Panasonic's HD Remote Camera Lineup delivers High-Quality HD Images for a wide range of applications from Broadcasting to Business, Government and Education
Live Image Production with Panasonic

High-Quality, Highly Functional HD Box Cameras for Versatile Indoor and Outdoor Use

Ideal for producing cost-effective content for small studios and videoconferences while maintaining high image quality.

Multi-Purpose Camera
AK-HC1800G

Outdoor Pan-Tilt Head
AW-PH650

Multi-Purpose Camera
AK-HC1500G

Indoor Pan-Tilt Head
AW-PH405

HD Convertible Camera
AW-HE870

Advanced systems can be configured for high-speed, accurate image acquisition, such as live relays.

High-Quality Monitoring

Weather and Traffic Cameras

Sports

Lecture

Studio Productions
Remote Camera Systems

Compact, Integrated Units with IP Control Capability for Easy Setup and Control in Various Location

Convenient for capturing images at concerts, weddings and more

HD Integrated Camera
AW-HE120W/K

HD Integrated Camera
AW-HE60S/H

HD Integrated Camera
AW-HE2

Remote Camera Controller
AW-RP120G

Remote Camera Controller
AW-RP50

Compact Live Switcher
AW-HS50

Device for Control/Monitoring via IP (AW-HE60/HE2)

Conference Halls

Lectures

Seminars

Halls/Theaters

Weddings

Ideal for use in small and medium-size events, such as conferences, lectures, and educational applications

Ideal for use in small and medium-size events, such as conferences, lectures, and educational applications

Compact, Integrated Units with IP Control Capability for Easy Setup and Control in Various Location
MULTIPURPOSE CAMERA

Featuring High-Quality 3CCD Sensors
A Compact HD Box Cameras Ideal for a Variety of Indoor and Outdoor Acquisitions

Multi-Purpose Camera
AK-HC1800G  2.2 mega pixels
(Lens not included)

Multi-Purpose Camera
AK-HC1500G  1 mega pixels
(Lens not included)

**Key Points**
- High speed (90˚/s) and accurate pan-tilt operation for sporting events

Optional Boards

Down Converter Board
AK-HDC1500G
- Output: SD SDI (BNC × 1), SD analog (VBS) (BNC × 1)

HD SDI Output Board
AK-HHD1500G
- Output: HD SDI (BNC × 1)
  - Skin tone area zebra can be applied by using this optional board
  - This model is not available in some areas.

System example

Sporting Events
High speed and accurate camera operation for sports shooting

**Key Points**
- High speed (90˚/s) and accurate pan-tilt operation for sporting events

**Key Products**
AK-HC1800G  AW-PH400  AV-HS450  AW-RP120G

Remote Studio System
Content production at small, cost effective studios

**Key Points**
- Multi-format live switcher (AV-HS450) can control cameras/pan-tilt heads. In combination with a controller, you can control up to five cameras and pan-tilt heads.
- A teleprompter can be installed on the pan-tilt head (AW-PH405).
- Quiet pan-tilt motion is ideal for shooting in a quiet studio.

**Key Products**
AK-HC1800G  AW-PH405  AV-HS450

*The AC Adaptor provided with the unit is not shown in the above figure.*
Panasonic's CCD technology and signal processing produce high-quality.

The 2/3 type 3CCD system produces high-resolution HD images. Panasonic's single-channel transfer system and spatial-offset processing technologies improve modulation in high-frequency signal portions. This raises resolution and lowers moire to produce beautiful, highly detailed images. The AK-HC1800G is compatible with seven types of video formats, and the AK-HC1500G supports virtually all HD video formats in the world for versatile acquisition.

Output signal gain without spatial-offset processing
Output signal gain with spatial-offset processing

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

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

CCD accumulative drive allows high sensitivity.

In addition to the conventional gain-up circuit, the AK-HC1500G and AK-HC1800G use CCD accumulation and horizontal/vertical addition to enable a gain increase of up to 72 dB (minimum illumination 0.015 lx).

Electronic Extender (Digital Zoom) Function

Use of Down Converter board or HD SDI board enables system overcranking speed
Use the distinctive undercranking and overcranking speed effects of film cameras.

Dynamic Range Strech (DRS) automatically optimizes images that have a wide contrast range.

A gamma curve and knee slope are estimated to match the contrast of each pixel in real time. When dark, bright, and intermediate areas are all contained in the same scene, this function produces excellent gradation for each area and minimizes blocked shadows and blown highlights. The images of results are enhanced by a visually wider dynamic range.

Features a Cine Gamma & Variable Frame Rate functions

Variable Frame Rate function is available only with the AK-HC1500G.

The AK-HC1800G/1500G come equipped with the cine gamma that reproduces cinematic expression with a film quality-like tone. In addition, the AK-HC1500G features a variable frame rate function that lets you set the number of frames shot per second, allowing for undercranking / overcranking for fast or slow motion effects.

The Cine Gamma function captures image with a warm, film-like quality.

The Variable Frame Rate function varies the number of frames shot per second.

Automatically controls variable gain in dark scenes
Favor movement mode for subjects in motion

Automatic gain control (AGC)*

In addition to automatic iris control and continuous automatic variable gain control (-6 dB to 72 dB), AGC lets you choose between the normal mode, favor movement, favor clarity, and user setup mode.

Intelligent function significantly reduces time and effort for adjustment during remote video acquisition.

• AK-HC1800G only

Before correction After correction Before correction After correction

Before correction After correction

Before correction After correction

Before correction After correction

Other features

• Equipped with rear slot for system expansion boards
  Use of Down Converter board or HD SDI board enables system expansion.

• Electronic Extender (Digital Zoom) Function
  The electronic extender enables 2x magnification.
HD CONVERTIBLE CAMERA

HD/SD-compatible 2/3 type 3CCD camera

HD Box Camera with HD/SD Multi-Formats

HD Convertible Camera
AW-HE870
(Lens not included)

The 2/3 type progressive 3CCD and high-performance DSP enable HD/SD multi-format signal output.

The 2/3 type progressive 3CCD and high-performance DSP with 14 bit A/D support 1080i, 720p, and 480i video formats. A down-converter is also built-in, so down-converted (SD) images can be output simultaneously when shooting in HD. The format can be switched to match the application, allowing to fit a wide variety of HD/SD systems.

Same operation and interface as Panasonic’s conventional SD convertible camera series

AW-HE870 has the same operation and interfaces as Panasonic’s conventional SD convertible camera series. The Panasonic current Pan/Tilt heads and controllers can be used with AW-HE870. It can be helpful for system transition from SD to HD.

* Some functions require different operations from the SD cameras.
*2 Compatible models: AW-PH400,PH405,PH405,PH405,AW-PH400 does not support analog HD video signals.
*3 Compatible models: AW-RP120G and AW-RP50. Some models may require a software update for use with the AW-HE870. Please contact your Panasonic representative for more details.

Other features

- HD/SD SDI output card (AW-HHD870) (Optional)
  Installing the optional AW-HHD870 card enables the use of two HD/SD SDI outputs, as well as a Zoom-Focus control port.

- Provides HD component and SD composite outputs simultaneously
  AW-HE870 can support mixed HD/SD systems.

*4 When Genlock input is used, only the signals of the selected output video format will be synchronized.

* The AC Adaptor provided with the unit is not shown in the above figure.
Optional Products (compatible with AK-HC1800G, AK-HC1500G, AW-HE870)

**Indoor Pan-Tilt Head**

**AW-PH360**

- **A cost effective compact pan-tilt head**
  - Pan angle: Approx. ±150° (Maximum Pan speed 30°/s), Tilt angle: Approx. ±95° (Maximum Tilt speed 25°/s)
  - Quietness: (Under NC30)
  - Stop accuracy: under ±3 arcminutes (0.05°)
  - Maximum 50 preset memories
  - Tally light is included
  - Maximum control distance: 1,000 m
  - Featuring RS-232C interface
  - MD lenses are supported
  - Requires AC Adaptor AW-PS550.

