



# Exalta System User Manual

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# Introduction

# About this User Manual

## Manual version and software versions in this manual

Item	Version
User manual	V1.1.2
Exalta Manager App	V1.1.1.452
Exalta Operator App	V1.1.1.450
Webservice Linux	V1.1.0.72
Webservice Windows	V1.1.1.77



This user manual is an essential component of the product.



It must be read carefully before the product is assembled, put into operation or used, and must be kept for later reference.

This user manual includes important instructions and information related to the operating safety and maintenance of the computing unit. In particular, follow all safety instructions (see chapter "Safety Notes").

## Warning symbols in this user manual or on the system


The symbols used in this user manual have the following meaning:




Symbol	Meaning
 <b>Warning!</b>	Indicates a potentially hazardous situation or improper use that could result in serious personal injuries or death.
 <b>Caution!</b>	Indicates a potentially hazardous situation or improper use which, if not avoided, may result in minor or moderate injury.
<b>Note</b>	Indicates a potentially hazardous situation or improper use which, if not avoided, may result in appreciable material, financial and environmental damage.

Symbol	Meaning
	Indicates hazardous electrical voltage, risk of electric shock.
	Indicates a hazardous electromagnetic field.

## About this User Manual (Continued)

### Other symbols in this user manual or on the system

Symbol	Meaning
	Indicates additional information or explanations that are intended to help the user employ the product in a technically correct and efficient way.
✓	Prerequisite for a step or a sequence of steps
▶	<ul style="list-style-type: none"> <li>Individual step that you must perform</li> </ul> or <ul style="list-style-type: none"> <li>Several steps without given order</li> </ul>
1. 2.	Several steps that you must perform in the given order
[Name]	Names in the user interface of the apps (button name, menu name, etc.)

Symbol	Meaning
*	Item not contained in all equipment configurations
	Instructions for disposing of the system, its accessories and consumables. The system must be disposed of in accordance with 2012/19/EU WEEE directive.
	Manufacturing date, e.g. 11/2020 for November 2020
	China RoHS 50 years EFUP (Environmentally friendly use period)

# Copyright Information

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The instructions contained in the following documentation reflect state-of-the-art technology. We have compiled the texts and illustrations as accurately as possible. Still, we are always grateful for comments and suggestions regarding potential mistakes within this documentation.

The term “Windows”, “Apple”, and “Intel” may appear in the following text without further identification.

The names of companies and products used herein may be trademarks of their respective owners.

The information in this manual is subject to modification at any time and without notification.



# Safety Notes

# Intended Use

Exalta, a software application running on a computing unit, is a dedicated solution supporting manual optical quality inspection utilizing a microscope and camera. This solution supports the entire quality inspection process from the definition to the reporting of the conducted inspection. This is realized by the guided microscope concept in combination with automated data management and reporting.

The system is intended for professional use only.

## Reasonably foreseeable misuse

The following misuse is prohibited:

- Using the system for any purpose not in accordance with the Declaration of Conformity (e.g. using it as an in-vitro diagnostic product according to Council Directive 98/79/EC or as a medical product according to Council Directive 93/42/EEC)

- Cleaning the system in a way other than specified in this manual
- Using a power supply that Leica Microsystems has not provided or permitted
- Allowing unauthorized personnel to open the system
- Installing the system in a way other than Leica Microsystems has specified in this manual
- Using cables that Leica Microsystems has not provided or permitted
- Using the system in other environmental conditions than specified in this manual
- Using combinations with non-Leica components that go beyond the scope of the manual



## Caution!

The manufacturer assumes no liability for damage caused by, or any risks arising from using the microscope for other purposes than those for which they are intended or not using them within the specifications of Leica Microsystems.

In such cases, the Declaration of Conformity shall be invalid.

# Intended Use (Continued)

## Intended user



### Caution!

The system may only be operated by qualified staff who have received training for operating the system.

Your IT personnel should be able to follow the instruction to install the database on the server.

## Intended environment

The system is intended for use on the clean room shop floor only.

- ▶ In order to avoid overheating or corrosion of the system, only operate the system within the permissible temperature range and ambient conditions (see chapter "Technical Specifications").
- ▶ Do not use the system in altitudes exceeding 2000 m ASL/NL.
- ▶ Protect the components from moisture, large temperature fluctuations, heat (e.g. direct sunlight, radiators or other sources of heat) and vibrations. These conditions can distort the functionality of the system.
- ▶ Do not use in rooms with flammable gases and substances.
- ▶ Do not use in a potentially explosive environment.
- ▶ Ensure free air circulation and do not cover or block air vents of the components.
- ▶ Ensure that electrical components are placed at least 10 cm away from the wall, other devices and from flammable substances.
- ▶ Operate the system in as clean and dust-free an environment as possible.
- ▶ Position the system on a stable, even, non-slip surface.
- ▶ Ensure that the system is free-standing and easily accessible.
- ▶ Do not place multiple components, such as computing units, on one another and do not place a monitor on a computing unit.
- ▶ Only use the Leica adapter mount to mount the computing unit to the microscope (see chapter "Optional or additional accessories").

# General Safety Instructions

Exalta is an IPC (industrial PC) of protection class 3 which is constructed and tested in accordance with EN 61010-1/IEC 61010-1, Safety requirements for electrical equipment for measurement, control and laboratory use and EN 61326-1/IEC 61326-1, Electrical equipment for measurement, control and laboratory use – EMC requirements. The Exalta power supply is a protection class 2 component.

In order to maintain this condition and to ensure safe operation, the user must follow the instructions and warnings contained in this user manual.



## Caution!

In addition to this manual, the safety notes of the other manuals provided must be observed!

The system, components and accessories described in this manual have been safety-tested and checked for possible hazards. The responsible

Leica affiliate or the main plant in Wetzlar must be consulted whenever the system is altered, modified or used in conjunction with non-Leica components that are outside of the scope of this manual.

## Instructions for the person responsible for the system

- ▶ Ensure that the system is operated only by personnel who has been instructed by authorized Leica personnel.
- ▶ Ensure that this user manual is always available at the place where the system is in use.
- ▶ Ensure that installation is guided by the user manual.
- ▶ Ensure that all operators have read, understood and observed this user manual, and particularly the safety regulations.

- ▶ Carry out regular inspections to ensure that the authorized users are adhere to safety requirements.
- ▶ Ensure that personnel is aware of hazards and safety equipment.
- ▶ Manage the responsibilities, competences and monitoring of staff.

# General Safety Instructions (Continued)

## Instructions for the operator of the system



### Caution!

- ▶ In order to maintain the condition of the system and to ensure safe operation, follow the instructions and warnings contained in this user manual.
- ▶ In addition to this manual, observe the safety instructions of the other system component manuals provided (e.g. microscope, monitor or other accessories).
- ▶ Only operate the system in a technically perfect condition.
- ▶ In case of safety-related malfunctions, switch off the system immediately, disconnect it from the power supply and take suitable measures to prevent further use.
- ▶ In all cases of doubt regarding the safety of the system, switch off the system and prevent further use.

- ▶ In addition to the overall documentation, ensure that legal or other safety and accident prevention regulations including applicable standards and guidelines of the respective operating country are complied with.

## Personal protective equipment

- ▶ When working with the system, wear suitable protective equipment:
  - Protective mask (half mask with protection class FFP3)
  - Protective gloves
  - Protective goggles

# Safety Instructions for Potential Hazardous Areas

## Electrical safety



### Warning!

The On/Off button does not disconnect the computing unit from the supply voltage.

- ▶ To completely disconnect it, remove the power supply from the socket outlet.

The computing unit is powered via the external power supply:

- ▶ Use the original power supply only (LPS-certified Power Supply Mean Well GST36B05-P1J).
- ▶ Make sure that the power cord is approved for use in the country in which you intend to use it.
- ▶ Always hold the plug of power supply when removing it from the socket outlet. Never unplug it by pulling the cable.

- ▶ If the original power supply fails or is damaged, have it replaced by Leica service.

Original power supplies are available from your Leica branch office or Leica dealer.

- ▶ Do not repair the power supply.
- ▶ Electrical work must only be carried out by Leica Service.
- ▶ To avoid damage to the computing unit, do not plug in or unplug data lines and control circuits unless the computing unit is switched off.
- ▶ To avoid injury to the user and for cooling reasons and fire protection, never remove the covers of the components.

The electrical accessory components are not protected against water or liquid solutions. Water can cause electric shock:

- ▶ Do not immerse the components in water.
- ▶ Ensure that no liquids or objects enter the interior of the components (during cleaning, etc.).

## Electromagnetic radiation



### Caution!

Electromagnetic radiation can disrupt proper operation:

- ▶ Do not use the components near sources of high electromagnetic radiation (for example, unshielded, intentionally operated ultra-high frequency sources).

We recommend assessing the electromagnetic environment before operation of the components and then giving corresponding instructions.

## Hazardous Substance Marking Table

Part Name	Hazardous Substances					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
Printed circuit boards	x	o	o	o	o	o
Electronic components	x	o	o	o	o	o
Mechanical parts	x	o	o	o	o	o
Cables and cable accessories	x	o	o	o	o	o
Displays	x	o	o	o	o	o
Light sources	x	x	o	o	o	o
Optics	x	o	x	o	o	o

This table is prepared in accordance with the provisions of SJ/T 11364.



o: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

x: Indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.

The "Hazardous Substance Marking Table" covers the here listed products.

Microscopes	Controls	Light Sources	Optics and Cameras	Power Supply and Service Modules
-------------	----------	---------------	--------------------	----------------------------------

Label for Environmentally Friendly Use Period (EFUP) (see type plate)

	<p>The limit values of the regulated substances comply with the specifications of SJ / T 11364 and are below 0.1% by weight.</p>
	<p>The limit values of the regulated substances comply with the specifications of SJ / T 11364 but are above 0.1% by weight.</p>



# Safety Instructions for Individual Operating Phases

## Transportation



### Caution!

- ▶ Transport and store the system only within the permissible temperature range and ambient conditions (see chapter "Technical Specifications").
- ▶ Use the original packaging for shipping or transporting the individual components and accessories.
- ▶ In order to prevent damage from vibrations, disassemble all moving parts that (according to the user manual) can be assembled and disassembled by the customer and pack them separately.

## Installation and operation



### Caution!

- ▶ Operate the system only within the permissible temperature range and ambient conditions:
  - chapter "Intended environment"
  - chapter "Ambient conditions for operation"
- ▶ If the system has been stored in a cold environment or at high humidity, wait until it is absolutely dry and has reached approximately room temperature before operating the system.
- ▶ Before connecting the system, check that the supply voltage and frequency are correct at the installation site (chapter "Exalta System: Electrical data incl. power supply").

- ▶ Prior to connecting power or to operation, check the components and accessories for damage.
- ▶ Do not use damaged, non-functioning components or accessories. Instead, notify your Leica branch office or Leica dealer.
- ▶ In order to ensure the product reliability and warranty services, the system must be exclusively operated with the original accessories and in particular the original power cord. The user bears the risk when using non-approved accessories.

# Safety Instructions for Individual Operating Phases (Continued)

## Cleaning



### Caution!

- ▶ Only clean as specified in this user manual and observe the related safety regulations (see chapter "Care and Maintenance").
- ▶ Prior to any care, cleaning or maintenance work on the system switch off the power and unplug the power cable.

## Improper maintenance, modifications and repairs

Maintenance, repairs and repairs may be carried out only by technicians who are explicitly authorized by Leica to do so.

Unauthorized alterations to the system shall void all rights to any warranty claims and product liability.

- ▶ Ensure that only original Leica Microsystems spare parts are used.
- ▶ Avoid contact with powered electrical circuits, which can lead to injury.

# Directives of European Community (EC-Directives)

The system fulfills the EU Directive 2014/35/ EU concerning the safety of electrical equipment and 2014/30/EU concerning electromagnetic.

The complete system does not conform to the requirements of an IVD device according to 98/79/EC.

## System safety and EMC

Our system has been designed, produced and tested in compliance with

- IEC 62368-1: Information technology equipment – Safety – Part one: general requirements
- Radio interference suppression in compliance with EN 55011 class B
- EN 61326-1, Electrical equipment for measurement, control and laboratory use – EMC requirements

The system meets the requirements of EU directives and carries the CE mark.

- 2014/35/EU Low voltage directive
- 2014/30/EU EMC directive
- 2011/65/EU RoHS directive
- 2009/125/EC + VO EU 1194/2012 Ecodesign requirements for energy-related products

## Important Usage Information

When sending or forwarding the system to third parties for any reason, or when returning the system to Leica for service or maintenance, the User should always reset the system to factory settings.

Use of network and/or other connectivity functionality provided by or with the system are at the User's discretion and risk; specifically, the User assumes full responsibility for network operation and safety. Leica does not guarantee any particular network safety standard and declines all responsibility, without limitation, for unauthorized access, security breach, data loss or corruption, or any financial or legal consequences thereof.

Certain FOSS Licenses, such as the GNU General Public License, GNU Lesser (or Library) General Public License or Mozilla Public License require that Leica make available to recipients the source code corresponding to binaries distributed under those licenses. Leica therefore hereby offers, valid for at least three years and valid for as long as we offer spare parts or customer support for that product model or as otherwise required by the respective Licenses, to give anyone a copy of the Corresponding Source for all the software in the product that is covered by Licenses requiring such, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source.

To receive such source code please contact Leica as follows:

Email: [lmssuz.github@leica-microsystems.com](mailto:lmssuz.github@leica-microsystems.com)

Address:

Leica Microsystems (Suzhou) Technology Co., Ltd.  
Room 503, Building B2, GenwayI-Park,  
88 Dongchang Road, Suzhou Industrial Park,  
Jiangsu, China  
Suzhou 215028  
China

# System Overview

# Congratulations!

We congratulate you on purchasing the Exalta System from Leica Microsystems.

## Scope of delivery

Standard delivery of the Exalta System includes:

- Exalta computing unit (1x)
- Power supply (1x)
- Power cord (1x)
- Quick Start Guide (1x)
- Software License key (1x) (License key is provided on the back of the Quick Start Guide)

## Optional or additional accessories

- Exalta mounting bracket
- Mobile storage device (USB-HID device)
- Footswitch (USB-HID device)
- Keyboard and mouse (USB-HID device)
- Barcode scanner (USB-HID device)
- Wi-Fi dongle (USB-HID device)

## Technical requirements for USB-HID devices

To work with the Exalta computing units, the USB-HID devices (footswitch, keyboard, mouse, barcode scanner, etc.) must meet the following requirements:

- Power supply: Exalta computing units support only 500 mA max. at 5 VDC via USB. If the accessory exceeds this value, use an external power supply for the accessory
- USB type-A interface to connect to the Exalta computing units
- HID protocol support (HID keyboard, footswitch, barcode scanner)
- Compatible with ARM Linux system

All USB-HID devices complying with the above requirements are, in principle, compatible with Exalta, however, Leica cannot guarantee their compatibility with absolute certainty.

The devices listed below in the White List have been validated by Leica to work compatibly with Exalta:

Component	CE / Compliance check
Footswitch: steute KF 1S	OK
Scanner: HoneyWell 1250G	OK
Scanner: Zebra DS2208	OK
Scanner: HH450	OK
Wi-Fi dongle: EW-7611ULB from EDIMAX	OK



For information on additional accessories, such as objectives and adapters, illumination or the dust cover for the microscope, please contact your Leica dealer.

You can find detailed descriptions of different accessories in their corresponding user manual.

# Your Exalta System

## System components

The Exalta System consists of:

- 1x Exalta computing unit (see chapter "Overview of the Exalta Computing Unit: Front View")
- Exalta Manager and Exalta Operator App (see chapter "Software applications")

## Software applications

The Exalta System has two software applications:

- Exalta Manager App:  
Designed to manage users, create workflows, create reports, countersign reports, carry out audit trails and define settings (see chapter "Working with the Exalta Manager App")

- Exalta Operator App:  
Designed to perform quality inspection based on the workflows created in the Exalta Manager App and collect data (see chapter "Working with the Exalta Operator App")

## Integration in your IT infrastructure

There are two options to integrate the Exalta System.

If you have a server and agree to store Exalta data and install Leica Exalta service software on your server, we recommend using the database integration options.

If you have concerns about Leica Exalta service software installed on your server and agree to store data in a network folder of your server, we recommend using the folder integration option.

For more details, refer to the following chapters:

- See chapter "Appendix 1: Database integration option"
- See chapter "Appendix 2: Folder integration option"

Have the Exalta System integrated into your IT infrastructure by your IT support.

Your Exalta hardware has to be in the same network as the database.

# Your Exalta System (Continued)

## Data storage

Images captured in the Exalta Operator App during quality inspection tasks are stored as JPEG files on the server (in case of database integration option) or in the folder (in case of folder integration option).

Data collected in the Exalta Operator App during quality inspection tasks is saved in the database (in case of database integration option, see chapter "Appendix 1: Database integration option" and chapter "Appendix 4: Database Structure") or in the folder (in case of folder integration option, see chapter "Appendix 2: Folder integration option" and chapter "Appendix 2: Folder integration option").

## Databases "MariaDB", "MySQL" or "SQLite"

With the database integration option, the Exalta System supports "MariaDB", "MySQL" and "SQLite" databases (Structured Query Language).

Data extraction can be realized by SQL requests (see chapter "Appendix 4: Database Structure").

Please follow the instructions to install and set-up the database management system on your server (see chapter "Appendix 1: Database integration option").



# Overview of the Exalta Computing Unit: Front View



## Front view

1. On / Off button
2. Status LED

## Status LED of the computing unit

Status	Meaning
White	Computing unit is switched on
Off	Computing unit is switched off

## Overview of the Exalta Computing Unit: Rear View



1. *Ethernet port*
2. *USB 3.0 port (2x)*
3. *USB 2.0 port (2x)*
4. *HDMI port*
5. *Power port*

# Transportation and Unpacking

# Transportation and Unpacking

## Transporting the system

- ▶ Transport the system in its original packaging or in a packaging that protects from damage.
- ▶ Unpack the system only at the defined site of operation.

If the system is brought from a cold environment into the room where it will be used, condensation may occur:

- ▶ In order to avoid damage to the system, wait until the components have reached the ambient temperature and are dry before use.

## Unpacking the system and checking delivery content and condition

It is not recommended to dispose of the original packaging material. It may be required for reshipment at some later date.

1. Unpack all components.
2. Check that the delivery is complete (see chapter "Scope of delivery").
3. Check all components for any visible damage caused during transport.
4. Report any transport damage or missing components immediately (see chapter "Contact address").

# Set-Up

# Setting Up the Exalta System

**6** Power supply  
• Only Leica qualified power supply available

**1** HDMI

**2** Camera

**5** USB hub  
(USB flash disk, Wi-Fi dongle, foot switch, scanner)

**4** Network

**3** Keyboard / mouse

• If you need to connect more than 4 USB devices (USB 3.0), it is recommended to connect the devices to a USB hub or use a wired mouse / keyboard to avoid signal interference.

• Maximum sum of all USB output is 2A.

**7** Turn on Exalta

**01** Connect the Exalta computing unit to the monitor via HDMI cable

**02** Connect the Exalta computing unit to the Leica camera

**03** Connect the Exalta computing unit to the mouse and keyboard

**04** Connect the Exalta computing unit to the network

**05** Connect the Exalta computing unit to other devices, if needed

**06** Connect the Leica power supply to the 5V port of the Exalta computing unit

**07** Touch On / Off button on the Exalta computing unit

**Leica**  
MICROSYSTEMS

Please find the activation ticket on the back of the Quick Start Guide and refer to this user manual for the activation process.



For information on installing the Exalta System in your system, see chapter "Appendix 1: Database integration option" or see chapter "Appendix 2: Folder integration option".

## Selecting the site of operation

Before setting up your Exalta System, select a suitable site of operation on the clean room shop floor.

- ▶ Position the Exalta System on the same table as the microscope.
- ▶ If required, mount the Exalta System on the microscope, using the mounting bracket (see chapter "Mounting the Computing Unit on the Microscope (Optional)").

Make sure the requirements in the following chapters are observed:

- chapter "Intended environment", page 11
- chapter "Ambient conditions for operation", page 149

# Setting Up the Exalta System (Continued)



For the reference numbers in the following subchapters, refer to the numbers in the image on page 30.

Leica Microsystems suggests that all accessory cables connected with Exalta computing box should be less than 3 meters to avoid EMC disturbance.

The total maximum output current limitation of all USB ports is 2A. Please use a USB hub Wi-Fi with external power supply if an accessory with high power consumption is used.

To avoid signal interferences between USB 3.0 and USB wireless devices (Wi-Fi dongle, wireless mouse, keyboard...), Leica Microsystems recommends strictly following the rules defined in this chapter and its subchapters to set up the system.

## Connecting the computing unit to the power supply



Only use the supplied power cord.

- ✓ The requirements regarding the power supply are met (see chapter "Technical Specifications").
- 1. Connect the power cord to the power supply.
- 2. Connect the power supply to the power port of the computing unit (6).
- 3. Connect the power cord plug to a socket outlet (6).

## Connecting the computing unit to the local network

1. Connect one end of the network cable to the Ethernet port of the computing unit (4).
2. Connect the other end of the network cable to the network connection.

## Connecting the Leica camera



Compatible Leica cameras are:

- DMC2900
  - DMC4500
  - DMC5400
  - FLEXACAM C1
- ▶ Connect the Leica camera to one of the USB 3.0 ports of the computing unit (2).

# Setting Up the Exalta System (Continued)

## Connecting a monitor

1. Plug the data cable into the HDMI port of the computing unit (1).
2. Plug the monitor power cord to a socket outlet.

## Connecting USB keyboard and mouse (optional)

Wireless devices:

- ▶ Connect the USB dongles of keyboard and mouse to one of the USB 2.0 ports of the computing unit (3).

Wired devices:

- ▶ To avoid signal interference, we recommend that you connect wired mouse or keyboard to the other USB 3.0 port.



Please use a USB hub with external power supply if an accessory with high power consumption is used.

## Connecting a mobile storage device (optional)

- ▶ Connect the mobile storage device to one of the USB 2.0 ports of the computing unit (5).

## Connecting a barcode scanner (optional)

- ▶ Connect the barcode scanner to one of the USB 2.0 ports of the computing unit (5).

## Connecting a footswitch (optional)


- ▶ Connect the footswitch to one of the USB 2.0 ports of the computing unit (5).

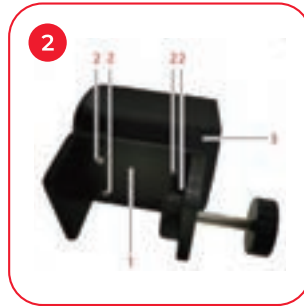
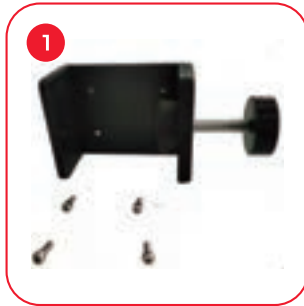
## Connecting a Wi-Fi dongle (optional)

- ▶ Connect the Wi-Fi dongle to one of the USB 2.0 ports of the computing unit (5).



# Mounting the Computing Unit on the Microscope (Optional)

 Use the optional mounting bracket to mount the Exalta computing unit on the microscope (see installation guide and information on this page).



## Exalta Mounting bracket Installation Guide

**01** The Exalta mounting bracket (optional) is provided with 4 screws and is mounted on the bottom side of the Exalta computing unit.

**02** Remove the rubber feet on the bottom side of the Exalta computing unit.

Mount the Exalta mounting bracket (1) on the bottom side of the Exalta computing unit (3) using the screws (2).

**03** Mount the Exalta computing unit (3) with the Exalta mounting bracket (1) on the column of the microscope and fasten it with the adjustment screw (4).

# Operation

# Switching the Exalta System On and Off

## Switching on the Exalta System

1. Switch on the monitor.
2. Press the On / Off button (1) for approx. 3 seconds.



The computing unit powers on.

The computing unit automatically detects the connected devices.

## Switching off the Exalta System

1. Press the On / Off button 1x.

The following message is displayed:



2. Confirm the message with [Close].

The computing unit is switched off.

3. Switch off the monitor.

\*: If the system is locked, you can re-enter by entering this password: gel-x

## Forced shut-down

- ▶ Press the On / Off button (1) for approx. 6 seconds.

# Starting the Exalta Manager and Exalta Operator Apps for the First Time

1. Ensure that your Exalta computing units are integrated in your IT infrastructure, either via database integration (chapter "Appendix 1: Database integration option") or folder integration (chapter "Appendix 2: Folder integration option").
2. To open the Exalta Manager App, double-click on the shortcut on the screen.

The Exalta Manager App asks for the IP addresses of the primary and the secondary server (database integration, see page 159; folder base integration, see page 179).

3. Enter the IP addresses.
4. Click [NEXT].

If all connections are working correctly, the login page is displayed (see chapter "Starting the Exalta Manager App").

5. Repeat the above steps for the Exalta Operator App.

# User Roles in the Software

The Exalta System has 4 user roles:

- Manager
- Operator
- QM (Quality Management)
- Admin

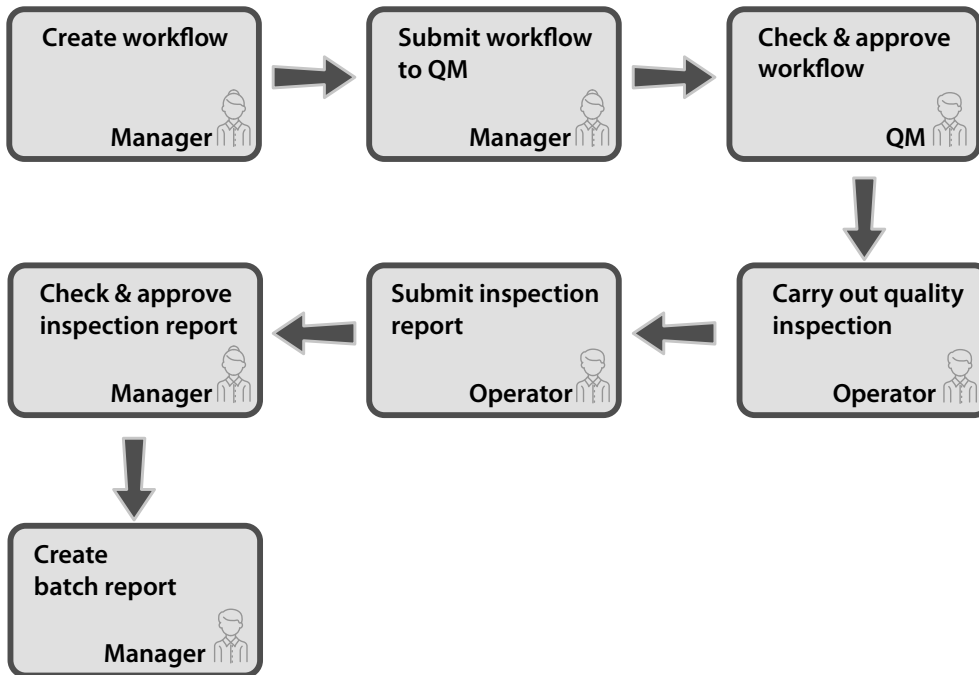
All users except for the Operator have access to the Exalta Manager App.

