Medical Catalogue 2014
www.pro.sony.eu/medical
At Sony we’re proud of our heritage in providing a clearer picture for medical practitioners. For more than thirty years we’ve led the way with innovative, easy to use quality medical printers to support the work of clinical staff.

Over the last decade Sony has pioneered the evolution from Standard Definition to High Definition imaging in medical environments. And today we’re constantly redefining clarity right across the hospital workflow – from High Definition cameras and recorders to monitors and printers for use in medical environments.

Our imaging, recording and networked sharing tools integrate seamlessly with a wide range of modern modalities in today’s operating room and beyond. Just as importantly, they’re designed for smooth interworking with legacy medical products and systems from Sony and other manufacturers.

We’ve always got an eye on the future. And now we’re innovating further with an exciting new generation of tools that extend 3D workflow from image acquisition to display.

Sony’s breadth of experience in developing cutting edge imaging technologies is second to none, spanning television broadcasting, digital cinematography and advanced medical vision applications.

Refining this unique insight through constant dialogue with healthcare professionals worldwide, we create medical products and solutions that offer dependable performance in modern clinical environments.
Cameras – capturing clarity 4 - 5
Application-specific SD & HD medical cameras
• CCD Sensor Video Camera
• CMOS Sensor Video Cameras

Video Recorders – a lasting image 6 - 9
Versatile and efficient recording and storage solutions
• Medical SD & HD video recorders

Monitors – displaying the detail 10 - 17
Medical monitors that deliver impressive image quality
• Thin is in-new 27" surgical monitor
• 2D Monitors-displaying the detail
• 3D Monitors-displaying the detail
• Public Displays for general purpose

Printers – documenting the detail 18 - 25
Dedicated medical printers for every application
• Printers-documenting the detail
• Black & White Medical Printers
• Radiology Diagnostic Imagers

Solutions – supporting the medical workflow 26 - 29
Hardware and software that support content management
• VMI-40MD
• Vegas Pro 13
• Movie Studio 13 Suite
• Vision Presenter
• Video Conferencing
• Video Security Solutions

Technology – advanced innovation 30 - 37
Bringing medical imaging innovations to life
• OLED: The new standard in medical imaging
• Guy Slater of St Richard’s Hospital case study
• HD: Delivering sharp detail in HD medical imaging
• 3D: Adding spatial orientation with 3D medical imaging

Accessories 38 - 41
Accessories

Specifications 41 - 55
Technical details
CAMERAS – capturing clarity

Application-specific SD & HD medical cameras

We’re continually challenging the boundaries of medical imaging technology.

Sony’s range of HD and Standard Definition colour video cameras helps clinicians capture medical 2D and 3D content with clarity and precision.

We offer a range of application-specific cameras which provide a secondary view from the microscope for a diverse range of challenging fields including ophthalmology, neurosurgery, pathology, biomedical research, veterinary science and teaching.

MCC-3000MT
1/2 inch 3CMOS 3D Full HD Colour Video Camera

Suitable for: Surgical Microscopy

Separate 3D video camera with twin camera heads and single CCU for operating microscopes, delivering high-precision 3D images of operating field.

• Quality stereoscopic 3D HD and 2D HD images
• C-mount compatible compact and lightweight camera head
• Easy parameter adjustment (including colour matching and white balance) with single CCU

Features
• Simultaneous control of left and right camera heads
• Incorporates 3-chip 1/2-inch Exmor Full HD CMOS sensor
• HD-SDI outputs

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.

PMW-10MD
1/2 inch 3CMOS Full HD Colour Video Camera

Suitable for: Surgical Microscopy

An ideal solution for microscopic applications, the PMW-10MD with its 2-piece design captures crisp HD images.

• High sensitivity delivers detail in low light environments
• Small, lightweight C-mount camera head for easy integration
• On-board HD recording capability

Features
• Incorporates 3-chip 1/2-inch Exmor Full HD CMOS sensor
• SDI and HD-SDI outputs
• Two SxS Memory card slots

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.
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.

**MCC-500MD**
1/3 inch Full HD single CMOS Colour Video Camera
Suitable for: Surgical Microscopy
This Space-saving two-piece camera offers HD image quality and convenient integration with modern medical modality devices.
- C-mount small and light weight camera head
- Wide Variety of Video Formats – from SD to Full HD (1080/60p)
- Picture Profiles allow you to easily call up customized picture-tonal settings

**Features**
- 1/2.9-inch single Exmor™ CMOS image sensor
- SDI, HD-SDI and HDMI outputs

**DXC-C33P**
1/3 inch 3CCD Colour Video Camera
Suitable for: Surgical Microscopy
The 2-piece compact design makes this model a perfect fit for space-limited applications, whilst offering great picture resolution and many useful features.
- Compact 3CCD remote camera head
- High resolution C-mount camera head
- DV connection to compatible VTR

**Features**
- Incorporates compact camera head units
- High horizontal resolution of 800 TV lines

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.*
Versatile recording and storage solutions for efficient workflow

Sony understands the clinician’s needs for surgical records for diagnostic review and training as well as radiology and ultrasound. With recording solutions from Sony you can rely on the clarity and integrity of medical images for years to come.

Every product supports efficient workflow with powerful random access storage capabilities, whilst models support enhanced security to protect patient data.
HVO-3000MT
3D & 2D Full HD Medical Video Recorder

Suitable for: Surgical Microscopy, Surgical Endoscopy, Robotic-Assisted Surgery in 3D

Designed specifically for recording long-playing 3D and 2D HD images from OR medical cameras and simultaneous patient monitor information.

- Can record and playback high quality 3D and 2D video with simple operation
- Accepts 3D HD video input from HD-SDI and DVI sources with high resolution of 1080 vertical lines up to 60 progressive frames per second
- Simultaneous recording on internal hard drive, DVD/Blu-ray Blu-ray Disc™ and USB slot

Features
- Real-time distribution with a streaming function
- Broad Support of media for data exchange
- High quality HD recording (MPEG-4 AVC/H.264 compression)
- Large capacity hard disc for long recording capability
- Wide range of Interfaces
- Network data transmission through FTP or CIFS
- Pre-installed Sony USB printer drivers
- Still and motion image capture

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.

HVO-1000MD
Full HD Medical Video Recorder

Suitable for: Surgical Microscopy, Endoscopy, Ultrasound, Radiology

To make efficient use of the operating theatre and to drastically improve the way doctors use surgical images, the HVO-1000MD offers many recording advantages and makes a significant contribution to effective hospital data management.

- High quality HD recording
- Simultaneous recording on internal hard drive, DVD/Blu-ray Blu-ray Disc™ drive and USB slot
- Easy to use operation via menu or external touchscreen

Features
- Real-time distribution with a streaming function
- Broad Support of media for data exchange
- High quality HD recording (MPEG-4 AVC/H.264 compression)
- Large capacity hard disc for long recording capability
- Wide range of Interfaces
- Network data transmission through FTP or CIFS
- Pre-installed Sony USB printer drivers
- Still and motion image capture

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.
Video Recorders – a lasting image

HVO-500MD
HD Medical Recorder, USB/NAS

Suitable for Ultrasound, Radiology
This High Definition Video recorder is designed to support modern workflows with HDD/USB/NAS recording. The compact design allows for easy integration in ultrasound systems or mobile C-Arm systems.

- Pre-recording function not to miss any important moments
- Simultaneous recording on internal HDD and external storage media (USB device or NAS).
- Easy integration thanks to various remote control interfaces

Features
- Extensive digital and analog video interfaces to be compatible from SD to the latest HD modalities
- Supports Full HD-video input through DVI & HDMI as well as standard SD-video-interfaces
- HD (720p) and SD (576i/480i) recording resolutions
- Remote 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.

HVO-550MD
HD Medical Recorder, DVD/USB/NAS

Suitable for Ultrasound, Radiology
This High Definition Video recorder is designed to support modern workflows with HDD/USB/NAS recording as well as DVD disc. The compact design allows for easy integration in ultrasound systems or mobile C-Arm systems.

- Digital recording on DVD-R
- Pre-recording function not to miss any important moments
- Simultaneous recording on internal HDD and external storage media (DVD, USB device or NAS).
- Easy integration thanks to various remote control interfaces

Features
- Extensive digital and analog video interfaces to be compatible from SD to the latest HD modalities
- Supports Full HD-video input through DVI & HDMI as well as standard SD-video-interfaces
- HD (720p) and SD (576i/480i) recording resolutions
- Remote 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.
HVO-500MD (Full HD Version)
Full HD Medical Recorder, USB/NAS

Features
- Full HD video input through DVI and HDMI as well as standard SD-video-interfaces
- HD (1080i/720p) and SD (576i/480i) recording resolutions
- Remote 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.

HVO-550MD (Full HD Version)
Full HD Medical Recorder, DVD/USB/NAS

Features
- Digital recording on DVD-R
- Pre-recording function not to miss any important moments
- Simultaneous recording on internal HDD and external storage media (DVD, USB device or NAS)
- Easy integration thanks to various remote control interfaces

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.

HVO-500MD (Surgical Version)
Full HD Medical USB recorder

Suitable for Surgical Microscopy and Endoscopy applications
This Full HD video recorder is designed to meet modern OR workflows with HDD/USB/NAS recording. The compact design allows for easy integration into surgical cart systems

Features
- Simultaneous recording on internal HDD and one external storage media
- Still and motion image capture
- Pre-installed printer driver for Sony UP-DR80MD
- Easy to use operation via menu

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.

HVO-550MD (Surgical Version)

Suitable for Ultrasound, Radiology
This High Definition Video recorder is designed to support modern workflows with HDD/USB/NAS recording as well as DVD disc. The compact design allows for easy integration in ultrasound systems or mobile C-Arm systems.

Features
- Extensive digital and analog video interfaces to be compatible from SD to the latest HD modalities
- Supports Full HD-video input through DVI & HDMI as well as standard SD-video-interfaces
- HD (1080i/720p) and SD (576i/480i) recording resolutions
- Remote 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.

The HVO-500MD (Full HD version) and HVO-550MD (Full HD version) are the same product as HVO-500MD and HVO-550MD respectively, but are upgraded to record in Full HD. The HVO-500MD (Surgical Version) is the same product as HVO-500MD but is upgraded version to record still image and motion images in Full HD.

The order codes for HVO-500MD (Full HD Version) is HVO-500MD/FHD and HVO-550MD (Full HD Version) is HVO-550MD/FHD. The order codes for HVO-500MD (Surgical Version) is HVO-500MD/SUR.
Thin is in

Introducing the next generation of surgical monitor

The new face of surgical monitors from Sony offers users a larger on-screen image with the added benefit of anti-reflective OptiContrast™ panel technology, boosting image contrast under the glare of direct lighting in the OR. All this takes place within a slender chassis with a minimal bezel, delivering the user a bigger picture on existing carts and boom arms used for 26-inch (66cm) models.
LMD-2760MD
Full HD 27 inch (69 cm) LCD* monitor

Suitable for: Microscopy, Endoscopy, Neurology and Ophthalmology

The robust, high brightness 27" (69cm) LCD panel features an advanced anti-reflective panel technology and allows surgeons and operating room staff to view Full HD images from a wide range of digital medical imaging systems with this high quality LCD monitor.

Features
- Digital connectivity only
- High Brightness 1000cd/m² LED backlit LCD panel
- Anti-reflective OptiContrast™ panel technology
- Choice of PIP/PoP picture modes and image flip function
- Powerful AIME image enhancement
- VESA mounting standard (100 x 100 mm/200 x 100 mm)

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

LMD-2765MD
Full HD 27 inch (69 cm) LCD* monitor

Suitable for: Microscopy, Endoscopy, Neurology and Ophthalmology

The robust, high brightness 27" (69cm) LCD panel features an advanced anti-reflective panel technology and allows surgeons and operating room staff to view Full HD images from a wide range of digital and analogue medical imaging systems with this high quality LCD monitor.

Features
- Digital and analogue connectivity
- High Brightness 1000cd/m² LED backlit LCD panel
- Anti-reflective OptiContrast™ panel technology
- Choice of PIP/PoP picture modes and image flip function
- Powerful AIME image enhancement
- VESA mounting standard (100 x 100 mm/200 x 100 mm)

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

* Measured diagonally

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

Medical monitors that deliver outstanding image quality

The clarity and resolution of medical imaging is becoming increasingly lifelike. And as it does, the role of the medical monitor in supporting critical decisions is more crucial than ever. An obvious example is in surgery, where a surgeon’s ability to distinguish clearly between different tissue types before making an incision is paramount.

*Monitors are shown with optional display stand.*

**PVM-2551MD**

24.5-inch Full HD Medical OLED Monitor

**Suitable for:** Microscopy, Endoscopy

The Sony PVM-2551MD is the first medical monitor with OLED technology and displays sharp images with in-depth detail.

- Wide dynamic range – accurate colour reproduction in dark areas of the displayed image
- Quick response – virtually no motion blur
- Wide colour gamut – reproduces small differences in colour

**Features**

- Panel Resolution Full HD (1920 x 1080 pixels)
- Variety of Gamma curve settings
- Direct input selection
- Key inhibit function
- Easy-clean flat-surface panel
- Installation-friendly cabling
- VESA mounting standard (100 x 100 mm/200 x 100 mm)

Compliance with Medical Safety Standards*

This device is compliant and certified for IEC 60601-1 and product safety standards in the U.S.A., Canada and Europe.
**LMD-2451MD**
24-inch Medical Full HD LCD Monitor

Suitable for: Microscopy, Endoscopy

The innovative LMD-2451MD has Advanced Image Processing Technology and enables physicians to see still and moving images with accurate, HD clarity and pinpoint precision.

- HD monitor with high resolution
- Original ChromaTRU colour processing technology
- Quality WUXGA panel
- DVI loopthrough possible with BKM-256DD board

**Features**

- Panel Resolution WUXGA (1920 x 1200 pixels)
- Accepts almost any signal from SD to HD video
- Multi-input capability (HD and SD signals from both analogue and digital sources)
- Selectable Gamma curves
- Key inhibit function
- VESA mounting standard (100 x 100 mm/200 x 100 mm)

**LMD-2110MD**
21.5-inch Full HD Medical LCD Monitor

Suitable for: Microscopy, Endoscopy

Offering superb picture quality, the feature-rich LMD-2110MD is ideal for video endoscope cart installation.

- Versatile Video and PC inputs ranging from SD to HD
- Two types of interpolation methods for high-quality image reproduction
- Improved picture stability when exposed to high electromagnetic fields in medical environments, i.e. electrical knife

**Features**

- Panel Resolution Full HD (1920 x 1080 pixels)
- Accepts signals ranging from SD to HD video, analogue VGA to SXGA PC input, as well as HDMI input
- HD-SDI input available by optional adaptor
- Parallel and serial remote control ports as standard
- User memory provides the capability of saving 20 patterns of memory settings
- VESA mounting standard (100 x 100 mm)

---

**LMD-1951MD**
19-inch SXGA Medical LCD Monitor

Suitable for: Microscopy, Endoscopy

This high resolution LCD monitor with superb picture quality and DC power supply is ideal for surgery arm mount and trolley based applications.

