

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



Multi-Purpose Camera AK-HC1800G



Multi-Purpose Camera AK-HC1500G



HD Convertible Camera AW-HE870N/E



HD Integrated Camera AW-HE120WP/WE/KP/KE



HD Integrated Camera AW-HE60SN/SE/HN/HE



HD Integrated Camera AW-HE2P/E



The Versatile Lineup Meets Various Needs

Compact HD Cameras for Versatile Indoor and Outdoor Use



High-Quality Monitoring



Weather and Traffic Cameras



Sports

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



Multi-Purpose Camera

AK-HC1800G 2.2 mega pixels

(Lens not included)

HD Convertible Camera

AW-HE870N/E

(Lens not included)



Multi-Purpose Camera

AK-HC1500G 1 mega pixels

(Lens not included)



lecture



Studio Productions

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

for High-Quality Shooting

High-Quality Integrated Camera/Lens Unit with IP Control for Easy Setup in Various Locations



Halls/Theaters



Weddings

Convenient for capturing images at concerts, weddings and more



HD Integrated Camera

For indoor use

new

AW-HE60SN/SE [SDI Model]

HD Integrated Camera

For indoor use

AW-HE60HN/HE [HDMI Model]



AW-HE120KP/KE
[Black Model]

HD Integrated Camera

For indoor use

AW-HE120WP/WE [White Model]



HD Integrated Camera

For indoor use

new

AW-HE2P/E



Conference Halls



Lectures



Seminars

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

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)

- 2/3 type Lens Mount
- 2.2 M 3CCD
- Cine Gamma
- HD SDI output
- Intelligent Function
- DRS
- Electronic Extender
- 60Hz/50Hz switchable

HD 1080/59.94i, 50i, 30PsF, 29.97PsF, 25PsF, 24PsF, 23.98PsF



Multi-Purpose Camera

AK-HC1500G 1 mega pixels

(Lens not included)

- 2/3 type Lens Mount
- 1.0 M 3CCD
- Cine Gamma
- Variable frame rate
- HD SDI output
- DRS
- Electronic Extender
- 60Hz/50Hz switchable

HD 1080/60i, 59.94i, 50i, 30PsF, 29.97PsF, 25PsF, 24PsF, 23.98PsF, 720/60p, 59.94p, 50p

Optional Boards



Down Converter Board
AK-HDC1500G

Output:
SD SDI (BNC x 1),
SD analog (VBS) (BNC x 1)



HD SDI Output Board
AK-HHD1500G

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

System example

Remote Studio System

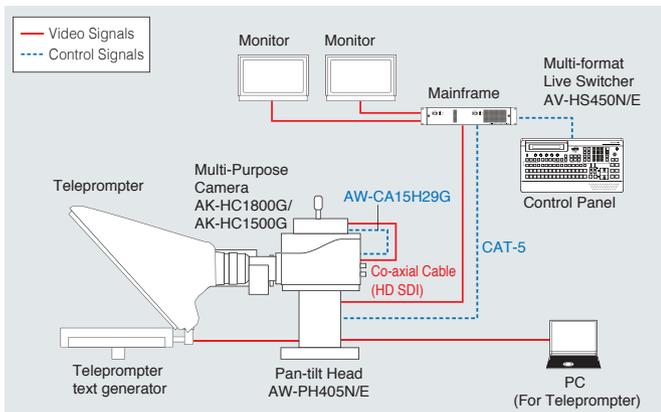
Content production at small, cost effective studios

Key Points

- Multi-format live switcher (AV-HS450N/E) can control cameras/pan-tilt heads. By adding a controller, you can control up to five cameras and pan-tilt heads.
- A teleprompter can be installed on the pan-tilt head (AW-PH405N/E).
- Quiet pan-tilt motion is ideal for shooting in a quiet studio.

[Key Products]

AK-HC1800G AW-PH405N/E AV-HS450N/E



Sporting Events

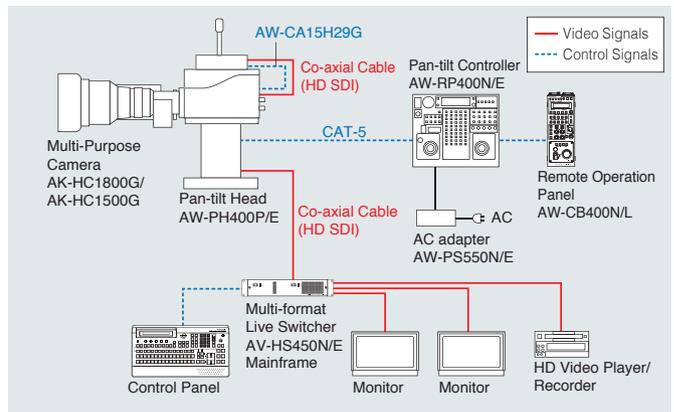
High speed and accurate camera operation for sports shooting

Key Points

- High speed (90 1/s) and accurate pan-tilt operation for sporting events
- Remote control ND filters, DRS, and low-latency image enhance sports production.

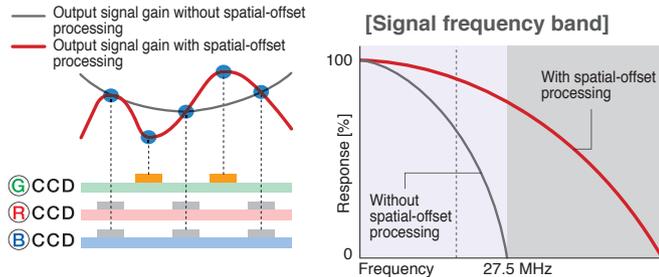
[Key Products]

AK-HC1800G AW-PH400P/E AV-HS450N/E AW-RP400N/E AW-CB400N/L



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.



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.

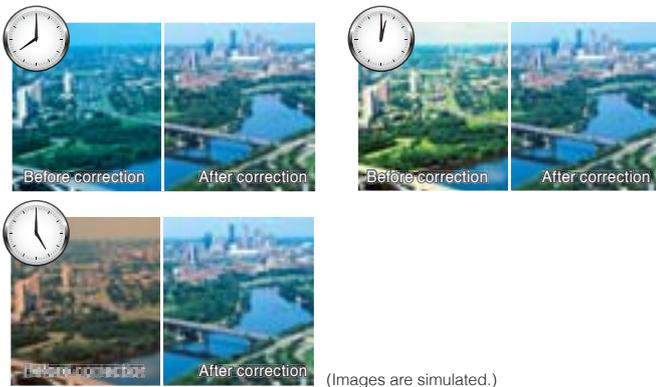
In addition to the conventional gain-up circuit, the AK-HC1500G and AK-HC1800G use CCD accumulation and horizontal/vertical addition to enable a gain increase of up to +72 dB (minimum illumination 0.015 lx).

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

● AK-HC1800G only

● Auto Tracking White Balance Function

This function automatically adjusts the white balance as the color temperature gradually changes during outdoors shootings. Images can be automatically adjusted depending on the shooting subject or time.

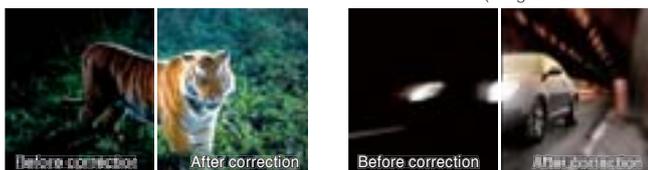


(Images are simulated.)

● 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.

(Images are simulated.)



Automatically controls variable gain in dark scenes

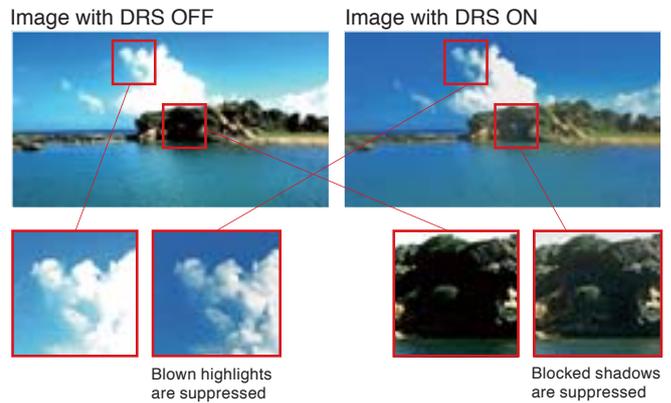
Favor movement mode for subjects in motion

*Note: Conditions for AGC are as follows: (1) AGC can only function when the camera is used outdoors. (2) A photometry area excluding certain areas (i.e. sky) must be specified. (3) AGC will respond gradually, but it will perform quickly when the power is turned on or when the filter is changed. (4) AGC will stop when the pan-tilt or lens are in use.

Dynamic Range Stretch (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.

● Images with the Dynamic Range Stretch (DRS) Effect



(Images are simulated.)

Features a Cine Gamma & Variable Frame Rate functions

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

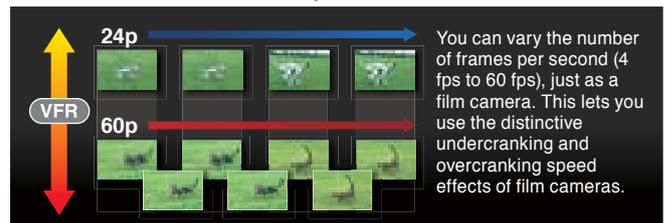
The AK-HC1800G/1500G come equipped with the cine gamma that reproduces cinematic expression with a film quality-like tone. In addition, the AK-HC1500G features a variable frame rate function that lets you set the number of frames shot per second, allowing for undercranking / overcranking for fast or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

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

(Images are simulated.)



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



(Images are simulated.)

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

In addition to the regular range extender (option), the electronic extender enables 2x magnification.

HD/SD-compatible 2/3 type 3CCD camera HD Box Camera with HD/SD Multi-Formats

HD Convertible Camera

AW-HE870N/E

(Lens not included)

2/3 type
Lens Mount

Progressive 3CCD

HD/SD

HD 1080/59.94i*, 50i*, 720/59.94p*, 50p*

SD 576/50i, 480/59.94i

* Optional card (AW-HHD870N/E) is required.



Option Card

HD/SD SDI output card
AW-HHD870N/E

■ With this optional card, AW-HE870N/E supports HD/SD SDI outputs.

