



SONY®

Digital **HDVS**

# HDC HD Family

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## Multi-format HD Camera System



THE NEW WAY OF BUSINESS™

# Sony HDC-1000 Series – Heralds a New Era of



HDC-1000

HDC-1550

# HD Production

Since introducing its first model, Sony has continually enhanced its line of high definition cameras, in support of the emerging DTV agendas around the world. The flagship HDC-900 Series, introduced in 2000, has presented a comprehensive and cost-effective path into studio, OB van, and field-based HD productions, due to its multiple format capability, stunning picture performance, and system flexibility.

Pursuing the ultimate HD system for today and for tomorrow, Sony now sets another milestone in the history of multi-format HD camera systems – the HDC-1000 Series – offering a broader choice of interlace and progressive formats, much greater picture quality, and enhanced operational flexibility.

The HDC-1000 Series consists of three camera heads, two large lens adaptors, two CCUs (Camera Control Units), and a range of peripherals. The camera heads – the HDC-1000 optical-fiber-based studio camera, the HDC-1500 optical-fiber-based portable camera, and the HDC-1550 triax-based portable camera – incorporate a newly developed CCD imager and DSP LSI – two key devices that allow them to achieve ultimate picture performance in a variety of scanning modes. The new CCD can accommodate all existing interlace and progressive scan formats ranging from 1080/50i and 1080/60i to 1080/24P.\*<sup>1</sup> And as a future-protected device, it can also capture stunning 1080/60P and 1080/50P images – as well as delivering highest-quality 720/50P and 720/60P image creation for operations today.\*<sup>2</sup>

Such high image quality is supported by the camera's convenient peripherals, which make installation and operation of the HDC-1000 system very smooth.

The HDLA-1500/HDLA-1505 Large Lens Adaptor incorporates a new interlocking mechanism, which allows a large lens to be attached/detached from the portable HDC-1500/HDC-1550 in just a matter of seconds – relieving operators from lengthy mechanical adjustments.

The new HDCU-1000/HDCU-1500 Camera Control Units use an optical fiber connection between the HDC camera for top-quality signal transmission and longer cable runs. In addition to a broad range of signal outputs, both CCUs come equipped with an Ethernet interface (100Base-TX) for control over a standard TCP/IP network. What's more, the HDTX-100 and HDFX-100 Triax Adaptors, which provide conversion between optical fiber and triax, allow systems to be configured around conventional triax-based infrastructures.

With its innovative performance, operability, and system flexibility, the Sony HDC-1000 Series will certainly become the mainstream acquisition tool to open unlimited possibilities in a broad range of HD production applications.

\*<sup>1</sup> 1080/60P and 1080/50P signals can be output only from the HDC-1000/HDC-1500 camera head.

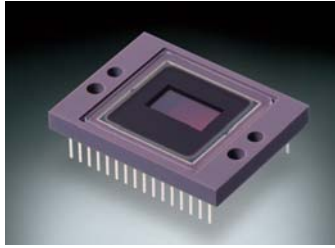
\*<sup>2</sup> In this brochure, 60i, 24P, 30P, and 60P are used as generic names for 59.94i, 23.976P, 29.97P, and 59.94P, respectively.



## Cutting-edge Technologies

### Newly Developed Progressive CCD

At the heart of the outstanding picture performance of the HDC-1000/HDC-1500/HDC-1550 cameras are a newly developed 2/3-inch type 2.2-megapixel HD CCD. Based on Sony HAD sensor technology and the latest on-chip lens structure, this new CCD offers a high sensitivity of F10 at 2,000 lx and an excellent signal-to-noise ratio of 54 dB (typical).



In addition to this performance, a wide variety of capturing modes including 1080/50i, 1080/60i, 1080/24P, 1080/25P, and 1080/30P are available. What's more, this CCD can capture top-quality 1080/60P\* and 1080/50P\* images – a capability that also results in the highest-quality 720/50P and 720/60P image acquisition for today's operations.

\*1080/60P and 1080/50P signals can be output only from the HDC-1000/HDC-1500 camera head.

### Industry-first 14-bit A/D Conversion

The HDC-1000/HDC-1500/HDC-1550 camera incorporates an industry-first\* 14-bit A/D converter that enables images captured by the high-performance CCDs to be processed with maximum precision. In particular, this high-resolution A/D conversion allows the gradation in mid-to-dark-tone areas of the picture to be faithfully reproduced. Thanks to the 14-bit A/D converter, pre-knee signal compression at highlight areas can be eliminated and the camera can clearly reproduce a high-luminance subject at a 600% dynamic range.

\*In a 2.2-megapixel HD camera.

### State-of-the-art DSP LSI

The newly developed DSP (Digital Signal Processing) LSI "Visual Image Processor" is the heart of the image-processing device for the HDC-1000/HDC-1500/HDC-1550



cameras. By adopting the latest 0.11  $\mu\text{m}$  design rule, this processor can accommodate up to 1080/60 and 1080/50 progressive formats at 14-bit resolution, maximizing the high-quality images captured by the CCD. In addition, white balance, white shading, and flare are digitally corrected, allowing for stable image correction.

