



# FLEXACAM C1

## 12 MP Stand-Alone Microscope Camera User Manual

**MICROSCOPY • METROLOGY SERVICES**  
Swiss made



RYF AG  
Bettlachstrasse 2  
CH-2540 Grenchen  
Tel. +41 32 654 21 00  
ryfag@ryfag.ch · www.ryfag.ch

RYF SA Succursale  
Route de Genève 9c  
CH-1291 Commugny  
Tel +41 22 776 82 28  
ryfag@ryfag.ch · www.ryfag.ch

RYF AG (Zürich)  
Bahnhofplatz 17  
CH-8400 Winterthur  
Tel +41 52 560 22 25  
ryfag@ryfag.ch · www.ryfag.ch

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# General Notes

# General Notes

## Safety concept

Before using your Leica microscope camera for the first time, please read the "Safety Concept" booklet included with your instrument. It contains additional information on handling and care.



## 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 the service section.
- 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 instrument

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

# Important Safety Notes

## User manual

The FLEXACAM C1 microscope camera can be configured in a variety of ways in the Leica product range. You can find information on individual system components on the interactive CD-ROM together with all relevant user manuals in additional languages. Keep this CD-ROM in a safe place, where it is available to the user. User manuals and updates are also 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 FLEXACAM C1 and contains important instructions for operating safety, maintenance and the accessory parts.

The "Safety Concept" booklet contains additional safety information regarding the service work, requirements and the handling of the microscope camera, accessories and electrical accessories as well as general safety instructions.

You can combine individual system articles with articles from external suppliers (e.g. cold 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 device.



## Instrument malfunctions and damage

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

## 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.

## Important information



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

# Safety Instructions

## Description

- The individual modules fulfill the high requirements for observation and documentation of the FLEXACAM C1 microscope camera.

## Intended use

- Refer to "Safety Concept" booklet

## Non-intended use

- Refer to "Safety Concept" booklet

Never use the FLEXACAM C1 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 manual!

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

## Place of use

- Refer to "Safety Concept" booklet
- 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

- Refer to "Safety Concept" booklet

Ensure that:

- The FLEXACAM C1 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)

## Repairs, service work

- Refer to "Safety Concept" booklet
- Only original Leica Microsystems spare parts may be used.
- Before opening the instruments, switch off the power and unplug the power cable.
- Avoid contact with powered electrical circuits, which can lead to injury.

## Transport

- Before shipping the camera, please reset the device to the factory default, so that no personal data like access details to E-Mail or network remain stored on the device.
- Use the original packaging for shipping or transporting the individual modules of the FLEXACAM C1 and the accessory components.

- 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.

## Integration in third-party products

- Refer to "Safety Concept" booklet

## Disposal

- Refer to "Safety Concept" booklet

## Legal regulations

- Refer to "Safety Concept" booklet

## EC Declaration of Conformity

- Refer to "Safety Concept" booklet

## 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.

# Safety Instructions (Continued)

## Instrument safety and EMC

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

- EN 60950-1: 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 device meets the requirements of EU directives

- 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

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.

# End User License Agreement (EULA)

This End User License Agreement is entered into by and between Leica Microsystems ("Leica") and you, the end user, as the context requires, either individually or as an authorized representative of the company or organization acquiring and/ or using this device ("User").

This device can be used in a network and offers functionality such as automated submission of images to an E-Mail recipient defined by the User, or copying of images to a SMB file server selected by the User. Therefore, passwords will need to be chosen by the User which passwords will be stored on the device in a separate password file. Direct access to the password file is denied; passwords are stored with an encryption which follows the Advanced Encryption Standard (AES), with a block and key size of 128 bits.

During any firmware update this password file will be deleted and the User will need to reenter the passwords.

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

Use of network and/ or other connectivity functionality provided by or with this device 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.

# Introduction

# Congratulations!

We congratulate you on purchasing the FLEXACAM C1 microscope camera from Leica Microsystems.

## Real 4K display

The integrated HDMI output allows the camera image to be displayed on a high-definition (HD-capable) monitor, where the following resolutions are possible:

- 3,840 × 2,160 (4K UHD). To be used on 4K monitors.
- 1,920 × 1,080 (Full-HD). This resolution provides the characteristic imaging performance for a Full-HD-capable monitor.

## Leica Application Suite X (LAS X)

Your FLEXACAM C1 includes a quickstart guide with a download link to the latest "Leica Application Suite X" software.

