

# Ikegami

**HD**  
High Definition

## Full Digital HDTV Camera System

# *HDK-790EXII*

# *HDK-79EXII*



on

**DIGI SUPER 25 XS**  
XJ25x6.8B IE 6.8-170mm 1:1.5

Ikegami HDK-790EXII

Ikegami

***Ikegami is the world-leading company of highest quality broadcast and professional video production.***

***The HDK-790EXII / HDK-79EXII are supreme HDTV gears with high reliability. It is full compatibility and also colorimetry can be perfectly matched between Studio and Portable cameras.***

**Top of the Line, Full Digital HDTV Companion Camera System**

## ***HDK-790EXII / HDK-79EXII***

- Incorporating a full digital process ASIC, 0.18um design rule.
- Newly developed 2/3" 2.2Mega pixel FIT HD CCD sensor
- Multi-format, Multi application purpose
- Enhanced operational flexibility with versatile peripherals.



### ***HDK-790EXII***

***Achieving 14bit full digital process,  
superb picture quality,  
exceptional functionality and high reliability.***



### ***HDK-79EXII***

# New DSP with 14bit Full Digital

## Incorporating advanced full digital process ASIC, 0.18um design rule.

Using sophisticated full digital process ICs, precision designed at 0.18um rule, the video signals are digitized with 14bit A/D conversion and up to 38-bit internal digital processing circuits.

### The latest 14bit A/D conversion

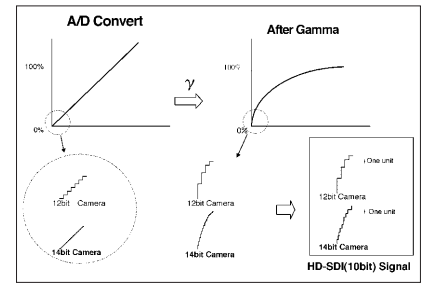
14bit A/D converter to maximize the color gradation for the darker parts provides high-level of digital signal process capability. It makes when reproducing dark-tone areas of the picture.

### DTL Correction

A detail correction system, including digitally processed horizontal, vertical and diagonal correction signal for red, green and blue video, is incorporated into the camera head, and obtains noise-free full resolution HDTV picture quality even if the camera is used in stand-alone configuration.

### Independent DTL

With Independent DTL system in the CCU, the type and amount of compensation can be optimized for the different requirements of HDTV and SDTV.



# Multi-standard / Simulcast Broadcasting

## 2/3-inch 2,200,000-pixel FIT CCDs with newly developed circuit

2/3-inch 2,200,000-pixel 1080i FIT CCD image sensors are employed to achieve superb picture quality with a horizontal resolution of 1,000 lines and a S/N ratio of 56dB. In addition, newly developed CCD drive and sampling circuit achieves higher video reliability.

### DTV Multi-format

1080/60i, 720/60p, 1080/24p, 480/60i and other frame conversion available .

### Simulcast (HDTV and SDTV)

Using a down converter incorporated in the CCU as standard, the HDK-790EXII/79EXII can be operated as a high-end NTSC studio camera. A high sampling frequency of 28.64MHz achieves maximum resolution of 900 TV lines in the NTSC format. Both HDTV video and SDTV (NTSC) are provided simultaneously from the CCU and in both digital and analog form. Monitoring video signals (WFM and PM) are likewise provided in both HDTV and SDTV to adapt to different system installations and to permit continued use of conventional monitoring.

### Acceptable Field frequency both 59.94Hz and 50Hz

\* Note: Supported by the specified viewfinder



CCU-790A Front Panel



CCU-790A Rear Panel

# Sophisticated features made possible with digital technologies

## Six-Vector + Two-Axis Color Corrector

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, instead of color correction after Gamma Circuit.

## Enhanced Digital DTL

Improved sensuous expressions such as texture and sheen, and richer reproduction of details in skin tone in dark backgrounds.

## Super KNEE

The Knee system makes corrections 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-50A)

## 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-50A)

## Master FLARE

The Master FLARE function enables one adjustment to control the level of the master 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-50A)

## 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.

## Wide-band DTL function

Wide-band edging gives the impression that fine parts of subjects or high frequency images have a higher resolution.

## HD-SDI Output from the camera Head

HD SDI output is provided from the camera head, and by using VTR connector (option), direct connection is possible with HD digital equipment, such as an HD VTR.

