

**SONY**

# MEDICAL CATALOGUE

[pro.sony/medical](http://pro.sony/medical)



# Contribute to people's health through innovations with Sony's technologies.

## Your partner for Healthcare Imaging Solutions

- Over four decades of clinical imaging innovation
- Advanced video and still image acquisition technologies
- Cutting-edge image processing and display techniques
- Dependable, long-lasting documentation solutions
- Flexible, future-proof integration



## Innovative imaging technologies

4K

3D

HDR

A.I.M.E.

## Putting our customers' needs first...



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4K 3D Surgical Monitors

4K 2D Surgical Monitors

Full HD Surgical Monitors

Case Study –

St. Luke's International University Hospital in Tokyo


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Surgical Recorders

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4K – The Ultimate Definition

3D – Surgical Certainty

HDR – True-to-life Images

Local Dimming

A.I.M.E. - Advanced Image Multiple Enhancer

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# Sustainability

Fill the world with emotion,  
through the power  
of technology.

For the next generation.

Driven by technology and the inspirations of  
a diverse and talented team, we're moving  
forward with the challenge of generating  
social and environmental value.



## Road to Zero: Four perspectives

Sony sets respective goals for the "four perspectives" related to environment.



### Curbing climate change

Sony reduces greenhouse gas emissions as the  
cause of climate change not just in operations  
but also throughout product life cycles.



### Conserving resources

Sony conserves resources by minimising  
consumption and maximising recycled materials  
in operations and product life cycles.



### Promoting biodiversity

Sony strives to continue to protect biodiversity, to  
maintain balanced ecosystems, through Sony's  
business and conservation activities.



### Controlling chemical substances

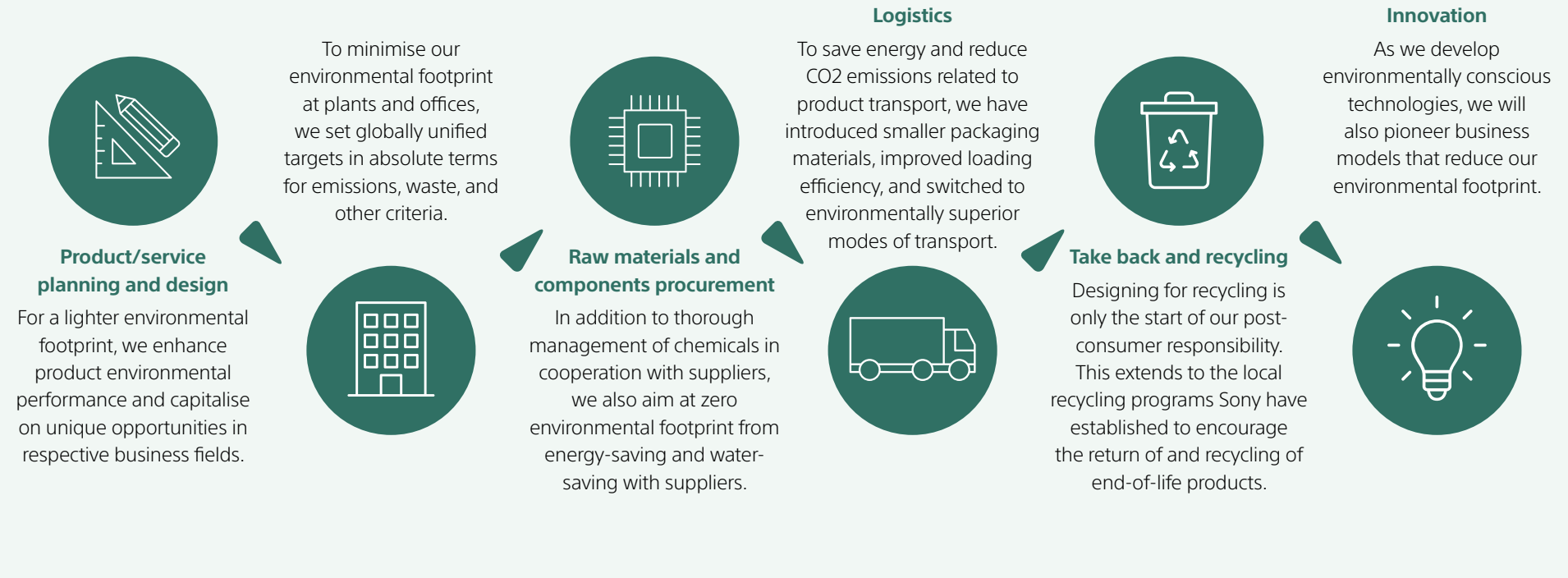
Sony minimises the use of chemical substances  
which can cause serious harm to human health  
and the environment.





## Road to Zero: Life cycle

Sony defines the process from the time when products and services are planned to the time when they are recovered and recycled as “Life cycle” and sets goals for each of the six stages.



Amount of plastic packaging per product unit

**-15%**

Fiscal Year 2021 Results  
(compared to fiscal year 2018)

Renewable electricity rate for sites

**14.6%**

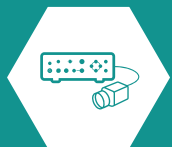
Materials

Manufacturing

Transportation

Usage

Learn more by accessing the full report:



## Cameras – Capture clarity

We will help you see more when it matters.

Our single chip and 3-chip camera can capture finely-detailed images from a wide range of medical modalities. We are the ideal choice for clinical imaging applications including ophthalmology, neurosurgery, pathology, biomedical research, veterinary science and teaching.

Images you can trust on:

- Accurate colour reproduction reproducing reality
- Images full of detail in high resolution
- Application oriented presets based on customer recommendations

Capturing at 4K or Full HD resolution, our range of cameras and our range of camera modules is also ideal for direct integration with imaging solutions from microscope and endoscope manufacturers.





## MCC-1000MD

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



### Suitable for Surgical Imaging

- Compact 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
- Ultra high sensitivity provides unparalleled low light sensitivity suited for ophthalmological procedures
- HDR function provides more colour and detail in both dark and light areas which can be beneficial for both anterior and posterior eye surgery
- 6 picture profiles can be set-up for immediate recall for shooting in different application scenarios (anterior and posterior pole)

### Features

- Full HD Camera Controller with separate 1/3" type 3 CMOS Camera Head
- Ultra high sensitivity (F20) and superior colour reproduction
- HDR compatible (HLG Gamma)
- Support for 3D image shooting
- Choice of camera cables from 6m to 15m + 5m extension cable available



## MCC-500MD

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



### Suitable for Surgical Imaging

- Compact 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, comparable to more 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

“  
It captures more than  
can be seen through  
an actual microscope  
eyepiece – even  
revealing things that  
can't be seen with  
the human eye.”



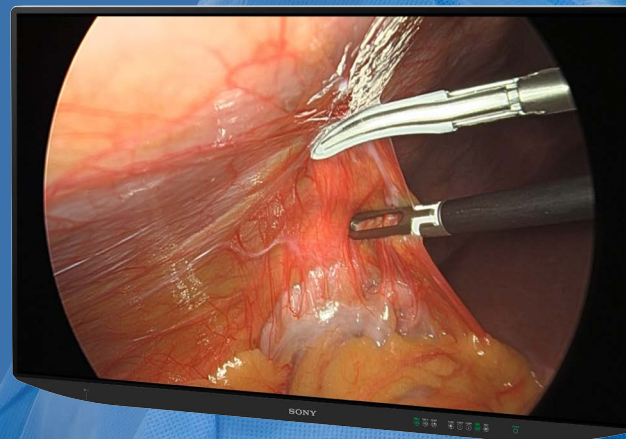
## Monitors – View with confidence

The clarity of displayed images is essential for surgeons, consultants, and clinical staff when making critical decisions.

We want to help in the best possible way with our surgical monitors:

- True life like imaging with superb clarity and natural colour reproduction
- Imperceptible lag time with no compromise on resolution whether it is 4K or HD
- Enhanced contrast and visibility in direct lighting thanks to improved panel technology
- Easy use with light guided User Interface

Our 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 designed for easy cleaning, Sony monitors are ideal for integration in a wide range of hospital environments.







4K  
HDR  
3D  
12G SDI

### LMD-XH320MT

32-inch 4K 3D LCD Surgical Monitor

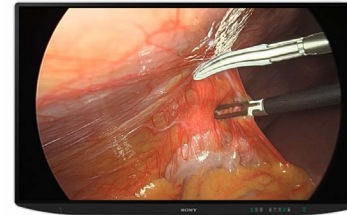


#### Suitable for Surgical Imaging

- Ultimate Brightness, Deepest Black
- Better colour reproduction and realistic visualisation with increased gradation
- Best 3D experience: improved texture and depth feeling and wider viewing angle
- Ultra Low reflection and reduced glare in lit OR's environment
- 3D A.I.M.E. Image enhancement (Structure, improved Colour, Shadow, Noise reduction)
- Clone output to duplicate/record the displayed image and/or to convert to HD
- Future-proof with 12G-SDI interface
- Intuitive user-friendly control panel for simple operation and adjustments
- Modern, slim, narrow bezel and ergonomic design
- Rear cable cover provides user friendly cable management and neat installation

#### Features

- 32" 4K resolution LCD Display (3840 x 2160pixels)
- Sony's unique Local Dimming Technology
- High brightness: 1 750 cd/m<sup>2</sup> (Typical, Peak)
- High contrast: 1 000 000:1
- HDR compatible
- Wide colour gamut BT.2020 (over 140% sRGB)
- VESA Mounting (100 x 100mm)



4K  
HDR  
3D  
12G SDI

### LMD-XH550MT

55-inch 4K 3D LCD Surgical Monitor



#### Features

- 55" 4K resolution LCD Display (3840 x 2160pixels)
- Sony's unique Local Dimming Technology
- High brightness: 1 500 cd/m<sup>2</sup> (Typical, Peak)
- High contrast: 1 000 000:1
- HDR compatible
- Wide colour gamut BT.2020 (over 120% sRGB)
- VESA Mounting (200 x 200mm / 400 x 200mm)

“

*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.*

”

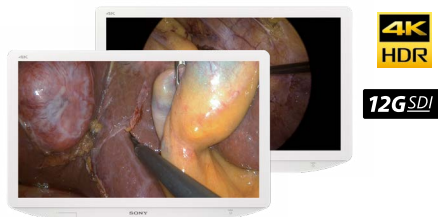


### Eye Shield

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

## MONITORS / 4K 2D SURGICAL MONITORS



### LMD-X2705MD/ LMD-X2710MD

27-inch 4K Surgical LCD Monitor

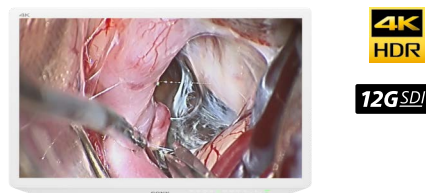
#### Suitable for Surgical Imaging

- Modern slim design and small bezel ideal for simple OR integration
- Excellent high quality image reproduction to enhance any imaging system
- Direct AC input or use optional AC Adapter for installation flexibility
- Wide range of video interfaces for HD and 4K imaging with DP, HDMI, DVI, 3G-SDI and 12G-SDI\*
- Variety of display formats (PIP, POP, side-by-side, image rotation)

