

Instructions for Use

LMM56800

Large Monitor Manager

Important

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



Legal information

Warning notice system

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

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

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

Qualified personnel

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

Use of EIZO products

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

Trademarks

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

Disclaimer of liability

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

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1 Introduction

1.1 Contents of this document

This document explains the functionality and the approved use of the Large Monitor Manager LMM56800. 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 is included on the CD-ROM provided and can be downloaded at www.eizo-or.com , or provided by the sales partner from whom you purchased the product.

1.2 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:

 DANGER
Please observe all warning information present on the device and in the instructions for use. There is a danger to life if warnings are not obeyed. Severe personal injury or damage to property may occur. 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 µA. 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 µA, 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.

 DANGER

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

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

Never use defective power cables

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

Disconnect the power cable correctly

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

Do not insert any objects into the housing

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

Do not place any objects on top of the device

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

Avoid penetration of liquid

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

 CAUTION

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

That is why you should observe the warning information:

Connection must be carried out by specialists

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

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

Connection in the USA and Canada

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

Connection in China

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

Observe the country-specific regulations

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

NOTICE

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

That is why you should observe the warning information:

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

Provide adequate air circulation

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

Avoid sources of heat

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

Do not subject the device to jolting or shocks

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

Only switch on a cold device following adaptation to room temperature

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

NOTICE

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

That is why you should observe the warning information:

Transportation only in original packaging

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

Care of device / cleaning agents

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

What to do if the device is faulty

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

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

Be aware of the monitors aging

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

Do not touch the monitor screen

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

2.2 Product-specific safety notes

For your protection, observe the following safety notes when installing and setting up your equipment:

- Follow all cautions and instructions marked on the equipment.
- Ensure that the voltage and frequency of your power source match the voltage and frequency stated on the device's rating plate.
- Never push objects through openings in the device.

NOTICE
Battery The motherboard of the device has a lithium battery. It may only be replaced by the manufacturer or authorized personnel. The stipulations of the German battery law (BattG), or the applicable laws in your country, have to be taken into account when disposing of the device.

Security

The software shipped with the system is standard software. When connected to other computers, viruses or other harmful software may attack the software of this product. It is the user's responsibility to protect this system against viruses and attacks from the Internet or other devices in this system

3 Description

3.1 Scope of delivery

The scope of delivery includes the following device and components. Check the scope of delivery for correctness and completeness.

Note

Keep the packaging material for subsequent transport of the device.

Device

Product	Order number	Description
LMM56800 Large Monitor Manager	6GF60201AB10	Supports output resolutions up to 3840 x 2160. Up to 26 of 26 input channels can be displayed simultaneously.

Components

The following components are included in the scope of delivery:

- 2 US, EU power cable each
- 2 DP modules (DisplayPort to DVI converter)
- 2 holder for installing the DP modules on top of the LMM56800
- 3 Y cables (adapter for connecting VGA and DVI-D to DVI-I)
- CD with documentation

3.2 Intended use

The LMM56800 Large Monitor Manager is specifically designed for control of the display of various video signals on an 8 MP monitor.

The LMM56800 is designed for use in a medical environment.

The LMM56800 may not be used in the patient vicinity.

The device may only be used by service personnel.

3.3 Features

The LMM56800 Large Monitor Manager has the following features that permit a wide area of applications.

Flexible arrangement of different video sources

The LMM56800 allows up to 26 different video sources to be displayed on one monitor simultaneously. The video sources can be displayed in different scales or cropping areas.

This means that the workflow can be simplified in the control room or examination room for example, and several work stations can be combined into one.

Display of analog and digital signals

The inputs of the LMM56800 can process both analog and digital image signals in resolutions from VGA(640 x 480 at 60 Hz) to WUXGA (1920 x 1200 at 60 Hz).

User-defined layouts and presets

The user can arrange the layout required on the LMM56800 and select the layout suitable for a given application.

In addition, presets can be created in which system configurations can be saved, e.g., for specific tasks.

Easy selection of display

Using a touch-sensitive console monitor, the appropriate display for the current step can be selected.

Alternatively, operation is possible with an iPad or joystick. The user interface is intuitive to use.

Fast image display

The configured image display is shown on the screen within a few seconds after switching on the LMM56800.

Image transmission has a latency time of one to two frames for a channel.

Flicker-free switching between default layouts takes less than 0.5 seconds.

High reliability

The LMM56800 offers high operating reliability. It has two redundant power supplies, a watchdog function, and a flash memory.

Common Interface

This network interface enables control of the LMM56800 using existing systems or computers. For example, layout changes, status queries, and remote diagnoses can be carried out from a radiography system or PC. .

4 Setup and installation

CAUTION

Changes to device

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

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

4.1 Installation location

NOTICE

Area surrounding the installation location

Protect the device from:

- Dirt
- Dust penetration
- Moisture

Provide adequate ventilation

Ventilation slots are provided on the front and back of the device for the circulation of air. Please note the following safety information.

CAUTION

Overheating of the device

Safe operation is endangered.

- Do not block or cover the device ventilation slots.
- Place the device so that the distance at the rear is at least 10 cm from a wall or 15 cm from other devices.
- Never place the device near a radiator.
- When installing the device in a rack, observe the permissible ambient temperature range.

Change of environment

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.

4.2 Positioning as a desktop device

The LMM56800 can be used as a desktop device in vertical position. Make sure the surface where it is to be placed is solid and even.

4.3 Installing and connecting the DP module.

The two DP modules included in the scope of delivery are used to convert from DisplayPort to DVI signals. They are to be installed and connected as follows:

1. Attach the holders to the LMM56800 housing using the screws provided.
2. Connect the DP cable of the DP module for the left DVI channel to DP output 1A.
3. Connect the DP cable of the DP module for the right DVI channel to DP output 1B.
4. Connect the USB cable of the DP module to the USB port ("PWR") of the LMM56800.
5. Connect the DVI modules and cables of the TDL Dual Link Sets according the color coding on the DP module.

Note: If the TDL Dual Link Set is not used, the DVI cable can be connected directly to the DP modules.



Fig.: Connected DP modules and TDL Dual Link Sets

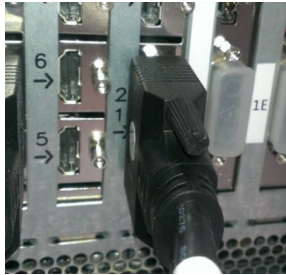
4.4 Installing the Y cable

The LMM56800 scope of delivery includes three Y cables as adapters for connecting from VGA and DVI-D to DVI-I. Using the Y cable, you can connect one analog and one digital video source each to inputs 1/2, 10/11, and 19/20.

Procedure

1. Attach a Y cable from the scope of delivery to inputs 1/2, 10/11, and 19/20 of the LMM56800

Note: The labels attached to the Y cable indicate the sockets into which the connectors are to be inserted.



2. Hand tighten the screws of the connector. You do not need a tool.
3. Repeat the steps for installing the Y cable for inputs 10/11 and 19/20 of LMM56800.



Fig.: Installed Y cable

4.5 Installing in a rack

The LMM56800 can be installed in a 19" rack.

Note

The mounting brackets for installing the Large Monitor Manager are not in the scope of delivery.
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CAUTION
--

Installing devices in the rack

- | |
|--|
| <ul style="list-style-type: none">• To prevent the rack from tipping over, arrange the devices so that the center of gravity of the rack and devices is below the center of the rack.• Always install the devices from bottom to top.• To prevent extreme operating temperatures within the rack, ensure that the maximum temperature does not exceed the rated ambient temperature for the device.• To prevent extreme operating temperatures due to reduced ventilation, ensure adequate ventilation of the respective device for safe operation.• You must install the devices such that the respective power switch, plug connector, and connection panel are accessible to the user. If this is not the case, install an additional element ensuring access. The installation has to comply with applicable safety standards. |
|--|

5 Connecting

5.1 Safety information for connection

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

DANGER

Connecting to line power

- | |
|--|
| <ul style="list-style-type: none">• 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. |
|--|

CAUTION
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Power cable and extension cable
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Not all power cables have the same rated values.
--

- | |
|--|
| <ul style="list-style-type: none">• Do not use the power cable delivered with the device for other products or purposes.• Do not use a common household extension cable to connect the device. Household extension cables do not have overload protection and are not suitable for use with computer systems. |
|--|

CAUTION
--

Shielding measures

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

NOTICE

Disconnecting from line power

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

NOTICE

Cable installation

Observe the following instructions:

- Only shielded cables are to be used for all signal connections.
- 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 Connection panel



Connection	Name	Function
①	PE connection	Additional protective conductor connection
②	LEDs	Indicates the status of the power supply
N1	Network connection (RJ45)	
1A	DP output	To connect a DP module
1B	DP output	To connect a DP module
3 ... 8, 12 ... 17, 21 ... 25	DVI inputs (HDMI sockets that only process video signals)	For connecting digital video sources Use the DVI-HDMI adapter that is provided.
9, 18, 27	VGA input (Sub-D, 15 pins)	For connecting analog video sources with VGA connector.
1, 10, 19	DVI-I inputs	Digital DVI input Split up to DVI-D input by Y-cable.
2, 11, 20	DVI-I inputs	Analog DVI input Split up to DVI-A input by Y-cable.
PWR	USB port	5 V power supply of the DP modules.
Power input	IEC 60320 C14 input	Input power supply
On/Off	Power switches of the redundant power supplies	Switching on / switching off the device
Display 1 / 2	Not used	

5.3 Connection procedure

Note

Picture quality, noise immunity, and emitted interference

Use high-quality cables only. The picture quality, noise immunity, and emitted interference of the entire system depend on the cable quality and length.

Connecting the monitor and video sources

1. Install the DP modules (DisplayPort to DVI converter) on the LMM56800.
2. Connect the TDL Link Sets to the DP modules.
See also [Installing and connecting the DP module](#). [► 15].
3. Connect the monitor.
Note: To display the video sources correctly, the monitor has to support the output resolution of the LMM56800: 3840x2160@60 Hz (8 MP).
4. Install the Y cables
See also [Installing the Y cable](#) [► 16].
5. Connect the video sources according to the following table.

PC video output	LMM56800 video inputs (1 ... 27)
DVI	• If you assign connection panels 3 ... 8, 12 ... 17, 21 ... 25, use an HDMI-DVI adapter cable. • If you assign the connection panels 1, 10 and/or 19, use a commercially available DVI cable.
VGA	• If you assign the connection panels 2, 9, 11, 18, 20, and/or 27, use a commercially available VGA cable.

Connecting to the network

The LMM56800 operates using a network. A network connection has to be established between RJ45 connector N1 of the LMM56800 and a PC.

- Use commercially available network components for this purpose, such as network cables, network hubs, and switches.
- Contact your network administrator with any questions on the network connection.

Power supply connection

CAUTION

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.

The LMM56800 has two redundant power supply units. If one power supply unit fails, the other power supply unit ensures continuous operation of the LMM56800.

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

1. Connect both power supply cables for your country (provided in the scope of delivery) to the voltage inputs connection panel.
2. Switch the device on using both power switches.
3. The device is operational when the LEDs illuminate green.

The LMM56800 has to be configured the first time it is used.

See also [Configuration and operation](#) ► 24].

