



CHANGING

As the number of microscopy applications increases, the method of capturing images has changed from using NTSC/PAL-based video signals to the simplicity and convenience of PC-based image data.

High image resolution and PC-based simplicity

A flexible interface with PCs along with superior picture quality are now essential to microscopy, and the Sony DXC-S500 Digital Camera System meets these demands by providing both.

Comprising two separate units, the DXC-S500 includes a compact and lightweight camera head unit (CHU) and a camera control unit (CCU) with an integrated 3.5 type LCD monitor. The 2/3 type five mega-pixel CCD incorporated in the CHU provides ultra-high-resolution images and precise colour reproduction. The LCD on the CCU enables you to monitor live images and offers user-friendly operation.

The added advantage of the DXC-S500 is its flexible interface with PCs. An IEEE 1394 interface on the CCU allows uncompressed image data transfer to a PC. A built-in PCMCIA card slot enables you to store images on various media, such as "Memory Stick™", CompactFlash™, SmartMedia™ and removable hard drives. What's more, a hot plug function allows the camera to be effortlessly connected to a PC, while the supplied TWAIN driver supports application software: Photoshop® and Image-Pro® Plus.

With excellent picture quality, sophisticated features and PC-friendly operation, the Sony DXC-S500 is the ideal system to support your medical and scientific microscopy applications.

Features

Superb Picture Quality

By utilising several core technologies, the DXC-S500 offers superb picture quality. With a five mega-pixel 2/3 type IT CCD, the camera can capture ultra-high-resolution and high-precision images. The maximum number of pixels used for image capture is 2560 (H) x 1920 (V), providing superior resolution. The use of RGB primary colour mosaic filters contributes to precise colour reproduction, while a cooling device cools the CCD chip to 5 °C (at 0 to 35 °C ambient temperature) to achieve excellent signal-to-noise ratio.

Long-Term Exposure Shooting

Built-in frame memory provides a remarkable enhancement in sensitivity by allowing the charge accumulation period of the CCD (typically 1/60 second) to be extended to a maximum of 60 seconds.

Analogue Video Output

Analogue composite output (BNC) and Y/C output (S-Video) terminals allow high-frame-rate live monitoring. The output signal supports VGA (640 x 480) size at a 30 fps (NTSC)/25 fps (PAL) frame rate, so you can easily focus the microscope by viewing the image on a video monitor.

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IEEE 1394 Interface



PC Card Slot

PC-Friendly Interfaces

- IEEE 1394 Interface

The IEEE 1394 (400 Mb/s) interface located on the CCU enables direct interface with various PCs or IEEE 1394 boards*. The interface supports a hot plug function for quick access to the camera's image without restarting the PC. The pictures are transmitted in uncompressed IEEE 1394 format for highest accuracy.

* When Microsoft® Windows® is used, IEEE 1394 boards conforming to OHCI are supported. For Macintosh® genuine FireWire® boards are supported.

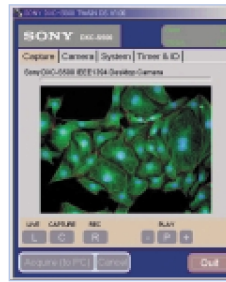
- TWAIN Driver

The supplied TWAIN driver enables the user to control the camera through Photoshop® and Image-Pro® Plus. You can use this driver to monitor live images on the PC application window, and to capture images with a simple mouse click.

- PC Card Slot

A PC card slot is located on the front of the CCU for storing images directly onto various media. This slot supports PCMCIA ATA Type II*, enabling data storage in a "Memory Stick", CompactFlash, SmartMedia and removable hard disk drive.

* PC cards supporting 3.3 V power supply only are not compatible.



