

Hitachi Kokusai Electric

HITACHI
Inspire the Next

Super Slow Motion Production Camera

SK-HD1300-HS

High-Speed, Dual Format HDTV camera



Hitachi SK-HD1300-HS

High-Speed HD Sports Production Camera

Super Slow Motion Sports production camera

The SK-HD1300-HS is a high speed, slow-motion production camera. This sports production camera is capable of high frame rates of 1080i/180, 720p/180 while simultaneously providing 1080i/60, 720p/60 standard output. This allows dual recording of 2 different HD signals. The SK-HD1300-HS can effectively be deployed in camera positions within a venue replacing normal frame-rate HD cameras. This 3X frame rate allows superb slow motion replay for high speed sports action. The high-speed output interfaces to all of today's popular slow motion servers.

Multi-format HDTV production camera

The SK-HD1300-HS high speed camera uses newly developed. MOS sensors, each having 2.6 million pixels, providing outstanding imaging performance. Hitachi's implementation of the latest imaging technology in the SK-HD1300-HS achieves high sensitivity and no vertical smear.

Hitachi's advanced digital signal processing

Each essential part of the Hitachi SK-HD1300-HS camera system has its own DSP processor. 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 Hitachi's DSP processors are designed to work with any new 2K imaging technology that is in the near future thus, offering a high R.O.I. (return on investment). Even at high gain, clear images are obtained with little noise. High horizontal resolution performance of 1100TVL (Luminance channel) is the pinnacle of picture sharpness and is the most transparent signal processing path of any Hitachi digital camera manufactured to date.

Superb High Definition picture reproduction & enhancement tools

Luminance response tools

Black Stretch

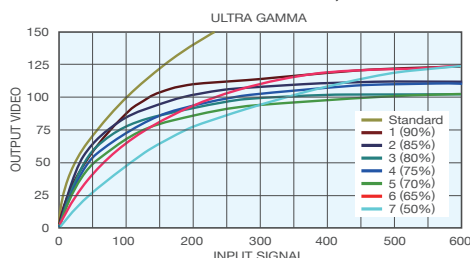
The Black stretch function allows for better reproduction of dark or underexposed areas by evenly raising the luminance response without changing the pedestal, white clip or knee settings. It is especially useful in high contrast shooting conditions.

Black Gamma

The Black Gamma function can control Initial gamma gain more finely than conventional black stretch. Independent Initial Gamma controls are provided for the Red, Green and Blue channels providing a fine granularity control over dark colors.

Ultra-Gamma

A new and useful function is Ultra-Gamma, which provides seven different responses to dramatically increase exposure latitude of the camera in shooting conditions where lighting and scenery vary widely in intensity.



Digital signal transmission via Hybrid Fiber Optical Cable

The SK-HD1300-HS camera system utilizes industry standard Hybrid Fiber-optic cable (HFOC) connectors made of high-strength materials that ensure durability and reliable performance. The maximum HFOC length with camera power and fully operational facilities is 4,000m (13,200 feet) without utility power*.

The Optical power meters at the camera head, control panel and CCU front panel indicate the optical condition of both transmitting and receiving signals independently to depict proximity to the "digital cliff" (maximum cable distance) or provide basic HFOC diagnostics.

Advanced Flicker Reduction Function

The video flicker seen in a modern HDTV slow-motion camera is mainly caused by the asynchronous frequencies between the camera's scanning and the refresh rates of artificial lights typically used in stadiums, arenas and auditoriums.

The SK-HD1300-HS can minimize the observed flicker in the image by its unique, automatic flicker-frequency detection algorithms which use the actual level fluctuations in the captured video frames to correct the flicker in real-time. The optimum reduction in flicker can be easily obtained by adjusting the detection response via the SK-HD1300-HS operational menu.

Real Time Lens Aberration Correction (RLAC)

Modern HDTV lenses can still produce optical distortions. "Lateral chromatic aberration" can be reduced in certain lens models when used with the SK-HD1300-HS camera system. This function, called RLAC dynamically corrects images using correction data provided by the lens, through a digital interface.

Auto Knee and Knee Detail

In addition to the linear knee, slope and white clip settings, the SK-HD1300-HS offers an AUTO KNEE function and detail control of the video highlights.

Auto knee continuously varies the knee point and the slope while keeping the APL and white clip constant. This creates images with a great rendition of bright objects and other highlights.

The knee detail function allows precise restoration of detail within the knee slope area. Knee detail creates fine edges and texture on high-brightness objects like white clothing on the subject.

Triple-masking

The triple-masking function includes 12-vector, linear matrix and skin tone masking providing users wide latitude in subject image color control. The 12-vector color corrector provides independent control of hue and saturation for six primary and six secondary combinations of colors. A 6-axis linear matrix provides overall color control for excellent, precise color rendition control. The Skin tone masking function provides "fine painting" (hue and saturation) of skin tones without affecting other colors in the scene.

