

# SONY



## MCC-1000MD

HD Video Camera

**Exmor** **R**  
CMOS Sensor

Full HD  
1080

HDR

The MCC-1000MD two-piece medical grade camera features latest-generation image sensor technology which offers better low-light sensitivity than traditional equivalent-sized image sensors.

Sony's expertise and knowledge, accumulated over decades as a world-leading supplier of broadcast equipment, are consolidated in this camera.

The camera head is equipped with 3 HD CMOS 1/2.8 inch image sensors with an effective pixel count of approximately 2,070,000 pixels (1920 x 1080). It features latest-generation image sensor technology for better low-light sensitivity.

Together with Sony's medical-grade recorders and monitors, the MCC-1000MD is an ideal solution for capturing and recording microsurgery procedures.\*

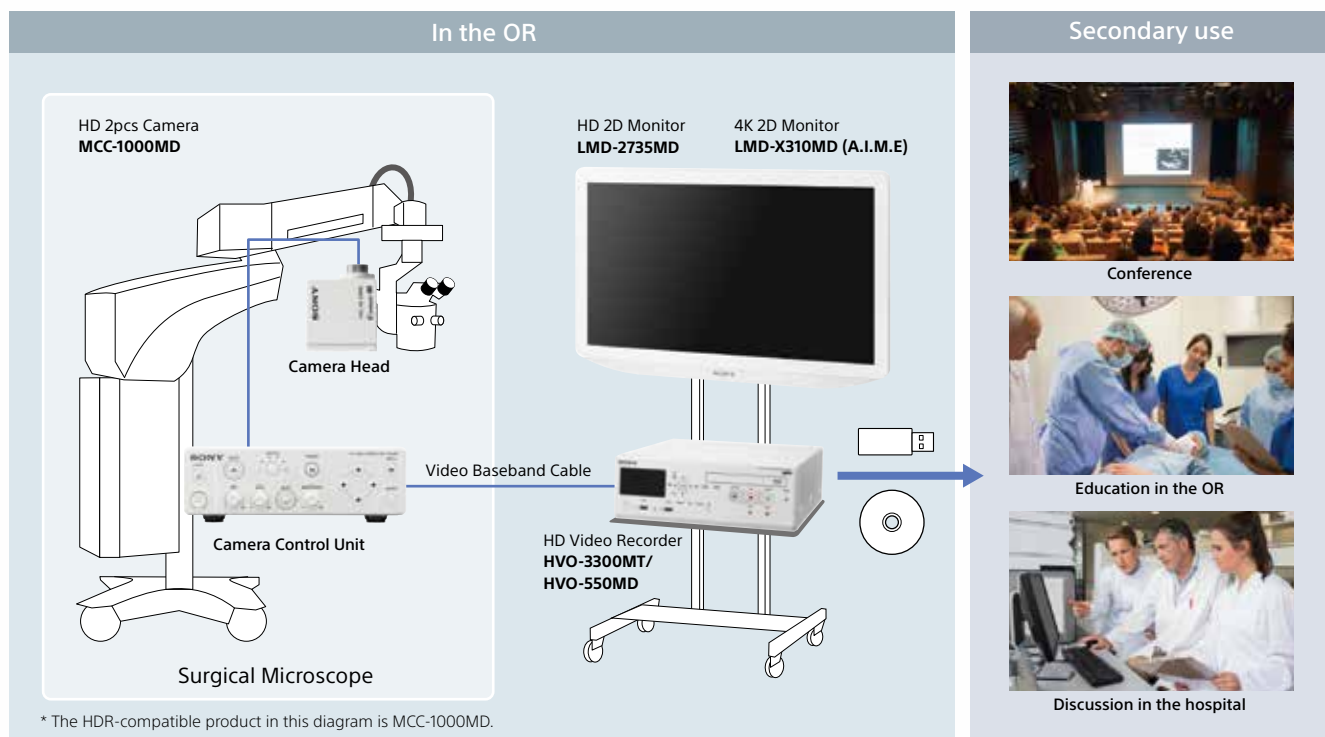
\*The MCC-1000MD acquires images which are intended for use with secondary view and can not be used for surgical and diagnostic purposes.



## Application

The MCC-1000MD is suitable for use primarily with medical microscope procedures including neurology and ophthalmology in hospital operating rooms, surgical centers, hospital examination rooms and similar medical environments. Its compact and lightweight design allows the camera's C-mount head to be easily mounted on most existing surgical microscopes. Users can deploy two of the MCC-1000MD cameras to achieve 3D shooting capability.

Captured live surgical video images from MCC-1000MD can be displayed on a surgical monitor inside the OR for OR staff or displayed outside the OR for wider educational use. In addition, by capturing content from the camera on a recorder, users can comply with the increasing need to maintain surgical records. High-quality images contribute not only to the improvement of surgery and inspection, but also to conference and education applications.