#### Features

- 27" 4K LCD Display (3840 x 2160 pixels)
- High brightness anti-reflective panel
- HD/SD to 4K upscaling
- Wide colour gamut (BT.709 and BT.2020) and HDR support (HLG)
- Ergonomic easy-grip design and edge-to-edge panel for easy cleaning
- Multiple format video inputs
- VESA mounting standard (100 x 100mm)

\*LMD-X2710MD only



### LMD-X3200MD

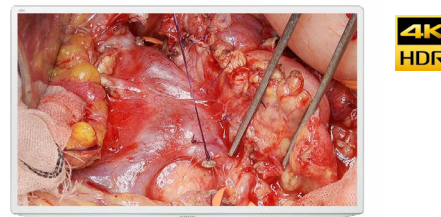
32-inch 4K Surgical LCD Monitor

#### Suitable for Surgical Imaging

- Vivid 4K HDR images with greater contrast
- Enhanced visibility with latest generation A.I.M.E. technology
- New scratch resistant panel with ultra low reflection for clear view
- Unique Image Clone output with optional down conversion from 4K to HD
- Hands-free remote control to let surgeons focus on surgery
- Failsafe operation thanks to auto-input select mode
- Future oriented video interface with 12G-SDI
- Slim, light and suitable for boom arm mounting

#### Features

- 32-inch 16:9 Ultra High Definition (3840 x 2160)
- Wide colour gamut (BT.709 and BT.2020) and HDR support (HLG)
- 4K in-/output 12G-SDI/DP/HDMI and Image Clone output
- Auto input mode and simple remote control via stereo mini
- AC/DC Dual Power option
- Smart Cable Management
- Compact and flat design with better cleanability
- VESA mounting standard (100 x 100mm)



### LMD-X550MD

55-inch 4K 2D Surgical LCD Monitor

#### Suitable for Surgical Imaging

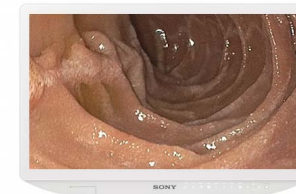
- Modern, slim, narrow bezel and ergonomic design
- 4K resolution provides greater detail
- Advanced HD to 4K upscaling without blurring
- Superb black reproduction combined with ultra fast processing to give sharp, high contrast, low latency surgical images
- Splash proof glass edge-to-edge screen for 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

#### Features

- 55" 4K resolution LCD Display (3840 x 2160 pixels)
- High brightness anti-reflective OptiContrast Panel™
- Wide colour gamut
- Modern low profile design with narrow bezel
- Integrated rear cable cover
- VESA Mounting (200 x 200mm / 300 x 300mm)



Full HD  
1080



Full HD  
1080

## 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



### 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 100mm)

## CASE STUDY

### 4K monitors support endoscopic surgery

Mr. Tatsunori Watanabe is a Surgical Work Manager in the Department of Clinical Engineering at St. Luke's International University Hospital in Tokyo, where around 10,000 surgeries are performed every year. He discusses the installation of the LMD-X3200MD 32-inch 4K LCD medical monitors in ten of the hospital's operating rooms and their role in supporting endoscopic surgery.



### Mr. Tatsunori Watanabe comments on the LMD-X3200MD 32-inch 4K monitor

#### What were the criteria for choosing a 4K surgical monitor for use in the OR?

The Sony LMD-X3200MD monitors in ten of our operating rooms make it possible to display SD resolution images, HD, and even 4K and 8K endoscope images (through 4K down-converted output) just by connecting an endoscope, operation field camera or vital signs monitor.

The endoscopes in our hospital's operating rooms are shared by all departments, and so it was necessary for the monitors to be very versatile, with uniform visibility to satisfy surgeons from a wide range of departments. In my opinion, the optimal brightness for a monitor in the OR is around 500-600 cd/m<sup>2</sup>. If it's darker than this the image is difficult to see in its entirety, and if it is brighter the surgeon's eyes will suffer from fatigue.



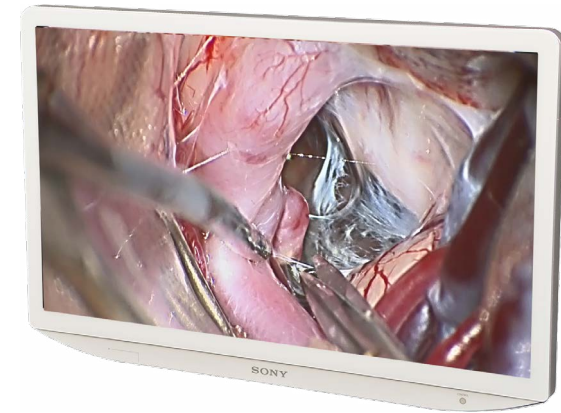


### **What's your opinion about the monitor's functionality and ease of use?**

We have been pleased with the clarity and brightness of the displayed images, and the doctors rate them highly. I find it convenient that you can freely change the display mode to meet the requirements of the surgical procedure. For example, endoscopic surgical field images and echo information can be simultaneously displayed. Also, simultaneous dual screen images can be output externally to a second monitor with no alterations to brightness or colour through the Clone Out function. The easy-to-understand side-by-side surgical field and ultrasound images can be directly recorded to a recording device.

In the past we needed to add special relay equipment for functions such as multiple screen display, vertical rotation and clone output recording, but this monitor alone fulfills multiple roles. It is easy to use. The back panel takes cable wiring into account, and we found it to be quite convenient and easy to set-up.

The interface is intuitive and easy-to-use: OR helper and assistants with little specialised mechanical knowledge can change the input source or settings during surgery. The monitor can also be easily cleaned after surgery, when our previous monitors' coating peeled from the effect of cleaning with isopropyl alcohol or ethanol.








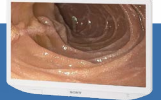
### **What about ease of installation, and plans for the future?**

We installed the monitors ourselves and we found setting up was easy even when handling different sources with a wide range of connector types.

We are using already 4K endoscopes today and we plan to use this monitor also with the next generation endoscope to come in 8K resolution. It's highly versatile, and I think it is a worthy candidate when considering a monitor purchase. The LMD-X3200MD fulfils multiple roles, it is easy to use and has great cost performance so that even small and medium hospitals can afford it.





Criteria/ model								
Criteria/ model	LMD-XH550MT	LMD-X550MD	LMD-XH320MT	LMD-X3200MD	LMD-X2710MD	LMD-X2705MD	LMD-2735MD	LMD-2435MD
Size	55"		32"		27"			24"
Brightness (cd/m <sup>2</sup> )	1 500 (Typical, Peak)	520	1 750 (Typical, Peak)	500	800		300	
Panel type	IPS with New OptiContrast NOC	IPS with Bonded panel (resin) LCD	IPS with New OptiContrast NOC	IPS with Air gap & Ultra-low reflection treatment LCD	IPS with Air gap & anti reflection coating LCD			IPS
Video IN	Display Port (1), HDMI (1), DVI-D (1) 3G/HD/SD-SDI (1) 12G-SDI (2)	HDMI (1), DVI-D (1) 3G/HD/SD-SDI (5)	Display Port (1), HDMI (1), DVI-D (1) 3G/HD/SD-SDI (1) 12G-SDI (2)	Display Port (1), HDMI (1), DVI-D (1) 3G/HD/SD-SDI (1) 12G-SDI (1)	Display Port (2), HDMI (1), DVI-D (1), 12G/3G/HD/SD-SDI (1)	Display Port (2), HDMI (1), DVI-D (1), 3G/HD/SD-SDI (1)	DVI-D (1), HD-SDI (1) + Analogue	
Video OUT	3G/HD/SD-SDI (1) 12G-SDI (2) CLONE OUT (1)	DVI-D (1) 3G/HD/SD-SDI (5)	3G/HD/SD-SDI (1) 12G-SDI (2) CLONE OUT (1)	3G/HD/SD-SDI (1) 12G-SDI (1) CLONE OUT (1)	Display Port (1) DVI-D (1) 12G/3G/HD/SD-SDI (1)	Display Port (1) DVI-D (1) 3G/HD/SD-SDI (1)	DVI-D (1)	
Power	AC Input	AC Input	AC Input or DC Input with optional AC-300MD				AC Input or DC Input with optional AC-120MD	
Protection Class	IP45 (Front), IP32 (Rear)	IPX2	IP45 (Front), IP32 (Rear)	IP41 (Front), IP31 (Rear)	IPX5 (Front), IPX2 (Rear)		IPX1	
Cleaning	Edge-to-edge front design, easy to wipe down and disinfect							
Cable protection	Supplied Rear Cable Cover						Recessed connectors at rear	
<b>HDR</b> Support	Yes	No	Yes				No	
<b>3D</b> Support	Yes	No	Yes	No				
A.I.M.E.	(Structure/improved Colour/Shadow/NR)	(Structure/Colour)	(Structure/improved Colour/Shadow/NR)	(Structure/Colour/Shadow/NR)	No			



## Video Recorders – Store & share safely

Ideal for documentation, training and education, our medical recorders capture clear, detailed video and still images. Recorders allow dedicated settings to fit the individual needs of various applications: endoscopic/laparoscopic camera systems, surgical microscopes, ultrasound systems and other compatible imaging equipment.

- Compatible with a wide range of medical imaging sources in 2D or 3D, from Standard Definition up to Full HD or 4K resolution
- No risk of data loss thanks to our smart simultaneous recording
- Freedom to decide external storage during or after the procedure
- Large choice of media types for external storage: external USB drive, DVD, or hospital network server

Reliable and easy to use, our recorders' compact design simplifies integration on medical carts.







“

*Images we capture during cataract surgeries are invaluable for us. We use it for our own review process improving our own techniques. We also use it for training and education for our fellow colleagues who benefit so much from better quality images. We also use it at national and international conferences to share our knowledge and skills and to teach our colleagues.*

”



**HVO-4000MT**   
4K 2D & 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 incl. PACS

**Features**

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



**HVO-3300MT**   
Full HD 2D & 3D 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 with long recording time of close to 200h in Full HD
- 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

## VIDEO RECORDERS / ULTRASOUND RECORDERS



### HVO-550MD

HD Medical DVD Recorder



### HVO-550MD /FHD

HVO-550MD (Full HD Version)

#### 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
- Digital video in/out: DVI-D, HDMI (1080p)
- Analog video in/out: S-Video, Composite
- Recording resolutions:  
HVO-550MD: HD (720p) and SD (576i/480i)  
HVO-550MD/FHD: 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.



## VIDEO RECORDERS / SONY MEDICAL RECORDER LINE-UP



	HVO-550MD HVO-550MD /FHD	HVO-500MD /SUR (Surgical version)	HVO-3300MT (FW 1.1)	HVO-4000MT (FW 1.2 or higher)	
<b>Recording</b>	Still image capture		✓	✓	
	2D/3D	2D Recording		2D & 3D Recording	
	4K Recording			✓	
	HD 720p Recording	✓	✓	✓	
	Full HD 1080i Recording	✓ (FHD model only)	✓	✓	
	Full HD 1080p Recording			✓	
	2 Channel Recording			✓	
	Simultaneous Recording	Internal HDD and 1 external media		Internal HDD & 2 ext. media	Internal HDD & 1 ext. media
	Optical Disc Drive	DVD drive		BD / DVD drive	
<b>Functions</b>	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			✓	✓
<b>Interfaces</b>	Digital video input	HDMI & DVI-D Interfaces		3G/HD/SD-SDI & DVI-D	3G-SDI Interface
	Analogue video interfaces		Video, S-Video	S-Video, Video BNC, RGB	N/A
	Remote control: RS-232C / USB	✓		✓	✓
	Printer driver		UP-DR80MD	UP-DR80MD & UP-D25MD	UP-DR80MD
<b>Applications</b>	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.