System example

HD Video Conference System

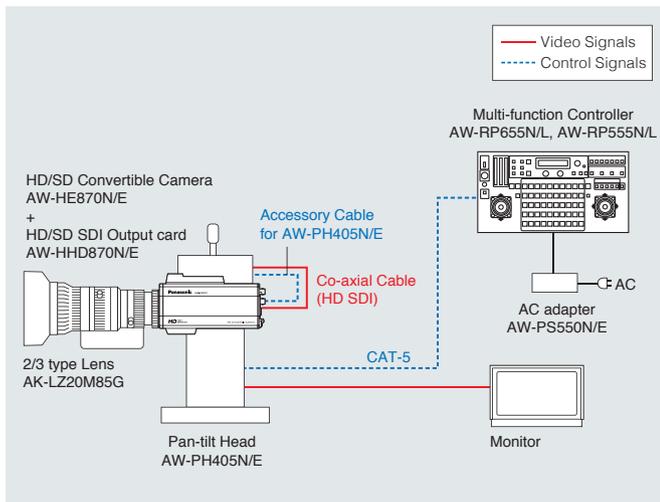
Quiet, accurate pan-tilt movement and high quality HD video images for video conference

■ Key Points

- Five cameras/pan-tilt heads with 50 preset positions can be controlled by one controller.
- High quality HD images can be provided.
- Maximum control distance is 1 000 m (control signal)

[Key Products]

AW-HE870N/E AW-PH405N/E AW-RP655N/L



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*1

AW-HE870N/E has the same operation and interfaces as Panasonic's conventional SD convertible camera series*1. The Panasonic current Pan/Tilt heads*2 and controllers*3 can be used with AW-HE870N/E. It can be helpful for system transition from SD to HD.



A pan tilt head AW-PH405N/E and AW-HE870N/E combination.

*1 Some functions require different operations from the SD cameras.

*2 Compatible models: AW-PH360N/L, PH400P/E, PH405N/E, PH650N/L, AW-PH400P/E does not support analog HD video signals.

*3 Compatible models: AW-RP555N/L and AW-RP655N/L as well as AW-RP400N/E, AW-CB400N/L and AW-RP50N/E. Some models may require a software update for use with the AW-HE870N/E. Please contact your Panasonic representative for more details.

Other features

● HD/SD SDI output card (AW-HHD870N/E) (Optional)

Installing the optional AW-HHD870N/E 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*4

AW-HE870N/E can support mixed HD/SD systems.

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

Optional Products (compatible with AK-HC1800G, AK-HC1500G, AW-HE870N/E)

Indoor Pan-Tilt Head

AW-PH360N/L



A cost effective compact pan-tilt head

- Pan angle: 300 ° (Maximum Pan speed 30 °/s), Tilt angle: 190 ° (Maximum Tilt speed 25 °/s)
- Quietness (Under NC30)
- Stop accuracy: under ±3 arcminutes (0.05 °)
- Maximum load: 4 kg
- Smooth starts and stops with soft landing function
- Maximum 50 presets memories
- Maximum control distance: 500 m from AW-RP400N/E
1 000 m from AW-RP655N/L, AW-RP555N/L, AW-RP50N/E
- Featuring RS-232C interface
- AW-PH360N/L requires AC Adaptor AW-PS550N/E.

Power supply	DC12 V
Power consumption	1.3 A (pan-tilt head only)
Weight	Approx. 3.5 kg (Approx. 7.7 lb)
Dimensions (WxHxD)	146 mm × 245 mm × 161.5 mm (5-3/4 inches × 9-5/8 inches × 6-3/8 inches) [excluding protrusions]
Maximum load	Approx. 4 kg (Approx. 8.8 lb)
Accessory	DC cable (Approx. 3 m), Camera cable

AW-PH405N/E



Usage example with AK-HC1500G



A compact and powerful indoor use pan-tilt head with max load 15 kg

- Pan range: 300 °, Tilt range: 300 °
- Maximum pan-tilt speed: 45 °/s (variable speed)
- Quietness: under NC35 (at 30 °/s)
- Stop accuracy: (±3 arcminutes) (0.05 °)
- Maximum load: 15 kg (including a camera, a lens and a teleprompter)
- 50 preset positions and 10 tracing memories (Maximum time: 300 seconds) are available when using the multi-function controller AW-RP655N/L*1
- Up to five camera systems can be controlled by Panasonic controllers (AW-RP655N/L, AW-RP555N/L, AW-RP400N/E*2, AW-RP50N/E)
- Maximum control distance:
1 500 m from AW-RP400N/E + AW-IF400G (optional protocol converter)
1 000 m from AW-RP655N/L, AW-RP555N/L, AW-RP50N/E
- A removable tally light is included
- RS-232C controllable (through Panasonic controllers)
- Professional motor drive lenses are supported.
- AC adaptor built in (power cable (2 m) included)

Power supply	AC 120 V (60 Hz), AC 220 to 240 V (50 Hz)
Power consumption	120 W
Weight	Approx. 10 kg (Approx. 22.0 lb)
Dimensions (WxHxD)	319 mm × 416 mm × 168 mm (12-9/16 inches × 16-3/8 inches × 6-5/8 inches) [excluding protrusions]
Maximum load	Approx. 15 kg (Approx. 33.1 lb)
Accessory	Camera cable (Approx. 0.6 m)

*1 You can't use tracing memories if you use the AW-RP400N/E and the AW-IF400G.

*2 The AW-IF400G is required if you use the AW-RP400N/E.

AW-PH400P/E



A quiet indoor use pan-tilt head with high speed for production use

- Pan range: 400 °, Tilt range: 300 °
- Maximum pan/tilt speed: 90 °/s (variable speed)
- Stop accuracy: (±30 arcseconds) (0.008 °)
- Quietness: Under NC30 (at 30 °/s) • Maximum load: Approx. 8 kg
- Maximum 10 tracing memories (with AW-RP400N/E)
- Special high speed protocol
- Tally lamp is included
- Maximum control distance: 500 m
(Maximum 1 000 m using the protocol converter AW-IF400G with AW-RP400N/E or AW-RP50N/E)
- Diagonal motion possible
- Teleprompter output
- Both broadcast ENG lenses and production MD lenses are acceptable
- AC adaptor built in (power cable (2 m) included)

Power supply	AC 120 V (60 Hz), AC 220 to 240 V (50/60 Hz)
Power consumption	145 W
Weight	Approx. 10.2 kg (Approx. 22.5 lb)
Dimensions (WxHxD)	315 mm × 534 mm × 188 mm (12-3/8 inches × 21 inches × 7-3/8 inches) [excluding protrusions]
Maximum load	Approx. 8 kg (Approx. 17.6 lb)
Maximum speed	90 °/s (30 °/s with a teleprompter)
Accessory	Camera cable (Approx. 0.6 m)

Outdoor Pan-Tilt Head

AW-PH650N/L



Waterproof design for stable shooting in a variety of weather conditions

- Pan range: 320 ° (±160 °), Tilt range: 50 ° to -95 ° (Maximum Pan and Tilt speed 20 °/s)
- Quietness (Under NC40) (at 30 °/s)
- Zoom pan-tilt function and heater wiper defroster function for the housing can also be controlled by the controller
- Maximum 50 presets memories
- Maximum load: Approx. 10 kg (including camera and lens)
- Maximum control distance: 1 000 m
- A camera housing, a AC adaptor and cables are included

AC adaptor



Power supply	AC 120 V (60 Hz), AC 220 to 240 V (50 Hz)
Power consumption	120 W

●Housing

Weight	Approx. 18 kg (Approx. 39.7 lb)
Dimensions (WxHxD)	246 mm × 314 mm × 685 mm (9-11/16 inches × 12-3/8 inches × 26-15/16 inches) [excluding protrusions]

●Pan-tilt Head

Weight	Approx. 19 kg (Approx. 41.9 lb)
Dimensions (WxHxD)	237 mm × 511 mm × 213 mm (9-5/16 inches × 20-1/8 inches × 8-3/8 inches) [excluding protrusions]
Accessory	Power cable: (Approx. 30 m) Multi cable: (Approx. 10 m) Camera cable: (Approx. 0.4 m)

●AC adaptor

Weight	Approx. 4.2 kg (Approx. 9.3 lb)
Dimensions (WxHxD)	200 mm × 131 mm × 280 mm (7-7/8 inches × 5-3/16 inches × 11-1/16 inches) [excluding protrusions]

2/3 type Lens

20x HD Zoom Lens AK-LZ20M85G



- Focal length: 8.5 mm-170 mm (F1.8-F2.7)
- Weight: Approx. 1.41 kg (Approx. 3.1 lb) [excluding lens hood]
- Dimensions (WxHxD): 114 mm × 91 mm × 170 mm (4-1/2 inches × 3-19/32 inches × 6-11/16 inches)

Cables

Name	Model	Connection equipments		Length	Note	
Pan-tilt cable kit	AW-CAK4H1G	AK-HC1800G, HC1500G	AW-PH360N/L, PH405N/E, PH400P/E	AK-HRP150G	0.7 m/3 m	
Pan-tilt cable	AW-CA15H29G	AK-HC1800G, HC1500G	AW-PH360N/L, PH405N/E, PH400P/E		0.7 m	When connected to AW-RP655N/L, RP555N/L, RP400N/E, RP50N/E using a cable.
Camera control cable	AW-CA50T8G	AW-HE870N/E	AW-CB400N/L		10 m	
Multi-interface Cable	AW-CA20T6G	AW-HE60HN/HE/SN/SE			1 m	When connected to AW-RP655N/L, RP555N/L, RP50N/E using a serial cable.

Smart operation with IP control

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

HD Integrated Camera

For indoor use

AW-HE120WP/WE/KP/KE

Full HD 3MOS	HD/SD	20x optical zoom	10x digital zoom
IP/Serial control	DRS	Turn-lock mounting mechanism	60Hz/50Hz switchable

HD	1080/59.94p (HDMI only), 59.94i, 50p (HDMI only), 50i, 720/59.94p, 50p,
SD	576/50p (HDMI only), 50i, 480/59.94p (HDMI only), 59.94i



AW-HE120WP/WE (White Model)
*Suspended (Hanging) style



AW-HE120KP/KE (Black Model)
*Stand-alone (Desktop) style



Option		<p>Wireless remote control AW-RM50G</p> <p>("AA", "R6" or "LR6" battery x 2 are not included.)</p>
		<p>Direct Ceiling Mount Bracket WV-Q105</p>

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-HE120WP/WE/KP/KE units can be controlled by AW-RP50N/E via IP connections when using Ethernet hubs.