- LED backlit for high contrast and brightness
- Power via AC adaptor or direct DC in
- 10 bit signal processing for enhanced picture quality

**Features**

- Panel Resolution SXGA (1280X1024 pixels)
- Accepts signals ranging from SD to HD video, analogue VGA to SXGA PC input, as well as DVI-D input
- 5 types of optional input adaptors are offered for use in two rear slots
- Parallel and serial remote control ports as standard
- User Memory provides the capability of saving 20 patterns of memory settings
- VESA mounting standard (100 x 100 mm)

**LMD-1530MD**
15.3-inch WXGA Medical LCD Monitor

Suitable for: Microscopy, Endoscopy

This high resolution LCD monitor with superb picture quality and DC power supply is ideal for Surgery Arm Mount applications.

- Full range of SD inputs & HDMI
- IPS LCD panel
- Wide viewing angle

**Features**

- Panel Resolution WXGA (1280 x 768 pixels)
- Anti-reflection (AR) coated protection panel
- Parallel control interface
- VESA mounting standard (100 x 100 mm)

---

*Registration status as a medical device may vary, depending on country. For more details, please contact your nearest Sony office or an authorized dealer.*
The Sony HMS-3000MT is a personal viewing system that provides a 3D colour video display of images from 3D surgical endoscopic/laparoscopic camera systems and other compatible 3D medical imaging systems.

- The system consists of the HMI-3000MT image processor unit plus HMM-3000MT Head Mounted Monitor.
- Connect a second headset to the camera control unit for simultaneous viewing by a second user.

Features
- Video input signals can be either 2D or 3D
- Image FLIP function in both landscape or portrait mode
- Image manipulation in both landscape or portrait
- Picture in picture mode for simultaneous display of a secondary image in a smaller inset window
- Range of image adjustment functions
- 1280x720 resolution from the two 0.7 inch OLED panels
- SDI/HD-SDI, DVI-D and HMM outputs for viewing on an external monitor

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.
LMD-2451MT
24-inch WUXGA 3D Medical LCD Monitor

Suitable for: Endoscopic Surgery, Conferences, Education, Training

With the introduction of the LMD-2451MT, Sony brings the third dimension back into operating theaters. With its circular polarized technology and multiple input possibilities, it's a great choice for medical 3D imaging.

• Delivers a stress-free viewing experience of natural depth with smooth, uninterrupted viewing of multiple monitors and flicker-free 3D images
• Optional BKM-250TGM 3G-SDI input adaptor enables a variety of 3D display functions to support optimum 3D settings and adjustments
• Also features 2D monitor functionality

Features
• Panel Resolution WUXGA (1920 x 1200 pixels) with pioneering 3D technology
• Multiple 3D formats
• Features unique ChromaTRU colour matching technology
• Superb brightness and contrast
• Natural gradation and accurate colour reproduction
• Gamma curve selection
• Multiple display modes available
• Mirror image function
• Protected controls functionality
• Key inhibit function
• VESA mounting standard (100 x 100 mm/200 x 100 mm)

LMD-3251MT
32-inch Full HD 3D Medical LCD Monitor

Suitable for: Endoscopic Surgery, Conferences, Education, Training

With the introduction of the LMD-3251MT, Sony expands the range of 3D monitors available for operating theatres.

• Delivers a stress-free viewing experience of natural depth with smooth, uninterrupted viewing of multiple monitors and flicker-free 3D images
• Optional BKM-250TG 3G-SDI input adaptor enables a variety of 3D
• Also features 2D monitor functionality

Features
• Panel Resolution Full HD (1920 x 1080 pixels) with pioneering technology
• Features unique ChromaTRU colour matching technology
• Gamma curve selection and multiple display modes
• Multiple 3D formats
• Impressive brightness and contrast
• Protected controls functionality
• VESA mounting standard (400 x 200 mm)

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

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.

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.
Monitors – public displays

FWD-40W600P
40-inch BRAVIA Professional Full HD LED display

Suitable for: Clinical Review, Training Rooms, Video Conference, Distance Learning

This slim, affordable display is a smart way to share content. The display includes a wide range of connectivity options: 4x HDMI ports, 1x D-Sub 15, 2x USB and 1x Ethernet, plus screen mirroring Wi-Fi.

- Full HD, 1080p
- Plug-in and go: D-Sub15-pin and HDMI input connections
- IP control and RS232C control (with optional accessory CBX-H11/1)
- 300 x 200 mm VESA mounting

Features
- A+ ErP energy efficiency rating
- USB playback

FWD-48W600P
48-inch BRAVIA Professional Full HD LED display

Suitable for: Clinical Review, Training Rooms, Video Conference, Distance Learning

Cost effective and energy efficient, this A++ energy rated display is a great all round product. In addition, U-Touch overlays are designed to fit easily on the Sony BRAVIA to turn the screen into a 6 multi-point interactive display.

- Full HD, 1080p
- Plug-in and go: D-Sub15-pin and HDMI input connections
- IP control and RS232C control (with optional accessory CBX-H11/1)
- 300 x 200 mm VESA mounting

Features
- A+ ErP energy efficiency rating
- USB playback

This product is for general purpose only and is not compliant with the technical standards under the medical device directive.
FWD-60W600P
60-inch BRAVIA Professional Full HD LED display

Suitable for: Teaching and clinical review
This slim, energy-efficient 60” Full HD LED display is easy to install, with plentiful connections and Wi-Fi networking on board, plus simple screen mirroring for smartphones or tablets.

• Full HD, 1080p
• Plug-in and go: D-Sub15-pin and HDMI input connections
• IP control and RS232C control (with optional accessory CBX-H11/1)
• 300 x 200 mm VESA mounting

Features
• A+ ErP energy efficiency rating
• USB playback

FWD-55X8600P
55-inch BRAVIA Professional 4K LED display

Suitable for: Teaching and clinical review
With 16:9 4K resolution, the FWD-85X9600P produces over 8 megapixels (four times the resolution of Full HD) for an improved level of depth, quality and realism. Standard mountings and straightforward operation means the FWD-85X9600P integrates easily into your environment.

• 16:9 4K resolution, 4 times the resolution of Full HD
• Plug-in and go: D-Sub15-pin and HDMI input connections
• IP control and RS232C control (with optional accessory CBX-H11/1)
• 3D (passive Technology)
• 300 x 300 mm VESA mounting

Features
• TRILUMINOS™ display technology uses a much broader colour range, reproducing truer, deeper, more natural shades and hues, including hard-to-reproduce reds, greens and blues.
• USB playback

FWD-65X8600P
65-inch BRAVIA Professional 4K LED display

Suitable for: Teaching and clinical review
With 16:9 4K resolution, the FWD-85X9600P produces over 8 megapixels (four times the resolution of Full HD) for an improved level of depth, quality and realism. Standard mountings and straightforward operation means the FWD-85X9600P integrates easily into your environment.

• 16:9 4K resolution, 4 times the resolution of Full HD
• Plug-in and go: D-Sub15-pin and HDMI input connections
• IP control and RS232C control (with optional accessory CBX-H11/1)
• 3D (passive Technology)
• 400 x 300 mm VESA mounting

Features
• TRILUMINOS™ display technology uses a much broader colour range, reproducing truer, deeper, more natural shades and hues, including hard-to-reproduce reds, greens and blues.
• USB playback

FWD-85X9600P
85-inch BRAVIA Professional 4K LED display

Suitable for: Teaching and clinical review
With 16:9 4K resolution, the FWD-85X9600P produces over 8 megapixels (four times the resolution of Full HD) for an improved level of depth, quality and realism. Standard mountings and straightforward operation means the FWD-85X9600P integrates easily into your environment.

• 16:9 4K resolution, 4 times the resolution of Full HD
• Plug-in and go: D-Sub15-pin and HDMI input connections
• IP control and RS232C control (with optional accessory CBX-H11/1)
• 3D (active technology)
• 400 x 400 mm VESA mounting

Features
• TRILUMINOS™ display technology uses a much broader colour range, reproducing truer, deeper, more natural shades and hues, including hard-to-reproduce reds, greens and blues.
• USB playback

This product is for general purpose only and is not compliant with the technical standards under the medical device directive.
Printers – documenting the detail

Dedicated medical printers for every application

Sony print technologies – direct thermal printing for black and white images, and dye sublimation printing for colour images – provide accurate reproduction of grey levels and colour tints, together with good resistance to fading.

Kinder on the environment

The entire range of Sony medical printers employs an advanced, environmentally-friendly printing system. No liquid chemicals are used in the printing process, and no chemical waste is produced after printing. In addition, our thermal blue film does not contain any metal components such as silver. This means that all Sony medical print media can be treated as household waste for disposal and recycling purposes, rather than as industrial waste.
UP-DR80MD
A4 Digital Colour Printer

Suitable for: Endoscopy, Ophthalmology, Ultrasound, Microsurgery, Microscopy, Pathology
Compact and stylish A4 dye-sublimation colour printer with easy to use front operation.

• A4 colour
• USB 2.0 interface
• High resolution Photo quality
• Long term durability of print out thanks to the lamination

Features
• Superior self laminating roll media
• Compact design for trolley applications
• A4 size colour print in approximately 76 seconds
• Advanced grey balance and colour balance adjustment

UP-55MD
A5 Colour Video Printer

Suitable for: Endoscopy, Microsurgery, Microscopy, Pathology, Ultrasound
Designed for heavy-duty use, offering superb reliability and durability, this colour video printer is ideal for a host of medical applications.

• Easy image storage of printed images on USB flash memory
• A5 colour
• RGB, Video & S-Video interfaces
• Ultra compact
• Multiple print modes: standard and 2, 4 and 8 split print of different images

Features
• HD television signal support accepting both 1080i and 720p signal types
• Resolution of 379 dpi for photo-quality prints
• A5 size print in approximately 20 seconds
• Compact size and simple front operation

UP-D25MD
A6 Digital Colour Printer

Suitable for: Endoscopy, Microsurgery, Microscopy, Pathology, Ophthalmology, Ultrasound
Compact and lightweight in design, this printer is perfectly designed to be integrated and used in a wide range of medical applications.

• A6 colour
• USB 2.0 interface
• Compact size

Features
• Photo-realistic quality prints with Sony dye sublimation printing technology
• Resolution of 423 dpi for high picture quality
• A6 size colour print in approximately 19 seconds
• Supports both self-laminating UPC-24 S/LA and non-laminating UPC-21 S/L media
• Advanced grey balance and HSV-colour balance adjustment, including preview window in driver

UP-25MD
A6 Colour Video Printer

Suitable for: Ultrasound, Endoscopy, Microsurgery, Microscopy, Pathology.
Compact and lightweight in design, this printer is perfectly designed to be integrated and used in a wide range of medical applications.

• A6 colour
• RGB, S-Video & Video interfaces
• Compact size

Features
• HD television signal support accepting both 1080i and 720p signal types
• Photo-realistic quality prints with Sony dye sublimation printing technology
• Resolution of 423 dpi for high picture quality
• A6 size colour print in approximately 19 seconds
• Supports both self-laminating UPC-24 S/LA and non-laminating UPC-21 S/L media
• RGB and advanced HSV-colour balance adjustment features

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

UP-D711MD
A7 Black & White Digital Printer

Suitable for: Ultrasound
The one of the smallest Medical Printer in its class is the ideal solution for all portable medical diagnostic equipment, such as ultrasound systems.

- A7 monochrome
- Very compact: 12.5 cm deep
- Low Power consumption
- USB 2.0 interface
- DC input : 12 to 24V

Features
- Photo quality print out with the UPP-84HG high glossy paper
- AC-adaptor available as optional accessory
- Various Print modes
- Paper saving mode

UP-D898MD
A6 Black & White Digital Printer

Suitable for: Ultrasound, C-Arm, Dental, Electrophoresis, Echo-endoscopy
The Sony UP-D898MD thermal printer is the ideal choice for digital ultrasound systems

- A6 monochrome
- USB 2.0 interface
- Photo quality print out with UPP-110HG high glossy paper

Features
- High picture quality with high resolution (325 dpi) and accurate gray scale reproduction (8bits/ 256 levels)
- High speed printing in approximately 1.9 seconds
- Multiple print modes available for a variety of applications
- Compact and lightweight design

Print Media:
UPP-84HG | UPP-84S

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.
Suitable for: Ultrasound, C-Arm, Echo-endoscopy

The Sony UP-X898MD thermal printer is the full-feature model offering hybrid interfaces and still image capture for easy use and smooth integration into medical equipments

- Image storage onto USB flash drive
- A6 monochrome
- Hybrid interfaces: USB 2.0 and video composite
- Photo quality print out with UPP-110HG high glossy paper

Features
- High picture quality with high resolution (325 dpi) and accurate gray scale reproduction (8bits/256 levels)
- High speed printing in approximately 1.9 seconds in standard mode
- Multiple print modes available for a variety of applications
- Compact and lightweight design

UP-X898MD
A6 Black & White Hybrid Printer

Print Media:
- UPP-110HG
- UPP-11BD

UP-D72XR
8x10" Black & White Digital Film & Paper Imager

Suitable for: C-Arm, Dental X-Ray, Ultrasound, Veterinary

The UP-D72XR provides photo-quality output and has been specifically designed for use with X-ray systems, such as mobile C-arm units and dental X-ray systems.

- 8"x10" monochrome
- USB Interface
- Thermal paper and Blue Film

Features
- High resolution of 300 dpi
- Photo-quality prints with Sony direct thermal printing technology
- High-speed printing of approximately 45 seconds
- Precise Gamma-curve-adjustment capability

Print Media:
- UPT-735BL
- UPP-725

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

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.
Suitable for: C-Arm, Dental, Ultrasound

The UP-991AD is a compact printer integrated by all major C-arm manufacturers offering x-ray images on blue film or thermal paper.

- A4 monochrome
- Thermal paper only
- Hybrid interfaces: USB 2.0 and video composite

Features
- Long print up to 60 cm
- Easy access to multiple print modes available via front panel
- More compact in depth and lighter compared to predecessor model
- High picture quality with high resolution (325 dpi) and High speed printing in approximately 8 seconds

UP-991AD
A4 Black & White Hybrid Printer

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.

Suitable for: C-Arm, Ultrasound

The UP-971AD is a compact printer integrated by all major C-arm manufacturers offering x-ray images on thermal paper.