- Accurate grey scale reproduction thanks to direct thermal print technology
- Fade-free, photographic quality colour prints through advanced dye sublimation technology
- 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. These printers are a versatile and convenient choice for any healthcare setting.





“

I use the printers in my daily work and the rendering is always of high quality. The output on paper is perfect, for my documentation, as well as for the patients who go home with a nice picture!

”



### UP-DR80MD



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 printing solution (UPA-WU10 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
- Additional USB 2.0 interface, compatible with Sony wireless printing solution (UPA-WU10 optional)

Print Media:

UPC-R80MD



### UP-D25MD



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
- Flexible placement through Sony wireless printing solution (UPA-W10 optional)

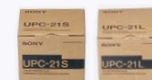
#### Features

- Sony dye sublimation printing technology
- A6 printout in approx. 19 seconds (423dpi)
- USB 2.0 interface
- RGB and advanced HSV-colour balance adjustment
- Self-cleaning function for paper feed roller
- Additional USB 2.0 interface, compatible with Sony wireless printing solution\* (UPA-WU10 optional)

Print Media:

UPC-21S

UPC-21L



3G SDI

### UP-27MD



A6 Colour Video Printer

#### Suitable for Medical Image Documentation

- Photo-realistic high quality prints
- Ensure compatibility with the latest medical imaging systems featuring SDI interface
- Intuitive operation with the large front LCD display
- Easy to integrate thanks to its compact design
- Selection of print media available
- Robust and low maintenance through self cleaning function

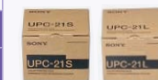
#### Features

- Accepts video signals up to full HD 1080p resolution
- 3G/HD/SD-SDI input and output
- Sony dye sublimation printing technology for superior image quality at 423dpi
- A6 printout in approx. 19 seconds
- 3 print layouts: One image, two-split image and four-split image
- Automatic Feed Roller Cleaning

Print Media:

UPC-21S

UPC-21L



### UPA-WU10



Wireless Printing Solution

#### Suitable for use in busy medical environments

- Remote printer placement for more space on surgical or ultrasound cart, less printer contamination and lower noise levels
- Automatic pairing
- Three printers can be used 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

#### Wireless Printing – No hassle with cables

Compatible with

UP-DR80MD	UP-971AD	UP-991AD
UP-D25MD	UP-X898MD	



## UP-971AD



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
- Flexible placement through Sony wireless printing solution (UPA-WU10 optional)

### 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 60cm
- Easy access to multiple print modes available via front panel

Print Media:

UPP-210HD UPP-210SE



## UP-991AD



A4 Black & White Hybrid Printer

### Suitable for Medical Image Documentation

- Superior image quality on thermal paper
- Automatic paper cutting
- Still image capture functionality
- Easy integration through compact design
- Full flexibility through hybrid interfaces
- Reliable printouts at maximum print speed
- Flexible placement through Sony wireless printing solution (UPA-WU10 optional)

### Features

- A4 B&W high speed paper printing in approx. 8 seconds
- Motorized print media cutter
- Image storage onto USB flash drive
- Hybrid interfaces: USB 2.0 and Composite video
- Long printouts of up to 60cm
- Easy access to multiple print modes available via front panel

Print Media:

UPP-210HD UPP-210SE





## UP-X898MD



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
- Flexible positioning on modality through dual cutter
- Maximum print speed for minimal waiting time
- Reliable printouts on a variety of print media types
- Flexible placement through Sony wireless printing solution (UPA-WU10 optional)

### Features

- A6 monochrome high speed printing in approx. 1.9 seconds
- Hybrid interfaces: USB 2.0 and composite video
- Dual cutter for paper cutting through upwards or downwards motion
- Image storage to USB flash drive
- Multiple print modes for a variety of applications

Print Media:

UPP-110HG UPP-110HD  
UPP-110S



## UP-D898MD



A6 Black & White Digital Printer

### Suitable for Medical Image Documentation

- The de facto industry standard in ultrasound
- Maximum print speed for minimal waiting time
- Flexible positioning on modality through dual cutter
- Reliable printouts on a variety of print media types

### Features

- A6 monochrome photo quality printout
- High speed printing in approx. 1.9 seconds
- Dual cutter for paper cutting through upwards or downwards motion
- Multiple print modes for a variety of applications

Print Media:

UPP-110HG UPP-110HD  
UPP-110S



## UP-D898DC



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
- Flexible positioning on modality through dual cutter
- 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
- Dual cutter for paper cutting through upwards or downwards motion
- Multiple print modes for a variety of applications

Print Media:

UPP-110HG UPP-110HD  
UPP-110S



## UP-D711MD



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
- Flexible positioning on modality through dual cutter

### Features

- A7 monochrome photo quality printout
- DC input, AC-adaptor AC-81MD available (optional)
- Compact and lightweight design
- Dual cutter for paper cutting through upwards or downwards motion
- Offering various print modes and paper saving mode

Print Media:

UPP-84HG UPP-84S



# 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 are 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.



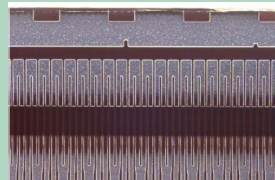
### High water resistance

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).

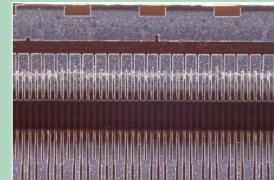


### Head-matching performance

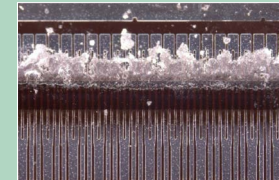
The top coat layer of Sony's print media, designed to optimally match the printer heads of Sony's printers, provides continuous printing.



Clean Thermal Head



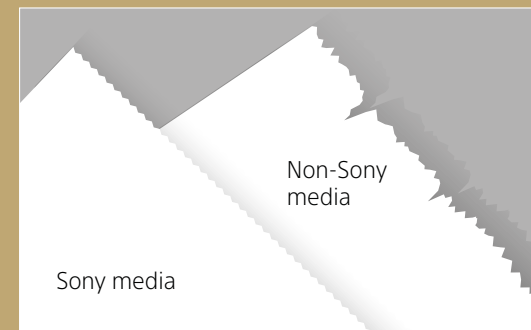
Thermal Head after one roll of Sony print media



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.

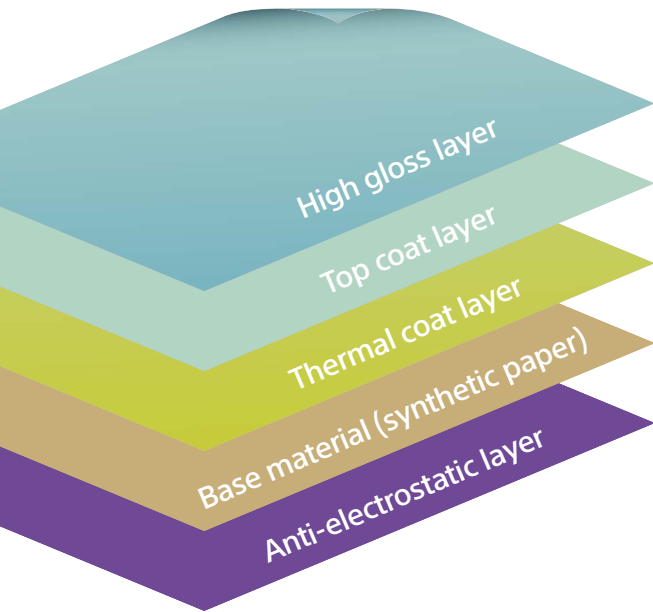






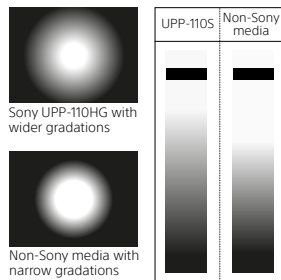
# Unique design to achieve

Quality, durability and reliability



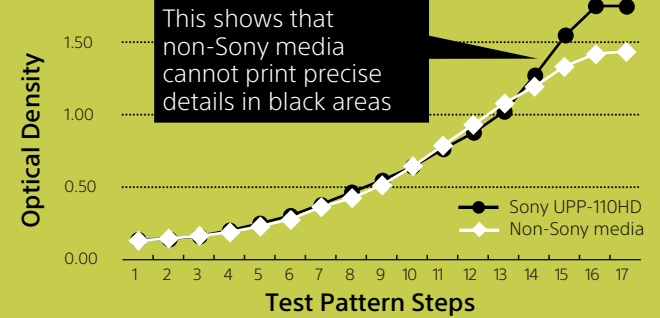
## Excellent greyscale reproduction

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



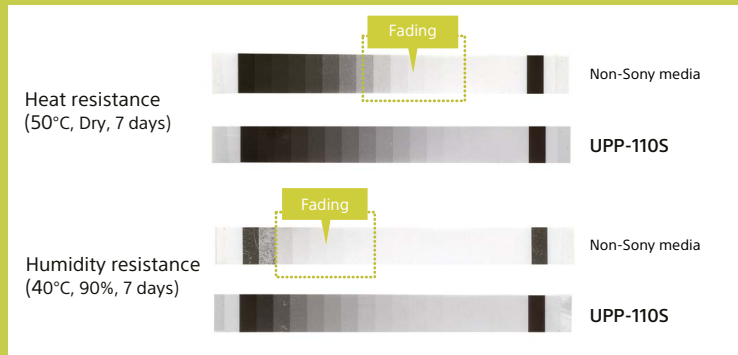
## Superior print quality

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



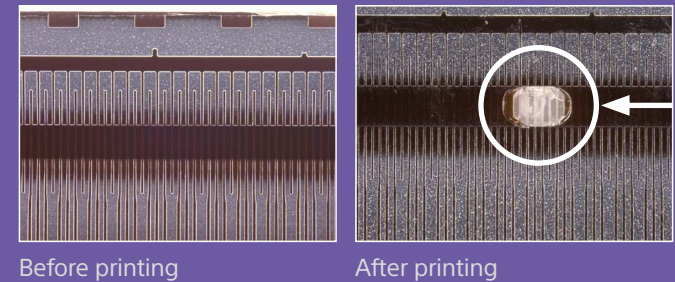
## High humidity and heat resistance

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.



## 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.

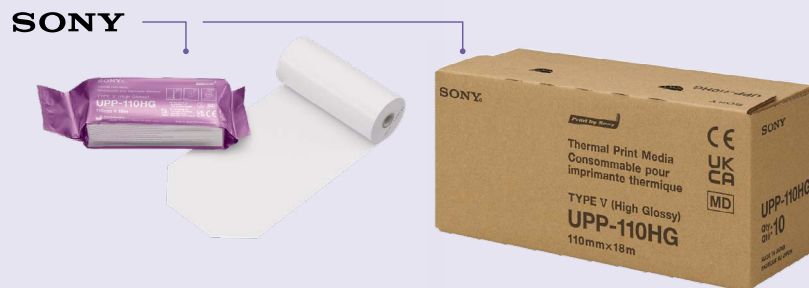
The choice of print media is equally crucial: the quality of a printed image, now or several years hence, is vital for it to serve as a lasting record.