5.4 Input signals

Distribution of input signals

- Inputs 1/2, 10/11, and 19/20 are DVI-I connections with a digital portion (1, 10, and 19) and an analog portion (2, 11, and 20). The inputs are split using a Y cable, making it possible to access both portions simultaneously, Standard cables can be used for both parts.
- Inputs 1 and 10 and 19 are digital inputs (DVI-D) with a maximum bandwidth of 165 MHz (for example: 1600 x 1200 at 60 Hz, 1920 x 1200 at 60 Hz reduced blanking, or 2048 x 1536 at 30 Hz).
- Inputs 2, 11, and 20 are analog inputs (DVI-A) with a maximum bandwidth of 135 MHz (for example: 1280 x 1024 at 75 Hz).
- Inputs 3 ... 8, 12 ... 17 and 21...26 are digital inputs (HDMI) with a maximum bandwidth of 165 MHz (e.g., 1600 x 1200 at 60 Hz, 1920 x 1200 at 60 Hz reduced blanking, or 2048 x 1536 at 30 Hz).
- Inputs 9, 18, and 27 are analog inputs (VGA) with a maximum bandwidth of 170 MHz (e.g., 1600 x 1200 at 60 Hz or 1920 x 1200 at 60 Hz reduced blanking).

Maximum number of pixels

- The number of horizontal pixels has to be between 320 and 2560.
- The number of vertical pixels has to be between 200 and 2560.
- The minimum H-blank pixels has to be 8.
- The minimum v-blank pixels has to be 4.

Image refresh rates

A minimum pixel clock of 16 MHz is required.

EIZO recommends a refresh rate of 60 Hz because the video output signal on the LMM56800 has an image refresh rate of 60 Hz.

Video bandwidth

The LMM56800 has the following input bandwidth restrictions:

- Input bandwidth per MDI board max. 620 MPx/s
- Complete system bandwidth max. 1500 MPx/s

6 Configuration and operation

6.1 Definition of terms

Before configuring the Large Monitor Manager (LMM) you should know the following terms:

Term	Explanation
Video input	Existing connection on the connection panel of the LMM.
Image source	Source of a video signal, such as a PC. The video source must be connected to a video input of the LMM.
Video signal	The video signal contains the picture information and is sent, for example, from the graphics card of the video source to the video input of the LMM.
Sidebar	The sidebars include the LMM operating menus. They are located on the outer edges of the screen (i.e. top, bottom, left and right), and open when you move the mouse pointer over them. The respective sidebar closes when you move the mouse pointer away. During operation via remote access, the sidebars can be opened using icons in the respective edges of the display area. Move the mouse pointer on the respective button. Please note that some information is visible only to service or users with the appropriate rights. Some sidebars are therefore not visible unless a password is entered.
Permanent sidebar	The sidebar can be displayed permanently and fixed by clicking the pin.
Tooltip	Information about a video signal can be displayed in the "Input Configuration" sidebar. Position the mouse pointer over the video input to display it.
Layout	A layout describes the arrangement (position and size) of windows on the screen.
Instance	Defined presentation of a video signal of a video source within a window of a layout. For each video input of the LMM multiple instances can be displayed with different presentations, e.g. 1:1, with a border, or as a cropping area. Each instance can be assigned to one or more windows and layouts.
Remote operation	Operation of the LMM via LAN or WLAN.

6.2 Basic icons

The following is a brief description of the symbols on the user interface.

General symbols

Symbol	Description
	Set the respective sidebar by clicking the pin.
	By clicking and holding the mouse button on the symbol, a dialog window or menu can be moved.
	The video source is presented with the aspect ratio 1:1.

SAs for instances

Symbol	Description
	The instance is deactivated.
	The instance is active, but a miniature thumbnail was not created (only displayed for remote access)
	The instance is active, but there is no video signal
	The instance was deleted.
	Insufficient resources available.
	The miniature thumbnail of the instance has not yet been configured or was deleted.
	The miniature thumbnail of the instance cannot be displayed.

6.3 Setting up operation

The LMM56800 operates via remote access. Remote access is possible via LAN or WLAN. The following steps are necessary to set up the connection:

Note

The Large Monitor Manager has to be switched on and connected to the network.

1. On the workstation, open the Internet protocol properties (TCP/IP) under Network settings/Local network.
2. Check that the general settings for IP address and DNS server are set to "Obtain automatically".
3. Under "Alternative configuration", set "User configured" and the following data:
IP: 169.254.213.96
Note: The address has to be in the address range 169.254.213.xxx and may not conflict with other addresses. The Large Monitor Manager address is 169.254.213.44.
Subnet: 255.255.0.0
4. Confirm with "OK" and close the Network settings dialog window.
5. In the network settings for the browser, set "No proxy".
6. Confirm and close the browser settings with "OK".
7. Enter the IP address of the Large Monitor Manager in the browser address line:
"169.254.213.44/config"

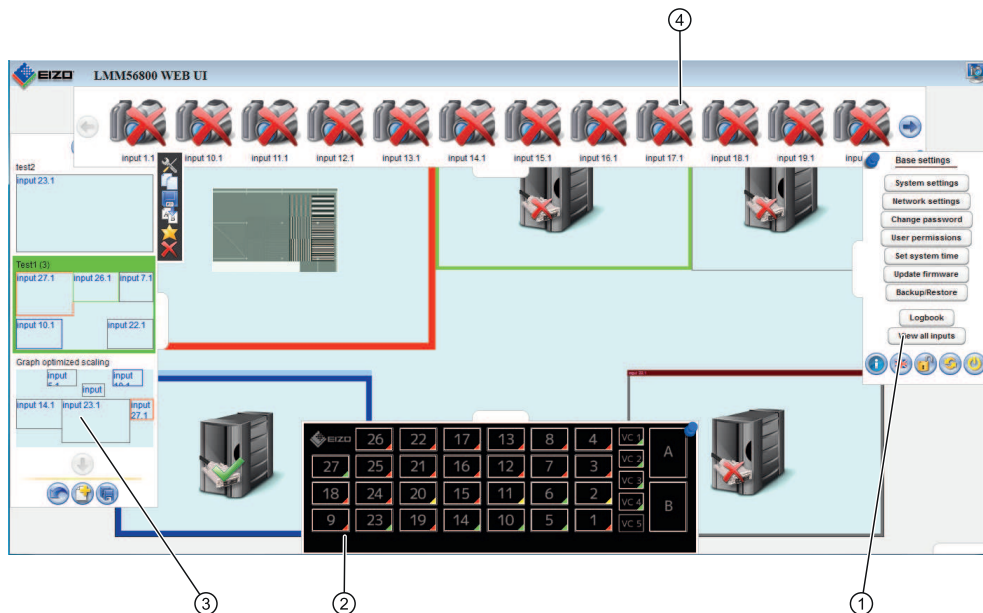
⇒ The LMM56800 user interface is displayed and is ready for use.

You can now configure the LMM56800 through the network and make the network settings as specified by the local administrator. This may require changes to the workstation IP address settings. In this case, follow the steps above.

Note

During operation via remote access, windows are identified by their corresponding thumbnail, live images are not transmitted.

6.4 Overview of the sidebars



- ① "Base settings" (full) sidebar
- ② "Input configuration" sidebar
- ③ "Layout" sidebar
- ④ "Instances" sidebar

6.5 "Base settings" (abbreviated) sidebar

The "Standard user" role is active after booting the Large Monitor Manager. The "Base settings" (abbreviated) sidebar is displayed.

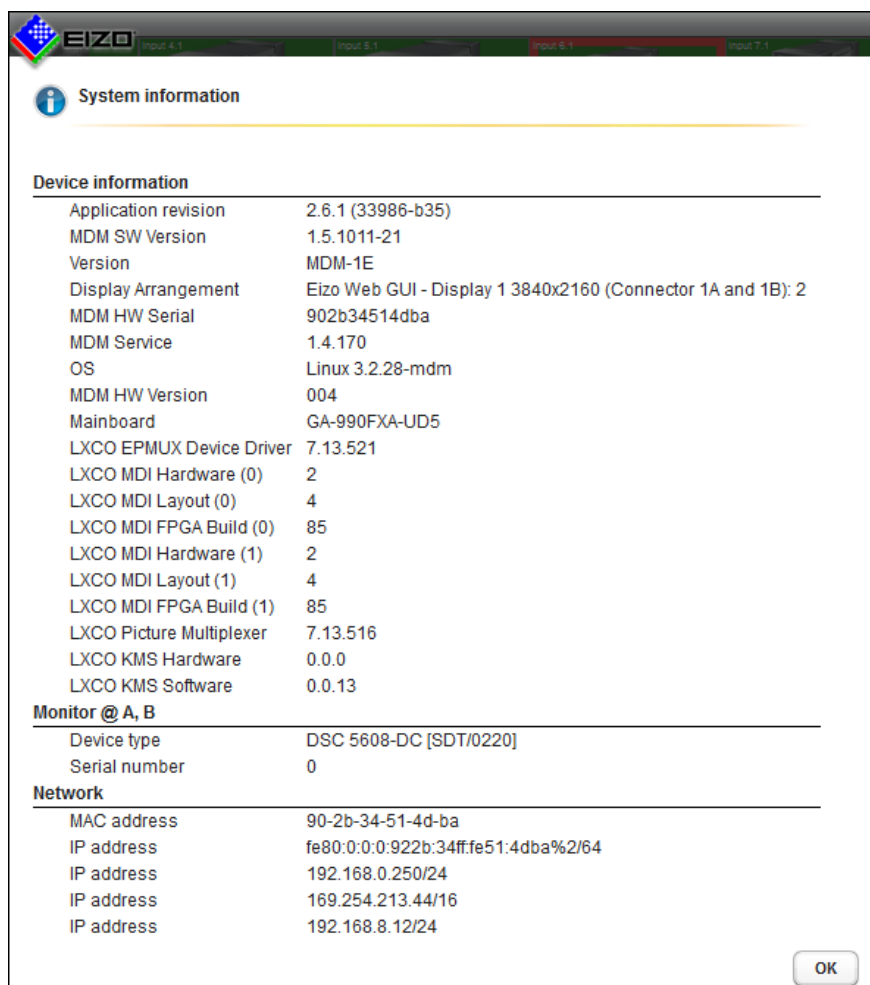
To open the sidebar, move the mouse pointer to the right edge of the screen.



Button	Description
	Displays the general system information.
	Changes the language in the dialog windows
	Opens the dialog window for logging on as "Service" (administrator) or "Advanced" (user with advanced rights).
	The Large Monitor Manager reboots.
	The Large Monitor Manager shuts down.

6.5.1 Calling up system information

To open the window with general system information, in the "Base settings" sidebar click .



Device information	Information on the hardware and software versions of the Large Monitor Manager.
Monitor A/B	Information on the connected monitor. The information is monitor-specific.
Network	Information on the network settings specified for the Large Monitor Manager. One of the IP addresses is the default IP address of the Large Monitor Manager. It cannot be changed. The other IP addresses are either assigned automatically by the DHCP server or specified by the administrator. See also chapter "Setting the network connection". The Large Monitor Manager has three IP addresses when DHCP is used. Otherwise it has two IP addresses. <i>Default setting: IP address 192.168.1.10</i> <i>Fall-back IP address: 169.254.213.44 (cannot be changed)</i>

6.5.2 Changing the language setting

To change the language setting, click the button of the set language in the "Base settings" sidebar. The following languages are available for selection:

- German
- English
- French
- Japanese

The default is German.