- A4 monochrome
- Thermal paper only
- Hybrid interfaces: USB 2.0 and video composite

Features
- Long print up to 60 cm
- Easy access to multiple print modes available via front panel
- More compact in depth and lighter compared to predecessor model
- High picture quality with high resolution (325 dpi) and High speed printing in approximately 8 seconds

UP-971AD
A4 Black & White Hybrid Printer

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.
Suitable for: Computed Tomography, Magnetic Resonance, CR/DR
Digital Film Imager for all DICOM compliant general radiology applications.

- Multi-format Diagnostic Film Imager
- DICOM interface
- Very small footprint in its class

Features
- Support for 14” x 17”, 11”x14”, 10”x12” and 8”x10” Sony Blue Thermal Film
- High resolution of 320 dpi and 12 bit processing
- High-speed printing at a rate of up to 85 sheets of film per hour (8”x10”)
- Vertical installation capability for saving space
- 20 Gamma curves for advanced image quality adjustment
- Quick warm-up time of less than 2 minutes

UP-DF550
Multi-format Diagnostic DICOM Film Imager

Print Media:
- UPT-517BL
- UPT-514BL
- UPT-512BL
- UPT-510BL
- UPT-M712BL
- UPT-M710BL

Suitable for: Mammography, CR/DR, Computed Tomography, Magnetic Resonance
The UP-DF750 Digital Film Imager features superior image quality through high resolution and high density printing.

- Suitable for Mammography
- DICOM interface
- World’s smallest footprint in its class

Features
- Superior image quality through 604 dpi resolution and 14 bit processing
- Support for 10”x12” and 8”x10” Sony Mammography Blue Film (Dmax=3.8)
- Support for 14”x17”, 11”x14”, 10”x12” and 8”x10” Sony Blue Thermal Film (Dmax=3.2)
- High-speed imaging at a rate of up to 90 sheets of film per hour (8”x10”)
- Fully flexible film trays accept any film size and type
- Large 3.8” graphic display with adjustable orientation
- Vertical installation capability for saving space
- Quick warm-up time of less than 2 minutes
- 40 Gamma curves for accurate greyscale reproduction
- New advanced parameterised magnification types and DICOM configuration utility

UP-DF750
High resolution Diagnostic DICOM Film Imager

Print Media:
- UPT-517BL
- UPT-514BL
- UPT-512BL
- UPT-510BL
- UPT-M712BL
- UPT-M710BL

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

The Sony difference

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

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

Selecting the right print media can also ensure trouble-free printing, reducing the risk of sudden problems at a critical moment. Because 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
Our high-gloss layer prevents smudging from water and fingerprints and increases storage stability.

Minimal curling
Enabling hassle-free filing, our print media minimises curling to ensure reliable, smooth throughput.

Head-matching performance
Designed to optimally match our printer heads, the top coat layer of Sony print media supports continual consistent printing.

Impressive print quality
Our rigorous application of pressure control ensures that the thermal coat layer delivers high-quality colouring properties. The Y curve and Dmax are 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.

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.

Anti-electrostatic layer
The electrostatic energy that builds up during printing can cause sparking which destroys vital printer components, particularly in the thermal head. Our built-in antistatic layer acts effectively against this build-up.

Excellent Grey scale reproduction

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

1 Applies to UPP-110HG
## Print media at a glance

### The Sony range

<table>
<thead>
<tr>
<th>Size</th>
<th>Description</th>
<th>Comments</th>
<th>Model</th>
<th>Prints per pack or length</th>
<th>Printers</th>
<th>Number of rolls or packs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour printing for reference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td>Self-laminating Colour Printing Pack</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td>Self-laminating Colour Printing Pack</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A5</td>
<td>Colour Printing Pack</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A6</td>
<td>Colour Printing Pack</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A7</td>
<td>Colour Printing Pack</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black &amp; white printing for reference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8x10&quot;</td>
<td>Blue Thermal Film</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8x10&quot;</td>
<td>Blue Thermal Film</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8x10&quot;</td>
<td>Thermal Print Media</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td>Thermal Print Media (Type II: High Density)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td>Thermal Print Media (Type II: High Quality)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td>Blue Thermal Film (Type III)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A6</td>
<td>Thermal Print Media (Type V: High Glossy)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A6</td>
<td>Thermal Print Media (Type IV: Superior Density)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A6</td>
<td>Thermal Print Media (Type II: High Density)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A6</td>
<td>Thermal Print Media (Type I: High Quality)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black &amp; white printing for diagnosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14x17&quot;</td>
<td>Blue Thermal Film</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11x14&quot;</td>
<td>Blue Thermal Film</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10x12&quot;</td>
<td>Blue Thermal Film</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8x10&quot;</td>
<td>Blue Thermal Film</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10x12&quot;</td>
<td>Blue Thermal High density Film</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8x10&quot;</td>
<td>Blue Thermal High density Film</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

### How to identify genuine Sony Print Media

Sony’s print media is developed with patented technologies exclusively alongside Sony’s printers, to ensure they complement each other. When purchasing print media look for the Sony logo in the top left to identify a genuine product.

---

25
Solutions – supporting the medical workflow

Hardware and software that supports efficient content management

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

Applying such expertise to hospitals and other medical facilities has enabled us to create hardware and software that support workflows through highly efficient content management.

From our VMI-40MD medical image multiplexer that combines multiple streams of clinical information into a single output for easy sharing and management to intuitive content editing software with Vegas Pro 13 content management and delivery system, our solutions give you greater content control.

Our Medical Solutions are continually evolving. For the latest information visit pro.sony.eu/medicalsolutions
The Vegas™ Pro 13 collection is an integrated production environment. Combining a familiar track-based timeline with hundreds of thoughtful workflow innovations, Vegas Pro 12 simplifies the editing process while offering the professional performance and more creative control.

- Precise editing tools
- Superior audio control with Dolby® Digital Professional Encoder
- Powerful Blu-ray Disc™ authoring

Features
- Device explorer window
- Improved interface and 3D editing functions
- Enhanced window trimmer
- Choice of layout
- Pre-built templates
- 3D capability

Movie Studio 13 Suite
HD video editing, DVD creation, and more.

Movie Studio 13 Suite brings four impressive Sony applications together to produce a comprehensive multimedia experience. The software allows creation of video in beautiful 4K XAVC S or AVCHD™, development of original music, and enhanced multichannel audio.

Features
- Jump Start Tutorials provide a quick overview of the Movie Studio 13 workflow
- Powerful Blu-ray Disc™ authoring
- Sound Forge™ Audio Studio software
- 3D capability
Presentation Solutions

PWA-VP100
Vision Presenter

Suitable for: Clinical review teaching and environments

Sony’s PWA-VP100 Vision Presenter brings together a wide range of multimedia sources to create a big, bold, dynamic presentations or training solutions that you control with simplicity. In one view you can connect as many as ten different input sources simultaneously; such as Live cameras, PCs, Videoconferencing systems, Monitoring stations, USB flash drives, as well as file based content. 17 different design layouts are provided as default, allowing you to create, manage and build multiple templates all connecting with different content or source material. Effortlessly arrange multiple types of content into one presentation. Blend live camera sources, PowerPoint presentations, web content, movies files, videoconferencing systems and more to boost audience engagement or enhance learning. Vision Presenter handles just about any kind of content, including 4K video, with simultaneous playback of up to five HD video sources.

• Inputs: PCI board (x2), e.g., 3G-SDI (x4) + HDMI*2 (x2) or HDMI*2 (x2) + HDMI*2 (x2)
• SDI/HDMI embedded audio

Features
• Playback 5 pieces of Full HD video content simultaneously
• Control via wired/wireless mouse or Tablet Control (Android, iOS)

This product is for general purpose only and is not compliant with the technical standards under the medical device directive.

*Optional upgrade
Video Conferencing Solutions

PCS-XC1
Full-HD Videoconferencing system

Suitable for: Peer to peer patient discussion, medical communications, remote learning
Hold high-quality video conferences, easily, wherever there’s a network connection available with the PCS-XC1. This portable videoconferencing system with colour video PTZ camera and optional wireless capability (license required) enhances collaboration so medical practitioners can communicate more effectively.

- Full HD 1080p video at 60 frames per second*
- Wireless network connection

Features
- Compact, highly portable
- Live data-sharing and video annotation
- Supports Microsoft Lync**

** Available from March 2015 with free software update

Video Security Solutions

The Sony portfolio of products also extends to a market leading range of professional video security solutions. Our range of network-based products for surveillance applications includes IP cameras, network recorders, accessories, and encoders, providing integrated solutions ideal for keeping staff, patients and property protected.

The range offers both indoor and outdoor cameras, with models such as the 360 degree view SNC-HM662 camera for a great overall view of corridors and waiting rooms, and the market leading SNC-VB632D dual-light model which can watch over entrances and delivery bays day and night with its unique functionality.

This product is for general purpose only and is not compliant with the technical standards under the medical device directive.

This product is for general purpose only and is not compliant with the technical standards under the medical device directive.
Technology – advanced innovation

Bringing medical imaging innovations to life

As a pioneer with a heritage of visual technology breakthroughs, we continue to champion new solutions that support diagnostic and surgical success.

Having created our leading HD medical workflow range – from image capture, display and recording through editing and storage to distribution and print – we are now bringing OLED and 3D clarity to medical environments.

From the world’s first OLED medical monitor to harnessing the clarity of precise perceived depth and spatial orientation with our 3D medical monitors, cameras and recorders, we translate the latest technological innovations into dedicated medical imaging solutions.
OLED technology

Wide dynamic range

Accurate colour reproduction in dark areas of the displayed image

Thanks to TRIMASTER EL technology, Sony OLED monitors are capable of reproducing pure black levels that are faithful to the source signal. They also provide excellent colour reproduction, especially for dark images.

This can assist medical professionals with observing subtle details such as faint colour differences of tissue such as blood vessels, membrane and fat under low-light conditions.

Quick response

Virtually no motion blur

The OLED electroluminescent layer responds almost instantly to changes in electrical current input, achieving superb response performance for blur-free reproduction of fast-moving images. This is beneficial for a variety of critical medical applications, such as rigid endoscopic surgery and flexible endoscope investigation.

Wide colour gamut

Reproduces small differences in colour

OLED exceeds the colour range of any previous Sony monitor technology. The advanced micro-cavity structure uses an optical resonance effect in combination with accurate colour filters to calibrate and stabilise RGB colour accuracy.

This combination is also effective in reducing ambient light reflection. Consequently deep colour reproduction can be achieved with virtually no degradation, particularly in bright environments.

Sony OLED Technology

PVM-2551MD Medical OLED Monitor

The PVM-2551MD features the newly developed dedicated OLED processor and establishes a new, improved standard of critical-image monitoring. Sony innovative OLED technology delivers deep black, high-contrast, accurate colour reproduction and quick response times with virtually no motion blur.

HMS-3000MT Head Mounted Display

The Sony Head Mounted Display uses OLED panels for detailed image representation of the viewed area. Two 18mm (diagonal) panels positioned inside the monitor, one in front of each eye. Independent HD images are displayed on the left and right panels respectively with no crosstalk.
Specifications

Guy Slater of St Richard’s Hospital discusses experience of Sony’s OLED medical monitors which enhance laparoscopic surgery

St. Richards Hospital (SRH) in Chichester has taken the next step in the surgical imaging field by introducing Sony’s ground-breaking 25” OLED monitor (PVM-2551MD). It’s the first solution of its kind in the medical sector that harnesses Sony TRIMASTER EL™ technology to provide the stability of colour imaging and high quality contrast to enhance surgical viewing. Leading surgeon Mr. Guy Slater and his team were the first to pilot trial the displays and have benefited from their superior contrast, reduced blur and more faithful colour reproduction, relative to LCD.

Case Study
St Richard’s Hospital is a medium-sized District General Hospital (DGH) located in Chichester, West Sussex, England. SRH has one of the most advanced bariatric surgery departments in the UK that provides specialist surgical weight loss treatment for obese patients. The service was established at St Richard’s Hospital in May 2006 and now attracts patients from all over the country who benefit from the specialist care of the hospital’s skilled staff.

Background

The bariatric division at SRH is the busiest department in the UK, with a high flow of patients. Using monitors and stacks – the hospital does very little conventional open surgery. For that reason, Mr Slater and his department required a technological solution that would enable them to distinguish even the most subtle differences between tissues and blood vessels that can affect an outcome of weight loss surgery.

Challenges

Sony Solution

St Richard’s Hospital needed a solution that would empower its surgeons with the highest quality images. Therefore, Sony provided SRH with 4 PVM-2551MD displays which combine full HD resolution (1,920 x 1,080 pixels) with 10-bit signal processing for accurate colour management and impressive image quality. OLED monitors are used particularly in both rigid and flexible endoscopy as well as surgical microscopy procedures to allow the surgeon to see subtle tissue differentiation in low light conditions. Sony’s OLED monitor provides high resolution and precision in image reproduction.

Commenting on the installation, John Strudwick of Richard Wolf - specialists in endoscopic cameras who work in partnership with Sony Medical, stated: “Sony’s OLED technology provides a clearer image so surgeons can work quickly and efficiently. As a specialist in endoscopic cameras, I can say with confidence that Sony is head and shoulders above its competition. In combination with our modern HD endoscopy cameras, customers like Mr. Slater can recognise even the smallest details, such as in screening for early indications of cancer, in detecting flat lesions, or in differentiating tumours seamlessly in a medical environment.”

Why Sony Were Selected

SRH required a cutting-edge technological solution that would enable them to operate efficiently, educate their trainees effectively on how to provide the highest quality bariatric care as well as helping them to develop their own operating techniques. Sony provided a quality solution to meet those needs, combined with expert consultancy, which was a major driver behind SRH’s investment in OLED.

SRH decided to make the transition from its LCD monitors to Sony’s OLED displays as part of an upgrade process for the laparoscopic stacks that they previously used. The hospital was presented with the opportunity of a side-by-side comparison and found Sony’s OLED technology provided the clearest possible image to work quickly and efficiently, thus improving the accuracy of surgery.

“OLED makes surgery easier, more accurate and much less stressful.”

Guy Slater, St Richard’s Hospital

Results

Commenting on the significant impact the introduction of OLED technology has had, Mr. Slater said: “OLED makes surgery easier, more accurate and much less stressful. The benefits for me are three fold: It handles colour better which makes the surgery more accurate. The speed the image can cope with movement is excellent – you never get blurring as your move the telescope around the abdomen. The ability to work in low light, particularly if you’ve got bleeding which draws the light away the OLED technology allows me to work more accurately despite sub-optimal conditions.”
## HD workflow

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Capture" /></td>
<td><img src="image2" alt="Display" /></td>
<td><img src="image3" alt="Record" /></td>
</tr>
</tbody>
</table>

### Capture
You can rely on one of the world leaders in imaging technology for compact cameras that capture intricate detail with HD clarity.

### Display
Now both professionals and students can benefit from a clearer picture of surgical procedures with displays that can assist with more accurate differentiation of colours and tissue types.