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 patented 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

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





## The Sony range

Size	Description	Comments	Model	Prints per pack or length	Printers					Number of rolls or packs		
<b>Colour printing for reference</b>					UP-DR80MD	UP-D77MD	UP-D75MD				Per subcarton	Per mastercarton
A4	Self-Laminating Colour Printing Pack		UPC-R80MD	100 (50x2)	●							4
					UP-55MD	UP-D55						
A5	Colour Printing Pack		UPC-55	200 (2x100)	●	●						5
					UP-27MD	UP-D25MD	UP-25MD	UP-20/21MD	UP-D23MD			
A6	Colour Printing Pack		UPC-21L	200 (50x4)	●	●	●	●	●			6
A7	Colour Printing Pack		UPC-21S	240 (80x3)	●	●	●	●	●			6
					UP-991AD <sup>1</sup>	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
					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
<b>Black &amp; white printing for diagnosis</b>					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

Printer models in black are available printers, other models are discontinued.  
 1 Usage of UPT-210BL with UP-991AD until S/N 71xxxx  
 Cannot be used with S/N 8\*\*\*\* and higher

## BLACK & WHITE MEDIA FOR REFERENCE

### Size: A7

#### UPP-84HG

Thermal Print Media

Print quantity:  
104 prints/A7 prints  
Paper size:  
84mm (W) x 12,5m



Size: A7

UP-D711MD

#### UPP-84S

Thermal Print Media

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



Size: A7

UP-D711MD

### Size: A6

#### UPP-110HG

Thermal Print Media

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



Size: A6

UP-X898MD

UP-D898MD

UP-D898DC

UP-897MD

UP-D897

#### UPP-110HD

Thermal Print Media

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



Size: A6

UP-X898MD

UP-D898MD

UP-D898DC

UP-897MD

UP-D897

#### UPP-110S

Thermal Print Media

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



Size: A6

UP-X898MD

UP-D898MD

UP-D898DC

UP-897MD

UP-D897

### Size: A4

#### UPP-210HD

Thermal Print Media

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



Size: A4

UP-991AD

UP-990AD

UP-971AD

UP-970AD

#### UPP-210SE

Thermal Print Media

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



Size: A4

UP-991AD

UP-990AD

UP-971AD

UP-970AD



## THERMAL FILM FOR DIAGNOSIS

### Standard density

#### UPT-517BL

Blue Thermal Film

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



Size: 14 x 17

UP-DF750

UP-DF500

UP-DF550

#### UPT-514BL

Blue Thermal Film

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



Size: 11 x 14

UP-DF750

UP-DF550

UP-DF550

#### UPT-512BL

Blue Thermal Film

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



Size: 10 x 12

UP-DF750

UP-DF500

UP-DF550

#### UPT-510BL

Blue Thermal Film

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



Size: 8 x 10

UP-DF750

UP-DF550

UP-DF550

## COLOUR MEDIA FOR REFERENCE

### Size: A6

#### UPC-21L

Colour Printing Pack

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



Size: A6

UP-27MD

UP-25MD

UP-21MD

UP-D25MD

UP-20

UP-D23MD

#### UPC-21S

Colour Printing Pack

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



Size: A6

UP-27MD

UP-25MD

UP-21MD

UP-D25MD

UP-20

UP-D23MD

### Size: A4 & A5

#### UPC-R80MD

Self-Laminating Colour Printing Pack

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



Size: A4

UP-DR80MD

#### UPC-55

Colour Printing Pack

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



Size: A5

UP-D55

UP-55MD



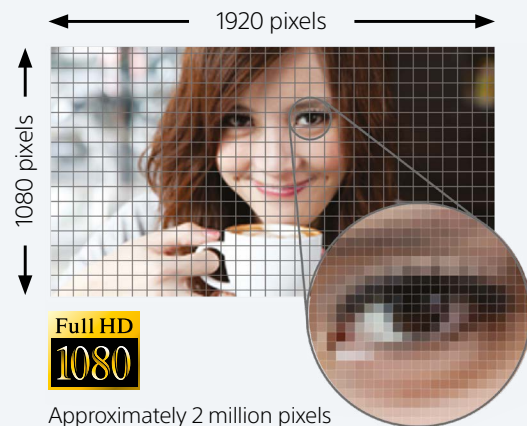
# Technology – Advanced innovation

## 4K – The ultimate definition

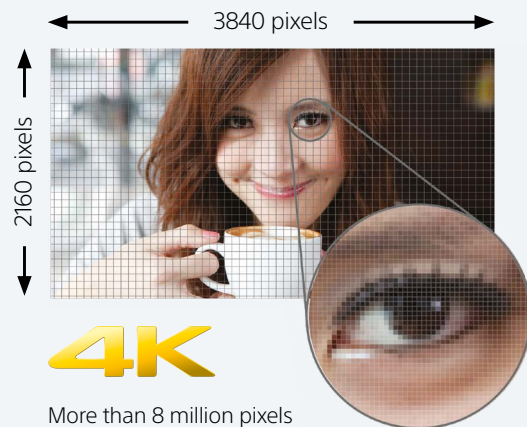
### What is 4K?

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 resolution.

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 the 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 revolutionise the way you work.





# 3D - The ultimate precision in depth

## 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 12G/3G-SDI, DisplayPort, HDMI and DVI and are capable of displaying signal formats such as dual stream for left and right, field mode and single stream in side-by-side, top-and-bottom or interleaved mode (line-by-line).

# 4K resolution 3D images from Full HD 3D camera sources

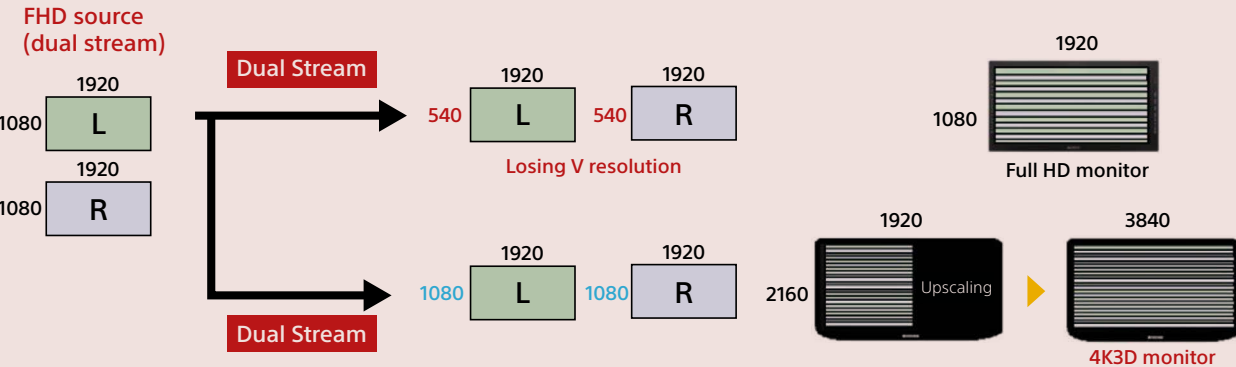
All Sony 3D medical monitors offer true 4K resolution for improved performance over Full HD (FHD) 3D monitors in clinical applications.

A Full HD 3D camera uses two sensors that capture simultaneous 'left eye' and 'right eye' images, each with a video resolution of 1080 lines. Since a Full HD 3D monitor can itself only display 1080 lines, half of this information is ignored when left and right eye images are merged to display in 3D, resulting in a reduced vertical resolution of just 540 lines from left eye and 540 lines from right eye images.

Our 4K 3D monitors offer a resolution of 2160 lines – twice that of Full HD. Left and right eye streams from a Full HD 3D camera are displayed without sacrificing image detail, with the monitor upscaling input signals to 4K resolution to fill the entire screen.

It's a highly cost efficient way of enhancing the effective imaging performance of existing Full HD 3D endoscopic or microscopic camera systems.

With the added benefit of new Local Dimming panel technology, surgical teams can enjoy exceptionally bright, detail-packed images without ghosting or crosstalk when viewing 3D sources.



# HDR True-to-life images from Sony

## What is HDR? High Dynamic Range

Dynamic range refers to the range between the lightest and darkest areas of an image that can be displayed before losing detail.

The human eye has a native dynamic range of about 10-14 stops. This is the range of brightness that we can see in one scene. However, the pupil allows the human eye to accept a far wider range of brightness levels up to about 24 stops from one scene to another.

## Setting standards

Sony innovation knows no limits, developing the first HDR medical camera and the first 4K HDR surgical monitor.

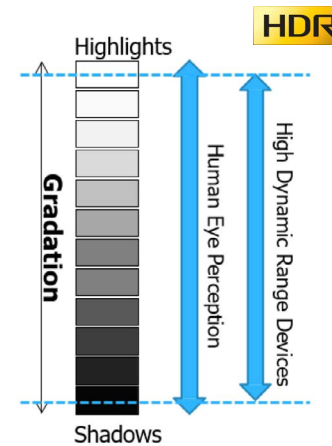


Offering remarkable sensitivity, the MCC-1000MD sees low light details that other surgical cameras can't see.

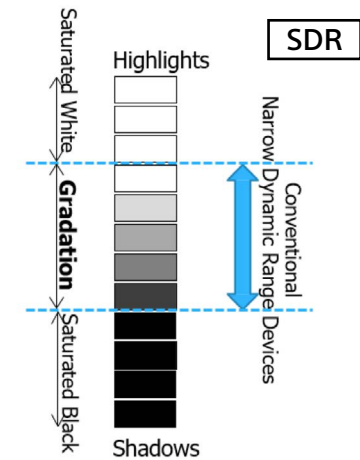
Initially Sony released the LMD-X2705MD, the very first 4K monitor bringing super clear, bright and colorful images with HDR technology. With this monitor, you'll be able to see a full range of bright and dark tones without losing important details. And now, we've added even more monitors to our HDR family. Check out the new 27" LMD-X2710MD and the 32" LMD-X3200MD for brilliant 2D imaging, or step into the world of 3D with the LMD-XH320MT and LMD-XH550MT.

### What is the difference for imaging?

High Dynamic Range devices are close to human eye perception and provide higher gradation. Narrow dynamic range devices – or often referred to as Standard Dynamic Range (SDR) devices – have less gradation while highlights and shadows lack detail.



High Dynamic Range devices are close to human eye perception



Narrow dynamic range devices have less gradation, highlights and shadows lack detail

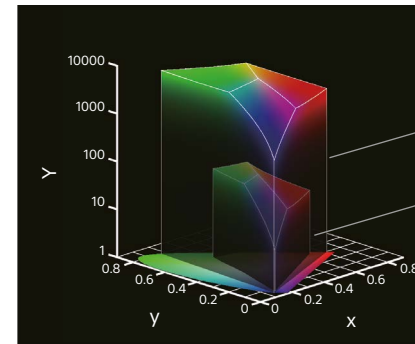




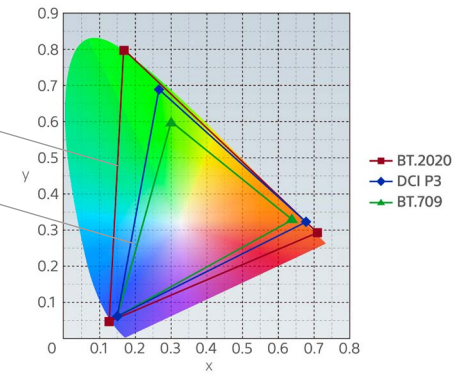
**Extended range of colour**

The colour volume and also the luminance level increase dramatically in an HDR system, so that images can be reproduced much more naturally and in a higher quality level.

