

Instructions for Use

LMM56800

Large Monitor Manager

Important




Please read the Safety Information and the 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.

Proper use of EIZO products

Note the following:

 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.

Table of contents

Legal information	2
1 Introduction	6
1.1 Contents of this document	6
1.2 Overview of the instruction manual	6
2 Safety notes	7
2.1 General safety notes	7
2.2 Product-specific safety notes	12
3 Description	13
3.1 Scope of delivery	13
3.2 Correct usage	13
3.3 Features	14
3.4 Plate and label layout.....	14
4 Setup and installation	16
4.1 Installation location	16
4.2 Positioning as a desktop device.....	17
4.3 Installing the DP modules	17
4.4 Installing the Y cables	18
4.5 Installing in a rack	19
5 Connecting	20
5.1 Safety information for connection.....	20
5.2 Connection panel	22
5.3 Connection procedure.....	23
5.4 Input signals.....	24
6 Configuration and operation	26
6.1 Definition of terms	26
6.2 Basic icons	27
6.3 Procedure for setting up the LMM.....	28
6.4 Setting up operation	29
6.5 Overview of the sidebars	30
6.6 "Base settings" (abbreviated) sidebar	30
6.6.1 Calling up system information	31
6.6.2 Changing the language setting	31
6.6.3 Logging in and out	32
6.6.4 Reboot and shutdown	33
6.7 "Base settings" (extended) sidebar	34
6.7.1 Settings.....	35
6.7.2 Setting the network connection.....	37

6.7.3	Changing the password	38
6.7.4	User permissions	39
6.7.5	Setting the system time	41
6.7.6	Updating the firmware.....	42
6.7.7	Backup/Restore	43
6.7.8	Creating a logbook	44
6.7.9	View all inputs	44
6.8	"Input configuration" sidebar	45
6.8.1	Configuring digital video inputs.....	47
6.8.2	Configuring analog video inputs	49
6.8.3	Creating and configuring instances	51
6.9	"Layout" sidebar	56
6.9.1	Edit layouts	58
6.9.2	Editing the window in the selected layout	58
6.10	"Instances" sidebar	61
6.11	Status window	62
6.12	Screenshot	62
6.13	Information for developers	62
6.14	Operation	63
7	Service and maintenance	64
7.1	Maintenance.....	64
7.2	Cleaning	64
8	Troubleshooting	65
8.1	Error messages.....	65
8.2	Troubleshooting	66
9	Technical specifications	67
9.1	Inputs and outputs.....	67
9.2	Power supply.....	67
9.3	Mechanical design	68
9.4	Climatic conditions	68
9.5	Mechanical requirements.....	68
9.6	Safety specifications	69
9.7	Electromagnetic compatibility.....	69
10	Spare parts / accessories	70
10.1	Accessories.....	70
11	Appendix	71
11.1	Markings and symbols	71
11.2	Guidance and manufacturer's declaration – electromagnetic emissions	72
11.3	Repairs.....	72
11.4	China RoHS (Restriction of Hazardous Substances).....	73
11.5	Accessory devices	74

11.6 Trademarks.....	74
11.7 Contact.....	75
Index.....	76

1 Introduction

1.1 Contents of this document

This document explains the functionality and the approved application of the LMM56800 Large Monitor Manager. 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 document is available on the CD-ROM provided.

1.2 Overview of the instruction manual

This instruction manual is divided into the following two main sections:

- The first section describes the start up of the Large Monitor Manager, and contains the chapters "Application Planning", "Installation", and "Connection".
- The second section describes the configuration and operation of the Large Monitor Manager in the chapter "Configuration and Operation".


2 Safety notes


2.1 General safety notes


Correct transport, professional storage, installation and connection, as well as careful operation and maintenance, are required to ensure that the EIZO devices operate safely and correctly.

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

For safety reasons, the following precautions must be observed:

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

 DANGER
<p>Please observe all warning information present on the device and in the Instruction Manual.</p> <p>There is a danger to life if warnings are not obeyed. Severe personal injury or damage to property may occur.</p> <p>Never use defective power cables</p> <p>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.</p> <p>Disconnect the power cable correctly</p> <p>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.</p> <p>Do not insert any objects into the enclosure</p> <p>Objects inserted into the housing may result in an electric shock or damage to the device.</p> <p>Do not place any objects on top of the device</p> <p>If you place objects on top of the device, this can lead to overheating and fire.</p> <p>Avoid penetration of liquid</p> <p>Liquids penetrating into the device may result in an electric shock or failure of the device.</p>

 CAUTION
<p>Extensive damage to property may result if the device is not connected correctly</p> <p>That is why you should observe the warning information:</p> <p>Connection must be carried out by specialists</p> <p>Please ensure that all steps are taken to avoid injuries or incorrect diagnoses.</p> <ul style="list-style-type: none">• 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. <p>Connection in the USA and Canada</p> <p>Molded power supply plugs must comply with the requirements for "hospital grade attachments" CSA Std. C22.2 No. 21 and UL 498.</p> <p>Connection in China</p> <p>Only use power cables approved for China. These power cables are identified by the labels "CCC" or "CQC".</p> <p>Observe the country-specific regulations</p> <p>Observe all regulations of the country in which the device is used.</p>

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 installed stand as well as the mounting surface have to be suitable for the weight of the unit.
- **For mounting on a wall or ceiling suspension:**
The mount unit must be suitable for the weight of the device.
- **For installation in a mounting frame:**
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 display in the vicinity of sources of heat, e.g. radiators, heating appliances or other devices which 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 acclimation 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 particularly to protect the monitor LCD module from shocks.

Care of display / 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 Instruction Manual.
- 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 line power and checked by qualified personnel:

- Damage to the plug or power cable.
- Following the entry of liquid into the device.
- If the device has been exposed to moisture.
- If the device does not function or if a fault cannot be corrected using the instruction manual.
- If the device has been dropped and/or the housing damaged.
- If the device smells of burning or produces peculiar noises.

Be aware of the aging of monitors

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 discharging, 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 LMM56800 has a lithium battery. This may only be replaced by the manufacturer.
The provisions of the Battery Law (BattG) must be observed 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 of 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 No.	Description
LMM56800	6GF6020-1AB10	Supports output resolutions up to 3840 x 2160 and 4096 x 2160 Up to 27 of 27 input channels can be shown simultaneously.

Components

The following components are included in the scope of delivery:

- Power cable for US, EU
- 2 display port to DVI converters
- 1 holder for installing the display port modules on top of the LMM56800
- 1 holder for attaching the display port plug on the graphics card
- 3 Y cables installed on the DVI inputs
- CD with documentation

3.2 Correct usage

NOTICE

Use of the device

The device may only be used by trained and qualified personnel.

Up to 27 video sources can be connected to the LMM56800 Large Monitor Manager. The video sources can be displayed on one monitor.

Insofar as they are not expressly stated in these instructions, all changes to the device are the sole responsibility of the user.

3.3 Features

The LMM56800 Large Monitor Manager has the following features that permit a wide range of applications:

Flexible arrangement of different video sources

The LMM56800 allows up to 27 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.

User-defined layouts

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

Display of analog and digital signals

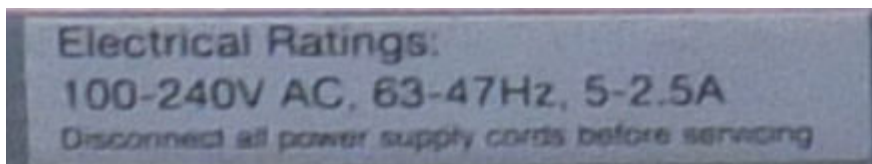
The inputs of the LMM56800 can process both analog and digital image signals in resolutions from VGA(640 x 480 at 60 Hz) to WUXGA (1920 x 1200 at 60 Hz).

Rapid availability of video sources

After initial configuration, the video signals are displayed on the screen within a few seconds after switching on the Large Monitor Manager.

3.4 Plate and label layout

Rating plate



Name plate



Item: LMM 56800


(P) P/N: 6GF6020-1AB10


(S) Serial No: 902B34514DBA


(2P) Revision: 04

Packaging label

Item: EIZO LMM56800
MDM-1E-3-10-C
MDM V.1 EIZO 3xMDI 8MPixel

(P) P/N: 
6GF6020-1AB10

(1S) F/N: 
902B34521114

 (2P) Revision: 04  (Q) Quantity: 1

Weight: 29kg
Country of origin: Germany

TRITEC ELECTRONIC AG
Carl-Zeiss-Str.41
55129 Mainz Germany




4 Setup and installation

CAUTION

Changes to device

Do not make any mechanical or electric changes to the device.

EIZO GmbH will not be held liable if changes are made to the device.

4.1 Installation location

NOTICE

Area surrounding the installation location

Protect the LMM56800 Large Monitor Manager 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 horizontal position. Make sure the surface where it is to be placed is solid and even.

4.3 Installing the DP modules

Install the DP modules as shown in the figures below, and comply with the following information.