## RET Video and teleprompter Video

The CCU-790A accepts two channels of return video input as standard. It is available with up to 4ch as a factory option. Input signals can be selected from HD-SDI, D1 component and VBS signals. The CCU includes an up converter permitting a SDTV return video signal (D1) to be viewed on the HD viewfinder. The CCU transmits the HD return video signal (each Y, PB, PR) and two NTSC Q-TV video signals (Q-TV1\*, Q-TV2\*) to the camera for teleprompter and external monitoring purposes.

\* For the HDK-79EX II, either Q-TV1 or Q-TV2 can be selected for output.



HDK-790EX II Rear



HDK-79EX II Rear

## Data Trunk (Option)

The CCU-790A accepts the RS-422 data line as option.

## Well balanced and Low Center of Gravity

Both the studio and portable cameras are compact with low center-of-gravity. Especially for the portable camera there is excellent balance when operated on the shoulder. Regarding the 7-inch viewfinder for HDK-790EX II, the position is lower and closer to the optical axis of the camera head.

## Easy access to Double Return Switch

A Return select switch is located on the hand grip and left side on front of the portable camera to control the selection when the camera is held off the shoulder, such as on the hip for low angle shots.



Front left



Handle grip

## Camera Number Display Function (Option)

Camera Number can be displayed in white LED on the right side of the camera head. In case of Arc net based assignable control operation, the camera number can be automatically displayed in accordance with CCU number, even when exchanging cameras within the system.



## Engineer Setup File and Factory Setup File

All Menu items including Level and Control settings can be preset and easily recalled. (Engineer Setup File) All settings can be easily reset to the factory default settings. (Factory Setup File) Either Engineer Setup File or Factory Setup File can be easily recalled.

## High Performance Viewfinders

For the HDK-79EXII, a 2-inch 16:9 high definition VF for portable application are available. Employing a magnifying eye-piece in the 2-inch VF, visibility is further improved.

In addition, 9-inch LCD color viewfinder is also available as option.



## On-Line Diagnostics

An On-line Diagnostic System monitors a range of circuits including video, control, fiber optic transmission, pulse and power supply.

## Serial Lens Support

Zoom/Focus control available from the MCP, control can be assigned to a switch on the camera handle. (Supported by MCP-150/MCP-200) Moreover it is possible to check the size and the position of the focus area on the VF when PF lens is attached (Fujinon Precision Auto Focus).

## Rotating Camera Cable Connection

The SMPTE standard fiber camera cable connector is provided with a pivoting mount on both the portable and studio camera heads. This permits a natural bend to the cable, even for example, when the portable camera is placed on the ground.



## HD-SDI Embedded Audio available in stand-alone operation

## Lower noise when Gain-up

Employing a low-noise feed-back type amplifier circuit in Master gain up, as well as, providing noise cancel circuits in all video related boards, eliminates noticeable noise and obtains a better signal-to-noise with high gain up.

# State of the Art, Expanding HDTV System Accessories

## CB-79HD/TFA-79HD HDTV Triax System

Ikegami's second generation HDTV triax system is now available for the full studio cameras, the HDK-790EXII and HDK-79EXII. The TFA-79HD, housed in a rugged weather resistant case, is used together with the CB-79HD at the CCU side for full resolution transmission of HD signals over conventional triax cable.



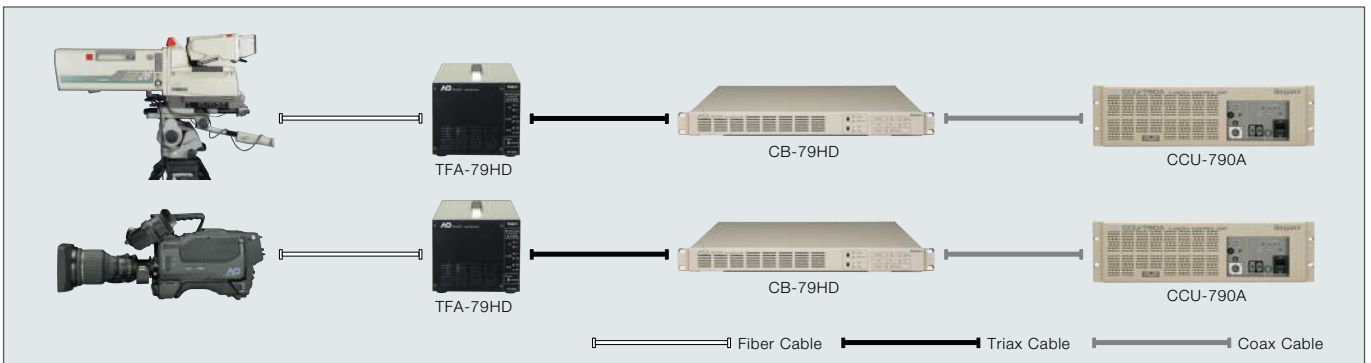
TFA-79HD (Camera side)



