

# SONY



MCC-S40MD shown is mounted on triaxial camera platform, sold separately.

## MCC-S40MD

### 4K and HD Surgical Field Camera

Capture in 4K/HD

Equipped with a large and high resolution 1.0-inch Exmor R<sup>®</sup> CMOS sensor ideal for 4K resolution, delivering high-resolution recordings of surgeries.

20x zoom\*

Employs a large-aperture 4K-quality lens. The additional use of an aspherical lens allows every part of an image to be captured without distortion.

High-resolution image quality

Sony's original advanced BIONZ X image Processing Engine delivers high-quality images and natural textures with low noise.

Optimal Design

It can also be mounted to boom mounting arms, and allows for external remote operation. The housing also employs a streamlined form that is easy to clean.

\* With the QFHD (4K) settings, attain 20x zoom from 12x optical zoom plus 1.67x clear image zoom.

**4K**

**Exmor R**

**HDMI**

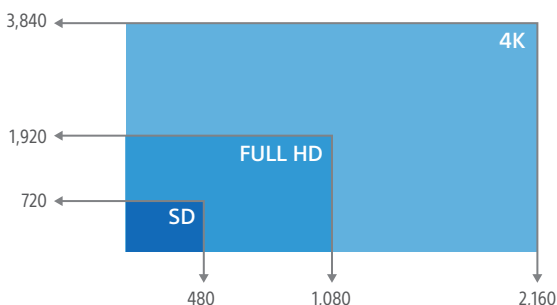
Capturing high-resolution video from surgical procedures is an increasing requirement in today's medical environments - from student teaching and academic research to maintaining accurate records for legal and compliance purposes. In response to these demands, Sony is proud to introduce a new 4K video camera, the MCC-S40MD, which is designed for use in operating rooms.\*

The MCC-S40MD adapts the 4K format and incorporates the large, high-resolution 1.0-inch Exmor R<sup>®</sup> CMOS sensor and an advanced aspherical lens. This fantastic combination allows you to capture exceptional 4K images of surgical procedures, assuring high levels of detail and very low image noise. Moreover, the high-quality zoom lens offers a detailed close-up view of intricate surgical procedures. The MCC-S40MD is an ideal 4K video camera for operating rooms.



### Crisply-Detailed 4K Images

The MCC-S40MD offers surgeons and clinical staff 4K images with greater detail, contrast than HD imaging. Boasting four times the resolution of Full HD, it captures finely detailed 4K video images with an accurate view of each image.



### Advanced BIONZ X Image Processing Engine to Faithfully Reproduce Texture and Detail

Equipped with a new-generation image processing engine, 'BIONZ X', this video camera offers further improvements in image processing. This engine enables faithful reproduction of texture and detail, and simultaneously realizes low image noise. Since 3D noise reduction is performed in the time axis direction, it removes noise more thoroughly than 2D noise reduction.



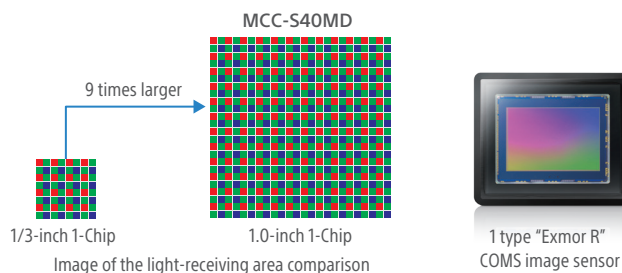
**BIONZ X**

### Large, High Resolution 1.0-inch Exmor R<sup>®</sup> CMOS Sensor

The size of an image sensor is one of the critical elements for image quality. If an image sensor is bigger, its effective area would also be bigger even if it had same total number of pixels as a smaller sensor. A large sensor allows you to capture crisp images even in low light.

The MCC-S40MD is the first Sony medical camera to incorporate the 1.0-inch Exmor R<sup>®</sup> CMOS sensor. Since the large 1.0-inch sensor has a light-receiving area nine times larger than that of a 1/3-inch single image sensor, it captures far more light than smaller sensors in conventional cameras, assuring high levels of detail and very low image noise.

**Exmor R**  
CMOS Sensor

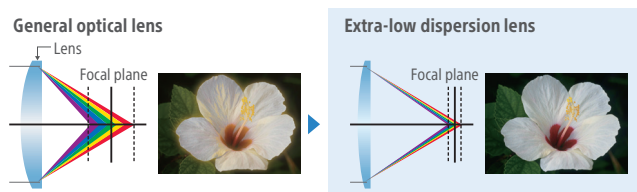


## Large-Aperture Aspherical Lens For Capturing 4K Crisp Images with Less Color Blur

The MCC-S40MD is equipped with a large-aperture 4K-quality lens that is optimized for precision surgical imaging applications. Moreover, Sony's unique thin-aspherical lens, the 'AA lens' (advanced aspherical), achieves a good balance between high-delineation performance surrounding part of the lens and a significantly thinner lens form factor. The lens has a multi-layer coating to reduce unnecessary reflected light causing effects such as ghost and flare.

