



OPERATING INSTRUCTIONS

Revision: 1.2

:: VUCAM® XO

Congratulation to your new VUCAM[®] XO videoscope

A system constructed strictly according to the practical demand of our customers and users. To obtain maximum benefit and for a secure and safe operation please read the manual before starting up and using the instrument. When used proper, this system will be offering you excellent inspection capabilities over a long lifetime.

In order to obtain the economic advantages of your system even in the long run, you ought to read and follow the following advice, tips and warnings carefully. The observance of these instructions serve the purpose of your own safety as well as the safety of those in the work field of the device.

All tips, code of behaviour, suggestions for measures to be undertaken, advice, warnings and instructions are exclusively valid for the operation of VUCAM® XO and not for devices by other manufacturers.

For questions, which have not been answered by this instructions manual, your dealer and/or the manufacturer are gladly available for advice. Kindly contact us even if you have suggestions for the improvement of this manual or the product. For contact details please consult the following page.

Thank you for choosing a viZaar[®] product for your inspection service.

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COMPULSORY

For a safe start-up in accordance with regulations. Reading before the initial operation is compulsory!



Warning against risk of injury or loss of life to humans



Warning against significant risk of damage to device and plant



Warning against fatal electric shock



Warning against lifethreatening explosion risk



Warning against lifethreatening fire risk Before the initial operation, this instructions manual must be completely read and understood by the user in order to prevent damage and danger to life and property through the operation of the video endoscope system (the device). The operation of the device without the understanding of the instructions manual is not allowed under any circumstances. The device has to be used exclusively by trained operators. It is absolutely not suited for any medical or veterinary application and must never be operated by private users.

For a generally non-destructive operation of the device, beside the safety of the personnel and environment, an extensive knowledge of the device, the inspection technology, the safety instructions as well as the field of application are absolutely necessary!

The device must never be connected to electric mains, if you have not understood this instruction including safety warnings or even if you have not understood individual sections or if you cannot or do not wish to use the device in accordance with the regulations.

viZaar[®] is not liable under any circumstances for the consequences of misinterpretation or faulty inspection results, which were achieved with the device.

viZaar® shall not be liable under any circumstances for the loss of inspection data.

viZaar[®] shall not be liable under any circumstances if device parts are left behind in the inspected plant inadvertently.



The device must never be opened by the user at any place. Life-threatening electric currents are used or generated in the device; in particular, the device must never be used with the housing open. The device must never be used when there are audibly loose parts inside the device.

Before start-up, the device must be acclimatized according to the ambient temperature. This is valid in particular for cooled devices, wherein condensate accumulation during warm-up can lead to destruction and damage due to electric spark over.



Never operate the device under conditions which do not comply with the operating conditions or storage conditions described in the instructions manual!



The device must never be operated in operating environments which are vulnerable to explosion or fire risk. The device is not equipped with safety devices or acceptance for operation in environments vulnerable to explosion or fire risk. An impermissible employment in environments susceptible to explosion or fire leads unavoidably to a device-induced life-threatening explosion and to a fire in the plant. The operator is obliged to check the plant for substances vulnerable to explosion or fire before every new start-up of the device. 02

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The device must be checked annually by the manufacturer or an authorized third party for compliance with the electrical safety instructions obligatory at the usage site and conformance with the as-delivered condition of the device. The device must not be connected to the electric supply mains or otherwise operated after the ascertainment of a defect or any deviation from the as-delivered condition. This is valid, in particular, if the device has tumbled or fallen down or was exposed to a liquid.





Never allow the device to be operated without supervision. For safety reasons, it is necessary to switch-off the machine during pauses.

Using the videoprobe nearby radioactive energy sources or in areas which may cause radioactive contamination demands strict compliance with the corresponding health and safety regulations. Constant and/or short exposure to radioactivity may limit the lifetime / performance of the videoprobe in dependence of the dose output.



For increasing your own safety against electric shocks with risk of injury or loss of life, the device must always be connected and operated via a residual current circuit breaker system or an isolating transformer. This can in any case be a compulsory condition depending upon the operating environment. For this, consult your responsible safety in-charge or the accident protection measures in force in your respective country. 08

The device must be transported exclusively in the transport case conceived for it by the manufacturer. The device and the corresponding accessories must be packed in the transport case only according to the instructions at hand.



