



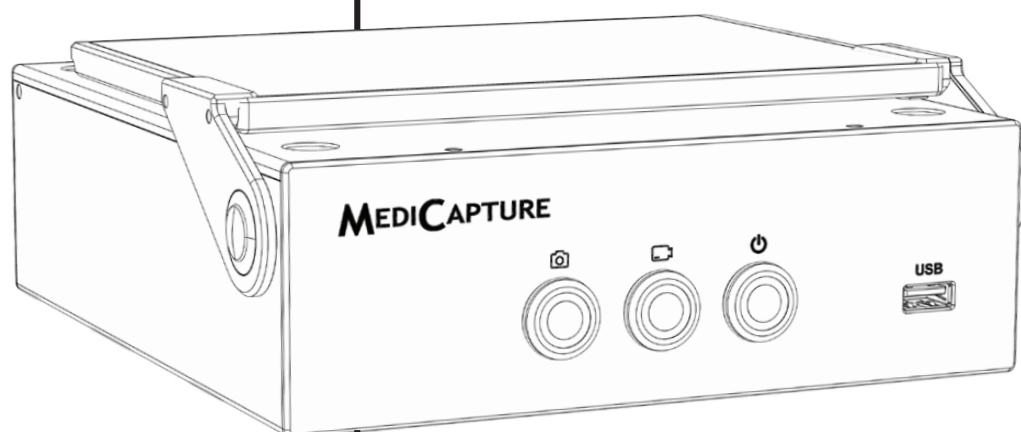
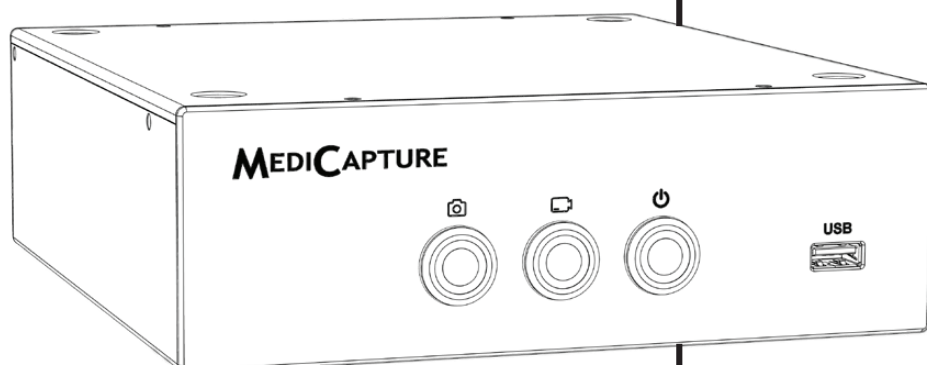
MVR450

MVR460

Medical Video Recorder

Instructions for Use

English



Applies to Firmware 240701 and higher

medicapture.com/support



For more translations (available in pdf), please visit www.medicapture.com/support

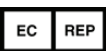
MVR450/MVR460-IFU01-EN-240701-MC
Version 1.1

Precautions for Use

Symbols in the manual

	Warning Indicates a potentially hazardous situation or improper use that could result in serious personal injuries or death. NOTE: Background color: Yellow Triangular band: Black Symbol: Black		This symbol indicates the manufacturer and appears next to the manufacturer's name and address.
			Medical Device
	Caution Indicates a potentially hazardous situation or improper use which, if not avoided, may result in minor or moderate injury and/or appreciable material, financial and environmental damage.		This symbol informs the user that these Instruction for Use and translated copies can be downloaded from the MediCapture website at: www.medicapture.com/support
			This symbol indicates the equipotential pole which brings the various parts of a system to the same potential.

Symbols on the product (Not all symbols are printed in all regions)

	Before attempting to set up the product, carefully read through the Instructions for Use.			Description of device (Catalog number)
	This symbol indicates the manufacturer and appears next to the manufacturer's name and address.			Serial Number
	2024-01-01	This symbol indicates date of manufacturing. It can also show the country of origin in the form of an ISO abbreviation.		This symbol indicates the equipotential pole which brings the various parts of a system to the same potential.
	Medical Device			This symbol indicates compliance with the Waste Electrical and Electronic Equipment Directive (WEEE Directive). The product contains waste from electrical and electronic equipment and should be separately collected and not disposed of as unsorted municipal waste.
	Conformité Européenne (European Conformity)			
	This symbol indicates MediCapture's European Representative.		AC 100-240V 0.6-0.3A 50/60Hz  T2AH 250V	Power Information Fuse Information
	Importing Entity to European Union			Ingress Protection. Protection against penetration of objects and liquids.
	Unique Device Identifier			Temperature limit for transport and storage
	UKCA marking			Humidity limitation for transport and storage
	Representative for Switzerland			Atmospheric pressure limit for transport and storage
	Federal Communications Commission - Declaration of Conformity			I : AC power ON O : AC power OFF

**WARNING**

To avoid risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

Do not modify this equipment without authorization of the manufacturer.

To avoid risk of electric shock, replace the fuse only by qualified service personnel, and only with the type specified in the Instructions for Use.

To reduce the risk of fire or shock hazard, do not expose this equipment to rain or moisture, this device is designed for indoor use only.

Do not connect / disconnect physical video connections when power is on. This device may get hot during operation, especially at the bottom and rear. Wait until the device has cooled down before changing or reconnecting physical video connections.

External equipment, intended for connection to signal input / output or other connectors, shall comply with UL/EN 60601-1 for medical electrical equipment. Anyone who connects equipment to the signal input part or signal output part is configuring a medical system, and is therefore, responsible that the system complies with the requirements of medical system standard IEC 60601-1-1.

Equipment not complying with UL/EN/IEC 60601-1 shall be kept outside the patient environment, as defined on the systems standard.

Note:

To the user and/or patient: Any serious incident related to the product shall be reported to the manufacturer and to the competent authority of the Member State where the user/patient is established.

**CAUTION**

To reduce the risk of fire or shock hazard and annoying interference, use the recommended accessories only.

Do not use the images for diagnosis or evaluation purposes. The compression reduces the information of the picture and is therefore not appropriate for diagnosis.

Restrictions of use:

- Do not use the monitor for direct diagnostic purposes.
- Do not use the monitor for radiological images and not for digital mammography.

Never touch a patient and this device at the same time.

It is important to observe your obligations as the operator of this medical device to ensure its safe operation with no risk of danger to patients, users or third parties.

Patients are not intended to be operators.

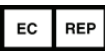
After a strong electrical disturbance, like lightning or a strong electrostatic discharge, the output signal may shake, change in color, or turn black. If you see these symptoms, restart the device by turning off the power, waiting a few seconds, and then turning on the power.

Disposal Method: Use your local regulations for proper disposal.

(CANADA ONLY) Note régionale pour le Canada**Précautions d'utilisation****Symboles utilisés dans le manuel**

	AVERTISSEMENT Indique une situation potentiellement dangereuse ou une utilisation incorrecte pouvant causer des blessures graves ou la mort. NOTE : Couleur de fond : jaune Contour du triangle : noir Symbole : noir		Cette image désigne le fabricant ; elle apparaît à côté du nom et de l'adresse du fabricant.
			Dispositif médical (Medical Device)
	ATTENTION Indique une situation potentiellement dangereuse ou une utilisation incorrecte pouvant, si elle n'est pas évitée, occasionner des blessures légères à modérées et/ou d'importants dommages matériels, financiers et environnementaux.		Ce symbole informe l'utilisateur que ce mode d'emploi et des copies traduites peuvent être téléchargés sur le site Web de MediCapture à l'adresse suivante www.medicapture/support
			Ce symbole indique le pôle d'équipotentialité qui met les différents éléments d'un système au même potentiel.

Symboles utilisés sur le produit (Tous les symboles ne sont pas imprimés dans toutes les régions.)

	Avant d'installer le produit, lire attentivement le mode d'emploi.			Description de l'appareil (numéro de catalogue)
	Cette image désigne le fabricant ;elle apparaît à côté du nom et de l'adresse du fabricant.			Numéro de série
	2024-01-01	Ce symbole indique la date de fabrication. Il peut porter le pays de fabrication sous la forme d'une abréviation ISO		Ce symbole indique le pôle d'équipotentialité qui met les différents éléments d'un système au même potentiel.
	Dispositif médical (Medical Device)			Cette icône représente la conformité avec la directive sur les déchets d'équipements électriques et électroniques (directive WEEE). Le produit contient des déchets d'équipements électriques et électroniques, et doit être collecté séparément et non éliminé comme un déchet municipal non trié.
	Conformité Européenne (European Conformity)			
	Ce symbole indique le représentant européen de MediCapture.		AC 100-240V 0.6-0.3A 50/60Hz  T2AH 250V	Informations sur l'alimentation électrique Informations sur le fusible
	Importateur vers l'Union européenne		IP40	Ingress protection. Protection contre les intrusions d'objets et de liquides.
	Identificateur unique du dispositif. (Unique Device Identifier)			Limite de température pour le transport et le stockage
	Marquage UKCA			Limitation de l'humidité pour le transport et le stockage
	Représentant pour la Suisse			Limite de pression atmosphérique pour le transport et le stockage
	Déclaration de conformité de la Federal Communications Commission			I : connexion à l'alimentation CA O : pas de connexion à l'alimentation CA

(CANADA ONLY) Note régionale pour le Canada**MISE EN GARDE**

Pour éviter les risques de choc électrique, cet équipement ne doit être connecté qu'à une prise électrique avec borne de terre.

Ne pas modifier cet équipement sans autorisation expresse du fabricant.

Pour éviter les risques de choc électrique, le fusible ne peut être remplacé que par un personnel qualifié et seulement avec le modèle spécifié dans le manuel utilisateur.

Afin de réduire les risques d'incendie ou d'électrocution, n'exposez pas cet équipement à la pluie ou à l'humidité. Cet équipement est exclusivement destiné à un usage intérieur.

Ne pas connecter/déconnecter les connexions vidéo physiques lorsque l'appareil est sous tension. Cet appareil peut devenir chaud en cours de fonctionnement, en particulier au niveau de la partie inférieure et arrière. Attendez que l'appareil ait refroidi avant de modifier ou de reconnecter les connexions vidéo physiques.

Avis :

A l'attention de l'utilisateur et/ou du patient : Tout incident grave lié au produit doit être signalé au fabricant et à l'autorité compétente de l'État membre où l'utilisateur/patient est établi.

**ATTENTION**

Afin de réduire les risques d'incendie ou de choc électrique et les interférences nuisibles, utilisez uniquement les accessoires recommandés.

Ne pas utiliser les images à des fins d'évaluation ou de diagnostic. La compression réduit l'information de l'image qui n'est en conséquence pas appropriée aux diagnostics.

Restrictions d'utilisation :

- N'utilisez pas le moniteur à des fins de diagnostic direct.
- N'utilisez pas le moniteur pour des images radiologiques et pas pour la mammographie numérique.

Ne touchez jamais un patient et cet appareil en même temps.

L'exploitant doit utiliser cet équipement conformément aux recommandations du manuel utilisateur afin d'assurer un fonctionnement sans risque ni danger pour le patient, l'utilisateur ou tout autre partie.

Les patients ne sont pas destinés à être des opérateurs.

Après une perturbation électrique forte, comme la foudre ou une forte décharge électrostatique, le signal vidéo de sortie peut vaciller, changer de couleur ou devenir noir. Si ces symptômes apparaissent, redémarrer l'équipement en l'éteignant puis en le redémarrant après avoir attendu quelques secondes.

Mise au rebut : Pour la mise au rebut du produit, respecter les règlements et lois appropriés valides dans votre pays.

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Ordering Information

MediCapture recommends MediCapture® brand USB flash drives.
Please visit medicapture.com for information on how to purchase flash drives.

Technical Support

For technical support and other questions, please visit medicapture.com or call 888-922-7887 (toll free from within the USA) or +1-503-445-6935 (from outside the USA).



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+31 46 2081120

UKRP: United Kingdom Responsible Person
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Pure Offices, Plato Close
Tachbrook Park
Warwick, CV34 6WE UK

CH REP

Jan Möstel
Robert-Seidel-Hof 70
CH-8048 Zürich

Contact: www.medicapture.com/contact.php

Residual Risks

Important Safety Instructions to avoid residual risks.

1. Read all of these instructions.
2. Keep these instructions.
3. Heed all warnings in these instructions.
4. Follow all of these instructions.
5. Do not misuse this apparatus.
6. Make sure that your video source is directly connected to the main monitor via primary safety wiring.
7. Clean the device regularly with a soft cloth moistened with surface disinfectant, alcohol or spirits.
Follow the disinfectant manufacturer's instructions!
 - Before disinfection, the device must be cleaned to remove debris. Removal of debris can be accomplished by using a dry, clean cloth.
 - Disinfectant/sterilant: U.S. Environmental Protection Agency (EPA) approved disinfectant/sterilant or U.S. Food and Drug Administration (FDA) approved disinfectants may be used. Manufacturer recommended disinfectants are:
 - Ethyl Alcohol, 70%
 - Becton Dickinson BD Alcohol Swabs – 70% Alcohol Preps
 - Pour approximately 5ml of ethyl alcohol on a sterile cotton swab.
 - Swipe the surface area of the device being careful not to come in contact with any of electrical connections on the back faceplate or the USB port on the frontal faceplate.
 - IMPORTANT!** Make sure that no humidity enters the device. Do not use any cleaning agents, scouring agents or solvents on this device.
8. Do not block any of the ventilation openings. Install in accordance with the manufacturer's instructions.
9. Do not install near any heat source such as radiators, heat registers, stoves or other apparatus that produces heat.
10. Do not tamper with the polarized or grounding-type plug. A polarized plug has two types of blades with one being wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or third prong is provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
11. Protect the power cord from being walked on or pinched especially near plugs, outlets, and the point where the cord exits from the apparatus.
12. Only use attachments/accessories specified by the manufacturer.
Use only hospital grade or equivalent power cord providing reliable grounding.
13. Use only with a cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus.
When a cart is used, use caution when moving the cart/apparatus combination to prevent the cart from tipping over and to avoid injury.
Place device in the position for easy disconnection of power cord.
14. Unplug this apparatus during lightning storms or when unused for long periods of time.
15. Disconnection Method: Switch off AC power by the rocker switch on the rear panel, disconnect power cord.
16. Do not place vessels containing water or other liquids (such as vases, etc.) on top of the apparatus. Do not splash water on top of the apparatus.
17. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when a power supply cord or plug has been damaged, liquid has been spilled on the apparatus, objects have fallen into the apparatus, and the apparatus has been exposed to rain or moisture, or does not operate normally, or has been dropped.
18. In case of breakdown, Service Equipment is performed by qualified personnel only, where qualified personnel refers to the person with proper education or training assigned by the hospital, medical institution or authorized distributor.
19. This device does not have any serviceable parts. Repairs are carried out exclusively in MediCapture service centers.

Data Protection

Sensitive personal data / protected health information (PHI), protected by the European GDPR and HIPAA is processed when using the devices of MediCapture. The user of a device of MediCapture is obligated, if the device is sent to MediCapture (i) for maintenance purposes (ii) under warranty (iii) after its use as a demo/test device or (iv) for any other reason, to reset the device to its delivery state and to delete all personal data on the device.

It is highly recommended to clean the internal storage before disposing the device.

The formatting function of the device must be used for this purpose (see chapter Deleting Data in these Instructions for Use).

You can use the backup function in the archive to copy studies from the internal storage to a USB storage device before formatting the internal memory.

If MediCapture notices that personal data or PHI is stored on the device, or if there is only reasonable suspicion that this is the case, the device will be returned at the expense of the user and the user will be instructed to re-send the device in the condition described hereinabove.

If a software update is installed on the device, data will only be transmitted to the device and not vice versa.

Intended Use:

This device is intended to record video and images from a variety of medical imaging systems.

The intended patient population are not specified for this device.

User Qualification

This product is intended only for use in professional healthcare environments and by healthcare professionals who have a corresponding specialized qualification.