Fluorescence Image Capturing



TWAIN Driver

Fluorescence Image Capturing

The DXC-S500 provides a fluorescent mode (FL MODE), which facilitates focus and capture adjustments for dark objects at the touch of a button. When activated, it automatically boosts the camera gain level and lowers the frame rate so the dark object can be clearly seen. When focus adjustments have been made, pressing the "CAPTURE" button resets the gain and calculates the appropriate shutter speed (Long-Term Exposure) so a clear image can be obtained. And, thanks to the CCD cooling device, the dark noise that is typically seen in Long-Term Exposure mode is dramatically reduced.

Selectable Image Size and Recording Format

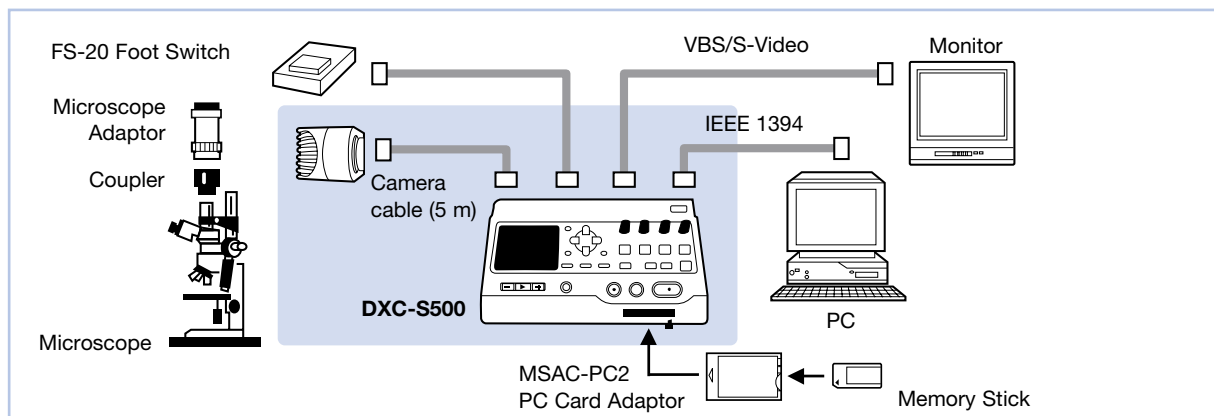
Three recording image sizes are available for selection, and images of each size can be stored in TIFF (uncompressed) or JPEG (compressed, three modes) format.

Selectable Image Size and Recording Format

Image recording size (H x V)	TIFF (uncompressed)	JPEG (compressed)		
		High	Mid	Low
FULL: 2560 x 1920	15 MB	5 MB	2.5 MB	1.3 MB
SXGA: 1280 x 960	3.8 MB	1.3 MB	630 KB	310 KB
VGA: 640 x 480	940 KB	310 KB	160 KB	78 KB

The above image data sizes are approximations.

System Example



User-Friendly Operation

A 3.5 type 200,000-pixel LPS TFT LCD monitor on the CCU provides sophisticated operability, including image capture, index picture display and menu setting. You can also monitor the live image with the built-in LCD monitor.



Index Picture



System Requirements for the Supplied TWAIN Driver

For Microsoft Windows users

Hardware

IBM PC/AT[®]-compatible machine

CPU:	Intel [®] Pentium [®] III or faster (Pentium III 400 MHz or faster recommended)
Memory capacity:	128 MB RAM minimum (more than 256 MB RAM recommended)
Cache memory:	256 KB minimum
Hard disk:	50 MB memory or greater required
PCI slot:	One free PCI slot required (PCI 2.1-compliant)
Video board:	24-bit full-colour video board supporting DirectX V 8.0 or later required

Software

Supporting OS:	Windows 98SE/ME/2000 Professional SP2/XP Home/XP Professional
DirectX:	DirectX Runtime Module V8.0 or later
Application software supporting TWAIN driver:	Photoshop V 5.0 or later, Image-Pro Plus V 4.5 or later

