

Ikegami

Unicam HD

Top of the line

16-bit Full Digital 3G HDTV Camera System

HDK-970A/970AP

16-bit Full Digital 3G HDTV Portable Camera System

HDK-97A/97AP



The highest picture quality, functionality and reliability with Ikegami's superb and latest camera technology

- Supports high-band 3G HDTV-SDI video output
- 2 times slo-motion
- Supports 3D
- Native support for 23.98p formats (HDK-970AP/HDK-97AP)
- Supports custom gamma
- 16-bit full digital

Supports high-band 3G-SDI(1080p59.94/50Hz) video output

The camera supports 3G-SDI 1080p (59.94/50Hz) wide-band video output as a standard feature for higher picture quality. The single and dual link output is available with CCU-970/BS-97 camera control unit/base station supporting 3G-SDI signal.

2 times slo-motion (1080i 119.88/100Hz)

Switchable for live and slo-motion picture with one camera. It is possible to get a slo-motion picture without changing the camera position. (Option)

*The simultaneous output for live and 2 times slo-motion picture is now under development.

3D support

The 3D picture is available easily with 3D capable lens. (Option)

Native support for 23.98P

The camera supports not only 23.98Psf, but also 23.98P in native (HDK-970AP/HDK-97AP)

Supports custom gamma

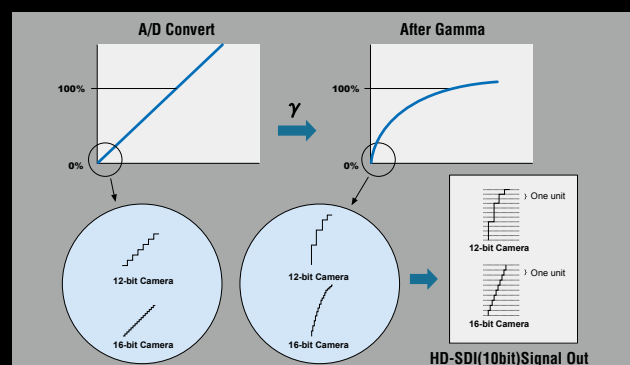
Various kinds of gamma curve can be flexibly set by users.

Newly developed 2.3 Mega pixel progressive sensors

New 2/3-inch 2.3 Mega pixel 1080 progressive CCDs are employed to support not only the usual 1080i 59.94/50Hz 4:2:2, 720p 59.94/50Hz 4:2:2, 1.5G formats, but also 3G formats such as 1080p 59.94/50Hz 4:2:2 and 1080i 59.94/50Hz 4:4:4. (50Hz formats are option) Furthermore, 1080i (119.88/100Hz), 1080p (29.97/25Hz) are available as an option. The HDK-970AP/HDK-97AP adds support for the 1080p (23.98Hz) format.

Newly developed FPGA

Using mass memory type FPGA, 45um design rule, the video signals are digitized with 16-bit A/D conversion to achieve the highest possible picture quality.



Multi-format

The camera supports various HDTV formats of 1080p (59.94/50Hz), 1080i (59.94/50Hz 4:2:2, 4:4:4), 1080i (119.88/100Hz), 1080p (29.97/25Hz) and 720p (59.94/50Hz), achieving flexible picture representation.

* 1080i (119.88/100Hz), 1080p (29.97/25Hz) are option.

Furthermore, 23.98P format is also available with the model HDK-970AP/ HDK-97AP.

16-bit full digital

Integrating Ikegami's advanced picture processing technology and digital processing technology maximizes the effect of 16-bit A/D conversion, increasing gradation in dark areas where the processing is performed for more natural reproduction of dark colors.

Two HD-SDI outputs from the camera head

Two HD-SDI output signals (1.5G) are selectable among Camera, VF, RET and MON (monitor) for external monitoring at the camera head.

* HD QTV is added to the line up of selectable HD SDI signals when the optional HD QTV (Video Trunk) module is installed in the CCU.

2 Channels QTV (Option)

Two channels of QTV output (VBS) are available as an option for prompter and external monitoring purposes.

* 2 channel QTV is option and not available operating at 720p/50Hz.