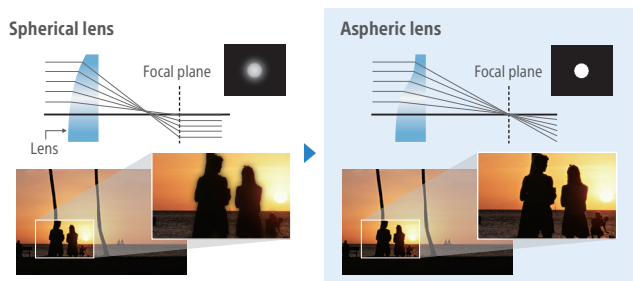
### • Color bleeding reduction

By adopting an extra-low dispersion lens, chromatic aberration caused by the inherent characteristic of the glass is greatly reduced. This produces images with less color blur.



### • High contrast

The aspherical lens reduces spherical aberration, a loss of definition that occurs when light passes near the center of the lens and the vicinity of its periphery does not focus on one point. This realizes sharp and crisp image reproduction.



## High Quality Zoom Lens

The 20x lossless zoom (12x optical and 1.67x clear image zoom) enables powerful close-ups of small surgical details.

## Clearer, Vibration-Free Images

Active image stabilization (optical/electronic hybrid) corrects for the effects of mechanical vibration on a boom mounting arm, ensuring clear and stable images even at high zoom settings.

## ND Filter and Auto Exposure Modes

The camera's built-in Neutral Density (ND) filter and range of Auto Exposure modes make the MCC-S40MD ideal for capturing high-quality video footage under a high-brightness shadowless lamp in the Operating Room.

## IR Cut Filter

The integrated IR (InfraRed) Cut Filter can be locked off to allow IR shooting.

## Optimized Design for Boom Mounting

The camera's sleek, cylindrical all-in-one design is optimized for boom mounting in surgical environments. Cables are accessed via a flush rear cover: connectors are grouped around the central axis, allowing the camera to be rotated freely for convenient installation. The casing features no exposed screws, minimizing the risk of loose parts falling during surgery.

## Wipe-clean Design for Improved OR Hygiene

The camera's smooth cylindrical exterior casing is easy to wipe clean and resists sterilization chemicals.

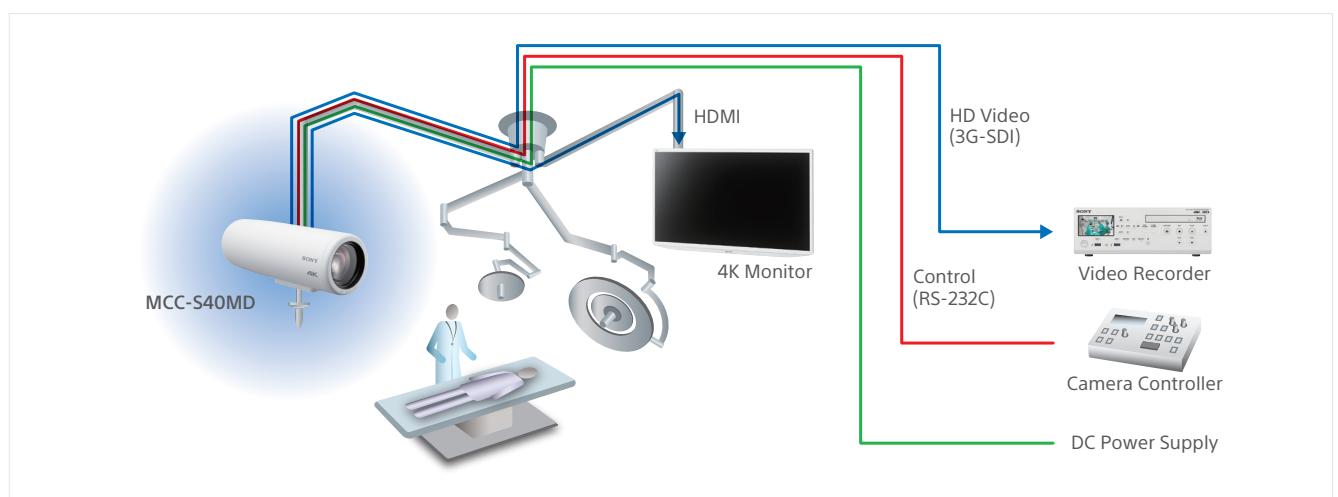
## Remote Control

The MCC-S40MD can be controlled via VISCA protocols (RS-232C) from a PC and/or dedicated OR controller. By using with a compatible swivel mount, camera orientation (pan/tilt/roll) and zoom can be commanded.

## Simultaneous HDMI and 3G-SDI Output

The MCC-S40MD can simultaneously output 4K video via HDMI, and Full HD video via 3G-SDI. This allows convenient connection to a 4K monitor, while simultaneously recording video via SDI to a Full HD recorder.