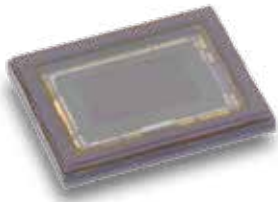


## Capture Minute Surgical Details

Designed to deliver a high level of detail in microsurgery applications, the MCC-1000MD camera head combines three 1/2.8-inch-type Exmor R™ CMOS sensors which can record up to 2.07 million pixels (1920 x 1080). With Sony's Exmor R CMOS sensor and image processing technologies, the MCC-1000MD provides sensitivity of F20, a signal-to-noise ratio of 63 dB, and a horizontal resolution of 1000 TV lines or more.

The MCC-1000MD is also capable of capturing Full HD images with 1,080 effective scanning lines even in progressive format, allowing you to capture details and movement in videos with greater clarity than in interlaced format.

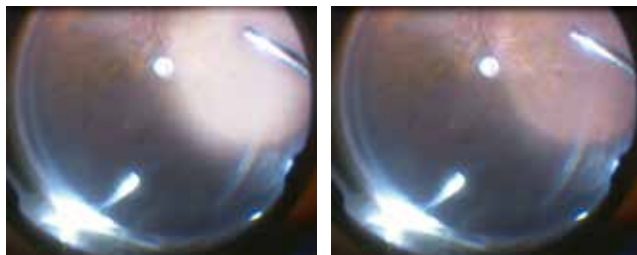
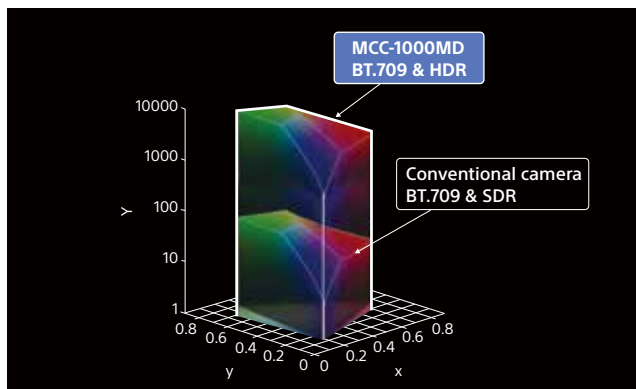
Simultaneous video outputs from two MCC-1000MD units can be synchronized, allowing capture of HD 3D stereoscopic video images. These can be recorded by the Sony HVO-3300MT Video Recorder or viewed on Sony's 3D surgical monitors such as the LMD-X550MT.



**Exmor R**  
CMOS Sensor

## High Dynamic Range (HDR) mode

The MCC-1000MD supports HLG and 2.4 wide gamma\* in HDR (High Dynamic Range) mode, with a wider range of brightness levels to capture surgical images with even greater contrast and realism. Moreover, since HDR technology covers wider brightness and also rich colors, it is easier to reproduce truer instances of color - within the gradation. With HDR mode, objects with surfaces that are difficult to reproduce - are visually improved, such as wetness, dark shadows, or glossiness.



SDR

HDR

\* Simulated images

\* 2.4 wide gamma is a gamma curve that can suppress blown-out highlights in high-luminance areas.

## High Sensitivity Designed for Near Darkness

A high sensitivity of F20 means the MCC-1000MD can capture remarkably clear video even in near darkness, where even in near darkness due to poor/uneven lighting conditions. This level of sensitivity allows the camera to capture more natural color and suppresses noise caused by higher gain. The camera can also capture and reproduce very brightly lit areas at standard exposure level.

## Picture Profile Function

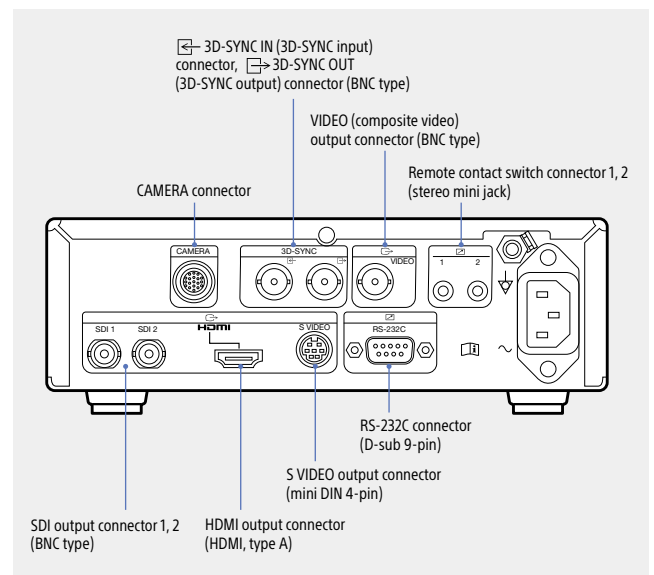
Picture profile is a menu that adjusts and changes the parameters to determine the characteristics of the image. The MCC-1000MD has six pre-installed picture profiles which match various shooting conditions in ophthalmic surgery and Fluorescein observation. Simply select the picture profile to shoot various types of surgery with optimum picture quality easily and immediately.

## Useful Camera Functions

Other image adjustment features include Auto Exposure, Knee, Digital Zoom, Picture Profile, Picture Flip, and GenLock. The picture flip function can turn the camera picture horizontally, vertically, or both horizontally and vertically according to the microscope.

