SONY


# HDC-3300R

HD Super Motion Color Camera

# HDCU-3300R

HD Super Motion Camera Control Unit

R SERIES

High Definition Video System

Digital HDVS

# HD Super Motion Color Camera HDC-3300R

Since the launch of the BVP-3000 high-speed scanning camera in 1984, Sony has been continuously developing cameras that provide high-quality slow-motion image shooting, which are primarily used for sports coverage. Nowadays, as television broadcasting evolves and moves steadily towards high definition (HD), there is strong demand for a new breed of slow-motion camera system - one that offers even greater performance, as well as HD compatibility.

The reputable HDC-3300 was developed to meet this demand. Today, it has evolved into the HDC-3300R - a next-generation model with stunning picture quality by enhanced S/N ratio, state-of-the-art features, and new functions.

Sony's cutting-edge technology enables the HDC-3300R to capture full-resolution 1920 x 1080 high-definition images at an amazing three times the normal frame rate (1080/180i, 1080/150i, 720/180P, or 720/150P).

The HDC-3300R system is capable of transferring data at a rate of 10 Gb/s. This high transfer rate enables superb-quality uncompressed wideband signals to be transferred from the camera head to the HDCU-3300R Camera Control Unit over distances up to 2,500 meters (8,200 feet)*. Furthermore, since its design is based on the proven HDC1500 HD Multi-format Camera, the HDC-3300R Super Motion HD Camera offers the same array of functionalities, outstanding picture quality by 14-bit A/D converter, versatile multi-format capability, and high reliability as the HDC1500, in addition to its slow-motion capability.

Another unique advantage of this camera is its outstanding picture quality even at normal frame rates, which is achieved thanks to its signal-processing LSI (Large Scale Integration) that's dedicated to normal-speed capturing. This simultaneous output can be used as a conventional camera feed to the switcher, making the camera ideal for use in a variety of shooting opportunities. In addition, one of the most sophisticated characteristics of this camera is its Flicker Reduction function, which further enhances its picture quality.

With all these attractive features, the Sony HDC-3300R camera is the optimum solution to deliver slow-motion HD images of breathtaking quality.

* The actual distance will depend on operating conditions, such as the number of cables used and configuration of the system.


Lens, viewfinder and microphone are optional.

# Features

## Three-times Normal Speed HD Signal Output

The HDC-3300R camera can output full-resolution 1920 x 1080 HD images at an outstanding three times the normal frame rate of 1080/180i (59.94i) and 1080/150i (50i), and 1280 x 720 HD images at three times the normal frame rate of 720/180P (59.94P) and 720/150P (50P).

## Excellent Flicker Reduction Function

The slow-motion images captured by the HDC-3300R camera are extremely fine, and are enhanced by Sony's state-of-the-art real-time processing technique, which minimizes the flickers typically seen on slow-motion images. Flickers can be reduced further by selecting an appropriate mode from three available response modes, and by adjusting the video level according to the brightness of the shooting environment.

## Long-distance Optical Fiber Transmission

The HDC-3300R camera allows captured data to be transferred as high-quality wideband signals to its companion HDCU-3300R Camera Control Unit up to 2500 meters (8200 feet)* at an amazingly high data rate of 10 Gb/s. This can be achieved only through an SMPTE-standard optical fiber cable, giving users a practical, yet outstanding high-quality transmission system. The HDCU-3300R Camera Control Unit allows these signals to be recorded onto a compatible third-party server via three HD-SDI outputs.

* The actual distance will depend on operating conditions, such as the number of cables used and configuration of the system.

## High-quality Normal-speed HD Images

In addition to its high-quality, slow-motion images, the HDC-3300R camera also provides high-quality, normal-speed images - thanks to a signal-processing LSI that's dedicated to processing images in this way. Furthermore, the HDCU-3300R Camera Control Unit can output these normal-speed images for live transmission simultaneously with Super Motion images, allowing users to employ the HDC-3300R for both slow-motion and standard shooting purposes for increased versatility.

## Flexible System Configuration

The HDC-3300R and HDCU-3300R camera system are compatible with other broadcast camera peripherals from Sony including the RCP-700/920 Series Remote Control Units, CNU-700 Camera Command Network Unit, and MSU-900/950 Master Setup Units. This enables the HDC-3300R and HDCU-3300R to be easily integrated into other existing camera systems from Sony.

