Thank you for purchasing this futudent product.

The brand "futudent" is used by the manufacturer Novocam Medical Innovations Oy (Novocam) for the dental market.

These devices are intended by the manufacturer to be used by qualified healthcare professionals to capture videos and pictures during dental and medical treatments for the purpose of documentation, providing additional information for diagnosis, following and evaluating changes of medical conditions, and for educational purposes in dental and medical fields.

Important Safety Information
Warnings

! The device must only be used for the intended purpose described above only.
! The camera must not be connected to life-supporting or other critical computers or devices.
! Disassembling the device is strictly prohibited.
! Do not make any changes, modifications or alterations to the device.
! Do not change lenses near patients. If lens needs to be adjusted make sure the camera is not above the patient due to the risk of the lens dropping.
! Do not leave loose cables on the floor. Cables on the floor should be protected by cable shields or otherwise sufficiently protected.
! Ensure all components or parts are attached before use:
- Check that the lens is attached properly to the camera. Do not turn lens too much because it might fall out. The camera will be completely out of focus well before the lens detaches. If the lens is detached, insert it carefully so that the threads are not damaged.
- Remove lens cover before attaching the camera to the overhead light or to the loupes.
- Adjust the lens focus **before the operation / treatment**.
- Make sure that the camera is attached firmly to the loupes, headband or overhead light with no wiggling. Wiggling will cause video to be shaky.
- When mounting the camera to the loupe, attach the cable spiral to the loupes before the operation.
- Check that the device is clean before use. If not, clean the device carefully as described below.
- The computer used for taking videos must be placed at least 2m/7ft. from the patient. Local requirements may apply.
- If the device or its components function abnormally, stop using the device, and contact the seller or manufacturer.
- When attaching the smartCam to the overhead light, check that the overhead light remains balanced and does not drift down due to the weight of the smartCam.

Safety precautions

! Do not use the device outdoors.
! Protect the device from fluids, heat and electric fields.
! Do not use in direct sunlight, or in adverse environmental conditions with dust, salt, magnetic fields, chemicals, gases, radiation, electrostatic discharge, acceleration, thermal ignition sources.
! Store the device in specified temperatures only.
! Keep cables away from fire or severe heat (over 70°C/158°F)
! Do not attach adhesive camera mounts to halogen lamps. Halogen lamps may reach surface tempteratures over 70°C. and the adhesive mount may detach, causing the camera to fall.
! If camera colors are inaccurate or monitors / screens are not presenting colors correctly, and you need to adjust camera color settings. (see 7.5.)
! Camera's image quality can be degraded due to insufficient lighting conditions. Always ensure sufficient amount of light. (see 7.6.)
! Do not touch the camera lens while the camera is connected. A static shock may discharge.

If you notice that the device gets hot, has an odor, or changes color or shape, disconnect the device immediately. DO NOT USE THE DEVICE!

Working condition precautions

! Do not use the device when the working temperature is above 30°C/86°F or when humidity is over 85 %.
! Do not handle the device by the cable.
! The camera must not be exposed to pressure, shock, vibration, or other mechanical stress.
! Do not use the camera with wet hands or wet gloves.
! Do not spray the device with water/detergent.
! Do not submerge the device in any liquid.
! Do not use the device if the camera overheats (over 50°C/120°F). If overheating occurs, disconnect it from the computer and allow it to cool for one hour. If the device becomes hot again in a relatively short period (1-5min), do not use it and contact the seller or manufacturer.
! Check the cable visually from time to time. If the surface of the cable is damaged, contact the nearest local support or manufacturer.

Storage condition precautions

! Keep the device in the temperature between 5° to 50°C (41F to 122°F).
! Keep the room relative humidity between 10% - 85% (non-condensing).

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If Futulight is purchased (optional accessory)

! Do not use Futulight when it is connected to a power supply for charging.
! Charge the Futulight fully before use.
NOTE: It is advised that Futulight not be used as the primary light during the treatment / recording. An alternative light source is recommended in case the Futulight battery is running out.
! Do not charge Futulight battery on flammable materials such as a bed, couch or on paper.
! Do not overcharge your device; unplug the device when fully charged.
! Never keep li-ion batteries near heat sources or in high temperatures, such as direct sunlight, radiators or laptops.
! Do not let battery get wet or to be exposed to liquids.
! Store the battery in a secure, dry, cool place and away from flammable materials. Keep batteries separate from metal objects.
! If you notice signs that the battery has a problem, such as overheating, odor, leaks, or change in color/shape, shut off the device and move it away from things that can catch fire and contact the seller or manufacturer.

Important

- If the camera **stops working** for any reason during the treatment, continue the treatment as you would do and disregarde the camera.
- The device is not compatible with other devices that are not mentioned in this document. Connecting the device to any external device, such as electricity, gas, hydraulic or pneumatic source, is prohibited.
- Equipment must not be brought into contact with the patient.
- **Do not touch the lens** during treatments in order to keep clean.
- **Do not** touch the camera during the treatments.