## User-friendly even in the smallest detail

Like every digital camera, the FLEXACAM C1 reacts differently to different light sources. However, the white balance is set with Leica LED illumination at the factory.

Therefore, we recommend to use Leica LED illumination.

# Standard Delivery and Optional Accessories

## Standard delivery

Standard delivery of the FLEXACAM C1 includes:

1. FLEXACAM C1 microscope camera
2. USB C cable, for connecting to a computer or to a power supply unit



## Optional "stand-alone kit"

3. 4K HDMI cable, for connecting to an HD / 4K monitor
4. USB power supply
5. USB thumb drive as storage device
6. Wireless USB mouse



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

# Optional Accessories

## Hand/footswitch

Various functions can be assigned to the optional hand/footswitch (such as taking individual pictures, white balance, video recording).

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



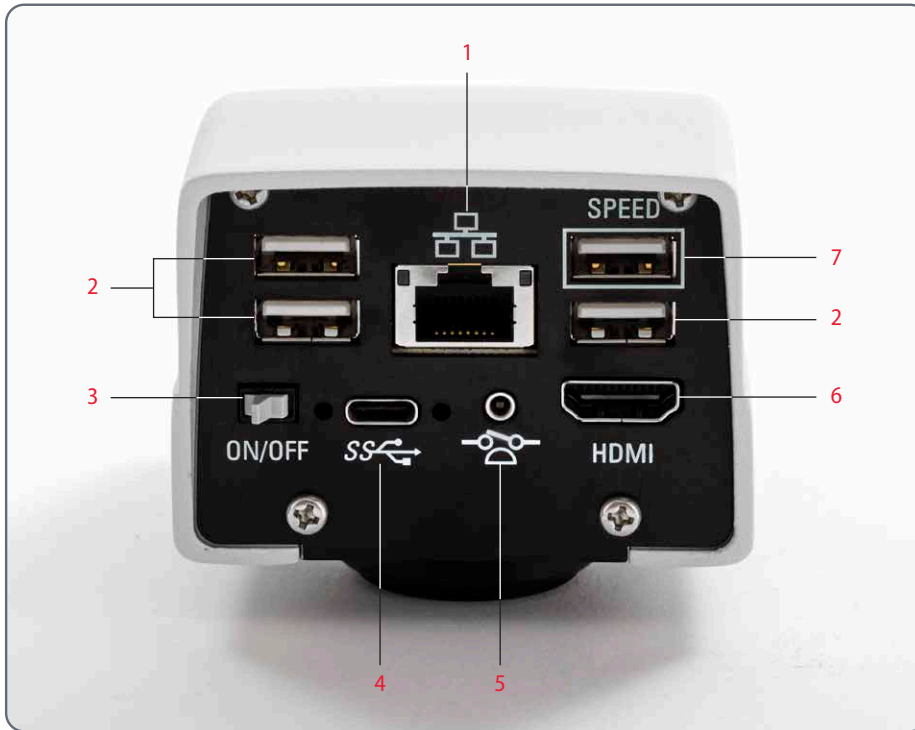
You can find detailed descriptions of different accessories in their corresponding user manual.

## Wi-Fi dongle

The Wi-Fi dongle enables you to work under wireless condition with the FLEXACAM C1. Due to different country restrictions, there are different versions of Wi-Fi dongles available.

To get the latest information about the availability of Wi-Fi dongles in your specific country, please contact your local sales representative.

# Overview of the Instrument





1. Ethernet connection
2. USB mouse connection, keyboard connection, or Wi-Fi dongle
3. ON/OFF switch
4. PC / power supply connection
5. Connection for footswitch
6. Monitor (stand-alone)
7. For stand-alone operation, insert USB stick for data storage here



# Assembly

# Assembling the Camera

 The FLEXACAM C1 is mounted on a tube or on a microscope's photo port using a C-mount adapter.

 The FLEXACAM C1 is compatible with most stereo, macro and light microscopes from Leica Microsystems.

## Assembly

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.


# Stand-Alone Operation


# Installation / Setup / Application

Note: The screenshots of the on-screen display shown in this user manual are in English, but during operation the display will be shown in the language selected by the user.

# Cables and Terminals in HD Mode (Stand-Alone)

## General notes

 The FLEXACAM C1 is designed for the use of 4K and HD-capable (high definition) monitors. We recommend connecting the HD/4K monitor using an HDMI connector and not using any adapters (e.g. DVI), as otherwise proper function can no longer be guaranteed!

 Please only connect the provided 5 V power supply unit. Using an incorrect voltage can substantially damage the FLEXACAM C1.