The Operator access is restricted to the Exalta Operator App.

Task	Manager	Operator	QM	Admin
Create workflows	✓	x	x	x
Submit workflows	✓	x	x	x
Approve/activate workflows	x	x	✓	x
Reject workflows	x	x	✓	x
Deactivate workflows	x	x	✓	x
Carry out quality inspection	✓	✓	✓	✓
Approve/reject inspection reports	✓	x	x	x
Manage batch reports	✓	x	x	x
Audit trail	✓	x	x	✓
Monitor users	✓	x	x	✓
Create new users	x	x	x	✓
Reset user passwords	x	x	x	✓
Deactivate/unlock users	x	x	x	✓
Set their own passwords	✓	✓	✓	✓
Update Exalta System	✓	x	x	✓
Update server address	✓	✓	✓	✓

# Overview of the Standard Quality Inspection Procedure

The following flowchart gives you an overview of the steps and responsibilities of a successful quality inspection procedure:



# Working with the Exalta Manager App

# Starting the Exalta Manager App



When logging in as a user for the first time, you will be asked to change your password.

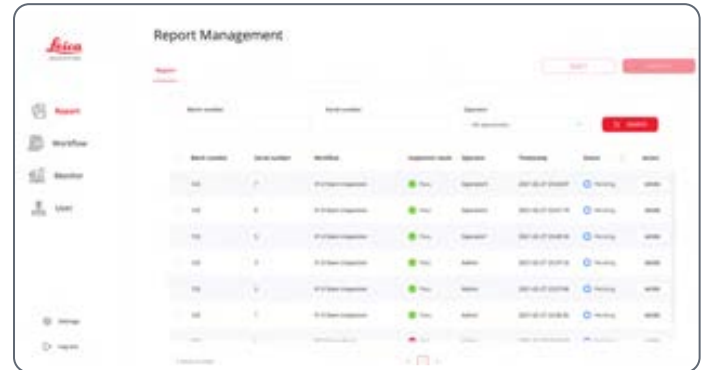
1. Double-click the following symbol on the desktop:



The Exalta Manager App is started.

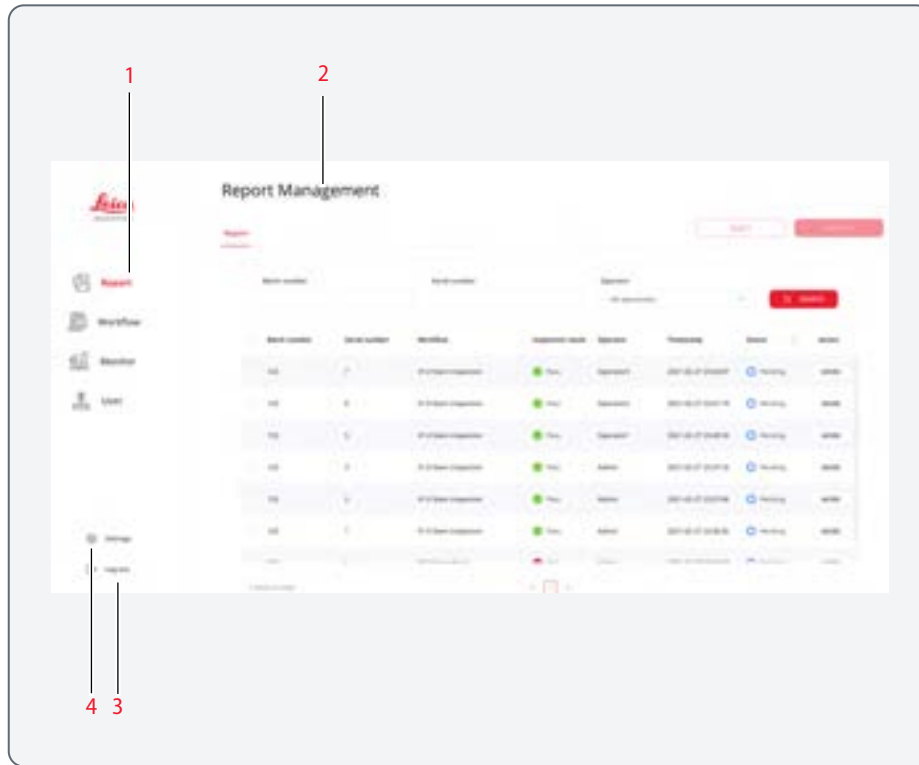
2. Enter your user name and password.
3. Click [LOG IN].

The start menu is displayed (Example: Admin user):





# Overview of the Exalta Manager App User Interface



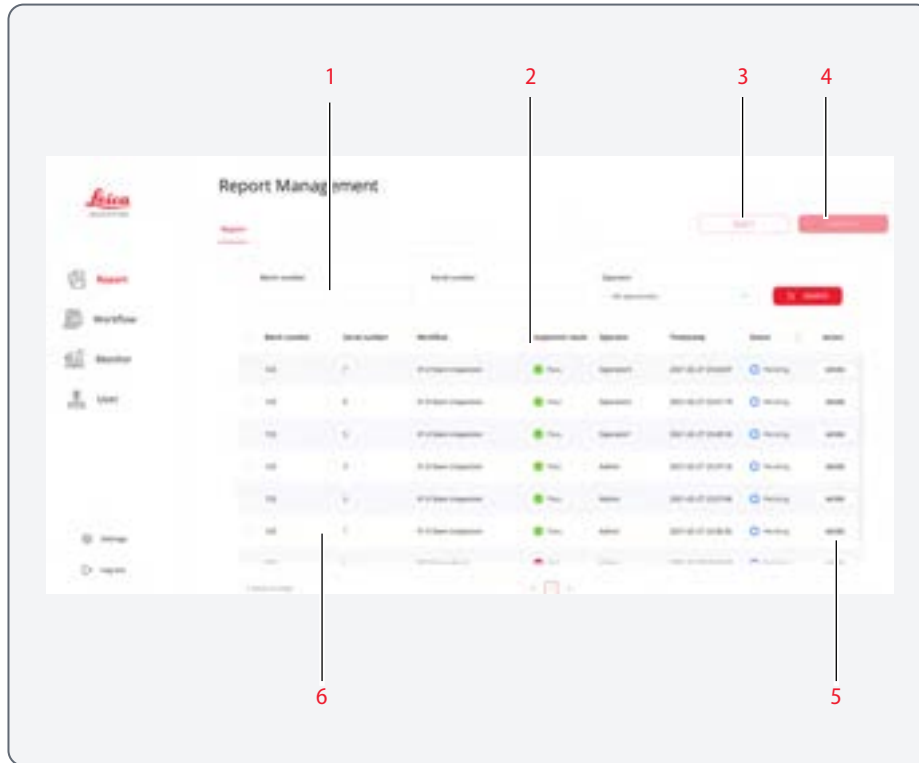
1. Menu bar (available menus depend on the user role)
2. Main display area of the active menu
3. [Log out] function
4. [Settings] menu

## Menu bar

The menu bar displays the available main menus, depending on the user role (see chapter "User Roles in the Software").

- [Report]:  
Displays inspection reports; provides functions to create and manage reports
- [Workflow]:  
Displays all workflows; provides functions to create and manage workflows
- [Monitor]:  
Displays the status of active users
- [User] (Admin users only):  
Displays all users; provides functions to manage users

# Overview of the [Inspection Report] Menu (Manager View)



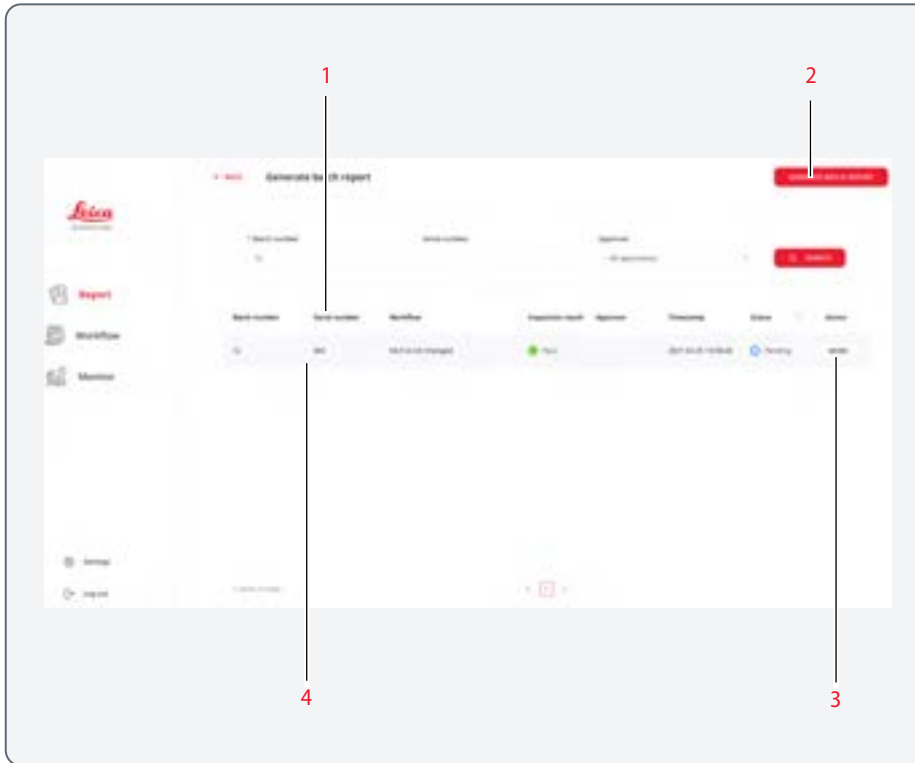
When the operator has finished quality inspection and submitted the report, the inspection report is displayed in the [Report] menu of the Manager users.

1. Filter function to search for individual reports
2. List of reports
3. [REJECT] button (see chapter "Rejecting an inspection report")
4. [APPROVE] button (see chapter "Approving an inspection report")
5. Menu options for the individual report
6. Detailed information on the individual report



For further information on managing inspection reports, see chapter "Managing Inspection Reports (Manager)".

## Overview of the [Batch Report] Menu (Manager View)



1. *List of reports*
2. *[GENERATE BATCH REPORT] button (see chapter "Creating and Managing Batch Reports")*
3. *Menu options for the individual report*
4. *Detailed information on the individual report*



When working with the folder integration option, batch reports are not supported.

For further information on managing batch reports, see chapter "Creating and Managing Batch Reports".

# Overview of the [Workflow] Menu



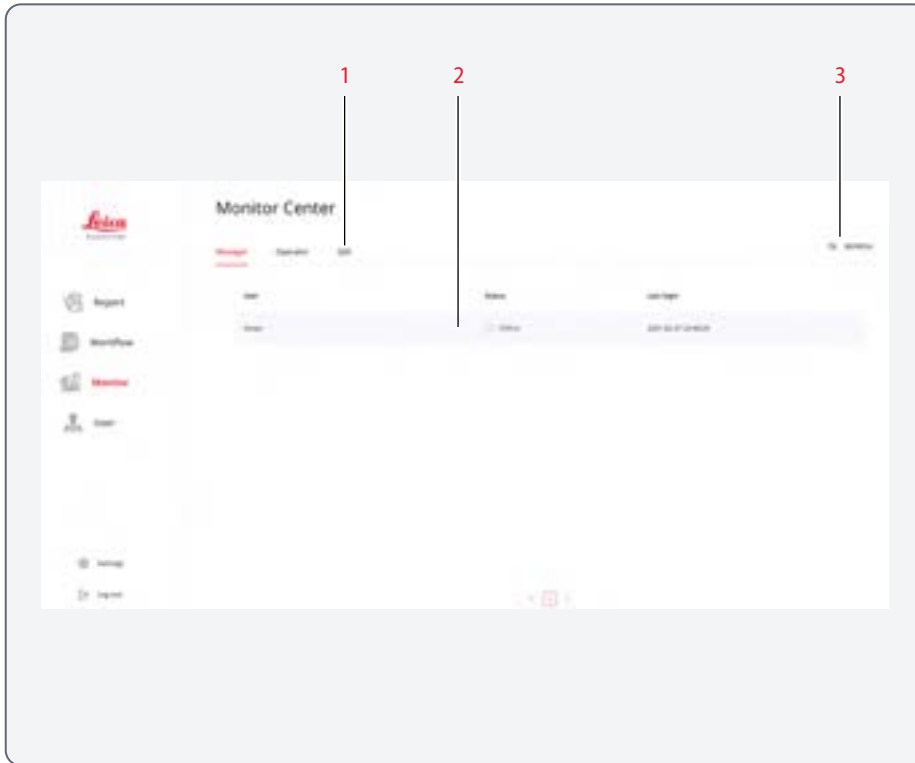
1. Status submenus (lists the workflows according to their status)
2. Filter function to search for individual workflows
3. [+ NEW WORKFLOW] button (see chapter "Creating a new workflow")
4. Menu options for the individual workflow
5. Detailed information on the individual workflow (name, number of steps contained)
  - blue = defect inspection step
  - green = measurement step
  - orange = overlay step



For further information on creating and managing workflows:

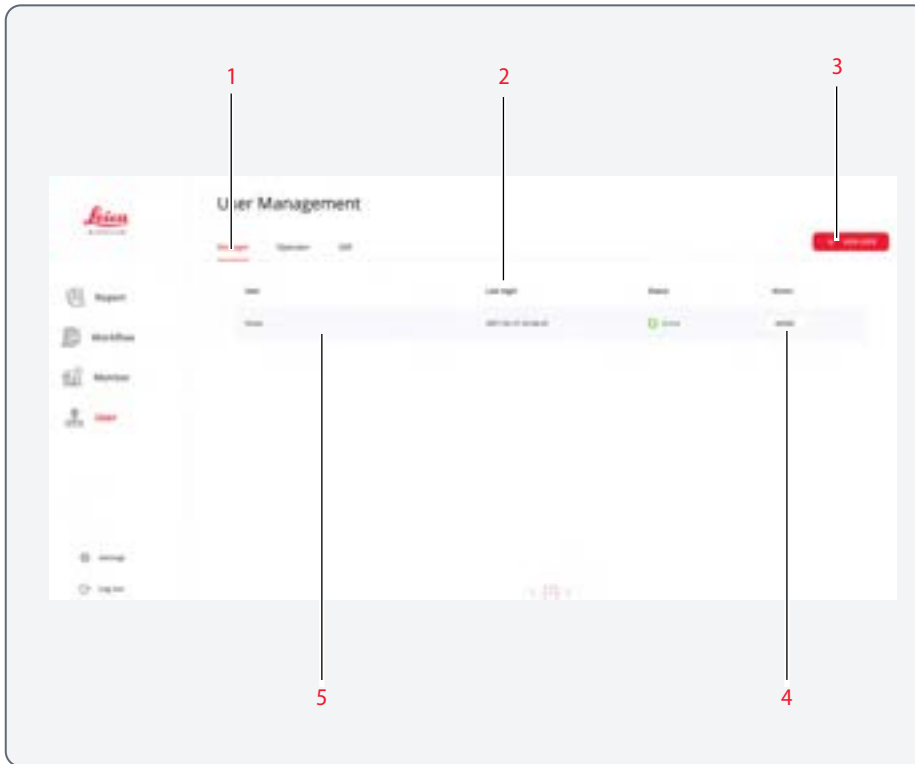
- See chapter "Creating and Managing Workflows"
- See chapter "Controlling and Monitoring Workflows"

## Overview of the [Monitor] Menu



1. *User submenus (lists the users according to their role)*
2. *Detailed information on the individual user*
3. *[REFRESH] button to refresh the status of the users*

## Overview of the [User] Menu (Admin View)



1. User submenus (lists the users according to their role)
2. List of users
3. [+ NEW USER] button (see chapter "Creating a new user")
4. Menu options for the individual user
5. Detailed information on the individual user



For further information on managing users, see chapter "Managing Users".

# Creating and Managing Workflows

Exalta allows you to create step-by-step workflows.

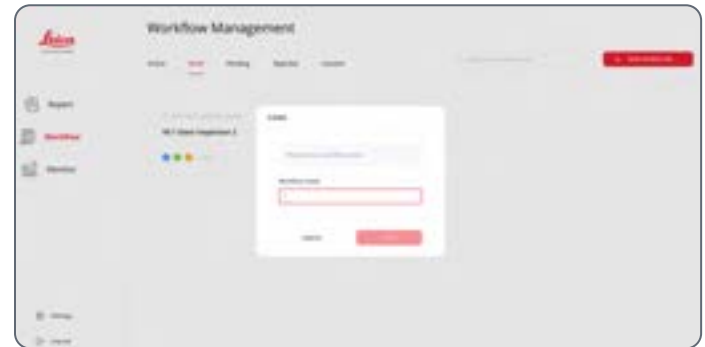
## Creating a new workflow

Role: *Manager*

1. Click [Workflow] in the menu bar.
2. Click the [+ NEW WORKFLOW] button:



3. Enter a workflow name:



# Creating and Managing Workflows (Continued)

The workflow configuration screen is displayed:



The first step is always "Inspection Step".

4. In the [Serial number] section, select if the operator has to enter a serial number when inspection starts.



Note that entering a batch number is mandatory.

5. If you want to add more attributes, click [ADD NEW ATTRIBUTE]:
  - In the [Description] field, enter the attribute name.
  - If the value is for display only, enter the value in the [Value] field.or
  - If the field is mandatory, activate the corresponding checkbox.
6. Repeat step 5 if you want to add more attributes.
7. Add more steps:
  - See chapter "Adding and configuring a defect inspection step in the workflow"
  - See chapter "Adding and configuring a measurement step in the workflow"
  - See chapter "Adding and configuring an overlay step in the workflow"



# Creating and Managing Workflows (Continued)

## Adding and configuring a defect inspection step in the workflow

Role: *Manager*

1. In the workflow configuration screen, click [Add workflow step].
2. Select [Defect inspection] from the drop-down list:

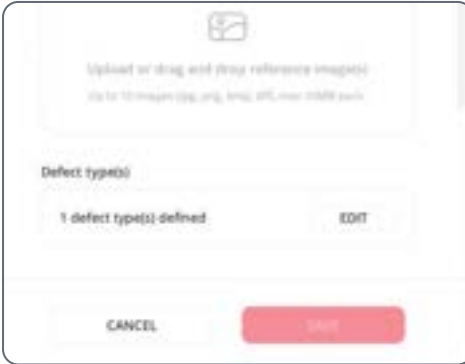



3. Fill out the required fields in the pop-up window:





Field	Function
Title	Enter a name for the defect
Description	Enter a more extensive description of the defect type for the operator
Reference image(s)	Select images of reference examples without defects

## Creating and Managing Workflows (Continued)

Field	Function
Defect type(s)	<p>Provide more detailed information on the defect type:</p>  <p>▶ Click on [EDIT].</p>

Field	Function
Defect type(s) (continued)	 <ul style="list-style-type: none"> <li>▶ In the pop-up window, enter the defect type in the first field.</li> <li>▶ Select an image showing a typical defect by clicking in the [Reference image(s)] section.</li> <li>▶ If you want to add further defects, click [ADD NEW DEFECT TYPE] and fill out the fields for the next defect.</li> </ul>

## Creating and Managing Workflows (Continued)

Field	Function
Acceptable number of defect(s)	Enter the number of acceptable defects 
Inspection image	Define if the image taken by the operator in the current step should be saved in the final report during the inspection process 

The defect inspection step is added (blue step):



4. Confirm your settings with [SAVE].

# Creating and Managing Workflows (Continued)

## Adding and configuring a measurement step in the workflow

Role: *Manager*

1. In the workflow configuration screen, click [Add workflow step].
2. Select [Measurement] from the drop-down list:



3. Fill out the required fields in the pop-up window:



Field	Function
Title	Enter a name for the measurement
Description	Enter a more extensive description of the measurement for the operator
Reference image(s)	Select images reference examples

## Creating and Managing Workflows (Continued)

Field	Function
Measurement type(s)	<ol style="list-style-type: none"> <li>Select the measurement type: <ul style="list-style-type: none"> <li>Radius</li> <li>Angle</li> <li>Length</li> </ul> </li> <li>Define an upper and lower measurement tolerance limit in the [Upper limit] and [Lower limit] fields.</li> </ol>
Acceptable numbers of measurement(s) outside tolerance range	<p>Enter the number of permissible measurements that can be outside of tolerance range</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>* Acceptable numbers of measurement(s) outside tolerance range</p> <input type="text" value="0"/> </div>
Inspection image	<p>Define if the image taken by the operator in the current step should be saved in the final report during the inspection process</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>Inspection image</p> <p>Include inspection image in report <input type="checkbox"/></p> </div>

3. Confirm your settings with [SAVE].

The measurement step is added (green step):



# Creating and Managing Workflows (Continued)

## Adding and configuring an overlay step in the workflow

Overlay steps are used to display a transparent PNG image over the live image in the Exalta Operator App, when the quality inspection is carried out.

Role: *Manager*

1. In the workflow configuration screen, click [Add workflow step].
2. Select [Overlay] from the drop-down list:






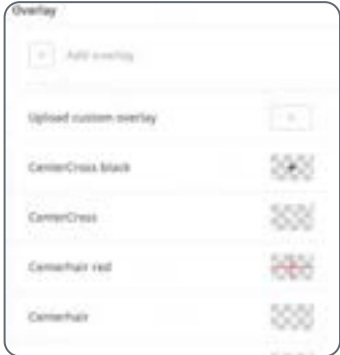
3. Fill out the required fields in the pop-up window:





Field	Function
Title	Enter a name for the overlay
Description	Enter a more extensive description of the overlay step for the operator

## Creating and Managing Workflows (Continued)

Field	Function
Overlay	<p>Select the one of the default overlay types or upload your own overlay image.</p> <p>To select a default overlay:</p>  <ul style="list-style-type: none"> <li>▶ In the [Add overlay] section click the [+ ]symbol.</li> </ul>  <ul style="list-style-type: none"> <li>▶ Click the required overlay in the list.</li> </ul> <p>The default overlays do not require calibration in the Exalta Operator App.</p>

Field	Function
Overlay - uploaded images	<p>Uploaded overlay images can be calibrated.</p> <p>To upload an image and make calibration settings:</p>  <ul style="list-style-type: none"> <li>▶ In the [Add overlay] section click the [+ ]symbol.</li> </ul>  <ul style="list-style-type: none"> <li>▶ Click the [+ ] symbol next to [Upload custom overlay].</li> </ul>

## Creating and Managing Workflows (Continued)

Field	Function
Overlay - uploaded images (continued)	<ul style="list-style-type: none"> <li>Select the overlay image in the file system (only PNG files are supported).</li> </ul>  <ul style="list-style-type: none"> <li>Click the [CALIBRATE] button on the uploaded image.</li> </ul> <p>A calibration pop-up window is displayed:</p>  <ul style="list-style-type: none"> <li>If calibration is not required, click [NO NEED TO CALIBRATE].</li> </ul>

Field	Function
Overlay - uploaded images (continued)	<ul style="list-style-type: none"> <li>If calibration is required, calibrate the image (see chapter "Performing an Overlay Task"). The procedure is identical to the calibration procedure in the Exalta Operator App.</li> </ul>
With / without Overlay	Define if the image taken by the operator in the current step should be captured with or without the overlay
Inspection image	Define if the image taken by the operator in the current step should be saved in the final report during the inspection process

- Confirm your settings with [SAVE].



## Creating and Managing Workflows (Continued)

The overlay step is added (orange step):



# Creating and Managing Workflows (Continued)

## Submitting a draft workflow for approval

Role: *Manager*

When all required steps are defined, you can submit the workflow for approval to the QM users:

1. Click [SUBMIT FOR APPROVAL]:




2. Enter a comment, if required, and click [CONFIRM].
3. Enter your password and click [CONFIRM].

The workflow is submitted.

A detailed view of the workflow is displayed:




# Creating and Managing Workflows (Continued)

 The function to submit workflows is also available in the [Draft] submenu of the [Workflow] menu:



## Editing an existing draft workflow

 This function is only available for workflows in Draft status.

Role: *Manager*

- ✓ You are in the [Draft] submenu of the [Workflow] menu.
- ✓ The list of draft workflows is displayed.

1. Click the list symbol on the right side of the required workflow:




2. Click [Edit the workflow]:



The workflow configuration screen is displayed and you can edit the workflow.

# Creating and Managing Workflows (Continued)

## Deleting a draft workflow

 This function is only available for workflows in Draft status.

Role: *Manager*

- ✓ You are in the [Draft] submenu of the [Workflow] menu.
- ✓ The list of draft workflows is displayed.

1. Click the list symbol on the right side of the required workflow:




2. Click [Delete the workflow]:



3. In the following message box, confirm with [DELETE].
4. Enter your password and click [CONFIRM].  
The workflow is deleted.

# Creating and Managing Workflows (Continued)

## Viewing the details of a workflow

 This function is available for workflows in any status, except for Draft status.

Role: *Manager*

- ✓ You are in the [Workflow] submenu of your choice (draft, pending, active, inactive, rejected).
- ✓ The list of workflows is displayed.

1. Click the list symbol on the right side of the required workflow:




2. Click [View the workflow]:



A detailed view of the workflow is displayed:



## Viewing the history of a workflow

 This function is available for workflows in any status.