- **AW-PH405**
  - **A powerful indoor use pan-tilt head with max load 15 kg**
  - Pan range: Approx. ±150°, Tilt range: Approx. ±150°
  - Maximum pan-tilt speed: 45°/s
  - Quietness: under NC30 (at 30°/s)
  - Stop accuracy: ±3 arcminutes (0.05°)
  - Maximum 50 preset memories
  - Maximum control distance: 1,000 m
  - Automatic camera control (Pan/tilt speed and pan tilt)
  - Maximum 50 preset memories
  - Stop accuracy: ±5 arcminutes (0.08°)
  - AC adaptor built in (power cable (2 m) included)

- **AW-PH400**
  - **A quiet indoor use pan-tilt head with high speed pan/tilt movement**
  - Pan range: Approx. ±200°, Tilt range: Approx. ±150°
  - Maximum pan-tilt speed: 90°/s
  - Quietness: Under NC30 (at 30°/s)
  - Stop accuracy: Under ±30 arcseconds (0.008°)
  - Maximum 50 preset memories
  - Special high speed protocol
  - A removable tally light is included
  - Maximum control distance: 500 m
  - Using the protocol converter AW-IF400G with remote camera controller AW-RP120G or AW-RP50)
  - Both ENG lenses and MD lenses are supported
  - AC adaptor built in (power cable (2 m) included)

**Outdoor Pan-Tilt Head**

**AW-PH650**

- **Waterproof design for stable shooting in a variety of weather conditions**
  - Pan range: Approx. ±160°, Tilt range: Approx. ±95° (Maximum Pan and Tilt speed 20°/s)
  - Quietness (Under NC40) (at 20°/s)
  - Stop accuracy: Under ±5 arcminutes (0.08°)
  - Maximum 50 preset memories
  - Zoom pan-tilt function and heater wiper defroster function for the housing can also be controlled by the controller
  - Maximum control distance: 1,000 m
  - A camera housing, a AC adaptor and cables are included
  - Both ENG lenses and MD lenses are supported
  - AC Adaptor (An included)

**2/3 type Lens**

**AK-LZ20M85G**

- Focal length: 8.5 mm-170 mm (F1.8-F2.7)
- Weight: Approx. 1.41 kg (Approx. 3.1 lb)
- Dimensions (W×H×D): 114 mm × 91 mm × 170 mm (4-1/2 inches × 3-19/32 inches × 6-11/16 inches)

**Cables**

- **Name**
  - Multi-interface Cable: AW-CA20T6G
  - Cable for indoor pan-tilt head connection: AW-CA15H29G
  - Pan-tilt cable kit: AW-CA4K4H1G
  - Camera control cable: AW-CA50T8G

- **Model**
  - AW-HE870
  - AW-PR120G
  - AW-PS550
  - AW-HE1800G
  - AW-HE1500G
  - AW-HE400
  - AW-HE405
  - AW-HE400

- **Length**
  - 1 m
  - 0.7 m
  - 0.7 m
  - 10 m

- **Remote Camera**
  - AW-HE870
  - AW-HE1800G
  - AW-HE1500G
  - AW-HE400
  - AW-HE405
  - AW-HE400
  - AW-HE1800G
  - AW-HE1500G
  - AW-HE400
  - AW-HE405
  - AW-HE400

- **Pan-Tilt Head**
  - AW-PR120G
  - AW-PR50
  - AW-HE870
  - AW-HE1800G
  - AW-HE1500G
  - AW-HE400
  - AW-HE405
  - AW-HE400

- **Controller**
  - Series controller, Composite/Component Output

- **Note**
  - Direct connection with the AW-HE870 and AW-HK200G

*To connect the AW-HE870 with the AW-PH400/AW-PH405/AW-PH400/AW-PH650 pan-tilt head, or to connect the AW-PH360/AW-PH405/AW-PH400/AW-PH650 pan-tilt head, use the camera cable that comes with each pan-tilt head.
Smart operation with IP control

An Integrated Pan-tilt HD/SD Camera for a Wide Range of Shooting Conditions

HD Integrated Camera

**AW-HE120W/K**

*For indoor use*

**Option**

Wireless remote control
**AW-RM50G**

("AA", "R6" or "LR6" battery x 2 are not included.)

Direct Ceiling Mount Bracket
**WV-Q105**

**System example**

**HD/SD Camera System**

Ideal for shooting in large places such as concert halls and government chambers

**Key Points**

* Up to a hundred AW-HE120W/K units can be controlled by AW-RP120G via IP connections when using Ethernet hubs.

**[Key Products]**

AW-HE120W/K  AW-HS50  AW-RP120G

Optimal for both hanging and desktop installation.
The mounting bracket and drop-prevention wire are standard accessories. Ceiling and desktop installation are both possible.

* Wiring, mounting, and removal must be done by a qualified technician. To ensure safety, consult with the dealer from whom you purchased the system.

*The AC adaptor provided with the unit is not shown in the above figure.*
Integrating a compact body and simple system configuration

Both SDI and HDMI are supported, and IP connection enables flexible system configuration, easy connection and settings. It can also be connected to current camera controllers. Both size and weight have been reduced by approximately 60% compared to our previous model (the AW-HE100) to achieve a lightweight, compact body. With its sleek design and color variation, it blends with atmospheres in a variety of situations.

Shooting high-quality images with 1/3 type Full-HD "U.L.T." 3MOS image sensors

- Ultra Luminance Technology

High resolution and high image quality are produced by the newly developed 1/3 type 2.2 mega pixels "U.L.T." 3MOS sensors and digital signal processor (DSP).

The 3MOS System uses three MOS sensors to process the three primary colors (R, G, B) of light. (MOS = Metal Oxide Semiconductor)

A 20x optical zoom lens covers wide-angle to ultra telephoto shots.

In addition to a wide-angle design that features 32.13 mm (35 mm equivalent) at the wide end, the AW-HE120 has a 20x optical zoom lens and a 10x digital zoom power. This lets you shoot a wide variety of sharp and crisp images from wide angle to close up.

A wide range pan-tilt, high-speed control, and silent design apply for versatile operations.

More smooth and natural movement is achieved for the pan-tilt operation. The pan-tilt head also allows a wide range* shooting, with a pan range of ±175° and a tilt range of -30° to 210°. The newly developed pan tilt drive provides high-speed operation at maximum 60°/s, excellent response from remote control operation, and highly precise stop control. These features combine to accurately capture fast-action sports scenes with comfortable remote shooting. The noise level during operation is also very low, at NC35 or less, which is ideal for shooting in concert halls.

* Depending on the position of the pan and tilt, its own unit may be reflected in the image.

Supporting IP to simplify connection and setup, and ensures comfortable operation.

Up to 100 x AW-HE120W/K units can be controlled from an AW-RP120G, an AW-RP50 or a PC via switching hubs using the IP connection. IP connection also allows one AW-HE120W/K to be controlled simultaneously from up to five AW-RP120G and AW-RP50 units.

Dynamic Range Strech (DRS) automatically optimizes images that have a wide contrast range.

A gamma curve and knee slope are estimated to match the contrast of each pixel in real time. When dark, bright, and intermediate areas are all contained in the same scene, this function produces excellent gradation for each area and minimizes blocked shadows and blown highlights. The images of results are enhanced by a visually wider dynamic range.

Other features

- Setting camera menus with a PC
  Camera menus can be set up via a web browser by connecting the AW-HE120W/K to a PC.

- Wireless remote controller for easy operation (option)
  Up to 4 cameras can be controlled by an optional wireless remote controller (AW-RM50G). The basic operations and menu settings can be done by using the wireless remote controller.

- Simple connection and installation enable a flexible camera layout
  IP control, a lightweight body, and the turn-lock mounting mechanism enable easy connection and mounting by a single person (indoor mounting only).

- Compact design for energy-saving
  The compact, lightweight body realizes low power consumption and low cost operation of multiple cameras.