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The use of too long power extension cords is life-threatening and forbidden (max. 25 m in case of a supply line made of copper 3 x 1.5 mm2). Hereby, a life-threatening loss of the protective function of the upstream safety element is possible. At the same time, voltage differences of the earth potential as compared to the displaced reference point of electric output (bridged by a too long extension cord) could cause dangerous electric currents on contact with the device housing or impermissibly high equalizing currents at the probe. In case of uncertainties, consult your on-site electrical expert.





Avoid direct exposure to sunlight for long periods of time.

Exclusively the viZaar[®] accessory articles or spare parts described in this instructions manual may be used in connection with the device. Always consult and follow the national and international operations and safety regulations, Norms or regulatory authority's advice.

The device can be connected to the public electric supply mains through a 'IEC-plug lead' included in the delivery or a 'IEC-plug lead' which complies with the local socket standards. The system accepts faultlessly all power supplies known worldwide with alternate currents of 96 VAC to 246 VAC at 46 to 60 Hz. For safe operation, the device needs a reliable potential earth (PE) connection. In case of doubt, an expert or the manufacturer must be consulted. The minimum output supplied by the power connection can be derived from the device specifications contained in the instructions.

When operating the device outside the permissible operating conditions or with destruction caused by usage which deviates from the instructions, non-compliance with the operating conditions or through the usage of non-original spare parts or accessories as well as through impermissible opening of the device, the guarantee obligation or the guarantee commitment by the supplier or manufacturer lapses, in principle.



The system must be earthed properly in case of an electrified application in relationship to the ground. If impossible, connect the system to the application or the ground (depending on which one the user needs to touch). The user needs to be isolated against the current path of the earthed path. 15





Never connect a triploar plug to a bipolar socket! Avoid any contact between the device (and all working equipment) and components carrying electrical charges.

The video probe of the device must never be used in or in the vicinity of apparatus or equipment, which are partly or fully energized by electric current of any type (e.g. transformers, motors, generators, switchboards etc.). The metallic mesh of the probe conducts electricity and dangerous currents are transmitted during every contact or even short-circuits can be triggered in the plant.



The device must never be operated with damaged video probe. There is a risk of damage to hand due to the metallic protective mesh (suggestion: always wear work gloves for protection). At the same time, there is a danger that liquids might penetrate the probe and thereby impair the functioning permanently or might cause a life-threatening electric shock to the operator! Even the use of a slightly damaged probe can guickly lead to the total destruction of the probe due to destruction of the light fibres or the electric conductors lying inside. The operation of a damaged probe is impermissible within the area of jurisdiction of the European Union, since the regulations on emission of electromagnetic radiation can no longer be adhered to with safety.

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Never bring the probe in contact with corrosive substances of any kind (acid or alkali). Risk of damage and injury while manipulating the probe. Never bring the probe in contact with solvent containing liquids! Risk of damage!

Never insert the probe in plant parts the contents of which are unknown!

Never insert the probe in plant parts, if weld or cutting work is being undertaken simultaneously or soon. Likewise, the probe must never be inserted if further inspection procedures like eddy current or radiography tests are being undertaken on the same plant part. Never insert the probe in plant parts, which are not fully switched-off (e.g. danger from rotating plant components) or cooled down.



Never look directly at the light emission in the camera head. There is danger of lasting eye injury or at least a long-lasting eye irritation with accidental consequences through a temporarily restricted power of vision.

Avoid tight coils or even knots in the tube. Do not step onto the insertion tube or camera head. Do not smash the camera head with it's optics onto the floor or cause any other possible impact to the instrument. This can damage your probe! 21

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dangers.

via fax / telephone.



Do not use the probe for transporting the system! This can damage your probe! To transport the system use the handle on the control unit.





Do not send the device without return material authorisation establishing contact previously

Do not insert the insert tube into any flammable gas or liquid (such as a fuel tank) to avoid

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1.1 Scope of delivery

Scope of delivery:

1 VUCAM® XO

with standard straight view 45°

- 2 Protection ring
- 3 Two field replacable batteries
- 4 Power supply
 - 4.1 Power supply to VUCAM® adapter
- 5 SD card 8 GB (FAT32 formated)
- 6 Hard copy VUCAM® XO manual
- 7 Transport & storage case



Optional accessory

For further information on optional accessory please refer to chapter "3 Optional accessory":

- 9 Tip adapter straight view: DOV 0°, FOV 100°
- 10 Tip adapter side view (close focus): DOV 90°, FOV 100°
- **11** Tip adapter side view (far focus): DOV 90°, FOV 45°
- 11 External charging unit
- 12 Car charger
- 13 SD card 32 GB (FAT32 formated)
- 14 Neck strap
- **15** Touch screen protective foil

Perhaps usefull accessories are not included in delivery and should be purchased additionally. Therefore, please contact your local sales representative.



