Instructions for Use

RadiForce®
MX194

Color LCD Monitor

Important

Please read this “Instructions for Use”, and “Installation Manual” (separate volume) carefully to familiarize yourself with safe and effective usage.
Please retain this manual for future reference.

- **For monitor adjustment and settings, refer to the “Installation Manual”.**
- **For the latest product information including the “Instructions for Use”, refer to our web site : http://www.eizoglobal.com**

SYMBOLS

This manual and this product use the symbols below. They denote critical information. Please read them carefully.

WARNING Failure to abide by the information in a WARNING may result in serious injury and can be life threatening.	**CAUTION** Failure to abide by the information in a CAUTION may result in moderate injury and / or property or product damage.
Indicates a warning or caution. For example, indicates an “electrical shock” hazard.	
Indicates a prohibited action. For example, means “Do not disassemble”.	
Indicates a mandatory action. For example, means “Ground the unit”.	

This product has been adjusted specifically for use in the region to which it was originally shipped. If operated outside this region, the product may not perform as stated in the specifications.

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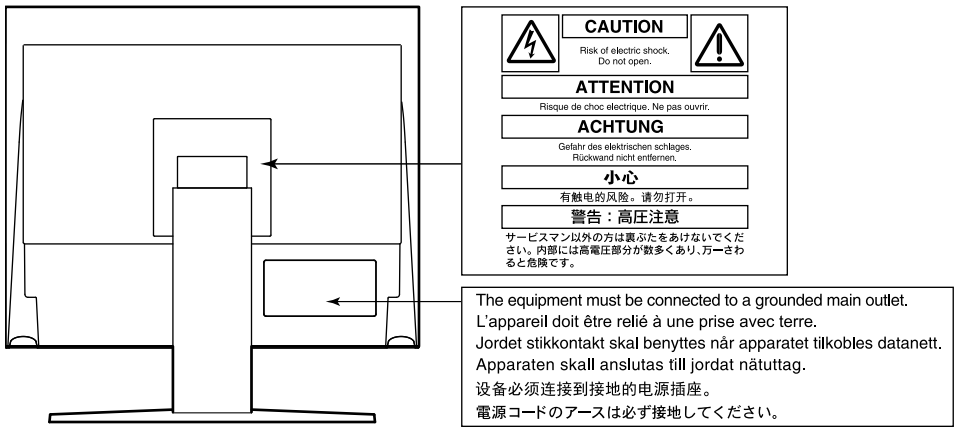
PRECAUTIONS

IMPORTANT

- This product has been adjusted specifically for use in the region to which it was originally shipped. If the product is used outside the region, it may not operate as specified in the specifications.
- To personal safety and proper maintenance, please read carefully this section and the caution statements on the monitor.

Location of the Caution Statements



Symbols on the unit

Symbol	This symbol indicates	
	Power button:	Press to turn the monitor's power on or off.
	Alternating current	
	Alerting electrical hazard	
	CAUTION	
	WEEE marking:	Product must be disposed of separately; materials may be recycled.
CE	CE marking:	EU conformity mark in accordance with the provisions of Council Directive and/or Regulation (EU).
	Manufacturer	
	Date of manufacture	
Rx only	Caution:	Federal law (USA) restricts this device to sale by or on the order of a licensed healthcare practitioner.
EU Medical Device	Medical device in EU	
EU Importer	Importer in EU	
UK CA	Mark signifying compliance with UK regulations	
UK Responsible Person	UK Responsible Person	
CH REP	Authorised representative in Switzerland	
EC REP	Authorised representative in the European Community	

WARNING

If the unit begins to emit smoke, smells like something is burning, or makes strange noises, disconnect all power connections immediately and contact your EIZO representative for advice.
Attempting to use a malfunctioning unit may result in fire, electric shock, or equipment damage.

Do not disassemble or modify the unit.
Opening the cabinet or modifying the unit may result in fire, electric shock, or burn.

Refer all servicing to qualified service personnel.
Do not attempt to service this product yourself as opening or removing covers may result in fire, electric shock, or equipment damage.

Keep small objects or liquids away from the unit.
Small objects accidentally falling through the ventilation slots into the cabinet or spillage into the cabinet may result in fire, electric shock, or equipment damage. If an object or liquid falls/spills into the cabinet, unplug the unit immediately. Have the unit checked by a qualified service engineer before using it again.

Place the unit at a sturdy and stable place.
A unit placed on an inadequate surface may fall and result in injury or equipment damage. If the unit falls, disconnect the power immediately and ask your local EIZO representative for advice. Do not continue using a damaged unit. Using a damaged unit may result in fire or electric shock.

Use the unit in an appropriate location.
Otherwise, fire, electric shock, or equipment damage may result.

- Do not place outdoors.
- Do not place in any form of transportation (ships, aircraft, trains, automobiles, etc.).
- Do not place in dusty or humid environments.
- Do not place in locations where water may be splashed on the screen (bathrooms, kitchens, etc.)
- Do not place in locations where steam comes in direct contact with the screen.
- Do not place near heat generating devices or humidifiers.
- Do not place in locations where the product is subject to direct sunlight.
- Do not place in environments with inflammable gas.
- Do not place in environments with corrosive gases (such as sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia, and ozone)
- Do not place in environments with dust, components that accelerate corrosion in the atmosphere (such as sodium chloride and sulfur), conductive metals, and so on

To avoid danger of suffocation, keep the plastic packing bags away from babies and children.