- Allows up to 100 pre-set memories per camera

- Four-position (Through, 1/4, 1/16, 1/64) ND filter
Full-HD Integrated Pan-Tilt HD/SD Camera Capable of IP Image Monitoring

HD Integrated Camera

AW-HE60S [SDI Model]
For indoor use

AW-HE60H [HDMI Model]
For indoor use

Full HD
MOS
18x optical zoom
HD/SD
IP/Serial control

DRS
Turn-lock mounting mechanism
Night mode
IP monitoring

HD 1080/59.94p*, 59.94i, 50p*, 50i, 29.97PsF, 25PsF, 720/59.94p, 50p
SD 576/50p*, 50i, 480/59.94p*, 59.94i

*1 AW-HE60H HDMI output only
*2 AW-HE60H only

Option

Wireless remote control
AW-RM50G
("AA", "R6" or "LR6" battery x 2 are not included.)

Direct Ceiling Mount Bracket
WW-Q105

Multi-interface Cable
AW-CA20T6G

System example

HD/SD Camera System

For small or medium scale shooting, such as education, business and wedding applications

- Key Points
  - Up to 100 x AW-HE60S units can be controlled by AW-RP50 via IP connections through Ethernet hubs.

- [Key Products] AW-HE60S AW-HS50 AW-RP50

Optimal for both hanging and desktop installation.
The mounting bracket and drop-prevention wire are standard accessories. Ceiling and desktop installation are both possible. Mount the bracket onto the installation surface and then put and turn the main unit on the bracket to be installed.

- Wiring, mounting, and removal must be done by a qualified technician. To ensure safety, consult with the dealer from whom you purchased the system.

*The AC adaptor provided with the unit is not shown in the above figure.
The lineup consists of two models, the AW-HE60S SDI model, which is optimal for content production, and the AW-HE60H HDMI model, which is ideal for image distribution in applications such as videoconferences. In addition to IP control, both models can be connected to existing controllers with serial control. An attractive form that blends with its surroundings and a cable cover that minimizes clutter allow shooting without adversely affecting the mood of the installation location.

The cameras are equipped with the 1/3 type Full-HD MOS sensor and high-performance zoom lens. The 18x optical zoom lens, the camera features a 10x digital zoom. This makes it possible to shoot a wide variety of sharp and crisp images, from wide angle to close up face.

Dynamic Range Strech (DRS) automatically optimizes images that have a wide contrast range.

A gamma curve and knee slope are estimated to match the contrast of each pixel in real time. When dark, bright, and intermediate areas are all contained in the same scene, this function produces excellent gradation for each area and minimizes blocked shadows and blown highlights. The images of results are enhanced by a visually wider dynamic range.

Hybrid (2D/3D) Noise Reduction function also suppresses afterimages, even in difficult lighting conditions.

IP Control with Image monitoring

IP control for easy connection and setup
IP connection allows control of up to 100 x AW-HE60S/H units from an AW-RP120G, AW-RP50 or a PC via switching hubs. IP connection also allows one AW-HE60S/H to be controlled simultaneously from up to five AW-RP120G and AW-RP50 units.

Features an image compression and IP image transmission LSI. The IP image output function allows transmission of images from one camera to up to 14 terminals through IP networks. When combined with IP control, the camera can be controlled from a distant location.

The Hybrid (2D/3D) Noise Reduction function also suppresses afterimages, even in difficult lighting conditions.

Pan-tilt mechanism for smooth movement
The pan range of ±175 ° and the tilt range of -30 ° to 90 ° cover a wide shooting area. The pan and tilt operate at a maximum speed of 90 °/second and respond quickly to remote control operation. They operate quietly at a sound level of NC35 or lower.* Depending on the position of the pan and tilt, its own unit may be reflected in the images.

Compact design for energy-saving
The compact, lightweight body realizes low power consumption and low cost operation of multiple cameras.

Allows up to 100 pre-set memories per camera

Without Noise Reduction
Some noise appear when gain control is turned up

With Noise Reduction
Less noise is visible when gain control is turned up

A gamma curve and knee slope are estimated to match the contrast of each pixel in real time. When dark, bright, and intermediate areas are all contained in the same scene, this function produces excellent gradation for each area and minimizes blocked shadows and blown highlights. The images of results are enhanced by a visually wider dynamic range.

Dynamic Range Strech (DRS) automatically optimizes images that have a wide contrast range.

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Hybrid (2D/3D) Noise Reduction
The Hybrid (2D/3D) Noise Reduction function also suppresses afterimages, even in difficult lighting conditions.

*1 For more information, see page 18
*2 Video output and IP image output signals cannot be used simultaneously.
*3 The number varies depending on distribution settings. Only one Android™ device can be connected to one camera.

Pan-tilt mechanism for smooth movement
The pan range of ±175 ° and the tilt range of -30 ° to 90 ° cover a wide shooting area. The pan and tilt operate at a maximum speed of 90 °/second and respond quickly to remote control operation. They operate quietly at a sound level of NC35 or lower.* Depending on the position of the pan and tilt, its own unit may be reflected in the images.

Setting camera menus with a PC
Camera menus can be set up via a web browser by connecting the AW-HE60S/H to a PC.

Wireless remote controller for easy operation (option)
Up to 4 cameras can be controlled by an optional wireless remote controller (AW-RM50G). The basic operations and menu settings can be done by using the wireless remote controller.

Compact design for energy-saving
The compact, lightweight body realizes low power consumption and low cost operation of multiple cameras.

Allows up to 100 pre-set memories per camera

Pan-tilt mechanism for smooth movement
The pan range of ±175 ° and the tilt range of -30 ° to 90 ° cover a wide shooting area. The pan and tilt operate at a maximum speed of 90 °/second and respond quickly to remote control operation. They operate quietly at a sound level of NC35 or lower.* Depending on the position of the pan and tilt, its own unit may be reflected in the images.

Setting camera menus with a PC
Camera menus can be set up via a web browser by connecting the AW-HE60S/H to a PC.

Wireless remote controller for easy operation (option)
Up to 4 cameras can be controlled by an optional wireless remote controller (AW-RM50G). The basic operations and menu settings can be done by using the wireless remote controller.

Compact design for energy-saving
The compact, lightweight body realizes low power consumption and low cost operation of multiple cameras.

Allows up to 100 pre-set memories per camera
**HD INTEGRATED CAMERA**

Ultrawide-angle 95°¹ horizontal viewing and Intelligent Zoom

A Compact HD camera with built-in microphone convenient for P.O.V. (Point Of View) applications

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**HD Integrated Camera**

**AW-HE2**  
For indoor use

- **3.9M MOS**
- **2x IA zoom**
- **4x digital zoom**
- **HD/SD**

<table>
<thead>
<tr>
<th>HD</th>
<th>1080/59.94p, 59.94i, 50p, 50i, 720/59.94p, 50p,</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>576/59p, 480/59.94p</td>
</tr>
</tbody>
</table>

¹1 18 mm in 35 mm equivalent

---

**Key Points**
- Wiring, mounting, and removal must be done by a qualified technician. To ensure safety, consult with the dealer from whom you purchased the system.

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**System example**

**HD Camera System**

**Ideal for use in conference, event capturing, video monitoring and sports**

**Key Points**
- Up to 100 x AW-HE2 units can be controlled by AW-RP50 via IP connections through Ethernet hubs.

**[Key Products]**
- AW-HE2
- AW-HE120W/K
- AW-RP50

---

**Option**

**Wireless remote control**

**AW-RM50G**

(*“AA”, “R6” or “LR6” battery x 2 are not included.)

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**Optimal for both hanging and desktop installation.**

The mounting bracket and drop-prevention wire are standard accessories. Ceiling and desktop installation are both possible. Simply mount the bracket to the installation surface and secure the camera unit to the bracket using the horizontal fixing screws on the camera unit.

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**[Hanging installation]**

- **Tightening torque: 1.176 N-m (12 kgf-cm)**

*The AC adapter provided with the unit is not shown in the above figure.*
Ultra-wide shooting with a 95 ° horizontal viewing angle

High-quality zoom with Super Resolution technology

Up to 100 cameras can be controlled.

