Full Digital HDTV Camera System

HDK-790E
HDK-79E
HDK-790E/HDK-79E
Full Digital HDTV Camera System

- 0.18µm design rule next generation ASICs.
- 2.2 Million pixel 2/3-inch FIT CCDs
- 12bit A/D Conversion/ 38-bit internal digital processing circuits
- Multi-standard / Simulcast Broadcasting
  (1080/60i, 480/60i interlace output standard, 1080/24p, 720/60p, 480/60p progressive output Option)
- Various Accessories available for different operating styles.
Evolutionary New Features / Designed for DTV

New Camera Control Unit, the CCU-790A
The Ikegami HDK-series HDTV cameras are designed as a Multi-Use Camera to meet the format requirements of HDTV and SDTV have incorporated next-generation 0.18 µm ASICs into a new Camera Control Unit, the CCU-790A. Also using newly developed ASICs, an Optional Engine Board has been developed to achieve Frame and Multi-Format Conversion. (24p, 30p, 50p, 720p, 1080i, 480i etc)

Multi-standard / Simulcast Broadcasting

2/3-inch 2,200,000-pixel FIT CCDs
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.

Simulcast (High-end HDTV and NTSC Camera)
Using a down converter incorporated in the CCU as standard, the HDK-790E/79E 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.

12bit Full Digital

Incorporating a new, next-generation digital process ASIC
Using newly developed full digital process ICs, precision designed at 0.18µm rule, the video signals are digitalized with 12-bit A/D conversion and up to 38-bit internal digital processing (quantization) circuits.

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.

Sophisticated features made possible with digital technologies

Six-axis + 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.

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 produces a more natural highlight appearance, rather than washing it out.

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.
**Perfect Match Between Studio and Portable Cameras**
The portable and studio cameras use the same CCD, same analog and digital video processing, same optical filters, and in most cases, the same PC boards, providing an unparalleled similarity in performance and function between the two camera types.

**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-79E, either Q-TV1 or Q-TV2 can be selected for output.

**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-790E, the position is lower and closer to the optical axis of the camera head.

**Return Switch**
A Return select switch is located on the handle grip 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.

**High Performance Viewfinders**
For the HDK-79E, a 2-inch 16:9 high definition VF for portable application and a 5-inch B/W VF (option) for studio application are available. Employing a magnifying eye-piece in the 2-inch VF, visibility is further improved. For the HDK-790E, 7” B/W VF and 7” color VF (option) are available. 7-inch VF attaches to the camera with a mechanism allowing easy panning and tilting for VF. Cable connection between the camera and the 7-inch VF is integrated into the pan and tilt mechanism and fully protected against possible damage. In addition, a 6-inch color LCD viewfinder is also available as an option for both studio and portable camera models.

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

**Application of Standard 2/3-inch Lenses**
The camera incorporates the HDTV lens mount (BTA-S-1005B type) as standard. But the Ikegami 2/3-inch lens mount can be specified as a factory order option to use lenses from conventional NTSC Ikegami HK-series cameras such as HK-388/377/366/355, etc.

**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.

**Strong Hand Grips**
HDK-790E has its side handle directly attached to the camera head, which ensures the solid structure of the handle. It also has a loop to attach a rope, by which the camera head can be hoisted.
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-790E and HDK-725. 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.

- CB-79HD/TA-79HD Triax Adaptor System
  The CB-79HD/TA-79HD HDTV new triax adaptor system is a high performance transmission technology. It is ideally suited for various field applications in the digital era. The system consists of the TA-79HD docking Triax Adaptor and the CB-79HD CCU side Converter Box. The CCU converter box enables use of triax or fiber makes cable without any reconfiguration. Docking type adaptors for triax or fiber make camera configuration quick and easy. No local AC power is necessary because the CCU provides AC power for the full system. The CB-79HD CCU converter box is only 1U rack size providing efficient use of space.

- Transmission Distance
<table>
<thead>
<tr>
<th>Distance</th>
<th>Triax Cable</th>
<th>Fiber Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>850m (2,800ft.)</td>
<td>by 8.8mm diameter triax / Fujikura type IL-21479</td>
<td>by 8mm diameter fiber / Fujikura type IL-21479</td>
</tr>
<tr>
<td>1,550m (5,100ft.)</td>
<td>by 14.5mm diameter triax / Fujikura type IL-21479</td>
<td>by 10mm diameter fiber / Fujikura type IL-21479</td>
</tr>
<tr>
<td>500m (1,600ft.)</td>
<td>by 9.2mm diameter triax / Belden type 9267</td>
<td>by 7mm diameter fiber / Belden type 9267</td>
</tr>
<tr>
<td>1,000m (3,300ft.)</td>
<td>by 13.2mm diameter triax / Belden type 9267</td>
<td>by 12mm diameter fiber / Belden type 9267</td>
</tr>
</tbody>
</table>

- Control Panel System
  The desired control panel which matches the needs of user can be selected, and connected to the CCU.
  MCP (Maintenance Control Panel)
  An MCP control panel is used for maintenance and fine adjustment purposes. Up to 40 cameras can be controlled from an MCP when the MCP is used with the CSU Camera Select Unit.
  OCP (Operation Control Panel)
  An OCP control panel is used for normal operation, and includes the primary operating control functions. The OCP is available in joystick and rotary versions.

- SE-79D System Expander
  The SE-79D System Expander enables the use of the 7-inch viewfinder and full studio lenses with the HDK-790E, 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.
**HD Location Shooting**
Provides operation with HDTV VTR similar to location shooting in SDTV.

- **Camera Adaptors**
  There are two kinds of camera adaptors available: the small camera adaptor CA-79D, which best suits local VTR operation, and the fiber adaptor FA-79, which enables the co-use of CCU operation and local VTR operation. You can select the appropriate type of adaptor depending on the desired manner of operation.

- **Camera Control Unit for reliable picture production**
  Configurations available are: the RCU-79, a combination remote control panel and extension device system, and the RCU-70, with the remote control panel detached from the unit. Together with a DC power supply, this system provides complete camera control and system interconnect for high quality field production for location shooting.

- **HD Location Shooting**

![HD Location Shooting Diagram]

- **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-79E and HDK-79E with the System expander can be connected with the BS-79 (factory option / AC operation only)*
**Video signals**

HDK-790E/79E

- HD/SD-SDI signal: Y, PB, PR 4:2:2 serial digital 2ch
- VTR signal (option): BTA S-1005B
- Analog signal: R, G, B or Y, PB, PR each 1ch, 75Ω

**Audio signals**

- Digital audio: AES/EBU 192p
- RSTS: 0dBm 200Ω
- RTS: -15dBs 200Ω
- Clearcom: -15dBs 200Ω

**Return video signal**

- VBS 1.0Vp-p 75Ω
- PM signal: R, G, B, Y each 1ch
- CCU-790A: 1080 lines 59.94 Hz 2:1 interlaced
- CCU-790A: 480p serial signal (SMPTE294M, factory option)

**Power consumption**

- HDK-790E/79E: 7.3A
- CCU-790A: 2A (29.97Hz 1:1, 29.97Hz SF, 23.98Hz 1:1, 23.98Hz SF)
- CCU-790A (factory option): 2.5A

**Operating condition**

- HDK-790E/79E: 11~16V
- CCU-790A: 1080 lines 59.94 Hz 2:1 interlaced
- CCU-790A: 480p serial signal (SMPTE294M, factory option)

**Design and specifications are subject to change without notice.**

[URL](http://www.ikegami.com)