Note

- Use the screws delivered with the holders to attach the the holders to the housing of the LMM56800.
- The DP cable for the left DVI channel has to be connected to DP output 1A, and the cable for the right DVI channel to DP output 1B. The USB connectors have to be connected to the PWR sockets.
- Connect the DVI modules and cables according the color coding on the DP module holder.
- If the TDL Dual Link Set is not used, the DVI cable can be connected directly to the DP modules.



Fig. 1: Connected DP modules

Use the delivered holder to secure the DP connectors on the graphics card as shown in the figure.



Fig. 2: Installed holder with DP connectors

4.4 Installing the Y cables

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

Prior to starting up the LMM56800 install the Y cable on inputs 1/2, 10/11, and 19/20 as shown in the following figures.

Note

- Note the markings affixed to the Y cable. The markings tell you which connections are to be made at which slots.
- You can tighten the connector screws by hand. No tools are required.

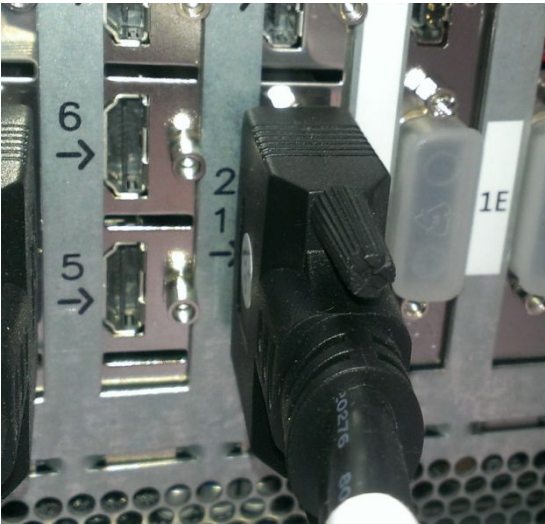


Fig. 3: Connecting a Y cable



Fig. 4: Connected Y cable

4.5 Installing in a rack

The LMM56800 can be installed in a 19" rack.

Note

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

⚠ CAUTION

Installing the device in a rack

Comply with the following items when installing in a rack:

- To prevent the rack from tipping over, devices must always be installed from bottom to top.
- Install the device at the lowest position in the rack first, followed by the device in the next higher position, and so on.
- 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 device for safe operation.
- The device must be installed so that the main switch, the plug connector, and the connection panel are accessible to the user. If this is not the case, an additional element ensuring access has to be installed. The installation has to comply with applicable safety standards.

5 Connecting

5.1 Safety information for connection

 **CAUTION**

Connecting to line power

The device is designed for line power with a grounded neutral conductor.

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

 **CAUTION**

Power cord and extension cord

Not all power cords have the same rated values.

- Do not use the power cord delivered with the device for other products or purposes.
- Do not use common household extension cords to connect the device.
Household extension cords do not have overload protection and are not suitable for use with computer systems.

 **CAUTION**

Shielding measures

Follow all shielding measures according to the country-specific EMC Directive. 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

Please note the following:

- 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.
- Do not route signal cables and power cords next to one another. Otherwise, line power subject to heavy interference could result in reversible pixel errors.
- The device must not share a 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 includes cable grips, please 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 display port to DVI converter.
1B	DP output	To connect a display port to DVI converter.
3 ... 8, 12 ... 17, 21 ... 26	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	Analog DVI input Split up to VGA input by Y-cable.
2, 11, 20	DVI-D inputs	Digital DVI input Split up to DVI-D input by Y-cable.
PWR	Power output	To connect the display port to DVI converter.
Power input	IEC 60320 C14 input	Input power supply

Connection	Name	Function
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
<p>Picture quality, noise immunity, and emitted interference</p> <p>Use high-quality cables only. The picture quality, noise immunity, and emitted interference of the entire system depend on the cable quality and length.</p>

Connecting the monitor and video sources

1. Install the display port to DVI converter on the LMM56800. Installing the DP modules [► 17]).
2. Connect the monitor to the converter using two Dual Link DVI cables.
To display the video sources correctly, the monitor has to support the output resolution of the LMM56800: 3840x2160@60 Hz (8 MP) or 4096x2160@60 Hz.
3. Install the Y cable (see also Installing the Y cables [► 18]).
4. Connect the video sources according to the following table:


PC video output	LMM56800 video inputs (1 ... 27)
DVI-D	<ul style="list-style-type: none"> • If you assign connection panels 3 ... 8, 12 ... 17, 21 ... 26, use an HDMI-DVI adapter cable (see also Accessories). • If you assign connection panels 2, 11, and/or 20, use a commercially available DVI cable.
VGA	<ul style="list-style-type: none"> • If you assign the connection panels 1, 9, 10, 18, 19, and/or 17, use a commercially available VGA cable.

Connecting to the network

The LMM56800 operates using a network. A network connection has to be established between 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 <ul style="list-style-type: none">• 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. Refer to chapter Configuration and operation [▶ 26].

5.4 Input signals

Distribution of input signals

- Inputs 1/2, 10/11, and 19/20 are DVI-I connections with a digital part (1, 10, and 19) and an analog part (2, 11, and 20). The inputs are split with a Y cable so that both parts can be accessed equally. Standard cables can be used for both parts.
- Inputs 1, 10 and 19 are digital inputs (DVI-ID) 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 140 MHz (e.g., 1600 x 1200 at 60 Hz or 1920 x 1200 at 60 Hz reduced blanking).
- 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 Large Monitor Manager 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 LMM56800 you should know the following terms:

Term	Explanation
Video input	Existing connection on the connection panel of the LMM56800.
Video source	Source of a video signal, such as a PC. The video source must be connected to a video input of the LMM56800.
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 LMM56800.
Sidebar	<p>The sidebars contain the user menus of the LMM56800. 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.</p> <p>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.</p> <p>Please note that some information is only visible to service or users with the appropriate rights. Some sidebars therefore are not visible unless a password is entered.</p>
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 Large Monitor Manager 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 LMM56800 via LAN or WLAN.








6.2 Basic icons

The following presents brief description of the icons on the user interface.

General icons

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


Icons for instances

Instance icon	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 Procedure for setting up the LMM

The LMM56800 can be set up via remote access using a workstation with a network browser.

The following steps have to be performed to set up the LMM56800:

1. Connect the monitor an (see also Connection procedure).
 2. Connect the workstation to the network
 3. Connect the video source (see also Connection procedure).
 4. Connect the LMM56800 to the network (see also Connection procedure).
 5. Connect the power supply⁷ and switch on the device (see also Connection procedure).
 6. Log in as "Service" (Chapter abbreviated "Base settings" sidebar).
 7. Make the base settings, such as language, standard layout, and network configuration.
 8. Perform the input configuration (Chapter Connecting the video source computer and Chapter "Input configuration" sidebar).
 9. Create and configure the required instances (Chapter Creating and configuring instances).
 10. Create a suitable layout (Chapter "Layout" sidebar).
 11. Select the suitable layout (Chapter "Layout" sidebar).
 12. Assign the instances to the windows of the selected layout and save the configured layout (Chapter "Instances" sidebar).
 13. If necessary, repeat steps 10 through 12.
 14. If several layouts have been configured, select the layout to be displayed as default. The default layout is identified in the layout bar  with a star (Chapter "Layout" Sidebar).
- Note:** The default layout is displayed when switching on or, after a power failure, within 10 seconds after power is restored. Defining a default layout is recommended.
15. Log out as "Service" (Chapter abbreviated "Base settings" sidebar).

The LMM56800 is now set up.

See also

Setting up operation [▶ 29]

6.4 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 box.
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.

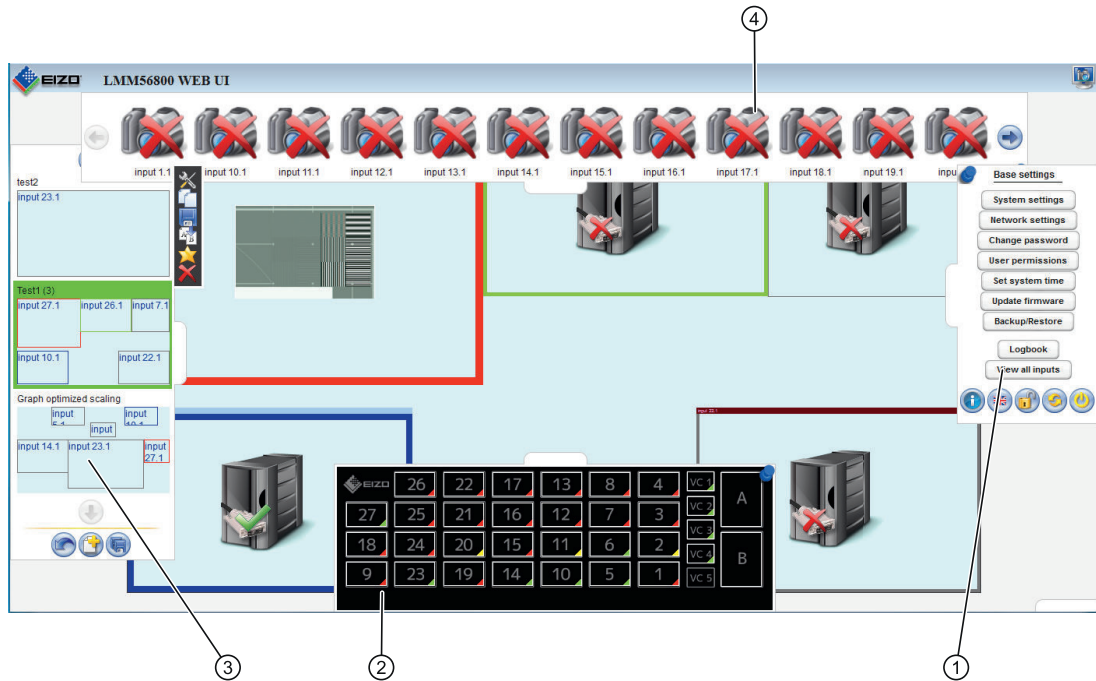
You can now configure the LMM56800 through the network and make the network settings as specified by the local administrator. This may require changes to the workstation IP address settings. In this case, follow the steps above.

