Instructions for Use

LMM0802

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.

EIZO®

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.

Table of contents

1 Introduction

1.1 Contents of this document

This document explains the functionality and the intended use of the 4.0.0 with firmware version Large Monitor Manager LMM0802. To ensure clarity, it does not contain all detailed information on this product.

You are additionally advised that the contents of this document are neither part of a previous or existing agreement, commitment, or legal relationship, nor does it modify such.

Note
What firmware is in the device?
To find the firmware version, click in the "Base settings" sidebar. The "Application Revision" entry corresponds to the installed firmware.

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 groups

User

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

Service / service personnel

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

Cleaning staff

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

2 Safety information

2.1 General safety instructions

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

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

For safety reasons, the following precautions must be observed:

⚠ **DANGER**

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 an accessories box with various components. After unpacking, 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
LMM0802	6GF60301AB00	Supports output resolutions up to 4K UHD (3840 x 2160 pixels) or 4K (4096 x 2160 pixels)

Accessories box

The following components are included in the accessories box:

*   6 HDMI to DVI adapter cables.

*   4 adhesive feet for the housing.

*   2 mounting brackets, including screws.

*   CD with documentation and test patterns.

*   Printed safety information.

3.2 Intended use

Up to twelve different video sources can be connected to the Large Monitor Manager LMM0802. Eight of these video sources can be displayed simultaneously on one or two monitors.

Additionally, up to two keyboards and mice can be connected If the video sources are PCs, they can be linked such that operation with the keyboard and mouse is possible.

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

The device is suited for use in a medical environment. It can be used as a desktop device or installed in a rack.

3.3 Features

Flexible arrangement of different video sources

With the LMM0802 you can simultaneously display up to eight different video sources on one or two monitors. Up to 16 images from the eight video sources can be displayed. The video sources can be displayed in different scales or image cropping areas. In addition, there are four virtual channels for transmitting images or text, for example. The virtual channels can be displayed on any monitor.

As a result you can simplify the workflow in the control or examination room for example, and merge multiple workstations.

Display of analog and digital signals

The inputs of the LMM0802 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), to QXGA (2048 x 1536 at 30 Hz).

Added inputs and outputs with a DVI matrix

It is possible to increase the number of connected video sources and outputs in combination with a DVI matrix:

- Up to 24 different image sources can be connected to LMM0802 with the GefenPRO 16x16 DVI Matrix. Of these image sources, 16 must be connected to the matrix and the other 4 to the LMM.

- Up to 28 different image sources can be connected to LMM0802 with the Extron DMS 2000 20x20 DVI Matrix. Of these image sources, 20 must be connected to the matrix and the other 8 to the LMM.

Expand the video management system with a splitter

The PDS0800-HD Splitter can be connected to duplicate the output signals and display them on additional monitors.

Extended software suite

The Extended software suite with the following functions is available as an optional extra:

- Annotation sidebar: Using the Annotation sidebar, graphical objects or texts can be created as remarks on the screen.

- Dynamic Layout: Windows that have been laid out can now be enlarged or reduced with the mouse during operation. Each window can also be zoomed in and out as well.

Operation on the device and remote access

Amendment or changing of the layout can be carried out either using the keyboard and mouse directly on the device, or via remote access using a browser interface.

With the LMM Control software installed on a touch screen PC, it is moreover possible to switch inputs and operate the "Dynamic Layout" function.

Dual User

If two monitors are connected to the LMM0802, they can be operated independent of one another by two users.

Fast image display after switching on

The configured image display mode is shown on the screen within six seconds of switching on the LMM0802.

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.

Designed for the medical environment

The special requirements of the medical environment have been taken into account. Accordingly, an ambient temperature of up to 40 °C is permitted; the electrical safety concept was developed and tested in accordance with IEC 60601-1. In addition, electronic components that will be available over the long term were used.

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
Operational safety is endangered of the device overheats.
• 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 Unpacking the Large Monitor Manager

The LMM0802 is delivered in a cardboard box.

⚠ CAUTION
Injuries from the device falling
Observe the following safety measures to avoid injuries when unpacking and handling the device: • Wear appropriate protective clothing to prevent injuries should the monitor fall.

To unpack proceed as follows:

1. Open the lid of the cardboard box.

2. Remove the accessories box.

3. Remove the box padding.

4. Take the LMM0802 and foam padding out of the cardboard box.

5. Remove the foam padding and take the LMM out of the protective wrapper.

   ⇨ You can now install the LMM at its setup location.

4.3 Positioning as a desktop device

The LMM0802 can be used as a desktop device in vertical or horizontal position. Make sure the surface where it is to be placed is solid and even.

An optional cable holder is available to route the cable cleanly and provide strain relief.

Horizontal positioning

Four adhesive feet for horizontal positioning are included in the scope of delivery. They can be attached to the underside of the device.

Vertical positioning

NOTICE
Vertical positioning
• Use the installation brackets and screws provided to secure the device to the surface. • Position the device so that the power connection is on top. This is the only way to ensure sufficient ventilation. Failure to comply voids the EIZO warranty.

4.4 Installing in a rack

The LMM0802 can be installed in a 19" rack. Use the mounting brackets provided for the installation where possible. Note the following:

⚠ CAUTION
Tightening torque
Excessive tightening torque when installing the Large Monitor Manager can damage the mounting surface. The tightening torque depends on the material of the selected mount. Adapt the tightening torque to the mount material accordingly.

Screw specifications for the mounting bracket	
No.	4
Thread	M4
Solidity class	8.8
Screw length	8 mm
Maximum torque for installation	3 Nm

Screw specifications for the rack	
No.	4
Thread	M6
Solidity class	8.8
Insertion depth	Min. 7 mm/max. 9 mm
Maximum torque for installation	3 Nm

⚠ CAUTION
Installing devices in the rack
• 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
• The device is designed for line power with a protective earth conductor.
• To avoid risk of electric shock, this device must only be connected to line power with a protective earth conductor.
• Contact the responsible building technician or a qualified electrician if you are uncertain whether the line power is equipped with a protective earth conductor.

⚠ CAUTION
Power cable and extension cable
• Not all power cables have the same rated values. Use a power cable approved in your country.
• 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.
• 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

NOTICE
Isolating the device from mains supply
Means of isolating the device from mains supply is by disconnecting the AC power line.
• Make sure that the AC power line is easily accessible.
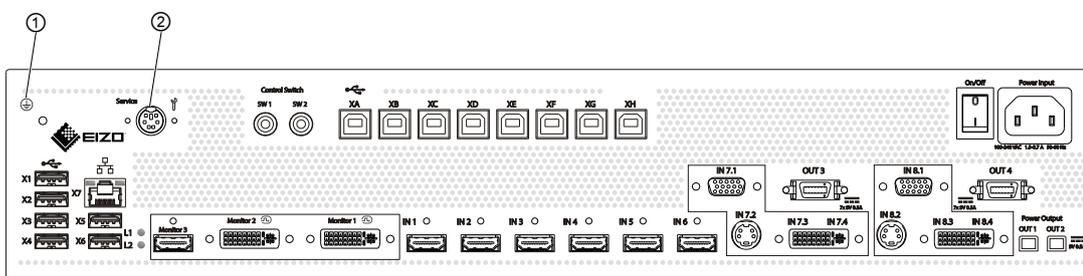
Connections	Name	Function
①	PE connection	Additional protective conductor connection.
②	PS2 socket (6x Mini-DIN connectors)	For service purposes only.
X1 - X6	USB Type A: Downstream (6x)	For external USB devices such as keyboard, mouse, etc., with a maximum connection value of 5 V and 500 mA.
X7	Network connection (RJ45)	For integrating into the existing network.
L1, L2	LEDs	Indicate the device status.
XA - XH	USB Type B: Upstream (8)	To control PCs connected as video sources.
Monitor 1	Dual Link DVI-I output	To connect an output monitor.

Connections	Name	Function
Monitor 2	Dual Link DVI-I output	To connect an output monitor.
Monitor 3	Single Link DVI-I downscale output with HDMI socket	To connect an FHD monitor; here, a 3840 x 2160 image can be scaled to FHD.
IN1 - IN6	DVI inputs (HDMI sockets that only process video signals)	For connecting digital video sources. Use the DVI-HDMI adapter that is provided.
IN7.1, IN8.1	VGA input (Sub-D, 15 pins)	For connecting analog video sources with VGA connector.
IN7.2, IN8.2	S-Video input (Mini DIN)	For connecting analog video sources with mini DIN connector.
IN7.3, IN7.4, IN8.3, IN8.4	DVI-D or DVI-A input	Digital or analog DVI input. Depending on the connected DVI cable and video source.
Power Output, OUT1, OUT2	HIROSE RP34L output	To connect external loads with a maximum connection value of 5 V and 500 mA.
Power Output, OUT3, OUT4	MDR output	To connect up to seven external loads with a maximum connection value of 5 V and 500 mA each.
Power input	IEC 60320 C14 input	Power supply input.
On/Off	Power switch	Switching on / switching off the device.

5.3 Input signals

Overview of supported input resolutions

Resolution	Inputs IN1 to IN6	IN7.3 / IN8.3	With Extron DMS 2000 20x20 DVI Matrix	With GefenPRO 16x16 DVI Matrix
720 p	Yes	Yes	Yes	Yes
1200 x 1600	Yes	No	No	Yes
1280 x 1024 (SXGA)	Yes	Yes	Yes	Yes
1536 x 2048 at 30 Hz	Yes	No	No	Yes
1600 x 1200 (UXGA)	Yes	Yes	Yes	Yes
1920 x 1080 VESA (FHD)	Yes	Yes	Yes	Yes
1920 x 1080 EIA (FHD)	Yes	Yes	Yes	Yes
1920 x 1080 24p (FHD)	Yes	Yes	No	Yes
1920 x 1200 (WUXGA)	Yes	Yes	Yes	Yes
2048 x 1536 at 30 Hz (QXGA)	Yes	No	No	Yes

Distribution of input signals

• Inputs IN1 through IN6 are digital inputs (HDMI) 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).

Note: Only DVI signals are supported, DHCP signals are not supported.

- Inputs IN7.1 and IN8.1 are analog inputs (VGA) with a maximum bandwidth of 170 MHz (for example: 1600 x 1200 at 60 Hz or 1920 x 1200 at 60 Hz reduced blanking).

- Inputs IN7.2 and IN8.2 are analog S-video inputs. All NTSC and PAL standards are supported.

- Inputs IN7.3 and IN8.3 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).

- Inputs IN7.4 and IN8.4are analog inputs (DVI-A) with a maximum bandwidth of 170 MHz (for example: 1600 x 1200 at 60 Hz or 1920 x 1200 at 60 Hz reduced blanking).

Maximum horizontal resolution

- The maximum horizontal resolution at inputs IN1 through IN6 is 2048 pixels.

- The maximum horizontal resolution at inputs IN7.x through IN8.x is 1920 pixels.

Note
Limitations for video inputs IN7 and IN8
Video inputs IN7.1, IN7.2, IN7.3, and IN7.4 as well as video inputs IN8.1, IN8.2, IN8.3, and IN8.4 are each joined together into a group: • A video signal can be connected to each of these video inputs. • No more than one video signal from each group can be displayed in a layout. If an attempt is made to display two video signals from the same group in one layout, the channel with the higher input number is hidden and the following symbol is shown:

Image refresh rates

EIZO recommends a refresh rate of 60 Hz because the video output signal on the LMM0802 has an image refresh rate of 60 Hz.

Video bandwidth

Note
Automatic adaptation to maximum video bandwidth
When the maximum video bandwidth is exceeded during operation of the Large Monitor Manager, the applied video signals are adjusted according to the following rules: • The scaling factor of a video signal may be less than 1. • The scaling factor of the video signal with the largest scaling factor is reduced. • If that is insufficient, the scaling factor of the video signal with the next largest scaling factor is reduced, etc., until the maximum video bandwidth can be maintained.

5.4 Monitor options

The LMM0802 supports various output resolutions. This means various monitors can be connected.

Output resolution (monitor 1 & monitor 2)	Downscale output (monitor 3)	Single User / Dual User
4096 x 2160 (8 MP)	Not activated	Single user only
3840 x 2160 (8 MP)	Enabled	Single user only
2560 x 1600 (4 MP)	Not activated	Both possible
2560 x 1440 (3.7 MP)	Not activated	Both possible
1920 x 1200 (2.3 MP)	Not activated	Both possible
1920 x 1080 (FHD)	Not activated	Both possible
1600 x 1200 (1.9 MP)	Not activated	Both possible

Note
If the application permits it, a single monitor can be connected as well. In this case, workplace settings have to be made.

5.5 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.

Proceed as follows to connect the LMM0802:

1. If necessary, connect a matrix or a splitter.
   See also Expand LMM with Extron DMS 2000 20x20 DVI matrix [▶ 25] or Expand LMM with GefenPRO 16x16 DVI matrix [▶ 26] or Expand LMM with PDS0800-HD splitter [▶ 28]

2. Connect the monitor and video sources.
   See also Connecting monitors and video sources [▶ 23].

3. Connect the video source computer to be operated.
   See also Connecting the PC as the video source [▶ 23].

4. To operate the LMM locally, connect the keyboard and mouse each to a to USB input (X1 - X6).

5. Connect the LMM and control PC to the network if you want to operate via remote or access network resources.
   See also Connecting to the network [▶ 24].

6. Connect a protective conductor to the LMM.

7. Connect the LMM to the power supply.
   See also Power supply connection [▶ 24].

   ⇨ The LMM0802 is connected and can be set up.

5.5.1 Connecting monitors and video sources

1. Connect the monitor(s) to connectors "Monitor 1" and "Monitor 2" using DVI cables suitable for the resolution. For example, to connect an 8 MP monitor, use two Dual Link DVI cables.

   Note: To display the video sources correctly, the monitor or monitors have to support the output resolution of the LMM.
   See also Monitor options [▶ 22].

2. Optionally, a monitor with Full HD resolution (1920 x 1080 @60 Hz) can be connected to the "Monitor 3" output. A reduced image of the 8 MP main monitor is generated there.

3. If necessary, connect the keyboard and mouse to connection panels X1 - X6.

4. Connect the video sources according to the following table:

PC video output	Large Monitor Manager video inputs (IN1 - IN8.4)
DVI-D	• When connecting to connection panels IN1 through IN6, use the HDMI-DVI adapter cable from the scope of delivery. **Note:** If you use a matrix, then you need to connect the number of outputs stated in the "Outputs connected to the LMM" system setting to the LMM in the correct sequence. • When connecting to connection panels IN7.3 and/or IN8.3, use a commercially available DVI-D cable.
DVI-A	• When connecting to connection panels IN7.4 and/or IN8.4, use a commercially available DVI-I cable. • If you assign connection panels IN7.1 and/or IN8.1, use a commercially available DVI-VGA adapter on the PC.
VGA	• When connecting to connection panels IN7.1 and/or IN8.1, use a commercially available VGA cable. • When connecting to connection panels IN7.4 and/or IN8.4, use a commercially available VGA-DVI adapter on the LMM0802.
S-Video	• When connecting to connection panels IN7.2 and/or IN8.2, use a commercially available S-video cable.

5.5.2 Connecting the PC as the video source

In order to be able to configure a PC as the video source with the LMM0802, you have to connect the LMM to the video source PC via a USB port. Use a commercially available USB cable with USB type A and USB type B connectors.

Connect PC as follows:

1. Connect the graphics output of the PC to an input of the LMM.

2. Connect the USB type A connector of the USB cable to the USB port of the video source computer.

3. Connect the USB type B connector of the USB cable to a USB socket (XA - XH) of the LMM.

4. Record the USB socket used as well as the corresponding input on the LMM.

   ⇨ You will need this information to configure the PC link as the video source on the LMM.

Note
In "Focused Mode", you can operate applications on the PC [▶ 99].

5.5.3 Connecting to the network

If you want to access the LMM0802 via a network (remote access), a network connection has to be established between the LMM and control PC.

• Use commercially available network components for this purpose, such as network cables, network hubs, and switches.

• Connect the network cable to socket X7 of the LMM.

• Contact your network administrator with any questions on the network connection.

5.5.4 Power supply connection

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

⚠ CAUTION
Risk of damage to the device
• Only use power cables or connection cables with protective earth conductor and appliance plug according to DIN 49547, IEC 60320 (max. length 3 m, cable e.g. H05VV-F 3x1.0 mm^2). 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.

Power supply connection

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

To connect the LMM0802 to line power:

1. Check the permissible power supply range.

2. Connect the power cable, approved in your country, to the "Power Input" connection panel.

3. Switch the device on at the main switch.
   CAUTION: After the device has been switched on at the main switch, the device must only be switched off when it is operational. Otherwise, the device could be damaged.

   ⇨ The device is operational when LEDs L1 and L2 illuminate green.

The LMM0802 has to be set up the first time it is used.

See also

Set-up procedure [▶ 33]

5.6 Expanding the system

The LMM0802 supports the following devices when expanding the connection options:

• Extron DMS 2000 20x20 DVI Matrix

• GefenPRO 16x16 DVI Matrix

• PDS0800-HD Splitter

Note
To activate operation with the matrix or splitter, you have to perform the appropriate activations in the "System settings" dialog window. See also Settings [▶ 44].

5.6.1 Expand LMM with Extron DMS 2000 20x20 DVI matrix

The Extron DMS 2000 20x20 has 20 DVI inputs and outputs each. Of the 20 input signals, up to 6 signals can be processed by the LMM0802 and simultaneously displayed. The other matrix video outputs can be controlled with the LMM user interface.

Two additional signals can be processed by the LMM via inputs 7.x and 8.x. These, however, may not come from the matrix.

System overview with the Large Monitor Manager

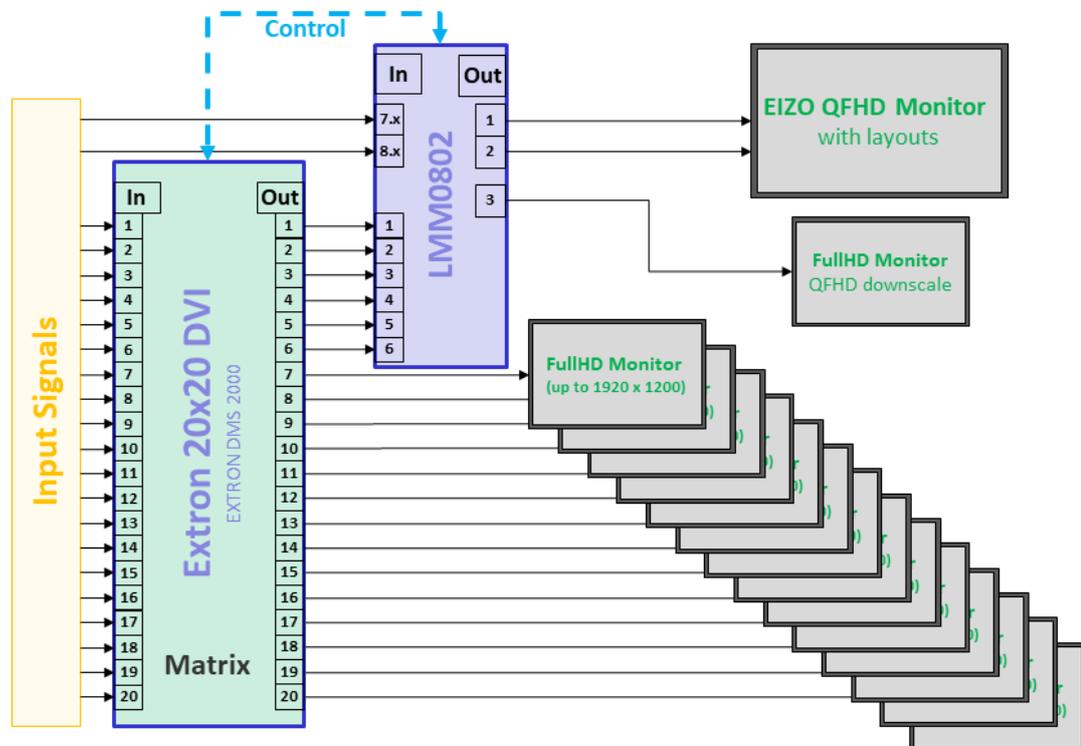For example, the system expanded with the Extron 20 x 20 DVI matrix has the following schematic layout:

Fig.: LMM0802 with Extron 20x20 DVI matrix (example with 6 signals from the matrix to the LMM)

Note
• The matrix must be operated via the Large Monitor Manager. Operating the matrix using device keys or remote control can result in unexpected video management system behavior.
• The full HD monitors connected to the matrix display the input signals of the matrix as a full-size image without a layout feature.

Connect the Extron DMS 2000 to the Large Monitor Manager (LMM)

Note
The matrix exclusively supports DVI-D signals.