Use the enclosed power cord and connect to the standard power outlet in your country.
Be sure to use within the rated voltage of the power cord. Otherwise, fire or electric shock may result.
Power supply: 100-240Vac 50/60Hz

To disconnect the power cord, grasp the plug firmly and pull.
Tugging on the cord may damage and result in fire or electric shock.

The equipment must be connected to a grounded main outlet.
Failure to do so may result in fire or electric shock.

Use the correct voltage.

- The unit is designed for use with a specific voltage only. Connection to another voltage than specified in this “Instructions for Use” may cause fire, electric shock, or equipment damage.
  Power supply: 100-240Vac 50/60Hz
- Do not overload your power circuit, as this may result in fire or electric shock.

WARNING

Handle the power cord with care.

- Do not place the cord underneath the unit or other heavy objects.
- Do not pull on or tie the cord.

If the power cord becomes damaged, stop using it. Using of a damaged cord may result in fire or electric shock.

The operator should not touch the patient while touching the product.

This product has not been designed to be touched by patients.

Never touch the plug and power cord if it begins to thunder.

Touching them may result in electric shock.

When attaching an arm stand, please refer to the user's manual of the arm stand and install the unit securely.

Otherwise, the unit may become detached, resulting in injury and/or equipment damage. Before installation, make sure that desks, walls, or any other installation surface has adequate mechanical strength. If the unit falls, please ask your local EIZO representative for advice. Do not continue using a damaged unit. Using a damaged unit may result in fire or electric shock. When reattaching the tilt stand, please use the same screws and tighten them securely.

Do not touch a damaged LCD panel directly with bare hands.

Liquid crystal is poisonous. If any part of your skin comes in direct contact with the panel, wash thoroughly. If liquid crystal enters your eyes or mouth, immediately flush with large amounts of water and seek medical attention.

CAUTION

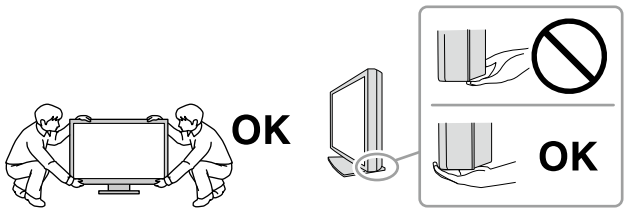
Handle with care when carrying the unit.

Disconnect the power cord and cables when moving the unit. Moving the unit with the power cord or cables attached is dangerous and may result in injury.

Carry or place the unit according to the correct specified methods.

- When carrying, grasp and firmly hold the unit as shown in the illustration below.
- Monitors of size 30 inches and above are heavy. When unpacking and/or carrying the monitor, ensure at least two people are utilized.

Dropping the unit may result in injury or equipment damage.



Do not block the ventilation slots on the cabinet.

- Do not place any objects on the ventilation slots.
- Do not install the unit in a place with poor ventilation or inadequate space.
- Do not use the unit laid down or upside down.

Blocking the ventilation slots prevents proper airflow and may result in fire, electric shock, or equipment damage.

Do not touch the plug with wet hands.

Doing so may result in electrical shock.

Use an easily accessible power outlet.

This is to facilitate disconnecting the power in case of a problem.

Periodically clean the area around the power plug and the ventilation slot of the monitor.

Dust, water, or oil on the plug may result in fire.

Unplug the unit before cleaning it.

Cleaning the unit while it is plugged into a power outlet may result in electric shock.

If you plan to leave the unit unused for an extended period of time, disconnect the power cord from the wall socket after turning off the power switch for the safety and the power conservation.

For users in the territory of the EEA and Switzerland:
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.

Notice for this Monitor

Intended Use

This Product is indicated for use in displaying radiological images for review, analysis, and diagnosis by trained medical practitioners. The display is not intended for mammography.

Attention

- This product may not be covered by warranty for uses other than those described in this manual.
- The specifications noted in this manual are only applicable when the following are used:
  - Power cords provided with the product
  - Signal cables specified by us
- Only use EIZO accessories products specified by EIZO with this product.