HD SDI Trunk (Option)

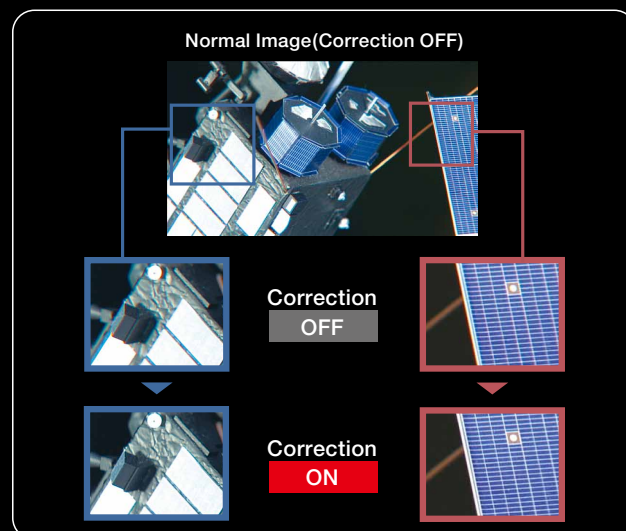
When the camera is operating in a conventional 1.5G format, a second 1.5G video from an external source can be transmitted to the CCU as a video trunk channel. For POV or 3D applications this will reduce the cables which need to be run.

Docking style camera body

With a docking style camera body, either an FA (Fiber Adaptor) or TA (Triax Adaptor) can be mounted depending on the use.

Lens Aberration Correction function

The Lens Aberration Correction function is newly incorporated for minimizing the blur and colored edges caused mainly by lens chromatic aberration.



Unicam HD

HDK-970A/AP HDK-97A/AP Accessories

3G capable fiber adaptor **FA-97**



3G capable camera control unit **CCU-970**



3G capable base station **BS-97**



High Band 3G Transmission

3G-SDI transmission is available between camera head and CCU/BS.

Simulcast

Using a down converter and up converter incorporated in the CCU-970/BS-97, both HDTV and SDTV signals are provided simultaneously from the CCU/BS. And the CCU/BS offers not only the usual 1080i 59.94/50Hz 4:2:2 1.5G signal outputs, but also 3G outputs like 1080p 59.94/50Hz 4:2:2 and 1080i 59.94/50Hz 4:4:4.

RET/QTV Video

The CCU/BS accepts 4 channels of return video input as standard. The return input signals can be either 3G-SDI or HD-SDI. QTV signals can be transmitted to the camera with not only the usual analog composite, but also HD-SDI (Option for CCU only).

* The return input signal can only be HDTV when this option is installed.

Frame Synchronizer for RET video

The return signal can be synchronized by a frame sync circuit, supporting non-sync return sources.

* The RET input signal quantity is fixed to 2 channels when the frame synchronizer is applied.

* VBS return signal can not be synchronized.

Connection to 1.5G format cameras

The CCU/BS can be used with existing Ikegami HDK-79EX series and HDK-77/79EC/95C cameras in 1.5G mode.

* New functions provided by 3G transmission of HDK-970A/HDK-97A are not available.

Embedded audio available as standard

All SDI outputs can be embedded with the audio signals of MIC-1 and MIC-2. Each channel has variable adjustment for delay time and independent On/Off switching for embedded audio.

State-of Art System Accessories, Expanding HDTV

System Expander

The System Expander enables the use of the 9-inch viewfinder and full studio lenses with the HDK-97A/AP, converting the portable camera into a full facility studio camera. Installation of the camera into the SE is very easy, and conversion back to portable configuration is quick for maximum operating flexibility.

Variety of viewfinders

For the HDK-97A/AP, 2-inch 16:9 high definition VFs for portable application are available.

In addition, 9-inch LCD color viewfinders are also available as an option.