Liability notes

This instruction and the accompanying documents should be thoroughly read and understood before using the device. Novocam Medical Innovations Oy is not responsible for any injury, damage or malfunction arising from the use of the device, or inability to use any information, apparatus, method or process disclosed in this document.

1. Know Your Device

Symbols on the camera:

SN Serial Number (ISO 7000 – 2498)

Consult operator's manual; operating instructions (ISO 1641)

Do not dispose in normal household waste (Directive 2002/96/EC - WEEE).

MD Medical Device

Manufacturer (ISO 7000 – 3082).

CE European Community mark.

Temperature limit for storage, transportation and use (ISO 0632).

1.1 Products Specification

The **proCam** is the first miniature 4K (2160p) medical loupe camera on the market and captures up to 4K video and hi-res still photos from either loupes, a headband, a gooseneck or the overhead treatment light.

Technical specifications for proCam

- Resolution: 13 MPix / 4K & 1080p (video)
- Full aluminum body
- Weight: 29 grams (1.02 ounces)
- Dimensions: 32 x 23 x 29 mm (1.27 x 0.91 x 1.14 inches)
- Digital zoom (up to 3x in fullHD)
- Optics: exchangeable lenses with manual focus
- Hands free operations with USB foot pedal
- Mounting options:
  - Loupe mount (universal/loupe specific attachments)
  - Overhead light or Headband
  - Gooseneck/flexible arm
- USB 2 connection with detachable cable (USB micro connector)
- Camera is powered through USB
- Recording software: Windows, Mac and Android
- 5 software licenses included per sales unit (see 1.2)
- Regulatory compliance according to EU MDR 2017/745 Class I
- Camera warranty 2 years

The **eduCam** is a 1080p (fullHD) 30 FPS multi-mount medical camera designed for healthcare professionals.

Technical specifications for eduCam

- Sensor: 3.4Mpix

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- Resolution: 1080p, 720p (video) at 30 fps
- Full aluminum body
- Weight: 29 grams (1.02 ounces)
- Dimensions: 32 x 23 x 29 mm (1.27 x 0.91 x 1.14 inches)
- Digital zoom (up to 2.5x)
- Optics: Exchangeable lenses with manual focus
- Hands free operations with USB foot control
- Mounting options:
  - Loupe mount (universal/loupe specific attachment)
  - Overhead light / Headband
  - Gooseneck / flexible arm
- USB 2 with detachable cable (USB micro connector)
- Camera is powered through USB
- Recording software: Windows, Mac and Android
- 5 software licenses included per sales unit (see 1.2)
- Regulatory compliance according to EU MDR 2017/745 Class I
- Camera warranty 2 years

The **microCam XS** is a fullHD 1080p miniature medical camera designed especially for loupe-mounting applications.

Technical specifications for microCam XS

- Resolution: 2.1 MPix / Full HD (video)
- Full aluminum body
- Weight: 11 grams (0.38 ounces)
- Dimensions: 14x17x27 mm (width/length/height)
- Optics: Changeable lenses with manual focus, 8 /16 /25 / 35mm)
- Hands free operations with USB foot control
- Mounting options:
  - Loupe mount (universal/loupe specific mounts)
- Connection with fixed 1,5m USB cable
- Camera is fully powered through USB
- Recording software: Windows, Mac and Android
- 5 software licenses included per sales unit (see 1.2)
- Regulatory compliance according to EU MDR 2017/745 Class I
- Camera warranty 2 years

The **proCam XS** is a 4K miniature medical camera designed for loupe or light mounting applications.

Technical specifications for proCam XS

- SONY IMX 415 sensor
- Resolution 4k30 / 1080p30 / 720p30, 8Mpix stills
- Full aluminum body
- Weight: 14grams (0.49 ounces)
- Dimensions: 30 x 20 x 20 mm (width/length/height)
- Optics: Exchangeable lenses 8 / 16 / 25 / 35mm
- Hands free operations with USB foot control
- Mounting options:
  - Loupe mount (universal/loupe specific mounts)
  - Overhead light or Headband
  - Gooseneck/flexible arm
- USB 2 with detachable cable (USB micro connector)
- Camera is powered through USB
- Recording software: Win, Mac and Android
- 5 software licenses included per sales unit (see 1.2)
- Regulatory compliance according to EU MDR 2017/745 Class I
- Camera warranty 2 years

The **smartCam** is an auto focus 4K non-interruptive medical camera for medical applications.