1. Connect the SD-Sub (DE-9P) plug of the adapter cable supplied with the matrix to the RS232 socket of the matrix, and the USB A plug to a USB input (X1 to X6) of the LMM.

2. Connect a maximum of 20 input signals to the DVI inputs of the matrix.

3. **Note:** The number of DVI outputs to be connected in this step depends on the "Outputs connected to the LMM" system setting within LMM.
   Connect DVI outputs 1 - 4 (6) of the matrix to inputs IN 3 (IN 1) to IN 6 of the LMM. Use the DVI/HDMI adapter cable supplied with the LMM for this purpose.
   Note: Matrix output signals may not be connected to inputs 7.x and 8.x.

4. Connect the desired number of monitors to the free single link DVI outputs of the matrix.
   Note: Monitors with a resolution of up to 1920 x 1200 pixels and a pixel frequency of 165 MHz are supported.

5. Connect the matrix to the power supply.

6. Switch on the matrix using the power switch.

   ⇨ The matrix is operational and can now be used in accordance with the LMM system settings.

5.6.2 Expand LMM with GefenPRO 16x16 DVI matrix

The GefenPRO 16x16 DVI Matrix has 16 DVI inputs and outputs each. Of the 16 input signals, up to 6 signals can be processed by the LMM and simultaneously displayed. The other matrix video outputs can be controlled with the LMM user interface.

Two additional signals can be processed by the LMM via inputs 7.x and 8.x. These, however, may not come from the matrix.

System overview with the Large Monitor Manager

The system expanded with the matrix and splitter has, for example, the following schematic layout:
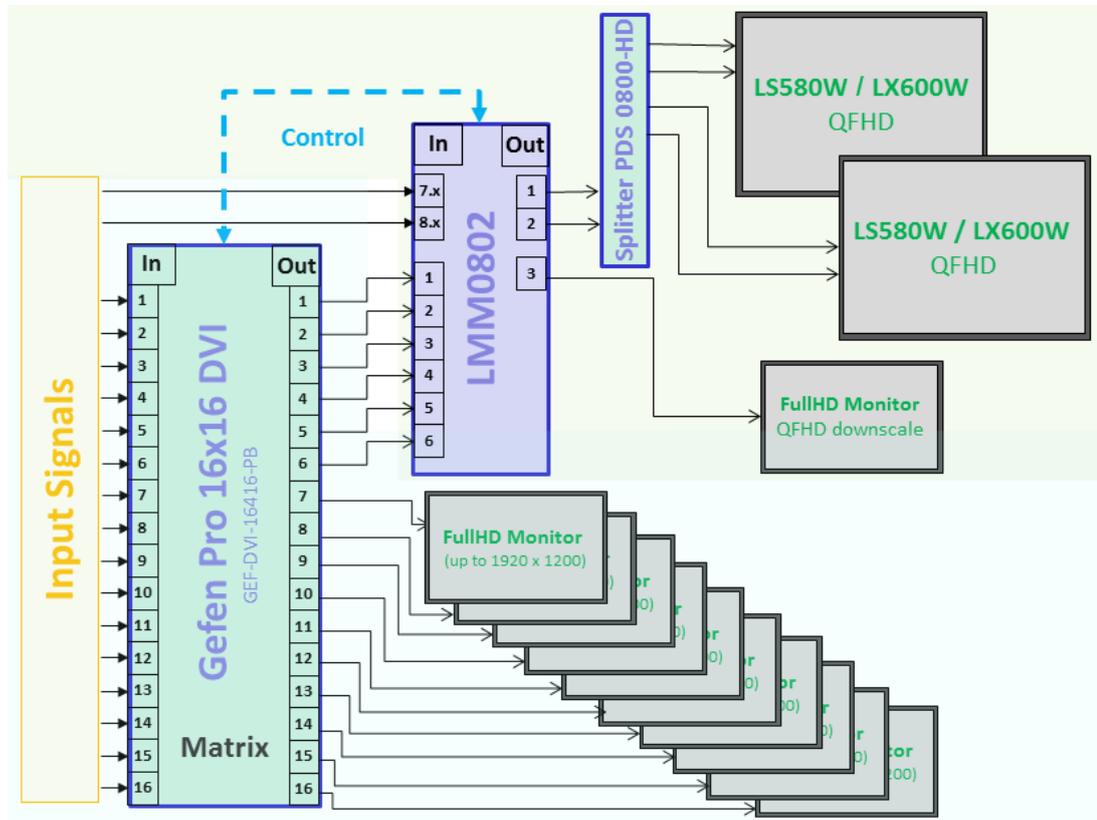

Fig.: LMM0802 with splitter and Gefen 16x16 DVI matrix (example with 6 signals from the matrix to LMM)

| Note |
| --- |
| • The matrix must be operated via the Large Monitor Manager. Operating the matrix using device keys or remote control can result in unexpected video management system behavior. |
| • The full HD monitors connected to the matrix display the input signals of the matrix as a full-size image without a layout feature. |

Connecting the GefenPRO 16x16 DVI matrix to the LMM0802

Note
The matrix exclusively supports DVI-D signals.

1. Connect the SD-Sub (DE-9P) plug of the adapter cable supplied with the matrix to the RS232 socket of the matrix, and the USB A plug to a USB input (X1 to X6) of the LMM.
2. Connect a maximum of 16 input signals to the DVI inputs of the matrix.

3. **Note:** The number of DVI outputs to be connected in this step depends on the "Outputs connected to the LMM" system setting within LMM.
Connect DVI outputs 1 - 4 (6) of the matrix to inputs IN 3 (IN 1) to IN 6 of the LMM. Use the DVI/HDMI adapter cable supplied with the LMM for this purpose.
Note: Matrix output signals may not be connected to inputs 7.x and 8.x.

4. Connect the desired number of monitors to the free single link DVI outputs of the matrix.
Note: Monitors with a resolution of up to 1920 x 1200 pixels and a pixel frequency of 165 MHz are supported.

5. Connect a protective conductor to the matrix.

6. Connect the matrix to the power supply.

7. Switch on the matrix using the power switch.

⇨ The matrix is operational and can now be used in accordance with the LMM system settings.

Note
Lock the matrix
To ensure problem-free use of the expanded system, the matrix may only be operated via the LMM.
Prevent operation on the matrix by locking it. Press the "Lock" key; the key illuminates blue and "LOCK MODE" appears on the matrix display:
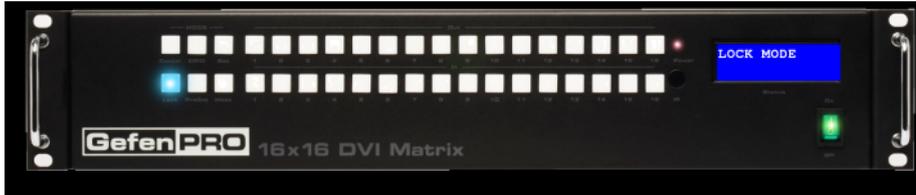
5.6.3 Expand LMM with PDS0800-HD splitter

With a PDS0800-HD Splitter, the output signals of the LMM0802 can be duplicated and, for example, the 8 MP output signals of the LMM0802 can be displayed on an additional 8 MP monitor.

Connect PDS0800-HD Splitter

Note
Observe the information in the instructions for use of the PDS0800-HD Splitter.

• Connect the PDS0800-HD Splitter to the Monitor 1 and Monitor 2 outputs of the LMM0802.

• Connect the monitors to the splitter.

6 Configuring

⚠ CAUTION
Configuration during operation
Configuration tasks should not be performed during medical procedures. Such actions can present a risk to patients if, for example, important images are no longer displayed.

This chapter describes how to configure the LMM0802 with the user interface:

- Explanations of frequently-used terms can be found in the following chapter "Definition of terms".

- An overview of symbols can be found in the chapter "Basic symbols [▶ 30]".

- The LMM has to be configured for the first use of the LMM0802. The chapter "Set-up procedure [▶ 33]" explains how to proceed.

- The remaining chapters describe the settings available on the individual sidebars and other implemented functions.

- The descriptions apply to operation with or without a matrix, unless otherwise indicated.

6.1 Definition of terms

The following terms are used to describe the Large Monitor Manager LMM0802 (LMM) user interface.

Term	Explanation
Active window	A window is active when the connected video source is controlled in "Focused Mode" directly. The mouse can move only within the limits of the window.
	An active window is opened by double-clicking on a window. It is marked by way of a green border (preset).
Video source	Source of a video signal, such as a PC. The video source must be connected to a video input of the LMM.
Extended window	If multiple video signals from a video source are connected to the LMM, they can be displayed in various windows. If one of these windows is activated, the other windows of the video source are activated automatically. You can move the mouse pointer beyond the borders of the window.
Inactive window	A window is inactive if only the video content of the connected video source is displayed. Control and operation with the keyboard and mouse are not possible in an inactive window.
Instance	An instance is the configured representation of a connected video source. A video source may have several instances, which can be displayed in a layout window. It is possible to display several instances of a video source in a layout at the same time.
Window	A window is an area in a layout with a prescribed position and size. The instance of a video source is displayed within a window. The content of a window can be moved to another window via Drag & Drop.

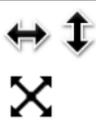| Term	Explanation
Focused Mode (operating mode)	In "Focused Mode", a video source PC is operated using the connected mouse and keyboard. The mouse pointer can move within the boundaries of the window. "Focused Mode" is activated by double-clicking a window with the mouse, provided it is configured correctly. To go back to "Overlay Mode", press the keys to exit the active window (ALT + Space key is the default setting). Alternatively, hold down the left and center mouse buttons for approx. 2 seconds.
Tooltip	Brief status and resolution information for each 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, number and size) of windows on the screen.
Overlay Mode	In "Overlay Mode", the user interface of the LMM is operated using the connected mouse and keyboard.
Remote access	Operation of the LMM via LAN or WLAN.
Sidebar	The sidebars contain the operating menus. They are positioned on the outer edges of the screen (top, bottom, left, and right) and open when the mouse pointer is moved there. The sidebar closes when you move the mouse pointer away. During operation via remote access, the sidebars can be opened via symbols at the respective edges of the display area. Move the cursor to the respective symbol. Please note that some information is visible only to administrators or users with the appropriate rights. Some sidebars are therefore not visible unless a password is entered.
USB input	Existing connection on the connection panel of the LMM.
Video input	Existing connection on the connection panel 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.
View Management (VM)	Sets the image content for the connected monitors using a computer or the or a panel PC with touchscreen and suitable EIZO software.

6.2 Basic symbols

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

General symbols

Symbol	Description
⬅➡⬇⬆ ◀◀▶▶ ⬇⬇⬆⬆	Move in the menu by clicking the respective navigation key. **Note:** A navigation key displayed in gray means there is no further selection available. **Note**: Scrolling is possible in the menus display the corresponding buttons. This is true for both operation in the device and remote operation. To scroll, one of the menu buttons or another menu objects such as an instance, has to be selected.

Symbol	Description
	Set the respective sidebar by clicking the pin.
	During layout editing, individual windows can be pinned, and therefore cannot be changed.
	By clicking and holding the mouse button on the EIZO logo, a dialog window or menu can be moved.

Mouse pointer symbols

Symbol	Description
	The video source (such as a PC) displayed in a window can be controlled by mouse and keyboard.
	Double-clicking the left mouse button activates the window, and the video source can be controlled.
	Note: To cancel, click Alt Space. This is the default key combination from the factory. It can be changed by the administrator.
	The video source (such as a PC) cannot be controlled with the mouse or keyboard.
	Instances within a layout can be interchanged using "drag & drop", or an additional instance can be dragged from the "Instances" sidebar into the layout
	Default user interface cursor.
	The mouse cannot be used as use of the mouse has been disabled in the instance configuration of the video input.
	Please wait.
	The Large Monitor Manager is busy processing the selected function and cannot process additional input.
	Pipette symbol to select a color from the live image during the instance configuration of a video input.
	Dynamic Layout (optional): The symbols are displayed when the mouse pointer is moved on to the borders or corners of the window.
	Dynamic Layout (optional): Panning a zoomed window section: The symbol is displayed when the mouse wheel is pressed.

Symbols in the title bar

Symbol	Description
	The video source is presented with the aspect ratio 1:1.
	The video source (such as a PC) can be controlled with the mouse.
	The video source (such as a PC) can be controlled with the keyboard.

Symbol	Description
	The video source (such as a PC) can be controlled with the keyboard and mouse.
	The video source is displayed with reduced image refresh rate. See also Creating or editing layouts [▶ 82].
	Display with graph optimized scaling. **Note:** The symbol is displayed only if a scale of less than 1:1 is set in the layout.
	Synchronization of the instance is activated, and the input signal can be displayed as synchronized.
	Synchronization of the instance is activated, by the input signal cannot be displayed as synchronized because, for example, the input signal of another instance is already synchronized.

Symbols for instances

Symbol	Description
	The instance is deactivated.
	The instance is active, but there is no video signal.
	The instance is active, but no preview thumbnail is created. **Note:** The symbol is displayed only for remote access.
	The instance was deleted.
	The instance cannot be displayed because the assigned input cannot be found, for example, after a change of operation with or without matrix.
	The instance cannot be displayed because there are insufficient resources available.
	The selected instance cannot be displayed because another instance is already active, or the assigned input cannot be found. For example, the symbol is displayed if you try to display more matrix inputs than the number established in the Video Matrix Switcher settings.
	This symbol is displayed if a matrix is active and the input status of the video source cannot be determined.
	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 Set-up procedure

The Large Monitor Manager (LMM) can be set up in one of the following two ways:

- Locally on the Large Monitor Manager screen using the mouse and keyboard.

- Remotely via a PC with a network browser.

Note
Remote access or local access
• To prevent conflicts during access, the LMM should be set up either locally or via remote access. EIZO recommends only using one type of access.
• In remote access, you open the sidebars using the symbols displayed on the edges.
• The sidebars during remote access appear somewhat different than the sidebars for local operation, but they are functionally identical.
• In remote access, windows are identified by their preassigned thumbnail; live images are not transmitted. The instance symbol is used if no thumbnail has been preassigned.
• EIZO recommends checking on the original image as to whether the changes made meet the requirements.

Prerequisite

- The LMM0802 and the system components are connected and set up.
  See also Connection Procedure [▶ 22].

- If you want to set up the LMM via remote access, you have to connect the LMM to the network and know the current network address of the LMM.
  See also Integrating the Large Monitor Manager into the network [▶ 34] and Calling up system information [▶ 37].

Procedure

Proceed as follows to set up the LMM0802:

1. If you want to access the LMM via remote access, enter "<Network address LMM> /config" in the browser address line.

2. Log on to the LMM as Administrator.
   See also Logging in and out [▶ 40].

3. Perform the base settings, such as language and network configuration.
   See also Settings [▶ 44].

4. Perform the input and output configuration.
   See also "Input and output configuration" sidebar [▶ 63].

5. Create and configure instances.
   See also Creating and configuring instances [▶ 74].

6. Select a suitable layout. Create a new layout if necessary or modify an existing one.
   See also Creating or editing layouts [▶ 82].

7. Assign the instances to the windows of the selected layout.
   See also Editing the window in the selected layout [▶ 83].

8. If necessary, repeat steps 5 through 7.

9. If you have configured multiple layouts, select the default layout. The default layout is identified in the "Layout" sidebar with an asterisk ⭐.
   Note: The default layout is displayed when switching on or, after a power failure, within 10 seconds after power is restored.

10. Log off as Administrator.

⇨ The LMM0802 is now set up.

6.4 Integrating the Large Monitor Manager into the network

The following describes how to integrate the LMM into a local network.

Note
• The description is intended for service personnel with corresponding knowledge of local networks.
• The system information displays the current LMM network address. In the "Base settings" sidebar click ⓘ.

Prerequisite

⚠ WARNING
Unauthorized access
To protect the LMM from unauthorized access, enter the network addresses that are permitted to access the LMM in the router settings of the local network.

• The control PC for remote access is set up correctly in the local network.

• The LMM is connected to the local network and switched on.

• With local access to the LMM: Keyboard and mouse are connected.

Procedure

1. With remote access to the LMM: Enter the address "<169.254.213.144/config>" in the browser on the PC.
   Note: IP address 169.254.213.144 is the fallback address of the LMM, which can be accessed in case of error. It cannot be changed. To enable access, the address must be permissible and routed within the local network.
   Alternatively, you can also access using the current network address of the LMM.

2. Log on in the "Base settings" sidebar as Administrator.
   See also Logging in and out [▶ 40].

3. Open the "Network settings" dialog window in the "Base settings" sidebar and make the required settings.
   See also Setting the network connection [▶ 53].

4. Close the dialog window with "OK".

5. Check the remote access by entering the set network address in the browser on the control PC.

⇨ The LMM connection to the network is correct if the LMM user interface appears and can be operated.
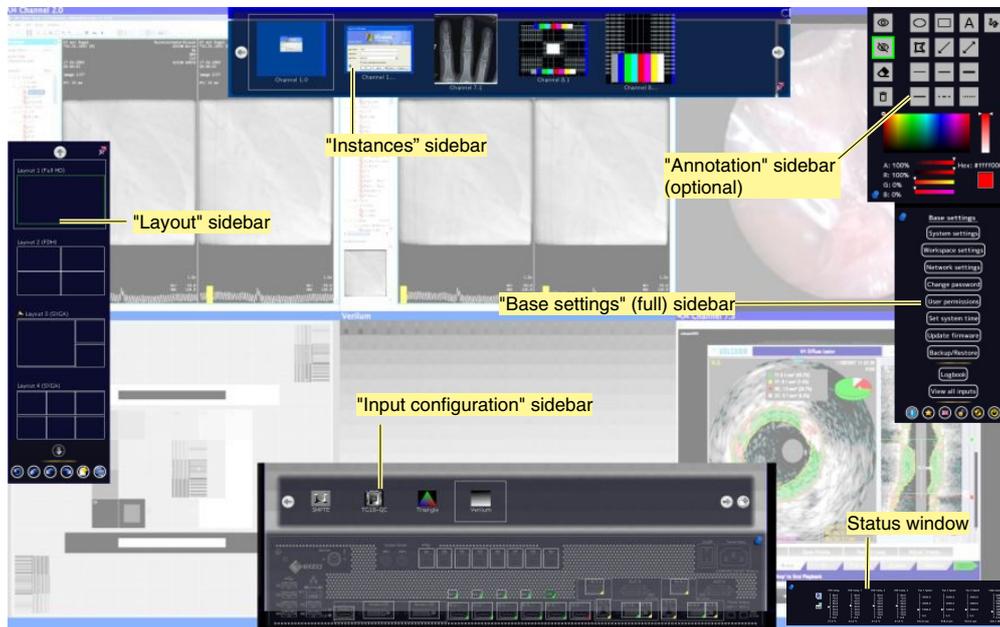
6.5 Overview of the sidebars

Fig.: Overview of the sidebars

The following sidebars of the LMM0802 user interface are available regardless of the user logged in:

- "Base settings" sidebar: This sidebar for system configuration is located on the right center edge of the screen and is available in three versions. It is available as a "Base setting" (basic) sidebar for a standard user, as a "Base setting (extended)" sidebar for a user with extended rights ("Advanced") and as "Base setting (full)" sidebar for an administrator ("Service").

- "Layout" sidebar: This sidebar on the left edge of the screen is available to all users. Standard users can only select layouts, whilst a user with extended rights and an administrator can create and edit layouts.

- "Input configuration" sidebar: The sidebar at the lower center edge of the screen for configuring video sources is not available to standard users.

- "Instances" sidebar: The sidebar at the upper center edge of the screen for configuring instances is not available to standard users.

- "Annotation" sidebar (optional): The "Annotation" sidebar in the upper right hand corner of the screen can be installed as a software extension, and offers graphic functions for marking the displayed screen content.

- Status window: The status window in the lower right-hand corner of the screen shows the current state of hardware components.

6.6 "Base settings" (basic) sidebar

The "Standard user" role is active each time upon booting the Large Monitor Manager. The "Base settings" (basic) sidebar is displayed.

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

Button	Description
	Displays the general system information [▶ 37].
	Opens Switch preset [▶ 38].
	Changes the language [▶ 40] 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.

See also

User permissions [▶ 55]

6.6.1 Calling up system information

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

Indicator	Description
Device information	Information on the hardware and software versions of the LMM0802.
Monitor @ output	Information on the monitor connected at the respective output.
Network	Information on the network settings specified for the LMM0802. See also Setting the network connection [▶ 53]. The MAC address of the network adapter and the IP address of the LMM0802 are specified. • The address assigned by the DHCP server or given manually by the administrator is displayed as the IP address. Nothing is displayed if an IP address was not assigned. *Standard IP address (without DHCP): 10.1.1.104* • IP address 169.254.213.144 is the fallback address of the LMM, which can be accessed in case of error. It cannot be changed.
USB board	Information on the hardware / firmware of the USB board.
Multiplexer	Information on the firmware version of inputs IN7.1 - IN8.4.
FPGA	Information on the FPGA version.
Common interface	Information on the common interface version.
Legal information	Button to display the end user license agreement (EULA) for the installed software. Please read the license agreement.

