

Panasonic

AK-HC3500A

Studio Handy Camera

AK-HC3500AP/ AK-HC3500AES (LEMO connector model)

AK-HC3500AE (Tajimi connector model*)

*This model is not available in some areas.

High Performance HD Camera System with Optical Fiber Transmission Capability



* Build up unit is not available in some areas.

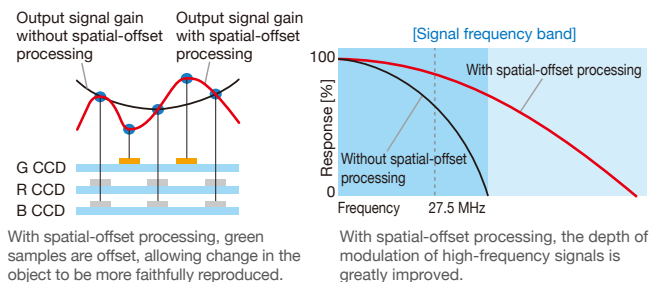
Features and Functions of the AK-HC3500A Studio Handy Camera

The AK-HC3500A is an HD camera with optical fiber transmission capability that meets the needs of high-end broadcast work for shooting live relays, producing TV programs, and more. Its 2/3 type 2.2-megapixel 3CCD provides high sensitivity, low noise, and low smear, while pixel-shifting technology ensures high resolution, and a 16-bit A/D processing circuit delivers rich gradation. HD multi-formats, including 24P, 25P and 30P, and filmlike gamma curves allow the AK-HC3500A to handle a wide variety of TV program production tasks. Combined with a Camera Control Unit (CCU), Master Setup Unit (MSU), and Remote Operation Panel (ROP), this camera can be configured into a long-distance optical transmission system with stunning image quality and uncompressed digital signals. A wide range of system options are also available, such as a Build-up Unit and LCD Viewfinder.



3CCD with High Sensitivity, Low Noise and Low Smear

The 2/3 type 2.2-megapixel 3CCD enables standard sensitivity of F11 (2,000 lx/50 Hz), F10 (2,000 lx/59.94 Hz), which is one of the highest levels in this camera range. A high S/N ratio of 60 dB (at 59.94 Hz) produces high-quality images with low noise and low smear. Panasonic's single-channel transfer system and spatial-offset processing technologies also improve signal modulation depth and reduce moire.



With spatial-offset processing, green samples are offset, allowing change in the object to be more faithfully reproduced.

With spatial-offset processing, the depth of modulation of high-frequency signals is greatly improved.

HD Multi-Formats — Including 24p/25p/30p

In addition to 1080/59.94i and 1080/50i, the AK-HC3500A supports 1080/29.97p (over 59.94i), 1080/25p (over 50i) and 1080/23.98p (over 59.94i)* HD formats. This allows it to handle a wide variety of production tasks for series-type and other TV programs.

*The AK-HCU355A enables conversion to 1080/23.98p (over 47.96i).

New High-Performance DSP Provides 16 bit A/D, 38 bit Processing

HD images are digitized with 74-MHz sampling and 16 bit A/D conversion. Full 38 bit processing within the DSP produces highly detailed, high-quality images.



High-Performance DSP

Dynamic Range Stretch (DRS)

The DRS function automatically suppresses blocked shadows and blown highlights. A gamma curve and knee slope are estimated to match the contrast of each pixel, and applied in real time. When dark, bright, and intermediate shades are all contained in the same scene, this produces excellent gradation for each shade. The images that result are enhanced by a visually wide dynamic range.

Five Selectable Gamma Curves

Selectable gamma curves are included in the DSP circuit. The Film Rec mode and Video Rec mode produce the kinds of film tone that you get with Panasonic VARICAM models. There are five modes altogether, including Filmlike 1/2/3. They produce HD images with a film-like quality, natural gradation, and vivid color reproduction.

Color Correction

The 12-axis color correction function allows precise and independent hue and saturation adjustment of individual colors.

Skin Tone Detail Correction

Separately reducing the sharpness of two skin tones helps tone down wrinkles and dull areas to produce beautiful, naturally textured results when recording people. Since it is possible to apply this function throughout the entire hue phase (360°), sharpness can also be reduced for colors other than skin tones.

Enhanced DTL Signal Processing

Enhanced DTL signal processing ensures superb picture quality with minimal noise in horizontal and vertical directions, as well as in the image's dark and brightly lit areas.