Precautions for Use

- Parts (such as the LCD panel) may deteriorate in the long-term. Periodically check that they are operating normally.
- When the screen image is changed after displaying the same image for extended periods of time, an afterimage may appear. Use the screen saver or Power Save function to avoid displaying the same image for extended periods of time.
- If the monitor displays continuously over a long period of time, dark smudges or burn-in may appear. To maximize the life of the monitor, we recommend the monitor be turned off periodically.
- An afterimage may appear even after a short time period has elapsed depending on the displayed image. If this occurs, changing the image or leaving the power off for a few hours may solve the problem.
- The backlight of the LCD panel has a fixed lifetime. When the screen becomes dark, begins to flicker or no longer lights up, please contact your local EIZO representative.
- The screen may have defective pixels or a small number of light dots on the screen. This is due to the characteristics of the panel itself, and is not a malfunction of the product.
- Do not press on the panel or edge of the frame strongly, as this may result in display malfunctions, such as interference patterns and others. If pressure is continually applied to the panel, it may deteriorate or damage your panel. (If pressure marks remain on the panel, leave the monitor with a black or white screen. The symptom may disappear.)
- Do not scratch or press on the panel with any sharp objects, as this may result in damage to the panel. Do not attempt to brush with tissues as this may scratch the panel.
- When the monitor is cold and brought into a room or the room temperature goes up quickly, dew condensation may occur on the interior and exterior surfaces of the monitor. In that case, do not turn the monitor on. Instead wait until the dew condensation disappears, otherwise it may cause some damage to the monitor.

To Use the Monitor for a Long Time

● Quality control

- The display quality of monitors is affected by the quality level of input signals and the degradation of the product. Perform visual checks and periodic constancy tests to comply with medical standards / guidelines according to your application, and carry out calibration as necessary. Use of the RadiCS monitor quality control software enables the user to perform high-level quality control that meets medical standards / guidelines. For how to perform various tests and calibration, refer to the RadiCS User's Manual.
- It takes about 30 minutes for the monitor display to stabilize. Please wait 30 minutes or more after the monitor power has been turned on or the monitor has recovered from the power saving mode before performing various tests for quality control, calibration, or screen adjustment of the monitor.
- We recommend that monitors be set to the recommended level or lower to reduce changes in luminosity caused by long-term use and maintain stable brightness.

Attention

- The display status of the monitor may change unexpectedly due to an operating error or unexpected setting change. Using the monitor with the control buttons locked is recommended after adjusting the screen of the monitor. For details on how to set, refer to the Installation Manual (on the CD-ROM).

● Cleaning

Periodic cleaning is recommended to keep the monitor looking new and to prolong its operation lifetime.

Carefully wipe the cabinet and panel surface with a soft cloth moistened with water or the following chemicals.

Chemicals that may be used for cleaning

Material name	Product name
Ethanol for disinfection	Ethyl alcohol (Ethanol)
Isopropyl alcohol	Isopropyl alcohol
Chlorhexidine gluconate	Hibitane solution
Sodium hypochlorite	Purelox
Benzalkonium chloride	Welpas
Alkyldiamino ethylglycine	Tego 51
Glutaral	Cidexplus 28

Attention

- Do not use chemicals frequently. Chemicals such as alcohol and antiseptic solution may cause gloss variation, tarnishing, and fading of the cabinet or panel, and also quality deterioration of the image.
- Never use any thinner, benzene, wax, and abrasive cleaner, which may damage the cabinet or panel.
- Do not attach chemicals directly to the monitor.

Note

- Using ScreenCleaner (optional) for cleaning of the cabinet and the panel surface is recommend.

To Use the Monitor Comfortably

- Staring at the monitor for a long time tires your eyes. Take a 10-minute rest every hour.
- Look at the screen from a proper distance and from a proper angle.

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Chapter 1 Introduction

Thank you very much for choosing an EIZO color LCD monitor.

1-1. Features

- 19.0 inches
- Supports a resolution of 1 M pixels (1280 dots x 1024 lines)
- VA panel with 178˚ horizontal and vertical viewing angles
- Supports triple-input system (DisplayPort, DVI, and D-Sub)
- Equipped with the six CAL Switch modes, including the DICOM mode having DICOM® Part 14-compliant grayscale characteristics
  The CAL Switch mode can be switched according to a displayed image. For details, refer to the Installation Manual (on the CD-ROM).
- The quality control software "RadiCS LE" is included.
  - Performs calibration and daily checkups and manages the history.
  - Allows the user to operate the monitor, such as switching the CAL Switch mode or input signal by using the mouse or keyboard.
- Employs stand with wide range of movement.
  Allows you to adjust the monitor to the optimal position for easy operation and minimizing fatigue.
  (Tilt: 30˚ up/0˚ down, swivel: 35˚ right /35˚ left, adjustable height: 100 mm)

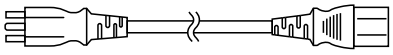
1-2. Package Contents

Check that all of the following items are included in the packaging box. If any of these are missing, contact your dealer or local EIZO representative.

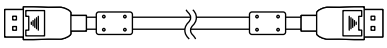
Note

- Please keep the packaging box and materials for future movement or transport of the monitor.

