tions devi	e radio ser ce to the ba	vices, only the fre ase station ("Uplir	equencies for tl nk") is included	he radio con in the table.	tact from the	e mobile com	munica-

^{b)} The carrier is modulated by a square wave with 50 % duty cycle.

13.2 Markings and Symbols

The markings and symbols on the device have the following meanings:

Marking/symbol	Meaning			
\wedge	Symbol for "Caution, observe accompanying documents".			
CE	CE marking (EU conformity mark).			
Electrical Safety	MET marking, in accordance with U.S. and Canadian national regulations.			
FC	U.S. FCC marking for communication devices.			
	CCC marking, in accordance with for Chinese national regulations.			
Ô	RCM marking for conformity with Australian EMC standards.			
yyyy-mm	Symbol for manufacturer of medical devices, supplemented by the date of manufacture.			
X	WEEE marking: Product must be disposed of separately; materials may be re- cycled.			
	Marking according to ACPEIP (China-RoHS).			
IP20	Symbol for degree of protection according to DIN EN 60529.			
	"On" symbol (voltage).			
\bigcirc	"Off" symbol (voltage).			
Ŷ	Input for service calls.			
	Symbol for "Observe operating instructions".			
	Symbol for "Authorized service personnel only".			
Â	Symbol for "Hazardous electrical voltage".			

13.3 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.

13.4 China RoHS (Restriction of Hazardous Substances)

液晶显示器 LCD Monitor

型号 Model: 6GF62005L\$## (\$ = A...Z; ## = 00...99)

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。

为保证所申明的环保使用期限,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,以保证所申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.

部件名称 Component Name	有毒有害	有毒有害物质或元素 Hazardous substances' name				
	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	0	0	0	0	0	0
控制板 Controller Board	0	0	0	0	0	0
电源 Power Supply	х	0	0	0	0	0
其他 电路板 Other Circuit Boards	0	0	0	0	0	0
其他(电缆等) Others (cables, etc.)	0	0	0	0	0	0
机架、底盘 Housing, Chassis	0	0	0	0	0	0
附件(信号电缆、输电线等) Accessories (signal cable, power line, etc.)	0	0	0	0	0	0

有毒有害物质或元素的名称及含量 Name and Concentration of Hazardous Substances

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

• 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。

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.

- Data listed in the table represents the 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.

产品中有毒有害物质或元素的名称及含量 Table of hazardous substances' name and concentration.

13.5 FCC Declaration of Conformity

	For U.S.A. , Canada, etc. (rated 100-120 Vac) Only
	FCC Declaration of Conformity
1	We, the Responsible Party
	EIZO Inc.
	5710 Warland Drive, Cypress, CA 90630
	Phone: +1 (562) 4 31 50 11
0	declare that the product
•	Trade name: EIZO
•	Model: RadiForce LX300W
i 1	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, pur- suant 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 ra- diate 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 interfer- ence will not occur in a particular installation. If this equipment does cause harmful interference to ra- dio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.
•	Reorient or relocate the receiving antenna.
•	 Increase the separation between the equipment and receiver.
•	 Connect the equipment into an outlet on a circuit different from that to which the receiver is con- nected.
•	 Consult the dealer or an experienced radio/TV technician for help.
1	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 attached specified cable below or EIZO signal cable with this monitor so as to keep interference within the limits of a Class B digital device.
•	AC Cord
•	Shielded Signal Cable (enclosed)
	Canadian Notice
.	This Class B digital apparatus complies with Canadian ICES-003.
	Cet appareil numérique de la classe B est comforme à la norme NMB-003 du Canada.

13.6 Additional devices

Connected devices such as PCs must meet the relevant safety standards.

13.7 Repairs

Please contact the sales partner from whom you purchased the product.

13.8 Contact

Support during installation and for technical questions

www.eizo-or.com

13.9 Trademarks

The EIZO Logo is a registered trademark of EIZO Corporation in Japan and other countries.

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