

Hitachi Kokusai Electric

HITACHI
Inspire the Next

MULTI-FORMAT CMOS 1080P PRODUCTION CAMERA
Z-HD5500



The Z-HD5500 is a 1080 progressive scan CMOS camera system with HDR.



Z-HD5500 with VF-L20HD

Ergonomic Design

New low center of gravity chassis

Optimized for on-shoulder production

Lightweight, ideal for portable use



CA-HF1200 Rear Panel

Hitachi Z-HD5500 1080P CMOS HDTV Studio and Field Production Camera

Hitachi's Z-HD5500 professional studio and field production camera employs the latest imaging advancements by utilizing a new generation of high-performance CMOS Full Frame sensors. The Z-HD5500 is 1920 X 1080 HD progressive scan throughout the entire camera chain. Outstanding sensitivity, signal-to-noise, resolution and color gradation are a result of utilizing Hitachi's new generation equivalent 2/3-inch CMOS image sensors. The Z-HD5500 delivers flawless high-performance in TV studios, houses of worship, arenas and other venues where LED lights and large LED displays are being used. It easily adapts to a wide range of LED lighting conditions.

With the addition of High Dynamic Range (HDR), the Z-HD5500 camera system delivers a dramatic improvement in picture performance with HDR. You'll see deeper blacks, increased detail in mid-tones, brighter highlights and more saturated colors. HDR adds a dramatic improvement in picture quality easily visible at all viewing distances.

The Z-HD5500 retains all the popular functions and features of the existing camera line. A new CCU model, CU-HD1300FT/T allows the use of compact SMPTE, single-mode fiber and/or a new long-range digital triax system. The Z-HD5500 progressive scan camera embodies the latest advanced digital signal processing (DSP) patents and world-renowned Hitachi technology.

High-performance starts with advanced sensors

Hitachi has achieved a new level of HD camera performance with a new generation of CMOS Full Frame progressive scan imagers. Using these newly developed progressive scan CMOS imagers, the Z-HD5500 easily handles difficult mixed frequency LED lighting and display situations. The new sensors also enable the Z-HD5500 to achieve outstanding resolution, dynamic range, sensitivity and absence of vertical smear. A high horizontal resolution of 1000TVL (Luminance channel) offers very high picture sharpness with low noise and ultra-low vertical smear.

Dynamic head-room ready for today's HDR

The Z-HD5500 takes full advantage of the increased dynamic range output performance of the NEW CMOS imagers.

Exposure latitude is available to satisfy the most demanding scene lighting or creative talent.

This exposure performance assures that every nuance of the image captured and converted to electrical energy by the sensors and is quantized in the digital domain resulting in faithful image reproduction. This is especially important when applying modern HDR (High Dynamic Range) workflows.

Professional HDTV Camera Z-HD5500

Hitachi's advanced digital signal processing

Each essential part of the Hitachi Z-HD5500 camera system has its own DSP. Different DSP ICs are used independently for the HDTV camera head processing, the transmission system and the Camera Control Unit (CCU) processing. The new, power-efficient Digital Signal Processors have a dynamic processing capability in excess of 30-bits per pixel, per RGB channel. Hitachi's DSPs are designed for process of signals from progressive readout HDTV sensors. The dynamic headroom of the Z-HD5500 allows to be faithfully reproduced thus providing future advancements in dynamics handling. Additional digital encoding at the camera head and CCU provides high signal integrity for all signal outputs.

With present technology, an outstanding system signal-to-noise ratio specification of 62dB is achieved by use of our own low-noise circuitry. The standard sensitivity is rated at F10(59.94Hz)/F11(50Hz) with 2000 lx. Even at high gain, clear images are obtained with little noise.

Setup memory and adjustment transfer card

A small plug-in setup card (SD card) stores the user setup and Scene File information. The adjustment data can then be recalled and used for future scenes and productions thereby assuring the exact video "look" and characteristics as the original Scene File and adjustment settings. A single camera's setup data can also be transferred to quickly adjust a group of cameras to be used in a production.

Access to setup card data and transfer is also available from the SU-1000 Setup Control Unit.



Digital signal transmission via Hybrid Fiber Optical Cable

The Z-HD5500 camera system utilizes industry standard Hybrid Fiber optic cable connectors made of high-strength stainless steel to insure durability and reliable performance under the most demanding TV Studio and Field production circumstances. All command audio and video signals to and from the camera are digitally transmitted hence, totally immune to EMI/ RFI interference. Camera power and cable condition supervision are also performed when using the Hybrid Fiber-Optic Cable (HFOC). Full Auxiliary (up to 4 analog or digital, HD or SD) video return and individual Teleprompter facilities are also available depending on the model of the transmission and CCU system. The maximum HFOC length with applied camera power and fully operational facilities is over 4,000 meters* (>13,123 feet*) with the optional CU-HD1300FT CCU. Unique to cameras in the Z-HD5500's price range are optical power meters at the camera head (via engineering menu), on the Remote Control Unit (RU-1500JY) and on the front of the Camera Control Units. These meters indicate the optical condition of both the receive and, transmit signals independently to accurately depict the proximity to the "digital cliff", maximum cable distance or provide basic HFOC diagnostics in the field.

*HFOC distance with applied CCU power differs depending on the system configuration. It is dependent on the type of lens used, viewfinder, studio Adaptor, teleprompter and other accessories that may be connected and thereby consuming power otherwise available for the camera head.