1.2 Removal from the transport case

Before opening the transport case, check the container for possible transport damages.

Dimensions: (H) 515 x (W) 395 x (D) 190 mm; PE; Weight empty: 3,3 kg.

- 1 Carry handle
- **2** Pull here to open the transport case

NOTE! Open the transport case in the correct position! Opening the transport case in incorrect positions may cause blocked locks or may cause the inlay to fall out!



1.1a



- 1 VUCAM® XO
- 2 Optional tip adapters
- 3 Two field replacable batteries
- 4 Optional battery charger
- 5 Power supply
- 6 SD card 8 GB (FAT32 formated)
- 7 Hard copy VUCAM® X0 manual



NOTE! Store the video probe correctly! Do not store the the probe with sharp bends! Possible damage to the probe and the probe head!

NOTE! Please check the correct position of the probe before closing the transport case. The probe may get stucked in the cases border!







Memorize the location of each part during removal to proceed later in reverse sequence when storing the system again.

- 1 LCD touch screen
- 2 White balance
- 3 Digital image capture
- 4 Digital video capture
- 5 File management / last captured file
- 6 Setup
- 7 Illumination -
- 8 Illumination +
- 9 Battery indicator
- 10 Illumination -

(see chapter "2.3.2 Buttons", page 19)

- 11 ON / OFF switch (see chapter "2.3.2 Buttons", page 19)
- 12 Illumination + (see chapter "2.3.2 Buttons", page 19)
- 1 Digital video capture (see chapter "2.3.2 Buttons", page 19)
- 2 Digital image capture (see chapter "2.3.2 Buttons", page 19)
- 3 SD card slot
- 4 Articulation wheels
- 5 Articulation brake
- 6 Grab to tilt LCD touch screen
- 7 Power supply / charger connector
- 8 ¼" mounting





Possible ways to use the system

Neck strap

For the mounting of the optional shoulder strap refer to picture 1.1d. Connect the third shoulder strap connection to the wrist loop.



1.1d

Horizontal position

The special construction of the VUCAM® XO system allows operation in horizontal position.



Vertical position

The special construction of the VUCAM® XO system allows operation in vertical position. The handle is constructed for hand free operations.



Mounted to tripod

Use the $\ensuremath{^{\prime\prime}}$ tripod connection for operation with a standard tripod.



Mounted to a magic arm

Use the ${\tt V}''$ mounting to operate the VUCAM® X0 system mounted to a magic arm.



1.3 Specifications

Probe				
Working length	2.2 m / 7.2 ft.	3.3 m / 10.8 ft.	6.6 m / 21.6 ft.	
Diameter	6.0 mm / 0.23"	6.0 mm / 0.23"	6.0 mm / 0.23"	
Articulation	130°	120°	100°	
Probe construction	Fou	r layer, final layer cut resistat tung	sten.	
Optical specification				
Direction of view (DOV)	Standard 0° forward, optional wi 90° side view (far focus) with 45°	th tip adapter 90° side view (close field of view.	focus) with 100° field of view* or	
Field of view (FOV)	Standard 45°, optional with optic	al adapter 100° wide angle*		
Focus range	3 mm to endless depending on o	otic adapter chosen		
Illumination				
Туре	Special high power hybrid LED gla	ss fiber ilumination. Digital phase w	idth light control auto / manual	
Light power	High efficiency LED illumination	6 Watt Daylight quality 6.500 K		
Display				
Image representation	Screen type, high resolution 5.7"	LED back illuminated TFT display,	640 x 480 Pixel, anti glare.	
Digital data capturin	g			
Image recording	Digital single JPEG format. Abilit	y to capture images during video r	ecording.	
Resolution	RGB 263,000 colors, 640 x 400 Pixel, JPEG format.			
Video recording	Video in MPEG4**			
Pre-Recording	Buffer 15 sec. Triggered with video stop.			
User interface				
User interface	Unique graphic user interface by touch screen. Paralell direct acces buttons ergonomically positioned User interface to control most frequent used functions like image capture, video capture, light control and system on/off.			
Mechanical				
Monitor	Rubber bumper protected carbor dust and splash proof.	n fiber construction. Screen shock	absorbing floating integrated,	
Hand piece	Coated high resistant aluminium with tilt adjustable display.	handpiece and control knobs, alur	ninium integral flat surface stand	
Memory	SD card 8 GB (optional: max. 32 0	B)		
Interface	Multi I/O per cable connection			
Power supply	Battery: 6.4 V Power supply: In	put 100 - 240V AC, ouput: 12V, ma	к. 2.5А	
Battery concept	Two field replacable high power Li is operated from mains, optional e time below 2 hours. Battery life t of Lithium cells (no memory effe System air transportable.	FePo4 batteries. Quick charge tech external charging unit allowing add ime depending on operation (up . I ect, high capacity, low weight) wh	nology, charging while the sytsem litional battery charge. Charging LiFePo combines the advantages ile being safe from self ignition.	
Image capturing	Auto stop; autosplit; freeze frame	e, single image capture, digital vide	eo recording	
Mounting	1/4" mounting for operation with s	tandard tripods and magic arms.		