[Key Products]

AW-HE120WP/WE/KP/KE AW-HS50N/E AW-RP50N/E

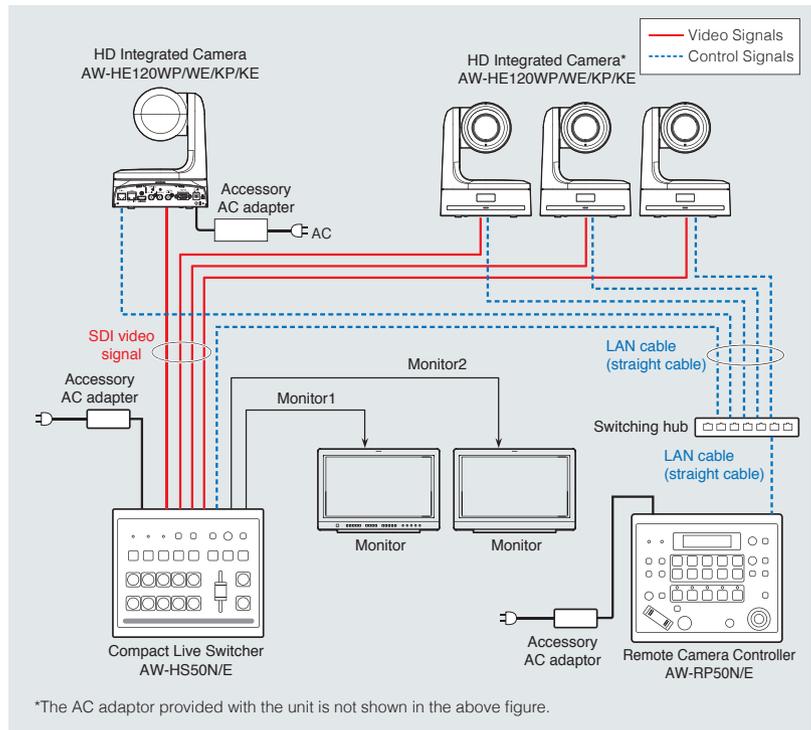
Optimal for both hanging and desktop installation.

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

Approx. 20°

Drop-prevention wire

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



Integrated Pan-tilt camera with 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.



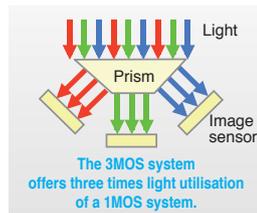
Compared with the previous AW-HE100 model

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.

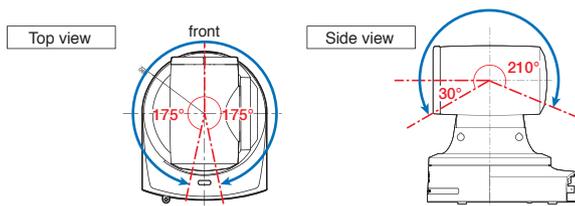


From wide angle to telescopic shots - the cameras deliver clear and crisp images for a wide range of applications. (Images are simulated.)

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

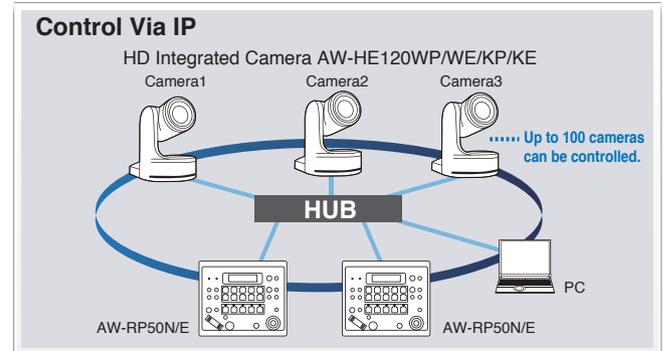
More smooth and natural movement is achieved for the pan-tilt operation. The pan-tilt head also allows a wide range* shooting, with a pan range of $\pm 175^\circ$ and a tilt range of -30° to 210° . The newly developed pan tilt drive provides high-speed operation at maximum 60°/s, excellent response from 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.



IP control provides easy connection and settings for comfortable camera control

Up to 100 x AW-HE120WP/WE/KP/KE units can be controlled from the AW-RP50N/E or a PC through a switching hub using the IP connection. IP connection also allows one AW-HE120WP/WE/KP/KE to be controlled simultaneously from up to five AW-RP50N/E units.



Dynamic Range Stretch (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.



DRS OFF
With the iris expanded, this blown highlight appears on the blackboard



DRS OFF
With the iris contracted, a blocked shadow appears on the figure



DRS ON
Both highlights and shadows are clearly visible

(Images are simulated.)

Other features

● Setting camera menus with a PC

Camera menus can be set up via a web browser by connecting the AW-HE120WP/WE/KP/KE 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

new

HD Integrated Camera For indoor use
AW-HE60SN/SE [SDI Model]

HD Integrated Camera For indoor use
AW-HE60HN/HE [HDMI Model]

- | | | | |
|--------------------|-------------------------------------|-------------------|--------------------------|
| Full HD MOS | 18x optical zoom | HD/SD | IP/Serial control |
| DRS | Turn-lock mounting mechanism | Night mode | IP monitoring |

HD	1080/59.94p ¹ , 59.94i, 50p ¹ , 50i, 29.97PsF, 25PsF, 720/59.94p, 50p
SD	576/50p ² , 50i, 480/59.94p ² , 59.94i

¹ AW-HE60HN/HE HDMI output only
² AW-HE60HN/HE only



Option		Wireless remote control AW-RM50G <small>("AA", "R6" or "LR6" battery x 2 are not included.)</small>
		Direct Ceiling Mount Bracket WV-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-HE60SN/SE/HN/HE units can be controlled by AW-RP50N/E via IP connections through Ethernet hubs.

[Key Products]

AW-HE60SN/SE AW-HS50N/E AW-RP50N/E

Optimal for both hanging and desktop installation.

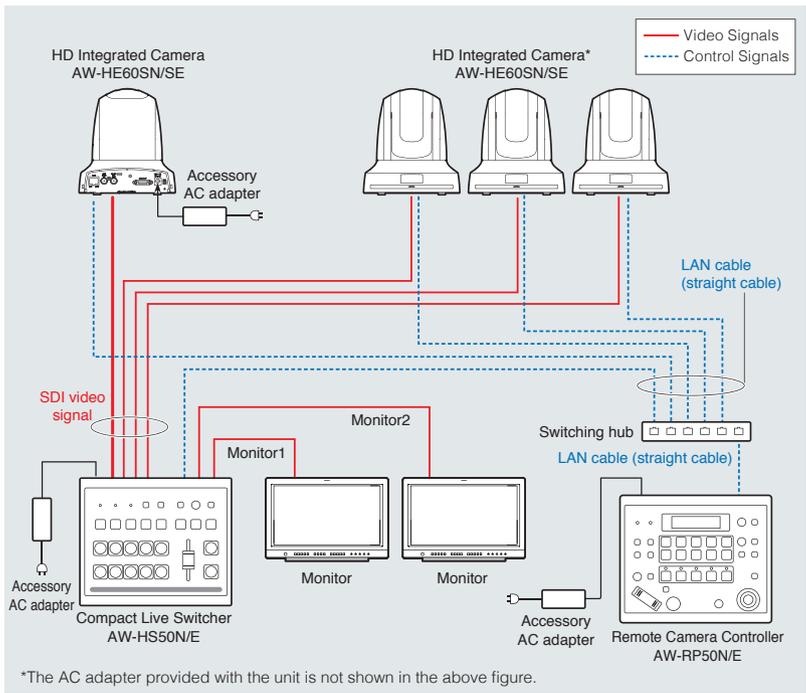
The mounting bracket and drop-prevention wire are standard accessories. Ceiling and desktop installation are both possible. Mount the bracket onto the installation surface and then put and turn the main unit on the bracket to be installed.

Mount bracket for installation surface

Drop-prevention wire

Approx. 15°

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



Camera, lens and pan-tilt in one compact, lightweight body

The lineup consists of two models, the AW-HE60SN/SE SDI model, which is optimal for content production, and the AW-HE60HN/HE 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.



1/3 type Full-HD MOS sensor and high-performance zoom lens

The cameras are equipped with the 1/3 type Full-HD MOS sensor and digital signal processor (DSP). Shooting clear, crisp HD video even in environments with less light (minimum illumination of up to 3 lx). In addition to 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.



From wide angle to telescopic shots - the cameras deliver clear and crisp images for a wide range of applications. (Images are simulated.)

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

● Dynamic Range Stretch (DRS)

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

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



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



3D Noise Reduction Alone
Afterimage and some loss of resolution appear



(Images are simulated.)

The Hybrid (2D/3D) Noise Reduction
Clearer images in difficult conditions

Equipped with Night mode for infrared shooting

When an optional infrared illuminator is used in conjunction with Night Mode, the camera can deliver high quality monochrome images in the dark.



(Images are simulated.)

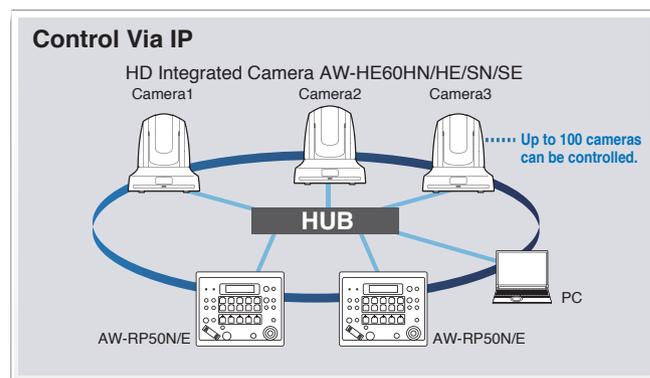
IP Control with Image monitoring

● IP control for easy connection and setup

IP connection allows control of up to 100 x AW-HE60SN/SE/HN/HE units from an AW-RP50N/E Remote Camera Controller or a PC via a switching hub.

● IP image monitoring*1 supported

Features an image compression and IP image transmission LSI. The IP image output function*2 allows transmission of images from one camera to up to 14 terminals through IP networks.*3 When combined with IP control, the camera can be controlled from a distant location.



*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.

Other features

● Integrated pan-tilt mechanism for easier operation

The pan range of $\pm 175^\circ$ 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-HE60SN/SE/HN/HE 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.

● 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

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

new

HD Integrated Camera

AW-HE2P/E

For indoor use

3.9M MOS	2x iA zoom	4x digital zoom	HD/SD
DRS	IP control	IP monitoring	

HD	1080/59.94p, 59.94i, 50p, 50i, 720/59.94p, 50p,
SD	576/50p, 480/59.94p

*1 18 mm in 35 mm equivalent



Suspended (Hanging) style

Stand-alone (Desktop) style



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

System example

HD Camera System

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

Key Points

- Up to 100 x AW-HE2P/E units can be controlled by AW-RP50N/E via IP connections through Ethernet hubs.

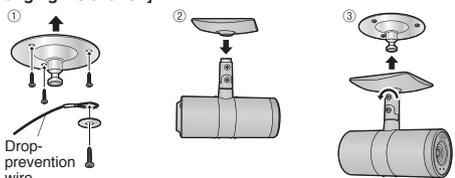
[Key Products]

AW-HE2P/E AW-HE120WP/WE/KP/KE AW-RP50N/E

Optimal for both hanging and desktop installation.

