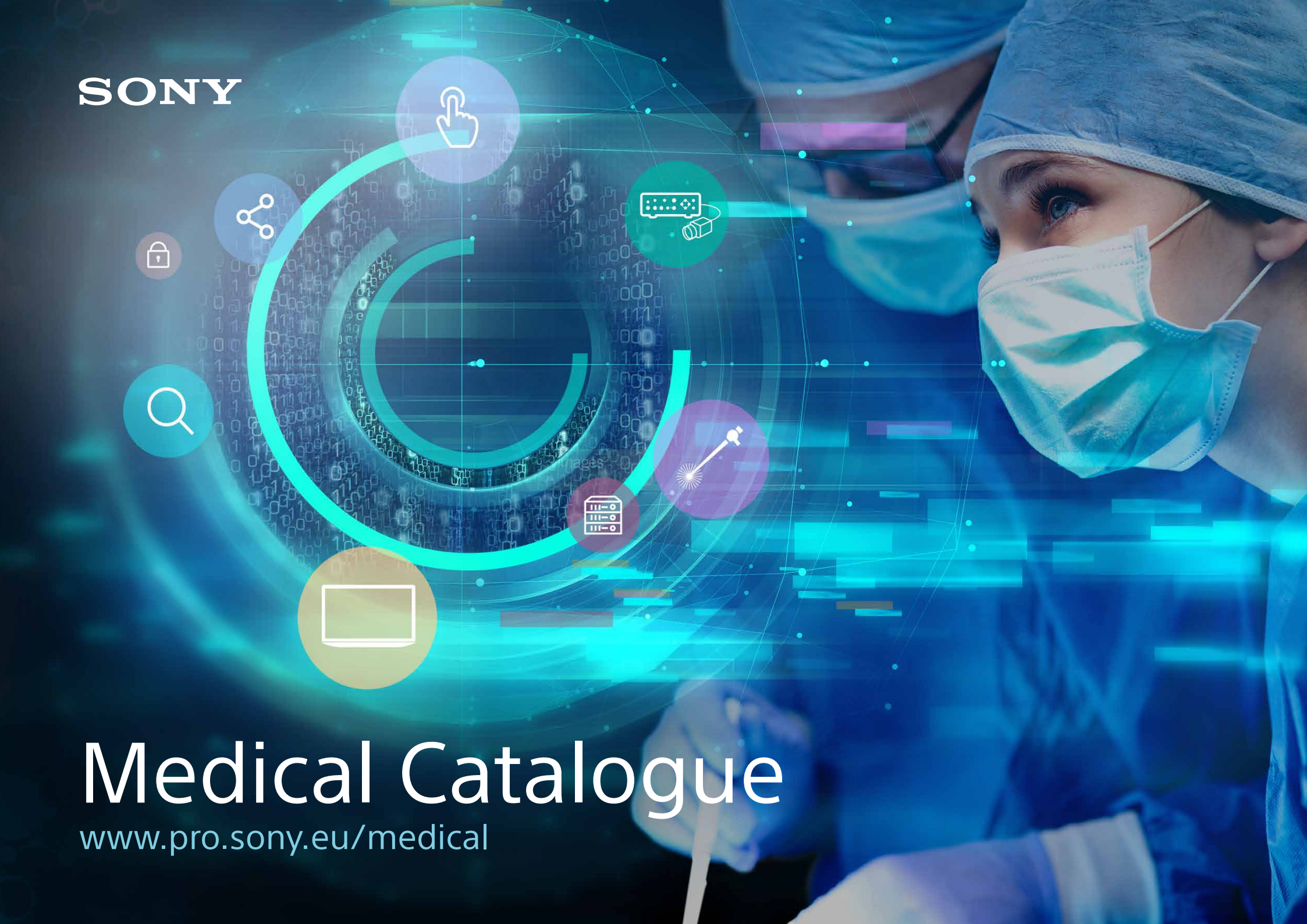
SONY
Medical Catalogue
www.pro.sony.eu/medical

Your partner for Healthcare Imaging Solutions

- Innovative technologies
- Vendor neutral platforms
- Patient safety
- Clinical benefits
- Operational efficiency

Next-generation digital operating room

NUCLEUS™

The next step of evolution has begun

Complete medical workflow from Light to Monitor

Innovative imaging technologies

4K 3D A.I.M.E.

Image is simulated for illustration purposes

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Technical details

Cameras – capture clarity

We will help you see more when it matters. Our reliable, high performance colour video cameras capture finely-detailed images from a wide range of medical modalities with impressive clarity and reliability.

We are the ideal choice for clinical imaging applications including ophthalmology, neurosurgery, pathology, biomedical research, veterinary science and teaching.

Capturing detail packed images at 4K or Full HD resolution, our range of single-chip and 3-chip camera modules is also ideal for direct integration with imaging solutions from microscope and endoscope manufacturers.

MCC-3000MT

1/2-inch 3CMOS Full HD 3D Colour Video Camera

Suitable for Surgical Imaging

- Compact fully MDD compliant easy to clean medical design
- Exceptionally high sensitivity for ultimate 3D HD image clarity and colour reproduction
- 2 compact C-mount camera heads for simple connection to most commonly used surgical microscopes for 3D shooting
- Both camera heads can be adjusted simultaneously by the single controller to simplify installation
- 6 picture profiles can be set up for immediate recall for shooting in different lighting conditions
- DC 24V power can be supplied either from the Surgical Microscope system or via the AC-81MD Adapter (optional accessory)

Features

- Full HD 3D Camera Controller with two separate 1/2" 3 CMOS (Exmor) camera heads
- Small, lightweight C-mount camera head units
- Support for wide range of HD and SD video formats
- Choice of 6m, 10m, 15m and 20m camera cables
- Wide variety of HD and SD signal outputs

MCC-500MD

1/3-inch single CMOS, Full HD Colour Video Camera

Suitable for Surgical Imaging

- Compact fully MDD compliant medical design allows for easy cleaning
- Direct AC power for easy installation on microscope with no AC Adapter needed
- Compact camera head for simple connection to most commonly used surgical microscopes and slit lamps
- Excellent low light sensitivity improves performance approaching costly 3-chip cameras
- 6 picture profiles can be set up for immediate recall for shooting in different lighting conditions

Features

- Full HD Camera Controller with separate 1/3" 1 CMOS camera head
- High sensitivity and excellent colour reproduction
- Compact C-mount camera head
- Support for wide range of HD and SD video formats
- Choice of camera cables from 6m to 15m + 5m extension cable available

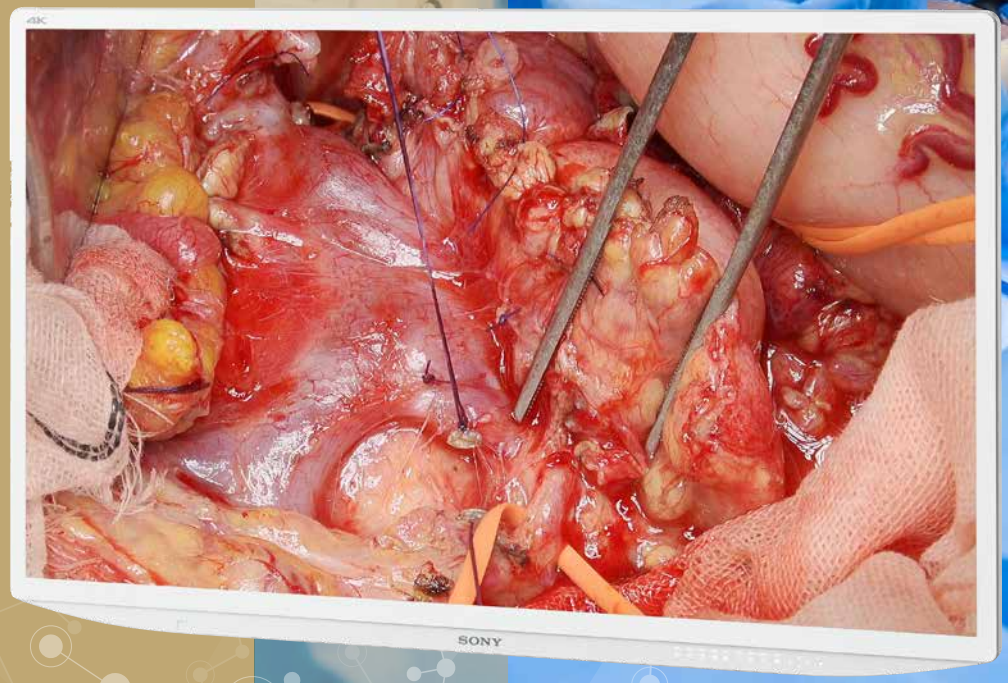
Compliance with Medical Safety Standards* This device is compliant and certified for IEC 60601-1 and product safety standards in the U.S.A., Canada and Europe.
*Registration status as a medical device may vary, depending on country. For more details, please contact your nearest Sony office or an authorized dealer.

Monitors – view with confidence

Surgeons, consultants and clinical staff all depend on seeing images displayed with extra clarity to inform critical decision making.

Our reliable surgical monitors offer superb clarity and colour reproduction at 4K or Full HD resolution, with imperceptible lag time. OptiContrast panel technology enhances on-screen image contrast for critical viewing, even under the glare of direct lighting in the operating room. Our large, high-contrast 4K medical monitors give extra workflow flexibility, with a range of picture modes for viewing multiple video sources simultaneously.

With slim, contemporary styling and intuitive operation, Sony monitors are ideal for integration in a wide range of hospital environments.



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4K SURGICAL MONITORS

LMD-X310MD

MDD Compliant

31-inch 4K 2D Surgical LCD Monitor

Suitable for Surgical Imaging

- Modern, slim, narrow bezel and ergonomic design
- 4K resolution provides greater detail
- Advanced HD to 4K upscaling without blurring
- Superb black reproduction combined with ultra fast processing to give sharp, high contrast, low latency surgical images
- Splash proof glass edge-to-edge screen for easy cleaning
- Intuitive user friendly control panel for simple operation and adjustments
- A.I.M.E. Image enhancement
- Rear cable cover provides user friendly cable management and neat installation
- Wider colour range reproduction than conventional HD monitors

Features

- 31" 4K & Ultra HD resolution LCD Display (4096 x 2160pixels)
- High brightness anti-reflective OptiContrast Panel™
- Wide colour gamut (43% greater than BT.709 colour space)
- Modern low profile design with narrow bezel
- Integrated rear cable cover
- VESA Mounting (100 x 100 mm/200 x 100 mm)

LMD-X550MD

MDD Compliant

55-inch 4K 2D Surgical LCD Monitor

Suitable for Surgical Imaging

- Modern, slim, narrow bezel and ergonomic design
- 4K resolution provides greater detail
- Advanced HD to 4K upscaling without blurring
- Superb black reproduction combined with ultra fast processing to give sharp, high contrast, low latency surgical images
- Splash proof glass edge-to-edge screen for easy cleaning
- Intuitive user friendly control panel for simple operation and adjustments
- A.I.M.E. Image enhancement
- Rear cable cover provides user friendly cable management and neat installation
- Wider colour range reproduction than conventional HD monitors

Features

- 55" Ultra HD resolution LCD Display (3840 x 2160pixels)
- High brightness anti-reflective OptiContrast Panel™
- Wide colour gamut (43% greater than BT.709 colour space)
- Modern low profile design with narrow bezel
- Integrated rear cable cover
- VESA Mounting (200 x 200 mm / 300 x 300 mm)

Compliance with Medical Safety Standards* This device is compliant and certified for IEC 60601-1 and product safety standards in the U.S.A., Canada and Europe.
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3D SURGICAL MONITORS

LMD-2451MT

MDD Compliant

24-inch WUXGA 3D Surgical LCD Monitor

Suitable for Surgical Imaging

- Exceptional 3D image reproduction from high brightness display
- Wide variety of option boards that can be used in the 2 built-in option ports for greater flexibility for 2D and 3D imaging
- Light-up sheet-key user interface
- 10-bit ChromaTru™ processor provides consistent, accurate colour matching between monitors
- Surgeon's assistant can view a mirror image of the surgeon's own display in order to assist with more efficient manoeuvering of camera
- Robust, compact design with protection screen for durability within the OR

Features

- 24" WUXGA LCD display (1920x1200pixels)
- 10-bit digital signal processing
- Wide Viewing Angle and Black Bezel for Optimised 3D Viewing
- Anti-Reflective Anti-Glare Protection Panel
- Multiple 3D signal format support
- VESA-mounting standard (100 x 100 mm /200 x 100 mm)

LMD-3251MT

MDD Compliant

32-inch Full HD 3D Surgical LCD Monitor

Suitable for Surgical Imaging

- Exceptional 3D image reproduction from high brightness display
- Wide variety of option boards that can be used in the 2 built-in option ports for greater flexibility for 2D and 3D imaging
- Light-up sheet-key user interface
- 10-bit ChromaTru™ processor provides consistent, accurate colour matching between monitors
- Surgeon's assistant can view a mirror image of the surgeon's own display in order to assist with more efficient manoeuvering of camera
- Robust, compact design with protection screen for durability within the OR

Features

- 32" Full HD LCD display (1920x1080pixels)
- 10-bit digital signal processing
- Wide Viewing Angle and Black Bezel for Optimised 3D Viewing
- Anti-Reflective Anti-Glare Protection Panel
- Multiple 3D signal format support
- VESA-mounting standard (100 x 300 mm /200 x 400 mm)

Compliance with Medical Safety Standards* This device is compliant and certified for IEC 60601-1 and product safety standards in the U.S.A., Canada and Europe.

*Registration status as a medical device may vary, depending on country.
For more details, please contact your nearest Sony office or an authorized dealer.

Eye Shield

Provides comfort for 3D viewing

- Easy to wear for long periods
- More comfortable to wear when user wears eye glasses
- Protects user against blood splashes and bodily fluids
- Maintain clear visibility
- Improves efficiency of 3D procedures
- Lightweight
- Re-useable frame, disposable shield
- Complies to EC Directive for Personal Protective Equipment

Compatible with all Sony 3D surgical monitors. More details on page 42.

4K 3D SURGICAL MONITORS

LMD-X310MT

MDD Compliant

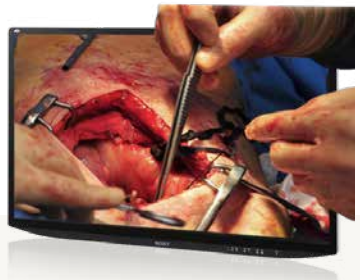
31-inch 4K 3D Surgical LCD Monitor

Suitable for Surgical Imaging

- Modern, slim, narrow bezel and ergonomic design
- 4K resolution provides greater detail
- Advanced HD to 4K upscaling without blurring
- 3D and 2D operating modes for ultimate flexibility
- Superb black reproduction combined with ultra fast processing to give sharp, high contrast, low latency surgical images
- Splash proof glass edge-to-edge screen for easy cleaning
- Intuitive user friendly control panel for simple operation and adjustments
- 3D A.I.M.E. Image enhancement
- Rear cable cover provides user friendly cable management and neat installation
- Wider colour range reproduction than conventional HD monitors

Features

- 31" 4K & Ultra HD resolution with 4096 x 2160 pixels
- High brightness anti-reflective OptiContrast Panel™
- Wide colour gamut (43% greater than BT.709 colour space)
- Modern low profile design with narrow bezel
- Integrated rear cable cover
- VESA Mounting (100 x 100 mm/200 x 100 mm)



LMD-X550MT

MDD Compliant

55-inch 4K 3D Surgical LCD Monitor

Suitable for Surgical Imaging

- Modern, slim, narrow bezel and ergonomic design
- 4K resolution provides greater detail
- Advanced HD to 4K upscaling without blurring
- 3D and 2D operating modes for ultimate flexibility
- Superb black reproduction combined with ultra fast processing to give sharp, high contrast, low latency surgical images
- Splash proof glass edge-to-edge screen for easy cleaning
- Intuitive user friendly control panel for simple operation and adjustments
- 3D A.I.M.E. Image enhancement
- Rear cable cover provides user friendly cable management and neat installation
- Wider colour range reproduction than conventional HD monitors

Features

- 55" Ultra HD resolution with 3840x2160 pixels
- High brightness anti-reflective OptiContrast Panel™
- Wide colour gamut (43% greater than BT.709 colour space)
- Modern low profile design with narrow bezel
- Integrated rear cable cover
- VESA Mounting 200 x 200 mm / 300 x 300 mm

Images are simulated for illustration purposes

FULL HD SURGICAL MONITORS FLAGSHIP 27" MODELS

LMD-2760MD

MDD Compliant

27-inch Full HD Surgical LCD Monitor with OptiContrast

Suitable for Surgical Imaging

- Modern, slim, narrow bezel and ergonomic design to enhance surgical imaging in the OR
- Superb black reproduction combined with ultra fast processing to give sharp, high contrast, low latency surgical images
- Splashproof glass front edge-to-edge screen allows for easy cleaning and disinfection
- Intuitive user friendly control panel for simple operation
- A.I.M.E. Image technology built in to the monitor to provide structural and colour enhancement
- Rear cable cover protects connectors and provides user friendly cable management

Features

- 27" Full HD High-Brightness LCD Display (1920 x 1080 pixels)
- OptiContrast™ LCD Panel with IPX5 rated front glass surface
- Modern low profile design with narrow bezel
- Guided User Interface control panel
- Integrated rear cable cover
- Digital video inputs/outputs only
- VESA Mounting (100x100 mm)

LMD-2765MD

MDD Compliant

27-inch Full HD Surgical LCD Monitor with OptiContrast

Suitable for Surgical Imaging

- Modern, slim, narrow bezel and ergonomic design to enhance surgical imaging in the OR
- Superb black reproduction combined with ultra fast processing to give sharp, high contrast, low latency surgical images
- Splashproof glass front edge-to-edge screen allows for easy cleaning and disinfection
- Intuitive user friendly control panel for simple operation
- A.I.M.E. Image technology built in to the monitor to provide structural and colour enhancement
- Rear cable cover protects connectors and provides user friendly cable management

Features

- 27" Full HD High-Brightness LCD Display (1920 x 1080 pixels)
- OptiContrast™ LCD Panel with IPX5 rated front glass surface
- Modern low profile design with narrow bezel
- Guided User Interface control panel
- Integrated rear cable cover
- Digital video inputs/outputs
- Analogue Video inputs/outputs
- VESA Mounting (100 x 100 mm)

Compliance with Medical Safety Standards* This device is compliant and certified for IEC 60601-1 and product safety standards in the U.S.A., Canada and Europe.
*Registration status as a medical device may vary, depending on country. For more details, please contact your nearest Sony office or an authorized dealer.

FULL HD SURGICAL MONITORS COST EFFECTIVE MODELS

LMD-2735MD

27-inch Full HD Surgical LCD Monitor

Suitable for Surgical Imaging

- Modern slim design and smaller bezel ideal for integration into today's OR environment
- Excellent high quality Full HD image reproduction to enhance any imaging system
- Easy to clean and disinfect with edge-to-edge front surface protection cover
- Intuitive guided user interface simplifies operation in busy OR
- Direct AC input or use optional AC Adapter for installation flexibility
- Fanless design ensures silent operation and minimizes dust circulation

Features

- 27" Full HD LCD Display (1920 x 1080 pixels)
- Ergonomic easy-grip design and edge-to-edge panel for easy cleaning
- Fanless design
- Multiple format video inputs
- VESA mounting standard (100 x 100 mm)

LMD-2435MD

24-inch Full HD Surgical LCD Monitor

Suitable for Surgical Imaging

- Modern slim design and smaller bezel ideal for integration into today's OR environment
- Excellent high quality Full HD image reproduction to enhance any imaging system
- Easy to clean and disinfect with edge-to-edge front surface protection cover
- Intuitive guided user interface simplifies operation in busy OR
- Direct AC input or use optional AC Adapter for installation flexibility
- Fanless design ensures silent operation and minimizes dust circulation

Features

- 24" Full HD LCD Display (1920 x 1080 pixels)
- Ergonomic easy-grip design and edge-to-edge panel for easy cleaning
- Fanless design
- Multiple format video inputs
- VESA mounting standard (100 x 100 mm)

FULL HD SURGICAL MONITORS

LMD-2451MD

24-inch Full HD Surgical LCD Monitor

Suitable for Surgical Imaging

- 10-bit ChromaTru™ processor provides crisp images with natural gradation suitable for many surgical camera systems
- Wide variety of option boards that can be used in the 2 built-in option ports for greater flexibility
- Light-up sheet-key user interface
- Selectable Gamma curves enables user to adjust colour reproduction to match the light source
- Surgeon's assistant can view a mirror image of the surgeon's own display in order to assist with more efficient manoeuvering of camera
- Robust, compact design with protection screen for durability within the OR

Features

- 24" WUXGA Panel Resolution (1920 x 1200 pixels)
- 10-bit digital signal processing
- ChromaTru™ provides accurate and consistent colour matching
- Input Versatility (Multi-format SD and HD Signal Support)
- VESA mounting standard (100 x 100 mm/200 x 100 mm)

LMD-2110MD

21.5-inch Full HD Surgical LCD Monitor

Suitable for Surgical Imaging

- Feature rich functionality in an economical package
- High contrast full HD LCD panel with fast transient response for sharp blur-free images
- Ideal for use in economic surgical microscope and endoscope systems
- Versatile monitor with wide range of video inputs
- Compact space saving design
- Direct AC input for simplified installation

Features

- 21" Full HD-resolution LCD panel (1920 x 1080 pixels)
- 10-bit digital signal processing
- Accurate colour reproduction
- Cost-effective feature-rich performance
- Wide range of standard input interfaces and optional HD-SDI interface
- Built-in stand and VESA mounting (100 x 100 mm)

LMD-1951MD

19-inch SXGA Surgical LCD Monitor

Suitable for Surgical Imaging

- Ideal for use with flexible endoscopy systems
- Outstanding 10-bit ChromaTru™ technology produces crisp, colour consistent images with natural gradation
- Easy to clean surfaces and ideal for medical environments
- Wide variety of option boards that can be used in the 2 built-in option ports for greater flexibility
- Light-up sheet-key user interface
- Flexible display modes suitable for many types of procedure

Features

- 19" LED backlit SXGA panel (1280 x 1024 pixels)
- Wide range of standard HD and SD input interfaces available
- 10-bit digital signal processing
- Anti-reflection AR coated protection panel
- Design features for hygiene and safety
- VESA mounting standard (100 x 100 mm)

LMD-1530MD

15.3-inch WXGA Surgical LCD Monitor

Suitable for Surgical Imaging

- High contrast display provides excellent detail
- Ideal replacement for small CRT monitors
- Built in stand and direct AC power for easy installation
- Lightweight, compact and robust design ideal for busy ORs
- Versatile monitor due to wide variety of SD and HD signal inputs
- Cost effective choice for demanding medical environments

Features

- 15" WXGA LCD Panel (1280 x 768 pixels)
- 10-bit digital signal processing
- Anti-reflection (AR) coated protection panel
- Built-in tally lamp, key inhibit function
- Built-in monitor stand and VESA mounting (100 x 100 mm)

Compliance with Medical Safety Standards* This device is compliant and certified for IEC 60601-1 and product safety standards in the U.S.A., Canada and Europe.
*Registration status as a medical device may vary, depending on country. For more details, please contact your nearest Sony office or an authorized dealer.