Superb High Definition picture reproduction & enhancement tools

Selectable gamma tables

In addition to normal gamma point and balance adjustments, the Z-HD5500 offers a multi-point gamma table that provides the user with exposure control over just the darkest points in the image. It enables adjustment of the initial gamma gain to optimize the reproduction of dark scene components. Hitachi's DSPs assure that no additional noise components are introduced in the image even with the most aggressive Gamma Table settings. Additionally, this function does not change any of the other parameters of the video signal thus maintaining overall exposure, detail, color reproduction and composition.



Standard Gamma



High Gamma Table ON (Simulated image)

High Dynamic Range (HDR)

High Dynamic Range (HDR) is a significant advancement in camera technology that dramatically improves picture quality and is easily visible at all viewing distances. HDR enhances images with expanded detail in blacks, brighter highlights and more accuracy in mid-tones. The improved dynamic range contrast also increases perceived sharpness and color saturation. Multiple HDR settings for HPQ and Hybrid Log Gamma are provided for increased compatibility with legacy TVs using Standard Dynamic Range.

Ultra Gamma

It dramatically increases the exposure latitude of the camera in shooting conditions where lighting and scenery vary widely in intensity. Seven different ultra-gamma responses are preprogrammed to suit just about every possible adverse shooting condition.

Black stretch

The Z-HD5500 black stretch function allows better reproduction of dark or underexposed areas by evenly raising the luminance response without changing the pedestal or white clip/ knee settings. It is especially useful in high contrast image venues, outdoors or sports production.

Knee saturation and auto-knee

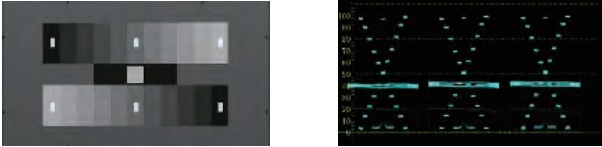
Like the peak video level control function of the white clip; the knee saturation function is made up of the actual knee (level compression) point and its slope which improve overexposed portions of the picture by compressing the video past a certain point. These points are user adjustable.

The auto knee provides the perception of a wider dynamic range by dynamically compressing (varying knee and slope) the video level in accordance to the strength of its over-exposure.

Lens optimization

Gray-Scale automatic setup

The Z-HD5500 offers Gray-Scale Automatic Setup function to optimize the optical parameters that could negatively affect the image you are trying to capture and faithfully reproduce. The Gain, Gamma, and Flare are the video signal functions that vary from lens to lens.



Automatic vertical modulation shading adjustment

The Z-HD5500 assures that with any lens used, an even, white-balance throughout the raster will be attained by the automatic vertical modulation shading correction function. At the simple push of a button, this function provides separate memory of lens' modulation shading characteristics to optimize the X1 and X2 lens extender positions.



Color reproduction excellence

Triple-masking

The triple-masking function includes the 12-vector, linear matrix and Skin-tone masking to provide the user wide latitude in image color control. The 12-vector color corrector provides independent control of the hue and saturation for six primary and six secondary combinations of colors. The 12-vector, linear matrix and Skin-tone masking provide overall color control providing the user with excellent and precise color rendition control.



Preset Masking

The preset masking function reproduces various image color spaces such as STANDARD (Hitachi standard), ITU-709, SMPTE-240M, SMPTE-WIDE, NTSC, and EBU.

Skin-tone masking

The Skin-tone masking function provides "fine painting" (hue and saturation) of Skin tones without affecting other colors in the scene. This functions additional and independently from the linear matrix and 12-vector-masking functions thereby adding an additional color-correction (Triple-masking) channel to the overall image color control.



Chroma Saturation

In addition to the extensive colorimetry controls offered in the Z-HD5500, the overall color saturation can be varied to achieve "dramatic" or artistic "effects" .

Knee Saturation

The Knee Saturation function dynamically restores color saturation to scene highlights above the Knee point. Color-saturated highlights lost in overexposed scenes are now visible. This function provides excellent results in imaging high-contrast, sunny outdoor scenes, fireworks, concerts, theatre stage lighting, and colored night scenes.

Lens Files

The Z-HD5500 can store 8 lens files which include various lens correction data such as vertical modulation shading. This lens correction data can also be stored in a card (SD card), where it can be recalled when necessary.

Picture sharpness enhancement

Absolute detail control

Hitachi provides 3 major detail controls designed to precisely place, control and shape the picture sharpness characteristics of the Z-HD5500.

Skin-tone Detail

The Skin-tone Detail functions allow a skin-tone color-based softening of the image to achieve the impression of more youthful TV personalities. 2 individual memories exist as well as a function to automatically detect the hue, saturation and luminance of the Skin-tone to be affected. This function is not limited to Skin-tones only; it can increase or decrease the sharpness of any pair of colors in the image. Furthermore, the Skin-tone Detail level can be adjusted to follow the lens zoom position so that one can avoid 'rubber faces' at wide angle shots of talent.



Master Detail items

Master Detail items are available to adjust varied parameters of the detail signal to taste or to achieve a desired "look" in your productions. Some of these adjustments are; H/V detail, crisp, level dependence, knee detail, limiter, source, frequency and balance.