Contra Indications and side effects:

Contraindications directly related to the product are presently unknown. On the basis of the patient's general condition the doctor in charge must decide whether the planned use is possible or not. For further notes and instructions please refer to the latest medical literature.

This device may not be used in the presence of a flammable anesthetic's mixture with air, oxygen, or nitrous oxygen.

Not to be used for diagnosis purposes.

This device has no applied parts that may come into contact with a patient. Never touch the product and a patient at the same time.

General Functional Description:

This device is a medical grade, High-Definition Video Recorder. This device does not feature any applied parts that come in contact with the patient. It is an assistive tool with no medical application to patients when using the device.

This device can be operated by using the integrated touchscreen monitor (MVR460 only), an external touchscreen monitor, an Android tablet (via WiFi router) or specific remote-control functions for system-integrators.

For more details about external touchscreen monitors types, please visit www.medicapture.com

After installing all physical video connections (see section *Back Panel*), the user can store images and videos - provided by the imaging system - in real time on the internal storage, onto a USB storage media, or on a network storage. Images get stored in JPG format or PNG format; videos are stored in high quality MP4 format. Both collected formats can be viewed and stored from the USB storage to any common PC system or server for long-term storage.

In the Review function a user can playback and edit the recorded data within the active patient study.

After closing the study, the user has access to the Archive (internal storage, network storage or USB media) to review and edit several stored studies of different patients.

This device features multi-input recording. It automatically detects the input resolution of both possible video inputs. If two signals are detected, an additional icon appears on the monitor. The user can toggle between these signal sources during the active patient study. For more details, see section *Changing Input Signals in Live View*.

Please note: This product features powerful functionality in minimized mechanical dimensions.

Passive cooling results in an inaudible, fan-less design. The device will be very warm to the touch, which is normal. This product operates across the full temperature range from -20°C to 40°C.

MediCapture recommends an installation in a location where air can provide proper cooling. Stacking this device with converters or other warm devices is not recommended.

First installation / General preparations for safe operation and performance:

1. Connect to the power cord to the back of the device and turn the device on.
2. Connect a network cable to LAN – if required.
3. Connect a camera with an output connector to the matching input connector. It is recommended to keep any cable connections as short as possible to avoid electromagnetic interferences caused by cables.
4. Prior to recording images and video for the first time, it is recommended to check the initial settings found in the INFORMATION Page .

As long as no patient study was started, this INFORMATION page gives you access to the device Settings .

The following settings are recommended to be checked prior to the first use of the device:

- | | |
|--|--|
| <p>a) User Interface Language
 ➤ Settings ➤ System ➤ Language
 Note: You can select the touch keyboard layout (language) every time the touch keyboards appears. Simply tap on the “globe” icon  to change the layout.</p> <p>b) Video Input selection Select 1 or 2 video inputs according to the video wiring you have made.
 ➤ Settings ➤ Video / Audio ➤ Video Input</p> <p>c) Time Zone, Date and Time**
 ➤ Settings ➤ System ➤ Date and Time</p> <p>d) Patient Information definition
 ➤ Settings ➤ System ➤ Patient Info</p> <p>e) Set Network settings. For Network storage, the MVR Remote App and network printing, please use Auto-IP setup or Manual IP setup.
 ➤ Settings ➤ Advanced ➤ Connections ➤ Network</p> <p>f) Network Storage properties. Set properties of your shared folder on the network storage target.
 ➤ Settings ➤ Advanced ➤ Connections ➤ Network Storage</p> | <p>g) Storage target selection. For Multi-Storage you can select two of three options. This setting is <i>very important</i> as it also defines your Review options in the Archive and search options for existing Patient Information.
 ➤ Settings ➤ System ➤ Storage</p> <p>h) Video quality and codec format H.264* or HEVC*
 ➤ Settings ➤ Video/Audio ➤ Recording Quality</p> <p>i) Photo format JPG or PNG
 ➤ Settings ➤ Video/Audio ➤ Photo Settings</p> <p>j) User Accounts. You can define User Accounts with different User roles and with specific passwords to protect the device and data from misuse.
 ➤ Settings ➤ Advanced ➤ User Accounts</p> <p>k) Printer Selection and Number of Print Copies
 Please ask your IT-Administrator to connect the device to LAN network first. A USB printer may be connected directly (ask for compatibility).
 ➤ Settings ➤ System ➤ Printer</p> <p>l) Audio-Recording ON/OFF and microphone selection
 ➤ Settings ➤ Video/Audio ➤ Audio Input</p> |
|--|--|

(*) H.264 is licensed via MPEG LA, HEVC is licensed via Access Advance LLC and MPEG LA.

**Date and Time settings

This device stores set date and time information for several days if it has been disconnected from the mains power. The prerequisite for this is that the device was previously switched on for a period of several hours.

The best way to get correct date and time information is to synchronize with a network server that provides NTP (Network Time Protocol).

➤ Settings ➤ Advanced ➤ Connections ➤ Network

A very often valid address for the NTP server is: **pool.ntp.org**

Checks before you operate the device:

The operation of this device does not require special maintenance, calibration or the use of consumable components. The hygiene officer of the operator should follow its own disinfection plan for cleaning devices.

Start:

1. Insert the supplied MediCapture USB flash drive in the front panel. (Connect USB flash drive and all external pointing devices first, e.g., mouse, keyboard, touch screen, etc. before switching on the device from the back panel.)
2. Turn on the unit from the back panel power switch.
3. Turn on your camera system(s).
4. Use your imaging equipment as you normally do.
5. Tap on the Start field to create a new patient folder and to either select a patient from a list or to type in patient information. Choose Capture Photo or Record Video by tapping the corresponding icon. Tap again to stop video recording.
6. When you wish to end the study, press the END OF STUDY icon on the touchscreen  [or “F3” on your keyboard]. Afterwards, you can either finish the study or review and edit.

If you wish to continue with the last active study, please tap on the upper return icon  [or “ESC” on your keyboard] to go back.
7. When you finished the study, it is safe to remove the USB flash drive from the device. Insert the stick into the USB connector of a computer. Drop and drag your recordings from the stick to your computer for viewing, archiving, etc.

Note: Do not remove the flash drive from the device while recording!

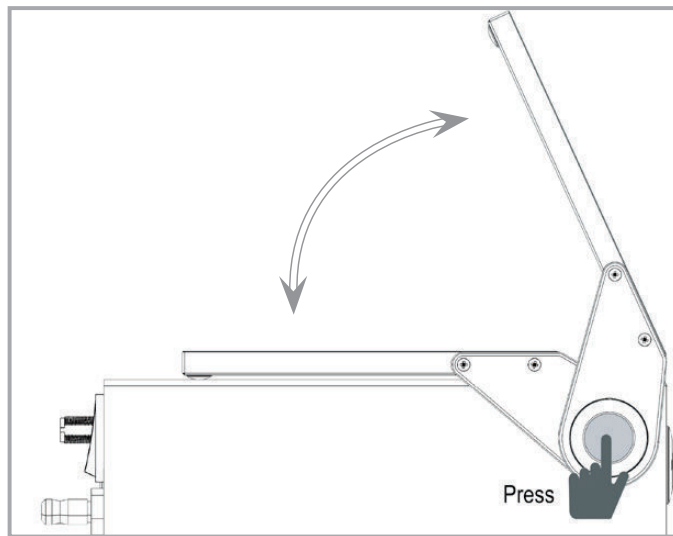
Compatibility to Other Devices

The technical list for medical video sources can be found in “**Appendix A: Technical Specifications**”, in this document.

Video signals: This section also includes video input signal specifications for video sources and Video output signal specifications for monitors to display the user interface (also external touchscreen monitors for optional operation). (also external touchscreen monitors for operation).

Touchscreen Monitor (MVR460 only)

The integrated touchscreen monitor serves to operate the MVR and for easy access to settings.



The touchscreen position can be changed by pressing the release button on the left side.

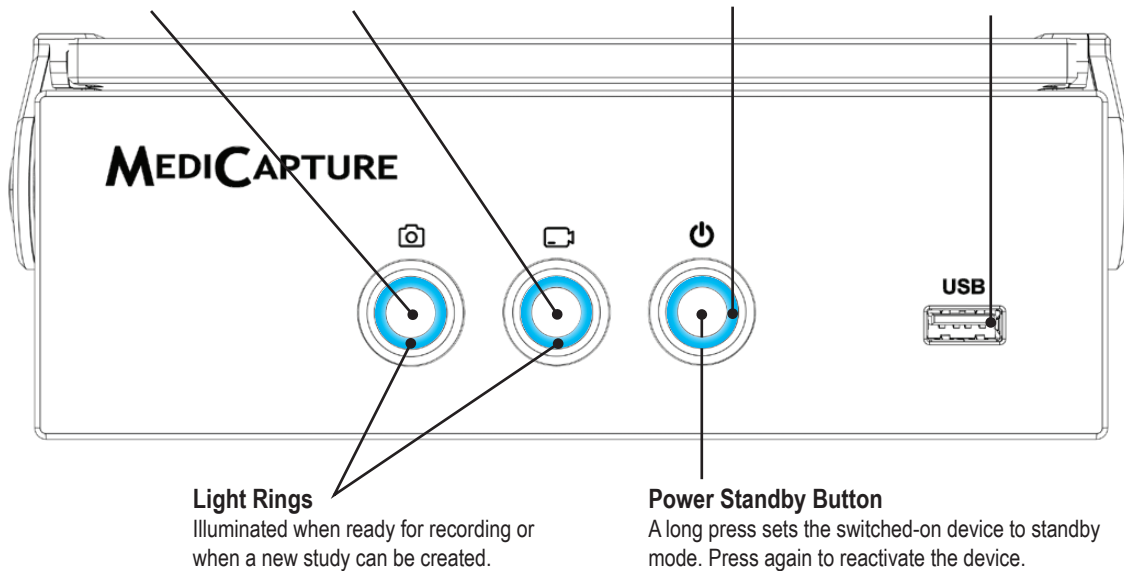
Front Panel

Capture Photo button
Captures the image on the monitor to storage(s).

Record Video button
Records video clips of what is displayed on the monitor. Press once to start recording and again to stop.

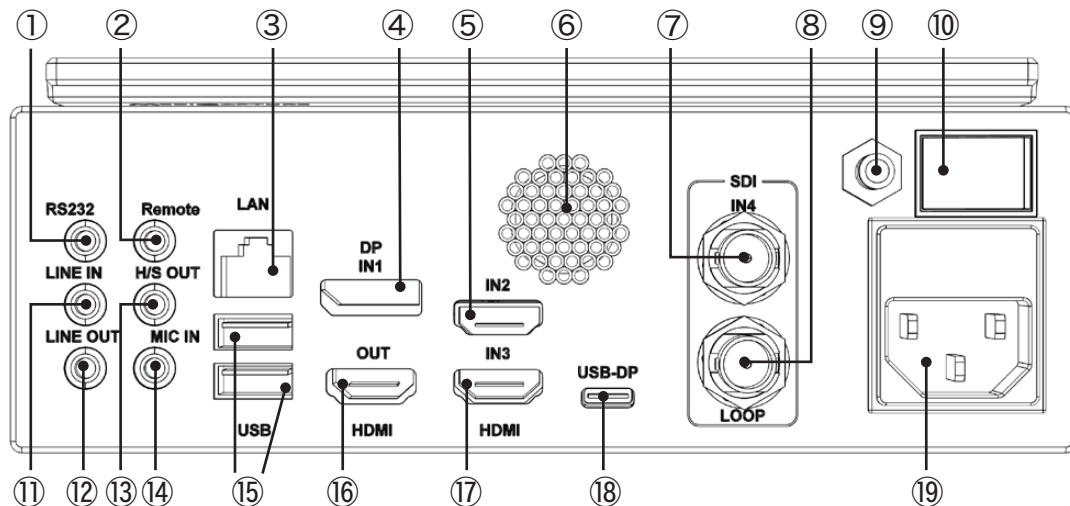
Light Ring
The ring flashes while the device is being powered up. Continuously illuminated when the device is ready for operation.

USB Drive Connector
Connect a USB drive here. Images and videos are captured to the drive.



Please note: The device is switched on and off at the back panel.
If required, the front button switches the device to standby mode and switches it back on again.

Back Panel



- ① **RS232** External controls.
3.5mm mini jack Stereo TRS (3-pin).
- ② **Footswitch / Remote cable** 2 footswitch / camera remote cables can be connected. Use the supplied Remote Splitter Cable for still images and video start/stop connections.
- ③ **LAN / Network** Wired Network connection (LAN).
- ④ **DisplayPort Input (IN1)** DP Input for a 4K or HD camera, detected in input channel 1.
This input also accepts interlace signals, e.g. 1080i.
- ⑤ **HDMI Video Input (IN2)** HDMI Input for a 4K or HD camera, detected in input channel 1.
This input also accepts interlace signals, e.g. 1080i.
- ⑥ **Loudspeaker** Playback of audio recordings (embedded in video) and confirmation tones.
- ⑦ **SDI Input (IN4)** SDI Input for 12G-SDI (4K), 3G-SDI (1080p) camera, detected in input channel 2.
- ⑧ **SDI LOOP Output** SDI output of input signal ⑦ Signal is not processed and shows no user interface overlay of this device.
- ⑨ **Equipotential Pole** 6mm pole connector (DIN 42801-2).
- ⑩ **Power Switch** 1=On (connection to power supply, mains).
0=Off (no connection to power supply, mains).
- ⑪ **Audio Line Input** High level audio input (1Vp-p) (3-pin TRS). For RCA (Cinch) connections, use an adapter cable.
- ⑫ **Audio Line Output** High level audio output (1Vp-p) (3-pin TRS). For RCA (Cinch) connections, use an adapter cable.
- ⑬ **H/S Audio Output** HS low level output to connect active speakers or a headset (3-pin TRS).
- ⑭ **Microphone Input** Low level audio input for microphones, Mono (2-pin TS).
- ⑮ **USB connectors, Type A (2)** For optional accessories and a USB camera signal (UVC). Only One UVC camera can be connected and later set as either Input 1 or Input 2.
In case a touchscreen monitor is not compatible to USB-Typ C, a USB Type A connector supplies power and control over USB.
- ⑯ **HDMI Video Output** HDMI Output for connection to a touchscreen monitor. HDMI out shows the user interface of this device.
- ⑰ **HDMI Video Input (IN3)** HDMI Input for a 4K or HD camera, detected in input channel 2.
- ⑱ **USB Type-C IN/OUT and DisplayPort Output** Input for USB camera signal (UVC) and optional accessories. Only One UVC camera can be connected and later set as either Input 1 or Input 2
Power and controls for Touchscreen Monitor.
If the touch panel is capable of processing video over USB-Type C, this connection can be a single wiring. (The HDMI video output ⑯ and USB Type A ⑮ are not required then).
The USB Type C connector includes DisplayPort video output information.
- ⑲ **Power Connector** Use supplied power cable to connect to a 100V-240V outlet.



The unit is for exclusive interconnection with IEC60601 certified equipment in the patient environment and IEC60XXX certified equipment outside of the patient environment.

A certified power supply cord set must be used with this equipment. The relevant national installation and/or equipment regulations shall be considered. The power supply cord shall be not less robust than an ordinary tough rubber-sheathed flexible cord according to IEC 60245 (designation 53) or ordinary polyvinyl chloride sheathed flexible cord according to IEC 60227 (designation 53).

Connecting cameras and other video sources



This device offers a wide variety of possible video connections. Two options can be used simultaneously, connected to video input channel 1 and channel 2.

Please refer to this table for the possible connections for channel 1 and channel 2. For each video recording channel (1 or 2), one of the three listed physical video signals can be connected.