### Record
Compact, versatile recording solutions deliver long-lasting picture quality, random access capability and enhanced security that incorporates patient data.

### Edit
As an expert in networked video and media management through software such as Vegas Pro 12 and Movie Studio 13, Sony delivers complete control of all digital data for more tailored teaching and colleague collaboration.

### Print
Sony have led the way in purpose-built medical printing technology for decades, offering excellent colour reproduction and durability.

### Distribution
Share digital still images and HD video across campuses and around the world, with high image and sound quality for more immersive group teaching and collaboration.

### Archive
Store and access massive and continually-increasing volumes of digital medical data with workflow-friendly, cost-efficient, dependable and secure archive solutions.
HD technology

Perception and discrimination

The closer you are to an object, the more detail you see. The human eye can discriminate detail within about 1 minute of arc (MOA). This is equivalent to being able to see 1mm lines from a distance of around 3.5 metres.

Therefore the larger the monitor or viewing screen, or the nearer you sit to it, the more detail you can resolve. The ideal size of screen or viewing distance is when the screen’s line structure is just imperceptible. If you sit any nearer, or the screen is any larger, the image begins to break up individual pixels become visible. Too far away, or too small a screen and you cannot see all the image’s available detail.

This is why Sony’s HD line-up is so important to medical practitioners: when it comes to a patient’s health, no detail is too small.

Pixels and resolution

SD pixels and resolution

The resolution of 625 line SD television (PAL) is 720 x 576 pixels, or 414,720 pixels in total (shown right). This is shown as a 4:3 image. PAL pixels are therefore not square but slightly tall.

HD pixels and resolution

The resolution of 1080 HD is 1,920 x 1,080 pixels, or 2,073,600 pixels in total (shown right). The resolution of 720 HD is 1280 x 720 pixels, or 921,600 pixels. Both 1080 HD and 720 HD are a true 16:9 image with square pixels.

Comparing PAL with 1080 HD. In comparison both images are made the same height.

HD and colour

HD television offers a new colour space with a redefined. For professionals, there is a jump in brightness in the colour bars standard test signal between green and magenta. The new standard also extends this gamut even further for selected HD equipment.
3D technology

Surgical certainty

Everyone knows the closer you are to something, the more detail you see. The human eye can discriminate detail within about 1 minute of arc (MOA). This is the equivalent to being able to see 1mm lines from about 3½ metres away.

Therefore the larger the monitor or viewing screen, or the nearer you sit to it, the more detail you see. The ideal size of screen or viewing distance, is when the screen’s line structure is just imperceptible. If you sit any nearer or the screen is any larger, the image begins to break up as you see the individual pixels. Too far away, or too small a screen, and you cannot see all the image’s available detail. This is why our HD line-up is so important to medical practitioners: when it comes to a patient’s health, no detail is too small.

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

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

To provide a three-dimensional image during surgery or for transmission for educational or in-service training purposes, users can attach the Sony MCC-3000MT camera with two camera heads to an operating microscope and show the images on compatible Sony 3D monitors, such as the LMD-3251MT or HMS-3000MT.

To complete the 3D workflow, the Sony HVO-3000MT 3D HD recorder can record outstanding 3D videos and stills.

Principle of Full Frame 3D

HMM-3000MT adopts the ‘Dual Panel 3D Method’ which uses independent panels to display dedicated 3D images for the left and rights eyes. HMM-3000MT delivers brighter, more natural and pure 3D images in HD (high definition) compared with other 3D methods without cross-talk phenomenon (image ghosting) and without losing resolution and brightness unlike other 3D methods.
3D workflow

1. Capture
2. Display
3. Record
4. Edit
5. Preview
6. Playback
7. Present

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

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

Display
3D stereoscopic images can be shared with other medical staff via a 3D medical-grade monitor such as the LMD-2451MT. Surgeons benefit from a smooth, uninterrupted view of multiple monitors whilst wearing light, comfortable polarised glasses.

Record
3D images can also be recorded using the HVO-3000MT 3D medical-grade HD video recorder. Providing exceptional picture quality for both 3D and 2D video recording and playback, it records high-quality images onto the internal hard disk drive and a variety of removable media.

Edit and present
Sony’s 3D workflow extends from recording to editing with Sony Vegas Pro software and multi-viewer presentation, with Full HD 3D projectors such as the VPL-HW50ES. With Sony, surgeons can enhance communication with patients and fellow clinicians by integrating 3D images into every phase of their workflow.
## Accessories

### RM-C950
Remote Control Unit

- DXC-C33P

### RM-91
Remote Control Unit

- Connector: Stereo mini
- Cable length: 5 m
- Mass: 80 g (3 oz)
- Supplied accessory:
  - Operation manual

### FS-24
Foot Switch

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

### Cables

<table>
<thead>
<tr>
<th>Model</th>
<th>Length</th>
<th>In</th>
<th>Out</th>
<th>DXC-C33P</th>
<th>PMW-10MD</th>
<th>MCC-500MD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCMC-20P</td>
<td>05/10/30</td>
<td>20-pin</td>
<td>20-pin</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CCMC-T</td>
<td>05/10/15/20</td>
<td>20-pin</td>
<td>36-pin</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CCMC-RDS</td>
<td>9-pin</td>
<td>9-pin</td>
<td>4BNC, DIN 4-pin</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CCMC-SA</td>
<td>08/10/15</td>
<td>20-pin</td>
<td>20-pin</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CCMC-EA06</td>
<td>5</td>
<td>20-pin</td>
<td>20-pin</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### UPA-500
Cleaning Kit

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

### BKM-220D
SDI 4:2:2 Input Adaptor

- LMD-1951MD
- LMD-2451MD
- LMD-4251TD

### BKM-227W
Composite and S-Video (Y/C) Input Adaptor

- LMD-1951MD
- LMD-2451MD
- LMD-4251TD

### BKM-229X
Analogue Component Input Adaptor

- LMD-1951MD
- LMD-2451MD
- LMD-4251TD

### BKM-243HSM
HD SDI & SDI Input Adaptor

- LMD-1951MD
- LMD-2451MD
- LMD-3251MT
- LMD-4251TD

### UPA-500
Cleaning Kit

- UP-DF750
- UP-DF550

### BKM-229X
Analogue Component Input Adaptor

- LMD-1951MD
- LMD-2451MD
- LMD-4251TD

### BKM-243HSM
HD SDI & SDI Input Adaptor

- LMD-1951MD
- LMD-2451MD
- LMD-3251MT
- LMD-4251TD

All products on this page are MDD Compliant.
BKM-250TGM
3G/HD/SD-SDI Input Adaptor

AC-110MD
AC Adaptor for LMD Monitors

SU-32FW
Display Stand

BGM-30GM
Circular-polariser 3D Glasses

AC-80MD
AC Adaptor for Printer, 3D camera and Head Mount Display

SU-560
Display Stand

BKM-31GM
Clip-on Type Circular-polariser 3D Glasses

HMM-3000MT
3D Head Mounted Monitor

HMO-CA50M
Head Mounted Display Cable

All products on this page are MDD Compliant.
<table>
<thead>
<tr>
<th>Item Code</th>
<th>Item Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPT-736BL</td>
<td>Blue Thermal Film</td>
<td>Contents: 100 sheets of print media; Paper size: 203 x 254mm (8 x 10 inches)</td>
</tr>
<tr>
<td>UPT-735BL</td>
<td>Blue Thermal Film</td>
<td>Contents: 100 sheets of print media; Paper size: 203 x 254mm (8 x 10 inches)</td>
</tr>
<tr>
<td>UPP-725</td>
<td>Thermal Print Media</td>
<td>Contents: 100 sheets of print media; Paper size: 203 x 254mm (8 x 10 inches)</td>
</tr>
<tr>
<td>UPP-210HD</td>
<td>Thermal Print Media</td>
<td>Print quantity: 139/A4 prints; Paper size: 210mm (W) x 25 m</td>
</tr>
<tr>
<td>UPP-210SE</td>
<td>Thermal Print Media</td>
<td>Print quantity: 139/A4 prints; Paper size: 210mm (W) x 25 m</td>
</tr>
<tr>
<td>UPT-210BL</td>
<td>Blue Thermal Transparent Film (Type III)</td>
<td>Print quantity: 42 prints (8-split); Paper size: 210mm (W) x 12.5 m</td>
</tr>
<tr>
<td>UPP-110HD</td>
<td>Thermal Print Media</td>
<td>Print quantity: 215 prints/A6 prints; Paper size: 110mm (W) x 20 m</td>
</tr>
<tr>
<td>UPP-110HG</td>
<td>Thermal Print Media</td>
<td>Print quantity: 215 prints/A6 prints; Paper size: 110mm (W) x 18 m</td>
</tr>
<tr>
<td>UPP-110S</td>
<td>Thermal Print Media</td>
<td>Print quantity: 215 prints/A6 prints; Paper size: 110mm (W) x 20 m</td>
</tr>
<tr>
<td>UPP-84HD</td>
<td>Thermal Print Media</td>
<td>Print quantity: 104 prints/A7 prints; Paper size: 84 mm (W) x 12.5m</td>
</tr>
<tr>
<td>UPP-84S</td>
<td>Thermal Print Media</td>
<td>Print quantity: 112 prints/A7 prints; Paper size: 84 mm (W) x 13.5m</td>
</tr>
</tbody>
</table>

All products on this page are MDD Compliant.
Thermal film for diagnosis

**UPT-517BL**
Blue Thermal Film
- Contents: 125 sheets
- Paper size: 210 x 298mm (8 3/8 x 11 3/4 inches)
- Size: 14 x 17

**UPT-514BL**
Blue Thermal Film
- Contents: 125 sheets
- Paper size: 279 x 354mm (11 x 14 inches)
- Size: 11 x 14

**UPT-512BL**
Blue Thermal Film
- Contents: 125 sheets
- Paper size: 253 x 304mm (10 x 12 inches)
- Size: 10 x 12

**UPT-510BL**
Blue Thermal Film
- Contents: 125 sheets
- Paper size: 202 x 253mm (8 x 10 inches)
- Size: 8 x 10

**UPT-M712BL**
Blue Thermal High density Film
- Contents: 125 sheets
- Paper size: 253 x 304mm (10 x 12 inches)
- Size: 10 x 12

**UPT-M710BL**
Blue High density Film
- Contents: 125 sheets
- Paper size: 202 x 253mm (8 x 10 inches)
- Size: 8 x 10

**UPT-514BL**
Blue Thermal Film
- Contents: 125 sheets
- Paper size: 279 x 354mm (11 x 14 inches)
- Size: 11 x 14

**UPT-512BL**
Blue Thermal Film
- Contents: 125 sheets
- Paper size: 253 x 304mm (10 x 12 inches)
- Size: 10 x 12

**UPT-510BL**
Blue Thermal Film
- Contents: 125 sheets
- Paper size: 202 x 253mm (8 x 10 inches)
- Size: 8 x 10

**UPT-M712BL**
Blue Thermal High density Film
- Contents: 125 sheets
- Paper size: 253 x 304mm (10 x 12 inches)
- Size: 10 x 12

**UPT-M710BL**
Blue High density Film
- Contents: 125 sheets
- Paper size: 202 x 253mm (8 x 10 inches)
- Size: 8 x 10

**UPC-770**
Self-laminating Colour Printing Pack
- Contents: 72 sheets of print paper
- Paper size: 210 x 298mm (8 3/8 x 11 3/4 inches)
- Size: A4

**UPC-R80MD**
Self-laminating Colour Printing Pack
- Contents: 2x 50 sheet print paper roll for 100 prints
2x ink ribbon
- Paper size: 210mm (W) x 140mm (L)
- Size: A4

**UPC-21L**
Colour Printing Pack
- Contents: 200 sheets of print paper
4 rolls of ink ribbon
- Paper size: 144 x 100mm (5 3/4 x 4 inches)
- Size: A6

**UPC-21S**
Colour Printing Pack
- Contents: 240 sheets of print paper
3 rolls of ink ribbon
- Paper size: 100 x 90mm (4 x 3 5/8 inches)
- Size: A6

**UPC-24SA**
Self-laminated Colour Printing Pack
- Contents (small size): 180 sheets of print paper
60 sheets x 3 packs
3 rolls of ink ribbon
- Size: A6

**UPC-24LA**
Self-laminated Colour Printing Pack
- Contents (large size): 160 sheets of print paper
40 sheets x 4 packs
4 rolls of ink ribbon
- Size: A6