High-chroma detail

The High-chroma detail adjustments allow precise control of the detail level in highly color-saturated portions of the picture such as the petals of a rose or a colorful fabric.



Professional HDTV Camera

Z-HD5500

Optical and image capture functions

Versatile CMOS functions

The Z-HD5500 camera system has six PRESET electronic shutter speeds, For stopping action or fast moving objects in the image, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 (1080/59.94i), plus LOCK SCAN to capture non-synchronous displays without flicker. Automatic Electronic Shutter (AES) maintains the video level when the maximum F-stop shooting condition is reached.

Programmable Smooth Video Gain

This new function allows the Z-HD5500 to smoothly and seamlessly transition between the video gain settings and electronic color correction filters. Continuous recording can be achieved without flash or glitch artifacts in the image.

Optical filters

In traditional photography, ND filters are used for depth of field control. One optical filter wheel is provided as standard. These are: Clear, 4-point Cross, 1/16ND and 1/64ND.

Viewfinder Focus Assist

Three different visual aids are available to help the camera operator find the right focus: VF DTL, VF PEAKING and VF Focus Assist. The Area Marker detects edges inside area, while a focus indicator shows the actual detail level by a horizontal line. A Focus Indicator Gauge can further be set to lock the maximum achieved level for a few seconds.

Quick-focus function for Precise Focus

The Quick Focus function automatically opens the iris then sets the video level with the electronic shutter at the push of a button. The resulting shallow depth of focus, allows the cameraman to set the exact focus with ease.

ECC (Electronic Color Compensation)

Due to the wide gain characteristics of the Z-HD5500, the ECC function compensates for color temperature electronically by providing preset gains to equal color temperature gradations of 3200K, 4300K, 5600K, 6300K and 8000K. The ECC can be controlled by the remote the Remote Control Unit and the Setup Control Unit like an optical filter. The setting can be stored in the Scene files and its status can be displayed on the view finder and the monitor output.

Full auto mode

The AES and automatic iris maintain the video level even with rapidly changing light intensity. These functions are accessed via the menu system or the shutter buttons provided on the RU-1500JY and SU-1000 remote control panels Control Unit. Full-time Auto White balance (FAW) corrects in real-time for color temperature variations due to changing types of lighting conditions on the scene object.

Ease of use characteristics & functions

Programmable soft-switches (CS-1, CA-CS)

The cameraperson can assign Zebra, marker, VF Detail, Quick Focus or FAW to the CS-1 switch via the operation menu. The CA-CS switch can take on the functions of VF Detail on/off, marker-1 or marker-2 on/off.

Viewfinder options

Seven viewfinder options are offered with the Z-HD5500 camera system. Black & White CRT-type and LCD color viewfinders are available for ENG (2-inch). Five different larger studio viewfinders including 9-inch and 7-inch color TFT-LCD screen viewfinders and 7.4 inch OLED are offered for critical viewing such as encountered in studio productions.

Viewfinder markers & functions

The Z-HD5500 provides an excellent range of viewfinder markers and functions to aid the cameraman in providing outstanding results during a TV program production.

All VF parameters can be stored in 4 dedicated memories which can catalog preferences for different camerapersons, programs, shooting conditions or events.

Programmable functions include; color/mono, detail, crisp, safety zone, 2 movable markers, center cross-hair, 2 movable effects boxes, variable aspect ratio side panels, side panel contrast/ bright, 2-mode zebra and variable line display level polarity.

Viewfinder status displays

Iris F-stop, Lens Extender position, Shutter speed, Optical and ECC filter in use, and Gain setting are all independently displayed via menu selection. Menu selection also includes over-level or between-range zebra pattern.

Comprehensive camera person operation panel

In Studio and Field production, the Z-HD5500 provides the camera-person with a wide array of controls for intercom audio, program audio, aux video switching controls, script lamp connector, dual-tally and call functions that are the norm in high-end broadcast cameras. These functions along with available 100VA of teleprompter monitor power and dedicated prompter SD signal make the Z-HD5500 a logical choice for sophisticated productions.

Camera head inputs & outputs

The camera head provides 2 buffered HD-SDI outputs, 1 SD analog teleprompter out, and 1 HD-SDI switchable as Monitor or VF and RET video output via BNC connectors. The MIC-1 channel is switchable with balanced XLR input connector located at the front of the camera (shotgun mic) or at the rear of the CA-HF1000. All the microphone inputs provide phantom power supplies and accept mic or line levels. These IOs satisfy a wide variety of production requirements and are typically provided with broadcast-grade cameras.

ACCESSORIES

SA-1000 Studio Adaptor

Demanding production workflows that require hand-held cameras to be used with large lenses in studio or sports productions, Hitachi offers the SA-1000 studio adaptor in traditional light gray or matching charcoal color.

The SA-1000 serves primarily as a mechanical lens supporter and it also offers these important features: the ability to use "Hanger-type" box lenses and "Bayonet-type" hand-held portable lenses without removing the camera from the SA-1000.

Functions routinely required by the cameraperson in Studio and Field production are brought out from the camera menu system and grouped in the SA-1000's rear operation panel for easy access.

Hitachi's efforts at providing an advanced level of studio camera features with this Studio Adaptor include a "Cable-less" and "tool-less" camera interface which increases the systems' reliability and retains the flexibility of having multiple choices for viewfinders when using the Z-HD5500 in this configuration.