Video input channel 1 - possible selection:

- USB camera*
- IN1 DisplayPort
- IN2 HDMI

Video input channel 2 - possible selection:

- USB camera*
- IN3 HDMI
- IN4 SDI

***Note:** Only one USB camera can be connected and then selected in the video input settings

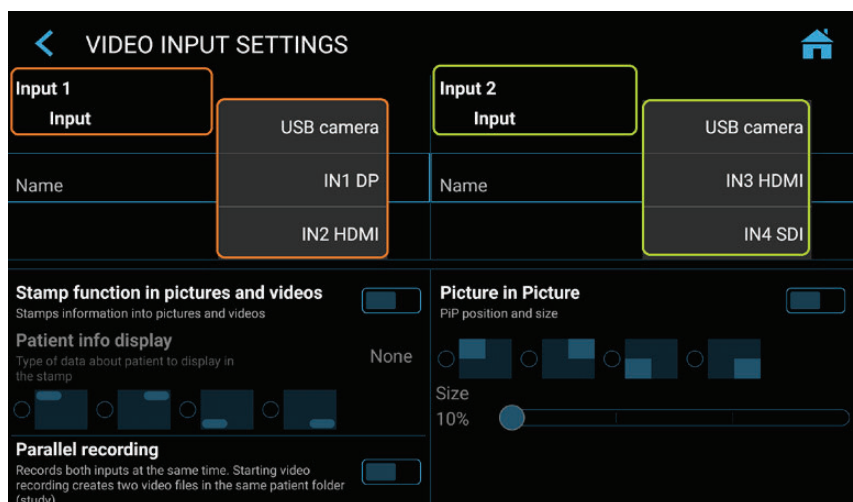
➤ Settings ➤ Video Audio ➤ Video Input

Settings for Video input

After you have connected your video source(s), you need to make the appropriate selection in the video input settings.

➤ Settings ➤ Video / Audio ➤ Video Input

Select the correct settings for the video input channel 1 and channel 2.



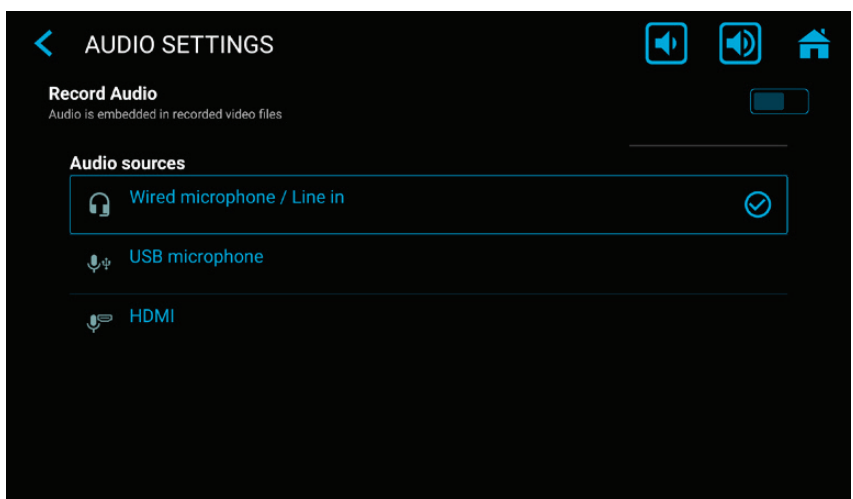
Connections and settings for Audio recording

This device offers a wide variety of possible audio connections for recording – audio embedded in video. Only One option can be used.

- *Wired microphone, 3.5mm Mono TS (2-pin)
- *LINE in, 3.5mm TRS (3-pin)
- USB microphone
- HDMI (audio embedded in video signal)

After you have connected your audio source, you need to make the appropriate selection in the Audio input settings.

➤ Settings ➤ Video / Audio ➤ Audio Input



***Please note:** A wired microphone and the line input occupy a common channel. LINE in is active. When you connect a microphone, LINE in is switched off and the microphone input becomes active.

Connecting Touchscreen Monitors



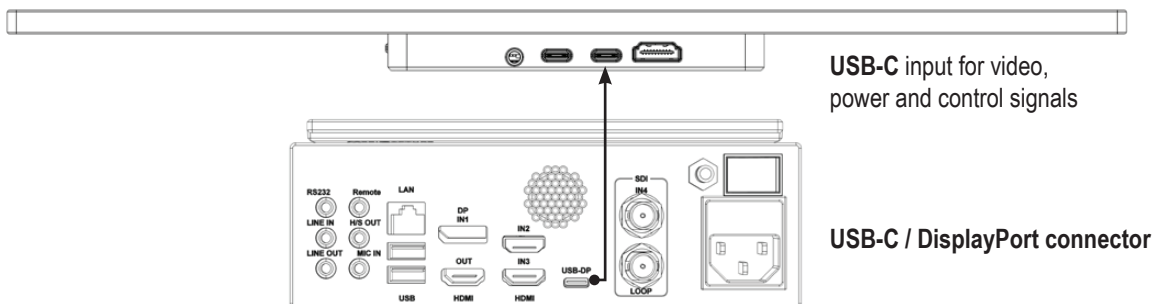
Warning:

When this device is used with a touchscreen monitor or a viewing monitor, the monitor must meet the requirements of IEC 60601-1. The set “MVR450/MVR460 recorder + monitor” must also meet the requirements of section 16 of IEC 60601-1 to ensure system safety.

Touchscreens with USB-C

If your touchscreen has the capability to process DisplayPort video signals via USB-C and be supplied with power via USB-C, it can be operated with a single connection via USB-C.

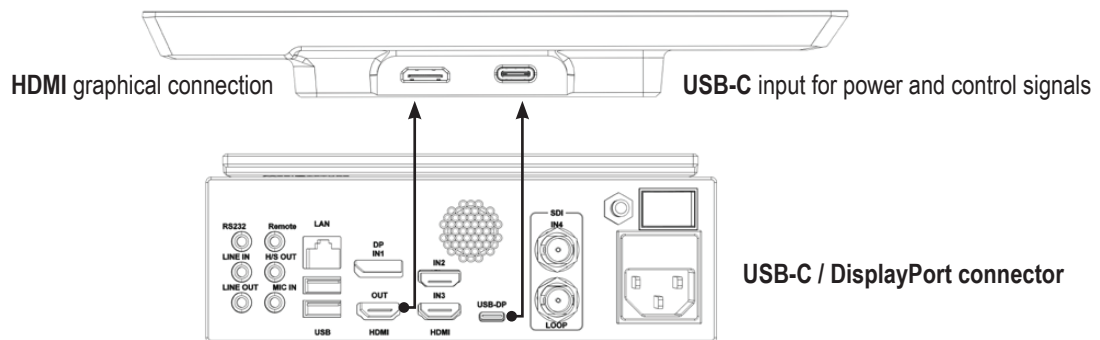
This example shows the MediCapture Monitor with Touchscreen, model MTS156:



Touchscreens with USB-C and HDMI

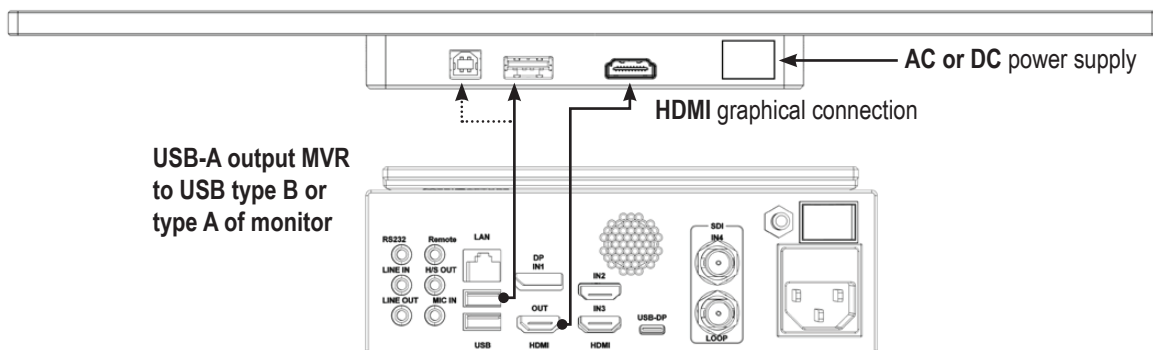
If your touchscreen cannot be fully operated via USB type C, an additional video connection via HDMI is required.

This example shows the MediCapture Monitor with Touchscreen, Model MTS101:



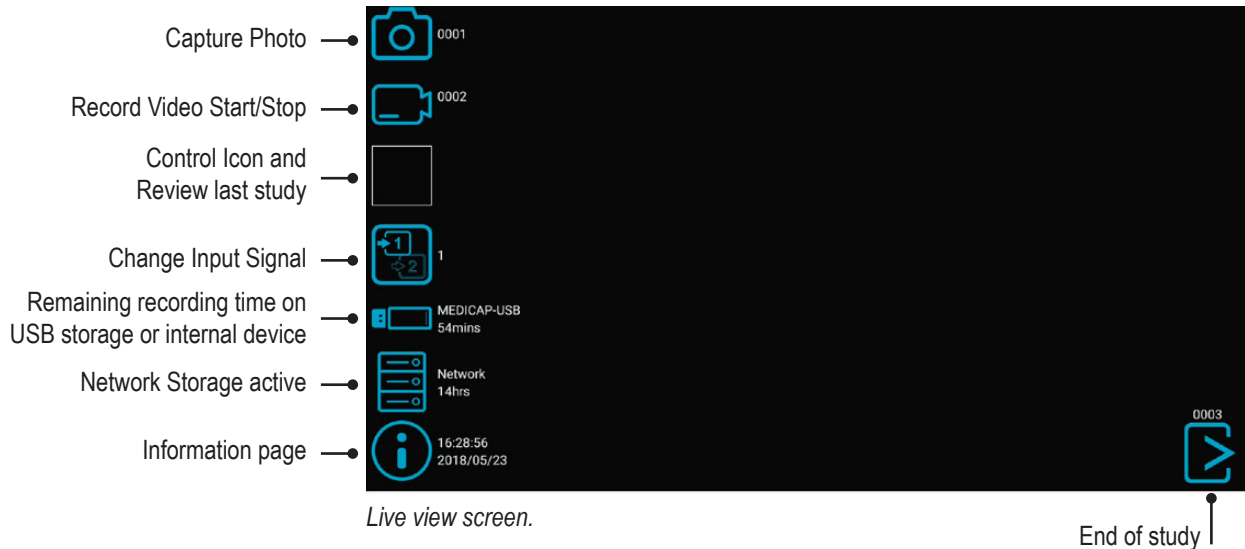
Touchscreens with USB-A / USB-B and HDMI

Touchscreens with USB type A or type B input need a separate graphical connection. These types of monitors likely also require a separate power supply.



Monitor User Interface

Easy-to-use icons are displayed on the monitor. Icons can be tapped directly on the touchscreen.



Please note:



The position of the icons in live view can be arranged to your preferred location. Simply swipe the icons to the left or the right for position change.

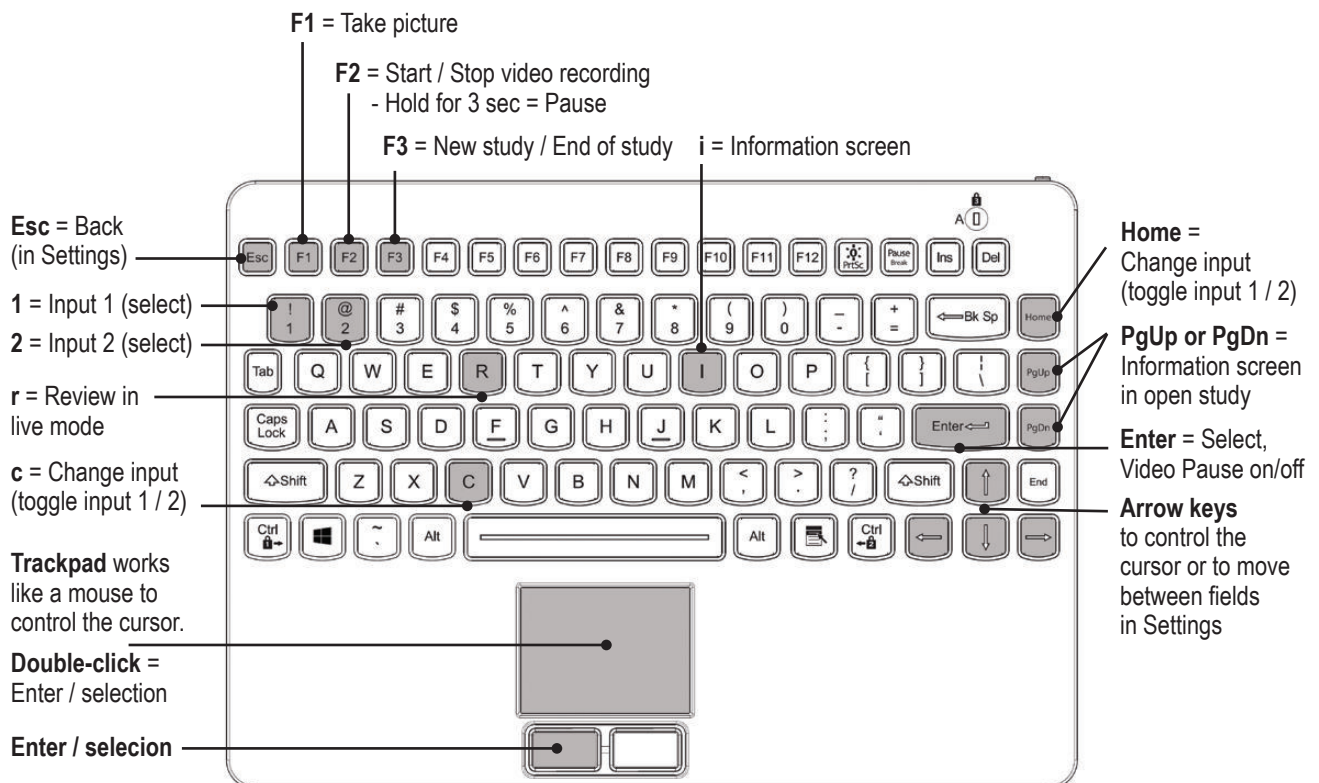
If you do not wish to see the icons on your monitor, you can easily swipe them out of the visible monitor area.

Swipe the icons with one finger, when using a touchscreen monitor.

USB keyboard with integrated trackpad

A USB keyboard with integrated trackpad can serve as an alternative to a touchscreen monitor. The integrated trackpad works like a mouse with double-click function.

Please note the short cut key functions to operate the user interface of MVR:



Remote control with a Remote Device (tablet) by using the MVR Remote App

Android remote devices (tablets) can be used for external control of this device, either via USB connection as an external touchscreen monitor (= USB tethering) or wirelessly as a handheld portable device.

For the wireless function, a tablet must be connected to the same Wi-Fi router as the recorder via LAN.

MediCapture recommends using pre-installed and tested MediCapture tablets.

For further instructions about setup and use of a tablet as a remote control, please contact MediCapture to obtain the additional document *Instructions for Use Supplement, Tablet*.



Connecting the MVR

This device connects to one or two video sources (for example, an endoscopic camera, surgical camera, ultrasound, etc.).

1. If you are adding this device to imaging equipment that you are already using, begin by locating the video output of the primary video source.
2. Connect the appropriate cable between the video output on the video source and the appropriate video *input* on the back panel of the device.
3. Plug in the power cord.
4. You can also connect standard footswitches or camera triggers to the back panel. A footswitch or trigger can be used to capture photos. Connect the footswitch or trigger to the "Remote" connector. By tapping the footswitch or trigger, it will perform the same function as pushing the *Capture Photo* button on the front panel.

Please note: To operate two remote cables from your image source (Capture Photo + Record Video) an adapter is necessary for the remote connector.