*All products on this page are MDD Compliant.*
## Specifications

### Full HD Colour Video Cameras

<table>
<thead>
<tr>
<th>Model</th>
<th>MCC-3000MT</th>
<th>PMW-10MD</th>
<th>MCC-500MD</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image device</td>
<td>3-chip 1/2 inch Exmor CMOS (x2)</td>
<td>3-chip 1/2 inch Exmor CMOS</td>
<td>single chip 1/3 inch type Exmor CMOS</td>
</tr>
<tr>
<td>Effective picture elements</td>
<td>1920 x 1080</td>
<td>1080/50i/59.94/PS5/P60</td>
<td></td>
</tr>
<tr>
<td>Scanning system</td>
<td>1080/50i/59.94</td>
<td>1080/50i/59.94/PS5/P60</td>
<td></td>
</tr>
<tr>
<td>Sync system</td>
<td>External with BNC (x1)</td>
<td>External with BNC (x2)</td>
<td>C-mount</td>
</tr>
<tr>
<td>Horizontal resolution</td>
<td>1000 TV lines</td>
<td>900 TV lines or more</td>
<td></td>
</tr>
<tr>
<td>Lens mount</td>
<td>C-mount (x2)</td>
<td>C-mount (x2)</td>
<td>C-mount</td>
</tr>
<tr>
<td>Flange back</td>
<td>17.526mm</td>
<td>17.526mm</td>
<td>17.526mm</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>F10 typical (in 1920 x 1080/59.94i mode)</td>
<td>F5.6 (Typical) (At 1080/59.94i)</td>
<td></td>
</tr>
<tr>
<td>Minimum illumination</td>
<td>9 lx (in 1920 x 1080/59.94i mode, F2.2, +21 dB gain, with 64-frame slow shutter)</td>
<td>0.14 lx (in 1920 x 1080/59.94i mode, F2.2, +21 dB gain, with 64-frame slow shutter)</td>
<td></td>
</tr>
<tr>
<td>S/N ratio</td>
<td>54 dB (Y) (Typical)</td>
<td>55dB (Y) (Typical)</td>
<td></td>
</tr>
<tr>
<td>Gain</td>
<td>0 to 21 dB</td>
<td>0dB to 27dB</td>
<td></td>
</tr>
<tr>
<td>Shutter speed</td>
<td>601: 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/20000, 1/16000</td>
<td>1/60 to 1/10000</td>
<td></td>
</tr>
<tr>
<td>Electronic shutter</td>
<td>OFF/speed/ECS/SLS/EXSLS</td>
<td>Auto/manual (semi/full)</td>
<td></td>
</tr>
<tr>
<td>Iris</td>
<td>Manual</td>
<td>Manual</td>
<td></td>
</tr>
<tr>
<td>AE area</td>
<td>Multi/Large/Medium/Spot/SIF Selectable</td>
<td>Multi/Large/Medium/Spot/SIF Selectable</td>
<td>Multi/Large/Medium/Spot/SIF Selectable</td>
</tr>
<tr>
<td>AE speed</td>
<td>-99 to +99</td>
<td>-99 to +99</td>
<td>-99 to +99</td>
</tr>
<tr>
<td>All detect</td>
<td>Backlight, Standard, Spotlight</td>
<td>Slow/Normal/Fast</td>
<td></td>
</tr>
<tr>
<td>Knee point</td>
<td>Auto, Point, Slope, Manual</td>
<td>Auto, Point, Slope, Manual</td>
<td></td>
</tr>
<tr>
<td>Black stretch</td>
<td>Variable Black max / Black min</td>
<td>Variable Black max / Black min</td>
<td></td>
</tr>
<tr>
<td>Gamma</td>
<td>Variable</td>
<td>Variable</td>
<td>Variable</td>
</tr>
<tr>
<td>Pedestal</td>
<td>Normal, medium/dynamic range</td>
<td>Normal, medium/dynamic range</td>
<td>Normal, medium/dynamic range</td>
</tr>
<tr>
<td>Mass</td>
<td>CHU: 90 g (3.2 oz)</td>
<td>CHU: Approx. 40 g/approx. 1.4 oz</td>
<td>CHU: 27.2 x 28.4 x 49 mm (1 1/8 x 1 1/8 x 1 15/16 inches)</td>
</tr>
<tr>
<td>Power</td>
<td>DC 24 V</td>
<td>AC 100 to 240 V, 50/60 Hz</td>
<td>AC 100 to 240V, 50/60Hz</td>
</tr>
<tr>
<td>Requirements</td>
<td>DC 24 V</td>
<td>AC 100 to 240 V, 50/60 Hz</td>
<td>AC 100 to 240V, 50/60Hz</td>
</tr>
<tr>
<td>Consumption</td>
<td>1.5 A (rush: 3.0 A)</td>
<td>0.0-0.36 A</td>
<td>100 to 240V, 50/60Hz</td>
</tr>
<tr>
<td>Temperature</td>
<td>0 to +40 °C (+32 to +104 °F)</td>
<td>0 to +40 °C (+32 to +104 °F)</td>
<td>0 to +40 °C (+32 to +104 °F)</td>
</tr>
<tr>
<td>Storage/Transporting conditions</td>
<td>-20°C to 60°C (-4°F to 140°F)</td>
<td>-20°C to 60°C (-4°F to 140°F)</td>
<td>-20°C to 60°C (-4°F to 140°F)</td>
</tr>
</tbody>
</table>

### System
- Image device: 3-chip 1/2 inch Exmor CMOS (x2)
- Effective picture elements: 1920 x 1080
- Scanning system: 1080/50i/59.94
- Sync system: External with BNC (x1)
- Horizontal resolution: 1000 TV lines
- Lens mount: C-mount (x2)
- Flange back: 17.526mm
- Sensitivity: F10 typical (in 1920 x 1080/59.94i mode)
- Minimum illumination: 9 lx (in 1920 x 1080/59.94i mode, F2.2, +21 dB gain, with 64-frame slow shutter)
- S/N ratio: 54 dB (Y) (Typical)
- Gain: 0 to 21 dB
- Shutter speed: 601: 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/20000, 1/16000
- Electronic shutter: OFF/speed/ECS/SLS/EXSLS
- Iris: Manual
- AE area: Multi/Large/Medium/Spot/SIF Selectable
- AE speed: -99 to +99
- All detect: Backlight, Standard, Spotlight
- Knee point: Auto, Point, Slope, Manual
- Black stretch: Variable Black max / Black min
- Gamma: Variable
- Pedestal: Normal, medium/dynamic range
- Mass: CHU: 90 g (3.2 oz) (x2)
- Power: DC 24 V
- Requirements: DC 24 V
- Consumption: 1.5 A (rush: 3.0 A)
- Temperature: 0 to +40 °C (+32 to +104 °F)
- Storage/Transporting conditions: -20°C to 60°C (-4°F to 140°F)
# SD Colour Video Cameras

**DXC-C33P**

## System

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image device</td>
<td>3 CCD / 1/3 inch EXWAVE HAD Sensor</td>
</tr>
<tr>
<td>Effective picture elements</td>
<td>752 (H) x 582 (V)</td>
</tr>
<tr>
<td>Sensing area</td>
<td>4.8 (H) x 3.6 (V) mm</td>
</tr>
<tr>
<td>Scanning system</td>
<td>2:1 interlaced, 625 TV lines</td>
</tr>
<tr>
<td>Horizontal frequency</td>
<td>15,625 kHz</td>
</tr>
<tr>
<td>Vertical frequency</td>
<td>59Hz</td>
</tr>
<tr>
<td>Sync system</td>
<td>Internal or external with VBS, HD/VD</td>
</tr>
<tr>
<td>Phase control</td>
<td>H/SC phase control</td>
</tr>
<tr>
<td>Horizontal resolution</td>
<td>850 TV lines</td>
</tr>
<tr>
<td>Lens mount</td>
<td>C mount</td>
</tr>
<tr>
<td>Flange back</td>
<td>17.526 mm</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>F8.0 at 2000 lx</td>
</tr>
<tr>
<td>Minimum illumination</td>
<td>4 lx (F2, GAIN: HYPER)</td>
</tr>
<tr>
<td>S/N ratio</td>
<td>61dB</td>
</tr>
<tr>
<td>Gain</td>
<td>STEP/AGC/HYPER selectable, STEP: 0 to 24 dB by 1 dB step, AGC: 0 to 24 dB (Limit value: 6 dB, 12 dB, 18 dB, 24 dB selectable), HYPER: 30 dB</td>
</tr>
<tr>
<td>Shutter speed</td>
<td>8.0 to 1/100,000 s</td>
</tr>
<tr>
<td>Electronic shutter</td>
<td>OFF/STEP/VARIABLE/CCD IRIS/HYPER selectable</td>
</tr>
<tr>
<td>Iris</td>
<td>Manual</td>
</tr>
<tr>
<td>AE area</td>
<td>Multi/Large/Medium/Spot/Slit/Manual selectable</td>
</tr>
<tr>
<td>AE speed</td>
<td>Fast/Mid/Slow selectable</td>
</tr>
<tr>
<td>AE detect</td>
<td>Average/Peak selectable</td>
</tr>
<tr>
<td>Contrast effect</td>
<td>Manual/DynaLatitude/DCC+ selectable</td>
</tr>
<tr>
<td>Knee point</td>
<td>High/Mid/Low/Off selectable (Contrast: Manual)</td>
</tr>
<tr>
<td>Black stretch</td>
<td>Variable (Contrast Effect: Manual)</td>
</tr>
<tr>
<td>Gamma</td>
<td>On/Off (Variable at ON)</td>
</tr>
<tr>
<td>Pedestal</td>
<td>Master and R/B Manual adjustable</td>
</tr>
<tr>
<td>Black balance</td>
<td>AIB</td>
</tr>
<tr>
<td>White balance</td>
<td>AWD/ATW/normal/ATW wide/Manual/3200 K/5600 K selectable AWD or ATW R/B paint, manual R/G gain</td>
</tr>
<tr>
<td>ATW area</td>
<td>Normal/Manual selectable</td>
</tr>
<tr>
<td>ATW speed</td>
<td>Fast/Mid/Slow selectable</td>
</tr>
<tr>
<td>Detail level</td>
<td>All/Target/Off (Variable at All or Target)</td>
</tr>
<tr>
<td>Detail frequency</td>
<td>High/Mid/Low selectable</td>
</tr>
<tr>
<td>Linear matrix</td>
<td>All/Target/Off (Variable at All or Target)</td>
</tr>
<tr>
<td>Linear matrix mode</td>
<td>Standard/R Enhance/G Enhance/B Enhance/Manual selectable</td>
</tr>
<tr>
<td>Partial enhance</td>
<td>All/In/Out selectable</td>
</tr>
<tr>
<td>CCD Integration mode</td>
<td>Field/Frame selectable</td>
</tr>
<tr>
<td>Shading compensation</td>
<td>Off/On (Manual control)</td>
</tr>
<tr>
<td>Baust rate</td>
<td>19200/9600/4800/2400/1200 selectable</td>
</tr>
<tr>
<td>Sync</td>
<td>RGB/G/Off selectable</td>
</tr>
<tr>
<td>Trigger</td>
<td>On (Positive edge trigger/Negative edge trigger)/Off</td>
</tr>
<tr>
<td>Strobe</td>
<td>Slave</td>
</tr>
<tr>
<td>User file</td>
<td>A/B switchable</td>
</tr>
<tr>
<td>Scene file</td>
<td>Standard/Microscope/Full Auto/Strobe/File A or B</td>
</tr>
<tr>
<td>Output signals</td>
<td>VBS, RGB/SYNC, Y/C, i.LINK(DV)</td>
</tr>
<tr>
<td>Serial data</td>
<td>RS-232C</td>
</tr>
<tr>
<td>Connectors</td>
<td>DV OUT (8-pin jack), RGB/SYNC (9-pin D-sub) VIDEO OUT (BNC), Y-VIDEO (6-pin mini DIN), FS/TRIG IN (Stereo Mini jack), REMOTE (8-pin mini DIN), AC Inlet, Camera (20-pin), EXT SYNC IN (BNC)</td>
</tr>
</tbody>
</table>

## Measurements

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>CHU: 32 x 38 x 40mm (1.5/1.5 x 1.5/1.5 inches)</td>
</tr>
<tr>
<td></td>
<td>CCU: 200 x 88 x 240mm (7.7/8.8 x 9.4/9.4 inches)</td>
</tr>
<tr>
<td>Mass</td>
<td>CHU: 48 g (1.7 oz)</td>
</tr>
<tr>
<td></td>
<td>CCU: 2.5 kg (5.5lb 8 oz)</td>
</tr>
</tbody>
</table>

## Power

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements</td>
<td>AC 100 to 240 V, 50/60 Hz</td>
</tr>
<tr>
<td>Consumption</td>
<td>Max. 16 W</td>
</tr>
</tbody>
</table>

## Operating conditions

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>-5 to 45°C (23 to 113°F)</td>
</tr>
<tr>
<td>Storage/transporting conditions</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>-20 to 60°C (-4 to 140°F)</td>
</tr>
</tbody>
</table>

---

[Image of DXC-C33P camera]
## Specifications

### 3D HD Video Recorder

<table>
<thead>
<tr>
<th>3D HD Video Recorder</th>
<th>HD Video Recorder</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HVO-3000MT</strong></td>
<td><strong>HVO-1000MD</strong></td>
</tr>
</tbody>
</table>

### Recording devices

<table>
<thead>
<tr>
<th>Internal hard disk drive</th>
<th>500 GB</th>
<th>320 GB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blu-ray Disc/DVD drive (1)</td>
<td>Compatible media: BD-RE (single or dual layer), BD-R (single or dual layer), DVD-R (single layer)</td>
<td></td>
</tr>
</tbody>
</table>

### Input connectors

| S-Video in | Mini DIN 4-pin type (x1) Y: 1.0 Vp-p (75 Ω) Sync negative C (BURST): 0.286 Vp-p (75 Ω) (NTSC) C (BURST): 0.3 Vp-p (75 Ω) (PAL) |
| Video in | BNC (x1), Composite 1.0 Vp-p (75 Ω), Sync negative |
| DVI-D in | DVI-D (x2), TMDS 1 channel (single link) |
| RGB in | D-sub 15-pin (x1), 0.7 Vp-p with sync on green G: 1.0 Vp-p, 75 Ω |
| HD-SDI in | SD: SMPTE259M HD: SMPTE292M |
| 3G | 3G: SMPTE424M compliant (75 Ω) |
| BNC (x2) | BNC (x2) |
| Audio line in | Stereo mini jack (x1), 1.4 Vrms (full bit), input impedance, 10 k Ω or higher, unbalanced |

### Output connectors

| S-Video out | Mini DIN 4-pin type (x1) Y: 1.0 Vp-p (75 Ω) | Sync negative, C (BURST): 0.286 Vp-p (75 Ω) (NTSC) C (BURST): 0.3 Vp-p (75 Ω) (PAL) |
| Video out | BNC (x1), Composite 1.0 Vp-p (75 Ω), Sync negative |
| DVI-D out | DVI-D (x1), TMDS 1 channel (single link) |
| HD-SDI out | BNC (x1), SD/HD/3G 0.8 Vp-p 75 Ω |
| Audio out | Stereo mini jack (x1), 1.4 Vrms (full bit), load impedance 10 k Ω, unbalanced |

### Other interfaces

| USB | USB 2.0 (x4) |
| Network | RJ-45 (x1), 1000Base-T/100Base-TX |
| Remote RS 232C | D-sub 9-pin (x2) |
| Remote contact switch | Stereo mini jack (x4) |
| Remote monitor | RJ-45 type (x1) |
| Menu monitor | D-sub 15-pin (1x) |

### Other

| Supplied accessories | Before Using this Unit (x1), CD-ROM (Instructions For Use, PROTOCOL MANUAL) (x1), Warranty booklet (x1), infrared remote control unit (x1) |

### General

| Power requirements | 100V to 240V AC, 50 Hz/60 Hz |
| Input current | 1.9 A to 0.8 A |
| Operating temperature | 5 to 40° C (41 to 104° F) |
| Operating humidity | 20% to 80% 30° C (86° F) (no condensation) |
| Operating pressure | 700 hPa to 1,040 hPa |
| Temperature range for storage | -20° C to +60° C (4° F to +140° F) |
| Humidity range for storage | 20% to 90% 30° C (86° F) |
| Storage and transport pressure | 700 hPa to 1,040 hPa |
| Mass | 8.4kg (18.5lb.) |
| Dimensions | 305 x 410 x 115.5mm (12 1/8 x 16 1/4 x 4 5/8 in.) including protrusions |
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.