## Great Operability

### Ergonomic Design

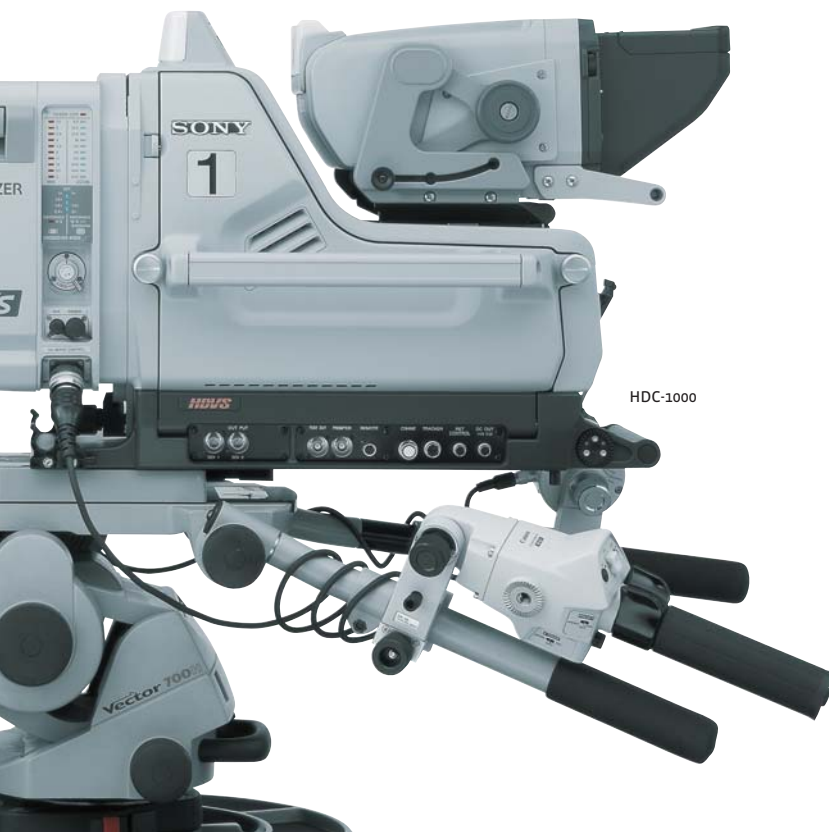
The design of the HDC-1000/HDC-1500/HDC-1550 cameras are based on over two decades of Sony experience in manufacturing broadcast video cameras and camcorders, providing a high level of operability. All control switches and connectors are in the most logical places and are positioned for optimum functionality and ease of use. The low-profile body of the HDC-1000 minimizes the parallax between the optical axis of the camera head and the large viewfinder, while the HDC-1500/HDC-1550's low center of gravity design allows the operator to carry the camera comfortably on the shoulder. In addition, the shoulder pad of the HDC-1500/HDC-1550 cameras can be adjusted forward and backward without tools, so the camera can easily be moved to a well-balanced position.



## Optical Fiber Digital Transmission (HDC-1000/HDC-1500)

The HDC-1000/HDC-1500 camera comes equipped with a SMPTE standardized optical fiber interface for connecting to the HDCU-1000/HDCU-1500 Camera Control Unit. In addition to its exceptional quality, the camera can transmit all-digital bi-directional video and audio signals, one control line, power lines and prompter line over extremely long distances – up to 3000 meters (9843 feet)\* with the HDCU-1000 and 1800 meters (5906 feet)\* with the HDCU-1500.

\*When supplying power to the camera via the optical fiber cable, the maximum cable length varies with the camera system configuration, lens type, the size of the optical fiber cable, and the number of cable connectors.



## Choice of Two Camera Control Systems

In a multi-camera configuration featuring the HDC-1000 Series, two types of camera control system can be used. One is where the CNU-700 Camera Command Network Unit is at the center of the configuration, while the other makes use of the Ethernet functionality of the systems – a new and powerful feature that also provides a path to the future. Both control systems allow communication between all the devices in the configuration, including cameras, camera control units, remote controllers, and setup units.

## Wide-band Triax Transmission (HDC-1550)

The HDC-1550 camera comes equipped with a triax transmission interface. This enables the camera to transmit bi-directional video and audio signals, one control line, and one power line to the HDCU-1000/HDCU-1500 Camera Control Unit via the HDFX-100 unit over long distances – up to 1400 meters (4593 feet)\* with a  $\varnothing$  14.5 mm triax cable or 1000 meters (3281 feet)\* with a  $\varnothing$  13.2 mm triax cable.

\*When supplying power to the camera via the triax cable, the maximum cable length varies with the camera system configuration, lens type, the size of the triax cable, and the number of cable connectors.

## Compact and Lightweight

The HDC-1500/HDC-1550 is designed to be very compact and lightweight for a high level of mobility in the field. The HDC-1500 and HDC-1550 cameras weigh approximately 4.5 kg (9 lb 15 oz) and 4.9 kg (10 lb 13 oz) respectively.

## Versatile Interfaces

The HDC-1000/HDC-1500/HDC-1550 cameras provide two HD SDI outputs and one HD SDI output respectively, as well as one digitally down-converted SDI or analog composite output. In addition, the viewfinder signals with characters can be output from the SDI output connector, giving camera operators additional convenience. Furthermore, when operating in 24P the built-in 2-3 pull-down function of the HDC-1000/HDC-1500/HDC-1550 cameras enable 60i down-converted SD signals to be output to a standard SD monitor.

## Memory Stick™ Storage of Camera Setup Parameters

The HDC-1000/HDC-1500/HDC-1550 cameras incorporate the Sony Memory Stick system for the storage and recall of setup parameters such as scene files, reference files, and lens files. This is an easy, effective system for storing and recalling camera parameters for individual scenes, plus individual operators' camera-setup preferences, such as viewfinder indicator settings.

## Servo-controlled ND and CC Filters

The HDC-1000/HDC-1500/HDC-1550 cameras come equipped with servo-controlled dual optical filters for ND (Neutral Density) and CC (Color Correction) for flexible color and exposure control. The filter settings can be remotely controlled on an RCP-750/751 Remote Control Panel, MSU-900 Master Setup Unit, MSU-950 Portable Master Setup Unit, or RM-B750/B150 Remote Control Unit or locally controlled on the camera head.

# HDLA-1500/HDLA-1505 – Maximizing Operability

Responding to the ever-increasing requirement of operations that combine a portable camera with a large lens, Sony is continuously seeking the optimum solution. The result is the highly sophisticated HDLA-1500\* and HDLA-1505\*\* Large Lens Adaptors, which are designed to maximize operability of the HDC-1500/HDC-1550

cameras. Generally, setting up a portable camera to a large lens adaptor can be a difficult task, especially fine-tuning the mechanical adjustments between each device. With the new HDLA-1500/HDLA-1505 adaptor, time-consuming adjustments, as well as wiring, are eliminated.

\*Includes an attachment for large CRT viewfinders \*\*Does not include an attachment for large CRT viewfinders



HDLA-1500

Docking **3**  
Closes the rear cover. Turns the handle of the camera and then slide the viewfinder forward.