In addition to the conventional 700 protocol, an Ethernet interface (10Base-T/100Base-TX) is also incorporated, allowing the HDC-3300R camera to be controlled over a network.

What's more, the HDC-3300R camera is compatible with the HDLA1500/HDLA1505 Large Lens Adaptors and the HDLA1507 Large Viewfinder Adaptors, which are quick and easy to install thanks to a unique design that does not require any cable wiring or time-consuming adjustment.

## Ergonomic Design

The design of the HDC-3300R camera is based on the proven HDC1500 Series Multi-format HD Portable Camera that provides a high level of operability. All control switches and connectors are in the most logical places for optimum functionality and ease of use. The low-profile body of the HDC-3300R minimizes the parallax between the optical axis of the camera head and the large viewfinder when the camera is attached to the HDLA1500/HDLA1505 Large Lens Adaptors and the HDLA1507 Large Viewfinder Adaptor. In addition, the HDC-3300R is designed with a low center of gravity, allowing the operator to carry the camera comfortably on the shoulder. The shoulder pad of the HDC-3300R camera can be adjusted either forwards or backwards without using a screwdriver, so the camera can easily be moved to a well-balanced position.

## Reliable Camera Head Operation

The HDC-3300R camera uses optimal design techniques to reduce heat generation within the camera body for comfortable operation.

HDCU-3300R

HDC-3300R

# Creative Versatility

## Knee Saturation

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-3300R adopts a knee saturation function, in which this "washed-out" effect on saturation and hue change is reduced to a minimum, and offers far more natural color reproduction in highlight areas.

Knee Saturation OFF

Knee Saturation ON

Simulated image

## Low Key Saturation

With traditional video cameras, low light areas can be subject to a reduction in saturation. This can result in the colors in those areas being "washed-out". The low key saturation function on the HDC-3300R eliminates this problem by optimizing the amplification of color saturation at low light levels by boosting it to an optimized level, thus providing more natural color reproduction.

Low Key Saturation OFF

Low Key Saturation ON

Simulated image

## Triple Skin Tone Detail Control

The HDC-3300R comes equipped with a triple skin tone detail control function, which allows for independent detail control over three specified colors. This enhances the capability of skin tone detail correction - enabling one color selection to be used for reducing the detail level of skin color, and two other selections to be used for either increasing or decreasing the detail level of two other objects. This can be a powerful imaging tool not available in film shooting.

Skin Tone Detail OFF

Skin Tone Detail ON

Simulated image

## Focus Assist Functions

For easier focusing through the viewfinder, two focus assist functions are newly incorporated to the HDC-3300R: Viewfinder Detail and Focus Assist Indicator.
To intuitively recognize a focusing point, users of the camera can add dedicated image-enhancing edge signals directly to the viewfinder as "Viewfinder Detail".
The "Focus Assist Indicator" is a helpful tool for manual focus adjustments. An indicator is displayed at the bottom or other positions of the viewfinder frame, enabling users to make more accurate and fine focus adjustments.

