

HITACHI

Preliminary Specifications

For

SK-31B

**Fully-Digital, Multi-Standard, Application-Specific, HDTV
Compact Color Camera**



Hitachi Kokusai Electric, Inc.

Document: M032511

Issue: November 12, 2003

Description:

The new Hitachi model SK- 31B is a multi-standard HDTV camera designed for the increasingly expanding applications in the digital production and broadcast market.

In response to user demands, Hitachi now makes available the choice of NATIVE-SCAN 1080i or 720p image pickup devices for the SK-31B. Both choices of image pickup devices are high-performance 2/3-inch, Inter-line, CCDs.

The SK-31B system is composed of the camera head, Camera Control Unit (CCU) model CU-3100 and, remote operation unit model RU-3300N. The camera head can be used in self-contained configuration (without CCU and RU) to additionally offer increased flexibility in system configurations for specific applications. Furthermore, the SK-31B is part of the SK-3300 series of Hitachi HDTV cameras thereby having the same performance, specifications and use of accessories.

A digital fiber-optic cable transmission system is used between the camera head and CCU in order to preserve the maximum video quality. A native-scan 10-bit HD-SDI signal is available at the SK-31B camera head even when used with the Fiber-Optic cable/ CCU configuration. In addition to the native HDTV scan formats offered by the CCDs, optionally available is a "down converter plug-in module" that provides Standard Definition (SD), Serial Digital Interface (SDI), 480i (when using progressive scanned CCDs) or 480p video (when using interlace scanned CCDs).

The SK-31B employs high-efficiency 0.18 μ m gate pitch digital signal processing (DSP-VLSIC) with the latest generation of 12-bit analog to digital converters (ADC) available on the market. These are the main constituents of the system's HDTV resolution, wide dynamic range, excellent signal-to-noise ratio and faithful color reproduction. Expert implementation of the latest generation of Hitachi DSP designs is the basis for the camera's low-heat dissipation and efficient power use.

This newly designed compact camera head weights approximately only 3.2 kg. It has no externally mounted heat sinks or protrusions and is generally square in exterior shape. An easily removable handle is provided for ease of use and transport.

The height of the compact CCU model CU-3100 is 2 units (88mm) and of half-rack size. Two CCU's can be mounted side-by-side, which make installations in mobile units efficient. The CU-3100 barely weights 6 Kg and is the smallest Optical-fiber cable Camera Control Unit in the world. The SK-3300 full size portable and studio HDTV camera series can also employ the CU-3100 with limited functionality.

Technical Features

Camera Head:

- ❖ Compact, lightweight magnesium-alloy metal, box-style camera head.
- ❖ Self-contained or Fiber CCU operation.
- ❖ Full Time HD-SDI output available at camera head in self-contained or Fiber CCU configurations.
- ❖ Prompter video output BNC available at camera head in Fiber CCU configuration for transport of digital or analog, HD or SD (4:3 or 16:9) signal.
- ❖ Serial data output available at camera head in Fiber CCU configuration for transport of commands to external device (Robotic Pan/ Tilt systems, Lens control, etc.).
- ❖ Dual Tally system (Red/ Green) available in Fiber CCU configuration.
 - External Tally drive available at camera head for remote Tally lamp installation (ex. In front of Prompter or optics)
 - High brightness multi-element LED External Tally lamp with 3-position (High/ Low/ Off) Tally switch.
- ❖ Camera head power indicator.
- ❖ Bayonet (B4) standard lens mount.
- ❖ Motorized 4-position, local or remote control optical filter wheel.
- ❖ Integrated control panel at camera head.
- ❖ 12-VDC-power input at camera head for self-contained operation.
- ❖ Genlock input BNC (Tri-level analog composite sync) for use in self-contained system operation.
- ❖ Compatibility with SK-3300 series accessories.
- ❖ Choice of: Native 1080/60i 2.2 million pixels, 2/3-inch, IT- CCD or 720/60p 1 million pixels, 2/3-inch, IT-CCD.
- ❖ High Sensitivity: F8@ 2,000 lux.
- ❖ High Resolution: Greater than 1,200 TV lines.
- ❖ High Signal to Noise Ratio: Greater than 54 dB (56 dB Typical).
- ❖ Advanced Hitachi 0.18µm lithography process, 3-million gate, 1.5V logic DSPs employed.
- ❖ High bandwidth 12-bit Analog to Digital converters used in each of the RGB channels.