Full-HD MOS, 95 °1 ultrawide-angle lens, Intelligent zoom and digital pan-tilt for flexible image acquisition

Featuring a 1/4.37 type (effective size) 3.9 mega pixels MOS sensor and ultrawide-angle lens with 95 °1 horizontal viewing angle. The Intelligent Zoom enlarges the picture two times normal size while maintaining high image resolution. When combined with the digital zoom, images can be enlarged up to four times.2 This model is suitable for a variety of image acquisition uses ranging from wide-area shooting to telephoto.

Digital pan/tilt

When zooming, the image area chosen by the AW-RP120G3 and AW-RP503 or wireless remote control can be moved within the shooting range.

The image in a frame can be freely moved while maintaining the zoom condition.

Supporting IP to simplify connection and setup, and ensures comfortable operation.

IP control for easy connection and setup

IP connection allows control of up to 100 x AW-HE2 units from an AW-RP120G3, AW-RP503 or a PC via a switching hub. IP connection also allows one AW-HE2 to be controlled simultaneously from up to five AW-RP120G and AW-RP50 units.

IP image monitoring supported*4

Features an image compression and IP transmission LSI. The IP image output function allows transmission of images from one camera to one terminal through IP networks. When combined with IP control, the camera can be controlled from a distant location.

Digital pan/tilt

When zooming, the image area chosen by the AW-RP120G3 and AW-RP503 or wireless remote control can be moved within the shooting range.

The image in a frame can be freely moved while maintaining the zoom condition.

Other features

Dynamic Range Strech (DRS)

Minimizes blown highlights and blocked shadows to deliver clear images in a wide range of applications.

Setting camera menus with a PC

Camera menus can be set up via a web browser by connecting the AW-HE2 to a PC.

Wireless remote controller for easy operation (option)

Up to 4 cameras can be controlled by an optional wireless remote controller (AW-RM50G). The basic operations and menu settings can be done by using the wireless remote controller.
IP Connection and Control of Up to 100 Remote Cameras. Highly Functional Remote Controller with New Joystick and Other Operating Enhancements.

- **IP connection**
  
  Up to 100 remote cameras can be connected and controlled via a switching hub. Automatic IP allocation simplifies the configuration of large-scale systems. In addition allows five AW-RP50 controllers to simultaneously control one remote camera.

- **Serial control compatibility**
  
  Up to five remote cameras can be connected and controlled. Also compatible with existing systems, and an RS232C port enables external control.

- **Linkage with AW-HS50**
  
  IP connection allows linking with an AW-HS50 Compact Live Switcher, for a highly efficient operating environment.

- **Newly designed control panel**
  
  Features a pan/tilt joystick, seesaw zoom lever, focus dial, and iris dial. A special speed adjustment dial is provided for each of the pan/tilt, zoom and focus functions.

- **Tracing memory**
  
  The remote camera operations (pan, tilt, zoom, focus, iris, and white balance modes) can be memorized and recalled. Up to ten memory items can be stored for each camera.

- **Preset memory**
  
  Up to 100 camera angle settings (pan, tilt, zoom operation) can be registered and retrieved for each camera to greatly simplify a variety of camera controls.

- **Preset batch retrieval function**
  
  By creating groups of any desired preset memories (up to four groups), multiple camera angle settings (up to ten cameras) can be retrieved in a single batch. This enables one-touch control of routine operations.

- **Camera Image Quality Adjustment**
  
  Equipped with an AWB button for automatic white balance, and an ABB button for automatic black balance. Dedicated dials allow pedestal and gain adjustment for Rch and Bch. Colors can also be easily adjusted by manual control.

- **Direct Selection Buttons**
  
  Ten camera selection buttons are provided. Also, numerical buttons from 1 to 50 and a page button enable quick recall of 100 preset memories and 10 tracing memories.

- **Settings can be backed up on a SD memory card. This also allows settings to be copied to other controllers.**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>DC12 V ±10 % (AC adaptor provided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption</td>
<td>0.5 A (With DC12 V)</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 1.1 kg (Approx. 2.4 lb)</td>
</tr>
<tr>
<td>Dimensions (W × H × D)</td>
<td>210 mm × 67 mm × 177 mm (8-1/4 inches × 2-9/16 inches × 6-15/16 inches)</td>
</tr>
</tbody>
</table>

- AC adaptor is required separately.

**Compact, easy-to-operate remote controller**

- **Up to 100 AW-HE60* and/or AW-HE120* and/or AW-HE2* units can be controlled by AW-RP50 via IP and Ethernet hubs**

- **Up to 5 cameras/pan-tilt heads can be controlled via serial connection**

- **Camera configuration and image quality can be adjusted by camera menu**

- **Up to 100 pre-set memories are available**

- **Compact panel design for easy control**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>DC12 V ±10 % (AC adaptor provided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption</td>
<td>0.5 A (With DC12 V)</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 1.1 kg (Approx. 2.4 lb)</td>
</tr>
<tr>
<td>Dimensions (W × H × D)</td>
<td>210 mm × 67 mm × 177 mm (8-1/4 inches × 2-9/16 inches × 6-15/16 inches)</td>
</tr>
</tbody>
</table>

- AC adaptor, Power cable

- When installing additional cameras, it is necessary to upgrade the version if the cameras were manufactured before October 2012. For more information, contact your dealer.

* See the system configuration chart on page 16 to confirm the applicable cameras and pan-tilt heads for the remote controller.
Remote Operation Panel

AK-HRP200G

(Rear View)

- AC adapter (DC12 V) is required separately when it controls remote camera directly.
- There is the case units require firmware upgrade.

For details, see “Support & Download” on the Panasonic website (http://pro-av.panasonic.net/en/).

Compact Remote Operation Panel Supporting IP Control

- Remote Operation of Studio Handy Camera and Remote Camera
  The camera can be remotely operated via serial control or IP control. In addition to the AK-HC3800** Studio Handy Camera, it is also possible for Panasonic multipurpose cameras, HD convertible cameras, and HD integrated cameras.

- Compact 6U Size
  The unit is compact, with a width of 92 mm and a 6U height suitable for easy rack mounting.

- ROP Menu/Camera Menu Setting
  The menu can be displayed on a monitor connected to the Camera Control Unit, so detailed camera settings can be made by operating the Remote Operation Panel.

- Joystick Control Lever
  The joystick control lever enables fine manual iris/pedestal adjustment.

- SD Memory Card Slot
  Scene files, user files** and lens file** can be saved an to a SD memory card. SD memory cards can also be used for firmware upgrades.**

- ** When power is supplied from the camera control unit.
- ** Only studio handy camera can handle.
- ** External power supply (DC 12 V) required when LAN cable is used.

<table>
<thead>
<tr>
<th>Power supply</th>
<th>DC12 V ±10 % (AC adaptor provided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption</td>
<td>2.0 A (With DC12 V input)</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 1.3 kg (Approx. 2.87 lb)</td>
</tr>
<tr>
<td>Dimensions (W × H × D)</td>
<td>92 mm × 308 mm × 55 mm</td>
</tr>
<tr>
<td></td>
<td>(3-5/8 inches × 12-1/8 inches × 2-3/16 inches) [excluding protrusions]</td>
</tr>
</tbody>
</table>

A Compact and High Performance Live Switcher with Multi-View Capability

- 5 inputs and 3 outputs
  IN: SDI × 4, DVI-D × 1
  OUT: SDI × 3, DVI-D × 1

- HD/SD SDI and DVI-D input and output included

- MultiViewer display functionality comes installed as standard

- Audio level meter display function

- Bus transition functions

- Frame synchronizers on all inputs

- PinP, AUX Bus, Frame Store and Keyer functions also included

<table>
<thead>
<tr>
<th>Power supply</th>
<th>DC10.8 V to DC16 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption</td>
<td>1.5 W</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 0.4 kg (Approx. 0.88 lb)</td>
</tr>
<tr>
<td>Dimensions (W × H × D)</td>
<td>145 mm × 30 mm × 85 mm [5-11/16 inches × 1-7/16 inches × 3-3/8 inches] (excluding protrusions)</td>
</tr>
</tbody>
</table>

Protocol Converter

AW-IF400G

(Rear View)

Enables various combinations, of a pan-tilt head and control panel

- Pan-tilt head (AW-PH400) can be controlled by controllers (AW-RP120G, AW-RP50)
- By using protocol converter AW-IF400G, control distance between pan-tilt head and controllers (AW-RP120G/AW-RP50) can be extended up to 1 500 m
- AC Adaptor is required separately

<table>
<thead>
<tr>
<th>Power supply</th>
<th>DC10.8 V to DC16 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption</td>
<td>1.5 W</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 0.4 kg (Approx. 0.88 lb)</td>
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<td>Dimensions (W × H × D)</td>
<td>145 mm × 30 mm × 85 mm [5-11/16 inches × 1-7/16 inches × 3-3/8 inches] (excluding protrusions)</td>
</tr>
</tbody>
</table>

AC Adaptor

AW-PS550

This AC adaptor is designed to be used with HD convertible cameras, multi-purpose cameras and their peripherals.