Additional lens mounting options for the SA-1000



LM-C1000/SA-1000
(for Canon Small Box Lens)



LM-F1000/SA-1000
(for Fujinon Small Box Lens)



LM-P1000/SA-1000
(for Portable Lens)

Dockable : One camera body to suit multiple configurations.



(3rd party)
Wireless Adaptor

Hybrid Fiber-optic
cable Adaptor

Triax
cable Adaptor

Professional HDTV Camera Z-HD5500

Flexible Choice of Camera Control Units

5 different Camera Control Units (CCU) are offered for every budget, physical size and signal requirement for the Z-HD5500 camera system.

The Fiber CU-HD1000-S8 is half-rack model. It offers 50/60Hz line power switching and output 1080i, 720p, 576i and 480i. The reduced size, weight and low power consumption makes it ideal for more portable applications. CU-HD1000-S8 also includes a unique optical power meter that indicates the status of the HFOC.

The budget priced CU-HD500 Fiber CCU is a full rack model that outputs either 1080i or (special order) 720p. All CCU models serve applications for a variety of Studio and Field productions.

Full HD 1080 Progressive CCUs include the fiber CU-HD1200, the CU-HD1300T and CU-HD1300FT that offers fiber, triax or both camera cable options. The dual fiber and triax cable CCU is particularly suitable for venues that may have multiple cable types connecting to mobile production/OB units**. All CCUs have an easy-to-maintain modular design, employ the same control panels, data cables and peripherals.

- Simultaneous HDTV/ SDTV, digital and analog video outputs (CU-HD1000)
- HD-SDI and SD-SDI outputs
- Analog RGB or Y, B-Y, R-Y component outputs (CU-HD1000)
- 4 auxiliary returns (CU-HD1000, CU-HD1200 and CU-HD1300T/FT)
- Dedicated teleprompter channel
- SMPTE color bar output
- 2 channel balanced analog Mic audio outputs or embedded HD-SDI digital audio
- Genlock with composite or tri-level sync
- 2-tally (Red/Green) system.
- 2-channel, 2W/4W intercom system.
- RS-232C remote control (CU-HD1000, CU-HD500)
- TRUNK (RS-422) option (CU-HD1200)

** (See detailed specifications on the last page of this brochure)



CU-HD1300FT Front Panel



CU-HD1300FT Rear Panel (Fiber/Triax)

CU-HD1300T/FT, CX-HD1300 Digital Triax System

Hitachi's 4th generation digital triax system can transmit full 1080 progressive signals over much longer triax cable distances. The ultra-low delay H.264 codec and hybrid digital modulation technology ensures high quality picture transmission. Signals include: video, prompter, return video, audio and all intercoms. Signal level indicators show the status of receive and transmit of triax or optical cable in the RU-1500JY Remote Control Unit and all CCUs.

In applications where traditional triax is already in use, substantial savings in the cabling infrastructure can be realized by employing Hitachi HDTV Digital Triax cameras.

- Hitachi's patented, fully digital, bi-directional signal transmission system
- Little to no signal degradation.
- Capitalizes on reduced costs and flexibility of triax copper cable.
- Includes 1080i/ 720p cross-converter for HD-SDI outputs Built in, high-performance SDTV up/ down converters



CX-HD1300E
Fisher
Rear Panel



CX-HD1300U
Kings
Rear Panel

ACCESSORIES

SU-1000 Setup Control Unit

The SU-1000 Setup Control Unit is used for the adjustment of camera parameters in a multi-camera production environment.

This unit provides full control of the Z-HD5500 camera system in a production facility or studios across town.

Utilizing a new large touch screen LCD panel that expands its control functions, it is connected directly to each CCU in parallel fashion via serial data cable with a distance of up to 100 meters. 12 cameras can be directly controlled from the SU-1000 as well as an external video switcher used for control monitoring. With Ethernet control, the SU-1000 can control up to 128 CCUs. With the CCUs, it can control cameras in parallel or simultaneously with an RU-1500JY Remote Control Unit.

The compact and lightweight SU-1000 features Color LCD indicators in the display section to easily identify and access the provided control parameters. The unit is small and lightweight enough to be used in space-limited locations such as the E.I.C. or senior video position in a broadcast mobile production unit or OB Van.

The SU-1000 has these primary functions:

- Selection of a single camera or groups of cameras to be controlled. On/Off control of all functions.
- Control of all variable data adjustments including Iris & Master Black. Selection of storage and operation data files.
- Transfer of files and data between cameras or groups of cameras. Adjustment and file data (write/ read) from SD memory card.
- Video output selection including external video switcher control. Ethernet connectivity and cabling.