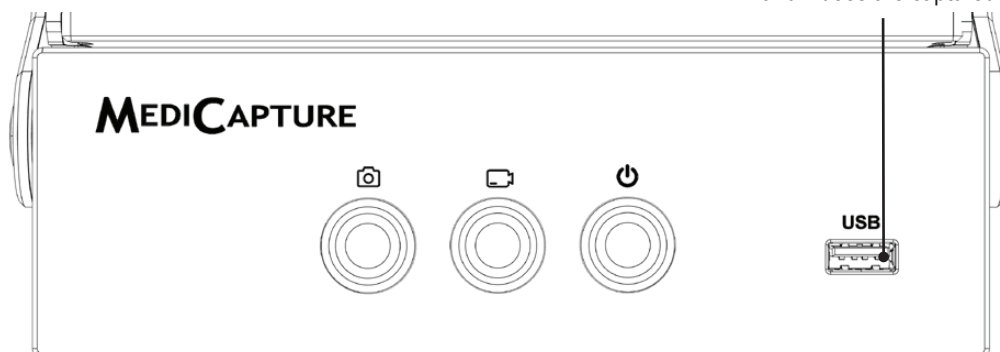
Footswitches are available as an option at medicapture.com.

Note that for a camera trigger to be compatible with this device, it must be of the simple "closed-contact" type, not a "programmable" type of trigger.

Inserting a USB Flash Drive

The easiest way to get started is to record to the supplied USB flash drive.¹ Insert the flash drive in the front USB port. MediCapture brand flash drives are recommended.

USB Drive Connector
Connect a USB drive here Images and videos are captured to the drive.

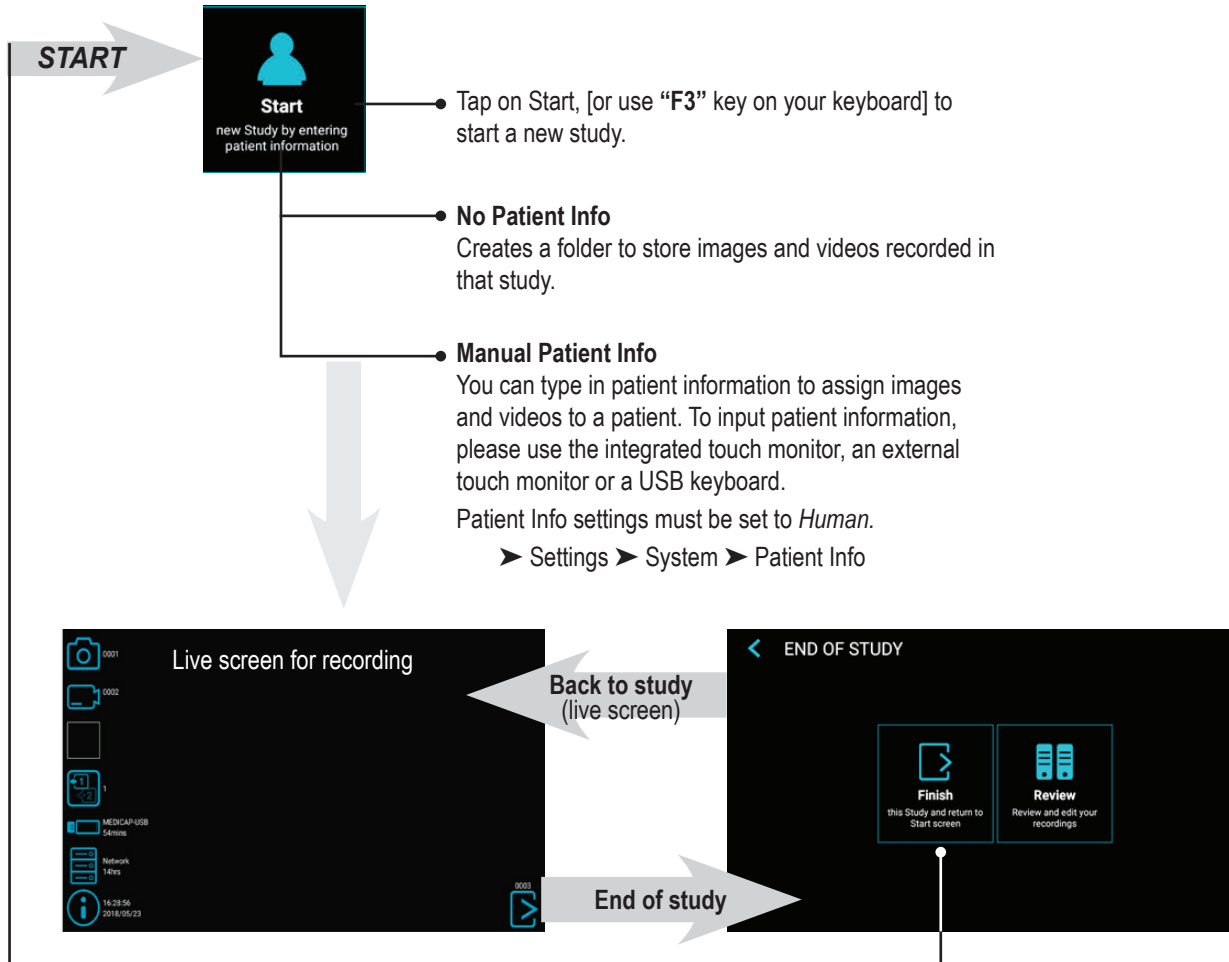


¹ MediCapture brand flash drives come in a variety of models.

Creating Patient Data

The workflow for patient data input depends on the settings for Patient Info. ➤ Settings ➤ System ➤ Patient Info
This device starts with a defined home screen after switching-on or after a study was finished.

Workflow after the device was switched on:



Manual Patient Data Input

You can type in patient information to assign images and videos to a patient. Patient info settings must be set to *Manual*.

➤ Settings ➤ System ➤ Patient Info

Tap on **Start** to start your new study.

Search Recent Patient on Storage



Instead of typing patient data manually, you can also list all recent patients which are

located on your storage media (those which are enabled and connected). Tap on the “search” icon in the screen “ENTER PATIENT DATA” to retrieve the list.

Select existing patient data and tap again to copy the patient data to your new study. You can still change these data.

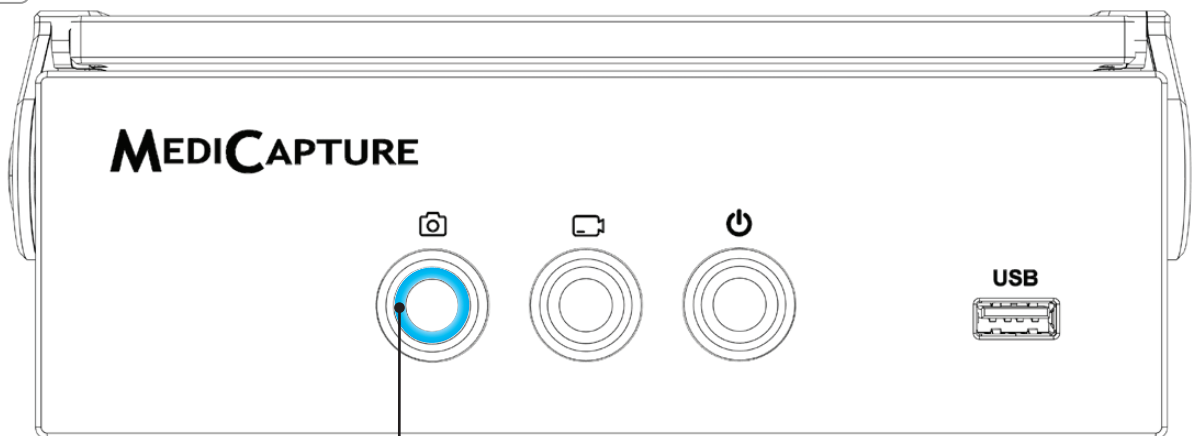
Date	Patient ID	Name	Birth date	Gender
2018/08/13	123JB4567	Bloggs, Joe	1958/05/12	M
2018/08/13	0123GS14...	Goodman, Saul	1965/12/04	M
2018/08/13	123SS5567	Smith, Sandra	1969/12/07	F

Capturing Images



To capture an image, tap on the *Capture Photo* icon on the touchscreen.

Front panel: Press the Capture Photo button on the front panel. [USB keyboard: Function key “F1” has the same function.]



Light Ring

Is illuminated blue when the device is ready for capturing images. Goes out briefly when capturing images.

Recording Videos



To start recording video, tap on the *Record Video* icon on the touchscreen. Tap icon again to stop recording.

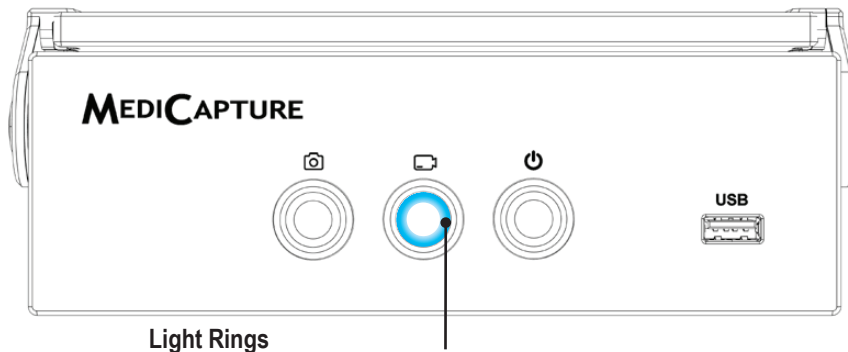
Front panel: Press the Record Video button on the front panel. Press the button again to stop recording.

[**USB keyboard:** Function key “F2” has the same function.]

Recording tips:

- You can capture still images while video is being recorded. Simply tap/press the *Capture Photo* button while a video recording is in progress. When reviewing a video file, you can see tags in the timeline. These tags are helpful to identify when a picture was captured during recording.
- Long recordings are automatically divided into files of 4GB each. This ensures that files are kept to a manageable size. The process is “seamless.” When making a long recording, you will not notice when a new file is automatically started. When playing back a long recording using “continuous play” (a feature in most media players), there will be no gaps in playback.

More information
about tags
in chapter:
“*Reviewing Videos*”



Light Rings
Is illuminated blue when the device is ready for recording videos. Flashes blue when recording videos.

Please note: The device can continue to write data to the memory for some time after a picture has been taken or video recording has ended. The LED indicates data storage activity.
Do not switch off the device and do not remove the USB memory while data is being saved!
Wait until the LED lights up constantly again.

Confirmation tones (beeps):

This device has built-in loudspeakers. Confirmation tones (beeps) can be heard via the speakers or via connected audio devices as additional information to the symbols on the screen when:

1. An image has been captured
2. Video recording has been started or stopped

Pausing a Video Recording



To use *Pause* you have to enable the function in Settings

➤ Settings ➤ Video/Audio ➤ Recording Options

The *Pause* icon will appear in the live screen after *Pause* is enabled.

To pause a video, tap on the *Pause* icon on the touchscreen. To continue video recording, tap the *Pause* icon again.

Alternative operation:

To pause a video while it is recording:

- Press the *Record Video* button on the front panel for 3 seconds.
- [**USB keyboard:** Holding key “F2” for 3 seconds or “Enter” has the same function.]

The *Light Ring* flashes in a very fast sequence when the video recording is paused.

To continue the video recording:

- Tap the *Pause* icon again
- Press the *Record Video* button again.
- [**USB keyboard:** Pressing “F2” or “Enter” has the same function.]

The *Pause* function is used to create only one video file with content of different sections. It can be used multiple times during one video recording to eliminate “unwanted” parts. When reviewing a video file that was paused, you can see tags in the timeline. These tags are helpful to identify the different sections of the video.



More information
about tags in chapter:
“*Reviewing Videos*”

Changing Input Signals in Live View = Multi Input



If two cameras are being connected, the device detects both input resolutions and displays an additional icon on the monitor. You have the option to change between Input 1 and Input 2 at any time during one imaging session (patient study). Any active video recording must be stopped first.

- By using a touchscreen monitor simply tap on the Input button to toggle between both signals.
- [USB keyboard: Pressing “c” has the same function.]

Storage Options = Multi-Storage

➤ Settings ➤ Archive ➤ Storage

This device offers the possibility to store your recording studies to multiple storage targets.

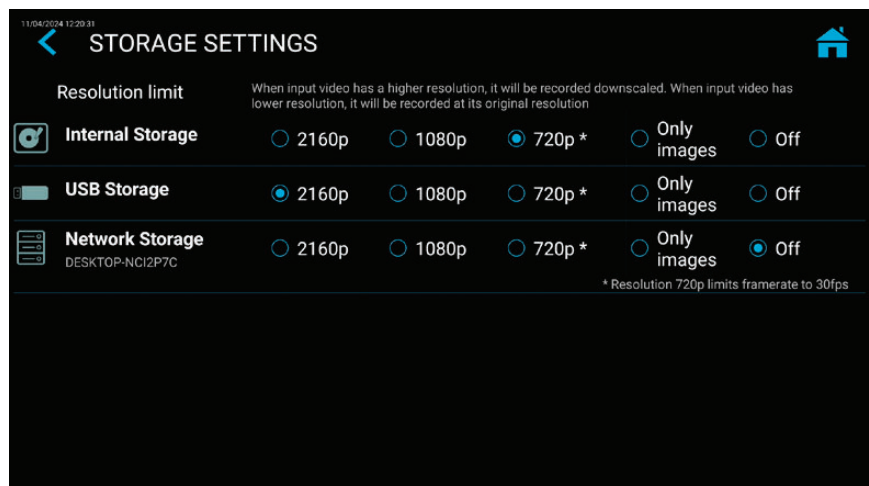
Note: Two types/options of storage can be chosen at the same time.

Options are:

- Internal Storage
- USB Storage
- Network Storage

You can also select different video resolutions for different storage targets.

Example: Recording to USB in the highest possible resolution and recording to a network server in reduced resolution.



Note: Images are always captured in the original input resolution.

Resolutions 1920x1200 and 1280x1024 will be supported at setting 1080p – recorded and captured in original resolution and format.

Recording to a USB Flash Drive

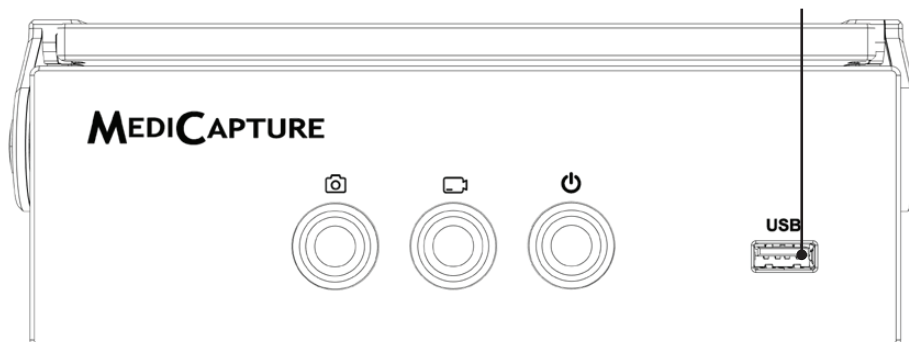
Recording to the supplied MediCapture USB flash drive is the easiest way to start. When you finish recording, you can remove the flash drive and easily carry it with you.

Please make sure that USB storage is activated.

➤ Settings ➤ Archive ➤ Storage

USB Drive Connector

Connect a USB drive here. Images and videos are captured to the drive.



Note: In case the policy in your IT-environment does not allow the use of USB storage media at all, IT-Administrators can disable the USB-option for storage.

➤ Settings ➤ Advanced Settings ➤ Storage Rules

Recording to a USB Hard Drive

Recording to a USB hard drive is very similar to recording to a USB flash drive. The primary benefit to using a USB hard drive is that it can provide much greater storage capacity than a USB flash drive. Before using a USB hard drive with your device, note the following:

- Delete any software that came pre-loaded on the drive (it may cause compatibility issues).
- To protect your videos and images, it is important to back them up by transferring them from the external hard drive to your computer or network.
- Due to the large capacities of external USB hard drives, it will take approximately 20-60 seconds to recognize the device. Please be patient and wait until the external hard drive has been recognized.
- The USB hard drive has been detected when the illuminated ring on the front lights up continuously and the USB stick symbol appears on the connected monitor on the INFORMATION page.