Colour Volume (Colour Gamut x Luminance)

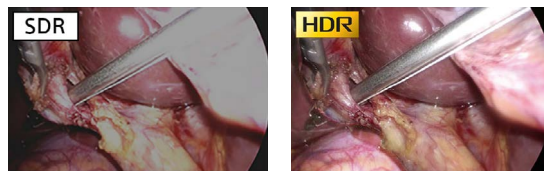


Colour gamut



## What is the benefit of High Dynamic Range in surgical imaging?

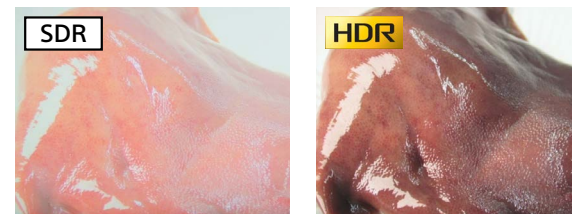
Surgical imaging often has strong highlights from various surgical and endoscopic light sources, along with lots of dimly lit areas and dark colours. The benefit can be shown in a comparison between systems with Standard Dynamic Range and High Dynamic Range:



With conventional SDR imaging (left image), highlight areas are overexposed when the light is too strong, so that fine vessels and the organ structure cannot be seen in these overexposed areas. When reducing the light, the highlight disappears, and the organ structure becomes visible again; but at the same time the background that is not illuminated well is getting too dark to observe any structure difference. With HDR imaging (right image), dark and bright areas show all details in the same lighting condition and allow to see the fine vessel and organ structure in bright and dark areas at the same time.



This image shows the stomach of a cow and a pork liver, exposed to high light, as if viewed through a surgical microscope. Within the SDR image chain, the display cannot reproduce brightness levels required, causing the surface structure to lose depth and the red tones to fade.



Within the HDR image chain, the surface structure and colour of these organs is maintained. Light reflections from the dry surface of the stomach and the wet liver remains natural, with the correct feeling of depth and texture.

# What is Local Dimming?

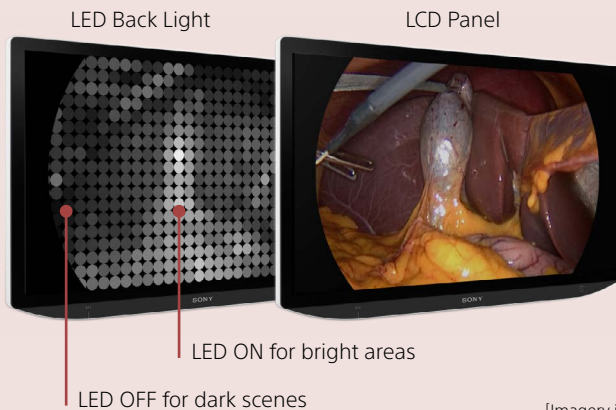
Local Dimming technology is a kind of backlight control to achieve the true black and high brightness.

Thanks to this technology, our LMD-XH Monitor series can display images with high contrast and accurate reproduction of the original image.

## How does it work?

The reproducibility of black is improved thanks to an individual drive of different areas of the backlight. An excellent "peak brightness" is achieved by adding the power that is saved in the dark area to be put on top of the bright area. As a result of Sony's special expertise, this is possible.

Thanks to Local Dimming, ultra-high brightness and ultimate black level can be achieved (with a peak brightness of up to 1750 cd/m<sup>2</sup> and a contrast ratio of 1.000.000:1).



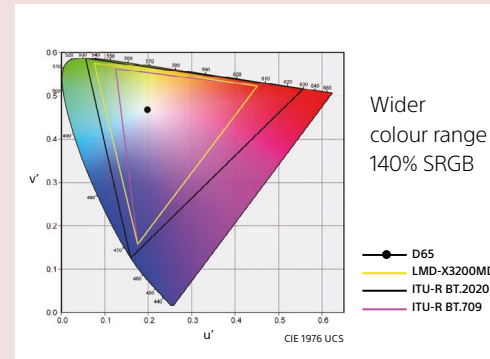
[Imagery in this article is simulated for illustrative purposes]

## Wider colour gamut

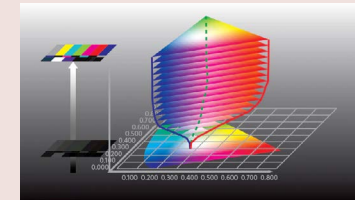
The capability of ultra-high brightness allows to see the smallest colour tone differences even in high bright areas. Conventional monitors would clip in the white tones making it impossible to display details.

### Local Dimming Technology

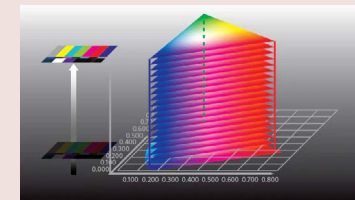
Local Dimming monitor achieves excellent colour reproductivity



### Typical LCD Monitor



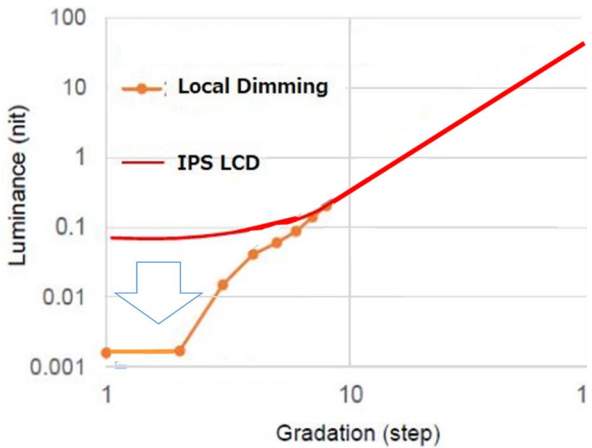
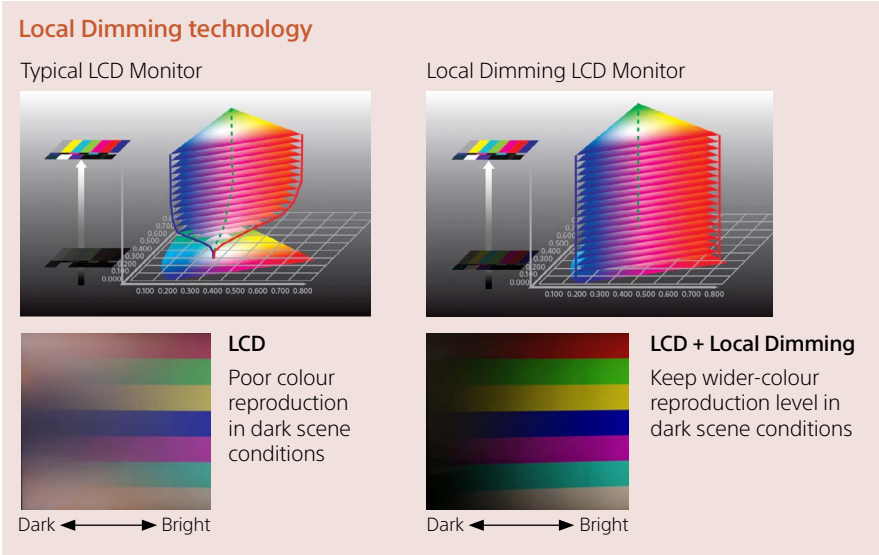
### Local Dimming LCD Monitor





The Local Dimming technology allows for exceeding the boundaries of illumination, whereas conventional LCD monitors have a constant global backlight.

With Local Dimming technology, colours can be clearly seen even in dark areas, while conventional monitors will crash and may not reproduce the colours correctly.



### Benefit for medical application

This test compares three types of display:

One with a regular backlight (left), another with Local Dimming technology in regular mode (middle), and the third one when changing to HLG (Hybrid Log Gamma) which is part of the BT.2100 standard for HDR signal reproduction.

Input Signal	SDR	HDR	HDR
Monitor Mode	SDR	SDR	HDR
LMD-X310MD (375nit)	LMD-XH550MT (375nit)	LMD-XH550MT (1500nit)	
The front is clearly visible but the back appears dark.	The back is visible due to the bright input signal, but the front appears saturated.	Both the back and the front are visible.	

# 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 4-6\* structure (sharpness) adjustments and from 8\* colour-adjusting levels, and can use them in any combination.

\* selection varies per model

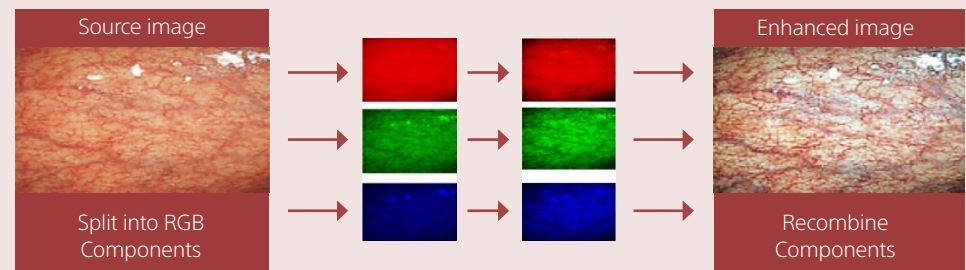
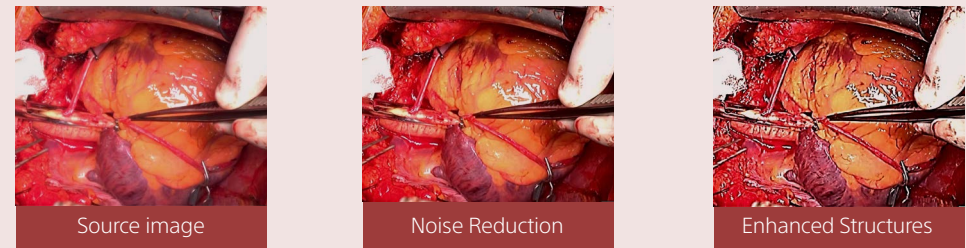
## A.I.M.E.

### Advanced Image Multiple Enhancer

- Integrated into high-end Sony surgical monitors as standard
- Allows surgeon to select colour, structure and shadow enhancing options to optimal choice\*
- A.I.M.E. function switchable on control panel (On/Off)
- Colour Mode and Structure Mode up to 8 steps
- Shadow enhance and noise reduction up to 6 steps\*

\* Shadow enhance and Noise Reduction is only available in last generation A.I.M.E. monitors

## Structural Enhancement





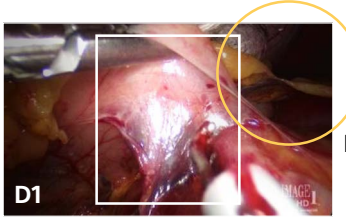
## Shadow Enhancement

The Shadow Enhancement function changes the dark areas for more or less black level compared to the original image, without touching the bright areas.