SU-1000

ADJUST-1				
GENERAL	DETAIL	MASKING	SKN DETAL	OTHER
DETAIL LEVEL	LEVEL DEFEND	CRISP	BOOST FREQ	DETAIL KNEE
BALANCE	KNEE DETAIL	DETAIL SOURCE		
CLEAR				
DETAIL LEVEL				
TOTAL	H	Y		
0	0	0		

ADJUST-1				
GENERAL	DETAIL	MASKING	SKN DETAL	OTHER
LINEAR 1	LINEAR 2	R Y _u -R	B C-MC	B R-MC
SKIN TONE MASKING	CHROMA SAT	Y _u C-Y _v	C _y B-C _y	B _u B-M _u
CLEAR				
LINEAR 1				
R-G	R-B	G-R		
0	0	0		

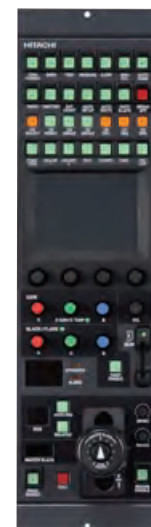
Remote Control Units RU-1500JY and RU-1000VR

The optional RU-1500JY Remote Control Unit has a comprehensive array of controls and functions directly accessible to the video control engineer. It features a joystick for iris and black level, as well as, touchscreen panel operation and Ethernet connectivity and serial data cabling.

The RU-1000VR Remote Control Unit is a small, low cost, simplified Remote Control Unit for the Hitachi Z-HD5500. Access to popular camera functions as well as advanced ones is directly available via full menu access and navigation. It is an ideal production tool that enhances any studio or field production under budget constraints.



RU-1000VR



RU-1500JY

Professional HDTV Camera Z-HD5500

Studio and Field Production Viewfinders

The Z-HD5500 camera system offers various choices for Studio or Field production viewfinders. The new optional HDF-EL800H is a high-brightness OLED High Definition color viewfinder designed for critical outdoor color viewing of the image. The HDF-700H color LCD screen offers a wide viewing angle and fast transient response time for reproduction of lag-free, crisp images.

HDF-EL800H OLED and VF-L90HD TFT-LCD color Field/ Studio viewfinders with AT-951 mount.

The optional VF-L20HD is a LCD color ENG-style 2-inch viewfinder for sports and OB applications where high-resolution, brightness and contrast are required. This viewfinder is optimized for use in cold weather conditions.

VF-L20HD TFT color and VF-402-S3 monochrome ENG viewfinders.

*VF-402-S3 is subject to Import restrictions in certain countries, please contact your local Hitachi Kokusai Electric Group office to check if available in your country.