Color Correction Matrix

The EBU or NTSC preset color correction matrix can be selected.

Designed for Easy Operation and Expandability

The AK-HC3500A incorporates Panasonic's extensive broadcast camera design know-how to provide even easier operation. Convenient features include a backlight on the rear operation panel for improved operation in dark settings and an SD Memory Card slot for easy storage of user settings. A movable optical connector is also provided to reduce stress on the optical cable.

Variable Internal Diameter Lens Mount for Easy Use with a Build-up Unit*

When mounting onto an optional Build-up Unit, a mechanism enlarges the internal diameter of the lens mount. Because the lens and camera can be separately mounted onto or removed from the Build-up Unit, its operation is easier and faster than a conventional model.

*This model is not available in some areas.

Servo Control ND/CC Filters

The following ND/CC motor driven double optical filters are available for shooting in variable lighting conditions.
 [CC filter] 3200K, 4300K, 6300K, Cross, Diffusion
 [ND filter] CAP, Through, 1/4, 1/16, 1/64

SD Memory Card Slot

Using an SD Memory Card enables storage and retrieval of various camera settings, such as user viewfinder indications.

*SD Memory Cards are sold separately. Panasonic cards with a capacity of 2 GB or lower are recommended. SDXC and SDHC Memory Cards are not compatible.

Movable Optical Cable Connector

The AK-HC3500A can be connected to a Camera Control Unit (CCU) via an optical fiber cable. High-quality images and signals can be transmitted even when the cable length between the camera and the CCU is up to about 2,000 m. Operating convenience is further assured by the movable connector.

RS-422/RS-232C Selectable Data Trunk Line

Two lines of data trunk are provided (selectable from RS-422/RS-232C).

Ergonomic, Low-Profile Design

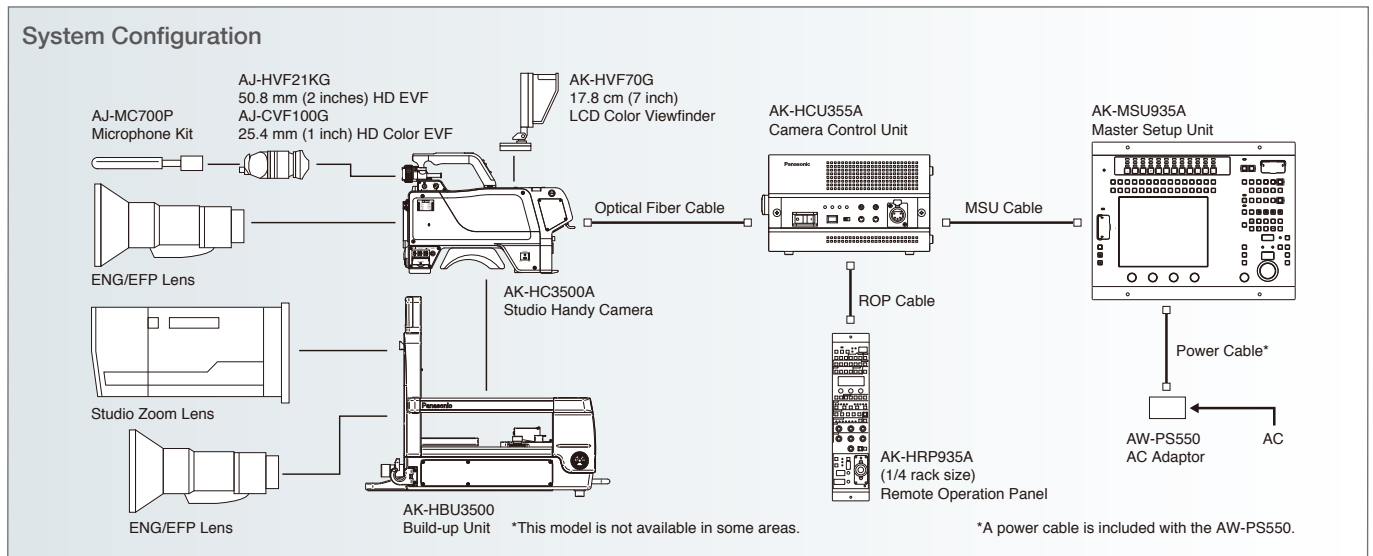
The ergonomic, low-profile design reduces fatigue when the operator needs to shoulder the camera for long periods. It also facilitates use when mounted on the Build-up Unit, for more efficient operation both indoors and out. When held on the shoulder, the viewfinder is closer to the optical axis, thus reducing parallax. The shoulder pad can be moved in a 24-mm range, to enable more stable shooting.