### HD Video Recorder

<table>
<thead>
<tr>
<th>HVO-500MD</th>
<th>HVO-500MD (Full HD Version)</th>
<th>HVO-500MD</th>
<th>HVO-550MD (Full HD Version)</th>
<th>HVO-500MD (Surgical Version)</th>
</tr>
</thead>
</table>

#### Recording Features

- **Recording Video Format**: MPEG-4 AVC/H.264
- **Recording Audio Format**: AC-3/AAC LC
- **Recording File Format**: AC-3/AAC LC LPCM
- **Recording Media**: Internal HDD (500GB), External USB Storage, Network (CIFS)
- **Recording Resolution**: 1280 × 720/59.94p, 1280 × 720/50p, 720 × 480/59.94i, 720 × 576/50i, 1920 × 1080/59.94i, 1920 × 1080/50i, 1280 × 720/59.94p, 1280 × 720/50p, 720 × 480/59.94i, 720 × 576/50i
- **Recording Bit Rate**: 14Mbps (Best), 8Mbps (High), 4Mbps (Standard), 20Mbps (Best), 12Mbps (High), 6Mbps (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), AUDIO (Stereo mini jack) (1), also via HDMI
- **DC IN**: (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), 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*

#### General

- **Power Requirements**: +12 V to +24 V DC (supply from AC-80MD AC adapter)
- **Input current**: 3.2 A to 1.6 A, 3.5 A to 1.8 A
- **Operating Temperature**: 5°C to 40°C (41°F to 104°F)
- **Operating Humidity**: 20% to 80% (Maximum wet-bulb temperature: 30°C (86°F)) (no condensation)
- **Operating Pressure**: 700 hPa to 1,060 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)) (no condensation)
- **Storage and transport pressure**: 700 hPa to 1,060 hPa
- **Mass**: 2.9 kg (6 lb. 6.3 oz.), 3.2 kg (7 lb. 0.88 oz.)
- **Dimensions (including longest protrusions)**: 212.0 × 287.7 × 105.5 mm (8 3/8 × 11 3/8 × 4 1/4 in.)
- **Supplied Items**: Before Using This Unit (1), CD-ROM (Instructions for Use, PROTOCOL MANUAL) (1), Warranty booklet (1), AC-80MD AC adapter (1), AC-80MD Instructions for Use (1), Service Contact List (1)

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

### LCD Monitor

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Effective picture size (WxH)</th>
<th>Diagonal</th>
<th>Aspect</th>
<th>Viewing Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMD-1530MD</td>
<td>1280 x 768 pixels (WXGA)</td>
<td>334 x 200mm (13 1/4 x 7 7/8 inches)</td>
<td>390mm (15 3/8 inches)</td>
<td>15:9</td>
</tr>
<tr>
<td>LMD-1951MD</td>
<td>1280 x 1024 pixels (SXGA)</td>
<td>376 x 301mm (14 7/8 x 11 7/8 inches)</td>
<td>481.84mm (19 inches)</td>
<td>5:4</td>
</tr>
<tr>
<td>LMD-2110MD</td>
<td>1920 x 1080 pixels (Full HD)</td>
<td>477 x 268mm (18 7/9 x 10 5/9 inches)</td>
<td>547mm (21 5/9 inches)</td>
<td>16:9</td>
</tr>
</tbody>
</table>

### Input

<table>
<thead>
<tr>
<th>Component</th>
<th>Type / Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGB Input</td>
<td>BNC (x3) RGB: 0.7Vp-p +/- 3dB (Sync on Green, 0.3Vp-p sync negative). Component: 0.7Vp-p (75% chrominance standard colour bar signal)</td>
</tr>
<tr>
<td>Y/C Input</td>
<td>BNC (x1)</td>
</tr>
<tr>
<td>Composite</td>
<td>BNC (x1), 1.0Vp-p +/-3dB, sync negative (NTSC/PAL). (Line A)</td>
</tr>
<tr>
<td>Audio Input</td>
<td>Phono jack (x1)-5dBu &gt;47KOhms</td>
</tr>
</tbody>
</table>

### Output

<table>
<thead>
<tr>
<th>Component</th>
<th>Type / Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGB Output</td>
<td>BNC (x3) loop through with 75Ohms automatic terminal function</td>
</tr>
<tr>
<td>Composite</td>
<td>BNC (x1) loop through with 75Ohms automatic terminal function</td>
</tr>
<tr>
<td>Audio Output</td>
<td>built-in speaker 0.5W (x1 Mono), phono jack (x1) loop through with 75Ohms terminal function</td>
</tr>
</tbody>
</table>

### Remote

<table>
<thead>
<tr>
<th>Control</th>
<th>Type / Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parallel</td>
<td>8pin modular</td>
</tr>
</tbody>
</table>

### Power

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>100V - 240V, 50/60Hz</td>
</tr>
</tbody>
</table>

### Consumption

<table>
<thead>
<tr>
<th>Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum</td>
<td>40W</td>
</tr>
</tbody>
</table>

### Operating conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>0 to 35°C (32 to 95°F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>30 to 85 % (no condensation)</td>
</tr>
</tbody>
</table>

### Storage conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>-20 to +60 °C (-4 to +140 °F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>0 to 90 % (no condensation)</td>
</tr>
</tbody>
</table>

### Pressure

<table>
<thead>
<tr>
<th>Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>700</td>
<td>1000 HPa</td>
</tr>
<tr>
<td>LCD Monitor</td>
<td>OLED</td>
</tr>
<tr>
<td>-------------</td>
<td>------</td>
</tr>
<tr>
<td>LMD-2451MD</td>
<td>PVM-2551MD</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Panel**

- **Panel Type**
  - LCD: a-Si TFT Active Matrix LCD with anti-reflection (AR) coated protection panel
  - OLED: Organic Light Emitting Diode (AG-AIR) coated protection panel

**Resolution**

- **Effective picture size (WxH)**
  - 518 x 324mm (20 1/2 x 12 7/8 inches)
  - 543.4 x 305.6mm (21 1/2 x 12 1/8 inches)
  - 597.9 x 336.3 mm (23 5/8 x 14 1/2 inches)

**Diagonal**

- 609mm (24 inches)
- 623.4mm (24 5/8 inches)
- 686 mm (27 inches)

**Aspect**

- 16:10
- 16:9
- 16:9

**Viewing Angle**

- 178°
- 89°/89°/89°/89° (typical)

**Input**

- **RGB Component**
  - BNC type (x3), RGB: 0.7 Vp-p ±3 dB (Sync On Green, 0.3 Vp-p sync negative) Component: 0.7 Vp-p ±3 dB (75% chrominance standard colour bar signal)

- **External Sync**
  - BNC (x1)

- **Y/C**
  - 4-pin Mini DIN x 1: Y: 1.0 Vp-p ±3 dB (Sync On Green, 0.3 Vp-p sync negative) Component: 0.7 Vp-p ±3 dB (PAL burst signal level), 0.3 Vp-p ±3 dB (NTSC burst signal level)

- **Composite**
  - BNC (x1), 1.0 Vp-p ±3 dB, sync negative (NTSC/PAL)

- **SD/HD - SDI**
  - Yes (x2 with optional board)

**Computer input**

- **Analogue HD-15**
  - D-sub 15-pin (x1), RGB: 0.7 Vp-p, sync positive (Sync On Green, 0.3 Vp-p sync negative) Sync: TTL level (polarity free, H/V separate sync) Plug & Play function: corresponds to DDC2B

- **DVI-D**
  - TMDS single link (x1)
  - (x2) TMDS single link for both models

**Output**

- **RGB Component**
  - BNC (x3) loop through with 75 Ohms automatic terminal function

- **Y/C**
  - Mini DIN 4-pin (x1), Loop-through, with 75 Ohms automatic terminal function

- **Composite**
  - BNC (x1) loop through with 75 Ohms automatic terminal function

- **SD/HD-SDI**
  - TMDS single link (x1 with optional board)

**Computer Output**

- **DVI-D**
  - TMDS single link (x1 with optional board)

**Other**

- **Remote**
  - Parallel 8pin modular Serial RS-232C 9-pin D-sub serial ETHERNET RJ-45

- **Stand**
  - Optional SU-560 100mm x 100mm VESA mount

- **Measurements**
  - Dimensions W x H x D: 622 x 386 x 110mm (23 3/4 x 15 1/4 x 4 3/8 inches)
  - 618.4 x 376 x 102.1mm (24 3/8 x 14 7/8 x 4 1/8 inches)
  - 650 x 419 x 58 (Slimmest D 29mm) 650 x 474 x 302 mm (with SU-560 optional stand) 25 5/8 x 18 3/4x 12 inches (with SU-560 optional stand)

- **Mass**
  - 8.7 kg (with 2 x BKD-229H installed) 8.1 kg (17 lb 14 oz)

- **Power Requirements**
  - AC 100V - 240V, 50/60Hz DC 24V 3.5A; DC 5V 0.03A

- **Requirements**
  - LCD monitor DC Input: 24 V/ 6.25 A (supplied from AC Adapter) AC adapter: 85 (W) x 170 (L) x 40 (H) mm AC In: 100 V - 240 V, 50/60 Hz, 2.5 A - 1 A

- **Consumption**
  - 115W

- **Operating conditions**
  - Temperature: 0 to 35°C (32 to 95°F)

- **Humidity**
  - 30% to 85% (no condensation)

- **Storage conditions**
  - Temperature: -20 to +60°C (-4 to 140°F)

- **Humidity**
  - 0 to 90% (no condensation)
## Specifications

### 3D LCD Monitor

<table>
<thead>
<tr>
<th>LMD-3251MT</th>
<th>LMD-2451MT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel</strong></td>
<td><strong>Panel</strong></td>
</tr>
<tr>
<td>LCD Panel Type</td>
<td>LCD Panel Type</td>
</tr>
<tr>
<td>a-Si TFT Active Matrix LED with anti reflection (AR) coated protection panel</td>
<td>a-Si TFT Active Matrix LCD with anti reflection (AR) coated protection panel</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td><strong>Resolution</strong></td>
</tr>
<tr>
<td>1920 x 1080 pixels (Full HD)</td>
<td>1920 x 1200 pixels (WUXGA)</td>
</tr>
<tr>
<td><strong>Effective picture size (H x W)</strong></td>
<td><strong>Effective picture size (H x W)</strong></td>
</tr>
<tr>
<td>698.4 x 392.9 mm (27 1/2 x 15 1/2 inches)</td>
<td>518.4 x 324.0 mm (20 1/2 x 12 7/8 inches)</td>
</tr>
<tr>
<td><strong>Effective picture size (diagonal)</strong></td>
<td><strong>Effective picture size (diagonal)</strong></td>
</tr>
<tr>
<td>801.3 mm (24 1/4 inches)</td>
<td>613.2 mm (24 1/4 inches)</td>
</tr>
<tr>
<td><strong>Aspect</strong></td>
<td>16:9</td>
</tr>
<tr>
<td><strong>Viewing angle (3D)</strong></td>
<td>35° at a viewing distance more than 620 mm, crosstalk less than 7% (typical)</td>
</tr>
<tr>
<td></td>
<td>50° at a viewing distance more than 300 mm, crosstalk less than 7% (typical)</td>
</tr>
<tr>
<td><strong>Viewing angle (2D)</strong></td>
<td>89°/89°/89°/89° (typical) (up/down/left/right contrast &gt; 10:1)</td>
</tr>
<tr>
<td></td>
<td>89°/89°/89°/89° (typical) (up/down/left/right contrast &gt; 10:1)</td>
</tr>
<tr>
<td><strong>Colours</strong></td>
<td>Approx. 16.7 million colours</td>
</tr>
<tr>
<td><strong>Input</strong></td>
<td><strong>Input</strong></td>
</tr>
<tr>
<td>Composite</td>
<td>Mini DIN 4-pin (x1)</td>
</tr>
<tr>
<td></td>
<td>Y: 1.0 Vp-p ± 3dB sync negative, C (Burst): 0.268 Vp-p/NTSC, 0.3 Vp-p/PAL</td>
</tr>
<tr>
<td>Y/C</td>
<td>Y/C Mini DIN 4-pin (x1)</td>
</tr>
<tr>
<td></td>
<td>Y: 1.0 Vp-p ± 3dB sync negative, C (Burst): 0.268 Vp-p/NTSC, 0.3 Vp-p/PAL</td>
</tr>
<tr>
<td>RGB Component</td>
<td>RGB 0.7 Vp-p ± 0.3 Vp-p (Sync on Green, 0.3 Vp-p sync negative)</td>
</tr>
<tr>
<td></td>
<td>Component: 0.7 Vp-p (75% cheerymsian standard colour bar signal)</td>
</tr>
<tr>
<td>DVI-D</td>
<td>DVI-D (x1) TMDS single link</td>
</tr>
<tr>
<td>HD15</td>
<td>D-sub 15-pin (x1), RGB/90°, 0.7 Vp-p sync positive (Sync on Green, 0.3 Vp-p sync negative) (Sync: Total level (polarity free), H/V separate sync) Plug &amp; Play function: corresponds to DDC/CEB</td>
</tr>
<tr>
<td>External Sync</td>
<td>BNC (x1), 0.3 Vp-p ± 0.3 Vp-p ± 10Vp-p ± 10Vp-p ± bipolarity ternary or negative polarity binary</td>
</tr>
<tr>
<td>Option slot</td>
<td>Two (2) ports, Signal format: H 15 kHz to 45 kHz, V: 48 Hz to 60 Hz</td>
</tr>
<tr>
<td>SD/HD/3G-SDI</td>
<td>Yes (2 x with optional boards)</td>
</tr>
<tr>
<td>Dual HD-SDI (3D)</td>
<td>Yes (2 x with optional boards)</td>
</tr>
<tr>
<td>Parallel remote</td>
<td>Modular connector 8-pin (x1) (Pin-assignable)</td>
</tr>
<tr>
<td>Serial remote</td>
<td>Serial remote, 9-pin (RS-232C) (x1), RJ-45 modular connector (Ethernet) (x1) (10BASE-T/100BASE-TX)</td>
</tr>
<tr>
<td>Output</td>
<td><strong>Output</strong></td>
</tr>
<tr>
<td>Composite</td>
<td>BNC (x1), Loop-through, with 75 ohms automatic termination</td>
</tr>
<tr>
<td>Y/C</td>
<td>Mini DIN 4-pin (x1), Loop-through, with 75 ohms automatic termination</td>
</tr>
<tr>
<td>RGB Component</td>
<td>BNC (x3), Loop-through, with 75 ohms automatic termination</td>
</tr>
<tr>
<td>External sync</td>
<td>BNC (x1), Loop-through, with 75 ohms automatic termination</td>
</tr>
<tr>
<td>SD/HD/3G-SDI</td>
<td>Yes (2 x with optional boards)</td>
</tr>
<tr>
<td>Dual HD-SDI (3D)</td>
<td>Yes (2 x with optional boards)</td>
</tr>
<tr>
<td>Audio monitor out</td>
<td>Phono jack (x2) (L, R)</td>
</tr>
<tr>
<td>DVI-D</td>
<td>DVI-D TMDS single link (x1) with optional board</td>
</tr>
<tr>
<td><strong>Measurements</strong></td>
<td><strong>Measurements</strong></td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>783 x 479.2 x 124.3 mm, 783 x 582.8 x 229 mm (with SU-32FW optional stand)</td>
</tr>
<tr>
<td></td>
<td>602.4 x 368.2 x 110 mm (23 3/4 x 15 1/4 x 4 3/8 inches) (including projections)</td>
</tr>
<tr>
<td>Mass (with options)</td>
<td>13.8 kg (when 2x BKM-229X installed)</td>
</tr>
<tr>
<td></td>
<td>30 lbs 7 oz (when 2x BKM-229X installed)</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td><strong>Power</strong></td>
</tr>
<tr>
<td>Requirements</td>
<td>AC 100V - 240V, 50/60Hz DC 24V 3.5A; DC 5V 0.03A</td>
</tr>
<tr>
<td>Consumption</td>
<td>Approx. 100 W (max.) (with 2x BKM-229X)</td>
</tr>
<tr>
<td></td>
<td>135W</td>
</tr>
<tr>
<td>Operating conditions</td>
<td><strong>Operating conditions</strong></td>
</tr>
<tr>
<td>Humidity</td>
<td>30% to 85% (no condensation)</td>
</tr>
<tr>
<td></td>
<td>30% to 85% (no condensation)</td>
</tr>
<tr>
<td>Storage/Transporting conditions</td>
<td><strong>Storage/Transporting conditions</strong></td>
</tr>
<tr>
<td>Temperature</td>
<td>20°C to +40°C (4°F to +140°F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>5% to 90% (no condensation)</td>
</tr>
<tr>
<td>Pressure</td>
<td>700 hPa to 1060 hPa</td>
</tr>
</tbody>
</table>
### Head Mount display