Note

The default language is displayed each time the Large Monitor Manager boots. If you have the appropriate user rights, you can change the default language in the "Settings" dialog box (see also [Settings](#) ► 31).

6.5.3 Logging in and out

The "Standard user" role is active after booting the Large Monitor Manager. The "Base settings" (abbreviated) sidebar is displayed.

Proceed as follows to activate a role with expanded rights:

1. In the sidebar click .
The following dialog box is displayed



2. Select the user and enter the appropriate password.
3. Click "OK".
The "Advanced" or "Service" role is now active.

To activate the standard user role again, click .

Note

Changing the password

To define a new password for a user, log in using the appropriate role and open the "Change password" dialog box (see also [Changing the password](#) ► 34).

Note

Resetting the password

To reset all passwords to the standard password, click  and enter the master password.

The master password depends on the MAC address of the LMM56800. It can only be created by EIZO. Please ask Service for the master key.

Password	Default password	Your set password
Advanced	plus	(please enter)
Service	super	(please enter)

See also

[Setting the network connection](#) ► 33]

6.5.4 Reboot and shutdown

Note

The "Service user can set whether a default user and shut down and restart the Large Monitor Manager. If this right has not been granted the buttons described in the following are deactivated (see also user authorization).

Reboot

To reboot the Large Monitor Manager, in the "Base settings" sidebar click .

This opens the dialog box to reboot the Large Monitor Manager.

Shutdown

To shut down the Large Monitor Manager, in the "Base settings" sidebar click .

This opens the dialog box to shut down the Large Monitor Manager.

Note

After shutting down the device, you must wait at least 15 seconds before you can switch the device on again.

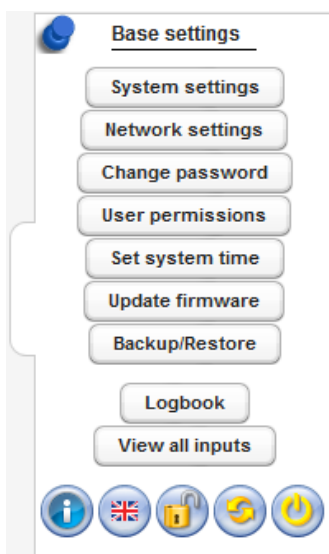
6.6 "Base settings" (extended) sidebar

Note

To access the sidebar in this configuration, you have to be logged in as administrator ("Service").

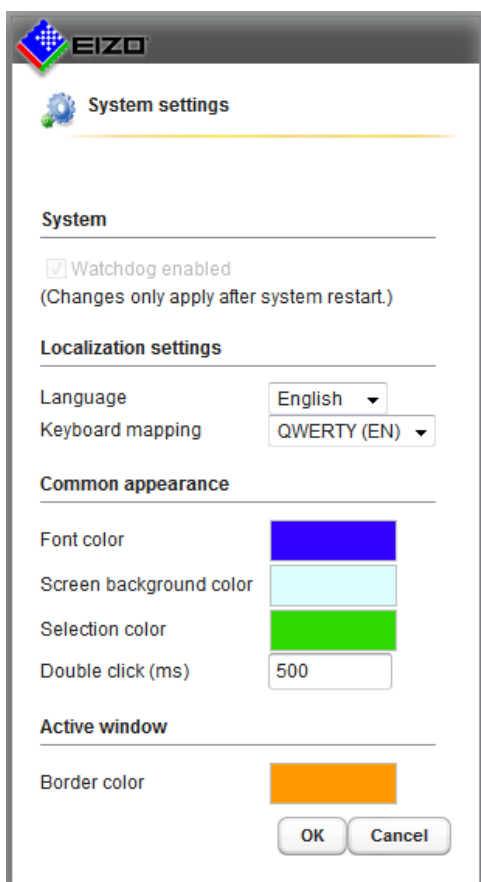
In the "Base settings (extended)" sidebar you can perform basic settings, such as establishing the common appearance, selecting the font color, setting the network, or updating the firmware.

To open the "Base settings (extended)" sidebar, move the mouse pointer to the right edge of the screen.



6.6.1 Settings

Click the "System settings" button to open the following dialog window:



You can make the following settings.

Setting	Description
System	Watchdog enabled This setting activates internal monitoring of the Large Monitor Manager. In the event of a system logjam, a reboot is activated automatically and the system is returned to the preset, ready-to-operate state.
Localization settings	Language Click the arrow keys to make the setting. Language selection: German, English, French, Japanese <i>Default setting: German</i> Keyboard mapping Define the keyboard mapping here. The available keyboard layouts are: QWERTZ (German keyboard), QWERTY (US English keyboard) or AZERTY (French keyboard) <i>Default setting: QWERTZ (German)</i>
Common appearance	Font color Click the color box to change the font color of dialog windows and menus. <i>Default setting: white</i>
	Screen background color This color will be seen on the screen as long as no instances are displayed in the window. Click the color box to change the color. <i>Default setting: black</i>
	Selection color The currently selected video input is displayed in the sidebar "Input configuration" in this color. The currently selected layout is displayed in the "Layout" sidebar in the same color. Click the color box to change the color. <i>Default setting: green</i>
	Double-click (ms) Set the double click speed here. <i>Default setting: 500 ms</i>
Active window	Border color The border color of an active window can be defined here. <i>Default setting: green</i>

6.6.2 Setting the network connection

To set the network connection, click the "Network settings" button in the "Base settings" (full) sidebar.

The "Network settings" dialog window opens.

You can make the following settings:

Setting	Description
Client network settings (Large Monitor Manager)	Set DHCP usage The DHCP (Dynamic Host Configuration Protocol) enables the assignment of the network configuration to clients through a server. If DHCP is used, the automatically assigned IP address can be found under "General system information" in the right sidebar. "Use DHCP" set • The IP address and net mask are assigned automatically and cannot be changed. • The host name and domain can be assigned. • The gateway and DNS server are assigned automatically and cannot be changed. • The MTU value is assigned automatically and cannot be changed. MTU (Maximum transmission unit) specifies the maximum size of the data packets that can be sent in the network.

Setting	Description
	"Use DHCP" is not set - The IP address and net mask can be assigned here. Note: The information has to fit with the existing network. Ask the local administrator for the correct settings. <i>Default setting: IP Address 10.1.1.104, Net mask 255.0.0.0</i> - The host name and domain can be assigned. - The gateway and DNS server IP address can be assigned. - The MTU value can be entered <i>Default setting: MTU value 1500</i> <i>Default setting: "Use DHCP" is set.</i>
Server	Information about the server the LMM should access when the firmware is updated or configuration data stored. See also Updating the firmware, Backup/Restore [► 38].

See also

[Setting the system time \[► 36\]](#)

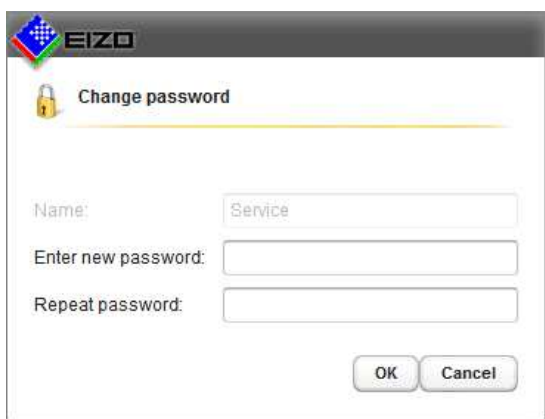
6.6.3 Changing the password

Two passwords are assigned as default for the LMM56800. For the administrator ("Service") the password "super" and for the user with expanded rights B ("Advanced") the password plus". If you want to change one of these passwords you have either log on as administrator or as user with extended rights (see also Logging in and out)

Only the password for the user logged in at the time is changed.

To assign a new password, click the "Change password" button.

The "Change password" dialog window opens.



Note

The password may not contain special characters.

6.6.4 User permissions

The Large Monitor Manager has a concept for rights and roles.

CAUTION

Administration and configuration during medical procedures

Administration and configuration activities should not be performed during medical procedures. Such actions can present a risk to patients as important images may no longer be displayed.

Roles

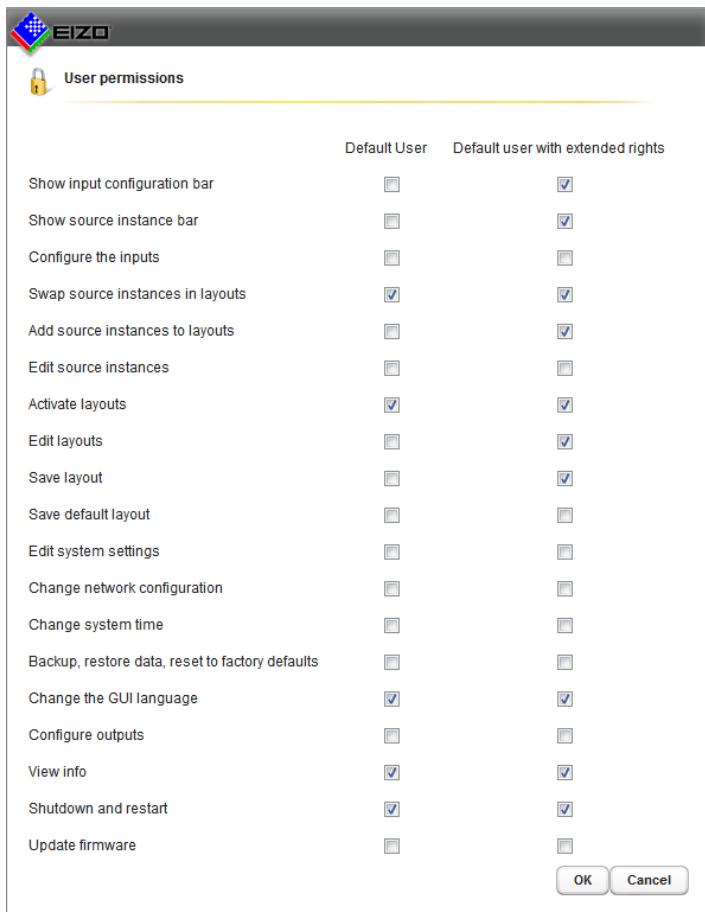
The system uses the following roles:

- Default user
- Default user with extended rights
- Administrator

When you start the Large Monitor Manager you are logged in as the default user.

Rights

The following rights are assigned to the roles "Default user" and "Default user with extended rights" (Advanced). The administrator has all rights.



The dialog box shows a table of permissions for two user roles. The 'Default User' column has checkboxes for most permissions, while the 'Default user with extended rights' column has checkboxes for a subset of permissions, including 'Show input configuration bar', 'Show source instance bar', 'Swap source instances in layouts', 'Add source instances to layouts', 'Activate layouts', 'Edit layouts', 'Save layout', 'Change the GUI language', 'View info', 'Shutdown and restart', and 'Update firmware'.

