



*Leica*  
MICROSYSTEMS

# Leica Microscope Camera User Manual

# Contents

## General Notes

General Notes	4
Important Safety Notes	5
Symbols Used	6
Safety Instructions	7

## Introduction

Standard Delivery and Optional Accessories	12
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## Assembly

Assembling the Camera	14
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## PC Operation - Installation / Setup / Application

Connecting a Computer, Installing LAS X Software	16
Using the Camera in LAS-X	17
Triggering the Camera	18
Filter Replacement	19

## Care and Maintenance

Care, Maintenance, Contact Persons	21
Spare Parts	24

# General Notes

# General Notes

## Cleaning

- Do not use any unsuitable cleaning agents, chemicals or techniques for cleaning.
- Never use chemicals to clean colored surfaces or accessories with rubberized parts. This could damage the surfaces, and specimens could be contaminated by abraded particles.
- Follow the notes regarding cleaning the filter glass.
- In most cases it is OK to use a wipe dampened with 70% ethanol in distilled water.

## Servicing

- Repairs may only be carried out by Leica Microsystems-trained service technicians. Only original Leica Microsystems spare parts may be used.

## Responsibilities of person in charge of camera

- Ensure that the Leica microscope camera is operated, maintained and repaired by authorized and trained personnel only.

# Important Safety Notes

## User manual

The Leica microscope camera can be configured in a variety of ways in the Leica product range. User manuals and updates are available for you to download and print from our web site at [www.leica-microsystems.com](http://www.leica-microsystems.com).

This user manual describes the special functions of the Leica microscope camera and contains important instructions for operating safety, maintenance and the accessory parts.

You can combine individual system articles with articles from external suppliers (e.g. light sources, etc.). Please read the user manual and the safety instructions from the supplier.

Before installing, operating or using the instruments, read the user manuals listed above. In particular, please follow all safety instructions.

To maintain the unit in its original condition and to ensure safe operation, the user must follow the instructions and warnings contained in these user manuals.

# Symbols Used



Read and understand this user manual before using this camera.

## Warning! Safety hazard!



This symbol indicates especially important information that is mandatory to read and observe. Failure to comply can cause the following:

- Personal injury!
- Instrument malfunctions and damage.

## Warning of hazardous electrical voltage



This symbol indicates especially important information. Failure to comply can cause the following:

- Personal injury!
- Instrument malfunctions and damage.

## Instrument malfunctions and damage



This symbol warns against touching hot surfaces, such as light bulbs.

## Important information



This symbol indicates additional information or explanations that are intended to provide clarity.

# Safety Instructions

## Intended use

This camera system is designed for use by technicians, engineers and scientists. It is a scientific measuring instrument, which provides images.

The camera may only be used according to the instructions of this user manual. The disclosures and operating conditions in this user manual must be respected. Unauthorized modifications and changes of the device are forbidden for safety reasons.

## Non-intended use

Never use the Leica microscope camera or its components for diagnostic procedures if it is not expressly intended for such use.

The instruments and accessories described in this user manual have been tested for safety and potential hazards.

The responsible Leica affiliate must be consulted whenever the instrument is altered, modified or used in conjunction with non-Leica components that are outside of the scope of this user manual!

Unauthorized alterations to the instrument or noncompliant use shall void all rights to any warranty claims.

## Place of use

- Electrical components must be placed at least 10 cm away from the wall and from flammable substances.
- Avoid large temperature fluctuations, direct sunlight and vibrations. These conditions can distort the functionality of the camera.

- In warm and damp climates, the individual components require special care in order to prevent the build-up of fungus.

## Responsibilities of person in charge of instrument

Ensure that:

- The Leica microscope camera and accessories are operated, maintained and repaired by authorized and trained personnel only.
- All operators have read, understood and observe this user manual, and particularly the safety regulations.

# Safety Instructions (Continued)

## Transport

- Use the original packaging for shipping or transporting the individual modules of the Leica microscope camera and the accessory components.

## EU Declaration of Conformity

To download the EU Declaration of Conformity use the link <http://www.leica-microsystems.com/products>.

## Health risks

Workplaces with microscopes facilitate and improve the viewing task, but they also impose high demands on the eyes and muscles of the user. Depending on the duration of uninterrupted work, asthenopia and musculoskeletal problems may occur. For this reason, appropriate measures for reduction of the workload must be taken:

- Optimal arrangement of workplace, work assignments and work flow (changing tasks frequently).
- Thorough training of the personnel, giving consideration to ergonomic and organizational aspects.

