

SONY®

HD Multi-purpose Camera

HDC-X300

Series



HDC-X300K

HDC-X300

HDC-X310K

HDC-X310

HFU-X310

INTRODUCTION



HFU-X310



HDC-X300/X310 with HKC-SV1

High-quality and Portable Acquisition with the Sony Multi-purpose Compact HD Camera System

*Following the successful introduction of the HDC-X300*¹, Sony now adds the new HDC-X310*¹, extending its line of compact multi-purpose HD cameras.*

*The HDC-X300 and HDC-X310 incorporate three 1/2-inch type 1.5-mega pixel HD CCDs, which offer high resolution, high sensitivity, and high signal-to-noise characteristics. Packing this performance into an extremely compact chassis, these cameras offer advanced features such as progressive scan modes, slow shutter, and auto-focus capabilities*². Convenient remote control is also available using the optional RM-B150/B750 Remote Control Unit or MSU-900/950 Remote Control Panels.*

*The HDC-X300 comes equipped with an HD-SDI output on its rear panel, and is the preferred choice for HD-exclusive operations. The HDC-X310, on the other hand, adds more interface and operational flexibility through the use of its associated HFU-X310 signal interface unit, connected via a fiber optical cable. This interface unit offers a variety of optional interface boards to cover a range of signal formats, including HD-SDI and SD-SDI, and HDV™ through the i.LINK™*³ interface, as well as computer XGA output.*

Combined with their compact designs, suitable for both indoor and outdoor use, the Sony HDC-X300 and HDC-X310 cameras are the ideal choice for an extensive range of HD image acquisition applications - from large-screen displays, production, PoV (Point of View), studios, surveillance, image processing, microscopy, and much more.

*1 In this brochure, the HDC-X300 refers to both the HDC-X300 camera and HDC-X300K lens package, while the HDC-X310 refers to both the HDC-X310 camera and HDC-X310K lens package.

*2 Auto-focus function is only available using the focus servo lens VCL-719BXS that is included in the HDC-X300K/X310K package.

*3 i.LINK is a trademark of Sony used only to designate that a product contains an IEEE 1394 connector. All products with an i.LINK connector may not communicate with each other. Please refer to the documentation that comes with any device having an i.LINK connector for information on compatibility, operating conditions and proper connection. For information on any Sony device having an i.LINK connection contact your local Sony Sales office.

APPLICATIONS

A range of features and system flexibility make the HDC-X300 and HDC-X310 camera systems suitable for virtually any general application. The following are typical examples:

News Studio

In addition to camera settings, pan/tilt/zoom operations can be controlled remotely from third-party pan/tilt systems, allowing the HDC-X300/X310 camera to be easily integrated into an automated news studio.



Church Production

Although the HDC-X300/X310 offers high-quality HD images, it is designed to be as compact as possible. This enables it to be installed discretely in many locations such as houses of worship, halls, and conference rooms.



Live Events

When displayed on large projection systems, the high-clarity HD images captured by the HDC-X310 camera provide impressive viewing of live events. And by use of the Sony AWS-G500 Anycast Station™ Live Content Producer, these stunning images can be seamlessly integrated with an array of PC sources on the screen projection.

* Interfacing the HDC-X310 to the AWS-G500 requires use of the optional HFU-X310 Interface Unit with an HFBK-XG1 XGA Output Board installed. In this connection, the 1080i signal acquired with the HDC-X310 is converted to XGA resolution.



Image Processing

The HDC-X300/X310 system can capture high-resolution progressive images - ideal for a range of image-processing applications such as microscopy and general inspections.



FEATURES

Superb Picture Quality

Incorporating three 1/2-inch type 1.5-mega pixel HD CCDs, the HDC-X300/X310 offers outstanding-quality images with a low smear level of -120 dB and a high signal-to-noise ratio of 52 dB.

Progressive Mode

Incorporating Sony's innovative Advanced Frame Accumulation (AFA) technology, the HDC-X300/X310 can output progressive HD signals (25PsF/29.97PsF), 2-3 pull down-converted signal from 23.976PsF (59.94i) in addition to interlaced HD signals (50i/59.94i). Interlace and progressive modes can be easily selected from the camera setup menu.