1 STRUCTURE AND START-UP

Functions	
Text annotation	Text is displayed and captured outside of the inspection image, thus not covering any application detail. Text is captured with image and video recording, printer friendly text formats available.
Menu	Touch screen menu, handpiece controls, multiple language options, real time image brightness, contrast, saturisation, color control; date, time, logo, system status, multi language.
Functions	Image capture, video capture, text entering, easy image and video selection, easy delete, language selection, illumination, immediate activation of the last saved file, fast access data recall, manual white balance, date & time display.
Specifications	
Water and pressure tested	Probe: 1.5 bar / 22 psi fully immersible over the full length \mid System: System housing IP 54 splash water and dust proof
Weight	1.5 kg / 3.3 lbs (1.7 kg / 3.7 lbs with battery), depending on probe length.
Shock and vibration	Vibration 3 grms random at 20Hz to 2 KHz, 10 min per axis; Shock 50 grms 11 ms half-sine three axis.
Temperature	Display: Storage -40°C (-40°F) to +85°C (+185°F); Operation -20°C (-4°F) to +70°C (+158°F) \mid Probe: Operating -10°C (14°F) to +80°C (176°F), in air
Manual	Full digital version on SD card, short guide hard copy.
Display dimensions in mm / inch	(H) 75 / 2.95 x (W) 196 / 7.71 x (D) 73 / 2.87

If used with optional optical tip adapters
 Media Player from Windows[®] 7.0 or any H.264 format player
 Yer and the rear and tear components like articulation cable and insertion tubes are excluded. Accessories of foreign suppliers will have their own warranty.

Equipment is not intrinsically safe or explosion-proof. Do not deploy in hazardous atmospheres.

All specifications are subject to change without notice due to technical progress.

1.4 Initial operation

Before starting the system, choose operation with batteries or power supply. For operation with power supply, connect the power supply to the connection cable. The connection cable must be connected to the VUCAM[®] XO system.





For operation with batteries insert the batteries into the VUCAM[®] XO. Please refer to the chapter "1.8 Changing the batteries".

ATTENTION! The batteries can't be loaded inside the VUCAM® XO system at ambient temperature below 0°C to over +60°C!

Proceed with starting the device:

1. Press for min. 2 seconds.



to start the device. The system will start in the operation menu.

2. Before starting to capture inspection data, please perform a white balance by pressing



and confirming with "OK".

Confirm the white balance. The white balance symbol flashes while performing.



3. After successfully performing white balance, start your inspection.





you will capture a digital image.

5. Press



to start recording a digital video. The video recording icon will flash red. Pressing



again will stop the video recording.

 To make a snapshot during the video recording, press



Repeat by pressing the button again. After taking the snapshot, the video recording will autmatically continue.

7. To check your last captured data (image and/or video), press



To return to the operation menu and continue your inspection, press



NOTE! Do not store the device in low temperature environment! If stored in low temperature environment, warm up the device before starting or operate with usual power supply.

NOTE! The video icon is blinking red while recording.

NOTE! Do not remove the SD card during capturing photos or video. This can cause a loss of the image or video and may damage the SD card!

NOTE! Video recording requires an SD card with fast writing speed. We recommend 80x (or above) writing speed SD cards for better video quality!

NOTE! Wait 5 seconds after recording, before removing the SD card!

