

SONY

HDC Series HDC-3500, HDC-3100, HDC-3170



4K

Sony HD Cameras – Open up a World of Creativity with this New Performance Benchmark

Over the years, Sony has established a powerful solution lineup for HD studio operations with its HDC Series cameras along with a wide range of accessories to enhance your creative options.

Sony's flagship HDC Series cameras have been accepted as a worldwide standard, using cutting-edge technologies to realize excellent picture quality.

Now Sony proudly introduces new models designed to boost creativity with higher levels of performance along with the flexibility of continued interchangeability with existing models. The new HDC-3500, HDC-3100, HDC-3170, and point-of-view (POV)-style camera HDC-P50 are powerful tools that truly inspire innovation and enable your creative vision.

In addition, for even higher levels of creativity, Sony offers the HDC-4300 super-motion camera with a 4K capability. Along with various camera head choices, all HDC Series cameras also boast various options such as a stunning 7-inch OLED viewfinder and a large lens adaptor that enables rapid attachment without fine adjustment.

With their field-proven high reliability, all HDC Series cameras are stunning acquisition tools, ideal for a broad range of HD production applications.



HDC Series Multi-Format HD Camera System

4K



HDC-3500

HDC-3500

Sony has newly developed a powerful imaging device specifically for the HDC-3500. This offers high sensitivity of F10 (at 1080/59.94p) or F11 (at 1080/50p) and a superior signal-to-noise ratio.

The HDC-3500*1 offers enhanced, excellent picture quality through new cutting-edge technologies. The first of these is a newly developed 4K CMOS imaging device equipped with global shutter technology. And the second is a newly developed dedicated signal processor. In addition, the HDC-3500 can be upgraded with optional software licenses to add required functions such as capturing progressive signals, progressive segmented frame (PsF) signals, and double-speed acquisition for exquisite picture-quality slow motion. The HDC-3500 is operated through fiber transmission as standard. It also has an exchangeable side panel interface and the HKC-CN50 enhances easy exchangeable operation. To satisfy your varying requirements with the HDC-3500, Sony provides exchangeable outside panels – the HKC-FB30 (for fiber transmission) and the HKC-TR37 (for triax transmission), as well as the HDC-3500H which does not have a transmission function. You can also choose the HDCU-3100 Camera Control Unit for fiber operation and the HDCU-3170 for triax operation.

Portable Cameras



HDC-3500

Optical-fiber interface
 1080/50i, 1080/59.94i
 1080/23.98p*2, 1080/24p*2, 1080/25p*2
 1080/29.97p*2, 1080/50p*3, 1080/59.94p*3
 720/50p, 720/59.94p, 1080/100i*4
 1080/119.88i*4, 720/100p*4, 720/119.88p*4
 UHD/50p*3*5, UHD/59.94p*3*5



HDC-3100

Optical-fiber interface
 1080/50i, 1080/59.94i
 720/50p, 720/59.94p
 1080/23.98p*2, 1080/24p*2, 1080/25p*2
 1080/29.97p*2, 1080/50p*3, 1080/59.94p*3
 UHD/50p*3*5, UHD/59.94p*3*5



HDC-3170

Digital triax interface
 1080/50i, 1080/59.94i
 720/50p, 720/59.94p
 1080/50p, 1080/59.94p

HDC-3100, HDC-3170

The HDC-3100*1 offers an optical fiber transmission capability as standard. Meanwhile, the HDC-3170 offers a digital triax transmission capability. Both deliver high sensitivity of F12 (at 1080/59.94i) or F13 (at 1080/50i) so you can select your model according to the signal wiring setup – optical fiber or triax – in the expected stadium.

*1 Please refer to the table on the left to see supported formats for each camera head.

*2 Optional HZC-PSF50 software is required. *3 Optional HZC-PRV50 software is required. *4 Double-speed acquisition format for slow-motion
 *5 Optional HKCU-UHD30 Board is required to be installed into HDCU-3100.

