

Ikegami

HD
High Definition

The Latest Technology
Multi-format Full Digital HDTV Camera System

HDK-79EC



**Leading-edge CMOS sensor technology,
featured in several innovative models,
pushes the state-of-the-art in End to End Digital,
Multi-format HD Cameras.**

State-of-the-Art, HDTV Native multi-format CMOS camera

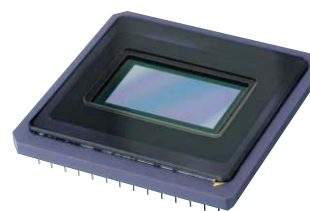
HDK-79EC

The HDK-79EC achieves outstanding performance to meet the critical needs of today and tomorrow, with exceptional functionality and superior reliability. For extraordinary flexibility, the HDK-79EC is designed as a docking style camera head, allowing configuration as a fiber, triax, or self-contained camera. The SE-79D, System Expander, adds the flexibility to rapidly change between full featured studio camera, and shoulder or jib mounted portable camera.

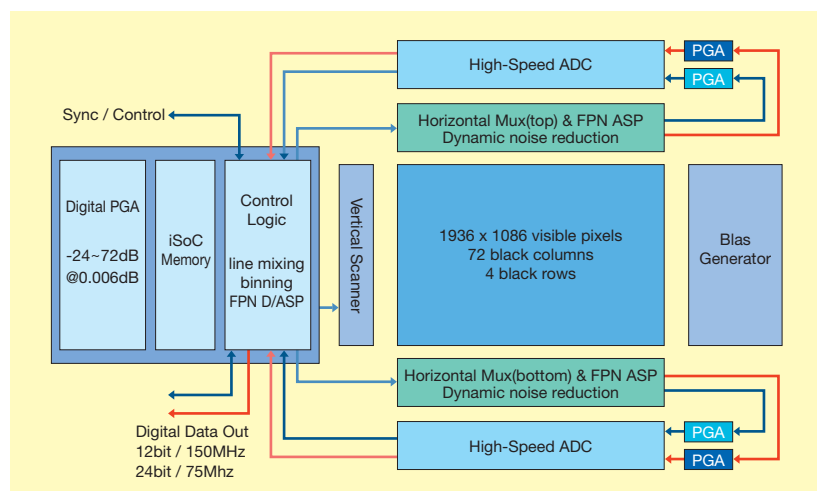


Revolutionary 2/3-inch 2.5 Mega-pixel CMOS sensors

Advanced CMOS sensors are employed to achieve superb picture quality. CMOS sensors have wide dynamic range and in principle, no smear since electric charges are not shifted throughout the imager which is the cause of vertical smear in CCDs. Instead each pixel of the CMOS sensor has its own amplifier (which changes electric charges to voltage signals). So it performs signal amplification on a pixel basis.



CMOS Block Diagram System-on-Chip



The CMOS sensors can be readout in either progressive or interlace, supporting native multi-format operation. They also have the capability of high speed operation for slow motion and other special applications (the HS model uses the same standard CMOS sensors, so camera upgrade is practical). The Advanced CMOS sensors used in the HDK-79EC include system-on-chip technology, so not just imaging, but also a range of support circuitry is included within the sensor itself. The result is a flexible sensor in a small package with low power consumption. The output of the sensors is digital, providing for the first time, a true end-to-end digital solution.

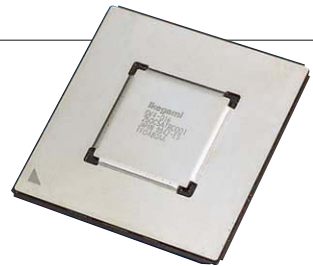
Ikegami is the world's leading supplier of state-of-the-art broadcast and professional video production equipment. The HDK-79EC adopts leading-edge CMOS sensor technology as an industry first, providing supreme picture quality and multi-format HD performance in this Full Digital camera system configurable for portable, field, or studio use.