6.6.2 Select Preset

A preset in a series of saved system configuration settings optimized for specific workflows or that correspond to the respective user's requirements.

The following settings are saved:

- Available layouts
- Available instances and their settings.
- Standard layouts for all monitors and workspaces.
- Language setting.

Not saved:

- System settings.
- Input settings.
- Workspace settings.
- Network settings.
- User permissions.

Procedure

To select a preset:

1. Click ⭐ in the "Base settings" sidebar.

   ⇨ The "Switch preset" dialog window opens.

2. Select the desired preset using ≪ or ≫.

Note
When you exit the dialog window with "OK", the LMM reboots. This happens regardless of whether you switch presets.

3. Click "OK".

   ⇨ The LMM starts with the set preset.

6.6.3 Changing Switch preset

Note
In order to change Switch preset, you need to be logged in as an "Advanced" or "Service" user. See also User permissions [▶ 55] or Logging in and off [▶ 40].

To change Switch preset:

1. Click ⭐ in the "Base settings" (extended) or "Base settings" (full) sidebar.

    The "Switch preset" (full) dialog window opens.

2. You can perform the following changes to Switch preset:

    – To create a new preset, click 🔶 and enter a name.

    – To copy the active preset, click 📋 and enter a name.

    – To rename the selected preset, click 🔷 and enter the new name.

    – To delete the selected preset, click ❌ and then confirm the deletion.
       Note: The active preset cannot be deleted.

3. To select a preset, click ◀ or ▶ until the desired preset is displayed.
    Note: Alternatively, you can click on the preset names to bring up a selection list.

4. To discard the changes you have made to the preset selection, click "Cancel", or click "OK" to confirm.
    Note: When you exit the dialog window with "OK", the LMM always reboots. This happens regardless of whether you switch presets.

6.6.4 Change the language

Note
The default language is displayed each time the LMM0802 starts. To change the default language you have to be logged in as the administrator and change the language in the "Settings" dialog window.

You can switch between the following languages:

- German

- English (default)

- French

- Japanese

- Chinese

To change language, proceed as follows:

1. Click the button for the symbol of the set language in the "Base settings" sidebar.

2. Continue clicking until the symbol of the desired language is displayed.

6.6.5 Logging in and out

The "Default user" role is active each time after booting the LMM0802. The "Base settings" (basic) sidebar is displayed.

To log in as administrator ("Service") or user with extended rights ("Advanced"), proceed as follows:

1. Click in the "Base settings" sidebar.

   The logon dialog window is displayed:
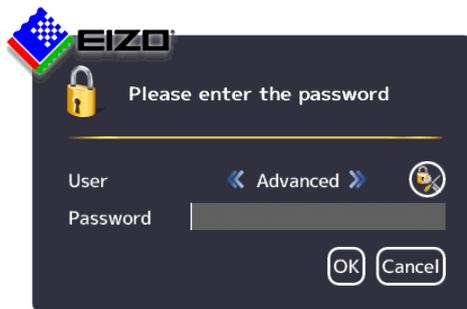
2. To log on as administrator, select the "Service" user with or and enter the password "super".

3. To log on as a user with extended rights, select the "Advanced" user with or and enter the password "plus".

Note
• To activate the "Default user" role again, click ![lock icon] .   • You can use Change passwords [▶ 55].   • Passwords can be reset. A master password is created in this case from the MAC address of the Large Monitor Manager. The master password is generated upon request by EIZO.   • You can enter the master password after clicking ![icon] .

6.6.6 Rebooting, shutting down or switching on and off

Note
Rebooting or shutting down via the user interface
The LMM0802 can be rebooted or shut down via the user interface.
The administrator can set whether a default user can shut down and reboot the Large Monitor Manager. If the corresponding rights have not been assigned, the associated button is deactivated.   See also User permissions [▶ 55].

Rebooting the LMM

• To reboot the Large Monitor Manager, click ![reboot icon] in the "Base settings" sidebar.

• This opens a query window to reboot the Large Monitor Manager.

Shutting down the LMM

• To shut down the Large Monitor Manager, click ![power icon] in the "Base settings" sidebar.

• This opens a query window to shut down the Large Monitor Manager.
  Note: The LMM can be switched back on using Wake on LAN.

Switching on and off

The LMM0802 has a power switch to switch it on and off.

Note
Switching on and off using the power switch
• Before switching off using the power switch, the LMM must be shut down via the user interface.   • After switching off using the power switch, wait until LEDs L1 and L2 are off, or LED L1 is illuminated only weakly before switching back on again. This takes at least 15 seconds.

6.7 "Base settings" (extended) sidebar

Note
• To be able to access the "Base settings" (extended) sidebar, you have to be logged on as a user with advanced rights ("Advanced").
• The functions to be executed on the "Base settings" (extended) sidebar may differ depending on how you have assigned the rights. See also User permissions [▶ 55]. The following "Base settings" (extended) describes the sidebar as provided.

To open the sidebar, move the mouse pointer to the right center edge of the screen.
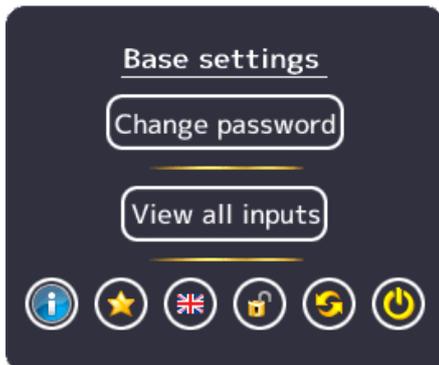
Fig.: "Base settings" (extended) sidebar in factory default state

In the "Base settings" (extended) sidebar shown you can run the following functions:

• Functions of the "Base settings" (basic) sidebar [▶ 36].

• Changing the password [▶ 55].

• View all inputs [▶ 62].

• Changing Switch preset [▶ 39].

6.8 "Base settings" (full) sidebar

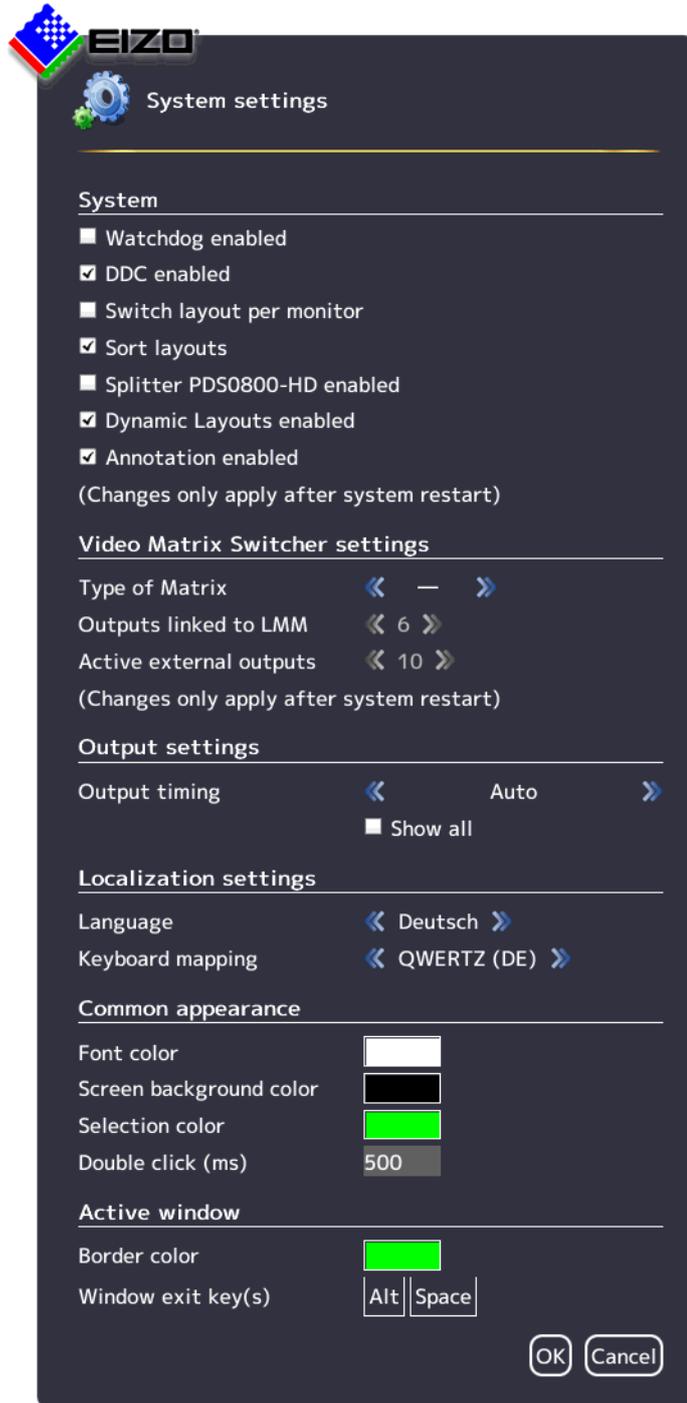| Note |
|---|
| To access this sidebar, you have to be logged in as an administrator ("Service"). |

In the "Base settings" (full) 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 sidebar, move the mouse pointer to the right center edge of the screen.
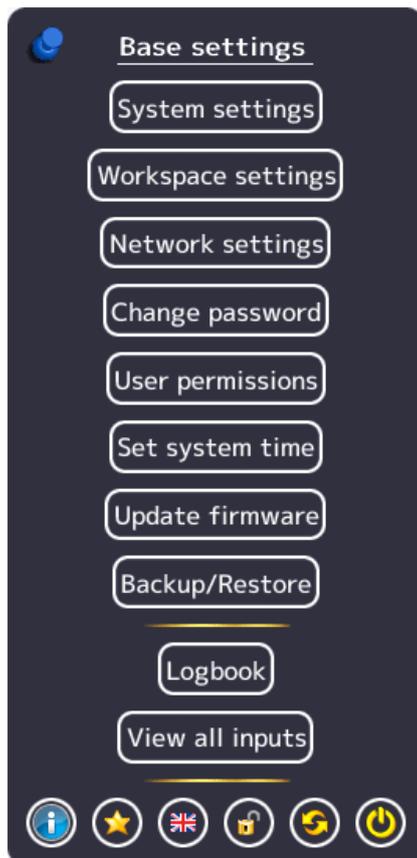
6.8.1 Settings

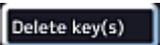To open the "System settings" dialog window, click "Settings" in the "Base settings" (full) sidebar.

You can make the following settings:

Setting	Description
System **Note:** Changes do not go into effect until the LMM re-boots.	**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. *Default setting: Watchdog is enabled.*
	DDC enabled The monitor information, which is stored as EDID (Extended Display Identification Data) in the monitor, is read via the Display Data Channel (DDC). This process can be deactivated. *Default setting: DDC is enabled.*
	Switch layout per monitor With this setting the layout can be set per monitor output. If disabled, the layout is set per workspace. **Note:** This setting only works when a workspace includes multiple monitors. *Default setting: Switching layout per monitor is disabled.*
	Sort layouts When this setting is enabled layouts are sorted alphabetically. **Note:** If you update a firmware version that did not support this function, the function will remain disabled until enabled or you "Restore factory defaults". *Default setting: Sort layouts is enabled.*
	Splitter PDS0800-HD enabled This setting integrates a connected PDS0800-HD Splitter into the system. It can communicate with monitors connected to the splitter. **Note:** Communication is possible only with EIZO LadisPro monitors. Deactivate this setting when other monitors are used. *Default setting: Splitter PDS0800-HD is disabled.*
	Dynamic Layouts enabled **Note:** This function is optionally available in a software extension. By using this setting, displayed windows can be enlarged or reduced dynamically from their borders. *Default setting: Dynamic Layouts is enabled.*
	Annotation enabled **Note:** This function is optionally available in a software extension. This setting enables the "Annotation" sidebar in the upper right corner of the screen. The "Annotation" sidebar is for marking image contents. *Default setting: Annotation is enabled.*

Setting	Description
Video Matrix Switcher settings	**Type of Matrix** This setting integrates a connected matrix into the video management system. **Note:** You have to adapt the assignment of instances when switching between operation with and without the matrix. The following options are available: • **-** (none) • **Extron:** One Extron DMS 2000 20x20 DVI Matrix is connected. • **Gefen:** One GefenPRO 16x16 DVI Matrix is connected. *Default setting: "-" none)*
	Outputs linked to LMM **Note:** If "-" is selected as the matrix type, then the setting is disabled. The maximum number of matrix outputs connected to the LMM is determined with this setting. **Note:** Only the outputs connected to the LMM can be laid out on the LMM. The following options are available: • **4:** Outputs 1 to 4 on the matrix are connected to inputs 3 to 6 on the LMM. Inputs 1 and 2 are available for other video sources. • **6:** Outputs 1 to 6 on the matrix are connected to inputs 1 to 6 on the LMM. *Default setting: 6 (when the matrix is connected)*
	Active external outputs The number of active matrix outputs that can be operated via LMM view management is set here. **Note:** If "-" is selected as the matrix type, then this setting is deactivated. *Default setting: 10 (when the matrix is connected)*
Output settings	**Output timing** The timing to be output at the monitor output is selected here. The timings stored in the monitor EDID are available for selection. If "Show all" is selected, all timings that the LMM can display are shown. *Default setting: Auto* **Note:** The "Layout" sidebar only displays the layouts that match the resolution of the selected output timing. **CAUTION:** The selected timing has to be supported by the connected monitor. Otherwise, no image or only a partial image may be displayed and it will not be possible to operate the LMM with mouse and keyboard because the sidebars will be outside the area shown. The LMM provides timings that support the "triple buffer mode". These timings can be set to eliminate the tearing problems associated with video images. You will recognize the timing through the marking ³B. To eliminate tearing, the triply buffer timing has to be below the input timing. The best triple buffer timing is one that is as little as possible below the input timing. **CAUTION:** If a timing is used in triple buffer mode, it can result in frame drops when displaying single images. In addition, the images will be displayed with a slight delay (16.67 ms to 33.34 ms).

| Setting	Description
Language set-tings	**Language** The language of the dialog windows and menus is set here. Click ◀ or ▶ to make the setting. *Default setting: English*
	Keyboard mapping Define the keyboard mapping here. Click ◀ or ▶ to make the setting. *Default setting: QWERTY (US)*
Common appear-ance	**Font color** Click the color box to change the font color of dialog windows and menus. *Default setting: white*
	Screen background color This color will be seen on the screen as long as no instances are displayed in the window or images in the window area. Click the color box to change the color. *Default setting: black*
	Selection color The currently selected input is displayed in the "Input configuration" sidebar 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. *Default setting: green*
	Double click (ms) Set the double click speed here. *Default setting: 500 ms*
Active window	**Border color** The border color of an active window can be defined here. *Default setting: green*
	Window exit key(s) Proceed as follows: 1. Double-click the left mouse button on a window in the layout. You are now in Focused Mode and can operate the video source directly. The mouse can move only within the limits of the window. 2. To go back to "Overlay Mode", use the "Window exit key(s)". *Default setting:* Alt Space

Setting	Description
Active window **(only for local operation)**	**Changing the key combination** To change the key combination for exiting the active window, proceed as follows: 1. In the "Settings" menu in the "Base settings" sidebar click [Alt][Space]. The menu opens. 2. Click [Delete key(s)] to delete the current key combination. 3. Press the keys required on the keyboard. A new key combination is set. EIZO recommends that you always define keys to exit the active window; otherwise, the focus will be "caught" in the active window. A maximum of three keys, pressed simultaneously, can be allocated. **Note:** If a mouse is connected, you can exit an active window by simultaneously pressing the left and center mouse buttons for approx. 2 s. The function cannot be changed, and is available in addition to the defined key combination.
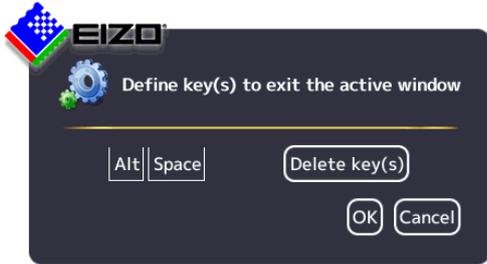
6.8.2 Workspace settings

One or two users can work on one or two monitors in "Single User" or "Dual User" operation, depending on how the application is configured for the LMM0802.
See also Monitor options [▶ 22].

Case 1: Single user operation with two monitors and an overall layout (side-by-side)

This is the most common type of application stored as a default setting. No workspace settings need to be carried out.
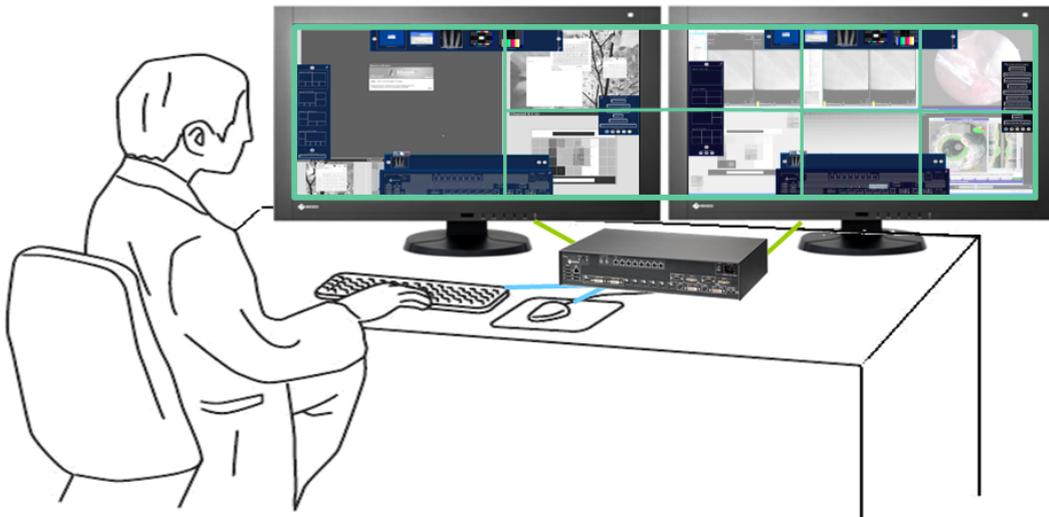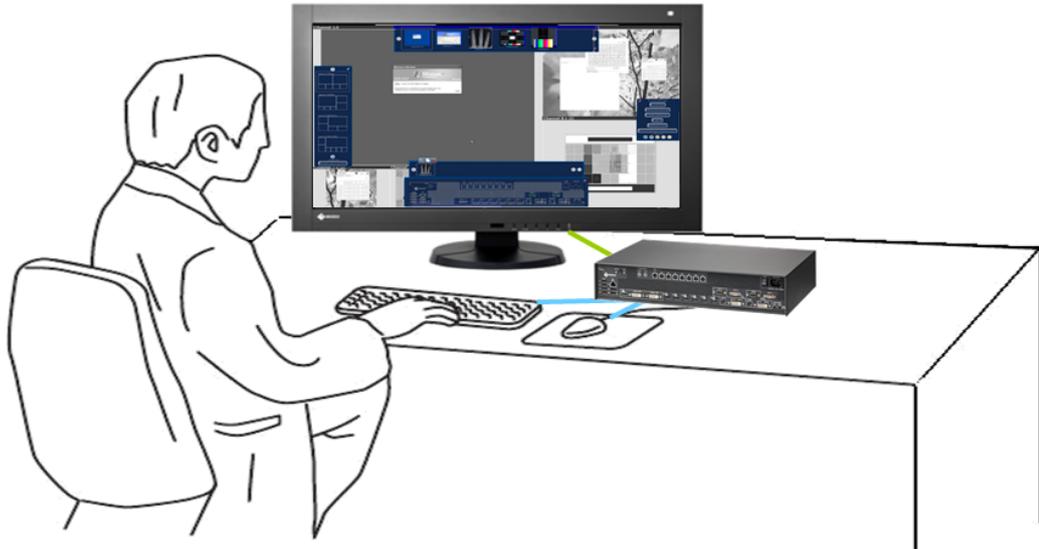

Properties

- 1 operator.
- 1 user interface (workspace).
- 1 keyboard.
- 1 mouse.
- The "Switch layout via monitor" system setting is disabled (meaning the overall layout is active).
- The mouse can move beyond the boundaries of individual monitors.