The color of the LED indicates that the power supply is not sufficient: it's red when the supply doesn't provide enough current and it automatically turns off the 3 USB ports.

## Power supply and HD / 4K monitor



1. Connect the FLEXACAM C1 to a suitable power socket using the supplied power supply.
2. Connect the FLEXACAM C1 to the HD/4K monitor using the HDMI cable. The camera detects automatically the monitor and displays a live image.




3. To acquire images a USB Stick with sufficient free memory must be inserted into the FLEXACAM C1. To reach the highest possible data transfer please use the USB connection marked with "SPEED".
4. Make sure that a USB mouse is connected to the FLEXACAM C1 in order to operate the on-screen display.

# Switching on the FLEXACAM C1

## HD mode (stand-alone)



 Ensure that the camera can receive light from the microscope and is connected to a HD / 4K monitor and a power supply.

1. Set the ON/OFF switch to "ON" to switch on the FLEXACAM C1.
2. During the boot sequence the status LED is blinking green and switches to a continuously green the moment it is ready to use. Now the live image and the OSD are available throughout the connected HDMI monitor.
3. The camera automatically detects the HD / 4K monitor.

# Information About Thumb Drive / USB Stick

## General notes



Make sure to read the following instructions about formatting and handling the thumb drive / USB stick provided in order to prevent malfunctions during image acquisition.

## File system and formatting

The exFAT or FAT32 file system is required for the thumb drive to work correctly, as it is detected by the FLEXACAM C1. Most USB sticks are factory-formatted with FAT32 so that they can be used immediately.

If the USB stick is formatted differently, FLEXACAM C1 provides the ability to reformat it as exFAT. You have to press "USB Eject" button but don't remove the stick and then go to the settings page to format. During this process all data on the stick are erased.

## Plug the USB stick into the camera



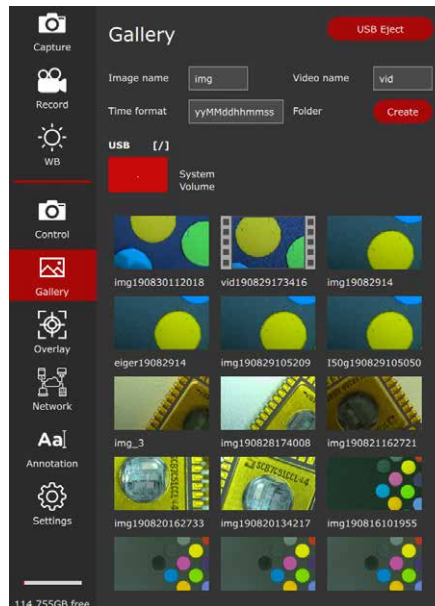
Make sure that the USB stick is oriented correctly before inserting it into the FLEXACAM C1. If you accidentally insert the USB stick the wrong way around, this could damage the camera.

Please insert the USB stick in the USB slot which is marked with the word "SPEED" to ensure the quickest possible way to store data. Please use a fast USB stick to ensure a quick operation.

# Using the USB Thumb Drive as a Memory Device

## Uninstall the USB thumb drive

1. Take care that you do not remove the USB thumb drive during the storage process.
2. Go to the menu "Gallery" and press the "USB Eject" button in the menu before pulling out the USB thumb drive.



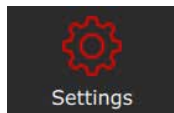
# Configuring the USB Wireless Mouse



We recommend using the Leica approved USB wireless mouse which is offered as an optional accessory. The USB wireless mouse is part of the "stand-alone kit".

## Installation of the USB wireless mouse

1. Plug in the USB transmitter in an unused USB 2 port on the rear side of the "FLEXA-CAM C1". Please don't use the USB "SPEED" port as this is required for the USB thumb drive.
2. Switch on the wireless device.
3. The connection between the wireless transmitter and the device will be arranged automatically. It's not necessary to "pair" the devices with each other.
4. Open "Settings" in the menu.



5. Go to the entry "Middle Mouse Button" and select the function assigned for pressing the scroll wheel of the USB mouse.

Capture = Capture an image

Record = START and STOP the recording of a movie

WB = White balance



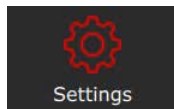
# Configuring the Footswitch

## Installation of hand / footswitch

Plug the hand/footswitch with the 2.5 mm phone jack in the designated connection port at the rear side of the "FLEXACAM C1".