CB-79HD (CCU side)

### Transmission Distance

Up to 850m (2,800ft.)	by 8.8mm diameter triax / Fujikura type II-21479
Up to 1,550m (5,100ft.)	by 14.5mm diameter triax / Fujikura type II-21479
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 9267



## SE-H700 System Expander

The SE-H700 System Expander enables the use of the 7-inch CRT or 9-inch LCD color viewfinder and full studio lenses with the HDK-79EXII, converting the portable camera into a full facility studio camera.

- Cable-less structure provides easy docking and undocking.
- No optical axis error due to the bayonet ring fixing method.
- Portable lens can be attached.



## Space-Saving Design

Suitable for small-sized HD vans and rental / flight-pack systems.

### BS-79 Half-Rack Base Station

A half-rack base station BS-79 is available, permitting full SMPTE fiber cable extension with a compact base station. It supports HDTV/SDTV simulcast operation with an up converter / down converter built into its half-rack size. It is suitable for small-sized HD vans and rental / flight-pack systems.

The HDK-790EXII and HDK-79EXII with the System expander can be connected with the BS-79 (factory option / AC operation only).



BS-79 Front



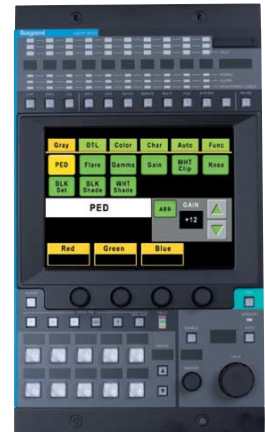
BS-79 Rear

# Cutting-Edge, New Control Panel System

The OCP-200 / MCP-200 is a new Arc-net based control panel system offered as an alternate to the traditional Ikegami style control panels. The Arc-net 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.