Role: *Manager*

- ✓ You are in the [Workflow] submenu of your choice (inactive, active, etc.).
- ✓ The list of workflows is displayed.

# Creating and Managing Workflows (Continued)

1. Click the list symbol on the right side of the required workflow:



2. Click [View history]:



The workflow history is displayed.


Submenu [History]:




# Creating and Managing Workflows (Continued)

Submenu [Versions]:



 To display a particular version, click the [VIEW] button next to the required version.

## Exporting a workflow

 This function is available for workflows in any status.

Role: *Manager*

- ✓ You are in the [Workflow] submenu of your choice (inactive, active, etc.).
- ✓ The list of workflows is displayed.
- 1. Click the list symbol on the right side of the required workflow:



2. Click [Export the workflow]:



3. Select a folder in the file system.

The workflow is stored in the file system in PDF format.

# Creating and Managing Workflows (Continued)

## Duplicating a workflow



This function is available for workflows in any status.

Role: *Manager*

- ✓ You are in the [Workflow] submenu of your choice (inactive, active, etc.).
- ✓ The list of workflows is displayed.

1. Click the list symbol on the right side of the required workflow:



2. Click [Duplicate the workflow]:



3. Select the required duplicate function:

- If you do want to duplicate the workflow with the same name, select [DUPLICATE].
- If you want to duplicate the workflow with a new name, select [new workflow].



The workflow is copied to the [Draft] submenu and can be edited.



# Controlling and Monitoring Workflows

## Viewing pending workflows for approval

Role: *QM*

1. In the [Workflow] menu, click the [Pending] submenu.

The list of pending workflows is displayed:



2. Click the list symbol on the right side of the required workflow:



3. Click [View the workflow]:



# Controlling and Monitoring Workflows (Continued)

A detailed view of the workflow is displayed:



# Controlling and Monitoring Workflows (Continued)

## Activating a workflow

Role: QM

✓ The detailed view of the workflow is displayed.

1. Click [ACTIVATE]:



A pop-up window is displayed:



2. If you want to upload a PDF file as an attachment to the report, click [Click to upload PDF file] and select the PDF file in the file system.
3. If required, enter a comment in the [Comment] section.
4. Click [ACTIVATE].
5. Enter your password and click [CONFIRM].

The workflow is activated and listed in the [Active] submenu.

The uploaded pdf can be found in the workflow history list.

# Controlling and Monitoring Workflows (Continued)

## Rejecting a workflow

Role: QM

✓ The detailed view of the workflow is displayed.

1. Click [REJECT]:



A pop-up window is displayed:



2. If you want to upload a PDF file as an attachment to the report, click [Click to upload PDF file] and select the PDF file in the file system.
3. If required, enter a comment in the [Comment] section.
4. Click [REJECT].
5. Enter your password and click [CONFIRM].

The workflow is rejected and listed in the [Rejected] submenu.

The uploaded pdf can be found in the workflow history list.

# Controlling and Monitoring Workflows (Continued)

## Deactivating an active workflow

Role: *QM*

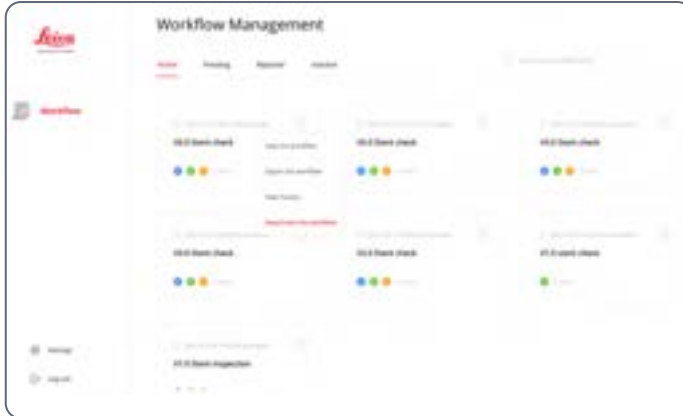
1. In the [Workflow] menu, click the [Active] submenu.

The list of active workflows is displayed.

2. Click the list symbol on the right side of the required workflow:



3. Click [Deactivate the workflow]:



4. If required, enter a comment in the message box, and click [DEACTIVATE].

5. Enter your password and click [CONFIRM].

The workflow is deactivated and listed in the [Inactive] submenu.

# Managing Inspection Reports (Manager)

When the Operator has finished the inspection and submitted the report, the inspection report is displayed in the [Report] menu.

## Viewing an inspection report

Role: *Manager*

1. Click [Report] in the menu bar and select the [Report] tab.  
The list of inspection reports is displayed.
2. Click [MORE] in the row of the required report.
3. Click [View the report]:



The report is displayed:



# Managing Inspection Reports (Continued)

## Approving an inspection report

Role: *Manager*

✓ The report is displayed:



1. Click [APPROVE THE INSPECTION].
2. Enter your password and click [CONFIRM].
3. If required, enter a comment in the message box, and click [Approve].

## Rejecting an inspection report

Role: *Manager*

✓ The report is displayed:



1. Click [REJECT THE INSPECTION].
2. Enter your password and click [CONFIRM].
3. If required, enter comment in the message box, and click [REJECT].

# Managing Inspection Reports (Continued)

## Exporting an inspection report

Role: *Manager*

1. Click [Report] in the menu bar and select the [Report] tab.  
The list of inspection reports is displayed.
2. Click [MORE] in the row of the required report.
3. Click [Export the report]:



4. Select a folder in the file system.  
The report is stored in the file system in PDF format.

## Display report history

Role: *Manager*

1. Click [Report] in the menu bar and select the [Report] tab.  
The list of inspection reports is displayed.
2. Click [MORE] in the row of the required report.
3. Click [Report history]:





## Managing Inspection Reports (Continued)

The report history is displayed:



The screenshot shows a dialog box titled "Report History". It contains a table with two columns: "ACTION" and "COMMENT". The table lists two entries: "Approved" and "Submitted". The "Approved" entry has a timestamp of "2021-02-26 13:27:44" and is attributed to "Admin". The "Submitted" entry has a timestamp of "2021-02-27 13:42:07" and is attributed to "Operator 9". At the bottom of the dialog box, there is a "CLOSE" button.

ACTION	COMMENT
Approved	
2021-02-26 13:27:44	By Admin
Submitted	
2021-02-27 13:42:07	By Operator 9

CLOSE

# Creating and Managing Batch Reports



When working with the folder integration option, batch reports are not supported.

Role: *Manager*

## Creating a report

1. Click [Report] in the menu bar and select the [Batch report] tab.

The list of batch reports is displayed.

2. Click [+ GENERATE BATCH REPORT]:



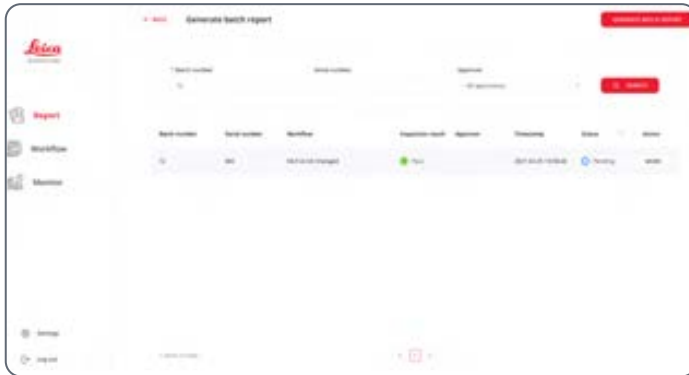
3. Enter the required information (batch number):



4. Click [SEARCH].

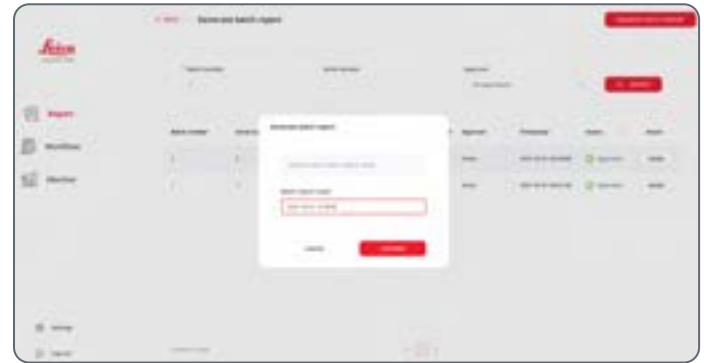
## Creating and Managing Batch Reports (Continued)

The result is displayed:



5. Click [GENERATE BATCH REPORT].

6. Enter a batch report name:



7. Click [CONFIRM].

8. Enter your password and click [CONFIRM].

## Creating and Managing Batch Reports (Continued)

The batch report is created:



If you want to export the batch report, proceed as described in chapter "Exporting an inspection report". The procedures are identical for all report types.

# Managing Users

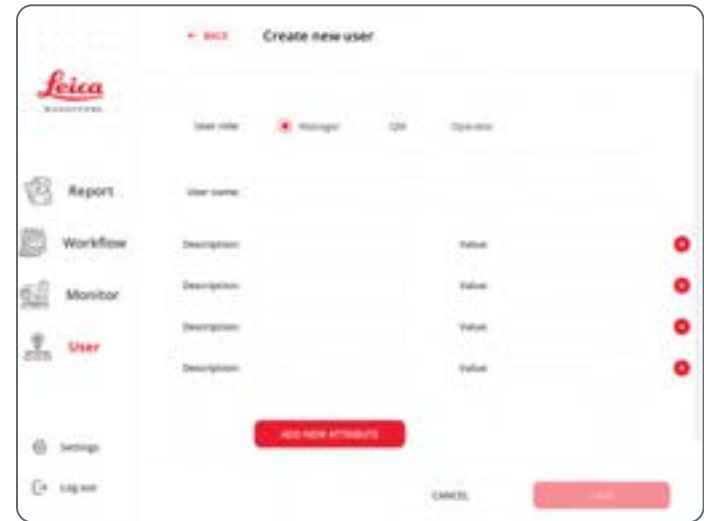
Role: *Admin*

## Creating a new user

1. Click [User] in the menu bar.
2. Click [+ NEW USER]:



3. Enter the required information (user role, user name).



4. Click [SAVE].

The new user is created.



The default password is 123456.

# Managing Users (Continued)

## Resetting a user password

1. Click [User] in the menu bar.

The list of users is displayed.

2. Click [MORE] in the row of the user name:



3. Click [Reset the Password].

The user password is reset to: 123456



When logging in as a user after password reset, you will be asked to change your password.

## Deactivating a user

1. Click [User] in the menu bar.

The list of users is displayed.

2. Click [MORE] in the row of the user name:



3. Click [Deactivate the user].

The user is deactivated.

# General User Settings

## Changing the user password

Role: *All users*

1. Click [Settings] in the menu bar.
2. Click [Change password] in the [User] submenu.
3. Enter the required information:



4. Confirm the new password with [SAVE].

## Updating Exalta System

Role: *Admin and Manager*



When working under Windows, this function is not supported in V1.1.1.

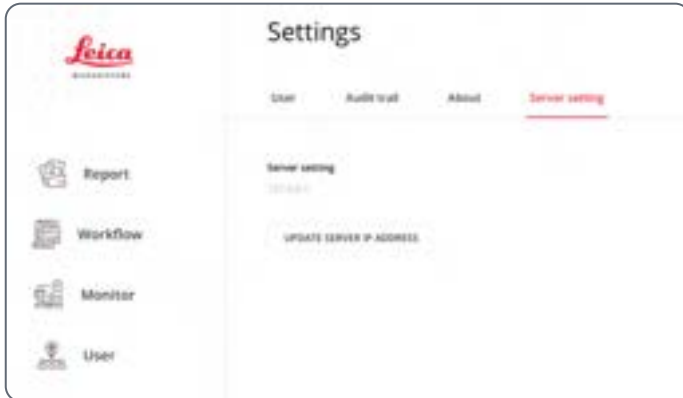
For further information, refer to chapter "Updating the Exalta Manager App on an Exalta Computing Unit".

# General User Settings (Continued)

## Updating the server address

Role: *All users*

1. Click [Settings] in the menu bar.
2. In the [Server settings] submenu, click [UPDATE SERVER IP ADDRESS]:



3. Enter the new server address:



4. Confirm with [SAVE].



# Audit Trail

Role: *Admin and Manager*

1. Click [Settings] in the menu bar.
2. Click [EXPORT AUDIT TRAIL] in the [Audit trail] submenu.



The export options are displayed:



## Audit Trail (Continued)

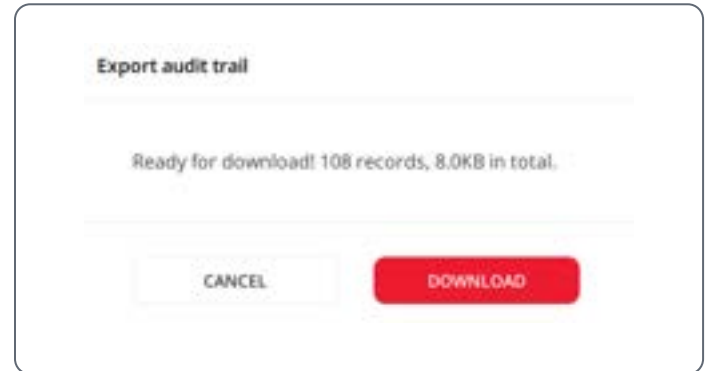
3. Select the required period of time in the [Date] section.
4. Select the desired audit trail category in the [Category] section.



The screenshot shows the 'Export audit trail' form. At the top, there is a title 'Export audit trail' and a note: 'Only up to 10,000 audit trail records can be exported at a time.' Below this, there is a 'Date' section with a date range from '2021-01-01' to '2021-01-31'. The 'Category' section is highlighted with a red box and shows a dropdown menu with 'All categories' selected. Below the dropdown, there is a list of categories: 'All categories', 'Workflow', 'Sign in', 'Registration', 'Registration request', and 'User'.

5. Confirm with [REQUEST FOR EXPORT].

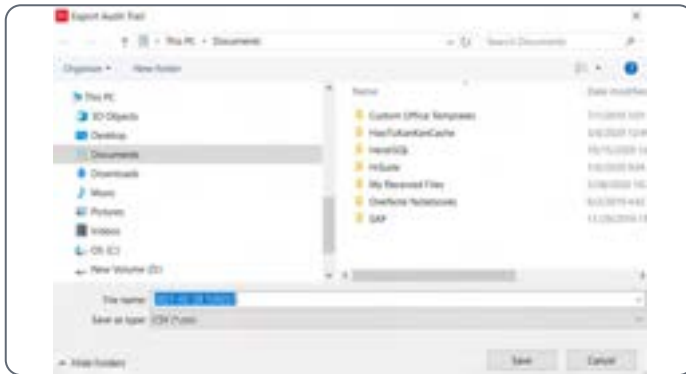
6. Confirm the message box with [DOWNLOAD]:



The screenshot shows a confirmation message box titled 'Export audit trail'. The message reads: 'Ready for download! 108 records, 8.0KB in total.' Below the message, there are two buttons: a white 'CANCEL' button and a red 'DOWNLOAD' button.

## Audit Trail (Continued)

7. Select a folder in the file system:



The audit trail is exported to the file system.

# Data Storage: Backup Function

Roles: *Admin* and *Manager*



- The backup file is stored on the server.
- You can perform backup on any computing unit or Windows 10 device in your system setup.
- Please perform data backup regularly following your IT data retention policy.
- Only the last backup is stored.
- If web service software and database are installed on different servers, please install MariaDB or MySQL on the server where the web service software is installed.
- Backup and restore can only be performed if all Exalta computing units are offline. Therefore, Leica suggests to perform backup and restore overnight.

1. Click [Settings] in the menu bar.
2. In the [About] submenu, click [BACKUP].

3. Wait for the backup to complete:



# Data Storage: Restore Function

Roles: *Admin* and *Manager*



- Restore is only enabled if a backup file is stored on the server.
- You can perform restore on any computing unit or Windows 10 device in your system setup.
- The backup file cannot be shared between different Exalta system setups in your production line.
- If web service software and database are installed on different servers, please install MariaDB or MySQL on the server where the web service software is installed.
- Backup and restore can only be performed if all Exalta computing units are offline. Therefore, Leica suggests to perform backup and restore in the night.

1. Click [Settings] in the menu bar.
2. In the [About] submenu, click [RESTORE].

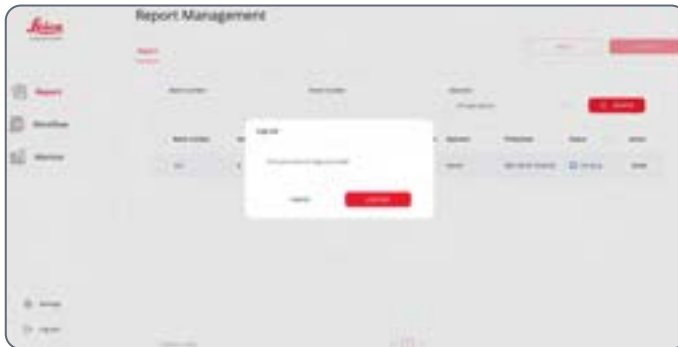
3. Wait for the restore to complete:



# Logging Out

Role: *All users*

1. Click [Log out] in the menu bar.
2. Confirm the message box with [LOG OUT]:



# Working with the Exalta Operator App

# Starting the Exalta Operator App

## Logging in



- When logging in for the first time, you will be asked to change your password.
- If you want to change settings prior to login, click the [Settings] button at in the upper right corner of the screen (chapter "General User Settings").

1. Double-click the following symbol on the desktop:



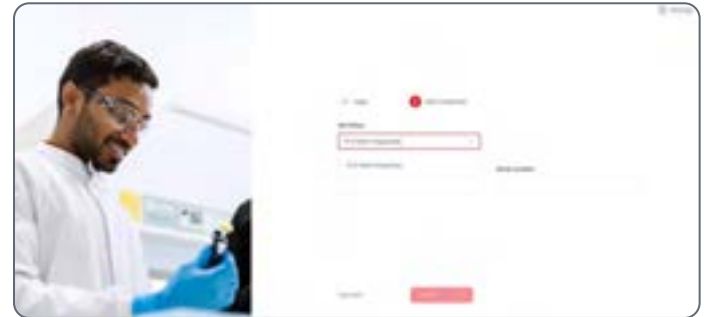
The Exalta Operator App is started.

2. Enter your user name and password:



3. Click [LOG IN].

The list of active inspection workflows is displayed:

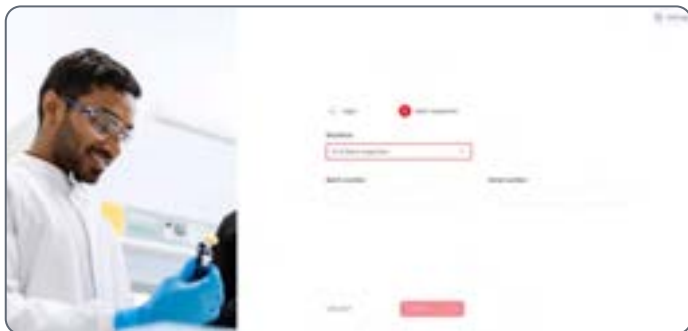




## Starting the Exalta Operator App (Continued)

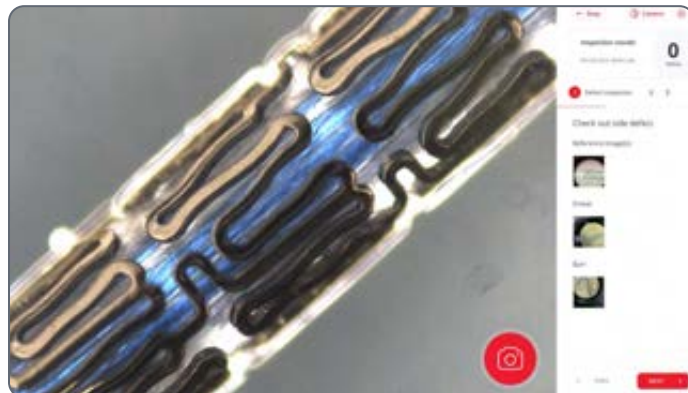
### Selecting a workflow

1. Select the required workflow from the drop-down list.
2. Enter the required information (batch number, serial number, etc.):

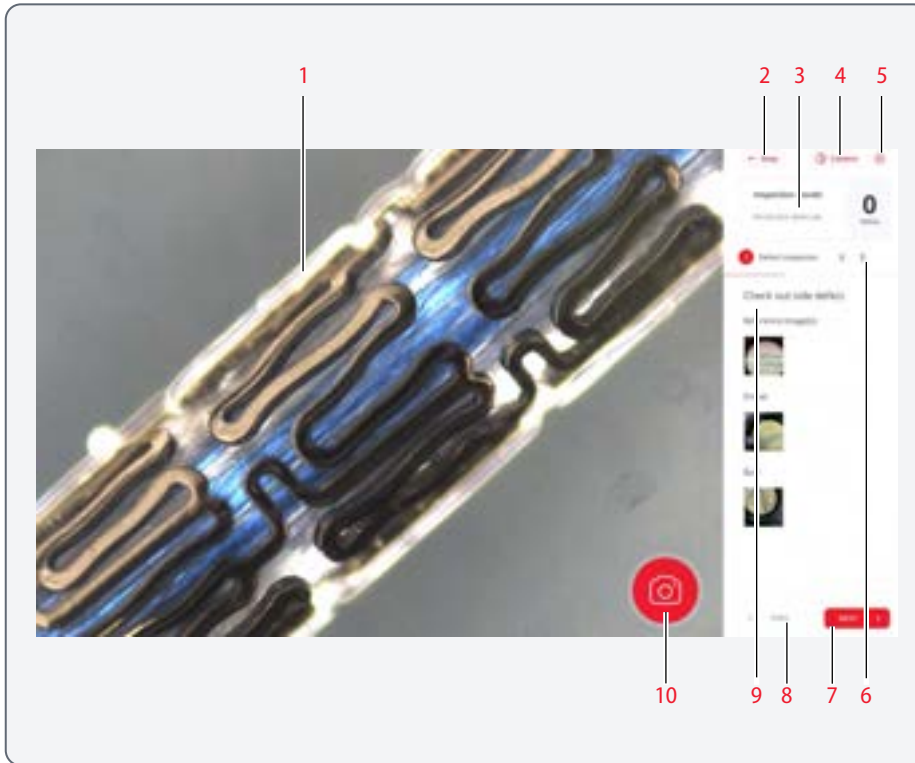


3. Click [START].

The workflow screen is displayed:



# Overview of the Exalta Operator App User Interface



## Workflow screen (example: inspection step)

1. Camera view
2. [Stop] button to leave the workflow and return to the workflow selection screen
3. List of inspection results, opens a detailed view of the inspection result (see chapter "Detailed view of step result (Example: inspection step)")
4. Camera settings
5. User settings
6. Number of steps (active step = red)
7. [NEXT] button to continue with the next workflow step
8. [PREV] button to return to the previous workflow step (Note: the present workflow step is not saved when you return to the previous step)
9. Detailed description of the task and reference images
10. Camera functions / tool box (see chapter "Camera functions")






# Overview of the Exalta Operator App User Interface (Continued)



## Camera functions



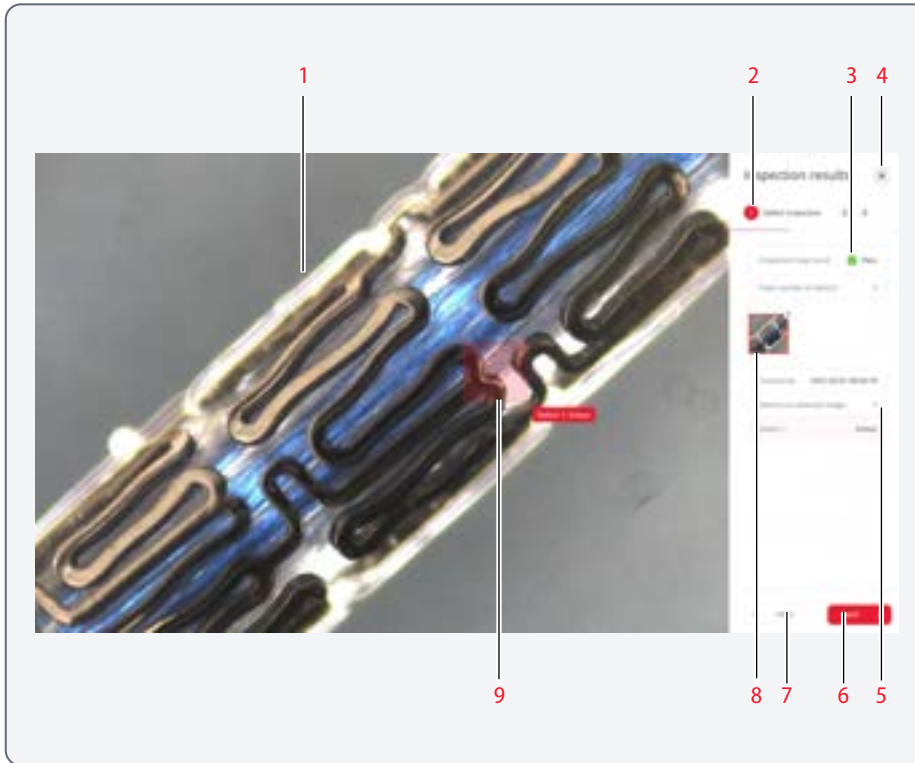
When you click the camera symbol, the tool box is displayed:



Symbol	Function
 Defect	Mark a defect in the camera image (see chapter "Performing Defect Inspection Steps")
 Length	Perform a length measurement (see chapter "Performing Measurement Steps (Length)")
 Angle	Perform an angle measurement (see chapter "Performing Measurement Steps (Angle)")
 Radius	Perform a radius measurement (see chapter "Performing Measurement Steps (Radius)")
 Annotation	Add a note to an image

Symbol	Function
 Edit	Allows you to edit defect or measurement markers.  Defect : <ul style="list-style-type: none"> <li>● Move</li> <li>● Delete</li> </ul> Measurements: <ul style="list-style-type: none"> <li>● Delete</li> </ul>
 Calibrate	Calibrate microscope and camera (see chapter "Calibrating the Camera")

## Overview of the Exalta Operator App User Interface (Continued)



### Detailed view of step result (Example: inspection step)

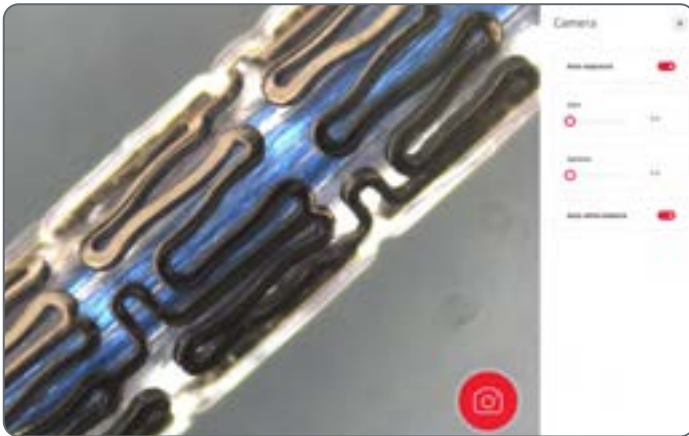
1. Saved image of the defect
2. Number of total steps (active step = red)
3. Quality inspection status: Pass or Fail and total number of defects
4. Button to close the detailed view
5. Defect list
6. [NEXT] button to proceed
7. [PREV] button to return to the previous step
8. Thumbnail of the image
9. Defect marked on the image

# Adjusting Camera Settings

1. Click the camera symbol in the upper right corner of the screen:



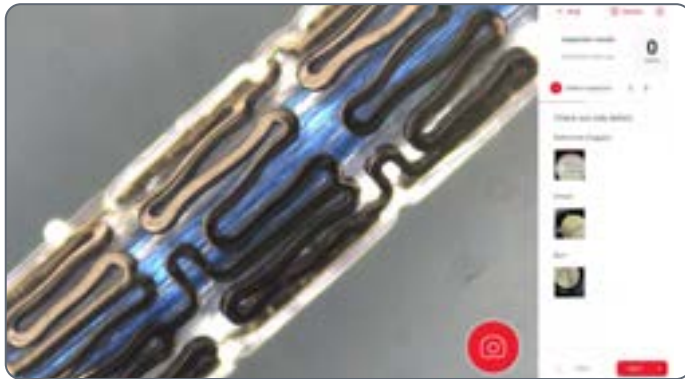
2. Adjust the required camera settings:



3. Save and close the camera settings with the [x] button.

# Performing Defect Inspection Steps

- ✓ You are logged in.
- ✓ The workflow is selected (chapter "Starting the Exalta Operator App").
- ✓ The required information is filled in (batch number, serial number, attributes).
- ✓ The workflow screen shows the defect inspection step:



## If no defects are detected:

- ▶ Continue with [NEXT].