- Incorporates Ikegami's sophisticated Chip C4 ASIC video processing technology
- Revolutionary 2/3" 2.5 Mega-pixel CMOS (Complementary Metal Oxide Semiconductor) imaging sensors
- Multi-format capability, Multiple application use
- Enhanced operational flexibility with a wide variety of peripherals.

Chip C4

Ikegami's video processing know how greatly influenced the development of Chip C4 ASIC (Application Specific Integrated Circuit). Chip C4 processes the digital video output from the CMOS sensors including Knee, gamma, color and DTL correction. For example, various DTL functions, Soft DTL, Skin tone DTL, horizontal / vertical / diagonal DTL, and DTL boost frequency are controlled in Chip C4 with up to 38-bit internal quantization.



To improve the HDK-79EC's ability to handle the high contrast scenes frequently encountered in field production, several new functions are programmed into Chip C4. A multiple break point Smooth Knee give progressively more level compression as the highlight level increases. The result is more natural reproduction of modest highlights while maintaining the broad dynamic to handle significant highlights. Super Color Knee and Knee Detail are added to improve color and sharpness in the knee process. Zoom tracking Detail helps compensate for loss of MTF shooting with long telephoto lenses.

Sophisticated features made possible with digital technologies

FINE DTL function

By expanding the small edge in the low contrast object and compressing the edge component in the high contrast object, the impression for the glare of picture with too much edge is reduced and the natural image, which is more visual for human being, can be obtained.

Six-Vector Color Corrector + Two-Axis Custom Color

Includes a color correction function that enables hue and saturation to be adjusted for each of the six primary colors (R, G, B, Cy, Y, Mg), plus another function to make color correction of two user-selected colors of the subject. Color correction before Gamma Circuit provides more true color reproduction.

Enhanced Digital DTL

Improved visual reproduction of subjects such as texture and sheen, and richer reproduction of details in skin tone and in dark backgrounds is realized.

Super KNEE

The Super Color Knee system maintains color saturation without changing the hue of the highlighted parts and provides natural color reproduction under high luminance conditions.

KNEE DTL function

KNEE DETAIL function provides better expression in highlight scene, improving on previous Knee Aperture. Vertical and Horizontal contour corrections are independently made to the highlight video where the KNEE is processed.
(Supported by OCP-200/MCP-150/MCP-200/RCP-50B)

Menu Preset function

All menu items including Level and Control settings can be preset and easily recalled from the control panel. It is also easy to reset to factory settings. Preset for 3 MATRICES can be set. The MATRIX settings can be preset for different lighting, and then selected by the control panel.
(Supported by OCP-200/MCP-150/MCP-200/RCP-50B)

Master FLARE

A Master FLARE function enables one adjustment to control the overall level of FLARE while maintaining the tracking of the R/G/B channels. This feature makes it possible to control flare during operation since the color balance is never off.
(Supported by OCP-200/MCP-150/MCP-200/RCP-50B)**

Clear VF DTL function

This function makes a difference in the edging of the image exclusively in the viewfinder, to make the precise point of focus easier to find, and to make it easier for the cameraperson to focus.

Full digital processing Camera Control Unit, the full size CCU-890

The full size CCU-890 is designed for use of an optical fiber connection between the HDK-cameras, ensuring high-quality signal transmission and long cable runs, up to 3000m for Studio camera or Portable camera with System Expander. Both HDTV and SDTV formats are supported simultaneously in both digital and analog form with a wide range of built-in interfaces. The CCU-890 also features embedded audio in the SDI output signals, as well as, frame synchronizer for return video input signals. Furthermore, the CCU-890 supports dual link with simple board exchange for high speed operation.
(note: camera head must also support for dual link)



CCU-890 front



CCU-890 rear

Space-Saving Design

Suitable for small-sized HD vans and rental / flight-pack systems A half-rack base station BS-89 is available, permitting full SMPTE fiber cable extension with a compact base station. It supports multi-format HDTV as standard, SDTV format available with optional boards. The BS-89 supports camera cable length up to 1000m for the Portable camera with System Expander.