HDC Series Cutting-Edge Technologies

Highly Acclaimed 4K CMOS Sensor with Global Shutter Technology (for the HDC-3500)

Based on Sony's cutting-edge imaging device technology and the latest on-chip lens structure, this 2/3-inch-type 4K CMOS sensor offers high sensitivity of F10 (at 1080/59.94p) and F11 (at 1080/50p) at 2,000 lx and a superior signal-to-noise ratio even without digital noise suppression.

In addition, there is a wide variety of available output formats including 1080/59.94i, 1080/50i, 1080/23.98p*1, 1080/24p*1, 1080/25p*1, 1080/29.97p*1, and 1080/59.94p*2 or 1080/50p*2. These formats are beyond HD picture quality made from 4K capturing images.

Double-speed acquisition for excellent slow-motion picture quality is also available in 1080/119.88i*3, 1080/100i*3, 720/119.88p*3, and 720/100p*3 modes.

What's more, installing the optional HKCU-UHD30 4K HDR Processor Board to the HDCU-3100 enables the CCU to transmit ultra-high-bit-rate (UHB) signals automatically and output 4K signals (UHD/59.94p or UHD/50p)*2.

*1 Optional HZC-PSF50 software is required for the HDC-3500.

*2 Optional HZC-PRV50 software is required for the HDC-3500.

*3 Optional HZC-DFR50 software is required for the HDC-3500.

State-Of-The-Art Evolving Digital Signal Processor

The DSP LSI developed for the HDC-3500 supports 1080/59.94p and 1080/50p progressive formats, making full use of the high-clarity images captured by the CMOS sensor. You can also capture UHD/59.94p or UHD/50p 4K resolution images and achieve high-speed signal processing – the capabilities that are needed most for compact operation.



Optical Fiber Transmission

HDC-3500 and HDC-3100 cameras offer an optical fiber transmission capability as standard, enabling you to shoot in various capturing formats.

These cameras are equipped with an SMPTE-standard optical fiber interface for connecting the associated camera control unit (the HDCU-3100 or HDCU-2000). While achieving exceptional quality, these cameras can also transmit all digital bi-directional video and audio signals, a control line, and a prompter line over extremely long distances.

Next-Generation Digital Triax Transmission

With these newly developed third-generation digital triax-based systems, you can transmit detailed high-quality images over a long distance – up to 1,800 meters (5,904 feet)*4 with a ø14.5 mm triax cable.

*4 Maximum cable length varies with camera system configuration.

Network TRUNK*5

The network TRUNK function (LAN port) allows for data transmission between the camera and the CCU at up to 1 Gbps. This supports new system configurations that are being used with various IP-based products.

*5 This function can only be used with the fiber system.

Servo-Controlled ND and CC Filters*6

The HDC-3500 is equipped with dual optical filter wheels for ND (neutral density) and CC (color correction) which can be remotely controlled by any remote control panel (RCP) or master setup unit (MSU), as well as directly controlled by the camera head.

*6 The HDC-3100 and HDC-3170 are equipped with a single optical filter wheel for ND.

Compact and Lightweight Camera Body

HDC-3500, HDC-3100, and HDC-3170 cameras incorporate magnesium alloy in their bodies and the HDC-3500 also features carbon fiber reinforced plastic (CFRP) in its outside panel. With this strong yet lightweight design, these cameras are highly mobile and can be operated even in the toughest shooting conditions.

The HDC Series provides stable handling, owing to a low center of gravity. You can easily adjust the shoulder pad into a well-balanced position without needing to use a screwdriver. Also, a wide viewable area beneath the handle provides you with a broad field of view, ideal for handheld camera operation. In every carefully considered aspect, HDC Series studio cameras offer great ergonomic design to increase ease of use.



Rich Focus Assist Functions

The viewfinder detail function adds dedicated image-enhancing edge signals directly to the viewfinder, helping you to recognize a focusing point.

The focus assist indicator displays an indicator for adjustment at the bottom (or another selected position) of the viewfinder frame.

In addition, the HDC-3500 and HDC-3100 are equipped with an advanced focus position meter function; the return switch can also be utilized as the focus position meter with illumination. Three focus positions can be assigned at the RGB switches of the HDLA-1500 Series Large Lens Adaptor, and the same position data can be assigned at the return switches on the camera's intercom panel. These switches can be lit in red, green, blue or others according to the functions.