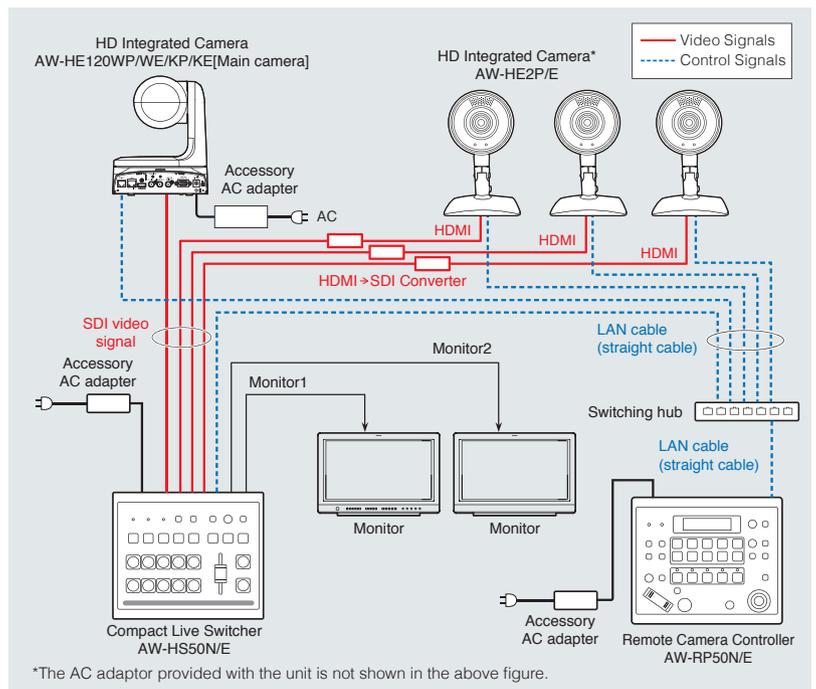
The mounting bracket and drop-prevention wire are standard accessories. Ceiling and desktop installation are both possible. Simply mount the bracket to the installation surface and secure the camera unit to the bracket using the horizontal fixing screws on the camera unit.

[Hanging installation]



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

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



Ultra-compact body integrated with wide-angle lens, microphone, tally lamp and various interfaces

The camera unit is small, but comes equipped with an ultrawide-angle lens, microphone, tally lamp, HDMI and LAN terminals. This model is suitable for P.O.V. (point of view) applications and Internet broadcasting. It can also be used in a variety of other situations. The compact and lightweight body can be installed easily (indoor use) by one person.



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.



Ultra-wide shooting with a 95 ° horizontal viewing angle



High-quality zoom with Intelligent Resolution technology

(Images are simulated.)

*1 18 mm in 35 mm equivalent.

*2 Digital zoom increases magnification, but results in degradation of the image quality.

● Digital pan/tilt

When zooming, the image area chosen by the AW-RP50N/E 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

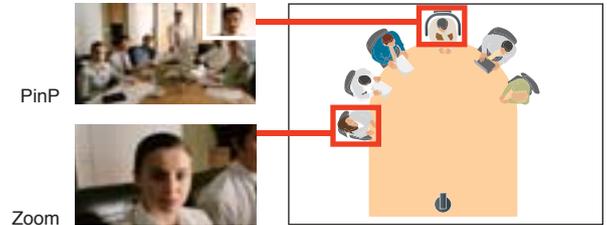
(Images are simulated.)

● PinP (Picture in Picture) mode

A specific area can be chosen from the shooting range and displayed. The PinP image position also can be changed and zooming.

● Preset memory

The Preset Memory function can store settings such as zoom magnification, brightness, PinP display, etc. (up to 9 settings). Settings can be easily accessed from the AW-RP50N/E and wireless remote control.



(Images are simulated.)

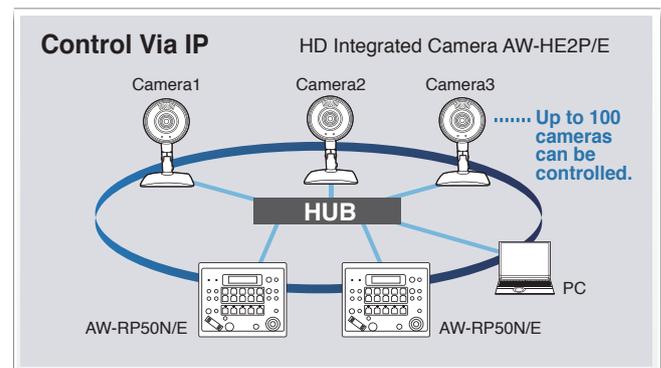
IP control simplifies connection and setup, and ensures comfortable operation.

● IP control for easy connection and setup

IP connection allows control of up to 100 x AW-HE2P/E units from an AW-RP50N/E Remote Camera Controller or a PC via a switching hub.

● IP image monitoring supported^{*3}

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.



*3 For more information, see page 18

Other features

● Dynamic Range Stretch(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-HE2P/E 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.

Optional Products

Remote Camera Controller AW-RP50N/E



(connector)

Versatile camera control with simple operation

- 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
- Various settings can be configured from a PC (configuration software supplied)
- Up to 100 AW-HE60* and/or AW-HE120* and/or AW-HE2* units can be controlled by AW-RP50N/E via IP and Ethernet hubs



Power supply	DC12 V \pm 10 % (AC adapter provided)
Power consumption	0.5 A (With DC12 V)
Weight	Approx. 1.1 kg (Approx. 2.4 lb)
Dimensions (W x H x D)	210 mm x 67 mm x 177 mm (8-1/4 inches x 2-9/16 inches x 6-15/16 inches) [excluding protrusions]
Accessory	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.

Compact Live Switcher AW-HS50N/E



(connector)

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

- 5 inputs and 3 outputs
- 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

Power supply	DC12 V \pm 10 % (AC adapter provided)
Power consumption	2.0 A (With DC12 V input)
Weight	Approx. 1.4 kg (Approx. 3.1 lb)
Dimensions (W x H x D)	210 mm x 67 mm x 177 mm (8-1/4 inches x 2-5/8 inches x 6-15/16 inches) [excluding protrusions]
Accessory	AC adaptor, Power cable

Multi-hybrid Controller AW-RP555N/L



(connector)

Compact controller with camera control function

- Controls up to five cameras and five pan-tilt heads
- Camera control by camera menu
- 10 preset memories per camera
- The motion direction of the operation lever can be reversed or changed
- AC Adaptor AW-PS550N/E is required



Power supply	DC10.8 V to DC16 V
Power consumption	9.0 W
Weight	Approx. 1.4 kg (Approx. 3.08 lb)
Dimensions (W x H x D)	210 mm x 58 mm x 177 mm (8-1/4 inches x 2-5/16 inches x 7 inches) [excluding protrusions]
Accessory	Rack mounting adapters (4U) x 2, Mounting screws (M4 x 8 mm) x 8, Join-up fixture x 1

* When installing additional cameras, it is necessary to upgrade the version if the cameras were manufactured before February 2009. For more information, contact your dealer.

Multi-function Controller AW-RP655N/L



(connector)

Controller with precise pan-tilt and camera control functions

- Controls maximum five cameras and five pan-tilt heads without hub unit
- Camera control by LCD menu
- Control speed can be adjusted by the angle of the operation lever and high speed and low speed mode can be switched
- 50 preset memories per camera
- 10 tracing memories (Maximum time: 5 minutes)
- The motion direction of the operation lever can be reversed
- Two additional controllers can be connected
- AC Adaptor AW-PS550N/E is required



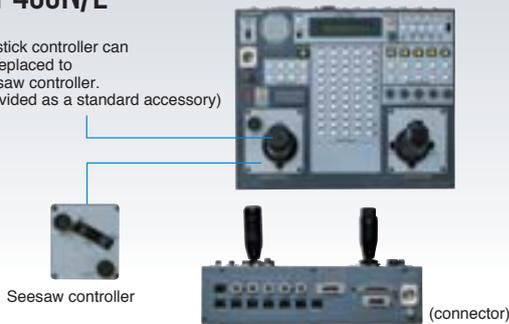
Power supply	DC10.8 V to DC16 V
Power consumption	9.0 W
Weight	Approx. 3.5 kg (Approx. 7.7 lb)
Dimensions (W x H x D)	420 mm x 52 mm x 220 mm (16 inches x 2-1/16 inches x 8-11/16 inches) [excluding protrusions]
Accessory	Rack mounting adapters (5U) x 2, Mounting screws (M4 x 8 mm) x 4

* When installing additional cameras, it is necessary to upgrade the version if the cameras were manufactured before January 2011. For more information, contact your dealer.

*model number depends on area.

Pan-tilt Controller AW-RP400N/E

Joystick controller can be replaced to seesaw controller. (provided as a standard accessory)



High performance controller for production and broadcast use

AK-HC1800G AW-HE870N/E
AK-HC1500G

- Controls up to five pan-tilt heads
- Able to select zoom/focus controller from joystick or seesaw
- Joystick with camera roll control • Maximum 50 preset positions
- Tally/Intercom function • Maximum 10 minutes tracing memory (60 seconds x 10 positions)*³
- Cross control by two controllers • Camera control inputs (AW-CB400N/L)
- DC12 V operation (AC Adaptor AW-PS550N/E is required)
- Special high speed protocol

*³ This function does not work with AW-PH405N/E nor AW-PH650N/L.

Power supply	DC12 V
Power consumption	Approx. 13 W
Weight	Approx. 3.8 kg (Approx. 8.4 lb)
Dimensions (W x H x D)	320 mm x 85 mm x 266 mm (12-5/8 inches x 3-3/8 inches x 10-1/2 inches) [excluding protrusions]
Accessory	Zoom switch x 1, Rack mounting adapters x 2, Plug for Tally/INCOM system (D-sub 15 pin) x 1, Mounting screws (M4 x 8 mm) x 4

* When installing additional cameras, it is necessary to upgrade the version if the cameras were manufactured before July 2008. For more information, contact your dealer.

Remote Operation Panel AK-HRP150G



The 1/4 rack size panel for easy adjustments of camera parameters

AK-HC1800G
AK-HC1500G

- Control of camera settings • Gen-lock signal can be sent
- Camera power can be supplied through an AK-HRP150G from an AW-PS550N/E
- Standard multi-core control cable: 5 m • 1/4 rack mount size

Power supply	DC12 V (XLR 4 pin connector)
Power consumption	3.0 W (camera controller only)
Weight	Approx. 1.2 kg (Approx. 2.65 lb)
Dimensions (W x H x D)	92 mm x 65 mm x 255 mm (3-5/8 inches x 2-9/16 inches x 10-1/8 inches) [excluding protrusions]
Accessories	Multi cable (5 m) x 1, Mounting screws (M4 x 8 mm) x 2

Remote Operation Panel AW-CB400N/L*¹



The unit can control up to five cameras.