**Docking 1**  
 Opens the rear cover of the HDLA-1500 adaptor.  
 There is no need to detach the viewfinder.



HDLA-1505



HDLA-1505 rear panel



**Docking 2**  
 Mount the HDC-1500 camera and slide forward  
 until the locking unit engages.

## Totally New Interlocking Mechanism

The HDLA-1500/HDLA-1505 adaptor does not require cable wiring. Utilizing a newly developed interlocking mechanism, power, video, and control signals are passed directly from the HDC-1500/HDC-1550 cameras to the HDLA-1500/HDLA-1505 adaptor. This unique mechanism also allows the HDC-1500/HDC-1550 cameras to be attached and detached without removing the large lens. Furthermore, the lens can be removed. The interlocking mechanism allows for a very quick and smooth setup.

## Low-profile Design

Together with the low-profile design of the HDC-1500/HDC-1550 camera, the viewfinder position of the HDLA-1500 is 45 mm lower than the previous model. This design significantly improves the operator's view, as well as minimizes the parallax between the optical axis of the camera head and viewfinder.

# Creative Versatility

## Digital Extender\*

The digital extender function of the HDC-1000/HDC-1500/HDC-1550 cameras enables images at the center of the shot to be digitally doubled in size. Unlike lens extenders, the digital extender function performs this capability without loss in image sensitivity.

\*Use of the digital extender function will reduce the resolution of the image by half.

## Multi Matrix

The multi-matrix function of the HDC-1000/HDC-1500/HDC-1550 cameras allow color adjustments to be applied over the color range specified by the operator. The color spectrum is divided into 16 areas of adjustment, where the hue and/or saturation of each area can be modified. This function is especially useful when only the hue of certain colors needs to be adjusted for special-effects work.



Multi Matrix OFF



Multi Matrix ON

## Triple Skin Tone Detail Correction

Skin Tone Detail Correction controls the detail level of objects in a scene with specific color tones. HDC-1000/1500/1550 camera allows detail to be set independently for each of three separate color ranges. These colors are not limited to skin tones, it can be set for any color. Detail may be increased or decreased relative to the normal level.



Skin Tone Detail OFF



Skin Tone Detail ON



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## Knee Saturation

Traditionally, shooting very bright portions of an object (such as key light conditions from a person's forehead) can reduce color saturation and change the hue in highlight areas. The HDC-1000/HDC-1500/HDC-1550 cameras adopt a Knee Saturation function, in which this "washed-out" effect on saturation and hue change is reduced to a minimum and far more natural color reproduction in highlight areas is achieved.



Knee Saturation OFF



Knee Saturation ON

## Low-key Saturation

With conventional cameras, low light areas can be subject to a reduction in saturation. This can result in colors in those areas being "muddy". The Low Key Saturation function on the HDC-1000/HDC-1500/HDC-1550 cameras eliminates this problem by optimizing the amplification of color saturation at low light levels, providing more natural color reproduction.



Low-key Saturation OFF



Low-key Saturation ON

## Selectable Gamma Table

A selectable gamma table of the camera allows users to create a specific look by selecting from a choice of fixed gamma patterns.

## Variable Black Gamma Range

The Variable Black Gamma Range function allows for fine adjustment of tonal reproduction in the shadow areas. This feature can help to bring out details from the dark areas of the picture without affecting mid-tones while maintaining the absolute black level.



Standard Video Gamma



Variable Black Gamma Range ON

# Versatile System Components

The HDC-1000/HDC-1500/HDC-1550 cameras are compatible with a variety of peripherals, including camera control units, remote controllers, command network units, and master setup units. This allows operators to flexibly configure the

system according to their needs both in the studio and out in the field. Optional triax adaptors are available for the HDC-1000/HDC-1500 optical fiber-based camera to enable triax-based operation.

## HDCU-1000 Camera Control Unit HDCU-1500 Portable Camera Control Unit

The HDC-1000/HDC-1500/HDC-1550 cameras can be configured with two types of camera control units – the full-size HDCU-1000 and half-rack HDCU-1500. The optical fiber transmission system used in these units maintains the high picture quality of the camera across cable runs of up to 3000 meters (9843 feet)\* with the HDCU-1000 and up to 1800 meters (5906 feet)\* with the HDCU-1500. Both models are equipped with a range of built-in interfaces such as HD SDI/SD SDI outputs, HD/SD return inputs, and a down-converted analog composite monitor output. In addition, a variety of output interfaces are offered via optional boards, which are installed in four slots on the HDCU-1000 and two slots on the HDCU-1500. Furthermore, the Ethernet interface (100Base-TX) that is built into both CCUs allows the camera to be controlled over a network.

\*When supplying power to the camera via the optical fiber cable, the maximum cable length varies with the camera system configuration, lens type, viewfinder type, the size of the optical fiber cable, and the number of cable connectors.

Three types of interface expansion option are available for both CCUs.

- The HKCU-1001 SD Analog Interface Unit provides two analog NTSC or PAL VBS signal outputs, a WFM (Waveform monitor), and a monitor output.
- The HKCU-1003 Multi Interface Unit consists of three types of interface board and provides:
  - Frame reference input and output to lock 2-3 pull-down sequence (Board A)

- Two analog NTSC or PAL VBS signal outputs (Board B)
- Analog NTSC or PAL VBS and analog component R/G/B or Y/R-Y/B-Y outputs (Board C)
- The HKCU-1005 HD/SD Output Expansion Unit provides four HD SDI or SD SDI outputs.