<table>
<thead>
<tr>
<th>Power input</th>
<th>AC100 V to 240 V/3.3 A, 47-63 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power output</td>
<td>DC12 V/3.5 A, 42 W with over-current protect circuit</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 0.3 kg (Approx. 0.7 lb)</td>
</tr>
<tr>
<td>Dimensions (W × H × D)</td>
<td>52 mm × 34.5 mm × 118 mm [2-1/16 inches × 1-1/8 inches × 4-5/16 inches] (excluding protrusions)</td>
</tr>
<tr>
<td>Accessory</td>
<td>Power cable × 1</td>
</tr>
</tbody>
</table>

* See the system configuration chart on page 16 to confirm the applicable cameras and pan-tilt heads for the remote controller.
This Versatile System Lineup Supports a Variety

**HD Remote Camera**
- **Multi-Purpose Camera**
  - AK-HC1800G
    - 2/3 type 2.2 mega pixels 3CCD
  - AK-HC1500G
    - 2/3 type 1 mega pixels 3CCD

**Pan-tilt Head**
- **Indoor Pan-tilt Head**
  - AW-PH360
    - Pan: Approx. ±150 °, Tilt: Approx. ±95 °
    - Maximum pan speed (30 °/s) / Maximum tilt speed (25 °/s)
    - Stop accuracy ±3 arcminutes (0.05 °)
    - Quietness: Under NC30 (at 30°/s)
    - Maximum load: Approx. 4 kg (Approx. 8.8 lb)
  - AW-PH405
    - Pan: Approx. ±150 °
    - Maximum pan speed 45 °/s
    - Stop accuracy ±3 arcminutes (0.05 °)
    - Quietness: Under NC35 (at 30 °/s)
    - Maximum load: Approx. 15 kg (Approx. 33.1 lb)
  - AW-PH400
    - Pan: Approx. ±200 °
    - Maximum pan speed 90 °/s (variable speed)
    - Stop accuracy ±30 arcseconds (0.008 °)
    - Quietness: Under NC30 (at 30 °/s)
    - Maximum load: Approx. 8 kg (Approx. 17.6 lb)
  - AW-PH650
    - Pan: Approx. ±160 °, Tilt: Approx. ±95 °
    - Maximum pan speed 20 °/s (variable speed)
    - Stop accuracy ±5 arcminutes (0.08 °)
    - Quietness: Under NC40 (at 20 °/s)
    - Maximum load: Approx. 10 kg (Approx. 22 lb)
  - Outdoor Pan-tilt Head
    - AW-PH650
      - Heater, wiper and defroster functions for the housing can be controlled by the controller

**Multi-interface Cable**
- AW-CA20T6G

**Control Cable**
- Control Cable (LAN Cable/CAT-5 or faster)
- Control Cable
- Ethernet Cable (LAN Cable)
of Remote Acquiring.

**IP Control**

**Controller**

- **Remote Operation Panel**
  - **AK-HRP200G**
  - Max.1 000 m

- **Remote Camera Controller**
  - **AW-RP120G**
    - Maximum 100 preset positions
    - Up to 5 cameras/pan-tilt heads may be controlled via serial connection.
    - Up to 100 HD Integrated Camera units can be controlled via IP.

- **Remote Camera Controller**
  - **AW-RP50**

**HD Remote Camera**

- **HD Integrated Camera**
  - **AW-HE120W/K**
    - 1/3 type Full-HD 3MOS
  - **AW-HE60S/H**
    - 1/3 type Full-HD MOS

- **HD Integrated Camera**
  - **AW-HE2**
    - 1/4.37 type 3.9 M MOS
    - Cannot be controlled from the AK-HRP200G.

- **HD Integrated Camera**
  - **AW-HE20**

**HUB**

- **Protocol Converter**
  - **AW-IF400G**
    - Max.1 000 m

**Compact Live Switcher**

- **AW-HS50**
  - 5 inputs and 3 outputs (SDI standard)

Connecting with the remote camera controller AW-RP120G/RP50 via IP, realizes efficient operation enabling display of camera setting information, acquisition of tally information, selection of bus images, and switching parameters can be realized.

- Detailed camera settings can be made by operating the ROP menu.
- Built-in SD memory card slot.

- When connecting directly, please use a crossover cable. When connecting via hub/switch, please use a straight cable.

- 1 The length of cable can be extended up to 1 000 m by using an external power supply. For details, please contact sales representative.
- 2 AC Adaptor(DC12 V) is required separately when it controls remote cameras directly.
- 3 AC Adaptor(DC12 V) is required separately.
- 4 When the unit is used without a pan-tilt head, AC Adaptor(DC12 V) is required separately.
- 5 There is a possibility of requiring software update. For details, please contact sales representative.

*1 The length of cable can be extended up to 1 000 m by using an external power supply. For details, please contact sales representative.
*2 AC Adaptor(DC12 V) is required separately when it controls remote cameras directly.
*3 AC Adaptor(DC12 V) is required separately.
*4 When the unit is used without a pan-tilt head, AC Adaptor(DC12 V) is required separately.
*5 There is a possibility of requiring software update. For details, please contact sales representative.
Supporting IP to simplify connection and setup, and ensures comfortable camera operation.

### Remote Controller

**Up to 19 units can be controlled via IP**

Remote Operation Panel
AK-HRP200G
- Detailed camera settings can be made by operating the ROP menu.
- Built-in SD memory card slot

- Operation and setting can be done web browser using.
- Displays live screens (AW-HE60S/H, HE2 only)
- IP images can be monitored on a mobile device (iPhone, iPad, Android).

**Up to 100 units can be controlled via IP**

Remote Camera Controller
AW-RP120G

Remote Camera Controller
AW-RP50

- Remote Operation Panel
AK-HRP200G
- Remote Camera Controller
AW-RP50

Control using web browser

- Operation and setting can be done web browser using.
- Displays live screens (AW-HE60S/H, HE2 only)
- IP images can be monitored on a mobile device (iPhone, iPad, Android). The camera can be remotely controlled (AW-HE60S/H only)

**Direct camera control**

Wireless remote control
AW-RM50G
- Up to four units can be registered and switched for use.

### HD Integrated Camera

**HD Integrated Camera**

**AW-HE120W/K**
- 1/3 type Full-HD 3MOS

**AW-HE60S/H**
- 1/3 type Full-HD MOS

**AW-HE2**
- 1/4.3’’ type 3.9M MOS

- Cannot be controlled from the AK-HRP200G.