SONY

Video recorders store & share safely

Ideal for documentation, training and education, our medical recorders capture clear, detailed video and still images from endoscopic/laparoscopic camera systems, surgical microscopes and other compatible imaging equipment. They're compatible with virtually any medical imaging source, from Standard Definition up to Full HD or 4K resolution in 2D or 3D.

Finely detailed images are always stored directly to the recorder's internal hard disk for additional security and workflow flexibility. They can be recorded at the same time or in a second step to an external USB drive, DVD or to a server on the hospital network. Reliable and easy to use, our recorders' compact design simplifies integration on medical carts.

SURGICAL RECORDERS

HVO-4000MT

4K 3D Medical Recorder

Suitable for Medical Image Documentation

- High image quality thanks to 4K resolution
- More clarity, more colour, more contrast
- Safe recording through simultaneous recording
- Easy to use through intuitive user interface including colour display on front panel and external touch screen (optional)
- Easy integration thanks to compact design, auto start-up function, integrated UP-DR80MD printer driver and network connectivity

Features

- Still and motion image capture in 2D and 3D
- Recording resolutions: 4K and FHD (downscaling)
- DICOM still image storage to PACS
- Video in/out: 3G-SDI, HDMI (out)
- Microphone pre-amplifier integrated

HVO-3300MT

2D & 3D Full HD Medical Recorder

Suitable for Medical Image Documentation

- Powerful and safe recording
- High image quality in Full HD
- Long recording time of close to 650h in FHD
- Easy to use through intuitive user interface including colour display on front panel and external touch screen (optional)
- Easy integration thanks to compact design, auto start-up function, integrated Sony printer drivers and network connectivity incl. PACS
- Real time video distribution outside the OR thanks to live streaming function

Features

- Still and motion image capture in 2D and 3D
- 2 channel Video recording
- Supports DICOM Modality Worklist (MWL)
- DICOM still image storage to PACS
- Video in/out: 3G/HD/SD-SDI, DVI-D, RGB, S-Video, Composite
- Microphone pre-amplifier integrated
- Recording resolutions: FHD (1080p/i), HD(720p) and SD (576i/480i)
- Remote control interfaces: USB, RS-232C and Footswitch

HVO-500MD Surgical version

Full HD Medical Recorder, USB/NAS with Still Image Capture (HVO-500MD /SUR)

Suitable for Medical Image Documentation

- Safe recording thanks to simultaneous recording on internal HDD and external media
- High Image Quality in Full HD with long recording time of close to 200h in FHD
- Easy to use through intuitive user interface
- Easy integration thanks to compact design, various video interfaces and integrated UP-DR80MD printer driver

Features

- Still and motion image capture
- Digital video in/out: DVI-D, HDMI (1080p)
- Analog video in/out: S-Video, Composite
- Recording resolutions: FHD (1080i), HD (720p) and SD (576i/480i)
- Remote control interfaces: Footswitch and Monitor remote
- Compact, lightweight and silent design

Compliance with Medical Safety Standards* This device is compliant and certified for IEC 60601-1 and product safety standards in the U.S.A., Canada and Europe.
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ULTRASOUND RECORDERS

HVO-500MD

HD Medical Recorder, USB/NAS MDD Compliant

HVO-550MD

HD Medical Recorder, DVD/USB/NAS

Suitable for Medical Image Documentation

- Safe recording thanks to pre-recording function and simultaneous recording on internal HDD and external media
- High Image Quality with long recording time of close to 200h in HD
- Easy to use through intuitive user interface
- Easy integration thanks to compact design and various video and remote control interfaces

Features

- Digital recording on DVD-R for HVO-550MD
- Digital video in/out: DVI-D, HDMI (1080p)
- Analog video in/out: S-Video, Composite
- Recording resolutions: HD (720p) and SD (576i/480i)
- Remote control interfaces: USB, RS-232C, Footswitch and Monitor remote
- Compact, lightweight and silent design

HVO-500MD/FHD

HD Medical Recorder, USB/NAS MDD Compliant

HVO-550MD/FHD

HD Medical Recorder, DVD/USB/NAS

Suitable for Medical Image Documentation

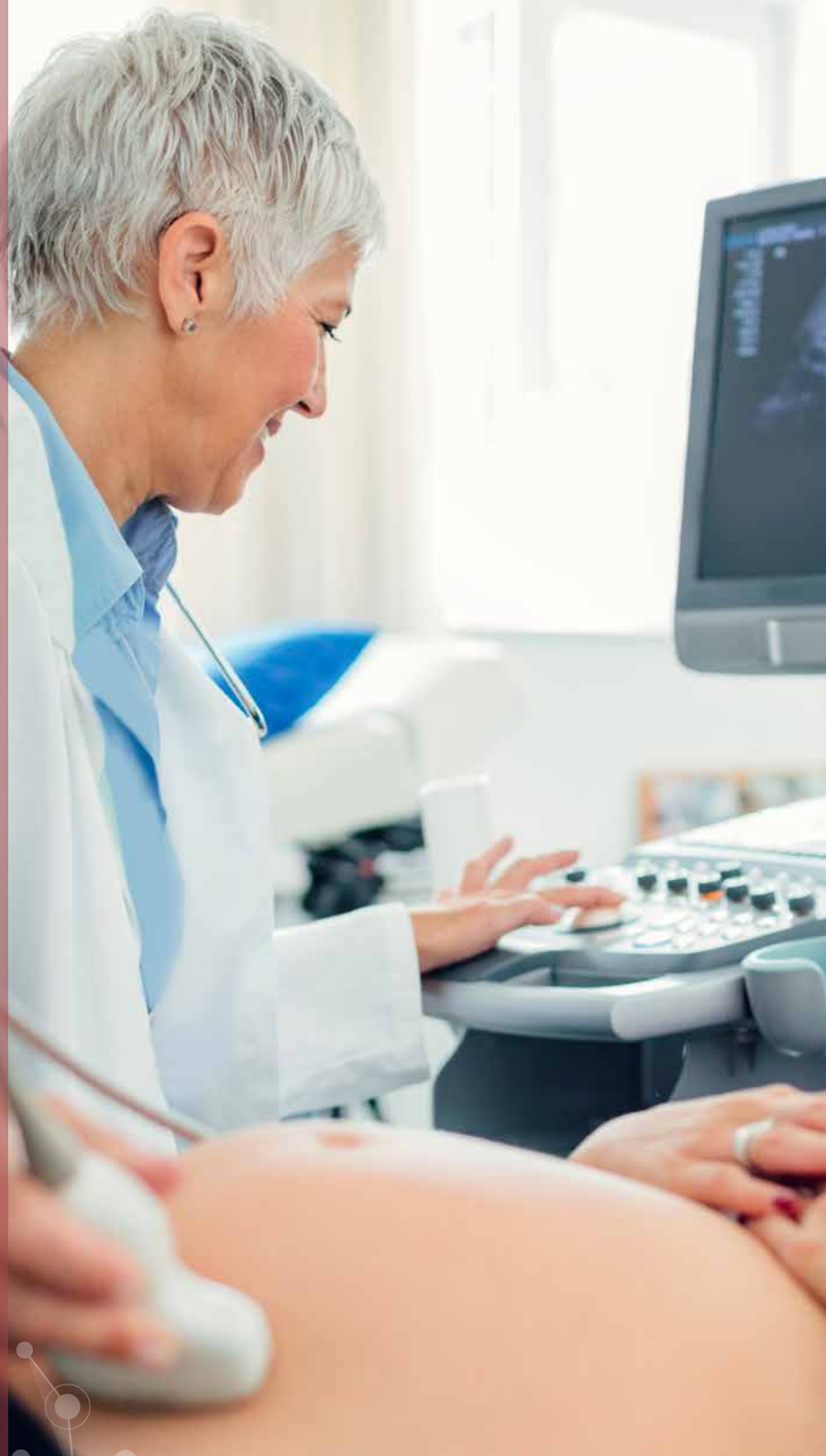
- Safe recording thanks to pre-recording function and simultaneous recording on internal HDD and external media
- High Image Quality with long recording time of close to 200h in HD
- Easy to use through intuitive user interface
- Easy integration thanks to compact design and various video and remote control interfaces

Features

- Digital recording on DVD-R for HVO-550MD/FHD
- Digital video in/out: DVI-D, HDMI (1080p)
- Analog video in/out: S-Video, Composite
- Recording resolutions: FHD (1080i), HD (720p) and SD (576i/480i)
- Remote control interfaces: USB, RS-232C, Footswitch and Monitor remote
- Compact, lightweight and silent design

Compliance with Medical Safety Standards* This device is compliant and certified for IEC 60601-1 and product safety standards in the U.S.A., Canada and Europe.

*Registration status as a medical device may vary, depending on country.
For more details, please contact your nearest Sony office or an authorized dealer.



Sony Medical Recorder Line-up

		HVO-500MD HVO-550MD*	HVO-500MD/FHD HVO-550MD/FHD* (Full HD version)	HVO-500MD /SUR (Surgical version)	HVO-3300MT (FW 1.1)	HVO-4000MT
Recording	Still Image Capture			✓	✓	✓
	2D/3D	2D Recording			2D & 3D Recording	
	4K Recording					✓
	HD 720p Recording	✓	✓	✓	✓	
	Full HD 1080i Recording		✓	✓	✓	
	Full HD 1080p Recording				✓	✓
	2 Channel Recording				✓	
	Simultaneous Recording	Internal HDD and one external media (USB flash drive, USB HDD, DVD* or Network)			Internal HDD and two external media	Internal HDD and one external media
	Optical Disc Drive	*DVD drive (HVO-550MD and HVO-550MD/FHD only)			BD / DVD drive	
Functions	DICOM Still Image Storage				✓	✓
	DICOM Modality Worklist				✓	
	Network Data transmission (CIFS)	✓	✓	✓	✓	✓
	Live Streaming				✓	
	Audio Recording	Line-in & HDMI			Line-in & Microphone-in	
	Touch Monitor Support				✓	✓
	Auto Start Function				✓	✓
	Input/output conversion				✓	✓
Interfaces	Digital Video Input	HDMI & DVI-D Interfaces			3G/HD/SD-SDI & DVI-D	3G-SDI Interface
	Analogue video interfaces	S-Video, Video BNC			S-Video, Video BNC, RGB	N/A
	Remote control: RS-232C / USB	✓	✓		✓	✓
	Printer Driver			UP-DR80MD	UP-DR80MD & UP-D25MD	UP-DR80MD
Applications		Ultrasound systems, Radiology modalities		Surgical carts for Endoscopy, Arthroscopy and Microsurgery		

Printers – document the detail

Our medical printers set the standard for rapid, reliable hard copy documentation in a wide range of healthcare environments. Validated by major modality manufacturers, you will find our comprehensive printer family delivering high quality, lasting prints in applications including ultrasound, radiology, endoscopy, ophthalmology and microsurgery.

Sony's proven direct thermal print technology enables precise reproduction of black and white images, with quick print delivery and accurate grey scale reproduction. For colour printing, Sony's advanced dye sublimation technology assures fade-free colour prints with a wide, accurate tonal range.

Integration is simplified by a wide range of interfaces and support for multiple operating systems. Our wireless printing solution provides extra workflow flexibility, enabling cable-free printer connection in the operating room, ultrasound suite or consulting room.

Wireless Printing – no hassle with cables

COLOUR PRINTERS

UPA-WU10

MDD Compliant

Wireless Printing Solution

Suitable for use in busy medical environments

- Remote printer placement bringing more space on surgical or ultrasound cart, less printer contamination and lower noise levels
- Automatic pairing
- Serving up to three printers in parallel (one UPA-WU10 per printer)
- Reducing power consumption on cart by remote printer placement
- Medical grade transmitter and receiver with compact design
- No extra driver software required
- Transmission range up to 10 m using Ultra Wide Band

Compatible with	
UP-DR80MD	UP-X898MD
UP-971AD	UP-991AD

UP-DR80MD

MDD Compliant

A4 Colour Digital Printer

Suitable for Medical Image Documentation

- Medical graded professional photo printer
- Intuitive image quality adjustment in printer driver
- Lamination layer for long term durability of printout
- Easy cart integration through compact design
- Flexible placement through Sony wireless solution (optional)

Features

- Sony self-laminating dye sublimation printing technology
- Compact design for trolley applications
- A4 size colour print in approx. 76 seconds
- RGB and advanced HSV-colour balance adjustment
- USB 2.0 interface, compatible with Sony wireless printing solution

Print Media:
UPC-R80MD

UP-D25MD

MDD Compliant

A6 Colour Digital Printer

Suitable for Medical Image Documentation

- Photo-realistic high quality prints
- Compact size with front panel operation
- Intuitive tools for image quality adjustment
- Selection of print media available
- Robust through self cleaning function

Features

- Sony dye sublimation printing technology
- A6 printout in approx. 19 seconds (423 dpi)
- USB 2.0 interface
- RGB and advanced HSV-colour balance adjustment
- Self-cleaning function for paper feed roller

Print Media:	
UPC-21S	UPC-21L
UPC-24SA	UPC-24LA

UP-25MD

MDD Compliant

A6 Colour Video Printer

Suitable for Medical Image Documentation

- Photo-realistic high quality prints
- Compact size with front panel operation
- Versatile video connectivity
- Selection of print media available
- Robust through self cleaning function

Features

- Sony dye sublimation printing technology (423 dpi)
- HD video signal support of both 1080i and 720p
- RGB, S-Video and Composite video interfaces
- RGB and advanced HSV-colour balance adjustment
- Self-cleaning function for paper feed roller

Print Media:	
UPC-21S	UPC-21L
UPC-24SA	UPC-24LA

Compliance with Medical Safety Standards* This device is compliant and certified for IEC 60601-1 and product safety standards in the U.S.A., Canada and Europe.
*Registration status as a medical device may vary, depending on country. For more details, please contact your nearest Sony office or an authorized dealer.

B&W PRINTERS – A4 FORMAT

UP-971AD

MDD Compliant

A4 Black & White Hybrid Printer

Suitable for Medical Image Documentation

- Superior image quality on thermal paper
- Easy integration through compact design
- Full flexibility through hybrid interfaces
- Reliable printouts at maximum print speed

Features

- A4 B&W high speed paper printing in approx. 8 seconds.
- Hybrid interfaces: USB 2.0 and Composite video
- Long printouts of up to 60 cm
- Easy access to multiple print modes available via front panel
- Compatible with Sony wireless printing solution

Print Media:	
UPP-210HD	UPP-210SE

UP-991AD

MDD Compliant

A4 Black & White Hybrid Printer

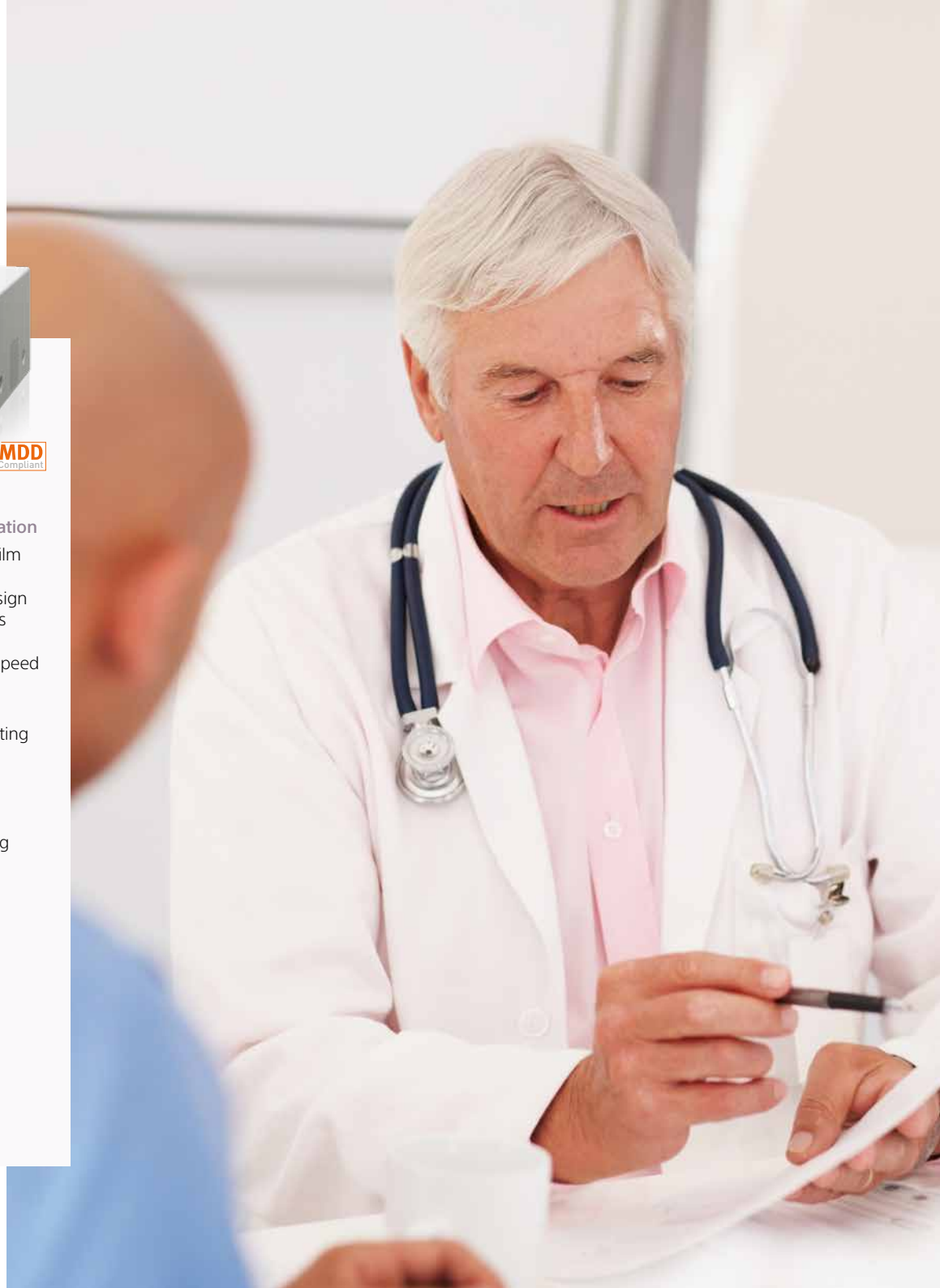
Suitable for Medical Image Documentation

- Superior image quality both on blue film and paper
- Easy integration through compact design
- Full flexibility through hybrid interfaces
- Still image capture functionality
- Reliable printouts at maximum print speed

Features

- A4 B&W high speed film & paper printing in approx. 8 seconds.
- Hybrid interfaces: USB 2.0 and video
- Image storage onto USB flash drive
- Long printouts of up to 60 cm
- Compatible with Sony wireless printing solution

Print Media:	
UPP-210SE	UPP-210HD
UPT-210BL	



B&W PRINTERS – A6 & A7 FORMAT

UP-D711MD

MDD Compliant

A7 Black & White Digital Printer

Suitable for Medical Image Documentation

- Excellent print quality on durable print media
- Easy integration through compact design and DC input
- Eco friendly with low power consumption

Features

- A7 monochrome photo quality printout
- DC input, AC-adapter AC-81MD available (optional)
- Compact and lightweight design
- Offering various print modes and paper saving mode

Print Media:	
UPP-84HG	UPP-84S

UP-D898MD

MDD Compliant

A6 Black & White Digital Printer

Suitable for Medical Image Documentation

- The de facto industry standard in ultrasound
- Maximum print speed for minimal waiting time
- Reliable printouts on a variety of print media types

Features

- A6 monochrome photo quality printout
- High speed printing in approx. 1.9 seconds
- Multiple print modes for a variety of applications

Print Media:	
UPP-110HG	UPP-110HD
UPP-110S	

UP-X898MD

MDD Compliant

A6 Black & White Hybrid Printer

Suitable for Medical Image Documentation

- The de facto industry standard in ultrasound
- Easy and flexible integration through hybrid interfaces
- Still image capture supporting modern medical workflows
- Maximum print speed for minimal waiting time
- Reliable printouts on a variety of print media types

Features

- A6 monochrome high speed printing in approx. 1.9 seconds.
- Hybrid interfaces: USB 2.0 and composite video
- Image storage to USB flash drive
- Multiple print modes for a variety of applications
- Compatible with Sony wireless printing solution

Print Media:	
UPP-110HG	UPP-110HD
UPP-110S	

UP-D898DC

MDD Compliant

A6 Black & White Digital Printer

Suitable for Medical Image Documentation

- Easy integration through compact design and DC input
- Eco friendly with low power consumption
- Same user interface and performance as 898 family
- Reliable printouts on a variety of print media types

Features

- A6 monochrome photo quality printout
- Compact & lightweight design through DC input
- High speed printing in approx. 1.9 seconds
- Multiple print modes for a variety of applications

Print Media:	
UPP-110HG	UPP-110HD
UPP-110S	

Compliance with Medical Safety Standards* This device is compliant and certified for IEC 60601-1 and product safety standards in the U.S.A., Canada and Europe.
*Registration status as a medical device may vary, depending on country. For more details, please contact your nearest Sony office or an authorized dealer.