BS-89 front



BS-89 rear

State-of the-Art, expanding HDTV System accessories

CB-79HD/TA-79HD Triax Adaptor System

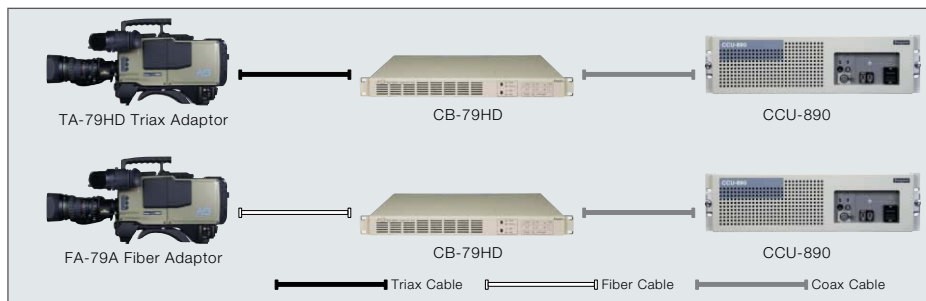
The CB-79HD / TA-79HD is a high performance HD triax transmission system ideally suited for field applications where there is an existing triax infrastructure. The CCU converter enables use of triax or fiber camera cable without any reconfiguration.



CB-79HD (CCU side)

Transmission Distance

Up to 850m (2,800ft.)	by 8.8mm diameter triax / Fujikura
Up to 1,550m (5,100ft.)	by 14.5mm diameter triax / Fujikura
Up to 500m (1,600ft.)	by 9.2mm diameter triax / Belden type 9267
Up to 1,000m (3,300ft.)	by 13.2mm diameter triax / Belden type 9232



TA-79HD Triax Adaptor (Docking type)

High Performance Viewfinders



For the HDK-79EC, a 2-inch 16:9 high definition VF for portable application is available. Employing a magnifying eyepiece in the 2-inch VF, visibility is further improved. In addition, a 9-inch LCD color viewfinder is available as an option.



SE-79D System Expander

The SE-79D System Expander enables the use of the 9-inch viewfinder and full studio lenses with the HDK-79EC, converting the portable camera into a full facility studio camera. Installation of the camera into the SE-79D is very easy, and conversion back to portable configuration is quick for maximum operating flexibility.