## Other Features of the HDC-3300R

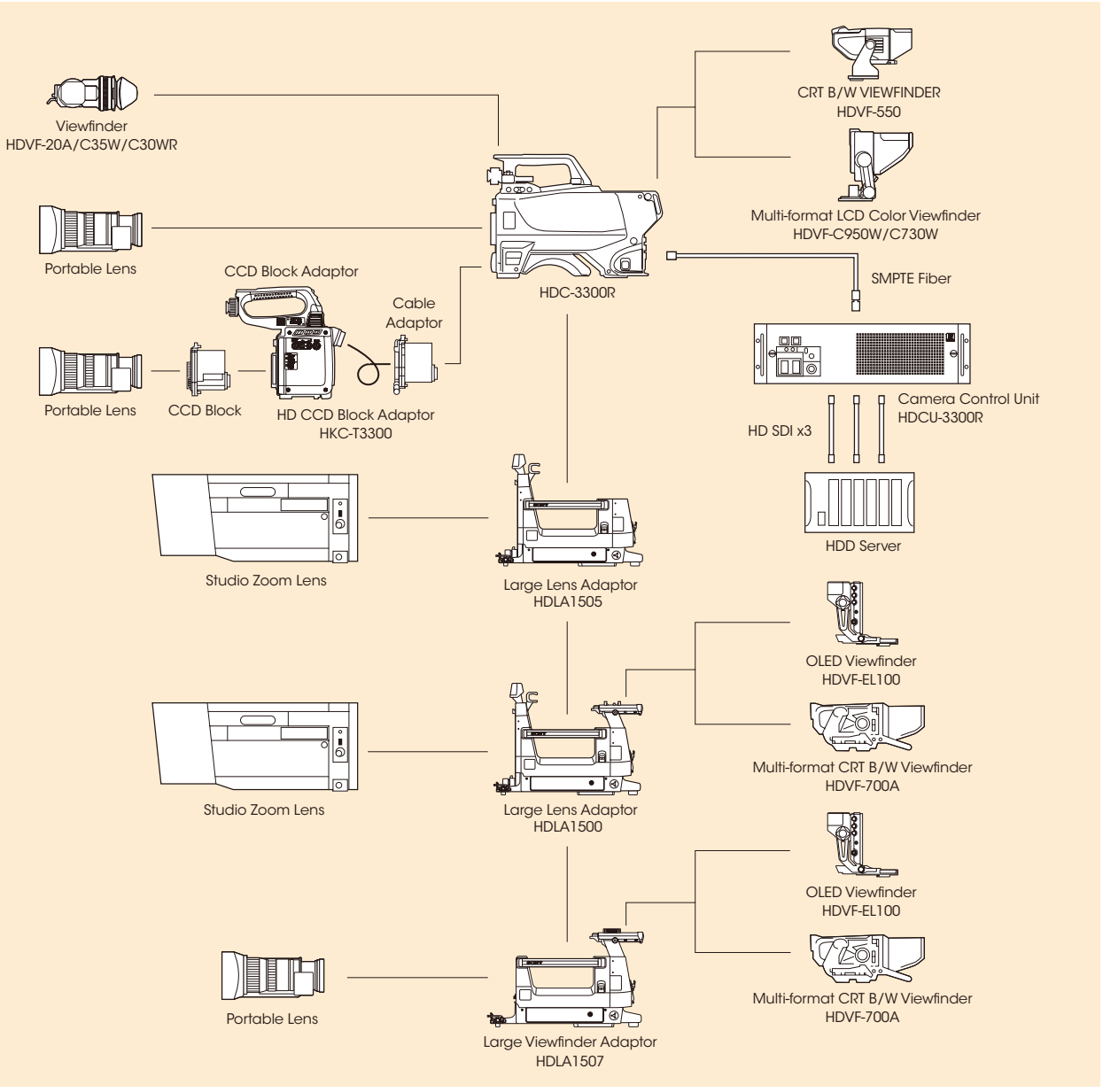
- Five assignable switches: one on the inside panel, and another four switches - RET1 (handle), RET1 (outside panel), INCOM1 (handle), and RET2 (front panel) - enable operators to assign frequently used functions
- Memory Stick™ media slot for saving and recalling camera setup files
- A wide range of viewfinder options: HDVF-20A, HDVF-200, HDVF-C35W, HDVF-C30WR, HDVF-C950W, HDVF-C730W, HDVF-700A, HDVF-550, and HDVF-EL100