**HMS-3000MT**

<table>
<thead>
<tr>
<th>Panel</th>
<th>Display Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel</td>
<td>Active Matrix OLED</td>
</tr>
<tr>
<td>Picture Size (Diagonal)</td>
<td>0.7-inch</td>
</tr>
<tr>
<td>Effective Picture Size (H x V)</td>
<td>15.6 x 8.88 mm</td>
</tr>
<tr>
<td>Pixel pitch</td>
<td>12μm</td>
</tr>
<tr>
<td>Resolution (H x V)</td>
<td>1280x720</td>
</tr>
<tr>
<td>Aspect</td>
<td>16:9</td>
</tr>
<tr>
<td>Colour Display</td>
<td>Approx. 16.7 million Colours</td>
</tr>
<tr>
<td>SDI, DVI-D</td>
<td>SDI HD-SDI (x2), DVI-D (x2), TMDS Single link</td>
</tr>
<tr>
<td>SDI Output, DVI-D Output, HMM Output</td>
<td>SDI HD-SDI (x2) (Through), DVI-D (x2) (Through), HMM (x2)</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>HMM-3000MT: DC IN: 24 V, 1.5A (Supplied from AC adaptor), AC Adapter (Sony, AC-80MD): AC IN: 100-240 V, 50/60 Hz, 1.0/0.5A DC OUT: 24 V/3.3A</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>36W</td>
</tr>
<tr>
<td>Supplied Accessories</td>
<td>Before Using this Unit (1), CD-ROM (Instructions for Use) (1), AC-80MD AC adapter (1), AC-80MD Instructions for Use (1), Service Contact List (1)</td>
</tr>
<tr>
<td>Optional Accessories</td>
<td>An additional HMM-3000MT Head Mounted Monitor and an additional HMO-CA50M head mounted display cable (x1, 5m)</td>
</tr>
</tbody>
</table>

### Public Displays

<table>
<thead>
<tr>
<th>Public Displays</th>
<th>FWD-40W600P</th>
<th>FWD-48W600P</th>
<th>FWD-60W600P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Features</td>
<td>Screen Size (measured diagonally) 40” (40&quot;)</td>
<td>48” (47.6&quot;)</td>
<td>60&quot;(60.0&quot;)</td>
</tr>
<tr>
<td>Screen Size (cm)</td>
<td>101.8 cm</td>
<td>120.9 cm</td>
<td>152.5cm</td>
</tr>
<tr>
<td>Picture</td>
<td>Full HD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspect Ratio</td>
<td>16:9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimming Type</td>
<td>Frame Dimming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display Device</td>
<td>LCD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backlight Type</td>
<td>LED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Processing</td>
<td>X-Reality PRO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motionflow</td>
<td>200 Hz</td>
<td>400 Hz</td>
<td></td>
</tr>
<tr>
<td>System</td>
<td>Video Signal</td>
<td>1080/24p (HDMI only); 1080/60i; 1080/60p (HDMI/Component); 1080/50i; 1080/50p (HDMI/Component); 480/60i; 480/60p; 576/50i; 576/50p; 720/60p; 576/50p; 1080/30p (HDMI only); 720/30p (HDMI only); 720/24p (HDMI only)</td>
<td></td>
</tr>
<tr>
<td>Network Features</td>
<td>Skype™ Ready</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wi-Fi Direct/WiFi Integrated</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wi-Fi Certified</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opera Apps (System)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen mirroring</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display SideView™</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet Browser</td>
<td>Yes (Opera)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Features</td>
<td>USB Play</td>
<td>MP4(6); MP4G2PS; MP4G2TS; AVCHD; MP4Part10; MP4Part10; AV10(V1D2); AV10(Motionjpeg); MOV; WMV; MKV; WEBM; 3GPP; MP3; WMA/ WAV/ JPEG/ MPO/ IFO/WAV(RW)</td>
<td></td>
</tr>
<tr>
<td>BRAVIA Sync</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LightSensor</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inputs and Outputs</td>
<td>AC Power Input</td>
<td>AC Adapter (external)</td>
<td></td>
</tr>
<tr>
<td>Power Requirements (voltage)</td>
<td>Shop 84W / Home 45W</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Panel Features**

- **Screen Size (measured diagonally):**
  - FWD-40W600P: 40"
  - FWD-48W600P: 48"
  - FWD-60W600P: 60"

- **Screen Size (cm):**
  - FWD-40W600P: 101.8 cm
  - FWD-48W600P: 120.9 cm
  - FWD-60W600P: 152.5 cm

- **Picture Resolution:** Full HD

- **Aspect Ratio:** 16:9

- **Dimming Type:** Frame Dimming

- **Display Device:** LCD

- **Backlight Type:** LED

- **Video Processing:** X-Reality PRO

- **Motionflow:**
  - FWD-40W600P: 200 Hz
  - FWD-48W600P: 400 Hz
  - FWD-60W600P: 400 Hz

- **System Features:**
  - **Video Signal:**
    - 1080/24p (HDMI only); 1080/60i; 1080/60p (HDMI/Component); 1080/50i; 1080/50p (HDMI/Component); 480/60i; 480/60p; 576/50i; 576/50p; 720/60p; 576/50p; 1080/30p (HDMI only); 720/30p (HDMI only); 720/24p (HDMI only)

- **Network Features:**
  - **Skype™ Ready**
  - **Wi-Fi Direct/WiFi Integrated** Yes
  - **Wi-Fi Certified** Yes
  - **Opera Apps (System)** Yes
  - **Screen mirroring** Yes
  - **Display SideView™** Yes
  - **Internet Browser** Yes (Opera)

- **Other Features:**
  - **USB Play:** MP4(6); MP4G2PS; MP4G2TS; AVCHD; MP4Part10; MP4Part10; AV10(V1D2); AV10(Motionjpeg); MOV; WMV; MKV; WEBM; 3GPP; MP3; WMA/ WAV/ JPEG/ MPO/ IFO/WAV(RW)

- **BRRAVIA Sync** Yes

- **Manual** Yes

- **LightSensor** Yes

- **Inputs and Outputs:**
  - **AC Power Input:** AC Adapter (external)

- **Power Requirements (voltage):**
  - Shop 84W / Home 45W
<table>
<thead>
<tr>
<th>Display Features</th>
<th>FWD-55X8600P</th>
<th>FWD-65X8600P</th>
<th>FWD-85X9600P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen Size (measured diagonally)</td>
<td>55” (54.6”)</td>
<td>65” (64.5”)</td>
<td>85” (84.6”)</td>
</tr>
<tr>
<td>Screen Size (cm)</td>
<td>138.8 cm</td>
<td>163.9 cm</td>
<td>214.8 cm</td>
</tr>
</tbody>
</table>

**Picture**

<table>
<thead>
<tr>
<th>Display Resolution</th>
<th>4K (3840x2160)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspect Ratio</td>
<td>16:9</td>
</tr>
<tr>
<td>Dimming Type</td>
<td>Frame Dimming</td>
</tr>
<tr>
<td>Display Device</td>
<td>LCD</td>
</tr>
<tr>
<td>Backlight Type</td>
<td>LED</td>
</tr>
<tr>
<td>Video Processing</td>
<td>4K X-Reality PRO</td>
</tr>
<tr>
<td>Motionflow</td>
<td>Motionflow XR 200 Hz</td>
</tr>
<tr>
<td>3D format</td>
<td>3D (passive technology)</td>
</tr>
</tbody>
</table>

**System**

| Video Signal       | HDMI only: 3840x2160/24p, 3840x2160/25p, 3840x2160/30p, 4096x2160/24p, 1080/24p, 480/60, 480/60p, 576/50, 576/50p, 720/50p, 720/60p, 720/30p, 720/24p, 3840x2160/50p (YCbCr4:2:0 8bit) 3840x2160/60p (YCbCr4:2:0 8bit) HDMI/Component: 1080/60i, 1080/60p, 1080/50i, 1080/50p |

| TV Tuner           | 1 (Digital/Analog) / 1 (Sat) |

**Network Features**

<table>
<thead>
<tr>
<th>Skype™</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wi-Fi Certified</td>
<td>Yes</td>
</tr>
<tr>
<td>Opera Apps (System)</td>
<td>Yes</td>
</tr>
<tr>
<td>One-touch mirroring</td>
<td>Yes</td>
</tr>
<tr>
<td>Screen mirroring</td>
<td>Yes</td>
</tr>
<tr>
<td>Display SideView™</td>
<td>Yes</td>
</tr>
<tr>
<td>Internet Browser</td>
<td>Yes (Opera)</td>
</tr>
</tbody>
</table>

**Other Features**

<table>
<thead>
<tr>
<th>USB Play</th>
<th>MPEG1 / MPEG2PS / MPEG2TS / AVCHD / MP4Part10 / MP4Part12 / AVI(XVID) / AVI(Motionjpeg) / MOV / WMV / MKV / WEBM / 3GPP / MP3 / WMA / WAV / JPEG / MPO / 55X8 and 65X8 only: RAW(ARW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRAVIA Sync</td>
<td>Yes</td>
</tr>
<tr>
<td>i-Manual</td>
<td>Yes</td>
</tr>
<tr>
<td>LightSensor</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Inputs and Outputs**

| RF Connection Input(s) | 1 (Side) |
| Composite Video Input(s) | 1 (Rear Hybrid w/Component) |
| HDMI™ Connection(s) (Total) | 4 (Side) |
| Digital Audio Output(s) | 1 (Rear) |
| Audio Out            | 1 (Side/Headphone) |
| USB                  | 3 (Side) |
| Ethernet Connection(s) | 1 (Rear) |
| HDMI™/PC Input       | Yes        |

**Power**

<p>| Power Requirements (voltage) | AC 220-240V / 50Hz |
| 3D Glasses                  | TDG-500P x2 |
| 3D Glasses                  | TDG-81400A x2 |</p>
<table>
<thead>
<tr>
<th>Colour Printers</th>
<th>UP-25MD</th>
<th>UP-D25MD</th>
<th>UP-DR80MD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System</strong></td>
<td>Analogue</td>
<td>Digital</td>
<td>Digital</td>
</tr>
<tr>
<td>Format</td>
<td>A6</td>
<td>A4</td>
<td></td>
</tr>
<tr>
<td>Printing system</td>
<td>Dye sublimation printing technology</td>
<td>Approx. 402 dpi</td>
<td>Approx. 301 dpi</td>
</tr>
<tr>
<td>Resolution</td>
<td>Approx. 1,200 dots</td>
<td>Approx. 1,800 dots</td>
<td>Approx. 1,800 dots</td>
</tr>
<tr>
<td>Print matrix</td>
<td>UP-21L/24LA: 2,132 x 1,800 dots</td>
<td>UP-21S/24SA: 1,600 x 1,260 dots</td>
<td>21L / 24LA : 2,100 x 1,600 dots</td>
</tr>
<tr>
<td>Printable area</td>
<td>UP-21L/24LA: 1,279 x 960 mm (5.1 x 3.7 inches)</td>
<td>UP-21S/24SA: 1,600 x 1,260 mm (5.1 x 4.7 inches)</td>
<td>21L / 24LA : 1,26 x 99 mm (5 x 3.9 inches)</td>
</tr>
<tr>
<td>Memory</td>
<td>8 frame memories</td>
<td>NA</td>
<td>A4 size UPC-R80MD: 3,400 x 2,392 dots</td>
</tr>
<tr>
<td>Tray capacity</td>
<td>S Size tray: Max. 80 sheets</td>
<td>L Size tray: Max 50 sheets</td>
<td>50 sheets</td>
</tr>
<tr>
<td>Inputs/outputs</td>
<td>Video, S-Video, RGB, SYNC, HDTV IN/OUT signals</td>
<td>Hi-Speed USB (USB 2.0)</td>
<td>Letter size: Approx. 72 seconds</td>
</tr>
<tr>
<td>Control connectors</td>
<td>Remote 1 (special mini jack) for optional RM-5500 (discontinued), Remote 2 (stereo mini jack) for optional RM-91 or FS-24. RS-232C interface port (D-sub 25-pin) for external computer</td>
<td>NA</td>
<td>USB cable (1)</td>
</tr>
<tr>
<td>Measurements</td>
<td>Dimensions: 212 (W) x 98 (H) x 398 (D)mm, (8.3 x 3.9 x 15.6 inches)</td>
<td>Mass: 5.7 kg (12 lb 9 oz)</td>
<td>Power: AC 100 V to 240 V, 50/60Hz</td>
</tr>
<tr>
<td></td>
<td>Approx. 317(W) x 207(H) x 425(D)mm (12.5 x 8.1 x 16.7 inches)</td>
<td>5.5 kg (12 lb 2 oz)</td>
<td>Consumption: 1.7 A to 1.0 A</td>
</tr>
<tr>
<td>Power requirements</td>
<td>AC 100 V to 240 V, 50/60Hz</td>
<td>Approx. 11.5 kg (25.3 lb)</td>
<td>Operating conditions: Temperature: 5 °C to 35 °C (41 °F to 95 °F)</td>
</tr>
<tr>
<td>Operating conditions</td>
<td>Humidity: 20% to 80% (non condensing)</td>
<td>Power Cable (1), USB cable (1), CD ROM (1), Paper holder (2), Cleaning ribbon (1)</td>
<td>Storage/transporting conditions: Temperature: -20 °C to 60 °C (-4 °F to 140 °F)</td>
</tr>
<tr>
<td>Supplied accessories</td>
<td>CD-ROM (1) Printer Driver, Operating Instructions (PDF), Before using this Printer (1), Paper Tray (1), Stopper (1), Cleaning Cartridge (1)</td>
<td>CD-ROM (1) Operating Instructions (PDF), Before using this Printer (1), Paper Tray (1), Stopper (1), Cleaning Cartridge (1), USB Cable (1)</td>
<td>Humidity: 20% to 80% (non condensing)</td>
</tr>
<tr>
<td>Other</td>
<td>CD-ROM (1)</td>
<td></td>
<td>Power Cable (1), USB cable (1), CD ROM (1), Paper holder (2), Cleaning ribbon (1), Before using this printer (1), Software license agreement</td>
</tr>
</tbody>
</table>