This is helpful especially when shooting with a wide-viewing angle.



Flexibility with the HDC Series

Easy Transmission Change

The transmission system can be easily changed between fiber (HKC-FB30), triax (HKC-TR37), and wireless (HKC-WL50) transmission by replacing parts assembled in the outside panels*7.

In addition, since all replacement connectors are located in the outside panels, camera balance is maintained.

*7 The optional HKC-CN50 is required to attach an outside panel.

HKC-FB30: Optical Fiber Transmission Adaptor
(for HDC-3500 and HDC-3500H)



HKC-TR37: Digital Triax Transmission Adaptor
(for HDC-3500 and HDC-3500H)



Upgrade Software to Expand Creativity

An upgrade path is provided for your further creative operation. You can select your configuration with the following optional software, including special versions that operate for a limited time period, according to your needs.

HZC-PSF50: PsF-format Software

HZC-PSF50M: PsF-format Software (30-day limited period)

HZC-PSF50W: PsF-format Software (7-day limited period)

HZC-PRV50: 59.94p/50p Software

HZC-PRV50M: 59.94p/50p Software (30-day limited period)

HZC-PRV50W: 59.94p/50p Software (7-day limited period)

HZC-DFR50: Double-speed Capturing Software for Slow Motion
(for HDC-3500)

HZC-DFR50M: Double-speed Capturing Software for Slow Motion
(30-day limited period) (for HDC-3500)

HZC-DFR50W: Double-speed Capturing Software for Slow Motion
(7-day limited period) (for HDC-3500)

