HD Multi-purpose Camera

HDC-X300

Series

HDC-X300K
HDC-X300
HDC-X310K
HDC-X310
HFU-X310
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.

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*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.
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.

Live Events

When deployed in 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.

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.

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

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 while auto-tracing focus automatically tracks the focus each time the button is pressed, while auto-tracking focus automatically tracks the focus in a dynamic manner.

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 mode focuses the lens while the button is pressed, while auto-tracking focus automatically tracks the focus in a dynamic manner.

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 noise level of 52 dB and a high signal-to-noise ratio.

Progressive Mode

Incorporating Sony’s innovative Advanced Frame Accumulator (AFA) technology, the HDC-X300/X310 can output progressive HD signals (52P/60P/29.97PsF). In addition to interlaced HD signals (50i/59.94i), interlace and progressive modes can be easily selected from the supplied tally unit.

Low-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 camera to shoot successively up to 150 frames (typically 1/50 or 1/60 second) in order to achieve a better illumination of 0.003 lx. The Gain function allows the camera gain to be boosted to +48 dB. When these functions are used together, the camera offers an amazing minimum illumination of 0.0001 lx.

Flexible Image Controls

The HDC-X300/X310 provides handy advanced image-control functions such as matrix. The Tri-color white balance function, in addition to horizontal and vertical synchronization, and automatic white balance, etc., allows the camera 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 synchronized with an external flash - a function that is previously available only on high-end studio cameras or camcorders - allows creative images to be produced with high clarity.

Optical ND Filter and Electronic CC Function

The HDC-X300/X310 is equipped with a range of interface such as HD-SDI input, SDI control, and tally inputs. It is also provided with an 8-pin remote input to connect the RM-B750/B150, RM-B750 series, or HSU-50C/50D. Output interfaces including HD-SDI, SD-SDI, computer RGB, and IP (RJ45) are offered via optional accessories (HFK-T12 and HFK-A21) that are installed in the two slots located on the unit’s rear panel.

HDC-X310 Optical Interface Unit

The HDC-X310 Optical Interface Unit is 20-pin, half-rack-size unit with an optical fiber interface. Digital data, including external sync, Bi-directional RS-232C, cue line and camera control signals - can be transmitted between the HDC-X310 and the HFU-X310 via optical fiber cables. This cable can be up to 1000 meters (3280 feet) long, which allows the camera to be installed virtually anywhere.

HFK-X310 Optical Interface Unit

The HFK-X310 is a unit that allows the optical ND-filter of the HDC-X300/X310 to be controlled remotely from the RM-B750/B150 Remote Control Unit, RCP-700 Series Remote Control Panel, or HSU-50C/50D Master Setup Unit.

HFK-X310 with optional boards

HFK-X310

HFK-HD1

HFK-XG1

HFK-A21

HFK-T12

HFK-SD1

HFK-K4x8

OPTIONAL ACCESSORIES

HFK-HD1 SDI Output Board

HFK-XG1 XGA Output Board

HFK-SD1 SDI Output Board

HFK-T12 Link HD Output Board

HFK-K4x8 XGA Output Board

HFK-K4x8 with an optional XGA Output Board

HFK-X310 with an optional XGA Output Board

HFK-X310 Optical Interface Unit

Remote Control Panel

RM-B750 Remote Control Unit

RM-B750H Remote Control Panel

RM-B750H with tally input

RM-B150 Remote Control Unit

RM-B150H Remote Control Panel

HFK-T12 with tally input

HFK-X310 Interface Unit

HFK-X310 Interface Unit

Chassis PH-1050

Remote Control Unit

Remote Control Panel

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FEATURES

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 84 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 0.0002 lux.

Flexible Image Controls

The HDC-X300/X310 provides highly advanced image-control functions such as 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-scanning applications. Another trigger mode is the Slow Shutter mode, which allows all filters on the filter wheel to be ND filters. When slow shutter is enabled, the camera can be operated at a low shutter speed (1/60TH or 1/50TH second) to be produced with high clarity.

Optical ND Filter and Electronic CC Function

Optimum light and color control is easily achieved using the built-in optical 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.

Superb Picture Quality

Incorporating Sony’s innovative Advanced Frame Accumulator (AFA) technology, the HDC-X300/X310 can output progressive HD signals (29.97PsF) in 3:2 pull-down-converted signal from 59.94PsF (25PsF). Interface and progressive modes can be easily selected from the camera's setup menu.