Note

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

To check some settings, it may be necessary to review the changes made on the original image. This is particularly important with the function "Graph optimized scaling".

6.5 Overview of the sidebars



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

6.6 "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 you have to move the mouse to the right edge of the screen.



6.6.1 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	<p>Information on the network settings specified for the Large Monitor Manager.</p> <p>One of the IP addresses is the default IP address of the Large Monitor Manager. It cannot be changed.</p> <p>The other IP addresses are either assigned automatically by the DHCP server or specified by the administrator. See the chapter "Setting the network connection".</p> <p>If the DHCP is used the Large Monitor Manager has three IP addresses. Otherwise it has two IP addresses.</p> <p><i>Default setting: IP address 192.168.1.10</i> <i>Fallback IP address: 169.254.213.44 (cannot be changed)</i></p>

6.6.2 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

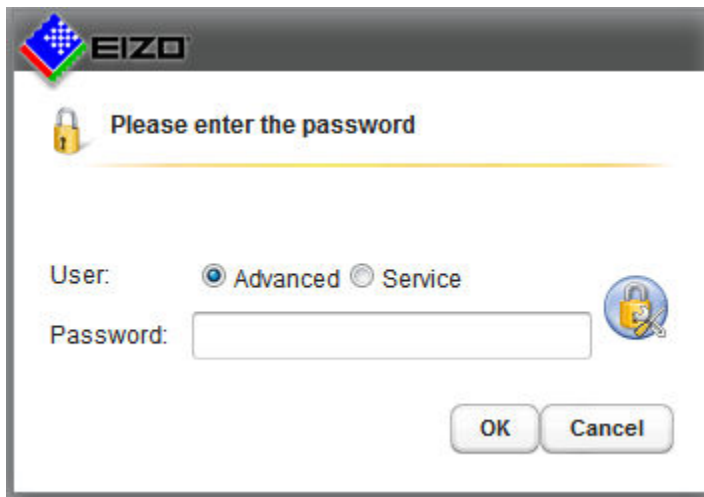
The default language is displayed each time the Large Monitor Manager boots. If you have the appropriate user rights, you can change the default language in the "Settings" dialog box (see also Settings [▶ 35]).

6.6.3 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 [▶ 38]).

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 [▶ 37]

6.6.4 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.

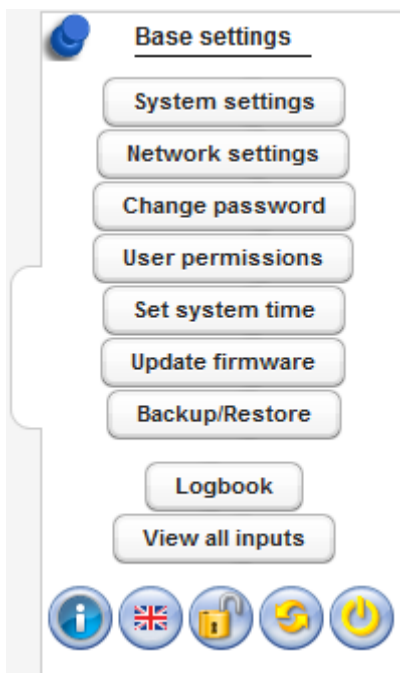
6.7 "Base settings" (extended) sidebar

Note

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

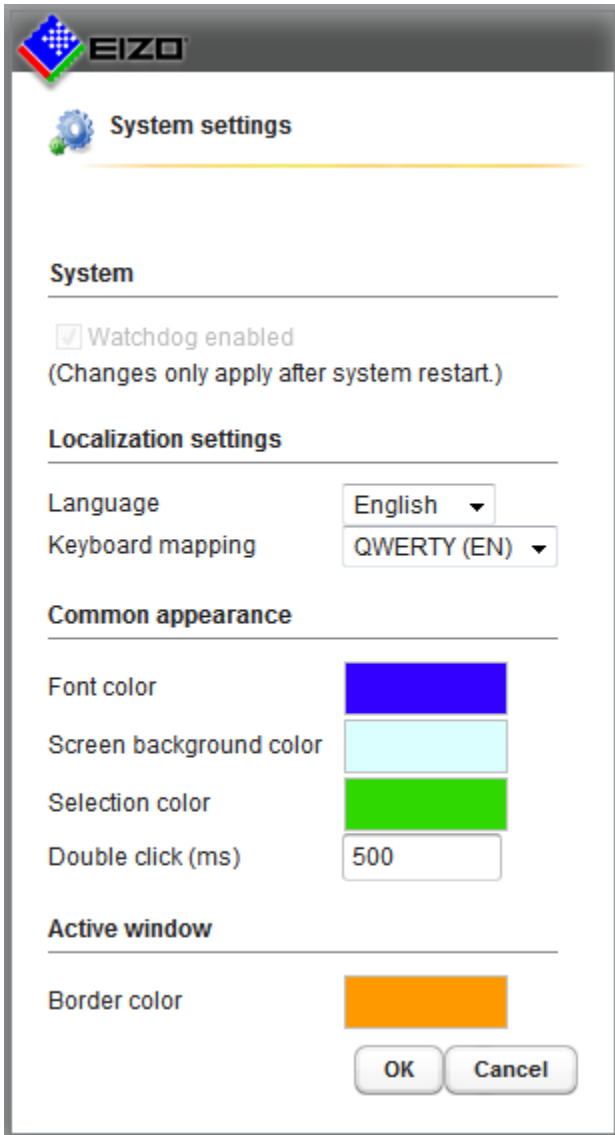
In the "Base settings (extended)" sidebar you can perform basic settings, such as establishing the common appearance, selecting the font color, setting the network, or updating the firmware.

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



6.7.1 Settings

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



You can make the following settings.

Setting	Description
System	<p>Watchdog enabled</p> <p>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.</p>

Setting	Description
Localization settings	<p>Language Click the arrow keys to make the setting Language selection: German, English, French <i>Default setting: German</i></p> <p>Keyboard layout Define the keyboard layout here. The available keyboard layouts are: QWERTZ (German keyboard), QWERTY (US English Keyboard) or AZERTY (French Keyboard) <i>Default setting: QWERTZ (German)</i></p>
Common appearance	<p>Font color Click the color box to change the font color of dialog boxes and menus. <i>Default setting: white</i></p> <p>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></p> <p>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></p> <p>Double click (ms) Set the double click speed here. <i>Default setting: 500 ms</i></p>
Active window	<p>Border color The border color of an active window can be defined here. <i>Default setting: green</i></p>

6.7.2 Setting the network connection

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

The "Network settings" dialog box opens.

EIZO

Network settings

Use DHCP

IP address: 192.168.0.44 Netmask: 255.255.255.0

Hostname:

Domain:

Gateway:

DNS Server:

MTU value: 1500

Server

Protocol: ftp

Hostname: 192.168.1.2

Port: 7020


Path: /

User: LDM

Password: ●●●●●●●●

OK Cancel

You can make the following settings:

Setting	Description
Use DHCP	<p>The DHCP (Dynamic Host Configuration Protocol) enables the assignment of the network configuration to clients through a server.</p> <p>If DHCP is used, the automatically assigned IP address can be found  under "General system information".</p> <p><i>Default setting: "Use DHCP" is not set</i></p> <p>"Use DHCP" is set</p> <ul style="list-style-type: none"> • The host name and domain are assigned here. <p>"Use DHCP" is not set</p> <ul style="list-style-type: none"> • The IP address and net mask can be assigned here. Note: The information has to be suitable with the existing network. Ask the local administrator for the correct settings. • The host name and domain can be assigned. • The gateway and DNS server IP address can be entered here. • MTU value • MTU (Maximum transmission unit) specifies the maximum size of the data packets that can be sent in the network. <i>Default setting: 1500</i>
Server	<p>To perform a firmware update or to store configuration data on a server, first define here which server the Large Monitor Manager should access (see also "Update firmware [▶ 41]" and "Backup/Restore").</p>

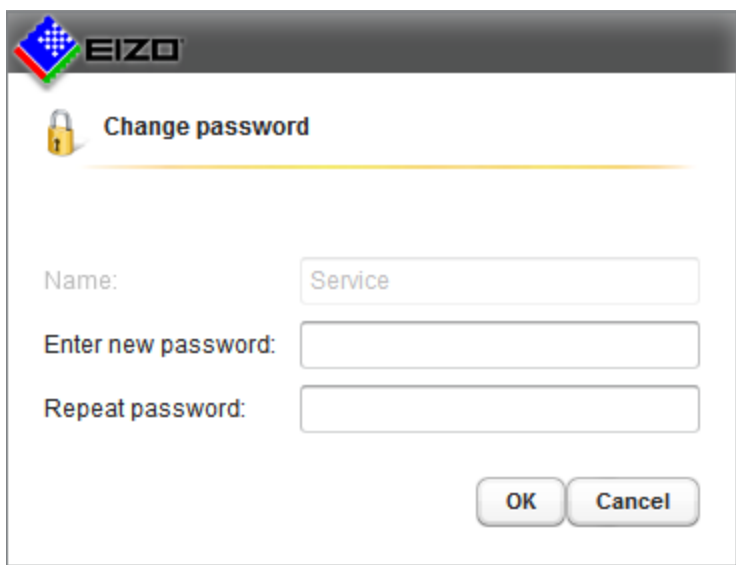
6.7.3 Changing the password

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 box opens.