Thermal Print Media

The Sony difference

Here's a guide to the unique features that make Sony medical print media significantly superior when used with our medical printers.

The quality of printed images, now and over time, is determined by the performance of the printer itself. But choosing the print media is equally vital to achieve long-term quality and durability of images that's crucial in medical applications.

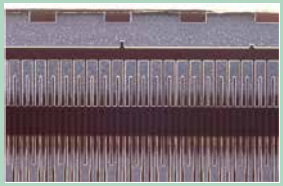
Selecting the right print media can also ensure trouble-free printing, reducing the risk of sudden problems at a critical moment. As it's designed to match the mechanical characteristics of our medical printers, Sony print media ensures you can depend on the worry-free delivery of high quality images – today and tomorrow.

High water resistance

The high-gloss layer of Sony's print media, the result of proprietary technologies, provides high water resistance and high storage stability. This layer prevents print smudging from fingerprints or water, and increases storage stability. The heavy-duty high-gloss layer achieves smudge-free, high-quality printing while at the same time adding an attractive high-gloss finish to the sheet. (Applicable model: UPP-110HG).

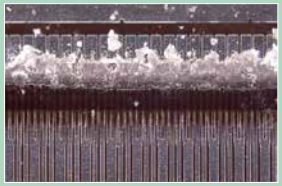
Head-matching performance

The top coat layer of Sony's print media, designed to optimally match the printer heads of Sony's printers, provides continuous printing.



Clean Thermal Head

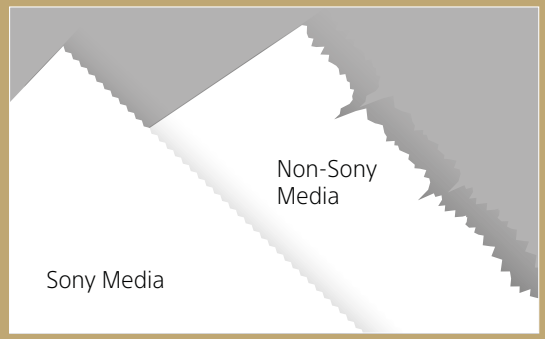
Thermal Head after one roll of Sony Print Media



Thermal Head after one roll of low-quality print media

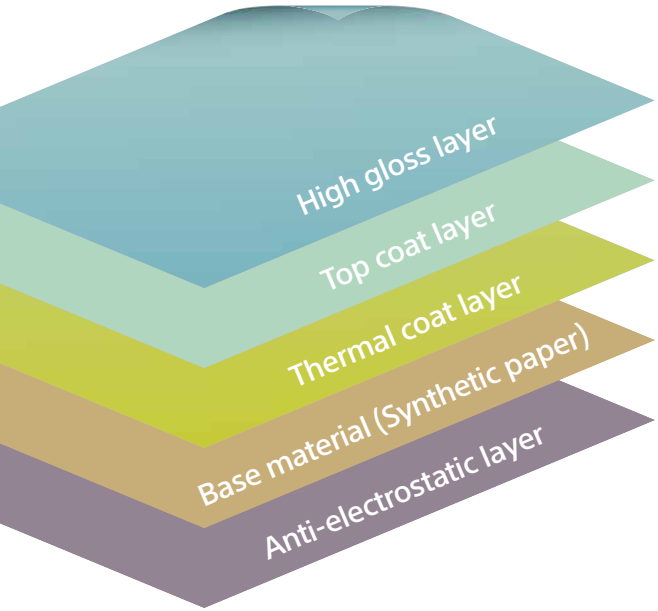
Advanced tearing properties

The base material of Sony print media uses a dedicated substrate that matches the thermal specifications of our printers, and applies a special process to improve coating properties. This prevents cutting in the machine direction, whilst ensuring excellent cutting properties in the cross direction.



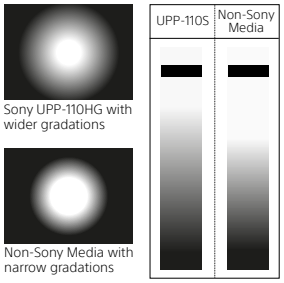
Unique design to achieve

Quality, durability and reliability



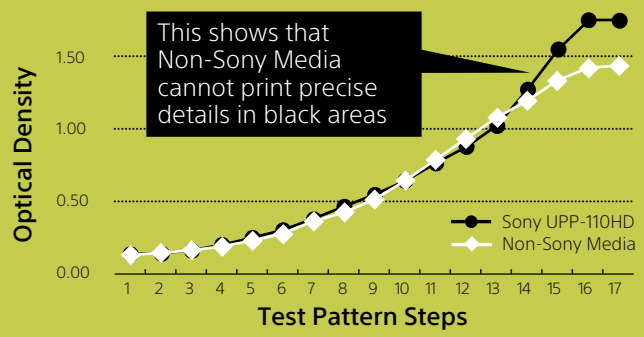
Excellent Grey scale reproduction

Sony video printers and print media are developed together, ensuring accurately matched grey scale characteristics that help to ensure the best possible image transfer quality.



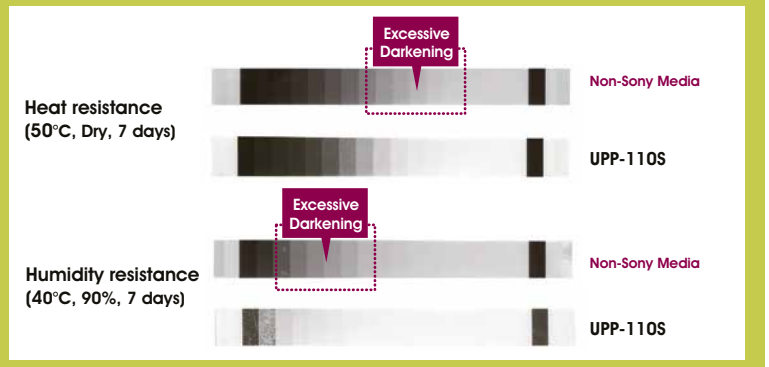
Superior print quality

Thanks to rigorous application pressure control, the thermal coat layer delivers high-quality colouring properties. The gamma curve and Dmax are strictly adjusted to ensure the stable provision of consistent, optimal image quality.



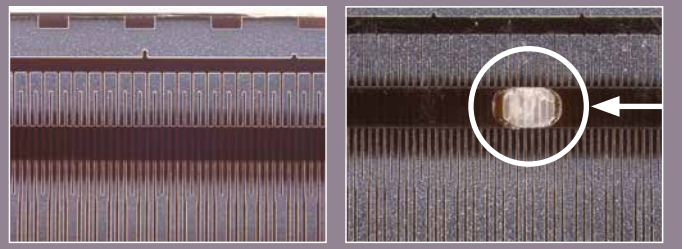
High humidity and heat resistance

High humidity can cause a significant loss of print density. Such degradation is much less marked with Sony print media, which is designed to maintain picture durability.



Long thermal head life span

The anti-electrostatic layer avoids the accumulation of electrostatic energy, which can damage the thermal head, the most vital element of the printer. Extend the lifetime of your printer by using Sony Medical Print Media.



Before printing

After printing

PRINT MEDIA AT A GLANCE

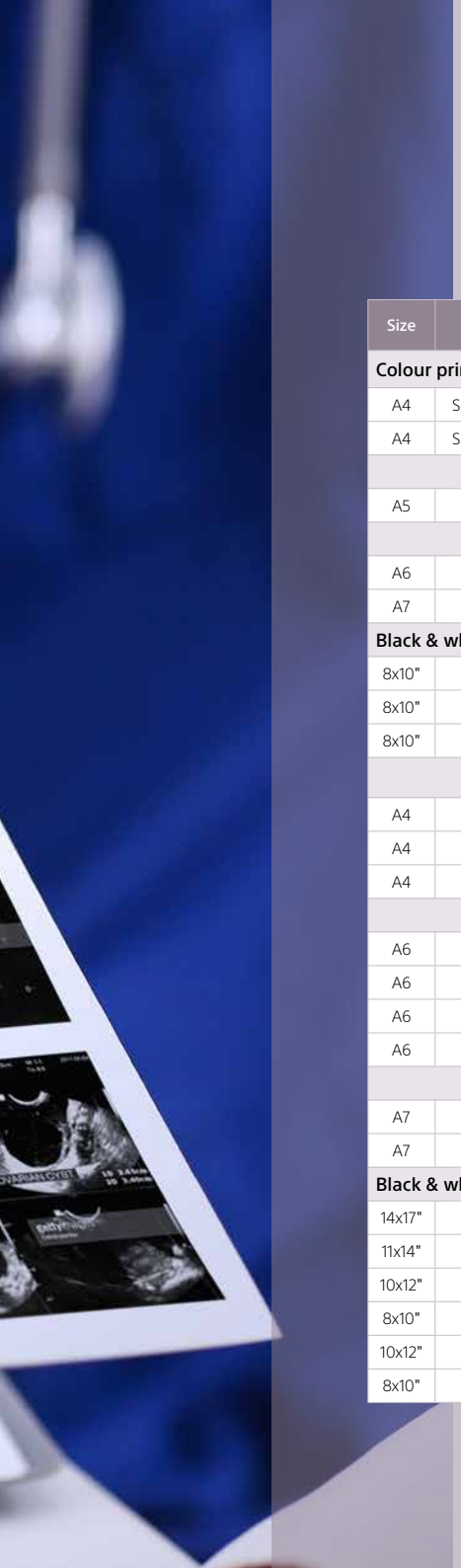
Sony's print media is designed to match the mechanical characteristics of Sony's printers.

When you're trying to consistently obtain optimal print quality, it's tempting to focus on your printer, as you should; but your printer is just one part in the process from image capture to image transfer. The choice of print media is equally crucial: the quality of a printed image, now or several years hence, is vital for it to serve as a lasting record. That same decision can mean the difference between the high-quality, trouble-free printing that needs to be taken for granted in difficult circumstances, or a serious problem at a critical moment. Sony's print media is developed with patent technologies exclusively alongside Sony's printers - one complements the other. Use them together and you'll get the very best out of both. Here's how.

How to identify genuine Sony Print Media

Sony's print media is developed with patented technologies exclusively alongside Sony's printers, to ensure they complement each other.

When purchasing print media look for the Sony logo in the top left to identify a genuine product.



PRINT MEDIA AT A GLANCE

The Sony range

Size	Description	Comments	Model	Prints per pack or length	Printers					Number of rolls or packs	
Colour printing for reference					**UP-DR80MD**	UP-D77MD	UP-D75MD			Per subcarton	Per mastercarton
A4	Self-laminating Colour Printing Pack		UPC-R80MD	100 (50x2)	●						4
A4	Self-laminating Colour Printing Pack		UPC-770	72		●	●				5
					UP-55MD	UP-D55					
A5	Colour Printing Pack		UPC-55	200 (2x100)	●	●					5
					UP-25MD	**UP-D25MD**	UP-20/21MD	UP-D23MD			
A6	Colour Printing Pack		UPC-21L	200 (50x4)	●	●	●	●			6
A7	Colour Printing Pack		UPC-21S	240 (80x3)	●	●	●	●			6
Black & white printing for reference					UP-D72XR	UP-D74XRD					
8x10"	Blue Thermal Film		UPT-736BL	100		●					5
8x10"	Blue Thermal Film		UPT-735BL	100	●						5
8x10"	Thermal Print Media		UPP-725	100	●	●					5
					UP-991AD	UP-990AD	**UP-971AD**	UP-970AD			
A4	Thermal Print Media	(Type II: High Density)	UPP-210HD	25 m	●	●	●	●		5	20
A4	Thermal Print Media	(Type I: High Quality)	UPP-210SE	25 m	●	●	●	●		5	20
A4	Blue Thermal Film	(Type III)	UPT-210BL	12.5 m	●	●				5	20
					UP-X898MD	**UP-D898 series**	UP-897 series	UP-895 series	UP-890 series		
A6	Thermal Print Media	(Type V: High Glossy)	UPP-110HG	18 m	●	●	●	●		10	100
A6	Thermal Print Media	(Type II: High Density)	UPP-110HD	20 m	●	●	●	●	●	10	100
A6	Thermal Print Media	(Type I: High Quality)	UPP-110S	20 m	●	●	●	●	●	10	100
A6	Thermal Print Media	(Type IV: Superior Density)	UPP-110HA	18 m					●	10	100
					UP-D711MD						
A7	Thermal Print Media	(Type HG: High Glossy)	UPP-84HG	12.5 m	●					10	100
A7	Thermal Print Media	(Type S: High Quality)	UPP-84S	12.5 m	●					10	100
Black & white printing for diagnosis					UP-DF550	UP-DF750	UP-DF500				
14x17"	Blue Thermal Film	For general Radiology	UPT-517BL	125	●	●	●				4
11x14"	Blue Thermal Film		UPT-514BL	125	●	●					4
10x12"	Blue Thermal Film		UPT-512BL	125	●	●					4
8x10"	Blue Thermal Film		UPT-510BL	125	●	●					4
10x12"	Blue Thermal High density Film	For Mammography application	UPT-M712BL	125		●					4
8x10"	Blue Thermal High density Film		UPT-M710BL	125		●					4

Printer models in black are available printers, other models are discontinued.

Solutions – supporting the medical workflow

A powerful platform which enables workflow efficiency around the hospital

At Sony Healthcare, we are able to draw upon Sony expertise across numerous sectors to develop technology that underpins business and organisational efficiency and productivity.

Applying such expertise to hospitals and other medical facilities has enabled us to utilize Sony's hardware and software which enables workflows through enhanced efficiency at a daily bases.

NUCLeUS

- Low footprint inside the OR/ video switching and routing
- Vendor neutral IP platform
- Annotations and telestration
- Introducing smart apps
- Streaming, recording and archiving
- Future-proof platform for expandabilty and maintenance

"This digital operating room and the supported workflow really puts us on the cutting edge of minimal invasive surgery."

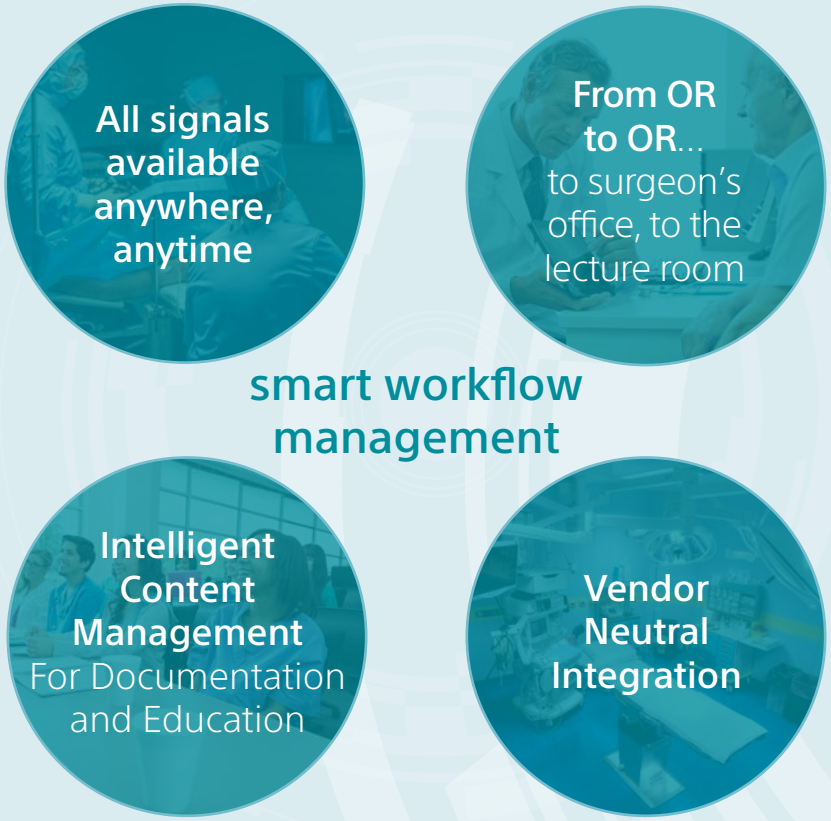
"The system can be fully integrated with our PACS and EPR using standard protocols, which was an important criterion."

"We have looked for such a Vendor neutral solution, which allows us to be fit for the future."

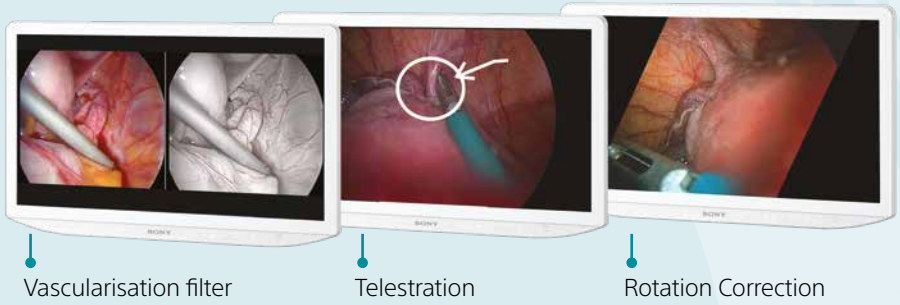
Powerful, intuitive switching and control

The intuitive touchscreen interface has been designed in consultation with leading surgeons, enabling smoother workflows and reducing information overload in today's busy Operating Rooms. Image routing and viewing options are enriched with a wide range of display modes including full screen, picture-in-picture and multi-split, enabling smoother workflows through all phases of a surgical intervention, from planning to intervention to post-operative review.

NUCLeUS, transforming the conventional OR



Enhance the NUCLeUS platform by using additional smart applications:



Telestration

This tool allows you to annotate video streams remotely and share these annotations in real-time with the staff in the OR.

Rotation Correction

Compensates for shifts in orientation of video from a handheld surgical endoscopic camera due to movements of the surgeon's hand position. Video remains stable and correctly oriented, irrespective of rotational movements.

Vascularisation Filter

Sophisticated pattern recognition identifies structures and colours that are typically indicative of vessels and veins.

Multi-Disciplinary Meeting rooms, Patient information systems

Sony is the leading supplier of AV/IT solutions to businesses across a wide variety of sectors including Medical, Media and Broadcast, Video Security, Digital Cinema and Monitors. We deliver products, systems and applications to enable the creation, manipulation and distribution of digital audio-visual content that add value to businesses and their customers.

With over 25 years' experience in delivering innovative market-leading medical products, Sony is ideally placed to deliver exceptional quality and value to its customers. Collaborating with a network of established technology partners, Sony delivers end-to-end solutions that address the customer's needs, integrating software and systems to achieve each organisation's individual business goals.

Sony can offer a wide range of solutions for the healthcare market, starting from Patient information systems over multi-disciplinary meeting rooms up to innovative ways of enhancing training for staff or students or helping patients to relax before their procedure.

For more information, visit our website:

Bravia 4K professional monitors

Highlights

- Brilliant 4K image quality with powerful 4K X1 processor and Reality Creation
- Embedded HTML5 platform for easy digital signage
- Copy custom settings to multiple screens via USB memory
- Slim, stylish and installation friendly with versatile control options
- Touchscreen option
- 24/7 operations and reliable high-brightness panel

Visual imaging cameras

Highlights

- Powerful 30x optical zoom (SRG-300H and SRG-300SE)
- View-DR and XDNR – unique Sony technologies for clarity in poor light (SRG range)
- IP streaming – stream conferences, lectures and events (SRG-300SE and SRG-360SHE)

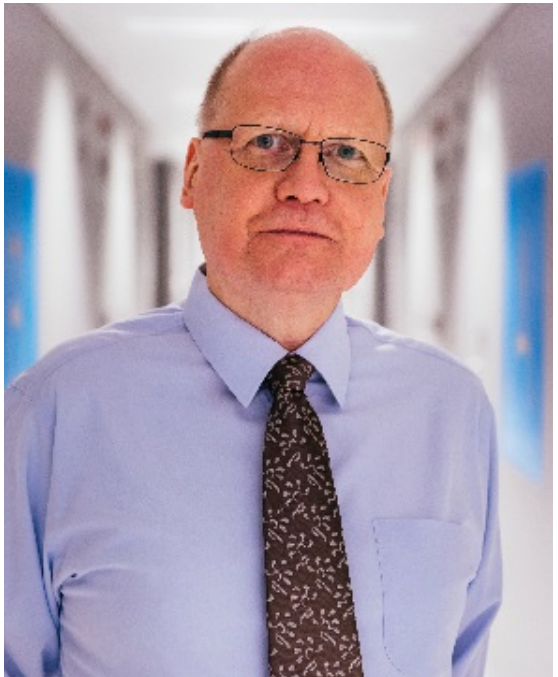
Case Study

NUCLeUS streamlines surgical workflow at UZ Leuven

NUCLeUS is the video-over-IP platform that lets surgeons and clinical staff route any live video source to any screen in the Operating Room, or record content for sharing. It's being used to enhance ergonomics and team cooperation in nearly a hundred ORs and treatment rooms at one of Belgium's leading university hospitals.

Application: NUCLeUS
Location: University Hospitals
Country: Belgium

"The modern OR is a busy place, with a lot going on," says Professor Erwin Bellon, IT Manager Multimedia & Telematics at UZ Leuven. "There is a lot of equipment – endoscopy, patient monitoring, ultrasound and more – each typically with its own dedicated screen. As a surgeon operating in a relatively confined space, you have to be like a contortionist sometimes, constantly turning your head and changing position to look at all these different screens. With NUCLeUS it's so much easier for the surgeon to see any image they need – whether it's radiology, vital signs or whatever – on a nearby monitor."