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.

Super Slow Motion Production Camera

SK-HD1300-HS

High-Speed, Dual Format HDTV Camera

Camera Control

CU-HD1300-HS

Chroma Saturation

Total chroma saturation allows control over the amount of color in the image. A purely black & white image can also be achieved.

Knee Saturation

Washed out colors are faithfully reproduced in bright areas of the image with the Knee Saturation control.

Lens Files

The SK-HD1300-HS can store 8 lens files which include various lens correction data such as vertical modulation shading.

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 SK-HD1300-HS camera system.

Master Detail items

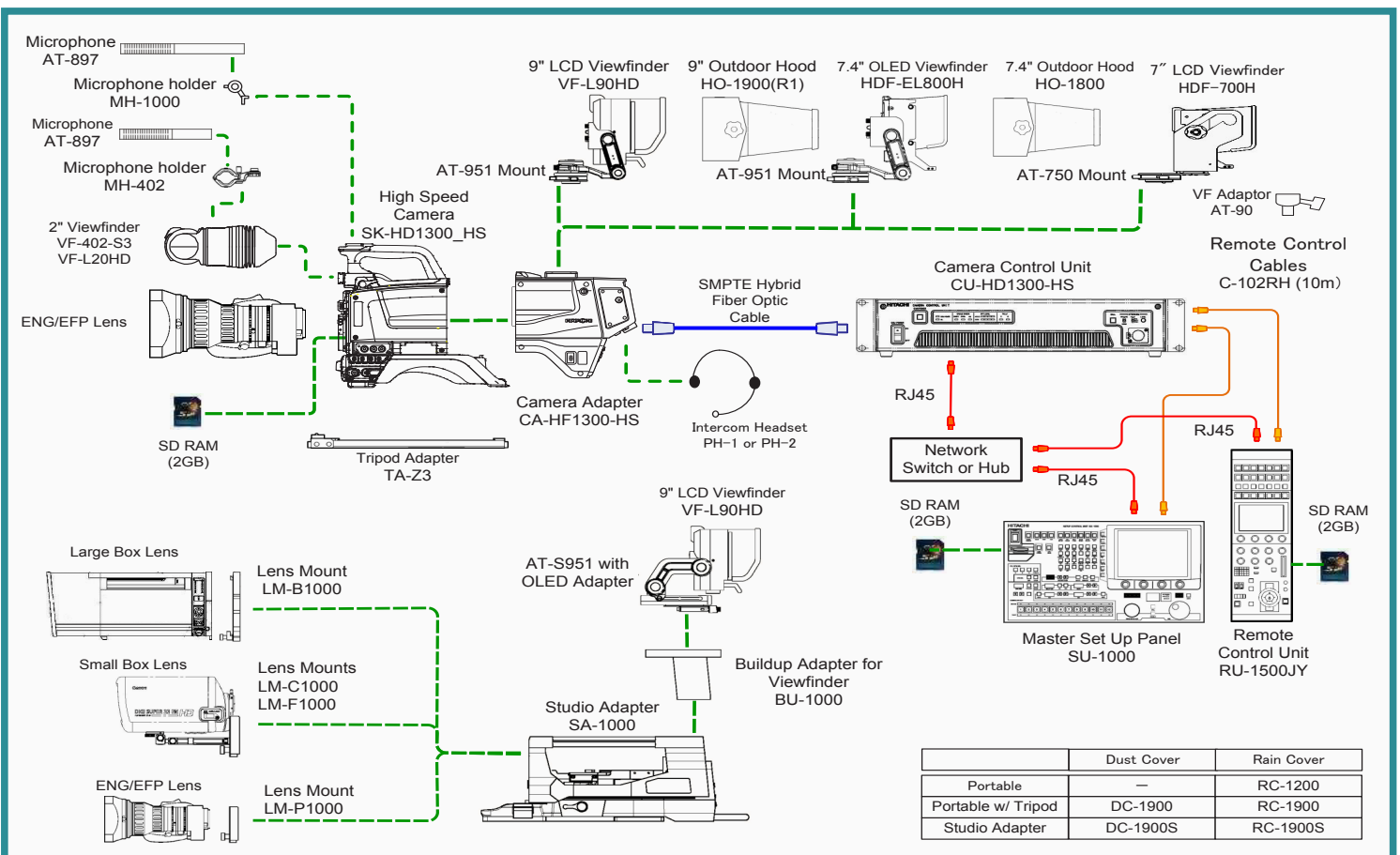
Master Detail items are available to adjust varied parameters of the detail signal to taste or to achieve a desired "look" in your productions. Some of these adjustments are; H/V detail, crisp, level dependence, knee detail, limiter, source, frequency and balance.