HDCU-1000

## HDCU-1000

- Eight HD SDI or SD SDI outputs
- Up to eight additional HD SDI or SDI outputs (with two optional HKCU-1005 boards)
- Four sets of HD SDI, SD SDI, and analog composite return video inputs
- Built-in down-converted analog composite output
- Built-in 2-3 pull-down capability
- Two-channel teleprompter inputs
- Built-in Ethernet interface (100Base-TX)
- Two-channel data trunk lines (RS-422A or RS-232C) for easy data transmission
- AES/EBU digital audio output
- Two-channel microphone outputs (two XLR connectors)
- High power supply allowing HDC1000 camera or HDC-1500/HDC-1550 with HDLA-1500/HDLA-1505 operation



HDCU-1000 rear panel



HDCU-1500

### HDCU-1500

- High power supply allowing HDC-1000 camera or HDC-1500/ HDC-1550 with HDLA-1500/HDLA-1505 operation
- Three HD SDI or SD SDI outputs
- Up to eight additional HD SDI or SD SDI outputs (requires two optional HKCU-1005 boards)
- Three HD SDI, SD SDI, or analog composite return video inputs
- Built-in down-converted analog composite output
- Built-in 2-3 pull-down capability
- RM-B750 Remote Control Unit attach capability on the front panel
- One channel teleprompter inputs
- Built-in Ethernet interface (100Base-TX)
- Two-channel data trunk line (RS-422A/RS-232C) for easy data transmission
- Two-channel microphone outputs (two XLR connectors)

### RM-B750 Remote Control Unit

The RM-B750 Remote Control Unit has been designed to offer a highly mobile and fully controllable camera system in the field. The RM-B750 can be connected directly to the HDC-1000/HDC-1500/HDC-1550 camera or attached to the half-rack HDCU-1500 Camera Control Unit. The combination of an LCD touch-panel screen and direct push buttons enables full parameter adjustment of the camera to be controlled. The RM-B750 has a Memory Stick media card slot so that various setup parameters can be stored and recalled.



RM-B750



HDCU-1500 rear panel



The RM-B750 attached to the HDCU-1500



HKCU-1001  
SD Analog Interface Unit



HKCU-1003  
Multi Interface Unit



HKCU-1005  
HD/SD Expansion Unit



## MSU-900 Master Setup Unit MSU-950 Portable Master Setup Unit

The MSU-900/950 Master Setup Unit is a central control panel used for the adjustment of camera parameters in a multi-camera system. The MSU-900/950 unit is connected to each camera control unit in the system via the CNU-700 Command Network Unit or an Ethernet network hub.

- Central control of camera parameters for the entire camera system
- Picture and waveform monitor switching
- Precise picture adjustment
- Built-in 6.5-inch\* type LCD display for clear viewing of adjustment parameters during operation
- Memory Stick slot for storing/recalling files
- Built-in Ethernet interface (100Base-TX)

\* Viewable area, measured diagonally



MSU-900



MSU-950

## RCP-750/751 Remote Control Panel

Two types of RCP-750 Series Remote Control Panels are also available, providing a range of control functions from the basic to the very sophisticated for operational adjustments of an HDC-1000/HDC-1500/HDC-1550 cameras. The RCP-750 is available with joystick. The RCP-751 is available with a dial-type iris control.



RCP-750



RCP-751

## CNU-700 Camera Command Network Unit

The CNU-700 Camera Command Network Unit allows communication between all the units in the system. The CNU-700 also provides the ability to assign CCUs, MSUs, RCPs, and HDC-1000/HDC-1500/HDC-1550 camera heads. A RISC-based microprocessor system provides high-speed transfer of command signals to the HDCU-1000/HDCU-1500/HDC-1550 cameras for rapid response and reliable control. One CNU-700 unit can control six cameras, but can be expanded to control up to 12 cameras when fitted with an optional BKP-7930 expansion board. Several CNU-700 units can be connected to the camera control network in a large system.



CNU-700

## HDTX-100 HD Triax Adaptor (Camera side) HDFX-100 HD Triax Adaptor (HDCU side)

The HDTX-100 and HDFX-100 HD Triax Adaptors are available to convert optical fiber transmission to triax transmission. The HDTX-100 adaptor is used with the HDC-1000 and HDC-1500 cameras\* to convert the camera output to triax, while the HDFX-100 adaptor is used with the HDCU-1000 and HDCU-1500 camera control units to receive triax signals from the camera side.

The triax-based system enables high-quality pictures to be transmitted from the HDC-1000 camera and HDC-1500/HDC-1505 cameras (with or without the HDLA-1500/HDLA-1505 adaptor) over long distances – up to 1400 meters (4593 feet)\*\* with a  $\varnothing$  14.5 mm triax cable or 1000 meters (3281 feet)\*\* with a  $\varnothing$  13.2 mm triax cable. In addition, the HDTX-100 adaptor enables hybrid triax and optical fiber operation. In this case, longer cable runs of more than 2000 meters (6562 feet)\*\* can be achieved with the HDC-1500 portable camera that is equipped with a portable lens and a small viewfinder.

- \*The HDC-1500 does not require the HDTX100 unit because it is equipped with a Triax output as standard.
- \*\* When supplying power to the camera via the optical fiber cable and/or triax cable, the maximum cable length varies with the camera system configuration, lens type, viewfinder type, the size of the optical fiber cable and/or triax cable, and the number of cable connectors.