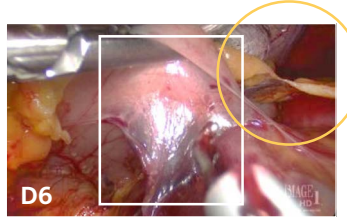
Changes in Shadow can be selected from "Off" (Original), D1 (darker than Original) to D6 (brighter than Original).



A.I.M.E. "Off"  
Original Image



- **D1** to accentuate dark parts to be darker
- No change for bright areas

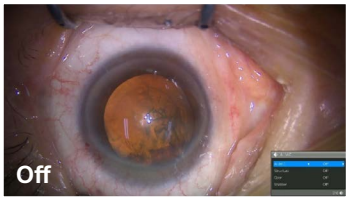


- **D6** to accentuate dark parts to be brighter
- No change for bright areas

## Colour Enhancement

The Colour Enhancement function emphasises on red and yellow parts of the image or increases the white portion in the bright parts of the image.

Colour Enhancement can be selected from "Off" (Original), C1 (more red and yellow) up to C8 (more white and less yellow).



A.I.M.E. "Off"  
Original Image



- Colour Enhance **C4** changes image part to lighter yellow
- Structure Enhance **S5** gives more sharpness to the original image



- Structure Enhance **S6** creates even higher sharpness
- **C7** gives a more whiteish impression to the bright image parts

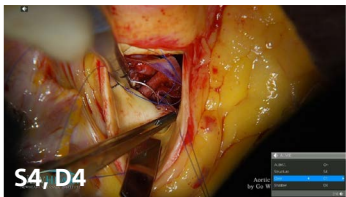
## Combination: Sharpness/Shadow/Colour

When combining Shadow and Colour with Sharpness Enhance, the structural differences become clearer for even further visibility between blood vessels and fat tissue.

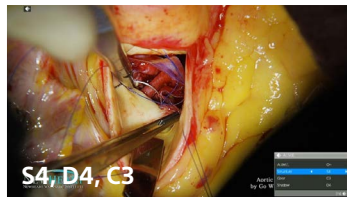
Sharpness Enhancement can be selected from "Off" (Original), S1 (slightly sharper) up to S6 (strong sharpness).



A.I.M.E. "Off"  
Original Image



- More sharpness with Structure Enhance set to **S4**
- More brightness in dark areas using Shadow enhancement **D4** to improve structural visibility



- Colour Enhance is set to **C3** (more yellow) in addition to **S4** and **D4** to improve visibility between blood vessels and fat



## Protecting your investment

Sony delivers peace of mind and confidence, providing you with the highest quality services and support for Sony Healthcare products across Europe (the full list of eligible countries can be found on [sony.pro](https://sony.pro) website).

## 2 years PrimeSupport Pro cover on all medical hardware



Sony Healthcare products are provided with a 2 Year PrimeSupport Pro service package included at no extra cost. Our PrimeSupport Pro packages go beyond a standard warranty with access to expert technical assistance. Our multilingual helpdesk can answer everyday questions on setting up and using your products by phone or email. If you do need repairs, we'll organise logistics quickly and efficiently, with free shipping and no hidden costs.



### Multilingual Support

Technical expertise and support from multilingual product specialists when you need it.



### Collection and Delivery Service

Free collection and delivery back to the place of your choice, saving you time and stress.



### Sony Certified Repairs

Repairs from dedicated Sony engineers that know Sony Medical products best.



### Fast Track Repairs

If we cannot resolve the issue remotely, then we'll arrange collection, repair and return of the unit to you within 7 days.

## Service Packages



	2 years included extendable up to 5 years	Up to 5 years
Duration		
Helpdesk Access Mon-Fri 9:00-18:00 CET	✓	✓
Standard repair best effort turn around time (TAT)*	✓	
Fast-Track Repair 7 days TAT Target		✓
Logistics Covered	✓	✓

\* TAT (Turn Around Time) is average 14 days of repair time



# Up to 5 years of support with a PrimeSupport Extension

Get extra peace of mind by purchasing 3 additional years of PrimeSupport. Extension packages can be purchased up to a maximum of 5 years after the initial purchase of your unit.

## Surgical Monitors

Optional	
Duration	3-year extension
Helpdesk Access Mon-Fri 9:00-18:00 CET	✓
Standard Repair Best effort TAT	
Fast-Track Repair 7 days TAT Target	✓
Logistics Covered	✓



### 3-Year Prime Support Elite Extension Packages

Support Reference	Model Name
PSP.MED.LMD15-21.3	LMD-2110MD
PSP.MED.LMD24-27.3	LMD-2435MD, LMD-2735MD, LMD-X2705MD, LMD-X2710MD
PSP.MED.LMD31.3	LMD-X310MD, LMD-X310MT
PSP.MED.LMD32.3	LMD-X3200MD, LMD-XH320MT
PSP.MED.LMD55.3	LMD-X550MD, LMD-X550MT, LMD-XH550MT

### Uplift the PrimeSupport Pro to Elite for free:

Register your new monitor with PrimeSupport and get a Free upgrade to premium Elite cover offering fast track repair services [pro.sony/primessupport-free-upgrade](https://pro.sony/primessupport-free-upgrade)

## Recorders • Printers • Cameras

Optional	
Duration	3-year extension
Helpdesk Access Mon-Fri 9:00-18:00 CET	✓
Standard Repair Best effort TAT	✓
Fast-Track Repair 7 days TAT Target	
Logistics Covered	✓



### 3-Year Prime Support Pro Extension Packages

Product Category	Support Reference	Model Name
Medical Cameras	PSP.MED.MCC500.3	MCC-500MD
	PSP.MED.MCC1000.3	MCC-1000MD
Medical Recorders	PSP.MED.HVO500.3	HVO-500MDseries, HVO-550MDseries
	PSP.MED.HVO3300.3	HVO-3300MT
	PSP.MED.HVO4000.3	HVO-4000MT
Medical Printers	PSP.MED.UP.BW.A7.3	UP-D711MD
	PSP.MED.UP.BW.A6.3	UP-D898MD, UP-D898DC, UP-X898MD
	PSP.MED.UP.BW.A4.3	UP-971AD, UP-991AD
	PSP.MED.UP.COL.A6.3	UP-D25MD, UP-25MD, UP-27MD
	PSP.MED.UP.COL.A4.3	UP-DR80MD



# Accessories

## CAMERA ACCESSORIES

### Cable

Camera cables	Model	Length	In	Out	MCC-500MD MCC-1000MD	MCC-3000MT PMW-10MD
	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	•	

## RECORDER AND PRINTER ACCESSORIES

### AC Adapter

#### AC-81MD

AC Adapter for Printer, Recorder, 3D Camera and Head Mount Display



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

### Remote Control

#### FS-24

Foot Switch

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



UP-25MD	UP-X898MD
UP-971AD	UP-991AD
HVO-500MD	HVO-550MD
HVO-3300MT	HVO-4000MT
LMD-X2700MD	LMD-X2705MD
LMD-X3200MD	LMD-XH320MT
LMD-XH550MT	



All products on this page are EU-MDR compliant.





SURGICAL MONITORS ACCESSORIES

Eye Shield

CFV-E30SK

3D Eye Shield Kit



LMD-X550MT	LMD-X310MT
LMD-XH320MT	LMD-XH550MT

CFV-E20SK

2D Eye Shield Kit



LMD-X550MT	LMD-X310MT
LMD-XH320MT	LMD-XH550MT

CFV-B100

Eye Shield Frame



LMD-X550MT	LMD-X310MT
LMD-XH320MT	LMD-XH550MT

CFV-E30D

Eye Shield (x15pc)



LMD-X550MT	LMD-X310MT
LMD-XH320MT	LMD-XH550MT

Monitor Stand

SU-600MD

Monitor Stand



LMD-X310MT	LMD-X310MD
LMD-2735MD	LMD-2435MD
LMD-X2710MD	LMD-X2705MD
LMD-X3200MD	LMD-XH320MT

AC Adapter

AC-120MD

AC Adapter for Medical Monitors



LMD-2435MD	LMD-2735MD
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AC-300MD

AC Adapter for LMD Monitors



LMD-X2700MD	LMD-X2705MD
LMD-X310MD (supplied)	LMD-X3200MD
LMD-XH320MT	

Input Adapter

BKM-341HS

SD/HD-SDI Adapter



LMD-2110MD	LMD-1530MD
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Cable

SMF-405

Component RGB to D-sub 15-pin Signal Cable



LMD-2435MD	LMD-2735MD
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# Specifications





Full HD Colour Video Camera  
MCC-1000MD



System	
Image Device	1/2.8 type, Exmor R 3CMOS image sensor, RGB 3CMOS type
Effective Picture Elements	1920 x 1080
Lens Mount	C-mount
Sensitivity	F13 (Typical) (At 1080/59.94i, 89.9% reflection, 2000 lx) F20 (Typical) (At 1080/59.94i, 89.9% reflection, 2000 lx, "High Sensitivity" is "ON")
Picture S/N	63dB (Y) (Typical)
Gain	0dB to 30dB
Horizontal Resolution	1000 TV lines
Shutter Speed	1/60 to 1/10000
Slow Shutter	2 to 8 Frames
Picture Profile	Yes (Six settings)
Picture Flip	Yes
Freeze Function	Yes (capturing a still image)
Colour Bar	Off/Multi/EBU 75%/EBU 100%/Test Saw
Camera Synchronization for 3D-shooting	Yes
Output Connectors	VIDEO OUT (x1) [BNC], S-VIDEO OUT (x1) [4-pin Mini DIN] HDMI OUT (x1) [HDMI], HD-SDI OUT (x2) [BNC, HD/3DG]
HD-SDI Video Format	1080/i50/i60, 1080/p50/p60
AC Power Operation	Yes
Input Connectors	Remote contact switch connectors 1, 2 (Stereo mini jack)
Input/Output Connectors	CAMERA (x1) [20p-pin, round type], RS-232C (x1) [D-Sub 9-pin] 3D-SYNC-IN, OUT[BNC]
Other Connector	Equipotential ground connector (x1)
Measurements	
Mass (Camera Head)	approx. 60g (approx. 2.1oz)
Mass (Camera Control Unit)	approx. 1.9kg (approx. 4lb. 3oz)
Dimensions (Camera Head) (WHD, excluding longest protrusions)	approx. 34x39x43mm [13/8 x 19/16 x 13/4 in]
Dimensions (Camera Control Unit) (Excluding longest protrusions)	approx. 200 x 62 x 264mm [7 7/8 x 2 1/2 x 10 1/2 in]
Power	
Power Requirements	100V to 240V AC, 50/60Hz
Input Current	0.40A - 0.25A
Operating conditions	
Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	20% to 80% (no condensation allowed)
Operating Pressure	700 hPa to 1,060 hPa
Storage/Transporting conditions	
Storage and Transport Temperature	-20°C to +60°C (-4°F to +140°F)
Storage and Transport Humidity	20% to 90% (no condensation allowed)
Storage and Transport Pressure	700 hPa to 1,060 hPa