CAUTION:

***After inserting the external hard drive, DO NOT UNPLUG!
Wait at least one (1) minute
allowing the system enough time to recognize the external hard drive.***

Hard Drive Formats

External USB hard drives come in different “formats”: FAT32, NTFS or exFAT. The device can process all three formats. In case-of non-recognition of the USB hard drive, it may be helpful to format the drive to FAT32.

How to Determine the Format of a USB Hard Drive:

- Plug the drive to a Windows computer.
- Right-click on the drive icon and select “Properties”.
- In the general tab, the File System (format) will be listed.

Transferring Images from a USB Drive to Your Computer

1. If you record your videos to a USB flash drive or USB hard drive, unplug it from the device at the end of your imaging studies. Insert the drive into a USB connector on your computer.

***Note: Do not remove USB storage device - either flash drive or hard drive – from the device while recording!
Your recording file may get corrupted.***

2. The computer will manage the USB drive just like any other drive on your computer. Navigate to the drive and open it so you can see the folders it contains.
3. You can click on the images and videos to review them while they are on the drive, or you can move them to your computer's hard drive and review and store them there (recommended).

Refer to Windows or Mac OS documentation for information on how to access drives on your computer and manage files.

Recording to Internal Storage

Recording to internal storage as a second option improves safety of your stored data as you always create a backup recording.

Please do not consider the internal storage as a long-term storage. Even the biggest internal memory will eventually fill to capacity. Best practice is to clear the cache on a regular basis.

The device offers functions to clean the internal storage automatically. Rules to clean internal memory should be set by your IT-Administrator.

➤ Settings ➤ Advanced Settings ➤ Storage Rules

Recording to Network Storage

Recording to network storage is the best option for long-term storage. Images and Videos are recorded in real-time and in standard formats to this external mass-storage.

Please ask your IT-Administrator to setup the settings for network storage.

1. Create a physical LAN connection to your Network server by using the network connector on the rear of the device.
2. Choose IP settings Auto-IP setup or Manual IP setup.
➤ Settings ➤ Advanced ➤ Connections ➤ Network
3. Properties for the Network storage server, including Test functionality.
➤ Settings ➤ Advanced ➤ Connections ➤ Network storage server
4. Storage settings for Network storage (activation and resolution limits).
➤ Settings ➤ Archive ➤ Storage

Exporting Studies to Network Storage

If you have a low bandwidth network (low speed), or bandwidth is limited, you can enable the “Export to NAS” function. Studies will then be exported from internal storage to your NAS after the study is completed.

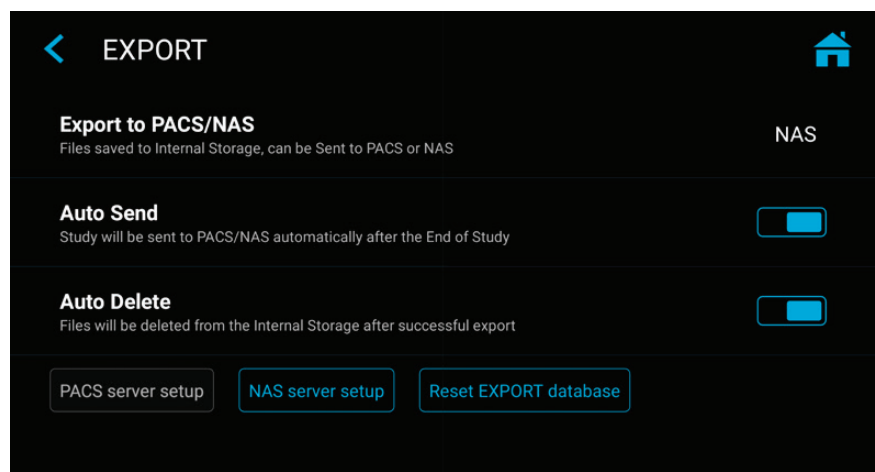
➤ Settings ➤ Archive ➤ Export

The settings of the network server (NAS) can also be set up here. Auto Send and Auto Delete (of the internal memory after successful export) can be set here if desired.

Please note:

The internal storage must be enabled and direct storage to the network must be disabled (off).

Settings ➤ Archive ➤ Storage

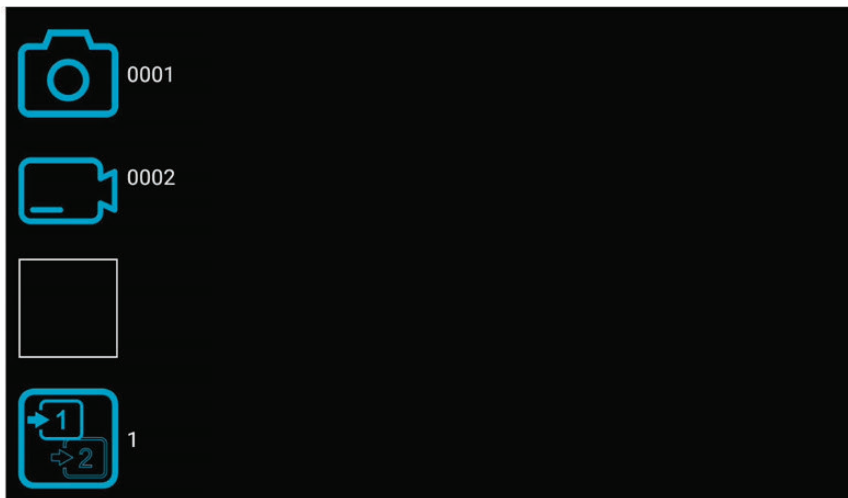


Reviewing Studies

You can review your active study from the live recording screen. This is helpful to control your recordings before you finish this study. Video recordings must be stopped before changing to Review.

- Tab on the Review icon to enter Review.
- Closing the Review screen brings you back to your live recording screen.

Control Icon and
Review current study —●



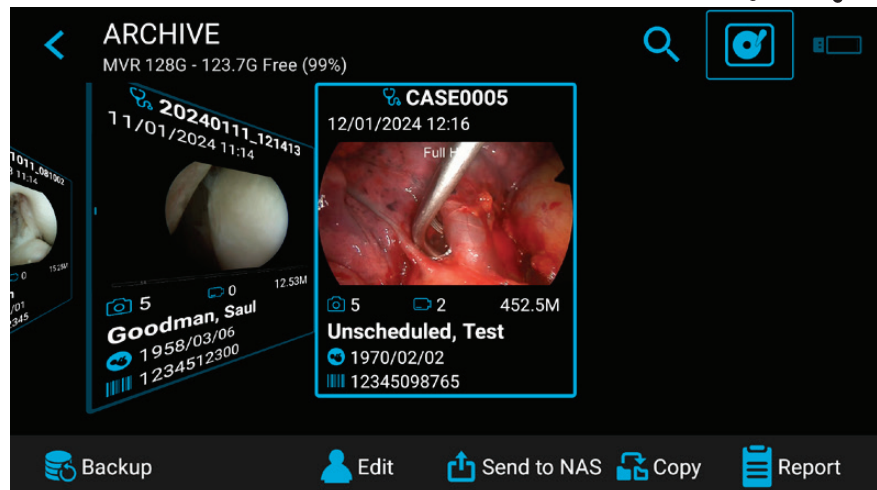
Archive

The Archive offers intuitive features to browse your recorded studies. You can enter the Archive from the Start screen. Both enabled options for multiple storage can be accessed in Archive. All enabled options need to be connected to this device

Available features in Archive:

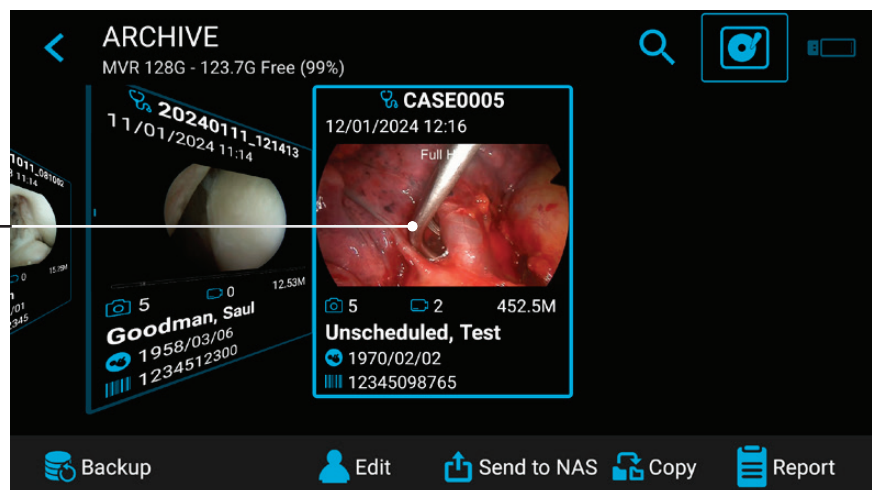
- Review images and playback videos
- Slow motion / fast playback of videos
- Delete files
- Delete empty studies
- Take snapshots from paused videos. Paused videos can be moved frame by frame
- Delete video sections at the beginning and/or the end, cut video in multiple parts and store as new combined video.
- Edit images with annotations and store them as new image
- Magnify or crop images and store them as new image
- Copy complete studies, single images or single videos to USB
- Add new images or videos to existing studies (Append function)
- Backup the complete internal storage to USB media
- Select images and print them on a report
- Send reports to a network printer or store them as PDF file
- Edit patient information

Select one storage. Internal, USB or Network

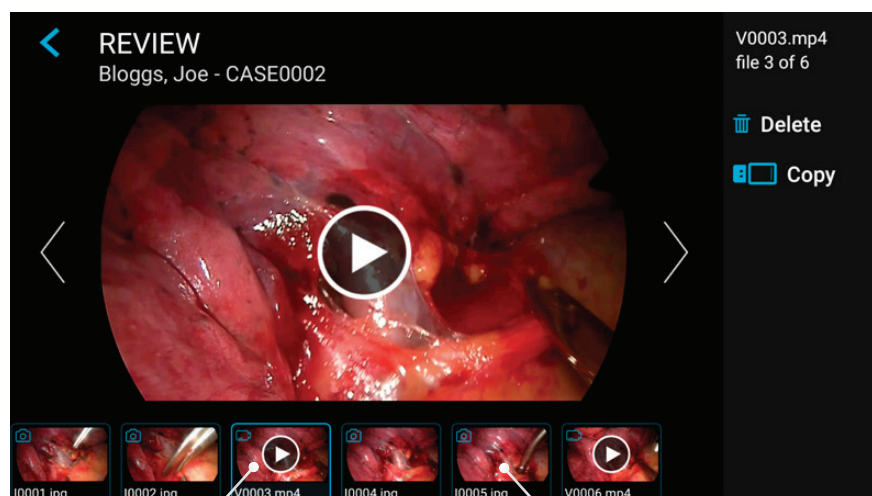


Please note: If a large amount of data has already been written to the internal storage, it may take a while until the data is completely read out. Please wait until the corresponding note disappears.

Tap on study for selection



To select a study, a video or a still image, simply tap on the preview icon.



Tap on video for playback

Tap on image for editing

Deleting Data

Data on selected storage media can be deleted individually. Your confirmation of each deleting activity is requested on the screen.

- **Deleting single files** (pictures/videos): Select the file you want to delete and tap on the delete icon.
- **Deleting of a complete study** is possible, as soon as it is empty – all files where already deleted.
- **Clearing of all data** from the device storage. Please use the formatting process to delete all data from directly connected storages (USB memory or internal memory):

➤ Settings ➤ Advanced ➤ Update & Default

Note: When using the formatting process, all data is deleted and cannot be recovered!

Reviewing Videos



A selected video starts to play automatically. If you do not want to see the user interface (icons) during playback, tap on the full screen icon. Tap the center of the touchscreen again to display the user interface again.



To pause the video, tap on the *Pause* icon. You can now use the timeline slider to change position in the video or tap forward and backward frame by frame.



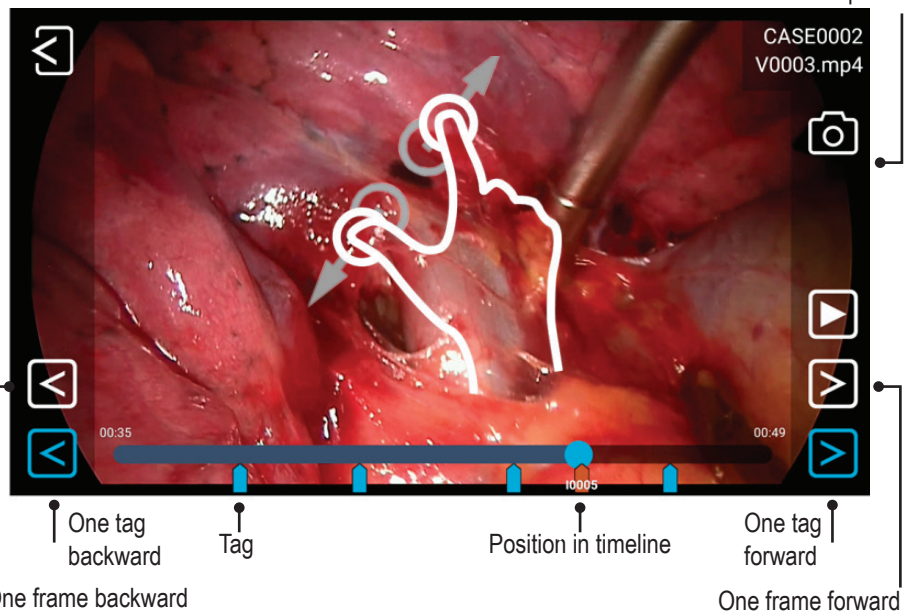
You can magnify the paused video by using two fingers.

If you want to take a snapshot of the paused video, tap on the *Photo* icon. This captured image will be added to the patient study.

You may see tags in the video timeline. Tags get created every time:

- the video is paused during recording
- an image is captured during recording
- the video signal lost synchronization for less than 10 seconds (most probably caused by a damaged video cable)

You can jump between tags by using the blue forward/backward icons.



Slow motion playback and fast playback of videos

You can influence the playback speed of a video while watching it.



Tapping the left arrow key results in slow motion



Tapping the right arrow key increases the playback speed.

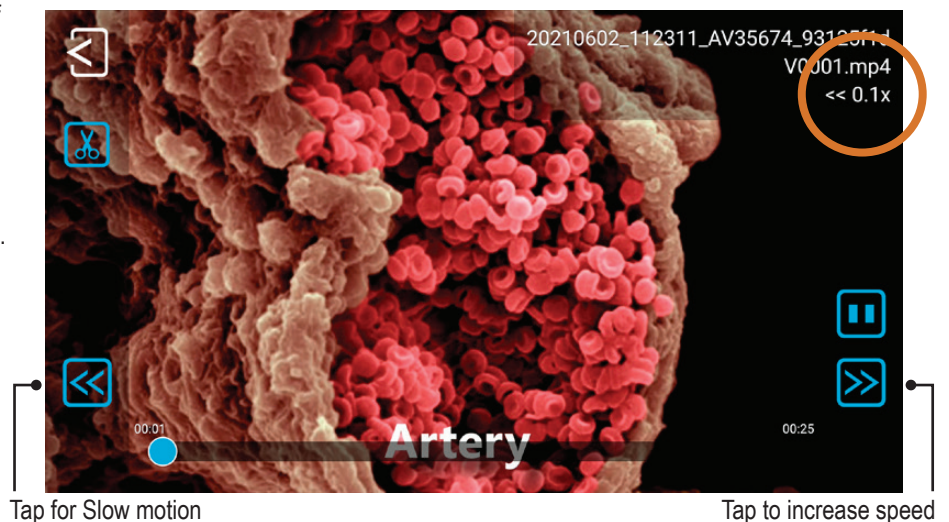
The speed factor is displayed in the upper area.