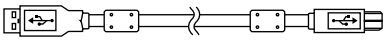
- Monitor
- Power cord



- Digital signal cable: PP300
  DisplayPort - DisplayPort



- USB cable: UU300



- EIZO LCD Utility Disk (CD-ROM)
- Instructions for Use
- VESA Mounting Screws (M4 x 12 mm, 4 pcs)

● EIZO LCD Utility Disk

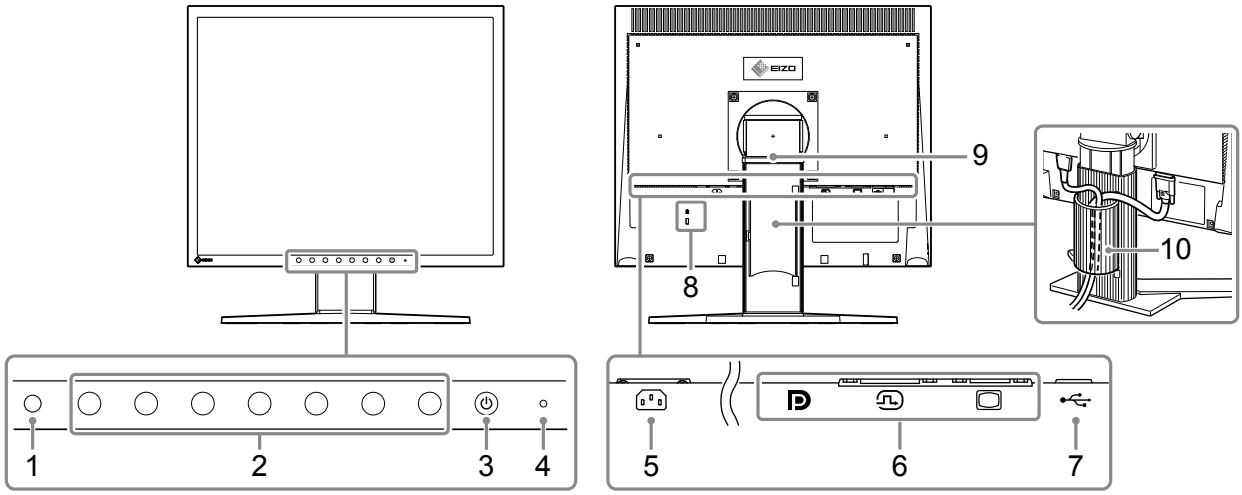
The following items are included in the EIZO LCD Utility Disk (CD-ROM). Refer to Readme.txt file on the CD-ROM for software startup procedures or file reference procedures.

- Readme.txt file
- RadiCS LE monitor quality control software (for Windows)
- User's Manual
  - Monitor Installation Manual
  - RadiCS LE User's Manual
- Outline dimensions

Note

- For information on how to install and use RadiCS LE, refer to RadiCS LE User's Manual. When using RadiCS LE, connect the monitor to your PC using the supplied USB cable.

1-3. Controls and Functions



1. Ambient Light Sensor	This sensor measures illumination with the RadiCS / RadiCS LE function that monitors changes in illumination. Refer to RadiCS / RadiCS LE User's Manual for details. The values measured by this sensor are not reflected on the RadiCS environmental illumination because the sensor is simplified one.
2. Control button	Displays the operation guide. Set menus according to the operation guide. For details on the operation guide and the menus, refer to the Installation Manual (on the CD-ROM).
3. ⏻ button	Turns the power on or off.
4. Power Indicator	Indicates the monitor's operation status. Green: Operating Orange: Power saving mode Off: Power off
5. Power connector	Connects the power cord.
6. Input Signal Connector	Connect signal cables. Left: DisplayPort connector Center: DVI-D connector Right: D-Sub mini 15-pin connector
7. USB upstream port	Connects the USB cable to use the software that needs USB connection.
8. Security lock slot	Complies with Kensington's MicroSaver security system.
9. Stand	Used to adjust the height and angle (tilt, swivel) of the monitor screen.
10. Cable holder	Covers the monitor cables.

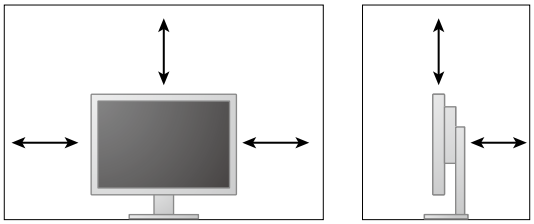
Chapter 2 Installation / Connection

2-1. Before Installing the Product

Carefully read “PRECAUTIONS” (page 3) and always follow the instructions.
If you place this product on a lacquer-coated desk, the color may adhere to the bottom of the stand due to the composition of the rubber. Check the desk surface before use.

● Installation Requirements

When installing the monitor in a rack, ensure that there is adequate space around the sides, back and top of the monitor.



Attention

- Position the monitor so that there is no light to interfere with the screen.