High Speed model **HDK-79EC/HS**

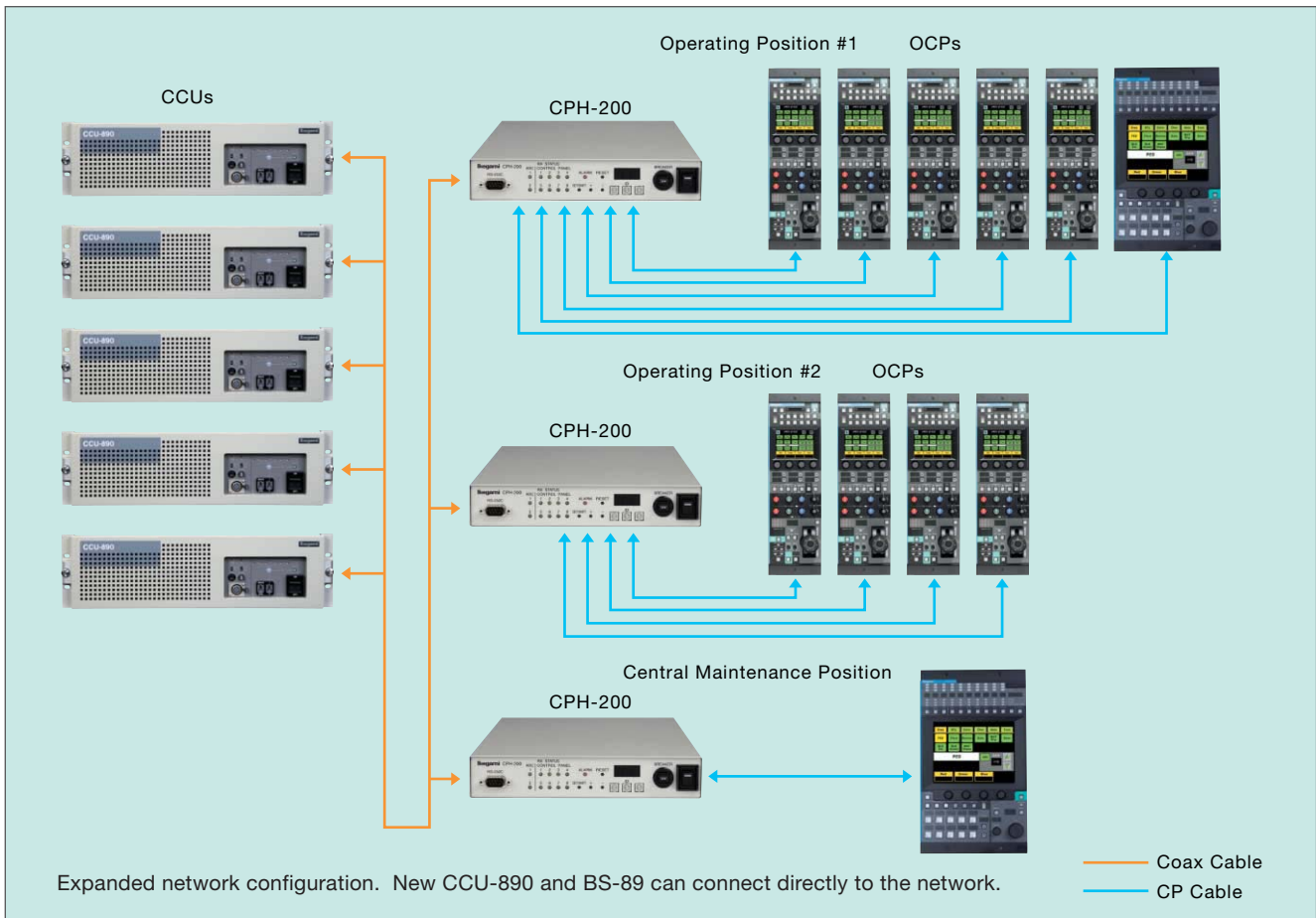
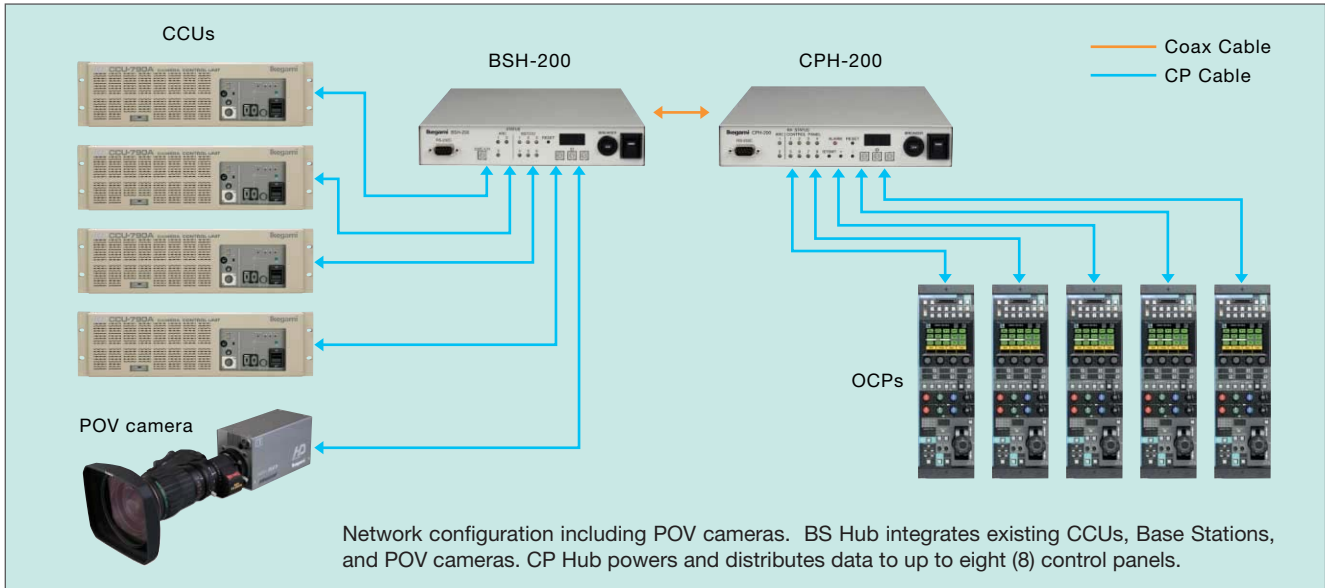