## Configuring the button function

1. Open "Settings" in the menu.



2. Go to the entry "Footswitch" and select the function assigned for pressing "Hand / footswitch".

Capture = Capture an image

Record = START and STOP the recording  
of a movie

WB = White balance

# Capturing Images Without a Computer

## General notes



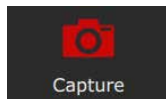
Before capturing an image, ensure that enough memory is available on the USB stick. The amount of remaining space is shown on the bottom of the menu bar.



In the highest resolution, a single image takes up approx. 2.5 megabytes of storage space on the USB stick. This means that per gigabyte of capacity, you can save approx. 400 images.

## Acquire an image

1. Focus on the specimen.
2. Plug the USB stick in the "SPEED" slot at the rear side of the FLEXACAM C1.
3. Move the USB mouse to the left side of the screen so that the menu opens.
4. Press the "Capture" button in the menu to acquire an image.

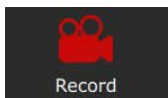


Optionally press the middle USB mouse button or the hand/footswitch to capture an image or a movie. You hear a signal tone as confirmation. While the image is being stored, the status light flashes red and the word "image captured" appears briefly on the HD / 4K monitor. Storage time depends on the write speed of your USB thumb drive.

# Capturing Movies Without a Computer

## Acquire an image

1. Focus on the specimen.
2. Plug in the USB stick in the "SPEED" slot at the rear side of the FLEXACAM C1.
3. Move the USB mouse so that the menu bar at the left side of the screen opens.
4. To start and stop a movie recording use the "Record" button.



During capturing a clock is displayed to show how long the movie is recording.



The time limit of a video is restricted to 29 minutes. On a FAT32 formatted USB stick the size limit is 4 GByte. You can format your USB stick with exFAT in the Settings panel.

Optionally you can use the hand / footswitch to capture a movie. This function has to be configured in the Settings panel.

# White Balance

## General notes



The white balance ensures that the specimen is shown in neutral colors. We recommend carrying out a new white balance adjustment whenever you change the illumination type or color temperature. This is particularly necessary if you are working with halogen light that can shift from yellow (low intensity) to blue (high intensity).



Configure the white balance via the user menu. Depending on the configuration, automatic white balance can also be carried out using the footswitch.



The white balance of the camera is factory set to automatically provide good initial results when used in conjunction with Leica LED illumination.

## Manual white balance

- Manual white balance is described on [page 39](#).

## One Push white balance

1. Position a gray chart or a gray, neutral object under the microscope so that the entire image field is filled.
2. Adjust the illumination as desired.
3. Press the "WB" button on OSD.



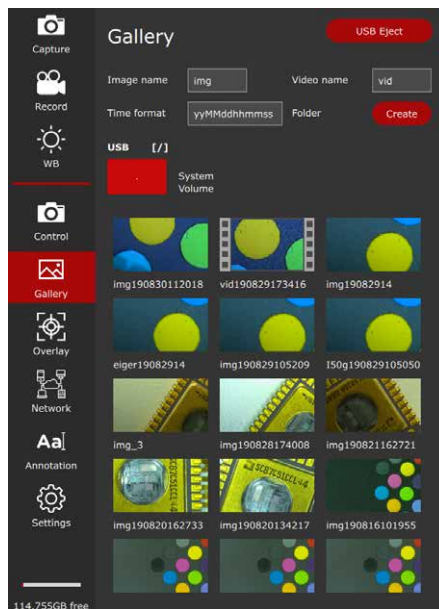
# Menu of GALLERY View

The FLEXACAM C1 can display images and video clips directly on an HD / 4K monitor.

## Control via On-Screen Display menu

1. Move the USB mouse to open the OSD (On-Screen Display).
2. Press the "Gallery" button.

3. By double clicking on a picture / movie icon you open the full screen view of the file.
4. By clicking the "<" and ">" button in the left upper corner of the image you can choose the previous or next image.
5. By clicking the "X" button the full screen view closes and you are again in the "Gallery" view.



# PC Operation

## Installation / Setup / Application

# Connecting a Computer, Installing Software, Activating PC Mode

## Installation and connection



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

1. After downloading the software, follow the instructions for installing the software. (The computer also has to have sufficient free hard drive space).
2. Connect the FLEXACAM C1 to a USB 3 port of the computer using the USB C cable.