### Web browser Operating Environment

<table>
<thead>
<tr>
<th>OS</th>
<th>Browser</th>
<th>OS</th>
<th>Browser</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microsoft Windows 7</td>
<td>Internet Explorer 8/9.0</td>
<td>Mac OS 10.5</td>
<td>Safari 5.0.6</td>
</tr>
<tr>
<td>Professional SP1</td>
<td>Internet Explorer 7.0</td>
<td>Mac OS 10.6</td>
<td>Safari 5.1.7</td>
</tr>
<tr>
<td>64bit/32bit†</td>
<td>Internet Explorer 6.0/8.0</td>
<td>Mac OS 10.7</td>
<td>Safari 5.1.7 (AW-HE60) / 6.0 (AW-HE2)</td>
</tr>
<tr>
<td>Microsoft Windows</td>
<td>Internet Explorer 10†</td>
<td>Mac OS 10.8</td>
<td>Safari 6.0.2 (AW-HE60) / 6.0 (AW-HE2)</td>
</tr>
<tr>
<td>Vista Business SP2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP2 32bit†</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microsoft Windows XP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Edition SP3 /</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional SP3†</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microsoft Windows 8</td>
<td>Internet Explorer 7.0†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pro 64bit/32bit†</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- †Cannot be used in Windows XP compatibility mode.
- †Cannot be used by the 64bit version of Internet Explorer.
- †2 AW-HE120W/K only
- †4 Not supported by the Microsoft Windows XP Professional x64 Edition.
- †5 There is the case units require firmware upgrade. Please use Internet Explorer for the desktop. (Internet Explorer in the Windows UI is not supported).
- †6 AW-HE60SN/HN only
- †7 AW-HE60SN/HN, AW-HE2 only
- †8 Verification model: Panasonic TOUGHPAD FZ-A1

* For latest information on supported OS / browser, please refer to the ‘service and support’ on the Panasonic Website(http://pro-av.panasonic.net/)

*1 Cannot be used in Windows XP compatibility mode.
*2 Cannot be used by the 64bit version of Internet Explorer.
*3 AW-HE120W/K only
*4 Not supported by the Microsoft Windows XP Professional x64 Edition.
*5 There is the case units require firmware upgrade. Please use Internet Explorer for the desktop. (Internet Explorer in the Windows UI is not supported).
*6 AW-HE60SN/HN only
*7 AW-HE60SN/HN, AW-HE2 only
*8 Verification model: Panasonic TOUGHPAD FZ-A1
Specifications

<table>
<thead>
<tr>
<th>Power Requirements</th>
<th>AK-HC1800G</th>
<th>DC 12V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Consumption</td>
<td>17 W</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0°C to 40°C (32°F to 104°F)</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20°C to 60°C (-4°F to 140°F)</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 1.5 kg (Approx. 3.3 lbs)</td>
<td></td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>90 mm x 117 mm x 160 mm (3-9/16 inches x 4-5/8 inches x 6-5/16 inches) (excluding protrusions)</td>
<td></td>
</tr>
<tr>
<td>Image Sensors</td>
<td>2/3 type 2.2 mega pixels IT, CCDx3</td>
<td>2/3 type 1.0 mega pixels IT, CCDx3</td>
</tr>
<tr>
<td>Total Number of Pixels</td>
<td>2 010(H) x 1 120(V)</td>
<td>1 370 (H) x 744 (V)</td>
</tr>
<tr>
<td>Effective Number of Pixels</td>
<td>1 920(H) x 1 080(V)</td>
<td>1 280 (H) x 720 (V)</td>
</tr>
<tr>
<td>Image Sensing Method</td>
<td>GBR Image sensing method</td>
<td></td>
</tr>
<tr>
<td>Lens Mount</td>
<td>2/3 type bayonet mount</td>
<td></td>
</tr>
<tr>
<td>Optical Prism</td>
<td>F1.4 prism</td>
<td></td>
</tr>
<tr>
<td>Optical Filter</td>
<td>ND: CLEAR, 1/4, 1/16, 1/64</td>
<td></td>
</tr>
<tr>
<td>M.T.F.</td>
<td>50 % (typ) (27.5 MHz)</td>
<td></td>
</tr>
<tr>
<td>Gain</td>
<td>Maximum 72 dB by using gain up circuit, CCD accumulation and horizontal/vertical addition</td>
<td></td>
</tr>
<tr>
<td>S/N</td>
<td>60 dB (typ)</td>
<td>More than 54 dB</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>F10: 2 000 lx, 3 200 K white reflection rate 89.9 % (1080/59.94i)</td>
<td>F10: 2 000 lx, 3 200 K white reflection rate 89.9 %</td>
</tr>
<tr>
<td>F11: 2 000 lx, 3 200 K white reflection rate 89.9 % (1080/50i)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum Illumination</td>
<td>0.015 lx (F1.4/68 dB)</td>
<td></td>
</tr>
<tr>
<td>Video Output</td>
<td>HD SDI (BNC x 1)</td>
<td></td>
</tr>
<tr>
<td>SYNC input</td>
<td>SYNC input (GL input 3 value SYNC/BB)</td>
<td></td>
</tr>
<tr>
<td>Lens Connector 1</td>
<td>Iris control (HIROSE: HR10A-10R12SC)</td>
<td></td>
</tr>
<tr>
<td>Lens Connector 2</td>
<td>Zoom/ Focus control (HIROSE: HR10A-10R12PC)</td>
<td></td>
</tr>
<tr>
<td>Standard Accessories</td>
<td>Lens cap, Filter, Mounting screw for wire (inch screw: 1/4-20UNC), Flat washer (inch screw), Spring washer (inch screw)</td>
<td></td>
</tr>
</tbody>
</table>

Dimensions

(Front)

(Side)

(Top)

(Bottom)

Rear view

Zoom/focus connector

Remote connector

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Signal</th>
<th>AK-HC1800G</th>
<th>AK-HC1500G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Focus control selection</td>
<td>GL GND</td>
<td>GL GND</td>
</tr>
<tr>
<td>2</td>
<td>Zoom control selection</td>
<td>NC</td>
<td>TC in</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>NC</td>
<td>NC</td>
</tr>
<tr>
<td>4</td>
<td>Forcible iris closing</td>
<td>TX_N</td>
<td>TX_N</td>
</tr>
<tr>
<td>5</td>
<td>Iris control</td>
<td>RX, N</td>
<td>RX, N</td>
</tr>
<tr>
<td>6</td>
<td>=Voltage</td>
<td>DC12 V</td>
<td>GL in</td>
</tr>
<tr>
<td>7</td>
<td>COM</td>
<td>TX, P</td>
<td>TX, P</td>
</tr>
<tr>
<td>8</td>
<td>Focus control</td>
<td>RX, P</td>
<td>RX, P</td>
</tr>
<tr>
<td>9</td>
<td>Zoom control</td>
<td>GND</td>
<td>GND</td>
</tr>
<tr>
<td>10</td>
<td>Iris control selection</td>
<td>TX, N</td>
<td>TX, N</td>
</tr>
<tr>
<td>11</td>
<td>COM +Voltage</td>
<td>GND</td>
<td>GND</td>
</tr>
<tr>
<td>12</td>
<td>COM Voltage</td>
<td>GND</td>
<td>GND</td>
</tr>
</tbody>
</table>

* The photograph shows AK-HC1500G.
## Specifications

### Power Requirements
- **DC 12 V**

### Power Consumption
- **18.5 W**

### Operating Temperature
- **-10°C to 45°C (-14°F to 113°F)** (Preheating is necessary for activation below 0°C)

### Allowable Humidity Range
- **20 % to 90 %**

### Storage Temperature
- **-20°C to 60°C (4°F to 140°F)**

### Weight
- Approx.1.2 kg (Approx.2.65 lbs)

### Dimensions (W x H x D)
- **83 mm (3-1/4 inches)**
- **104.5 mm (4-1/8 inches)**
- **34 mm (1-1/32 inches)**
- **77 mm (3-1/32 inches)**

### Lens Mount
- **Mounting screws (Inch Screws)**
  - 1/4-20UNC, Depth: 10mm (3/8 inches)

### Optical System
- **Dichroic prism optical system, F1.4**

### Electronic Shutter Speed
- **59.94 Hz**
- **1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, ELC, Syncro-scan (61.19 Hz to 1466 Hz)**
- **50 Hz**
- **1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, ELC, Syncro-scan (50.99 Hz to 1479 Hz)**

### Color Bar
- **59.94 Hz**
- **SMPTE**
- **50 Hz**
- **FULL**

### Output Format
- **59.94 Hz**
- **1080/59.94i*, 720/59.94p*, 480/59.94i**
- **50 Hz**
- **1080/50i*, 720/50p*, 576/50i**