Technical specifications for smartCam

- SONY IMX 415 sensor
- Resolution: 4k30 /1080p30 /720p30, 8MPix stills
- Full aluminum body
- Weight: 37 grams (1.3 ounces) with lens
- Dimensions: 40x22x27mm
- SONY IMX 415 sensor
- Optics: 25mm
- Hands free operations with USB foot control
- Mounting options:
  - Overhead light or Headband
  - Headband
- USB 2 with detachable cable
- Camera is powered through USB
- Recording software: Windows, Mac and Android
- 5 software licenses included per sales unit (see 1.2)
- Regulatory compliance according to EU MDR 2017/745 Class I
- Camera warranty 2 years

1.2 A complete sales unit for eduCam, proCam, proCam XS and smartCam

1x Camera case for eduCam, proCam, proCam XS and smartCam including:

- Camera (with selected lens 8mm, 16mm or 25mm lens)
- Camera box
- Micro-USB camera cable 1,5m
- Screwdriver
- Cloth clip
- Light mount (pre-installed on proCam, proCam XS, smartCam only)
- Adhesive light attachment clip (proCam, proCam XS, smartCam only)
- Loupe mount attachment in bag (proCam, proCam XS, smartCam only)
- Universal loupes clip
- Spiral cable guide for loupe arm
- System setup quick guide
- Focus assistant card

1x Installation Kit for eduCam, proCam, proCam XS and smartCam including:

- 1pc universal overhead light attachment
- 1pc USB control pedal
- 1pc USB 5m camera cable
- 2 pc 5m USB extension cables
- 40pcs cable clips:
    - 15pcs curvy cable clips
    - 25pcs extension cable clips
- Instructions for Use

1.3. A complete sales unit for microCam XS

Camera case for microCam XS including:

- Camera (with selected lens 8mm, 16mm or 25mm lens)
- Camera box
- Connection with fixed 1,5m USB cable
- Screwdriver
- Cloth clip
- Universal loupes clip
- Spiral cable guide for loupe arm
- System setup quick guide
- Focus assistant card
- 1pc USB control pedal
- 2pc 5m USB extension cables
- 25 pcs extension cable clips
- Instructions for Use

2. Preparation

The camera is recommended to be connected to a medically compliant 60601-1 computer via USB. However, if electrocautery/surgery devices are used or if the computer used is not medical grade in a medical environment, an USB isolator of 5kVrms protection must be used to ensure electromagnetic conformity. If you need to purchase an isolator, please contact Novocam support.

It is recommended to **test video recording** prior treatment **to ensure colors are acceptable for use**. See further instructions for color adjustment in 7.5.

Ensure lighting conditions are sufficient and **test the camera image capture before the treatment.** See further instructions for sufficient lighting in 7.6.

2.1 Camera Set up

2.1.1 Install on loupes

Loupe mounted filming provides the ultimate, unobstructed point-of-view (POV) angle of the procedure. Aligning the camera with the loupes and LED headlight makes it easy to work without focusing on filming. Simply work as usual and everything seen through the loupes is being filmed in perfect focus.

Benefits:

- Unobstructed point-of-view advantage
- Always in focus with the loupes
- No need to look at a screen to orient

2.1.2 Mount to the overhead light

Mounting a camera to the overhead light is an easy and effective way to integrate camera technology into every operatory room. The overhead light is an ideal location for capturing images and videos without interrupting the procedure. Videos and pictures can be taken easily with the fututdent foot control. The camera is always available when connected

to a computer and the software is running which allows high quality documentation of any procedure the moment it's needed.

- Put the self-adhesive light connector in an optimal location aligned with the light. (NOTE: Do not stick on a surface that heats to over 50°C/120°F as it will melt the glue on the connector)
- Attach cables neatly to the arm with the cable clips
- Reinstalling - removing cable clips and overhead light attachment (do not use sharp tools when reinstalling clips and attachment).

Benefits:
- Stable footage
- Always available
- Aimed with the light

2.1.3 Mount to the flexible arm (Gooseneck optional accessory)
Mounting the camera to a flexible arm provides a stable, close-up image for many applications like filming in labs, schools and training centers.

Benefits:
- Stable footage
- Always available
- Close ups and flexible aiming

2.1.4. Focusing the camera

2.1.4.1. proCam, educam, proCam XS, microCam XS
When installing the camera, the camera lens needs to be focused based on the **working distance.**

Find the Focus Card in the camera case:



- Mount the camera as you intend to use it - on loupes or overhead on the light.
- Place the focus card at your normal working distance.
- Aim the camera by simultaneously watching the camera image on you screen with the recording software.
- **If using loupes**, look at the center of the focus card through your loupes.
- Align the camera to the center of the focus card.
- Focus the camera by carefully turning the lens.
- Try to get the thin lines as sharp as possible.

2.1.4.2 smartCam
smartCam 4K is an auto focus camera for light mounting. The camera focuses automatically (Win/Mac/Android) or the focus can be set to be manual in Windows futudent recording software (go to *camera settings* > *camera control* > *focus*. Tick the *auto box to be empty* and your setting is manual focusing).

2.2 Install Futudent Recording Software

The Futudent recording software is for video and image capturing, including cloud service. It is applied for eduCam / microCam / proCam / smartCam / proCamXS / microCam XS and it is available for Windows, Mac, and Android.
- Go to our website: https://www.futudent.com/services/software
- Log in or create a futudent account to access the download page.
- Download and run the installation file.