AK-HC1800G AW-HE870N/E
AK-HC1500G

- Controls five cameras • Camera control • DC12 V operation
- Tally/Intercom function

*Power is supplied from AW-RP400N/E. AC Adaptor AW-PS550N/E is required for controlling cameras directly. (Maximum control distance: 1 000 m)

Power supply	DC12 V
Power consumption	3.8 W
Weight	Approx. 1.4 kg (Approx. 3.08 lb)
Dimensions (W x H x D)	100 mm x 85 mm x 266 mm (4 inches x 3-3/8 inches x 10-7/16 inches) [excluding protrusions]
Accessory	Pan/tilt controller (AW-RP400N/E) connecting cable x 1, Tally/INCOM connector (D-sub 15 pin) x 1, Rack-mounting adapters x 2, Join-up fixture x 1, Mounting screws (M4 x 8 mm) x 8, Join-up screws (stepped screws) x 2, Joining sticker x 2

* When installing additional cameras, it is necessary to upgrade the version if the cameras were manufactured before April 2009. For more information, contact your dealer.

Protocol Converter AW-IF400G



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

- High performance pan-tilt head (AW-PH400P/E) can be controlled by controllers (AW-RP555N/L, AW-RP655N/L), indoor pan-tilt head (AW-PH405N/E) and this protocol converter (AW-IF400G)*⁴
 - Outdoor pan-tilt head (AW-PH650N/L) can be controlled by high performance controller (AW-RP400N/E) with this protocol converter (AW-IF400G)*⁴
 - By using protocol converter AW-IF400G, control distance between AW-PH400P/E & AW-RP400N/E can be extended up to 1 000 m • AC Adaptor AW-PS550N/E is required
- *⁴ Maximum control distance: 1 500 m.

Power supply	DC10.8 V to DC16 V
Power consumption	1.5 W
Weight	Approx. 0.4 kg (Approx. 0.88 lb)
Dimensions (W x H x D)	145 mm x 30 mm x 85 mm (5-11/16 inches x 1-3/16 inches x 3-3/8 inches) [excluding protrusions]

AC Adaptor AW-PS550N/E



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

Power input	AC100 V to 240 V/1.3 A, 47-63 Hz
Power output	DC12 V/3.5 A, 42 W with over-current protect circuit
Weight	Approx. 0.3 kg (Approx. 0.7 lb)
Dimensions (W x H x D)	52 mm x 34.5 mm x 118 mm (2-1/16 inches x 1-3/8 inches x 4-5/8 inches) [excluding protrusions]
Accessories	Power cable x 1 DC cable with ø5.5 plug: Approx. 3 m x 1 DC cable with ø6.5 plug: Approx. 3 m x 1

This Versatile System Lineup Supports a Variety

High-Resolution, High-Quality Acquiring

HD Remote Cameras



Multi-Purpose Camera
AK-HC1800G

- 2/3 type 2.2 mega pixels 3CCD
- Output Format: 1080/59.94i, 50i, 30PsF, 29.97PsF, 25PsF, 24PsF, 23.98PsF



Down converter Board
AK-HDC1500G



Multi-Purpose Camera
AK-HC1500G

- 2/3 type 1 mega pixels 3CCD
- Output Format: 1080/60i, 59.94i, 50i, 30PsF, 29.97PsF, 25PsF, 24PsF, 23.98PsF, 720/60p, 59.94p, 50p



HD SDI Output Board
AK-HHD1500G

* Not available in some areas



2/3 type
20x HD Zoom Lens
AK-LZ20M85G



HD Convertible Camera
AW-HE870N/E

- 2/3 type 3CCD
- Output Format: 1080/59.94i, 50i, 720/59.94p, 50p, 576/50i, 480/59.94i
- HD/SD Switchable



SDI Card
AW-HHD870N/E

HD Integrated Camera
AW-HE120WP/WE/KP/KE

- 1/3 type Full-HD 3MOS
- Output Format: 1080/59.94p (HDMI only), 59.94i, 50p (HDMI only), 50i, 720/59.94p, 50p, 576/50p (HDMI only), 50i, 480/59.94p (HDMI only), 59.94i



HD Integrated Camera
AW-HE60SN/SE/HN/HE new

- 1/3 type Full-HD MOS
- Output Format: 1080/59.94p^{*1}, 59.94i, 50p^{*1}, 50i, 29.97PsF, 25PsF, 720/59.94p, 50p, 576/50p^{*2}, 50i, 480/59.94p^{*2}, 59.94i
- HD/SD Switchable
- *1 AW-HE60HN/HE HDMI output only
- *2 AW-HE60HN/HE only



HD Integrated Camera
AW-HE2P/E new

- 1/4.37 type 3.9 mega pixels MOS
- Output Format: 1080/59.94p, 59.94i, 50p, 50i, 720/59.95p, 50p, 576/50p, 480/59.94p
- HD/SD Switchable



Flexible System Configuration for Various Applications

Pan-tilt Heads

A control cable is included with the AK-HRP150G^{*1}

Control cable: Local procurement^{*2}

Indoor Pan-tilt Head
AW-PH360N/L ^{*3}

- Video output: SDI (HD/SD), SD Analog Component, VBS
- Pan 300°, Tilt 190°
- Quietness: Under NC30 (at 30°/s)
- Maximum pan speed (30°/s) / Maximum tilt speed (25°/s)
- Stop accuracy ±3 arcminutes (0.05°)
- Maximum load: Approx. 4 kg (Approx. 8.8 lb)



Indoor Pan-tilt Head
AW-PH405N/E

- Video output: HD/SD SDI, HD/SD Analog Component, VBS
- Pan 300°, Tilt 300°
- Maximum pan speed 45°/s (variable speed)
- Stop accuracy ±3 arcminutes (0.05°)
- Quietness: Under NC35 (at 30°/s)
- Maximum load: Approx. 15 kg (Approx. 33.1 lb) (including with a camera, a lens and a teleprompter)



Indoor Pan-tilt Head
AW-PH400P/E

- Video output: HD/SD SDI, SD Analog Component, VBS
- Pan 400°, Tilt 300°
- 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)



Outdoor Pan-tilt Head
AW-PH650N/L

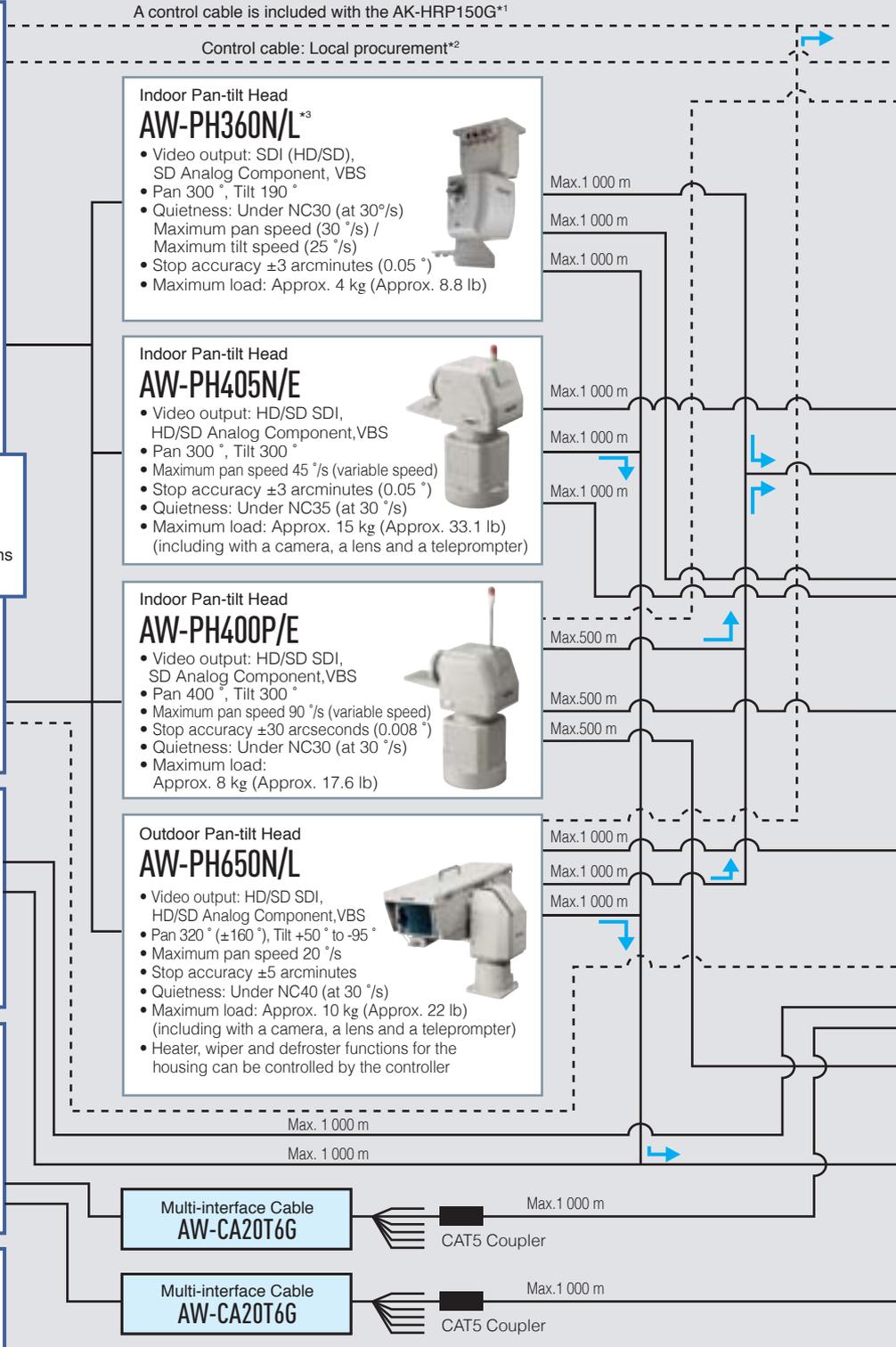
- Video output: HD/SD SDI, HD/SD Analog Component, VBS
- Pan 320° (±160°), Tilt +50° to -95°
- Maximum pan speed 20°/s
- Stop accuracy ±5 arcminutes
- Quietness: Under NC40 (at 30°/s)
- Maximum load: Approx. 10 kg (Approx. 22 lb) (including with a camera, a lens and a teleprompter)
- Heater, wiper and defroster functions for the housing can be controlled by the controller



Multi-interface Cable
AW-CA20T6G



Multi-interface Cable
AW-CA20T6G



of Remote Acquiring.

Extensive Peripheral Equipment

Controllers

Remote Operation Panel

AK-HRP150G

- 1/4 rack mount size
- Control of camera setting



Remote Operation Panel

AW-CB400N/L^{*2*4}

- Controls maximum 5 cameras
- Camera control
- Tally/Intercom function



Pan-tilt Controller

AW-RP400N/E^{*3*4}

- Maximum 50 preset positions
- Maximum 5 pan-tilt heads control
- 10 minutes tracing memory (60 seconds x10 positions)



Remote Camera Controller

AW-RP50N/E

- Maximum 100 preset positions
- Up to 5 cameras/pan-tilt heads may be controlled via serial connection.