The image shows a dialog box titled "Change password" with the EIZO logo in the top left corner. The dialog box contains three input fields: "Name:" with the text "Service" entered, "Enter new password:", and "Repeat password:". At the bottom right, there are two buttons labeled "OK" and "Cancel".

Note

The password may not contain special characters.

6.7.4 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 image shows a dialog box titled "User permissions" with the EIZO logo in the top left corner. A yellow horizontal line is below the title. The dialog contains a table with two columns: "Default User" and "Default user with extended rights". Each row represents a permission, with a checkbox in each column. At the bottom right, there are "OK" and "Cancel" buttons.

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

Note

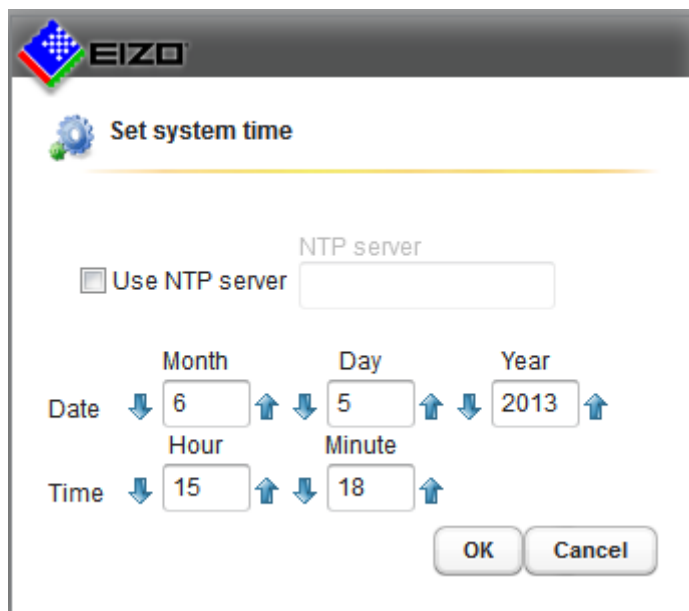
Assigning rights

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

6.7.5 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. Make changes with the arrow keys  and  incrementally change the date and time until the required values are displayed.
2. Click "OK".

Restart the device to apply the changes.

6.7.6 Updating the firmware

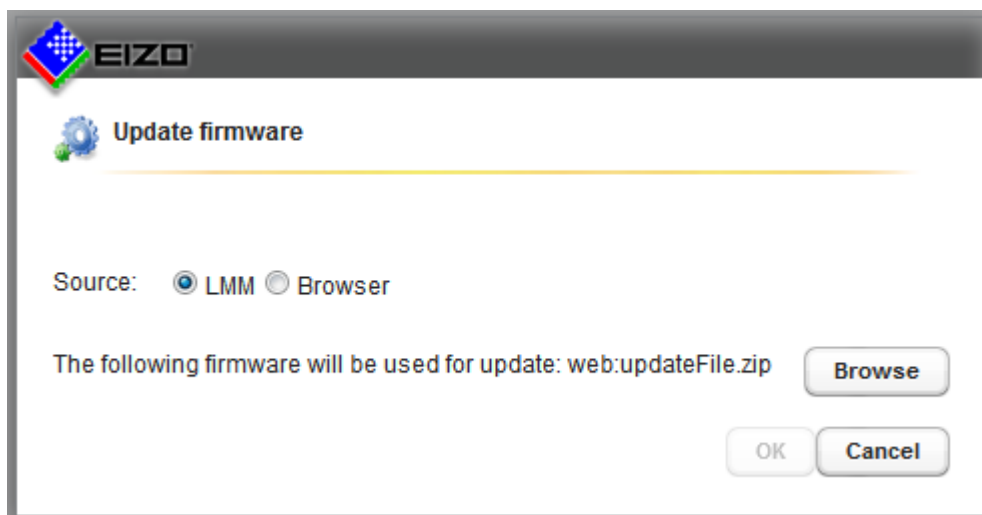
NOTICE

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.

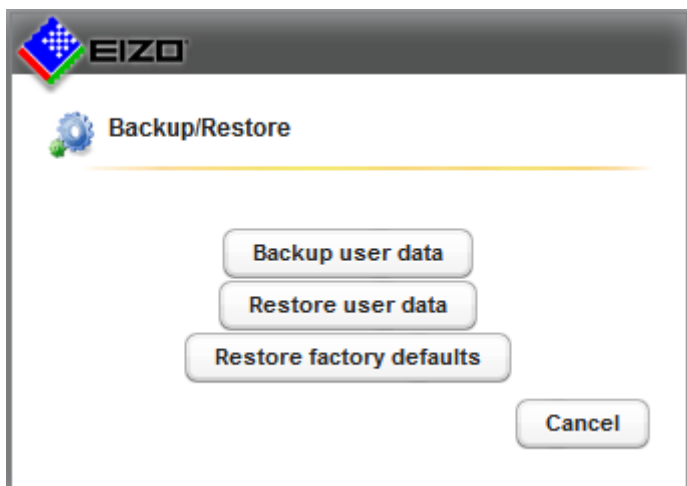


2. Select "Source".
If you select "LMM" then the firmware file must be stored on the configured server.
If you select "Browser" the firmware file must be stored on the connected file system, e.g., on the workstation.
3. Use the "Browse" button to find the storage location of the new firmware file.
4.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

6.7.7 Backup/Restore

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

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



You can perform the following functions:

Function	Description
Backup user data	<p>The user-defined settings are backed up to a USB stick or FTP server.</p> <p>To back up the user data proceed as follows:</p> <p>Prerequisite: The USB stick is connected or the ftp server is accessed.</p> <ol style="list-style-type: none"> 1. Click the "Backup user data" button. 2. Click "Browse" and establish the storage location and the file names. 3. Click "OK" to perform the backup. <p>The user data is saved to a zip file. A corresponding message is displayed once the backup is complete.</p>
Restore user data	<p>User data backed up to a USB stick or ftp server can be restored on a component basis.</p> <p>To read the user data proceed as follows:</p> <p>Prerequisite: The USB stick with backed up user data is connected or the ftp server with back up user data is accessed.</p> <ol style="list-style-type: none"> 1. Click the "Restore user data" button. 2. Click "Browse" and select the storage location of the backup file. 3. Click "OK" to restore the user data. 4. In the dialog box displayed, set the components to be restored. <p>After reading the user data, the system restarts automatically with the restored data.</p>

Function	Description
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. Click the "Restore factory defaults" button. A dialog window opens.

See also

Setting the network connection [▶ 37]

6.7.8 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.

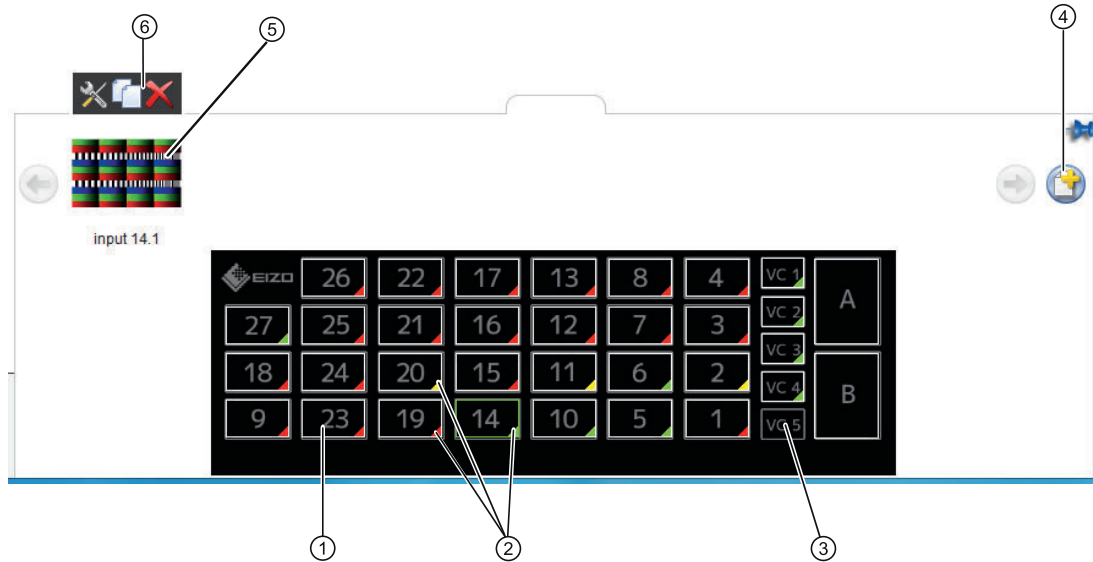
6.7.9 View all inputs

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 box 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 the input channels 1 to 27 is displayed simultaneously. The title bar has a light blue background.