NOTE! Always release the SD card performing the "Release card" menu! Releasing the SD card without performing via specific menu might damage the SD card and/or the data!

1.5 Mounting the protection ring

Before every inspection, check the probe if the protection ring is mounted. Carefully mount and remove the parts. Never use force for this procedure. In case of doubt, contact our service to get further instruction. ATTENTION! Never use the probe without the protection ring! Operation without the protection ring may damage the probe!

To mount the protection ring to the probe head (double thread protection), follow further instructions:

ATTENTION! Due to small dimensions, the threads of the probe and the protection ring / tip adapters are very delicate. To prevent any damage, pay attention to dirt in the threads!

1. Screw the protection ring on the probe heads first thread.



1.5b

 Then, push the protection ring gently to the second thread. Screw the protection ring to the probe heads second thread to mount it. For removing the protection ring, please proceed in reverse order.



ATTENTION! The change of the tip adapters must be performed by briefed personnel only!

1.6 Flashback recording

Many areas of interest are passed by while inspecting. By the time deficiency is realized, revisits are needed for analysis and documentation. Save time and money with VUCAM® constantly buffer capturing. By pressing



the last 15 seconds are already saved with the ongoing recording.

To just save the last 15 seconds without adding ongoing data, press



twice

1.7 Changing the tip adapter

To change the tip adapter remove the protection ring from the probe head. Carefully mount and remove the parts. Never use force for this procedure. In case of doubt, contact our service to get further instruction.

ATTENTION! Never use the probe without the protection ring! Operation without the protection ring may damage the probe!

Continue with following instructions:

1. Prepare the probe of the VUCAM[®] XO system.



2. Put the tip adapter onto the probe head and turn it clockwise by holding the ribbed end to mount the tip adapter. ATTENTION! Due to small dimensions, the threads of the probe and the protection ring / tip adapters are very delicate. To prevent any damage, pay attention to dirt in the threads!



To remove the tip adapter of the probe head, please proceed in reverse order and turning the tip adapter anti-clockwise.

ATTENTION! Do not use force to screw protection ring onto the probe head!

ATTENTION! The change of the tip adapters must be performed by briefed personnel only!

1.8 Changing the batteries

To change batteries of the VUCAM® XO system, follow further instructions and images.

1. Remove the battery cover on the back of the VUCAM[®] XO touch screen.



2. Turn the mounting support gently until you hit the stopper.



3. Now, push the mounting support on its sides and make a full turn.



4. Pull the batteries out. The batteries are always used with a mounting.

5. Make sure the pins of the battery mounting fit the insertion of the VUCAM $^{\odot}$ XO system.



To remove the batteries from the mounting to insert full batteries, remove the side covers and change the batteries.







To insert the batteries again, proceed in reverse order considering this instructions:



Insert the batteries again considering the right direction.



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2.1 Introduction

Take a moment to prepare and get the most out of your system. Before using the device you should configure it to your individual demand. Choose your language, set the date and time, and configure the view settings.

2.2 Setup

Your system starts directly in the operation menu. To get to the setup, press



l	Setup	
l	files	
l	device	
	GUI configuration	
	release SD card	

Once in the setup menu, browse through the menu chapters by using



To enter / leave a menu or to return to the operation

menu, press







All your inspection data (images & videos) are showed in the file manager. For further instructions on the use of the file manager, please refer to page 23, chapter "2.5 File manager".

NOTE! Files are saved with following configuration (counting): INVIZ_0001_JJJJMMDD.AVI / JPG

2.2.2 Video in

This chapter contains the following configurations:

video in	
brightness	0
contrast	0
hue	0
color	0
noise reduction	automatic
reset to factory settings	

- A) Brightness
- B) Contrast
- C) Hue
- D) Color
- E) Noise reduction
- F) Reset to initial values

2.2.3 Date & time configuration

This chapter contains the configuration of date & time. Set year, month, day, hour, minute & second.

	D	ate & time	configurat	ion	
Year Month Day			2014 07 01		
Hour Minute Second			10 30 45		
		Reset to ini	itial values		
< <p> <!--</th--><th></th><th></th><th></th><th></th><th></th></p>					

A) Set time, date and time/date format

Browse through the settings with





Enter the secific setting by pressing



Now change the setting by pushing

or





By pressing



your setting will be saved. To exit the specific setting without saving press



When finished with configurating the settings, exit the menu with



2.2.4 Device

Enter the menu for following settings:

device	
status	
set date/time	
display date/time	
format sd card	
language	
reset to factory settings	

- A) Format SD card
- B) System status
- C) Language
- D) Set date & time

(chapter 2.2.2 Date & time configuration)

- E) Display date & time
- D) Reset to default settings

Format SD card

To format your SD card, confirm "Continue to format SD card" with



To return to the previous menu without formating the SD card press



or confirming "Cancel with formating the SD card" with



ATTENTION! Formating your SD card will delete all your data permanently!