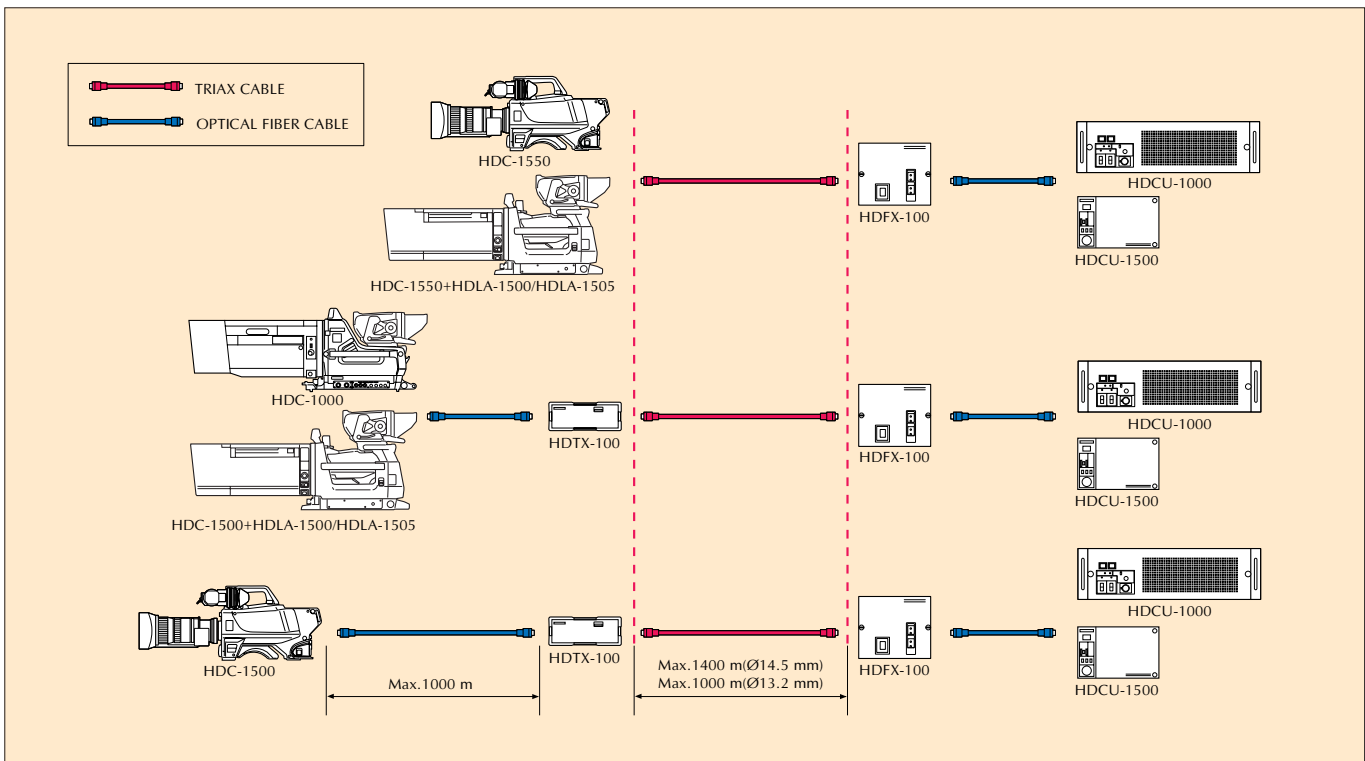


HDTX-100



HDFX-100

## Triax and Optical Fiber Operation



## HKC-T1500 CCD Block Extension Adaptor

The HKC-T1500 CCD block adapter is a unique accessory for the HDC-1500 and HDC-1550 portable cameras. It allows the CCD block to be extended from the camera body by up to 10 m (up to 50 m with an optional cable). More creative camera shooting angles and the freedom to place the imaging assembly in areas where a full size camera would be restricted can be achieved. The HKC-T1500 adaptor will expand the spectrum of HD camera applications in area such as snorkel lenses, helicopter gimbal mounts or mini jibs.



Extension Head Block with Handle



HKC-T1500 connected to the HDC-1550

## Panel

### HDC-1000



HDC-1000 rear panel



HDC-1000 inside panel



HDC-1000 outside panel

### HDC-1500 / HDC-1550



HDC-1500



HDC-1500 rear panel (CE)



HDC-1550 rear panel



# Optional Accesories



HDLA1500  
Large Lens Adaptor



HDLA1505  
Large Lens Adaptor



RM-B150  
Hand-held Remote Control Unit



RCP-700/701  
Remote Control Panel  
(Photo shows RCP-700)



RCP-750/751  
Remote Control Panel  
(Photo shows RCP-750)



HDVF-20A  
CRT B/W Viewfinder  
for HDC1500/HDC1550



HDVF-C30W  
LCD Color Viewfinder  
for HDC1500/HDC1550



HDVF-700A  
CRT B/W Viewfinder  
for HDC1000



HDVF-9900  
HD CRT Color Viewfinder  
for HDC1000



HDVF-C730W  
LCD Color Viewfinder  
for HDC1500/HDC1550



Viewfinder Eye-piece for HDVF-20A  
A-8314-798-A  
(High performance, with soft cushion)



Viewfinder Eye-piece for HDVF-20A  
A-8262-537-A (High magnification)  
A-8262-538-A (Low magnification)  
A-8267-737-A (Standard magnification with special  
compensation for aberrations)