## In case of defects:

1. Click the camera symbol.



## Performing Defect Inspection Steps (Continued)

The [Defect] symbol is activated automatically:



2. Click and hold the left mouse button to create a frame marking the defect:



3. Release the mouse button when the frame has the correct size.



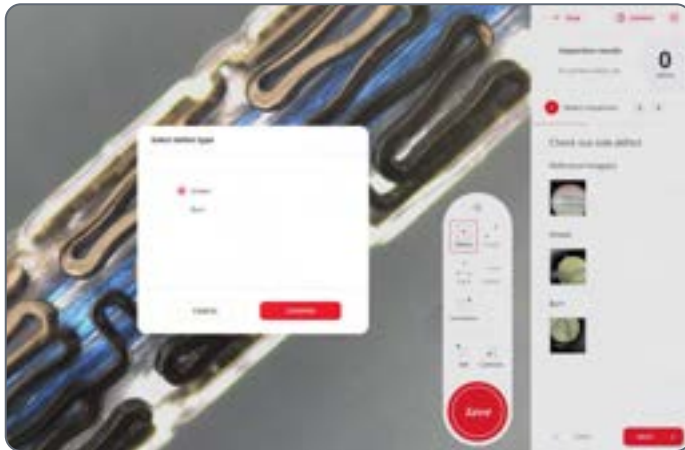
If you want to edit the frame, use the [Edit] function (see chapter "Editing defect markers").

Note that the [Edit] function is no longer available once the image is saved (next step).



## Performing Defect Inspection Steps (Continued)

4. In the message box, select the defect type and click [CONFIRM]:



5. Click [Save] in the tool box.

6. Click [CONFIRM TO SAVE].

The message box confirms that the defect is saved:



In the [Inspection Result] area, the number of defects is updated:





## Performing Defect Inspection Steps (Continued)



If you want to display the inspection result in more detail, click the [Inspection Result] area (see chapter "Detailed view of step result (Example: inspection step)").

If you want to delete the captured image, see chapter "Deleting captured images (defects)".

7. Repeat the steps for all defects.
8. When all defects are marked, click [NEXT].

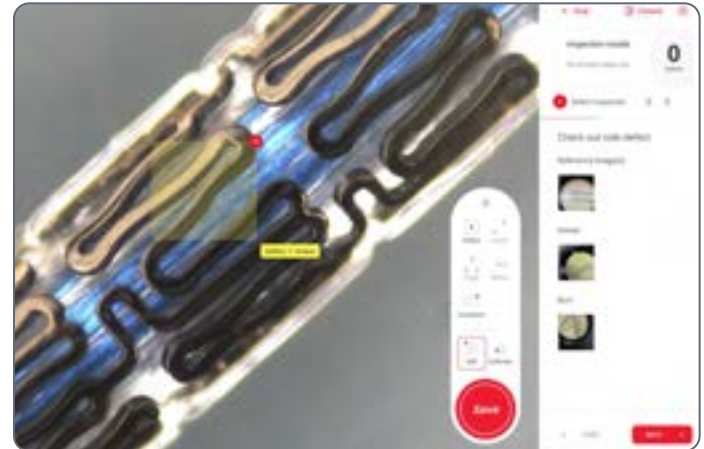
The next workflow step is displayed.

Or:

- ▶ If inspection fails, continue with chapter "Failed Quality Inspection Task":

### Editing defect markers

1. Select [Edit] in the tool box.
2. Click on the defect marker.



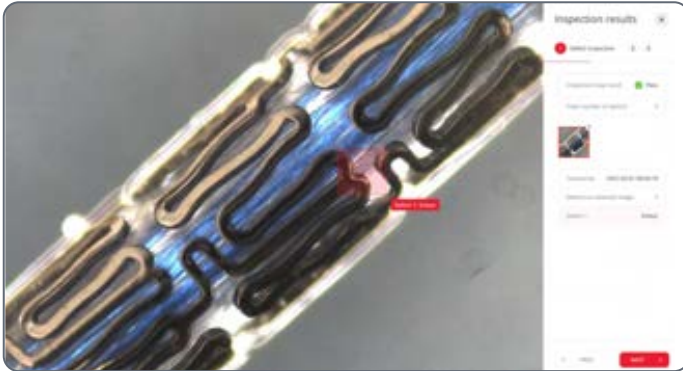
3. To move the defect marker:
  - Move the mouse over the defect marker until the hand symbol is displayed.
  - Hold left mouse button and move the defect marker to the required location.
4. To delete the defect marker, click on the red x symbol:



# Performing Defect Inspection Steps (Continued)

## Deleting captured images (defects)

1. Display the detailed view of the step result:



2. To delete the image, click on the x symbol in the upper right corner of the thumbnail.
3. Confirm the message box.

# Performing Measurement Steps (Length)



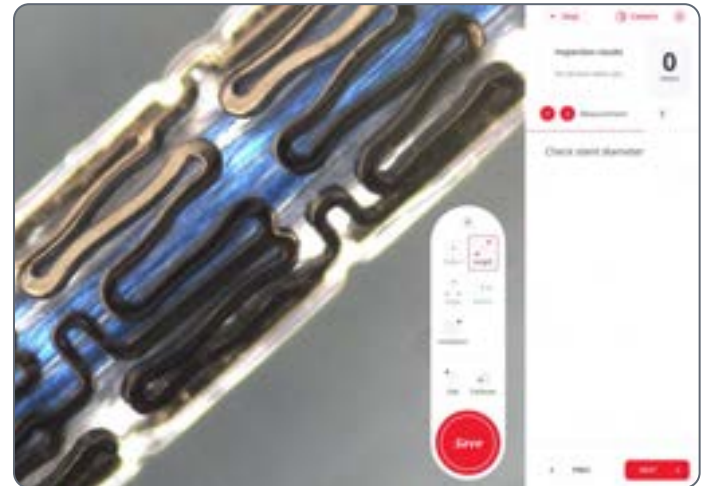
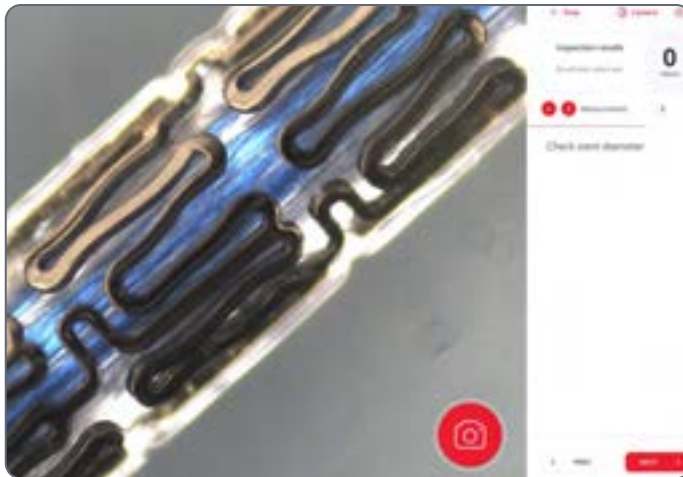
Prior to a length measurement, always calibrate the camera (see chapter "Calibrating the Camera")!

- ✓ You are logged in.
- ✓ The workflow is selected (chapter "Starting the Exalta Operator App").
- ✓ The required information is filled in (batch number, serial number, attributes).
- ✓ The workflow screen shows the measurement step:

1. Click the camera symbol.



The [Length] symbol is activated automatically:



## Performing Measurement Steps (Length) (Continued)

2. To set the start point of the measurement, click in the image.
3. Move the mouse to the required endpoint and click again.



If you want to edit the measurement, use the [Edit] function (see chapter "Editing measurement markers (Length)").

Note that the [Edit] function is no longer available once the image is saved (next step).

4. Click [Save] in the tool box.

5. The measurement result is displayed in a message box (Example: measurement within range):



6. Click [CONFIRM TO SAVE].
7. Click [Save] in the tool box.



If you want to display the measurement result in more detail, click the [Inspection Result] area (see chapter "Detailed view of step result (Example: inspection step)").

If you want to delete the captured image, see chapter "Deleting captured images (Length)".

# Performing Measurement Steps (Length) (Continued)

8. Click [NEXT].

The next workflow step is displayed.

Or:

- ▶ If measurement fails, continue with chapter "Failed Quality Inspection Task".

## Editing measurement markers (Length)

1. Select [Edit] in the tool box.
2. Click on the measurement marker.



3. To move the measurement marker:

- Move the mouse over the measurement marker until the hand symbol is displayed.
- Click and hold the left mouse button.
- Move the measurement marker to the required location.

4. To move individual points of the measurement marker:

- Click on the point and hold the left mouse button.
- Move the point to the required location.

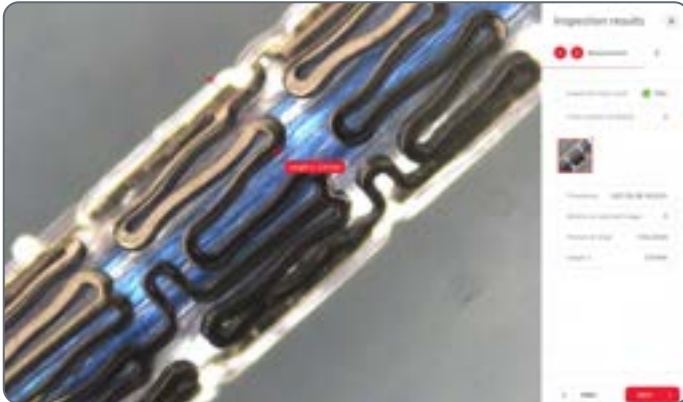
5. To delete the measurement marker, click on the red x symbol:



# Performing Measurement Steps (Length) (Continued)

## Deleting captured images (Length)

1. Display the detailed view of the step result:

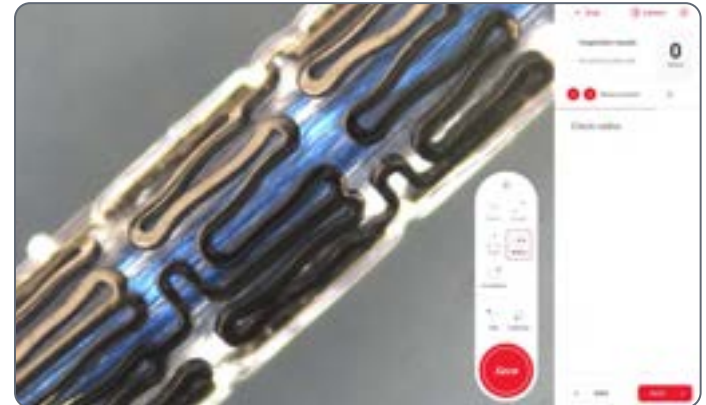
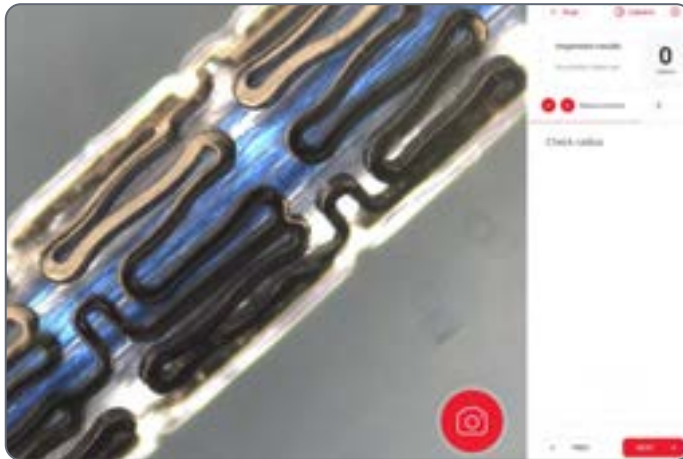


2. To delete the image, click on the x symbol in the upper right corner of the thumbnail.
3. Confirm the message box.

## Performing Measurement Steps (Radius)

- ✓ You are logged in.
- ✓ The workflow is selected (chapter "Starting the Exalta Operator App").
- ✓ The required information is filled in (batch number, serial number, attributes).
- ✓ The workflow screen shows the measurement step:

The [Radius] symbol is activated automatically:



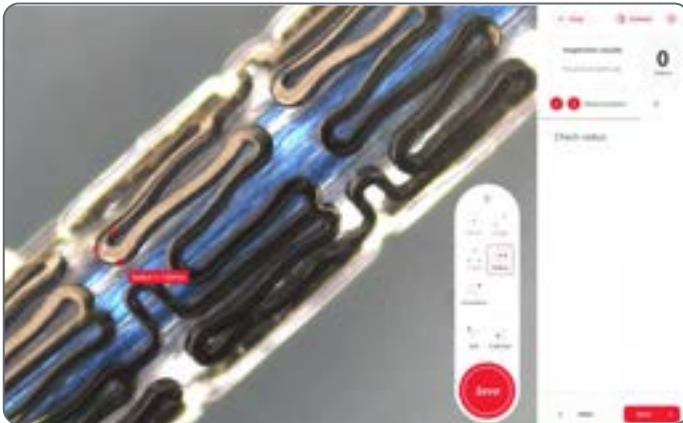
1. Click the camera symbol.






## Performing Measurement Steps (Radius) (Continued)

2. To set the start point of the measurement, click in the image.
3. Move the mouse to the second point and click.
4. Move the mouse to the third point and click.



 If you want to edit the measurement, use the [Edit] function (see chapter "Editing measurement markers (Radius)").


Note that the [Edit] function is no longer available once the image is saved (next step).

5. Click [Save] in the tool box.

6. The measurement result is displayed in a message box (Example: measurement outside of the tolerance range):



7. Click [CONFIRM TO SAVE].
8. Click [Save] in the tool box.

 If you want to display the measurement result in more detail, click the [Inspection Result] area (see chapter "Detailed view of step result (Example: inspection step)").

If you want to delete the captured image, see chapter "Deleting captured images (Radius)".



## Performing Measurement Steps (Radius) (Continued)

9. Click [NEXT].

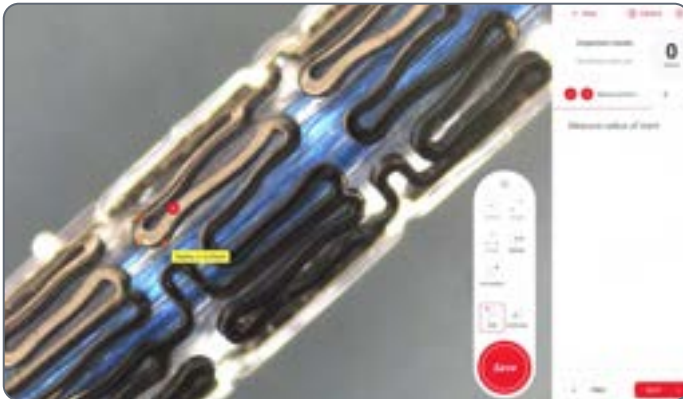
The next workflow step is displayed.

Or:

- ▶ If measurement fails, continue with chapter "Failed Quality Inspection Task".

### Editing measurement markers (Radius)

1. Select [Edit] in the tool box.
2. Click on the measurement marker.



3. To move the measurement marker:

- Move the mouse over the measurement marker until the hand symbol is displayed.
- Click and hold the left mouse button.
- Move the measurement marker to the required location.

4. To move individual points of the measurement marker:

- Click on the point and hold the left mouse button.
- Move the point to the required location.

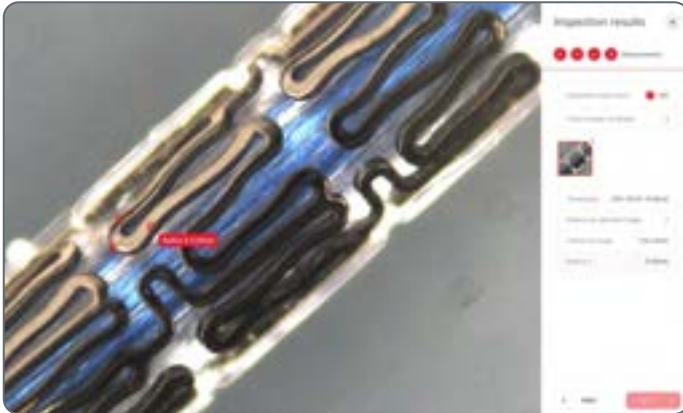
5. To delete the measurement marker, click on the red x symbol:



## Performing Measurement Steps (Radius) (Continued)

### Deleting captured images (Radius)

1. Display the detailed view of the step result:

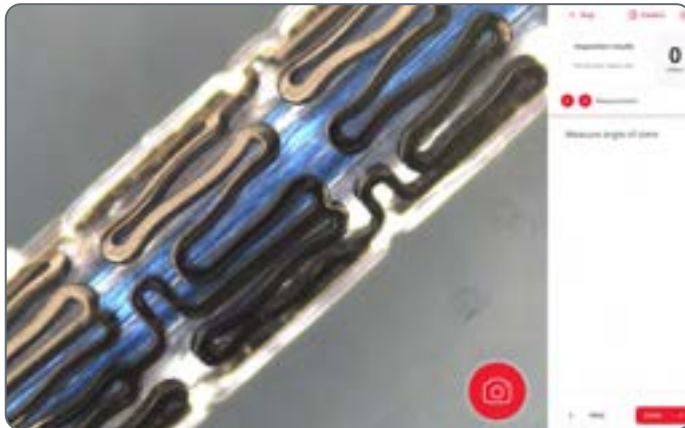


2. To delete the image, click on the x symbol in the upper right corner of the thumbnail.
3. Confirm the message box.

## Performing Measurement Steps (Angle)

- ✓ You are logged in.
- ✓ The workflow is selected (chapter "Starting the Exalta Operator App").
- ✓ The required information is filled in (batch number, serial number, attributes).
- ✓ The workflow screen shows the measurement step:

The [Angle] symbol is activated automatically:




1. Click the camera symbol.



## Performing Measurement Steps (Angle) (Continued)

2. To set the start point of the measurement, click in the image.
3. Move the mouse to the second point and click.
4. Move the mouse to the third point and click.



 If you want to edit the measurement, use the [Edit] function (see chapter "Editing measurement markers (Angle)").


Note that the [Edit] function is no longer available once the image is saved (next step).

5. Click [Save] in the tool box.

6. The measurement result is displayed in a message box (Example: measurement outside of the tolerance range):



7. Click [CONFIRM TO SAVE].
8. Click [Save] in the tool box.

 If you want to display the measurement result in more detail, click the [Inspection Result] area (see chapter "Detailed view of step result (Example: inspection step)").

If you want to delete the captured image, see chapter "Deleting captured images (Angle)".

## Performing Measurement Steps (Angle) (Continued)

9. Click [NEXT].

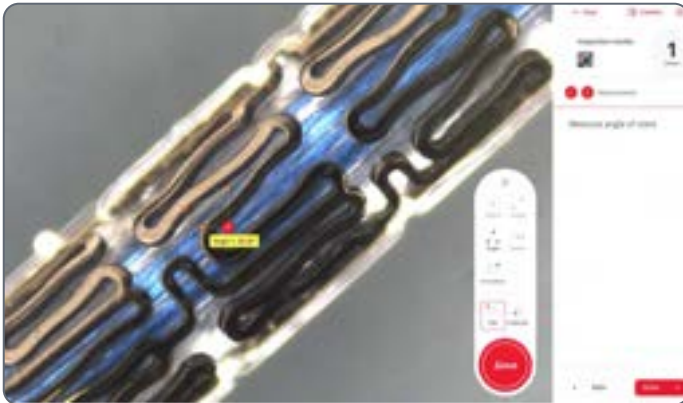
The next workflow step is displayed.

Or:

- ▶ If measurement fails, continue with chapter "Failed Quality Inspection Task".

### Editing measurement markers (Angle)

1. Select [Edit] in the tool box.
2. Click on the measurement marker.



3. To move the measurement marker:

- Move the mouse over the measurement marker until the hand symbol is displayed.
- Click and hold the left mouse button.
- Move the measurement marker to the required location.

4. To move individual points of the measurement marker:

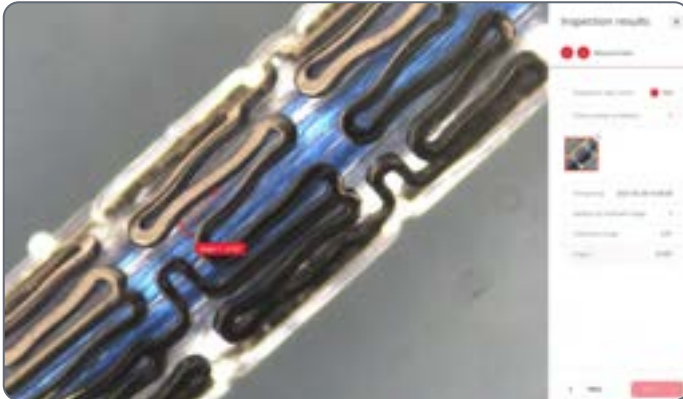
- Click on the point and hold the left mouse button.
- Move the point to the required location.

5. To delete the measurement marker, click on the red x symbol.

## Performing Measurement Steps (Angle) (Continued)

### Deleting captured images (Angle)

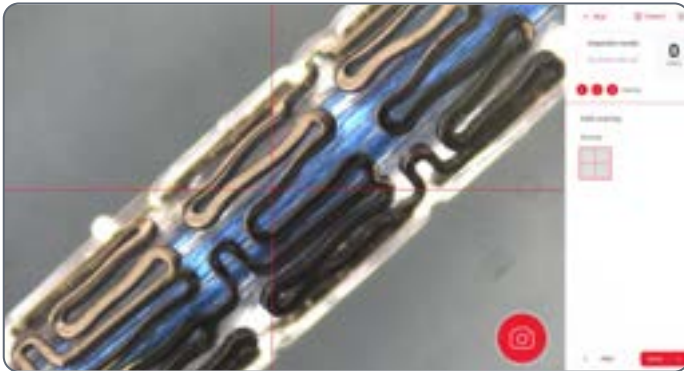
1. Display the detailed view of the step result:



2. To delete the image, click on the x symbol in the upper right corner of the thumbnail.
3. Confirm the message box.

# Performing an Overlay Task

- ✓ You are logged in.
  - ✓ The workflow is selected (chapter "Starting the Exalta Operator App").
  - ✓ The required information is filled in (batch number, serial number, attributes).
  - ✓ The workflow screen shows the overlay step:
1. If the overlay requires calibration, perform calibration (see chapter "Calibrating the Camera").
  2. In the [Overlay] section click on the required overlay.



3. When calibration is complete or the overlay does not require calibration, click [Save] in the tool box.
4. Check the result using the overlay and select [PASS] or [FAIL]:



5. Confirm with [CONFIRM TO SAVE].  
The next workflow step is displayed.
- Or:
- ▶ If inspection fails, continue with chapter "Failed Quality Inspection Task".