CCU- Camera Control Unit:

- ❖ Compact, lightweight CCU (model CU-3100).
 - Half-rack width, 2RU units (88mm) high.
 - 6Kg weight.
- ❖ Low power consumption CCU (model CU-3100), less than 100VA.
- ❖ Highly reliable & easy to service modular CCU with only 3 plug-in modules (model CU-3100).
- ❖ Independent Waveform and Monitor SD-SDI video outputs available at CCU (model CU-3100).
 - Monitor HD-SDI with superimposed characters for operational menu navigation, RT-diagnostics and camera ID.

- ❖ Three buffered HD-SDI outputs available at CCU (model CU-3100).
- ❖ Up-converter OPTION for two Return BNC and independent Prompter BNC, both with selectable (HD/SD) signal input format available at CCU (model CU-3100).
- ❖ Down converter OPTION for 480i and 480p output from CCU (model CU-3100).
- ❖ Basic operation control panel (model RU-3300N) can be integrated into front fascia of CCU (model CU-3100).
- ❖ Digital Fiber-Optic cable transmission with SMPTE311M standard connectors.
- ❖ Limited-function compatibility with SK-3300 series HDTV cameras.
- ❖ Real-time System Diagnostics: The CU- 3300 can detect and display via the Pix monitor video output; processing, transmission and output errors in real-time.

Operational Features

- ❖ 6-color vector Hue and Saturation controls.
- ❖ Master (overall) saturation adjustment.
- ❖ 6-color difference linear masking level controls.
- ❖ Flesh-tone masking Hue, Saturation adjustment, On/ Off control.
- ❖ Independently adjustable RGB gamma tables.
- ❖ Master (overall) gamma level adjustment.
- ❖ Full parameter lens white shading controls. (HS, VS, HP, VP). White shading adjustment memory for lens 2X extender position.
- ❖ RGB Lens Flare adjustment.
- ❖ Independent H & V Detail level control.
- ❖ Independent H & V Detail Crisping control.
- ❖ Adjustable detail center frequency between 14 and 20MHz.
- ❖ High Chroma Detail on/off control
- ❖ Detail level dependence and slope adjustment.
- ❖ White suppression; Knee Slope and Clip adjustments.
- ❖ Return input select: HD/ SD, Analog or Digital video (16:9 or 4:3). Two return inputs on CCU.
- ❖ Camera Head ID and CCU ID selection to easily identify system components in a large equipment pool application.
- ❖ Adjustable MIC audio gain output at CCU.

Accessories

CU-3100: Fiber optic cable, half-rack, 2RU camera control unit.



RU-3300N: Compact Remote Operation unit. Can be used with camera in self-contained mode or integrated into front of CU-3100.



RU-3300: Full-size Remote Operation unit with function display, rotary encoders and full function access to a single camera.



SU-3300A: Master Setup Control unit. Can directly access full setup parameters for 12 cameras and up to 48 with external delegation switch.



VF- L6HD: 6-inch Color LCD VIEWFINDER



Specifications:

Camera Head	
Imaging device	2/3-inch 2.2M pixel IT-CCD sensor or 1 Mpixel IT CCD sensor
Pixel array	720p: 1370(H) X 744(V)
	1080i: 2010(H) X 1086(V)
Sensitivity	F8.0 @ 2000lux, 3200K, 89.9%
Prism	RGB beamsplit, F1.4
Signal-to-noise ratio	56 dB typical, >54 dB (HD-SDI decoded Y : 27.6MHz), 64dB SDTV typical
Horizontal resolution	HD >1200 TV Lines typical, SD >900 TV Lines typical
Power consumption	Camera Head 40W approx.
Lens Mount	Bayonet B4
Dimensions & Mass	Camera Head: 118(W) x 143(H) x 324(D) mm 3 kg approx.
Storage Temp.	-20°C ~ 80°C
Operational Temp.	0°C ~ +40°C

Head outputs	
Line	HD-SDI x1
Return	With up-converter OPTION: HD-SDI x1
Prompter	D1 or VBS x1
Data	(As per CCU selection)
Tally	Red, Green, Ext Tally drive, Call