BKW-401  
Viewfinder Rotation Bracket  
for HDVF-20A



BKP-7911  
Script Holder



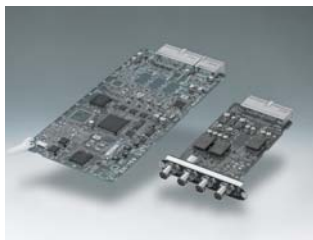
CAC-6  
Return Video Selector



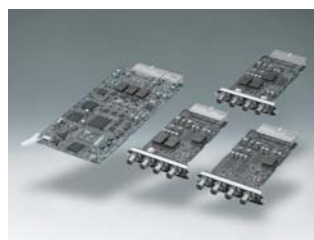
CAC-12  
Mic Holder



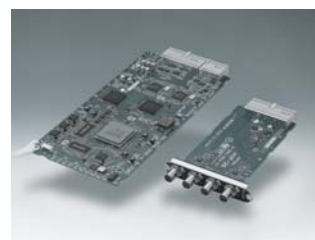
VCT-14  
Tripod Adaptor



HKCU1001  
SD Analog Interface Unit

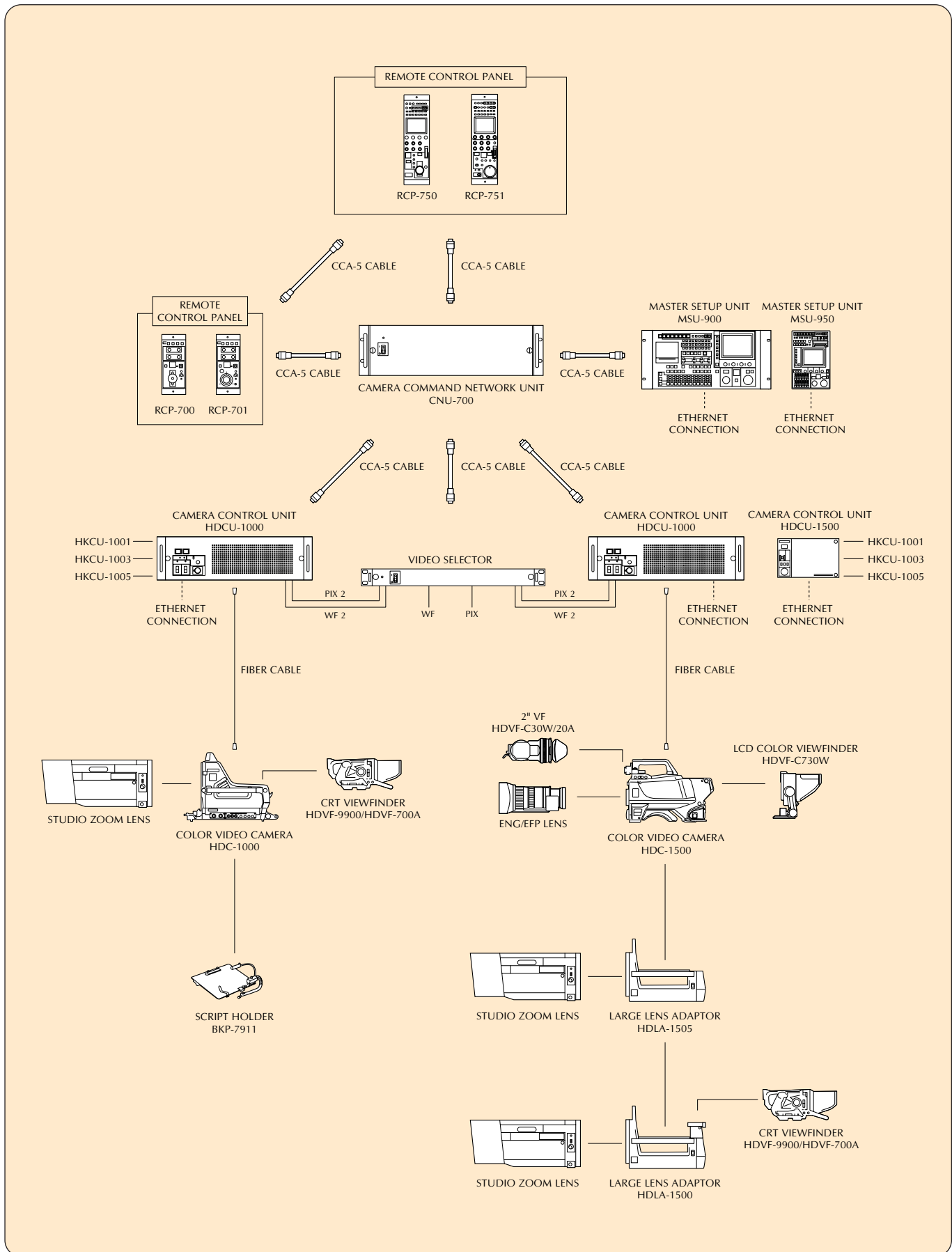


HKCU1003  
Multi Interface Unit

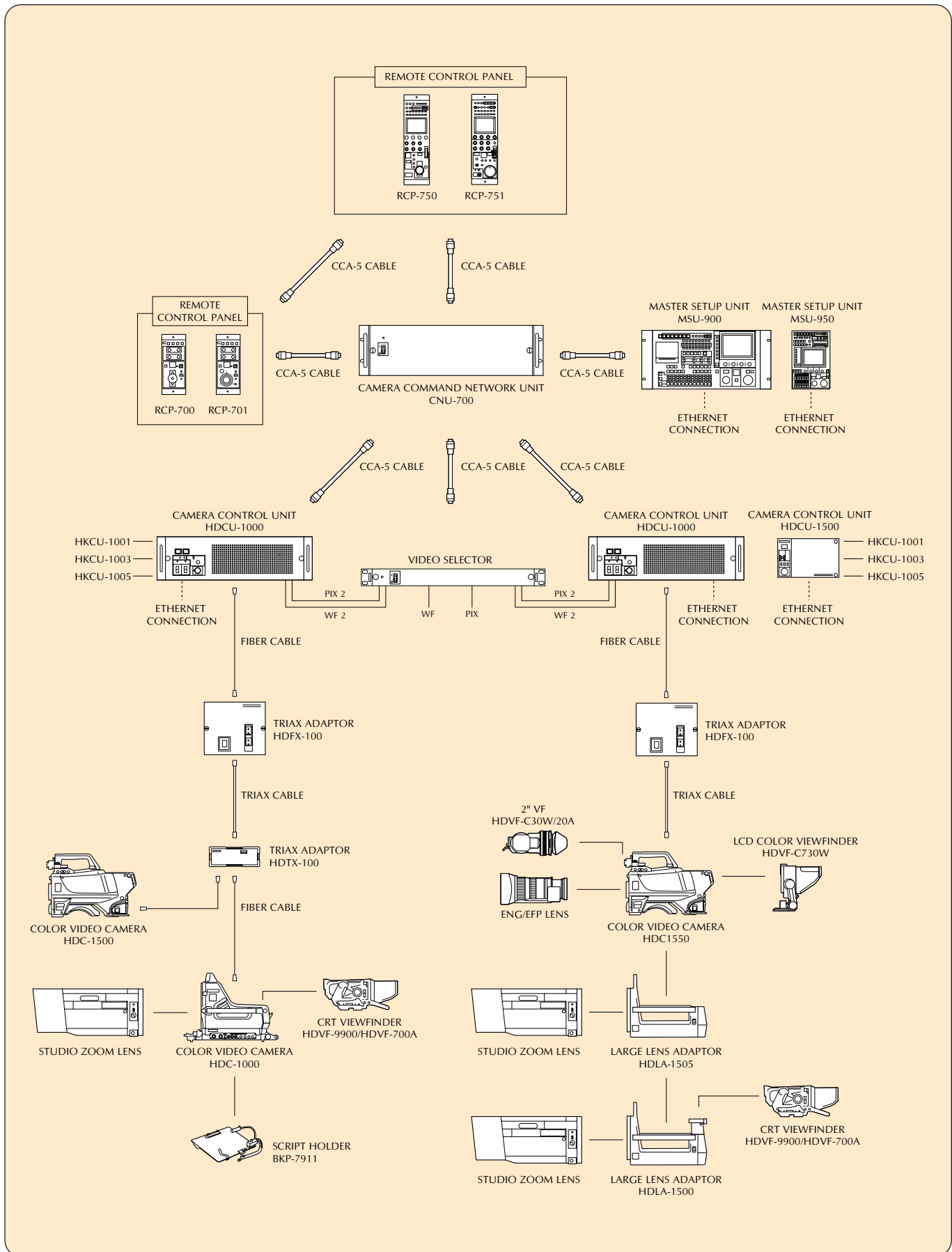


HKCU1005  
HD/SD Expansion Unit

# System Configuration for Optical Fiber Operation



# System Configuration for Triax Operation





## HDC1000, HDC1500 AND HDC1550 SPECIFICATIONS

	HDC-1000	HDC-1500	HDC-1550
<b>General</b>			
Weight	Approx. 44 lb 9 oz (20 kg, without VF and lens)	Approx. 9 lb 14 oz (4.5 kg, without VF and lens)	Approx. 10 lb 13 oz (4.9 kg, without VF and lens)
Operating temperature	-4 to +113 °F (-20 to +45 °C)		
<b>Camera</b>			
Pickup device	3-CCD 2/3-inch type 16:9		
Effective picture elements (H x V)	1920 x 1080		
Spectrum system	F1.4 prism system		
Built-in filters	1: Clear, 2: 1/4ND, 3: 1/8ND, 4: 1/16ND, 5: 1/64ND A: CROSS, B: 3200K, C: 4300K, D: 6300K, E: 8000K		
Servo filter control	Yes		
Sensitivity	F10 at 2000 lx (3200K, 89.9% reflectance)		
Signal-to-noise ratio	54 dB (typical)		
Horizontal resolution	1000 TV lines		
Dynamic range (1080/60i mode)	600%		
Registration	Within 0.02% (all zones, without lens)		
Shutter speed selection	1/100, 1/125, 1/250, 1/500, 1CTE/1000, 1/2000 s (1080/60i mode) 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000 s (1080/50i mode)		
Modulation depth	45% or more horizontally (800 TV lines at center, 27.5 MHz, with typical lens)		
Lens mount	Sony hanger mount	Sony bayonet mount	
<b>Input connectors</b>			
Audio in (CH-1)	XLR-3-31 type (1, female), mic or line selectable		
Audio in (CH-2)	XLR-3-31 type (1, female), AES/EBU or mic or line selectable		
Mic in (front)	-	XLR-3-31 type (1, female)	
Return control	6-pin (1)		
Genlok/return in	-	BNC type (1)	