## Performing an Overlay Task (Continued)

### Deleting captured images (defects)

1. Display the detailed view of the step result by opening the [Inspection results] window.



2. To delete the image, click on the x symbol in the upper right corner of the thumbnail.
3. Confirm the message box.



# Completing the Quality Inspection Task and Submitting the Report

If the quality inspection task is successful, continue as follows:

- ✓ The workflow screen shows the last completed step:



1. Click [DONE].

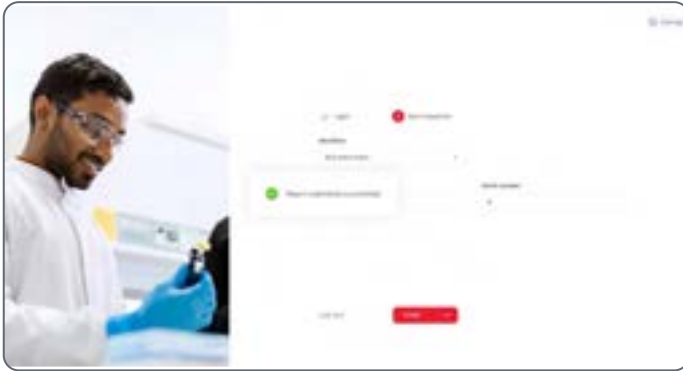
The report summarizing the results of the quality inspection task is displayed:



2. To submit the report to the manager, click [SUBMIT REPORT].
3. Enter your password and click [CONFIRM].

## Completing the Quality Inspection Task and Submitting the Report (Continued)

The report is submitted:



# Failed Quality Inspection Task

If the inspection fails in the measurement or overlay step, the following message box is displayed:



The number of permissible defects is exceeded.

1. Click [FINISH INSPECTION].

The report summarizing the inspection results is displayed:



2. To submit the report to the manager, click [SUBMIT REPORT].
3. Enter your password and click [CONFIRM].

# Calibrating the Camera

1. Click the [Calibrate] symbol in the tool box:



The instructions to calibrate the microscope and camera are displayed in the upper left corner of the screen:



Recalibrate the camera and microscope after each adjustment.

2. Follow the instructions on the screen.
3. Put a standard microscope ruler in focus, draw a line, and enter the actual length in the [Calibration] window:



# General User Settings

## Changing the user password

1. Click the settings symbol in the upper right corner of the screen:



2. Click [Change password] in the [User] section.
3. Enter the required information:



4. Confirm the new password with [SAVE].

## Update server address

1. Click the settings symbol in the upper right corner of the screen:



2. Click [UPDATE SERVER IO ADDRESS] in the [Server address] section:
3. Enter the new server address:



4. Confirm with [SAVE].

# Logging Out

1. Complete your quality inspection task (see chapter "Completing the Quality Inspection Task and Submitting the Report").

The start screen is displayed.

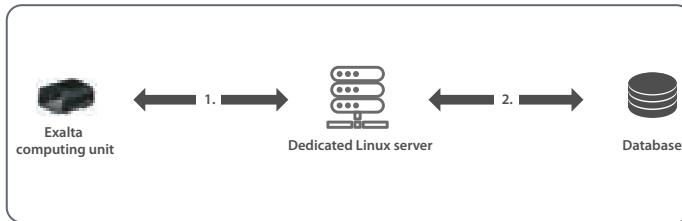
2. Click [Log out].
3. Confirm the message box with [LOG OUT].

# Troubleshooting

# Troubleshooting of Software-Related Issues (Database Integration Option)

## Precondition

- ✓ The installation instructions to finish the setup are carried out as shown below (see chapter "Integrating Exalta System into Your IT Infrastructure", see chapter "Installing the Exalta Service Software on Your Server (Linux Server)").



## Error messages

The Exalta System informs you via the apps about the state of your system and potential problems. The messages include information on ways to solve these problems. If you cannot solve the problems please use the troubleshooting information in the following chapters.

**Sorry, the network is unavailable. Please check your network status.**

This message is shown when the user tries to log in and the two apps cannot connect to the Exalta software installed on the server.

1. Check whether the Exalta computing unit network is available:
  - Check whether the network setup is correct within your network infrastructure.
  - Ensure that the IP address is as expected according to your network infrastructure.





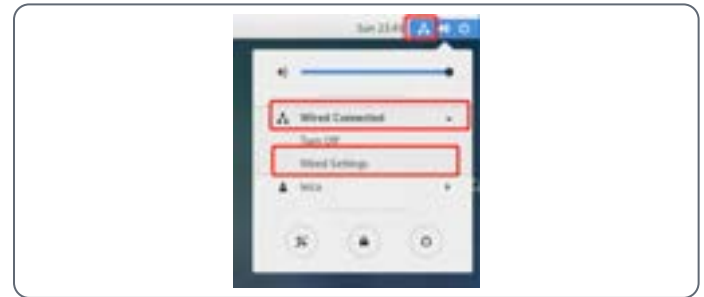
# Troubleshooting of Software-Related Issues (Database Integration Option) (Continued)

2. Check whether the server setting is configured correctly: Ensure that the IP address is set to the one of the Linux servers.

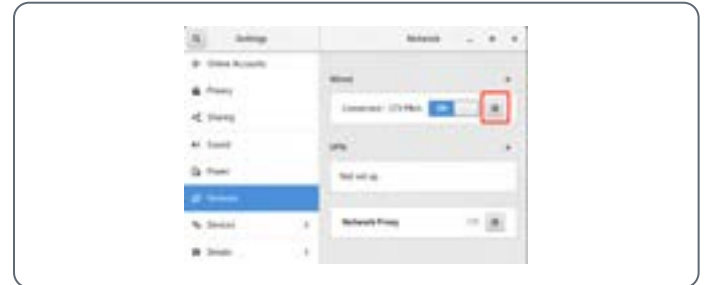


4. Check the Linux server network connection:

- Open the wired setting via the symbol in the top bar.



3. Check whether the network between the Exalta computing unit and the server is working correctly: Open a terminal and try to ping the IP address.



# Troubleshooting of Software-Related Issues (Database Integration Option) (Continued)



- Ensure that the IP address is set to the one of the apps on the Exalta computing unit.
5. If the Exalta computing unit is working correctly, check whether the Exalta software is working on the Linux server:

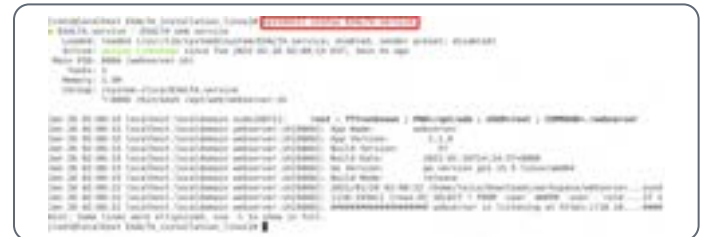
- Open a terminal from the desktop on the Linux server.
- To enter root mode, enter “su” in the terminal.
- Enter the root password.

The terminal enters root mode:



- Execute the “systemctl status Exalta.service” command.

The [Active] status is active (running):

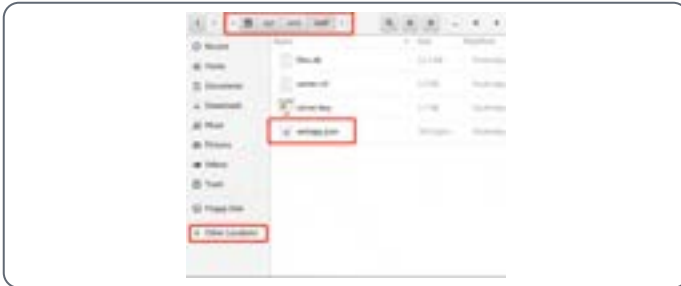


- Execute the “systemctl status Exalta.service” command for about 2 to 4 times.

If it remains active, this indicates that the Exalta software is running correctly.

## Troubleshooting of Software-Related Issues (Database Integration Option) (Continued)

6. Check whether the database credentials were configured correctly during installation: Check whether the setting file has been configured with the correct database credentials during the installation.



## Troubleshooting of Software-Related Issues (Database Integration Option) (Continued)

7. Check whether the database connection is available: Open a terminal and try to ping the IP address in the Exalta software setting file.



```
Microsoft Windows [Version 10.0.18363.1168]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\chanda>ping 18.18.232.81

Pinging 18.18.232.81 with 32 bytes of data:
Reply from 18.18.232.81: bytes=32 time=1766 TTL=64
Reply from 18.18.232.81: bytes=32 time=866 TTL=64
Reply from 18.18.232.81: bytes=32 time=866 TTL=64
Reply from 18.18.232.81: bytes=32 time=866 TTL=64

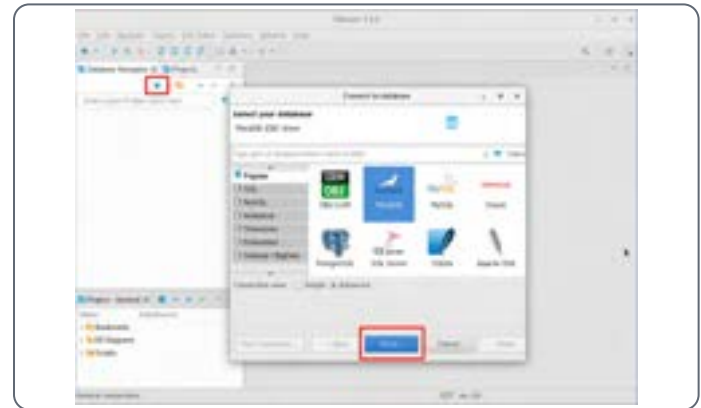
Ping statistics for 18.18.232.81:
    Packet: Sent = 4, Received = 4, Lost = 0 (0% loss)
    Approximate round trip times in milliseconds:
        Minimum = 366, Maximum = 1766, Average = 866

C:\Users\chanda>
```

8. Check whether the database credentials are correct:
  - Install the DBeaver tool on the Linux server by downloading the RPM package from <https://dbeaver.io/download/>.



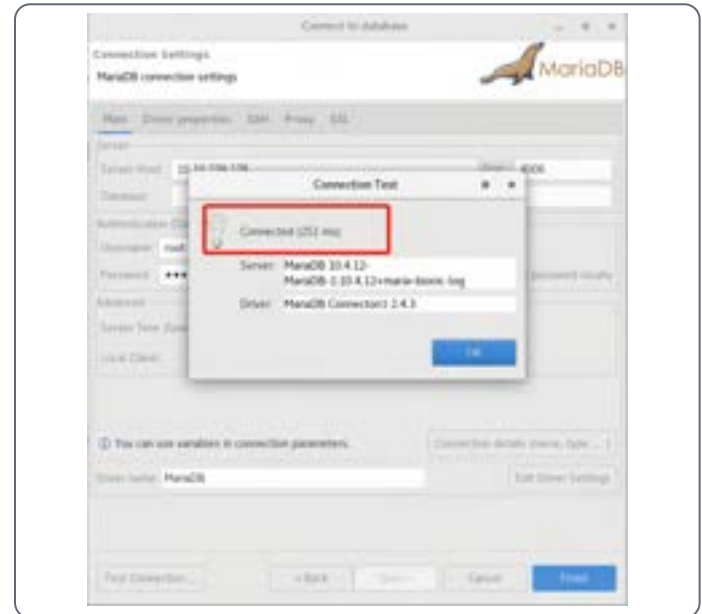
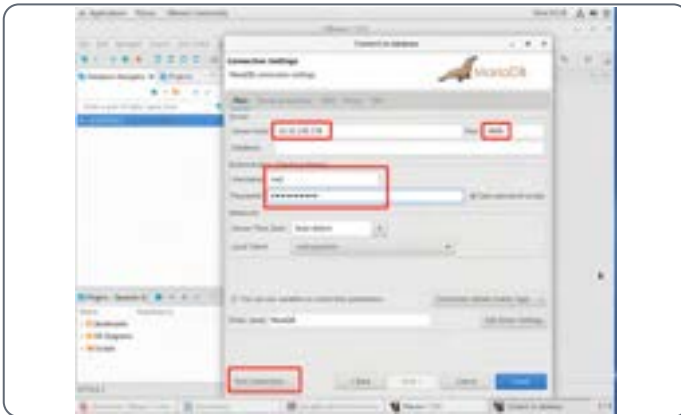
- Use the DBeaver tool to test the database connection from the Linux server.
- Create a new connection and select the proper database driver:



## Troubleshooting of Software-Related Issues (Database Integration Option) (Continued)

- Enter the database IP address, port, user and password.
- Click [Test Connection]:

if the database connection is available and credentials are correct, [Connected] is displayed:



# Troubleshooting of the Windows Server Installation



Admin rights are required to install the wizard!

## Error message: Cannot connect to the database

The wizard asks for the database connection credentials during installation. If it cannot connect to the database with the provided credentials, an error message is displayed.

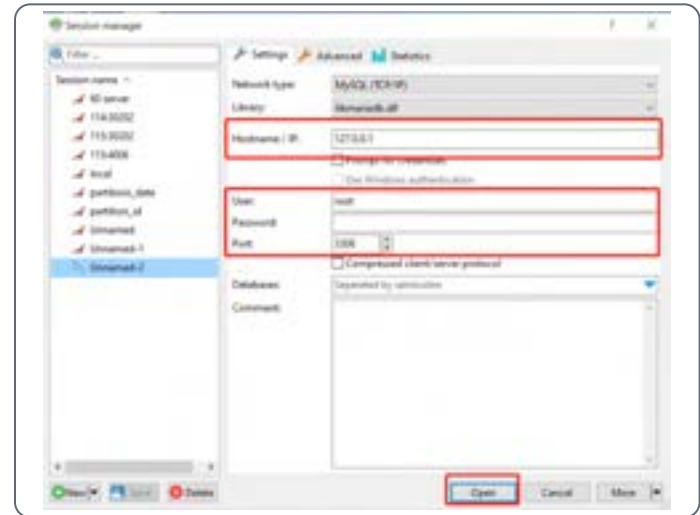
- ▶ If an error occurs, use other database tools, e.g. HeidiSQL, to check whether it can connect to the database successfully with the same credentials.

## Install HeidiSQL

- ▶ Download HeidiSQL and install it with the installation wizard.  
<https://www.heidisql.com/download.php?download=installer>

## Verify the credentials with HeidiSQL

1. Enter IP, user name, password, port and confirm with [Open].



HeidiSQL connects to the database if the credentials are correct.

2. If database connection is not possible with HeidiSQL either, contact your IT manager for the correct database connection credentials.
3. If database connection is possible with HeidiSQL but not with the Exalta wizard, contact Leica Microsystems.

# Troubleshooting of Software-Related Issues (Folder Integration Option)

## Precondition

✓ The installation instructions to finish the setup are carried out as shown below (see chapter "Appendix 2: Folder integration option")

1. Check whether the web service software is running:
  - Open a terminal.
  - Execute the ">> sudo systemctl status Exalta.service" script.

An active status is displayed in green.
2. Check whether the network folder is successfully installed:
  - Open a terminal.
  - To update the configuration file, execute the ">> sudo gedit /usr/local/bin/mount\_cifs.sh" script.

- Get the MOUNT\_POINT from the file (e.g. "/home/gel-x/xx"):



```
#! /bin/bash
USERNAME="leica"
PASSWORD="Leica@12345"
HOST_IP=10.10.230.1
HOST_FILE_PATH=share
MOUNT_POINT=/home/gel-x/xx
FILE_SYSTEM="//$HOST_IP/$HOST_FILE_PATH"
FILE_MODE=0777
CIFS_MODE=0777
USER_ID="1000"
GROUPID="1000"

/etc/mount -t cifs $FILE_SYSTEM $MOUNT_POINT -o
user=$USERNAME,password=$PASSWORD,uid=$USER_ID,gid=$GROUPID
```

- Open a second terminal.
- Execute the scripts:  
>> cd /home/gel-x/xx/  
>> ls



```
gel-x@gelx-desktop:~$ sudo mount_cifs.sh
gel-x@gelx-desktop:~$ cd /home/gel-x/xx/
gel-x@gelx-desktop:~/xx$ ls
1
gel-x@gelx-desktop:~/xx$
```

## Troubleshooting of Software-Related Issues (Folder Integration Option) (Continued)

3. Check whether the web service setting is correct:
  - Go to: `/opt/web/conf/` and open `webapp.json`.
  - Get the value of `cacheDir` (e.g. `"/media/gel-x/nvme/"`).
  - Open a terminal.
  - Execute the `">> cd /media/gel-x/nvme"` script.



```
    "web": {
      "defaultPassword": "123456",
      "tokenExpireMinutes": 30,
      "dataSource": "folderbase"
    },
    "dataCache": {
      "cacheDir": "/media/gel-x/nvme/"
      "folderNumber": 10000,
      "filesPerFolder": 20000,
      "cacheThumb": true
    },
    "sqlite": {
      "filePath": "/opt/web/conf/webserver.db"
    }
  }
```

- If the webserver setting is correct, the command is executed successfully.



# Troubleshooting of Hardware-Related Issues

## Exalta fails to connect the camera

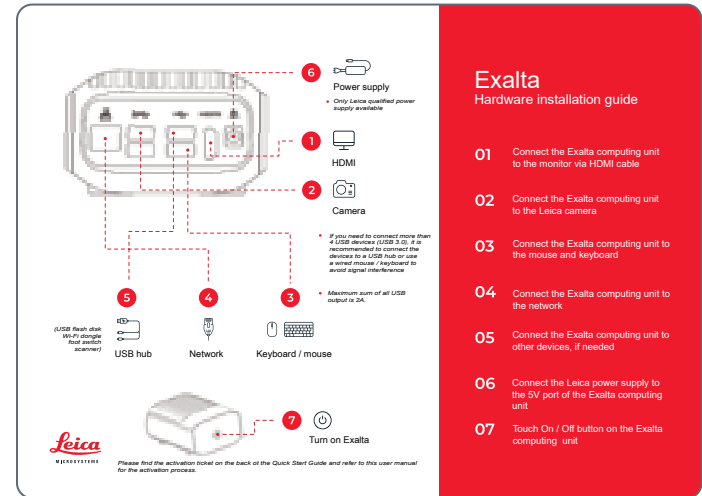
If Exalta cannot connect to the camera, use the following troubleshooting steps:



### 1. Check whether the USB interfaces are connected to the right devices:

- Check if the camera is well connected to the USB 3.0 port.
- Close the Exalta Operator App.
- Unplug all external USB devices.
- Plug in the external USB devices again, following the instructions below.

- If more than four USB ports are required, connect an intermediate USB hub to the computing unit and connect your USB devices to the USB hub instead.
- Unplug the camera and plug it in again. Wait and check if the camera status LED turns green.
- If this does not solve the problem, reboot the Exalta hardware by following steps 1 to 7:



## Exalta Hardware installation guide

- 01 Connect the Exalta computing unit to the monitor via HDMI cable
- 02 Connect the Exalta computing unit to the Leica camera
- 03 Connect the Exalta computing unit to the mouse and keyboard
- 04 Connect the Exalta computing unit to the network
- 05 Connect the Exalta computing unit to other devices, if needed
- 06 Connect the Leica power supply to the 5V port of the Exalta computing unit
- 07 Touch On / Off button on the Exalta computing unit

## Troubleshooting of Hardware-Related Issues (Continued)

### Fault triggering of the On/Off button

If liquid drops on the button, or cables are put on it, the capacitor of the surface is changed, because there is a capacitance sensor behind it. This may cause fault triggers.



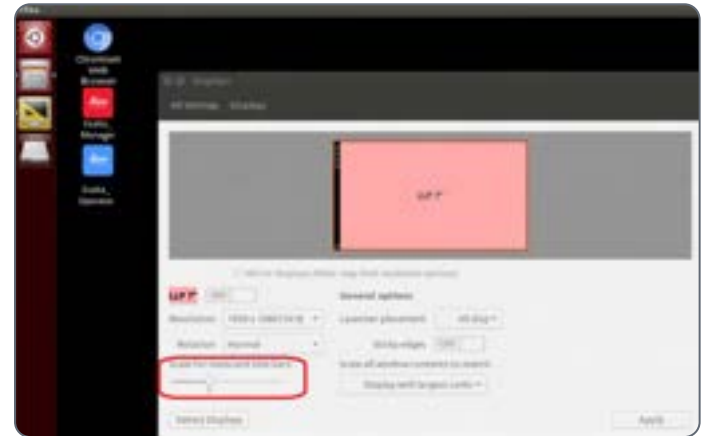
- ▶ Do not put cables / liquid near the front glass of the computing unit.

### No display images on the screen

- ▶ Check if the HDMI cable is securely connected.
- ▶ Unplug the HDMI cable from the computing unit and plug it in again.

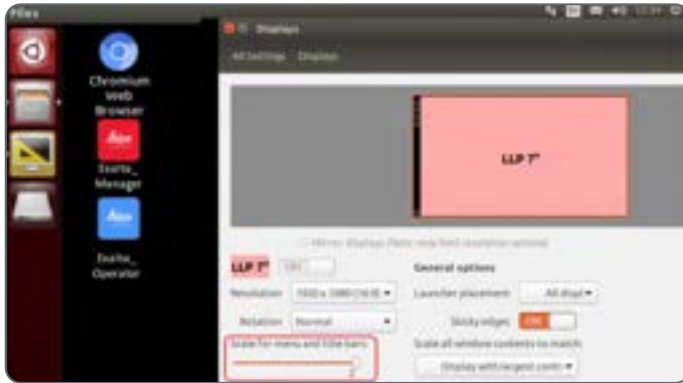
The Exalta Operator App and the system desktop show big icons (see image below)

- ▶ Check the scale / resolution setting of the monitor.



The scale should be 1. When [Scale] is set to a different value, the software may not be displayed properly.

## Troubleshooting of Hardware-Related Issues (Continued)



- ▶ Unplug the HDMI cable from the computing unit and plug it in again.

### Wireless keyboard / mouse response is slow / devices have lost the connection

- ▶ Check if the wireless USB dongle is connected to the USB 3.0 port in parallel with the camera.
- ▶ Connect the wireless USB dongle to the USB 2.0 port instead or use an intermediate wired USB hub.
- ▶ Replace the device with a wired keyboard / mouse device.

### During operation, the camera response (streaming) is slow or fails

- ▶ Check if the wireless USB dongle is connected to the USB 3.0 port in parallel with camera.
- ▶ Connect the wireless USB dongle to the USB 2.0 port instead or use an intermediate wired USB hub.
- ▶ If the auto exposure is enabled, check if the LED light source is sufficient.



The light source has an impact on the exposure time when auto exposure is enabled. A long exposure time can cause a slow frame rate.

# Troubleshooting of Hardware-Related Issues (Continued)

## **No power to the system**

- ▶ Check if the power supply is connected to the device.
- ▶ Check if the power supply is working or not.
- ▶ Only use the Leica provided power supply. Using a wrong power supply may damage the device.

# System Time Synchronization



Leica recommends using the internet time to ensure time synchronization within the Exalta System, including the Exalta computing units and web server.

If the Exalta computing units do not have the access to internet time, use NTP to ensure time synchronization with local time on your server.

Contact your IT for support and follow the instructions below.

## Performing NTP setup

1. On the server intended to provide time service: Start the NTP server by running the "timesync.sh" script in the following format:

```
sudo timesync.sh -s -i 192.168.0.x
```

- s: [Option] Stands for the server setting
- i: [Option] Set the IP address of the subnet to be synchronized via NTP (the subnet contains the Exalta computing unit)



The user password is: gel-x

2. On the Exalta units which need to use time service: Start syncing with the NTP server by running the "timesync.sh" script in the following format:

```
sudo timesync.sh -c -i 192.168.0.10
```

- c: [Option] Stands for the client setting
- i: [Option] Set the IP address of the NTP server

# Online License Activation



Connect a network cable to the Ethernet port of the Exalta computing units and make sure the Exalta computing units have access to the internet.

1. Open the CodeMeter License Central WebDepot (<https://licenses.leica-microsystems.com/index.php>):



2. Enter the activation ticket in the [Ticket] field and click [Next].

3. To confirm the license information, click [Activate Licenses]:

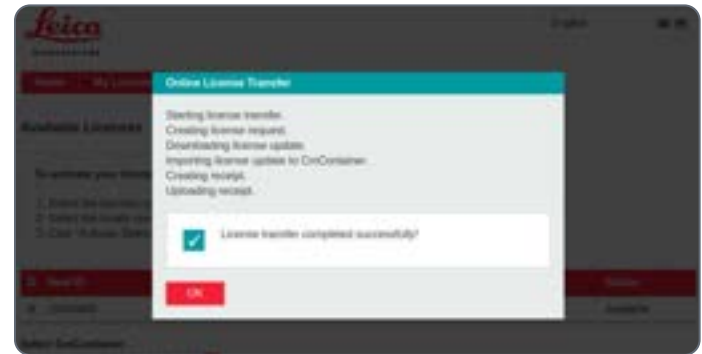


## Online License Activation (Continued)

- To activate the selected license for the Exalta computing unit, click [Activate Selected Licenses Now]:



- Wait until the license transfer is complete.
- Click [OK] to complete the license activation process.



# Offline License Activation

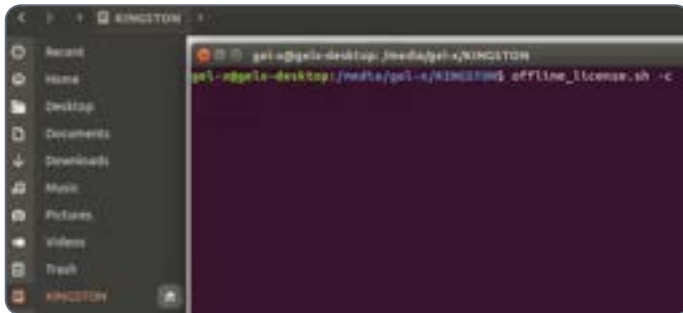
## Generating the context file



If the Exalta computing units do not have access to the internet, use the offline activation function to activate the computing units.

Make sure that a second computer with internet access and a USB flash drive are available prior to activation.

1. Connect the USB flash drive to the Exalta computing unit.
2. On the Exalta computing unit:
  - Open the File Explorer.
  - Navigate to the USB flash drive.
  - Right-click the USB flash drive and open a terminal.



- To generate the context file, execute the "offline\_license.sh" script.



With the -c option, the context file is generated.

## Uploading the context file and downloading the license

1. Disconnect the USB flash drive from the Exalta computing unit.
2. Connect the USB flash drive to the second computer (computer with internet access).
3. On the second computer, open the CodeMeter License Central WebDepot (<https://licenses.leica-microsystems.com/index.php>):



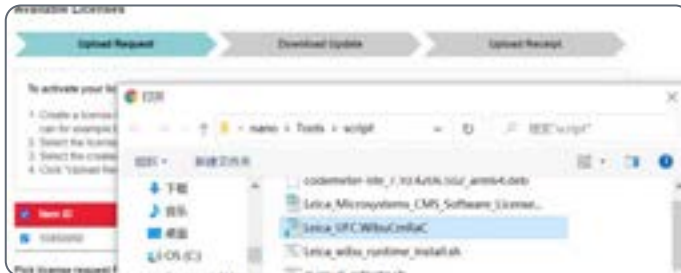
4. Enter the activation ticket in the [Ticket] field and click [Next].