2-2. Connecting Cables

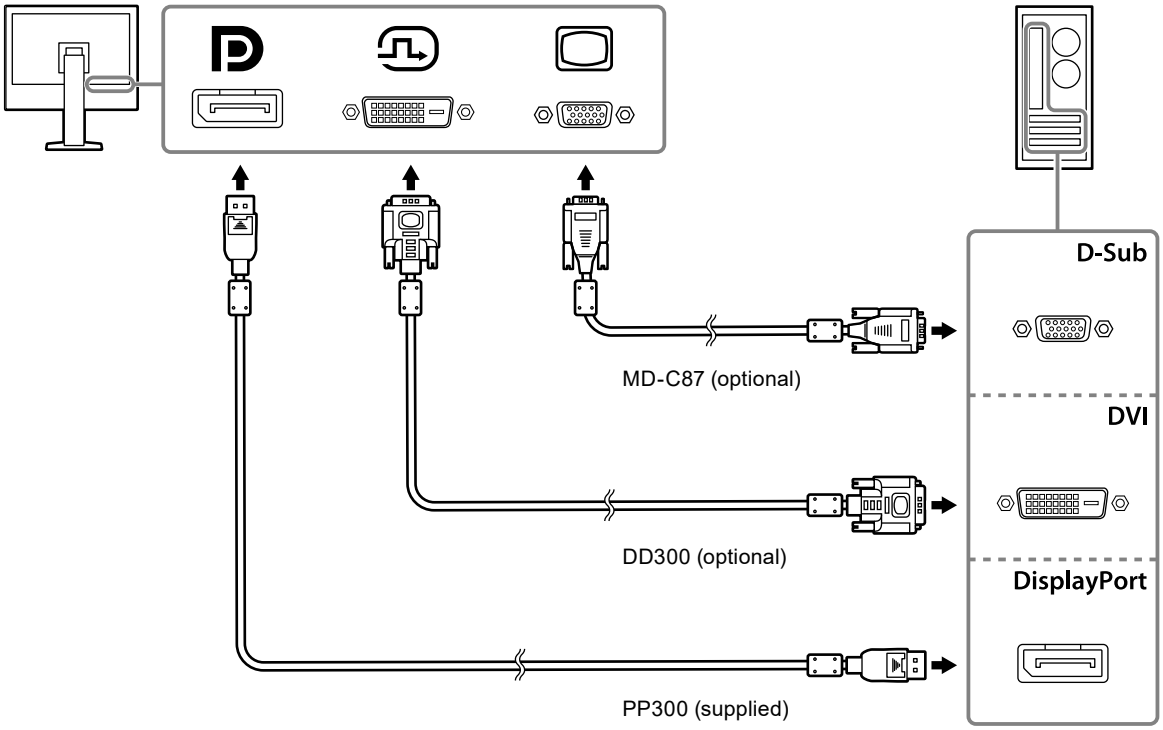
Attention

- Check that the monitor and the PC are powered off.
- When replacing the current monitor with this monitor, be sure to change the PC settings for resolution and vertical scan frequency to those that are available for this monitor by referring to “4-2. Compatible Resolutions” (page 17), before connecting the PC.

1. Connect signal cables.

Check the shapes of the connectors, and connect the cables.

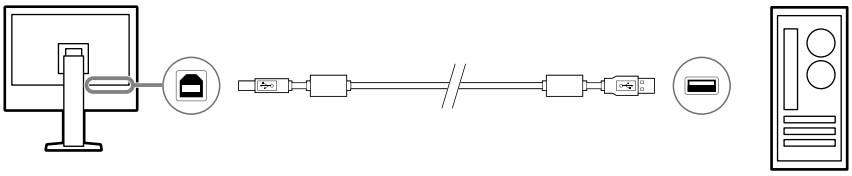
After connecting the DVI cable or the D-Sub cable to the monitor, tighten the fasteners to secure the connector.



2. Plug the power cord into a power outlet and the power connector on the monitor.

Insert the power cord fully into the power connector on the monitor.

3. When using RadiCS / RadiCS LE, connect the USB cable between the monitor's USB upstream port and the PC.



2-3. Turning On the Power

1. Press ⏻ to turn on the monitor.

The monitor's power indicator lights up green.

If the indicator does not light up, refer to "Chapter 3 No-Picture Problem" (page 15).

2. Turn on the PC.

The screen image appears.

If an image does not appear after turn-on, refer to "Chapter 3 No-Picture Problem" (page 15) for additional advice.

Attention

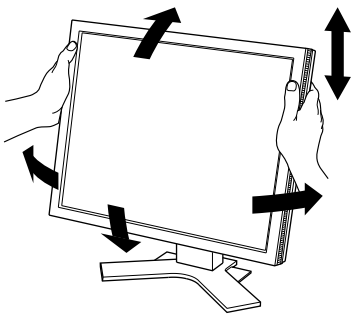
- For the maximum power saving, it is recommended that the Power button be turned off. Disconnecting the power outlet cuts the power consumption completely, when not using the monitor.

Note

- When turning on the monitor and PC for the first time with the analog signal, the Auto Adjustment function works to adjust the clock, phase, and display position automatically.
- In order to maximize the monitor's lifespan by impeding brightness degradation and to reduce power consumption, carry out the following:
  - Use the power saving function of the computer.
  - Turn off the monitor and PC after using them.

2-4. Adjusting the Screen Height and Angle

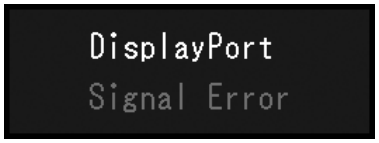
Hold left and right edge of the monitor with both hands, and adjust the screen height, tilt and swivel of the screen to the best condition for working.



Attention

- After the adjustment is finished, make sure that the cables are correctly connected.