Up to 100 AW-HE120* or HE60* or HE2* units can be controlled via IP. ^{*model number depends on area.}

Multi-hybrid Controller

AW-RP555N/L^{*3*4}

- Controls maximum 5 cameras and pan-tilt heads
- Maximum 10 preset memories per camera



Multi-function Controller

AW-RP655N/L^{*3*4}

- Controls maximum 5 cameras and pan-tilt heads
- Maximum 50 preset memories per camera
- 10 tracing memories (Maximum time: 5 minutes)



Pan-tilt cable kit
AW-CAK4H1G

Camera Control Cable
AW-CA50T8G

Protocol Converter
AW-IF400G^{*3}

Protocol Converter
AW-IF400G^{*3}

Protocol Converter
AW-IF400G^{*3}

Max.500 m

Max.1 000 m

Max.1 000 m

- Control Cable (CAT-5)
- - - Control Cable
- Ethernet Cable (CAT-5)

Easy Connection and Operation with IP Control

- IP connection allows control of up to 100 AW-HE120*/HE60*/HE2* HD Integrated Camera units from an AW-RP50N/E Remote Camera Controller via a switching hub.
- The AW-RP50N/E's Automatic IP Address Setup function automatically assigns IP addresses to AW-HE120*/HE60*/HE2* units or AW-HS50N/E Compact Live Switcher.
- IP connection allows simultaneous control of one AW-HE120*/HE60*/HE2* unit by up to five AW-RP50N/E units.

^{*model number depends on area.}

Stress-free operations

Connecting the remote camera controller AW-RP50N/E with the compact live switcher AW-HS50N/E via IP realizes efficient operation enabling display of camera setting information, acquisition of tally information, selection of bus images, and switching parameters.

Max.
100 m

HD Integrated Camera
AW-HE120*



^{*model number depends on area.}

new

HD Integrated Camera
AW-HE60*



^{*model number depends on area.}

new

HD Integrated Camera
AW-HE2*



^{*model number depends on area.}

Video signal

HUB

Max.
100 m

Max.
100 m

Compact Live Switcher
AW-HS50N/E

- 5 inputs and 3 outputs (SDI standard)
- Compatible formats: 1080/59.94i, 50i, 24PsF, 23.98PsF, 720/59.94p, 50p, 480/59.94i, 576/50i



^{* When connecting directly, please use a crossover cable. When connecting via a hub/switch, please use a straight-through cable.}

Other Peripherals

AC Adaptor

AW-PS550N/E



^{*1 The length of cable can be extended up to 1 000 m by using an external power supply.}

^{*2 AC Adaptor AW-PS550N/E is required for controlling cameras directly.}

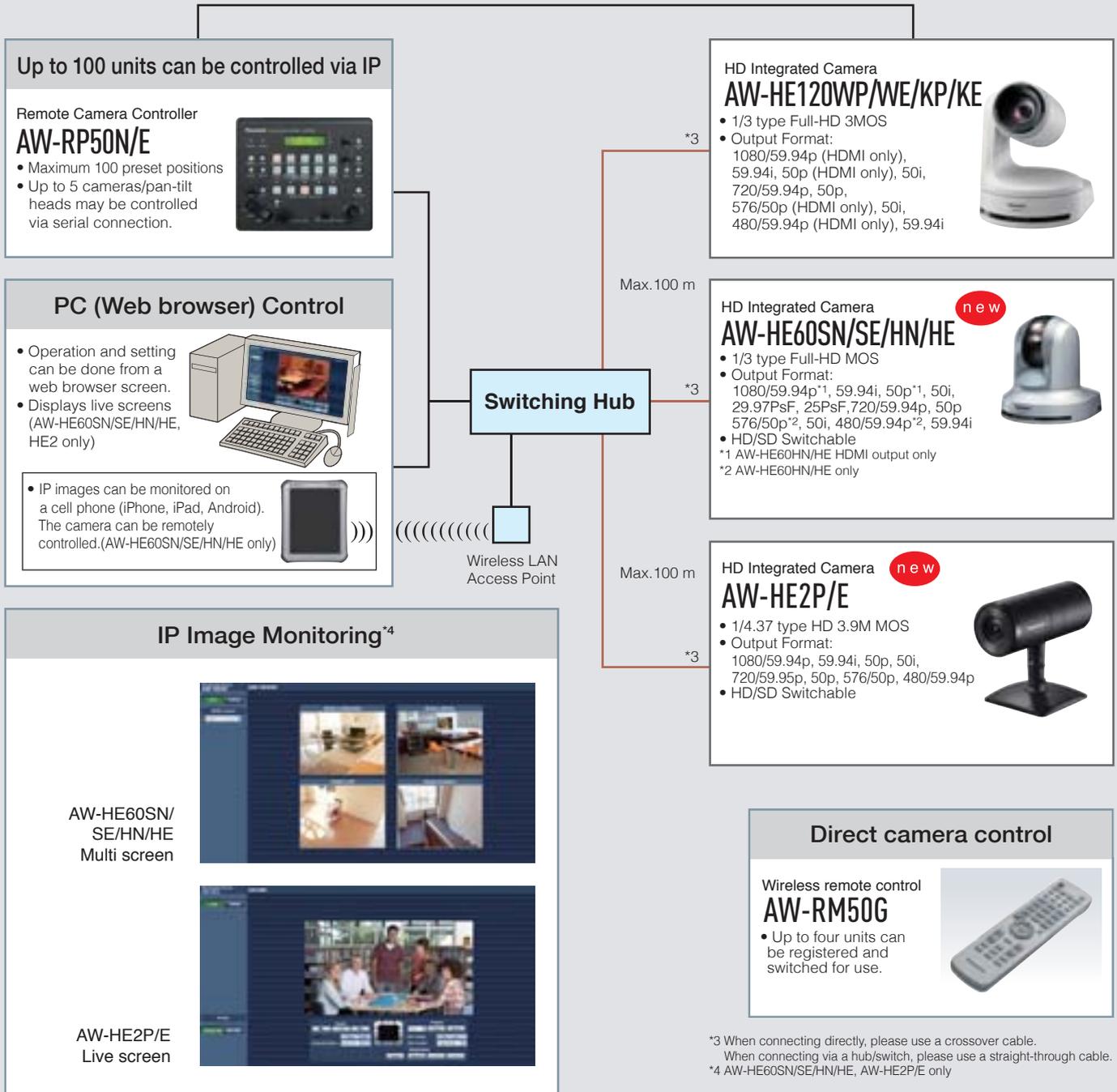
^{*3 AC Adaptor AW-PS550N/E is required.}

^{*4 There is a possibility of requiring software update. For details, please contact a sales outlet.}

IP control simplifies connection and setup, and ensures comfortable camera operation.

Remote Controller/PC (Web browser) Control

High-Resolution, High-Quality Acquisition



*3 When connecting directly, please use a crossover cable.
When connecting via a hub/switch, please use a straight-through cable.
*4 AW-HE60SN/SE/HN/HE, AW-HE2P/E only

PC (Web browser) Operating Environment

[OS]

- Microsoft® Windows® 7 Professional (SP1) 32bit/64bit
- Microsoft Windows XP Home Edition (SP3) Professional Edition (SP3)

- Apple Mac OS X 10.5¹⁵/10.6/10.7¹⁶/10.8¹⁷
- Apple iOS 5.1.1¹⁸
- Android™¹⁸ (Panasonic TOUGH PAD FZ-A1)

[Browser]

- Windows Internet Explorer® 8.0/9.0
- Apple Safari 5.0.6¹⁵/5.1.7/6.0¹⁷
- Android standard browser⁸

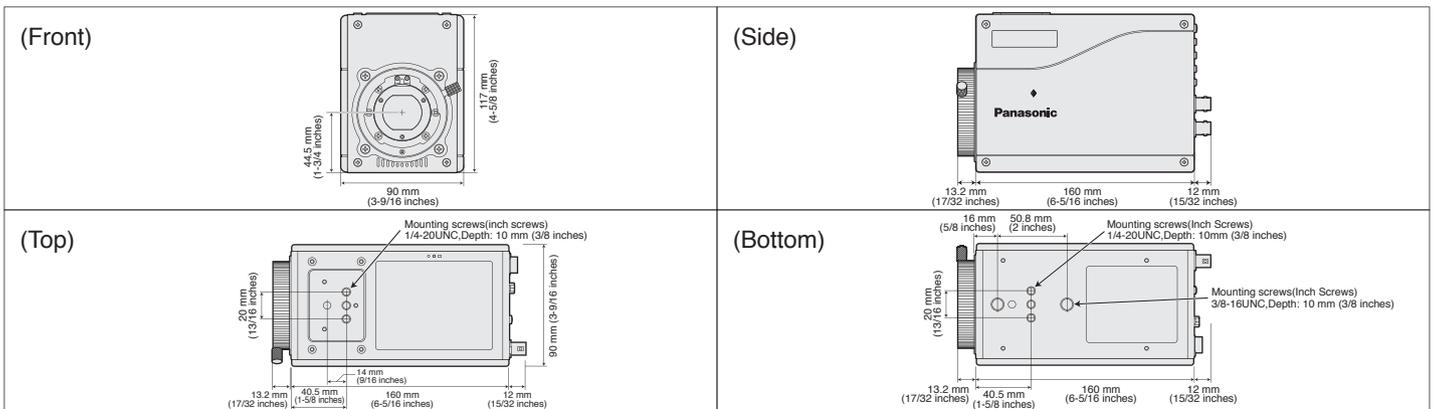
¹⁵ AW-HE2 is not supported
¹⁶ AW-HE60SN/SE/HN/HE, HE2P/E only
¹⁷ AW-HE2P/E only
¹⁸ AW-HE60SN/SE/HN/HE only