3. The FLEXACAM C1 is powered by the computer via the USB C cable.

# Switching on the FLEXACAM C1

## PC mode

### Installation and connection



1. Set the ON/OFF switch to "ON" to switch on the FLEXACAM C1.
2. The status light's LED switches from blinking green to continuously green, a signal tone sounds and the live image is displayed on the computer – the FLEXACAM C1 camera is ready to use.
3. Start Leica Application Suite X (LAS X).
4. 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. For the image source section, select the "Flexacam camera" menu entry to select the FLEXACAM C1.




# Additional Parallel Use of an HD / 4K Monitor

## General notes

 When connected to a PC, the microscope image is always shown in the preview window of Leica Application Suite X. In addition, a HD / 4K monitor can be connected via the HDMI interface.

 The resolution on the connected HD / 4K monitor is always a 16:9 format and independent of the PC resolution.

 Additionally the on-screen display (OSD) functionality is turned off on the HDMI monitor.

## Connecting the HD / 4K monitor




1. Connect the FLEXACAM C1 to the HD / 4K monitor using the HDMI cable.

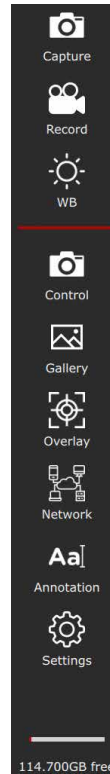
# User Menu – On-Screen Display (OSD)

Note: The screenshots of the on-screen display shown in this user manual are in English, but during operation the display will be shown in the language selected by the user.

# On-Screen Display (OSD)

 The FLEXACAM C1 comes with a dedicated operating system to provide the stand-alone functionality. The user interaction is enabled via an onscreen display which superimposes a graphical user interface on the microscope image.

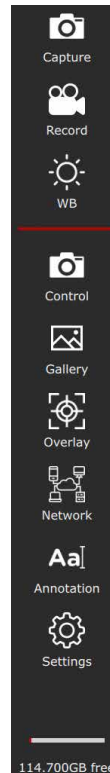
The individual menu functionality is navigated by a cursor which is controlled via the attached USB mouse.



# Calling up and Closing the User Menu / OSD

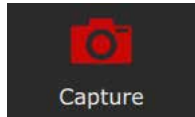
## Calling up and closing the user menu / OSD

1. Make sure that a USB mouse is connected to the FLEXACAM C1 and in the case of a wireless mouse the mouse is switched on.
2. Move the USB mouse and then the OSD menu appears on the left side of the screen.
3. Click on a symbol to start a process or open a menu for further operating steps.
4. If your mouse cursor is not over the menu bar or on an open panel the OSD menu will disappear after a second when no further movement of the mouse is recognised.



# Calling up and Closing the User Menu / OSD (Continued)

The icons have the following meaning:



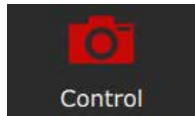
Capture an image.



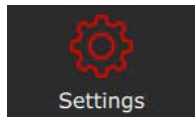
Start and stop a movie recording.



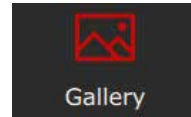
Initiate a white balance.



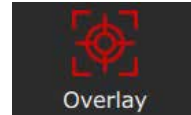
Set camera parameters like resolution and image orientation.



Open the settings panel to change parameters like language, date and time or execute a firmware update.



Open the gallery to display acquired images or videos.



Open the overlay panel where you can select overlays provided from the system. You can also choose your own prepared overlays.



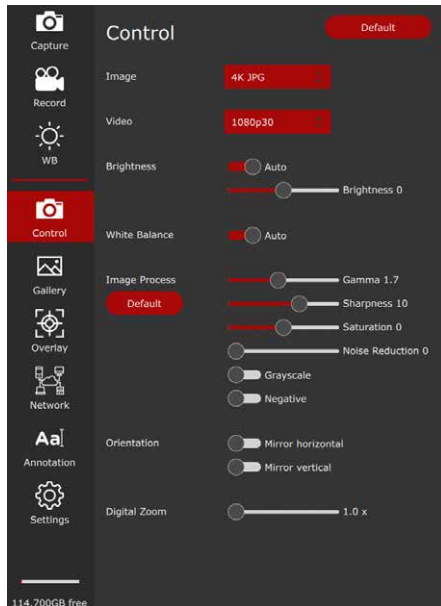
Configure network access for ethernet or the optional Wi-Fi dongle.



Open the annotation window to add descriptions, arrows or other annotations.

# CONTROL Menu

Clicking the "Control" button will open the following panel.



## Default

Clicking the "Default" button will reset the FLEXACAM C1 camera to the factory values.