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 2.0 lb 10 oz (1.2 kg), allowing easy installation in space-constrained and outdoor 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 into, for example, a parrot head or an underwater Housing.

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 quickly focuses the focus each time the button is pressed, while auto-tracing focus automatically tracks the focus in a dynamic manner.

SYSTEM VERSATILITY


The HDC-X300/X310 is equipped with a range of interfaces such as HD-SDI input, SDI connector, and tally outputs. It also provides an 8-pin remote input to connect the RM-B750/B150, RM-700 series, or RMU-900/950. Output interfaces including HD-SDI, SDI-SDI, computer RCA, and USB (PDI) are offered via optional ports (HFBK-121, and HFBK-421) that are installed in the two slots located on the unit’s rear panel.

OPTIONAL ACCESSORIES

HFX-750/751 Remote Control Panel

The HFX-750/751 is a remote control panel including dedicated remote control operation for the RM-B750/B150, RM-700 series, RM-400/420, RCP-700 series, MSU-900/950 Master Setup Unit.

HFX-41D/HFX-42D Optical Fiber Interface Unit

The HFX-41D/HFX-42D is a panel that allows the optical signals from the HDC-X300/X310 to be transmitted between the HDC-X300 and the HFU-X310 via an optical fiber cable that can be used to transmit between two HDC-X300 cameras. 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.

HKC-SV1 Servo Filter Unit

The HKC-SV1 is a servo unit that allows the camera to be installed virtually anywhere with a wide range of control parameters. The HKC-SV1 allows all filters on the filter wheel to be ND filters. When slow shutter is enabled, the camera can be operated at a low shutter speed (1/60TH or 1/50TH second) to be produced with high clarity.

HKC-SV1 Servo Filter Unit

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FEATURES

Superclear Picture Quality

Incorporating Sony’s innovative Advanced Frame Accumulator (AFA) technology, the HDC-X300/X310 offers outstanding quality images with a low noise level of 1.321 dB and a high signal-to-noise ratio of 52 dB.

Progressive Mode

Incorporating Sony’s innovative Advanced Frame Accumulator (AFA) technology, the HDC-X300/X310 can output progressive HD signals (525P/576P, 2:3 pull-down converted signal from 23.976P to 24P). In addition, interlace and progressive modes can be easily selected from the camera’s setup menu.

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 1.3 kg, making it easy to carry.

Light-Shooting

When the HDC-X300/X310 is used in low light environments or a Slow Shutter mode is selected, this camera offers a minimum illumination of 0.003 lx. When these functions are used together, the camera offers a stunning minimum illumination of 0.003 lx.

Flexible Image Controls

The HDC-X300/X310 offers the following image control functions:

- Shutter function
- Slow Shutter ON (64 frames)
- Slow Shutter OFF

The Slow Shutter mode allows the camera to capture a high-quality image in low-light environments. The Slow Shutter OFF mode is used to capture images with motion blur or to photograph night scenes.

Remote Control Capability

The HDC-X300/X310 is compatible with the RM-B750/B150 Remote Control Unit. When the camera is set to 23.976PsF frame lock mode, it outputs a 2-3 pull-down trigger signal for frame locking to other SXGA/SXGA-compatible cameras.

Remote Control Unit

The HDC-X300/X310 allows for sophisticated operations. From basic camera control to sophisticated operations, such as matrix, a filter control, and tally inputs.

HD SDI Output Board

The HDC-X300/X310 can output HD-SDI signals (525P/576P, 2:3 pull-down converted signal from 23.976P to 24P). This cable can be up to 3100 meters (10,000 feet) long, which allows the camera to be installed virtually anywhere.

SYSTEM VERSATILITY

The HDC-X310 is equipped with a range of interfaces such as HD-SDI input, SDI/SDI ports, and tally inputs. It also provides an HDMI remote input to connect the RM-B750/B150. DCI-700 Series, or MSU-900/950. Output interfaces including HD-SDI, SDI output, composite RCA, and LINK (PDY) are offered via optional boards (HFBK-TS1 and HFBK-HD1) that are installed in the two slots located on the unit’s rear panel.