For Macintosh users

Hardware

Apple Computer, Inc. genuine personal computer

CPU:	PowerPC G3/G4, PowerMac, PowerBook, iMac, iBook series
Memory capacity:	128 MB RAM minimum (more than 256 MB RAM recommended)
Hard disk:	50 MB memory or greater required
FireWire port:	One free built-in FireWire port required

Software

Supporting OS:	Mac OS 8.6/9.0/9.1/9.2
QuickTime:	QuickTime V 4.0 or later
Application software supporting TWAIN driver:	Photoshop V 5.0 or later

Other Convenient Features

• AE Function

The AE (Auto Exposure) function automatically detects the lighting conditions or brightness of the object and adjusts the shutter speed and gain for proper exposure. The DXC-S500 is equipped with a number of AE modes that offer superb image quality.

• C-Mount System

To provide an extensive choice of lenses, the DXC-S500 uses the 2/3 type C-mount system for flexible and easy lens mounting.

• Foot Switch

An optional FS-20 foot switch is available, enabling you to capture and record images by simply stepping on the switch.

• Histogram Display on the LCD

The DXC-S500 automatically detects the luminance distribution of images, displaying a histogram on the LCD monitor so you can verify the condition of each exposure.

• User File (max. three files)

A variety of customised data can be saved as a user file, up to three of which can be stored in the CCU. By loading this user file, you can quickly recreate particular setup conditions.

• Black & White Mode

The image output can be selected from either Colour or Black & White modes.

• Interval Recording (max. 24 hours)

It is possible to record at pre-determined intervals (up to 24 hours).

• Picture Rotation (0°/180° selectable)

This function rotates the image by 0° or 180°.

• 2x Digital Zoom

DXC-S500 SPECIFICATIONS

Imager

Pick-up device	2/3 type IT (Interline Transfer) CCD, interlaced scan
Colour filter	R, G, B primary colour filter
Total picture elements (H x V)	5.24 mega-pixels (2658 x 1970)
Recording pixel elements (H x V)	2560 x 1920
Sensing area (H x V)	9.74 x 7.69 mm, square pixels

Camera

Lens mount	C mount
Flange back	17.526 mm in air
CCD cooling	Cooled to 5 °C (41 °F) at 0 °C to 35 °C (32 °F to 95 °F) ambient temperature
Bit depth	10-bit ADC
Sensitivity	ISO 100/200/400 selectable
Gain	Auto (AGC): 0 dB, 6 dB, 12 dB selectable Manual: 0 to 12 dB (1 dB steps)
Exposure control	AE: Auto/Manual selectable, AE lock function
AE area	Spot/Mid/Large
AE level	Variable
AE speed	Fast/Mid/Slow selectable
Shutter speed	Auto/Manual (60 to 1/10,000 s)/Electrical shutter
Gamma	ON(MS)/ON(STD)/OFF *1 switchable
White balance	Auto/Manual (R/B gain)
Detail level	Variable
EV compensation	-2 to 2 EV (0.25 EV steps)
Flash	Ext: Input mode/Output mode
User file	1/2/3 switchable (3 pattern memories)
Electrical zoom	2x (VGA size)
Fluorescent mode	ON/OFF
Black & White mode	ON/OFF
Interval recording	ON/OFF Max. 24 hours
User ID	ON/OFF Max. 20 digit
Picture rotate	0°/180° selectable

Live picture

Image size	640 x 480 pixels
Frame rate	30 fps/25 fps
Display	Digital interface and analogue video output

LCD

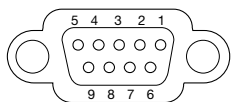
Size	3.5 inch
Type	TFT colour LCD made of low-temperature polysilicon
Resolution	200,000 dots
Frame rate	NTSC: 30 fps, PAL: 25 fps
Image display	Live image or recording image (VGA size)