## Video

Use to change the resolution and frame rate for video recording. The FLEXACAM C1 can be set to the following movie formats:

- MJPEG: 720 p
- MJPEG: 1,080 p



With the FLEXACAM C1 you can record movies with a maximal length of 29 min.



With a USB stick formatted in FAT32 the size is limited to 4 GByte.

## Image

Use to change the capture resolution.

- Full-HD – JPEG: 1,920 × 1,080 pixels
- 4K – JPEG: 3,840 × 2,160 pixels
- 12 MP – JPEG: 4,000 × 3,000 pixels

## Brightness

You can choose between an automatic mode and a manual setting. The brightness can be adjusted by moving the slider.

# CONTROL Menu (Continued)

## Manual white balance (AUTO OFF)

The "balance" function makes it possible to adapt the camera chip to the ambient light so that color-neutral images can be acquired.

Whenever possible, use a neutral gray chart or another color-neutral object to obtain optimum results.

If you want to use the automatic "White Balance" mode choose the "Auto ON" function.

## White balance

You can choose either an automatic mode or use a manual mode to set the color gain differently.

## Adjusting the white balance manually (recommended)

1. Place the gray chart or another color-neutral object under the microscope so that the entire field of view is filled in.
2. Press the "Balance" button. A white balance is calculated and applied to the camera. Alternatively, you can configure the foot-switch to make a white balance.
3. If you do not have a neutral gray area in the image or if the illumination has a very strong color tint, you can manually set the values for "RED LEVEL", "BLUE LEVEL" and "BLACK LEVEL" until the image displays the desired colors. The white balance mode is always set to "MANUAL" after manually adjusting the white balance, even if it was set to "AUTO" previously.

## Image process

Use the slider to adjust the different image processes like "Gamma", "Sharpness" or "Noise reduction" or use the switch to enable "Gray-scale" (change image from color to black/white mode) or "Negative" mode.

## Orientation

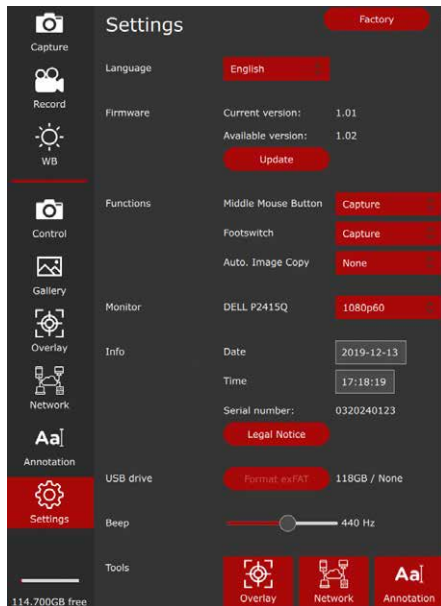
With these switches you can flip the image horizontally or vertically.

## Digital zoom

With the slider or mouse wheel you can digitally zoom in on the live image. On the right bottom you can see the current digital magnification if the value is greater than 1.0× (default).

# SETTINGS Menu

Clicking the "Settings" will open the following panel.



## General notes

Within the "Settings" panel you can set the parameters for language, time, date, and configure the additional devices like USB mouse and footswitch.

## Language

Press the button to change the language according your needs.

The FLEXACAM C1 can be set to the following languages:

- German
- English
- French
- Italian
- Spain
- Portuguese
- Chinese
- Japanese
- Korean

## Date and Time

Enter the fields to change the date and time of the internal clock. The internal battery for the buffer of these data has a durability of approx. 10 years and can be replaced in the factory or by a certified service technician.

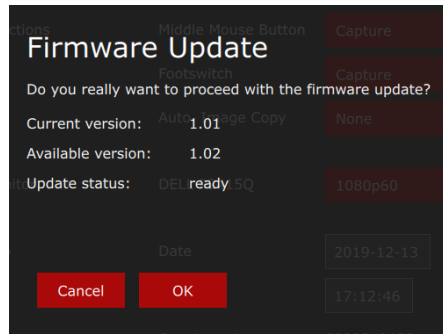


# SETTINGS Menu (Continued)

## Firmware

Press the "Update" button to update the firmware of the FLEXACAM C1. The camera will be updated with the firmware provided on the USB stick.

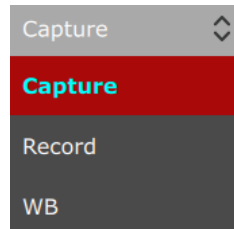
When activating the firmware process you must confirm or cancel the process.