6.8 "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 box 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 This toolbar is displayed when you move the mouse pointer over the miniature thumbnail ⑤ of the instance. 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 box 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 following symbol appears in the window:



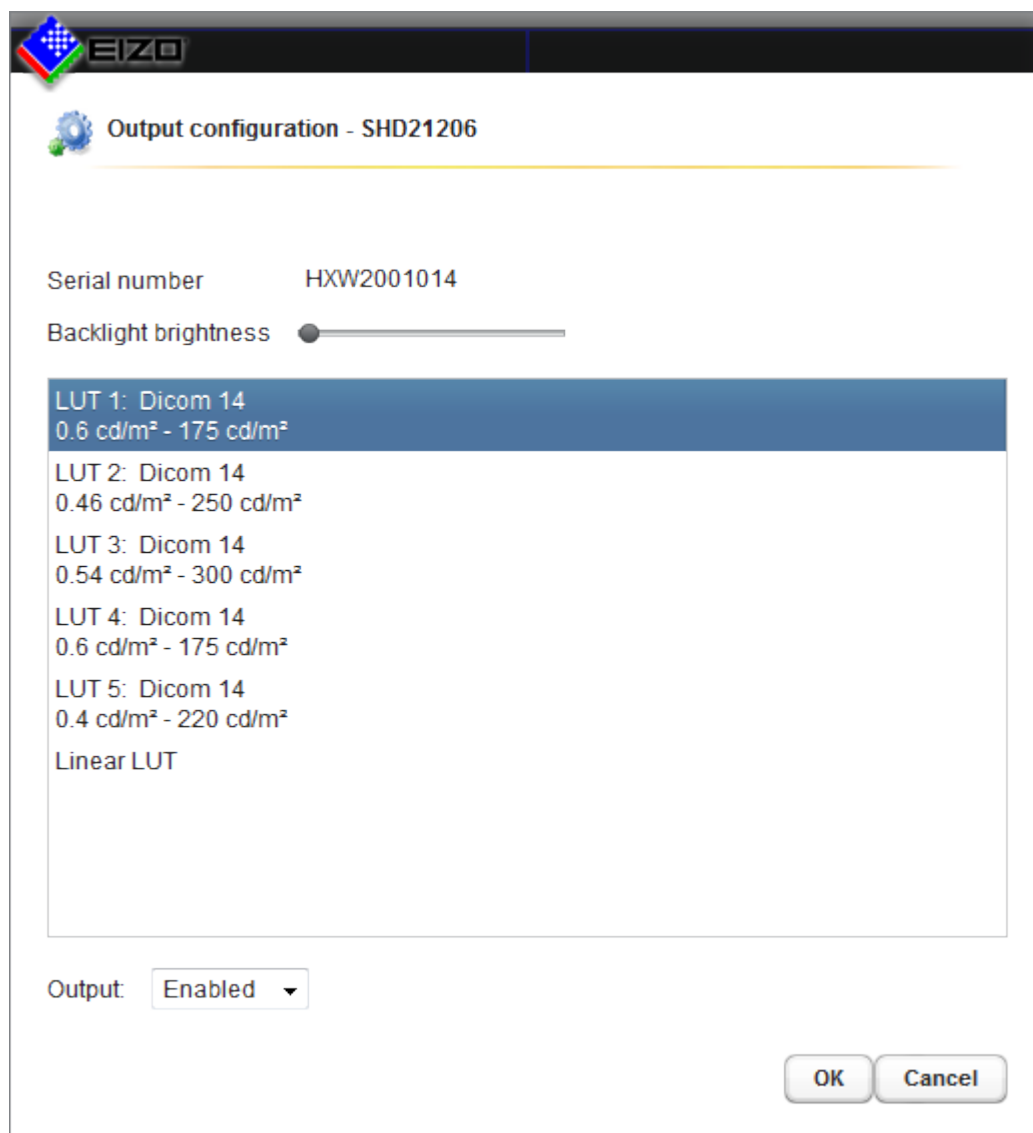
Adjust LUT at monitor output

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.



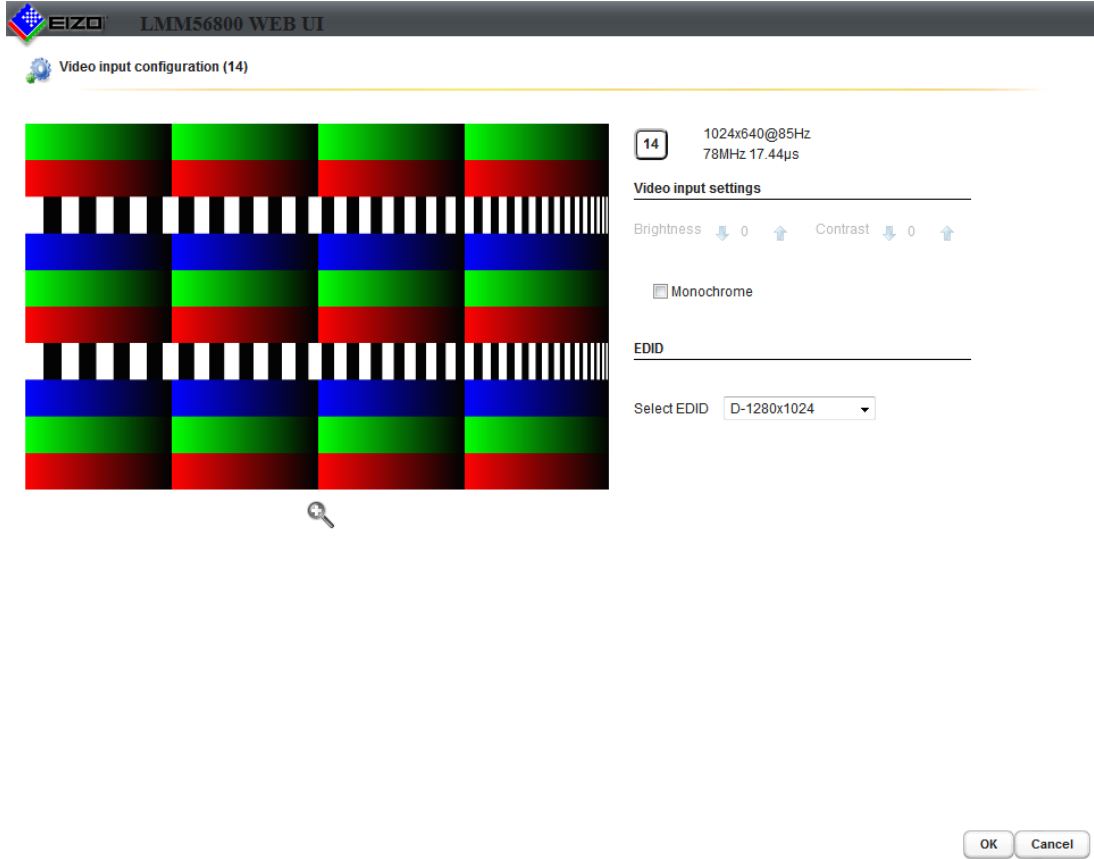
2. In the displayed dialog box select the required LUT.
3. Close the dialog box.

6.8.1 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 2, 11, and 20 are digital inputs (DVI-I) with a maximum bandwidth of 165 MHz (e.g., 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 box is displayed.