Range is from 0.1 to 10.

Examples:

Factor 0.1 = playback ten times slower

Factor 5 = playback five times faster



Cutting videos



When a video is selected, the cut function can be activated by pressing the blue “**Scissors**” icon.

Shortening a video:

By moving the **yellow bar on the left and right**, the start sequence and end sequence of the video are cut.

Pressing the “**Video Camera**” icon saves the shortened video as a new video file into the study.

Assembling multiple parts:

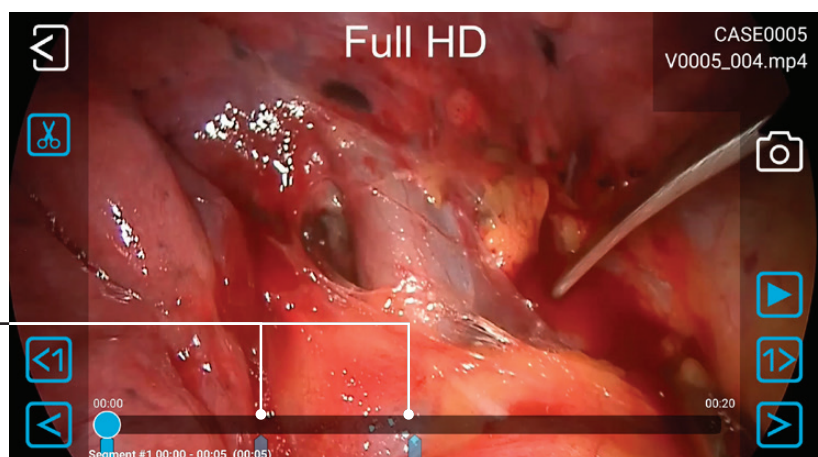
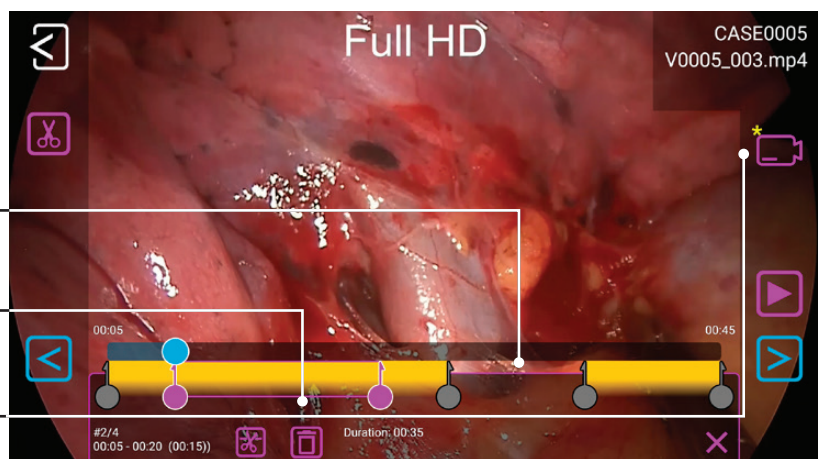
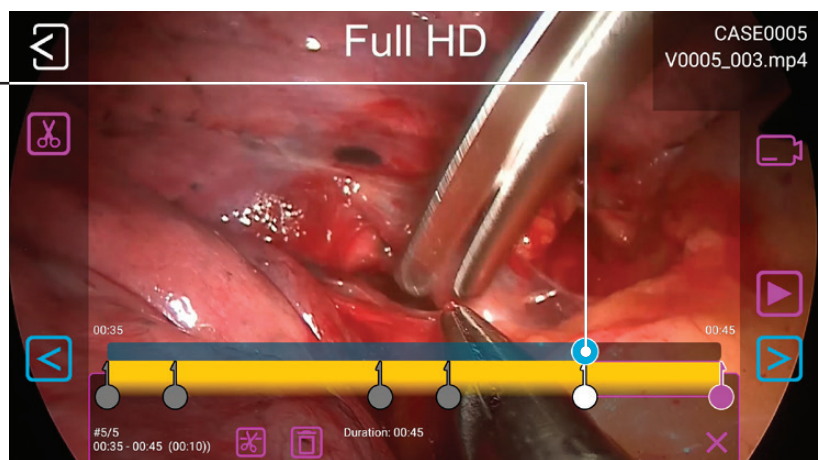
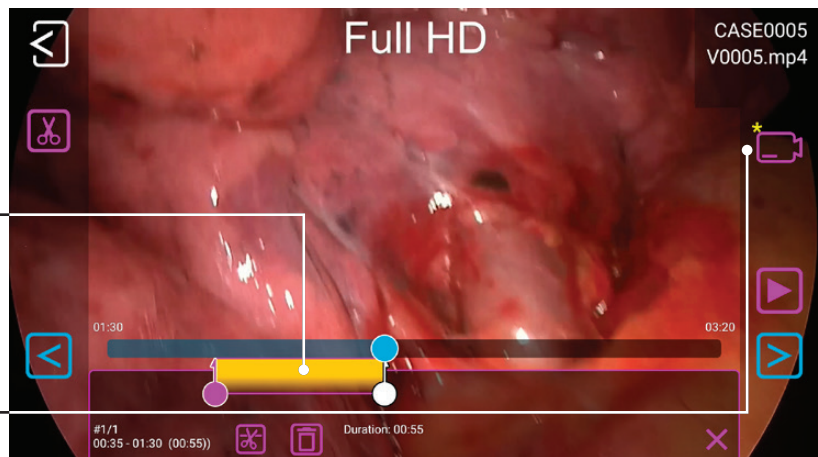
By moving the **blue timeline marker**, you can find relevant parts within the video.

Pressing the “**Scissors**” icon splits the video at the set position.

- You can thus create multiple parts of the video.
- Delete parts by tapping them and tapping the “**Trash**” button.

All the remaining yellow parts will be saved as a new video in the study when you press the “**Video Camera**” icon.

The trimmed video contains tags where it was cut.



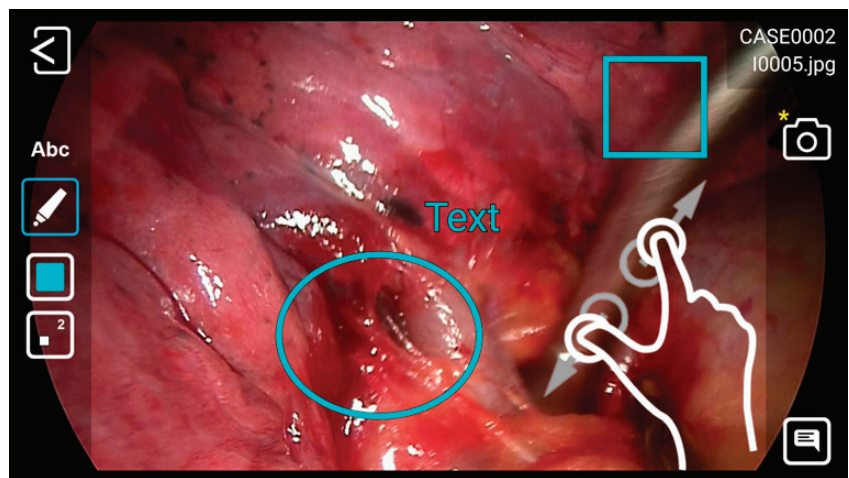
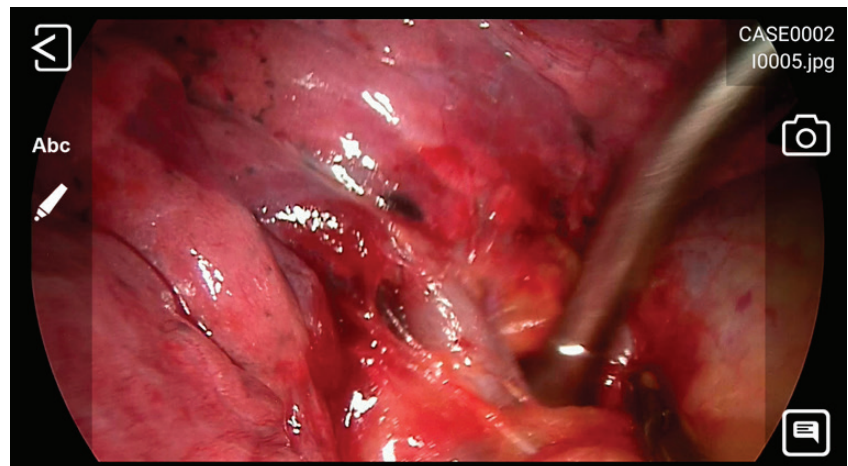
Reviewing Still images

A selected image can be edited in many ways and stored afterwards as a new image to the study.

Options are:

- Magnification / cropping
- Adding text notes
- Marking areas with circles, squares or freehand drawings
- Adding notes to the image file which will appear in reports

Note: To discover all options for editing, please watch our demonstration videos at medicapture.com



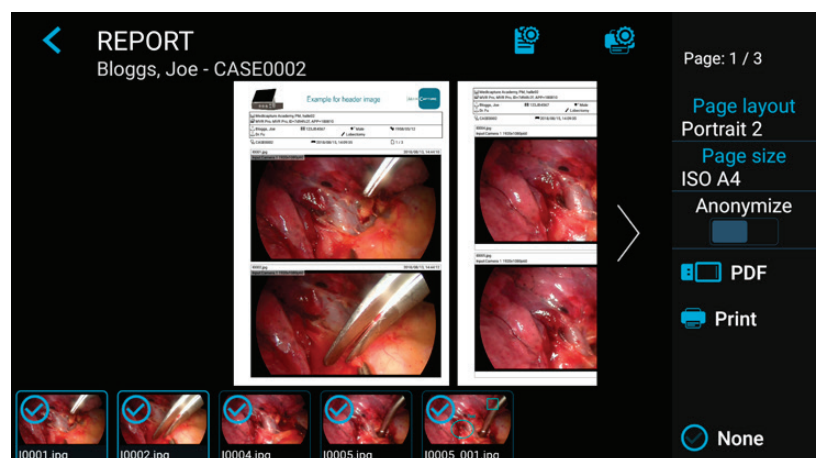
Creating and Printing Reports

Still images of a selected study can be saved as a PDF report. You can add notes which will appear on the report. The PDF report will be stored into the same folder as your images and videos. The report can also be printed with a network printer*.

All selected images will appear in the report.

By tapping on the upper icons you can change the layout of the report (number of images per page, arrangement) and select the number of copies.

** Please ask your IT-Administrator to connect a network printer or a local Wi-Fi printer and to setup the printer properties.*



Report Header Image

You can import a header image to personalize the report. This image will appear on top of the first page of your reports. Recommended header image size is 1600-3200 pixels in width. Recommended height is 200-1000 pixels. PNG or JPG files can be used for the header image.

MediCapture® Inc.

2250 Hickory Road, Suite 200
Plymouth Meeting, PA 19462
USA



This example of a header image has a size of 1600x200 pixels. After picking the PNG image, it will appear in full width.

Viewing Still Images on Your Computer

You can easily view the recorded images that you have transferred to your computer. Windows and Mac computers provide built-in viewing software that will open automatically when you double-click on an image file. You can also view and edit your still images using specialized medical image management programs available from many third-party vendors.

Viewing Videos on Your Computer

This device records high definition video in H.264* or HEVC* (=H.265) format, sometimes referred to as MPEG-4 or MP4. These widely used formats are ideally suited to medical applications because they deliver the highest quality video in a compact file size. New Windows and Mac computers provide built-in viewing software that will open automatically when you double-click on a video file. However, some older computers may need additional software to play H.264* / HEVC* videos. For example, on Windows XP and Vista computers, playback is enabled by installing a simple “add-on” to Windows Media Player. For information on how to install this “add-on”, please visit medicapture.com/support.

(*) H.264 is licensed via MPEG LA, HEVC is licensed via Access Advance LLC and MPEG LA.

Other Features

Capturing Images While Recording Videos

While video is being recorded, you can also record still images; simply press the *Record Photo* button as you normally would.

Creating Tags in Video Files

Tags are helpful markers in your video file to identify important events. Tags get added to the video time line when:

- an image was captured during a video recording
- the video recording was paused and continued
- the video source has lost synchronization for a short moment (probably by a damaged cable etc.)

MediCapture Automatic Video Repair Function

USB drives **must not** be removed during recording! Removing the USB drive during recording results in corrupted files.

Turning the device off or a mains power failure during active video recording will also cause corrupted video files.

This device features an Automatic Video Repair Function, patented by MediCapture®¹. As soon as you plug-in a USB drive with a damaged video file, the device detects the file and fixes it for playback. A message will pop-up on the screen to inform you about the successful progress.

The device also scans the internal storage for corrupted video files and repairs them automatically.

Footswitches and Camera Triggers

One Standard footswitch / camera-trigger connector is located on the back panel. It serves the same function as the corresponding *Record Photo* button on the front panel. Note that the footswitch / trigger connectors respond to a simple “closed contact”; they are not “programmable.”

**Please note: To operate two remote cables from your image source
(*Capture Photo* + *Record Video*) an adapter is necessary for the remote connector.**

¹ US patent (US 11,750,784 B2) for the “AUTOMATIC VIDEO FILE REPAIR METHOD AND SYSTEM”

Information Page / System Settings

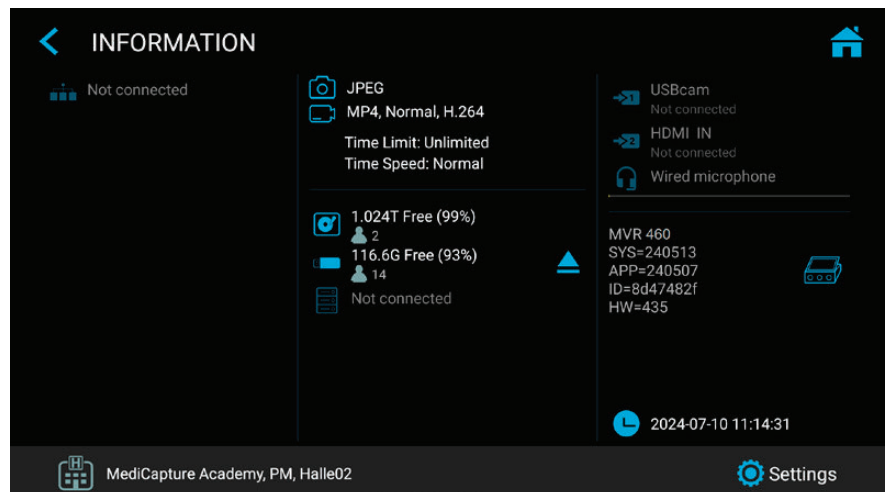


An Info Icon is displayed in the Start screen and in the live recording screen.

By using a touchscreen monitor or a USB mouse, you can tap on the Info Icon to access the INFORMATION page.

[USB keyboard: “i” has the same function.]

The INFORMATION page gives you an overview about relevant parameters and access to System SETTINGS.



Please note:



The SETTINGS icon function is only available when no recording study has started. After starting a recording study, the Settings cannot be changed. If you wish to enter the system Settings, you need to close the study first. Then open the System Info page and tap on SETTINGS.

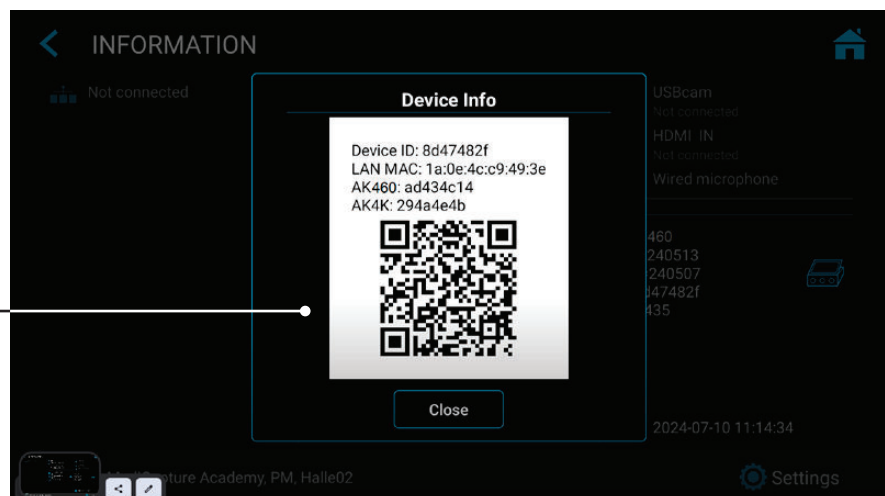
Device Info: Device ID / LAN MAC address / QR code



You can find the Device ID and the LAN MAC address by tapping on the icon for Device Info.