System status

Check the status of your software version, your sd card capacity or your battery status.

s	tatus
Manufacturer	viZaar AG
Device	VUCAM XO
Software version	1.0.0
SD card total / free / used	3836 MB / 3422 MB / 414 MB
Battery level	14%

Language

To change the language of your device, select your desired language in this chapter:

1. Confirm with



Now choose your desired language by pressing





To save the setting, confirm again with



To exit without saving, press



Reset to default settings

Set all your individual settings back to default settings.

Reset to default settings
Return without resetting Reset to default setting and turn off system

Return without resetting or reset to defautl settings and turn off the system.

ATTENTION! Reseting back to default settings will delete all your individual settings!

2.2.5 GUI configuration

Enter the menu to change the complete design of the setup menu. Change text color, background color as well as marked text and marked background colors. Optimize your menu design for every environment with different background and text colors.

NOTE! The settings made in the GUI configuration menu do not include the text generator!

Reseting the file counter

Reseting the file counter sets the position back to

ATTENTION! By reseting the file counter your files, which were recorderd the same day, can be overwritten by files after reseting the file counter. Files with the same counting name will overwrite previous files without further notice.

2.2.6 Release SD card

Use this menu to correctly release the SD card.



NOTE! Always release the SD card performing the "Release card" menu! Releasing the SD card without performing via specific menu might damage the SD card and/or the data!

To release the SD card, confirm with



To return without releasing the SD card, press



or confirm "Return without releasing card".

After successfully releasing the SD card, please

press



2.3 Operation menu

When turning on the device, your system will start with the operation menu.

- 1 White balance
- 2 Digital image capture
- 3 Digital video capture
- 4 File management / last captured file
- 5 Setup
- 6 Illumination -
- 7 Illumination +
- 8 Battery indicator
- 9 Inspection area
- 10 Text area



Logo on/off

To turn the logo on/off, press the logo on the touch screen.

Date & time on/off

To turn date & time on/off, press the logo on the touch screen.

2.3.1 Flashback recording

Many areas of interest are passed by while inspecting. By the time deficiency is realized, revisits are needed for analysis and documentation. Save time and money with VUCAM[®] constantly buffer capturing. By pressing



the last 15 seconds are already saved with the ongoing recording. By stopping the video recording. To just save the last 15 seconds without adding ongoing data, press



twice

2.3.2 Buttons

WB	White balance	Press White Balance to adjust the inspection image before recording.
	Image recording	Press Image Recording to freeze the image. Press again to record an image.
	Video recording	Press Video Recording to start recording a digital video. The icon is shown red. To stop the video recording, press Video Recording again.
	File management / last captured file	Press Last Captured File to open the last saved image / video. Videos play automatically. Press Stop to pause the video. Press Up / Down to select images / videos.
	Setup	Press Setup to change the settings of your system. Change GUI configurations, system configurations, eject the sd card or enter the file manager.
	Illumination + / -	Press + to add light. Press - to reduce light. Select between 9 steps of illumination.
	Illumination automatic	Illumination automatic avtivates with entering the 9th step of the illumination. To deactivate the Illumination Automatic, reduce illumination.
	Illumination boost	Long push: Activate the Illumination Boost. The illumination is working with approx. double luminosity. To deactivate the boost, perform a long push again. NOTE: Activating the Illumination Boost reduced the lifetime of the battery.

Ċ	On / Off	On: Press button for min. 2 seconds. Off: Press button for min. 2 seconds.
REC -15 SEC.	Flashback recording	Eliminate revisits with Flashback Buffer Recording. Many areas of interest are passed by while inspecting. By the time deficiency is realized, revisits are needed for analysis and documentation. Save time and money with VUCAM® constantly buffer capturing.

2.4 Text generator menu

You can add text information to your inspection results. To enter the text generation menu, press the text area (10).