Configuration and operation
 6.8 "Input configuration" sidebar

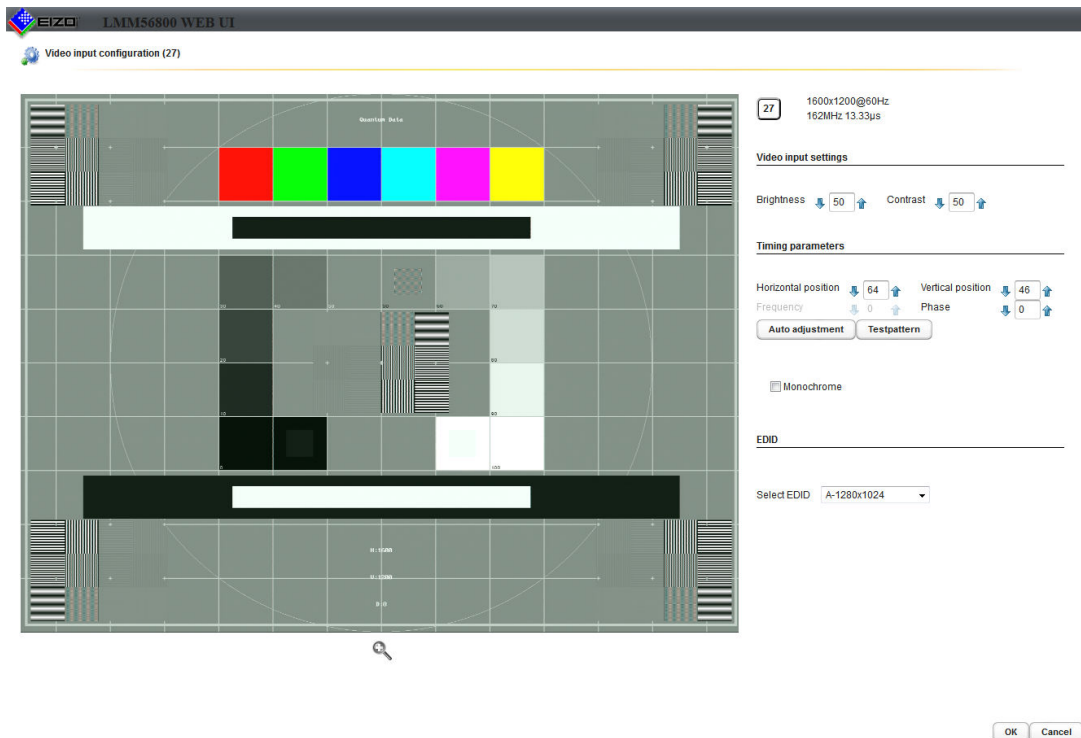


Function	Description
Monochrome	Mark this box if the video source delivers monochrome images.
Select EDID	Use the arrow keys to select the EDID setting for the respective video input. The EDID setting establishes the resolution the graphics card of the video source delivers. You can select the following EDID data: Select EDID D-1280x1024 ▼ <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> 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 </div>

6.8.2 Configuring analog video inputs

- Inputs 9, 18, and 27 are analog inputs (VGA) with a maximum bandwidth of 140 MHz.
- Inputs 1, 10, and 19 are analog inputs (DVI-A) with a maximum bandwidth of 170 MHz.

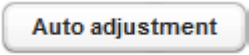
If you double-click the analog video input to be configured with the left mouse button, the "Video input configuration" dialog box is displayed.



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

Function	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>

Configuration and operation
 6.8 "Input configuration" sidebar

Function	Description																																				
Vertical position	The vertical position of the displayed image can be set down to a pixel. Setting range: 0 ... 100 % <i>Default setting: 50 %</i>																																				
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 must be displayed with the correct resolution 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 <div style="text-align: center;">  </div> 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: <div style="margin-top: 10px;"> <table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">Select EDID</td> <td style="padding: 2px;">D-1280x1024 ▼</td> </tr> <tr> <td></td> <td style="padding: 2px;">D-640x480</td> </tr> <tr> <td></td> <td style="padding: 2px;">D-800x600</td> </tr> <tr> <td></td> <td style="padding: 2px;">D-1024x768</td> </tr> <tr style="background-color: #e0e0e0;"> <td></td> <td style="padding: 2px;">D-1280x1024</td> </tr> <tr> <td></td> <td style="padding: 2px;">D-1200x1600</td> </tr> <tr> <td></td> <td style="padding: 2px;">D-1600x1200</td> </tr> <tr> <td></td> <td style="padding: 2px;">A-1280x1024</td> </tr> <tr> <td></td> <td style="padding: 2px;">A-1920x1200</td> </tr> <tr> <td></td> <td style="padding: 2px;">D-1920x1080</td> </tr> <tr> <td></td> <td style="padding: 2px;">D-1536x2048,30Hz</td> </tr> <tr> <td></td> <td style="padding: 2px;">D-2048x2560,25Hz</td> </tr> <tr> <td></td> <td style="padding: 2px;">D-2048x2048,30Hz</td> </tr> <tr> <td></td> <td style="padding: 2px;">D-1920x1200</td> </tr> <tr> <td></td> <td style="padding: 2px;">D-2560x1600,30Hz</td> </tr> <tr> <td></td> <td style="padding: 2px;">D-2560x1600,60Hz</td> </tr> <tr> <td></td> <td style="padding: 2px;">D-2560x1440,60Hz</td> </tr> <tr> <td></td> <td style="padding: 2px;">A-1920x1080</td> </tr> </table> </div>	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
Select EDID	D-1280x1024 ▼																																				
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	D-1536x2048,30Hz																																				
	D-2048x2560,25Hz																																				
	D-2048x2048,30Hz																																				
	D-1920x1200																																				
	D-2560x1600,30Hz																																				
	D-2560x1600,60Hz																																				
	D-2560x1440,60Hz																																				
	A-1920x1080																																				

6.8.3 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 existing 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 box 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, left-click .

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

Instance configuration of a video input

Instance name

Video input

Instance enabled

Keep aspect ratio

Synchronize output

Keyboard / mouse settings

Mouse enabled

Keyboard enabled

Graph optimized scaling

Use graph optimized scaling

Dialog detection

Dialog color

Color tolerance (0.0-1.0)

Image cropping

Cropping enabled

Instance presentation

Show title/border

Font color of title

Background color of title

Border






Border enabled



Use background color of title


Border color

Border width

Function	Description
	<p>Instance name</p> <p>Define the instance name here. It should be short and precise.</p> <p><i>Default setting: In xy</i></p>

Function	Description
	<p>Video input</p> <p>The correct video input for which the instance is created already appears as default. To assign the same settings to a different video input, use the drop down list.</p> <p><i>Default setting: The selected video input</i></p> <hr/> <p>Instance enabled</p> <p>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:</p>  <p><i>Default setting: "Instance enabled" is set (instance is visible)</i></p> <hr/> <p>Keep aspect ratio</p> <p>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.</p> <p><i>Default setting: "Keep aspect ratio" is set .</i></p> <hr/> <p>Create/delete miniature thumbnail</p> <p>A miniature thumbnail can be created for each instance. The thumbnail appears in both the "Input configuration" (bottom) and "Instance" (top) sidebars.</p> <ol style="list-style-type: none"> 1. Click  . The "Miniature thumbnail" dialog box opens. 2. Move the marker  , to select the suitable cropping area for the thumbnail. 3. Confirm with "OK". The thumbnail is applied. Note: Alternatively, you can load a symbol, for example from a USB stick. Click  . 4. To delete the thumbnail, click  . <hr/> <p>Synchronize output</p> <p>Enables input/output synchronization.</p> <p>Note</p> <p>If synchronization is enabled for multiple inputs, the instance with the lowest channel number is synchronized for the video input.</p>
Keyboard/mouse settings	Not available for LMM56800 .

Function	Description
Image cropping	<p>Cropping enabled</p> <p>If you only wish to view a certain part of an instance, you can define the cropping area as follows:</p> <ol style="list-style-type: none"> 1. Enable cropping. 2. Select the instance to change. 3. Click . The "Define cropping area" dialog box opens. 4. Move the marker , to define the cropping area required. 5. Confirm with "OK". The cropping area is applied. <p>Multiple instances with various cropping areas can be created.</p> <p><i>Default setting: "EnableImage cropping is not set."</i></p>
Graph optimized scaling	Not available for LMM56800 .
Instance presentation	<p>Show title/border</p> <p>You define whether a title (instance name) and a border are to be displayed for the currently selected instance.</p> <p><i>Default setting: "Show title/border" is set.</i></p> <hr/> <p>Font color of title/Background color of title</p> <p>The font color and the background color of the title can be changed. Click the color box.</p> <p>Use scale "A" for the transparency value of the color.</p> <p><i>Default setting for font color of title: white</i></p> <p><i>Default setting for background color of title: blue</i></p> <hr/> <p>Border enabled</p> <p>You define whether a border is to be displayed for the selected instance.</p> <p><i>Default setting: "Border enabled" is set.</i></p> <hr/> <p>Use background color of title</p> <p>You can define here whether the background color of the title is to be used as the border color.</p> <p><i>Default setting: "Use background color of title" is not set</i></p> <hr/> <p>Border color</p> <p>The border color can be changed by clicking the color box.</p> <p><i>Default setting: white</i></p> <hr/> <p>Border width</p> <p>You change the border width here. Click the arrow keys.</p> <p>Setting range: 1 - 10 pixels wide</p> <p><i>Default setting: 1 pixel</i></p>