## HKC-T3300 CCD Block Extension Adaptor

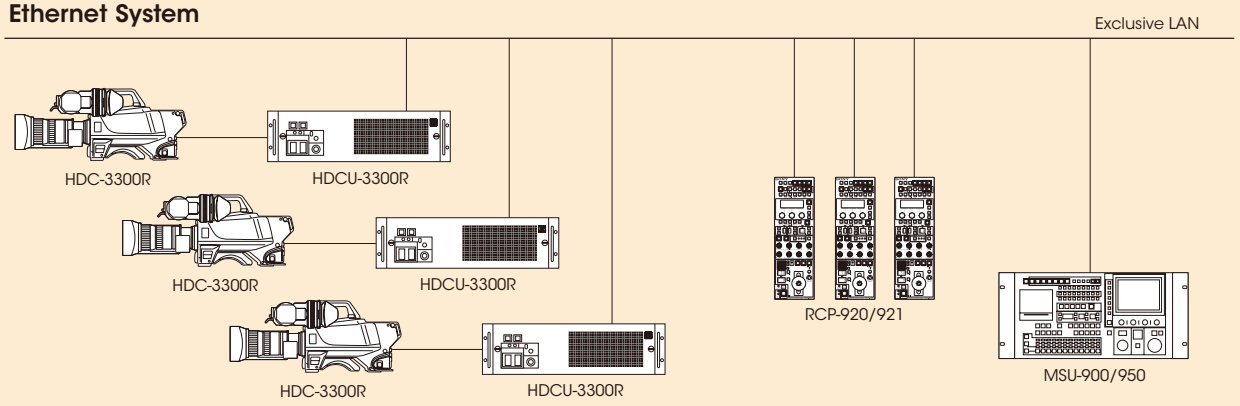
The HKC-T3300 CCD Block Extension Adaptor is a unique accessory for the HDC-3300R HD Super Motion Color Camera. It allows the CCD block to be extended from the camera body by up to 12.5 m. This allows more creative camera shooting angles to be achieved, along with the freedom to place the imaging assembly in areas where a full-size camera would be restricted. The HKC-T3300 adaptor will expand the spectrum of HD Super Motion Color camera applications in areas such as snorkel lenses, helicopter gimbal mounts, mini jibs, and 3D production.

HKC-T3300 connected to the HDC-3300R

# System Configurations




## Ethernet System



# Optional Accessories

**HDLA1500**
Large Lens Adaptor
(for attachment of the HDVF-EL100/700A)

**HDLA1505**
Large Lens Adaptor
(for attachment of the HDVF-C950W/C730W/550)

**HDLA1507**
Large Viewfinder Adaptor
(for attachment of the HDVF-EL100/700A)

**RCP-920/921**
Remote Control Panel
(Photo shows RCP-920)

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

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

**RM-B750**
Remote Control Unit

**RM-B150**
Remote Control Unit

**HDVF-20A**
2.0-inch* CRT B/W Viewfinder

**HDVF-200**
2.0-inch* CRT B/W Viewfinder

**HDVF-C35W**
3.5-inch* LCD Color Viewfinder

**HDVF-C30WR**
2.7-inch* LCD Color Viewfinder


**HDVF-C950W**
9.0-inch LCD Color Viewfinder


**HDVF-C730W**
6.3-inch* LCD Color Viewfinder


**HDVF-700A**
7.0-inch CRT B/W Viewfinder


**HDVF-550**
5.0-inch CRT Color Viewfinder

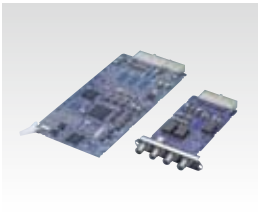
**VFH-550**
Outdoor Food for
HDVF-700A/C730W