- 50i output mode: 50i or 25PsF selectable
- 59.94i output mode: 59.94i/29.97PsF/23.976PsF (with built-in 2-3 pull-down function) selectable

Compact and Lightweight Design

The HDC-X300/X310 is designed to be compact and lightweight, making it ideal for capturing HD-quality images at locations and from angles where bulky production HD cameras cannot be installed. This compact camera weighs only 2 lb 10 oz (1.2 kg)*, allowing easy installation in space-constrained and awkward areas such as on a crane head or helicopter. The supplied tally unit can be easily detached from the camera body, minimizing the camera size to be fitted in, for example, a pan/tilt head or an underwater housing.

* HDC-X300



HDC-X300/X310 with supplied tally unit

HDC-X300/X310

Low-Light Shooting

The HDC-X300/X310 offers two convenient functions for capturing clear images in low-light environments - a Slow Shutter mode and a Gain function - which can be used separately or together. The Slow Shutter mode allows the charge accumulation period of the CCD (typically 1/60TH or 1/50TH second) to be extended up to approximately two seconds (64 frames). The Gain function allows the camera gain to be boosted to +48 dB. When these functions are used together, the camera offers a stunning minimum illumination of 0.003 lx.



Slow Shutter OFF



Slow Shutter ON (64 frames)

Auto-Focus Function*

While maintaining compatibility with interchangeable manual-focus lenses, the HDC-X300/X310 comes packaged with a convenient auto-focus lens. Two auto-focus modes are available and can be selected on the supplied lens. One-push auto-focus readjusts the focus each time the button is pressed, while auto-tracing focus automatically tracks the focus in a dynamic manner.

* Auto-focus function is only available when using the focus servo lens VCL-719BXS included in the HDC-X300K/X310K package.

Flexible Image Controls

The HDC-X300/X310 provides highly advanced image-control functions such as matrix, a TruEye™ feature, skin-tone detail, and color temperature controls. These functions - previously available only on high-end studio cameras or camcorders - allow creative images to be produced with high clarity.

Trigger Function

Two types of trigger modes are available with the HDC-X300/X310, allowing synchronized operation with external equipment. The flash trigger input mode allows the camera to capture a high-quality still image when synchronized with an external flash - a function suited for photo-booth or document-stand applications. Another trigger mode is the 23.976PsF frame lock mode. When the HDC-X300/X310 is set to 23.976PsF progressive mode, the camera outputs a 2-3 pull-down trigger signal for frame locking to other HDC-X300/X310 cameras.

Remote Control Capability

The HDC-X300/X310 is compatible with the RM-B150/B750 Remote Control Unit, RCP-700 Series Remote Control Panel and MSU-900/950 Master Setup Unit. These remote controllers cover the complete range of control parameters that the HDC-X300/X310 provides, from basic camera control to sophisticated operations.

Optical ND Filter and Electronic CC Function

Optimum light and color control is easily achieved using the built-in optical Neutral Density (ND) filter wheel and electronic Color Correction (CC) function. The HDC-X300/X310 uses electronic color correction to eliminate the need for optical color correction filters. This allows all filters on the filter wheel to be ND types, providing the operator with greater flexibility in depth of field and exposure control.



HKC-SV1 Servo Filter Unit

The HKC-SV1 is a servo unit that allows the optical ND filters of the HDC-X300/X310 to be controlled remotely from the RM-B750/B150 Remote Control Unit, RCP-700 Series Remote Control Panel, or MSU-900/950 Master Setup Unit.



HDC-X300/X310 with an optional HKC-SV1 attached

SYSTEM VERSATILITY

HFU-X310 Optical Interface Unit (for use with HDC-X310 only)

The HFU-X310 Interface Unit is a 2U-high, half-rack-wide unit with an optical fiber interface. Digital data - including external sync, Bi-directional RS-232C Pan & Tilt and camera control signals - can be transmitted between the HDC-X310 and the HFU-X310 via an optical fiber cable*. This cable can be up to 1000 meters (3280 feet) long, which allows the camera to be installed virtually anywhere required.