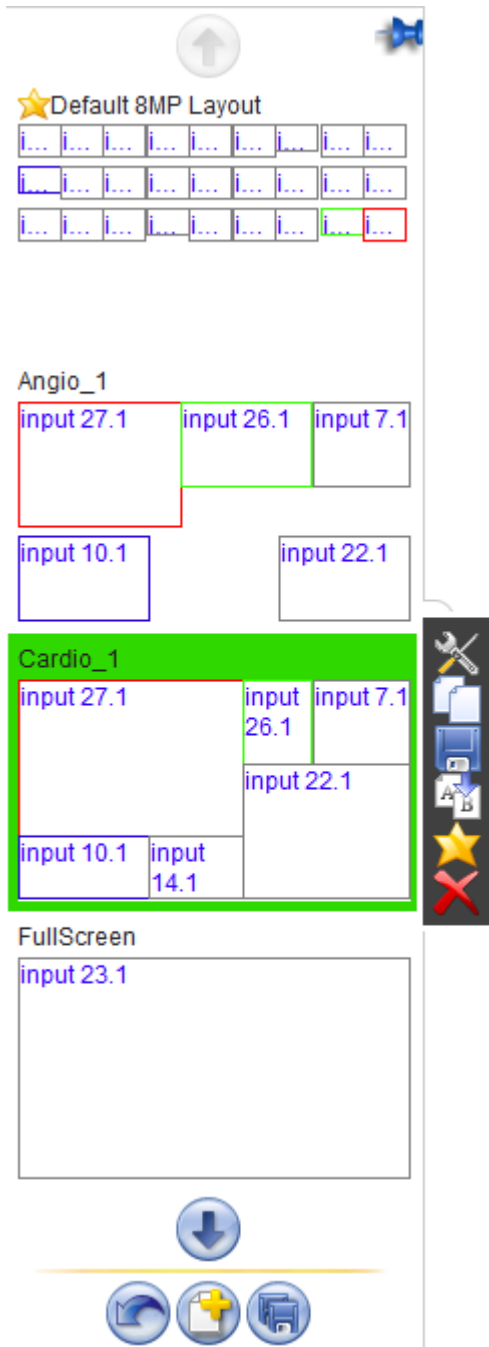
Function	Description
	<p>Direct selection of the border in thumbnail</p> <p>You can define the sides on which a border is to be displayed. To do this, click on the individual border sides in the thumbnail.</p>  <p><i>Default setting: complete border</i></p>

6.9 "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




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

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: The layout cannot be deleted if the symbol is displayed in gray. In this case, the layout is defined as the default. To delete it, you have to define another layout as the default.

6.9.1 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 duplicate the layout and then edit it.


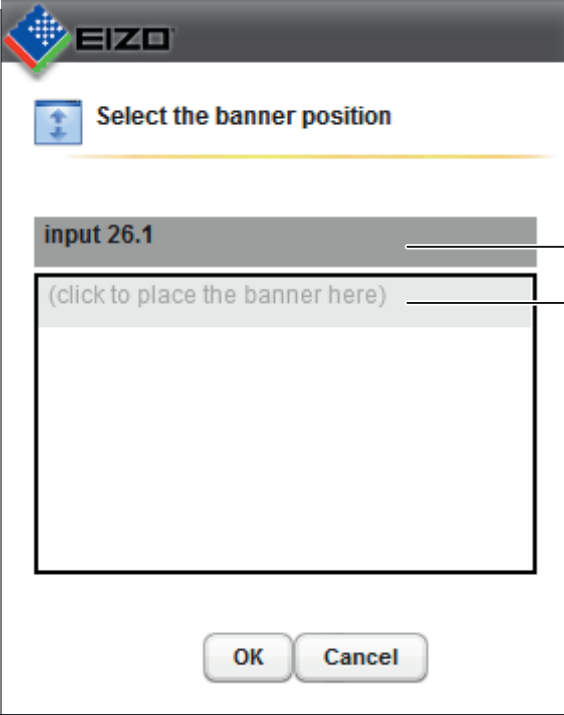


A toolbar is displayed in the upper right corner of each window in the layout. Use the toolbars to edit the windows.

6.9.2 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.

Button	Description
	<p>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.</p>  <p>The information banner can be shown either above (Position 1) or within (Position 2) the window. It can also be omitted.</p> <p>Note: Make sure no image information is covered if the information banner is in the window.</p>
	<p>Opens the menu for editing the instance in this window.</p>
	<p>The window cannot be changed if the pin is set. It can only be deleted, and the created instance in this window can be edited.</p>

There are other ways to edit windows in addition to buttons.




Creating new windows via drag & drop

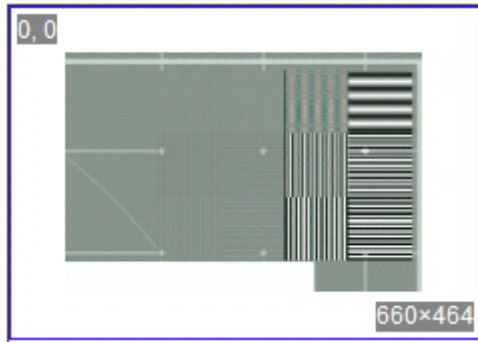
Sufficient free space in the layout is required as a prerequisite for this function.

Click and hold the left mouse button on a window and drag the window to an open area. 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.




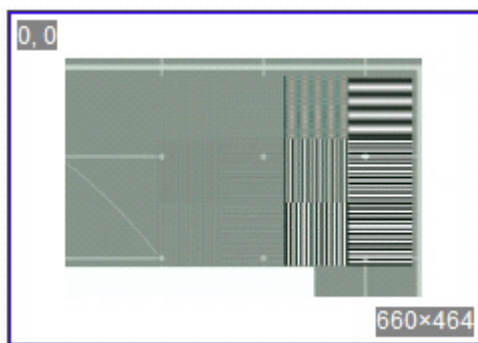
In this example, the width is 660 pixels, the height is 464 pixels, no information banner is set.

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 positions.

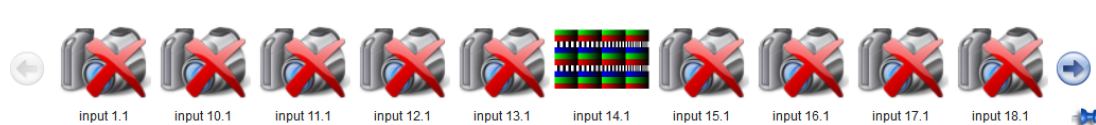
Saving changes

- Click the  button in the "Layout" sidebar to save all changes in the layout.

See also

Edit layouts [▶ 58]

6.10 "Instances" sidebar




Displaying the "Instances" sidebar

To open the "Instances" sidebar you have to move the mouse to the top 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:

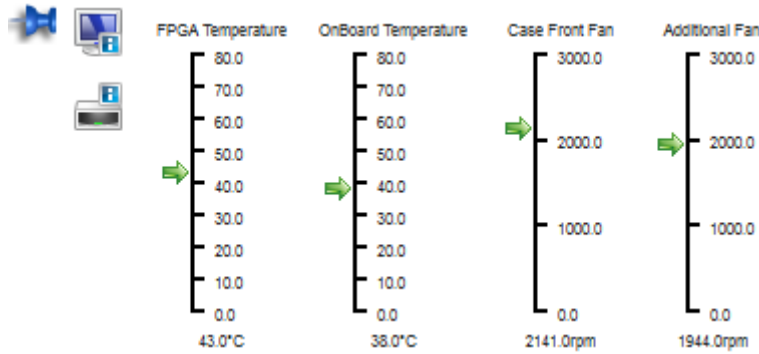
1. Select a layout in the "Layout" sidebar.
2. Click a miniature thumbnail of an instance in the "Instances" sidebar and drag it to a window.
3. Repeat the procedure to assign additional instances.
4. If needed, use drag and Drop to exchange the window contents.
5. Save the layout in the "Layout" sidebar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



Note

The configuration is retained when switching between layouts. If the settings are not saved, they are lost if you restart or shut down the Large Monitor Manager.

6.11 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  symbol, a tooltip is displayed with the number of errors on the monitor or LMM.

6.12 Screenshot

The LMM56800 has a screenshot function.

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

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

The dialog box closes and the file is saved.

6.13 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

The software is distributed by EIZO. Contact your local distributor with any inquiries.

6.14 Operation

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

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

- Changing the layout.
- Assigning instances in layouts.

Layout changes can be performed via the standard interface. Instances are assigned using View Management. This means for example that instances can be exchanged.

Changing the layout

To change 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:
<ul style="list-style-type: none">• Click the required layout.

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

7 Service and maintenance

7.1 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.

7.2 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 penetrating 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.

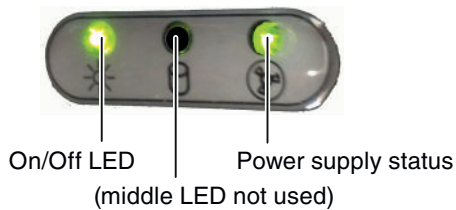
8 Troubleshooting

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

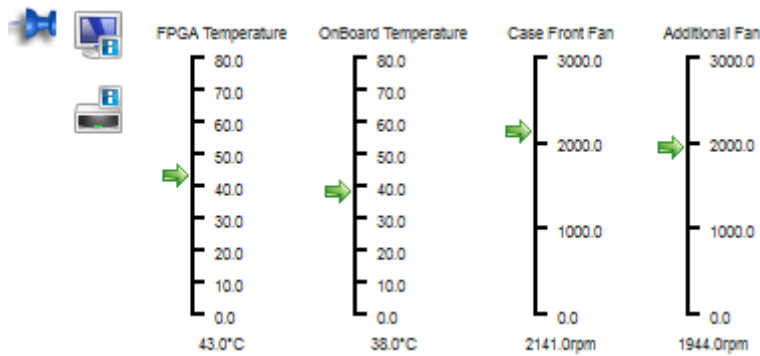


On/Off LED status	Measure
Green when system is switched on	No measures.
Off when system is switched off	No measures.