Other Advanced Digital Functions

- A lens file function (for up to 32 files) to save flare and shading values.
- Various information, including color temperature, is displayed in the viewfinder.



*The photo shows a system example of the AK-HC3500A (LEMO connector model).



AK-HC3500A Studio Handy Camera

Power Supply:	DC 12 V (during external power supply operation) AC 220 V (when CCU is connected)
Power Consumption:	AK-HC3500AP: 32W (during external power supply operation) 34W (when CCU is connected) AK-HC3500AE/AK-HC3500AES: 28W (during external power supply operation) 70W (when CCU is connected)
Operating Temperature:	-10 °C to 45 °C (14°F to 113°F) Preheating required at temperatures below 0°C (32°F)
Operating Humidity:	Less than 85 %
Storage Temperature:	-20 °C to 60 °C (-4°F to 140°F)
Weight:	Approx. 4.7 kg (approx. 10.36 lb)
Dimensions (W x H x D):	135 mm x 260 mm x 360 mm (5-5/16 inches x 10-1/4 inches x 14-3/16 inches) excluding protrusions
Pickup Device:	2/3 type 2.2 million pixel IT, CCD x 3
System:	GBR Pickup System
Color Separation Optical system:	f/1.4 prism
CC Filter:	3200 K, 4300 K, 6300 K, Cross, Diffusion
ND Filter:	CAP, Through, 1/4, 1/16, 1/64
Lens mount:	Bayonet mount
Sensitivity:	59.94 Hz: F10 (2000 lx, 3200 K, 89.9 %) 50 Hz: F11 (2000 lx, 3200 K, 89.9 %)
S/N:	60 dB (typ) (Y: 30 MHz)
Horizontal modulation:	More than 50 % (27.5 MHz)
Output Format:	1080/59.94i, 1080/50i, 1080/29.97p (over 59.94i), 1080/25p (over 50i), 1080/23.98p (over 59.94i)
HD SDI Output:	HD signal = 0.8 V [p-p], 75 Ω (BNC) The HD SDI 2 signal output can be added to the regular images using the camera menu item setting and switched to the VF or RET image output. Embedded audio supported (MUTE when RET Video output)
PROMPT Output:	VBS signal = 1 V [p-p], 75 Ω (BNC)
GENLOCK Input:	Tri-level SYNC/BB (BNC×1) The PROMPT output and the GENLOCK input are changed with the switch.
AUX Output:	Prompt2 Output: VBS Signal = 1 V [p-p], 75 Ω (BNC) (When there is Prompt2 input in CCU)
MIC Input:	-60 dBu to 4 dBu (XLR 3-pin female x 2) Gain selected by camera menu
Intercom:	Input: -60 dBu to -10 dBu Output: 100 mW max. (XLR 5-pin, female x 2) (The mix of PGM1 and PGM2 is individually controlled)
DC OUT:	12 V, MAX. 1 A

AK-MSU935A Master Setup Unit

Power Supply:	DC 12 V
Power Consumption:	15 W
Operating Temperature:	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity:	Less than 80 %
Dimensions (WxHxD):	340 mm x 75 mm x 264 mm (13-3/8 inches x 2-15/16 inches x 10-3/8 inches)
Weight:	Approx. 3.25 kg (Approx. 7.2 lb)
Switch Functions:	Camera selection, MODE ON/OFF (5600 K, Flare OFF, Black gamma ON, Gamma OFF, Knee OFF, White clip OFF, HD matrix ON, PM character display, HDTV detail OFF, SDTV detail off, HDTV skin tone detail ON, SDTV skin tone detail ON), Control item selection (UNDO, Black shading selection, White shading selection, R/G/B shading, Matrix control, FUNC, System, Pedestal control, Gain control, Gamma curve control, Flare control, Knee/White clip control, HD detail control, SDTV detail), ALL, Reference, Camera video output selection, Automatic adjustment (Auto white balance, Auto black balance, Auto setup), Monitor selection, Scene files, SHUTTER, Gain selection, Filter selection (HEAD, ND filter, CC filter), CALL, Auto iris, Iris active, Master pedestal storage, Master pedestal file call
Adjustment Functions:	Iris, Master pedestal
CCU control:	RS-422 compliant
Camera (CCU) connection:	Control up to 12 cameras