VF-L20HD 2-inch Color LCD



VF-402-S3 2-inch CRT



VF-L90HD / AT-951
9-inch Color LCD

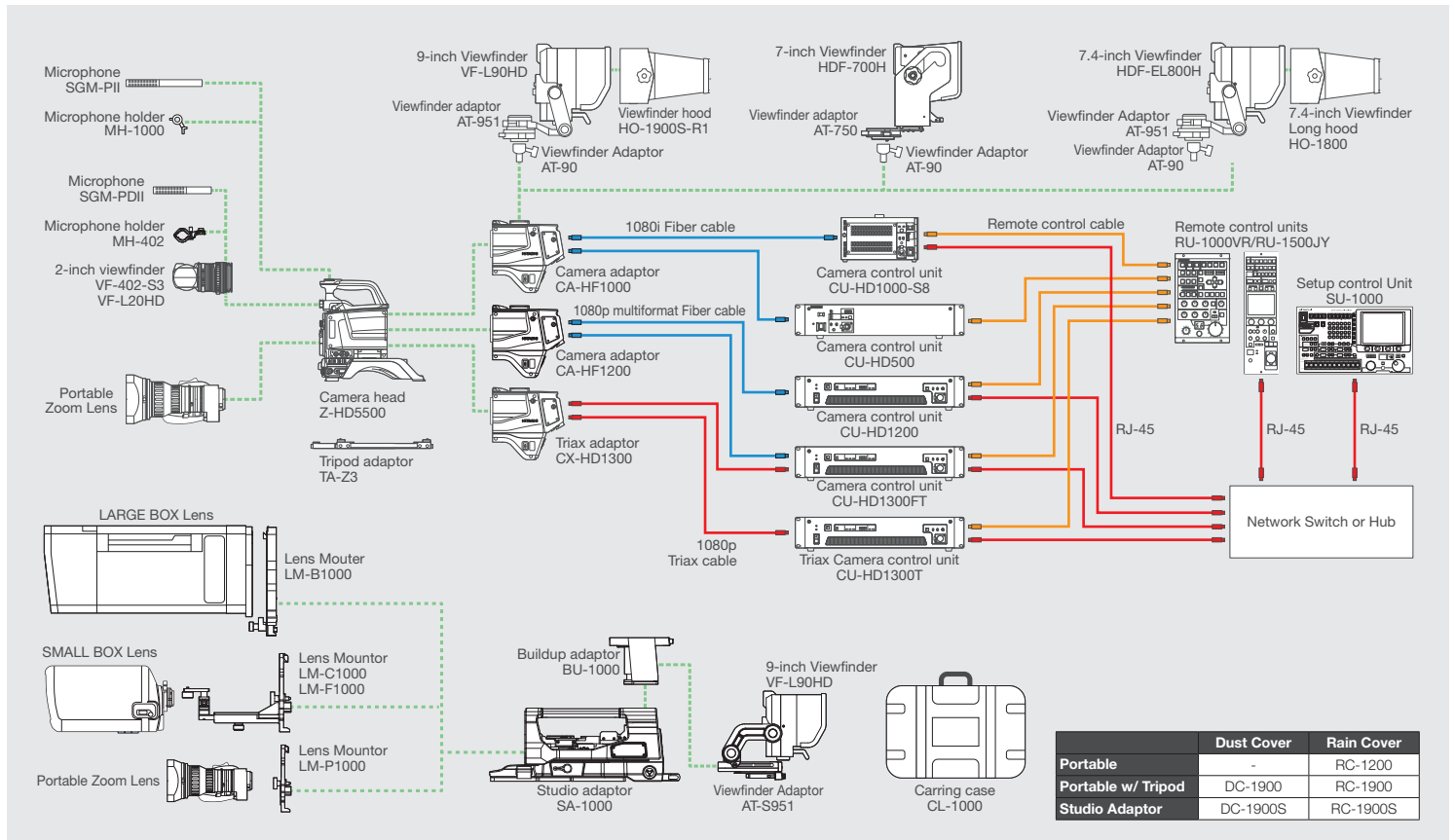


HDF-700H / AT-750
7-inch Color LCD



HDF-EL800H / AT-951
7.4-inch Color OLED

System configuration chart



SPECIFICATIONS

Z-HD5500 Camera Head

Imaging Device	(3x - RGB) 2/3-inch equivalent CMOS imager, micro-lens
Effective pixels	1,920 (H) x 1,080 (V)
Optical system	F1.4 prism.
Optical Filters	1x filter wheel w/4 filter positions 1: Clear, 2: Cross, 3:1/16ND, 4:1/64ND
ECC	3200K, 4300K, 5600K, 6300K, 8000K
Sensitivity	F10 (59.94Hz) / F11 (50Hz) @2000lx, 3200K, 89.9% reflectance
Signal to Noise Ratio	62dB (typical)
Horizontal resolution	1000 TV Lines (at center)
Registration	Overall 0.01% (excluding lens limitations)
Lens mount	B4 bayonet-type
Gain selection	L (LOW) -6, -3, 0dB M (medium) 0, +3, +6, +9, +12, +15, +18, +21dB H (high) +3, +6, +9, +12, +15, +18, +21, +24dB
Electronic Shutter	1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 (1080/59.94i), AES, CC Frame
Dimensions	133 (W) x 191 (H) x 262 (D) mm
Operating temperature	-10°C to +45°C, 14°F to 113°F
Camera head	1x BNC HD-SDI MON out, VF out (Character ON/OFF) or HD-SDI RET out
Input & Output	4-pin Multi connector for remote control unit 20-pin Multi VF connector, 12-pin Multi LENS connector 3-pin XLR MIC-1 connector, SD Memory Card Slot
Power consumption	Camera head 20 W (Head only without VF, lens)
Mass	2.2kg, 4.8lbs. approx. Camera head

CA-HF1000 Fiber Camera Adaptor

CCU connector	1x-type HFOC female connector (LEMO/Tajimi Type) SMPTE-304M-type
Video transmission system	Fully digital, bi-directional, 10-bit, 4:2:2 sampling, SMPTE-274M
Intercom	2x channel, 5-pin each XLR, channel selection, MIC on/off, volume
Program audio	2x, PGM audio level controls w/ Chnl1 & Chnl2 intercom mix
Teleprompter power output	1x 5-pin, 230VAC, 60W to 100W, external prompter Tally drive out (depending on configuration accessories)
Microphones	Chnl1 & 2 Line or MIC level select (MENU), with phantom power on/off
Return/ Aux switcher	2-channel, 4-input remote AUX/VF video select connector (RET control)
Video Inputs & Outputs	2x HD-SDI out (1080i50/59.94 SMPTE292M), 1X SD analog teleprompter out shared with Genlock in
Other I/O	1x 29-pin (for SA-1000 cable-less interface) (female) 1x 5-pin script lamp +12 VDC (1.0 A max) (female) 1x 6-pin VF AUX return (female) (for use in cranes or extended Head / VF configurations) 1x XLR 4-pin, 12VDC power input (male)
Mass	2.2kg, 4.8lbs. approx.

CX-HD1300 Triax Camera Adaptor

CCU connector	1x-Triax connector
Video transmission system	Fully digital, bi-directional, 10-bit, 4:2:2 sampling, 3G (1080 60p/50p)
Intercom	2x channel, 5-pin each XLR, channel selection, MIC on/off, volume
Program audio	2x, PGM audio level controls w/ Chnl1 & Chnl2 intercom mix
Teleprompter power output	1x 5-pin, 230VAC, 60W to 100W, external prompter Tally drive out (depending on configuration accessories)
Microphones	Chnl1 & 2 Line or MIC level select (MENU), with phantom power on/off
Return/ Aux switcher	2-channel, 4-input remote AUX/VF video select connector (RET control)
Video Inputs & Outputs	2x HD-SDI1/3 OUT, 3G-SDI/HD-SDI 1x HD-SDI2 OUT 3G-SDI or HD-SDI • 3G-SDI (1080p50/59.94): SMPTE424/425 Level-A • HD-SDI (1080i50/59.94): SMPTE292M
Other I/O	1x 29-pin (for SA-1000 cable-less interface) (female) 1x 5-pin script lamp +12 VDC (1.0 A max) (female) 1x 6-pin VF AUX return (female) (for use in cranes or extended Head / VF configurations) 1x XLR 4-pin, 12VDC power input (male)
Mass	2.6 kg, 5.7 lbs. approx.