Chapter 3 No-Picture Problem

Problem	Possible cause and remedy
1. No picture • Power indicator does not light.	• Check whether the power cord is connected properly. • Press ⏻.
• Power indicator lights green.	• Increase "Brightness", "Contrast", or "Gain" in the Setting menu. For details, refer to the Installation Manual (on the CD-ROM).
• Power indicator is lighting orange.	• Switch the input signal with ⏎. For details, refer to the Installation Manual (on the CD-ROM). • Move the mouse or press any key on the keyboard. • Check whether the PC is turned on. • This problem may occur when the PC is connected via the DisplayPort connector. Reconnect the power cord of the monitor, or reboot the PC.
2. The message below appears.	This message appears when the signal is not input correctly even when the monitor functions properly.
• This message appears when no signal is input. Example: 	• The message shown left may appear, because some PCs do not output the signal soon after power-on. • Check whether the PC is turned on. • Check whether the signal cable is connected properly. • Switch the input signal with ⏎. For details, refer to the Installation Manual (on the CD-ROM).
• The message indicates that the input signal is out of the specified frequency range. Example: 	• Check whether the PC is configured to meet the resolution and vertical scan frequency requirements of the monitor (see “4-2. Compatible Resolutions” (page 17)). • Reboot the PC. • Change to the appropriate setting using the graphics board's utility. For details, refer to the User's Manual of the graphics board.

Chapter 4 Specifications

4-1. Specifications List

LCD Panel	Type	VA
	Backlight	LED
	Size	48 cm (19.0 inch) (48.1 cm diagonal)
	Resolution	1280 dots × 1024 lines
	Display Size (H x V)	376.3 mm x 301.0 mm
	Pixel Pitch (H x V)	0.294 mm x 0.294 mm
	Display Colors	Max. 1073.74 million colors
	Viewing Angles (H / V, typical)	178˚ / 178˚
	Contrast Ratio (typical)	2000 : 1
	Response Time (typical)	20 ms (black -> white -> black)
Video Signals	Input Terminals	DisplayPort x 1, DVI-D (Single Link) x 1, D-Sub mini 15-pin x 1
	Horizontal scanning frequency	DVI, DisplayPort: 31 kHz - 64 kHz D-Sub: 24.8 kHz - 80.0 kHz
	Vertical Scan Frequency	DVI, DisplayPort: 59 Hz - 61 Hz (720 x 400: 69 Hz - 71 Hz) D-Sub: 50.0 Hz - 75.0 Hz
	Synchronization Signal	Separate
	Dot Clock (Max.)	DVI, DisplayPort: 108 MHz D-Sub: 135 MHz
USB	Port	Upstream x 1
	Standard	USB Specification Revision 2.0
Power	Input	100 - 240 VAC ±10 %, 50 / 60 Hz, 0.50A - 0.30A
	Maximum Power Consumption	28 W or less
	Power Save Mode	0.6 W or less *1
	Standby Mode	0.6 W or less *2
Physical Specifications	Outside dimensions (Width × Height × Depth)	405 mm x 406.5 mm - 506.5 mm x 205 mm (Tilt: 0˚) 405 mm x 438.8 mm - 538.8 mm x 227.7 mm (Tilt: 30˚)
	Outside dimensions (Without Stand) (Width x Height x Depth)	405 mm × 334 mm × 61.5 mm
	Net Weight	Approx. 6.0 kg
	Net Weight (Without Stand)	Approx. 4.2 kg
	Height Adjustment Range	100 mm
	Tilt	Up 30˚, down 0˚
	Swivel	Right 35˚, Left 35˚
	Rotation	90˚ (clockwise)
Operating Environment Requirements	Temperature	0 ˚C - 35 ˚C
	Humidity	20 % - 80 % R.H. (no condensation)
	Air Pressure	540 hPa - 1060 hPa

Transportation / Storage Environmental Requirements	Temperature	-20 ˚C - 60 ˚C
	Humidity	10 % - 90 % R.H. (no condensation)
	Air Pressure	200 hPa - 1060 hPa

*1 When DVI input is used, the USB upstream port is not connected, "Auto Input Detection": "Off", "Power Save": "On" and "DP Power Save": "On"

*2 The USB upstream port is not connected and "DP Power Save": "On"

4-2. Compatible Resolutions

The monitor supports the following resolutions.

● For Digital Signal Input (DisplayPort / DVI)

Resolution	Vertical Scan Frequency
640 x 480	60 Hz
720 x 400	70 Hz
800 x 600	60 Hz
1024 x 768	60 Hz
1280 x 1024 *1	60 Hz

*1 Recommended resolution.

● For Analog Signal Input (D-Sub)

Resolution	Vertical Scan Frequency
640 x 480	~75 Hz
720 x 400	70 Hz
800 x 600	~75 Hz
1024 x 768	~75 Hz
1152 x 864	75 Hz
1280 x 960	60 Hz
1280 x 1024 *1	~75 Hz
640 x 400	70 Hz

*1 Recommended resolution.