	Default User	Default user with extended rights
Show input configuration bar	☐	☒
Show source instance bar	☐	☒
Configure the inputs	☐	☐
Swap source instances in layouts	☒	☒
Add source instances to layouts	☐	☒
Edit source instances	☐	☐
Activate layouts	☒	☒
Edit layouts	☐	☒
Save layout	☐	☒
Save default layout	☐	☐
Edit system settings	☐	☐
Change network configuration	☐	☐
Change system time	☐	☐
Backup, restore data, reset to factory defaults	☐	☐
Change the GUI language	☒	☒
Configure outputs	☐	☐
View info	☒	☒
Shutdown and restart	☒	☒
Update firmware	☐	☐

OK Cancel

Note

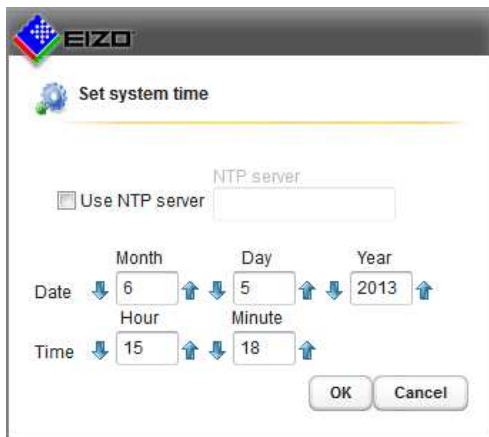
Assigning rights

Only the administrator can change the rights assigned to roles. Additional rights or roles cannot be created.

6.6.5 Setting the system time

To set the system time, click the "Set system time" button in the "Base settings" (extended) sidebar.

The "Set system time" dialog box opens.



With NTP server

When the Large Monitor Manager is operated in a network that uses an NTP server as the time basis, the system time can be synchronized with the server. Otherwise, it has to be entered

Note

If you use an NTP server, the system time of the Large Monitor Manager is set to the coordinated world time (UTC).

1. Activate the option "Use NTP Server".
2. Enter the server address in the "NTP Server" field.
3. Click "OK".

Without NTP server

1. Incrementally change the date and time with the arrow keys  and  until the required values are displayed.
2. Click "OK".

Restart the device to apply the changes.

6.6.6 Updating the firmware

NOTICE

Firmware update

- Ensure that the power supply to the Large Monitor Manager is not interrupted during the firmware update. An interrupted firmware update can result in device failure.
- Perform a firmware update in consultation with your local distributor or on the recommendation of EIZO only.
- Only use firmware updates released by EIZO to ensure proper function of the Large Monitor Manager.

To update the firmware proceed as follows :

1. Click the "Update firmware" button in the "Basic settings" (extended) sidebar.
The following dialog box opens.



2. Select "Source".
If you select "LMM" then the firmware file must be stored on the configured server.
If you select "Browser" the firmware file must be stored on the connected file system, e.g., on the workstation.
3. Use the "Browse" button to find the storage location of the new firmware file.
4. Upload the new firmware file.
5. Start the firmware update by clicking "OK".

6.6.7 Backup/Restore

Backup/Restore allows you to back up user data and restore user data or factory settings.

To open the "Backup/Restore" dialog window, click the "Backup/Restore" button in the "Base settings" (full) sidebar.



You can perform the following functions:

Setting	Description
Backup user data	Save the user-defined settings on the following storage media: • USB stick (on the LMM) or network server. • Remote access: Additionally on the PC or in the network. Prerequisite The USB stick is connected and the required network settings specified [► 33]. Procedure To update the user data proceed as follows: 1. Click "Backup user data". 2. Select the storage medium: – If you want to back up data on a USB stick or network server, click "Browse" and specify the backup folder and name of the file. – If you access remotely and want to back up user data to the PC or network, click "Download". 3. Click "OK" to perform the backup. The user data are compressed in a zip file. A corresponding message indicates that the backup is complete. 4. If you selected "Download" in remote access, a dialog is displayed for selecting the backup location. Back up the data to the required location.

Setting	Description
Restore user data	Previously saved user data are restored on a component basis. Prerequisite The update file is available and can be accessed. Procedure To import the user data proceed as follows: 1. Click the "Restore user data" button. 2. Select the required zip file: – If the file is saved to a USB stick or network server, mark "LMM" and click "Browse". – If you access remotely and the file is saved on the PC or network, mark "Browser" and click "Upload file". 3. Click "OK" to restore the user data. 4. Establish the components to be restored in the dialog that is displayed. After importing the user data, the system reboots automatically with the re-stored data.
Restore factory defaults	Note: If you restore the factory defaults for the Large Monitor Manager, all user-defined settings are lost. For this reason, back up the current user data before performing this function. To restore the factory settings click the appropriate button. A dialog window opens.

6.6.8 Creating a logbook

Note
The information in the logbook is only intended for EIZO support personnel, and can only be evaluated by specialists from EIZO.

To create the logbook for EIZO support :

1. Click the "Logbook" button in the "Basic settings" (extended) sidebar.
2. Define the storage location and file name in the dialog box displayed and click OK.

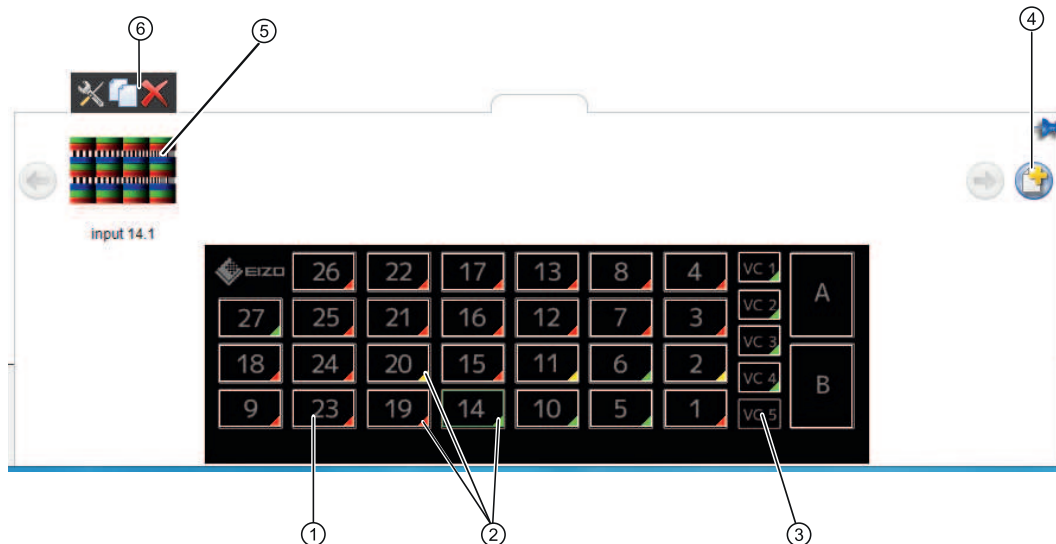
6.6.9 View all inputs

When you click the "View all inputs" button the video inputs will be displayed as follows:

- All inputs are displayed the same size on screen. A dialog window with progress bar is displayed in the center of the screen.
- Each window contains an instance of a video input channel. A live video signal of all input channels is displayed simultaneously. The title bar has a light blue background.

6.7 "Input configuration" sidebar

The "Input configuration" sidebar is only visible in the "Administrator" role. It opens as soon as you move the mouse pointer to the bottom edge of the screen. The physical inputs are selected and configured here. Instances can be created, edited, and deleted.



- ① The inputs are marked by colored triangles in the lower right corner. The meanings are as follows:

- A green triangle ▲ means an active input.
- A red triangle ▼ means an inactive input.
- A yellow triangle ▼ indicates an input with unreadable information.

If you click a video input with the left mouse button, the connected instances are displayed (one instance in this case).

If you double-click a video input with the left mouse button, the "Video input configuration" dialog window is displayed.

- ② If you move the mouse pointer over a video input, one of the following tooltips is displayed depending on the state of the video input:

- The timing is displayed for an active input ▲.
- The message "Not connected" is displayed for an inactive input ▼.
- The message "No information" is displayed for an input with information that cannot be read ▼.

- ③ Virtual channel: When the Large Monitor Manager is connected to a network, you can display images and text for example from an external device.

- ④ If an instance does not exist for a video input, a new instance can be created using this button.

- ⑤ Miniature thumbnail of an instance.

- ⑥ When you move the mouse pointer over the miniature thumbnail ⑤ of the instance, this toolbar is displayed. You can change, duplicate, or delete an instance.



If you click this button with the left mouse button, the "Instance configuration of a video input" dialog window is displayed. You configure the selected instance here.



If you click this button with the left mouse button, the active instance is duplicated. All settings of the instance are copied.



If you click this button with the left mouse button, the selected instance is deleted. If the

instance was assigned to a window, the symbol  appears in the window:

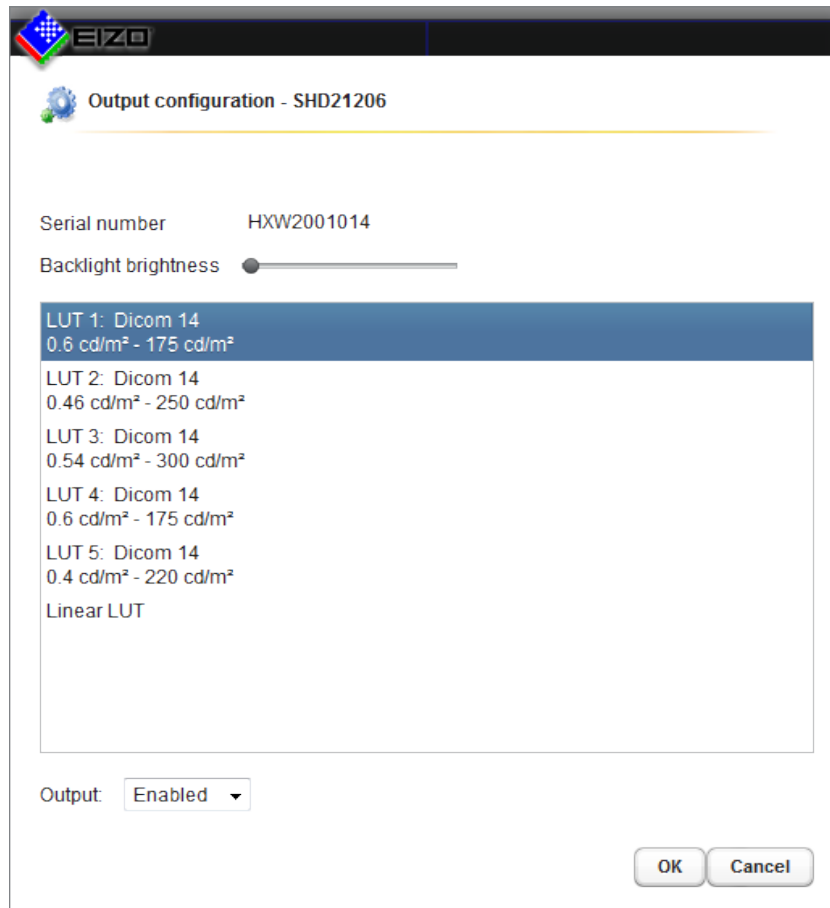
Adjust LUT at monitor output

Note

To adjust the lookup table (LUT) of the connected monitor using the Large Monitor Manager, the monitor must support switching of the LUT.