HZC-UG50: User Gamma-compatible Software

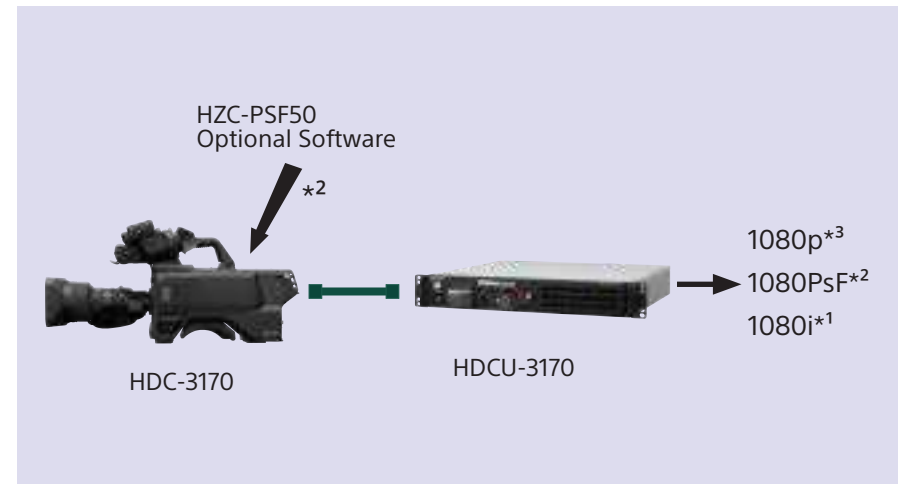
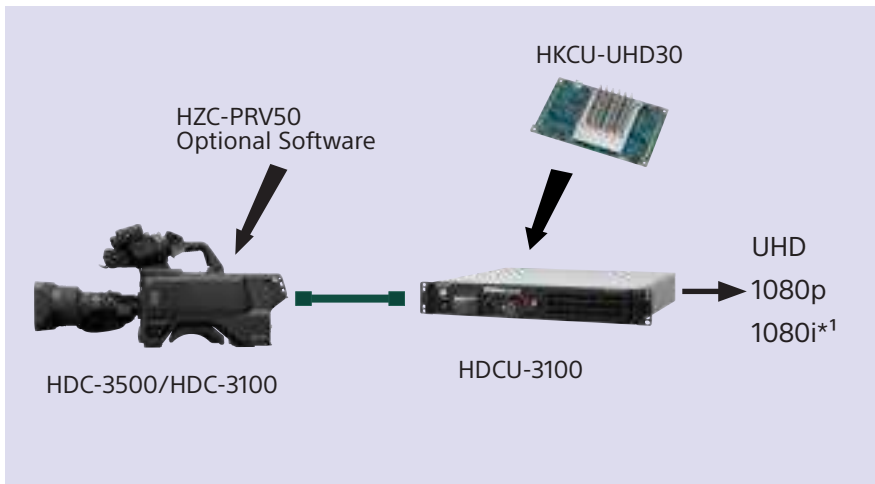
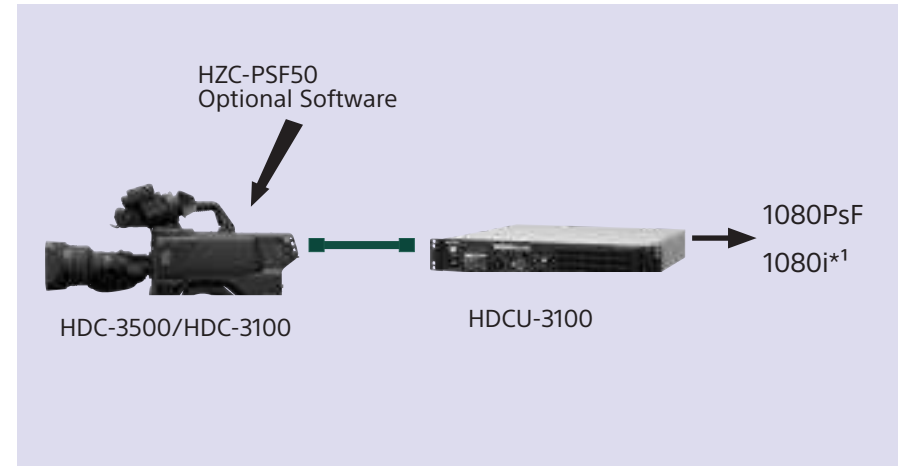
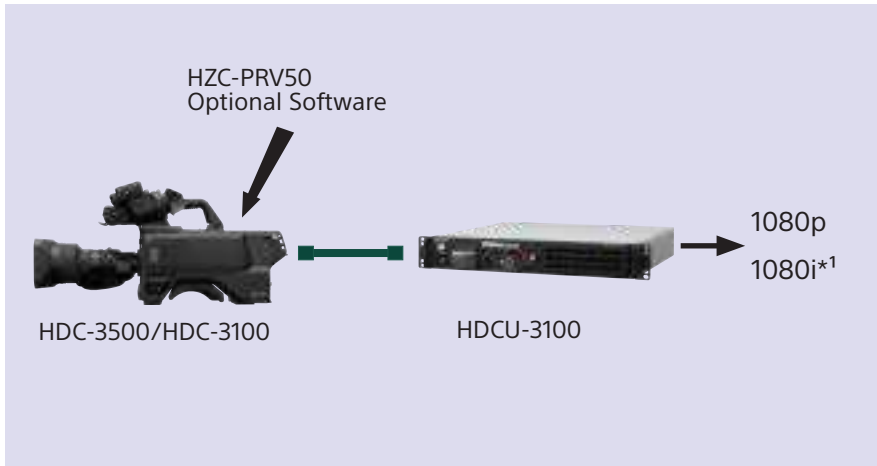
HZC-UG50M: User Gamma-compatible Software (30-day limited period)

HZC-UG50W: User Gamma-compatible Software (7-day limited period)



HDC-3100

Flexibility with the HDC Series



*1 1080i signals are supported as standard.

*2 This will be supported in 2019.

*3 Progressive software is pre-installed.

Superior Operability

Wider area for an easier handle grip

It's easy to grip the handle even with gloves on. And visibility through this area has improved. In addition, the ergonomically designed handle enables stable handling of the camera – use your index finger to tightly hold this part of the camera.



