

PMW-10MD

HD Video Camera

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Exmor™ **SXS**

The PMW-10MD Medical-compliant* Full HD Video Camera - Providing Outstanding Image Quality and Workflow Innovation

The demand for high-quality image acquisition in medical applications such as surgery and inspection has been growing rapidly. High-quality images contribute not only to the improvement of surgery and inspection, but also conference and education applications. To accommodate this trend, Sony introduces the PMW-10MD medical-compliant full HD video camera. Sony's expertise and knowledge, accumulated over decades as a world-leading supplier of broadcast equipment, are consolidated in this camera.

The PMW-10MD is compact camera head unit that can be attached easily either to a surgical microscope**, a surgical boom arm***, or to a ceiling and separated camera control unit. The length between the camera head and the signal processor can be extended up to 20 m (62.6 feet).

In the camera control unit, there are two SxS™ memory card slots for recording full HD quality moving images and capturing still images. The SxS memory card provides a number of significant benefits - such as instant random access to recordings, easy editing, and quick copying of footage to IT-based devices - all of which offer tremendous workflow improvements. In addition to SxS memory cards, selected Memory Stick™ media and SDHC memory cards can be used as alternative recording media with an optional media adaptor****.

With its outstanding image quality, extremely long recording time, and a number of advanced features, the PMW-10MD is an ideal medical camera that improves both image quality and operational efficiency.

* EN 60601-1, EN 60601-1-2, IEC 60601-1, IEC 60601-1-2, UL 60601-1, and CSA C22.2 No.601.1

** Requires an optional optical adapter which the microscope manufacturer recommends.

*** The camera should be mounted in a housing to prevent any contamination to the surgical field. Please ask your system integrator for details.

**** In addition to an optional media adaptor, an early version of the PMW-10MD also requires a firmware upgrade to use SxS-1 memory cards..

Features

Three 1/2-inch Type "Exmor™" Full HD CMOS Sensors

The PMW-10MD is equipped with three 1/2-inch type "Exmor" Full HD CMOS sensors, each with an effective pixel count of 1920 (H) x 1080 (V), delivering excellent picture performance with full HD resolution in 1080i mode.

This "Exmor" image sensor, together with Sony's accumulated sensor technologies, allows the PMW-10MD to provide an excellent sensitivity of F10, a remarkable signal-to-noise ratio of 54 dB, a high horizontal resolution of 1000 TV lines, and a wide dynamic range of 450%.

Small and Lightweight Camera Head Unit with C-Mount

The lens mount part of the camera head unit is a C-mount type, which is commonly used for microscopes in medical applications.

The dimensions (W x H x D) of the camera head unit are 35 x 45 x 50 mm (1 7/16 x 1 13/16 x 2 inches), and it weighs only 90 g (3.2 oz). Thanks to this compact size and light weight, the camera head can be installed easily in space-constrained locations.



Camera Head Unit can be Installed Remotely up to 20 m From the Camera Control Unit

By connecting the camera head unit and the camera control unit with the optional camera cable, which extends up to 20 m (62.6 feet), you can use the camera in many versatile ways.

Various Shooting Modes, Specialized for Medical Use

A rich variety of features for shooting are incorporated into the PMW-10MD such as image reverse mode convenient for microsurgery, freeze function synchronized with flash light of retinal camera, and spot photometry mode provided for the AE (Auto Exposure) on slit lamp.

Additionally, Picture Profile™ feature allows camera operators to easily call up customized picture-tonal settings to suit particular shooting conditions, rather than having to readjust the camera each time – giving users greater operational efficiency. Up to six different settings such as the parameters of shutter, gain, detail, knee, and gamma can be saved in the memory. These settings can be recalled from the switches on the front panel.

Variety of Recording Media

The PMW-10MD provides two SxS memory card slots to record moving images and to capture still images. The SxS memory card is an ultra-compact nonlinear medium that uses flash memory with a number of distinguishing features. By virtue of recording onto flash memory cards, the PMW-10MD makes each new recording on an empty area of the card, so you do not have to worry about accidentally overwriting existing footage.

In addition to the conventional SxS PRO memory card, there is now a new member of the SxS memory card family, the SxS-1*. It maintains the superb usability and high-speed transfer rate of SxS PRO memory cards, at an affordable price.

Using the optional MEAD-MS01 or MEAD-SD01 Media Adaptor, selected Memory Sticks or SDHC memory cards** can be used as alternative recording media.