AK-HCU355A Camera Control Unit

Power Supply:	DC 12 V AC 100 V to 120 V, 50 Hz/60 Hz (AK-HCU355AP) AC 220 V to 240 V, 50 Hz/60 Hz (AK-HCU355AES/355AE)
Power Consumption:	37 W (excluding power supply) 340 W (include power supply)
Capacity for Supplying Power to a Camera:	AC 220V to 240 V, 1.2 A, 50 Hz/60 Hz (AK-HCU355AP) AC 220V to 240 V, 1.2 A, 50 Hz/60 Hz (AK-HCU355AES/355AE)
Operating Temperature:	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity:	10 % to 90 % (no condensation)
Dimensions (W x H x D):	200mm x 120 mm x 445 mm (7-7/8 inches x 4-3/4 inches x 17-9/16 inches) excluding protrusions
Weight:	Approx. 9 kg (Approx. 19.8 lb)
Video Output:	HD SDI/SD SDI x 4 lines *1 (shared by picture monitor output 1 line *4) Analogue composite x 2 lines (shared by picture monitor output 1 line *4)
WFM Output:	Analogue composite x 1 line *2
Return Input:	HD SDI/SD SDI x 4 lines
Prompter Input:	Analogue composite x 2 lines *2
Reference Input:	Black burst/tri-level x 2 lines (loop-through x 1 line) *2*3*5
Sync Output:	Analogue sync, HD (±0.3 V [p-p]) / SD (1 V [p-p]) (with 75 Ω termination) x 1 line *4
Mic Output:	0 dBm/600 Ω x 2 lines
Communication:	Intercom input/output(0 dBm, 600 Ω, 2W/RTS/4W *4) x2 lines (ENG/PROD) PGM input (0 dBm/600 Ω) x 2 lines Tally input (Red, Green) x 1 line each
WFM CONT:	For WFM control (open collector output)
AUX:	For setting down-conversion system (photo-coupler input) For tally, alarm (open collector output)
TRUNK:	RS-422/RS-232C x 2 lines *4
ROP I/F:	RS-422 x 1 line, 12 V output
MSU I/F:	RS-422 x 1 line, GPI for control
LAN:	For use with PC connections x 1 line (10Base-T, 100Base-TX: Cross cable)

*1: Embedded audio is supported only for HD signal output.

*2: Prompter input 2 and reference input 2 share the same connector so only one of these inputs can be selected at one time.

*3: The black burst signal and tri-level sync signal of reference input 1 are recognized automatically.

*4: Depending on the setting, only one of these outputs can be selected at one time.

*5: Reference input 2 supports only dual sync tri-level sync signal input when the 23.98PsF format applies.

AK-HRP935A Remote Operation Panel

Power Supply:	DC 12 V (DC 10V to 17V) (supplied from CCU)
Power Consumption:	Approx. 6 W
Operating Temperature:	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity:	Less than 80 %
Dimensions (WxHxD):	92 mm x 419 mm x 55 mm (3-5/8 inches x 16-1/2 inches x 2-3/16 inches) excluding protrusions
Weight:	Approx. 1.85 kg (Approx. 4.1 lb)
CCU Control:	Control signals (camera, CCU control) RS-422 compliant
Maximum Cable Length:	50 m (164 ft)

AK-HBU3500* Build-up Unit

Power Supply:	AC 220 V, 50Hz/60 Hz (Supplied from the studio handy camera)
Power Consumption:	20 W (main unit only) 200W (with large lens, viewfinder and maximum load condition of AC outlet)
Operating Temperature:	-10 °C to 45 °C (14 °F to 113 °F)
Operating Humidity:	Less than 85 %
Dimensions (WxHxD):	300 mm x 417 mm x 510 mm (11-13/16 inches x 16-7/16 inches x 20-1/16 inches)
Weight:	Approx. 14.5 kg (Approx. 32.0 lb)
Adjustment Functions:	H-POS1, V-POS1, WIDTH, HEIGHT, 4:3 brightness adjustment level
Switch Functions:	AC outlet reset, Viewfinder power, Up tally ON/OFF, Center maker, Cursor memory 1, Cursor memory 2, 4:3 marker, ND filter selection, Local, CC filter selection, Menu ON/OFF, Menu JOG, Return A switch, Return B switch, User, Viewfinder detail, Monitor output selection, P in P function ON/OFF, P in P position selection (functions not available with the AK-HC3500A)

*This model is not available in some areas.