## Various Outputs for Flexible Connectivity

The MCC-1000MD has enough output flexibility to fit into a range of medical environments, with HDMI, SDI (3G-SDI), S-video and Composite video outputs. This makes it easy to integrate the camera seamlessly into your current set up - be it SD or HD while ensuring you're future-proofed for migration to any other workflow. All of the camera's outputs are active simultaneously, so it can be used with a second or even third monitor in the operating room.



## 3D Shooting Capability

Users can deploy two of the MCC-1000MD cameras to achieve a 3D shooting capability. When connecting two units together 3D images can be shot by synchronizing video frames of each camera.

## Fluorescein Mode

The MCC-1000MD is equipped with a fluorescein mode that produces optimal image quality when shooting objects that are fluorescing with fluorescein. It adjusts the saturation and hue for only the color fluorescence due to the excitation light.

## Convenient Foot Switch Operation

The MCC-1000MD can be connected to two foot switches, which allow hands free control over functions such as switching the picture profile and pausing the image on screen.

## Specifications

Camera Head	
Image Device	1/2.8 type "Exmor R" CMOS image sensor, RGB 3CMOS type
Effective Pixels	1920 (H) x 1080 (V)
Lens Mount	C-mount
Sensitivity	F13 (Typical) (At 1080/59.94i, 89.9% reflection, 2000 lx) F20 (Typical) (At 1080/59.94i, 89.9% reflection, 2000 lx, "High Sensitivity" is "ON")
Picture S/N	63 dB (Y) (Typical)
Horizontal Resolution	1000 TV lines or more
Gain	0 dB to 30 dB
Shutter Speed	1/60 to 1/10000
Slow Shutter	2 to 8 Frames
Camera Cable Connector	20-pin, round
SDI Video Format	1080/60i 1080/60p 1080/50i 1080/50p
Camera Control Unit	
Picture Profile	Yes (Six settings)
Picture Flip	Yes
Freeze Function	Yes (capturing a still image)
Color Bar	Off/Multi/EBU 75%/EBU 100%/Test Saw
Camera Synchronization for 3D-shooting	Yes
AC Power Operation	Yes
Connectors	
Input Connectors	Remote contact switch connectors 1, 2 (Stereo mini jack)
Output Connectors	VIDEO OUT (x1) (BNC) S VIDEO OUT (x1) (4-pin mini DIN connector)

## Compatible Optional Camera Adapter

To attach the MCC-1000MD to a surgical microscope, a compatible camera adapter is recommended.

The optional CCMA-2DAR Camera Adapter enables acquisition and recording of 2D video images during procedures such as brain surgery and ophthalmic surgery. It is compatible with widely used surgical microscopes with excellent imaging performance and setup flexibility due to a compact body.

This adapter can also be used with compatible 4K video cameras, and thanks to its capabilities, can maximize the performance of the MCC-1000MD with high resolution and sensitivity.

Output Connectors	HDMI OUT (x1) (HDMI connector) HD-SDI OUT (x2) (BNC, HD/3G)
Input/Output Connectors	CAMERA (x1) (20-pin, round) RS-232C (x1) (D-sub 9-pin) 3D-SYNC IN, OUT (BNC)
Other Connector	Equipotential ground connector (x1)
General	
Power Requirements	100 V to 240 V AC, 50/60Hz
Input Current	0.40 A - 0.25 A
Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	20% to 80% (no condensation allowed)
Storage and Transport Temperature	-20°C to +60°C (-4°F to +140°F)
Storage and Transport Humidity	20% to 90% (no condensation allowed)
Mass (Camera Head)	approx. 60 g (approx. 2.1 oz)
Mass (Camera Control Unit)	approx. 1.9 kg (approx. 4 lb. 3 oz)
Dimensions (Camera Head) (WHD, excluding longest protrusions) *1	approx. 34 x 39 x 43 mm (approx. 1 3/8 x 1 9/16 x 1 3/4 in.)
Dimensions (Camera Control Unit) (excluding longest protrusions)	approx. 200 x 62 x 264 mm (approx. 7 7/8 x 2 1/2 x 10 1/2 in.)
Supplied Items	Lens mount cap (x1) Before Using This Unit (x1) CD-ROM (Instruction for Use in PDF format (x1) Warranty Booklet (x1) Service Contact List (x1)

\*1 The values for dimensions are approximate.

This product is distributed to the US and EU as a medical device and satisfies product safety standards (e.g. IEC 60601-1). For more details, please contact your nearest Sony sales office or an authorized dealer.

## Optional Accessories



**CCMA-2DAR**  
2D Camera Adapter



**CCMC-SA06/SA10/SA15**  
Camera Cables (Standard cable  
6m/10m/15m)



**CCMC-EA05**  
Camera Cable (Extension cable 5m)



**FS-24**  
Foot Switch

\* The FS-24 has an Ingress Protection rating of IPX3. Therefore, do not operate in environments exposed to splashing liquids (e.g., surgical operating rooms). For safety, use a device with a rating of IPX6 or higher when operating in such environments.

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