Case 2: Single user operation with one monitor

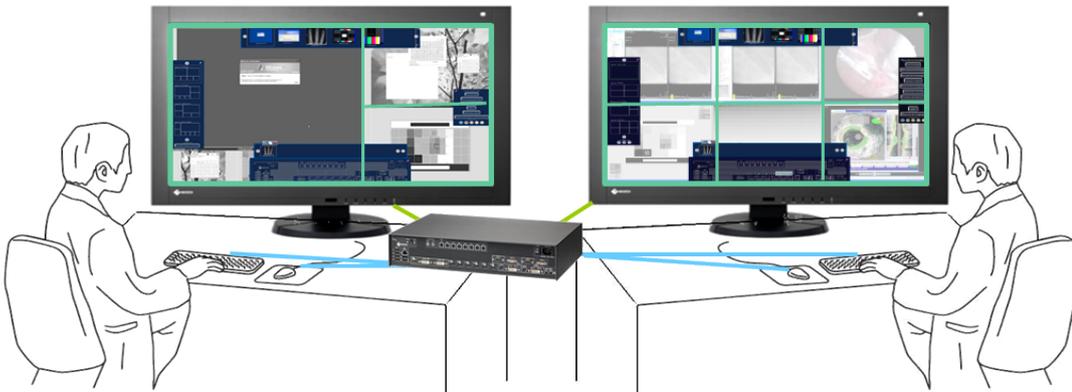This is another type of application in single user operation.

Note
To enable single user operation with one monitor, you must enable the "Switch layout per monitor" system setting. See also Settings [▶ 44].

Properties

- 1 operator

- 1 workspace

- 1 keyboard

- 1 mouse

Case 3: Dual users operation with one monitor each

Properties

- 2 users

- A different layout can be activated on each monitor

- 2 keyboards

- 2 mice

- The mouse can move only within the respective monitor

- Connected sources can be operated independently

Note
Dual user operation
• Carry out Setting the workspace [▶ 52] to enable dual user operation.
• The monitor connected to "Monitor 1" is considered to be Workspace 1. The monitor connected to "Monitor 2" is considered to be Workspace 2.
• The same layouts are available for both workspaces.
• If layouts are processed and saved at one workspace, then this also applies to the other workspace. Deletion, creation, and amendment of layouts all count as processing.
• Each workspace can define a default layout.
• A default layout cannot be deleted. This is also true for the workspace where it is not set as the default layout.

Setting the workspace

To set the workspaces, click the "Workspace settings" button in the "Base settings" (full) sidebar.

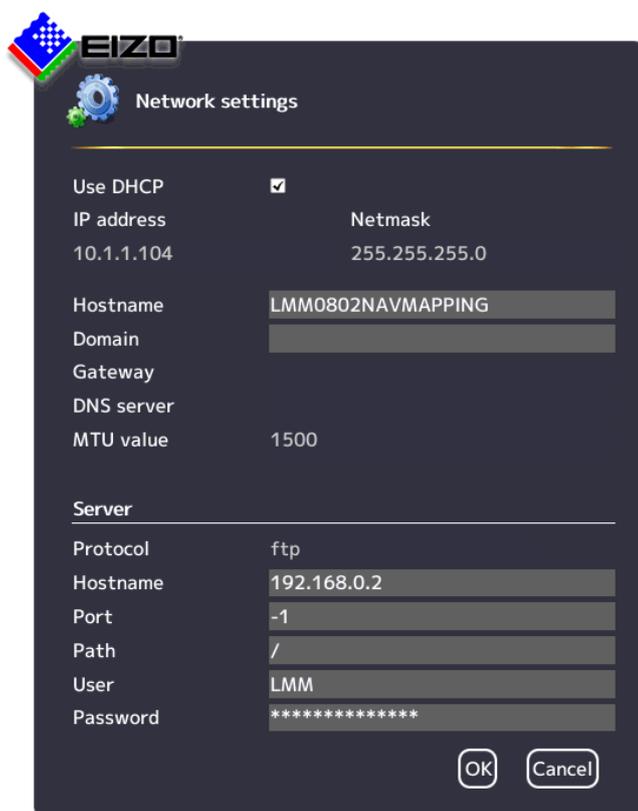The "Workspace settings" dialog window opens:

Setting	Description
Arrangement of outputs	Defines how the monitors are assigned: • horizontal • vertical **Note:** The displayed layouts are linked to the respective "Arrangement of outputs". If the "Arrangement of outputs" is modified, the displayed layouts are also modified. *Default setting: horizontal*
Number of workspaces	Defines how many workspaces are used. • "1": One user with two monitors. • "2": One user with one monitor or two users with two monitors. *Default setting: "1"*
Workspace 1	**Name** The name for workspace 1 is set here. Avoid using special characters. *Default setting: Workspace 1*
	Input devices The names of the connected keyboards and mice are displayed here. If you click ✗ next to the name of the keyboard or mouse, you deactivate it for Workspace 1. If you click ✚ you can activate the keyboards or mice for Workspace 1 again.

Setting	Description
Workspace 2	**Name**
	The name for Workspace 2 is set here. Avoid using special characters.
	Default setting: no Workspace 2
	Input devices
	The names of the connected keyboards and mice are displayed here.
	If you click ✘ next to the name of the keyboard or mouse, you deactivate it for Workspace 2.
	If you click ➕ you can activate the keyboards or mice for Workspace 2 again.

6.8.3 Setting the network connection

To set the network connection, click "Network settings" 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.
	"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. *Default setting: IP Address 10.1.1.104, Netmask 255.0.0.0* • The host name and domain can be assigned. • The gateway and DNS server IP address can be assigned. • The MTU value can be entered. *Default setting: MTU value 1500* *Default setting: "Use DHCP" is set.*
Server	Information about the server the LMM should access when the firmware is updated or configuration data stored. See also Updating the firmware [▶ 58], Backup/Restore [▶ 59].

### 6.8.4 Changing the password

The following passwords are assigned as default for users of the LMM0802:

• For the administrator ("Service"), the password "super".

• For the default user with advanced rights ("Advanced") the password "plus".

To change a password proceed as follows:

1. Log in as administrator or default user with advanced rights.
   Note: Only the password for the user logged in can be changed.

2. In the "Base settings" sidebar, click "Change password".

   The "Change password" dialog window opens.
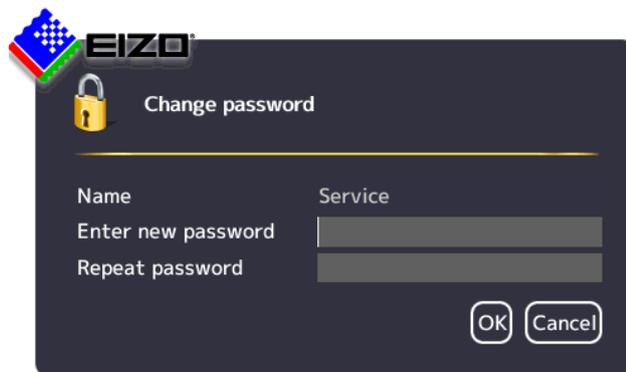
3. Enter the new password in "New password" and in "Repeat password".
   Note: The password may not contain special characters.

4. Apply the new password with "OK".
   Note: If an error message is displayed repeat step 3.

The new password is then saved and valid with immediate effect.

6.8.5 User permissions

The LMM0802 has a concept for rights and roles.

Roles

The following roles are stored and cannot be enhanced or changed:

• Default user.

• Default user with extended rights ("Advanced").

• Administrator ("Service").

After booting the LMM0802, you will always have the "Standard user" role.

Rights

The following user permissions are assigned to the roles "Default user" and "Default user with extended rights". The administrator has all rights and can change the allocations.

6.8.6 Setting the system time

To set the system time, click "Set system time" in the "Base settings" (full) 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.

1. Activate the option "Use NTP Server".

2. Enter the server address in the "NTP Server" field.

3. Click "OK".

Without NTP server

If an NTP server is not used, you can set the system time as follows:

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

2. Click "OK".

3. Restart the device to apply the changes.

6.8.7 Updating the firmware

The firmware update can be run using a USB stick connected to the Large Monitor Manager (LMM) or via the network server. If remote access is available, the update file can also be installed from a PC or a storage location on the network.

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.

Note
Save the user-defined settings before starting the firmware update. See also Backup/Restore [▶ 59].

Prerequisite
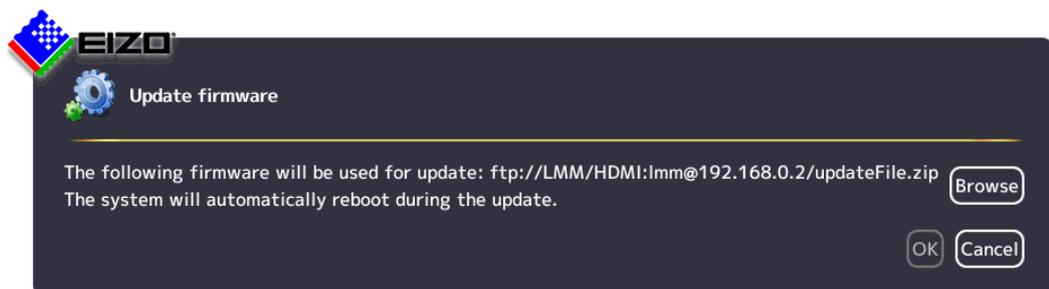
• The network settings have to be specified for an update via remote access or a network server.
  See also Setting the network connection [▶ 53].

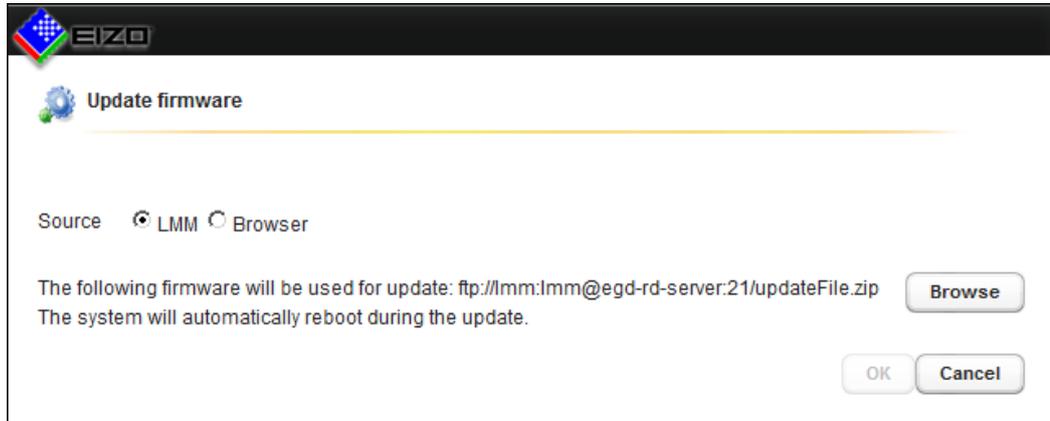• The update file is available and can be accessed.

Procedure

To update the firmware, proceed as follows:

1. Click "Update firmware" in the "Basic settings" (full) sidebar.

   With local operation the following dialog window opens:

With remote access the following dialog window opens in the web browser:

2. Select the update file:

   Note: The file name always begins with "UpdateFile" and ends with "zip".

   – If you want to run the update file from the USB stick or network server, click "Browse".

   – If you access remotely and want to run the update file from the PC or network, select "Browser" as the source and then click "Upload file".

3. Perform the firmware update with "OK".

   CAUTION: Do not switch off the device during the update; otherwise, irreparable damage may result.

4. The LMM is rebooted when the update is finished and then you are logged in as a default user. The current "Applications Revision" firmware version can be found in the system information.

6.8.8 Backup/Restore

Backup/Restore allows you to "back up user data", "restore user data" or "restore factory settings”.

Note
There is no exchange in user data between LMM0802-HDMI and LMM0802
It is not recommended to restore user data of an LMM0802-HDMI to an LMM0802 (or vice versa). Especially if a matrix was configured for an LMM0802 variant, the restoration of data to another LMM0802 variant may lead to an incorrect assignment of the inputs.

User data includes the following settings:

• Base settings

   – Settings

   – Workspace settings

   – Network settings

   – Password

   – User permissions

   – NTP server configuration

- Layouts

- Video input configuration (for example, the selected EDID, USB input settings)

- Video input instance configurations

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

You can perform the following functions:

Function	Description

Backup user data	Save the user data 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 Setting the network connection [▶ 53] specified.
	
	 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.
	     Note: The file name must not contain spaces.
	
	   – 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.

Function	Description

Restore user data	Previously saved user data are restored on a component basis.
	
	Prerequisite
	
	• The user data file is available and can be accessed.
	
	• The name of the file does not contain any spaces.
	
	Procedure
	To import the user data proceed as follows:
	
	1. Click "Restore user data".
	
	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 restored data.

Restore factory defaults	**Note:** If you restore the factory settings for the LMM, all user data will be deleted. For this reason, back up the current user data before performing this function. If you reset the LMM to factory settings, the user-defined data for inputs IN7.1 to IN7.4 and IN8.1 to IN8.4 and the LUT settings of the monitor are not reset. The user-defined settings for inputs IN1 to IN6 are reset To execute the function, click on "Restore factory defaults".

6.8.9 Display the log book

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

To create the logbook for EIZO support:

1. Click "Logbook" in the "Basic settings" (full) sidebar.

    ⇨ The "Logbook" dialog window opens.

2. To save the available logbook entries, click "Save logfiles".

3. To save the storage location and files names displayed in the "Logfile save" dialog window, click "Browse" and then specify the storage location and file names required.

4. To save the logbook, click "OK" is the "Logfile save" dialog window.
   Note: When using remote access, you can download the file to the PC. Mark the "Download" field and click OK.

  ⇨ The logbook is saved as a zip file using the current settings regarding storage location and name.
    Note: When downloading using remote access, the logbook is saved as a zip file to the storage location specified in the web browser.

6.8.10 View all inputs

When you click "View all inputs" in the "Basic settings" (full) sidebar, the video sources are displayed as follows:

- All inputs are displayed the same size on screen.

- A dialog window for leaving the overview is displayed in the center of the screen.

- The inputs with light blue information banners display a live image.

- The inputs with dark blue information banners display a screenshot of the last live image.

- There is no information for inputs with the symbol. The inputs are checked for connection.

- Checking is complete for inputs with the symbol. No video source was found.

6.9 "Input and output configuration" sidebar

The "Input configuration" sidebar is by factory default only visible to the administrator ("Service") and the user with extended rights ("Advanced").

The sidebar is displayed as soon as you move the mouse pointer to the lower center edge of the screen. It schematically represents the physical inputs and outputs of the LMM. Inputs and outputs can be configured in the sidebar. Associated instances can also be created, edited, and deleted
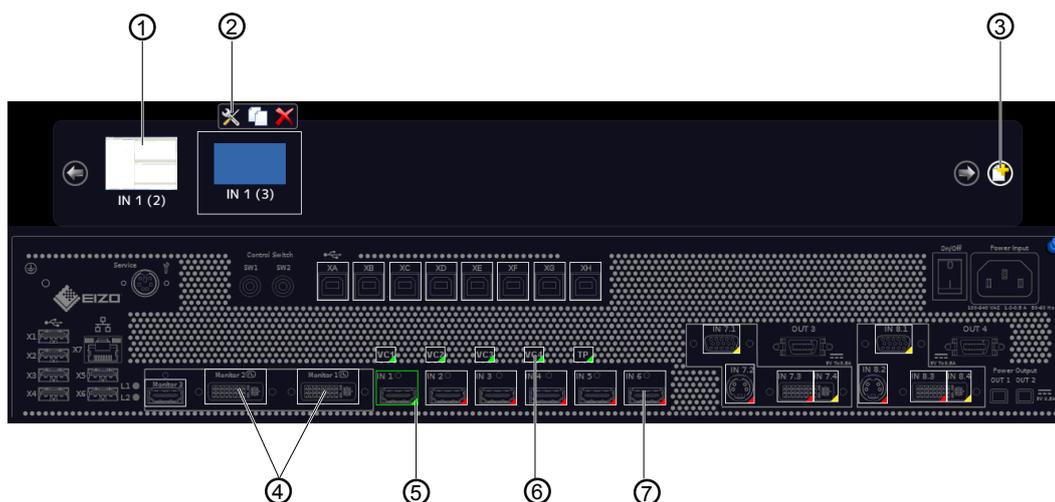
① Miniature thumbnail of an instance (example)

② This toolbar is displayed when you move the mouse pointer over the miniature thumbnail ① of the instance. You can change, duplicate, or delete an instance.

        Opens the dialog window to configure the instance.

        Duplicates the instance. A copy of the instance is created with all its settings.

        Deletes the instance.

        If the instance was assigned to a window, the following symbol appears in the window after deletion:

③ Button for creating a new instance.

④ After double-clicking a monitor output (except for "Monitor 3"), a dialog window with the LUT settings of the monitor is displayed (only if supported by the monitor).
The required LUT and corresponding brightness can be set for the monitor.

⑤ The inputs are marked by colored triangles in the lower right corner:

- A green triangle ◢ means that a signal is available. The input is active.

- A red triangle ◢ means that no signal is available. The input is inactive.

- A yellow triangle ◢ means that no valid signal is available at the input.

If you click a video input with the left mouse button, the connected instances are displayed.

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

⑥ Virtual channel: When the Large Monitor Manager is connected to a network, you can display test images and text from an external device, for example.

⑦ 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 ◢.

6.9.1 "Input and output configuration" sidebar with matrix

An amended "Input and output configuration" sidebar is displayed if a video matrix is configured in the system settings. It contains additional information on the inputs and outputs of the connected matrix. Individual groups are displayed differently and are highlighted by colored frames in the following chart.
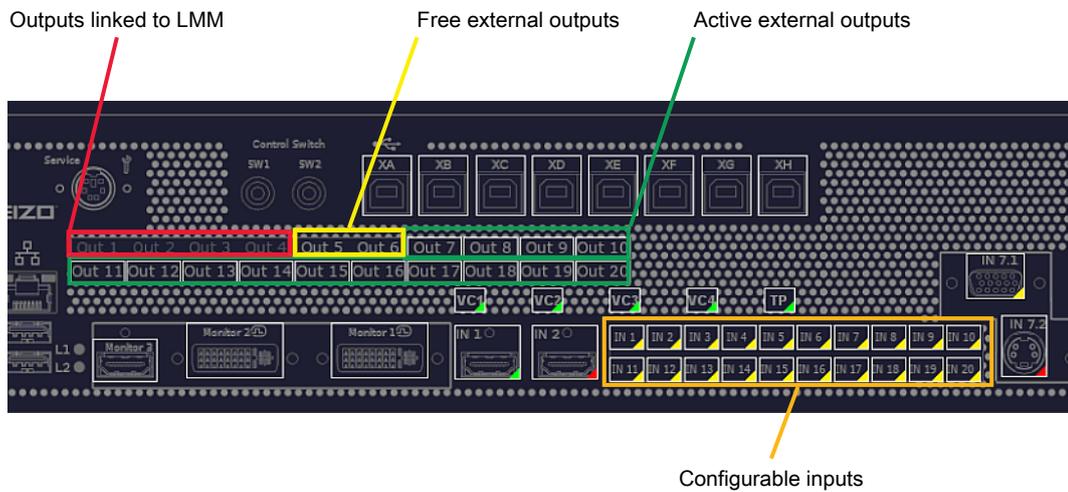

Fig.: Displayed sidebar with connected matrix (example)

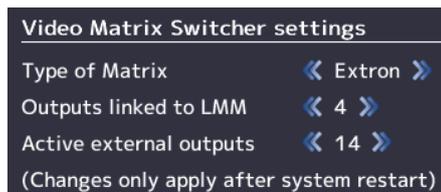The system setting for the matrix in this case is as follows:

Fig.: System setting for matrix (example)

Note
Operation with matrix

- If the warning symbol appears in the display window of an input, this may have the following causes: After a change between operation with or without matrix, the layout contains instances with inputs that are not available. Change the layout by dragging the available inputs into the affected instances and save the layout.

- If the warning symbol appears in the display window of an input, this may have the following causes: Faulty communication with the matrix. In this case, a red triangle is displayed in the bottom right corner of the input in the "Input and output configuration" sidebar and an error message is displayed in the brief information section.

Note
Matrix outputs

- Virtual channels cannot be assigned to the active external outputs.

- Layout settings for the active external matrix outputs are not applied for display. A full-size image is transmitted to the monitor with up to 1920 x 1200 pixels.

- Each active external output can be operated in the user interface.

- The tooltips for the active external outputs display the respective workplace number in square brackets.

- If setting "4" is selected for "Outputs connected to the LMM" system, then the IN 1 and IN 2 inputs are available for other signal sources.

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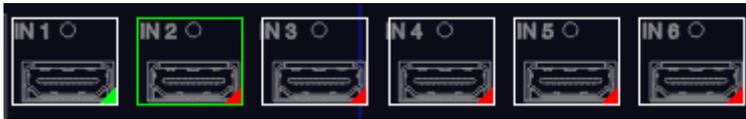
If you double-click the digital video input to be configured with the left mouse button, the "Video input configuration" dialog window is displayed.