**2-inch CRT
B/W viewfinder**



**2-inch LCD
color viewfinder**



**9-inch LCD
color viewfinder**

HDK-970A/AP HDK-97A/AP

Ratings

■ Scanning System	
• HDK-970A/HDK-97A	1080p (59.94Hz or 50Hz) Y,Pb,Pr 4:2:2 Progressive (above SMPTE425 Level B)
• CCU-970/BS-97	1080i (59.94Hz or 50Hz) Y,Pb,Pr 4:2:2 Interlaced 1080i (119.88Hz or 100Hz) Y,Pb,Pr 4:2:2 Interlaced (Option) 1080p (29.97Hz or 25Hz) Y,Pb,Pr 4:2:2 Progressive (Option) 720p (59.94Hz or 50Hz) Y,Pb,Pr 4:2:2 Progressive 1080p (23.98Hz) RGB 4:4:4 Progressive (Supported by HDK-970AP/HDK-97AP) 1080p (23.98Hz) Y,Pb,Pr 4:2:2 Progressive (Supported by HDK-970AP/HDK-97AP) 480i (59.94Hz) Y,Pb,Pr 4:2:2 Interlaced 576i (50Hz) Y,Pb,Pr 4:2:2 Interlaced
■ Image Sensors	
2/3-inch 2.3 million pixel Progressive CCD Sensors	
■ Optical System	
2/3-inch, 3CCD, f1.4	
■ Lens Mount	
BTA- S1005B	
■ Viewfinder	
2" B/W CRT Viewfinder 2" Color LCD Viewfinder 9" Color LCD Viewfinder	
■ Input Signals	
• HDK-970A/AP / HDK-97A/AP	
External Sync Signal	SYNC 0.6Vp-p ±6dB 75ohm BNC CN 1ch (BB/PS Signal)
Audio Signal	-60dB ~ +4dB (Variable) / -20dB (Fixed) XLR CN 2ch (600 ohm Balanced)
Intercom Signal	XLR Type or 110 Type CN 2ch
• CCU-970/BS-97	
[HDTV System]	
External Sync Signal	PS(1Vp-p) or SYNC(0.6Vp-p±6dB) or VBS(1Vp-p) or BBS, BBS+10Field ID 75 ohm Single End BNC 2ch (bridge connection is available) (HDTV/SDTV auto detect)
Return Video Signal	75 ohm Single End 3G-SDI/HD-SDI (common use) 4ch
HD Q-TV Signal	Y, Pb, Pr 4:2:2 Serial Digital 75 ohm Single End BNC 1ch (Factory Option) * This option is not available for BS-97. * The signal is transmitted to the camera head in Y, Pb, Pr 4:2:2 8bit.
[SDTV System]	
Return Video Signal	75 ohm Single End SD-SDI/VBS (common use) 4ch * SDTV Return is not available when optional HD-QTV(Trunk) module is installed. * The total return input channel is 4ch in HDTV and SDTV.
External Genlock Signal	VBS(1Vp-p) or BBS, BBS+10Field ID 75 ohm bridged, 1ch (HDTV/SDTV auto detect)
Q-TV Signal	75 ohm Single End VBS 2ch
Intercom/Tally	
Intercom(ENG/PROD)	(4-Wire or Clearcom or RTS)
4-Wire	0dBm 600 ohm 2ch
Clearcom	-15dBs 200 ohm 2ch
RTS	0dBm 200 ohm 2ch
Tally	R/G 2ch MAKE/POWER selectable
Program Sound	0dBs 600 ohm/10K ohm switchable 2ch
■ Output Signals	
• HDK-970A/AP / HDK-97A/AP	
Video Signals	
Analog Signal	R,G,B D-Sub SE CN 1ch (for System Expander) *Available for HDK-97A only.
3G-SDI/HD-SDI Signal	Serial Digital 75 ohm BNC 1ch
Q-TV Signal	75 ohm VBS 2ch (2nd channel is option, and 1ch only in 720p/50Hz)
MON Video Signal(1.5G)	VF / RET / MON (MENU Selection) Serial Digital 75 ohm BNC 1ch OR VF / RET / MON / HD-QTV (MENU Selection) Serial Digital 75 ohm BNC 1ch (Factory Option) *Optional HD-QTV(Trunk) module should be installed in CCU.
Intercom Signal	0 dBs 4ch (ENG/PROD/PGM1/PGM2) XLR Type or 110 Type CN
• CCU-970/BS-97	
[HDTV System]	
3G-SDI/HD-SDI Signal	Serial Digital 75 ohm BNC 2ch 2 outputs per ch 3G-SDI/DUAL-LINK/HD-SDI (MENU SELECTION)
WFM Signal	Serial Digital Signal SDI 75 ohm BNC 2ch (1ch for BS-97) Ch1: 3G-SDI / DUAL-LINK(A) / HD-SDI / SD-SDI (MENU SELECTION) Ch2: DUAL-LINK(B) / HD-SDI / SD-SDI / SD Analog (MENU SELECTION)
3G-SDI/HD-SDI PM Signal	Serial Digital 75 ohm BNC 2ch (1ch for BS-97) 3G-SDI / DUAL-LINK / HD-SDI (MENU SELECTION)
[SDTV System]	
VBS/SD-SDI Signal	Serial Digital and VBS 75 ohm BNC 2ch each
WFM Signal	Serial Digital or VBS 75 ohm BNC 2ch (1ch for BS-97) Ch1: Serial Digital 75 ohm BNC 1ch *VBS Output is not available Ch2: Serial Digital 75 ohm or VBS 75 ohm BNC 1ch (MENU SELECTION)
SD-SDI/VBS PM Signal	Serial Digital or VBS 75 ohm BNC 2ch (1ch for BS-97, MENU SELECTION)
Phase Reference Signal	75 ohm SINGLE END Analog 1ch HDTV: Tri-Sync(0.6Vp-p) / SDTV: HV(2Vp-p) (MENU SELECTION)