Viewfinder position: easy and stylish to use

The position of the viewfinder can be adjusted with ease. You can slide the viewfinder backward or forward and lock it to set its position with just the positioning lever. Its mounting rods are perfectly retracted into the body in a minimized position. As the rods do not protrude inward, they cannot interfere with your hand when gripping the handle.



Excellent Visibility

Camera numbering using electronic paper (for the HDC-3500)

An industry first, the HDC-3500 camera uses electronic paper (e-ink)-type camera numbers. This numbering changes automatically when the system changes the camera number. In addition, graphics can also be displayed with a number.

Side tally using an LED lamp (for the HDC-3500)

A tally lamp is mounted next to the camera number, improving visibility of tally status from the outside.



User-Friendly Interface

Improved layout of connectors

It's easy to pull BNC connectors out of the rear panel because of the ergonomic layout design.



Simple intercom with earphone terminal

Besides the conventional intercom system, a commercially available earphone (4-pole earphones) can be utilized to input and output the intercom audio signal.



Versatile System Components: HDCU-3100 and HDCU-3170

Sony HDCU-3100 and HDCU-3170 Camera Control Units are next-generation CCUs that perform signal processing, provide an interface to external equipment, and supply power to the camera. In a compact 1.5 RU-size, these devices provide a path for IP and 12G-SDI capabilities, including IP on HDC Series optical fiber studio cameras. These highly compact 1.5 RU-size CCUs fit a standardized 19-inch rack system, ideal for space-limited production areas.

HDCU-3100 Camera Control Unit

- Up to eight 3G-SDI/HD-SDI outputs
- Four sets of 3G-SDI/HD-SDI/SD-SDI return video inputs
- Two-channel teleprompter inputs
- Built-in LAN interface (10BASE-T/100BASE-TX)
- Two-channel data trunk lines (RS-422A or RS-232C) for easy data transmission
- Two-channel microphone outputs (two XLR connectors)

HDCU-3170 Camera Control Unit

- Up to eight 3G-SDI/HD-SDI outputs
- One-channel teleprompter input
- Built-in LAN interface (10BASE-T/100BASE-TX)
- A channel data trunk line (RS-422A/RS-232C) for easy data transmission
- Two-channel microphone outputs (two XLR connectors)
- A triax transmission connector is incorporated as standard and an optical fiber connector can also be added by installing an optional HKCU-FB30 Optical Fiber Connector kit. When you are operating in an OB van, it's easy to switch signals between optical fiber and triax cables.



HDCU-3170 standard



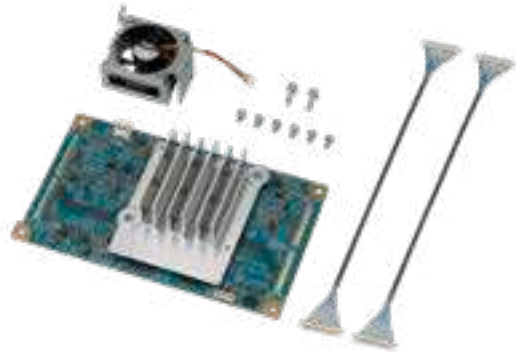
HDCU-3170 Triax/Fiber transmission
with optional HKCU-FB30

Upgrade Program for 4K

With the optional HKCU-UHD30 4K HDR Processor Board and HZC-PRV50 Signal Format Software, the HDC-3500 and HDC-3100 can be upgraded to create 4K images as well as 4K Live HDR (high dynamic range) images.

HKCU-UHD30: 4K/HDR Processor Board

The HKCU-UHD30 4K HDR Processor Board provides 4K HDR signals for SDI and IP output.



HKCU-SDI30: 12G-SDI Extension Kit

The HKCU-SDI30 is an 12G-SDI expansion kit that adds two connectors for 4K 12G-SDI signals.*1



*1 The HKCU-UHD30 is required for 4K signal output.