Setting	Description
Select EDID	Here you can select the EDID setting for the respective video input with or . The EDID setting establishes the resolution the video source graphics card will deliver when it evaluates the EDID.
	Note: To permanently save a change to the EDID setting in the expanded system with Extron DMS 2000 20x20 DVI Matrix, the matrix must remain switched on for at least **three** minutes after the change
	You can select from the following EDID data:
	• 1280 x 1024
	• 1200 x 1600
	• 1600 x 1200
	• 1920 x 1080p (VESA)
	• 1920 x 1080p (EIA)
	• 1920 x 1200
	• 1536 x 2048 (30 Hz)
	• 2048 x 1536 (30 Hz)
	• 1920 x 1080 24p

Setting	Description
USB input	**USB input enabled**
	Here you establish whether the video source can be operated by mouse and keyboard (Focused Mode).
	Default setting: "USB input enabled" is set.
	USB input
	You establish the link of the video source with a USB-B connector here. Without this setting, the video source cannot operate with the mouse and keyboard.
	Click ◀ or ▶, to assign the USB-B connector.
	Note: Use the notes made during connection. See also Connecting the PC as the video source [▶ 23].

6.9.3 Configuring analog video inputs

If you double-click with the left mouse button the analog video input IN7.1, IN7.2, IN7.4, IN8.1, IN8.2, or IN8.4 that is to be configured, the "Video input configuration" dialog window is displayed.
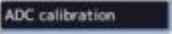
The dialog window will have a different layout, depending on the input type.

Configuring VGA and DVI-A video inputs

The following "Video input configuration" dialog window is displayed for VGA (IN7.1, IN8.1) and DVI-A (IN7.4, IN8.4) inputs:
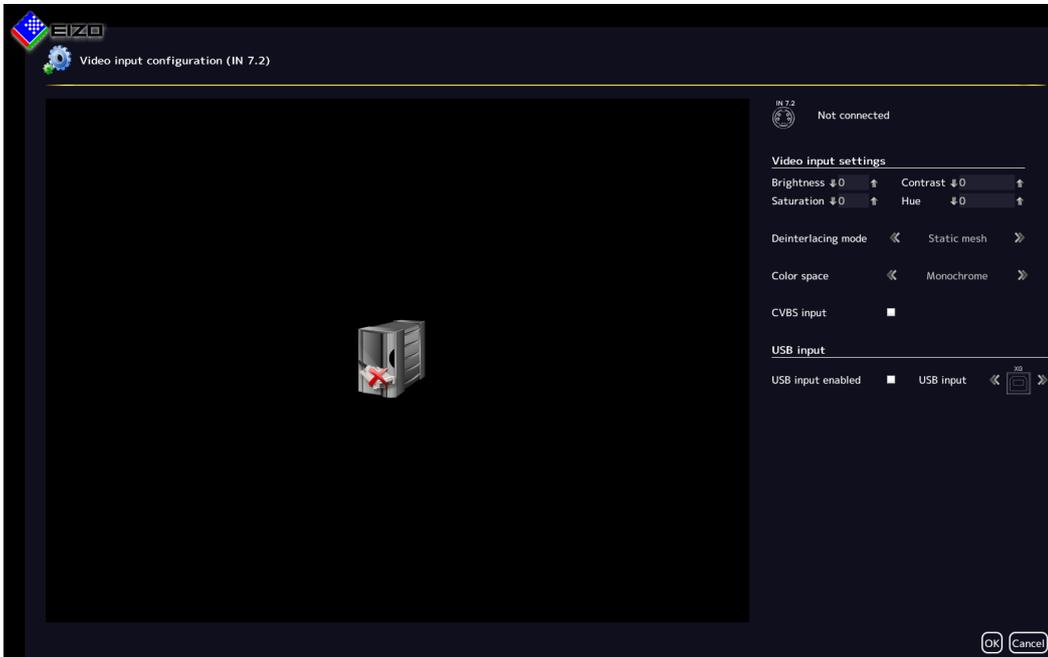
Setting	Description
Input configuration The analog video in-put parameters can be set manually step by step. Click ⬇ or ⬆.	**Brightness** Adapting the representation of darker picture areas. Setting range: 0 … 100% *Default setting: 50%* **Note:** Failure to set the brightness correctly can lead to a 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% *Default setting: 50%* **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 ar-eas with 95% and 100% gray values visibly differ.
Timing parameters	**Horizontal position** The horizontal position of the displayed image can be set down to a pixel. Setting range: 0 … 100% *Default setting: 50%*
	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 LMM0802. Click the "Test pattern" button to do so. Save the generated image on a USB memory stick. Open the test pattern in your video source. Then click Auto adjustment . Automatic adjustment takes place.

Setting	Description
ADC parameters	**Gain / Offset** The parameters of the analog-to-digital converter (ADC) for the analog video input csn be set step by step. Click ⬇ or ⬆ . The representation of the bright (gain) and dark (offset) picture areas can be set directly for the red, blue, and green color channels. Setting range: 0 … 255 **Note:** EIZO recommends automatic ADC calibration.
	ADC calibration The ADC parameters can be set automatically. 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 LMM0802. Click the "Test pattern" button to do so. Save the generated image on a USB memory stick. Open the test pattern in the video source. Then click ADC calibration . ADC calibration takes place.
Deinterlacing mode	This function sets the deinterlacing mode.
Color space	This function sets the color space.
USB input	**USB input enabled** Here you establish whether the video source can be operated by mouse and keyboard (Focused Mode). *Default setting: "USB input enabled" is set.*
	USB input You establish the link of the video source with a USB-B connector here. Click ⟪ or ⟫, to assign the USB-B connector. **Note:** In this case use the notes made during connection (chapter Connecting the PC as the video source [▶ 23]). Without this setting, the video source cannot operate with the mouse and keyboard.

Configuring S-video inputs

The following "Video input configuration" dialog window is displayed for S-video inputs IN7.2 and IN8.2.

Setting	Description
Analog input configuration The analog video input parameters can be set manually step by step. Click ⬇ or ⬆.	**Brightness** Adapting the representation of darker picture areas. Setting range: 0 … 100% *Default setting: 50%* **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% *Default setting: 50%* **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.
	Saturation The color intensity can be changed here. Setting range: 0 … 100% *Default setting: 50%*
	Hue The hue can be changed here. Setting range: 0 … 100% *Default setting: 50%*

| Setting	Description
Deinterlacing mode	This function sets the deinterlacing mode.
Color space	This function sets the color space.
CVBS signal	Establishes whether a connection with CVBS signal is used.
USB input	**USB input enabled**
	Here you establish whether the video source is operated by mouse and keyboard (Focused Mode).
	Default setting: "USB input enabled" is set.
	USB input
	You establish the link of the video source with a USB-B connector here.
	Click ◀ or ▶, to assign the USB-B connector.
	Note: In this case use the notes made during connection (chapter Connecting the PC as the video source [▶ 23]).
	Without this setting, the video source cannot operate with the mouse and keyboard.

6.9.4 Configuring an extended window

If a video source delivers multiple signals, they can be displayed and operated on the Large Monitor Manager in an extended window.

To configure an extended window, always select the same USB input in the "USB input" field for all video inputs of the video source. Only one USB cable needs to be physically connected to one of the XA … XH inputs.

Example

Three video signals of a single video source are connected to video inputs IN1, IN2 and IN3. To configure an extended window, use "USB input" in the "Video input configuration" dialog window to select the same USB port for each video input, such as "XB".
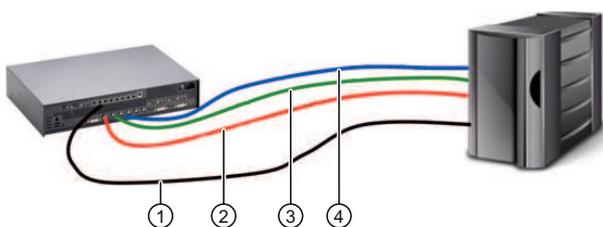
①	USB
②	Video signal 1
③	Video signal 2
④	Video signal 3

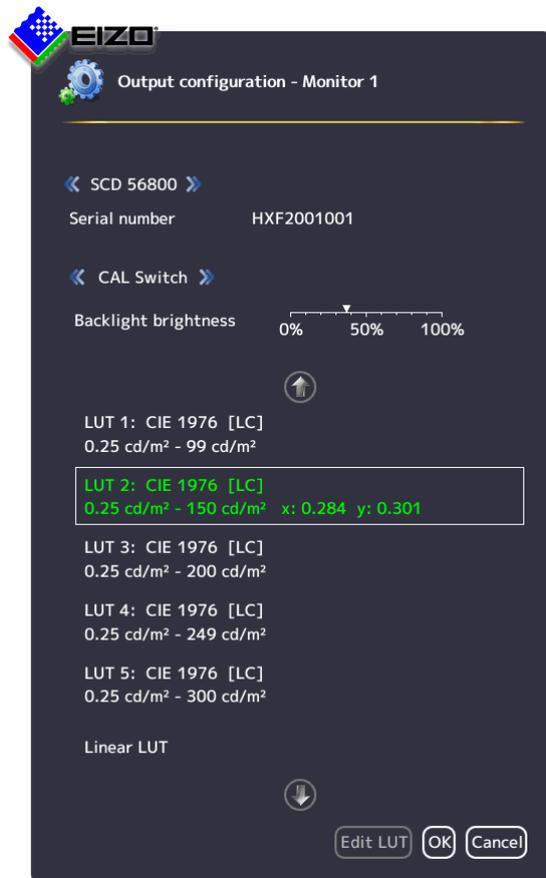| Note |
|------|
| To operate an extended window via the LMM user interface, the mouse and keyboard must be connected to the X1 … X6 USB ports. |

6.9.5 Configuring video outputs

Note
Additional matrix video outputs
The procedure described below also applies to the additional outputs of a connected matrix. See also "Input and output configuration" sidebar with matrix [▶ 64].

For the LMM0802, you can set the output configuration of a connected monitor as follows:

1. Double-click the required monitor output in the "Input and output configuration" sidebar. A window is displayed with the properties that can be set depending on the connected monitor. For example:

2. Set the required values.

    CAUTION: Do not change the backlight value for calibrated monitors. Otherwise, the diagnostic capabilities when using the monitor will be reduced.

    Note: The change in backlight value is only temporary and is reset to the initial value if the LUT is changed over or if the monitor is switched off and on again.

3. If supported by the monitor, you can amend the LUT to meet special requirements with the "Amend LUT" button.
    CAUTION: Amending the LUT may lead to a loss of information in the displayed image.

4. Click "OK" to apply the settings.

Editing the LUT

⚠ CAUTION
Check the gray levels
After each LUT recalculation, it is absolutely necessary to use the appropriate test pattern and to check that all gray levels are present and displayed correctly.

Note
• The "Edit LUT" function may only be executed by service personnel.
• The "Edit LUT" function is only displayed if the connected monitor supports the dialog.
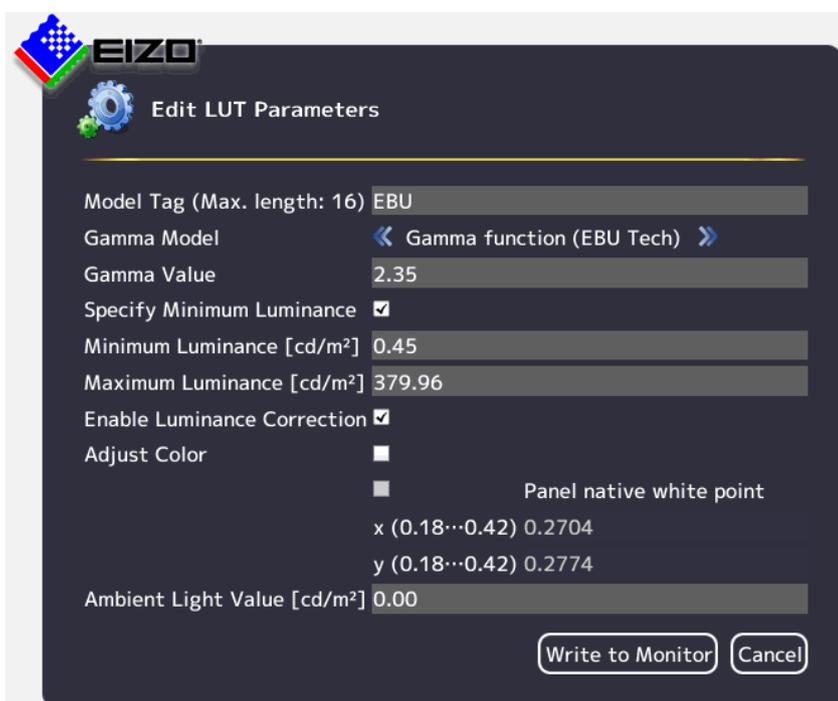
Parameters	Description
Model designation	A name can be assigned to the selected model here.
Gamma model	The gamma model, which serves as the basis for recalculating the LUT, can be selected here.
Gamma value	Gamma value input
Set minimum luminance	Enable/disable
Minimum luminance [cd/m2]	Adapt the minimum black value.
Maximum luminance [cd/m2]	Adapt the maximum white value.
Correct luminance distribution	Enable/disable
Color matching	Enable/disable
Natural color location	Enable/disable
x (0.18 … 0.42)	Adapt x color coordinate.
Y (0.18 … 0.42)	Adapt y color coordinate.

Parameters	Description
Ambient light [cd/m²]	Take the ambient light into account when recalculating the LUT.
LUT-> monitor	Recalculate the LUT and save the calculation in the monitor. Closing the function
Aborting	Abort the recalculation and close the function.

6.9.6 Creating and configuring instances

Several instances with different representations can be configured for each video input, for example as a 1:1 display or as a cropped image.

①　　　　　　Miniature thumbnail of an instance

②　　　　　　This toolbar is displayed when you move the mouse pointer over the miniature thumbnail ① of the instance. You can change, duplicate, or delete an instance.
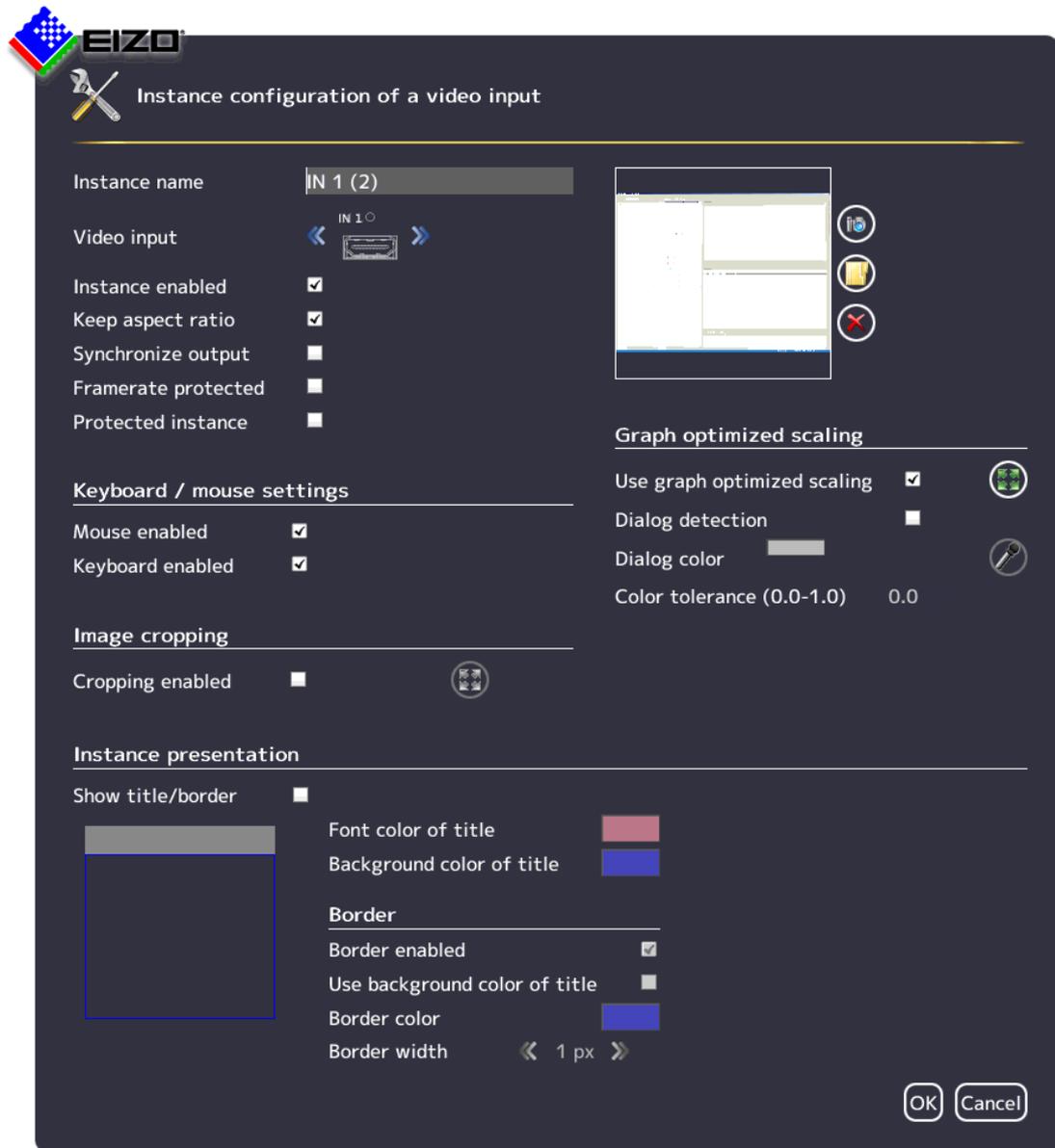
③　　　　　　Video input

Creating an instance

An new instance can be created or duplicated from an existing instance:

1. Left-click the video input ③ for which an instance should be created.

⇨ The available instances ① of the input are displayed.

2. Left-click ![icon] in the sidebar ② to create a new instance.

3. To duplicate an existing instance, click ![icon]

⇨ The "Instance configuration of a video input" dialog window is displayed.
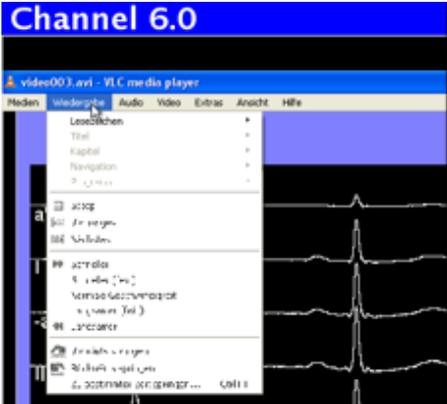
Configuring an instance

1. Left-click the video input ③ for which an instance should be configured.

2. To configure an instance, double-left-click the miniature thumbnail of the instance ① or click on ![icon] in the toolbar ②.

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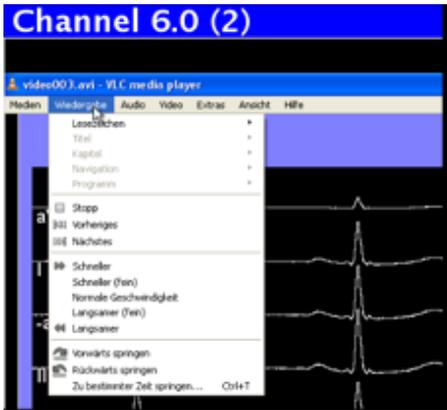
"Instance configuration of a video input" dialog window

Setting	Description
Instance name	Define the instance name here. It should be short and precise. Do not use special characters. *Default setting: IN X*
Video input	The correct video input for which the instance is created already appears as default. To assign the same settings to a different video input, click or . The video input is selected. *Default setting: The selected video input.*

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: *Default setting: "Instance enabled" is set (instance is visible).*
Keep aspect ratio	This property causes the aspect ratio of the connected video source to be retained. If this property is disabled, the aspect ratio of the window in which the instance is displayed is used. This can lead to image distortion. *Default setting: "Keep aspect ratio" is set.*
Synchronize output	Enables or disables input or output synchronization for an instance. If synchronization is activated, there is no delay between the input and output signal.
Framerate protected	When working with multiple windows, the image refresh rate of selected instances may be reduced. If this option is enabled, the selected instance is excluded from a reduction in the image refresh rate. *Default setting: "Framerate protected" is not set.*
Protected instance	The selected instance is protected against changes through dynamic layout and zoom. The selected window cannot be enlarged or reduced dynamically. *Default setting: "Protected instance" is not set.*
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. 1. Click . The dialog window to create the miniature thumbnail opens. 2. Move the marker, for example , to select the suitable image cropping for the thumbnail. 3. Confirm with "OK". The thumbnail is applied. **Note:** Alternatively, you can load a symbol, for example from a USB stick. To do this, click . 4. To delete the thumbnail, click .
Keyboard / mouse settings	**Mouse enabled / Keyboard enabled** If the mouse and keyboard are connected to the input and configured, you can enable operation of a video source with mouse / keyboard (Focused Mode). If operation with the mouse / keyboard (Focused Mode) is not required for a video source, operation can be disabled here. *Default setting: "Mouse enabled"* and *"Keyboard enabled are set.*

Setting	Description
Image crop-ping	**Image cropping enabled** If you only wish to view a certain part of an instance, you can define the cropping area as follows: 1. Enable image cropping. 2. Select the instance to change. 3. Click ⊞. The "Define image cropping area" dialog window opens. 4. Move the markers, for example ⌐⌐, ⟩, to set the suitable image cropping area. 5. Confirm with "OK". The image cropping area is applied. Multiple instances with various cropping areas can be created. *Default setting: "Cropping enabled"is not set.*
Graph opti-mized scaling	**Use graph optimized scaling** If vital functions or ECG images are to be displayed in a layout of less than 1:1, the curves (such as the heart rate curve) may appear blurred. To prevent this, proceed as follows: 1. Activate "Graph optimized scaling". 2. Click ⊞. The dialog window for setting the image cropping area opens. 3. Set the required image cropping area with the markers, for example ⌐⌐, ⟩. 4. Confirm with "OK". **Note** • "Graph optimized scaling" may be used in a maximum of two windows in a layout. • If "Graph optimized scaling" is used in two windows in a layout, the windows must be placed on the right and left half of the monitor and may not extend beyond the center. • If "Graph optimized scaling" is set, check the effects on the original image. *Default setting: "Use graph optimized scaling" is not set.*
	Dialog detection / Dialog color After graph optimized scaling is enabled for an image cropping area, the dialog window and menus may no longer be legible.