CCU-970 / BS-97					
Audio Signal					
Mic	0dBm XLR-3 (600 ohm Balanced analog) 2ch				
Digital Audio	75 ohm Digital Format BNC 1ch (Option for BS-97) 48KHz Sampling, 24bit Pro, 2-pair ch's (AES3 Compliant)				
Intercom/Tally					
Intercom (ENG/PROD)	(4-Wire or Clearcom or RTS)				
4-Wire	0dBm 600 ohm 2ch				
Clearcom	-15dBs 200 ohm 2ch				
RTS	0dBm 200 ohm 2ch				
Tally	R/G 2ch, OPEN (OFF) / GND (ON) 50mA (max)				
■ Filter					
ND	1	2	3	4	5
CAP	100%	25%	6.2%	1.6%	
A	B	C	D	E	
CC	CROSS	3200K	4300K	6300K	8000K
■ Electronic ColorTemperature					
5600K					
■ Ambient Temperature					
-20°C ~ +45°C					
■ Relative Humidity					
30% ~ 90% (Non-condensing)					
■ Operating Voltage					
• HDK-970A	AC100/110/117/220/240V ±10%				
• HDK-97A	DC+11 ~ 16V				
• CCU-970/BS-97	AC100/110/117/220/240V ±10%				
■ Weight					
• HDK-970A	Approx 24kg (52.9lbs) (excluding lens)				
• HDK-97A	Approx 4.5kg (9.9lbs) (Head + FA)				
• CCU-970	Approx 28kg (61.7lbs) (in standard configuration)				
• BS-97	Approx 9kg (19.8lbs)				
■ Dimensions					
• HDK-970A	W315 x H462 x D517mm (W12.37 x H18.25 x D20.37 inches)				
• HDK-97A	W138.5 x H270 x D337mm (W5.5 x H10.62 x D13.25 inches)				
• CCU-970	W483 x H133 x D454mm (W19.00 x H5.25 x D17.87 inches)				
• BS-97	W218.6 x H124.8 x D457mm (W8.62 x H4.87 x D18.00 inches)				

Performance

■ Sensitivity		F10 (1080/59.94i)/F11(1080/50i) at 2000 lx	
■ S/N		62dB (Typical)	
■ Modulation Depth			
HDTV System		50% or more	
■ Limiting Resolution			
HDTV System		1000TV lines	
■ Video Frequency Response (CCU+BS Output)			
Y Output Signal (4:2:2)	Below 60Hz	Falling	
	60Hz ~ 30MHz	within±1.0dB	
	Over 30MHz	Falling	
Pb, Pr Output Signal (4:2:2)	Below 30Hz	Falling	
	30Hz ~ 15MHz	within±1.0dB	
	Over 15MHz	Falling	
R,G,B Output Signal (4:4:4)	Below 60Hz	Falling	
	60Hz ~ 30MHz	within±1.0dB	
	Over 30MHz	Falling	
■ Audio Frequency Response (CCU+BS Output)			
Mic-1/2 Output	Below 100Hz	Falling	
	100Hz ~ 20KHz	within±1.0dB	
	Over 20KHz	Falling	
Intercom Output	Below 100Hz	Falling	
	100Hz ~ 10KHz	within±1.0dB	
	Over 10KHz	Falling	
■ Detail Correction			
Vertical	5 lines		
Horizontal	Boost frequency: 13MHz ~ 24MHz (HDTV)		
■ Gamma			
OFF, 0.35, 0.4, 0.45			
■ Gain			
-3dB, 0dB, +3dB, +6dB, +9dB, +12dB			
■ Power Consumption			
• HDK-970A	Power is fed by CCU or BS		
• HDK-97A	Camera Head: 35W (in 1080i/59.94) 2-inch VF: 6W		
• CCU-970	Approx 110VA (CCU only) 400VA or less (incl power for camera with cable loss)		
• BS-97	Approx 80VA (BS only) 150VA or less (incl power for camera with cable loss)		

Design and specifications are subject to change without notice.



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