NUCLEUS SMART DIGITAL OR PLATFORM

34
ORs covered for routing & capture operation

91
ORs and exam rooms covered for imaging/ video capture

5
sites covered

120
receiver modules

180
transmitting modules

Connecting partner sites **8km** away

The Challenge

- University Hospital Leuven (UZ Leuven) is a leading teaching hospital with almost 2,000 patient beds and around 1,500 physicians
- Routing and recording video footage of surgeries required dedicated equipment and time-consuming re-plugging of cables

The Outcome

- Our NUCLeUS video-over IP platform helps clinical teams perform thousands of surgical interventions each year
- Simplifies cable routing and allows more efficient use of operating room resources
- Live video can be patched instantly to any destination or outside the operation room

The Solution

- NUCLeUS system installed in 34 digital operating rooms and other hospital areas
- Video streams from endoscopic cameras and other sources can be viewed locally or routed across the hospital's IT network
- Content is recorded on central servers for post-operative analysis, teaching and training

Any video source, any screen

NUCLeUS is installed in 34 fully-digital Operating Rooms, where the easy-to-use system allows any image source to be routed to any monitor as needed. It is also integrated into eight ambulatory surgery rooms, three eye surgery rooms and eleven endoscopy rooms where the system is used primarily for image capture and recording. For this application, it is linked with video sources at two partner hospitals up to 80km away.

Simpler cabling, more efficient use of resources

NUCLeUS offers several benefits to UZ Leuven's surgical and nursing teams, while offering extra flexibility and attractive economies of scale to IT staff. As any type of video source is digitised into an IP stream and carried by a universal network cable, physical connections between equipment become simpler. And as additional network outlets are relatively inexpensive, there's always a nearby outlet that mobile equipment can be plugged into.

Since the arrival of NUCLeUS, dedicated video recording equipment has disappeared from the rooms. Recording is performed by servers located hundreds of metres away – rather than taking up valuable space in the OR while potentially generating heat and dust.

Improving communication in the OR

As well as offering improved ergonomics for surgeons, NUCLeUS allows better cooperation between all members of the surgical team. Giving everyone in the OR a clear picture of what's happening delivers big ergonomic benefits.

Crucially, the open architecture of NUCLeUS does not commit UZ Leuven to using imaging modalities from a specific manufacturer. The system can accommodate virtually any kind of video source, in any format or resolution. Clinical staff are also impressed by the reliability of the hospital-wide system: "They just expect it to work!" concludes Professor Bellon.

To read the complete case study, visit our website

Case Study

Enhancing surgical workflow in the OR at Alder Hey Children's Hospital

One of the world's most technologically advanced children's hospitals, Alder Hey in the Park has partnered with Sony to build a powerful and easy to use hospital-wide IP video network. High Definition surgical footage can be patched instantly to screens in thirteen integrated Operating Rooms – or shared with surgeons and students anywhere on campus.

Application: NUCLeUS
Location: Alder Hey Children's Hospital
Country: UK

"...we realised a networked approach was much more powerful. Everything's so much cleaner to have data flowing back to a server and integrated with your electronic patient records."

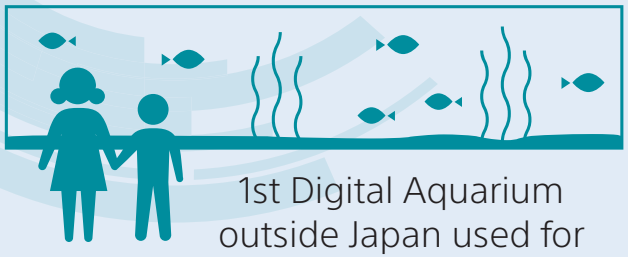
Dr Iain Hennessey, Clinical Director of Innovation at Alder Hey

SMART SOLUTIONS AT ALDER HEY CHILDREN'S HOSPITAL

13
ORs covered for routing & capture operation

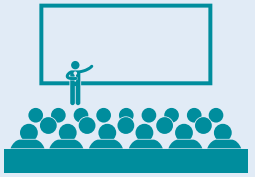
40
4k Bravia Pro's providing enhanced information system in the Atrium

26
Smart integrated surgical monitors



1st Digital Aquarium outside Japan used for patient distraction

Large lecture room solution



The Challenge

- One of the world's most innovative hospitals, Alder Hey in the Park cares for 275,000 young people every year. State-of-the-art facilities include sixteen integrated digital Operating Rooms.
- The large number of modalities in each Operating Room – including endoscopic, laparoscopic and X-ray systems – means more video sources and more screens.
- Every extra piece of equipment in the OR presents an extra infection risk and creates a less ergonomic environment.

The Outcome

- The networked video solution we have implemented for Alder Hey plays a significant role in optimising Operating Room workflow.
- Sharing images from an endoscopic camera or operating light mounted camera improves team awareness. This can reduce the danger from risks that may be missed when surgeons are focused on the task in hand.
- Surgeons can share real-time images during an operation to draw on the opinions of colleagues outside the OR.

The Solution

- Alder Hey has implemented a hospital-wide networking solution based on the NUCLeUS platform. This allows digital data from any source to be routed instantly to any destination.
- IP encoder boxes can be attached to any imaging device in the Operating Room, including video feeds from visible light and other modalities.
- Video can be displayed on screens in each OR, or routed across the hospital network via an intuitive touchscreen.

Taking the integrated OR to the next level

Every modern Operating Room is crammed with technology to help surgeons, anaesthetists and support staff perform their tasks with optimum efficiency. But this additional complexity is not without its challenges. Multiple modalities – including endoscopic, laparoscopic, X-ray and more – mean more video sources and more screens. And every time an extra piece of equipment is introduced, it presents an extra infection risk and creates a less ergonomic environment.

There was an obvious opportunity to take the trend towards 'integrated' Operating Rooms to the next level. The team wrote an ambitious brief to commission full theatre integration at Alder Hey. Engaging with Sony Healthcare, the hospital resolved to create a powerful new IP-based network based solution that would streamline the sharing, storage and management of video data captured in surgery.

Boosting workflow efficiency

Alder Hey's networked screens play a significant role in optimising workflow in the OR. Being able to move the ceiling-mounted screens precisely into position where the surgeon is working can offer a significant boost in task performance.

Letting everyone in theatre see images from an endoscopic camera or operating light mounted camera also improves team awareness about what's happening. This can reduce the danger from risks like accidental bleeding that may be missed when surgeons are 100% focused on the task in hand.

In addition, a networked approach gives surgeons the ability to reach out from the OR in the middle of an operation – where the focus is 100% on the patient – to draw on external opinions. Being able to see surgery on a screen elsewhere in the hospital allows the surgeon to interact with other colleagues who have specific knowledge about a rare procedure.

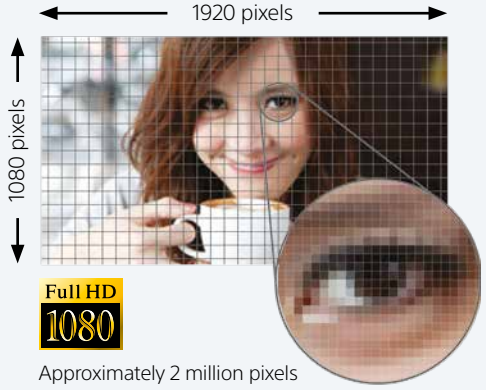
Technology – advanced innovation

4K – the ultimate definition

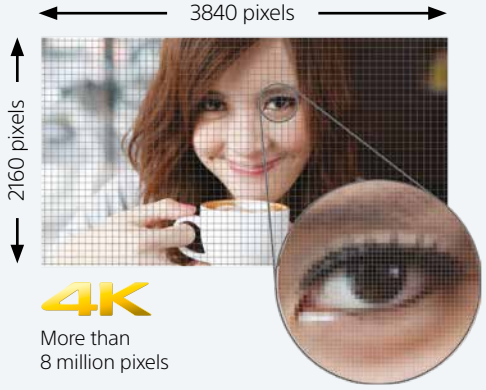
What is 4K?

4K means detail and lots of it. It's the description given for any still image, video or digital cinematographic material which delivers a resolution of 3840 x 2160 pixels, four times the quality of Full HD definition.

The benefit of the increased pixel count found in a 4K image can be easily explained when looking at the same still image in both Full HD and 4K. The increased number of pixels provides a greater level of detail, giving more definition to the entire image and clear detail when zooming in to a smaller section of an image. Where the Full HD content will begin to blur, the detail will remain in the 4K resolution, making it easier for the user of the image to identify content and definition within it.



Approximately 2 million pixels



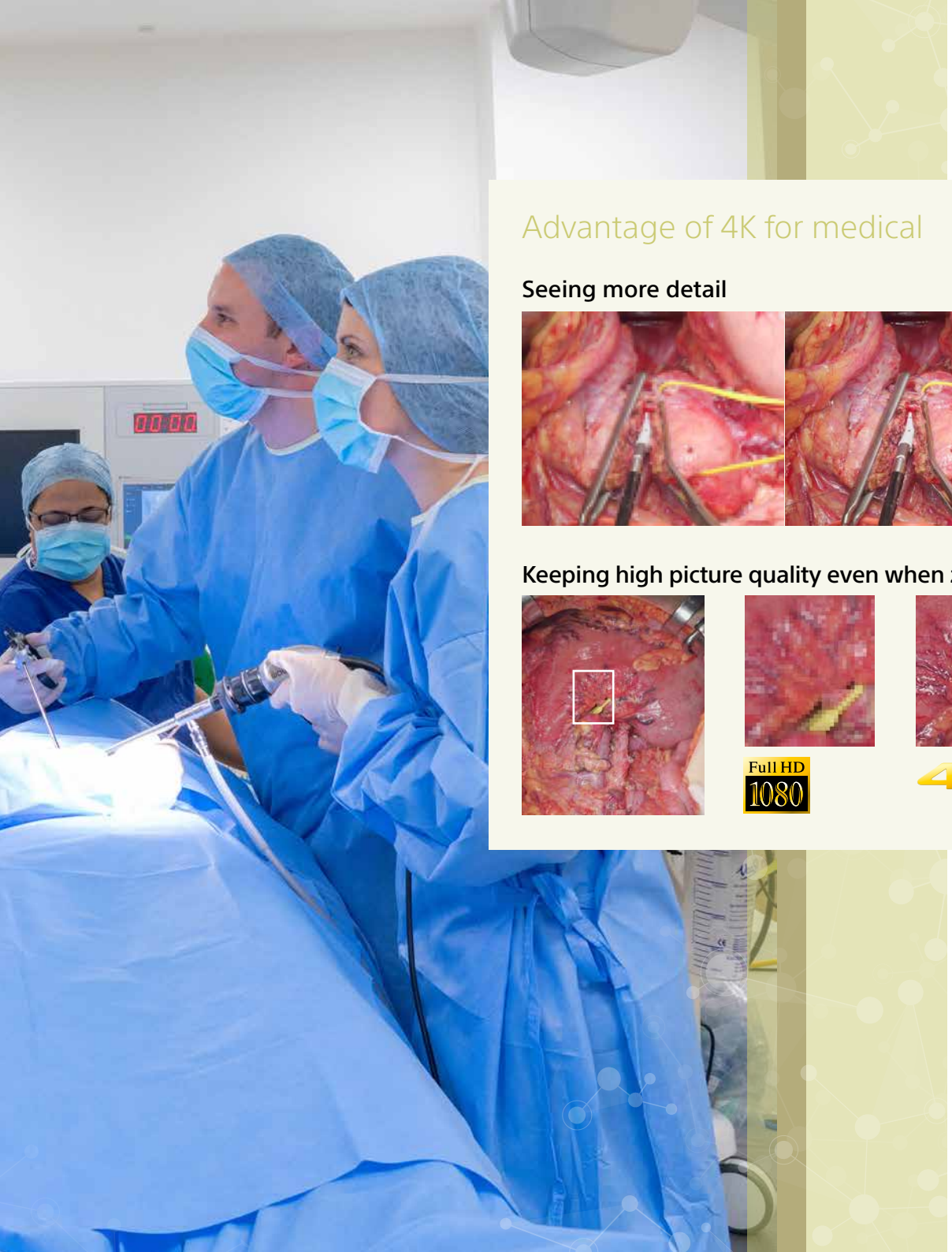
More than
8 million pixels

Leading the way in 4K

As market-leader in 4K innovation, we have championed 4K definition across a huge number of product applications.

From Sony F65 4K broadcast live system capturing the latest movie footage, Sony 4K Digital Cinema projectors distributing the content in crisp 4K into cinema screens – through to a 4K Bravia TV you can buy for your home.

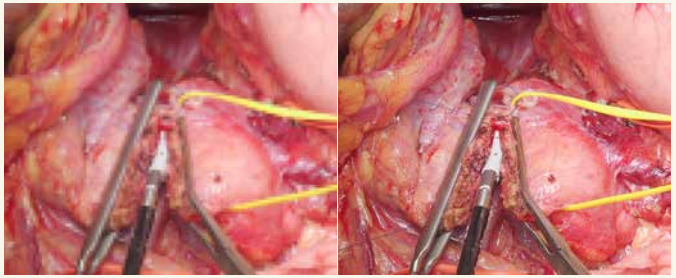
4K technology is becoming widely accepted as the new resolution – for the ultimate in clarity. And we have the expertise to revolutionize the way you work.



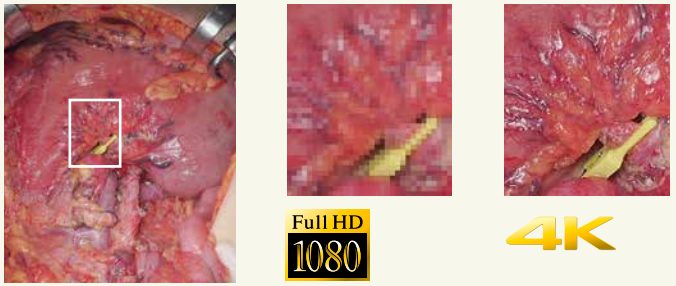
4K – THE ULTIMATE DEFINITION

Advantage of 4K for medical

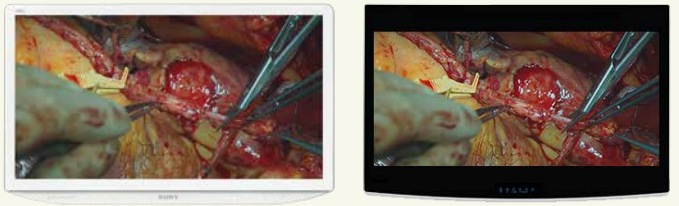
Seeing more detail



Keeping high picture quality even when zooming



True 4K and UHDTV – what's the difference ?



17:9 16:9

Only 17:9 aspect ratio display provides True 4K native resolution (4096 x 2160) whereas UHDTV has a 16:9 aspect ratio display (3840 x 2160).

If True 4K is shown on the 16:9 aspect ratio display, it will lose resolution and will have blank areas at the top and bottom of the display resulting in a narrower image with reduced resolution.

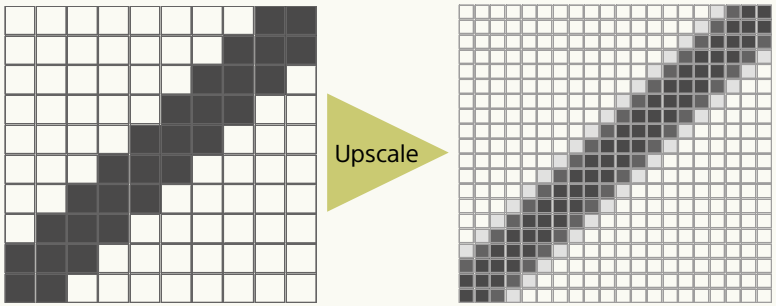
Setting a standard

Our products and workflow are designed to work with different modalities; our IP Converter will allow a hospital to share 4K content across an open platform. We are standardizing technology to make sure we are providing vendor neutral technology to the market, there is no proprietary technology to worry about.

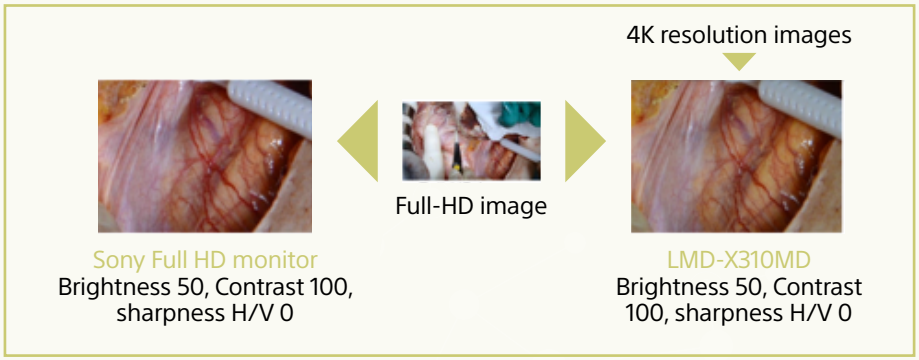
Images are simulated for illustration purposes

How do 4K monitors fit into a Full HD environment?

How HD is upscaled to 4K in a Sony surgical monitor



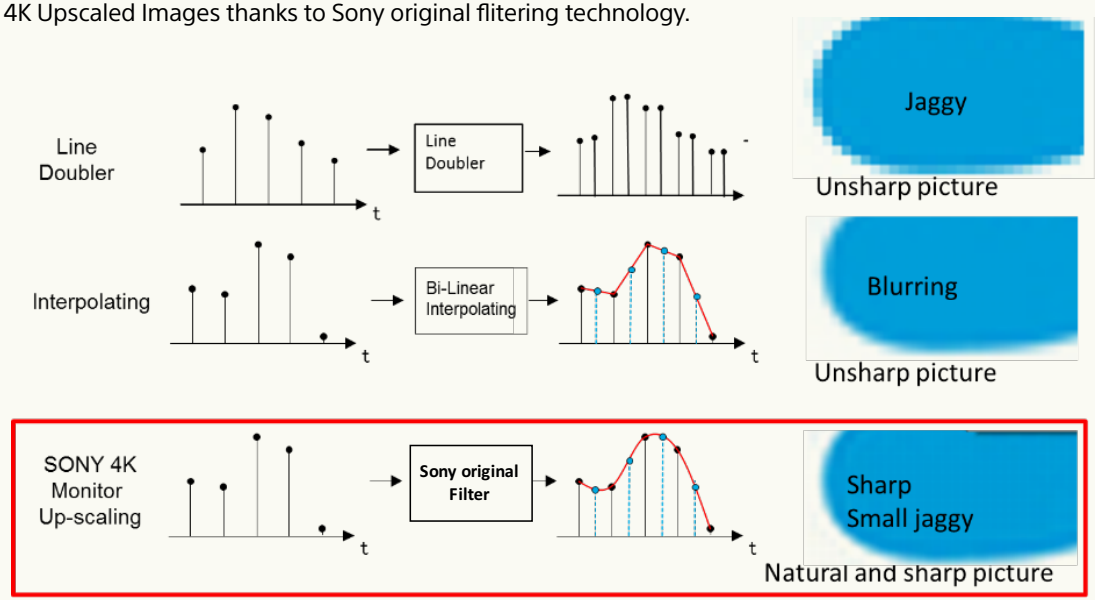
Built-in upscaling filter upconverts HD input signal to 4K resolution images

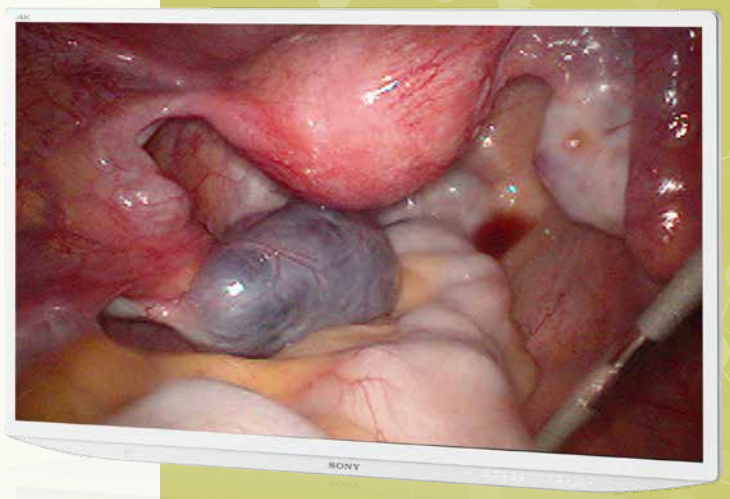


Unique Sony image interpolation and upscaling gives crisp, natural 4K view of lower resolution (HD/SD) images without blurring or 'jaggies'.

Advantages of Sony upscaling

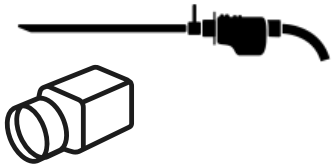
The upscaling filter of SONY 4K monitor provides natural and sharp 4K Upscaled Images thanks to Sony original flitering technology.



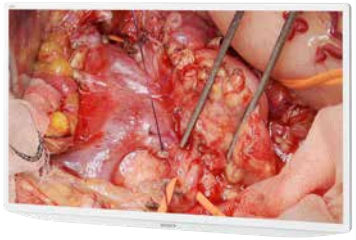


4K – THE ULTIMATE DEFINITION

1. Capture



2. Display



3. Record

4. Edit

5. Distribute

Introducing 4K to healthcare

We continue to build on our long and unique history of developing technologies used in products throughout the world, and are pleased to introduce sensor technology which now offers the healthcare market the opportunity to capture surgical procedures in 4K.

In fact we have developed a 4K workflow which makes it possible for any hospital to upgrade to the latest in imaging technology. With our 4K workflow, designed to work over IP across your existing network we can provide you with detail when it matters most. From the image sensors inside the latest 4K endoscopy cameras and the images they capture shown on our latest 4K surgical monitors, to a 4K recorder, whose content can then be distributed over the network to content management systems, or one of our 4K monitors for post-surgical review or teaching – we've got it covered.

Sony 4K Surgical Monitors

Our monitors can display very high-quality 4K Ultra HD colour video images in 3D and 2D from endoscopic/laparoscopic cameras, surgical microscopes, and other compatible medical imaging systems. Offering four times the pixel count of Full HD, the 4K Monitors provides a clearer view of fine details. Its increased resolution also maintains picture quality when viewing zoomed images, as well as supporting multiple picture display modes for enhanced operability in the OR. All our 4K surgical monitors incorporate A.I.M.E. technology which allows you to adjust the structure and colour of surgical images to enhance the view to the surgeon's preference. A.I.M.E. improves visibility and features four structure modes and eight colour modes.