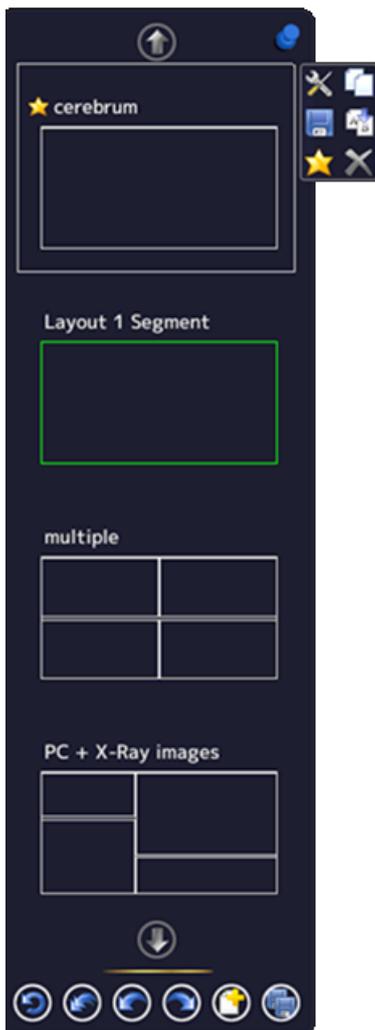| Setting	Description
Graph opti-mized scaling	To change this, proceed as follows:
	1. Activate dialog recognition.
	2. Select the background color of the dialog window. In this way you specify that graph optimized scaling is not used in the dialog window.
	3. Click the color bar and select the color.
	Alternatively, click the [pipette icon] and use the pipette in the "Select dialog color" menu to set the desired color.
	The dialog window and menus are legible once again.
	Default setting: "Dialog detection" is not set.
	Color tolerance
	If various dialog windows / menus present slight color variations (such as white to light gray), you can have both colors detected as dialog window / menu by increasing the color tolerance.
	Default setting: 0.0 (no tolerance).

Setting	Description
Instance pre-sentation	**Show title/border** You define whether a title (instance name) and a border are to be displayed for the currently selected instance. *Default setting: "Show title/border" is set.*
	Font color of title / Background color of title The font color and the background color of the title can be changed. Click the color box. Use scale "A" for the transparency value of the color. *Default setting for font color of title: white.* *Default setting for background color of title: blue.*
	Border enabled You define whether a border is to be displayed for the selected instance. *Default setting: "Border enabled" is set.*
	Use background color of title You can define here whether the background color of the title is to be used as the border color. *Default setting: "Use background color of title" is not set.*
	Border color The border color can be changed by clicking the color box. *Default setting: white.*
	Border width You change the border width here. Click ⟨⟨ or ⟩⟩. Setting range: 1 - 10 pixels wide *Default setting: 1 pixel.*
	Direct selection of the border in thumbnail 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. *Default setting: complete border.*

6.10 "Layout" sidebar

To display the "Layout" sidebar, you have to move the mouse to the left center 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.
• The "Layout" sidebar only displays the layouts that match the resolution of the selected output timing.   See also Settings [▶ 44].

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.
	Resets the user-defined settings in the active layout to the original values.
	This is only possible if the settings have not already been saved.
	The last user-defined setting is reset to the previous value.
	This is only possible if the settings have not already been saved.
	The last user-defined setting is repeated.
	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.

6.10.1 Creating or editing layouts

Proceed as follows to create or edit layouts:

- To create a new layout, click ![icon] in the "Layout" sidebar.

- To edit an existing layout, click the layout to be changed in the sidebar.
  The following toolbar is displayed next to the layout:

- Click ![icon] to edit the selected layout directly, or click ![icon] to copy the existing layout and then edit it.

Note
Reduced image refresh rate If the reduced image refresh rate symbol ![icon] is displayed in the information banner of a window during LMM operation, the maximum number of windows to be displayed with a full image refresh rate is exceeded. You can ensure that all windows are displayed with a full image refresh rate with the following layout modifications: - Distribute the windows equally over the halves of the image. - Reduce the number of windows. - Use the "Get image frequency" function for the windows to be displayed with a full image refresh rate. This will then result in another window being displayed with a reduced image refresh rate.

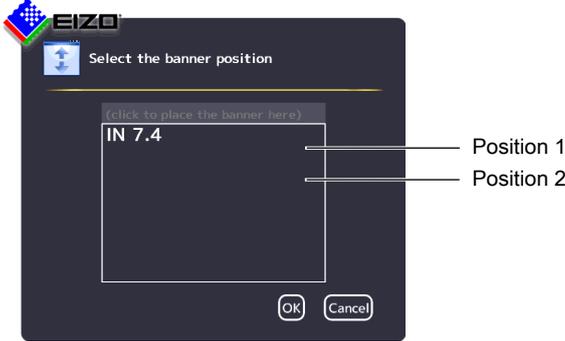| Note |
| --- |
| **Limitations for video inputs IN7 and IN8**

Video inputs IN7.1, IN7.2, IN7.3, and IN7.4 as well as video inputs IN8.1, IN8.2, IN8.3, and IN8.4 are each joined together into a group:

- A video signal can be connected to each of these video inputs.

- No more than one video signal from each group can be displayed in a layout.
If an attempt is made to display two video signals from the same group in one layout, the channel with the higher input number is hidden and the following symbol is shown:

![icon] |

6.10.2 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. 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 key) 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. Marker symbols are displayed 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.

  `512×770+30`

  In this example, the window width is 512 pixels, the height is 770 pixels, and the height of the information banner is 30 pixels.
  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 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.

  `2048,30`

  In this example, the horizontal position is 2048 pixels and the vertical position is 30 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 ⊕ in the "Layout" sidebar to save all changes in all layouts. Or click 💾 to save changes to the current layout.

6.11 "Instances" sidebar
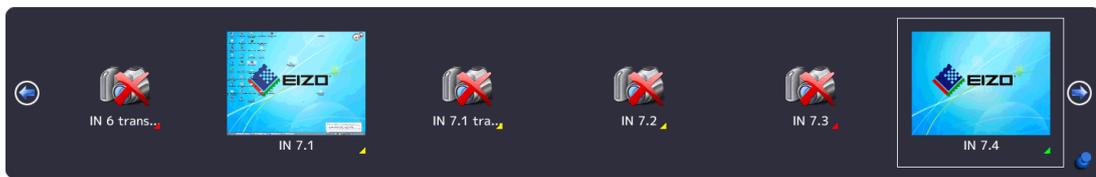
Displaying the "Instances" sidebar

To open the "Instances" sidebar, you have to move the mouse to the upper center edge of the screen. The sidebar contains a 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, click 🖿 in the "Layout" sidebar.

| Note |
| --- |
| When switching between layouts, all changes are retained, but are not automatically saved. When the LMM0802 is rebooted or switched off, all unsaved changes are lost. |

See also

Creating and configuring instances [▶ 74]

6.12 Status window

The status window contains information on the LMM0802 and the connected monitor.

To display the window move the mouse pointer in the lower right corner of the screen.
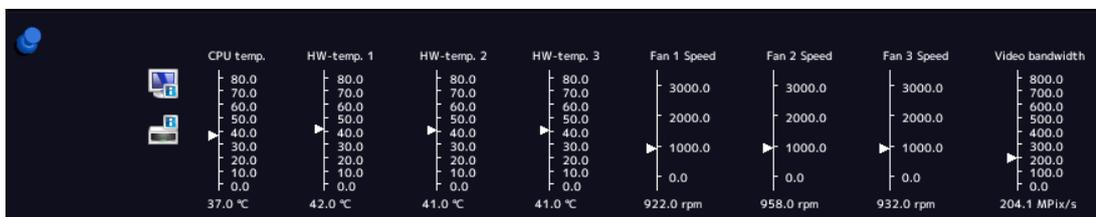
Moving the mouse pointer over the 🖥 or 🖳 icon displays monitor information or a tool tip on the LMM status.

6.13 Displaying instance information

With local access, additional information can be displayed or hidden with the <F8> function key for each instance used in a window:

Video	IN 7.4 (1600×1200@60Hz)
Scaling	1.000
Bandwidth	30% (119.8MPix/s)
Load	39% (156.0MPix/s)
Address	0x38000

Note
• After rebooting the LMM, information on instances is not displayed.
• With remote access using the configuration command, information can be displayed or hidden in the web browser using the "Instance information" 🛈 button.

6.14 Identifying the monitor

Note
• This function is available with local access only.

Pressing the <F9> key displays or hides the name of the output in the lower right corner of the corresponding monitor.

The monitor connected to the "Monitor 3" output displays the following information:

• If the monitor connected to the "Monitor 3" output is configured for the display of another output, it displays the information of this output.

6.15 Screenshot function

The LMM0802 has a screenshot function that can be triggered locally or via remote access.

With local operation, the screenshot can be saved to a USB stick connected to the LMM or a default network server. With remote access, a screenshot can also be saved to the PC or in the network.
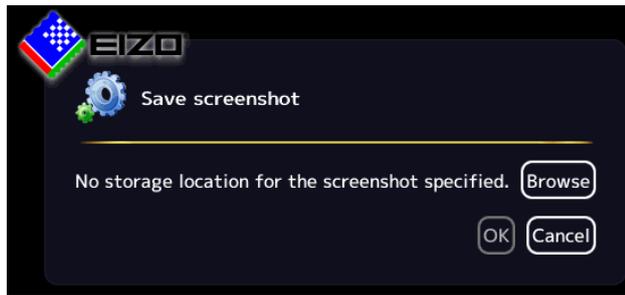
Prerequisite

• If you want to save the screenshot to a USB stick, then the USB stick must be connected to one of inputs X1 to X6.

• The network settings [▶ 53] are applied.

Procedure

Proceed as follows to create and save the screenshot:

1. Press "Print" on the keyboard, or with remote access, click the 🖼 button in the web browser.

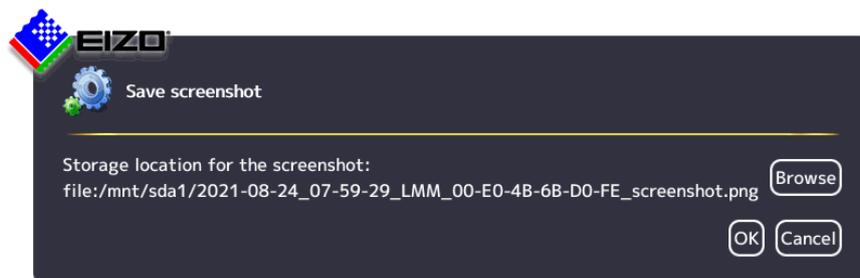   The dialog window to save the screenshot is opened.

Note: A URL address for saving the screenshot is displayed if an FTP server is configured in the network settings.

2. To save the data to a USB stick or network server, click "Browse".
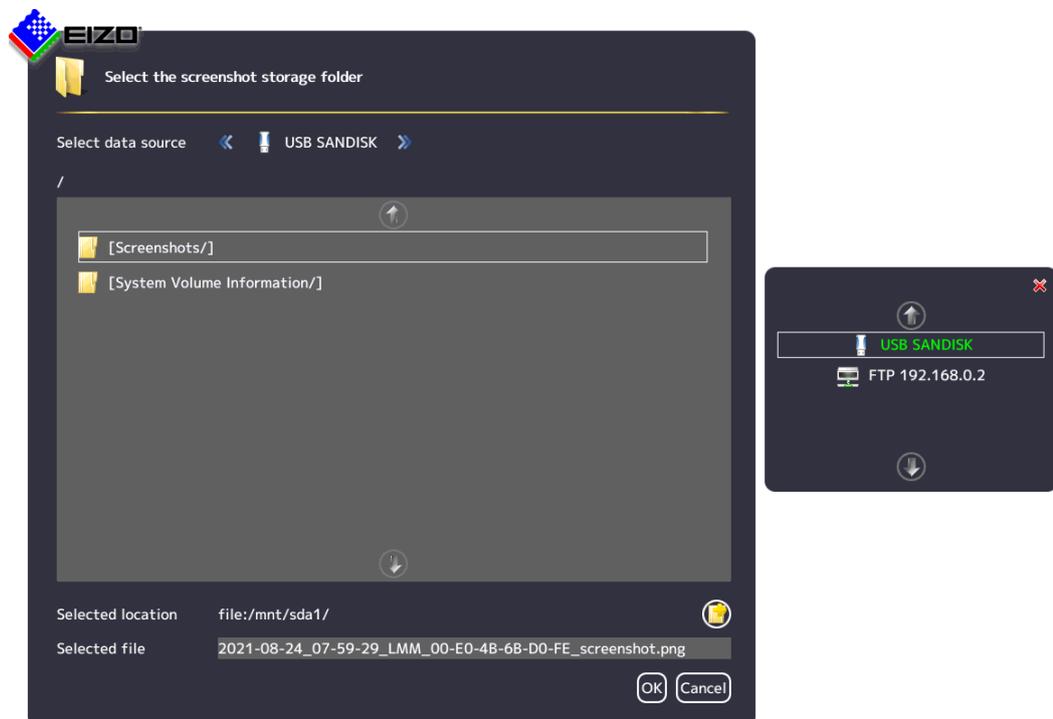
– Select the data source using or .

– If you want to create a new directory at the storage location, click .

– Enter a file name under "Selected file". Do not use special characters and spaces.
  Note: The LMM suggests a file name containing the date and time.

– Click "OK" to accept the storage location and file name.

- Click "OK" to save the screenshot.
  The dialog window closes and the screenshot is saved under the set file name.

3. If you access remotely and want to save the screenshot to the PC or network, click "Download".
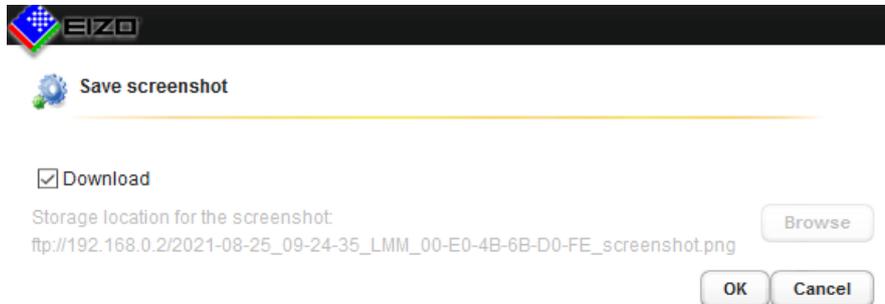
- Click "OK" to download the screenshot.
  Note: The screenshot downloads to the default storage location set in the web browser. The file name is assigned by the LMM. It includes the date and time.
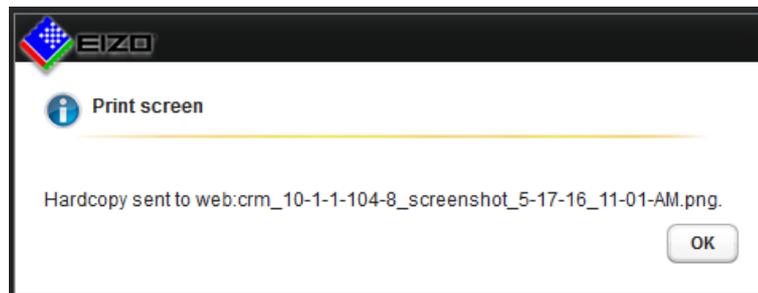
- Click "OK" to close the dialog window.

6.16 Information for the operator

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

- View Management (image content selection)
- Layout selection and changing the layout
- 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.

Note
The operator is solely responsible for any changes made or access obtained via this software interface.

7 Operation

After configuring the Large Monitor Manager LMM0802, user operation is limited to the following applications:

- Changing layouts in a workspace.
- Assigning instances in layouts and workspaces.
- Running an application displayed on one of the monitors.

Operating units

The LMM0802 can be operated as follows:

- Using a remotely connected PC with web browser or a panel PC with touchscreen and suitable software.
- With one of the input devices configured in the "Workspace settings" menu, such as the mouse and keyboard.

User interfaces

The following user interfaces are available when the LMM is operated via web browser or the Control Interface Device:

- Standard interface
- View Management
- LMM Control application (optional)

Layout changes can be made for the respective selected workspace when operating via the standard interface. When operating via View Management, instances can also be assigned in addition. This means that the instances can be exchanged within or between the workspaces.

Operation with the optional LMM Control application is described in a separate document.

7.1 Operation using the web browser or panel PC with touchscreen

The prerequisite for using a panel PC with touchscreen is that it has suitable software for operations.

Depending on the IP address used, you can make the following settings on the LMM0802 in the web browser or panel PC with touchscreen:

- If you use the start address "<IP address of the LMM0802>", the standard interface is displayed and you can assign layouts.
- If you use the start address "<IP address of the LMM0802>/vm,", View Management opens and you can also assign layouts and instances.

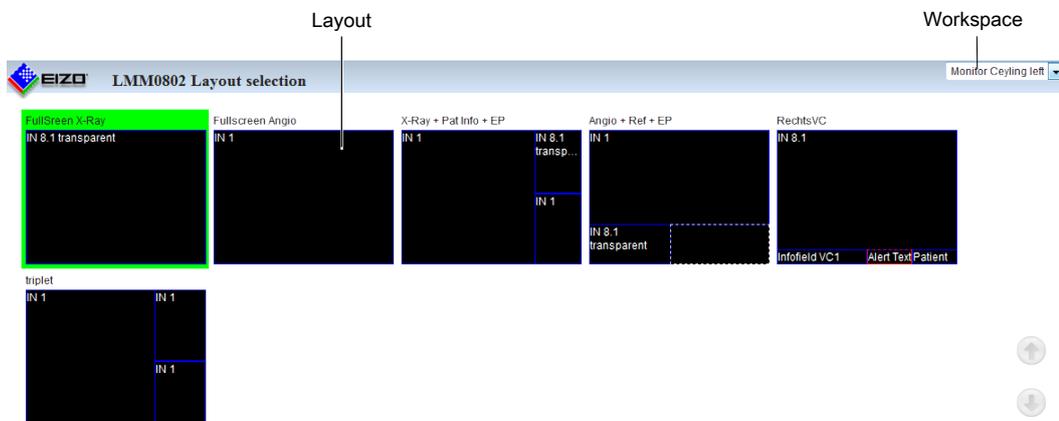| Note |
| --- |
| • All described functions can also be executed using Drag & Drop. |
| • All described functions can also be executed for additional outputs of a system expanded [▶ 26] with a matrix. |

Note
Setting up the panel PC with touchscreen
Observe the information in the panel PC with touchscreen's instructions for use.

7.1.1 Assigning layouts in the standard interface

Prerequisite

• The start address "<IP address of the LMM0802>" is used in the web browser or in the panel PC with touchscreen.

• The standard interface is displayed. For example:

Procedure

To assign layouts in the standard interface:

1. Click the arrow next to the Workspace indicator.

2. Select the workspace to be processed in the displayed list.

3. Click the required layout.

   Note: The active layout is highlighted green.

The layout changes immediately.

7.1.2 Assigning instances and layouts in View Management

Note
If a video source in an assigned output cannot be displayed, the window is highlighted red (when operating with Drag & Drop) or flashing red (when operating with clicks).