## System Configuration



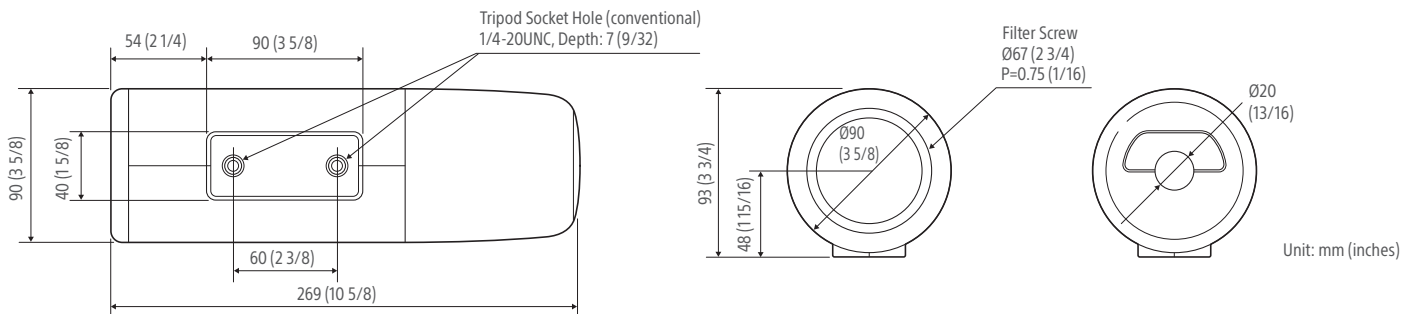
# Specifications

System	
Product Style	1-Piece Completed Camera With Lens
Image Device	1 type "Exmor R" CMOS image sensor, single chip type) Effective Pixels : 20.9 million(14.2 million)
Zoom Ratio	HD/SD: 24x (12x optical,2.0x digital) 4K: 20x (12x optical,1.67x clear image zoom) 144x digital zoom (12x optical,12x electronic zoom)
Focal Length	f = 9.3 mm to 111.6 mm
F-number	F2.8 to F4.5 mm
ND Filter	Integrated (In and Out) ND level: 0, 1/4, 1/16, 1/64
IR Cut Filter	Integrated (In and Out, Removable)
Image Stabilization	Optical and Electrical (Hybrid)
Minimum Object Distance	80 mm (w) to 1000 mm (t)
Minimum illumination	0.2 lux
Shutter Speed	1/6 to 1/10000
Horizontal Resolution	1800 TV lines
Shutter System	Auto / Manual
Sensitivity	F6.2 (Y) (Typical)
Exposure Control	Auto / Manual
Iris Control	Auto / Manual
Gain	0 to 39 dB
White Balance	Auto / Manual
Picture S/N	61 dB (Y) (Typical)
Contrast Emphasis	Integrated
Digital Noise Reduction	Integrated (2D /3D)
Color Bar	Integrated
Image Lotation	Horizontal, Vertical

Image Reversal	Horizontal
Picture Profile	6
	Interface: RS-232C, Protocol: VISCA
Connectors	
Output Connectors	HDMI 1.4b (TypeA) (x1) (4K, HD, SD) 3G-SDI (x1) (SMPTE 292/424 Compatible)
Input/Output Connectors	RS-232C (x1) (D-sub 9-pin) HR10G-7R-4P (73) (x1)
General	
Power Requirements	DC 9 to 24 V
Input Current	1 A (9 V) to 0.4 A (24 V)
Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	20% to 80% (without condensation)
Operating Pressure	700 hPa to 1060 hPa
Storage/Transport Temperature	-20°C to 60°C (-4°F to 140°F)
Storage/Transport Humidity	20% to 90% (without condensation)
Storage/Transport Pressure	700 hPa to 1060 hPa
Mass (Camera Head)	Approx. 1.2 kg (2 lb 10 oz)
Dimensions*1 (Camera Head) (WHD, excluding longest protrusions)	Approx. 90 x 93 x 269 mm (Approx. 3 5/8 x 3 3/4 x 10 5/8 in.) *1 The values for dimensions are approximate.
Supplied Items	Fall Prevention Wire (1) Wire Fixing Screw M4 x8 (1) Instructions for Use (x1) Warranty Card (x1)

\* Please note that this product does not conform to the definition of a medical device.  
\* The mounted features for these differ depending on the controller you use.

## Dimensions



## Optional accessories



**3DH-S100**  
Triaxial pan head  
(Orion Giken Co.,Ltd.)



**RCU-S3000**  
PTR Controller  
(Orion Giken Co.,Ltd.)

\*To control cameras, lenses and triaxial pan heads



**RCU-S2000**  
Control Unit  
(Orion Giken Co.,Ltd.)

\*To control cameras and lenses.

\* Controlling MCC-S40MD, control tools are required separately.

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