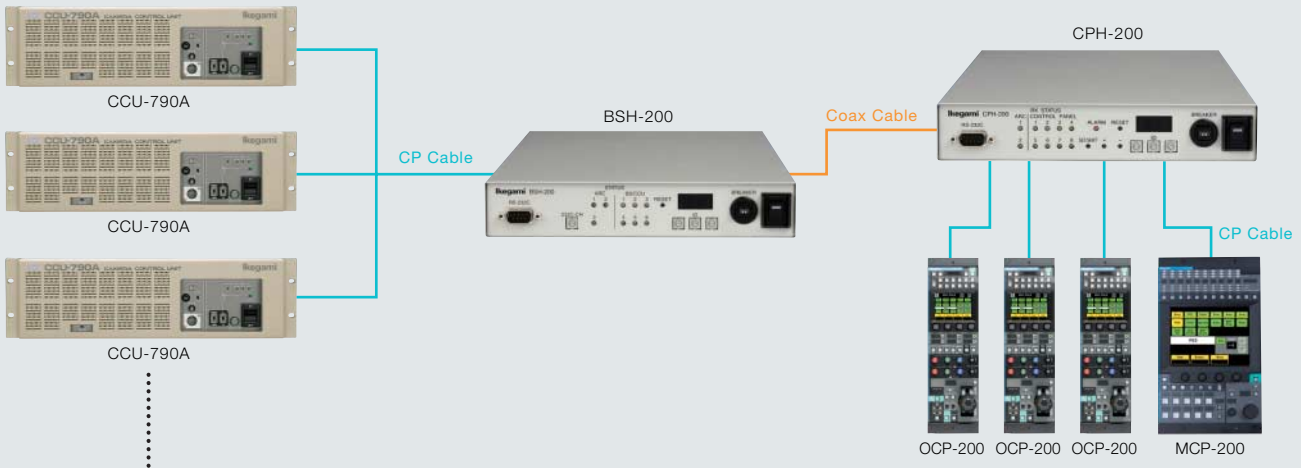


OCP-200

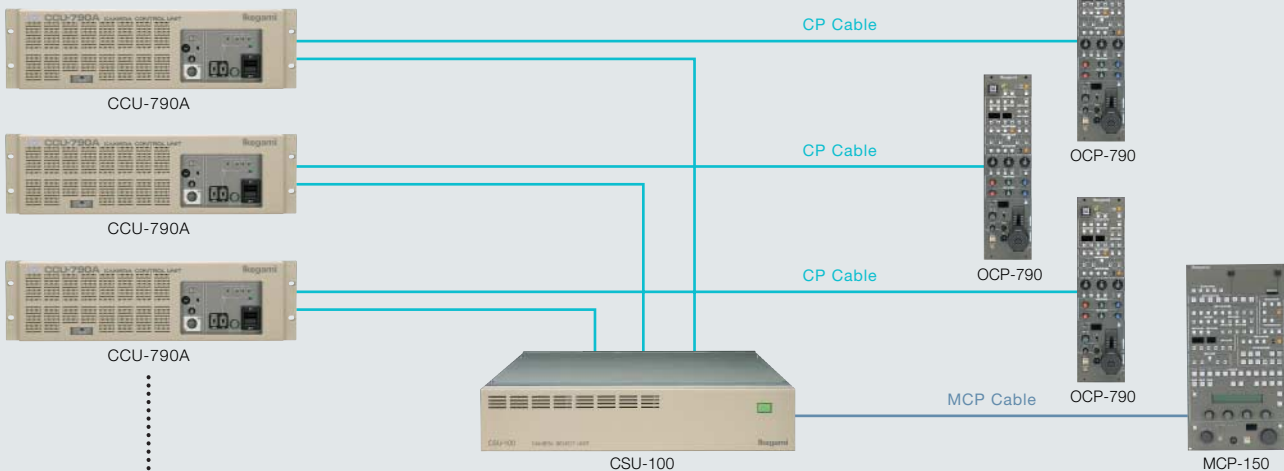


MCP-200

## Arc net based camera control system

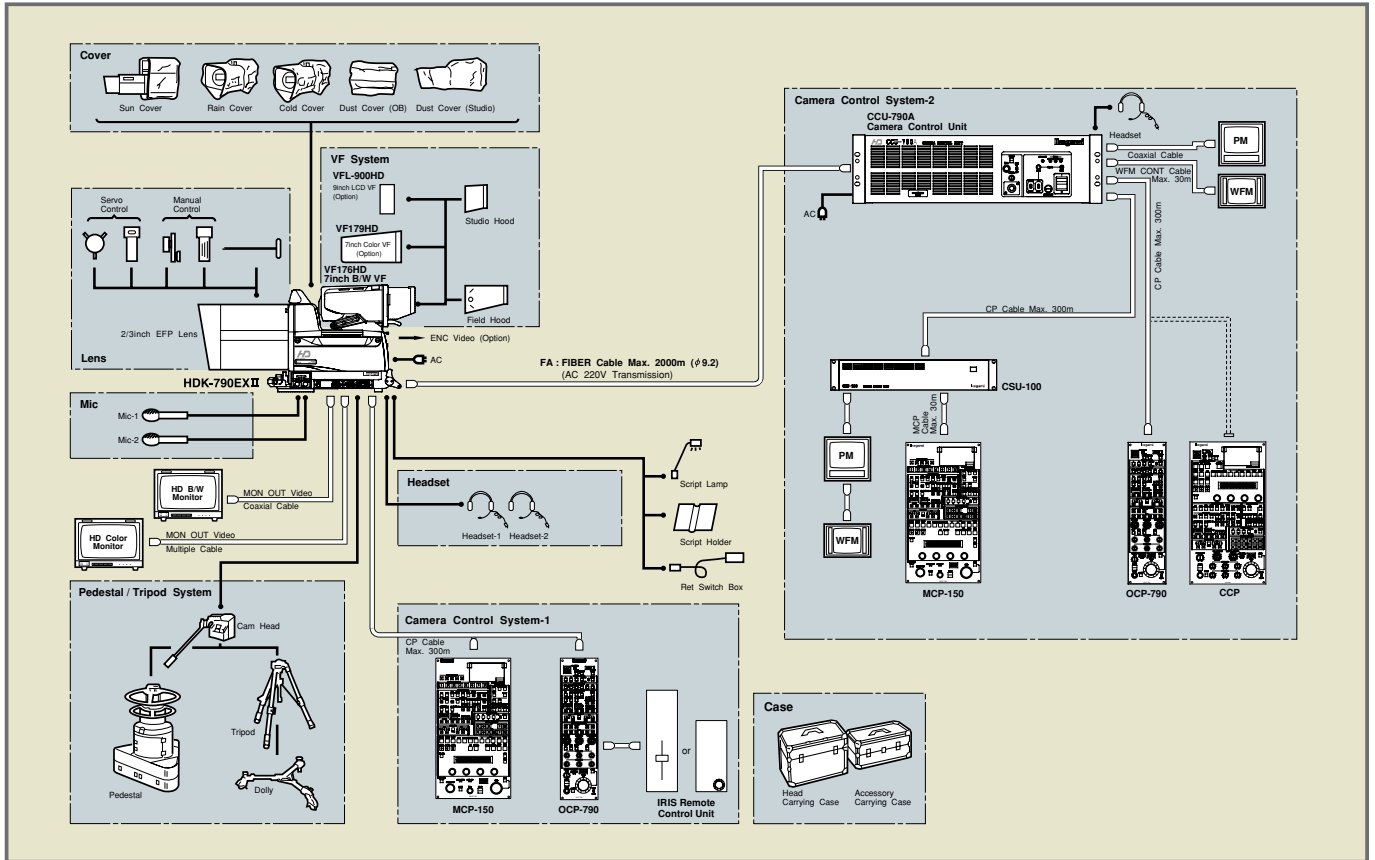


## Conventional one by one camera control connection

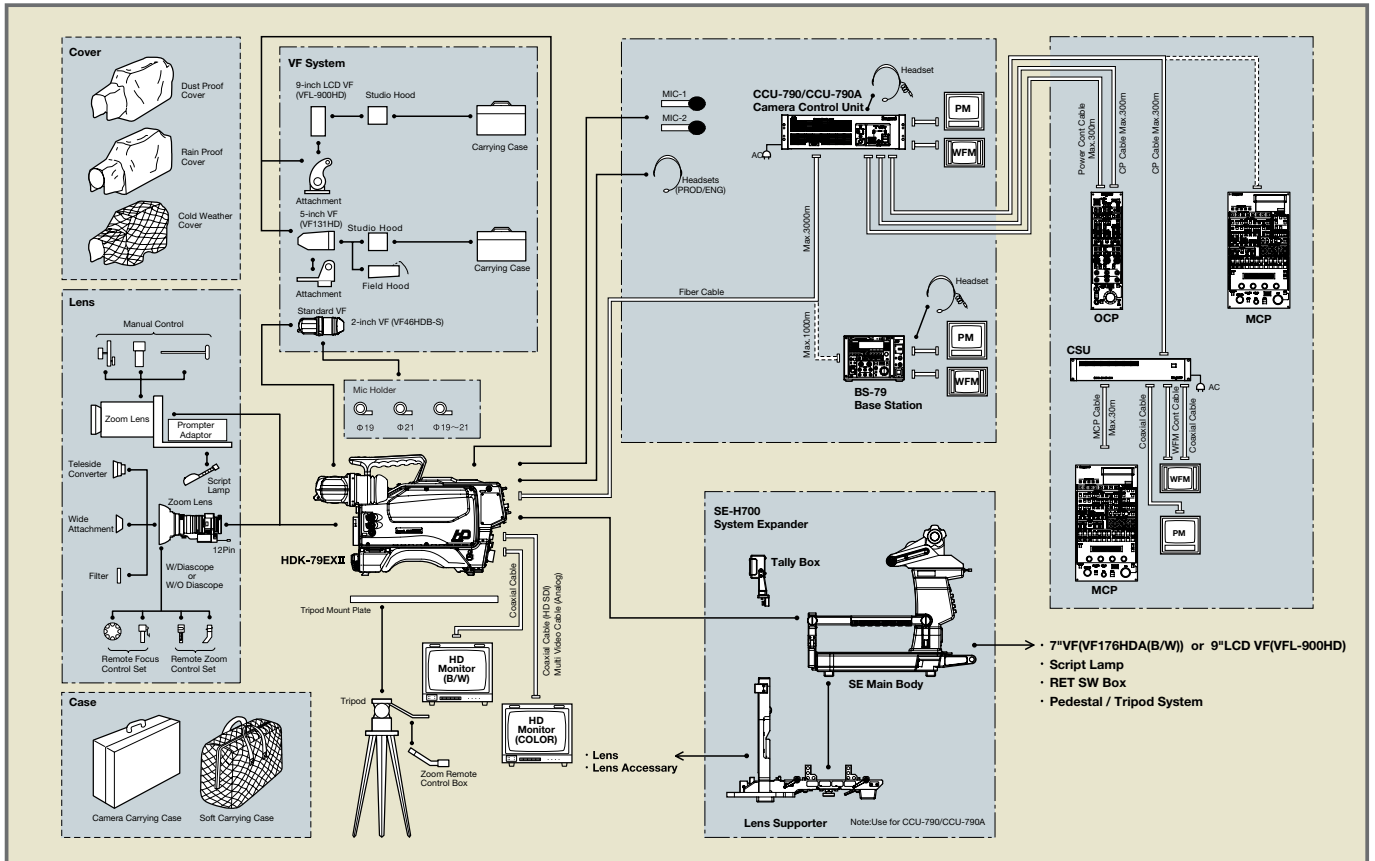


# System Diagram

## HDK-790EXII



## HDK-79EXII



## Ratings

### ■ Scanning System

● HDK-790EX II / 79EX II	1125 (59.94Hz or 50Hz, selectable)
● CCU-790A	1080 lines 59.94Hz 2:1 interlaced 480i lines 59.94Hz 2:1 interlaced 1080 lines 59.94Hz 2:1 interlaced 2-3 pull-down (option) 1080 lines 59.94Hz 2:1 interlaced variable frame (option) 1080 lines 29.97Hz 1:1 non-interlaced (option) 1080 lines 29.97Hz SF non-interlaced (option) 1080 lines 23.98Hz 1:1 non-interlaced (option) 1080 lines 23.98Hz SF non-interlaced (option) 720 lines 59.94Hz 1:1 non-interlaced (option) 720 lines 59.94Hz 1:1 non-interlaced variable frame (option)

### ■ CCD image sensor

2/3-inch 2,200,000-pixel FIT CCD

### ■ Optical system

2/3-inch 3CCD, f1.4

### ■ Lens mount

BTA S-1005B (standard)