Recording system

Recording media	PC card type removable HDD (PCMCIA-ATA type II), Max. 5 GB Memory Stick (PC card adaptor required), Max. 128 MB CompactFlash (PC card adaptor required), Max. 330 MB SmartMedia (PC card adaptor required), Max. 128 MB
Max. recording pixel number (H x V)	2560 x 1920
Image data size (H x V)	3 modes: 2560 x 1920, 1280 x 960, 640 x 480
Recording format	TIFF (uncompressed), JPEG (compressed, 3 modes)

Pin Assignment

FS2 connector



1	When the signal is input, camera enters LIVE picture mode
2	When the signal is input, picture is captured in the built-in frame memory of the camera with the specified picture size.
3	When the signal is input, picture is recorded on a card
4	Not connected
5	Not connected
6	Common ground connector
7	Not connected
8	Not connected
9	Not connected

Software

TWAIN driver	Bundled, for Windows/Macintosh
Supported OS	Windows 98SE/ME/2000/XP, Mac OS 8.6/9.0/9.1/9.2
Supported application software	Image-Pro Plus version 4.5 or later (for Windows) Photoshop version 5.0 or later (for Windows/Macintosh)
Control from PCs	Data transmission, live picture display, camera control

Output signals

IEEE 1394 (400 Mb/s), UYUV 16 bit/s
VBS: 1.0 Vp-p, 75 Ω, sync negative
Y: 1.0 Vp-p, 75 Ω
C: NTSC 0.284 Vp-p, 75 Ω (without sync)
PAL 0.3 Vp-p, 75 Ω (without sync)

General

Operating temperature	-5 to 45 °C (23 to 113 °F)
Storage temperature	-20 to 60 °C (-4 to 140 °F)
Power requirements	100 to 240 V AC, 50/60 Hz
Power consumption	Max. 24 W
Dimensions (W x H x D)	CHU: 56 x 72 x 72 mm (2 1/4 x 2 7/8 x 2 7/8 inches) CCU: 270 x 163 x 79 mm (10 5/8 x 6 1/2 x 3 1/8 inches)
Mass	CHU: 300 g (11 oz) CCU: 1.8 kg (3 lb 15 oz)
Connectors	IEEE 1394 output (6-pin jack) *2 PC card (PCMCIA-ATA type II) Video output (BNC) S-Video output (Mini DIN 4-pin) External trigger in (BNC) Flash out (X) FS1 (stereo mini jack) FS2 (D-sub 9-pin) AC in Camera cable (10-pin)

Supplied accessories

TWAIN driver software (CD-ROM)
Lens mount cap
Camera cable
Operation manual
User's guide for TWAIN driver software

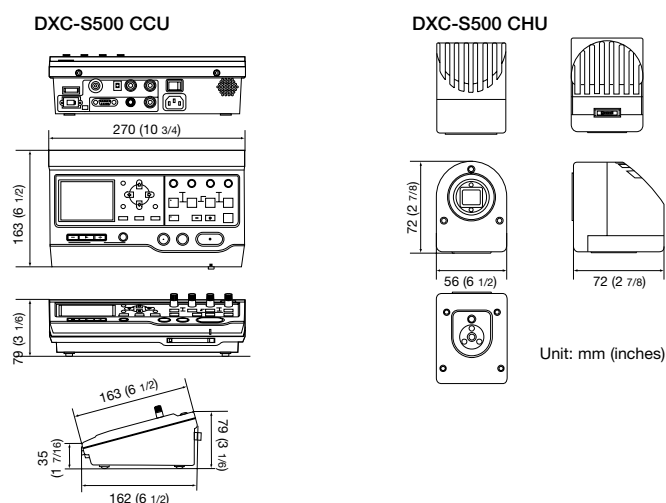
Optional accessories

MSA-8A/16A/32A/64A/128A Memory Stick
MSAC-PC2 Memory Stick Adaptor
VMC-IL6615A/IL6635A IEEE 1394 cable (6-pin to 6-pin)
FS-20 Foot Switch

*1: MS: for Microscopy, STD: for Standard

*2: IEEE 1394: Bus power not supported

Dimensions



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