All activation keys already activated on your device will be displayed when you tap on the device icon.

The Device Info also contains a QR code for scanning.



Settings (for Administrators)



You can find all device setup features in Settings.

Please note: Advanced Settings as well as optional networking should only be changed by technical personnel or IT administrators.

SETTINGS are only available in English language.

Advanced Settings can be protected by a password. You can create your own password.

Structure of Settings:

Video/Audio.....

- Video Input
 - Manual Video Input selection for Input 1 and Input 2.
 - Renaming Video Input 1 and Video Input 2
 - Extended color range
 - BT.2020
 - Picture in Picture
- Stamp function in pictures and videos
- Parallel recording
- Recording Quality
 - Quality
 - Codec selection
- Recording Options
 - Video Time Limit
- Time Lapse Speed
- Pause Function
- Photo Settings
 - Image Format
 - Noise reduction
 - Freeze on capture
- Audio Settings
- Audio activation
- Audio selection (voice source):
Wired microphone /
USB microphone /
LINE / HDMI

System.....

- Patient Info
 - Patient Info selection
 - Worklist search and worklist server setup (optional)
 - Location input (Hospital /
- Department / Location / Device title)
- Printer Setup
 - Printer Selection
 - Number of copies
- Display
 - Brightness
 - Pointer Speed
 - Display rotation
 - Display size
- Date and Time
 - Time zone selection
 - Date
 - Time
- Language
 - User Interface language selection

Archive

- Storage
 - Activation of USB / Internal / Network
 - Images only
 - Resolution limits
 - Selection to stamp folder names into content / file name
- Export
 - Export to PACS (if enabled by activation)
 - Export to NAS
 - Auto Send to NAS
 - Auto Delete Study after Export
- PACS Server Setup (if enabled by activation)
- NAS Server Setup
- Report Settings
 - Header image import
 - Footer text
 - Notes text
- Page layout
- Page size
- Auto reporting (activation)

Advanced

(can be password protected by Admin User Account)

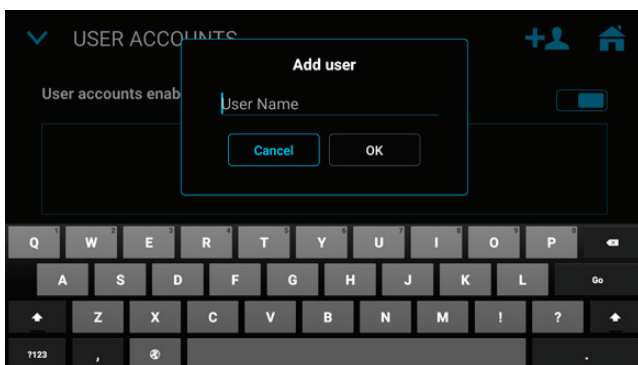
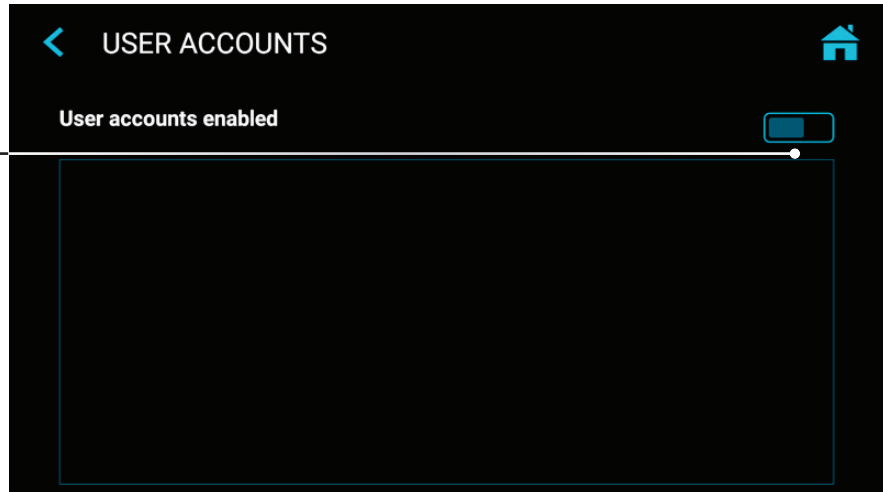
- Connections
 - Network
 - Auto IP / Manual IP selection
 - Manual IP setup
 - NTP Server – Network Time Protocol
 - Network Storage
 - Server Properties
 - Video resolution limit to network (preset for administrator)
 - Find server
 - Connection test
 - Remote Access
 - Device IP address info
 - HTTPS option
 - Remote access activation
- Remote password configuration
- Local storage. Enable local storage on remote device (MVR Remote App)
- WEB streaming. Enable streaming via network and Audio option.
- API access. Password for simplified API access during normal use.
- Storage Rules
 - Disable USB Storage
 - Internal storage cleanup rules
 - Auto delete Internal Storage – activation
- Update & Default
 - Update firmware
 - Backup settings to USB stick
 - Restore settings from USB stick
 - Format USB Storage
 - Format Internal Storage
 - Format USB storage
 - Reset settings to default
 - Reset device to factory default
- User accounts
 - User account activation
 - User account setup with different roles
- Security
 - Renew password (time settings)
 - Inactivity time-out
- Activation keys
- Audit Trail
 - Review log files
 - Filter log files
 - Copy log files to USB
 - Delete log files

User Accounts for Security Protection

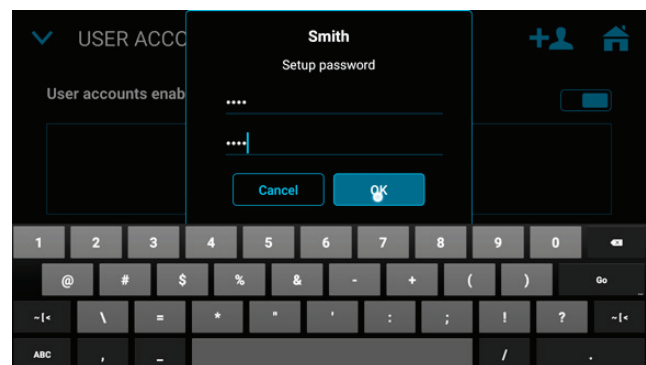
➤ Settings ➤ Advanced ➤ User Accounts

For advanced device protection and data security of recorded studies, this device can be locked with User accounts.

Enable user accounts
and add users



User Name



Password for User Account

Please note:

Once user accounts are enabled, you need to know your User Names and Passwords to operate this device.

MediCapture has no access to user account information and therefore, no “Master Password” exists.

In case you do not remember your ADMIN user account information, this device requires a complete setup to factory default settings, which means many of your achieved information will get lost.

User Roles – Protecting Advanced Settings

➤ Settings ➤ Advanced ➤ User Accounts

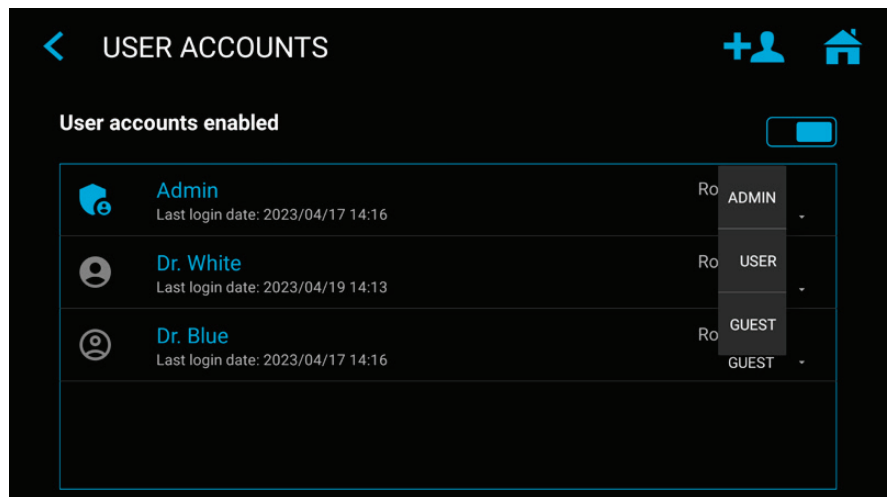
User Roles can be assigned to users.

These gradations of roles are available:

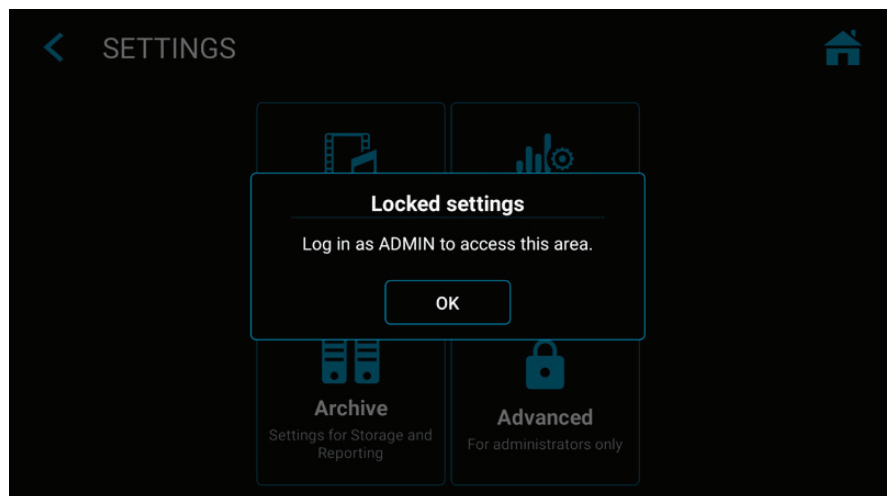
- **ADMIN:** User who has access to all parts of the User Interface and all Settings. The ADMIN can configure the user accounts where it is possible to add, delete, rename users and change their roles.
- **USER:** Standard user, without access to the Advanced Settings configuration.
- **GUEST:** Restricted user, who can only view the archive on the unit.
- **Special role: Emergency user,** operating the “breaking glass function”. Not configurable. Has the right to create a recording study but has no rights for anything else.

All configured user roles allow connection to WEBSTREAMING with their account values (name, password) via an external web browser.

Note: If user accounts are enabled, there must be at least one configured ADMIN user.

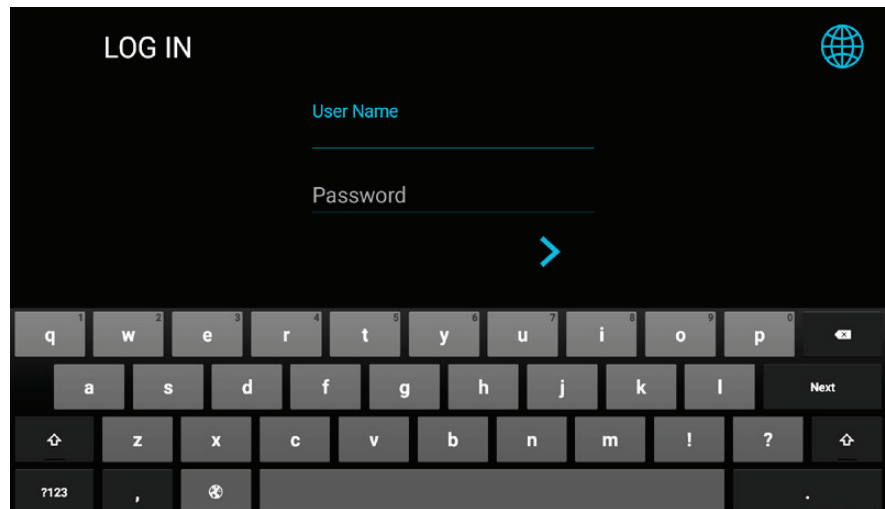


Example: If a user with role “user” wants to open Advanced Settings, access is blocked. Only an ADMIN has access rights



User log in with User Name and Password.

Note: If the User account information is lost, the users with ADMIN roles can login with their ADMIN password.



Special Video Input Settings

► Settings ► Video/Audio ► Video Input

Picture-in-Picture Recording (PIP)

When using Multi-Input you can set the recording to *Picture-in-Picture*.

Input 2 will be displayed as a window in Input 1.

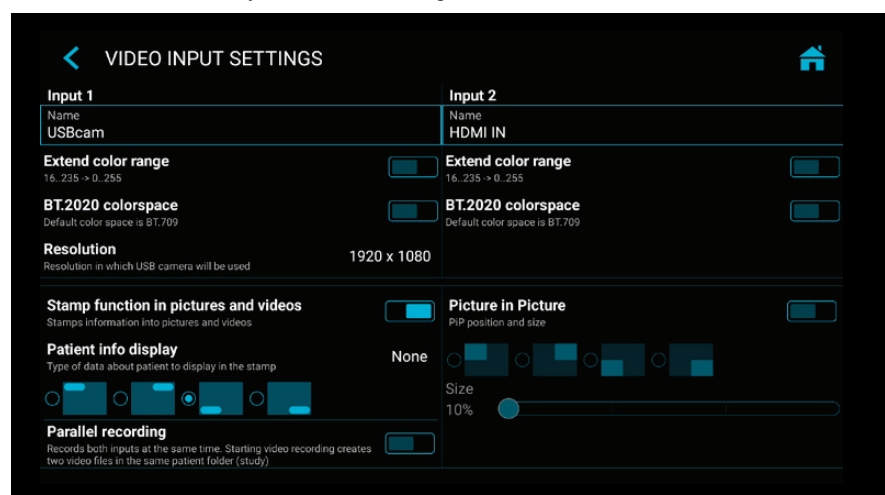
- Exactly this view gets recorded as one picture or one video into the patient study folder.
- You can choose the size and position of the PIP window.

Parallel Recording

When using Multi-Input you can set the recording to *Parallel Recording*.

Both inputs, Input 1 and Input 2 get recorded at the same time when you start a recording.

- This creates two independent video files in your patient study folder.
- You can only see one input in the live view screen, second input gets recorded as well.



Note: You can only choose one option for Special Video Input Settings: Either PIP or Parallel recording.

Recording Options

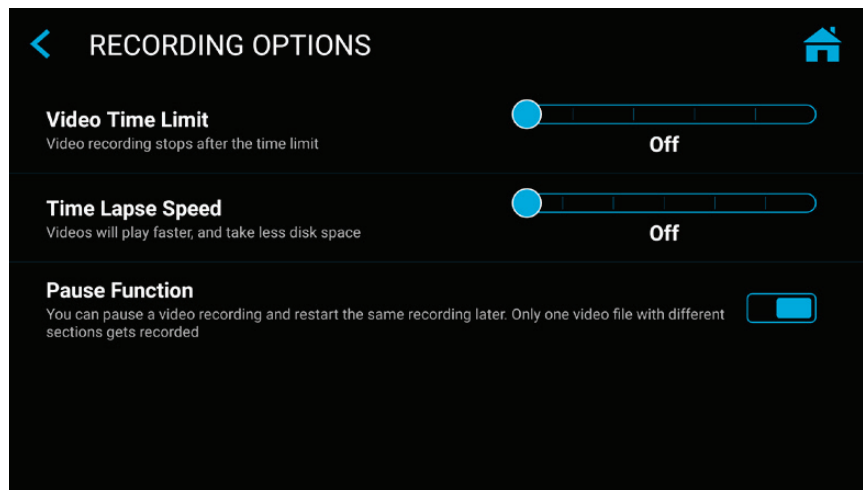
► Settings ► Video/Audio ► Recording Options

Video Time Limit

Allows you to choose time limits on recordings. For example, you can set a recording time limit of 5 minutes.