- 1 Shift
- 2 Space
- 3 ALT
- 4 Delete previous character
- 5 Confirm
- **6** Up
- 7 Down
- 8 Exit without saving
- 9 Keyboard
- 10 Text area

Shift

ALT







2.4.1 Buttons

	Shift	Press Shift to enter the layer with capital letters
ALT	ALT	Press ALT to enter the layer with special characters.
	Delete previous character	Press Delete Previous Character to delete the last character typed on the keyboard.
\checkmark	Confirm	Confirm your text or text change with Confirm and enter the operation menu.
	Up / Down	Press Up / Down to enter the next line (max. 8 lines of text).
	Exit without saving	Press to exit without saving the entered information.

2.5 File manager

Enter the File Manager to get an overview of all captured files (images and videos).

Press







to select the file. Then press



to open the file. If you want to delete an inspection file, press



To exit the File Manager press



By choosing a image / video, the File Manager opens the file (automatically playing video):



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I

3.1 Optional side tip adapter

To change the tip adapter remove the protection ring from the probe head. Carefully mount and remove the parts. Never use force for this procedure. In case of doubt, contact our service to get further instruction. For further information refer to chapter "1.5 Mounting the protection ring" on page 11.

ATTENTION! Never use the probe without the protection ring! Operation without the protection ring may damage the probe!



Continue with following instructions:

ATTENTION! Due to small dimensions, the threads of the probe and the protection ring / tip adapters are very delicate. To prevent any damage, pay attention to dirt in the threads!

1. Prepare the probe of the VUCAM® XO system.

2. Put the tip adapter onto the probe head and turn it clockwise by holding the ribbed end) to mount the tip adapter.



To remove the tip adapter of the probe head, please proceed in reverse order and turning the tip adapter anti-clockwise. ATTENTION! The change of the tip adapters must be performed by briefed personnel only!

ATTENTION! Do not use force to screw the tip adapter onto the probe head!

NOTE! Pay attention to keep the inside structure of the side tip adapter free of dirt!

NOTE! Never use the camera without tip adapter! Not recommended use may damage the probe!

3.2 Optional car charger

Connect the auto charger cable with the charger connection of your VUCAM® XO (page 05, 7. Power supply / charger connection). Connect the USB auto charger module with the car's cigarette-lighter.

3.3 Optional battery pack

To remove the batteries from the system, please refer to chapter "1.8 Changing the batteries", page 12. To charge the batteries refer to pictures 3.3a to 3.3b.

ATTENTION! The batteries can't be loaded inside the VUCAM® XO system at ambient temperature below 0°C to over +60°C!

Charging time: approx. 1,5 - 2 hours. Battery operation time: approx. 2,5 hours

1. Connect the batteries to the battery charger.



2. Take note that the charging option is on "LiFePo".



NOTE! Charging the batteries with other options than "Li-FeP" can damage the batteries!

NOTE! Remove the batteries before longer breaks or longer storage. Never store the system with fully discharged batteries!

NOTE! IATA classification of the batteries: UN 3481 Lithium ion batteries packed with equipment or contained in equipment.

3.4 Optional neck strap

For the mounting of the optional shoulder strap refer to picture 3.4a.

Connect the third shoulder strap connection to the wrist loop.



3.4a

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4.1 Maintenance by the manufacturer

Even if your device apparently still functions, the manufacturer can noticeably improve the functional safety during maintenance by his trained personnel, and prevent possibly greater defects in advance.

- :: Check of the probe, of the extra-flexible articulating section and of the camera for water-tightness.
- :: Care / exchange of the sealing's at the camera optic, check of the optical qualities and that of the camera.
- Check of the probe cross-section for dangerous squeezes, documentation of the destroyed probe sheathing braid, removal of fraught wires.
- :: Check of the light fibres.
- :: Safety check according to accident protection regulations and VDE.
- :: Concluding report.

Use holidays or the standstill time between your inspections and send in the system for check ups regularly in order to prevent an unexpected breakdown. We recommend annual maintenance intervals and / or after 480 operating hours each time.

IMPORTANT! viZaar[®] is not liable for accidents or damage to devices, which are caused by repair attempts by unauthorized persons. viZaar[®] does not repair systems which are contaminated with dangerous substances.

4.2 Cleaning of the system

A dirty probe, as far as watertight, can be cleaned with soap water. A tip adapter can be cleaned with a very soft cotton cloth and some 70% isopropanol or alcohol.

4.3 Transport

The system can be shipped in the transport case repacked by a courier service or it can be transported personally. The case must be secured against inadvertent opening through strapping.