## Offline License Activation (Continued)

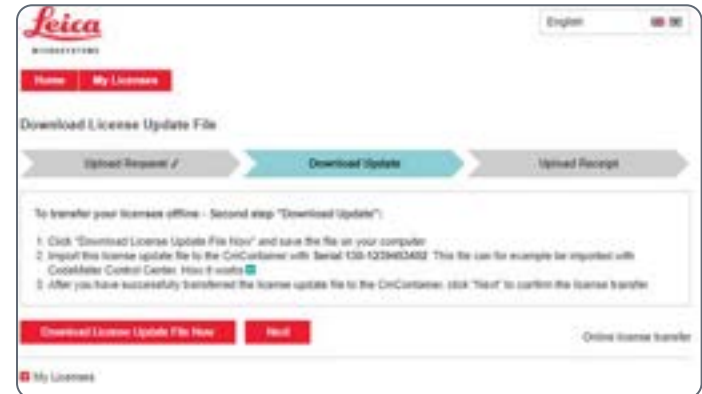


5. To confirm the license information, click [Offline license transfer].
6. In the next window, click [Choose File].



7. Select the generated context file.

8. To download the license file to the USB flash drive, select [Download License Update File Now]:



# Offline License Activation (Continued)

## Importing the licences and uploading the receipt file

1. Disconnect the USB flash drive from the computer.
2. Connect the USB flash drive to the Exalta computing unit.
3. On the Exalta computing unit:
  - Open the File Explorer.
  - Navigate to the USB flash drive.
  - Right-click the USB flash drive and open a terminal.
  - To import the licence file, run the "offline\_license.sh" script:

```
offline_license.sh -i
```



With the `-i` option, the licence file is imported.

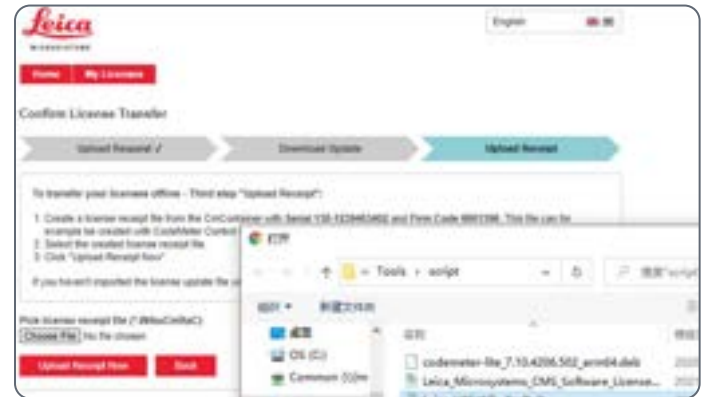
- To generate the receipt file on the USB flash drive, run the "offline\_license.sh" script:

```
offline_license.sh -r
```



With the `-r` option, the receipt file is generated.

4. Disconnect the USB flash drive from the Exalta computing unit.
5. Connect the USB flash drive to the second computer (computer with internet access).
6. To download the receipt file, select [Upload Receipt Now]:



# License Rehoming



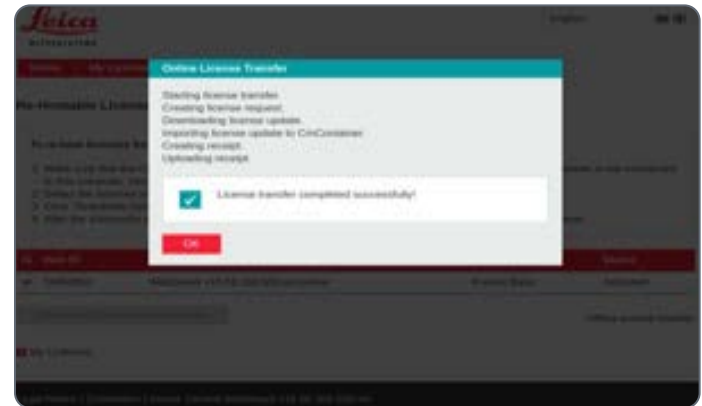
Connect a network cable to the Ethernet port of the Exalta computing units and make sure the Exalta computing units have access to the internet.

1. Open the CodeMeter License Central WebDepot (<https://licenses.leica-microsystems.com/index.php>):



2. Select the license that you want to de-activate and click [Deactivate Selected Licenses Now].

3. Wait until the license de-activation is complete.
4. Click [OK] to complete the license de-activation process.





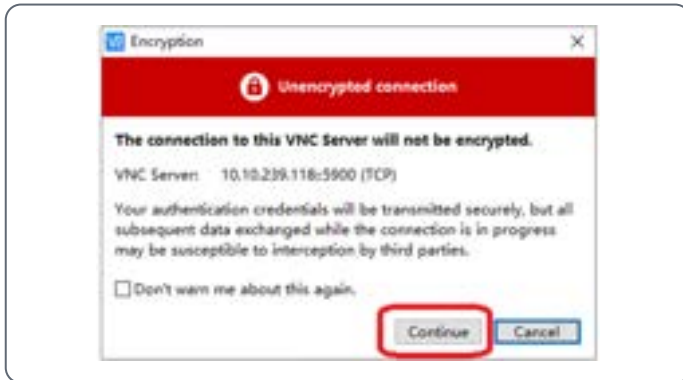
## Service: Remote Support (Continued)

### Establishing VNC access to the Exalta computing unit

1. Start the VNC Viewer on your IT's computer.
2. Enter the IP address of the Exalta computing unit you want to access (chapter "Checking the IP address of your Exalta computing unit"):



3. In the [Encryption] confirmation window, click [Continue]:



4. Enter the password "gel-x" and click [OK] to establish the remote access to the Exalta computing unit:



# Care and Maintenance

# Care, Cleaning, Maintenance, Contact Details

## Warranty benefits

The warranty time for electronic parts are 1 year, mechanical parts are 2 years. Guarantee covers all faults in materials and manufacture. It does not, however, cover damage resulting from careless or improper handling.

## Contact address

If your system is no longer functioning properly, contact your Leica representative. You can find information on worldwide Leica representatives on the Leica website: [www.leica-microsystems.com](http://www.leica-microsystems.com).

## Protection from dirt

Dust and dirt will affect the quality of your results.

- ▶ Put an optionally available dust cover over the components when they are not in use for an extended period of time.
- ▶ Keep accessories in a dust-free place when not in use.

## Prior to any care, cleaning or maintenance work on the system

- Switch off the power and unplug the power cord.

Touching live parts or components can cause injury!

- ▶ Do not disassemble or replace parts. They must only be disassembled by Leica service specialists.

Removing the covers of the components exposes hazardous voltages. Risk of electric shock and death.

- ▶ Do not clean any interior parts yourself.
- ▶ Please contact an authorized Leica dealer for technical service.

## Care and cleaning of the Exalta computing unit

Keeping all components clean is important for maintaining good optical performance.

- ▶ Do not use any unsuitable cleaning agents, chemicals or techniques for cleaning.
- ▶ Protect your components from moisture, fumes and acids and from alkaline, caustic and corrosive materials.
- ▶ Never use chemicals (e.g. thinners containing acetone, xylene or nitrogen) to clean the component, in particular colored surfaces or accessories with rubberized parts. This could damage the surfaces, and specimens could be contaminated by abraded particles.
- ▶ Test cleaning solutions of unknown composition on a less visible area of the components first. Ensure that coated or plastic surfaces do not become matted or etched.
- ▶ Protect your components from oil and grease.
- ▶ Do not grease guide surfaces or mechanical parts.

# Care, Cleaning, Maintenance, Contact Details (Continued)

## Cleaning polymer components

Some components are made of polymer or are polymer-coated. They are, therefore, pleasant and convenient to handle. The use of unsuitable cleaning agents and techniques can damage polymers.

## Cleaning the microscope

Microscopes in warm and warm-damp climatic zones require special care in order to prevent the build up of fungus. The microscope optics should be kept meticulously clean.

- ▶ For cleaning instructions, refer to the microscope user manual.

## Handling acids and bases

- ▶ For examinations using acids or other aggressive chemicals, take particular caution.
- ▶ Never allow the optics and mechanical parts to come into direct contact with these chemicals.

## Maintenance, repair work and servicing

- Ensure that repairs are only carried out by Leica-trained service technicians.
- Only use original Leica spare parts.



## Spare Parts

Item	Leica article number	Designation
1	18362001000004	Power supply

## Optional Accessories

Item	Leica article number	Designation
1	10450951	Exalta mounting bracket

# Disposal

# Disposal

After the end of the product's life, please contact Leica Service or Leica Sales on how to dispose of it.

Like all electronic devices, the computing unit, its components and accessories may not be disposed of as general household waste!



Please observe the national laws and ordinances which, for example, implement and ensure compliance with EU directive WEEE 2012/19/EU.

# Technical Specifications

# Computing Unit

## Weight

- Fully equipped, including packaging: 1.25 kg
- Without packaging: 0.65 kg

## Exalta System: Electrical data incl. power supply

- Supply voltage: 100 V ~ 240 V DC
- Frequency: 47 Hz – 63 Hz
- Power supply connection: Electrical circuits (10 A) for socket outlet
- Permitted power consumption of the multiple socket outlets: 2200 VA
- Protection class: II
- Overvoltage category: II

## Interfaces

- 1x Ethernet port
- 2x USB 3.0 port (Type-A)
- 2x USB 2.0 port (Type-A)
- 1x HDMI port
- 1x power port
- Status LED

## Ambient conditions for transportation and storage

- Temperature: -10°C – +40°C
- Relative humidity: 10% – 90%, non-condensing

## Ambient conditions for operation

- Temperature: +10°C – +40°C
- Relative humidity: 30% – 70% up to 30°C, non-condensing

## Transportation environment

- Transport shock (unpacked): 80 g/6 ms
- Transport shock (packed): 800 mm free fall
- Transport vibrations (unpacked): 5 Hz – 200 Hz / 1.5 g

# Power Supply

## Electrical data

- Supply voltage: 100 V ~ 240 V DC
- Frequency: 47 Hz – 63 Hz
- Power: max. 21.5 W
- Output voltage: 5 V DC
- Output current: max. 4.3 A

<b>Note</b>	Only use the power supply provided by Leica.
-------------	--

## Ambient conditions for transportation and storage

- Temperature: -10°C – +40°C
- Relative humidity: 10% – 90%, non-condensing

## Ambient conditions for operation

- Temperature: +10°C – +40°C
- Relative humidity: 30% – 70% up to 30°C, non-condensing

# Installation Room Requirements

## Ambient conditions for operation

- Temperature: +10°C – +40°C
- Relative humidity: 30% – 70% up to 30°C, non-condensing

## Work table

Before setting up your Exalta System, select a suitable site of operation on the clean room shop floor.

- ▶ Position the Exalta System on the same table as the microscope.
- ▶ If required, mount the Exalta System on the microscope, using the mounting bracket (see chapter "Mounting the Computing Unit on the Microscope (Optional)")

## Ambient conditions for storage

- Temperature: -10°C – +40°C
- Relative humidity: 10% – 90%, non-condensing

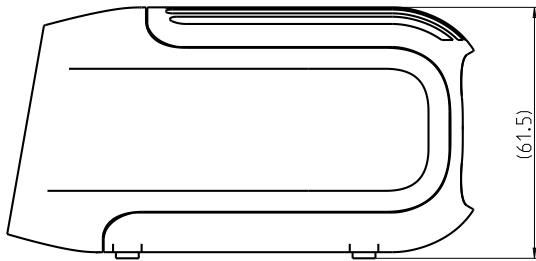
## Electrical connection requirement

- Supply voltage: 100 V ~ 250 V DC
- Frequency: 47 Hz – 63 Hz
- Power Supply Connection: Electrical circuits (10A) for socket outlet
- Permitted power consumption of the multiple socket outlets: 2200 VA
- Protection class: II
- Overvoltage category: II

# Dimensional Drawings

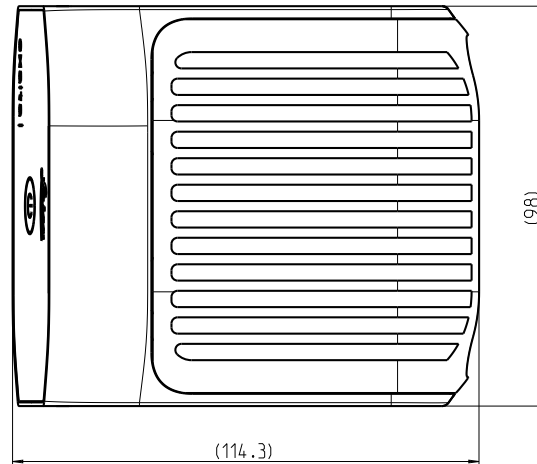
## Side view

Dimensions in mm



## Top view

Dimensions in mm





# Appendix 1: Database integration option

Note: The following chapters are intended for IT managers and administrators only.

# General IT Infrastructure Prerequisites

## Network connection

- Network bandwidth: 1000 Mbps
- RJ45 Ethernet connection or Wi-Fi dongle connection
- Recommended: Use RJ45 ethernet cable to connect the Exalta computing units at the workstations for stability reasons

## Database

Make sure that one of the following 3 databases is installed in advance by your IT, prior to the Exalta System installation procedure described in this manual:

- MariaDB 10.4 / 10.5
- MySQL 8
- SQLite3

# Server Prerequisites (Linux Server)



Observe the installation room requirements, see chapter "Installation Room Requirements".

## Dedicated server for Exalta software installation

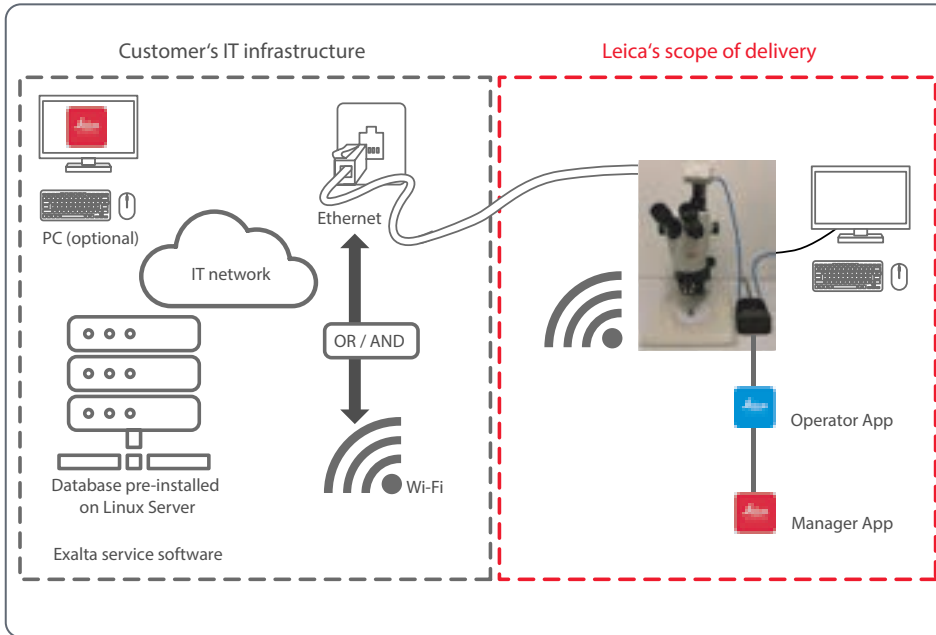
- Operating system:  
CentOS-7-X86\_64 7.7.1908 or higher, with GNOME desktop
- CPU: 4 Cores
- RAM:  $\geq 8$  GB
- Recommended disk storage:  $\geq 2$  TB (depending on the customer data retention policy)
- RAID infrastructure (Redundant Arrays of Independent Disks)

## Open ports, services and protocols on the network

e.g. to avoid customer firewall conflicts / alarms

- Ports: 8088, 4006, 3306
- HTTP protocol

# Server Prerequisites (Linux Server) (Continued)



## Supported databases:

- MariaDB 10.4/10.5
- MySQL 8
- SQLite3

## Supported Linux Server:

- GNOME desktop
- CentOS-7-X86\_64 7.7.1908 or higher

# Server Prerequisites (Windows Server)



Observe the installation room requirements, see chapter "Installation Room Requirements".

## Dedicated server for Exalta software installation

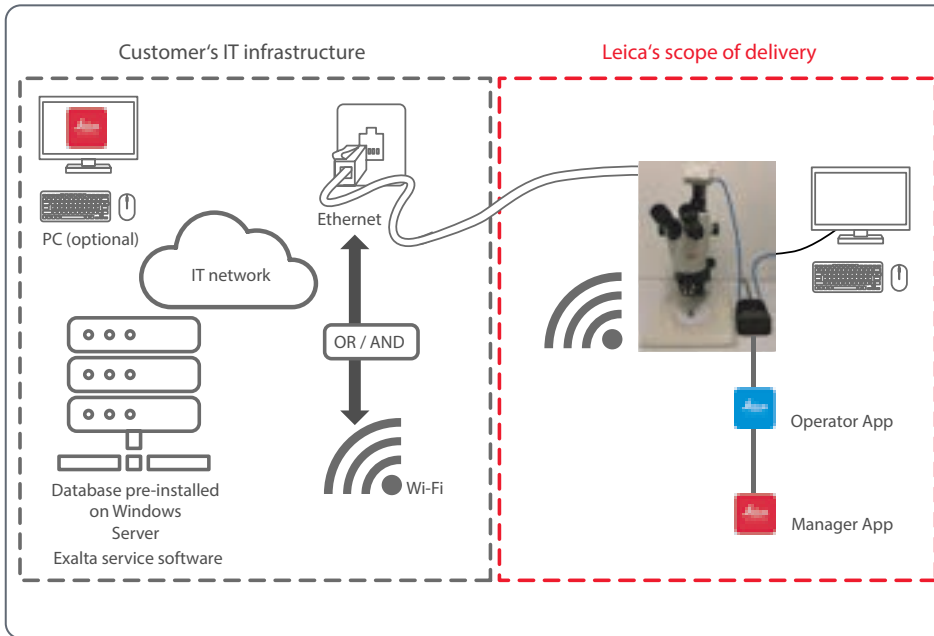
- Windows Server 2016 and 2019
- CPU: 4 Cores
- RAM:  $\geq 8$  GB
- Recommended disk storage:  $\geq 2$  TB (depending on the customer data retention policy)
- RAID infrastructure (Redundant Arrays of Independent Disks)

## Open ports, services and protocols on the network

e.g. to avoid customer firewall conflicts / alarms

- Ports: 8088, 3306, 4006
- HTTP protocol

## Server Prerequisites (Windows Server) (Continued)



### Supported databases:

- MariaDB 10.4/10.5
- MySQL 8
- SQLite3

### Supported Windows Server:

- Windows Server 2016
- Windows Server 2019

# Integrating Exalta System into Your IT Infrastructure

## Installation

1. Please refer to chapter "Server Prerequisites (Windows Server)" on page 158 or chapter "Server Prerequisites (Linux Server)" on page 156 to learn which databases and versions are supported.
2. Please get the database server IP address, port, user and password from your IT if you already have the proper database.
3. Otherwise, please ask your IT support to help install one of the databases.

# Installing the Exalta Service Software on Your Server (Linux Server)

1. Download "Exalta\_installation\_linux-vesion.tar.gz" from the website:  
<https://go.leica-microsystems.com/exalta>
2. Extract the zip file at any location on the server.
3. Open a terminal on the extracted folder.
4. To enter root mode, enter "su" in the terminal.
5. Enter the root password of the server.



```
leica@localhost:~/home/leica/Downloads/EXALTA_installation_linux$ su
leica@localhost EXALTA_installation_linux#
Password:
[root@localhost EXALTA_installation_linux]#
```

6. To perform a new installation, execute the `./install_service.sh IPAddress port account password` script (replace the text in italics by your values, example: `>> ./install_service.sh 10.10.239.178 4006 root Leic@12345`):



```
leica@localhost:~/home/leica/Downloads/EXALTA_installation_linux$ ./install_service.sh 10.10.239.178 4006 root Leic@12345
```

7. Repeat the above step for the second server, if there are two servers.



# Installing the Exalta Service Software on Your Server (Windows Server)

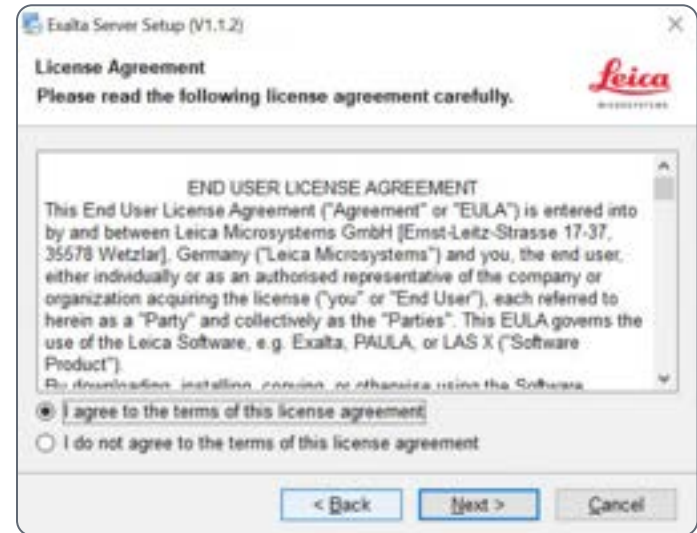
1. Log in on the Windows Server as Server Admin.
2. Double-click the Exalta server setup.exe.

The setup wizard is displayed:



3. Click [Next].

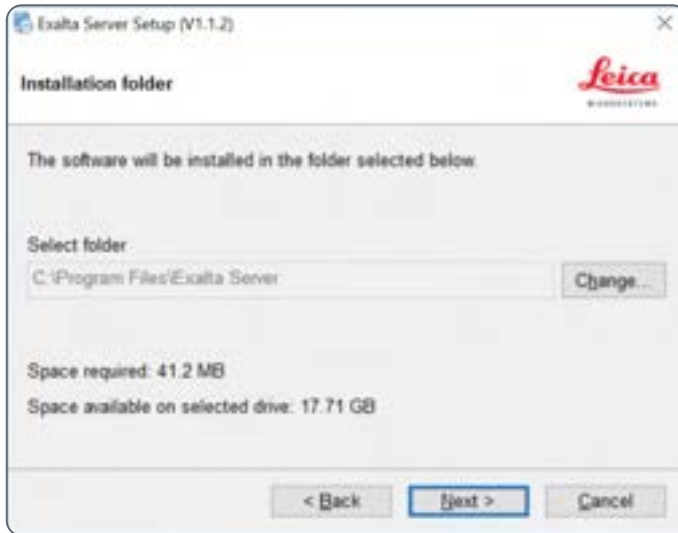
4. Select the radio button [I agree to the terms of this license agreement].



5. Click [Next].

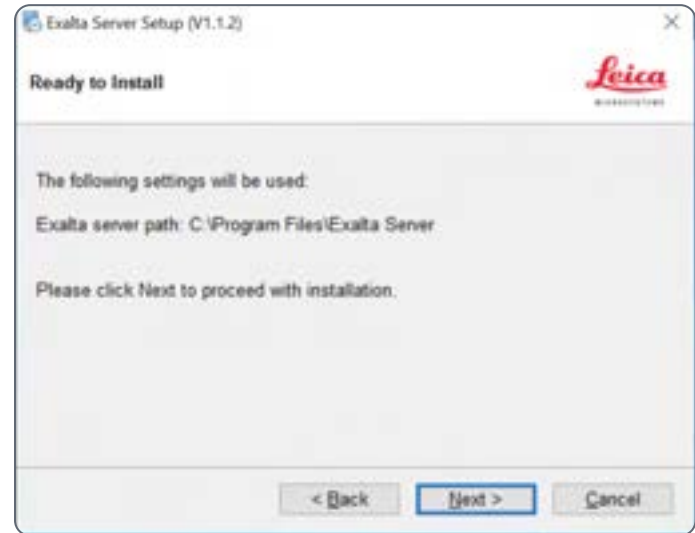
# Installing the Exalta Service Software on Your Server (Windows Server) (Continued)

6. Select the installation folder:



7. Click [Next].

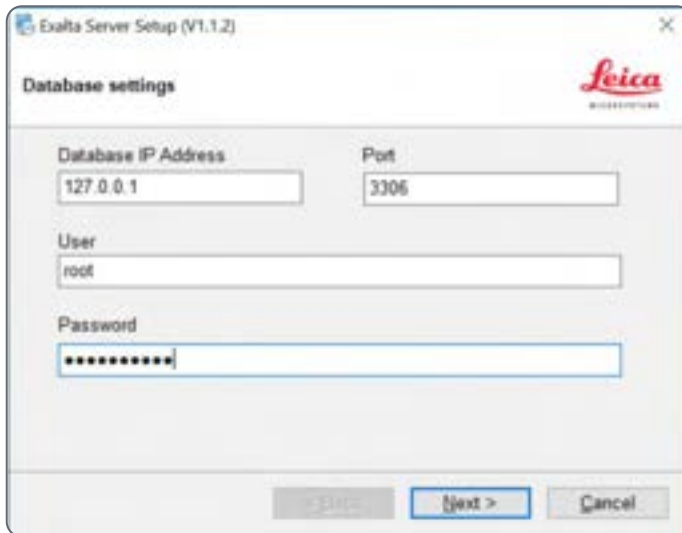
The following message is displayed:



8. Click [Next].

## Installing the Exalta Service Software on Your Server (Windows Server) (Continued)

9. Enter the correct database access credentials to connect to the database:



Exalta Server Setup (V1.1.2)

Database settings

Leica  
MICROSYSTEMS

Database IP Address: 127.0.0.1

Port: 3306

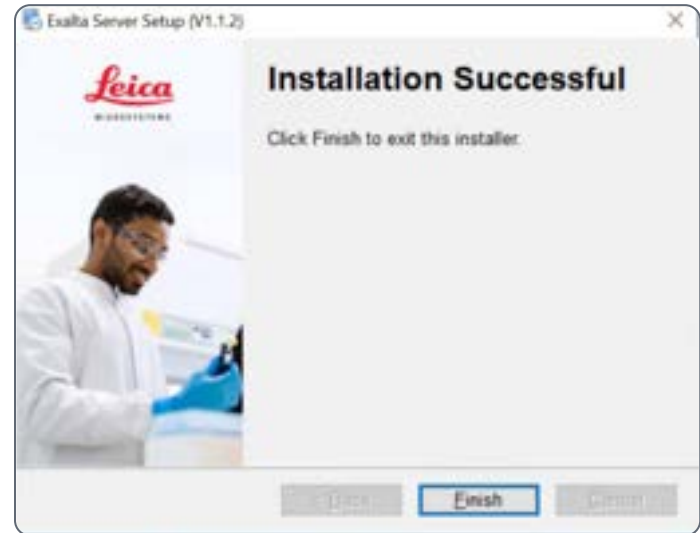
User: root

Password: [masked]

< Back   Next >   Cancel

10. Click [Next].

The following message is displayed:



11. Click [Finish].

# Upgrading the Exalta Service Software (Linux Server)

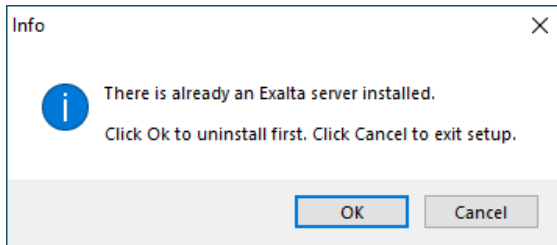
Use this function when you have installed the service software successfully and you want to upgrade the service software on your server to the latest version.