The HFU-X310 is equipped with a range of interfaces such as HD-SDI input, SD/HD genlock, and tally inputs. It also provides an 8-pin serial remote input to connect the RM-B750/B150, RCP-700 Series, or MSU-900/950. Output interfaces including HD-SDI, SD-SDI, computer XGA, and i.LINK (HDV) are offered via optional boards (HFBK-HD1 and HFBK-SD1) that are installed in the two slots located on the unit's rear panel.

* A single mode fiber cable with LC connector is required for the connection between the HDC-X310 and HFU-X310.



HFU-X310 with optional boards

OPTIONAL ACCESSORIES



HFU-X310
Optical Fiber Interface Unit



HFBK-HD1
HD SDI Output Board



HFBK-SD1
SDI Output Board



HFBK-XG1
XGA Output Board



HFBK-TS1
i.LINK (HDV) Output Board



RM-B750
Remote Control Unit



RM-B150
Remote Control Unit



RCP-750/751
Remote Control Panel



MSU-900
Master Setup Unit



MSU-950
Master Setup Unit



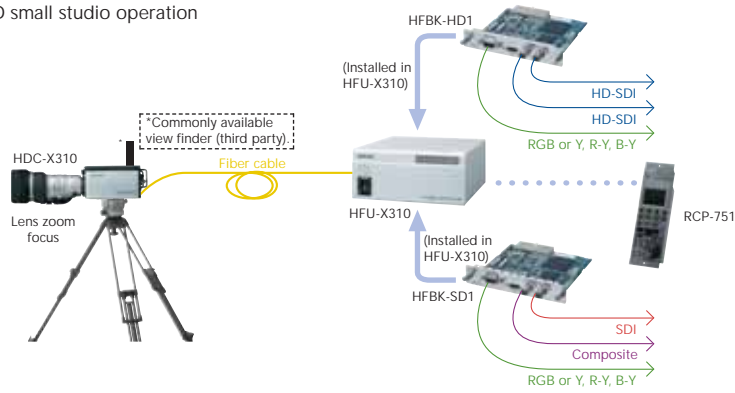
HKC-SV1
Filter Servo Unit



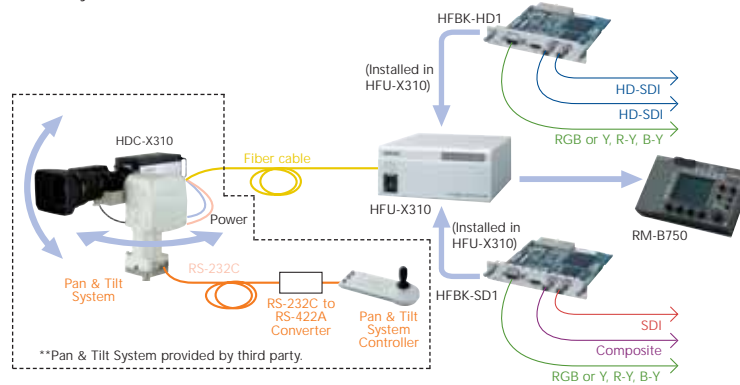
VCT-U14
Tripod Adaptor
Requires A-8279-993-A
V-shoe adaptor and
K4x8 screw (x4)