## USB mouse and footswitch button setup

With these menus you change the function of the middle USB mouse button and the footswitch.

For each device you can choose between capture an image, start and stop a movie recording, or white balance.

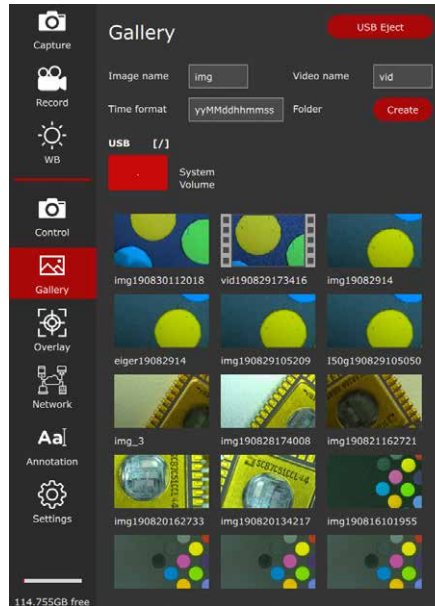


# Menu of GALLERY View

The FLEXACAM C1 can display images and video clips directly on an HD / 4K monitor.

## Control via On-Screen Display menu

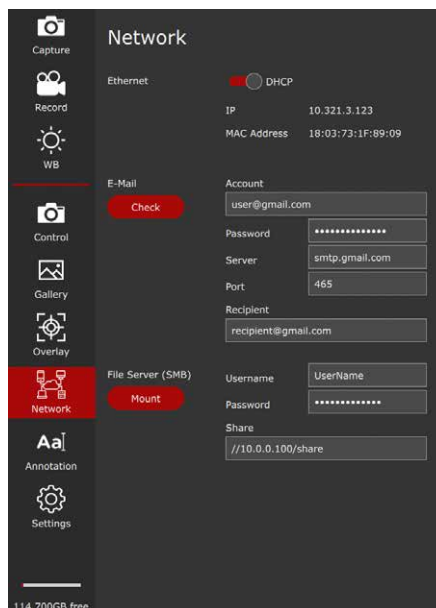
1. Move the USB mouse to open the OSD (On-Screen Display).
2. Press the "Gallery" button.
3. By double clicking onto a picture/movie icon, you open the full screen view of the file.
4. By clicking the "<" and ">" button in the left upper corner of the image you can choose the previous or next image.
5. Click the X sign in the upper left corner to close the full screen view and you are reaching again the "Gallery" view.



# Settings Network

In the network settings you can configure the Ethernet connection. DHCP will obtain an IP address automatically from the server. If DHCP is not active you can enter the desired values manually.

Please contact your IT department for the correct settings.



In the email settings you can set sender's email address, outgoing SMTP server and the password. Some email providers may not allow sending emails from the camera. In the recipient's address you can specify where the image should be sent with one mouse click.

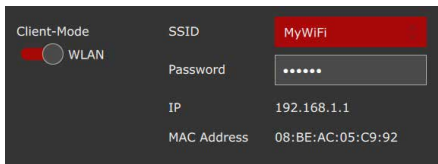
It is possible to save images directly to a file server or shared directory via SMB.

Please contact your IT department for the correct settings.

## Settings Network (Continued)

When using a Wi-Fi dongle, you can configure the camera to join an existing Wi-Fi network in reach.

Please contact your IT department for the correct settings.



# 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 cleaning tips will ensure that even after years and decades, your Leica 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 website: [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 microscope 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 manual.
- Protect your microscope 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 microscope 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	10 726 529	HDMI cable (2 m)
2	19 002 015	C-Mount Cap
3	10 726 695	USB C / USB A cable
4	10 726 490	Power supply with USB C connector
5	10 726 491	USB wireless mouse
6	10 747 551	USB stick 64 GB

## Optional Sales Item

Item	Leica article number	Designation
1	10 730 229	Hand / footswitch

# Specifications

# FLEXACAM C1

## Digital camera

- Weight 0.37 kg (camera only)
- Live image on an HDMI monitor at up to 60 fps (3,840 × 2,160 pixels)
- Full-screen image capture at 12 MP
- Sensor diagonale: 7.81 mm (type 1/2.3" CMOS)
- Pixel size: 1.55 µm × 1.55 µm
- Input: 5 V DC / 3 A
- Power consumption: 15 W
- Supported software: LAS X 3.0.13 or newer
- File formats: JPEG / MJPEG