2.2.1 System requirement check
We recommend you check that your computer system meets the basic requirements before installing the Futudent recording software.

We strongly recommend regularly checking and installing updates for your operating system and applications.

All the requirements are available at:
https://www.futudent.com/services/software#basic-system-requirements

2.2.2 Hardware Requirement for Windows OS
- Personal computer (Windows 7 or later)
- NET Framework 4.5
- 8GB RAM or higher
- USB2 or USB3 port for the camera + additional USB port for foot control pedal

How to find your computer specifications Windows
(Windows 10 similar process on Windows 7 & 8)

Check Windows version, processor, and RAM

- To open *System information*, right-click the Start icon and select *System*
- System specifications are displayed in the window.

Check your CPU rating

- Open www.cpubenchmark.net in a web browser.
- Click on *Search for your CPU model.*
- Use the search field to find your CPU model by entering your CPU model number (typically found under *System Information*) into the search field.
- Your CPU rating is displayed in the *Passmark CPU mark* column.

Check/change screen resolution

- To open *Advanced display settings*, Search for *screen resolution* from the *Start* menu and select *Change the screen resolution.*
- Check current screen resolution and change if necessary. Screen resolution of 1024x768 or higher is required.
- Click *Apply* to apply and save any changes.

Check USB port

- To open *Device Manager*, right-click the *Start* icon and select *Device Manager.*
- Expand the *Universal Serial Bus Controllers* option and check that you have either USB2 or USB3.

Check Graphic card

- To open *Device Manager*, right-click *Start* icon in the bottom left corner of screen and select *Device Manager.*
- Expand *Display adapters* to check if you have the Intel graphics card.

Minimum requirement for HD (720p) mode recording

- CPU rating over 3000.
- Screen resolution of 1024x768 or higher.

Minimum requirement for Full HD (1080p) mode recording

- Hardware encoding (QuickSync technology)
- Intel i5 or i7 (Ivy Bridge or never) processor
- Intel graphics card
- 8GB RAM minimum
- CPU rating over 4000
- Without hardware encoding: CPU rating over 5000
- Screen resolution of 1024x768 or higher

Recommended for Full HD (1080p) mode recording

- Intel 5 or i7 (Broadwell or newer) processor
- CPU rating over 5000
- Screen resolution of 1920x1080 or higher

Minimum requirements for 4K (2160p) recording on Windows:

- Windows 10 computer, Intel i5/i7 7th generation processor with at least 6000 points in CPU benchmark.
- In order to see all the details in 4K videos, you need to have a 4K (3840x2160) capable screen.

Note that you can connect your PC to external 4K screen (even your computer screen is not a 4K resolution screen).

Recommended for 4K (2160p) recording

- CPU rating over 10000
- 16GB RAM
- Screen resolution of 1920×1080 or higher

2.2.3 Hardware requirements for Mac

- OS X version 10.13 (High Sierra) or newer
- Minimum 8GB RAM
- MacBook Air/Pro 2013 or newer
- USB port for the camera + additional USB port for control pedal

Minimum requirement for 720p mode

- (Macbook Pro/Air, iMac, Mac-mini) 2015 or later

Minimum requirement for 1080p mode

- (Macbook Pro/Air, iMac, Mac-mini) 2017 or later
- Intel i5/i7 processor

Recommended for 4k mode

- (Macbook Pro, iMac, Mac-mini) 2018 or later
- 16GB RAM
- Intel i7 processor

How to find your Mac's system information

- Select About this Mac from the Apple Menu (top left corner)
- Mac OS version and other system information is displayed

- Select Displays to view screen resolution

2.2.4. Hardware requirements Android OS

- Android 9.0 (Pie) or later
- 64bit CPU
- 4GB RAM or higher
- USB port and OTG adaptor

2.2.5 Download the software to computer

Recording software is used for taking photos and recording videos during the treatments. Photos and videos are saved locally on your computer in predefined folders. Photos and videos can also be uploaded to the Futudent cloud for secure sharing with patients or colleagues in the futudent software. All videos are recorded in h.264 mp4 format. (Refer to 2.2)

2.2.6 Download the futudent App to Android mobile devices

- Search for "Futudent" in the App Store/Google Play Store.
- Click install and follow the prompts to complete the installation.
- Connect the camera to your mobile device with an active USB cable and OTG (on-the-go) adapter.
- Start the Futudent app and grant all required permissions (only required first time app is run).
- Live feed from camera should now be visible - if not visible, disconnect camera and reconnect after a few seconds.

3. Using the device

3.1 Introduction of recording software

After you have installed the device to light/loupe/flexible arm, connect the camera cable to the camera and the foot pedal cable to your computer. If your set up needs an extension cable to reach the comptuer, use the provided active USB extension cable (5m/16ft long) to connect the camera to the computer.

Please note that the recommended **total cable length** is a maximum of 10 meters (5m+5m) / 32ft (16ft+6ft). If there is a need for longer extension than 10m / 32ft, please contact manufacturer for longer extension options.