Full HD Colour Video Camera  
MCC-500MD



System	
Image device	Single chip 1/3 inch type Exmor CMOS
Effective picture elements	1920 x 1080
Scanning system	1080i50/i59.94/P50/P60
Lens mount	C-mount
Sensitivity	F5.6 (Typical) (At 1080/59.94i)
S/N ratio	55db (Y) (typical)
Gain	0dB to 27dB
Horizontal resolution	Above 900TV lines
Shutter speed	1/60 to 1/10000
Gamma	Normal/medium/dynamic range
Sync system	External with BNC (x1)
Output signals	HDMI, HD-SDI, S-Video (Y/C), Composite
Flange back	17.526mm
Electronic shutter	Auto/manual (semi/full)
AE detect	Slow/normal/fast
White balance	Auto/Xenon/Halogen/White LED
Scene file	Profile 1 - Profile 6 (selectable)
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 I/O [Stereo Mini (x2)], Remote: D-Sub 9-pin (x1)
Measurements	
Mass	Camera Head Unit (CHU): 40g [14oz] Camera Control Unit (CCU): 2.3kg [5lb. 11oz]
Dimensions	CHU: 27 x 28 x 49mm [1 1/8 x 1 1/8 x 1 15/16 in] CCU: 200 x 62 x 240mm [7 7/8 x 2 1/2 x 9 1/2 in]
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)

## 4K 3D Surgical Monitor



LMD-XH550MT



LMD-XH320MT

Picture Performance		
Picture Size (Diagonal)	1387.8mm (54 3/4 inches)	800.757mm (31 5/8 inches)
Effective Picture Size	1209.6 x 680.4mm (47 5/8 x 26 7/8 inches)	697.92 x 392.58mm (27 1/2 x 15 1/2 inches)
Resolution	3840 x 2160 pixels	
Aspect	16:9	
Backlight	LED	
Panel Technology	LCD with IPS	
Luminance (Panel Spec)	550cd/m2 (Typical) 1500cd/m2 (Typical, Peak)	650cd/m2 (Typical) 1750cd/m2 (Typical, Peak)
Contrast Ratio	1,000,000:1 (Typical)	
Colours	10 bit colours (1,073,741,824)	
Vertical Viewing Angle (3D Mode)	37° at a viewing distance more than 1,000mm, crosstalk ratio less than 7% (Typical)	32° at a viewing distance more than 690mm, crosstalk ratio less than 7% (Typical)
Gamma	1.8, 2.0, 2.2, 2.4, 2.6, DICOM, Highlight, HLG	
Input		
Composite Input	N/A	
Y/C Input	N/A	
RGB, Component Input	N/A	
HDMI Input	HDMI (x1) (HDCP 2.3 correspondence)	
DVI-D Input	DVI-D (x1) (TMDS single link, HDCP 1.4 correspondence)	
SDI Input	BNC (x2) 12G/3G/HD-SDI BNC (x1) 3G/HD/SD-SDI	
Display port	Display Port (x1) (SST HDCP 1.3 correspondence)	
HD15 Input	N/A	
External Sync Input	N/A	
Remote	Stereo mini jack (x1)	
Serial Remote (LAN)	D-sub 9-pin (RS-232C) (x1), RJ-45 (x1) (Ethernet, 10BASE-T/100BASE-TX)	
DC Input	N/A	DC input connector (x1) DC 26V
AC input	AC input connector (x1) AC 100-240V, 50/60Hz	
Output		
Composite Output	N/A	
Y/C Output	N/A	
RGB, Component Output	N/A	
DVI-D Output	N/A	
SDI Output	BNC (x2) 12G/3G/HD-SDI BNC (x1) 3G/HD/SD-SDI	
Clone Out	BNC (x1) 12G/3G-SDI	
External Sync Output	N/A	
DC 5V Output	5V Output (x1) 2.0A max	
DC 12V Output	12V Output (x1) 2.5A max	
General		
Power Requirements (LCD monitor)	AC IN: 100V - 240V, 50/60Hz, 3.1A - 1.1A	AC IN: 100V - 240V, 50/60Hz, 2.4A - 1.1A DC IN: 26V, 8.8A (max) (Supplied from AC adaptor)
AC Adapter	N/A	Optional
Power Consumption (Approx.)	Approx. 290W (max.)	Approx. 230W (max.)
Operating Temperature	0°C to 40°C (32°F to 104°F)	
Dimensions (W x H x Dmm)	1249.6 x 763.3 x 92.8mm	753.9 x 476.3 x 84.7mm
Dimensions (W x H x D inches)	49 1/4 x 30 1/8 x 3 3/4	29 3/4 x 18 7/8 x 3 3/8
Mass	Approx. 27kg (Approx. 59lb 8.4oz)	Approx. 10.5kg (Approx. 23lb 2.38oz)

Images are simulated for illustration purposes. The values for dimensions are approximate.



## 4K 2D Surgical Monitor



LMD-X550MD



LMD-X3200MD



LMD-X2710MD



LMD-X2705MD

Picture Performance			
Picture Size (Diagonal)	1387.8mm (54 3/4 inches)	800.757mm (31 5/8 inches)	684mm (26.93 inches)
Effective Picture Size	1209.6 x 680.4mm (47 5/8 x 26 7/8 inches)	697.92 x 392.58mm (27 1/2 x 15 1/2 inches)	596.2 x 335.3mm (23 1/2 x 13 1/4 inches)
Resolution	3840 x 2160 pixels		
Aspect	16:9		
Backlight	LED		
Panel Technology	LCD with IPS a-Si TFT Active Matrix LCD		
Luminance (Panel Spec)	520 cd/m <sup>2</sup> (typical)	500 cd/m <sup>2</sup> (typical)	800 cd/m <sup>2</sup> (typical)
Contrast Ratio	1400:1		1000:1
Colours	approx. 1.073 billion colours		
Vertical Viewing Angle	89°/89°/89°/89° (typical) (up/down/left/right, contrast > 10:1)		
Gamma	1.8, 2.0, 2.2, 2.4, 2.6, DICOM, Highlight		1.8, 2.0, 2.2, 2.4, 2.6, DICOM, HLG
FHD upscale	Yes		
Input			
Composite Input	N/A		
Y/C Input	N/A		
RGB, Component Input	N/A		
HDMI Input	HDMI (x1) (HDCP 1.4 correspondence)	HDMI connector (x1) HDCP2.3 correspondence	HDMI connector (x1) HDMI 2.0b, HDCP1.4 correspondence
DisplayPort Input	No	Display Port connector (x1) SST, HDCP1.3 correspondence	Yes (2x)
DVI-D Input	DVI-D (x1), TMDS single link	DVI-D connector (x1) TMDS single link, HDCP1.4 correspondence	DVI-D (x1), TMDS single link
SDI Input	BNC (x5) 3G-/HD-/SD-SDI	3G-SDI input connector BNC type (x1) 12G-SDI input connector BNC type (x1)	12G-/3G-/HD-SDI (1x)      3G-/HD-SDI (1x)
HD15 Input	N/A		
External Sync Input	N/A		
Remote	N/A		Stereo mini jack (x1)
Serial Remote (LAN)	D-sub 9-pin (RS-232C) (x1), RJ-45 (x1) (Ethernet, 10BASE-T/100BASE-TX)		D-sub 9-pin (RS-232C) (x1) RJ-45 modular connector (ETHERNET) (x1)
DC Input	N/A		DC input connector (x1) DC 26V
Output			
Composite Output	N/A		
Y/C Output	N/A		
RGB, Component Output	N/A		
HDMI Output	No		
Display Port Output	No		Yes (x1) when HDCP disabling
DVI-D Output	DVI-D (1x) when HDCP disabling	No	DVI-D (1x) when HDCP disabling
SDI Output	BNC (x5)		No      Yes (x1)
Clone Out	N/A	CLONE output connector BNC type (x1)	N/A
DC 5V Output	5V Output (x1) up to 1.3A	Round-type 3-pin female (x1), up to 2A	5V Output (x1) up to 2A
DC 12V Output	12V Output (x1) up to 1.7A	Round-type 4-pin female (x1), up to 2.5A	12V Output (x1) up to 2.5A
General			
Power Requirements (LCD monitor)	AC IN: 100V - 240V, 50/60Hz, 3.2A - 1.3A	AC IN: 100V - 240V, 50/60Hz, 1.7A - 0.8	AC IN: 100V - 240V, 50/60Hz, 1.5A - 0.7A DC IN: 26V, 5.2A (Supplied from AC adaptor)
AC Adaptor	N/A	A DC IN: 26V, 5.8A	AC input connector (x1), 100V to 240V, 50/60Hz
Power Consumption (Approx.)	290W	Approx. 163W (max.)	Approx. 149W (max.)
Operating Temperature	0°C to 40°C / 32°F to 104°F		0°C to 35°C / 32°F to 95°F
Dimensions (W x H x Dmm)	1264.6 x 771.5 x 85.5 (Slimmest D 33.9mm)	753.9 x 476.3 x 79.2mm	658.8 x 426.8 x 80mm
Dimensions (W x H x D inches)	49 7/8 x 30 3/8 x 3 3/8	29 3/4 x 18 7/8 x 3 1/8	26 x 16 7/8 x 3 1/4 inches
Mass	35.2kg (77lb 9.6oz)	Approx. 11.8kg (26lb 1oz)	Approx. 8.8kg (without stand)

## FHD 2D Surgical Monitor



LMD-2735MD



LMD-2435MD

Picture Performance		
Picture Size (Diagonal)	686mm (27 inches)	604.7mm (24 inches)
Effective Picture Size	597.9 x 336.3mm (23 5/8 x 13 1/4 inches)	527.0 x 296.5mm (20 3/4x11 3/4 inches)
Resolution	1920 x 1080 pixels (Full HD)	
Aspect	16:9	
Backlight	LED	
Panel Technology	LCD with IPS	
Luminance (Panel Spec)	300 cd/m <sup>2</sup> (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	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) (incl. 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 (x1), TMDS single link	
SDI Input	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), 24V 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	N/A	
External Sync Output	N/A	
DC 5V Output	(x1), up to 2.0A	
DC 12V Output	N/A	
General		
Power Requirements (LCD monitor) (AC Adapter)	100-240V, 50-60Hz, 0.6 - 0.3ADC Input: 24V, 2.2A OPTIONAL: AC Input 100V-240V, 50/60Hz 0.6-0.3A, DC Output: 24V 2.2A	
Max. Power Consumption (Approx.)	57W	
Operating Temperature	0°C to 35°C / 32°F to 95°F	
Dimensions (W x H x Dmm)	660 x 427 x 78	572 x 376 x 78
Dimensions (W x H x D inches)	26 x 16 7/8 x 3 1/8	22 5/8 x 14 7/8 x 3 1/8
Mass	8.7kg (19lb 2.9oz)	6.7kg (14lb 12oz)

## FHD 2D Monitor

LMD-2110MD



Picture Performance	
Picture Size (Diagonal)	547mm (21 5/8 inches)
Effective Picture Size	447.0 x 268.0mm (18 7/8 x 10 5/8 inches)
Resolution	1920 x 1080 pixels (Full HD)
Aspect	16:9
Backlight	LED
Panel Technology	LCD with TN
Luminance (Panel Spec)	300 cd/m <sup>2</sup> (typical)
Contrast Ratio	1000:1
Colours	16.7 million
Gamma	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	HDMI (x1) (HDCP correspondence)
DVI-D Input	N/A
SDI Input	BNC (x1) HD/SD-SDI (with optional board BKM-341HS/M)
HD15 Input	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)	N/A
DC Input	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	N/A
SDI Output	N/A
External Sync Output	BNC (x1), Loop-through, with 75 Ω automatic terminal function
General	
Power Requirements (LCD monitor)	100V to 240V AC, 1.3A to 0.6A, 50/60Hz
(AC Adapter)	N/A
Max. Power Consumption (Approx.)	69W
Operating Temperature	0°C to 35°C / 32°F to 95°F
Dimensions (W x H x Dmm)	515.0 x 355.0 x 86.3
Dimensions (W x H x D inches)	20 3/8 x 14 x 3 1/2
Mass	8.6kg (18lb 15oz)