To adjust the LUT for the connected monitor, proceed as follows:

1. Double-click the "Monitor 1" button in the "Input configuration" sidebar.

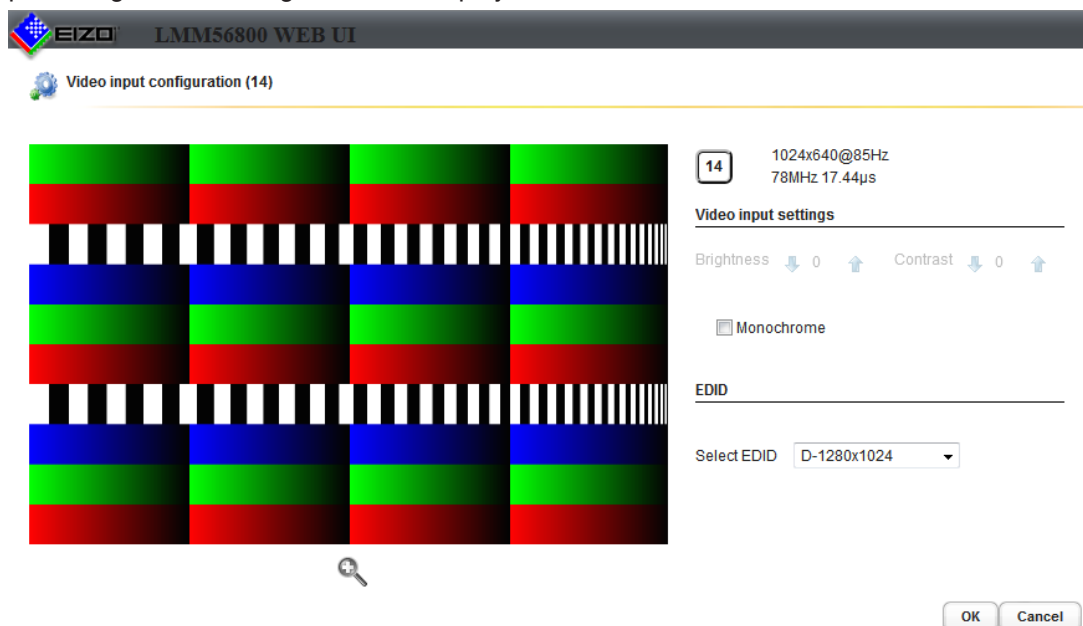


2. In the displayed dialog window select the required LUT.
3. Close the dialog window.

6.7.1 Configuring digital video inputs

- Inputs 3 ... 8, 12 ... 17 and 21...26 are digital inputs (HDMI) with a maximum bandwidth of 165 MHz (e.g., 1600 x 1200 at 60 Hz, 1920 x 1200 at 60 Hz reduced blanking, or 2048 x 1536 at 30 Hz).
- Inputs 1, 10 and 19 are digital inputs (DVI-D) with a maximum bandwidth of 165 MHz (for example: 1600 x 1200 at 60 Hz or 1920 x 1200 at 60 Hz reduced blanking).

If you double-click the video input to be configured with the left mouse button, the "Video input configuration" dialog window is displayed.

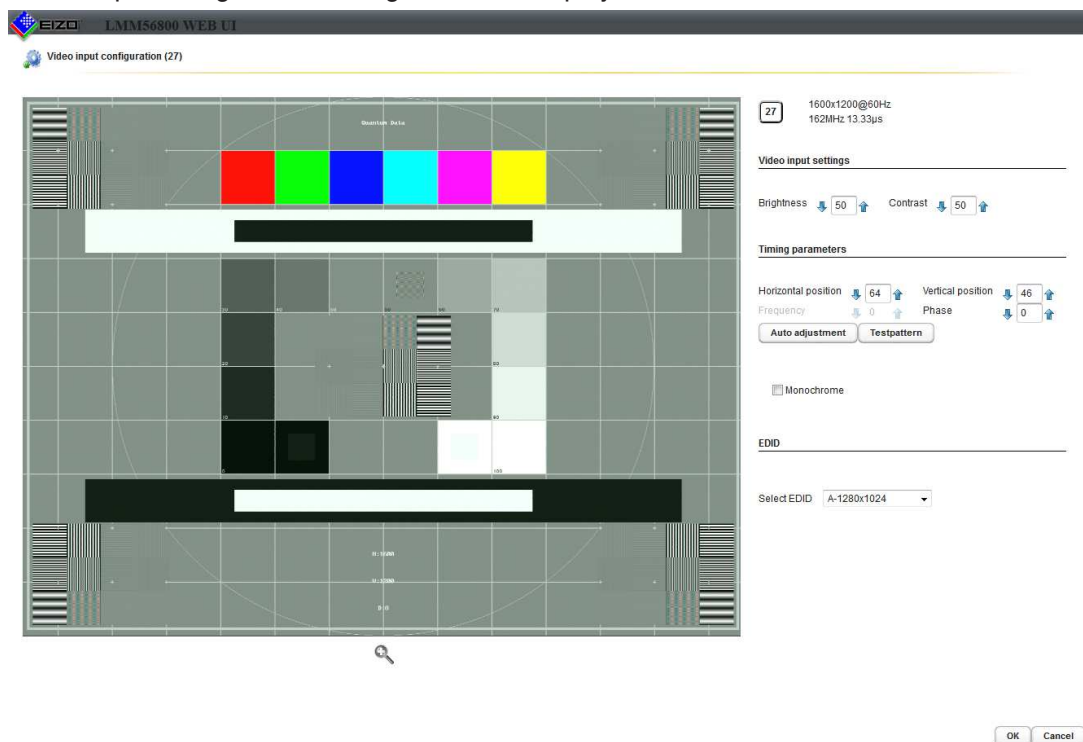


Setting	Description
Monochrome	Mark this box if the video source delivers monochrome images.
Select EDID	Use the arrow keys to select the EDID setting for the respective video input. The EDID setting specifies the resolution that will be provided by the graphics card of the video source. You can select the following EDID data: Select EDID - D-1280x1024 - D-640x480 - D-800x600 - D-1024x768 D-1280x1024 - D-1200x1600 - D-1600x1200 - A-1280x1024 - A-1920x1200 - D-1920x1080 - D-1536x2048,30Hz - D-2048x2560,25Hz - D-2048x2048,30Hz - D-1920x1200 - D-2560x1600,30Hz - D-2560x1600,60Hz - D-2560x1440,60Hz - A-1920x1080

6.7.2 Configuring analog video inputs

- Inputs 9, 18, and 27 are analog inputs (VGA) with a maximum bandwidth of 170 MHz.
- Inputs 2, 11, and 20 are analog inputs (DVI-A) with a maximum bandwidth of 135 MHz.

If you double-click the analog video input to be configured with the left mouse button, the "Video input configuration" dialog window is displayed.



You can set the parameters for analog video inputs manually. Click the arrow keys.

Setting	Description
Brightness	Adapting the representation of darker picture areas. Setting range: 0 - 100 % <i>Default setting: 50 %</i> Note: Failure to set the brightness correctly can lead to a loss of gray scales. Create an SMPTE test pattern and set the brightness such that the picture areas with 5 % and 0 % gray values visibly differ.
Contrast	Adapting the representation of brighter picture areas. Setting range: 0 - 100 % <i>Default setting: 50 %</i> Note: Failure to set the contrast correctly can lead to a loss of gray scales. Create an SMPTE test pattern and set the contrast such that the picture areas with 95 % and 100 % gray values visibly differ.
Horizontal position	The horizontal position of the displayed image can be set down to a pixel. Setting range: 0 - 100 % <i>Default setting: 50 %</i>

Setting	Description
Vertical position	The vertical position of the displayed image can be set down to a pixel. Setting range: 0 - 100 % Default setting: 50 %
Frequency / phase	Vertical lines that are still slightly fuzzy can be corrected using the frequency and/or phase setting. The two parameters are automatically set as soon as an analog picture signal is connected to the video input. Setting range: 0 - 100 %
Auto adjustment	The parameters for brightness, contrast, horizontal position, vertical position, frequency and phase can be automatically adjusted. To do so, a test pattern with the correct resolution must be displayed in the video source. The test pattern can be generated by the Large Monitor Manager. Click the "Test pattern" button. Save the generated image on a USB memory stick. Open the test pattern in your video source. Then click . Automatic adjustment takes place
Monochrome	By enabling this function a SoG (Sync on Green) signal is shown as a monochrome signal.
Select EDID	Here you can define the EDID data for the selected video. This specifies resolution to be provided by the graphics card of the video source. You can select from the following EDID data: Select EDID - D-1280x1024 - D-640x480 - D-800x600 - D-1024x768 - D-1280x1024 - D-1200x1600 - D-1600x1200 - A-1280x1024 - A-1920x1200 - D-1920x1080 - D-1536x2048,30Hz - D-2048x2560,25Hz - D-2048x2048,30Hz - D-1920x1200 - D-2560x1600,30Hz - D-2560x1600,60Hz - D-2560x1440,60Hz - A-1920x1080

6.7.3 Creating and configuring instances

Several instances with different representations (e.g. 1:1, cropping area etc.) can be configured for each video input. One instance is preconfigured for each video input by default.



- ① Video input
- ② Miniature thumbnail of an instance

Creating an instance

An instance can be created using default values or duplicated from an existing instance.

Proceed as follows:

1. Left-click the video input ① for which an instance should be created.
The available instances ② of the input are displayed.
 2. To create an instance with default values, left-click .
 3. To duplicate an existing instance, click .
- The "Instance configuration of a video input" dialog window is displayed.