4-3. Accessories

The following accessories are available separately.
For the latest information about the optional accessories sold separately and information about the compatible graphics board, refer to our web site.
http://www.eizoglobal.com

Panel protector	EIZO "FP-702"
Arm, Stand	EIZO "LS-HM1-D": Dual height adjustable stand EIZO "LA-011-W": Wall-hung arm EIZO "AAH-02B3W": Wall-hung arm
Calibration Kit	EIZO "RadiCS UX2" Ver. 4.6.3 or later
Network QC Management Software	EIZO "RadiNET Pro" Ver. 4.6.3 or later EIZO "RadiNET Pro Lite" Ver. 4.6.3 or later
Cleaning Kit	EIZO "ScreenCleaner"
Signal Cable (Display Port - Display Port)	PP200
Signal Cable (DVI-D - DVI-D)	FD-C39, DD300
Signal Cable (D-Sub - D-Sub)	MD-C87
Signal Cable (DVI-I - D-Sub)	MD-C16
USB cable	FD-C93

Appendix

Medical Standard

- It shall be assured that the final system is in compliance to IEC60601-1 requirement.
- Power supplied equipment can emit electromagnetic waves, that could influence, limit or result in malfunction of the monitor. Install the equipment in a controlled environment, where such effects are avoided.

Classification of Equipment

- Type of protection against electric shock : Class I
- EMC class: IEC60601-1-2 Group 1 Class B
- Classification of medical device (EU): Class I
- Mode of operation : Continuous
- IP Class : IPX0

EMC Information

The RadiForce series has a performance that appropriately displays medical images.

Environments of Intended Use

The RadiForce series is intended to be used in the following environments.

- Professional healthcare facility environments such as clinics and hospitals

The following environments are not suitable for the RadiForce series to be used:

- Home healthcare environments
- In the vicinity of high-frequency surgical equipments such as electrosurgical knives
- In the vicinity of short-wave therapy equipments
- RF shielded room of the medical equipment systems for MRI
- In shielded location Special environments
- Installed in vehicles including ambulances
- Other special environment

⚠ WARNING

The RadiForce series requires special precautions regarding EMC and need to be installed. You need to carefully read EMC Information and the "PRECAUTIONS" section in this document, and observe the following instructions when installing and operating the product.

The RadiForce series should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the equipment or system should be observed to verify normal operation in the configuration in which it will be used.

When using a portable RF communication equipment, keep it 30 cm (12 inches) or more away from any part, including cables, of the RadiForce series. Otherwise, degradation of the performance of this equipment could result.

Anyone who connects additional equipment to the signal input part or signal output parts, configuring a medical system, is responsible that the system complies with the requirements of IEC60601-1-2.

Do not touch the signal input/output connectors while using the RadiForce series. Otherwise, the displayed image may be affected.

Be sure to use the cables attached to the product, or cables specified by EIZO.
Use of cables other than those specified or provided by EIZO of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and improper operation.

Cable	EIZO Designated Cables	Max. Cable Length	Shielding	Ferrite Core
Signal cable (DisplayPort)	PP300 / PP200	3 m	Shielded	With Ferrite Cores
Signal cable (DVI-D)	DD300 / FD-C39	3 m	Shielded	With Ferrite Cores
Signal cable (D-Sub)	MD-C87	1.8 m	Shielded	With Ferrite Cores
USB cable	UU300 / MD-C39	3 m	Shielded	With Ferrite Cores
Power cord (with earth)	-	3 m	Unshielded	Without Ferrite Cores

Technical Descriptions

Electromagnetic emissions		
The RadiForce series is intended for use in the electromagnetic environment specified below. The customer or the user of the RadiForce series should assure that it is used in such an environment.		
Emission test	**Compliance**	**Electromagnetic environment - Guidance**
RF emissions CISPR11	Group 1	The RadiForce series uses RF energy only for its internal function. Therefore, its RF emission are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR11	Class B	The RadiForce series is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC61000-3-2	Class D	
Voltage fluctuations / flicker emissions IEC61000-3-3	Complies	

Electromagnetic immunity			
The RadiForce series has been tested at the following compliance levels (C) according to the testing requirements (T) for Professional healthcare facility environments defined in IEC60601-1-2. The customer or the user of the RadiForce series should assure that it is used in such an environment.			
Immunity test	**Test level (T)**	**Compliance level (C)**	**Electromagnetic environment - Guidance**
Electrostatic discharge (ESD) IEC61000-4-2	±8 kV contact discharge ±15 kV air discharge	±8 kV contact discharge ±15 kV air discharge	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transients / bursts IEC61000-4-4	±2 kV power lines ±1 kV input / output lines	±2 kV power lines ±1 kV input / output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surges IEC61000-4-5	±1 kV line to line ±2 kV line to ground	±1 kV line to line ±2 kV line to ground	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC61000-4-11	0 % U_T (100 % dip in U_T) 0.5 cycles and 1 cycle 70 % U_T (30 % dip in U_T) 25 cycles at 50 Hz 0 % U_T (100 % dip in U_T) 250 cycles at 50 Hz	0 % U_T (100 % dip in U_T) 0.5 cycles and 1 cycle 70 % U_T (30 % dip in U_T) 25 cycles at 50 Hz 0 % U_T (100 % dip in U_T) 250 cycles at 50 Hz	Mains power quality should be that of a typical commercial or hospital environment. If the user of the RadiForce series requires continued operation during power mains interruptions, it is recommended that the RadiForce series be powered from an uninterruptible power supply or a battery.
Power frequency magnetic fields IEC61000-4-8	30 A/m (50 / 60 Hz)	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment. The product should be kept at least 15 cm away from the source of power frequency magnetic fields during use.