Interface Expansion Options

HKCU-FB30: Optical Fiber Connector Kit

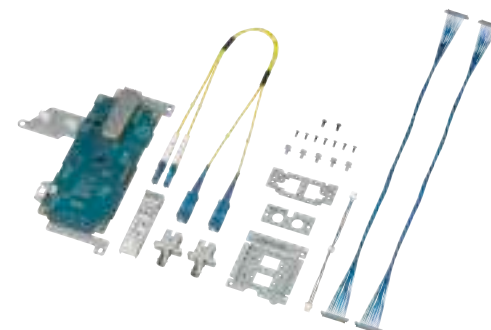
The HDCU-3170 Digital Triax CCU can achieve fiber transmission when you install the optional HKCU-FB30. With this new feature, the HDCU-3170 provides selectable triax and fiber transmission in one CCU body.



HKCU-SM30: Single Mode Fiber Connector Kit

The HKCU-SM30 is a single mode fiber connection kit between a camera and CCU.

With the HKCU-SM30, the maximum distance extends up to 10 km.



Optional Accessories



MSU-1000
Master Setup Unit



MSU-1500
Master Setup Unit



HDLA-1500
Large Lens Adaptor
(for attachment of the
HDVF-EL70/700A)



HDLA-1505
Large Lens Adaptor
(for attachment of the HDVF-EL75/
C730W/550/C550W)



HDLA-1507
Large Viewfinder Adaptor
(for attachment of the
HDVF-EL70/700A)



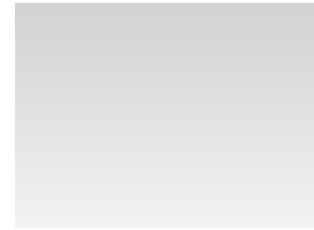
RCP-1000
Remote Control Panel



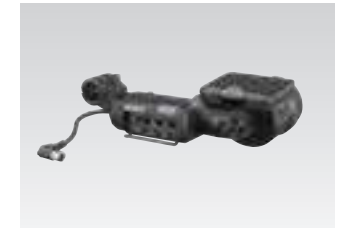
RCP-1001
Remote Control Panel



RCP-1500
Remote Control Panel



RCP-3100
Remote Control Panel
*Available in 2019 January



HDVF-EL30
Full HD OLED Viewfinder with
3.5-inch*1 LCD



HDVF-EL20
Full HD OLED Viewfinder



HDVF-EL70
7.4-inch*1 Color HD Viewfinder



HDVF-EL75
7.4-inch*1 Color HD Viewfinder



VFH-790
Outdoor Hood for
HDVF-EL70/EL75



HDVF-L750
7-inch*1 LCD Color Viewfinder



HDVF-L770
7-inch*1 LCD Color Viewfinder



HDCE-100
Camera Extension Adaptor



HKCU-SM100
CCU Extension Adaptor



BKW-401
Viewfinder Rotation Bracket



BKP-7911
Script Holder

*1 Viewable area measured diagonally



CAC-6
Return Video Selector



CAC-12
Mic Holder



VCT-14
Tripod Adaptor



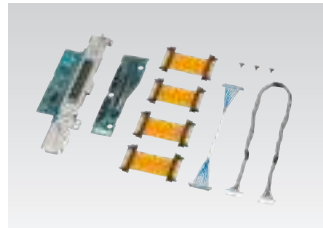
HKC-FB30
Optical Fiber Transmission Adaptor