: Due to the strict demands of courier services in terms of packing, we recommend that you pack all fragile accessories well with air bubble foil.

4.4 Customer service

Should there be problems or disturbances in the device, kindly contact your local dealer or factory customer service:

viZaar industrial imaging AG

VT repair service Hechinger Straße 152 72461 Albstadt Germany Fon: +49 7432 98375-0 Fax: +49 7432 98375-50

Do not send the device without return material authorisation establishing contact previously via fax / telephone.

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5.1 Warranty

viZaar[®] warranties, that all video endoscope system components are free of faults to the specifications as specified in the lates current datasheet in respect of material and fabrication. The obligation from this warranty is restricted to the repair and the exchange of all parts, wherein an error occurred during proper use. Other manufacturers products are not covered and are covered by the warranty offered by those manufactures.The warranty starts with the date of delivery the manufacturer.

The warranty period is restricted to 12 months. The warranty is valid for the buyer, and / or end consumer, and cannot be transferred to third parties. The warranty expires for products, which are damaged through accident, transport, alteration, improper storage or non-purposive application, or are opened and/or repaired by unauthorized persons.

Optional additional warranty extension

viZaar[®] provides you with the possibility of an additional warranty extension. The additional warranty extension is containg a liftime warranty on the LED light source and an additional 12 month warranty to the VUCAM[®] XO system (a total of 24 months). The warranty applies to typical application and usage. It will not cover transport damage, misuse and typical wear and tear and tear components as steering cable & outer insertion tube.

5.1.1 Excluded from the warranty regulation

- :: Wear and tear parts like, steering cables, braid work, cable pulls and light fibres.
- : Assembly groups exposed to risks like heat damage to the probe head etc.
- : Merchandise like video recorder, monitor, etc., which have a separate manufacturer warranty.

5.1.2 Special fabrications are subject to a special warranty agreement

viZaar[®] does not assume any warranty for damages to the device, which have occurred through the insertion in plants with electrical potential error.

During application in the hot zone of nuclear plants the warranty claim expires in principle for the function of the camera head. This is valid, in particular, the optic sensor, sealing plastics and the light fibres. For all further warranty claims of contaminated devices, viZaar[®] offers an on-site service against travel payment.

5.2 General device specifications

5.2.1 Device dimensions

All individual device dimensions are listed in the data sheets of the different systems. Changes to the specifications that are introduced to advance the usability or life time might be introduced without specific notice. Although handled with great care, mistake or errors can occur. Always reconfirm specifications of importance with the manufacturer.

5.2.2 Operating conditions

All individual operating conditions are listed in the individual data sheets of the different systems.

5.2.3 General system data

For general system data please refer to chapter "1.3 Specifications" on page 08.

5.4 Confirmation of CE conformity

This device possesses CE- identification and fulfills the conformity with standardisation EN 50081-2, EN 50082-2, EN 55022. The fulfillment of this standard presupposes the application in industrial area.

The device is designed for an application under the following elctro-magnetic conditions:

"Commercial and, to a limited extent, industrial segment (E2)".

5.2.4 Camera / camera head

All individual camera parameters are listed in the individual data sheets of the different systems.

viZaar[®] reserves the right to errors and changes attributable to technical progress.

5.3 Disposal of the device after end of life-expectancy

All the devices of viZaar® described in this instructions manual shall be taken back for disposal by viZaar® without any time-limit and free of cost if desired by the legitimate possessor. viZaar® shall not pay for the costs of delivery. Prerequisite is a largely clean condition without adhering product residues or other toxic contaminations. The device must never be left next to household or bulky waste, but must be disintegrated in component types and must be introduced in the commercial recycling system. The device contains electro-chemical (storage) support batteries and minor parts of heavy metals, which must be properly disposed of and recycled in accordance with the valid guidelines within the EC.



Manufacturer: viZaar industrial imaging AG Hechinger Straße 152 D-72461 Albstadt

Quality is the focus o our activities!

To provide you with the most innovative and reliable products and services in constant high quality we work on continues improvements in all aspects of our business.

This is an ongoing process involving all staff and processes guided and certified by experts.

Furthermore, our personal commitment to quality is attached to your VUCAM[®] X0 inspection system to ensure best quality and high value check-ups.



Our personal commitment to quality



DIN / EN / ISO 9001

DIN / EN / ISO 14001



SCC^P

KTA 1401