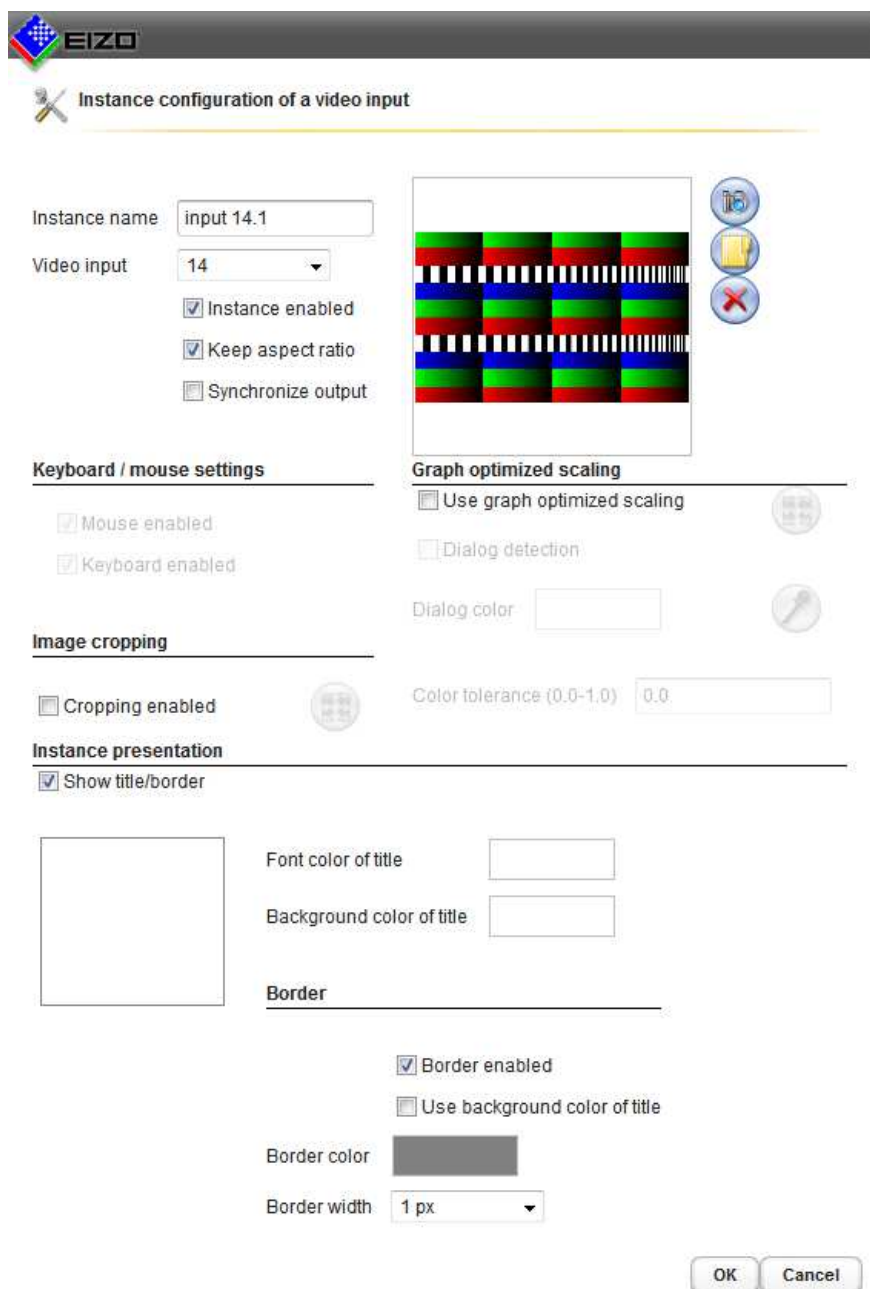
Configuring an instance

1. Left-click the video input ① for which an instance should be configured.
 2. To configure an instance, double-click the miniature thumbnail of the instance ②.
- Alternatively, click .

The "Instance configuration of a video input" dialog window is displayed.

Configuration and operation

6.7 "Input configuration" sidebar



The screenshot shows the 'Instance configuration of a video input' window. At the top is the EIZO logo. Below it is a title bar with a wrench icon and the text 'Instance configuration of a video input'. The main area is divided into several sections:

- Instance name:** A text field containing 'input 14.1'.
- Video input:** A dropdown menu showing '14'.
- Checkboxes:** 'Instance enabled' (checked), 'Keep aspect ratio' (checked), and 'Synchronize output' (unchecked).
- Keyboard / mouse settings:** 'Mouse enabled' (checked) and 'Keyboard enabled' (checked).
- Image cropping:** 'Cropping enabled' (unchecked).
- Instance presentation:** 'Show title/border' (checked).
- Font color of title:** A color selection box.
- Background color of title:** A color selection box.
- Border:**
 - 'Border enabled' (checked)
 - 'Use background color of title' (unchecked)
 - 'Border color': A color selection box showing a dark gray color.
 - 'Border width': A dropdown menu showing '1 px'.

On the right side of the window, there is a preview area showing a grid of colored squares (red, green, blue, black) and a set of icons: a magnifying glass, a document, and a red 'X'.

At the bottom right, there are 'OK' and 'Cancel' buttons.

Setting	Description
Instance name	Establishing the instance name It should be short and unique. <i>Default setting: In xy</i>
Video input	The video input for which the instance is created appears as default. To assign the same settings to a different video input, use the drop down list. <i>Default setting: The selected video input</i>

Setting	Description
Instance enabled	The currently selected instance can be disabled here so that it is no longer visible. If the instance was assigned to a window, the following symbol appears in the window:  <i>Default setting: "Instance enabled" is set (instance is visible)</i>
Keep aspect ratio	This property should always be enabled. The aspect ratio of the connected video source is then retained. If this property is disabled, the aspect ratio of the window in which the instance is displayed is used. This can result in image distortion. <i>Default setting: "Keep aspect ratio" is set.</i>
Synchronize output	Enables input/output synchronization. Note: If synchronization is enabled for multiple inputs, the instance with the lowest channel number is synchronized for the video input.
Create/delete miniature thumbnail	A miniature thumbnail can be created for each instance. The thumbnail appears in both the "Input configuration" (bottom) and "Instance" (top) sidebars.  - Click the  button. The "Miniature thumbnail" dialog window opens. - Move the markers , , , to select the suitable image cropping for the thumbnail. - Confirm with "OK". The thumbnail is applied. Note: Alternatively, you can load a symbol, for example from a USB stick. Click the  button. - To delete the thumbnail, click the  button.
Keyboard/mouse settings	Not available for LMM56800.
Image cropping enabled	To view only a certain part of an instance, you can define the cropping area as follows: - Enable image cropping. - Select the instance to change. - Click the  button. The "Define image cropping area" dialog window opens. - Move the markers , , , to set the requested image cropping area. - Confirm with "OK". The image cropping area is applied. Multiple instances with various cropping areas can be created. <i>Default setting: "Enable image cropping" is not set.</i>
Graph optimized scaling	Not available for LMM56800.
Show title/border	You define whether a title (instance name) and an activated border are to be displayed for the currently selected instance. <i>Default setting: "Show title/border" is set.</i>

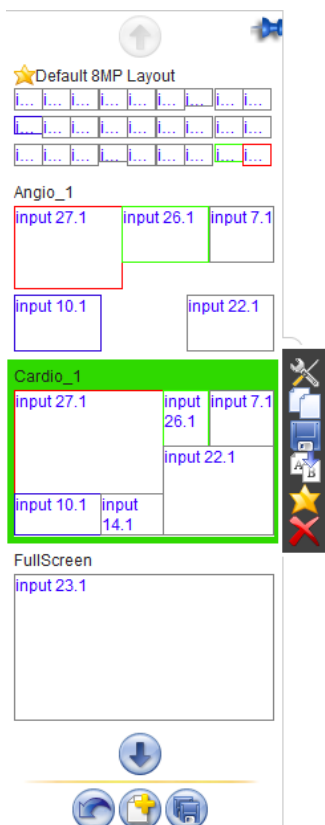
Setting	Description
Font color of title/ Background color of title	Set the font color and background color of the title. Click the color box. Use scale "A" for the transparency value of the color. <i>Default setting for font color of title: white</i> <i>Default setting for background color of title: blue</i>
Border enabled	You define whether a border is to be displayed for the selected instance. <i>Default setting: "Border enabled" is set.</i>
Use background color of title	Set whether the background color of the title is to be used as the border color. <i>Default setting: "Use background color of title" is not set</i>
Border color	Setting the border color. Click the color box. <i>Default setting: white</i>
Border width	Setting the border width. Click the arrow keys. Setting range: 1 - 10 pixels wide <i>Default setting: 1 pixel</i>
Border sides	Set the sides on which a border is to be displayed. To do this, click on the individual border sides in the thumbnail.  <i>Default setting: complete border</i>

6.8 "Layout" sidebar

To open the "Layout" sidebar you have to move the mouse to the left edge of the screen. You can select a layout with the left mouse button. The current layout is marked in color.

Note

Advanced user rights, such as administrator ("Service"), are required to edit layouts and windows.



Note

You can only use the three buttons at the bottom of the sidebar if you are logged in as administrator ("Service").

Sidebar toolbar

The sidebar toolbar has the following buttons that you select by left clicking.

Button	Description
	Resets the user-defined settings in all layouts to the original values. This is only possible if the settings have not already been saved.
	Creates a new layout.
	Saves the user-defined settings in all layouts.

Layout toolbar

You can create or change layouts. The toolbar of the selected layout has the following buttons:

Button	Description
	Edits the layout.
	Duplicates the layout.
	Saves changes to the layout.
	Renames the layout.
	Sets the layout as the default layout.
	Deletes the layout. Note: If the symbol appears gray, the layout cannot be deleted because it is defined as the default layout in a workspace or monitor. To delete it, you have to define another layout as the default.

6.8.1 Edit layouts

Note

Extended user rights, such as service, are required to edit layouts and windows.

Proceed as follows to edit the layout:

1. To create a new layout for editing, in the "Layout" sidebar click .
2. To edit an existing layout, click the layout to be changed in the sidebar.
The following toolbar is displayed next to the layout:



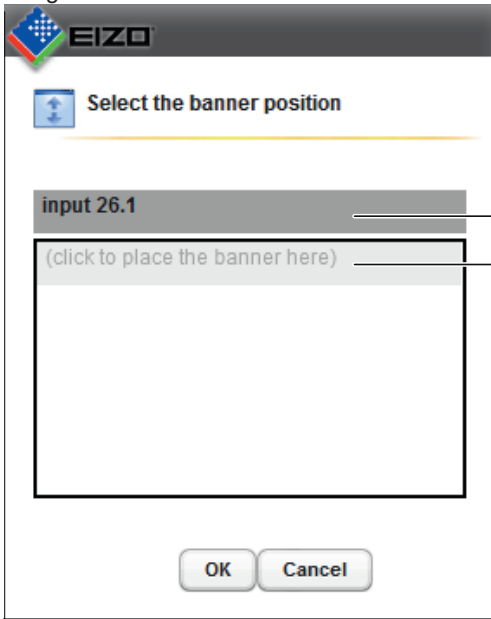
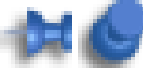
3. Click  to edit the selected layout directly or  to copy the existing layout and then edit it.

A toolbar is displayed in the upper right corner of each window in the layout. Use the toolbars to edit the windows.

6.8.2 Editing the window in the selected layout

A toolbar is displayed in the upper right corner of each window in the selected layout.

The toolbar buttons have the following functions:

Button	Description
Buttons shown in gray	If a button appears in gray, its function cannot be used for the current edit.
	Deletes the selected window.
	The selected window can be divided into multiple windows. Click the button and select the number of windows required.
	The window moves to the available free space in the layout. Click the button.
	The sets the window to 1:1 aspect ratio.
	With this button you can decide whether and where an information banner appears on the selected window. The information banner shows the name of the instance assigned to this window.  Position 1 Position 2 The information banner can be shown either above (Position 1) or within (Position 2) the window. It can also be omitted. Note: Make sure no image information is covered if the information banner is in the window.
	Opens the menu for editing the instance in this window.
	The size of the window cannot be changed if the pin is set. It can only be deleted or shifted, and the created instance in this window can be edited.

Creating new windows via Drag & Drop

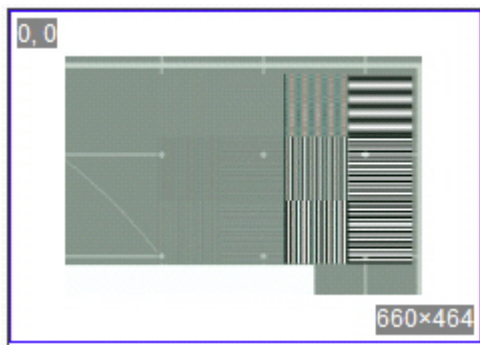
Sufficient free space in the layout is required as a prerequisite for this function.