Open the **Futudent recording software** by double clicking the application icon.

In the software, you have following options:

Camera settings

- Select active camera and check resolution and frame rate for your camera.

Start / Stop Video Recording

- Foot pedal - press the pedal for 3 (three) seconds to start or stop video recording. To create a bookmark during recording press pedal briefly.
- Keyboard - press the F6 key for 3 (three) seconds to start or stop video recording. To create a bookmark during recording press F6 key briefly.

Taking Photos

- On-screen - click the camera icon to take a photo
- Foot pedal - press the pedal briefly to take a photo
- Keyboard - press the F6 key briefly to take a photo.

Microphone

- A microphone is not integrated in the camera: Choose any microphone connected to the PC in the software.
- **The microphone is on by default.** The microphone can be muted/unmuted by clicking the microphone icon in the software.
- For optimal sound quality, an external microphone is recommended

Resolution, white balance and brightness settings

- Automatic white balance can be selected from Camera settings in the software.
- You can manually **set the white balance.** This keeps colors constant during recording and eliminates fluctuation in white balance if the lighting is varying. Open **Camera settings** and select **manual WB**.

Gallery

- Saved photos/recordings can be viewed, deleted and uploaded to cloud or shared with patients or colleagues.
- Photos are stored in JPG format in the **Futudent Photos** folder on the desktop by default. They are named with the date and time.
- Bookmarks are created by tapping the foot pedal or clicking the camera icon during video recording. This allows finding specific moments easily, and you can move between bookmarks using up/down arrow keys. Further instructions or notes can be added to the bookmarks during replay, and additional bookmarks can be added by clicking the camera icon during video playback.

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- Videos are h.264 mp4 format and editing videos can be done with third-party software.

3.2 Share videos from Futudent recording application over the cloud

Before you can use the share videos function, you need a Futudent account.

- Open www.futudent.com in a web browser and select *Register* in the top right corner of the page. Follow prompts to set up your Futudent account.
- If you already have a Futudent account, please select *Login* and enter your login details.

3.2.1 Send to the patient via application

- Start the Futudent recording application and log into your Futudent account to view recordings in your gallery.
- A login window is automatically opened when the recording application is launched.
- Alternatively, log in by clicking on the *Gallery* button in the bottom left corner of the application and then *Login* button in the top left corner of the gallery panel.
- Select *Save and Share* after making a new recording or click on the video you wish to share in the gallery and select *Upload / Send*.
- On the" *Send to Patient*" tab, fill in the following fields:
  - Patient's email address
  - Subject
  - Personal Message
  - You can share additional files as follows:
    - Click "*Add file*".
    - Select the files from your computer and click "*Open*".
    - Click" *Send*".
- Patient will receive a link to the shared recording by email. They will need to log in/Register to view video(s).
- Videos shared to patients automatically creates a free user account on mydentalbook.com for the patient.
- The mydentalbook.com secure cloud platform can be used in communication with patient.

3.2.2 Send to the colleagues via application

- Start the Futudent recording application and log into your Futudent account to view recordings in your gallery. A login window is automatically opened when the recording application is launched.
- Alternatively, log in by clicking on the *Gallery* button in the bottom left corner of the application and then *Login* button in the top left corner of the gallery panel.
- Select *Save and Share* after making a new recording or click on the video you wish to share in the gallery and select *Upload / Send*.
- On the "Send to Colleague" tab, fill in the following fields:
  - Colleague's email address
  - Subject
  - Personal Message
  - You can share additional files as follows:
    - Click "*Add file*".
    - Select the files from your computer, and click "*Open*"
    - Click '*Send*'
- Colleagues will receive a link to the recording on the futudent.com secure dental professional cloud platform by email. They will need to log in/create a Futudent account to view cases.

3.3 Share via the Futudent Clould Service

3.3.1 Uploading video recordings to Futudent cloud via recording software

- Log in to your Futudent account.
- Start the Futudent recording application and log into your Futudent account to view recordings in your gallery. A login window is automatically opened when the recording application is launched.
- Alternatively, log in by clicking on the Gallery button in the bottom left corner of the application and then Login button in the top left corner.
- Select Save and Share after making a new recording or click on the video you wish to share in the gallery and select "Upload / Send".
- Select the" Upload" tab and click the Upload button to begin upload.
- Log in to your Futudent cloud account from www.futudent.com to view uploaded videos.

Uploading recordings to Futudent cloud via web browser

- Open www.futudent.com and log in to your Futudent account. If you do not have a Futudent account, select Register in the top of the webpage and follow the prompts to set up your Futudent account.
- Click "*Upload*" button in the top right corner of your Futudent homepage.
- Fill in the Title, Description (optional), and Category of the recording you wish to upload.
- Click "*Choose file*" to browse your computer and select the file you wish to upload.

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- Click "*Upload*".