### Standard Illumination, Color Temperature
- **2 000 lx (F10, 3 200 K)**

### Camera Output Format
- **SD Format**
- **Switched by menu**
- **Continuous**
- **59.94 Hz**
- **VIDEO OUT : 1.0 V(p-p)/75 Ω**
- **Pu/Pu : 0.7 V(p-p)/75 Ω**
  - **Y**
  - **P/Pr : 0.286 V(p-p)/75 Ω (burst)**
  - **C**
  - **0.3 V(p-p)/75 Ω (burst)**
  - **(D-sub 50 pin×1)**

### White Balance
- **Auto**
  - **R/B painting**
- **AWB A/B (R/B painting)**
- **ATW 3 200 K/5 600 K preset**

### Black Balance
- **Internal/External synchronization BB (BNC×1, D-sub 50 pin×1)**

### Registration
- **0.05 % (Entire screen, excluding effects of lens)**

### Dimensions (AW-HE870N/E)

#### (Front)

![Dimensions Diagram](image)

#### (Side)

![Dimensions Diagram](image)

#### (Top)

![Dimensions Diagram](image)

#### (Bottom)

![Dimensions Diagram](image)

### Rear View

![Rear View Diagram](image)

* Optional card (AW-HHD870) is required.
### Specifications

<table>
<thead>
<tr>
<th>AW-HE120WP/WE/KP/KE</th>
<th>Scene File</th>
<th>Output Format</th>
<th>Synchronization System</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scene1, Scene2, Scene3, Scene4</td>
<td>HD: 1080/59.94i<em>2, 1080/59.94c, 1080/50i</em>2, 1080/50p, 720/50i, 720/50p</td>
<td>Internal/External synchronization (BBS/Tri-level sync)</td>
</tr>
<tr>
<td></td>
<td>SD: 576/50p<em>2, 576/50i, 480/59.94i</em>2, 480/59.94c</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Power Requirements
- DC 12 V (AC adaptor supplied)
- 1.75 A

#### Operating Temperature
- 0°C to 40°C (32°F to 104°F)
- Allowable Humidity Range: 35% to 90% (no condensation)
- Storage Temperature: -20°C to 50°C (-4°F to 122°F)

#### Dimensions
- Image Sensors: 1/3 type Full-HD 3MOS
- Lens: Motorized 20x zoom, F1.6 to F3.4 (f=4.5 mm to 90 mm; 35 mm equivalent: 32.13 mm to 642.5 mm)
- ND Filter: CLEAR, 1/4, 1/16, 1/64
- Focus: Switching between auto and manual
- Focus distance: Entire zooming range: 800 mm, Wide end: 400 mm
- Color Separation Optical System: 3MOS
- Minimum Illumination: 7 lx (50 IRE, F1.6, +18 dB)
- Horizontal Resolution: 1000 TV lines Type (Center area)
- Gain Selection: Auto. 0 dB to 18 dB
- Frame Mix: 0 dB, 6 dB, 12 dB, 18 dB, 24 dB
- Electronic Shutter Speed: 59.94 Hz, 1/100, 1/250, 1/1000, 1/2000, 1/4000, 1/10000
- SynchroScan: 59.94 Hz
- Gamma: 60.17 Hz to 644.26 Hz

#### Pan/Tilt Operation Speed
- Panning Range: ±175°
- Tilting Range: -30° to 210°
- Quietness: NC35

#### White Balance
- AWB A, AWB B, ATW, 3200K, 5600K

#### Input/Output
- HDMI x1
- HD/SD SDI OUT
- VIDEO OUT
- HD/SD ANALOG OUT
- Camera: HDMI, BNC x 1
- BNC x 1 NTSC/PAL 1.0 V [p-p] / 75 Ω
- Y/Pb/Pr or R/G/B D-sub 15 pin x 1
- LAN connector for IP control (RJ-45)
- CONTROL IN RS422A (RJ-45)

#### Mount bracket for installation surface (Hanging/ Desktop)
- Drop-prevention wire, Drop-prevention wire mounting screw (already attached to the unit), Bracket mounting screws (bind-head) M4 × 10 mm, Main unit mounting screw (with flat washer, spring washer) M3 × 6 mm, Cable cover, Power cable (1.8 m [5.9 ft]), AC adaptor

#### Scene File
- Scene1, Scene2, Scene3, Scene4

#### Input Connector
- DC 12 V IN, G/L IN (BNC×1)³
- *BBS (Black Burst Sync), Tri-level sync supported

#### Standard Accessories
- AWB A, AWB B, ATW, 3.200K, 5.600K

---

#### Dimensions

- **(Front)**
  - Unit mounting area
  - Hole for mounting the mount bracket
  - Hook for mounting the drop prevention wire
  - Mount bracket
  - Hole for checking the positioning

- **(Side)**
  - Through hole for cable and 3.5 mm jack screw

#### Rear view

1. Cannot be set when using 1080/59.94i nor 1080/50i formats.
2. When 1080/59.94p, 1080/50p, 480/59.94p or 576/50p mode is selected, a Progressive signal is output to HDMI and an Interlace signal is output to SDI and analog component outputs.
3. Supports BBS (Black Burst Sync) and Tri-level Sync. BBS does not allow locking of the color subcarrier.
4. To ensure more safety, AW-HE120WP/WE/KP/KE can be secured by using the direct ceiling mount bracket (WV-Q105).
**Specifications**

| AW-HE60SN/SE/HN/HE |  
|---|---|
| **Power Requirements** | FullAuto, Manual1, Manual2, Manual3 |
| DC 12 V (AC adaptor supplied) |  
| **Power Consumption** |  1.3 A (AW-HE60H), 1.4 A (AW-HE60S)  |
| **Operating Temperature** | -10°C to 40°C (32°F to 104°F) |
| **Allowable Humidity Range** | 20 % to 90 % (no condensation) |
| **Storage Temperature** | -20°C to 50°C (-4°F to 122°F) |
| **Weight** | Approx. 1.4 kg (Approx. 3.1 lbs) |
| **Dimensions (W x H x D)** | (excluding protrusions, cable cover, direct ceiling mount bracket) |
| 160 mm x 178 mm x 166 mm | (6-5/16 inches x 7 inches x 6-9/16 inches) |

**Image Sensors**

- Motorized 18x zoom, F1.6 to F2.8
- (f=4.7 mm to 84.6 mm; 35 mm equivalent: 36.9 mm to 664.5 mm)

**Focus**

- Switching between auto and manual

**Focus Distance**

- Entire zooming range: 1.0 m (3.3 ft.), Wide end: 30 cm (0.98 ft.)

**Color Separation Optical System**

- On-chip color filter system

**Minimum Illumination**

- 3 lx (50 IRE, F1.6, 36 dB)

**Horizontal Resolution**

- 850 TV lines Typ (Center area)

**Gain Selection**

- Auto, 0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 15 dB, 18 dB

**Frame Mix**

- 0 dB, 6 dB, 12 dB, 18 dB

**Electronic Shutter Speed**

- 59.94 Hz: 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000

**Synchro Scan**

- 59.94 Hz: 60.24 Hz to 646.21 Hz

**Shutter Speed**

- 50 Hz: 50.20 Hz to 538.51 Hz

**Gamma**

- Off, Normal (Low, Mid, High), Cinema

**Lens**

- Motorized 18x zoom, F1.6 to F2.8

**White Balance**

- AWB A, AWB B, ATW

**Color Separation Optical System**

- On-chip color filter system

**Focus**

- Switching between auto and manual

**Focus Distance**

- Entire zooming range: 1.0 m (3.3 ft.), Wide end: 30 cm (0.98 ft.)