DC in	XLR-4-pin type (1)		
<b>Output connectors</b>			
Test out	BNC type (1), 1.0 Vp-p, 75 Ω		
HD SDI out	BNC type (2)		BNC type (1)
Earphone out	-	Mini-jack (1), 8 Ω	
DC out	4-pin (1), 10.5 to 17 V, max. 1.5 A		
<b>Input/output connectors</b>			
CCU	Optical fiber connector		Triax connector
Lens	36-pin	12-pin	
Viewfinder	D-sub 25-pin	20-pin	
Remote	8-pin		
Prompter	BNC type (1), 1.0 Vp-p, 75 Ω		
Tracker	10-pin: Tracker R/T, R/G Tally, unregulated 12 V		
Crane	12-pin, Y/Pb/Pr, Trunk data I/O, Serial Data		
Intercom	XLR-5-pin (2, female)		
<b>Supplied accessories</b>			
	Operation manual (1), Front cover (1), Number plate for side panel (2), Belt for cable clamp (2), Angle adjustment fitting (2)	Operation manual (1), Lens cap (1), Label for assignable switch (1)	Operation manual (1), Lens cap (1), Label for assignable switch (1)

## MSU-900 and MSU-950 Specifications

	MSU-900	MSU-950
<b>General</b>		
Power requirements	AC 100 to 240 V, 50/60 Hz	
Current consumption	0.35 A	
Operating temperature	+41 to +104 °F (+5 to +40 °C)	
Maximum cable length	200 m (656 feet)	
Weight	Approx. 9 lb 14 oz (4.5 kg)	Approx. 8 lb 2 oz (3.7 kg)
Dimensions (W x H x D)	19 x 2 3/4 x 8 3/4 inches (482 x 67 x 222 mm)	8 1/8 x 14 x 2 3/4 inches (204 x 354 x 67 mm)
<b>Inputs/outputs</b>		
Remote	CCU/CNU: 8-pin (1) AUX: 8-pin (1)	
I/O port	50-pin (1)	
Ethernet	6-pin (1)	
AC input	3-pin (1)	

## HDLA-1500 and HDLA-1505 Specifications

	HDLA-1500	HDLA-1505
<b>General</b>		
Power requirement	240 V AC (max. 1.2 A)/180 V DC (max. 0.6 A)/12 V DC (max. 9 A)	
Operating temperature	+14 °F to +113 °F (-10 °C to +45 °C)	
Storage temperature	-4 °F to +140 °F (-20 °C to +60 °C)	
Dimensions (Approx. W x H x D)	21 x 15 3/4 x 13 1/4 inches (531 x 400 x 336 mm)	
Weight (Approx.)	40 lb 13 oz (18.5 kg)	37 lb 11 oz (17.1 kg)
<b>Input/output connector</b>		
Lens	36-pin	
DC IN	XLR-4-pin (1), 10.5 to 17 V DC	
DC OUT	4-pin (1), 10.5 to 17 V DC, max. 1.5 A	
VF	D-sub 25-pin (1)	-