AK-HC1800G/AK-HC1500G

Specifications

	AK-HC1800G	AK-HC1500G
Power Requirements	DC 12V	
Power Consumption	17 W	
Operating Temperature	0°C to 40°C (32°F to 104°F)	
Storage Temperature	-20°C to 60°C (-4°F to 140°F)	
Weight	Approx. 1.5 kg (Approx. 3.3 lbs)	
Dimensions (W x H x D)	90 mm x 117 mm x 160 mm (3-9/16 inches x 4-5/8 inches x 6-5/16 inches) (excluding protrusions)	
Image Sensors	2/3 type 2.2 mega pixels IT, CCDx3	2/3 type 1.0 mega pixels IT, CCDx3
Total Number of Pixels	2 010(H)x1 120(V)	1 370 (H)x744 (V)
Effective Number of Pixels	1 920(H)x1 080(V)	1 280 (H)x720 (V)
Image Sensing Method	GBR Image sensing method	
Lens Mount	2/3 type bayonet mount	
Optical Prism	F1.4 prism	
Optical Filter	ND: CLEAR, 1/4, 1/16, 1/64	
M.T.F.	50 % (typ) (27.5 MHz)	More than 45 % (27.5 MHz, 720 p /60 p)
Gain	Maximum 72 dB by using gain up circuit, CCD accumulation and horizontal/vertical addition	Maximum 72 dB
Output Format	1080/59.94i, 1080/50i, 1080/30PsF, 1080/29.97PsF, 1080/25PsF, 1080/24PsF, 1080/23.98PsF	1080/60i, 1080/59.94i, 1080/50i, 1080/30PsF, 1080/29.97PsF, 1080/25PsF, 1080/24PsF, 1080/23.98PsF, 720/60p, 720/59.94p, 720/50p
S/N	60 dB (typ)	More than 54 dB
Sensitivity	F10: 2 000 lx, 3 200 K white reflection rate 89.9 % (1080/59.94i) F11: 2 000 lx, 3 200 K white reflection rate 89.9 % (1080/50i)	F10: 2 000 lx, 3 200 K white reflection rate 89.9 %
Minimum Illumination	0.015 lx (F1.4/68 dB)	
Video Output	HD SDI (BNCx1)	
SYNC input	SYNC input (GL input 3 value SYNC/BB)	
Camera Connector Control System	D-sub 15 pinx1	
Lens Connector 1	Asynchronous (EIA-422)	
Lens Connector 2	Iris control (HIROSE: HR10A-10R12SC)	
Lens Connector 2	Zoom/ Focus control (HIROSE: HR10A-10R12PC)	
Standard Accessories	Lens cap, Filter, Mounting screw for wire (Inch screw: 1/4-20UNC), Flat washer (Inch screw), Spring washer (Inch screw)	

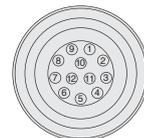
Dimensions



Rear view

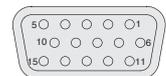


Zoom/focus connector



Pin No.	Signal
1	Focus control selection
2	Zoom control selection
3	GND
4	Forcible iris closing
5	Iris control
6	+Voltage
7	COM
8	Focus control
9	Zoom control
10	Iris control selection
11	COM +Voltage
12	COM -Voltage

Remote connector



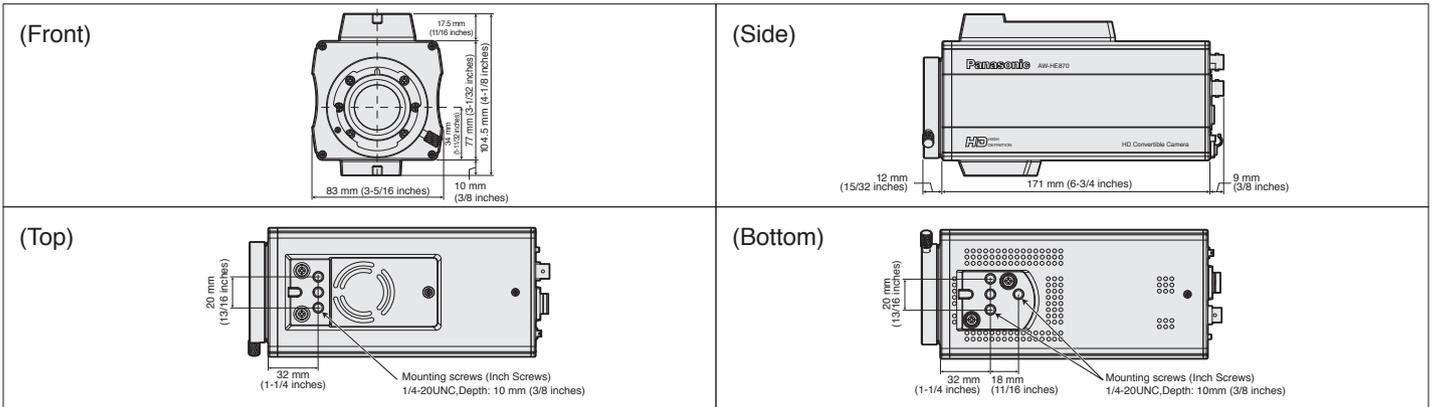
Pin No.	AK-HC1800G	AK-HC1500G
1	Signal	
1	GL GND	
2	NC	TC in
3	NC	
4	TX_N	
5	RX_N	
6	DC12 V	
7	GL in	
8	GND	
9	TX_P	
10	RX_P	
11	GND	
12	NC	TC GND
13	GND	
14	GND	
15	GND	

Specifications

		AW-HE870N	AW-HE870E
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 x 104.5 mm x 192 mm (3-1/4 inches x 4-1/8 inches x 7-9/16 inches) (excluding protrusions)	
Image Sensors		2/3 type IT 3CCD	
Lens Mount		2/3 type bayonet mount	
Optical System		Dichroic prism optical system, F1.4	
Gain Selection		-6 dB to 18 dB (1 dB in step), AGC	
Electronic Shutter Speed		1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, ELC, Synchro-scan (61.19 Hz to 1466 Hz)	1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, ELC, Synchro-scan (50.99 Hz to 1478 Hz)
Color Bar		SMPTE	FULL
Output Format		1080/59.94i*, 720/59.94p*, 480/59.94i	1080/50i*, 720/50p*, 576/50i
Standard Illumination, Color Temperature		2 000 lx (F10,3 200 K)	
Registration		0.05 % (Entire screen, excluding effects of lens)	
White Balance		AWB A/B (R/B painting), ATW 3 200 K/5 600 K preset	
Black Balance		Auto (R/B painting)	
Synchronization System		Internal/External synchronization BB (BNCx1, D-sub 50 pinx1)	
Output Format	HD Format (Switched by menu)	Y/Pb/Pr Y: 1.0 V[p-p]/75 Ω Pb/Pr: 0.7 V[p-p]/75 Ω (D-sub 50 pinx1) RGB : 1.0 V[p-p]/75 Ω (D-sub 50 pin x 1)	
	SD Format	Continous Output	VIDEO OUT : 1.0 V[p-p]/75 Ω (BNCx1, D-sub 50 pinx1) Y/C Y: 1.0 V[p-p]/75 Ω C: 0.286 V[p-p]/75 Ω (burst) (D-sub 50 pinx1)
		Switched by menu	Y/Pb/Pr Y: 1.0 V[p-p]/75 Ω Pb/Pr: 0.7 V[p-p]/75 Ω (D-sub 50 pinx1) RGB : 1.0 V[p-p]/75 Ω (D-sub 50 pinx1) Y/C Y: 1.0 V[p-p]/75 Ω C: 0.286 V[p-p]/75 Ω (burst) (D-sub 50 pinx1)
	VIDEO OUT		BNCx1
GEN LOCK IN		BNCx1	
IRIS		12 pin round x1	
DC12 V		DCx1	
I/F REMOTE		D-sub 50 pinx1	
Standard Accessories		DC cable (3 m[9.84 ft]), Mounting screw for wire (Inch screw: 1/4-20UNC), Flat washer (Inch screw), Spring washer (Inch screw)	

* Optional card (AW-HHD870N/E) is required.

Dimensions



Rear view



AW-HE120WP/WE/KP/KE

Specifications

AW-HE120WP/WE/KP/KE					
Power Requirements	DC 12 V (AC adaptor supplied)		Scene File	Scene 1, Scene 2, Scene 3, Scene 4	
Power Consumption	1.75 A		Camera Output Format	1080/59.94p ² , 1080/59.94i, 1080/50p ² , 1080/50i, 720/59.94p, 720/50p	
Operating Temperature	0°C to 40°C (32°F to 104°F)			HD	
Allowable Humidity Range	35 % to 90 % (no condensation)		Synchronization System	576/50p ² , 576/50i, 480/59.94p ² , 480/59.94i	
Storage Temperature	-20°C to 50°C (-4°F to 122°F)			Internal/External synchronization (BBS/Tri-level sync)	
Weight	Approx. 3.0 kg (Approx 6.61 lbs) (Including mount bracket)		Input Connector	DC 12 V IN, G/L IN (BNC×1) ³ *BBS (Black Burst Sync), tri-level sync supported	
Dimensions (W × H × D)	180 mm × 228 mm × 220 mm (7-3/32 inches × 8-31/32 inches × 8-21/32 inches) (excluding protrusions, cable cover, direct ceiling mount bracket)			HDMI	HDMI×1
Image Sensors	1/3 type Full-HD 3MOS		Output Connector	BNC×1 Compliant with the SMPTE292M/SMPTE259M standards/75 Ω	
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)			VIDEO OUT	BNC×1 NTSC/PAL 1.0 V[p-p]/75 Ω
Focus	Switching between auto and manual			HD/SD ANALOG OUT	Y/Pb/Pr or R/G/B D-sub 15 pin x 1
Focus distance	Entire zooming range: 800 mm, Wide end: 400 mm		Input/Output Connector	LAN	LAN connector for IP control (RJ-45)
Color Separation Optical System	3MOS			RS-422	CONTROL IN RS422A (RJ-45)
Minimum Illumination	7 lx (50 IRE, F1.6, +18 dB)		Pan-Tilt Mechanism	Pan/Tilt Operation Speed	MAX 60°/s
Horizontal Resolution	1 000 TV lines Typ (Center area)			Panning Range	±175°
Gain Selection	Auto, 0 dB to 18 dB			Tilting Range	-30° to 210°
Frame Mix ^{*1}	0 dB, 6 dB, 12 dB, 18 dB, 24 dB		Quietness	NC35	
Electronic Shutter Speed	59.94 Hz	1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000	Standard Accessories	Mount bracket for installation surface (Hanging ^{*4} / 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	
SynchroScan	59.94 Hz	60.17 Hz to 644.26 Hz			
	50 Hz	50.19 Hz to 537.13 Hz			
Gamma	Off, Normal (Low, Mid, High), Cinema				
White Balance	AWB A, AWB B, ATW, 3 200K, 5 600K				

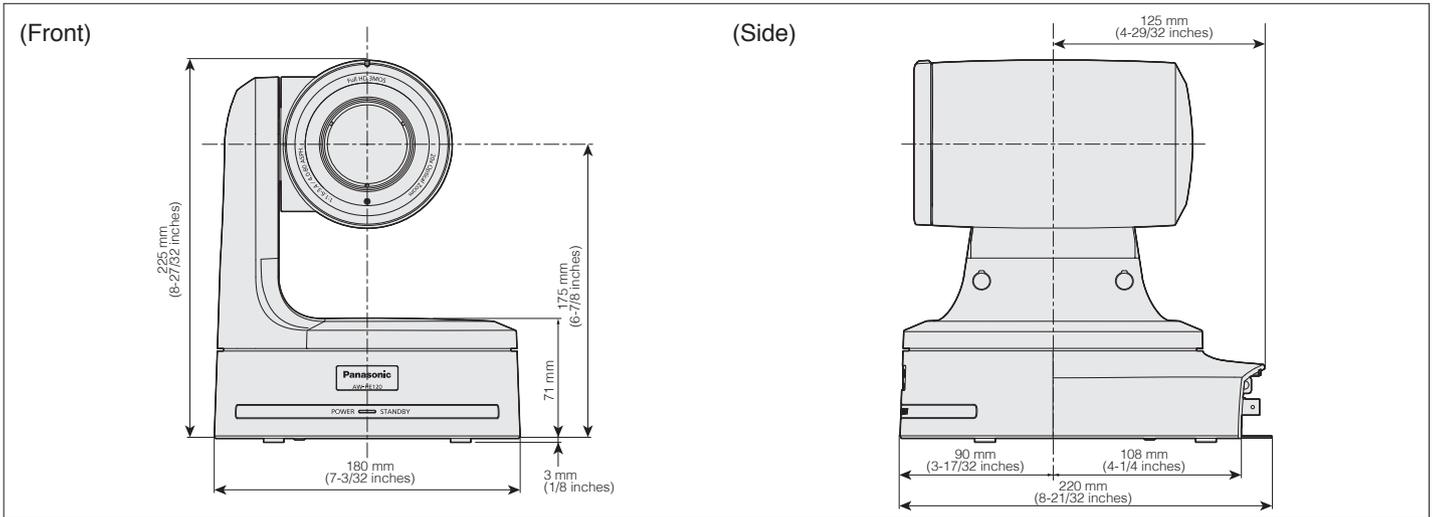
*1 Cannot be set when using 1080/59.94i nor 1080/50i formats.