1. Open a terminal on the extracted folder.
2. To enter root mode, enter "su" in the terminal.
3. Execute the script `./upgrade_service.sh`.
4. If there are two servers, repeat this step for the second server.

# Upgrading the Exalta Service Software (Windows Server)

1. Log in on the Windows Server as Server Admin.
2. Double-click the Exalta server setup.exe.

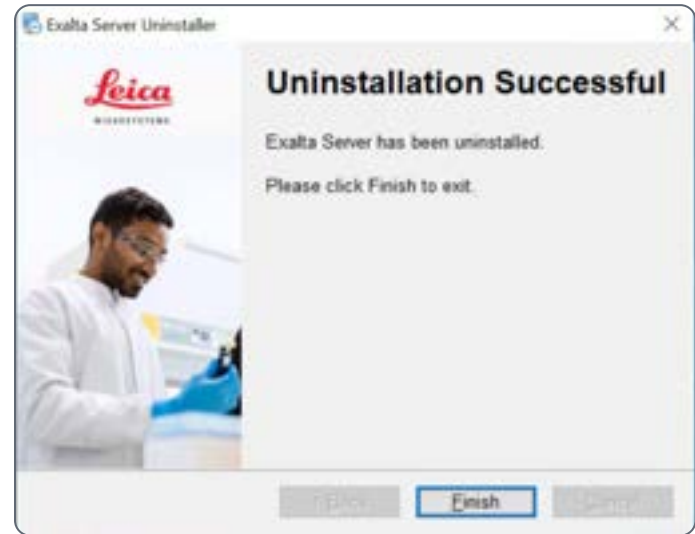
The following message is displayed:



You need to uninstall the legacy version.

3. Click [OK].

The uninstallation process starts.



4. Click [Finish] once uninstallation is complete.

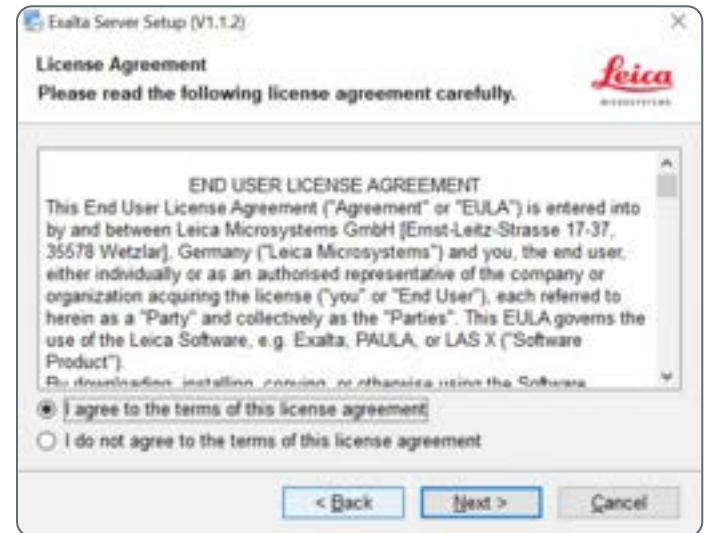
# Upgrading the Exalta Service Software (Windows Server) (Continued)

The following message is displayed:



5. Click [Next].

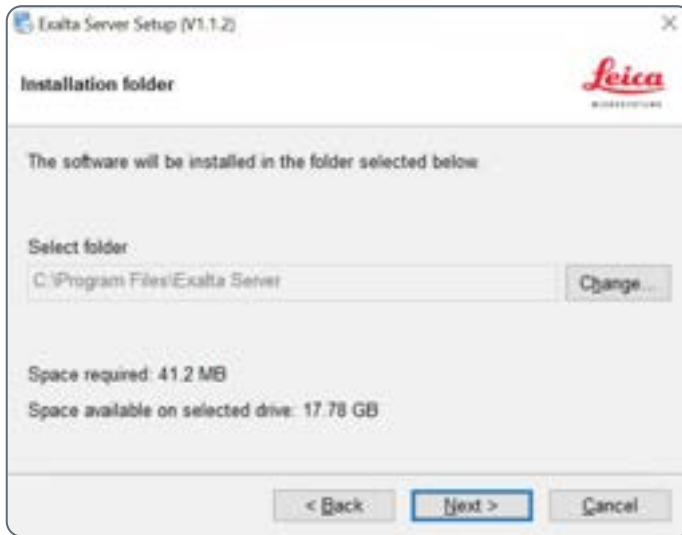
6. Select the radio button [I agree to the terms of this license agreement].



7. Click [Next].

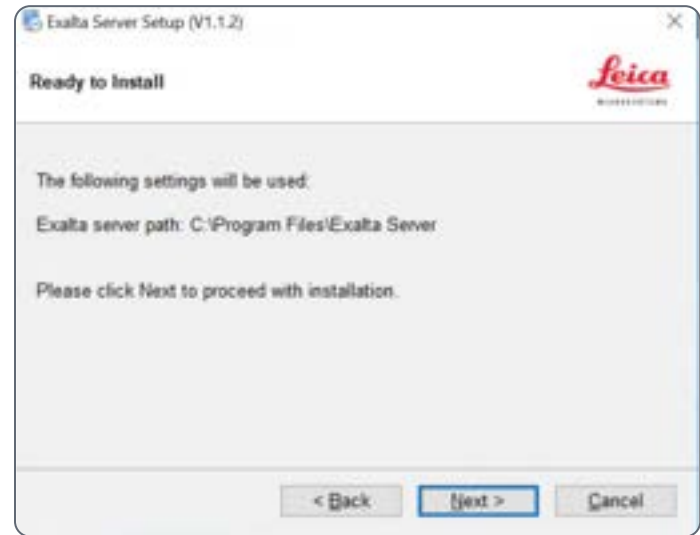
# Upgrading the Exalta Service Software (Windows Server) (Continued)

The following message is displayed:



8. Click [Next].

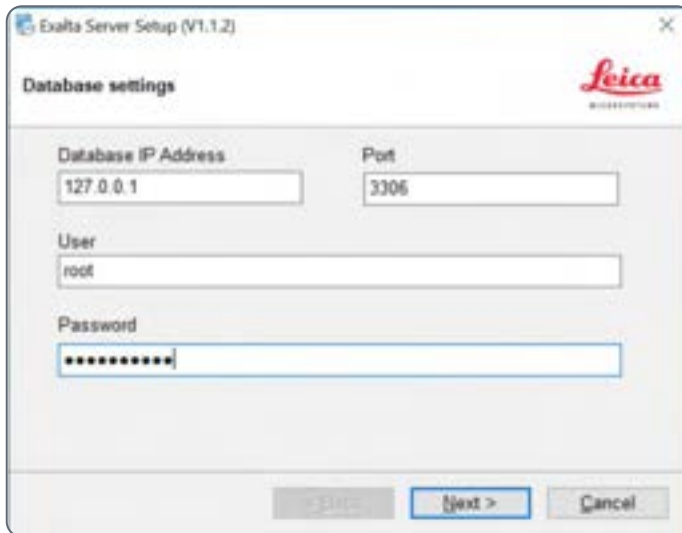
The following message is displayed:



9. Click [Next].

## Upgrading the Exalta Service Software (Windows Server) (Continued)

10. Enter the correct database access credentials to connect to the database:

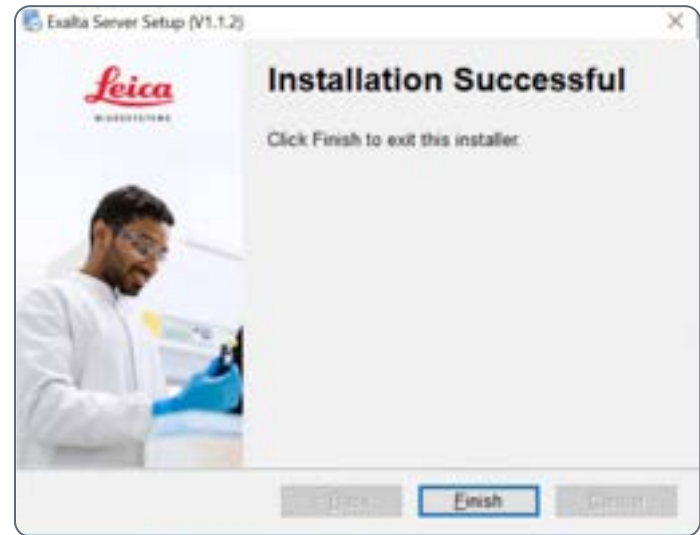


The screenshot shows the 'Exalta Server Setup (V1.1.2)' window with the 'Database settings' tab selected. The Leica logo is in the top right corner. The window contains the following fields and buttons:

- Database IP Address:** A text box containing '127.0.0.1'.
- Port:** A text box containing '3306'.
- User:** A text box containing 'root'.
- Password:** A password field with masked characters '\*\*\*\*\*'.
- Navigation buttons:** '< Back' (disabled), 'Next >' (highlighted in blue), and 'Cancel'.

11. Click [Next].

The following message is displayed:



12. Click [Finish].



# Uninstalling the Exalta Service Software (Windows Server)

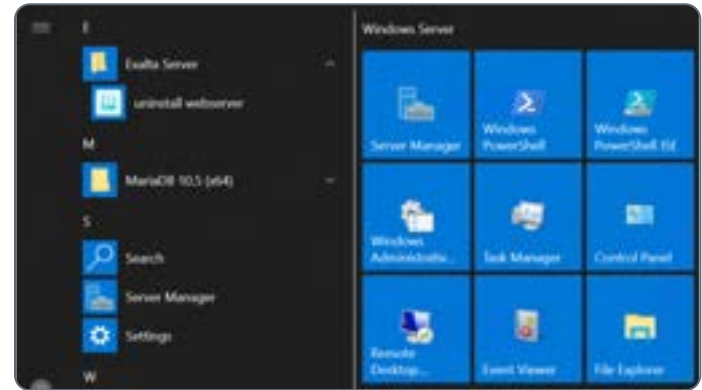
1. Log in to the Windows Server as Server Admin.

1. Click the Windows Start button.

2. Select [Exalta Server]:

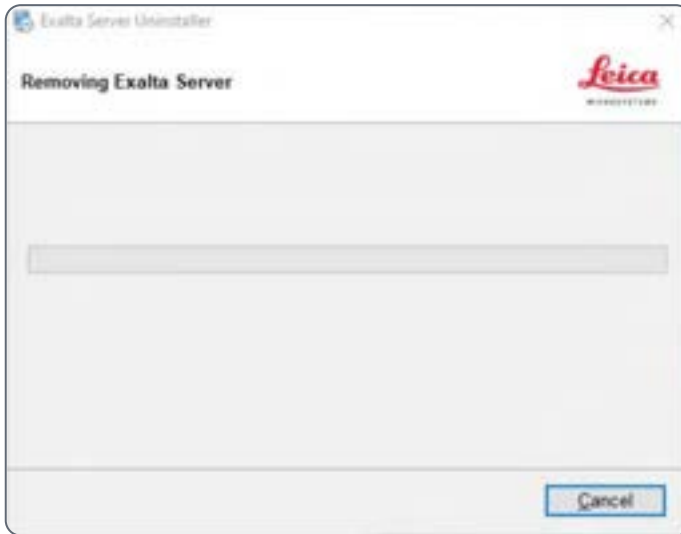


3. Select [uninstall webserver]:



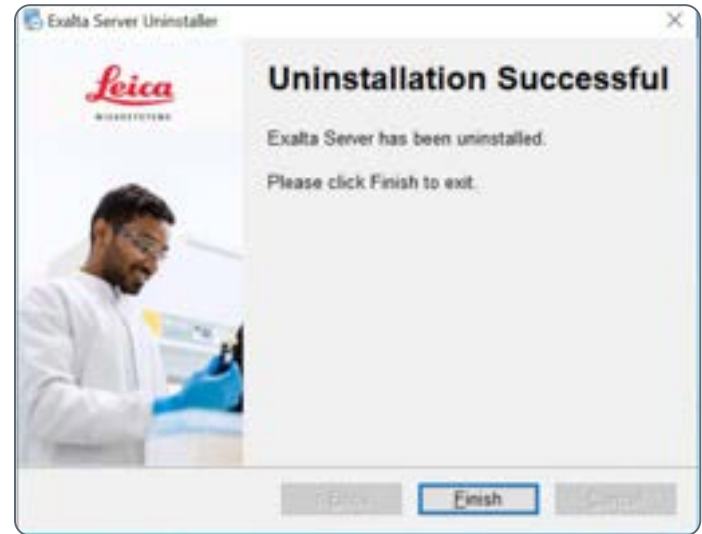
# Uninstalling the Exalta Service Software (Windows Server) (Continued)

The following message is displayed:



4. Wait for the process to complete.

The following message is displayed:



5. Click [Finish].

# Appendix 2: Folder integration option

Note: The following chapters are intended for IT managers and administrators only.

# Customer server prerequisite: Folder integration option (Linux/ Windows)



Observe the installation room requirements, see chapter "Installation Room Requirements".

## Server

One network folder is required. It supports CIFS or NFS. CIFS is preferable.



For the installation of the system, > 40 GB of free space is required for the Exalta System on the hardware. 1 TB is preferable.

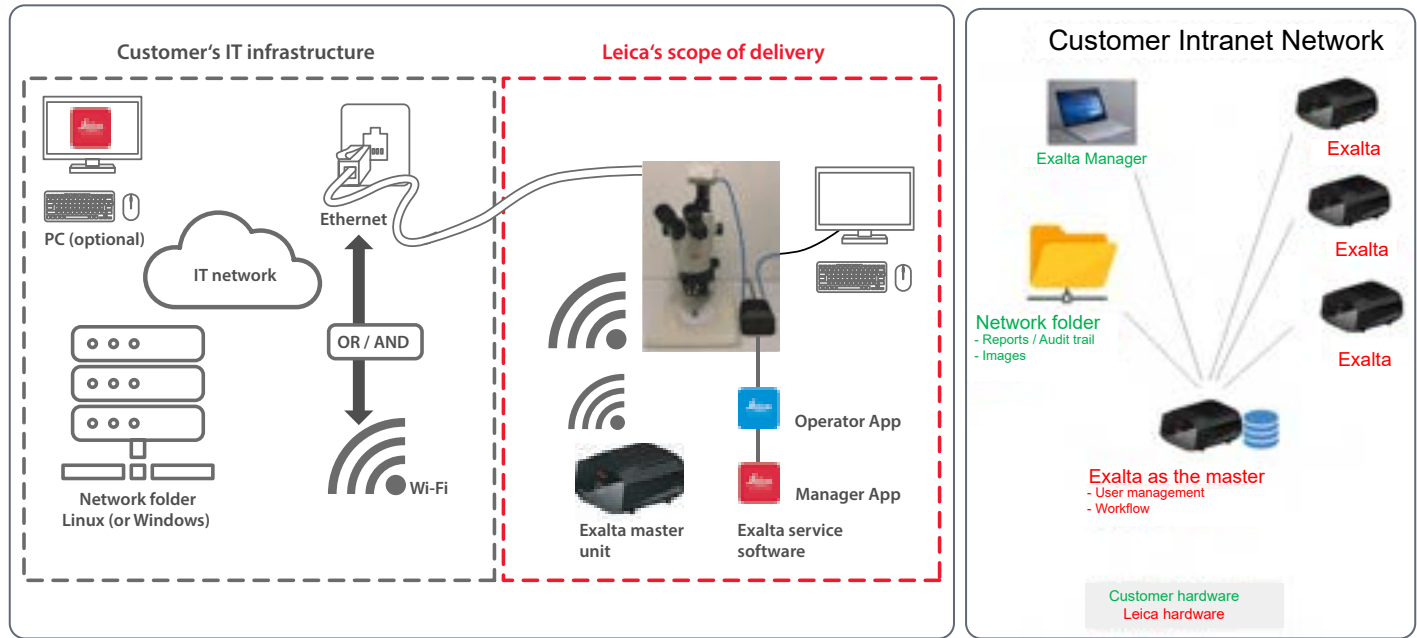
Have your IT support ensure that there is enough space.

## Open ports, services and protocols on the network

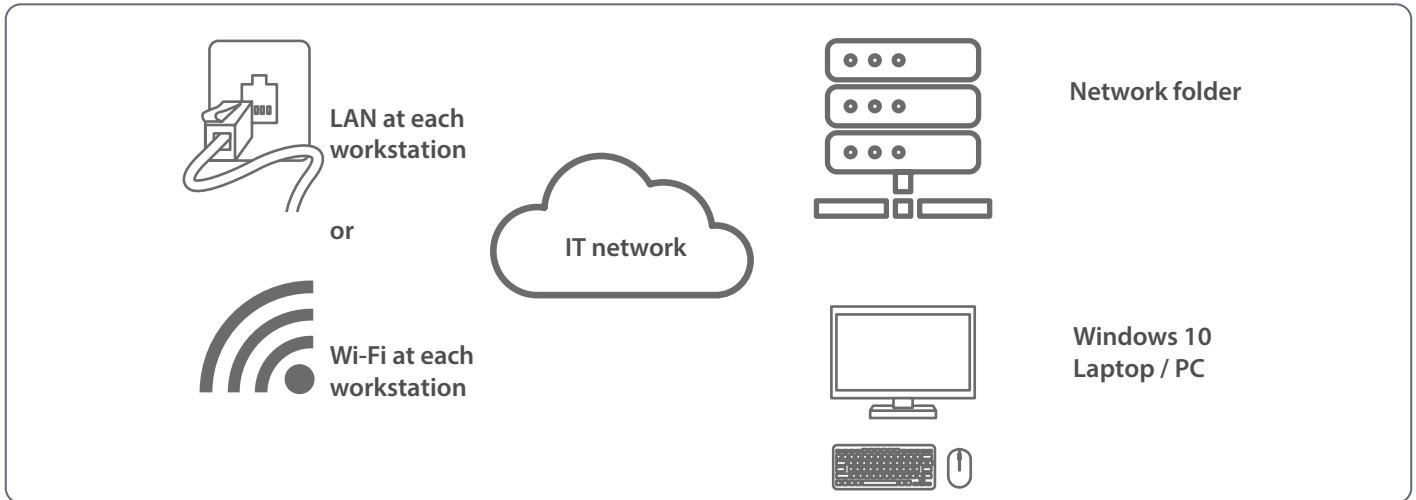
e.g. to avoid customer firewall conflicts / alarms

- Ports: 8088, 3306, 4006
- HTTP protocol

# Prerequisites: Your IT infrastructure



# Requirements on Your IT Infrastructure



# Granting Access to the Network Folder for the Master Unit



Select one Exalta computing unit as the master unit.

The folder integration option allows you to save the inspection data (csv files) and reports (pdf files) on the network folder in your intranet. In order to do so, you need to grant the Exalta **master unit** access to the network folder.

Proceed according to the following instructions:

1. Open a terminal from anywhere.
2. Execute the following command to update the configuration file:

```
>> sudo gedit /usr/local/bin/mount_cifs.sh
```



3. Enter the root password to execute the command.  
The screen on the right side of this page is displayed.
4. Save and close the file after the update.



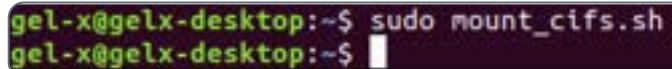
Note: Please use your actual data to fill in the content above and refer to the descriptions below.

- USERNAME: Name of the user which has read / write access on the network folder
- PASSWORD: Password of the user
- HOST\_IP: IP address of the network folder server
- HOST\_FILE\_PATH: Path on the **network folder** where Exalta inspection data is stored
- MOUNT\_POINT: Map HOST\_FILE\_PATH to this path on the Exalta **master unit**

## Granting Access to the Network Folder for the Master Unit (Continued)

5. Open a terminal from anywhere.
6. Execute the following command:

```
>> sudo mount_cifs.sh
```

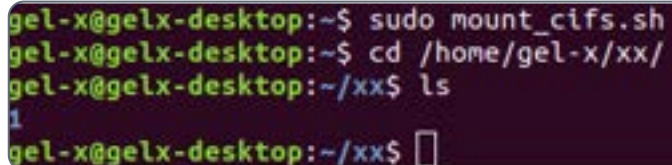


```
gel-x@gelx-desktop:~$ sudo mount_cifs.sh
gel-x@gelx-desktop:~$ █
```

7. Enter the root password to execute the command.
8. Check whether configuration is complete:

```
>> cd /home/gel-x/xx/
```

```
>> ls
```



```
gel-x@gelx-desktop:~$ sudo mount_cifs.sh
gel-x@gelx-desktop:~$ cd /home/gel-x/xx/
gel-x@gelx-desktop:~/xx$ ls
1
gel-x@gelx-desktop:~/xx$ █
```

9. Enable auto-run of this service:

```
>> sudo systemctl enable mountcifs.service
```

```
>> sudo systemctl start mountcifs.service
```



# Installing the Exalta Service Software on Your Exalta Master Unit



Select one Exalta computing unit as the master unit.

1. Download "Exalta\_installation\_linux-vesion.tar.gz" from the website:  
<https://go.leica-microsystems.com/exalta>
2. Extract the zip file at any location on the server.
3. Open a terminal on the extracted folder.
4. To perform a new installation, execute the "sudo ./install\_service.sh" script (example: `>> sudo ./install_service.sh`).

Or

5. To perform an upgrade, execute the "sudo ./upgrade\_service.sh" script.

```
~/Documents/EXALTA_installation_linux$ sudo ./install_service.sh
```

# Installing the Exalta Service Software on Your Exalta Master Unit (Continued)



Ensure that your IT grants network folder access to the Exalta master unit before installing the web service software.

2. Change the marked path to your storage root path (provided by your IT support).
3. Reboot the Exalta master unit.

## Configuring the Exalta master unit:

1. Go to "/opt/web/conf/" and edit "webapp.json":



# Configuring Other Exalta Computing Units

## Setting up the other computing units

1. Get the IP address of the master unit.
2. Configure the IP address for each Exalta computing unit on the shop floor.



# Appendix 3: Installation and Upgrade

## Exalta Operator App and Exalta Manager App

Note: The following chapters are intended for IT managers and administrators only.

# Performing a New Installation on the Exalta Computing Unit

1. Download "EXALTA\_Apps\_vx.x.tar.gz" from the website:  
<https://go.leica-microsystems.com/exalta>
2. Extract the zip file at any location on the Exalta computing unit.
3. Open a terminal on the extracted folder.
4. Execute the "./reset\_system.sh" script.

You are required to enter the root password:

```
>> ./reset_system.sh
```

5. To install both Exalta Manager App and Exalta Operator App, execute the  
"./install.sh" script.

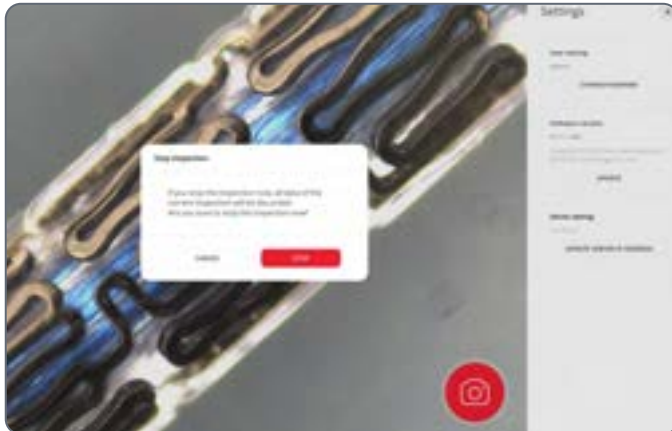
You are required to enter the root password:

```
>> ./install.sh
```

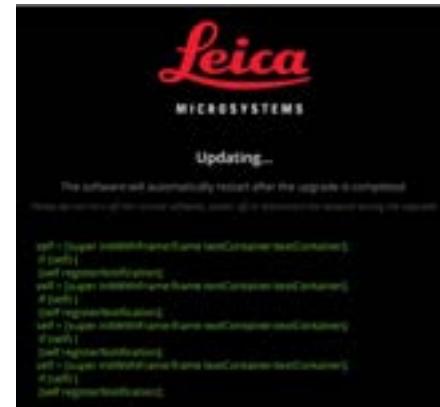


# Updating the Exalta Operator App on an Exalta Computing Unit

1. Download "Exalta Operator\_XXXX\_arm64.deb" from the website:  
<https://go.leica-microsystems.com/exalta>
2. Open the Exalta Operator App.
3. Log in using an active user.
4. Go to the [Settings] menu.
5. Click [UPDATE].