The ergonomic optical design and construction of Leica microscopes are intended to reduce the exertion of the user to a minimum.



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

In the event of such, the declaration of conformity shall become null and void.

This device is not intended for use in the patient environment defined by DIN VDE 0100-710. Neither is it intended for combining with medical devices according to 93/42/EWG and/or IVD devices according to 98/78/EG (2107/746).



## Safety Instructions (Continued)



This user manual is an essential component of the camera, and must be read carefully before the camera is assembled, put into operation or used, and must be kept for later references.

### Instrument safety and EMC

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

- Radio interference suppression in compliance with EN 55011 class B
- EN 61326-1, Electrical equipment for measurement, control and laboratory use – EMC requirements

The device meets the requirements of EU directives

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

and carries the CE mark.



The device must be disposed of in accordance with 2012/19/EU WEEE directive.

Intended for indoor use only in all EU member states, EFTA states and Switzerland.



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

Unauthorized alterations to the camera or noncompliant use shall void all rights to any warranty claims and product liability!

# Safety Instructions (Continued)

## Tolerable ambient conditions

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



Do not use the device in altitudes exceeding 2000 m ASL/NL.

Transport and storage in a range of -10° – +60°C and at a humidity not exceeding 70% (non-condensing).

Make sure that a free air circulation is provided.



The electrical components are not protected against water. Water can cause electric shock.



Do not use this camera near sources of high electromagnetic radiation (for example, unshielded, intentionally operated ultra-high frequency sources), because these can disrupt proper operation.

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



This user manual is an essential component of the product; it must be read carefully before the camera is assembled, put into operation or used, and must be kept for later reference.

Only insert or unplug data and control circuits when the camera is switched off; otherwise, the camera may be damaged.



Illustrations, descriptions and technical data are not binding and may be changed without notice.

You will find the latest release of this user manual and other information on our web site at [www.leica-microsystems.com](http://www.leica-microsystems.com).

# Introduction

# Standard Delivery and Optional Accessories

## Standard delivery

Standard delivery of the Leica microscope camera includes:

1. *Leica microscope camera*
2. *USB cable, for connecting to a computer or to a power supply unit*



The number and layout of ports will differ between camera models.

Additional information about working on the computer and with Leica Application Suite X (LAS X) is provided in the software's online help.

# Assembly

# Assembling the Camera



The Leica microscope camera is mounted on a tube or on a microscope's photo port using a C-mount adapter.



The Leica microscope camera is compatible with most stereo, macro and light microscopes from Leica Microsystems.

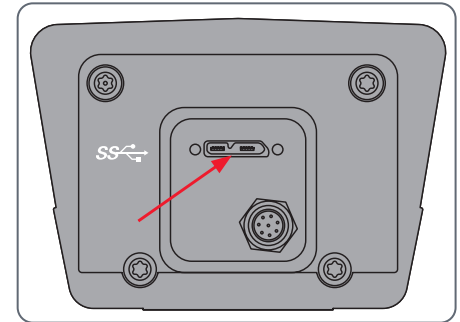
## Connecting the camera

1. Screw the camera onto a C-mount adapter.
2. Place the camera on the microscope's photo port or the tube using the previously mounted C-mount adapter.
3. Connect the USB cable to the USB 3 port in the PC and fasten the screws.



In case of triggering the camera, connect the trigger cable to the trigger port and secure it. Then connect the trigger cable to a compatible triggering device of your choice.

When the LED light on the back plate is showing red, please check the USB connectivity between the camera and the PC.