## Mechanical and optical interfaces

- Mechanical: C-mount thread
- Color filter: IR-cut coating 650 nm, not replaceable

## Electronic interfaces

- Compatibility: USB 3.0, standard USB type C, lockable
- High-definition connector: HDMI 2.0a, HDMI plug type A
- 4× USB 2 connectors, type B
- On / Off switch: Available, on rear side of the camera
- 2.5 mm Jack connector for hand / footswitch
- Multicolor status LED

## Ambient conditions

- Operating temperature: 5 °C to 40 °C (50 °F to 104 °F)
- Relative humidity for storage/operation: 10 % – 90 % (non condensing)
- Pollution degree 2
- For indoor use only
- Installation category II (overvoltage category)
- Altitude operation: 0 m to 2,000 m (0 ft to 6,561 ft)

## Miscellaneous

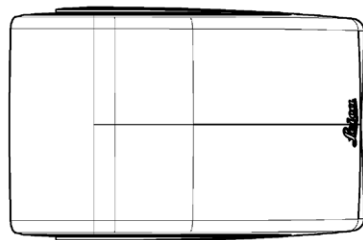
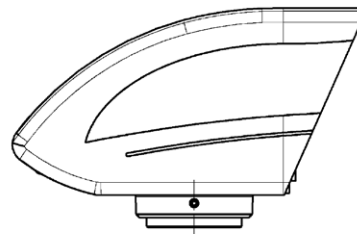
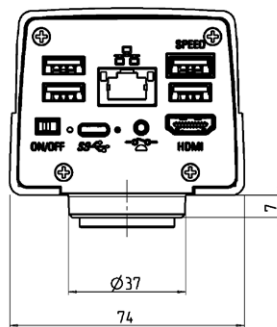
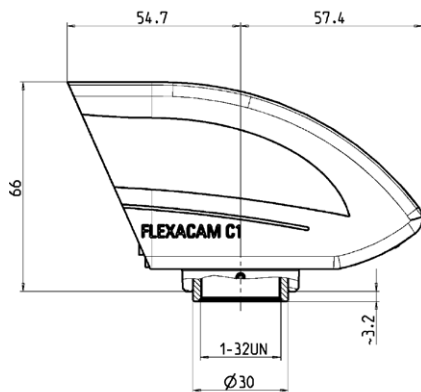
- Power supplied via USB C from computer or to external 5 V USB power supply
- Min. computer configuration: Please consult the software used

## Power supply (optional)

- Input: 100–240 V
- Input frequency: 47–63 Hz
- Output: 5 V, max. 3.3 A

# Dimensional Drawings

Dimensions in mm



# Troubleshooting

# Troubleshooting

## Stand-alone operation

If the camera is configured for 4K resolution and attached to a Full-HD monitor with only 1,080 p resolution, the camera should detect this and switch automatically to the necessary resolution.

However, if no image appears and the screen reports an error message like "out of range" or something similar, you can reset the camera resolution to 1,080 p.

## How to reset the camera?

1. Power the camera off.
2. Unplug the USB mouse.
3. Restart the camera.  
The camera will restart in Full-HD 1,080 p mode and a live image will appear.
4. Plug in the USB mouse again and configure the correct live image resolution.

## Recovery Mode

At every startup the camera checks whether the application image is valid. In case the image is corrupted, e.g. by an interrupted firmware update, the camera switches into a recovery mode:



### RECOVERY MODE

**Starting up fallback system ...**

After 12 seconds the system asks for the firmware file which should be stored on the USB flash drive.



### RECOVERY MODE

**Please insert a USB flash drive with the latest firmware for FLEXACAM C1**  
**Download from [www.leica-microsystems.com](http://www.leica-microsystems.com)**

The latest firmware can be downloaded from [www.leica-microsystems.com](http://www.leica-microsystems.com). Please make sure the USB stick is inserted in the speed port so the system will automatically install the provided firmware.

**MICROSCOPY • METROLOGY SERVICES**

Suisse made



RYF AG  
Bettlachstrasse 2  
CH-2540 Grenchen  
Tel. +41 32 654 21 00  
ryfag@ryfag.ch · www.ryfag.ch

RYF SA Succursale  
Route de Genève 9c  
CH-1291 Commugny  
Tel. +41 22 776 82 28  
ryfag@ryfag.ch · www.ryfag.ch

RYF AG (Zürich)  
Bahnhofplatz 17  
CH-8400 Winterthur  
Tel. +41 52 560 22 25  
ryfag@ryfag.ch · www.ryfag.ch