6. Select "Exalta Operator\_XXXX\_arm64.deb" from the pop-up window:



# Installing and Updating the Exalta Manager App on a Windows 10 Laptop

1. Download "Exalta Manager\_xxxxx\_windows\_x64.tar.gz" from the website:  
<https://go.leica-microsystems.com/exalta>
2. Extract the zip file at any location.
3. Execute the "Exalta Manager.exe" in the extracted folder to complete either a new installation or a version update:
  - Go to the [Settings] menu.
  - Click [UPDATE].



The Exalta Manager App depends on Microsoft Visual C++ 2015-2019 redistributable.

4. Download and install Microsoft Visual C++ 2015-2019 if it is not already on your laptop:  
[https://download.visualstudio.microsoft.com/download/pr/3b070396-b7fb-4eee-aa8b-102a23c3e4f4/40EA2955391C9EAE3E35619C4C24B5AAF3D17AEAA6D09424EE9672AA9372AEED/VC\\_redist.x64.exe](https://download.visualstudio.microsoft.com/download/pr/3b070396-b7fb-4eee-aa8b-102a23c3e4f4/40EA2955391C9EAE3E35619C4C24B5AAF3D17AEAA6D09424EE9672AA9372AEED/VC_redist.x64.exe)



# Appendix 4: Database Structure

Note: The following chapters are intended for IT Managers and Administrators only.

The tables in the following chapters show the database structure of the database integration option.

# User Tables

## User table

Name	Description
id	Table primary key
deleted_at	Time at which the user was deleted
created_at	Time at which the user was created
updated_at	Time at which the user was updated
username	Name of the user
role	Role of the user
locked	Information that the user was locked by an admin
active	Information that the user is active
checksum	User password checksum
last_login_at	Last login time of the user
must_change_pwd	Information that the user has to change the password at first log-in
attributes	User custom attributes, e.g. email, phone number

## User Tables (Continued)

### Role table

Name	Description
id	Table primary key
deleted_at	Time at which the role was deleted
created_at	Time at which the role was created
updated_at	Time at which the role was updated
type	Role type, e.g. admin, manager, operator, etc.

### History\_checksum table

Name	Description
id	Table primary key
deleted_at	Time at which the checksum was deleted
created_at	Time at which the checksum was created
updated_at	Time at which the checksum was updated
uid	User's ID
checksum	Encrypted content of user credentials

# Workflow Tables

## Workflow table

Name	Description
id	Table primary key
created_at	Time at which the workflow table was created
updated_at	Time at which the workflow table was updated
deleted_at	Time at which the workflow table was deleted
name	Workflow name
owner	Workflow owner, e.g. Dora-Manager
approver	Person approving the workflow
state	Workflow state, e.g. draft, pending, active
state_changed_at	Time at which the workflow was changed
need_article_number	Inspector needs to fill in the article number
need_batch_number	Inspector needs to fill in the batch number
need_serial_number	Inspector needs to fill in the serial number
version	Workflow version
job_types	Jobs included in the workflow (each job type list)
checksum	N/A
parent_id	N/A
root_id	Clone workflow ID for the workflow (parent ID)

## Workflow Tables (Continued)

Name	Description
submitted_at	Time at which the workflow was submitted
approved_at	Time at which the workflow was approved
rejected_at	Time at which the workflow was rejected
deactivated_at	Time at which the workflow was deactivated
version_number	Workflow version number
full_name	Full name of the workflow
attachment_seed	Workflow attachment
cycle_time_enabled	N/A
cycle_time	N/A

## Workflow Tables (Continued)

### Workflow\_attribute table

Name	Description
id	Table primary key
deleted_at	Time at which the workflow attribute was deleted
created_at	Time at which the workflow attribute was created
updated_at	Time at which the workflow attribute was updated
workflow_id	Workflow attribute, based on the ID of the workflow
title	Label of the workflow attribute
value	Value of the workflow attribute
need_fill	Inspector needs to fill in a workflow attribute
sequence	Workflow attribute sequence

### Job\_type table

Name	Description
id	Table primary key
deleted_at	Time at which the job type was deleted
created_at	Time at which the job type was created
updated_at	Time at which the job type was updated
type	Description of the job type

## Workflow Tables (Continued)

### Job table

Name	Description
id	Job ID
created_at	Time at which the job was created
updated_at	Time at which the job was updated
deleted_at	Time at which the job was deleted
workflow_id	Workflow the job belongs to (workflow ID)
type	Job type, e.g. measurement, defect, instruction, overlay
title	Job title
description	Job description
sequence	Job sequence (each workflow includes several jobs, each job has a sequence)
max_defect_count	Maximum defect count of the job (inspection baseline): <ul style="list-style-type: none"><li>● Above count: inspection not passed</li><li>● Below count: inspection passed</li></ul>
save_img_on	Information if an image of the inspection has to be saved or not. If the value is set to "on", an image is saved. If it is not set to "on", no image is saved
content	Job content (json format): draw a circle, a rectangle, a line a note, etc.
step_time_enabled	N/A
step_time	N/A

# Workflow Tables (Continued)

## Job table (continued)

SQL sample to merge workflow data together:

```
SELECT * FROM workflow
LEFT JOIN job ON workflow.id = job.workflow_id
LEFT JOIN workflow_attribute ON workflow.id =
workflow_attribute.workflow_id
```

## QC data related tables

The QC data is saved into the tables listed below. You can extract the data on your own according to your requirements.

- inspect\_result table: stores the final inspection data of a product sample, e. g. batch number, serial number, sample pass or fail, etc.
- inspect\_detail table: stores the inspection data of each step, e. g.:
  - how many defects were reported in this step
  - is this step completed or not
  - what is the result of this step (pass or failure, etc.)

One inspect\_result record contains multiple inspect\_detail records.

- inspect\_data table: stores the inspection data of all observations reported by the operator, e. g. defect, measurement, note, etc. One inspect\_detail record contains multiple inspect\_data records.

- attr\_attribute table: stores the attribute value input for each product sample.

SQL sample to merge inspection data together:

```
SELECT *
FROM `inspect_result`
LEFT JOIN `inspect_detail` `Inspect Detail`
ON `inspect_result`.`id` = `Inspect
Detail`.`inspect_result_id`
LEFT JOIN `inspect_data` `Inspect Data` ON
`Inspect Detail`.`id` = `Inspect Data`.`inspect_
detail_id`
LEFT JOIN attr_record ON attr_record.inspect_
result_id = inspect_result.id
```



## Workflow Tables (Continued)

### Attr\_attribute table

Name	Description
id	Table primary key
created_at	Time at which the attribute record was created
updated_at	Time at which the attribute record was updated
deleted_at	Time at which the attribute record was deleted
inspect_result_id	Inspection result ID of the attribute record
attribute_id	Attribute ID of the workflow the attribute record is assigned to
user_id	ID of the inspector that inspected the attribute record
title	Attribute record title (from the attribute of the workflow)
value	Attribute record value (from the value of the workflow)

# Inspection Tables

## Inspect\_result table

Name	Description
id	Table primary key
created_at	Time at which the inspection result was created
updated_at	Time at which the inspection result was updated
deleted_at	Time at which the inspection result was deleted
operator	Operator carrying out the inspection and creating the inspection result
workflow_id	ID of the workflow the inspection result is assigned to
workflow_name	Name of the workflow the inspection result is assigned to
workflow_version	Version of the workflow the inspection result is assigned to
batch_no	Batch number the inspection result is assigned to
sample_sn	Serial number of the inspected sample the inspection result is assigned to
device_sn	Serial number of the device the inspection result is assigned to
pass_count	Pass sample count
fail_count	Fail (NG) sample count
result	Final result of the inspection.  If the inspection has several steps: Once the Fail (NG) count has exceeded the max. defect count, the result is "Fail". If not, the result is "Pass".
reported	Report was created for the inspection

## Inspection Tables (Continued)

Name	Description
state	Status of the inspection result, e.g. submitted, pending, approved, rejected
approver	Person approving the inspection result
finished_at	Time at which the inspection result was completed
approved_at	Time at which the inspection result was approved
rejected_at	Time at which the inspection result was rejected
checksum	Column checksum of the inspection result, to ensure that the inspection result was not manipulated
recheck	Backup field for re-inspection
cycle_time	N/A
time_used	N/A
timeout	N/A

## Inspection Tables (Continued)

### Inspect\_detail table

Name	Description
id	Table primary key
created_at	Time at which the inspection detail was created
updated_at	Time at which the inspection detail was updated
deleted_at	Time at which the inspection detail was deleted
inspect_result_id	Link to the inspect_result table
job_id	Link to the job table
result	Information if the inspection detail was completed or not
finished	N/A
step_time	N/A
time_used	N/A
timeout	N/A

# Inspection Tables (Continued)

## Inspect\_data table

Name	Description
id	Table primary key
created_at	Time at which the inspection data was created
updated_at	Time at which the inspection data was updated
deleted_at	Time at which the inspection data was deleted
parent_id	Inspection data parent ID. The parent ID is the inspection data root ID.
type	Inspection data type, e.g. defect, length, origin image, radius, angle
subtype	Inspection data subtype, e.g. length
data	Detail data of inspection data (json format)
value	Record value of the inspection data record value
is_defect	Information if the inspection result is a defect or not: <ul style="list-style-type: none"><li>● 1: Defect</li><li>● 0: No defect</li></ul>
inspect_detail_id	Link to inspect_detail table

## Inspection Tables (Continued)

### Data\_type table

Name	Description
id	Inspection data type ID
created_at	Time at which the inspection data type was created
updated_at	Time at which the inspection data type was updated
deleted_at	Time at which the inspection data type was deleted
type	Inspection data type, e.g. defect, length, origin image, radius, angle, annotated image, overlay, note

### Report table

Name	Description
id	Table primary key
created_at	Time at which the report was created
updated_at	Time at which the report was updated
deleted_at	Time at which the report was deleted
name	Report name
batch_no	The batch number for which the report was generated
reporter	Person who created the report
approver	Person approving the report
inspect_result_ids	Inspection result ID list of the report

# File Tables

## File table

Name	Description
id	Table primary key
deleted	Time at which the file was deleted
created_at	Time at which the file was created
updated_at	Time at which the file was updated
seed	Information that the file was uploaded to the webserver seed
dir	File storage in the webserver directory
mime_type	Mime type of the file, e.g. image / jpeg, text / markdown, application / vnd.ms-excel, etc.
ext	File extension
size	File size
checksum	File content checksum
deleted_at	Time at which the file was deleted
name	Name of the file

# Cache Tables

## Cache table

Name	Description
id	Table primary key
deleted_at	Time at which the cache was deleted
created_at	Time at which the cache was created
updated_at	Time at which the cache was updated
key	Cache key
value	Cache value
deadline	Cache deadline. When the login token has expired, the user is reminded to log in again.



# Audit Trail Tables

## Audit\_trail table

Name	Description
id	Table primary key
deleted_at	Time at which the audit trail was deleted
created_at	Time at which the audit trail was created
updated_at	Time at which the audit trail was updated
uid	Audit trail user ID (person having performed an action recorded by the system)
username	Name of the operator recorded in the audit trail
role	Role of the operator recorded in the audit trail
api_track_id	API ID index (for internal use only)
category	Category the audit trail record belongs to
table_name	Table in which a change was recorded by the audit trail
audit_id	Audit trail ID index (for internal use only)
audit_name	Audit trail name
action	Audit trail action
field	Information which column of the table was changed
old_value	Old value of "field" column
new_value	New value of "field" column
data_type	Data type of "field" column

## Audit Trail Tables (Continued)

Name	Description
appendixes	Additional information on the audit trail record
comment	Audit trail comment

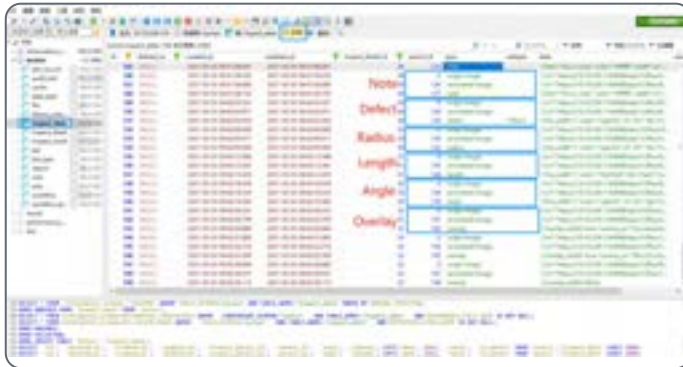
# Inspect\_Data Type Definition (json format)

Database table: inspect\_data

Inspect_data type		
Inspect data type	Defect	
	Measurement	Length
		Angle
		Radius
Note		
Inspect data property	Origin image	
	Annotation image	

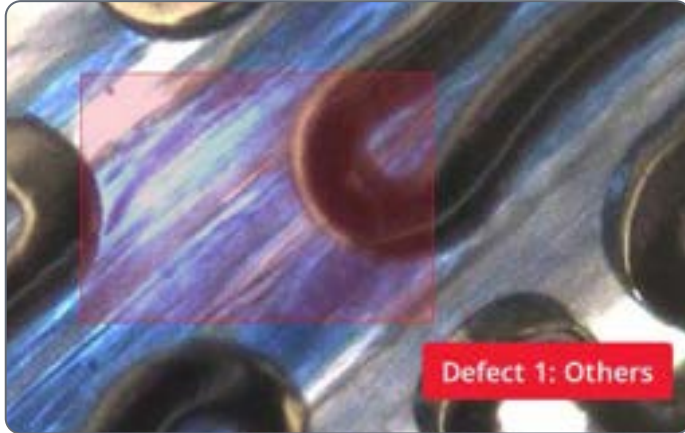
The data is associated by the parent\_id

- Parent\_id of origin image equals 0, i.e. origin image has no parent
- Parent\_id of annotated image equals the id of origin image
- For defect, measurement and overlay, the parent\_ids equal the ID of the annotated image



## Inspect Data Type Definition (json format) (Continued)

Defect



Property	Definition	Value
line_width	Line width to paint defect rectangle	1
color	Defect rectangle borderline color	rgb(237, 27, 47)

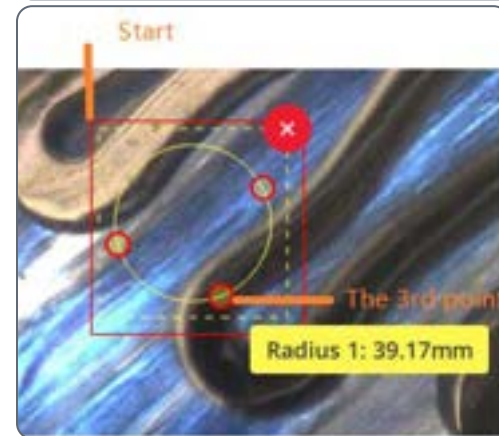
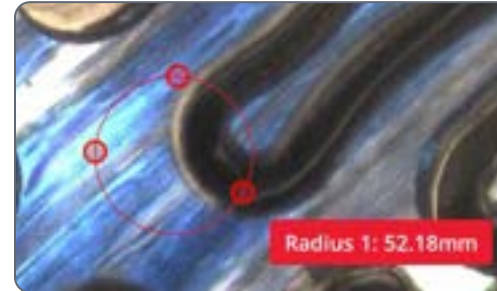
Property	Definition	Value	
Tip	text	Tip text content	Defect 1: Others
	color	Tip text color	#ffffff
	width	Tip font size	14
	pos	Tip position offset from rectangle start position	"x":95,"y":98
	start	Rectangle start position	"x":333,"y":318
	width	Rectangle width	85
	height	Rectangle height	88
	subtype	Defect type	Others
	id	The sequence number of defects in the current captured image	1

## Inspect Data Type Definition (json format) (Continued)

E.g.

```
{ "line_width":1,  
  "color":"rgb(237, 27, 47)",  
  "tip":{  
    "text":"Defect 1: Others",  
    "color":"#ffffff",  
    "width":14, (font size)  
    "pos":{"x":95,"y":98},  
    "start":{"x":333,"y":318},  
    "width":85,  
    "height":88,  
    "subtype":"Others",  
    "id":1}
```

Measurement-Radius



## Inspect Data Type Definition (json format) (Continued)

Property	Definition		Value
line_width	Line width to paint circle		1
color	Defect circle borderline color		rgb(237, 27, 47)
Tip	text	Tip text content display circle radius	Radius 1: 23.39mm
	color	Tip text color	#ffffff
	width	Tip font size	14
	pos	Tip position in the circle canvas which is based on the 3rd point position of the circle with 16 pixel offset	"x": 68.05510574018126, "y": 68.07625377643504
start	Circle start position	"x":368.94489425981874, "y":222.92374622356496	

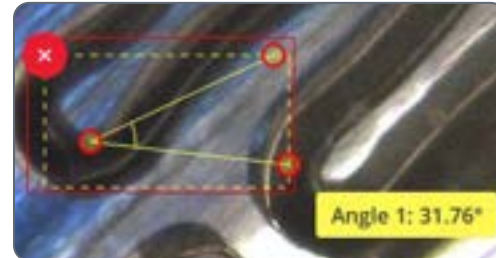
Property	Definition		Value
Tip (continued)	points	Position of 3 points in circle	{"x":43.05510574018126,"y":14.076253776435038},  {"x": 7.055105740181261,"y":29.07625377643504},  {"x":42.05510574018126,"y":42.07625377643504}
	value	Radius	23.39
	unit	Pixel transfer to cm/mm/ $\mu$ m unit	mm
	id	The sequence number of radius in the current captured image	1

## Inspect Data Type Definition (json format) (Continued)

E.g.

```
"line_width":1,
"color":"rgb(237, 27, 47)",
"tip":{
"text":"Radius 1: 23.39mm",
"color":"#ffffff",
"width":14,
pos":{"x":68.05510574018126,"y":68.07625377643504}},
"start":{"x":368.94489425981874,"y":222.92374622356496},
"points":[{"x":43.05510574018126,"y":14.076253776435038},
{"x":7.055105740181261,"y":29.07625377643504},
{"x":42.05510574018126,"y":42.07625377643504}],
"value":23.39,
"id":1,
"unit":"mm"
```

Measurement-Angle



Property	Definition	Value
line_width	Line width to paint angle	1
color	Defect angle borderline color	rgb(237, 27, 47)

## Inspect Data Type Definition (json format) (Continued)

Property	Definition		Value
Tip	text	Tip text content display angle value	Angle 1: 41.13°
	color	Tip text color	#ffffff
	width	Tip font size	14
	pos	Tip position in the angle canvas which is based on the 3rd point position of the circle with 16 pixel offset	"x":99,"y":79
	start	Angle start position	"x":293,"y":168
	points	Position of 3 points in circle	{"x":82,"y":21}, {"x":34,"y":34}, {"x":73,"y":53}
	value	Angle value	41.13
id	The sequence number of angle in the current captured image	1	

E.g.

```
"line_width":1,
"color":"rgb(237, 27, 47)",
"tip":{
"text":"Angle 1: 41.13°",
"color":"#ffffff",
"width":14,
"pos":{"x":99,"y":79}},
"start":{"x":293,"y":168},
"points":[{"x":82,"y":21},{"x":34,"y":34},{"x":73,"y":53}],
"value":41.13,
"id":1}
```



## Inspect Data Type Definition (json format) (Continued)

### Measurement-Length



Property	Definition		Value
line_width	Line width to paint line		1
color	Defect borderline color		#ed1b2f
Tip	text	Tip text content display line length	Length 1: 482.86mm
	color	Tip text color	#ffffff
	width	Tip font size	14
	pos	Tip position offset from length stop position	"x":83,"y":460
	start	Line start position	"x":278,"y":15

Property	Definition		Value
	points	Position of 2 points in line	{"x":12,"y":12}, {"x":57,"y":434}
	value	Line length value	482.86
	unit	Pixel transfer to cm/mm/ $\mu$ m unit	mm
	id	The sequence number of line in the current captured image	1

## Inspect Data Type Definition (json format) (Continued)

E.g.

```
"line_width":1,
"color":"#ed1b2f",
"tip":{
"text":"Length 1: 482.86mm",
"color":"#ffffff",
"width":14,
"pos":{"x":83,"y":460}},
"start":{"x":278,"y":15},
"points":[{"x":12,"y":12},{x":57,"y":434}],
"length":482.86,
"value":482.86,
"id":1,
"unit":"mm"
```

Overlay



Property	Definition	Value
overlay_visible	Control overlay visible or not when selecting this overlay. If it is false, the overlay is not displayed with the captured image.	true
overlay_url	Location of the overlay image	qrc:/assets/overlay_black_cross.svg
is_logo	Information whether the overlay is a logo or not	false
origin_rate	Origin ratio	0

## Inspect Data Type Definition (json format) (Continued)

Property	Definition	Value
origin_unit	Origin unit. If it is not calibrated, the unit is px.	px
local_rate	Local ratio	0.01
local_unit	Local unit. If it is not calibrated, the unit is px.	mm
origin_width	Overlay image origin width	200
origin_height	Overlay image origin height	200
is_calibrated	Information whether the overlay is calibrated or not. If it overlay has to be calibrated, the operator must perform calibration to perform measurement.	false
is_standard	Information whether the overlay is a standard overlay or a customized overlay	true

E.g.

```
"overlay_visible":true,
"overlay_url":"qrc:/assets/overlay_black_cross.svg",
"is_logo":false,
"origin_rate":0,
"origin_unit":"px",
"local_rate":0.01,
"local_unit":"mm",
"origin_width":200,
"origin_height":200,
"is_calibrated":false,
"is_standard":true
```

## Inspect Data Type Definition (json format) (Continued)

### Note



Property	Definition	Value
text	Note text	3444
color	Note text color	#ffffff
width	Note font size	14
start	Start position of note text	"x":318,"y":233.5
url	Note URL for access file server	https://10.10.231.61:8088/api/v1/files/0299b695a4d65c97c52ce0bb15cbd62a
uuid	UUID of the note image	0299b695a4d65c97c52ce0bb15cbd62a

E.g.

```
"text":"3444",
```

```
"color":"#ffffff",
```

```
"width":14,
```

```
"start":{"x":318,"y":233.5},
```

```
"url":"https://10.10.231.61:8088/api/v1/files/0299b695a4d65c97c52ce0bb15cbd62a",
```

```
"uuid":"0299b695a4d65c97c52ce0bb15cbd62a"}
```

# Inspect Property Type

## Origin image

Property	Definition	Value
url	Image URL for access file server	https://10.10.231.61:8088/api/v1/files/40b6e10d0f26b57f478146c93962f0d7
uuid	UUID of the origin image	0299b695a4d65c97c52ce0bb15cbd62a

"url":"https://10.10.231.61:8088/api/v1/files/40b6e10d0f26b57f478146c93962f0d7", "uuid":"40b6e10d0f26b57f478146c93962f0d7"

## Annotation image

Property	Definition	Value
url	Image URL for access file server	https://10.10.231.61:8088/api/v1/files/84aa71b190100d6464d4acd1e9b3a3dc
uuid	UUID of the annotation image	84aa71b190100d6464d4acd1e9b3a3dc

"url":"https://10.10.231.61:8088/api/v1/files/84aa71b190100d6464d4acd1e9b3a3dc", "uuid":"84aa71b190100d6464d4acd1e9b3a3dc"

# Appendix 5: Folder Structure

Note: The following chapters are intended for IT Managers and Administrators only.

The tables in the following chapters show the folder structure of the folder integration option.

# Data File Location

On the computer on which you installed the webservice:

1. Go to "computer > opt > web > conf".
2. Open "webapp.json" to identify "cachedir".

The data folder is "cacheDir"/Exalta.

On the Exalta computing unit, cacheDir is as below.

The default folder is "/media/gel-x/nvme/".



```
Open + [icon] webapp.json [Read-Only]
"web": {
  "defaultPassword": "123456",
  "dataSource": "database"
},
"cachedir": {
  "cachedir": "/media/gel-x/nvme/",
  "filePerFolder": 20000,
  "cacheThumb": true
},
"mysql": {
  "host": "127.0.0.1",
  "port": 4000,
  "user": "root",
  "password": "123456",
  "dbName": "xunlun"
}
}
```

## Inspection report and media files

The inspection report files are stored in the "Inspection Report" folder, the media files are stored in the ".data" folder.



# Data Structure

## Data file structure

There are two files for one inspection report. After the operator has viewed the inspection result, a PDF file of the inspection report is generated. In addition, a raw data file in CSV file format is also generated.

Item		Rule
File folder layer		Inspection report -> workflow version + workflow name -> Batch number-> Inspection date
File name	pdf file	Inspection report_ workflow version + workflow name_
	csv file	Batch number_Serial number(if there is one)_report ID

E.g.

Workflow version	Workflow name	Batch number	Inspection date	Serial number	Report ID
V1.0	test	1	2021-2-22	1	2





## Data Structure (Continued)

### CSV file format

Column name	Data definition
Workflow	Workflow version and workflow name
Batch number	Batch number
Serial number	Serial number
Attribute Name 1	Attribute value 1
Attribute Name N	Attribute value N
Inspection result	Inspection result: The value is either Pass or Fail.
Operator	User account name
Step No.	Inspection step number
Step type	Inspection type
Step title	Inspection step title
Step result	Inspection step result
Number of defects	The total defects of the step
Details	Inspection data detail information (json format)
Images	Inspection image, depending on the workflow step settings. The image files are located in the ".data" folder.

E.g.

Inspect report file: Inspection report\_V1.0 testUI\_5r\_55r\_86.csv

File content:

```
"Workflow";"Batch number";"Serial number";"Attribute1";"Attribute2",
"Inspection result";"Operator";"Step No.;"Step type";"Step title";"Step
result";"Number of defects";"Details";"Images"
```

```
"V1.0 Test 0301";"20210301";"20210301A2";"Text";"Text2";"Pass";"Admin",1,
Defect inspection,"defect",Pass,1,"Defect 1:Others ",1130133fc94066fb0cf-
403f9a9a77300
```

```
,,,,,2,Measurement-Radius Tolerance range:0-10mm,
"Radius";Pass,0;"Normal (1): Radius 1: 1.72mm ",25c9ac1674d05e19d2d-
06f7f41add105
```

```
,,,,,3,Overlay,"Overlay",Pass,,,"e4bb9f1a5876ca41910a6b82689a7cd0
```

File format:







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