CCU Features and Benefits

- Front panel Optical Power meter.
- Simultaneous HD-SDI High Speed and standard SDI outputs.
- 2 channel embedded Digital audio.
- CU-HD1300-HS works with SMPTE Fiber or Single mode up to 10km.
- 4 auxiliary returns.
- Dedicated teleprompter channel and AC power.
- ARIB-type color bar output.
- 2 channel balanced analog Mic audio outputs.
- Genlock with composite or tri-level sync.
- 2-tally (Red/Green) system.
- 2-channel, 2W/4W intercom system.
- RS-232C remote control.
- TCP/IP Network connectivity via RJ45 with SU-1000 & RU-1500JY.

System configuration chart



SPECIFICATIONS

Camera Head SK-HD1300-HS	
Model Name	SK-HD1300-HS
Imaging Device	2/3-inch, MOS image sensor Total pixels : 2,270(H) × 1,144(V) 2.6 million pixels
TV System	1,920(H) × 1,080(V) / 59.94i/p
Optical system	F1.4 prism
Optical Filters	1x manual filter wheel w/4 filter positions Clear, Cross, 1/16ND, 1/64ND ECC (Electronic Color Correction) with 5 settings (3200K, 4300K, 5600K, 6300K, 8000K)
Sensitivity	F11 @ 2000 lx (3200 K, 89.9% reflectance)
Signal to Noise Ratio	62dB (1080i) (typical)
Resolution	Horizontal : 1100TVL , Vertical : 1000TVL
Registration	0.01 % (excluding lens characteristics)
Lens mount	B4 bayonet-type
Gain selection	L (low) -3, 0dB M (medium) 0, +3, +6, +9, +12, +15, +18, +21dB H (high) +3, +6, +9, +12, +15, +18, +21, +24dB
Electronic Shutter	1/60, 1/250, 1/500, 1/1000, 1/2000, AES
Dimensions	133 (W) x 191 (H) x 262 (D) mm
Operating temperature	-10°C to +45°C, 14°F to 113°F
Input & Output	1x BNC HD-SDI VF out (Character ON/OFF) or HD-SDI RET out 4-pin Multi connector for remote control panel 20-pin Multi VF connector, 12-pin Multi LENS connector 3-pin XLR MIC-1 connector, SD Memory Card Slot
Power consumption	Camera head 18 W Head only (without VF)
Mass	2.1kg, 4.6lbs. Camera head

Fiber Camera Adaptor CA-HF1300-HS	
CCU connector	1x-type HFOC female connector (LEMO) SMPTE-304M-type
Intercom	2x channel, each XLR 5-pin, channel selection, MIC on/off, volume
Program audio	2x, PGM audio level controls w/ Chnl1 & Chnl2 intercom mix
Teleprompter power output	1x 5-pin, AC230V, 100VA, external prompter R/G Tally drive out (depending on configuration accessories)
Microphones	Channel 1 & 2 Line or MIC level select (MENU), with phantom power on/off
Return/ Aux switcher	4-input remote AUX/VF video select connector (RET control)
Video Inputs & Outputs	1x HD-SDI OUT, 1X SD analog teleprompter out shared with Genlock in, 1x HD-SDI RET OUT
Other I/O	1x 29-pin (for SA-1000 cable-less interface) (female) 1x 5-pin script lamp DC12V (1.0A max) (female) 1x 6-pin VF AUX return (female) (for use in cranes or extended Head/VF configurations) 1x R05-R8F 8-pin TRUNK RS-422 or RS-232C (option) (female) 1x XLR 4-pin, DC12V power input (male)
Dimensions	133 (W) x 189 (H) x 194 (D) mm
Operating temperature	-10°C to +45°C, 14°F to 113°F
Mass	2.2kg, 4.8lbs.

Camera Control Unit CU-HD1300-HS (59.94Hz))	
Genlock	1x BNC, B-BST 0.45Vp-p/75 (loop through) HDTV tri-level sync 0.60Vp-p/75 (loop through)
Digital Return A (1/2/3/4) B (1/2)	6x BNC, HD SDI : 1.5G or SD SDI
Prompt	1x BNC, VS or VBS 1.0Vp-p/75 (loop through)
Intercom (Headset)	IN : 1x XLR, 5-pin, -60dBm (female) OUT : 1x XLR, 5-pin, 0dBu Max +15dB (female)
Communication	1x D-sub 25-pin (female)
Intercom	0dBm, 600 / 4Wire
PGM	0dBu or -15dBu, 200 at 2Wire 0dBm/ 600
R/G TALLY	Contact or DC supply
Digital Out	BNC HD-SDI (Embedded 2-Chnl audio available) 4x BNC HD-SDI or SD-SDI selectable (Embedded 2-Chnl audio available) 1x BNC HD-SDI or SD-SDI selectable WFM 1x BNC HD-SDI or SD-SDI selectable PIX
MIC OUT 1/MIC OUT 2	1x XLR, 3-pin, 0dBm/ 600 (male)
Remote 1/Remote 2	1x 4-pin, 1.5Vp-p (female)
Remote 3	1x RJ-45
TALLY OUT	1x D-sub 9-pin (female)
R/G Tally	Contact or Voltage selectable
WFM control	1x D-sub 15-pin WFM 0-7, 0/5V (female)
MIC REMOTE	1x D-sub 15-pin MIC 1.2GAIN (female)
TRUNK	1x D-sub 9-pin TRUNK RS-422 or RS-232C (option) (male)
Power supply voltage	CU-HD1300-HS AC117V / CU-HD1200E 230V
HFOC maximum cable distance	4,000m (13,200 feet) with no utility power*
Operating temperature	0°C to 40°C, 32°F to 104°F
Power consumption	300W approx. (AC operation, including SK-HD1300-HS, VF-402 and AUX POWER OUT 100VA)
Mass	10kg, 22lbs.