An early version of the PMW-10MD requires a firmware upgrade to use SxS-1 memory cards, as well as an optional media adaptor.

The PMW-10MD offers a choice of bit rates depending on the desired picture quality and recording time. HQ mode supports 1920 x 1080 resolution at 35 Mbps, and SP mode supports 1440 x 1080 resolution at 25 Mbps, which

provides compatibility with HDV 1080i products.

This highly efficient MPEG-2 Long-GOP codec enables users to capture stunning-quality HD images with a long recording time of 140 minutes on a single 32-GB memory card (in SP mode).

Equipped with two card slots, the PMW-10MD achieves up to 280 minutes of recording with two 32-GB cards in SP mode.

Furthermore, because cards can be hot-swapped – for example, the first memory card can be removed and replaced while recording onto the second memory card – even longer recording times can be achieved. By continually exchanging recorded media with blank media, very lengthy surgery can be recorded sequentially without any breaks for media exchange.

* SxS-1 memory cards support fewer re-writes than SxS PRO memory cards. Notification is given when an SxS-1 memory card approaches end of life.

** Please contact your local Sony office for the latest compatibility information. The salvage function is not supported with Memory Sticks or SDHC memory cards.

Effective Secondary Use of Footage

XDCAM EX Clip Browsing Software, supplied with the PMW-10MD, is a simple-to-use PC software application that allows users to easily browse and copy video clips to other devices such as hard disk drives. The footage can be edited by non-linear editing software that is compatible with the XDCAM EX format. Clip Browser also serves as a bridge tool between different formats - converting the clips to other file formats such as the DV format for export to existing DV-based non-linear editing systems. The Clip Browser software is available for both Windows-based PCs and Macintosh computers.



A Wide Variety of Interfaces

The PMW-10MD is equipped with a wide variety of interfaces including two HD-SDI outputs, a DVI-D output that supports 1080/60P and 1080/50P, an analog component output, analog composite output, and S-Video output. It also has a microphone input for audio recording.

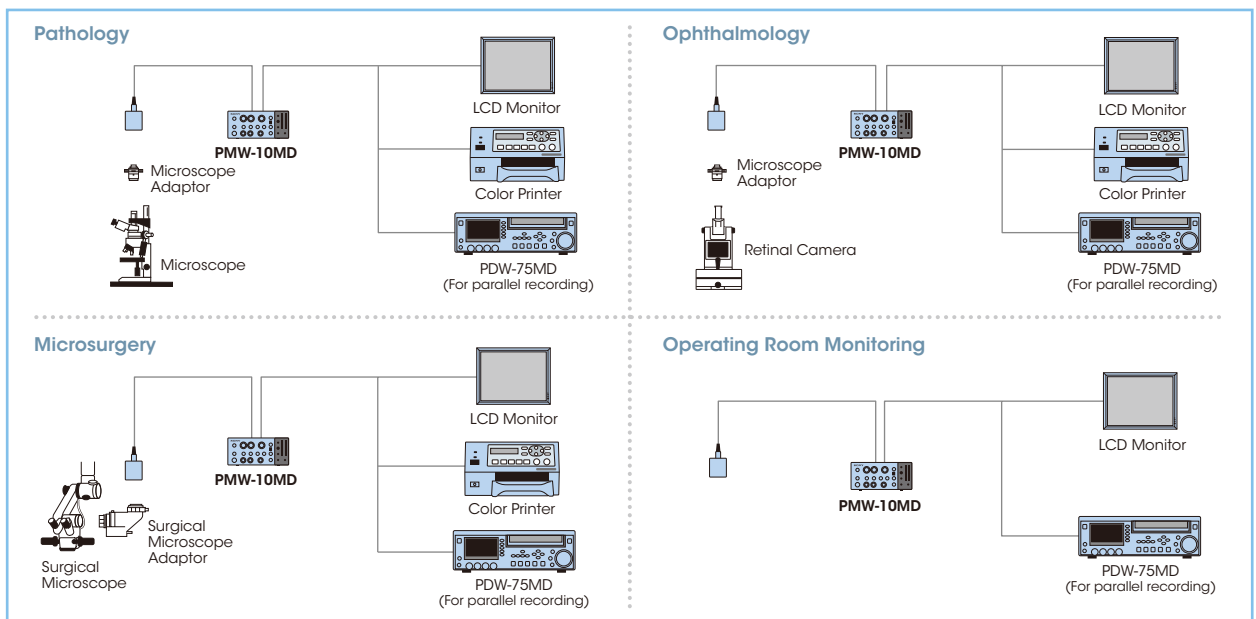
A 9-pin RS-232C connector for remote control and a mini-stereo jack for a footswitch are provided.