HKC-TR37
Digital Triax Transmission Adaptor



HKC-WL50
Wireless Module Adaptor
*Available in 2019 January



HKC-CN50
Side Panel Attachment Kit



HDCU-3100
Fiber Camera Control Unit



HDCU-3170
Triax Camera Control Unit



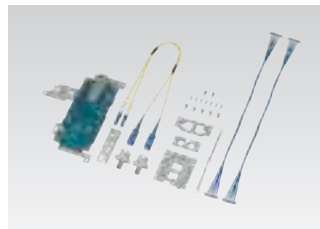
HKCU-SFP30
ST2110 Interface Kit



HKCU-UHD30
4K/HDR Processor Board



HKCU-SDI30
12G-SDI Extension Kit



HKCU-SM30
Single Mode Fiber Connector Kit



HKCU-FB30
Optical Fiber Connector Kit



J-712-156-0A
Camera Test Charts

Specifications

HDC-3500/HDC-3100/HDC-3170 Specifications

	HDC-3500	HDC-3100	HDC-3170
General			
Power requirements	AC 240 V, 1.4 A (max.), DC 240 V, 1.05 A (max.)	AC 240 V, 1.05 A (max.), DC 240 V, 1.05 A (max.)	DC 240 V, 1.05 A (max.)
Operating temperature	-20°C to +45°C (-4°F to 113°F)		
Storage temperature	-20°C to +60°C (-4°F to 140°F)		
Mass	Approx. 4.9 kg (10 lb 13 oz) (Unit only) Approx. 5.1 kg (11 lb 4 oz) (when HKC-TR37 is attached) Approx. 4.9 kg (10 lb 13 oz) (when HKC-FB30 is attached)	Approx. 4.8 kg (10 lb 9 oz)	Approx. 5.0 kg (11 lb 0.4 oz)
Imager			
Imager	2/3 inch type 4K CMOS sensor with global shutter		2/3 inch type CMOS sensor with global shutter
Method	3-CMOS, RGB		
Electrical characteristics			
Sensitivity	F10 with 1080/59.94p F11 with 1080/50p (at 2,000 lx with 89.9% reflectance)	F12 with 1080/59.94i F13 with 1080/50i (at 2,000 lx with 89.9% reflectance)	
Signal-to-noise ratio	-62 dB or higher		
Geometric distortion	Negligible (not including lens distortion)		
Optical system specifications			
Spectrum system	F1.4 prism		
Built-in filters	ND filters 1: CLEAR, 2: 1/4ND, 3: 1/8ND, 4: 1/16ND, 5: 1/64ND CC filters A: cross filter, B: 3200K (clear), C: 4300K, D: 6300K	1: CLEAR, 2: 1/4ND, 3: 1/16ND, 4: 1/64ND	
Input/output connectors			
CCU	Electro-optical connector (LEMO 3K.93C connector) (x1)		Triax connector (x1)
LENS	12-pin (x1)		
VF	20-pin (x1)		
MIC 1 IN	XLR 3-pin, female (x1)		
AUDIO IN CH1, CH2	XLR 3-pin, female (x1 each) AUDIO switch for MIC: -60 dBu (can be selected up to -20 dBu in the menu), balanced AUDIO switch for LINE: 0 dBu, balanced		
INTERCOM 1	XLR 5-pin, female (x1)		
INTERCOM 2	XLR 5-pin, female (x1)	No	
EARPHONE	4-pole mini jack (x1), (2-pole mono, 3-pole stereo, 4-pole CTIA standard, 4-pole OMTP standard)		
DC IN	XLR 4-pin (x1), DC 10.5 to 17 V		
DC OUT	4-pin (x1), DC 10.5 to 17 V, max. 0.5 A* 2-pin (x1), DC 10.5 to 17 V, Max. 2.5 A* ¹		
SDI 1	BNC (x1)		
SDI 2	BNC (x1)	No	
SDI MONI	BNC (x1)		
TEST OUT	BNC (x1)		
PROMPTER/GENLOCK	BNC (x1) PROMPTER 1 Vp-p, 75 Ω GENLOCK HD: SMPTE ST274, tri-level sync, 0.6 Vp-p, 75 Ω, SD: Black burst (NTSC: 0.286 Vp-p, 75 Ω/PAL: 0.3 Vp-p, 75 Ω)		
PROMPTER2	BNC (x1), 1 Vp-p, 75 Ω	No	
RET CTRL	6-pin (x1)		
REMOTE	8-pin (x1)		
TRACKER	12-pin (x1)		
CRANE	12-pin (x1)	No	
USB	USB 2.0 Type A 4-pin (x1) (for connecting USB drive)		
NETWORK TRUNK	RJ-45 type 8-pin (x1)		No
Supplied accessories			
	Before Using This Unit (1), Operating Instructions (CD-ROM) (1), Cable clamp belt (1 set), Screws (+B3×8) (2), Attached label (1)		Before Using This Unit (1), Operating Instructions (CD-ROM) (1), Cable clamp belt (1 set), Screws (+B3×8) (2), Attached label (1), Camera number label (1)

*1 This may be limited by the imposed load or inputs.