VF-402-S3 2-inch Viewfinder

Display device	2-inch BW (16:9)
Resolution	650 TV lines
Functions	Bright, Contrast, Peaking, knobs VR front-facing Diopter
Internal tally	Red / Green
Tally controls	Tally OFF, NORMAL, HIGH
Power Consumption	Approx. 5 W (at Tally OFF)

VF-402-S3 is subject to Import restrictions in certain countries, please contact your local Hitachi Kokusai office to check if available in your country.

VF-L20HD 2-inch Color LCD Viewfinder

TV System	50 or 59.94Hz 1080i or 720p
Construction	Metal die-cast chassis and mount 2-inch, color TFT-LCD, 960 (H) x 540 (V)
Display	2-inch Color 16:9 LCD with removable Diopter (Focus ring)
User-comfort	VF angle rotation, X-Y mechanical movement, internal heater, anti-fog lens, rubber eyecup
Functions	Bright, Contrast, Peaking, knobs VR (front-facing)
Internal Tally	Red/ Green, Front-facing high brightness LEDs
Tally controls	Tally OFF, NORMAL, HIGH
Power Consumption	5 W (at Heater OFF) 5.5W (at Heater ON) approx.
Mass	0.76 kg, 1.7 lbs approx.

HDF-EL800H 7.4-inch Color OLED viewfinder

TV system	59.94/50Hz, 1080p/1080i/720p auto-switching
Construction	7.4-inch Color OLED 960 (H) x 540 (V), 16:9
Functions	Bright, Contrast, Peaking, knobs VR (front-facing) ZEBRA, MARKER, UTIL (Waveform/Vector/Audio indicator)
Internal tally	Red/Green
Front tally controls	Tally OFF, NORMAL, HIGH
Dimensions	215 x 158 x 51.5mm (main body)
Attachement (Option)	AT-951(mass : 1.6kg, 3.5lbs AT-90 (mass : 0.7kg, 1.54lbs)
Mass	1.25kg, 2.8lb

HDF-700H 7-inch Color LCD Viewfinder

TV System	50/60Hz, 1080i/ 720p auto-switching
Construction	Metal chassis and mount 7-inch, color TFT-LCD, 800 (H) x 480 (V)
Display	6500°K with removable hood
Camera mounts	AT-951 / AT-90
Functions	Chroma, WF on/off, Marker-1/2 On/Off, Bright, Contrast, Peaking, knobs VR (front-facing), Power ON/OFF
Internal Tally	Red/ Green, Front-facing high brightness LEDs
Tally controls	Red, OFF/L/H Selectable
Power consumption	12 W approx.
Mass	1 kg, 2.2 lbs approx.

Professional HDTV Camera

Z-HD5500

CU-HD1000-S8 Camera Control Unit

Genlock	1x BNC, B-BST 0.45Vp-p/75Ω (loop through) HDTV tri-level sync 0.60Vp-p/75Ω (loop through)
Digital Return 1/2/3/4	4x BNC, HD SDI or SD SDI
Analog Return 1/Prompt	1x BNC, VS or VBS 1.0Vp-p/75Ω (loop through)
Intercom (Headset)	5-pin XLR, -60dBm
Communication Intercom PGM R/G TALLY	1x D-sub 25-pin, Incom, Tally 0dBm / 600Ω at 4Wire, 0dBu or -15dBu/200Ω at 2Wire 0dBm / 600Ω Contact or DC supply
Output signals	
ENCR	3x BNC, VBS 1.0Vp-p/75Ω
R-Y or R / B-Y or B	1x BNC, NTSC : 0.7Vp-p, PAL : 0.525Vp-p/ 75Ω VS 1.0Vp-p/ 75Ω (Selectable)
Y or G	1x BNC, VS 1.0Vp-p/ 75Ω
Digital Out	3x BNC, HD-SDI, SD-SDI selectable (Embedded audio available) HD-SDI (1080i, 720p) SMPTE 292M, SD-SDI SMPTE 259M-C
PIX (R,G,B,ENCR)	1x BNC, VS or VBS 1.0Vp-p/ 75Ω
WFM OUT (R,G,B,ENCR)	1x BNC, VS or VBS 1.0Vp-p/ 75Ω
MIC OUT 1	1x XLR, 3-pin, 0dBm/ 600Ω
MIC OUT 2	1x XLR, 3-pin, 0dBm/ 600Ω
Intercom (headset)	1x XLR, 5-pin, 0dBu Max +15dB
Remote 1	1x 4-pin, 1.5Vp-p or 1x D-sub, 9-pin RS-232C (Switchable)
Remote 2	1x 4-pin, 1.5Vp-p
TALLY OUT (R/G)	1x D-sub 9-pin Contact or Voltage selectable
WFM control	1x D-sub 15-pin WFM 0-7, 0/5V,
Power supply voltage	CU-HD1000J AC100V @ 50/60Hz CU-HD1000U AC117V @ 60Hz CU-HD1000E AC230V @ 50Hz
HFOC maximum cable distance	3,000 meters (9,840 feet) with CCU power
Operating temperature	0°C to 40°C, 32°F to 104°F
Power consumption	210W approx. (AC operation, including SK-HD1000, VF-402 and AUX POWER OUT 100VA)
Mass	8.7 kg, 19.1 lbs.

RU-1000VR Remote Control Unit

Dimensions	116 (W) x 182 (D) x 60 (H) mm
Power input	+12 V DC
Operation temperature	0°C to 40°C, 32°F to 104°F
Interface	4 pin connector
Mass	0.6 kg, 1.2 lbs.