**VFH-770**
Outdoor Food for
HDVF-700A/C730W

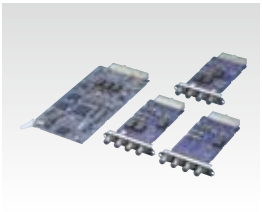
**VFH-990**
Outdoor Food for HDVF-C950W

**HDVF-EL100**
11-inch* OLED Color Viewfinder

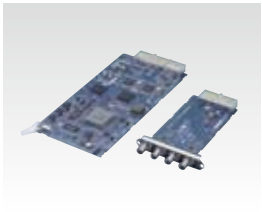
**VCT-14**
Tripod Adaptor



**HKCU1001**
SD Analog Interface Unit
(for HDCU-3300R)



**HKCU1003**
Multi Interface Unit
(for HDCU-3300R)



**HKCU1005**
HD-SDI/SD-SDI Expansion Unit
(for HDCU-3300R)

**BKW-401**
Viewfinder Rotation Bracket

**BKP-7911**
Script Holder

**CAC-6**
Return Video Selector

**CAC-12**
Mic Holder

**HKC-T3300**
HD CCD Block Adaptor

* Viewable area measured diagonally

# Specifications

| HDC-3300R HD Super Motion Color Camera | |
|---|---|
| **General** | |
| Power requirements | AC 240 V, 1.4 A max., DC 12 V, 8.6 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 | 4.8 kg (10 lb 9 oz) (without VF and lens) |
| Dimensions (W x H x D) | 154 x 197 x 348 mm (6 1/8 x 7 7/8 x 13 3/4 inches) |
| **Camera section** | |
| Pickup device | 3-chip 2/3-inch type CCD |
| Effective picture elements | 1920 (H) x 1080 (V) |
| Signal format | 1920 x 1080 images: 1080/180i (59.94i), 1080/150i (50i)<br>1280 x 720 images: 720/180p (59.94p), 720/150p (50p) |
| Sensitivity | F8 (1080/180i)/F9 (1080/150i) at 2000 lx |
| Signal-to-noise ratio (typical)* | x1: -56 dB/-64 dB (at NS MAX mode)<br>x3: -52 dB/-60 dB (at NS MAX mode) |
| Horizontal resolution* | 1000 TV lines (at center) |
| Spectral system | F1.4 prism |
| Built-in filters | ND: 1: CLEAR, 2: 1/4ND, 3: 1/8ND, 4:1/16ND, 5: 1/64ND<br>CC: A: CROSS, B: 3200K, C: 4300K, D: 6300K, D: 8000K |
| **Signal inputs** | |
| Mic input | XLR-3-pin x1 (female) |
| Audio input | CH1: XLR-3-pin x1 (female), MIC or LINE or FRONT MIC selectable<br>CH2: XLR-3-pin x1 (female), AES/EBU or MIC or LINE selectable |
| **Signal outputs** | |
| HD-SDI/SD-SDI output** | BNC type x1, HD-SDI or SD-SDI, character on/off selectable |
| Test output | BNC type x1, VBS (SD) or VF: Y/R/G/B (HD) or HD-sync or SD-sync selectable |
| **Other inputs/outputs** | |
| CCU | Optical/electrical multi-connector (x1) |
| Intercom | XLR-5-pin x2 (female) |
| Prompter output | BNC type x2 |
| DC input | XLR-4-pin x1, DC 10.5 to 17 V |
| DC output | 4-pin x1, DC 10.5 to 17 V (max. 1.5 A) |
| Lens | 12 pin x1 |
| Viewfinder | 20 pin x1 |
| Earphone | Stereo mini-jack x1 |
| Return control | 6 pin x1 |
| Remote | 8 pin x1 |
| Tracker | 10 pin x1 |
| Crane | 12 pin x1 |
| **Supplied accessories** | |
| | Operation manual (1), Cable clamper belt (1 set), Switch label 1, 2 (1 each) |

* 1080/180i mode

** When the HDC-3300R camera is not connected to the HDCU-3300R camera control unit, the HD-SDI output signal is for maintenance purpose only.

## Optional Input/Output Boards for HDCU-3300R

| HKCU1001 SD Analog Interface Unit | |
|---|---|
| **VDA-A board** | |
| VBS output | BNC type x2, 1.0 Vp-p, 75 Ω |
| PIX output | BNC type x1: VBS/R/G/B selectable, VBS: 1.0 Vp-p, 75 Ω |
| WF output | BNC type x1: VBS/R/G/B selectable, VBS: 1.0 Vp-p, 75 Ω |
| **HKCU1003 Multi Interface Unit** | |
| **VDA-A board** | |
| VBS output | BNC type x2, 1.0 Vp-p, 75 Ω |
| PIX output | BNC type x1: VBS/R/G/B selectable, VBS: 1.0 Vp-p, 75 Ω |
| WF output | BNC type x1: VBS/R/G/B selectable, VBS: 1.0 Vp-p, 75 Ω |
| **VDA-B board** | |
| Frame reference input | BNC type x1 |
| Frame reference output | BNC type x1 |
| PIX output | BNC type x1: VBS/R/G/B selectable, VBS: 1.0 Vp-p, 75 Ω |
| WF output | BNC type x1: VBS/R/G/B selectable, VBS: 1.0 Vp-p, 75 Ω |
| **HKCU1005 HD/SD Expansion Unit** | |
| HD-SDI/SD-SDI output | BNC type x4, HD-SDI/SD-SDI selectable<br>(SDI output 3, 4: character on/off selectable)<br>HD: SMPTE 292M, 0.8 Vp-p, 75 Ω, 1.485/1.4835 Gb/s,<br>SD: SMPTE 259M, 0.8 Vp-p, 75 Ω, 270 Mb/s |