### ■ Viewfinder

● HDK-790EX II ..... 7-inch B/W viewfinder (standard) or 7-inch color viewfinder (option) or 9-inch color LCD viewfinder (option)  
● HDK-79EX II ..... 2-inch B/W viewfinder (standard) or 5-inch B/W viewfinder (option) or 9-inch color LCD viewfinder (option)

### ■ Input signals

● HDK-790EX II / 79EX II				
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) (*option for HDK-790EX II)
Intercom signal	2ch (ENG/PROD)	(1/4"Phone type or XLR type)		
● CCU-790A	[HDTV system (SMPT274M and SMPT292M)]			
Phase reference signal	PS/S	0.6Vp-p	±6dB 75Ω	bridged, 1ch
Return video signal	PS	1.0Vp-p	75Ω	2ch (standard) 4ch (factory option) (Input signal is SDI signal)
	[NTSC system]			
Return video signal	VBS	1.0Vp-p	75Ω	2ch (standard) 4ch (factory option) (Input signal is SDI signal)
External genlock signal	VBS/PS/S	1.0Vp-p	75Ω	bridged, 1ch
Q-TV signal	VBS or PS	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-790EX II / 79EX II				
Video signals				
Analog signal	R, G, B or Y, PB, PR	each 1ch,	75Ω	(multi-pin connector :HDK-79EX II standard, HDK-790EX II option)
HD SDI signal	Y, PB, PR	4:2:2 serial digital	2ch	(BNC connector, Camera cable connector) (SMPT292M)