Head inputs	
Mic	PGM audio x1
Power	12VDC

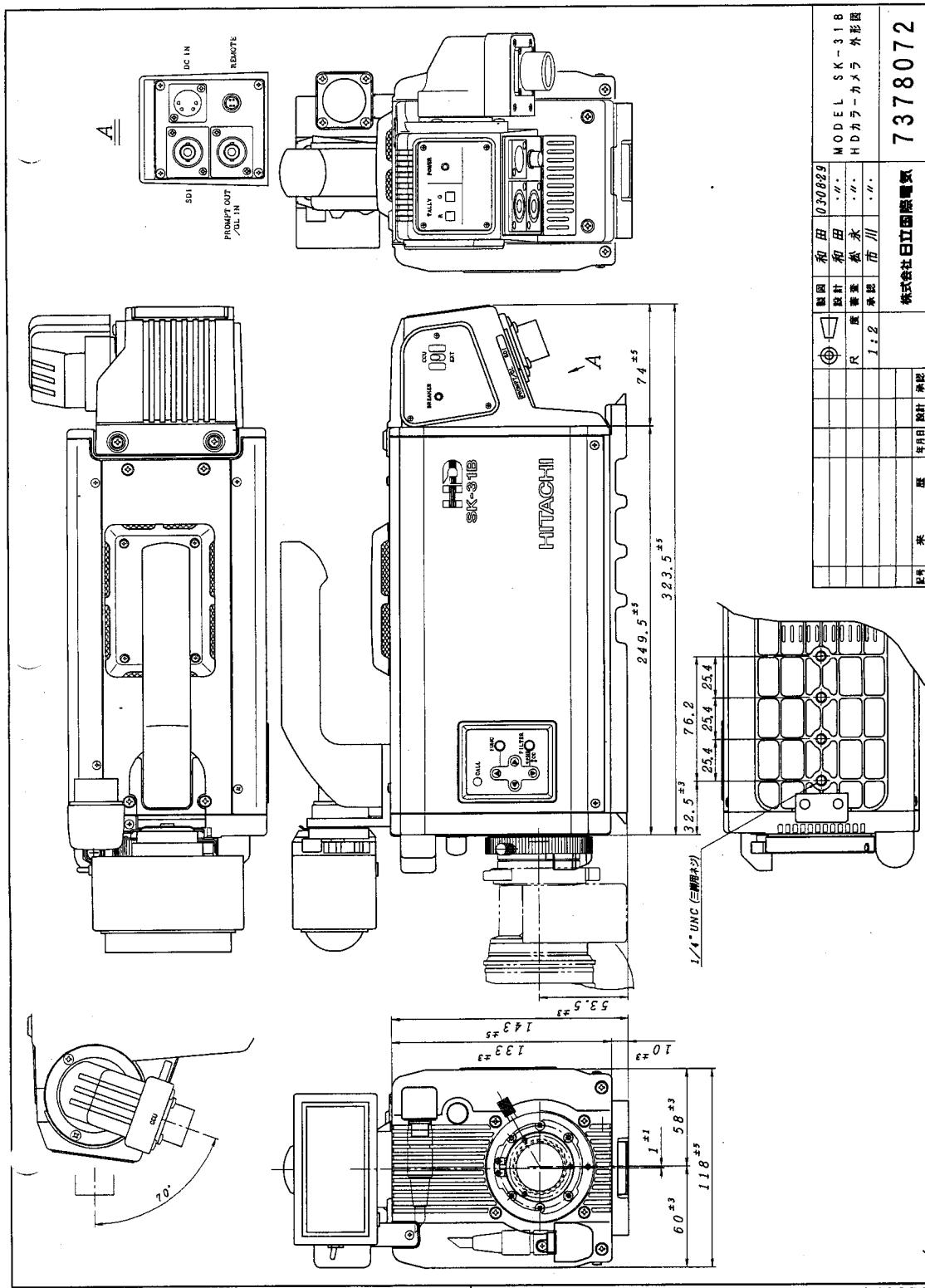
CCU outputs	
HDTV Line	HD-SDI x3
Pix	NTSC (Analog 480i)
WFM	NTSC (Analog 480i)
NTSC Line	With down-Converter OPTION: D1x3, VBS x3, R, G, B(or Y, PB, PR)
PGM Audio	x1

CCU inputs	
Return	HD-SDI x2 or SDTV D1 x2 or VBS x2
Prompter	SDTV D1 or VBS
Genlock	BB or HDTV Tri-level sync
Data	RS232C, RS485

CCU Dim. & Mass	215 (W) x 88(H) x 450(D) mm 6 kg approx.
Optical Fiber Cable	SMPTE311 Hybric Fiber-optic camera cable
Usable FO Cable	2Km w/ head power, 10Km w/o head power.
CCU Power	117VAC/50~60Hz
CCU Consumption	100 +25VA approx.

Specifications subject to change without notice. Please contact a Hitachi Denshi America Sales or Technical representative for updates.

Product CAD Drawings:



Sales Information:

Europe Corporate Headquarters:

Hitachi Denshi (Europa) GmbH
Weiskircher Str. 88
D-63110 Rodgau, Germany
Tel. +49-(0)6106-6992-27
Fax +49-(0)6106-13691
Website: <http://www.hitachi-service.net>