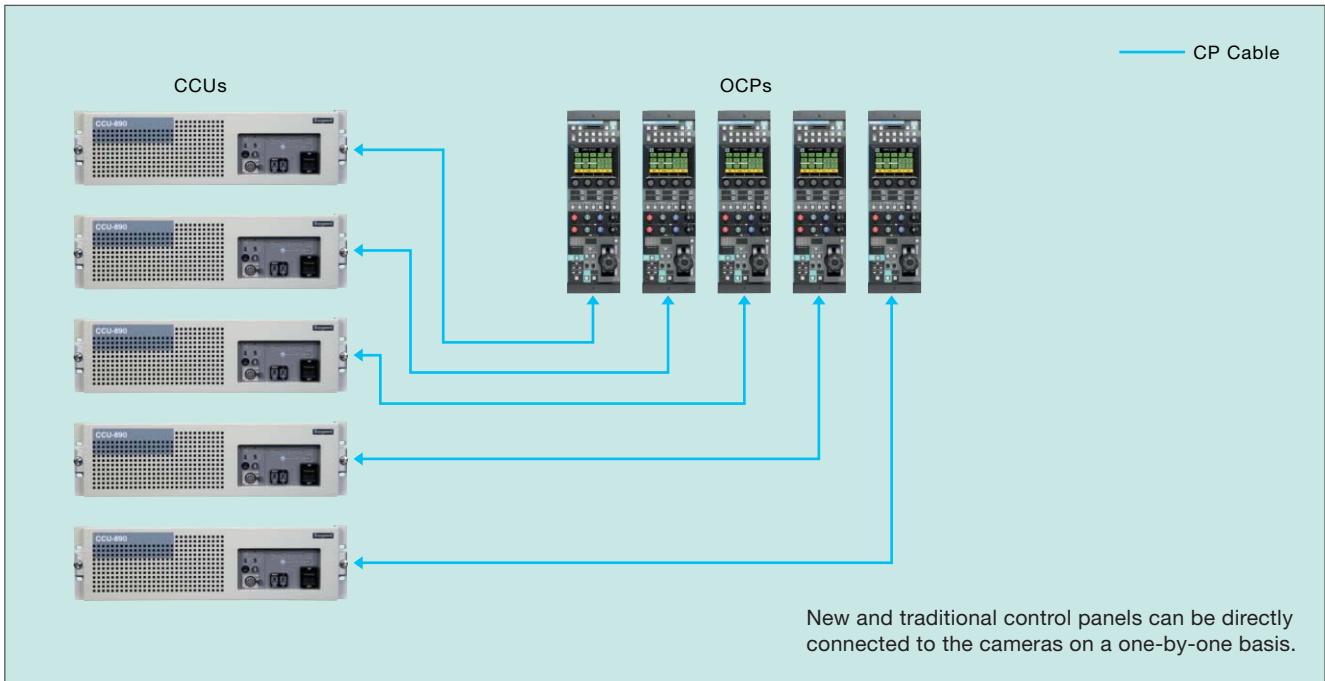
Exploiting new CMOS technology, the HDK-79EC/HS offers 1080/60p and 720/120p High Speed sensor readout for special applications, including Super Slow Motion.