RU-1500JY Remote Control Unit

Dimensions	102 (W) x 370 (D) x 56.2 (H) mm
Power input	+12 VDC
Operational temperature	0°C to 40°C, 32°F to 104°F
Interface	RJ-45 connector, 4-pin connector
Mass	1.3 kg, 2.9 lbs.

SU-1000 Setup Control Unit

Input signal	VE (Video Engineer) Switch input : Contact closure
Dimensions	385 (W) x 255 (D) x 65 (H) mm
Power input	100/117/220/240 VAC, 50/60 Hz, auto-sensing
Operational temperature	0°C to 40°C, 32°F to 104°F
Interface	RJ-45 connector, 4-pin connector
Power consumption	33 VA Approx.
Mass	4.1 kg, 9 lbs.

CU-HD1300FT/T Camera Control Unit

Genlock	1x BNC, B-BST 0.45Vp-p/75Ω (loop through) HDTV tri-level sync 0.60Vp-p/75Ω (loop through)
Digital Return 1/2	2x BNC, 3G-SDI or HD-SDI or SD-SDI
Prompt	1x BNC, VS or VBS 1.0Vp-p/75Ω (loop through)
Intercom (Headset)	5-pin XLR, -60dBm
Communication Intercom PGM R/G TALLY	1x D-sub 25-pin 0dBm, 600Ω/ 4Wire, 0dBu or -15dBu, 200Ω with 2-wires 0dBm, 600Ω Contact or DC supply
Digital Out	2x BNC, 3G-SDI, HD-SDI, SD-SDI Selectable (Embedded 2-Ch audio available) 3G-SDI (1080p) SMPTE 424/425 Level-A HD-SDI (1080i, 720p) SMPTE 292M SD-SDI SMPTE 259M-C
PIX/WFM OUT	2X BNC 3G-SDI, HD-SDI, SD-SDI Selectable (Embedded audio available)
MIC OUT 1	1x XLR, 3-pin, 0dBm/ 600Ω
MIC OUT 2	1x XLR, 3-pin, 0dBm/ 600Ω
Intercom (headset)	1x XLR, 5-pin, 0dBu Max +15dB
Remote 1	1x 4-pin, 1.5Vp-p
Remote 2	1x 4-pin, 1.5Vp-p
Remote 3	1x RJ-45
TALLY OUT (R/G)	1x D-sub 9-pin, 1x D-sub 9-pin Contact or 24Vdc 10mA
WFM control	1x D-sub 15-pin WFM 0-7, 0/5V
Power Supply Voltage	100 to 240VAC 47 to 63 Hz (with auto sensing mode)
CU-HD1300T	Triax camera cable
CU-HD1300FT	Both SMPTE fiber and Triax camera cable
HFOC maximum cable distance	4,000 meters (13,123 feet) with CCU power
Operating temperature	0°C to 40°C, 32°F to 104°F
Triax maximum cable distance	1080i, Belden 9267 3/8" Triax cable – 700 m, 2,296 ft
Power consumption	300W approx. (AC operation, including Z-HD5500,
Mass	11kg, 24.3 lbs approx.

CU-HD500 Camera Control Unit

Genlock	1x BNC, B-BST 0.45Vp-p/75Ω (loop through) HDTV tri-level sync 0.60Vp-p/75Ω (loop through)
Digital Return 1/2	1x BNC, HD SDI or SD SDI
Prompt	1x BNC, VS or VBS 1.0Vp-p/75Ω (loop through)
Intercom (Headset)	5-pin XLR, -60dBm
Communication Intercom PGM R/G TALLY	1xD-sub 25-pin, Incom, Tally 0dBm / 600Ω at 4Wire, 0dBu or -15dBu / 200Ω at 2Wire 0dBm / 600Ω Contact or DC supply
Digital Out	2x BNC, HD-SDI (Embedded audio available) 4x BNC, HD-SDI, SD-SDI Selectable (Embedded 2-Ch audio available) HD-SDI (1080i, 720p) SMPTE 292M SD-SDI SMPTE 259M-C
PIX OUT	1X BNC HD-SDI, SD-SDI Selectable(Embedded audio available)
MIC OUT 1	1x XLR, 3-pin, 0dBm/ 600Ω
MIC OUT 2	1x XLR, 3-pin, 0dBm/ 600Ω
Intercom (headset)	1x XLR, 5-pin, 0dBu Max +15dB
Remote 1	1x 4-pin, 1.5Vp-p
Remote 2	1x 4-pin, 1.5Vp-p
MIC REMOTE	1x D-sub 15-pin MIC1.2 GAIN
TALLY OUT (R/G Tally)	1x D-sub 9-pin Contact 24V DC. 10mA
WFM control	1x D-sub 15-pin WFM 0-7, 0/5V
Power supply voltage	CU-HD500J AC100V @ 50/60Hz CU-HD500U AC117V @ 60Hz CU-HD500E AC230V @ 50Hz
HFOC maximum cable distance	1,000 meters (3,280 feet) with CCU power
Operating temperature	0°C to 40°C, 32°F to 104°F
Power consumption	300W approx. (AC operation, including SK-HD1000, VF-402 and AUX POWER OUT 100VA)
Mass	9kg, 15.4lbs