# **PC Operation - Installation / Setup / Application**

# Connecting a Computer, Installing LAS X Software

## Installation and connection

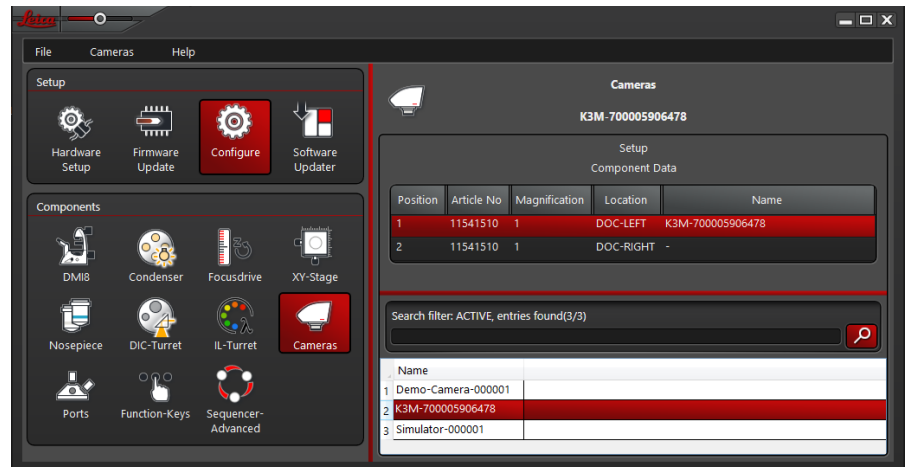


For instructions on installing and using the LAS X software for PC mode, refer to the "Quick Installation Guide".

1. After downloading the LAS X software, follow the instructions for installing the software. (The computer also has to have sufficient free hard drive space).
2. Connect the Leica microscope camera to a USB 3 port of the computer using the USB cable.

The Leica microscope camera is powered by the computer via the USB cable.

3. In the Leica Hardware Controller, select [Configure] and [Cameras] to enable the camera within LAS-X by selecting the available camera attached to a chosen C-mount adapter.



4. Close the Leica hardware configurator.



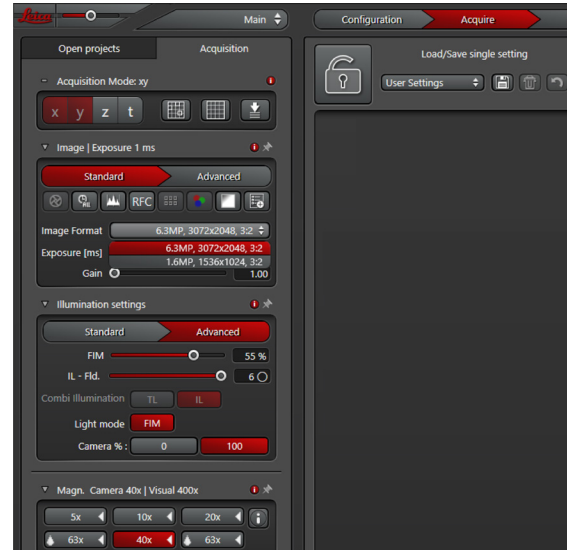
# Using the Camera in LAS-X

## Starting the camera in LAS X

1. Start Leica Application Suite X (LAS X).
2. Follow the instructions in the software for adjusting and acquiring an image.



For additional information on Leica Application Suite X, please refer to "LAS X Help".



You may be asked to specify your microscope's current instrument configuration when starting LAS X for the first time.

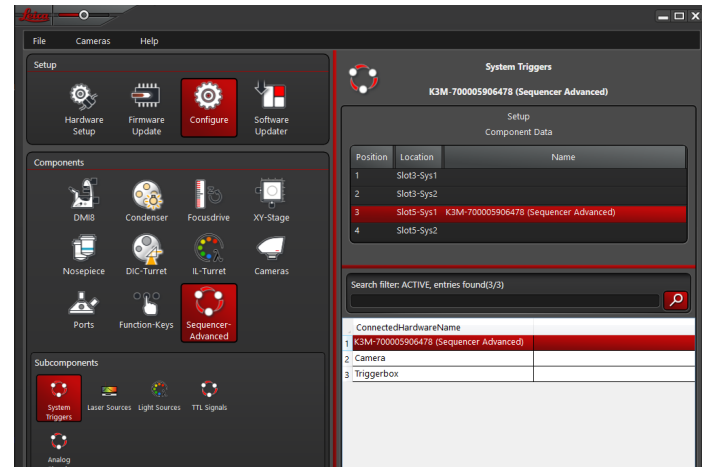
# Triggering the Camera

To control triggering of the camera, the following elements are needed:

- Hardware: camera, CTR box
- LAS X software
- Hardware Configurator in LAS X shown below

1. Start the Leica Hardware Configurator.
2. With sequencer: In the Hardware Configurator, select [Configure > Sequencer > System Triggers].

3. Select [Camera] for the terminal ([Sys 1] or [Sys 2]) of the sequencer plug-in module to which the trigger cable is connected.



4. Close the Leica Hardware Configurator.

# Filter Replacement

A filter is installed in color cameras. This filter can lead to limitations in the applicability of the sensor for specific applications.