51
### Colour Printers

**UP-55MD**

<table>
<thead>
<tr>
<th>System</th>
<th>Analogue</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Format</strong></td>
<td>A5</td>
</tr>
<tr>
<td><strong>Printing system</strong></td>
<td>Dye sublimation printing</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>Approx. 379 dpi</td>
</tr>
<tr>
<td><strong>Gradations</strong></td>
<td>8 bits (256 levels) processing each for Yellow, Magenta and Cyan</td>
</tr>
<tr>
<td><strong>Print matrix</strong></td>
<td>2528 x 1920 dots (full screen print)</td>
</tr>
<tr>
<td><strong>Printable area</strong></td>
<td>169 (W) x 129 (H) mm (6 3⁄4 x 5 1⁄8 inches)</td>
</tr>
<tr>
<td><strong>Printing time</strong></td>
<td>Approx. 20 seconds</td>
</tr>
<tr>
<td><strong>Tray capacity</strong></td>
<td>Max. 100 sheets</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>8 frame memories</td>
</tr>
<tr>
<td><strong>Control connectors</strong></td>
<td>Remote 1 (special mini) for optional RM-5500, Remote 2 (stereo mini) for optional RM-91, RS-232C interface port (D-sub 25-pin) for external computer</td>
</tr>
<tr>
<td><strong>Inputs/outputs</strong></td>
<td>IN/OUT : Video, S-Video, RGB SYNC, OUT : USB host port for USB flash memory</td>
</tr>
</tbody>
</table>

### Measurements

| Dimensions | Approx. 280 x 125 x 398mm (11 1/8 x 5 x 15 3/4 inches) excluding the projection parts |
| Mass | Approx. 9 kg (19 lb 13 oz) |
| **Power Requirements** | AC 100 to 120 V, 50/60 Hz, AC 220 to 240 V, 50/60 Hz |
| **Consumption** | 100 to 120 V: Max. 2.8 A / 220 to 240 V: Max. 1.2 A |
| **Temperature** | 5 °C to 35 °C (41 °F to 95 °F) |
| **Humidity** | 20% to 80% (non condensing) |

### Operating conditions

| Temperature | -20 °C to 60 °C (-4 °F to 140 °F) |
| Humidity | 20% to 90% (non condensing) |

### Other

<p>| Supplied accessories | Paper tray (1), Ink ribbon holder (1), Before using printer document (1), Instruction for use (1), AC power cord (1), CD-ROM with PDF files of multi-language usage instructions (1) |</p>
<table>
<thead>
<tr>
<th>Black &amp; White Printers</th>
<th>UP-D711MD</th>
<th>UP-D898MD</th>
<th>UP-X898MD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System</strong></td>
<td>Analogue</td>
<td>Digital</td>
<td></td>
</tr>
<tr>
<td>Format</td>
<td>A7/A8</td>
<td>A6</td>
<td></td>
</tr>
<tr>
<td>Printing system</td>
<td>Thermal Printing Technology</td>
<td>Direct thermal printing</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>301 dpi</td>
<td>325 dpi</td>
<td></td>
</tr>
<tr>
<td>Gradations</td>
<td>256 levels (8-bits processing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print matrix</td>
<td>2688x996 dots</td>
<td>4096x1280 dots</td>
<td></td>
</tr>
<tr>
<td>Printing time</td>
<td>Approx 5 sec. (High Speed &amp; standard image mode)</td>
<td>High-speed mode: Approx. 1.9 seconds/image (960 x 1,280 dots)</td>
<td>Approx. 1.9 seconds/image (at standard setting)</td>
</tr>
<tr>
<td></td>
<td>Approx 8 sec. (Normal Speed &amp; standard image mode)</td>
<td>Normal speed mode: Approx. 3.3 seconds/image (960 x 1,280 dots)</td>
<td>Normal speed mode: Approx. 3.3 seconds/image (at standard setting)</td>
</tr>
<tr>
<td>Tray capacity</td>
<td>12.5 m (UPP-84HG), 13.5 m (UPP-84S)</td>
<td>20 m (UPP-110HG, UPP-110S), 18 m (UPP-110HG)</td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td>896 x 2688 pixels max</td>
<td>Digital: 4,096 x 1,280 x 8 (bit)</td>
<td>Digital: 4,096 x 1,280 x 8 (bit)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Video: 10 frame memories (640 x 8 bits per frame)</td>
<td>Video: Hi-Speed USB (USB 2.0)</td>
</tr>
<tr>
<td>Inputs/outputs</td>
<td>Hi-Speed USB (USB 2.0)</td>
<td>Digital: Hi-Speed USB (USB 2.0)</td>
<td>Analogue: Video IN/OUT (BNC type) EIA/CCIR composite video signals (automatic detection)</td>
</tr>
<tr>
<td><strong>Measurements</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media Size</td>
<td>Roll width of 84 mm</td>
<td>Roll width of 110mm</td>
<td></td>
</tr>
<tr>
<td>Print size</td>
<td>50.4 mm x 75.7 mm</td>
<td>320 x 100 mm</td>
<td>Digital: 320 x 100 mm</td>
</tr>
<tr>
<td></td>
<td>56.8 mm x 75.7 mm</td>
<td></td>
<td>STD Video PAL 94 x 71 mm (WIDE 1)</td>
</tr>
<tr>
<td></td>
<td>75.7 mm x 75.7 mm</td>
<td></td>
<td>STD Video NTSC 94 x 73 mm (WIDE 1)</td>
</tr>
<tr>
<td></td>
<td>75.7 mm x 101.1 mm</td>
<td>SIDE Video PAL 127 x 96 mm (WIDE 1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>75.7 mm x 227.1 mm</td>
<td>SIDE Video NTSC 124 x 96 mm (WIDE 1)</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>140 x 70 x 125 mm (5 5/8 x 2 7/8 x 5 inches)</td>
<td>154 x 88 x 249mm (6 1/6 x 3 1/2 x 9 1/2 inches)</td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>Approx. 1kg</td>
<td>2.5 kg (5 lb 8 oz)</td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>DC 12V to 24V</td>
<td>AC 100 V to 240 V, 50/60 Hz</td>
<td></td>
</tr>
<tr>
<td>Requirements</td>
<td>6 A to 3 A</td>
<td>1.3A to 0.6A</td>
<td></td>
</tr>
<tr>
<td>Consumption</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating conditions</td>
<td>Temperature</td>
<td>5 °C to 35 °C (41 °F to 95 °F)</td>
<td>5°C to 40°C (41°F to 104°F)</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>20% to 80% (no condensation allowed)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage/Transporting</td>
<td>Temperature</td>
<td>-20 °C to 60 °C (-4 °F to 140 °F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>20% to 80% (no condensation allowed)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Supplied accessories</td>
<td>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)</td>
<td>Thermal head cleaning sheet (1) CD-ROM (1), Before Using this Printer (1) Service Contact List (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thermal head cleaning sheet (1) CD-ROM (1), Before Using this Printer (1) Service Contact List (1)</td>
<td>USB Flash Drive Ex: Cable Print media (UPP-110HG)</td>
</tr>
</tbody>
</table>

**Supplied accessories**
- Thermal head cleaning sheet (4-419-859) (1)
- CD-ROM (including multi-lingual operating instructions, Readme and printer driver) (1)
- Before Using this Printer (1)
- Service Contact List (1)
<table>
<thead>
<tr>
<th>Specifications</th>
<th>UP-D72XR</th>
<th>UP-991AD</th>
<th>UP-971AD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System</strong></td>
<td>Digital</td>
<td>Analogue &amp; Digital</td>
<td></td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>8” x 10” (20 x 25 cm)</td>
<td>A4</td>
<td></td>
</tr>
<tr>
<td><strong>Printing system</strong></td>
<td>Thermal Printing Technology</td>
<td>Direct thermal printing</td>
<td></td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>300 dpi</td>
<td>325 dpi</td>
<td></td>
</tr>
<tr>
<td><strong>Gradations</strong></td>
<td>512 grey levels (9 bit)</td>
<td>8-bit (256 levels) processing</td>
<td></td>
</tr>
<tr>
<td><strong>Print matrix</strong></td>
<td>2743 x 2320 dots</td>
<td>7680 x 2560 dots</td>
<td></td>
</tr>
<tr>
<td><strong>Throughput</strong></td>
<td>Approx. 40 seconds</td>
<td>Approx. 8 sec</td>
<td></td>
</tr>
<tr>
<td><strong>Tray capacity</strong></td>
<td>Paper: 100 sheets / Film: 100 sheets</td>
<td>25 m (UPP-210HD, UPP-210SE), 12.5 m (UP-210BL)</td>
<td></td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>16 MB</td>
<td>Digital: 2816 x 7680 x 8 bits</td>
<td></td>
</tr>
<tr>
<td><strong>Inputs/outputs</strong></td>
<td>USB connector x 1</td>
<td>Digital: Hi-Speed USB (USB 2.0)</td>
<td></td>
</tr>
<tr>
<td><strong>Measurements</strong></td>
<td></td>
<td>Analogue: Video IN/OUT (BNC type)</td>
<td></td>
</tr>
<tr>
<td><strong>Media Size</strong></td>
<td>Sheet of 8x x 10” (20 x 25 cm)</td>
<td>Paper width of 210 mm (8 1/4 inches)</td>
<td></td>
</tr>
<tr>
<td><strong>Print size</strong></td>
<td>232.2 x 196.4mm (9 1/4 x 7 3/4 inches)</td>
<td>Digital: 600 x 200 mm (23 5/8 x 7 7/8 inch) (Max)</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>412 x 210 x 43.1 mm (16 1/4 x 8 3/8 x 17 inches)</td>
<td>Paper width of 210 mm (8 1/4 inches)</td>
<td></td>
</tr>
<tr>
<td><strong>Mass</strong></td>
<td>Approx. 15.5 kg (34 lb 3 oz)</td>
<td>7 kg (15lb 7oz)</td>
<td></td>
</tr>
<tr>
<td><strong>Power Requirements</strong></td>
<td>AC 100 to 240 V, 50/60 Hz</td>
<td>AC 100 V to 240 V, 50/60 Hz</td>
<td></td>
</tr>
<tr>
<td><strong>Consumption</strong></td>
<td>Standby: 12.6 W (actual measurement); Black printing: 190 W (actual measurement); Max: 270 W</td>
<td>2.9 A to 1.2 A</td>
<td></td>
</tr>
<tr>
<td><strong>Operating conditions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>10 °C to 30 °C (50 °F to 86 °F)</td>
<td>5°C to 35°C (41°F to 95°F)</td>
<td></td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>20% to 80% (no condensation allowed)</td>
<td>20% to 80% (no condensation allowed)</td>
<td></td>
</tr>
<tr>
<td><strong>Storage/Transporting conditions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>-20°C to +60°C (-4°F to +140°F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>20% to 80% (no condensation allowed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Supplied accessories</strong></td>
<td>Paper tray (1), Thermal Head Cleaning Kit (1), Cleaning Sheets (2), Tray guide cover (1), Operation guide (1), CD-ROM (operation manual) (1),</td>
<td>Print Media (1), Thermal head cleaning sheet (1), CD-ROM (1) Before Using this Printer (1) Service Contact List (1)</td>
<td></td>
</tr>
</tbody>
</table>
## Diagnostic Film Imagers

<table>
<thead>
<tr>
<th></th>
<th>UP-DF550</th>
<th>UP-DF750</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printing system</td>
<td>Direct Thermal Printing</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>320dpi</td>
<td>604 dpi</td>
</tr>
<tr>
<td>Gradations</td>
<td>12 bit</td>
<td>14 bit processing</td>
</tr>
<tr>
<td>Print matrix</td>
<td>5232 x 4350 dots (for 14 x 17 inch film)</td>
<td>8,256 x 9,888 dots (for 14 x 17 inch film)</td>
</tr>
<tr>
<td>Throughput</td>
<td>Approx. 84 sheets (per hour for 14 x 17 inch film)</td>
<td>Approx. 75 prints (per hour for 14 x 17 inch film)</td>
</tr>
<tr>
<td></td>
<td>Approx. 85 sheets (per hour for 8 x 10 inch film)</td>
<td>Approx. 90 prints (per hour for 8 x 10 inch film)</td>
</tr>
<tr>
<td>Film supply tray</td>
<td>Two trays</td>
<td></td>
</tr>
<tr>
<td>Tray capacity</td>
<td>125 sheets (max.)</td>
<td></td>
</tr>
<tr>
<td>Maximum density</td>
<td>UPT-517BL, UPT-514BL, UPT-512BL, UPT-510BL: 3.2</td>
<td>UPT-517BL, UPT-514BL, UPT-512BL, UPT-510BL: 3.8</td>
</tr>
<tr>
<td>Inputs/outputs</td>
<td>DICOM port x 1 (92-45 Modular jack)</td>
<td></td>
</tr>
<tr>
<td><strong>Measurements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media size</td>
<td>354 x 430mm (14 x 17 inches), 279 x 354mm (11 x 14 inches), 253 x 304mm (10 x 12 inches), 202 x 253mm (8 x 10 inches)</td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>Approx. 63 kg (138 lb 14 oz)</td>
<td>Approx. 67 kg (147 lb 11 oz)</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>AC 100 to 240 V, 50/60 Hz</td>
<td>AC 100-120 V / AC 200-240 V, 50/60 Hz</td>
</tr>
<tr>
<td>Consumption</td>
<td>4.4 to 1.8 A</td>
<td>4.4 to 2.4 A</td>
</tr>
<tr>
<td><strong>Operating conditions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>10 °C to 30 °C (50 °F to 86 °F)</td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>20% to 80% (non-condensing)</td>
<td></td>
</tr>
<tr>
<td><strong>Storage/transporting conditions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>-20 °C to 60 °C (-4 °F to 140 °F)</td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>20% to 80% (non-condensing)</td>
<td></td>
</tr>
</tbody>
</table>