Viewfinder

9-inch viewfinder VF-L90HD	
Construction	1080i/720p field frequency 59.94/50Hz
Number of pixels	1280 (H) x 768 (V) normal scan (16:9)
Color temperature	6500K
Input Signals	Analog Y/Pb/Pr/SYNC
Functions	BRIGHT, CONTRAST, PEAKING knob VR power on/off, tally on/off, Marker on/off, (center marker, 4 : 3 marker, area marker)
Internal tally	Red/Green
Dimensions	230(W) x 185(H) x 86(D)
Attachment (Option)	AT-95i(mass : 1.6kg, 3.5lbs AT-90(mass : 0.7kg, 1.54lbs)
Mass	1.6kg, 3.5lbs

 **CAUTION** : To ensure safe operation, please read the instruction manual before using this product.

Hitachi Kokusai Electric Inc.

32, Miyuki-cho, kodaira-shi, Tokyo 187-8511, Japan
Phone : +81-50-3383-3432, Fax : +81-42-322-3270
URL : <http://www.hitachi-kokusai.co.jp/global/en/index.html>

Hitachi Kokusai Electric Asia (Singapore) Pte. Ltd.

URL : <http://www.hitachi-kokusai.com.sg/>

7 Tampines Grande, #02-04 Hitachi Square, Singapore 528736
Phone : +65-(0)6212-1945, Fax : +65-(0)6231-2429

Hitachi Kokusai Electric America, Ltd.

URL : <http://www.hitachikokusai.us/>

Headquarters : 150 Crossways Park Drive, Woodbury, NY 11797, U.S.A.

Phone : +1 (516) 921-7200, Fax : +1 (516) 496-3718

West Office : 11258 Monarch Street, Unit H, Garden Grove, CA 92841, U.S.A.

Phone : +1 (714) 895-6116, Fax : +1 (714) 895-6252

Northeast Sales : Phone : +1 (860) 757-3892 **South Sales** : Phone : +1 (850) 934-1234

Midwest Sales : Phone : +1 (330) 334-4115 **Latin / Canada Sales** : Phone : +1 (516) 682-4408

Hitachi Kokusai Electric Europe GmbH

URL : <http://www.hitachi-keu.com/>

Frankfurt Head Office : Siemensstr. 9, D-63263 Neu-Isenburg, Germany
Phone : +49(0) 6102-8332-0, Fax : +49(0) 6102-202616

London Office : Windsor House, Queensgate, Britannia Road, Waltham Cross,
Hertfordshire, EN8 7NX, United Kingdom
Phone : +44(0) 845-121-2177, Fax : +44(0) 845-121-2180

These Specifications are subject to change without notice.

Hitachi Kokusai Linear Equipamentos Eletrônicos S/A

URL : <http://www.hitachi-linear.com.br/>

Head Office : Rodovia BR 459, No121-A, Km 121 - Bairro Corrego Raso,
Santa Rita do Sapucaí, 37540-000, MG - Brazil

Phone : +55 (35) 3473-3473, Fax : +55 (35) 3473-3474

Sales Office : Alameda Santos, 745 - 9 Andar - Conj. 91B, Cerqueira Cesar,

São Paulo, 01419-001, SP - Brazil

Phone : +55 (11) 3541-3244, Fax : +55 (11) 3541-2425

Hitachi Kokusai Electric Turkey Elektronik Ürünleri Sanayi ve Ticaret A.Ş.

Hitachi Kokusai Electric Turkey Yayıncılık Sistemleri A.Ş.

URL : <http://www.hitachi-kokusai.com.tr/>

Istanbul Endüstri ve Ticaret Serbest Bölgesi Akif Kopuz Cad. No.3,
34957 Tuzla Istanbul, Turkey

Phone : +90-216-394-8484, Fax : +90-216-394-8482