The newly developed CMOS sensors include dual outputs as standard, enabling high performance and high speed 1080/60p, 720/120p, and 1080/120i formats. The HDK-79EC, FA-79A, and CCU-890 can be ordered in the optional HS-configuration, and in this configuration the camera will support both standard and high speed HD formats, further increasing flexibility and future proof protection.

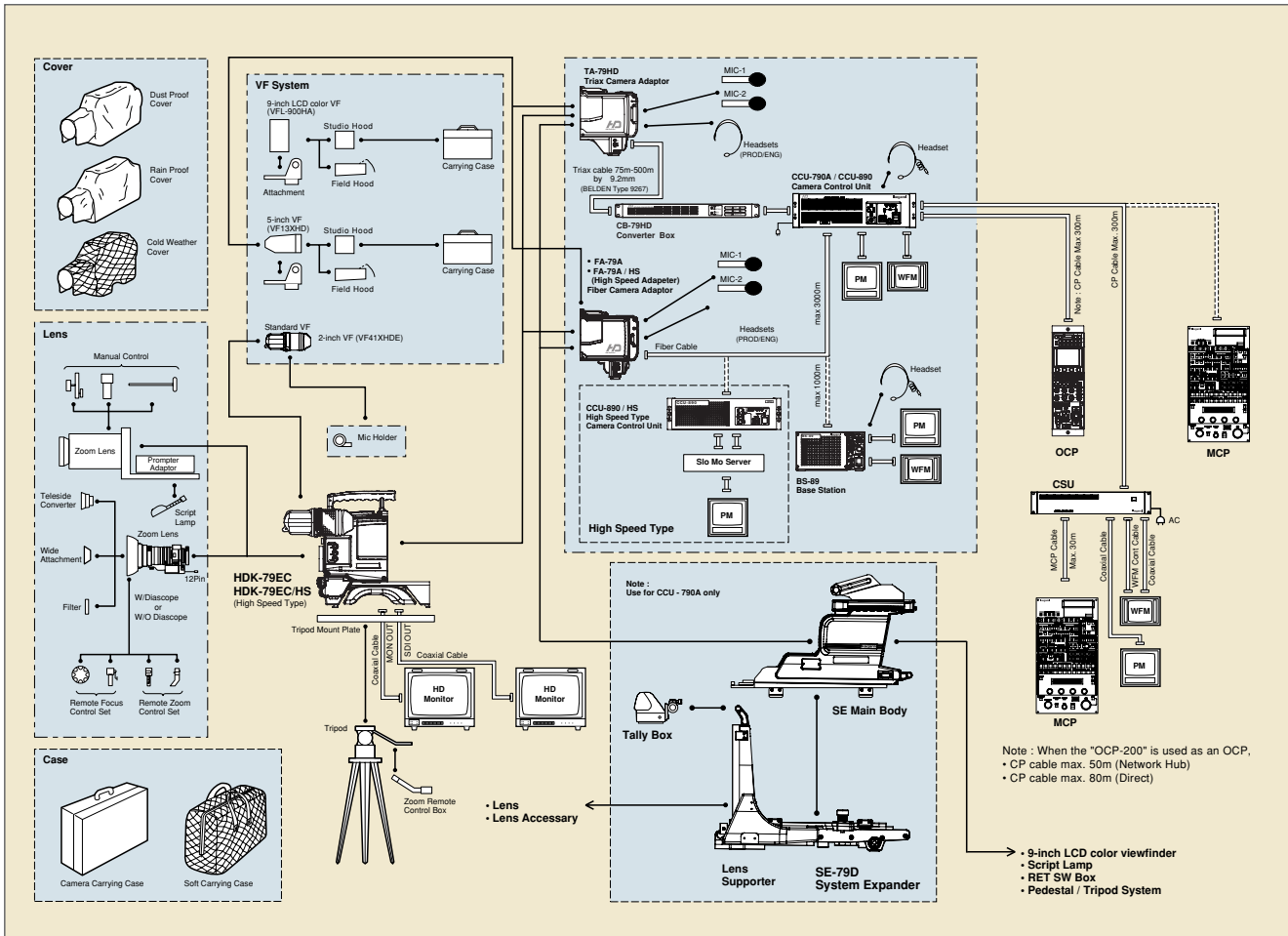
Cutting-edge, Network based Control Panel System