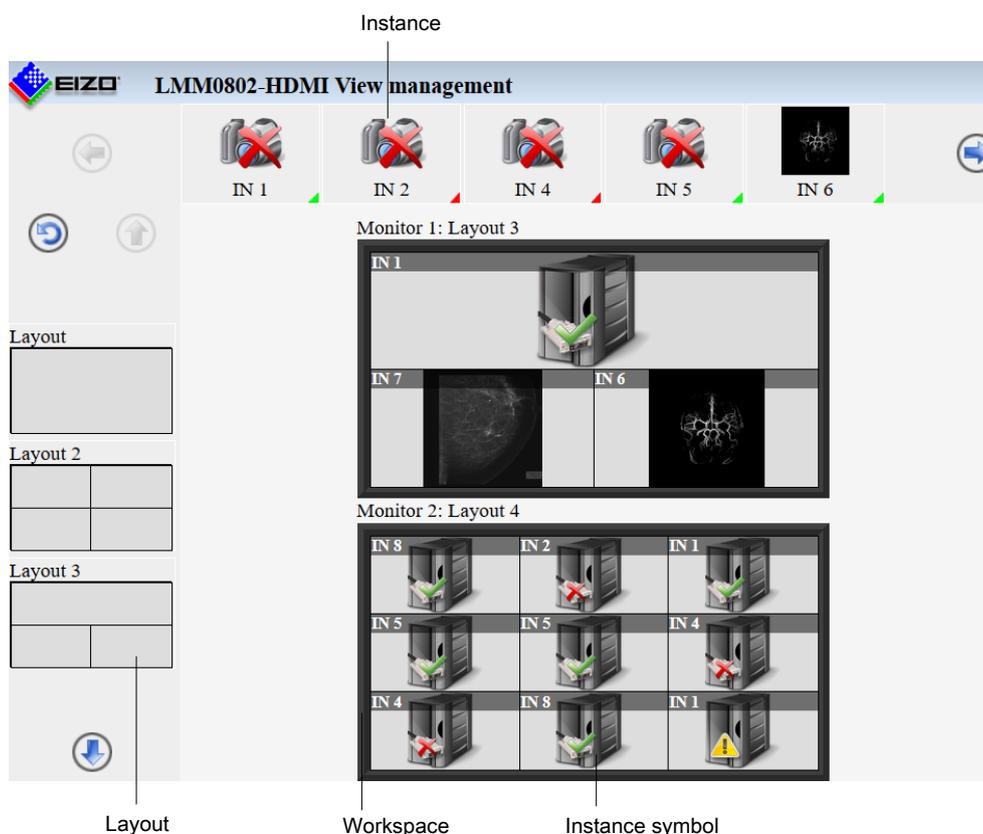| Note |
| --- |
| **Filter the displayed outputs**

 To improve web browser display clarity, you can filter the workspaces and monitors displayed in View Management.

 The command in the web browser is: "<IP address LMM0802>/vm?outputs=<List>. "<List>" contains the number of workspaces and monitors to be displayed.

 You determine the number by enumerating the displayed workspaces line by line from top to bottom. For example, entering "/vm?outputs=1,2,9" means the first, second, and ninth units are displayed in the web browser. |

Prerequisite

• The start address "<IP address of the LMM0802>"/vm is used in the web browser or in the panel PC with touchscreen.

• View Management is displayed. For example:

Note: If "Switch layout per monitor" is set in the system settings, only monitors, and not workspaces, are displayed.

Procedure

To assign instances or layouts in View Management:

1. Click the instance or layout to be assigned.

   Note: If you want to exchange instances with or between workspaces or monitors, click the instance to be exchanged.
   Note: The selected instance or layout is highlighted green. To undo the selection, click
   ⟲ .

2. Click the workspace or monitor where the instance or layout is to be used.

The layout or instance is assigned immediately.

7.2 Sidebar Annotation

Note
The optional software package 4.0.0 Extended is required for the described functions.

Note
• The Annotation sidebar is available for local operation only. Remote access is not possible.   • To use the Annotation sidebar, "Annotation enabled" must be set in the system settings.   • When rebooting the LMM, annotations made previously are deleted.   • In Dual User mode, each user works with the Annotation sidebar independently of the other user.

Using the Annotation sidebar, graphical objects or texts can be created as remarks on the screen. The sidebar is opened by moving the mouse pointer to the upper right corner.

Fig.: "Annotation" sidebar

The following table explains the available buttons.

Symbol	Description
👁	Button for displaying all objects.
🚫👁	Button for hiding all objects.
◆	Button for permanently deleting individual objects.
🗑	Button for deleting all objects. **Note:** The objects are permanently deleted without the need for confirmation after clicking the button.
◯	Button for drawing ovals.
▢	Button for drawing rectangles.
A	Button for entering text.
∿	Button for drawing a freehand line.
▣	Button for drawing polygons.
╱	Button for drawing lines.
↙	Button for drawing arrows.
↗	Button for drawing double arrows.
—	Button for "thin" line width.
—	Button for "medium" line width.
—	Button for "thick" line width.
—	Button for "solid" line type.
- - -	Button for "dashed" line type.
......	Button for "dotted" line type.

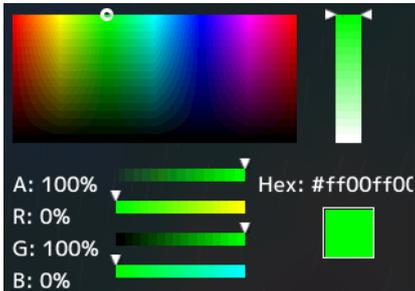The color palette is available for establishing the object color.

Fig.: Color palette

7.2.1 Introduction

Graphical objects can be created using the Annotation sidebar; for example, oval, rectangle, polygon, freehand line, arrow, double arrow, and text.

The following functions are available:

• Set and change object properties such as line width, line type using buttons.

• Select the line color using a color palette.

• Display or hide the graphical objects that are drawn.

• Permanently delete individual objects or all objects with one click.

Every object has "handles". A flashing handle marks the active object. Handles are used to set the size and orientation of the object.
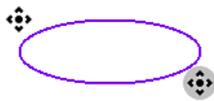

Fig.: Example for two handles of an oval (gray flashing = active)

7.2.2 Displaying or hiding objects

• To display the objects that have been created, click [eye icon] with the mouse.

• To hide the objects that have been displayed, click [hidden eye icon] with the mouse.

7.2.3 Inserting text

✓ The Annotation sidebar is fixed.

1. In the sidebar, click **A** with the mouse.

2. If necessary, select the text color from the color palette.

3. In the image area, click the mouse at the position where you want to place the text.

   ⇨ The text object is placed horizontally.

4. Enter the required text.

⇨ The text is displayed in the default size. Use the handles to enlarge, rotate, or move the text.
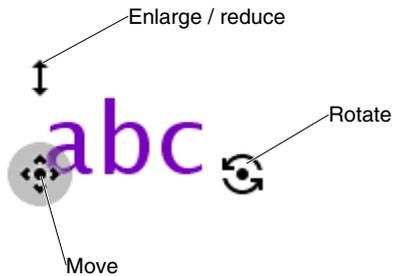
Enlarge / reduce

Rotate

Move

Fig.: Text object handles

7.2.4 Creating graphical objects

✓ The Annotation sidebar is fixed.

1. In the sidebar, click the button for the required graphical object with the mouse.
   Note: The following graphical objects are available: oval, rectangle, polygon, freehand line, arrow, and double arrow.

   ⇨ At the same time the object is selected, the most recently set line type, line width, and line color are selected. If you do not wish to change these, skip the following step.

2. Select the required line width, line type, and line color in the sidebar with the mouse.
   Note: Line widths thin, medium, and thick, and line types solid, dashed, and dotted are available. Use the color palette to set the line color.

3. In the image area, click and hold the left mouse button at the initial position desired.
   Exception: To draw a polygon, click the initial position required, then click additional points in sequence. If a point is on a previous point, the polygon is closed and a new polygon can be drawn. You can also use this to draw a line by selecting the start and end points and then clicking the end point again.

4. Drag the mouse pointer to the required end position and release the left mouse button.

   ⇨ The object has been created. You can create additional objects of the same type by repeating the last two steps. To create an object of a different type, begin with step 1.

Note
Steps 2 and 3 can be in any order. You can also set the object properties after drawing the object.

Note
Deleting the active object with the right mouse button
You can delete the active object by clicking a handle with the right mouse button.

7.2.5 Editing objects

✓ The Annotation sidebar is fixed.

✓ The handles of the object to be edited are visible.
Note: If the object's handles are not visible, in the sidebar click the symbol of the corresponding object type with the mouse.

1. To change the size or position of an object, click the corresponding handle and drag it to the required position.

   ⇨ The size and position of the object is changed.

2. If you want to change the line type, line width, or color of an object, first click one of the object's handles so that it flashes gray. The use the mouse to select the settings required.
   Exception: The line type and width cannot be set for a text object.

   ⇨ The settings for the object are changed.

7.2.6 Deleting objects

Note
Deleting the active object with the right mouse button
You can delete the active object by clicking a handle with the right mouse button.

Deleting individual objects

✓ The Annotation sidebar is fixed.

1. To delete individual objects, click with the mouse in the sidebar.

   ⇨ The handles of all objects are displayed.

2. Click the handle of the object to be deleted with the mouse.

⇨ The object is deleted. To delete an additional object, repeat the last step.

Note
Deleting all objects
You delete all objects with the button. Deletion is immediate and permanent when you click the button with the mouse. The sidebar does not have to be fixed.
• Only use this button if you are certain that all objects should be deleted. Deleting cannot be undone.

7.3 Dynamic Layout

Note
The optional software package 4.0.0 Extended is required for the described functions.

Note
• The function is only available for local operation or with the optional LMM Control application.
• The function can only be run if "Dynamic layouts enabled" is set in the system settings.
• When rebooting the LMM, changes made previously are reset.

Note
Undoing layout changes
• To undo individual or all layout changes, click 🔵 or 🔵 in the Layout sidebar.
• You can undo individual layout changes by double-clicking the right mouse button.

Rescaling

You can change the window borders and sizes during operation with the dynamic layout.

The following symbols are displayed when you move the mouse pointer to the borders or corners of a window:

Symbol	Description
↔	• Displayed on the vertical window borders. • Enlarge or reduce the window in horizontal direction.
↕	• Displayed on the horizontal window borders. • Enlarge or reduce the window in vertical direction.
⤡	• Displayed on the window corners. • Enlarge or reduce the window in any direction.

Zooming

You can zoom in and out in each window with the dynamic layout.

To do this, move the mouse to the position that you want to enlarge in the displayed image. Turn the mouse wheel forwards to zoom in on this location in the image. To zoom out, turn the wheel backwards.

If you are displaying multiple windows in the set layout, you can zoom in on each of them. The LMM automatically limits the zoom factor depending on signal source and bandwidth so that a correct image continues to be displayed.

Note
Move
• You can pan the zoomed image section by pressing the mouse wheel and moving the mouse. The ✊ symbol is displayed with this.

7.4 Switching on and off

Switching on

The LMM0802 can be switched on using the main switch or Wake on LAN.

NOTICE
Switching on and off using the main switch
When the LMM0802 has been switched on at the main switch, the LMM may only be switched off again when switching on has been completed. This occurs when both LEDs L1 and L2 illuminate green. Otherwise, the device could be damaged.

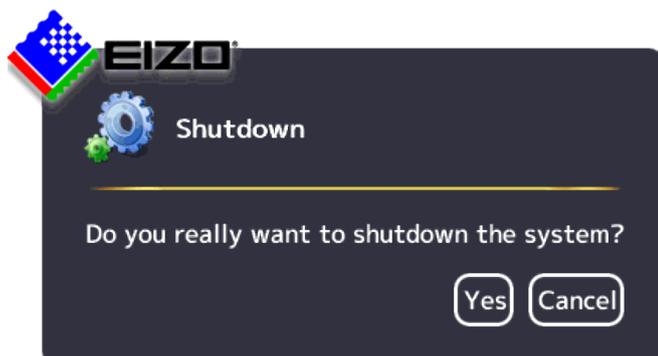| **Note** |
|---|
| **Switching on with matrix** |
| Image sources which are connected to the LMM0802 via a matrix may be displayed incorrectly or as image artifacts during switching on the LMM, due to technical limitations. When the LMM has completely finished switching on, the image sources are displayed correctly. |
| Image sources which are directly connected to the LMM0802 will already be correctly displayed during switching on. |

Shutdown

To switch off the LMM0802 proceed as follows:

1. Click ⏻ in the "Base settings" sidebar.
   Note: The administrator can set whether a default user can shut down the Large Monitor Manager. If the corresponding right has not been assigned, the button is disabled.

2. To shut down click "Yes".
   ⇨ The LMM is switched off and can be switched back on using Wake on LAN.

3. Shut down the LMM using the main switch.

⇨ The LMM is disconnected from the power supply and can only be switched back on using the main switch.

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

Wake On LAN

If the LMM0802was shut down using the ⏻, you can switch it back on via the network using Wake on LAN. The required software has to be installed on the PC used for switching on, and configured according to the MAC address of the LMM.

7.5 Running a PC application

The LMM0802 can be used to run a PC application, such as patient data entry or system control, using the mouse and keyboard.

To access the application, the PC as video source [▶ 23] has to be connected to an input and configured.

The PC operates in "Focused Mode", which is activated by double-clicking the window.

The selected window in which "Focused Mode" is active has a green frame by default. Other instances cannot be amended as the assigned mouse and keyboard are restricted to this window until quitting "Focused Mode".

To quit "Focused Mode", either hold down the left and center mouse buttons for about 2 seconds, or press the "Key(s) to exit" defined in the settings. The default is <Alt><Space>.

8 Cleaning and maintenance

8.1 Cleaning

⚠ CAUTION
Device maintenance, cleaning and disinfecting
• The device is sensitive to mechanical influences. Avoid mechanical shocks or similar.
• 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.
• Remove all cleaning agent and disinfectant residue.
• Use only tested disinfectants.

Recommended cleaning agents and disinfectants

⚠ CAUTION
Use of cleaning agents and disinfectants
When handling the recommended cleaning agents and disinfectants, observe the information in the respective safety data sheet.

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

Prohibited cleaning agents and disinfectants

The following cleaning agents and disinfectants could lighten the finish and are therefore prohibited.

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

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

8.2 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.

9 Troubleshooting

9.1 Status messages

LEDs - LED status

LED	Status	Measure
L1 (FPGA)	Green when loaded successfully.	
	Orange if FPGA is not loaded.	Primary measure: Restart Secondary action: If the L1 LED remains orange, there could be a hardware fault. Return for repair necessary.
	Red when there is an initialization error.	Primary measure: Restart Secondary action: If the L1 LED remains red, there could be a hardware fault. Return for repair necessary.
L2 (µ-PC)	Orange during boot.	
	Green when software is started.	
	Red when communication to FPGA cannot be established.	Primary measure: Restart Secondary action: If the L2 LED remains red, there could be a hardware fault. Return for repair necessary

Status window

The status window opens if you move the mouse pointer in the lower right corner of the screen. The status window shows the current state of LMM hardware components.
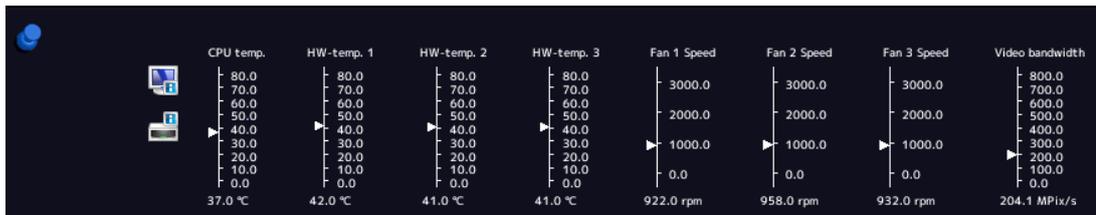
NOTICE
If a state in the status window is surrounding by a flashing red frame, the component is outside the acceptable operating ranger and safe operation of the LMM is endangered. • Look for a remedy immediately using the corresponding actions in the following table.

Indicator	Function	Action when frame is flashing red
CPU temp.	Monitors the CPU temperature.	Overtemperature: • Switch off the device. • Check the ambient temperature and try to reduce it if necessary. • Clear any dust from the ventilation slots.

Indicator	Function	Action when frame is flashing red
HW-temp 1 HW-temp 2 HW-temp 3	Monitors the temperature of the other hardware.	Overtemperature: • Switch off the device. • Check the ambient temperature and try to reduce it if necessary. • Clear any dust from the ventilation slots.
Fans 1 Speed Fans 2 Speed Fans 3 Speed	Monitors the fan functions.	Fans are not working (0.0 RPM): • Switch off the device. • Send the device back for repair.
Video band-width	Monitors the overall video band-width. (informational display)	No actions needed. The video bandwidth is adapted automatically by the LMM.

9.2 Remedy

Error	Possible cause	Measure
After changing the layout, the LMM cannot be operated with the connected mouse and keyboard.	You are still in "Focused Mode"	To exit the mode, press the keys to exit the active window (ALT + Space key is the default setting).
The connected PC cannot be operated using the mouse and keyboard connected to the LMM.	The connected computer does not correctly detect the USB interface of the LMM.	It is not a LMM0802 malfunction. Certain PC BIOS versions do not detect the keyboard of the LMM. Check whether there is a newer BIOS available for the PC.
The picture of an analog input is blurred or the colors are not shown correctly.	The analog input is not balanced.	Perform automatic detection of the input signal. See also Configuring analog video inputs [▶ 67].
After a change to the output timing in the "Settings" menu, the sidebars are no longer visible or the monitor does not display an image.	The monitor does not support the output timing on the LMM.	Using remote access, the set output timing to "Auto" in the "Settings" menu.
The LMM shut down after the firmware update.	After the firmware update, the LMM was not switched off and switched on again using the power switch.	Use the power switch to switch the device off and switch it back on.
Instance warning symbol is displayed.		See the description of symbols for instances in Basic symbols [▶ 30].