## 4K, 3D and HD Video Recorder



HVO-4000MT



HVO-3300MT



HVO-500MD Surgical Version  
(HVO-500MD/SUR)

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	4096 x 2160, 3840 x 2160 1920 x 1080* (*from late 2018)	1920 x 1200, 1920 x 1080, 1600 x 1200, 1280 x 1024, 1280 x 768, 1280 x 720, 1024 x 768, 800x600, 720 x 576, 720 x 480, 640 x 480	1920 x 1080p (DVI-D/HDMI), 1680 x 1050p (DVI-D), 1440 x 900p (DVI-D), 1280 x 1024p (DVI-D), 1280 x 720p (DVI-D/HDMI), 1024 x 768p (DVI-D), 800 x 600p (DVI-D), 720 x 480p/576p (DVI-D/HDMI), 720 x 480i/576i (Video), 640 x 480p (DVI-D/HDMI)
Recording Resolution	3840 x 2160, 1920 x 1080	1920 x 1080p, 1920 x 1080i, 1280 x 720p 720 x 576i, 720 x 480i	1920 x 1080i (HD), 1280 x 720p (HD), 720 x 480i/576i (SD)
Recording Bit Rate (4K)	150Mbps (Best), 100Mbps (High), 60Mbps (Standard)	N/A	
Recording Bit Rate (HD)	24Mbps (Best), 18Mbps (High), 12Mbps (Standard)	1080p: 24Mbps (Best), 18Mbps (High), 12Mbps (Standard) 1080i/720p: 20Mbps (Best), 12.5Mbps (High), 6Mbps (Standard)	20Mbps (Best), 12.5Mbps (High), 6Mbps (Standard)
Recording Bit Rate (SD)	N/A	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)	N/A
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) 19-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 (Type A) (2), USB 2.0 (Type A) (4), USB 2.0 (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) (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	100V to 240V AC, 50/60Hz	100 V to 240 V AC, 50/60 Hz	+12 V to +24V DC (supply from AC-81MD AC adapter)
Input current	1.25 to 0.52A	1.25 to 0.52 A	3.2A to 1.6A
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.6.5kg (Approx. 14 lb. 5.3oz.)	Approx.6.5kg (Approx. 14lb. 5.3oz.)	Approx 2.9kg (Approx. 6lb. 6.3oz.)
Dimensions (including longest protrusions)	305.0 x 115.5 x 329.0mm (including longest protrusions) 12 1/8 x 4 5/8 x 13 in. (including longest protrusions)	305.0 x 115.5 x 329.0mm (including longest protrusions) 12 1/8 x 4 5/8 x 13 in. (including longest protrusions)	212.0 x 287.7 x 105.5mm (8 3/8 x 11 3/8 x 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)





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), DVD-R, External USB Storage, Network (CIFS)
Input Resolution	1920 x 1080p (DVI-D/HDMI), 1680 x 1050p (DVI-D), 1440 x 900p (DVI-D), 1280 x 1024p (DVI-D), 1280 x 720p (DVI-D/HDMI), 1024 x 768p (DVI-D), 800 x 600p (DVI-D), 720 x 480p/576p (DVI-D/HDMI), 720 x 480i/576i (Video), 640 x 480p (DVI-D/HDMI)
Recording Resolution	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	+12V to +24V DC (supply from AC-80MD AC adapter)
Input Current	3.5A to 1.8A
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	3.2kg (7lb. 0.88oz.)
Dimensions (including longest protrusions)	212.0 x 287.7 x 105.5mm (8 3/8 x 11 3/8 x 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-27MD



UP-D25MD



UP-DR80MD

System	Analogue	Digital	Digital
Format	A6		A4
Printing System	Dye sublimation printing technology		
Resolution	423dpi		301dpi
Gradations	8bit (256 levels) processing each for Yellow, Magenta, Cyan		
Print matrix	UPC-21L: 2132 x 1600 dots UPC-21S: 1600 x 1260 dots	21L: 2100 x 1600 dots 21S: 1600 x 1200 dots	A4 size UPC-R80MD: 3400 x 2392 dots Letter size UPC-R81MD: 3192 x 2464 dots
Printable Area	UPC-21L: 127.9 x 96.0mm (5 1/8 x 3 3/4 inches) UPC-21S: 96.0 x 75.6mm (3 3/4 x 3 inches)	21L / 24LA: 126 x 96mm (5 x 3 3/4 inches) 21S: 96 x 72mm (3 3/4 x 2 7/8 inches)	A4 size: 287 x 202mm Letter size: 269 x 208mm
Tray Capacity	S Size tray: Max. 80 sheets L Size tray: Max 50 sheets		50 sheets
Printing Time	UPC-21L: approx. 29 seconds UPC-21S: approx. 19 seconds		A4 size: Approx. 76 seconds
Inputs/outputs	SDI IN: BNC (x1) 3G/HD/SD-SDI SDI OUT: BNC (x1) 3G/HD/SD-SDI	Hi-Speed USB (USB 2.0)	
Control Connectors	REMOTE: Stereo mini jack (x1) for optional FS-24 Foot Switch RS-232C (Computer control interface): D-sub 9-pin connector (x1)	N/A	
<b>Measurements</b>			
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	5.7kg (12lb 9oz)	5.5kg (12lb 2oz)	Approx. 11.5kg (25.3lbs)
<b>Power</b>			
Voltage Requirements	AC 100V to 240V, 50/60Hz		
Input Current	1.7A to 1.0A		3.4 to 1.4A
<b>Operating Conditions</b>			
Temperature	5°C to 35°C (41°F to 95°F)		
Humidity	20% to 80% (non condensing)		
<b>Storage/Transporting Conditions</b>			
Temperature	-20°C to 60°C (-4°F to 140°F)		
Humidity	20% to 80% (non condensing)		
<b>Other</b>			
Supplied Accessories	Paper feed tray (1), Stopper (1), Before using this Printer (1) Thermal head cleaning cartridge (1), CD ROM (instructions for use) (1), Service Contact List (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 this Printer (1), Software license agreement

## Black &amp; White Printers



UP-991AD



UP-971AD

System		Analogue & Digital
Format		A4
Printing System		Direct thermal printing
Resolution		325dpi
Gradations		8-bit (256 levels)
Print matrix		Max. 7680 x 2560 dots
Throughput		Approx. 8 seconds
Tray capacity		25m (UPP-210HD, UPP-210SE)
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 210mm (8 1/4 inches)
Print Size		DIGITAL: 600 x 200mm (23 5/8 x 7 7/8 inch) (Max) VIDEO: STD NTSC: 182 x 144mm PAL: 188 x 140mm SIDE NTSC: 244 x 184mm PAL: 244 x 183mm
Dimensions		316 x 132.5 x 265mm (12 1/2 x 5 1/4 x 10 1/2 inch)
Mass		7kg (15lb 7oz)
Power		
Voltage Requirements		AC 100V to 240V, 50/60Hz
Input Current		2,9A to 1,2A
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-X898MD



UP-D898MD



UP-D898DC



UP-D711MD

System	Digital	Analogue / Digital	Digital	Digital
Format		A6		A7/A8
Printing System		Direct thermal printing		Thermal Printing Technology
Resolution		325dpi		301dpi
Gradations		256 levels (8-bits processing)		
Print matrix		4096 x 1280 dots		2688 x 896 dots
Printing Time		About 1.9 seconds/image (960 x 1280 dots) (High-speed mode) About 3.3 seconds/image (960 x 1280 dots) (Normal speed mode)		Approx 5 seconds. (High Speed & standard image mode) Approx 8 seconds. (Normal Speed & standard image mode)
Tray Capacity		20m (UPP-110HG, UPP-110S), 18m (UPP-110HG)		12.5m (UPP-84HG), 13.5m (UPP-84S)
Memory	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)	896 x 2688 pixels max
Inputs/outputs	Digital: Hi-Speed USB (USB 2.0) Analogue: Video IN/OUT (BNC type) EIA/CCIR composite video signals (automatic detection)		Digital: Hi-Speed USB (USB 2.0)	Hi-Speed USB (USB 2.0)
<b>Measurements</b>				
Media Size		Paper width of 110mm (4 3/8 inches)		Roll width of 84mm
Print Size	Digital: 320 x 100mm STD Video PAL 94 x 71mm (WIDE 1) SIDE Video PAL 127 x 96mm (WIDE 1) STD Video NTSC 94 x 73mm (WIDE 1) SIDE Video NTSC 124 x 96mm (WIDE 1)		Digital: 320 x 100mm	50.4 x 75.7mm 56.8 x 75.7mm 75.7 x 75.7mm 75.7 x 101.1mm 75.7 x 227.1mm
Dimensions		154 x 88 x 240mm (6 1/6 x 3 1/2 x 9 1/2 inches)	154 x 88 x 165mm (6 1/6 x 3 1/2 x 6 1/2 inches)	140 x 70 x 125mm (5 5/8 x 2 7/8 x 5 inches)
Mass		2.5kg (5lb 8oz)	1.8 g (3lb 15oz)	Approx. 1kg
<b>Power</b>				
Voltage		AC 100V to 240V, 50/60Hz	12V to 24V DC	DC 12V to 24V
Input Current		1.3A to 0.6A	8.2A to 3.7A	6A to 3A
<b>Operating Conditions</b>				
Temperature		5°C to 40°C (41°F to 104°F)		5°C to 35°C (41°F to 95°F)
Humidity			20% to 80% (non condensing)	
<b>Storage/Transporting Conditions</b>				
Temperature			-20°C to 60°C (-4°F to 140°F)	
Humidity			20% to 80% (non condensing)	
<b>Other</b>				
Supplied Accessories	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) Before using this Printer (1) Service Contact List (1)	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)	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)

## Wireless Printing Solution

UPA-WU10



<b>Dimensions (W x H x D)</b>	
Transmitter (excluding USB connector)	19.5 × 8.5 × 41.3mm (25/32 x 11/32 x 1 11/16 inches)
Transmitter (including USB connector)	19.5 × 8.5 × 53.3mm (25/32 x 11/32 x 2 1/8 inches)
Receiver	27.6 × 66.1 × 66.1mm (1 1/8 x 2 5/8 x 2 5/8 inches)
Mass	Transmitter: 8g (0.28oz.) Receiver: 57g (2.0oz.)
<b>Power</b>	
Requirements	DC 5V/0.5A (USB Bus power)
<b>Operating Conditions</b>	
Temperature	5°C to 40°C 41°F to 104°F
Humidity	20% to 80%
<b>Storage/Transporting Conditions</b>	
Temperature	-20°C to +60°C -4°F to +140°F
Humidity	20% to 80%
<b>System</b>	
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. 10m (33ft.) line-of-sight
<b>Other</b>	
Supplied Accessories	Instructions for Use (1) Service Contact List (1) Stand (1) USB cable (x2) European Representative (1)



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