3.3.2 Share recordings to the colleague via Cloud

- Open www.futudent.com and sign in to your Futudent cloud account.
- From the Tasks menu on the left, click *Add Case*.
- Enter the case title and description.
- Enter the email you would like to share your case with and click *Add User*. You can do this for as many people as you would like to add.
- *Media* icon to select a recording from your Futudent cloud account or upload a new recording from your computer.

4. Maintenace and Disposal

4.1 Cleaning

With proper care, your camera and its optical-electrical parts will have a long life. Cleaning and disinfection recommended being made as follows:

- Disinfecting can be done using low-alcohol medical disinfectant.
- Use a soft, lint-free wipe to clean the device.
- Remember to squeeze excess fluid out of the cloth/wipe before cleaning the device.

When cleaning:

- Do not directly spray liquid on to the device.
- Never spray the device with detergent or any other liquid.
- Do not submerge the device into water or put it under running water.
- Do not use an autoclave for the device.
- Do not use a cleaning detergent with alcohol concentration more than 70%.

4.2 Service

It is recommended always to check the camera and accessories before use:

- Check that all the parts are tightly attached.
- Check the cables are not worn or damaged and not left on the floor.
- Make sure Instructions for Use are available for all users.
- Futulight (if purchased) battery is charged.

4.3 Annual check

It is also recommended to make annual check for cameras as follows:

- Inspect that all hardware (camera and accessories) is in good and clean condition, no external damages to be seen.
- Instructions for Use are available.
- Check that you are using the latest software version. If not, update to the latest version of the software.

4.4 Disposal instructions

Dispose the camera according to the rules defined in your country. Generally, the device must be brought to an appropriate collection point for electronic waste, such as a home appliance dealer or an official electronic waste collection point. The device may also be sent back to the seller or manufacturer.

Never throw Futulight li-ion batteries in the trash. This causes pollution and can be a fire hazard. To properly dispose li-ion batteries, take them to a battery recycling location or contact your local waste management service provider for disposal instructions. Put batteries in a sealed metal container before recycling them.

5. Warranty

5.1 Warranty period

The standard limited warranty for Novocam Medical Innovations products is two (2) years from the date of original purchase, with the following exceptions: 1. Accessories are covered by a standard one (1) year warranty 2. Software incorporated in the Products is covered by End User License Agreement (EULA) and its warranty terms. Up-to date EULA is made available https://www.futudent.com/contact/about/terms-of-service and EULA must be accepted prior or during Software installation. The warranty period starts when the product is delivered and/or given to the Buyer.

This limited warranty covers defects in materials and workmanship in the Products and Accessories.

Extended warranty or additional 2 or 3 years are available for cameras. Please contact your local dealer or manufacturer to agree separately with Novocam Medical Innovations Oy.

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from any unauthorized tampering with the Product or Accessory, any repairs attempted by anyone not authorized by Novocam Medical Innovations Oy to make such repairs, or any other cause which

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does not relate directly to a defect in materials and/or workmanship of the Product or Accessory.

This limited warranty is void if (i) the label bearing the serial number of the Product and/or Accessory has been removed or defaced, (ii) the Product and/or Accessory is not distributed by Novocam or (iii) the Product and/or Accessory is not purchased from an authorized Novocam distributor. Your rights under the limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form.

Operator may not be held liable for defects or dysfunction of the Software and/or the Service due to (i) lack of qualification and competence on the part of the persons using it, and/or (ii) changes made by the Licensee, a third party other than Operator or not previously certified in writing by Operator, and/or (iii) software and/or equipment is not supplied and installed by Operator or its authorized distributor.

5.2 Warranty Claim Remedies

Novocam will at, at its sole discretion, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

Elect to repair of any defective part within a reasonable period of time, free of any charge for needed parts and labor to complete the repair and restore the Product and/or Accessory to its proper operating condition. Novocam will also pay the shipping costs necessary to return the Products and accessory once the repair is complete.

- Replace the Products and/or Accessory with a direct replacement or with a similar product deemed by Novocam to perform substantially the same function as the original Product and/or Accessory.
- Issue a refund of the original purchase price less depreciation to be determined based on the age of the Product and/or Accessory at the time remedy is sought under this limited warranty.
- If this Product and/or Accessory is returned to Novocam or the auhorized distributor from which it was purchased, or any other party authorized to repair Novocam products, The Product and/or accessory must be insured during shipment, with the insurance and shipping charges prepaid by Buyer. If the Product and/or Accessory is returned uninsured, Buyer assumes all risks of loss or damage during shipment.

5.3 How to make a warranty claim

To claim under this limited warranty, the Buyer must contact either the authorized Novocam distributor whom the Product and/or Accessory was purchased from Novocam. In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Novocam distributor. If the Product and/or Accessory is returned under this limited warranty, a return authorization will be required from Novocam, Buyer may also be directed to an authorized distributor or a person authorized by Novocam to repair the Products and/or Accessory. If it is decided that the Products and/or Accessory should be returned directly to Novocam, the Product and/or Accessory should be properly packed for shipping.