Left-click a window, and instance, or an input, then drag the selected object (while holding the button) to the open space. The new window fills the open space completely.

Changing the window size

There are two ways to change the window size:

- Click the window to be changed. The following symbols appear around the window: , , . Move the marker as needed. The window size changes. All other windows adapt automatically to the new size. To prevent this, set individual windows with the pin.
- In the lower right-hand corner of each window a field with the current size of the window in pixels as well as the height of the information banner (if this is shown above the window) is visible.



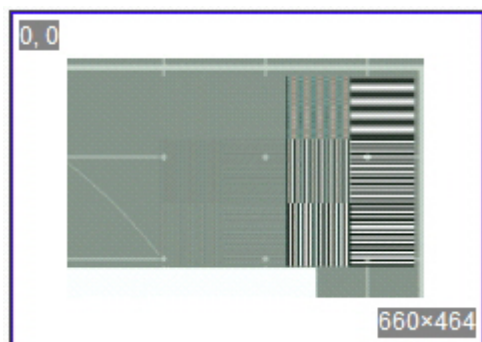
In this example, the width is 660 pixels, the height is 464 pixels, no information banner is set.

Click the field and enter the values required for the horizontal and vertical position. The information banner height cannot be changed.

Changing the window position.

There are two ways to change the window position:

- Click the window to be changed. The following symbol appears in the center of the window: . Click the symbol and drag the window to the required position. The surrounding windows adapt to the new position. To prevent this, set individual windows with the pin.
- A field in each upper left corner displays the position of the window in pixels. If the information window is displayed above the window, its height is taken into account.



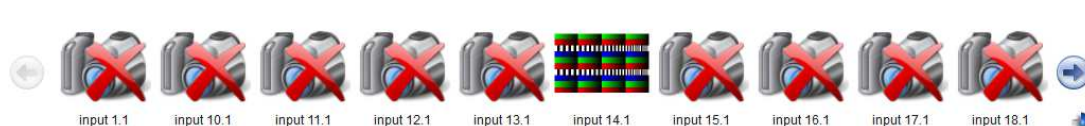
In this example the horizontal position is 0 pixels and the vertical position is 0 pixels. The zero position is the top left corner of the displayable screen area.

Click the field and enter the values required for the horizontal and vertical position.

Saving changes

- Click the  button in the "Layout" sidebar to save all changes in all layouts. Or click  to save changes to the current layout.

6.9 "Instances" sidebar



Displaying the "Instances" sidebar

To open the "Instances" sidebar you have to move the mouse to the upper edge of the screen. The sidebar contains miniature thumbnail or the camera icon for all available instances.

Assigning instances

Proceed as follows to assign instances to a window:

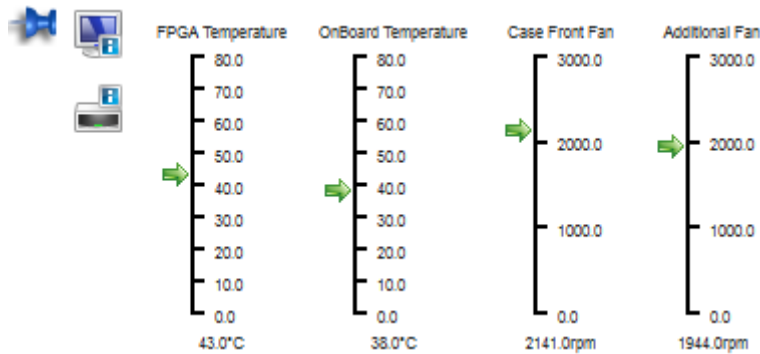
1. Select a layout in the "Layout" sidebar.
2. Click a miniature thumbnail of an instance in the "Instances" sidebar and drag it to the required window.
3. Repeat the procedure to assign additional instances.
4. If needed, use "Drag & Drop" to exchange the window contents.
5. To save the layout, in the "Layout" sidebar click .

Note

When switching between layouts, all changes are retained, but are not automatically saved. When the LMM56800 is rebooted or switched off, all unsaved changes are lost.

6.10 Status window

You can display the status window to obtain information about the hardware. Move the mouse pointer to the lower right corner of the screen.



If you move the mouse pointer over the  or  icon, a tooltip with the number of errors is displayed on the monitor or LMM.

6.11 Screenshot

The LMM56800 has a screenshot function.

To create a screenshot of the output screen, proceed as follows:

1. Click the  button.
2. Select a storage location.
3. Enter a file name.
4. Click "OK".

The dialog window closes and the file is saved.

6.12 Information for developers

A software interface, the common interface, is available for developing your own control software for the Large Monitor Manager. The main components of this interface are:

- Layout selection and switchover
- Querying device status
- Saving the device configuration on memory media external to the Large Monitor Manager
- Reading the log file
- Saving the current screen content
- Displaying text fields

Software distribution is available from EIZO. Contact your local distributor with any questions.

6.13 Operation

The LMM56800 operates via a remotely linked PC with web browser.

After configuring the LMM56800, operation is limited to the following applications:

- Changing the layout.
- Assigning instances in layouts.

Layout changes can be carried out using the standard interface. View Management is used to assign the instances. This means, for example, it is possible to exchange instances.

Changing the layout

To switch the layout:

1. In the address line of the web browser enter "<IP address of the LMM56800>".
The standard interface opens.
2. Click the required layout.

Note: The active layout is highlighted green.

The layout changes immediately.

Assigning instances

To assign instances:

1. In the address line of the web browser enter "<IP address of the LMM56800>/vm".
View Management opens.
2. Click the instance to be assigned.

Note: The selected instance is highlighted green. To undo the selection, click the selected instance again.

3. Click the window where the instance should be used.

The instance is assigned immediately.

Note
Change the layout You can also change layouts in View Management: • Click the required layout.

Note
Drag & Drop The described functions can also be executed in the web browser using Drag & Drop.

7 Cleaning and maintenance

7.1 Cleaning

CAUTION

Device maintenance, cleaning and disinfecting

- The device is sensitive to mechanical influences. Avoid mechanical shocks.
- 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.
- Clean the dirty housing with a damp cloth and, if necessary, with a commercially available cleaning agent.
- The device is not intended to be disinfected.

7.2 Maintenance

CAUTION

Cleaning the fans

The device is equipped with fans. Depending on the environment, these may become dirty. The fans may only be cleaned by EIZO.

Ensure that the vents are unobstructed.

Ensure that the vents for air intake and exhaust are not covered.

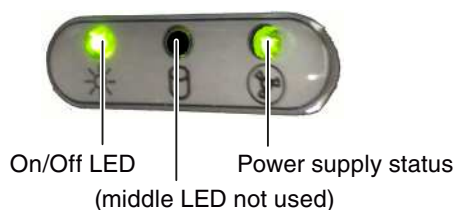
8 Troubleshooting

8.1 Error messages

LED status of power supplies

LED status	Measure
Green when power supply switch is on and no failure.	No measures.
Red when power supply has a failure.	Replace the power supply as quickly as possible.
Off when power switch is off or cord is not connected or line power is off. .	Primary measure: Turn "on". Second measure: Check power connection and line power.

LED status on front

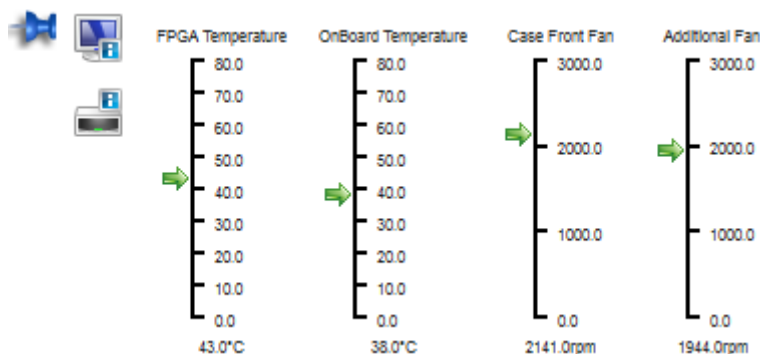


On/Off LED status	Measure
Green when system is switched on	No measures.
Off when system is switched off	No measures.

Power supply LED status	Measure
Green when all supplies are turned on and are running	No measures.
Red when one power supply is not connected or fails.	Check power connection, power switch and LED of power supply, replace power supply if necessary

Status window

The status window is displayed if you move the mouse pointer in the lower right corner of the screen.



A flashing red border indicates the hardware where a problem has occurred.

Indicator	Function	Measure
FPGA Temperature	Monitors the FPGA temperature	If the temperature is too high, turn off the device. Check the ambient temperature and reduce it if possible.
On Board Temperature	Monitoring of remaining hardware temperature.	If the temperature is too high, turn off the device. Check the ambient temperature and reduce it if possible.
Fan	Monitors the fan function	If the fans are not working (0.0 rpm) the device has to be sent in for repair.

8.2 Troubleshooting

Problem	Possible cause	Measure
An analog input is displayed indistinctly, or the colors are incorrect.	The analog input was not calibrated.	Perform automatic detection of the input signal (see also Configuring analog video inputs [► 43]).
The left and right halves of the image are shown interchanged.	The DP modules were connected incorrectly.	Connect the DP cable of the DP module for the left DVI channel to DP output 1A and the DP cable of the DP module for the right DVI channel to DP output 1B.

9 Technical specifications

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

9.1 Inputs and outputs

Video inputs	
Max. number of simultaneously displayed input channels	Up to 26 images from up to 26 video sources can be displayed with different characteristics (scales, cropping areas)
Max. delay between input and output	< 50 ms
Number of digital inputs [HDMI] [165 MHz]	17
Number of digital inputs [DVI-D] [165 MHz]	3
Number of analog inputs [VGA] [170 MHz]	3
Number of analog inputs [DVI-A] [135 MHz]	3
Max. number of horizontal pixels per channel	2560
Max. number of vertical pixels per channel	2560
Min. pixel clock at input	25 MHz (VGA at 60 Hz)
Support of programmable EDID	Yes
Video input bandwidth	3 x 620 megapixels
Total system bandwidth	1.5 Gigapixel/s
Video outputs	
Number of digital outputs [DVI-I Dual Link] [330 MHz]	2 via DP modules (DisplayPort to DVI converter)
Output resolution	3840 x 2160 (QFHD), 60 Hz 1920 x 2160 x 2, 60 Hz
Interfaces	
Ethernet interface RJ45 [1 Gbit/s]	1
Voltage outputs	
USB power supplies for DP modules	2
Number of USB ports (for future purpose)	2

9.2 Power supply

Rated voltage	100 V ~ 240 V, 50 Hz ~ 60 Hz
Current consumption	3A@115VAC / 1.5A@230VAC (typical), 6A@115VAC / 3A @ 230VAC (max)
Consumption	340 W (typical), 380 W (max)
Redundancy	2 independent power supplies, hot swap capable

9.3 Mechanical design

Housing	19" 4U
Degree of protection	IP20
Dimensions (W x H x D) in mm	430 x 172 x 450
Weight	<20 kg

9.4 Climatic conditions

In operation	
Temperature range	5 °C ... 40 °C ambient temperature
Temperature gradient	Maximum 5 °C/h, without condensation
Transport and storage (packed)	
Temperature range	-40 °C ... +70 °C ambient temperature
Temperature gradient	Maximum 10 °C/h, without condensation

9.5 Safety specifications



This product has been assigned a CE marking in compliance with the stipulations of EU directives 2014/30/EU, 2014/35/EU, and 2011/65/EU.