OPTIONAL ACCESSORIES

- HKC-SV1 Servo Filter Unit

The HKC-SV1 is a servo unit that allows the HDC-X300/X310 to control remotely from the RM-B750/B150, RM-B150, or MSU-900/950. It provides a range of interfaces including HD-SDI input, SD/HD genlock, and tally inputs. It also provides an 8-pin serial interface to connect the RM-B750/B150, RCP-700 Series, or MSU-900/950. Optical ND and electronic Color Correction (CC) functions. The HDC-X300/X310 can output a 2-3 pull-down trigger signal for frame locking to other SXGA/SXGA-compatible cameras.
Remote control studio operation

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

HD small studio operation

Lens zoom

**Pan & Tilt System provided by third party.**

**Pan & Tilt System having RS-232C capability contact your local Sony Sales office.**

**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 view finder (third party).*

**Pan & Tilt System**

Pan & Tilt System with PAN & TILT CONTROLLER (Installed in HFU-X310)

HFBK-HD1 HD-SDI Composite Fiber Cable

HFBK-SD1 HD-SDI Composite Fiber Cable

HFBK-XG1 XGA Output Board installed. In this connection, the XGA signal output from the HFBK-XG1 is converted to XGA resolutions.

**Pan & Tilt control signal Converter**

RS-232C to Bi-directional RS-232C

**Pan & Tilt System**

RM-B750 Audio Mixer

AWS-G500 Anycast Station™ Live Content Producer

HDC-X310 camera to be easily integrated into an automated news studio.

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.

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.

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.

A range of features and system flexibility make the HDC-X300 and HDC-X310 camera systems suitable for virtually any general application.

News Studio

Live Events

Church Production

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.

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

Live Events

Church Production

Image Processing
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 separately 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 AW-S3500 AnyStation™ Live Content Producer, these stunning images can be seamlessly integrated with an array of PC sources on the screen projection.

**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.
**SPECIFICATIONS**

**HDC-X300**

<table>
<thead>
<tr>
<th>General</th>
<th>HDC-X310</th>
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<tbody>
<tr>
<td>Power requirements</td>
<td>12 V DC</td>
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<tr>
<td>Power consumption</td>
<td>18 W (camera head only) 24.5 W (with the VCL-719BXS, HKC-SV1 Filter Servo Unit, and the RM-B750 Remote Control Unit connected)</td>
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<tr>
<td>Operating temperature</td>
<td>-14 to +113 °F (-10 to +45 °C)</td>
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<tr>
<td>Storage temperature</td>
<td>4 to +140 °F (10 to +60 °C)</td>
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<tr>
<td>Weight</td>
<td>Approx. 2 lb 10 oz (1.2 kg) Approx. 2 lb 13 oz (1.3 kg) (including camera head, tally unit)</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 3 lb 11 oz (1.7 kg) Approx. 3 lb 15 oz (1.8 kg) (including camera head, tally unit)</td>
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**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)
- 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 (2), 3-level/2-level (VBS, VS)
- Trigger: BNC type (1), TTL level
- HD SDI input*: BNC type (1) Conforming to SMPTE 292M
- Sync block: 0.3 Vp-p (when terminated), 75 Ω, loop-through
- HD/VD: TTL level (3 Vp-p)
- Sync: 0.6 Vp-p, 75 Ω

**Tally**

- M-in/jack (1)

**Other inputs/outputs**

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<tr>
<th>OFC</th>
<th>Single mode, LC optical connectors (2)</th>
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<tr>
<td>Remote</td>
<td>8-pin (1)</td>
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<tr>
<td>Lens</td>
<td>14-pin (1)</td>
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<tr>
<td>DC Input</td>
<td>DC jack (1)</td>
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**WCL-719BXS (supplied with the HDC-X300K/X310K)**

- Focal length: 6.7 to 127 mm
- Zoom ratio: x19
- Maximum aperture: 1.3, 1.6, 1.2 (at telephoto end)
- Aperture: Manual or automatic selectable
- Focusing range: Infinity to 3 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), OFC cover (1), M3 x 4 screws (2), M4 x 4 screws (1), Multi-connector plug (1)

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**PIN ASSIGNMENT D-sub 15-pin**

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<tr>
<th>Pin number</th>
<th>Signal</th>
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<tr>
<td>1</td>
<td>R (Y)/Y (X)</td>
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**Dimensions**

**HDC-X300**

- 3 3/4 (95) 4 1/2 (113) 2 3/8 (60)

**HDC-X310**

- 3 3/4 (95) 4 1/2 (113) 2 3/8 (60)

**HCU-X310**

- 3 3/4 (95) 6 3/4 (171) 2 3/8 (60)

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**Supplied accessories**

- Operation manual (1), OFC cover (1), M3 x 4 screws (2), M4 x 4 screws (1), Multi-connector plug (1)

* Requires upgrading

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**PIN ASSIGNMENT D-sub 15-pin**

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