The OCP-200 / MCP-200 is a new Network based control panel system offered as an alternate to the traditional Ikegami style control panels. The Network system allows any OCP-200 to control any camera with assignment set at the OCP itself. System wiring is simplified with control of up to 96 cameras via a single coax cable between CCU locations and video control locations. The OCP-200 and MCP-200 include touch screen LCDs. The depth-of-control of the OCP-200 can be selected from basic to complete to fit the customers' operating discipline. Conventional one by one camera control connection is also available.





System Diagram



HDK-79EC

Ratings

■ Image sensor	2/3-inch 2,500,000-pixel CMOS
■ Optical system	2/3-inch, f1.4 prism
■ Lens mount	BTA S-1005B (standard)
■ Viewfinder	2-inch B/W viewfinder (standard) or 5-inch B/W viewfinder (option) or 9-inch color LCD viewfinder (option)
■ Input signals	
● HDK-79EC/FA-79A	
External SYNC signal	SYNC 0.6Vp-p ±6dB
Audio signal*	-60, -50, -40, -30, -20, -10, 0, +4dB 600Ω (2ch, balanced) (after selecting, variable 5dB available)
Intercom signal	2ch (ENG/PROD) (Standard: XLR type)
● CCU-890	
[HDTV system (SMPTE274M and SMPTE292M)]	
Genlock signal	PS 1.0Vp-p or Sync 0.6Vp-p ±6dB 75Ω bridged
Return video signal	HD-SDI : 75Ω, Single End 4ch VBS/D1 : 75Ω, bridged 2/4ch
Q-TV signal	VBS 1.0Vp-p 75Ω, Single End 2ch
Intercom/Tally	
Intercom (ENG/PROD)	4-wire or Clearcom or RTS
4-wire	0dBm 600Ω 2ch
Clearcom	-15dBs 200Ω 2ch
RTS	0dBm 200Ω 2ch
Tally	contact/voltage R, G 2ch
Program sound	0dBs 600Ω 2ch
■ Output signals	
● HDK-79EC	
Video signals	
MON HD-SDI	Monitor, VF or Return Select 1ch, 75Ω (BNC Connector)
Analog Monitor signal	Viewfinder Video 1ch, 75Ω (BNC connector)
● FA-79A	
HD SDI signal	Y, Pb, Pr 4:2:2 serial digital 1ch (BNC connector) (SMPTE292M) (2ch for HDK-79EC/HS High Speed version)
Q-TV signal	Analog signal 2ch, 75Ω (BNC connector) (1ch for HDK-79EC/HS High Speed version)
Intercom signal	0dBs 2ch (ENG/PROD) (Standard: XLR type)
VTR signal	BTA S-1005B (Factory option)
● CCU-890	
RGB signal (HDTV/SDTV) (Option)	RGB or Y, Pb, Pr 75Ω 1ch (either HDTV output or NTSC output is selected)
HD SDI signal (SMPTE294M)	75Ω 4ch
HD-WFM signal	HD-SDI 75Ω 2ch
HD-PM signal	PM-SDI 75Ω 2ch (MON can be selected)
Composite video signal	VBS 1.0Vp-p 75Ω 2ch
SD-SDI(D1)	(SMPTE259M) 270Mbit/s 0.8Vp-p 75Ω 2ch
SD-WFM signal (Option)	R, G, B, Y, ENC select 1.0Vp-p 75Ω or SDI 75Ω 2ch
SD-PM signal (Option)	R, G, B, Y, ENC select 1.0Vp-p 75Ω or SDI 75Ω 2ch
Audio Signal	
Mic	0dBm 600Ω 2ch
Digital audio	AES 3ID 1Vp-p 75Ω 1ch (In conformity with AES/EBU)
Intercom/Tally	
Intercom (ENG/PROD)	4-wire or Clearcom or RTS
4-wire	0dBm 600Ω 2ch
Clearcom	-15dBs 200Ω 2ch
RTS	0dBm 200Ω 2ch