Images are simulated for illustration purposes

3D technology

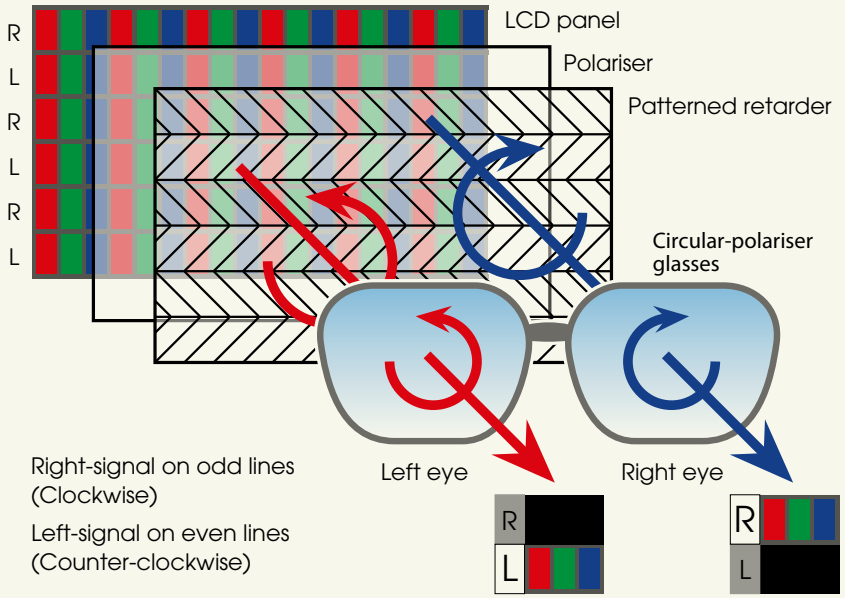
Surgical certainty

Sony 3D technology represents a major breakthrough in medical precision, enabling surgeons to gain detailed insights and spatial orientation during complicated operations. The delivery of pin-sharp images is achieved by combining our 3D technology with Sony advanced LCD displays. All our monitors undergo a multistage calibration process, which ensures true-to-original reproduction of the object under examination. This is indispensable not only for high precision but also for uniformity between monitors.

Sony 3D monitors process different 3D signal inputs such as 3G-SDI, DVI and HDMI and are capable to display signal formats such as dual stream for left & right, field mode and single stream in side-by-side, top-and-bottom or interleaved mode (line-by-line).

Principle of passive 3D display technology

The medical 3D monitors from Sony incorporate a circular-micro polariser filter attached to the LCD panel, and are supplied with circular-polariser 3D eye shield. Wearing this lightweight 3D eye shield, users experience a feeling of natural depth, and smooth, uninterrupted viewing of multiple monitors and flicker-free 3D images. This image quality helps users to engage in 3D operations with minimal stress.



Principle of 3D Circular-polariser

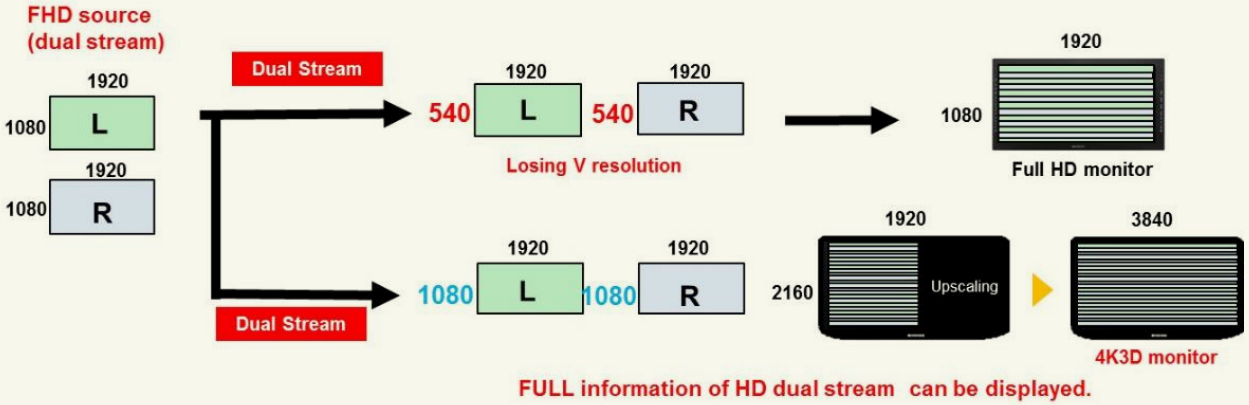
Delivering clear 3D Images for precise perceived depth and spatial orientation

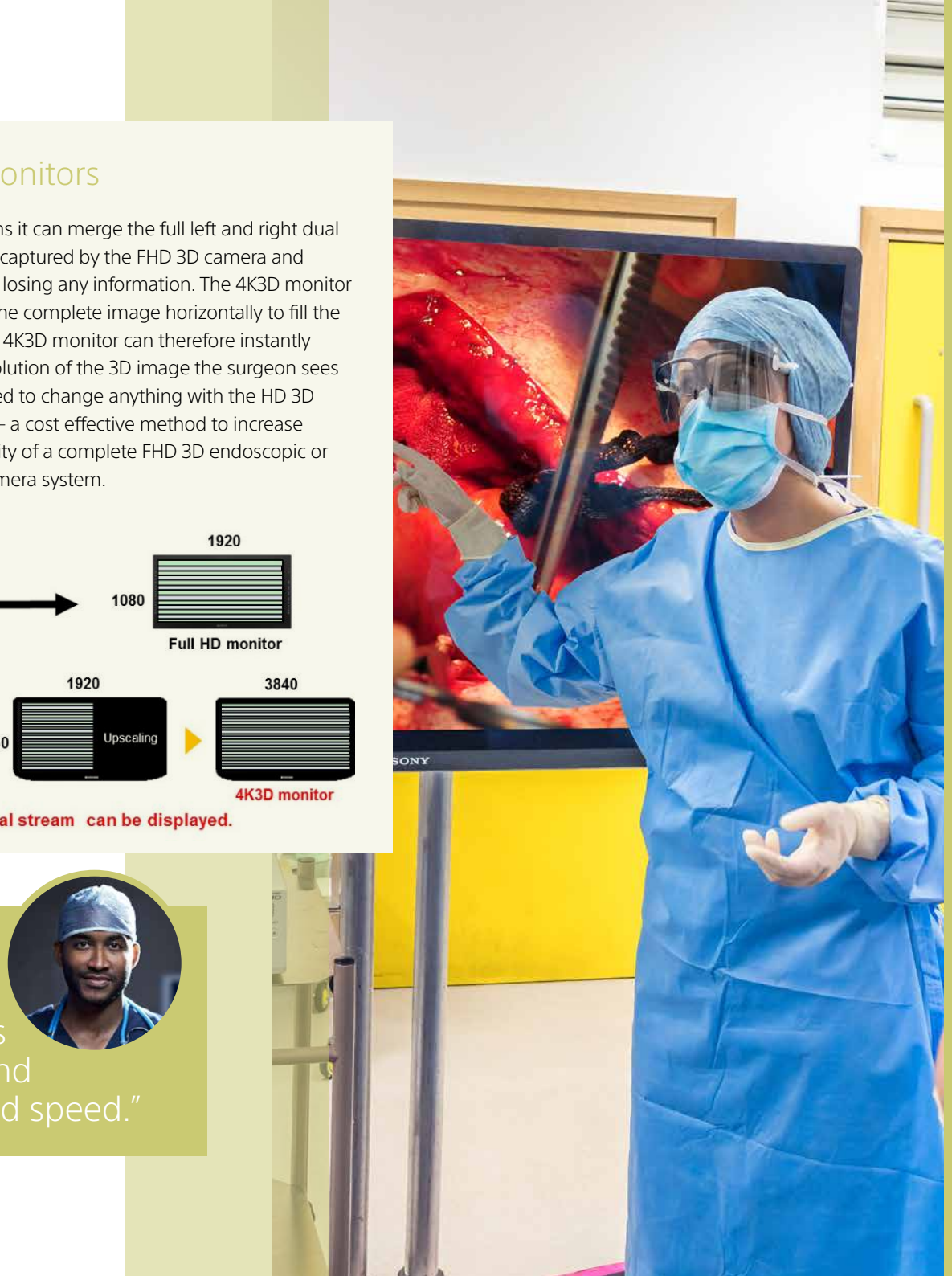
With the aid of lightweight, easy- to-wear 3D polarisation eye shields, users can also view several monitors seamlessly and without interruption.

Images are simulated for illustration purposes

The advantage of Dual Line FHD on 4K 3D monitors

A Full HD (FHD) 3D camera uses two image sensors to capture a left and a right eye image. These images are then displayed on a 3D monitor by merging them together with alternate lines for left and right eye view. So this means that on a conventional FHD 3D monitor with the capability to show a maximum of 1080 lines resolution, it can only show 540 lines of each left and right image. The rest of the captured images from the camera are lost. A 4K3D monitor has double the vertical resolution than a FHD 3D monitor so it can show 2160 lines. This means it can merge the full left and right dual stream images captured by the FHD 3D camera and display without losing any information. The 4K3D monitor then upscales the complete image horizontally to fill the entire screen. A 4K3D monitor can therefore instantly double the resolution of the 3D image the surgeon sees without the need to change anything with the HD 3D camera source – a cost effective method to increase the image quality of a complete FHD 3D endoscopic or microscopic camera system.





"3D is very important for laparoscopic surgery. It provides me with depth perception just like natural vision. This gives more confidence to position instruments and therefore I can operate with more safety and speed."

3D TECHNOLOGY

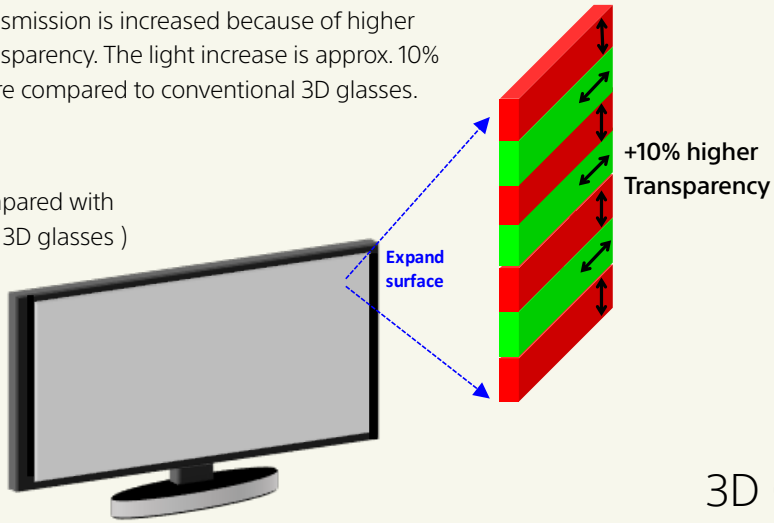
Improve efficiency of 3D surgical operations

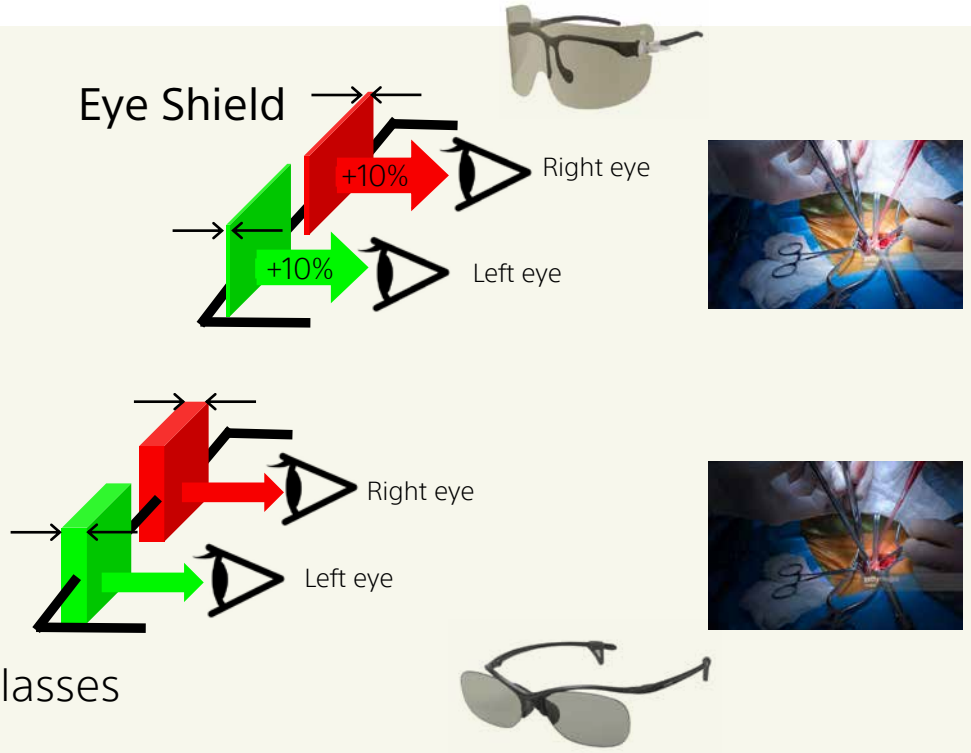
Advantages of Sony Eye Shields

High Transparency

Thanks to the thin shield material, the light transmission is increased because of higher transparency. The light increase is approx. 10% more compared to conventional 3D glasses.

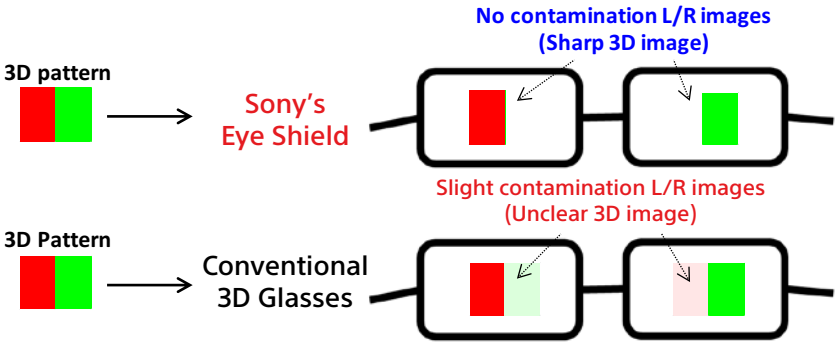
(Compared with Sony 3D glasses)





Less 3D Crosstalk

In principle when seeing an image, the left eye only sees the "Red side of the image" and the right eye only sees the "Green side of the image". Thanks to the high precision manufacturing, there is minimal influence of light "leaking" between left and right eye polarisation compared to conventional 3D glasses.



Less Colour Shift

There is strict control in manufacturing the 3D polarization filter so that the colour shift is kept at minimum and always at the same level. Further to this, our 3D surgical monitors are equipped with a 3D colour correction to compensate the colour shift so that the images can be reviewed in natural colour either in 2D (without glass/shield) or in 3D (with glass/shield) at no difference.

1. Capture

2. Display

3. Record

3D workflow

The Sony 3D workflow helps surgeons and other medical staff benefit from a more true visual experience that's closer to natural sight than 2D imaging.

Capture

For microscopic surgery applications, the MCC-3000MT is the first 3D medical-grade Full HD video camera with twin camera heads and a single camera control unit (CCU). Combining ease of adjustment with high precision and high resolution, this 3D video camera is attached to the operating microscope to deliver precise imaging in all three dimensions – recording the same view that the surgeon sees through the microscope.

Display

3D stereoscopic images can be shared with other medical staff via 3D medical-grade monitors ranging from 24 inch screen (LMD-2451MT) up to 55 inch screen (LMD-X550MT). Surgeons benefit from a smooth, uninterrupted view of multiple monitors whilst wearing light, comfortable polarized eye shields.

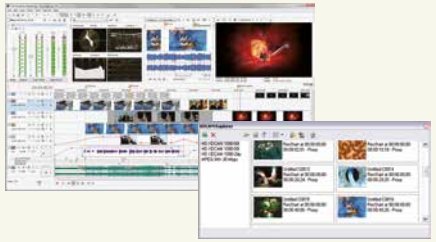
Record & streaming

3D images can also be recorded using the HVO-3300MT 3D medical-grade HD video recorder. Providing exceptional picture quality for both 3D and 2D video recording and playback, it records high-quality images onto the internal hard disk drive and a variety of removable media. Further to this, the video from any 2D or 3D input signal can be simultaneously streamed without any additional device.

Edit and present

Sony's 3D workflow extends from recording to editing with Sony Vegas Pro 15 (the latest Version at date of brochure release) and multi-viewer presentation. With Sony surgeons can enhance communication with patients and fellow clinicians by integrating 3D images into every phase of their workflow.

4. Edit



5. Present

Images are simulated for illustration purposes

A.I.M.E. Technology

What is A.I.M.E.?

Sony's proprietary A.I.M.E.™ (Advanced Image Multiple Enhancer)* is a hardware-implemented technology delivering rapid adjustment of structure and colour.

A.I.M.E. enhances the image reproduction in structure and colour and can be selected from the user simultaneously or individually for image analysis.

Various settings help to optimize user choice. You can select from 4 structure (sharpness) adjusting and 8 colour-adjusting levels, and can use them in any combination.

* A.I.M.E. delivers rapid contrast and colour enhancement of input images. Its effectiveness in clinical situations has been verified from several doctors serving for different medical disciplines. (It is not designed to serve as a medical diagnostic or treatment tool.)

AIME

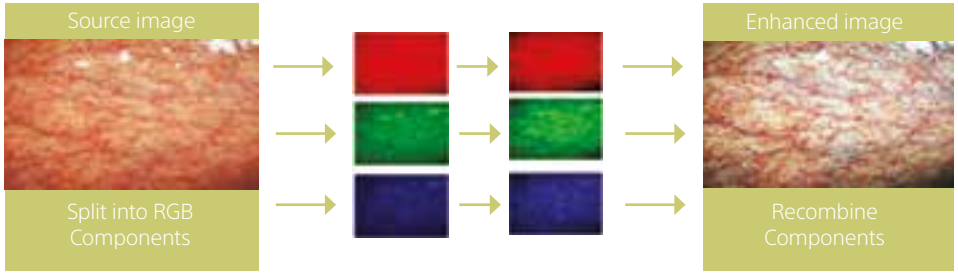
Advanced Image Multiple Enhancer

Integrated into high-end Sony surgical monitors as standard

Allows Surgeon to select colour and structure image enhancing options to optimal choice

AIME function switchable on control panel (ON/OFF)
- Colour Mode adjustable in 8 steps
- Structure mode adjustable in 4 steps

Structural Enhancement



Medical Device Report: Technology Interview
Hospital: Dezawa PED Center
Country: Japan
Orthopedic Surgeon

Dr. Akira Dezawa

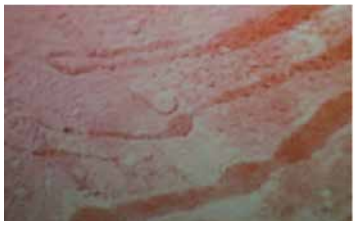
"The endoscopic system used at my clinic is equipped with leading-edge image processing designed by a European manufacturer. This time I am using a Sony monitor to compare some stock images from our endoscope. I should first say that the monitor itself is very bright and very clear. And when we turn A.I.M.E. on, I can see that it compares very favorably with our own images. In particular, the A.I.M.E.-enhanced images are very bright, and the image areas of interest to me—as a surgeon—are very clear and easy to see. I also notice that, even in cases where the endoscopic camera is focused on the foreground, the areas further back—which you would expect to be out of focus—are pretty clear as well. I think this would probably reduce the need to move the camera around during surgery."

A.I.M.E. OFF

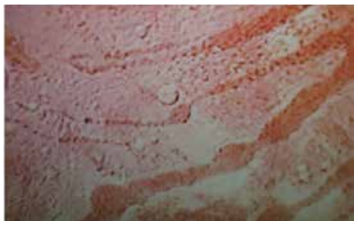
A.I.M.E. ON

Dr. Dezawa: With A.I.M.E. turned off, the image is watery and blurred. When you turn A.I.M.E. on, the entire area seems to gain focus. And I think the A.I.M.E. contrast enhancements may make the image easier to read.

A.I.M.E. OFF



A.I.M.E. ON



Dr. Dezawa: In this example, A.I.M.E. seems to improve the overall red contrast, so that the image may be easier to view.

Arthroscope

Opinions on monitors featuring A.I.M.E. (Advanced Image Multiple Enhancer)

Funabashi Orthopaedic Hospital

"It highlights the deeper portions of the joint. This could help the doctor to improve surgery efficiency."
Dr. Akihiro TSUCHIYA
Chairman, Sports Medicine

Graduated from Chiba University School of Medicine in 1981; Orthopaedic Assistant at Chiba University School of Medicine in 1991; Studied sports medicine and arthroscopic surgery at Harvard University in Boston, USA in 1991; Sports Medicine of Funabashi Orthopaedic Hospital in April 2002; Team Doctor for the J. League Kashiwa Reysol in January 2004; Director and Sports Doctor for Chiba Skating Federation in November 2010.

"Now I can often see the inside depth, and that can mitigate stress."
Dr. Hiroyuki SUGAYA
Chairman & Director, Shoulder & Elbow Center

Graduated from Chiba University School of Medicine in 1987; Obtained medical doctorate in 1996 and studied at Orthopaedic Research Lab in West Palm Beach, Florida in the US; Director of the Shoulder & Elbow at Sports Medicine of Funabashi Orthopaedic Hospital in April 2002; Chairman & Director of the Shoulder & Elbow Center since April 2013; Specialist of the Japanese Orthopaedic Association; Certified Sports Doctor of Japan Sports Association.