SYSTEM EXAMPLES

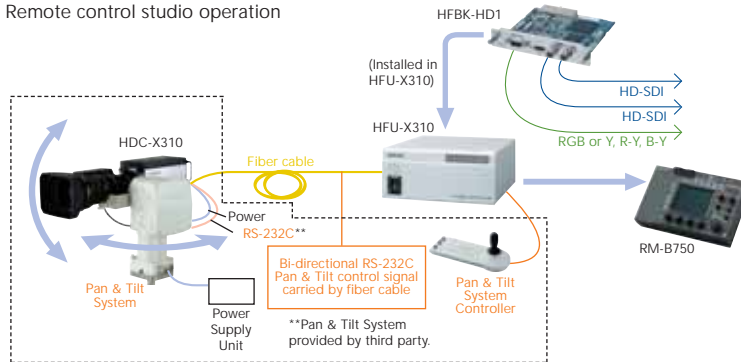
HD small studio operation



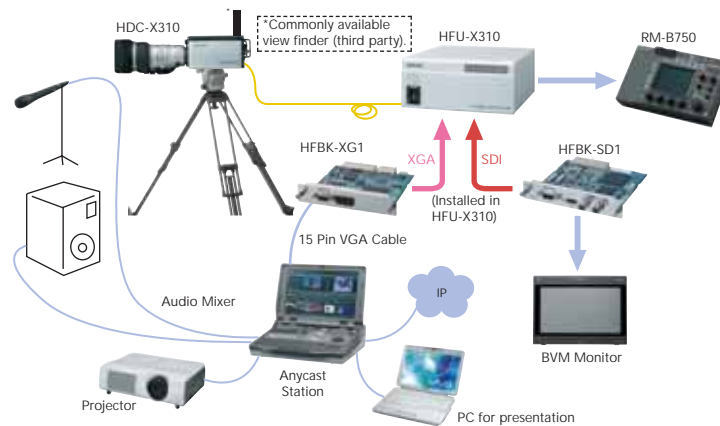
Robotic system with discrete RS-232C** Pan & Tilt Control



Remote control studio operation

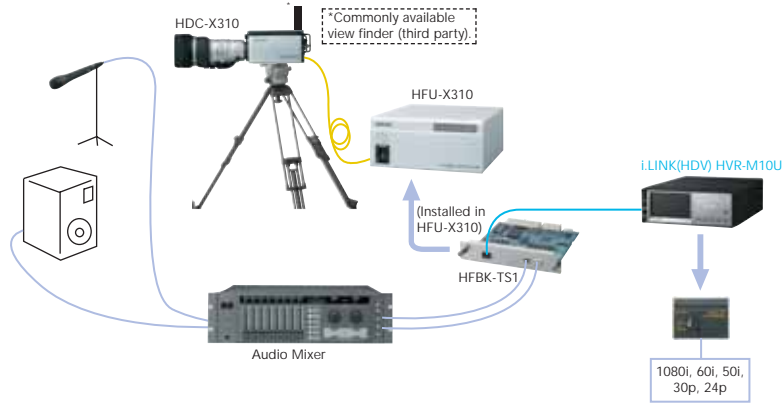


Live event operation

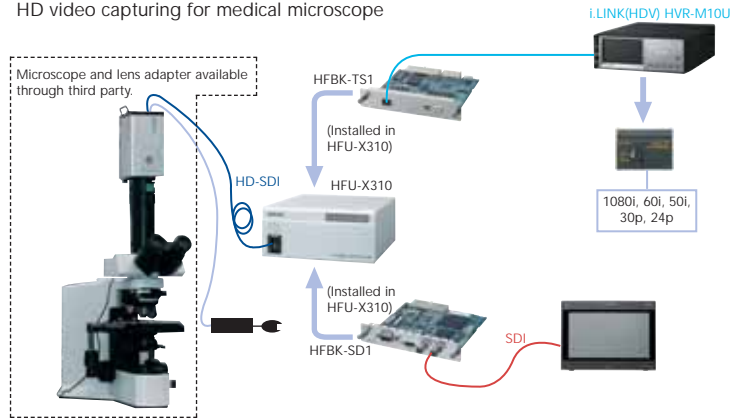


**All products with RS-232C capability may not communicate with each other. Please refer to the documentation that comes with any device having RS-232C capability for information on compatibility, operating conditions and proper connection. For information on any Sony device having RS-232C capability contact your local Sony Sales office.