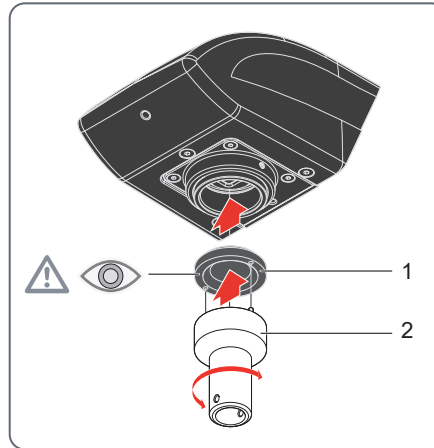
## Notice!

Avoid contamination of the filter, sensor and the lens by dust and airborne particles.

Perform the filter replacement in a dust-free room with clean tools.

Proceed as follows to replace the filter.

1. Hold the camera during the change of the filter with the lens downward to prevent dust from falling into the camera.



2. Insert the assembly tool (2) into the sensor opening.
3. Place the two pins at the front end into the locator holes of the filter.
4. Unscrew the existing filter.

5. Place the two pins of the assembly tool at the front end (to the lens) into the locator holes of the new filter (see warning symbol in the image).
6. Screw the new filter into the sensor opening. Do not touch the sensor!

# Care and Maintenance

# Care, Maintenance, Contact Persons

## General

We hope you enjoy using your high-performance camera. Leica microscope cameras are renowned for their robustness and long service life. Observing the following care and clean-ing tips will ensure that even after years and decades, your Leica microscope camera will continue to work as well as it did on the very first day.

## Warranty benefits

The guarantee covers all faults in materials and manufacture. It does not, however, cover damage resulting from careless or improper handling.

## Contact address

If your instrument no longer works perfectly, contact your Leica representative. You can find information on worldwide Leica representatives on the Leica web site: [www.leica-microsystems.com](http://www.leica-microsystems.com).

# Care, Maintenance, Contact Persons (Continued)

## Care

- Keeping all optical components clean is important for maintaining good optical performance.
- If any optical surface becomes badly coated with dust or dirt brush it off with a camel hair brush before attempting to wipe it clean.
- Optical surfaces should be cleaned using a lint-free cloth, lens cloth or cotton swab soaked in 70% ethanol or a commercially available glass cleaner. Do not use pure alcohol.
- Avoid excessive use of solvents. The lint-free cloth, lens cloth or cotton swab should only be lightly moistened with solvent.
- Protect your camera from moisture, fumes and acids and from alkaline, caustic and corrosive materials and keep chemicals away from the instruments.
- Plugs, optical systems and mechanical parts must not be disassembled or replaced, unless doing so is specifically permitted and described in this user manual.
- Protect your camera from oil and grease.
- Do not grease guide surfaces or mechanical parts.

## Protection from dirt

Dust and dirt will affect the quality of your results.

- Put an optionally available dust cover over the camera when it will not be used for a long time.
- Keep accessories in a dust-free place when not in use.

# Care, Maintenance, Contact Persons (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.

## Permitted measures

- Remove dust on the filter glass with a bellows and a soft paintbrush.
- Your local Leica Service or an appropriately trained user can replace a dirty or scratched glass filter in front of the camera sensor.
- Clean the objectives with special optics cleaning cloths and pure alcohol.

## Servicing

- Repairs may only be carried out by Leica Microsystems-trained service technicians. Only original Leica Microsystems spare parts may be used.

## Spare Parts

Item	Leica article number	Designation
1	12730530	USB 3 cable (3.0 m)

## Optional Sales Item

Item	Leica article number	Designation
1	12730495	USB 3 PCI-express board (low profile)



## 有害物质标记表

### Hazardous Substance Marking Table

部件名称 Part Name	有害物质 Hazardous Substances					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴联苯 (PBB)
印刷电路板 Printed circuit boards	x	o	o	o	o	o
电子元器件 Electronic components	x	o	o	o	o	o
机械部件 Mechanical parts	x	o	o	o	o	o
电缆和电缆配件 Cables and cable accessories	x	o	o	o	o	o
显示屏 Displays	x	o	o	o	o	o
光源 Light sources	x	x	o	o	o	o
光学 Optics	x	o	x	o	o	o

这些表是按照 SJ/T 11364的规定编制。

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

o: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572规定的限量要求以下。

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: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572规定的限量要求。

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.

害物质标记表涵盖了这里列出的产品。

The “Hazardous Substance Marking Table” covers the here listed products.

显微镜	控制	光源	光学和照相机	电源和服务模块
Microscopes	Controls	Light Sources	Optics and Cameras	Power Supply and Service Modules



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