6. Available accessories

Novocam provides also following optional accessories.
They are available at our company web shop:
https://www.fututdent.com/shop

6.1 Camera Lenses

Lenses are designed to be used in operatory rooms and they offer exceptional depth of view.

Available lenses:

- 8mm lens, UHD 5MP, 1-1.5X magnification, wide angle
- 16mm lens, UHD 5MP, 2X magnification, optimal for loupe / gooseneck mounting
- 25mm lens, UHD 5MP, 3,5-4X magnification, optimal for light mount
- 35 mm lens, UDH 5MP, 5X magnification, optimal for close up

6.2 Futulight

Futulight is a LED headlight designed for fututdent cameras and it provides optimal image quality for videos and still photos.
Technical specifications:

- Charger: 110V-220VAC, 50-60Hz
- Battery capacity: 3,7V 4400mAh
- Battery life: With full intensity about 9h, with 50% intensity about 13h
- Charging time to reach full charge: 10h
- Max output: 32 000LUX, linearly adjustable
- Color temperature: ~6500K Light spot size: Approximately 7cm diameter from 25cm distance

6.3 Installation kit

Installation kit contains accessories needed to install a camera for an operatory room, content described in 1.2., please note that microCam XS does not includee an installation kit.

6.4 Flexible arm / Gooseneck
The flexible arm can be mounted on tables, chairs, light fixtures and other fixed positions. Base with clamp is 60cm, extension part 50cm.

6.5 Headband
The lightweight headband for mounting the camera. The cables can be integrated within the soft padding.

6.6 Light and Loupe Attachments
Novocam has wide library of attachments available for various loupes and headlights. Novocam continuously develops the attachment library based on customer requests.

6.7 Wireless pedal
You can buy optional wireless pedal to your device. Plug the wireless USB receiver into a free USB port in your computer or USB host device. You can now check the successful operation of the devices by pressing and releasing the pedal – an LED on the USB receiver will briefly flash every time the pedal is pressed. The wireless pedal can now be positioned up to 10 meters from the USB receiver.

6.8 Isolator
The camera is recommended to be connected to a medically compliant 60601-1 computer via USB. However, if electrocautery/surgery devices are used or if the computer used is not medical grade in a medical environment, an USB isolator of 5kVrms protection must be used to ensure electromagnetic conformity. If you need to purchase an isolator, please contact Novocam support.

6.9 Other Attachments
- Overhead light attachment
- Cable clips, curved, flat, extension cable clips

Take special attention when unpacking to verify all components listed in the packing list are present.

7. Trouble shooting

7.1 Camera stops functioning
Electrocautery or electrosurgery device is taken in use while the camera is attached to the loupes. Several cases have been noted where the camera stops functioning which seems to be connected to a leakage current / interference conducting through the USB cables.

A solution: A USB isolator of 5kVrms protection must be taken in use between the camera and the computer when using electrocautery or electrosurgery device (see also 6.8.).

7.2 Futudent recording software cannot open or frozen frequently
If recording software do not open after software installation on the computer / mobile device or software is not operational.

A solution: Futudent recording software are hardware and software dependent, we strongly recommend reading the system requirements list (section 2.2.1) before installing. Update your PCs, mobile devices and software regularly.

7.3. Camera is not detected
After installing the software and connecting the camera to the PC, the software screen still shows" camera not detected!", clicking the "refresh" button does not seem help.

A solution (Windows):
- Go to "control panel" -> " Device Manager" or search "Device manager" by clicking on the "camera" button. Right click on camera name (eduCam, proCam or microCam) to do the uninstallation and installation it again. After that try "refresh" button on software screen.
- If the camera cannot be found in " Device manager -> Camera" list, please try with other available devices. If the camera still cannot be detected, we would suggest trying with other connecting cables. If this does not help, contact your local support point or manufacturer.

7.4. Camera signal is not stable
The camera connecting signal is unstable, recording cannot continue.

A solution: Double check that all USB ports and joints are fatigued. Carefully check that all cables are integrated. *Note: If serval extension cables are used at the same time, it may affect the performance of the camera. Try using a shorter extension cable.*

If you want to learn more about the device, we kindly recommend that you read the "Futudent user guide" page in relavent topics. This page can be found on our website: https://www.futudent.com/support/user-guide

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7.5 The camera's color representation differs from human perception

Sometimes camera color settings are inaccurate, or monitors / screens are not presenting colors correctly.

A solution: Following procedures can be done to correct colors:

- for adjusting color settings, test color palette can be used for comparison purpose.
- camera color adjustments (brightness, contrast, hue, saturation, white balance) can be done in the camera control panel in the software.
- color adjustment to monitors can be adjusted on the monitor or operating system.
- Reference color samples are recommended to be used to ensure color accuracy.

7.6 Camera's image quality is low

Camera's image quality can look low due to insufficient lighting conditions or If camera Is out of focus.

A solution: In general, good quality recordings can be achieved when sufficient quality of light is available.