| HDCU-3300R HD Super Motion Camera Control Unit | |
|---|---|
| **General** | |
| Power supply | AC 100/120/220 to 240 V, 50/60 Hz |
| Current consumption | max. 5.6 A |
| 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 | 16.8 kg (37 lb) |
| Dimensions (W x H x D) | 424 x 133 x 410 mm (16 3/4 x 5 1/4 x 16 1/4 inches)<br>excluding projection |
| **Signal inputs** | |
| HD-SDI return input | BNC type x4, SMPTE 292M, 1.485/1.4835 Gb/s |
| SD-SDI return input | BNC type x4, SMPTE 259M, 270 Mb/s |
| VBS return input | BNC type x4 |
| Reference input | BNC type x2 (1 connector for loop-through output)<br>HD: SMPTE 274M, tri-level sync, 0.6 Vp-p, 75 Ω<br>SD: Black burst, NTSC : 0.286 Vp-p, 75 Ω,<br>PAL: 0.3 Vp-p, 75 Ω |
| Prompter input | BNC type x4 (2 connectors for loop-through output),<br>analog NTSC/PAL/HD-Y, 1.0 Vp-p, 75 Ω |
| AC input | (x1), AC 100, 110 to 120, 220 to 240 V switchable |
| **Signal outputs** | |
| HD-SDI LINK A/B/C | BNC type x6, SMPTE 292M, 0.8 Vp-p, 75 Ω, 1.485/1.4835 Gb/s |
| Super Motion output | Link A (x2), Link B (x2), Link C (x2) |
| HD-SDI output | BNC type x4, SMPTE 292M, 1.485/1.4835 Gb/s |
| SDI output | BNC type x4, HD-SDI/SD-SDI selectable<br>(SDI output 3, 4: character on/off selectable)<br>HD: SMPTE 292M, 0.8 Vp-p, 75 Ω, 1.485/1.4835 Gb/s<br>SD: SMPTE 259M, 0.8 Vp-p, 75 Ω, 270 Mb/s |
| Sync output | BNC type x1, HD sync/SD sync selectable<br>HD: BTA-S001A, tri-level sync, 0.6 Vp-p, 75 Ω<br>SD: composite sync, 0.3 Vp-p, 75 Ω |
| Character output | BNC type x1, VBS, 1.0 Vp-p, 75 Ω |
| AES/EBU output | BNC type x1, AES/EBU format, 20-bit/ 48 kHz |
| Mic output | XLR-3-pin x2 (male), 0/-20 dBs selectable |
| WF mode | 4-pin x1 |
| **Other inputs/outputs** | |
| CAMERA | Optical/electrical multi-connector x1, 10.692/10.681 Gb/s<br>Serial digital x2, 240 V AC power supply |
| Intercom/Tally/PGM | D-sub 25-pin x1<br>Intercom (PD/ENG): 4W/RTS/CC, 0 dB<br>Tally: R, G tally, 24 V power in/make contact<br>PGM: 0/-20 dB selectable |
| RCP/CNU | 8-pin x1, Sony Camera System-700 Control Protocol<br>(for entire camera system control) |
| Ethernet | RJ-45 x1, 10BASE-T/100BASE-TX |
| Trunk A | 12-pin x1 |
| Trunk line | D-sub 9-pin x1 (female), RS-232C |
| Mic remote | D-sub 15-pin x1 |
| **Supplied accessories** | |
| | Operation manual (x1), Number plates (1 set), Fuses (1 set) |

## HKC-T3300 Specifications

| General | |
|---|---|
| Power requirements for camera input | 13.5 to 17.0 V DC |
| Operating temperature | -20 °C to +45 °C (-4 °F to +113 °F) |
| Operating humidity | 10% to 90% (no condensation) |
| Mass | Cable adaptor: approx. 0.5 kg (1 lb 2 oz)<br>CCD block adaptor: approx. 1.9 kg (4 lb 3 oz) (with CCD block) |
| **CCD block adaptor I/F** | |
| Camera cable | 55-pin multicore cable connector (male) |
| MIC IN | XLR-3-pin x1 (female) |
| LENS | 12-pin x1 |
| VF | 20-pin x1 |
| Intercom | XLR-5-pin x1 (female) |
| **Cable adaptor I/F** | |
| Camera cable | 55-pin multicore cable connector (female) |
| MIC OUT | XLR-3-pin x1 (male) |
| VF | 20-pin x1 |
| INCOM | XLR-5-pin x1 (male) |

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