Q-TV signal*	Analog signal,	1ch 75Ω	(BNC connector)	(*Q-TV1 or 2 selectable)
Return out	HD SDI signal	(option)		
VTR signal (option)	BTA S-1005B			
Monitor signal	R, G, B or Y, P <sub>s</sub> , P <sub>r</sub>	select 1ch,	75Ω	(BNC connector)
Intercom signal	0dBs	2ch (ENG/PROD)	(1/4"Phone type or XLR type)	
● CCU-790A	[HDTV system]			
Analog video signal (SMPT274M)	Y, P <sub>s</sub> , P <sub>r</sub>	75Ω each	1ch	(R, G, B signal output is selectable by internal switch)
HD SDI signal (SMPT294M)		75Ω	3ch	
WFM signal	R, G, B, Y select	1.0Vp-p	75Ω or HD-SDI 75Ω	2ch (factory option)
PM signal	R, G, B, Y select	1.0Vp-p	75Ω	2ch
	PM-SDI	0.8Vp-p	75Ω	2ch (factory option)
	[NTSC system]			
Composite video signal	VBS	1.0Vp-p	75Ω	3ch
Component video signal	R, G, B	0.7Vp-p	75Ω each	1ch
Component serial signal (D1)	(Y, P <sub>s</sub> , P <sub>r</sub> signal output is selectable by CCU Menu) (SMPT259M)	270Mbit/s		
	0.8Vp-p	75Ω	4ch	
WFM signal	R, G, B, Y, ENC select	1.0Vp-p	75Ω or SDI 75Ω	2ch
PM signal	R, G, B, Y, ENC select	1.0Vp-p	75Ω or SDI 75Ω	2ch
Phase reference signal	sync	0.6Vp-p	75Ω	1ch (HD or SD automatically selectable)