"I can obtain some relevant information before actually touching the part."
Dr. Norimasa TAKAHASHI
Co-Director, Shoulder & Elbow Center

Medical Specialist of the Japanese Orthopaedic Association; Certified Sports Doctor of Japan Sports Association; Specialist in sports medicine and the shoulder and elbow joints.

What do top experts say about monitors featuring Sony's unique A.I.M.E. technology?

Arthroscope/the shoulder
Dr. Hiroyuki Sugaya

Q. How did you like Sony's monitor?

"Every image on the Sony monitor was very bright and sharp. Images were often unfocused and blurred but now, after using the Sony monitor, I realize those problems had nothing to do with the camera but were rather caused by our previous monitor."

A.I.M.E. OFF

Rotator cuff

A.I.M.E. ON

Rotator cuff

Q. What do you think about A.I.M.E. image processing?

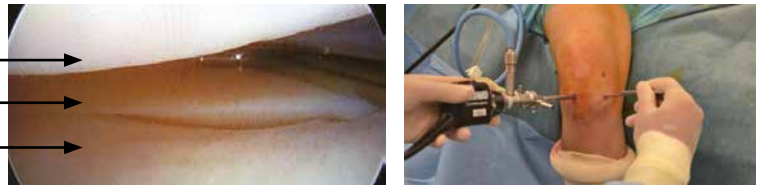
"The images processed with A.I.M.E. look more focused. I was even able to see the undulations of the tissues. This image processing can give a sense of depth to images on the monitor. What is good about A.I.M.E., I think, is that it allows doctors to see tissues more three dimensionally; it can mitigate their stress during an operation. I did not feel any time lag between the monitor display and my procedure."

Arthroscopy/the knee
Dr. Akihiro Tsuchiya

Q. What is your opinion of A.I.M.E. image processing?

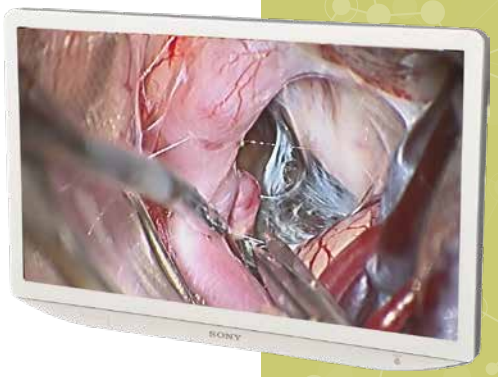
"In knee arthroscopic surgery, much of the area of interest for surgeons is somewhere deeper inside the image, so the key issue is how clearly that portion of an image can appear on the monitor. For example, if there is white tissue near the front (as in the left-hand picture), this could cause halation and blur the image. The A.I.M.E. function prevents the occurrence of halation, so I felt I was able to keep seeing images clearly and I found the operation easier."

A.I.M.E. ON



A.I.M.E. enhanced images can reduce anticipated risk in neurosurgery

Dr. Toru Mizutani talks about his experience with A.I.M.E. technology. With his abundant surgical experience in cerebrovascular disorders, including cerebral aneurysms, carotid artery stenosis, cerebral vascular bypass and benign brain tumours, he is considered an expert in this field.



Dr. Mizutani's general comment on A.I.M.E. technology

Please tell us about the procedure you use for surgical clipping of cerebral aneurysms.

"Dr. Mizutani: I have performed surgery on approximately 2,000 cases of cerebral aneurysms. The accuracy and speed of attaching the clip around the neck of a cerebral aneurysm are of utmost importance to determine the surgery's success or failure. Dissection toward the cerebral aneurysm requires accurate manipulation under microscopy to avoid damage to tissues and bleeding of tiny vessels.

After placing the clip, careful inspection under direct vision is conducted to assure that the clip definitely prevents blood from entering the aneurysm, that the parent artery is not constricted, and that penetrating branches are preserved. Further checking is performed by the ICG* fluorescence imaging."

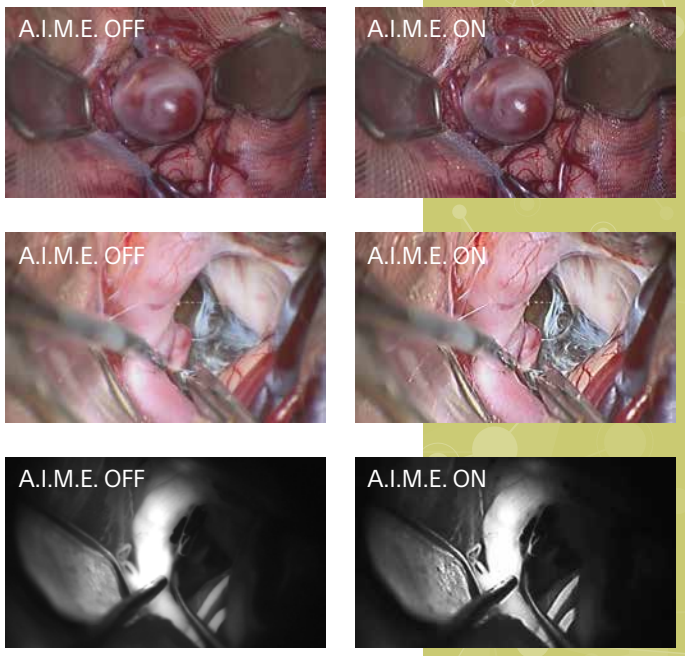
** ICG: Indocyanine green.*

What do you think about the possible utilisation of A.I.M.E. technology for cerebral aneurysm clipping under a microscope?

"Dr. Mizutani: Compared with the images of clipping preparation I have described before (Photos 1 and 3), those created with A.I.M.E. imaging technology (Photos 2 and 4) seem more clear, and the 'red colour tone' is accentuated by the enhancement function of contrast and colour tone. The surgeon actually does not conduct the surgery through a monitor but through the lens of the microscope. Other physicians observing the surgery, however, can see finer tissues and the way in which the surgeon handles the surgical scissors, because the monitor of this system provides very clear images that help them to learn more about the surgery. The system may also be very useful to conduct repeated postoperative checks. Better-defined imaging may even allow surgery using the monitor in future.

When checking with the ICG fluorescence imaging (Photo 5), I noticed that similar clearness was achieved with the contrast enhancement of A.I.M.E. (Photo 6).

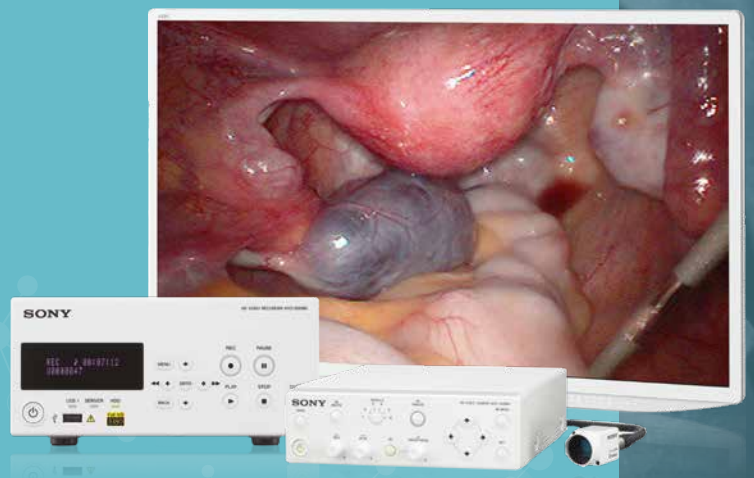
Based on these findings, I consider that there are various possibilities of applying A.I.M.E. to procedures performed under a microscope."

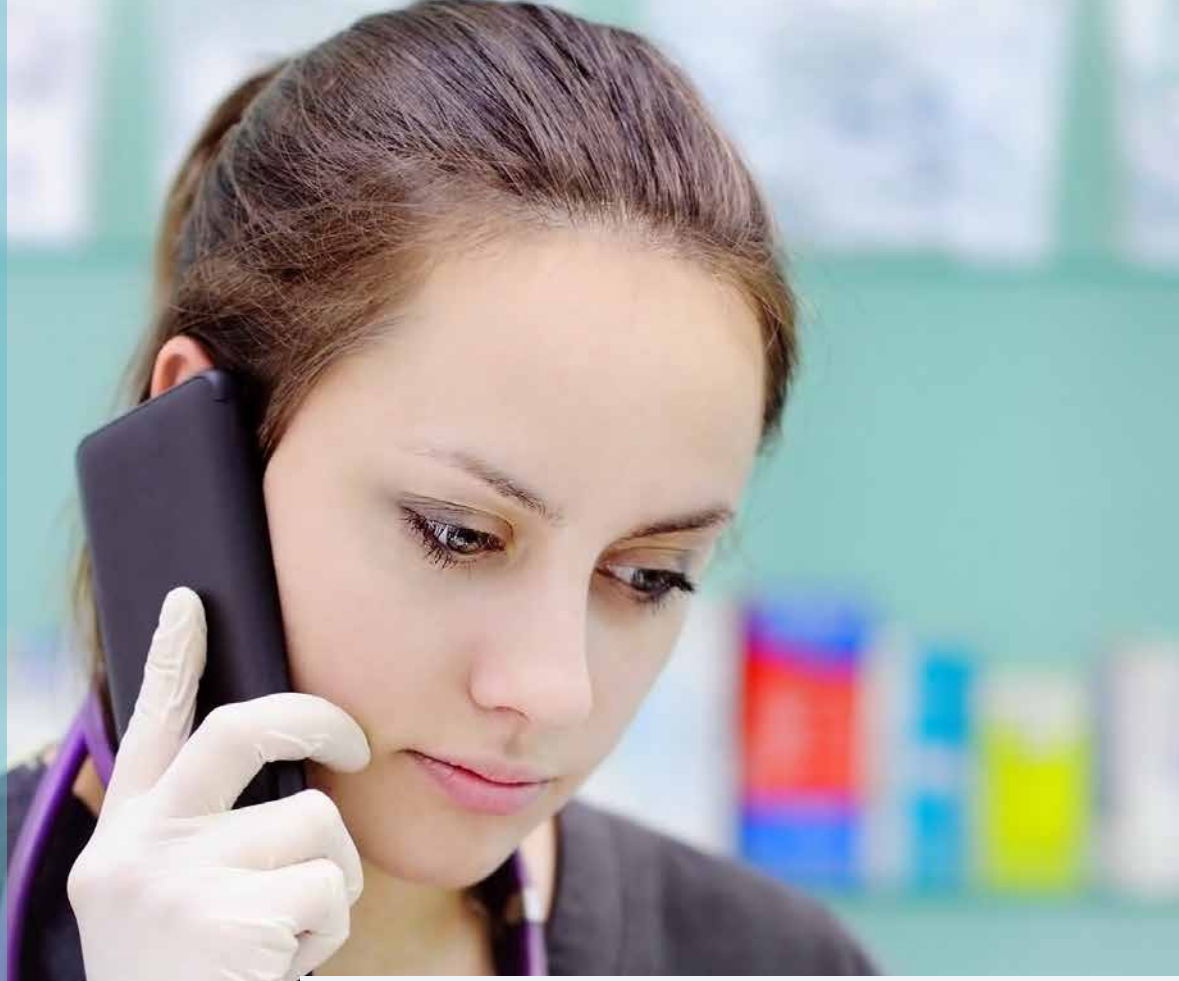


Sony Healthcare PrimeSupport

Get extra peace of mind with PrimeSupport

PrimeSupport goes beyond your standard warranty, with privileged access to our helpdesk for advice on your Sony Professional product. Our PrimeSupport package options give you all the help you need to stay up and running.





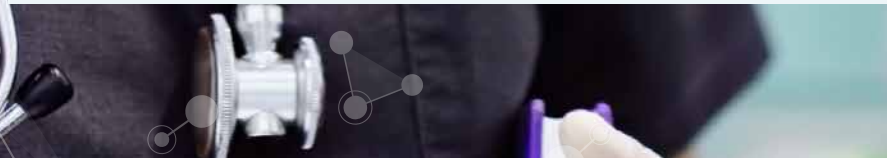
PrimeSupport

Contact our technical support team on 00800 7898 7898

Monday - Friday 09:00 – 18:00 (Central European Time), excluding local national holidays.

Support is available in English, French, Italian, German and Spanish and is free for most European countries.

Or email **primesupport@sony.com**



PrimeSupport Service Summary

Telephone Support
Helpdesk support services are available Monday to Friday 09:00-18:00 CET (Central European Time), excluding Local National Holidays. Visit **www.pro.sony.eu/helpdesk** to find the contact details.

The multilingual team (English, French, German, Italian and Spanish) provide access to product specialists, who are able to advise and act as the first point of contact for Service & Support enquires. Where diagnosis cannot be made by the helpdesk, the issue may be escalated to a senior specialist.

Standard Repair
Where the issue cannot be resolved by the Helpdesk, we will arrange to collect the faulty unit for repair. We aim to collect the faulty unit within two working days of escalation and we will repair the unit and return it to you. We reserve the right to replace items beyond economic repair with a refurbished model of a similar specification.

Logistics Covered
Our repair centre will inspect the unit. If we find the unit has suffered from accidental damage or no fault is found we may invoice you for the cost of shipment and labour. Units can be collected from and returned to any address within mainland areas of EU countries, Norway and Switzerland. For all other areas, please contact the helpdesk for further assistance. Regardless of repair route chosen by the helpdesk, all parts and labour costs will be covered under this agreement subject to the standard terms and conditions. *Some geographical locations outside the EU, may cause shipment delays, which will result in a longer resolution time.

PrimeSupportPro

2 years PrimeSupport cover on all medical hardware

Extend your PrimeSupport cover up to 5 years. Provides peace of mind particularly when purchasing operationally critical equipment. 1 and 3 year PrimeSupport extensions are available in addition to the two year PrimeSupport Enhanced Warranty.

Accessories

CAMERAS, RECORDERS, PRINTERS ACCESSORIES

Cable

Camera cables	Model	Length	In	Out	MCC-500MD	MCC-3000MT
	CCMC-T	05/10/15/20	20-pin	36-pin		●
	CCMC-SA	06/10/15	20-pin	20-pin	●	
	CCMC-EA05	5	20-pin	20-pin	●	

AC adapter

AC-81MD Adapter

AC Adapter for Printer, 3D camera and Head Mount Display

UP-D711MD	MCC-3000MT
HVO-550MD series	HVO-500MD series
HMS-3000MT	

Remote Control

RM-91

Remote Control Unit

Connector: Stereo mini
Cable length: 5 m
Mass: 80 g (3 oz)

UP-25MD	UP-X898MD
UP-971AD	UP-991AD
HVO-500MD	HVO-550MD
HVO-3300MT	HVO-4000MT

FS-24

Foot Switch

Connector:
Stereo Mini Jack
Cable Length: 5 m
Water proofing: IPX3

UP-25MD	UP-X898MD
UP-971AD	UP-991AD
HVO-500MD	HVO-550MD
HVO-3300MT	HVO-4000MT

MDD Compliant

All products on this page are MDD Compliant.

SURGICAL MONITORS ACCESSORIES

Eye Shield

CFV-E30SK
3D Eye Shield Kit

LMD-X550MT	LMD-3251MT
LMD-X310MT	LMD-2451MT

CFV-E20SK
2D Eye Shield Kit

LMD-X550MT	LMD-3251MT
LMD-X310MT	LMD-2451MT

CFV-B100
Eye Shield frame

LMD-X550MT	LMD-3251MT
LMD-X310MT	LMD-2451MT

CFV-E30D
Eye Shield (x15pc)

LMD-X550MT	LMD-3251MT
LMD-X310MT	LMD-2451MT

CFV-E20D
2D Eye Shield (x15pc)

LMD-X550MT	LMD-3251MT
LMD-X310MT	LMD-2451MT

Monitor Stand

SU-560
Monitor Stand

LMD-1951MD	LMD-2451MD
LMD-2451MT	

SU-600MD
Monitor Stand

LMD-X310MT	LMD-X310MD
LMD-2735MD	LMD-2435MD
LMD-2760MD	LMD-2765MD

SU-32FW
Monitor Stand

LMD-3251MT

AC Adapter

AC-110MD
AC Adapter for LMD Monitors

LMD-1951MD	LMD-2451MD
LMD-3251MT	LMD-2451MD

AC-120MD
AC Adapter for Medical Monitors

LMD-2435MD	LMD-2735MD
LMD-2760MD	LMD-2765MD

Input Adapter

BKM-243HSM
HD SDI & SDI Input Adapter

LMD-1951MD	LMD-2451MD
LMD-2451MT	LMD-3251MT

BKM-256DD
DVI Input Expansion Board

LMD-1951MD	LMD-2451MD
LMD-2451MT	LMD-3251MT

BKM-250TGM
3G/HD/SD-SDI Input Adapter

LMD-1951MD	LMD-2451MD
LMD-2451MT	LMD-3251MT

BKM-341HS
HD-SDI Adapter

LMD-2110MD	LMD-1530MD

Cable

SMF-405
Component RGB to D-sub 15-pin Signal Cable

LMD-2765MD	LMD-2435MD
LMD-2735MD	

All products on this page are MDD Compliant.

BLACK & WHITE MEDIA FOR REFERENCE

Size: A7

UPP-84HG

Thermal Print Media

Print quantity:
104 prints/A7prints
Paper size:
84 mm (W) x 12,5 m

Size: A7
UP-D711MD

UPP-84S

Thermal Print Media

Print quantity:
112 prints/A7 prints
Paper size:
84 mm (W) x 13,5 m

Size: A7
UP-D711MD

Size: A6

UPP-110HG

Thermal Print Media

Print quantity:
193 prints/A6 prints
Paper size:
110 mm (W) x 18 m

Size: A6	
UP-897MD	UP-D897
UP-X898MD	UP-D898MD
UP-D898DC	

UPP-110HD

Thermal Print Media

Print quantity:
215 prints/A6 prints
Paper size:
110 mm (W) x 20 m

Size: A6	
UP-897MD	UP-D897
UP-X898MD	UP-D898MD
UP-D898DC	

UPP-110S

Thermal Print Media

Print quantity:
215 prints/A6 prints
Paper size:
110 mm (W) x 20 m

Size: A6	
UP-897MD	UP-D897
UP-X898MD	UP-D898MD
UP-D898DC	

Size: A4

UPP-210HD

Thermal Print Media

Print quantity:
139/A4 prints
Paper size:
210 mm (W) x 25 m

Size: A4	
UP-990AD	UP-970AD
UP-991AD	UP-971AD

UPP-210SE

Thermal Print Media

Print quantity:
139/A4 prints
Paper size:
210 mm (W) x 25 m

Size: A4	
UP-990AD	UP-970AD
UP-991AD	UP-971AD

UPT-210BL

Blue Thermal Transparent Film (Type III)

Print quantity:
42 prints (6-split)
Paper size:
210 mm (W) x 12.5 m

Size: A4	
UP-990AD	UP-991AD

Size: 8"x10"

UPT-736BL

Blue Thermal Film

Contents:
100 sheets
Paper size:
203 mm x 254 mm
(8 x 10 inches)

Size: 8 x 10
UP-D74XRD

UPT-735BL

Blue Thermal Film

Contents:
100 sheets
Paper size:
203 mm x 254 mm
(8 x 10 inches)

Size: 8 x 10
UP-D72XR

UPP-725

Thermal Print Media

Contents:
100 sheets of print media
Paper size:
203 mm x 254 mm
(8 x 10 inches)

Size: 8 x 10	
UP-D74XRD	UP-D72XR

MDD Compliant

All products on this page are MDD Compliant.

THERMAL FILM FOR DIAGNOSIS

Standard density

UPT-517BL

Blue Thermal Film

Contents:
125 sheets
Paper size:
354 mm x 430 mm
(14 x 17 inches)

Size: 14 x 17	UP-DF500
UP-DF750	UP-DF550

UPT-514BL

Blue Thermal Film

Contents:
125 sheets
Paper size:
279 mm x 354 mm
(11 x 14 inches)

Size: 11 x 14	
UP-DF750	UP-DF550

UPT-512BL

Blue Thermal Film

Contents:
125 sheets
Paper size:
253 mm x 304 mm
(10 x 12 inches)

Size: 10 x 12	
UP-DF750	UP-DF550

UPT-510BL

Blue Thermal Film

Contents:
125 sheets
Paper size:
202 mm x 253 mm
(8 x 10 inches)

Size: 8 x 10	
UP-DF750	UP-DF550

High density

UPT-M712BL

Blue Thermal High Density Film

Contents:
125 sheets
Paper size:
253 mm x 304 mm
(10 x 12 inches)

Size: 10 x 12
UP-DF750

UPT-M710BL

Blue High Density Film

Contents:
125 sheets
Paper size:
202 mm x 253 mm
(8 x 10 inches)

Size: 8 x 10
UP-DF750

Cleaning kit

UPA-500

Cleaning Kit

Contents:
Cleaning roller x 5
Cleaning paper x 5
Head lapping film x 1

Cleaning Kit	
UP-DF750	UP-DF550
UP-DF500	

COLOUR MEDIA FOR REFERENCE

Size: A6

UPC-21L

Colour Printing Pack

Contents:200 sheets of print paper
4 rolls of ink ribbon
Paper size: 144 mm x 100 mm
(5 3/4 x 4 inches)

Size: A6	
UP-25MD	UP-D25MD
UP-20	UP-21MD
UP-D23MD	

UPC-21S

Colour Printing Pack

Contents: 240 sheets of print paper
3 rolls of ink ribbon
Paper size: 100 mm x 90 mm
(4 x 3 5/8 inches)

Size: A6	
UP-25MD	UP-D25MD
UP-20	UP-21MD
UP-D23MD	

Size: A4 & A5

UPC-R80MD

Self-laminating Colour Printing Pack

Contents:2x 50 sheet print
paper roll for 100 prints
2x ink ribbon
Paper size:
210 mm (W) x 16 m

Size: A4
UP-DR80MD

UPC-770

Self-laminating Colour Printing Pack

Contents:
72 sheets of print paper
a roll of ink ribbon
Paper size:
210 mm x 298 mm
(8 3/8 x 11 3/4 inches)

Size: A4	
UP-D77MD	UP-D75MD

UPC-55

Colour Printing Pack

2x 100 sheets of paper
2x ink ribbon
Paper size:
178 mm x 152 mm

Size: A5	
UP-D55	UP-55MD

All products on this page are MDD Compliant.