HDCU-3100/HDCU-3170 Specifications

	HDCU-3100	HDCU-3170
General		
Power requirements	100 V to 240 V AC, 50/60 Hz	
Current consumption	4.5 A (max.)	
Operating temperature	5 °C to 40 °C (41 °F to 104 °F)	
Storage temperature	-20 °C to +60 °C (-4 °F to +140 °F)	
Mass	Approx. 7.3 kg (16 lb 1.5 oz)	Approx. 8.1 kg (17 lb 14 oz)
Input/output connectors		
CAMERA FIBER	Optical fiber connector (x1)	No
CAMERA TRIAX	No	Triax connector (x1)
INTERCOM/TALLY/IO PORT	D-sub 50-pin connector (x1) INTERCOM (PROD/ENG), 4 W: 0 dBu, RTS: 0 dBu, CC: -14 dBu PGM, 3 systems, 0dBu/-20dBu (for HDC-3100/HDC-3170) TALLY (R, G, Y) FLAG	
RCP/CNU	8-pin multi-connector (x1)	
TRUNK	12-pin (x1)	
LAN-COM	8-pin (x1)	
NETWORK TRUNK	8-pin (x1)	
SDI I/O 1 to 4	3G/HD/SD-SDI I/O BNC (x4) 3G-SDI: SMPTE ST424/425 Level-A/B, 0.8 Vp-p, 75 Ω, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 Ω, 1.485 Gbps/1.4835 Gbps SD-SDI: SMPTE ST259, 0.8 Vp-p, 75 Ω, 270Mbps 3G-SDI/HD-SDI/SD-SDI, character signal selectable	
REFERENCE IN/OUT	BNC (x2), loop-through output HD: SMPTE ST274, tri-level sync, 0.6 Vp-p, 75 Ω SD: Black burst (NTSC: 0.286 Vp-p, 75 Ω/PAL: 0.3 Vp-p, 75 Ω) or NTSC 10F-BB	
Input connectors		
AC IN	100 V to 240 V AC (x1)	
SDI RET 1 to 4	BNC (x4) 3G-SDI: SMPTE ST424/425, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 1.485 Gbps/1.4835 Gbps SD-SDI: SMPTE ST259, 270 Mbps	
PROMPTER 1 PROMPTER 2/VBS-RET	BNC (x2), loop-through output during 1CH mode, terminate internally at 75 Ω during 2CH mode, analog signal, 1.0 Vp-p, 75 Ω	
Output connectors		
AUDIO OUT CH1, CH2	XLR 3-pin, male (x2), 0dBu/-20 dBu/+4 dBu	
CHARACTER/ABS/EBU	BNC (x1), VBS, 1 Vp-p, 75 Ω HD SYNC: BTA-S001, tri-level sync, 0.6 Vp-p, 75 Ω SD SYNC: composite sync, 0.3 Vp-p, 75 Ω VBS/HD, SYNC/SD, SYNC selectable	
SDI OUT 1 to 4	3G/HD/SD SDI OUTPUT BNC (x4) 3G-SDI: SMPTE ST424/425 Level-A/B, 0.8 Vp-p, 75 Ω, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 Ω, 1.485 Gbps/1.4835 Gbps SD-SDI: SMPTE ST259, 0.8 Vp-p, 75 Ω, 270 Mbps 3G-SDI/HD-SDI/SD-SDI, character signal selectable	
Supplied accessories		
Number plates (1 set), Before Using this Unit (1), Operating Instructions (CD-ROM) (1)		
Optional accessories		
United States and Canada: Power cord set (1-551-812-XX) Other areas: Power cord set (1-782-929-XX)		
United States and Canada: Plug holder B (2-990-242-01) Other areas: Plug holder C (3-613-640-01)		
CCA-5-3 Connection Cable (3 meters), CCA-5-10 Connection Cable (10 meters)		

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SONY

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