- Ensure the light intensity (recommendation more than 10 000 lux) and color spectrum of light (recommended CRI is over 80) is sufficient for using the device.
- Ensure the camera is correctly focused (see 2.1.4)

7.7 Camera does not stay in position

The camera does not keep position when adjusted, it drifts or drops on its mount.

A solution: Tighten the screw holding the joint to create more friction.

8. EMC Guidance

CAUTION

Strong ESD (electro-static discharge) can cause the camera's signals to become confused. The video quality may be degraded or the video be stopped. If this occurs, the software may re-load the camera. If the camera does not come back online, either press the software camera refresh button or unplug the USB cable and plug it in again before re-starting the software and video.

NOTE

The emissions characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). It is also used in a residential environment for which CISPR 11 class B is normally required. For CISPR 11 Class B, this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or re-orienting the equipment. Contact Novocam for support if needed.

Technical requirements to minimize EMC Interference

Novocam does not provide separate EMC protective equipment with its system. The end user is responsible to check that the following equipment is IEC 60601-1 compliant and rated for use in a professional healthcare facility:

- Computers
- Monitors
- Clinic mains power supplies

If the end-user does not have an IEC 60601-1 compliant computer or monitor, they may purchase a hi-speed USB isolator with the following technical specification:

- USB 2.0 Hi-Speed (480 MBit/s)
- 500mA (internal DC/DC)
- ESD protection (20kV)
- Isolation withstands $5kV_{RMS}$

EMC Characteristics

The following cables and accessories are likely to affect compliance of the Novocam system with the requirements of electromagnetic emissions and immunity. The end user is responsible to check these parts with the functionality of the camera system:

Supplier	Description	Length	Reasoning
Novocam	Active USB extension cable (shielded)	10m max.	Emissions from electro-surgical equipment can interfere with video signals. This does not cause a hazardous situation.
Novocam	Camera USB cable (shielded)	1.5m max.	
End-User	Cables from surrounding computer equipment bundled with the Novocam cables. Signal and power cables bundled together.	Varies	
End-User	Electro-surgical knife and tools	Varies	

Emission interference can be checked by the end-user by watching the image for signs of:

- Horizontal lines in the image
- Flicker in the image
- Frozen video

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EMC Compliance

Compliance of Novocam products is tested according to the following electromagnetic emissions and immunity standards, in the electromagnetic environment specified below. The end user of the equipment should assure that it is used in such an environment.

Enclosure Ports (Table 4, IEC 60601-1-2:2014)		
Phenomenon (immunity)	**EMC standard or test method**	**Immunity test levels – professional helathcare facility environment**
Electrostatic discharge (ESD)	IEC 61000-4-2	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air
Radiated RF EM fields	IEC 61000-4-3	3 V/m / 80 MHz – 2,7 GHz 80% AM at 1kHz
Proximity fields from RF wireless communications equipment	IEC 61000-4-3 / IEC 60601-1-2 Table 9	
Rated power frequency magnetic fields	IEC 61000-4-8	30 A/m / 50 Hz
Signal input/output Parts Port (Table 8, IEC 60601-1-2:2014)		
Phenomenon (immunity)	**EMC standard or test method**	**Immunity test levels – professional healthcare facility environment**
Electrostatic discharge (ESD)	IEC 61000-4-2	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air
Electrical fast burst transients / bursts	IEC 61000-4-4	± 1 kV, 100kHz repetition frequency
Surges – Line-to-ground	IEC 61000-4-5	± 2 kV
Conducted disturbances induced by RF fields	IEC 61000-4-6	3 V / 0,15 MHz – 80 MHz 80% AM at 1kHz

9. Support and contact

9.1. Contact local partner

Our devices have been distributed by our partners in each country worldwide. We would advise you to contact your local reseller where you have purchased the device as first help. They may help you directly and immediately.

9.2. Contact Futudent support

You always can reach our support team by visiting our website https://www.futudent.com/support

You may:

- Submit a ticket
- Call us directly by the numbers:
  Europe and Rest of the World: +358 50 3880008
  North America (24/7): +1(888)-539-3828
- Request set a remote support session
- Send an email support@futudent.com

9.3. Contact manufacturer

You are welcome to contact us by filling the General contact form on our website either via www.futudent.com or via email info@futudent.com

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Phone +358 50 388 008

9.4 Data Protection and Privacy

Novocam Medical Innovations is an EU company and governed by the requirements of the EU General Data Protection Regulation. Novocam acts as data controller and data processor of end user data, including contact information, purchase information, voluntarily given data and images stored on the Cloud services. Novocam does not require patient healthcare identifiable data in order to use the system.

The end user of the camera is a Data Controller who is responsible for deciding what information to collect and how to use it. Camera images may be stored locally, on the Clouds or not stored at all. Accompanying information, such as patient and treatment details, are added at the discretion of the end user and according to their local data privacy laws.

See the futudent.com website for the full Privacy Policy.

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