## HDCU1000 and HDCU1500 Specifications

	HDCU-1000	HDCU-1500
<b>General</b>		
Power requirements	AC 100/120/220 to 240 V, 50/60 Hz	AC 100 to 240 V, 50/60 Hz
Maximum current consumption	5.4 A (at 100 V AC, entire system active)	4 A (at 100 V AC, entire system active)
Operating temperature	+41 to +104 °F (+5 to +40 °C)	+14 to +104 °F (-10 to +40 °C)
Weight	Approx. 35 lb 4 oz (16 kg)	Approx. 13 lb 10 oz (6.2 kg)
Dimensions (W x H x D)	16 3/4 x 5 1/4 x 16 1/4 inches (424 x 133 x 410 mm)	8 x 5 1/9 x 16 1/4 inches (200 x 127 x 410 mm)
<b>HD / SD inputs/outputs</b>		
HD SDI / SD SDI output	BNC type (4), SMPTE 292M, 1080/50i, 60i, 30P, 25P, 24P, 720/60P, 50P HD SDI/SD SDI selectable	BNC type (2), SMPTE 292M, 1080/50i, 60i, 30P, 25P, 24P, 720/60P, 50P HD SDI/SDI selectable
HD SDI / SD SDI monitor output	BNC type (4), SMPTE 292M, 1080/50i, 60i, 30P, 25P, 24P, 720/60P, 50P HD SDI/SD SDI selectable, character on/off selectable	BNC type (1), SMPTE 292M, 1080/50i, 60i, 30P, 25P, 24P, 720/60P, 50P HD SDI/SD SDI selectable, character on/off selectable
HD SDI return input	BNC type (4), SMPTE 292M, 1080/50i, 60i, 30P, 25P, 24P, 720/60P, 50P	BNC type (3), SMPTE 292M, 1080/50i, 60i, 30P, 25P, 24P, 720/60P, 50P HD SDI/SD SDI/VBS selectable
Character output	BNC type (1), SD analog video signal, character on/off selectable	BNC type (1), Character/Sync selectable, analog video signal, character on/off selectable
SDI return input	BNC type (4), SMPTE 259M, Serial digital component	SMPTE 259M, Serial digital component selectable from HD SDI return output
VBS return input	BNC type (4), NTSC/PAL	NTSC/PAL selectable from HD SDI return output
<b>Sync</b>		
Reference input	BNC type (1, with loop-through), HD tri-level sync or SD black burst	
Sync output	BNC type (1), HD tri-level sync or SD sync	HD tri-level sync or SD sync selectable from Character output
<b>Intercom/Tally/PGM</b>		
Intercom PD & ENG	D-sub 25-pin (1), 4W/RTS/CC selectable	
PGM1/PGM2	0/-20 dBu selectable	
R-Tally/G-Tally	24 V power in/make contact	
<b>Audio</b>		
MIC1/MIC2 output	XLR-3-31 type (2, female), 0/-20 dBu selectable	
Digital audio output (AES/EBU)	BNC type (1), AES/EBU format, 20-bit/48 kHz	-
Embedded audio	Embedded audio to HD SDI/SD SDI	
<b>Prompter</b>		
Prompter in	BNC type (2, with loop-through), Analog, NTSC/PAL/HD-Y	BNC type (1, with loop-through), Analog, NTSC/PAL/HD-Y
<b>Others</b>		
RCP/MSU/CNU interface	8-pin (1), Sony Camera Command Network Protocol (for entire camera system control)	
Ethernet	RJ-45 (1), 10BASE-T/100BASE-TX	
Mic remote	D-sub 15-pin	
WF mode	4-pin (2), Stair step (for SD composite Waveform monitor)	4-pin (1), Stair step (for SD composite Waveform monitor)
WF control	D-sub 15-pin (1), GPI (for SDI component WF control)	D-sub 15-pin (1), GPI (for SDI component WF control) WF control/mic remote selectable
System expansion I/O	D-sub 15-pin (1), GPI (for system control with external GPI interface)	-
Trunk line	D-sub 9-pin(1), RS-232C/422, (remote line for CHU equipment) 12-pin (round type connector), RS-232C/422 (remote line for CHU equipment)	12-pin (round type connector), RS-232C/422 (remote line for CHU equipment)
<b>Camera</b>		
Optical fiber cable interface	SMPTE 304M based optical fiber connector (1), 1.5 Gbps optical fiber digital transmission, SMPTE 292 M	

## Optional input/output boards

<b>HKCU-1001 SD Analog Interface Unit</b>	
VBS output	BNC type (2)
Analog composite monitor output	BNC type: WF (1), PIX (1)
<b>HKCU-1003 Multi Interface Unit</b>	
<b>VDA-A board: VBS I/F</b>	
VBS output	BNC type (2)
Analog composite monitor output	BNC type: WF (1), PIX (1)
<b>VDA-B board: Frame rate I/F</b>	
Frame reference input/output	BNC type (1, loop-through), full pull-down sequence lock
Analog composite monitor output	BNC type: WF (1), PIX (1)
<b>VDA-C board: Sub I/F</b>	
VBS output	BNC type (1)
Analog component output	BNC type (3), R/G/B or Y/R-Y/B-Y selectable
<b>HKCU-1005 HD/SD Expansion Unit</b>	
HD SDI/SD SDI output	BNC type (2)
HD SDI/SD SDI monitor output	BNC type (2), character on/off selectable

## HKC-T1500 Specifications

<b>General</b>	
Power requirements	13.0 to 17.0 V DC
Operating temperature	-4 °F to +113 °F (-20 °C to +45 °C)
Operating humidity	10% to 90% (no condensation)
Weight	Cable adaptor: approx. 1 lb 2 oz (0.5 kg) CCD block adaptor: approx. 4 lb 3 oz (1.9 kg) (with CCD block)
Dimensions (W x H x D)	Approx. 5 1/8 x 9 1/2 x 9 7/8 inches (130 x 240 x 250 mm)
<b>CCD block adaptor I/F</b>	
Camera cable	55-pin multicore cable connector (male)
MIC IN	XLR-3 (1, female)
LENS	12-pin (1)
VF	20-pin (1)
INCOM	XLR-5 (1, female)
<b>Cable adaptor I/F</b>	
Camera cable	55-pin multicore cable connector (female)
MIC OUT	XLR-3 (1, male)
VF	20-pin (1)
INCOM	XLR-5 (1, male)
<b>Supplied accessories</b>	
	Multi-core cable (12.5 m) (1), VF relay cable (1), MIC relay cable (1), INCOM relay cable (1), Top cover (1), Operation manual (1)

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