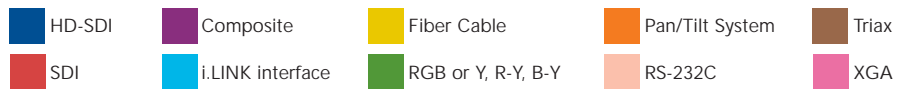
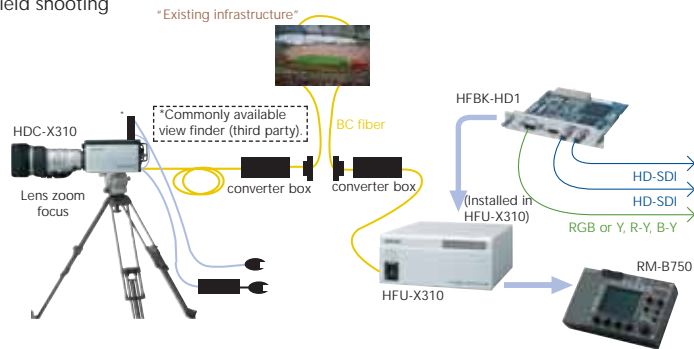
HDV production



HD video capturing for medical microscope



Field shooting



SPECIFICATIONS

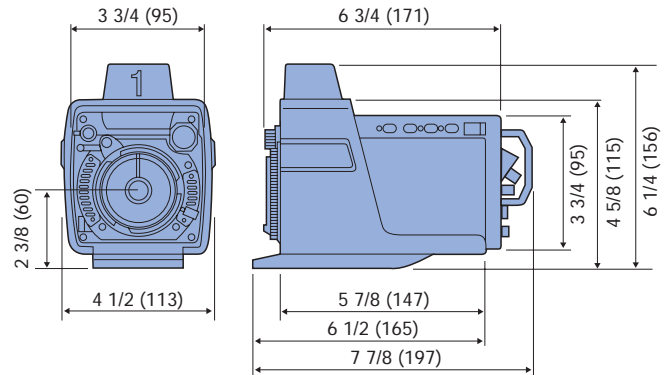
	HDC-X300	HDC-X310
General		
Power requirements	DC 12 V	
Power consumption	18 W (camera head only) 23.5 W (with the VCL-719BXS, HKC-SV1 Filter Servo Unit, and the RM-B750 Remote Control Unit connected)	19 W (camera head only) 24.5 W (with the VCL-719BXS, HKC-SV1 Filter Servo Unit, and the RM-B750 Remote Control Unit connected)
Operating temperature	+14 to +113 °F (-10 to +45 °C)	
Storage temperature	-4 to +140 °F (-20 to +60 °C)	
Weight	Approx. 2 lb 10 oz (1.2 kg) (camera head only) Approx. 3 lb 11 oz (1.7 kg) (including camera head, tally unit)	Approx. 2 lb 13 oz (1.3 kg) (camera head only) Approx. 3 lb 15 oz (1.8 kg) (including camera head, tally unit)
Camera		
Pickup device	3-chip 1/2-inch type 1.5-megapixel CCD	
Effective picture elements (H x V)	1440 x 1080	
Optical system	F1.4 prism system	
Built-in filters	1: Clear, 2: 1/4ND, 3: 1/16ND, 4: 1/64ND	
Lens mount	Sony 1/2-inch bayonet mount	
Signal system	1080/59.94i, 1080/50i	
Scanning system	59.94i/23.976PsF/29.97PsF selectable at 59.94i 50i/25PsF selectable at 50i	
Sync system	Internal and External (3 state/VBS (BB))	
Sensitivity (2000 lx, 89.9% reflectance)	F10 (typical)	
Minimum illumination	0.003 lx (F1.4, +48 dB gain, with slow shutter mode at 64 frame accumulation)	
Gain selection	-3, 0, 3, 6, 9, 12, 18, 24, 30, 36, 42, 48 dB	
Shutter speed	1/60 (50i mode), 1/100, 1/250, 1/500, 1/1000, 1/2000 s	
Slow shutter	2, 3, 4, 5, 6, 7, 8, 16, 32, 64 frame	
Clear scan	50 to 200 Hz (50i mode), 60 to 200 Hz (59.94i mode)	
Smear level	-120 dB (typical)	
S/N ratio	52 dB (typical)	
Geometric distortion	Below measurable level (without lens)	
Modulation depth at 21 MHz	40% (typical) (with HD SDI output)	
Signal inputs		
Genlock video	BNC type (1), 3-level/2-level (VBS, VS)	
Trigger	BNC type (1), TTL level	
Signal outputs		
HD SDI	BNC type (1), 0.8 Vp-p ±10%, 75 Ω -	
Video	HD D-sub 15-pin (1) Y/Pr/Pb: 1.0 Vp-p, 75 Ω R/G/B: 1.0 Vp-p, 75 Ω HD/VD: TTL level (3 Vp-p) Sync: 0.6 Vp-p, 75 Ω	
Tally	Mini-jack (1)	
Other inputs/outputs		
OFC	-	Single mode, LC optical connectors (2)
Remote	8-pin (1)	
Lens	14-pin (1)	
DC input	DC jack (1)	
VCL-719BXS (supplied with the HDC-X300K/X310K)		
Focal length	6.7 to 127 mm	
Zoom	Manual or power selectable	
Zoom ratio	x19	
Maximum aperture	1:1.6, 1:2.1 (at telephoto end)	
Aperture	Manual or automatic selectable	
Focusing range	Infinity to 5 cm	
Filter attachment threads	82 mm dia. 0.75 mm pitch	
Mounting	Sony 1/2-inch bayonet mount	
Weight	2 lb 13 oz (1.34 kg) including lens food	
Supplied accessories		
	Operation manual (1), AC adaptor (1), AC cable (1), Tally unit (1), Number plate (1), Lens mount cap (1), VCL-719BXS focus servo lens (1, HDC-X300K/X310K only)	