■ Filter	1	2	3	4	5
	ND	CAP	100%	25%	6.2%
	CC	CROSS	3200K	4300K	6300K
					8000K
■ Electric color temperature	5600K				
■ Ambient temperature	-20°C ~ +45°C (-4°F ~ +113°F) CCU-890 : -0°C ~ +45°C (+32°F ~ +112°F)				
■ Relative humidity	30%~90% (Non-condensing)				
■ Operating voltage	11~16V Weight				
● HDK-79EC	5.7kg (12.57 lbs) (without lens)				
● CCU-890	approx. 30kg (66 lbs) Dimensions				
● HDK-79EC	W107 X H232 X D375mm (W4.2 X H9.13 X D14.8 inches)				
● CCU-890	W482.6 X H132.6 X D481mm (W19 X H5.22 X D18.94 inches)				

Performance

■ Sensitivity	F8/2,000 lx
■ S/N	
● HDTV system	56dB (Typical)
■ Modulation depth	
● HDTV system	45% or more 1080/59.94i at 27.5MHz 40% or more 720/59.94p at 28.875MHz 45% or more 1080/50i at 27.5MHz 40% or more 720/50p at 28.875MHz 45% or more 1080/24p at 27.5MHz
● NTSC system	90% or more (400 TV lines, 5MHz)
■ Limiting resolution	
● HDTV system	1000 TV lines (1080/59.94i, 1080/50i) 700TL lines (720/59.94p, 720/50p)
■ Video frequency response (Base Station output)	
● Y output	
Below 60Hz	Falling
60Hz~30MHz	within 1.0dB
Over 30MHz	Falling
● Pb, Pr output signal	
Below 60Hz	Falling
60Hz~15MHz	within 1.0dB
Over 15MHz	Falling
● NTSC output signal (Ych 100kHz, output signal from external camera control equipment)	
Below 60Hz	Falling
60Hz~4.5MHz	within 0.5dB
4.5MHz~8.0MHz	within 1.0dB
Over 8MHz	Falling
■ Audio Frequency response (Base Station output)	
● Y output	
Below 100Hz	Falling
100Hz~10kHz	within 1.0dB
Over 10kHz	Falling
■ Contour correction	
Vertical	5line
Horizontal	Boost frequency, 13MHz~24MHz (HDTV) Boost frequency, 2.7MHz~8.9MHz (SDTV)
■ Gamma	OFF, 0.35, 0.4, 0.45
■ Gain	-3dB, 0dB, +3dB, +6dB, +12dB (Standard)
■ Power consumption	
● HDK-79EC	Camera Head only: 26W 2-inch VF: 6W

Design and specifications are subject to change without notice.

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Ikegami **IKEGAMI ELECTRONICS (U.S.A.), INC.** ■ URL <http://www.ikegami.com>

HEADQUARTERS 37 BROOK AVENUE, MAYWOOD, NJ 07607
Phone:(201) 368-9171 Fax:(201) 569-1626

WESTCOAST OFFICE 2631 MANHATTAN BEACH BLVD., REDONDO BEACH, CA 90278
Phone:(310) 297-1900 Fax:(310) 536-9550

SOUTHWEST OFFICE 773 BEARDEN WAXAHACHIE, TX 75167 Phone:(972) 869-2363 Fax:(972) 556-1057

MIDWEST OFFICE 747 CHURCH ROAD, UNIT C1, ELMHURST, IL 60126 Phone:(630) 834-9774 Fax:(630) 834-8689

SOUTHEAST OFFICE 5200 N.W. 33RD AVENUE, SUITE 111 FORT LAUDERDALE, FL 33309 Phone:(954) 735-2203 Fax:(954) 735-2227