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 [▶ 49]).

9 Technical specifications

9.1 Inputs and outputs

Video inputs	
Max. number of simultaneously displayed input channels	Up to 27 images from up to 27 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]	18
Number of digital inputs [DVI-] [165 MHz]	3
Number of analog inputs [DVI-A] [170 MHz]	3
Number of analog inputs [VGA] [140 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	3x620 Megapixel/s
Total system bandwidth	1.5 Gigapixel/s
Video outputs	
Number of digital outputs [DVI-I Dual Link] [330 MHz]	2 (Note: DVI outputs via DP to DVI converters)
Output resolution	3840 x 2160 QFHD, 4096 x 2160
Interfaces	
Ethernet interface	1 [1 Gbit/s]
Voltage outputs	
Number of USB power connectors for the Display Port to DVI converter	2
Number of USB ports for future purpose	2 (not used)

9.2 Power supply

Rated voltage	100 V ... 240 V, 50 Hz...60 Hz
Current consumption	5.00 A ... 2.5 A,
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	19 kg

9.4 Climatic conditions

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 Mechanical requirements

Packaged unit	
Vibrations	Compliant with IEC/EN 60721-3-2 Class 2M2
Shock	Compliant with IEC/EN 60721-3-2 Class 2M2
Falls/drop	up to 90 cm height

9.6 Safety specifications

Safety standards	IEC 60950-1:2005 + A1:2009 EN 60950-1:2006 + A1:2010 CSA C22.2 No. 60950-1-07 + A1:2011 UL 60950-1 2nd Ed. Revised 2011-12-19
Protection class	Protection class I
Degree of protection	IP20 in accordance with DIN 40050
Conformity	CE declaration compliant with <ul style="list-style-type: none">• EMC Directive 2004/108/EC• Low voltage Directive 2006/95/EC• RoHS Directive 2011/65/EC

9.7 Electromagnetic compatibility

Interference voltage/interference noise	EN55022:2010, Class B
Voltage dips	EN61000-4-11
Burst on power cables	EN 61000-4-4 1 kV
Burst on signal lines	EN 61000-4-4 0.5 kV
Surge on power cables	EN 61000-4-5 1 kV symmetrical, 2 kV unsymmetrical
Static discharge on casing parts (ESD)	EN 61000-4-2 8 kV air, 4 kV contact
RF irradiation	EN 61000-4-3 80 MHz ... 1.0 GHz, 3 V/m 80 % AM 1 kHz
Line reaction to harmonics	EN 61000-3-2

10 Spare parts / accessories

10.1 Accessories

Monitor

For the LMM56800 we recommend the use of the RadiForce® LS560W, LX600W, or RX840W monitor.

These monitors support the required resolution of 8MP (3840 x 2160 or 4096 x 2160) and have been tested and released with the LMM56800.













DVI Transmission Link








For longer distances between video source and LMM56800 we recommend the use of the TDL3600 DVI Transmission Link Sets. To connect a monitor over a long distance the TDL3600-DL transmission link can be used.

11 Appendix

11.1 Markings and symbols

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

Marking/symbol	Meaning (location on device)
	Symbol for "Caution, observe accompanying documents". (name plate).
	CE marking (EU conformity mark). (name plate).
	U.S. FCC marking for communication devices. (name plate)
	CSA marking, in accordance with U.S. and Canadian national regulations. (name plate).
	Symbol for date of production for medical products. (name plate).
	WEEE marking: Product must be disposed of separately; materials may be recycled. (name plate).
	Marking according to ACPEIP (China-RoHS). (name plate)
	Mark of the Japanese "Voluntary Control Council for Information Technology Equipment" (name plate)
	C-Tick marking for conformity with Australian EMC standards. (name plate)
	Symbol for alternating current at line voltage input. (name plate).
	Symbol for protective ground (protective conductor connection)
	"On" symbol (voltage) (power switch)

Marking/symbol	Meaning (location on device)
	"Off" symbol (voltage) (power switch)
	Input for service calls. (PS2 socket)
	Symbol for USB. (Upstream and downstream USB inputs)
	DVI output signal. (monitor output)
	Symbol for direct current. (5-V connections for the power supply to external devices).
	Symbol for network connection. (network connection)
	Symbol "Comply with the instruction manual". (device)

11.2 Guidance and manufacturer's declaration – electromagnetic emissions

The LMM56800 Large Monitor Manager is intended for use in the environment specified below. The customer or the user of the device should ensure that it is used in such an environment.

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

11.3 Repairs

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

11.4 China RoHS (Restriction of Hazardous Substances)

LMM56800 Model: 6GF6030-1AB## (##=00..99)

根据 SJ/T11364-2006 《电子信息产品污染控制标识要求》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/T11364-2006 Marking for Control of Pollution caused by Electronic Information Products.

电子信息产品污染控制标志说明 Explanation of Pollution Control Label



This symbol indicates the product does not contain any toxic or hazardous materials in excess of the limits established by the Chinese standard SJ/T11363-2006 Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products. The symbol also signifies that the product can be recycled after being discarded, and should not be casually discarded.

该标志表明本产品不含有超过中国标准 SJ/T11363- 2006 《电子信息产品中有毒有害物质的限量要求》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。

有毒有害物质或元素的名称及含量 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	○	○	○	○	○	○
其他 电路板 Other Circuit Boards	○	○	○	○	○	○
其他 (电缆 等) Others (ca- bles, etc.)	○	○	○	○	○	○
机架、底盘 Housing, Chassis	○	○	○	○	○	○
附件 (信号电 缆、输电线 等) Accessories (signal cable, power line, etc.)	○	○	○	○	○	○

部件名称 Component Name	有毒有害物质或元素 Hazardous substances' name
<p>O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下 X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求</p> <ul style="list-style-type: none"> • 此表所列数据为发布时所能获得的最佳信息. • 由于缺少经济上或技术上合理可行的替代物质或方案, 此医疗设备运用以上一些有毒有害物质来实现设备的预期临床功能, 或给人员或环境提供更好的保护效果。 <p>O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006. 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 SJ/T11363-2006</p> <ul style="list-style-type: none"> • Data listed in the table represents best information available at the time of publication. • Applications of hazardous substances in this medical device are required to achieve its intended clinical uses, and/or to provide better protection to human beings and/or to environment, due to lack of reasonably (economically or technically) available substitutes. 	

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

11.5 Accessory devices

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

11.6 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.

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.

Macintosh is a registered trademark of Apple Inc.

Mac is a registered trademark of Apple Inc.

VESA is a registered trademark of Video Electronics Standards Association in the United States and other countries.

All other trademarks are the properties of their respective owners.

11.7 Contact

Support during installation and for technical questions

Medical Monitor Solutions (<http://www.eizo.com>)

Index

A

Anmelden	32
Anschlussfeld	22
Aufstellort	16
Ausschalten	33

B

Backup/Restore	43
Batterie	12
Begriffserklärung	26
Belüftung	16
Benutzerrechte	39
Bestellnummer	
LMM0801	13

C

Common Interface	62
Configuration	
Video input	45
Connecting	23

D

Device information	31
--------------------	----

E

Einbauort	16
Einrichten	
LMM	28
Einstellungen	35
Entsorgung	
Batterie	12

F

Factory setting	43
Fehlermeldung	65
Fenster	
bearbeiten	58
Firmware-Update	42

G

General safety notes	8
Grundeinstellungen (verkürzt)	30

H

Hauptbenutzer	32
Herstellereklärung	72

I

Input configuration	45
Input signals	24
Instanz	51, 61

K

Konfiguration	
analoger Videoeingang	49
Videoeingang (digital)	47
Kontakt	75

L

Layout	56
bearbeiten	58
LED	65
LED Status	65
Leitlinien	72
Lieferumfang	13
Logbuch	44
Lookup table	46
Lüfterreinigung	64
LUT	46

N

Netzwerkverbindung	37
Neustart	33

O

Operation	63
-----------	----

P

Passwort	38
Produktspezifische Sicherheitshinweise	12

R

Rechte	39
Reinigung	64
Rollen	39

S

Screenshot	62
Service	32
Set up	
Remote operation	29
Shielding measures	20
Sidebar	
Grundeinstellungen (verkürzt)	30
Input configuration	45
Instanzen	61
Layout	56
Übersicht	30
Spracheinstellung	31
Statusfenster	62, 65
Symbol	27
System information	31
Systemzeit	41

T

Troubleshooting	66
-----------------	----

U

Umgebungswechsel	16
User data	43

V

Video bandwidth	25
Videoeingang	
analog	49
digital	47
Instanz	51
View Management	63

W

Wartung	64
Window	
process	59



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