AK-HCU355A

Camera Control Unit (CCU)

AK-HCU355AP/AK-HCU355AES (LEMO connector model)
 AK-HCU355AE (Tajimi connector model*)
 *This model is not available in some areas.

Compact, Half-Rack Size. High-Quality Optical Fiber Transmission, and Camera Power Supply.



[Output signal] 1080/59.94i, 1080/50i, 480/59.94i, 576/50i,
 1080/29.97PsF (over 59.94i), 1080/23.98PsF (over 59.94i),
 1080/23.98PsF (over 47.96i), 1080/25PsF (over 50i)

- Optical fiber transmission of uncompressed digital signals over a distance of approximately 2,000 m between the camera and camera control unit.*
 * When power is supplied from the CCU.
- Standard video output: HD SDI, SD SDI, SD composite.
- With a tub, 2 units of the CCU can be mounted together in a 3U rack size.
- Text display of BAR ID, output source for color bar images, etc.
- Two prompter inputs are provided as a standard feature. (One input when dual sync is used.)
- HD/SD SDI return input.
- DC (12V) power drive. (When the camera is driven by a DC power supply.)
- The large power supply enables 200 VA to be taken from the utility power supply of the Build-up Unit. (The power supplied varies depending on the length of the optical fiber cable.)
- No cables required for virtual control, pan/tilt camera head, or lens control.
- Two lines of data trunk are provided (selectable from RS-422/RS-232C).



Build-up Unit

AK-HBU3500

Build-up Unit

*This model is not available in some areas.

Large studio lenses can be mounted.

- Camera can be mounted quickly and smoothly



AK-MSU935A

Master Setup Unit (MSU)

With a large LCD control panel, the MSU can adjust all of the camera's parameters, serving up to 12 camera systems.



- Master control of precise camera settings for the entire camera system (up to 12 camera systems)
- Image and waveform monitor are selectable
- Large-scale (16-cm/6.3-inch) LCD display
- SD Memory Card slot for storing/retrieving three user references, eight scene files, and sixteen lens files
 * Optional AC adaptor is required.



AK-HRP935A

Remote Operation Panel (ROP)

The 1/4 rack size remote operation panel can easily adjust camera parameters.

- Full control of camera settings
- 1/4 rack size remote operation panel





AK-HRP200
Remote Operation Panel (ROP)
This ROP does not have LCD display for camera adjustment.



AJ-HVF21KG
50.8 mm (2 inches) HD EVF



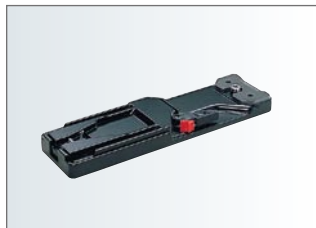
AJ-CVF100G
25.4 mm (1 inch) HD Color EVF



AJ-MC700P
Microphone Kit



AK-HVF70G
17.8 cm (7 inch)
LCD Color Viewfinder



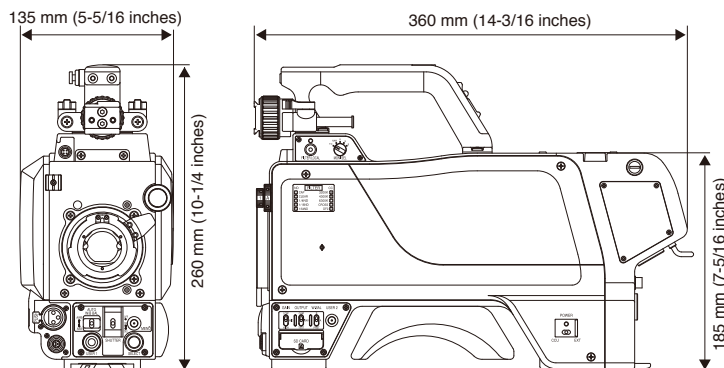
SHAN-TM700
Tripod Adapter



AW-PS550
AC Adaptor

AJ-C10050G
Remote Control Cable
(50 meters / 164 feet)

Dimensions



Panasonic®

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JQA-0443



Factories of AVC Networks Company have received ISO14001:2004-the Environmental Management System certification. (Except for 3rd party's peripherals.)