Time Lapse recording

Time Lapse recording is an option to save recording space on your storage media. It is useful for documentation of complete, long operations or processes which last over a very long period. You can take snapshots from the recorded video in the editing function of the Archive afterwards to extract important events as a captured picture.



Please note: Videos recorded in time lapse mode play back in a much shorter time (depending on the time lapse speed). Do not use time lapse recording when your demand for video documentation is video playback in real-time.

You can change the speed (=factor) of time lapse recording by moving the slider.

Example: x60 will speed up video playback 60 times (1 hour of recording will be played in 1 minute).

Pause Function

You can activate the optional Pause function.

Upgrades / Activation keys

Please contact MediCapture for ordering information to activation keys. The unique device ID needs to be provided (see Information screen).

The key is specific to the current device and cannot be used for other devices.

If you have purchased an activation key for this device, enter the 8-digit HEX code here. Depending on the stored functions of the activation key, the activated functions are displayed here.

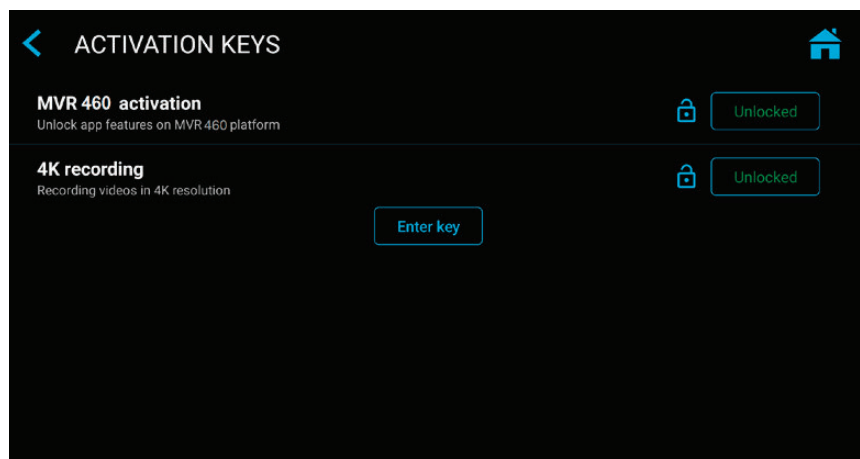
► Settings ► Advanced ► Activation keys

Important: Please keep the documentation on the activation key for your device in a safe place!

All activation keys already activated on your device will be displayed on the INFORMATION page when you tab on the device icon.

4K Recording Upgrade

- Recording can be upgraded to recording in a higher resolution 2160p.
- If your camera equipment provides 4x 3G-SDI in Quad-Split (=Square Division) or 2-Sample Interleave format, MediCapture's additional item MVC Pro HDMI to SDI will convert your SDI-signals to HDMI.

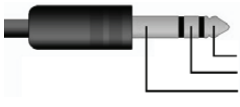


Appendix A: Technical Specifications

Function	Records video and still images in high definition from medical video sources to a USB storage, Internal storage or Network storage.
Case	Aluminum Alloy
Buttons	Stainless Steel, fluid resistant
Video Connections (Accepted input signals)	One video connection can be used per channel.
Channel 1 = Input 1 in Display Note: Channel 1 supports advanced Chroma Subsampling for 4K resolutions: RGB, YUV422-8bit, YUV422-10bit, YUV420-8bit.	IN1: DisplayPort (4K/UHD): 4096x2160p60/50/30/25 (4K2K)*, 3840x2160p60/50/30/2530/25 (UHD "4K")*, 1920x1200p60 (WUXGA), 1920x1080p60/59,94/50/30/25 (Full HD), 1920x1080i60/59,94/50/30/25 (Full HD, interlaced) 1280x720p60/50 (HD), 1280x1024p60/50 (SXGA) IN2: HDMI Input (4K/UHD): (DVI and DisplayPort with adapter) 4096x2160p60/50/30/25 (4K2K)*, 3840x2160p60/50/30/2530/25 (UHD "4K")*, 1920x1200p60 (WUXGA), 1920x1080p60/59,94/50/30/25 (Full HD), 1920x1080i60/59,94/50/30/25 (Full HD, interlaced) 1280x720p60/50 (HD), 1280x1024p60/50 (SXGA) USB UVC Input (USB camera)** 4096x2160p60/50/30/25 (4K2K)*, 3840x2160p60/50/30/2530/25 (UHD "4K")*, 1920x1200p60 (WUXGA), 1920x1080p60/59,94/50/30/25 (Full HD), 1280x720p60/50 (HD), 1280x1024p60/50 (SXGA)
Channel 2 = Input 2 in Display Note: Channel 2 supports limited Chroma Subsampling for 4K resolutions: RGB, YUV422-8bit, YUV422-10bit but not YUV420-8bit.	IN3: HDMI Input (4K/UHD): (DVI and DisplayPort with adapter) 4096x2160p60/50/30/25 (4K2K)*, 3840x2160p60/50/30/2530/25 (UHD "4K")*, 1920x1200p60 (WUXGA), 1920x1080p60/59,94/50/30/25 (Full HD), 1920x1080i60/59,94/50/30/25 (Full HD, interlaced) 1280x720p60/50 (HD), 1280x1024p60/50 (SXGA) IN4: SDI Input (4K/UHD): (12G-SDI) 3840x2160p60/50* (3G-SDI) 1920x1080p60/59,94/50/ (HD-SDI) 1920x1080i60/59,94/50/30/25 (Full HD, interlaced) USB UVC Input (USB camera)** 4096x2160p60/50/30/25 (4K2K)*, 3840x2160p60/50/30/2530/25 (UHD "4K")*, 1920x1200p60 (WUXGA), 1920x1080p60/59,94/50/30/25 (Full HD), 1280x720p60/50 (HD), 1280x1024p60/50 (SXGA)

(*) H.264 is licensed via MPEG LA, HEVC is licensed via Access Advance LLC and MPEG LA.

** Only one USV camera can be connected to one USB port and operated, not two cameras to both USB ports

Video Output (with User Interface overlay)	HDMI Output (supported monitors): 3840x2160p60/50/30/25 1920x1080p 60/59,94/50/30/25 1280x720p 60/59,94/50 (Device matches to attached monitor resolution and frame rate automatically) USB (Type-C) – DisplayPort signal: 4096x2160p 30/25 3840x2160p 30/25 1920x1080p 60/59,94/50/30/25 1280x720p 60/59,94/50	
Loop output (Original signal without User Interface overlay)	SDI loop out. Resolution and frame rate identical to SDI Input.	
Recording Resolution	3840x2160*, 1920x1080, 1280x1024, 1280x720 1024x768 <i>*For recording 4K input signals in 4K resolution, “4K recording” needs to be activated. Otherwise 4K input signals will be recorded in HD.</i>	
Video Recording Format	MP4: H.264* / HEVC* H.265 High Efficiency Video Coding	
Video Recording Bitrate	H.264* coding (Adaptive Constant Bitrate): Normal quality: (HD 1080): 16 Mbps, (HD 720): 8 Mbps Super quality: (HD 1080): 32 Mbps, (HD 720): 16 Mbps HEVC* coding (Adaptive Constant Bitrate): Normal quality: (HD 1080): 8 Mbps, (HD 720): 4 Mbps Super quality: (HD 1080): 16 Mbps, (HD 720): 8 Mbps	
Image format	JPG / PNG	
Touch Display (MVR460 only)	Monitor Dimensions: Display Resolution: Display Brightness: Viewing Angle: Contrast Ratio Response Time: Touchscreen Type:	7", diagonal 1920 x 1200 pixel 500 lux (typ) 80° / 80° / 80° / 80° 800:1 (typ) 16 ms (typ) Capacitive, 5-point multi touch
Audio Input (Sound Recording)	MIC in (low level), 3.5mm Mono TS (2-pin), USB microphone, LINE in 1Vpp, 3.5mm Stereo TRS (3-pin), HDMI	
Audio Output	Integrated speaker LINE out 1Vpp, 3.5mm Stereo TRS (3-pin), Headset output, 3.5mm Stereo TRS (3-pin). Pin Table: 	
Confirmation tones (beep)	Confirmation tones can be generated. 1. via the internal loudspeakers 2. via the audio connection (H/S) to active speakers 3. via HDMI, if a connected HDMI monitor supports audio	

(*) H.264 is licensed via MPEG LA, HEVC is licensed via Access Advance LLC and MPEG LA.

Internal Storage	HDD 2TB Larger Internal Storage by order.
External Storage	USB drives (flash drives or hard drives), FAT32 / NTFS / exFAT
USB Support	USB3.0, Super speed, 1 front connector, 2 rear connectors.
Remote	3.5mm mini jack Stereo TRS (3-pin). Compatible with standard footswitches (not included) and closed-contact camera triggers.
RS-232	3.5mm mini jack Stereo TRS (3-pin). RX, TX, GND
LAN	RJ-45, Ethernet , max 2.5 GB/s
Mechanical	MVR450: Dimensions w x h x d: 185 x 60 x 220.3 mm (7,3 x 2,4 x 8,7") MVR460: Dimensions w x h x d (monitor closed): 195 x 71 x 220.3 mm (7,7 x 2,8 x 8,7")
Mounting dimensions for VESA	VESA 100 on bottom of device
Weight:	MVR450: 1,75 kg (3.85 lbs) MVR460: 2,1 kg (4.63 lbs)
Environmental	Operating: ambient temperature -20° to +40° C, air pressure 700 to 1060hPa, humidity 30 to 75% (non-condensing) Storage and transportation: ambient temperature -40° to +85° C, air pressure 700 to 1060hPa, humidity 0 to 93% (non-condensing)
Ingress protection. Protection against penetration of liquids	IP40 Solid particle protection: 4 = tools and wires greater than 1 mm. Protection against harmful ingress of water: 0 = None
Degree of protection in the presence of flammable mixtures	This device is not protected against explosions. (Do not operate this device in ignitable atmosphere)
Power	AC 100-240V, 0.6-0.3A, 50/60Hz
Typical Power Consumption	< 20 Watt
Fuse	T2AH 250V (x2)
Box Contents	MVR recorder, USB flash drive, HDMI cable, DisplayPort cable, 12G-SDI cable (BNC), Split Remote Cable Adapter, Audio cable M-M, Audio cable M-F, Network Patch Cable RJ45, Power cable, Rubber Feet (4x1) (2), Information for Use (English)

Compliance / Certification / Classification

Compliance and Certification	EN 60601-1 (IEC 60601-1, ANSI/AAMI ES60601-1) - Medical Equipment Safety EN 60601-1-2:2015+A1:2021 - Electro Magnetic Compliance EMC EN IEC 63000:2018 - Restriction of hazardous substances
Classification	Class I Equipment / Mode of operation: continuous No AP/PG. No Applied Part.

Note: These specifications are subject to change without notice.

	Medical Device Regulation 2017/745/EU
	Conformité Européenne (European Conformity)
	UKCA marking (UK Conformity Assessed – Great Britain) (Product conforms to the requirements of the UK MDR 2002 for Class 1 devices)
	WEEE compliant RoHS compliant
	This device complies with FCC Part 15, Subpart B, Class B of the FCC emission Rules.

FCC compliance information

This product does not contain any user serviceable components. Any unauthorized product changes or modifications will invalidate warranty and all applicable regulatory certification and approvals, including authority to operate this device.

Supplier's Declaration of Conformity (SDoC)

We MediCapture® Inc., 2250 Hickory Road, Suite 200 Bd., Plymouth Meeting, PA 19462 USA, Phone +1 610-238-0700, declare under our sole responsibility that the products MVR450 / MVR460 comply with Part 15 Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following to conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Appendix B: MediCapture Limited Warranty

MediCapture Inc. ("MediCapture") warrants the product(s) listed below to be free of defects in materials and workmanship for a period of one (1) year. Should warranty service be required, the warranty period will be extended by the number of days required to restore normal operation and return the product(s).

MediCapture MediCapture MVR450 / MVR460 medical image recording device

Warranty Conditions

If, during the year that immediately follows the purchase date, a product covered by this warranty is found to have a defect in material or workmanship, MediCapture (or a service facility authorized by MediCapture) will restore the product to its original operating condition without charge for parts or labor. Note: MediCapture reserves the right to utilize reconditioned subassemblies as warranty replacements.

This warranty applies only to those products sold by retailers authorized by MediCapture to sell such products and is enforceable by the original purchaser only.

THIS WARRANTY IS APPLICABLE IN THE FIFTY (50) STATES OF THE USA AND THE DISTRICT OF COLUMBIA ONLY. IT IS NOT APPLICABLE IN THE POSSESSIONS OR TERRITORIES OF THE USA OR IN ANY OTHER COUNTRY. THIS IS THE ONLY EXPRESS WARRANTY WHICH MEDICAPTURE MAKES IN CONNECTION WITH THE ABOVE LISTED PRODUCT(S). ANY IMPLIED WARRANTIES APPLICABLE TO THESE PRODUCTS ARE LIMITED TO THE DURATION OF THE EXPRESS WARRANTY. MEDICAPTURE SHALL NOT BE LIABLE FOR LOSS OF REVENUES OR PROFITS, INCONVENIENCE, EXPENSE FOR SUBSTITUTE EQUIPMENT OR SERVICE, STORAGE CHARGES, LOSS OR CORRUPTION OF DATA, OR ANY OTHER SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES CAUSED BY THE USE OR MISUSE OF, OR INABILITY TO USE, THE ABOVE LISTED PRODUCT(S), REGARDLESS OF THE LEGAL THEORY ON WHICH THE CLAIM IS BASED, AND EVEN IF MEDICAPTURE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL THE RECOVERY OF ANY KIND AGAINST MEDICAPTURE BE GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT(S) LISTED ABOVE AND CAUSING THE ALLEGED DAMAGE. WITHOUT LIMITING THE FOREGOING, YOU ASSUME ALL RISK AND LIABILITY FOR LOSS, DAMAGE OR INJURY TO YOU AND YOUR PROPERTY AND TO OTHERS AND THEIR PROPERTY ARISING OUT OF USE OR MISUSE, OR INABILITY TO USE, THE ABOVE LISTED PRODUCT(S) NOT CAUSED DIRECTLY BY THE NEGLIGENCE OF MEDICAPTURE (some STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY MAY LAST, OR DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU).

This warranty gives you specific legal rights. You may also have other rights which vary from state to state. In the event any of the provisions of this warranty are found to be unenforceable, all remaining provisions shall retain full force.

Owner Responsibilities

- Read the Instructions for Use completely.
- Warranty registration is not necessary. However, should warranty service be required, you must be able to provide proof of the purchase date and the identity of the seller who made the sale (either MediCapture or an authorized reseller). Please save your sales receipt and invoice.
- Make sure that the proof of purchase that you save contains the serial number and that it matches the number on the unit that you purchased.
- Depending on where you purchased your unit, promptly notify either MediCapture or the authorized reseller of any malfunction upon discovery.
- In the event service is required, return the product to an authorized MediCapture service center. All shipments must be PREPAID. No COLLECT shipments will be accepted. Products repaired under warranty by MediCapture, or an authorized service center, will be returned to the sender PREPAID.
- Products returned for service (in or out of warranty) MUST have a Return Merchandise Authorization (RMA) number issued by MediCapture or an authorized service center.

Exclusions

IMPORTANT: The following conditions can cause this warranty to be unenforceable.

- Purchase of the product listed above from resellers NOT authorized by MediCapture to sell the product.
- Alteration or removal of the trademark, name, or identification number or serial number of the products.
- Use of parts or supplies (other than those sold by MediCapture) that cause damage to the products.
- Product failures that are the result of: neglect, abuse, misuse, modification, or accidental damage.