**Color Separation Optical System**

- On-chip color filter system

**Minimum Illumination**

- 3 lx (50 IRE, F1.6, 36 dB)

**Horizontal Resolution**

- 850 TV lines Typ (Center area)

**Gain Selection**

- Auto, 0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 15 dB, 18 dB

**Frame Mix**

- 0 dB, 6 dB, 12 dB, 18 dB

**Electronic Shutter Speed**

- 59.94 Hz: 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000

**Synchro Scan**

- 59.94 Hz: 60.24 Hz to 646.21 Hz

**Shutter Speed**

- 50 Hz: 50.20 Hz to 538.51 Hz

**Gamma**

- Off, Normal (Low, Mid, High), Cinema

**Lens**

- Motorized 18x zoom, F1.6 to F2.8

**White Balance**

- AWB A, AWB B, ATW

**Color Separation Optical System**

- On-chip color filter system

**Focus**

- Switching between auto and manual

**Focus Distance**

- Entire zooming range: 1.0 m (3.3 ft.), Wide end: 30 cm (0.98 ft.)

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- On-chip color filter system

**Minimum Illumination**

- 3 lx (50 IRE, F1.6, 36 dB)

**Horizontal Resolution**

- 850 TV lines Typ (Center area)

**Gain Selection**

- Auto, 0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 15 dB, 18 dB

**Frame Mix**

- 0 dB, 6 dB, 12 dB, 18 dB

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- 59.94 Hz: 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000

**Synchro Scan**

- 59.94 Hz: 60.24 Hz to 646.21 Hz

**Shutter Speed**

- 50 Hz: 50.20 Hz to 538.51 Hz

**Gamma**

- Off, Normal (Low, Mid, High), Cinema

**Lens**

- Motorized 18x zoom, F1.6 to F2.8

**White Balance**

- AWB A, AWB B, ATW

**Color Separation Optical System**

- On-chip color filter system

**Focus**

- Switching between auto and manual

**Focus Distance**

- Entire zooming range: 1.0 m (3.3 ft.), Wide end: 30 cm (0.98 ft.)

**Color Separation Optical System**

- On-chip color filter system

**Minimum Illumination**

- 3 lx (50 IRE, F1.6, 36 dB)

**Horizontal Resolution**

- 850 TV lines Typ (Center area)

**Gain Selection**

- Auto, 0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 15 dB, 18 dB

**Frame Mix**

- 0 dB, 6 dB, 12 dB, 18 dB

**Electronic Shutter Speed**

- 59.94 Hz: 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000

**Synchro Scan**

- 59.94 Hz: 60.24 Hz to 646.21 Hz

**Shutter Speed**

- 50 Hz: 50.20 Hz to 538.51 Hz

**Gamma**

- Off, Normal (Low, Mid, High), Cinema

**Lens**

- Motorized 18x zoom, F1.6 to F2.8

**White Balance**

- AWB A, AWB B, ATW

**Color Separation Optical System**

- On-chip color filter system

**Focus**

- Switching between auto and manual

**Focus Distance**

- Entire zooming range: 1.0 m (3.3 ft.), Wide end: 30 cm (0.98 ft.)

**Color Separation Optical System**

- On-chip color filter system

**Minimum Illumination**

- 3 lx (50 IRE, F1.6, 36 dB)

**Horizontal Resolution**

- 850 TV lines Typ (Center area)
### Specifications

<table>
<thead>
<tr>
<th>AW-HE2P/E</th>
<th>Power Requirements</th>
<th>DC 5.0 V (AC adaptor supplied)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Consumption</td>
<td>3.6 W</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0°C to 40°C (32°F to 104°F)</td>
<td></td>
</tr>
<tr>
<td>Allowable Humidity Range</td>
<td>-10 % to 80 % (no condensation)</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-10°C to 60°C (14°F to 140°F)</td>
<td></td>
</tr>
<tr>
<td>Storage Humidity Range</td>
<td>0 % to 90 % (no condensation)</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>Approx.0.244 kg (Approx.0.538 lbs)</td>
<td></td>
</tr>
<tr>
<td>Dimensions (W × H × D)</td>
<td>80 mm x 118 mm x 138 mm (3-5/32 inches x 4-5/8 inches x 5-7/16 inches)</td>
<td></td>
</tr>
<tr>
<td>Image Sensors</td>
<td>1/4.37 type MOS</td>
<td></td>
</tr>
<tr>
<td>Effective pixels</td>
<td>Motion picture Approx.3.9 mega pixels</td>
<td></td>
</tr>
<tr>
<td>Lens</td>
<td>IA Approx.2x zoom, Digital Approx.4x zoom</td>
<td></td>
</tr>
<tr>
<td>Standard Illumination</td>
<td>F2.0 (f=2.15 mm, 35 mm equivalent: 18 mm)</td>
<td></td>
</tr>
<tr>
<td>Minimum Illumination</td>
<td>20 lx (1/60 in Auto mode)(AW-HE2P), 20 lx (1/50 in Auto mode)(AW-HE2E)</td>
<td></td>
</tr>
<tr>
<td>Horizontal Resolution</td>
<td>850 TV line Typ (Center area)</td>
<td></td>
</tr>
<tr>
<td>Electronic Shutter Speed</td>
<td>1/60 to 1/12000 (AW-HE2P), 1/50 to 1/12000 (AW-HE2E)</td>
<td></td>
</tr>
<tr>
<td>White Balance</td>
<td>ATW, AWB A, AWB B, Sunny, Cloudy, Indoor1, Indoor2, Fluorescent(TTL type)</td>
<td></td>
</tr>
<tr>
<td>Output Format</td>
<td>HD 1080/59.94p, 1080/59.94i, 1080/50p, 1080/50i, 720/59.94p, 720/50p, 576/50i, 480/59.94p</td>
<td></td>
</tr>
<tr>
<td>SD 576/50p, 480/59.94p</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Synchronization System</td>
<td>Internal synchronization</td>
<td></td>
</tr>
<tr>
<td>Video Output Connector</td>
<td>HDMI x 1</td>
<td></td>
</tr>
<tr>
<td>Audio Output Connector</td>
<td>Micro-B terminal x 1, Power supply function</td>
<td></td>
</tr>
<tr>
<td>USB</td>
<td>2 ch stereo</td>
<td></td>
</tr>
<tr>
<td>Network</td>
<td>10BASE-T, 100BASE-TX, RJ-45</td>
<td></td>
</tr>
<tr>
<td>Automatic recognition of straight/crossover cable</td>
<td>Network output image: JPEG, 640x480 (640x360) or 320x240 (320x180), up to 30fps (16:9 video is transmitted in the Letter Box format),</td>
<td></td>
</tr>
<tr>
<td>USB</td>
<td>Micro-B terminal x 1, Power supply function</td>
<td></td>
</tr>
<tr>
<td>(power supplied from the USB terminal when there is no power provided from DC input terminal)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microphone</td>
<td>2 ch stereo</td>
<td></td>
</tr>
<tr>
<td>Minimum Focus Distance</td>
<td>Approx. ±23°[IA Approx.2x zoom]</td>
<td></td>
</tr>
<tr>
<td>Approx. ±35°[Digital Approx.4x zoom]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pan Tilt Range</td>
<td>Approx. ±14°[IA Approx.2x zoom]</td>
<td></td>
</tr>
<tr>
<td>Approx. ±21°[Digital Approx.4x zoom]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Accessories</td>
<td>CD-ROM (Operating Instructions Basics, Operations and Setting), Drop-prevention wire, Drop-prevention wire mounting screw (with washer) M4 x 20 mm, pedestal, pedestal cover, pedestal mounting screws M4 x 20 mm, Cable Ties, Power cable, AC adaptor</td>
<td></td>
</tr>
</tbody>
</table>

### Dimensions

**Front**

- Height: 80 mm (3-5/32 inches)
- Width: 80 mm (3-5/32 inches)
- Depth: 56 mm (2-11/64 inches)

**Side**

- Height: 80 mm (3-5/32 inches)
- Width: 80 mm (3-5/32 inches)
- Depth: 30 mm (1-3/16 inches)

**Bottom**

- Height: 54 mm (2-1/8 inches)
- Width: 29 mm (1-9/64 inches)
- Depth: 70 mm (2-3/4 inches)

**Rear view**

- Dimensions:
  - Width: 88 mm (3-1/2 inches)
  - Height: 80 mm (3-5/32 inches)
  - Depth: 56 mm (2-11/64 inches)
Factories of AVC Networks Company have received ISO14001:2004-the Environmental Management System certification. (Except for 3rd party's peripherals.)