Safety standards	EN 60950-1 UL60950 CAN/CSA - C22.2. No. 60950
Protection class	Protection class I
Degree of protection	IP20 in accordance with DIN 40050

10 Dimension drawings

All dimensions in mm

10.1 View from front, top, and side

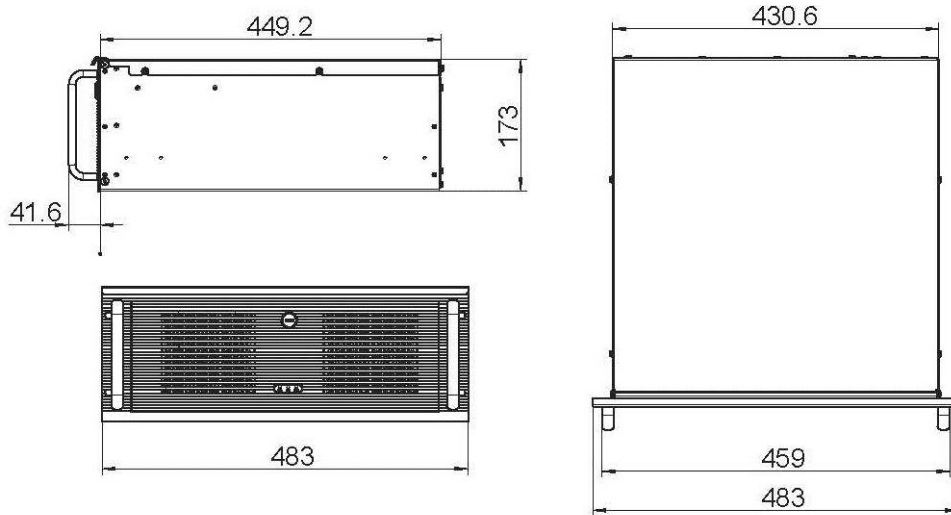


Fig.: LMM56800 dimensioned drawings

11 Spare parts / accessories

11.1 Accessories

Monitor

For the LMM56800 we recommend using the RadiForce LS580W monitor.

This monitor supports the required resolution of 8MP (3840 x 2160) and has been tested and released with the LMM56800.

DVI Transmission Link

For larger distances between the video source and LMM56800, we recommend using the TDL3600 DVI transmission link. To connect a monitor over a long distance the TDL3600-DL transmission link can be used.

12 Appendix

12.1 Markings and symbols

The markings and symbols on the device indicate the following:

Marking / symbol	Meaning
	Symbol for "Caution, observe accompanying documents".
	CE marking (EU conformity mark).
	U.S. FCC marking for communication devices.
	CSA marking, in accordance with U.S. and Canadian national regulations.
	Symbol for date of production for medical products.
	WEEE marking: Product must be disposed of separately; materials may be recycled.
	Marking according to ACPEIP (China-RoHS).
	Mark of the Japanese "Voluntary Control Council for Information Technology Equipment".
	C-Tick marking for conformity with Australian EMC standards.
	Symbol for alternating current at line voltage input.
	Symbol for protective ground (ground)
	"On" symbol (voltage).
	"Off" symbol (voltage).
	Input for service calls.
	Symbol for USB.
	DVI output signal.
	Symbol for direct current.
	Symbol for network connection.
	Symbol for "Comply with the instructions for use".

12.2 Information on electromagnetic compatibility (EMC)

The EIZO Large Monitor Manager (LMM) was designed for connecting video sources and monitors to play back images.

NOTICE

Special EMC provisions are required for use of the LMM56800 Large Monitor Manager. 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 increases the risk of electromagnetic radiation and negatively impacts on electromagnetic interference immunity.
Cable length: max. 3 m
- Do not position any portable or mobile RF communication devices in the immediate vicinity of the device. Otherwise, problem-free function of the LMM cannot be guaranteed.
- The LMM 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 device or system must be monitored to ensure proper operation for the defined configuration.
- 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.

Information and manufacturer's declaration – electromagnetic radiation

The LMM56800 Large Monitor Manager is intended for use in the electromagnetic environments noted below.

The customer or user of the LMM56800 Large Monitor Manager has to ensure that the device is used in such an environment.

Emissions test	Compliance	Electromagnetic environment – guidance
RF emissions according to CISPR 11	Group 1	The device uses RF radiation for internal operation only. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic devices.
RF emissions according to CISPR 11	Class B	The device 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 according to IEC 61000-3-2	Class D	
Voltage fluctuations / flicker emissions according to IEC 61000-3-3	Complies	

12.2 Information on electromagnetic compatibility (EMC)

Information and manufacturer's declaration – electromagnetic radiation			
The LMM56800 Large Monitor Manager is intended for use in the electromagnetic environments noted below.			
The customer or user of the LMM56800 Large Monitor Manager has to ensure that the device is used in such an environment.			
Interference immunity test	IEC/EN 60601 Measurement level	Compliance level	Information regarding the electromagnetic environment
Electrostatic discharge (ESD) IEC/EN 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 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 disturbance (burst) IEC/EN 61000-4-4	±2 kV for power lines ±1 kV for input / output lines	±2 kV for power lines ±1 kV for input / output lines	The power supply quality has to correspond to that of typical industrial environments or hospitals.
Surge voltage IEC/EN 61000-4-5	±1 kV line(s) against line(s) ±2 kV line(s) against ground	±1 kV line(s) against line(s) ±2 kV line(s) against ground	The power supply quality has to correspond to that of typical industrial environments or hospitals.
Voltage dips, brief interruptions, and voltage fluctuations along power supply lines IEC/EN 61000-4-11	<5 % V_T (>95 % dip in V_T) for 0.5 cycles 40 % V_T (60 % dip in V_T) for 5 cycles 70 % V_T (30 % dip in V_T) for 25 cycles <5% V_T (>95 % dip in V_T) for 5 seconds	<5 % V_T (>95 % dip in V_T) for 0.5 cycles 40 % V_T (60 % dip in V_T) for 5 cycles 70 % V_T (30 % dip in V_T) for 25 cycles <5% V_T (>95 % dip in V_T) for 5 seconds	The power supply quality has to correspond to that of typical industrial environments or hospitals. If the device has to continue operation even if the power supply is interrupted, it is recommended to connect the device to an uninterruptible power supply or battery.
Magnetic fields with energy technology frequencies (50/60 Hz) IEC/EN 61000-4-8	3 A/m	3 A/m	The magnetic fields with energy technology frequencies must be in an area that is representative of a typical location in a typical industrial environment or hospitals.
Note: V_T is the alternating current voltage before application of the measurement level.			

Information and manufacturer's declaration – electromagnetic radiation			
The LMM56800 Large Monitor Manager is intended for use in the electromagnetic environments noted below.			
The customer or user of the LMM56800 Large Monitor Manager has to ensure that the device is used in such an environment.			
Interference immunity test	IEC/EN 60601 Measurement level	Compliance level	Information regarding the electromagnetic environment
Conducted disturbances IEC/EN 61000-4-6	3 Vrms 150 kHz to 80 MHz	6 Vrms	Portable and mobile RF communication devices may only be operated in the vicinity of the monitor when in compliance with the recommended minimum distance. It is determined using the formula for calculating the frequency of the transmitter.
High-frequency electromagnetic fields IEC/EN 61000-4-3	3 V/m 80 MHz to 2.5 GHz	6 V/m	Recommended minimum distance $d = [3.5/6] \sqrt{P} = 0.583 \sqrt{P}$ $d = [3.5/6] \sqrt{P} = 0.58 \sqrt{P}$, 80 MHz to 800 MHz $d = [7/6] \sqrt{P} = 1.17 \sqrt{P}$, 800 MHz to 2.7 GHz In this case, "P" stands for the measured maximum nominal output power in watts (W) of the transmitter recommended by the transmitter manufacturer, and "d" for the recommended minimum distance in meters (m). The field strengths of fixed transmitters according to electromagnetic location measurement ^a have to be less than the compliance level in each individual frequency range ^b . 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: This information may not be applicable 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 LMM to ensure its proper operation. If improper operation is observed, in some circumstances additional measures may be necessary, such as reorienting or repositioning the device.			
^b The field strength beyond the frequency range 150 kHz to 80 MHz should be less than 3 V/m.			

Recommended minimum distance between portable and mobile RF communications devices and the LMM56800 Large Monitor Manager

The LMM56800 Large Monitor Manager is intended for use in an electromagnetic environment in which interference due to electromagnetic radiation is controlled.

The customer or user of the LMM can help prevent electromagnetic interference by maintaining the recommended minimum distance between portable and mobile RF communications devices (transmitter) and the monitor as shown below. This is based on the maximum output power of the communication device.

Maximum nominal output power of the transmitter (W)	Recommended minimum distance according to the frequency of the transmitter (m)		
	150 kHz to 80 MHz $d = 0.583 \sqrt{P}$	80 MHz to 800 MHz $d = 0.58 \sqrt{P}$	800 MHz to 2.7 GHz $d = 1.17 \sqrt{P}$
0.01	0.058	0.058	0.12
0.1	0.184	0.184	0.37
1	0.583	0.583	1.17
10	1.844	1.844	3.69
100	5.833	5.833	11.67

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.

12.3 FCC Declaration of Conformity

For U.S.A. , Canada, etc. (rated 100-120 Vac) Only
FCC Declaration of Conformity We, the Responsible Party EIZO Inc. 5710 Warland Drive, Cypress, CA 90630 Phone: +1 (562) 4 31 50 11 declare that the product • Trade name: EIZO • Model: LMM56800 Large Monitor Manager 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 digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

12.4 China RoHS (Restriction of Hazardous Substances)

LMM56800 Model: 6GF60301AB## (##=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



该标志表明本产品不含有超过中国标准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。该标志还表示本产品废弃后可以回收利用，不应随意丢弃。

This symbol indicates the product does not contain 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 symbol also signifies that the product can be recycled after being discarded, and should not be casually discarded.

产品中有害物质的名称及含量

Name and Concentration of Hazardous Substances

部件名称 Component Name	有毒有害物质或元素 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)
电源 Power Supply	O	O	O	O	O	O
其他 电路板 Other Circuit Boards	O	O	O	O	O	O
其他 (电缆等) Others (cables, etc.)	O	O	O	O	O	O
机架、底盘 Housing, Chassis	O	O	O	O	O	O
附件 (信号电缆、输电线等) Accessories (signal cable, power line, etc.)	O	O	O	O	O	O
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 best information available at the time of publication. - Applications of hazardous substances in this medical device are required to achieve its intended clinical uses, and/or to provide better protection to human beings and/or to environment, due to lack of reasonably (economically or technically) available substitutes.						

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

12.5 Environmental protection

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

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

12.6 Warranty

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

12.7 Additional devices

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

12.8 Repairs

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

12.9 Contact

Support during installation and for technical questions

www.eizo-or.com

12.10 Trademarks

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

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

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

CuratOR is a registered trademark of the EIZO Corporation.

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

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

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

Windows is a registered trademark of Microsoft Corporation in the United States and other countries.

Apple is a registered trademark of Apple Inc.

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