Electromagnetic immunity			
The RadiForce series has been tested at the following compliance levels (C) according to the testing requirements (T) for Professional healthcare facility environments defined in IEC60601-1-2. The customer or the user of the RadiForce series should assure that it is used in such an environment.			
Immunity test	**Test level (T)**	**Compliance level (C)**	**Electromagnetic environment - Guidance**
			Portable and mobile RF communications equipment should be used no closer to any part of the RadiForce series, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance
Conducted disturbances induced by RF fields IEC61000-4-6	3 Vrms 150 kHz - 80 MHz	3 Vrms	$d = 1.2\sqrt{P}$
	6 Vrms ISM [a] bands between 150 kHz and 80 MHz	6 Vrms	$d = 1.2\sqrt{P}$
Radiated RF fields IEC61000-4-3	3 V/m 80 MHz - 2.7 GHz	3 V/m	$d = 1.2\sqrt{P}$, 80 MHz - 800 MHz $d = 2.3\sqrt{P}$, 800 MHz - 2.7 GHz Where “P” is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and “d” is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey [b], should be less than the compliance level in each frequency range [c]. Interference may occur in the vicinity of equipment marked with the following symbol.

Note 1	U_T is the a.c. mains voltage prior to application of the test level.
Note 2	At 80 MHz and 800 MHz, the higher frequency range applies.
Note 3	These 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.

a)	The ISM (industrial, scientific and medical) 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.
b)	Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the RadiForce series is used exceeds the applicable RF compliance level above, the RadiForce series should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the RadiForce series.
c)	Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Recommended separation distances between portable or mobile RF communication equipment and the RadiForce Series

The RadiForce series is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the RadiForce series can help prevent electromagnetic interference by maintaining a minimum distance (30 cm) between portable and mobile RF communications equipment (transmitters) and the RadiForce series.
The RadiForce series has been tested at the following compliance levels (C) according to the testing requirements (T) of immunity to proximity fields from the following RF wireless communication services.

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

a) For some services, only the uplink frequencies are included.
b) The carrier is modulated using a 50 % duty cycle square wave signal.
c) The test levels were calculated using the maximum power, separation distance of 30 cm.

The customer or the user of the RadiForce series can help prevent interference from proximity magnetic fields by maintaining the minimum distance (15 cm) between RF transmitters and the RadiForce series.
The RadiForce series has been tested at the following conformance levels(C) according to the testing requirements(T) of immunity to proximity magnetic fields in the table below.

Test frequency	Modulation [a]	Test level (T) (A/m)	Compliance level (C) (A/m)
134.2 kHz	Pulse modulation [a] 2.1 kHz	65	65
13.56 MHz	Pulse modulation [a] 50 kHz	7.5	7.5

a) The carrier is modulated using a 50 % duty cycle square wave signal.

For other portable and mobile RF communication equipments (transmitters), minimum distance between portable and mobile RF communications equipment (transmitters) and the RadiForce series as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter (W)	**Separation distance according to frequency of transmitter (m)**		
	150 kHz to 80 MHz $d = 1.2\sqrt{P}$	**80 MHz to 800 MHz $d = 1.2\sqrt{P}$**	**800 MHz to 2.7 GHz $d = 2.3\sqrt{P}$**
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 rated at a maximum output power not listed above, the recommended separation distance “d” in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where “P” is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note 1	At 80 MHz and 800 MHz, the separation distance for a higher frequency range applies.
Note 2	These 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.

FCC Declaration of Conformity

For U.S.A., Canada Only

FCC Declaration of Conformity

We, the Responsible Party	EIZO Inc.
	5710 Warland Drive, Cypress, CA 90630
	Phone: (562) 431-5011
declare that the product	Trade name: EIZO
	Model: RadiForce MX194

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.

* 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 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 information technology equipment complies with Canadian ICES-003.
Cet équipement informatique de classe B est conforme à la norme NMB-003 du Canada.

EIZO Corporation
153 Shimokashiwano, Hakusan, Ishikawa 924-8566 Japan

EIZO GmbH EC REP
Carl-Benz-Straße 3, 76761 Rülzheim, Germany

艺卓显像技术(苏州)有限公司
苏州工业园区唯新路 39 号生物医药产业园六期 17 号楼

EIZO Limited UK Responsible Person
1 Queens Square, Ascot Business Park, Lyndhurst Road,
Ascot, Berkshire, SL5 9FE, UK

EIZO AG CH REP
Moosacherstrasse 6, Au, CH-8820 Wädenswil, Switzerland

www.eizoglobal.com

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