HFU-X310	
General	
Power requirements	AC 100 to 240 V, 50/60 Hz
Current consumption	Max. 0.6 A
Operating temperature	+41 to +104 °F (+5 to +40 °C)
Storage temperature	-4 to +140 °F (-20 to +60 °C)
Maximum cable length	Optical fiber cable (single mode): 3280 feet (1000 m)
Dimensions (W x H x D)	7 7/8 x 3 1/2 x 8 1/2 inches (200 x 88 x 215 mm) without projection
Weight	Approx. 4 lb 6 oz (2 kg)
Signal inputs/outputs	
Remote	8-pin (1)
Genlock	BNC type (2), 3-level/2-level (VBS, VS) Sync block 0.3 Vp-p (when terminated), 75 Ω, loop-through
HD SDI input*	BNC type (1) Conforming to SMPTE 292M
OFC	Single mode, LC connectors (2), send/receive
Multi-connector	6-pin (1)
AC input	3-pin (1)
Supplied accessories	
	Operation manual (1), OFC cover (1), M3 x 4 screws (2), M4 x 4 screws (1), Multi-connector plug (1)

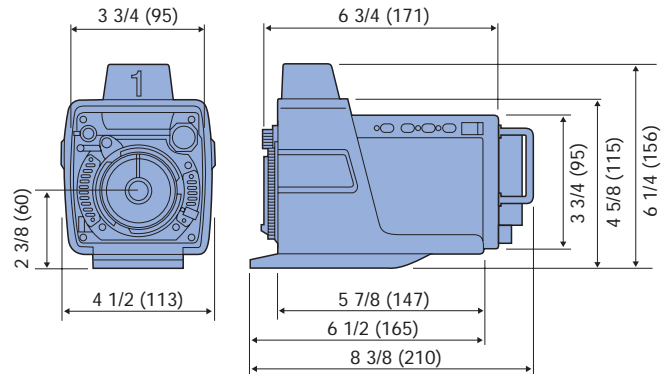
* Requires upgrading

Dimensions

HDC-X300



HDC-X310



Unit: inches (mm)

PIN ASSIGNMENT D-sub 15-pin

Pin number	Signal	Pin number	Signal
1	R (X)/Y (X)	9	NC
2	G (X)/Pb (X)	10	GND
3	B (X)/Pr (X)	11	NC
4	NC	12	NC
5	GND	13	HD
6	R (G)/Y (G)	14	VD/SYNC
7	G (G)/Pb (G)	15	NC
8	B (G)/Pr (G)		



HDC-X300 Rear Panel



HDC-X310 Rear Panel

SONY

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