Specifications

Full HD Colour Video Cameras

MCC-3000MT

System	
Image device	3-chip 1/2 inch Exmor CMOS (x2)
Effective picture elements	1920 × 1080
Scanning system	1080i50/i59,94
Sync system	External with BNC (x1)
Horizontal resolution	1000 TV lines
Lens mount	Cmount (x2)
Flange back	17.526 mm
Sensitivity	F10 typical (in 1920 x 1080/59.94i mode)
Minimum illumination	9 lx (in 1920 x 1080/59.94i mode, F2.2, +21 dB gain)
S/N ratio	54 dB (Y) (typical)
Gain	0 to 21 dB
Shutter speed	60i: 1/60, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/20000 50i: 1/60, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/16000
Electronic shutter	Off/speed/ECS/SLS/EXSLS
Iris	Manual
AE area	Multi/Large/Medium/Spot/Slit Selectable
AE speed	-99 to +99
AE detect	Backlight, Standard, Spotlight
Knee point	Auto, Point, Slope, Manual
Black stretch	Variable Black max / Black min
Gamma	Variable
Pedestal	Master, R/B Manual
Black balance	-99 to +99
White balance	Preset/Memory/ATW
ATW area	Normal/manual selectable
ATW speed	1 (slow) - 5 (fast) selectable
Detail level	-99 to +99
Detail frequency	-99 to +99
Linear matrix mode	ALL/Target/OFF/Select
Partial enhance	-99 to +99, Type1-Type4
CCD integration mode	G-B, B-G, G-R, R-G, R-B, B-R
Baud rate	Manual
Sync	Up to 38400
Trigger	CMOS/Open Collector ext Sync BNC
Strobe	Slave
Scene file	Profile 1 - Profile 6 (selectable)
Output signals	HD-SDI, Composite
Serial data	RS-232C
Connectors (on Camera Control Side)	Composite output BNC (x1), HD-SDI output BNC for A and B (2x), Ext Sync input BNC (x1), Remote D-sub 9-pin (x1)
Measurements	
Dimensions	CHU: 35 × 45 × 50 mm (1 7/16 × 13/16 × 2 inches) without projection CCU: 200 × 88 × 341 mm (7 7/8 × 3 1/2 × 13 1/2 inches) without projection
Mass	CHU: 90 g (3.2 oz) (x2), CCU: 4.5 kg (9 lb 15 oz)
Power	
Requirements	DC 24 V
Consumption	1.5 A (inrush: 3.0 A)
Operating conditions	
Temperature	0 to +40 °C (+32 to +104 °F)
Storage/Transporting conditions	
Temperature	-20°C to 60°C (-4°F to 140°F)

Full HD Colour Video Cameras

MCC-500MD

System	
Image device	Single chip 1/3 inch type Exmor CMOS
Effective picture elements	1920 × 1080
Scanning system	1080i50/I59,94/P50/P60
Sync system	External with BNC (x1)
Horizontal resolution	Above 900TV lines
Lens mount	C-mount
Flange back	17.526 mm
Sensitivity	F5.6 (Typical) (At 1080/59.94i)
S/N ratio	55db (Y) (typical)
Gain	0dB to 27dB
Shutter speed	1/60 to 1/10000
Electronic shutter	Auto/manual (semi/full)
AE detect	Slow/normal/fast
Gamma	Normal/medium/dynamic range
White balance	Auto/Xenon/Halogen/White Led
Scene file	Profile 1 - Profile 6 (selectable)
Output signals	HDMI, HD-SDI, S-Video (Y/C), Composite
Serial data	RS-232C
Connectors (on Camera Control Side)	HDMI (x1), HD-SDI output on BNC (x1), S-Video output: mini DIN 4-pin (x1), Composite output BNC (x1), 3D SYNC on BNC (x2) Input: FS TRIG IO: Stereo mini-jack (x2) Remote:D-sub 9-pin (x1)
Measurements	
Dimensions	CHU:27 x 28 x 49 mm (1 1/8 x 1 1/8 x 1 15/16 inches) CCU:200 x 62 x 240 mm (7 7/8 x 2 1/2 x 9 1/2 inches)
Mass	Camera head: approx. 40 g/approx. 1.4 oz Camera control unit: approx. 2.3 kg/approx. 5 lb. 1.1 oz
Power	
Requirements	100 to 240V AC, 50/60Hz
Consumption	0,27A - 0,18A
Operating conditions	
Temperature	0 to +40 °C (+32 to +104 °F)
Storage/Transporting conditions	
Temperature	-20°C to 60°C (-4°F to 140°F)

	4K3D Surgical Monitor		4K2D Surgical Monitor	
	LMD-X550MT	LMD-X310MT	LMD-X550MD	LMD-X310MD
Picture Performance				
Picture Size (Diagonal)	1387.8 mm (54 3/4 inches)	789.06 mm (31 1/8 inches)	1387.8 mm (54 3/4 inches)	789.06 mm (31 1/8 inches)
Effective Picture Size (HxV)	1209.6 x 680.4 mm (47 5/8 x 26 7/8 inches)	698.0 x 368.1 mm (27 1/2 x 14 1/2 inches)	1209.6 x 680.4 mm (47 5/8 x 26 7/8 inches)	698.0 x 368.1 mm (27 1/2 x 14 1/2 inches)
Resolution (HxV)	3840 x 2160 pixels	4096 x 2160 pixels	3840 x 2160 pixels	4096 x 2160 pixels
Aspect	16:9	17:9	16:9	17:9
Backlight	LED			
Panel Technology	LCD with IPS			
Luminance (Panel Spec)	520 cd/m² (typical)	435 cd/m² (typical)	520 cd/m² (typical)	770 cd/m² (typical)
Contrast Ratio	1400 : 1	1450 : 1	1400 : 1	1450 : 1
Gray scale depth	10bit			
Colours	1.073 billion			
Vertical Viewing Angle (3D Mode)	32° at a viewing distance more than 1,200 mm, crosstalk ratio less than 7% (typical)	27° at a viewing distance more than 775 mm, crosstalk ratio less than 7% (typical)		
Gamma	1.8, 2.0, 2.2, 2.4, 2.6, DICOM, Highlight			
Input				
Composite Input	N/A			
Y/C Input	N/A			
RGB, Component Input	N/A			
HDMI Input	HDMI (x1) (HDCP 1.4 correspondence)			
DVI-D Input	DVI-D (x1) (HDCP 1.4 correspondence), TMDS single link			
SDI Input	BNC (x5) 3G/HD/SD-SDI			
HD15 Input	N/A			
External Sync Input	N/A			
Parallel Remote	N/A			
Serial Remote (LAN)	D-sub 9-pin (RS-232C) (x1), RJ-45 (x1) (Ethernet, 10BASE-T/100BASE-TX)			
DC Input	N/A	XLR-type 3-pin (male) (x1) 26V DC (output impedance 0,005Ohms or less)	N/A	XLR-type 3-pin (male) (x1), 26 V DC (output impedance 0.005 ohms or less)
Output				
Composite Output	N/A			
Y/C Output	N/A			
RGB, Component Output	N/A			
DVI-D Output	DVI-D (x1) when HDCP disabling			
SDI Output	BNC (x5)			
External Sync Output	N/A			
DC 5V Output	(x1), 8W			
DC 12V Output	(x1) 20W max			
General				
Power Requirements (LCD monitor)	AC IN: 100 V - 240 V, 50/60 Hz, 3.2 A - 1.3 A	DC Input: 26 V, 6.9 A	AC IN: 100 V - 240 V, 50/60 Hz, 3.2 A - 1.3 A	DC Input: 26 V, 6.9 A
(AC Adapter)	N/A	AC IN: 100 V - 240 V, 50/60 Hz, 2.1A - 1.0 A	N/A	AC IN: 100 V - 240 V, 50/60 Hz, 2.1A - 1.0 A
Max. Power Consumption (Approx.)	290 W	180 W	290 W	180 W
Operating Temperature	0°C to 40°C / 32°F to 104°F			
Dimensions (W x H x D mm)	1264.6 x 771.5 x 85.5 (Slimmest D 33.9 mm)	753.8 x 456.4 x 69.3 (Slimmest D 28 mm)	1264.6 x 771.5 x 85.5 (Slimmest D 33.9 mm)	753.8 x 456.4 x 69.3 (Slimmest D 28 mm)
(inches)	49 7/8 x 30 3/8 x 3 3/8	29 3/4x 18 x 2 3/4	49 7/8 x 30 3/8 x 3 3/8	29 3/4x 18 x 2 3/4
Mass	35.2 kg (77lb 9.6oz)	11.8 kg (26lb 0.23oz)	35.2 kg (77lb 9.6oz)	11.8 kg (26lb 0.23oz)

Images are simulated for illustration purposes

FHD 3D Surgical Monitor

LMD-3251MT

LMD-2451MT

Picture Performance		
Picture Size (Diagonal)	801.3 mm (31 5/8 inches)	613.2 mm (24 1/4 inches)
Effective Picture Size (HxV)	698.4 x 392.9 mm (27 1/2 x 15 1/2 inches)	518.4 x 324.0 mm (20 1/2 x 12 7/8 inches)
Resolution (HxV)	1920 x 1080 pixels (Full HD)	1920 x 1200 pixels (WUXGA)
Aspect	16:9	16:10
Backlight	LED	
Panel Technology	N/A	
Luminance (Panel Spec)	320 cd/m² (typical)	
Contrast Ratio	1000 : 1	
Gray scale depth	N/A	
Colours	16.7 million	
Vertical Viewing Angle (3D Mode)	35° at a viewing distance more than 620 mm, crosstalk less than 7% (typical)	54° at a viewing distance more than 320 mm, crosstalk less than 7% (typical)
Gamma	2.2, DICOM	
Input		
Composite Input	BNC (x1) 1 Vp-p ±3dB sync negative	
Y/C Input	Mini DIN 4-pin (x1) Y: 1 Vp-p ± 3dB sync negative C: 0.286 Vp-p ± 3dB (NTSC burst signal level), 0.3 Vp-p ± 3dB (PAL burst)	
RGB, Component Input	BNC (x3) 0.7 Vp-p ± 3dB (Sync On Green, 0.3 Vp-p sync negative) 0.7 Vp-p ± 3dB (75% chrominance standard colour bar signal)	
HDMI Input	N/A	
DVI-D Input	DVI-D (x1), TMDS single link	
SDI Input	BNC (x2) 3G/HD/SD-SDI (with optional board BKM-250TGM)	
HD15 Input	D-sub 15-pin (x1) R/G/B: 0.7 Vp-p sync positive (Sync On Green, 0.3 Vp-p sync negative) Sync: Total level (polarity free, H/V separate sync) Plug & Play function: corresponds to DDC2B	
External Sync Input	BNC (x1) 0.3 to 4.0 Vp-p ±bipolarity ternary or negative polarity binary	
Parallel Remote	Modular connector 8-pin (x1) (Pin-assignable)	
Serial Remote (LAN)	D-sub 9-pin (RS-232C) (x1), RJ-45 (x1) (Ethernet, 10BASE-T/100BASE-TX)	
DC Input	XLR-type 4-pin (male) (x1), 24V/5V DC (output impedance 0.05 ohms or less)	
Output		
Composite Output	BNC (x1), Loop-through, with 75 Ω automatic terminal function	
Y/C Output	Mini DIN 4-pin (x1), Loop-through, with 75 Ω automatic terminal function	
RGB, Component Output	BNC (x3), Loop-through, with 75 Ω automatic terminal function	
DVI-D Output	DVI-D (x1), TMDS single link (with optional board BKM-256DD)	
SDI Output	BNC (x2) 3G/HD/SD-SDI (with optional board BKM-250TGM)	
External Sync Output	BNC (x1), Loop-through, with 75 Ω automatic terminal function	
DC 5V Output	N/A	
DC 12V Output	N/A	
General		
Power Requirements (LCD monitor)	DC Input: 24V 5.0 A 5V 0.060A	DC Input: 24V 4.5A 5V 0.030A
(AC Adapter)	AC Input:100 V - 240 V AC, 50/60 Hz, 1.53 A - 0.58 A- DC Output:24V 5.0A 5V 0.060A	
Max. Power Consumption (Approx.)	100 W max (with 2 optional boards)	136 W max (with 2 optional boards)
Operating Temperature	0°C to 35°C / 32°F to 95°F	
Dimensions (W x H x Dmm)	783 x 479.2 x 124.3	602.4 x 386.2 x 110
(inches)	30 7/8 x 18 7/8 x 5	23 3/4 x 15 1/4 x 4 3/8
Mass	13.3 kg (29lb 5oz)	8.5 kg (18lb 12oz)

FHD 2D Surgical Monitor

LMD-2760MD

LMD-2765MD

LMD-2735MD

LMD-2435MD

Picture Performance				
Picture Size (Diagonal)	686 mm (27 inches)			604.7 mm (24 inches)
Effective Picture Size (HxV)	597.9 x 336.3 mm (23 5/8 x 13 1/4 inches)			527.0 x 296.5 mm (20 3/4×11 3/4 inches)
Resolution (HxV)	1920 x 1080 pixels (Full HD)			
Aspect	16:9			
Backlight	LED			
Panel Technology	LCD with IPS			
Luminance (Panel Spec)	1000 cd/m² (typical)		300 cd/m² (typical)	
Contrast Ratio	1000 : 1			
Colours	16.7 million			
Vertical Viewing Angle	89°/89°/89°/89° (typical)			
Gamma	1.8, 2.0, 2.2, 2.4, 2.6, DICOM			
Input				
Composite Input		BNC (x1)		
Y/C Input		Mini-DIN 4-pin (x1) Y: 1.0 Vp-p (75 Ω) C: 0.286 Vp-p (75 Ω, NTSC burst)0.3 Vp-p (75 Ω, PAL burst)		
RGB, Component Input	N/A	Via HD-15 connector (D-sub 15-pin) * with SMF-405 0.7 Vp-p (75 Ω) (when Sync On Green, 0.3 Vp-p sync) Y: 1.0 Vp-p (75 Ω) (incll. 0.3 Vp-p sync) Pb: 0.7 Vp-p (75 Ω), Pr: 0.7 Vp-p (75 Ω)		
HDMI Input	N/A			
DVI-D Input	DVI-D (x2) TMDS single link		DVI-D (x1), TMDS single link	
SDI Input	3G/HD/SD-SDI		BNC (x1) HD/SD-SDI	
HD15 Input		D-sub 15-pin (x1) RGB: 0.7 Vp-p (75 Ω) H/V Sync: Total level (polarity free) Plug & Play function: corresponds to DDC2B		
External Sync Input		Via HD-15 connector (D-sub 15-pin) * Needs SMF-405 0.3 Vp-p to 4.0 Vp-p (75 Ω)		
Parallel Remote	N/A			
Serial Remote (LAN)	D-sub 9-pin (RS-232C) (x1), RJ-45 (x1) (Ethernet, 10BASE-T/100BASE-TX)			
DC Input	XLR-type 3-pin (male) (x1), 24 V DC (output impedance 0.05 ohms or less)		XLR-type 3-pin (male) (x1), 24 V DC (output impedance 0.05 ohms or less) With optional Adapter AC-120MD	
Output				
Composite Output	N/A			
Y/C Output	N/A			
RGB, Component Output	N/A			
DVI-D Output	DVI-D (x1)			
SDI Output	BNC (1x)		N/A	
External Sync Output			N/A	
DC 5V Output	(x1), up to 1.2 A		(x1), up to 2.0 A	
DC 12V Output	N/A			
General				
Power Requirements (LCD monitor)	24 V, 6.25		100-240V, 50-60Hz, 0.6 - 0.3ADC Input: 24 V, 2.2A	
(AC Adapter)	AC IN: 100 V - 240 V, 50/60 Hz, 2.5 A - 1 A		OPTIONAL: AC Input 100V-240V, 50/60Hz 0.6-0.3A, DC Output: 24V 2.2A	
Max. Power Consumption (Approx.)	102 W		57 W	
Operating Temperature	0°C to 35°C / 32°F to 95°F			
Dimensions (W x H x D mm)	650 x 419 x 58 (Slimmest D 29 mm) 650 x 474 x 302 mm (with SU-560 optional stand)		660 x 427 x 78	572 x 376 x 78
(inches)	25 5/8 x 16 1/2 x 2 3/8 inches 25 5/8 x 18 3/4x 12 inches (with SU-560 optional stand)		26 x 16 7/8 x 3 1/8	22 5/8 x 14 7/8 x 3 1/8
Mass	Approx. 8.5 kg (Approx 18.75 lb)		8.7 kg (19lb 2.9oz)	6.7 kg (14lb 12oz)

	FHD2D Monitor		HD2D Monitor	
	LMD-2451MD	LMD-2110MD	LMD-1951MD	LMD-1530MD
Picture Performance				
Picture Size (Diagonal)	613.2 mm (24 1/4 inches)	547 mm (21 5/8 inches)	481 mm (19.0 inches)	390 mm (15 3/8 inches)
Effective Picture Size (HxV)	518.4 x 324.0 mm (20 1/2 x 12 7/8 inches)	447.0 x 268.0 mm (18 7/8 x 10 5/8 inches)	376 x 301 mm (14 7/8 x 11 7/8 inches)	334.0 x 200.0 mm (13 1/4 x 7 7/8 inches)
Resolution (HxV)	1920 x 1200 pixels (WUXGA)	1920 x 1080 pixels (Full HD)	1280 x 1024 pixels (SXGA)	1280 x 768 pixels (WXGA)
Aspect	16:10	16:9	5:4	15:9
Backlight	LED			CCFL
Panel Technology		LCD with TN		LCD with IPS
Luminance (Panel Spec)	320 cd/m² (typical)	300 cd/m² (typical)	450 cd/m² (typical)	330 cd/m² (typical)
Contrast Ratio	1000 : 1			
Gray scale depth				
Colours	16.7 million			
Vertical Viewing Angle				
Gamma	2.2, DICOM	5 settings from 1.8 - 2.6	2.0, 2.2, 2.4, 2.6, DICOM	5 settings from 1.8 - 2.6
Input				
Composite Input	BNC (x1) 1 Vp-p ±3dB sync negative			
Y/C Input	Mini-DIN 4-pin (x1) Y: 1 Vp-p ± 3dB sync negative C: 0.286 Vp-p ± 3dB (NTSC burst signal level), 0.3 Vp-p ± 3dB (PAL burst signal level)			
RGB, Component Input	BNC (x3) 0.7 Vp-p ± 3dB (Sync On Green, 0.3 Vp-p sync negative) 0.7 Vp-p ± 3dB (75% chrominance standard colour bar signal)			
HDMI Input	N/A	HDMI (x1) (HDCP correspondence)	N/A	HDMI (x1) (HDCP correspondence)
DVI-D Input	DVI-D (x1), TMDS single link	N/A	DVI-D (x1), TMDS single link	N/A
SDI Input	BNC (x2) 3G/HD/SD-SDI (with optional board BKM-250TGM)	BNC (x1) HD/SD-SDI (with optional board BKM-341HS/M)	BNC (x2) 3G/HD/SD-SDI (with optional board BKM-250TGM)	BNC (x1) HD/SD-SDI (with optional board BKM-341HS/M)
HD15 Input	D-sub 15-pin (x1) R/G/B: 0.7 Vp-p sync positive (Sync On Green, 0.3 Vp-p sync negative) Sync: Total level (polarity free, H/V separate sync) Plug & Play function: corresponds to DDC2B	N/A	D-sub 15-pin (x1) R/G/B: 0.7 Vp-p sync positive (Sync On Green, 0.3 Vp-p sync negative) Sync: Total level (polarity free, H/V separate sync) Plug & Play function: corresponds to DDC2B	N/A
External Sync Input	BNC (x1) 0.3 to 4.0 Vp-p ±bipolarity ternary or negative polarity binary			
Parallel Remote	Modular connector 8-pin (x1) (Pin-assignable)			
Serial Remote (LAN)	D-sub 9-pin (RS-232C) (x1), RJ-45 (x1) (Ethernet, 10BASE-T/100BASE-TX)	N/A	D-sub 9-pin (RS-232C) (x1), RJ-45 (x1) (Ethernet, 10BASE-T/100BASE-TX)	N/A
DC Input	XLR-type 4-pin (male) (x1), 24V/5V DC (output impedance 0.05 ohms or less)	N/A	XLR-type 4-pin (male) (x1), 24V/5V DC (output impedance 0.05 ohms or less) With optional Adapter AC-110MD	N/A
Output				
Composite Output	BNC (x1), Loop-through, with 75 Ω automatic terminal function			
Y/C Output	Mini-DIN 4-pin (x1), Loop-through, with 75 Ω automatic terminal function			
RGB, Component Output	BNC (x3), Loop-through, with 75 Ω automatic terminal function			
DVI-D Output	DVI-D (x1), TMDS single link (with optional board BKM-256DD)	N/A	DVI-D (x1), TMDS single link (with optional board BKM-256DD)	N/A
SDI Output	BNC (x2) 3G/HD/SD-SDI (with optional board BKM-250TGM)	N/A	BNC (x2) 3G/HD/SD-SDI (with optional board BKM-250TGM)	N/A
External Sync Output	BNC (x1), Loop-through, with 75 Ω automatic terminal function			
DC 5V Output	N/A			
DC 12V Output	N/A			
General				
Power Requirements (LCD monitor)	- DC Input: 24V 4.5A 5V 0.030A	100 V to 240 V AC, 1.3 A to 0.6 A, 50/60 Hz	100 V to 240 V AC, 0.92 A to 0.4 A, 50/60 Hz- DC Input: 24V 3.5A 5V 0.030A	100 V to 240 V AC, 1.0 A to 0.5 A, 50/60 Hz
(AC Adapter)	AC Input:100 V - 240 V 50/60 Hz, 1.53A - 0.58A DC Output:24V 5.0A 5V 0.060A	N/A	OPTIONAL: AC Input 100V-240V 50/60Hz 1.53A-0.58A, DC Output 24V 5.0A 5V 0.06A	N/A
Max. Power Consumption (Approx.)	136 W max (with 2 optional boards)	69 W	85 W max (with 2 optional boards)	50 W
Operating Temperature	0°C to 35°C / 32°F to 95°F			
Dimensions (W x H x D mm)	602.4 x 386.2 x 110	515.0 x 355.0 x 86.3	455.8 x 368.3 x 101.7	372.0 x 288.3 x 100.0
(inches)	23 3/4 x 15 1/4 x 4 3/8	20 3/8 x 14 x 3 1/2	18 x 14 5/8 x 4 1/8	14 3/4 x 11 3/8 x 4
Mass	8.3 kg (18lb 5oz)	8.6 kg (18lb 15oz)	6.7 kg (w/o SU-560) (14lb 12oz)	6.2 kg (13lb 11oz)