Compliance with Medical Safety Standards

EN 60601-1, EN 60601-1-2, IEC 60601-1, IEC 60601-1-2, UL 60601-1, and CSA C22.2 No.601.1

System Configuration



Specifications

PMW-10MD	
General	
Mass	CHU : Approx. 90 g (3.2 oz) CCU : Approx. 2.8 kg (6 lb 3 oz)
Dimensions	CHU : 35 x 45 x 50mm (1 7/16 x 1 13/16 x 2 inches) without projection CCU : 200 x 88 x 240 mm (7 7/8 x 3 1/2 x 9 1/2 inches) without projection
Power Requirements	AC 100 to 240 V, 50/60 Hz
Power Consumption	0.6-0.36 A (Max.30 W)
Operational Temperature	0°C to 40°C (32°F to 104°F)
Storage Temperature	-20°C to +60°C (-4°F to +140°F)
Camera Head Unit	
Image Device	3-chip 1/2-inch type Exmor CMOS
Effective Picture Elements	1920 (H) x 1080 (V)
Lens Mount	C-mount
Optical system	F2.2 prism system
Sensitivity	F10 typical (in 1920 x 1080/59.94i mode)
Minimum Illumination	0.14 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)
Horizontal Resolution	1000TV lines (in 1920 x 1080/59.94i ;through HD-SDI)
White Balance	PRESET/MEMORY/ATW
AE	ON/OFF
AE Area	Multi/Large/Medium/Spot/Slit Selectable
Connector	
Camera output	20-pin (x1)
Camera Control Unit	
Picture Profile	PictureProfile 1-6
Output Signals	HD-SDI, Composite, S-Video (Y/C), Y,Pb,Pr, DVI-D
DVI-D output	1080i/1080P
Color Bars	Multifomat/75%/100%/Off
Downconvert Mode	Squeeze/Letterbox/EdgeCrop
Flash Trigger output	CMOS/Open-Collector
Serial Data	RS-232C
Connectors	
Camera input	36-pin (x1)
MIC input	Stereo mini-jack (x1)
Composite output	BNC (x1)
S-Video output	mini DIN 4-pin (x1)
Component output	D-Sub 15-pin (x 1)
DVI-D output	DVI connector 19-pin (x1)
HD SDI output	BNC (x 2)
EXT SYNC input	BNC (x1)
FS,TRIG IO	Stereo mini-jack (x1)
Remote	D-sub 9-pin (x1)
Freeze function	OFF/ON
Recording Media	SxS PRO™ Memory Card, SxS-1 Memory Card, Memory Stick*, SDHC Memory Card*
Recording Format (Video)	HQ mode 35Mbps (VBR) MPEG-2 MP@HL - 1920 x 1080 / 59.94i, 50i SP mode 25Mbps (CBR) MPEG-2 MP@H-14 - 1440 x 1080 / 59.94i, 50i
Recording Format (Audio)	LPCM (16 bits, 48 kHz, 2Ch)
Recording Capacity	HQ mode** Approx. 100 min. with SBP-32 (32 GB) memory card Approx. 50 min. with SBP-16 (16 GB) memory card SP mode Approx. 140 min. with SBP-32 (32 GB) memory card Approx. 70 min. with SBP-16 (16 GB) memory card

* Please contact your local Sony office for the latest compatibility information.

** When recording in HQ (35 Mbps) mode, the recording time may differ from the above specified figure, depending on the actual bit rate that is adopted during VBR encoding.

Optional Accessories



CCMC-T20/15/10/05
Camera Cables



FS-24
Foot Switch



LMD-2450MD/2451MD
LCD Monitor



LMD-3250MD
LCD Monitor



PDW-75MD
XDCAM HD Medical Video Recorder

General-purpose Optional Accessories (No medical products)



SBP-32/16
SxS Pro
Memory Cards



SBS-32G1
SxS-1
Memory Card



**MEAD-MS01/
SD01**
Media Adaptor



PMW-EX30
XDCAM EX Recording Deck



SBAC-US10
SxS Memory Card
USB Reader/Writer

Optional Accessory from Other Manufacturer



Kowa, LMZ8556-HD3
3 Sensor HD Zoom Lens

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