[Progressive system (option)]

1080p SDI signal (SMPT274M option) 1920 X 1080 75Ω 3ch  
(29.97Hz 1:1, 29.97Hz SF, 23.98Hz 1:1, 23.98Hz SF)  
720p SDI signal (SMPT296M option) 1280 X 720 75Ω 3ch (59.94Hz 1:1)  
480p serial signal (SMPT294M, factory option)

### Audio Signal

Mic	0dBm	600Ω	2ch
Digital audio	AES 3/ID	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%	1.6%
CC	CROSS	3200K	4300K	6300K	8000K

### ■ Electric color temperature

5600K

### ■ Ambient temperature

HDK-790EX II / 79EX II : -20°C ~ +45°C (-4°F ~ +112°F)  
CCU-790A : -0°C ~ +45°C (+32°F ~ +112°F)

### ■ Relative humidity

30%~90% (Non-condensing)

### ■ Operating voltage

● HDK-790EX II ..... AC100/110/117/220/240 ±10%

### ■ Weight

● HDK-790EX II ..... 24kg (52.91 lbs) (without lens)  
7-inch B/W viewfinder : approx. 4.5kg (9.92 lbs)  
7-inch color viewfinder (option) : approx. 5kg (11.02 lbs)  
● HDK-79EX II ..... 4.5kg (9.92 lbs) (without lens)  
2-inch B/W viewfinder : approx. 0.8kg (1.76 lbs)  
● CCU-790A ..... approx. 30kg (66 lbs)

### ■ Dimensions

● HDK-790EX II ..... W310 X H410.5 X D380mm  
(W12.2 X H16.16 X D14.96 inches)  
● HDK-79EX II ..... W125 X H270 X D337mm  
(W4.92 X H10.63 X D13.27 inches)  
● CCU-790A ..... W438 X H132 X D430mm  
(W17.24 X H5.197 X D16.93 inches)

## Performance

### ■ Sensitivity

F10/2,000 lx

### ■ S/N

HDTV system ..... 56dB  
NTSC system ..... 64dB

### ■ Modulation depth

HDTV system ..... 45% or more (800 TV lines, 27.5MHz)  
NTSC system ..... 90% or more (400 TV lines, 5MHz)

### ■ Limiting resolution

HDTV system ..... 1,000 TV lines  
NTSC system ..... 900 TV lines

### Video frequency response (Base Station output)

Y output ..... Below 60Hz ..... Falling  
60Hz~30MHz ..... within ±1.0dB  
Over 30MHz ..... Falling

P<sub>s</sub>, P<sub>r</sub> 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)  
+18dB, +24dB, +30dB, +36dB, +42dB, +48dB, +54dB  
(Factory Option)

### ■ Power consumption

● HDK-790EX II ..... approx. 500VA (including 7-inch color viewfinder and CCU)

● HDK-79EX II ..... Camera Head : 28W / 2-inch VF : 6W

Design and specifications are subject to change without notice.

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# Ikegami

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