4K, 3D and HD Video Recorder

HVO-4000MT

HVO-3300MT

HVO-500MD
(Surgical Version)

	HVO-4000MT	HVO-3300MT	HVO-500MD (Surgical Version)
Recording Features			
Recording Video Format	MPEG-4 AVC/H.264	MPEG-4 AVC/H.264	MPEG-4 AVC/H.264
Recording Audio Format	LPCM, AAC LC	AAC LC	AAC LC
Recording File Format	XAVC S as MP4	MP4	MP4
Recording Media	Internal HDD (4TB), External USB Storage Network (CIFS) DVD-R BD-R/BD-R DL BD-RE/BD-RE DL	Internal HDD (2TB), External USB Storage, Network (CIFS) DVD-R BD-R SL/BD-R DL BD-RE SL/BD-RE DL	Internal HDD (500GB), External USB Storage, Network (CIFS)
Input Resolution	4096x2160, 3840x2160	640×480, 720×480, 720×576, 800×600, 1024×768, 1280×720, 1280×768, 1280×1024, 1600×1200, 1920×1080, 1920×1200	1920x1080p (DVI-D/HDMI), 1680x1050p (DVI-D), 1440x900p (DVI-D), 1280x1024p (DVI-D), 1280x720p (DVI-D/HDMI), 1024x768p (DVI-D), 800x600p (DVI-D), 720x480p/576p (DVI-D/HDMI), 720x480i/576i (Video), 640x480p (DVI-D/HDMI)
Recording Resolution	3840x2160, 1920x1080	720×480i / 720×576i 1280×720p, 1920×1080i, 1920×1080p	1920x1080i (HD), 1280x720p (HD), 720x480i/576i (SD)
Recording Bit Rate (4K)	150Mbps (Best), 100Mbps (High), 60Mbps (Standard)		
Recording Bit Rate (HD)	24Mbps (Best), 18Mbps (High), 12Mbps (Standard)	1080p: 24Mbps (Best), 18Mbps (High), 12Mbps(Stardard) 1080i/720p: 20Mbps (Best), 12.5Mbps (High), 6Mbps (Standard)	20Mbps (Best), 12.5Mbps (High), 6Mbps (Standard)
Recording Bit Rate (SD)		6Mbps (Best), 4Mbps (High), 2Mbps (Standard)	6Mbps (Best), 3.75Mbps (High), 2.25Mbps (Standard)
3D Recording	Top and Bottom (Input 3D Signals: Line by Line, Top and Bottom)	Side by Side, Top and Bottom (Input 3D Signals: Side by Side, Line by Line, Dual Stream)	
Connectors			
Input Connectors	3G-SDI (BNC type) (4), AUDIO (Stereo mini jack) (1), MIC (Stereo mini jack) (1), AC Inlet (3-pin) (1)	3G/HD/SD-SDI (BNC type) (2), DVI-D (Single link) (2), S-VIDEO (Mini DIN 4-pin type) (1), VIDEO (BNC Type) (1), RGB (Mini D-Sub 15-pin) (1), AUDIO (Stereo mini jack) (1), MIC (Stereo mini jack) (1), AC Inlet (3-pin) (1)	HDMI (Type A) (1), DVI-D (DVI 19-pin) (1), S VIDEO (Mini DIN 4-pin type) (1), VIDEO (BNC type) (1)9-pin) (1), S VIDEO (Mini DIN 4-pin type) (1), VIDEO (BNC type) (1), AUDIO (Stereo mini jack) (1), DC IN (DIN 3-pin)
Output Connectors	3G-SDI (BNC type) (4), HDMI (Type A) (1), AUDIO (Stereo mini jack) (1)	3G/HD/SD-SDI (BNC type) (1), DVI-D (Single link) (1), S-VIDEO (Mini DIN 4-pin type) (1), VIDEO (BNC Type) (1), AUDIO (Stereo mini jack) (1)	HDMI (Type A) (1), DVI-D (DVI 19-pin) (1), S VIDEO (Mini DIN 4-pin type) (1), VIDEO (BNC type) (1), AUDIO (Stereo mini jack) (1)
Other Interfaces	USB 3.0 (Type A) (2), USB 2.0 (Type A) (4), USB 2.0 (Type B) (1), Network (RJ-45, 1000 Base-T/100 Base) (1) REMOTE RS-232C (D-sub 9-pin) (1) REMOTE contact switch (stereo mini jack) (4) Equipotential terminal	USB 3.0 (TypeA) (2), USB 2.0 (TypeA) (4), USB 2.0 (TypeB) (1), Network (RJ-45, 1000 Base-T/100 Base-TX) (1), REMOTE RS-232C (D-Sub 9-pin) (1), REMOTE contact switch (stereo mini jack) (4), MENU MONITOR (Mini D-Sub 15-pin) (1), Equipotential terminal	USB (Type A) (3), USB (Type B) (1), Network (RJ-45, 1000 Base-T/100 Base-TX) (1), RS-232C (D-sub 9-pin) (1) *1, REMOTE contact switch (stereo mini jack) (2) REMOTE MONITOR (RJ-45) (1), Equipotential terminal
General			
Power Requirements	100 V to 240 V AC, 50/60 Hz	100 V to 240 V AC, 50/60 Hz	+12 V to +24 V DC (supply from AC-81MD AC adapter)
Input current	1.25 to 0.52 A	1.25 to 0.52 A	3.2 A to 1.6 A
Operating Temperature	5 °C to 40 °C (41 °F to 104 °F)	5 °C to 40 °C (41 °F to 104 °F)	5°C to 40°C (41°F to 104°F)
Operating Humidity	20% to 80% (Maximum wet-bulb temperature: 30 °C (86 °F)) (non condensing)	20% to 80% (Maximum wet-bulb temperature: 30 °C (86 °F)) (non condensing)	20% to 80% (Maximum wet-bulb temperature: 30°C (86°F)) (non condensing)
Operating Pressure	700 hPa to 1060 hPa	700 hPa to 1060 hPa	700 hPa to 1060 hPa
Storage and transport temperature	-20°C to +60°C (-4°F to +140°F)	-20°C to +60°C (-4°F to +140°F)	-20°C to +60°C (-4°F to +140°F)
Storage and transport humidity	20% to 90% (Maximum wet-bulb temperature: 30 °C (86 °F)) (non condensing)	20% to 90% (Maximum wet-bulb temperature: 30 °C (86 °F)) (non condensing)	20% to 90% (Maximum wet-bulb temperature: 30°C (86°F)) (non condensing)
Storage and transport pressure	700 hPa to 1060 hPa	700 hPa to 1060 hPa	700 hPa to 1060 hPa
Mass	Approx.6.5 kg (Approx. 14 lb. 5.3oz).	Approx.6.5 kg (Approx. 14 lb. 5.3oz).	Approx 2.9 kg (Approx. 6 lb. 6.3 oz.)
Dimensions (including longest protrusions)	305.0 x 115.5 x 329.0 mm (including longest protrusions) 12 1/8 × 4 5/8 × 13 in. (including longest protrusions)	305.0 x 115.5 x 329.0 mm (including longest protrusions) 12 1/8 × 4 5/8 × 13 in. (including longest protrusions)	212.0 × 287.7 × 105.5 mm (8 3/8 × 11 3/8 × 4 1/4 in.)
Supplied Items	Before Using This Unit (1), CD-ROM (Instructions for Use, PROTOCOL MANUAL) (1), Warranty booklet (1), Service Contact List (1), Infrared remote control unit (RM-M010) (1)	Before Using This Unit (1), CD-ROM (Instructions for Use, PROTOCOL MANUAL) (1), Warranty booklet (1), Service Contact List (1), Infrared remote control unit (RM-M010) (1), European Representative (1)	Before Using This Unit (1), CD-ROM (Instructions for Use, PROTOCOL MANUAL) (1), Warranty booklet (1), AC adapter (1), AC adapter Instructions for Use (1), Service Contact List (1)

	HD Video Recorder			
	HVO-500MD	HVO-500MD (Full HD Version)	HVO-550MD	HVO-550MD (Full HD Version)
Recording Features				
Recording Video Format	MPEG-4 AVC/H.264			
Recording Audio Format	AC-3/AAC LC			
Recording File Format	AC-3/AAC LC			
Recording Media	Internal HDD (500GB), External USB Storage, Network (CIFS)		Internal HDD (500GB), DVD-R, External USB Storage , Network (CIFS)	
Recording Resolution	1280x720p (HD), 720x480i/576i (SD)	1920x1080i (HD), 1280x720p (HD), 720x480i/576i (SD)	1280x720p (HD), 720x480i/576i (SD)	1920x1080i (HD), 1280x720p (HD), 720x480i/576i (SD)
Recording Bit Rate	14Mbps (Best), 8Mbps (High), 4Mbps (Standard)			
Recording Bit Rate	(SD) 5Mbps (Best), 3Mbps (High), 2Mbps (Standard)			
Connectors				
Input Connectors	HDMI (Type A) (1), DVI-D (DVI 19-pin) (1), S VIDEO (Mini DIN 4-pin type) (1), VIDEO (BNC type) (1), (Stereo mini jack) (1), also via HDMI, (DIN 3-pin)			
Output Connectors	HDMI (Type A) (1), DVI-D (DVI 19-pin) (1), S VIDEO (Mini DIN 4-pin type) (1), VIDEO (BNC type) (1), AUDIO: Stereo mini jack (1) and also via HDMI			
Other Interfaces	"USB (Type A) (3), USB (Type B) (1), Network (RJ-45, 1000 Base-T/100 Base-TX) (1)), REMOTE RS-232C* (D-sub 9-pin) (1), REMOTE contact switch (stereo mini jack) (2), REMOTE MONITOR (RJ-45) (1), Equipotential terminal			
General				
Power Requirements	+12 V to +24 V DC (supply from AC-80MD AC adapter)			
Input Current	3.2 A to 1.6 A		3.5 A to 1.8 A	
Operating Temperature	5°C to 40°C (41°F to 104°F)			
Operating Humidity	20% to 80% (Maximum wet-bulb temperature: 30°C (86°F)) (non condensing)			
Operating Pressure 700 hPa to 1060 hPa	700 hPa to 1060 hPa			
Storage and Transport Temperature	-20°C to +60°C (-4°F to +140°F)			
Storage and Transport Humidity	20% to 90% (Maximum wet-bulb temperature: 30°C (86°F)) (non condensing)			
Storage and Transport Pressure	700 hPa to 1060 hPa			
Mass	2.9 kg (6 lb. 6.3 oz.)		3.2 kg (7 lb. 0.88 oz.)	
Dimensions (including longest protrusions)	212.0 × 287.7 × 105.5 mm (8 3/8 × 11 3/8 × 4 1/4 in.)			
Supplied Items	"Before Using This Unit (1), CD-ROM (Instructions for Use, PROTOCOL MANUAL*) (1), Warranty booklet (1), AC-80MD AC adapter (1), AC-80MD Instructions for Use (1), Service Contact List (1)"			

The HVO-500MD (Full HD Version), HVO-500MD (Surgical Version) and HVO-550MD (Full HD Version) models are the same product as HVO-500MD and HVO-550MD respectively, but are upgraded versions to record in full HD.

*RS232C Protocol is not supported for HVO-500MD (Surgical version)

Colour Printers

	UP-25MD	UP-D25MD	UP-DR80MD
System	**Analogue**	**Digital**	**Digital**
Format	A6		A4
Printing system	Dye sublimation printing technology		
Resolution	Approx. 423 dpi		Approx. 301 dpi
Gradations	8bit (256 levels) processing each for Yellow, Magenta, Cyan		
Print matrix	UP-21L/24LA: 2,132 x 1,600 dots UP-21S/24SA: 1,600 x 1,260 dots	21L / 24LA: 2100x1600 dots 21S / 24SA: 1600 x 1200 dots	A4 size UPC-R80MD: 3400 x 2392 dots Letter size UPC-R81MD: 3192 x 2464 dots
Printable area	UP-21L/24LA: 127.9 x 96.0 mm (5 1/8 x 3 3/4 inches) UP-21S/24SA: 96.0 x 75.6 mm (3 3/4 x 3 inches)	21L / 24LA: 126 x 96 mm (5 x 3 3/4 inches) 21S/ 24SA: 96 x 72 mm (3 3/4 x 2 7/8 inches)	A4 size: 287 x 202mm / Letter size: 269 x 208mm
Memory	8 frame memories	N/A	
Tray capacity	S Size tray: Max. 80 sheets L Size tray: Max 50 sheets		50 sheets
Printing time	UP-21L: approx. 29 seconds, UP-24LA: approx. 36 seconds UP-21S: approx. 19 seconds, UP-24SA: approx. 25 seconds		A4 size: Approx. 76 seconds
Inputs/outputs	Video, S-Video, RGB, SYNC, HDTV IN/OUT signals 1080i/59.94i, 1080/50i (2:1 interlace) 720/59.94p, 720/50p (progressive)	Hi-Speed USB (USB 2.0)	
Control connectors	Remote 1 (special mini jack) for optional RM-5500 (discontinued). Remote 2 (stereo mini jack) for optional RM-91 or FS-24. RS-232C interface port (D-sub 25-pin) for external computer	N/A	
Measurements			
Dimensions	212 (W) x 98 (H) x 398 (D) mm, (8 3/8 x 3 7/8 x 15 5/8 inches)		Approx. 317(W) x 207(H) x 425(D) mm (12 1/2 (W) x 8 1/8 (H) x 16 3/4 (D) inches)
Mass	5.7 kg (12 lb 9 oz)	5.5 kg (12 lb 2 oz)	Approx. 11.5 kg (25.3 lbs)
Power			
Requirements	AC 100 V to 240 V, 50/60Hz		
Consumption	1.7 A to 1.0 A		AC 100 V to 240 V, 50/60Hz 3.4 to 1.4 A
Operating conditions			
Temperature	5 °C to 35 °C (41 °F to 95 °F)		
Humidity	20% to 80% (non condensing)		
Storage/Transporting conditions			
Temperature	-20 °C to 60 °C (-4 °F to 140 °F)		
Humidity	20% to 80% (non condensing)		
Other			
Supplied accessories	CD-ROM (1) (Printer Driver, Operating Instructions (PDF). Before Using this Printer (1), Paper Tray (1), Stopper (1), Cleaning Cartridge (1)	CD-ROM (1) (Operating Instructions (PDF). Before Using this Printer (1) , Paper Tray (1), Stopper (1), Cleaning Cartridge (1), USB Cable (1)	Power Cable (1), USB cable (1), CD ROM (1), Paper holder (2), Cleaning ribbon (1), Before using ths printer (1), Software license agreement

Black & White Printers

UP-991AD

UP-971AD

System	Analogue & Digital
Format	A4
Printing system	Direct thermal printing
Resolution	325 dpi
Gradations	8-bit (256 levels)
Print matrix	Max. 7680 x 2560 dots
Throughput	Approx. 8 sec
Tray capacity	25 m (UPP-210HD, UPP-210SE), 12,5 m (UPT-210BL)
Memory	Digital: 2816 x 7680 x 8 bits Video: 6 frames (720 x 608 x 8 bits for one frame)
Inputs/outputs	Digital: Hi-Speed USB (USB 2.0) Analogue: Video IN/OUT (BNC type) EIA/CCIR composite video signals (automatic detection)
Measurements	
Media Size	Paper width of 210 mm (8 1/4 inches)
Print size	DIGITAL: 600 x 200 mm (23 5/8 x 7 7/8 inch) (Max) VIDEO: STD NTSC: 182 x 144 mm PAL: 188 x 140 mm SIDE NTSC: 244 x 184 mm PAL: 244 x 183 mm
Dimensions	316 x 132.5 x 265 mm (12 1/2 x 5 1/4 x 10 1/2 inch)
Mass	7 kg (15lb 7oz)
Power	
Requirements	AC 100 V to 240 V, 50/60 Hz
Consumption	2,9 A to 1,2 A
Operating conditions	
Temperature	5°C to 35°C (41°F to 95°F)
Humidity	20% to 80% (non condensing)
Storage/Transporting conditions	
Temperature	-20°C to +60°C (-4°F to +140°F)
Humidity	20% to 80% (non condensing)
Other	
Supplied accessories	Print Media (1) Thermal head cleaning sheet (1) CD-ROM (1) Before Using this Printer (1) Service Contact List (1)

Black & White Printers

	UP-D711MD	UP-D898MD	UP-X898MD	UP-D898DC
System	**Digital**	**Digital**	**Analogue / Digital**	
Format	A7/A8	A6		
Printing system	Thermal Printing Technology	Direct thermal printing		Direct thermal printing
Resolution	301 dpi	325 dpi		325 dpi
Gradations	256 levels (8-bits processing)			8 bits (256 levels) processing
Print matrix	2688 x 896 dots	4096 x 1280 dots		4096 × 1280 dots (max.)
Printing time	Approx 5 sec. (High Speed & standard image mode) Approx 8 sec. (Normal Speed & standard image mode)	About 1.9 sec/image (960 x 1280 dots) (High-speed mode) About 3.3 sec/image (960 x 1280 dots) (Normal speed mode)		
Tray capacity	12,5 m (UPP-84HG), 13,5 m (UPP-84S)	20 m (UPP-110HG, UPP-110S), 18 m (UPP-110HG)		
Memory	896 × 2688 pixels max	Digital: 4096 x 1280 x 8 (bit)	Digital: 4096 x 1280 x 8 (bit) Video: 10 frame memories (850 k x 8 bits per frame)	Digital: 4096 x 1280 x 8 (bit)
Inputs/outputs	Hi-Speed USB (USB 2.0)		Digital: Hi-Speed USB (USB 2.0) Analogue: Video IN/OUT (BNC type) EIA/CCIR composite video signals (automatic detection)	High Speed USB (USB 2.0)
Measurements				
Media Size	Roll width of 84 mm	Roll width of 110 mm		Paper width of 110 mm (4 3/8 inches)
Print size	50.4 mm x 75.7 mm 56.8 mm x 75.7 mm 75.7 mm x 75.7 mm 75.7 mm x 101.1 mm 75.7 mm × 227.1 mm	320 x 100 mm	Digital: 320 x 100 mm STD Video PAL 94 x 71 mm (WIDE 1) SIDE Video PAL 127 x 96 mm (WIDE 1) STD Video NTSC 94 x 73 mm (WIDE 1) SIDE Video NTSC 124 x 96 mm (WIDE 1)	
Dimensions	140 × 70 × 125 mm (5 5/8 × 2 7/8 × 5 inches)	154 x 88 x 240 mm (6 1/6 x 3 1/2 x 9 1/2 inches)		154 x 88 x 165 mm (6 1/6 x 3 1/2 x 6 1/2 inches)
Mass	Approx. 1kg	2.5 kg (5 lb 8 oz)		1.8 kg (3 lb 15 oz)
Power				
Voltage	DC 12V to 24V	AC 100 V to 240 V, 50/60 Hz		12V to 24V DC
Input Current	6 A to 3 A	1,3A to 0,6A		8.2A to 3.7 A
Operating conditions				
Temperature	5 °C to 35 °C (41 °F to 95 °F)	5°C to 40°C (41°F to 104°F)		
Humidity	20% to 80% (non condensing)			
Storage/Transporting conditions				
Temperature	-20 °C to 60 °C (-4 °F to 140 °F)			
Humidity	20% to 80% (non condensing)			
Other				
Supplied accessories	Thermal head cleaning sheet (4-419-859) (1) CD-ROM (including multi-lingual operating instructions, Readme and printer driver) (1) Before Using this Printer (1)	Thermal head cleaning sheet (1) CD-ROM (1) Before Using this Printer (1) Service Contact List (1)	Thermal head cleaning sheet (1) CD-ROM (1) Before Using this Printer (1) Service Contact List (1) USB Flash Drive Ex. Cable Print media (UPP-110HG)	Thermal head cleaning sheet (1) CD-ROM (1) (including multi-lingual instructions for use, readme and printer driver) Before Using this Printer (1) European Representative (1) Service Contact List (1)

Wireless Printing Solution

UPA-WU10

Dimensions (W x H x D)	
Transmitter (excluding USB connector):	19.5 × 8.5 × 41.3 mm (25/32 x 11/32 x 1 11/16 inches)
Transmitter (including USB connector):	19.5 × 8.5 × 53.3 mm (25/32 x 11/32 x 2 1/8 inches)
Receiver:	27.6 × 66.1 × 66.1 mm (1 1/8 x 2 5/8 x 2 5/8 inches)
Mass	Transmitter: Approx. 8 g (0.28 oz.) Receiver: Approx. 57 g (2.0 oz.)
Power	
Requirements	DC 5V/0.5A (USB Bus power)
Operating conditions	
Temperature	5 °C to 40 °C 41 °F to 104 °F
Humidity	20% to 80%
Storage/Transporting conditions	
Temperature	-20 °C to +60 °C -4 °F to +140 °F
Humidity	20% to 80%
System	
Communication System	UWB (Ultra Wide Band)
Transmit/Receive Frequency	7392 MHz to 8448 MHz Band Group #6 (Band #9, #10)
Interface	Hi-Speed USB (USB 2.0)
Maximum Communication Distance	Approx. 10 m (33 ft.) line-of-sight *2
Other	
Supplied accessories	Instructions for Use (1) Service Contact List (1) Stand(1) USB cable (x2) European Representative (1)

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