10 Technical specifications

10.1 Inputs/Outputs

Video inputs

Number of video inputs	12
Max. number of simultaneously displayed input channels	Up to 16 images from up to 8 video sources can be displayed with different characteristics (scales, cropping areas).
Max. delay between input and output	< 16.67 ms
Number of digital inputs [HDMI] [165 MHz]	6
Number of digital inputs [DVI-I] [165 MHz]	2
Number of analog inputs [DVI-I] [170 MHz]	2
Number of analog inputs [VGA] [170 MHz]	2
Number of analog inputs [S-Video] [170 MHz]	2
Max. number of horizontal pixels per channel	2048 for IN1- IN6 1920 for IN7.x and IN8.x
Min. pixel clock at input	25 MHz (VGA at 60 Hz)
Support of programmable EDID	Yes
Bandwidth	440 Mpixel/s

Video outputs

Number of digital outputs [DVI-I Dual Link] [330 MHz]	2
Output resolution for monitor 1 and monitor 2	up to max. 4096x2160 or 3840x2160 (QFHD)
Number of digital outputs [DVI-I Single Link] [165 MHz]	1
Output resolution	1920x1080 (FHD)

Interfaces

Ethernet interface	1 with 1 GBit/s
PS/2 service interface (for service purposes only)	1
USB Type A (downstream)	6
USB Type B (upstream)	8

Voltage outputs

Number of voltage outputs, 5 V, 500 mA	2
Number of voltage outputs, 5 V, 7 x 500 mA (MDR plug)	2, may only be used with breakout cable, 1 MDR on 7 jacks

10.2 Power supply

Rated voltage	100 V ... 240 V, 50 Hz ... 60 Hz
Current consumption	1.5 A ... 0.7 A

Note
The LMM0802 has power supply outputs. The actual current consumption depends on the number of additional loads.
The following list contains the individual consumption values. • Typical power consumption: 50 W • Maximum additional power consumption due to connected modules: 40 W • Maximum power consumption: 120 W

10.3 Mechanical design

Housing	19" 2HE
Degree of protection	IP20
Dimensions (W x H x D) in mm	444 x 88 x 286
Weight	5.5 kg

10.4 Climatic conditions

In operation	
Temperature range	5 °C ~ 45 °C ambient temperature
Temperature gradient	Maximum 10 K/h, without condensation
Humidity	10% ~ 85%, non-condensing
Air pressure	700 hPa~ 1060 hPa or 3000 m ~ -384 m height

During transport and storage (packed)	
Temperature range	-40 °C ~ 70 °C ambient temperature
Humidity	10% ~ 95%, non-condensing
Air pressure	200 hPa~ 1060 hPa or 11800 m ~ -384 m height

10.5 Safety specifications

Safety standards	IEC/EN 60601-1 IEC/EN 62368-1 UL/CSA 62368-1 (cMETus)
Protection class	Protection class I
Degree of protection	IP20 in accordance with DIN 40050

11 Dimension drawings
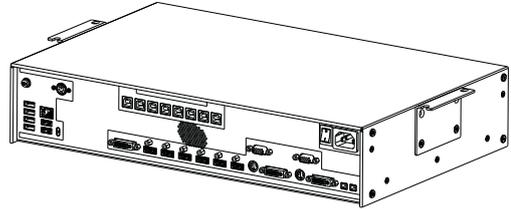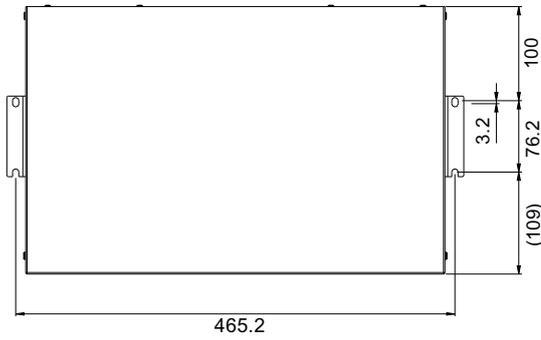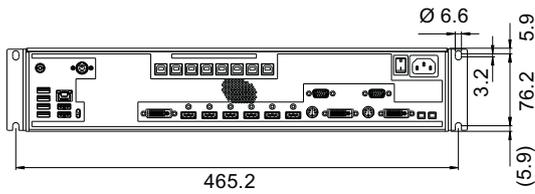
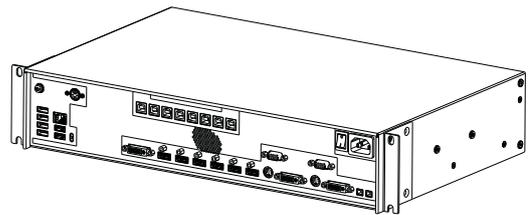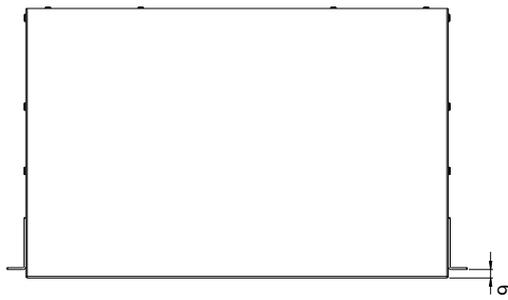All dimensions in mm
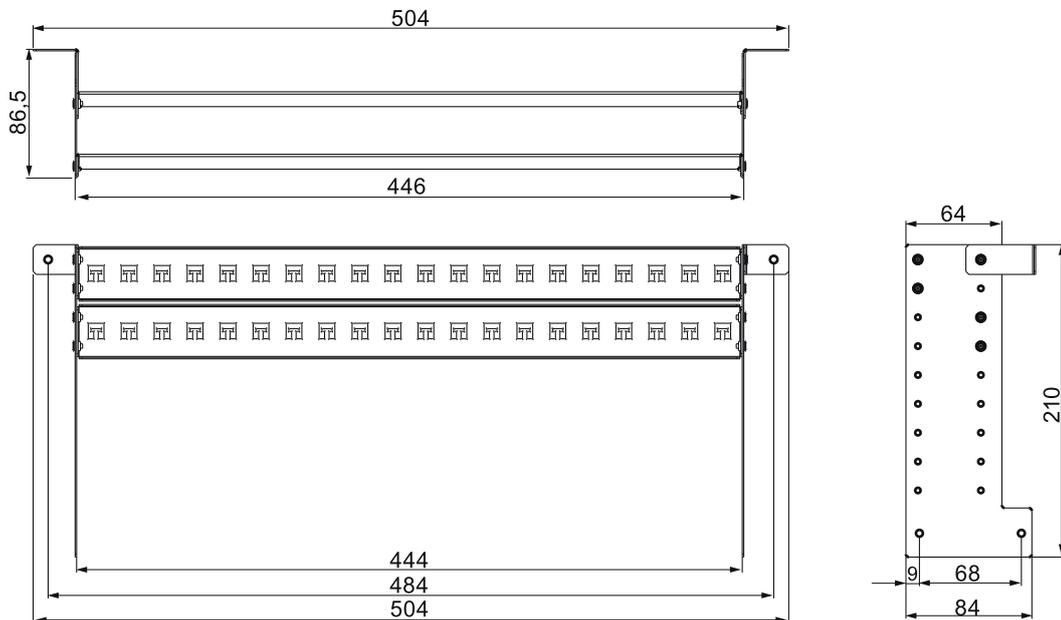
11.1 LMM without brackets
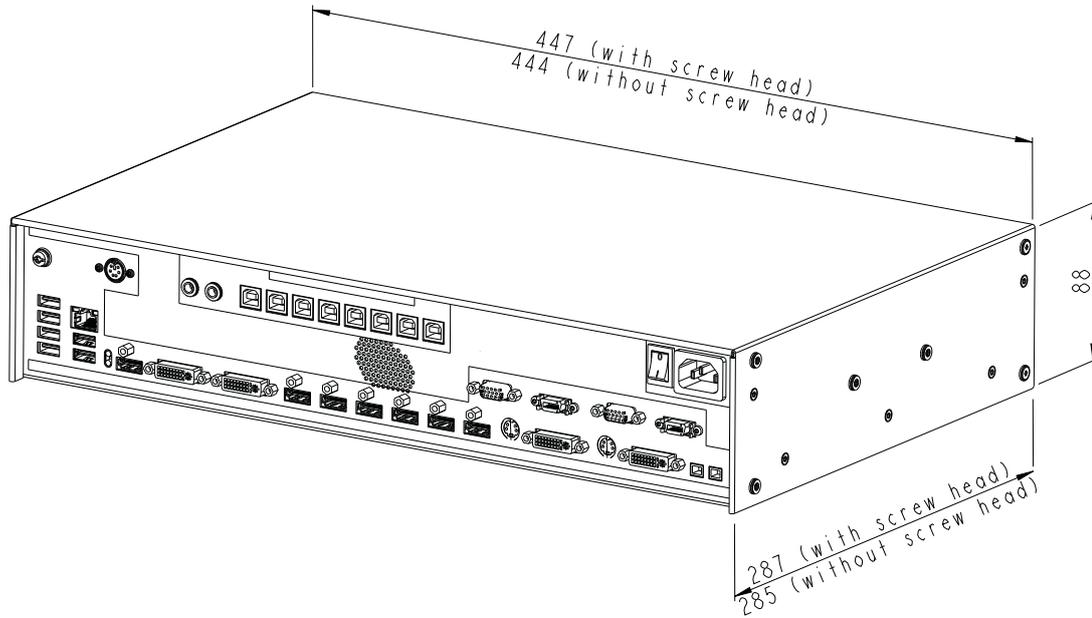
Front
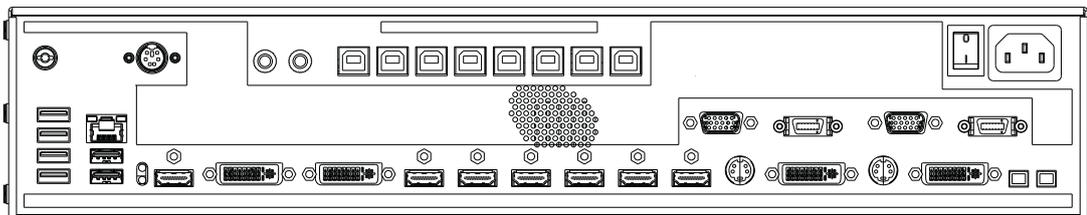
Back
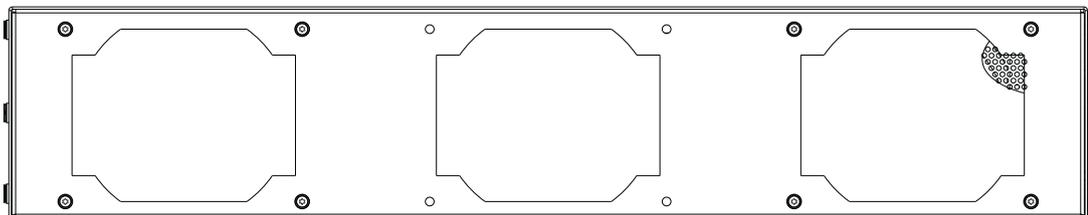
11.2 LMM with center mounting bracket
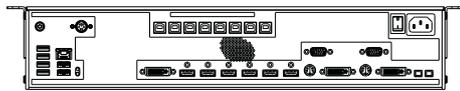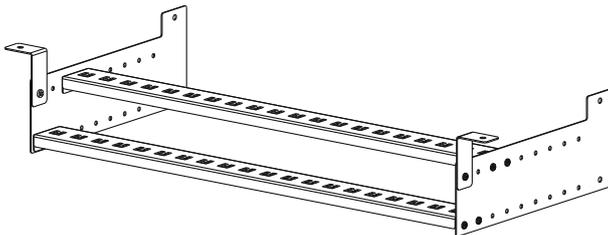
11.3 LMM with front brackets

11.4 Cable strain relief FMM0800 (accessory)

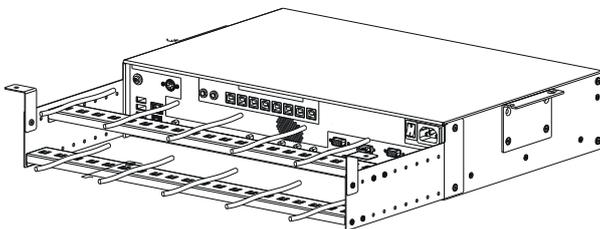**View when not installed**

View when installed on the Large Monitor Manager

Use the screws provided to attach to the LMM0802.

For undertable installation, the cable holder also has to be secured on both front brackets.

Note
Cable ties, 3 mm in width, can be used to attach the cables.

12 Spare parts / accessories

12.1 Accessories

Extron DMS 2000 20x20 DVI Matrix

The Extron DMS 2000 20x20 has 20 DVI inputs and outputs each. Of the 20 input signals, up to 6 signals can be processed by the LMM0802 and simultaneously displayed. The other matrix video outputs can be controlled with the LMM user interface.

The matrix scope of delivery includes a special adapter cable for connecting the RS232 output of the matrix with a USB input of the LMM. Installation instructions are also provided to enable operation according to the tested system environment.

Order No.: 6GF60310AA01

GefenPRO 16x16 DVI Matrix

The GefenPRO 16x16 DVI Matrix has 16 DVI inputs and outputs each. Of the 16 input signals, up to 6 signals can be processed by the LMM and simultaneously displayed. The other matrix video outputs can be controlled with the LMM user interface.

The matrix scope of delivery includes a special adapter cable for connecting the RS232 output of the matrix with a USB input of the LMM. Installation instructions are also provided to enable operation according to the tested system environment.

Order No.: 6GF60310AA00

PDS0800-HD Splitter

The 8 MP output of the LMM0802 can be duplicated with a PDS0800-HD Splitter on an additional 8 MP monitor and can communicate via the LMM.

Order No.: 6GF60200AA001AA1

Panel PC with Touchscreen CID1201P

The CID1201P is a panel PC with touchscreen and suitable application software. It can be used to switch layouts and assign instances on the LMM0802.

Order No.: 6GF65500AE180AA1 (not for Japan)

Analog-DVI converter PDC0100

The PDC0100 converts analog video signals into digital signals. With the Force Mode function, even non-standard analog signals can be displayed.

Order No.: 6GF60100BA02

Cable strain relief FMM0800

To arrange the connecting cables and protect against unintended disconnection, we recommend using cable strain relief FMM0800.

Order No.: 6GF60301AB000AA0

Breakout cable, 1 MDR on 7 jacks

Power supply adapter for up to seven external devices, such as optical transmission links.

Order No.: 6GF60301AB000AB0

Software package 4.0.0 Extended

The software package 4.0.0 includes the following functions:

- The "Annotation" function to add annotations and comments to the displayed video content.

- The "Dynamic Layout" function to change the window position and size or to zoom in and out when in the windows.

Order No.: 6GF67301AA01

LMM Control application

- The LMM Control application is an alternative control software that you can run using a panel PC.

- Connection via LAN cable.

- **Note**: The LMM0802 must be updated using the software package 4.0.0 Extended in order to be able to run the LMM Control application. A functioning Windows 10 installation is also required to run LMM Control.

Order No.: 6GF67301AE00

Additional accessories

- DVI-D to HDMI signal cable.

- DVI to HDMI conversion adapter.

13 Appendix

13.1 Markings and symbols

Marking / symbol	Meaning
⚠	Symbol for "Caution, observe accompanying documents".
⚡	Symbol for "Hazardous voltage".
CE	CE marking (EU conformity mark).
UK CA	UKCA marking (UK conformity mark).
FC	U.S. FCC marking for communication devices.
Electrical Safety MET® c us E113208	MET marking, in accordance with U.S. and Canadian national regulations.
RCM	RCM marking for conformity with Australian and New Zealand EMC standards.
CCC	CCC marking, in accordance with Chinese national regulations.
🏭	Symbol for the manufacturer of medical devices, supplemented by the date of manufacture.
WEEE	WEEE marking: Product must be disposed of separately; materials may be recycled.
⊖	Marking according to ACPEIP (China-RoHS).
IP20	Symbol for degree of protection according to DIN EN 60529.
∼	Symbol for alternating current at line voltage input.
⏚	Symbol for protective ground (ground).
|	"On" symbol (voltage).
○	"Off" symbol (voltage).
🔧	Input for service calls.
USB	Symbol for USB.
DVI	DVI output signal.
⎓	Symbol for direct current.
🖧	Symbol for network connection.
ℹ	Symbol for "Comply with the instructions for use".

13.2 Information on electromagnetic compatibility (EMC)

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

Intended environment

The Large Monitor Manager LMM0802 is intended for use in professional healthcare facilities such as clinics and hospitals. The LMM is not suitable for direct contact with a patient!

The LMM0802 is unsuitable for the following environments:

* Home-based healthcare facilities.

* Near short-wave therapy devices.

* Near an MRI system.

* Installed into vehicles, including ambulances.

⚠ WARNING
Special EMC provisions are required for use of the LMM0802 . Installation, assembly, and use must take place in compliance with the following instructions: • 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. • When using a portable HF communications device, maintain a distance of at least 30 cm (12 inches) from all parts of the LMM, including cables. Otherwise, the performance of this device could be affected. • Persons connecting additional devices to the signal input or output for configuring a medical system are responsible for ensuring compliance with standard IEC/EN 60601-1-2. • Only use the cables supplied with the product or specified by EIZO. The use of cables other than those specified for this device by EIZO, or the cables provided, can result in increased electromagnetic radiation or reduced electromagnetic interference immunity of this device, and may constitute improper use.

Cable	Max. cable length	Shielding	Ferrite core
Signal cable (HDMI)	3 m	Shielded	Without ferrite cores
Signal cable (DVI)	3 m	Shielded	With ferrite cores
USB cable	3 m	Shielded	With ferrite cores
Power cable (with grounding)	3 m	Unshielded	Without ferrite cores
Ethernet cable	30 m	Unshielded	Without ferrite cores
5 V DC cable adapter (MDR output)	0.3 m	Unshielded	Without ferrite cores
5 V DC cable (HIROSE RP34L output)	0.25 m	Unshielded	Without ferrite cores

Information and manufacturer's declaration – electromagnetic radiation		
The LMM0802 is intended for use in the electromagnetic environments listed below. The customer or user of the LMM0802 has to ensure that the device is used in such an environment.		
Emissions test	**Compliance**	**Electromagnetic environment – guidance**
RF emissions according to CISPR 22	Group 1	The device uses HF radiation for internal operation only. Therefore, its HF emissions are very low and are not likely to cause any interference in nearby electronic devices.
RF emissions according to CISPR 22	Class B	The device is suitable for use in all establishments, including domestic establishments and those directly connected to the public line power 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	

Information and manufacturer's declaration – electromagnetic radiation			
The Large Monitor Manager LMM0802 is intended for use in the electromagnetic environment specified below. The customer or user of the Large Monitor Manager LMM0802 has to ensure that the device is used in such an environment.			
Interference immunity test	**Measurement level for professional healthcare environments**	**Compliance level**	**Information regarding the electromagnetic environment**
Electrostatic discharge (ESD) IEC/EN 61000-4-2	±6 kV contact ±15 kV air	±6 kV contact ±15 kV air	It is recommended to use the device on wood, concrete, or ceramic floors. If the floor is made of synthetic material, the relative humidity should be at least 30%.
Fast transient electric 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) to line(s) ±2 kV line(s) to ground	±1 kV line(s) to line(s) ±2 kV line(s) to 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	0% V_T (100% dip in V_T) 0.5 cycles and 1 cycle 70% V_T (30% dip in V_T) 25 cycles 0% V_T (100% dip in V_T) 5 sec	0% V_T (100% dip in V_T) 0.5 cycles and 1 cycle 70% V_T (30% dip in V_T) 25 cycles 0% V_T (100% dip in V_T) 5 sec	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	30 A/m (50 / 60 Hz)	30 A/m (50 / 60 Hz)	The magnetic fields with energy technology frequencies must be in an area that is representative of a typical location in a typical industrial environment or hospitals.
Note: V_T is the alternating current voltage before application of the measurement level.			

Electromagnetic interference immunity			
The LMM0802 is intended for use in the electromagnetic environment specified below. Customers and users of the device have to ensure that the device is used in such an environment.			
Interference immunity test	Measurement level for professional healthcare environments	Compliance level	Information regarding the electromagnetic environment
Line-based disturbances caused by HF fields IEC/EN 61000-4-6	3 Vrms 150 kHz to 80 MHz	6 Vrms	Portable and mobile HF communications devices may only be operated in the vicinity of the device and its components (including cables) when in compliance with the recommended minimum distance. It is determined using the formula for calculating the frequency of the transmitter.
	6 Vrms ISM bands between 150 kHz and 80 MHz	6 Vrms	
Electromagnetic HF fields IEC/EN 61000-4-3	3 V/m 80 MHz to 2.7 GHz	10 V/m	Recommended minimum distance $d = [6/6] \sqrt{P} = \sqrt{P}$ $d = [6/10] \sqrt{P} = 0.6 \sqrt{P}$, 80 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 transmitters with fixed settings according to on-site electromagnetic 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: For 80 MHz, the recommended minimum distance for the higher frequency range applies. **Note:** Guidelines with respect to line-based interference due to HF fields or electromagnetic HF fields may not apply in all situations. Absorption and reflection by structures, objects, and people impact the propagation of electromagnetic waves. **Note:** The ISM bands between 150 kHz and 80 MHz are in the range of 6.765 MHz to 6.795 MHz, 13.553 MHz to 13.567 MHz, 26.957 MHz and 27.283 MHz and 40.66 MHz to 40.70 MHz.			
[a] The field strengths of fixed transmitters, for example the base station for cordless and mobile telephones, radio, land mobile radio, ham radio, and television cannot be determined precisely in advance. To evaluate the electromagnetic environment using fixed transmitters, an electromagnetic location measurement should be included. If the measured field strength in the environment where the device is used exceeds the applicable HF compliance level, observe the device 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 or mobile HF communications devices and the LMM0802			
The LMM0802 is intended for use in an electromagnetic environment in which interference due to electromagnetic radiation is controlled. For other portable and mobile HF communication devices (transmitters), the recommended minimum distance between the portable and mobile HF communication devices (transmitters) and the device applies as listed below. This is based on the maximum output power of the communication device.			
Maximum nominal output power of the transmitter (W)	**Recommended minimum distance according to the frequency of the transmitter (m)**		
	150 kHz to 80 MHz $d = \sqrt{P}$	80 MHz to 800 MHz $d = 0.6\sqrt{P}$	800 MHz to 2.7 GHz $d = 0.6\sqrt{P}$
0.01	0.1	0.06	0.06
0.1	0.316	0.190	0.19
1	1	0.6	0.6
10	3.162	1.897	1.897
100	10	6	6
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, the recommended minimum distance for the higher frequency range applies. **Note:** This information may not be applicable in all situations. Absorption and reflection by structures, objects, and people impact the propagation of electromagnetic waves.			

Recommended minimum distance between portable or mobile HF communications devices and the LMM0802

The LMM0802 is intended for use in an electromagnetic environment in which interference due to electromagnetic radiation is controlled. The customer or user of the device can help prevent electromagnetic interference by maintaining the recommended minimum distance between portable and mobile HF communications devices (transmitters) and the device.
The interference immunity regarding adjacent fields has been confirmed for the following wireless HF communications devices:

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

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

13.3 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.

13.4 Repairs

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

13.5 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.

13.6 China RoHS (Restriction of Hazardous Substances)

LMM0802 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） Acessories (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.

13.7 Additional devices

Connected devices must meet the relevant safety standards.

13.8 Contact

Support during installation and for technical questions

www.eizo-or.com

13.9 Trademarks

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