*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).

Dimensions



Rear view



Specifications

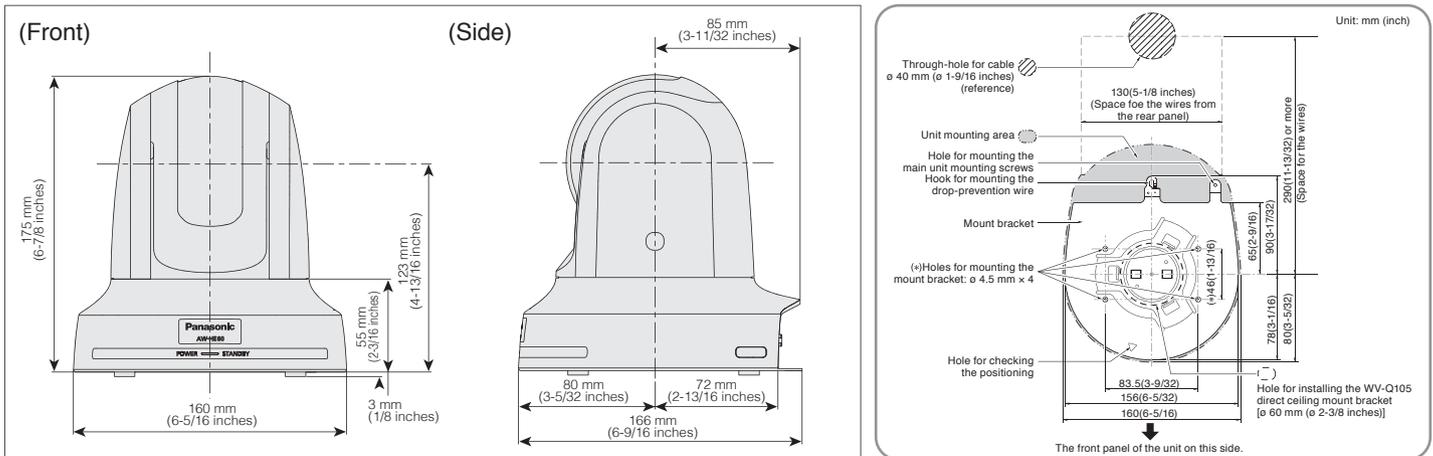
		AW-HE60HN/SN	AW-HE60HE/SE
General	Power Requirements	DC 12 V (AC adaptor supplied)	
	Power Consumption	1.3 A (AW-HE60H), 1.4 A (AW-HE60S)	
	Operating Temperature	0°C to 40°C (32°F to 104°F)	
	Allowable Humidity Range	20 % to 90 % (no condensation)	
	Storage Temperature	-20°C to 50°C (-4°F to 122°F)	
	Weight	Approx. 1.4 kg (Approx. 3.1 lbs)	
	Dimensions (W x H x D)	160 mm x 178 mm x 166 mm (6-5/16 inches x 7 inches x 6-9/16 inches) (excluding protrusions, cable cover, direct ceiling mount bracket)	
	Image Sensors	1/3 type Full-HD MOS	
Camera	Lens	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 [50 Hz] 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000	
	Synchro Scan	[59.94 Hz] 60.24 Hz to 646.21 Hz [50 Hz] 50.20 Hz to 538.51 Hz	
	Gamma	Off, Normal (Low, Mid, High), Cinema	
	White Balance	AWB A, AWB B, ATW	
	Scene File	FullAuto, Manual1, Manual2, Manual3	
	Output Format	HD	1080/59.94p ^{*1} , 1080/59.94i, 1080/50p ^{*1} , 1080/50i, 1080/29.97PsF, 1080/25PsF, 720/59.94p, 720/50p
SD		576/50p ^{*1} , 576/50i, 480/59.94p ^{*1} , 480/59.94i	
Synchronization System	Internal synchronization (AW-HE60H), Internal/External synchronization (BBS) (AW-HE60S)		
Input Connector	Input Connector	DC 12 V IN, EXT SYNC IN (BNC) (AW-HE60S only) *BBS (Black Burst Sync) signal supported	
	HDMI	HDMIx1 (AW-HE60H)	
	SDI	BNCx1 Compliant with the SMPTE292M/SMPTE259M standards / 75 Ω (AW-HE60S)	
	Composite	MULTI-I/Fx1 1.0 V [p-p] / 75 Ω	
	Y/Pb/Pr(HD/SD) ^{*2}	HD MULTI-I/Fx1 Y: 1.0 V[p-p]/75 Ω, Pb/Pr: 0.7 V[p-p]/75 Ω SD MULTI-I/Fx1 Y: 1.0 V[p-p]/75 Ω, Pb/Pr: 0.7 V[p-p]/75 Ω(59.94 Hz)/Y: 1.0 V[p-p]/75 Ω, Pb/Pr: 0.525 V[p-p]/75 Ω(50 Hz)	
Input/Output Connector	LAN	LAN connector for IP control (10BASE-T/100BASE-T, RJ-45)	
	RS-422	MULTI-I/Fx1 CONTROL IN RS422A ^{*3}	
Pan/Tilt Mechanism	Pan/Tilt Operation Speed	MAX 90°/s	
	Panning Range	±175°	
	Tilting Range ^{*4}	90° to -30°	
	Quietness	NC35 (at normal speed), NC40 (at fastest speed when preset)	
Standard Accessories	Mount bracket for installation surface (Hanging ^{*5} /Desktop), Drop-prevention wire (already attached to the unit), Bracket mounting screws (bind-head) M4 x 10 mm, Main unit mounting screw (with flat washer, spring washer) M3 x 6 mm, Cable cover, Power cable (2 m[6.6 ft]), AC adaptor		

*1 When 1080/59.94p or 1080/50p mode is selected, a progressive signal is output through HDMI OUT, and an interlace signal is output through analog component OUT and SDI OUT. When 480/59.94p or 576/50p mode is selected, a progressive signal is output through HDMI OUT (AW-HE60HN/HE only) and analog component OUT, and an interlace signal is output through SDI OUT (AW-HE60SN/SE only). When IP images distributed, component signals (480/59.94i, 576/50i) are not output through a multi-interface.

*2 Y/Pb/Pr changes to 1080/720/SD depending on format setting. *3 Multi-interface Cable (AW-CA20T6G) is required. *4 The camera may be subject to external glare, depending on the pan and tilt position.

*5 To ensure more safety, AW-HE60SN/SE/HN/HE can be secured by using the direct ceiling mount bracket (WV-Q105).

Dimensions



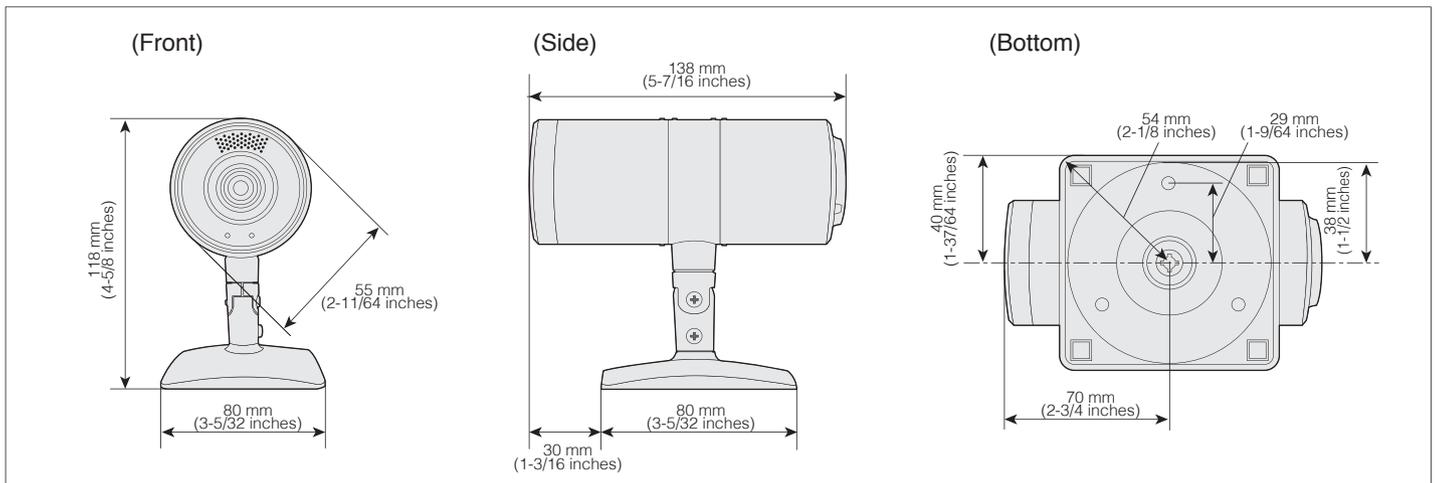
Rear view



Specifications

		AW-HE2P/E		
General	Power Requirements	DC 5.0 V (AC adaptor supplied)		1080/59.94p, 1080/59.94i, 1080/50p,
	Power Consumption	3.6 W		1080/50i, 720/59.94p, 720/50p
	Operating Temperature	0°C to 40°C (32°F to 104°F)		576/50p, 480/59.94p
	Allowable Humidity Range	-10 % to 80 % (no condensation)		Internal synchronization
	Storage Temperature	-10°C to 60°C (14°F to 140°F)		HDMI x 1
	Storage Humidity Range	0 % to 90 % (no condensation)		HDMI x 1, Linear PCM
	Weight	Approx.0.244 kg (Approx.0.538 lbs)		10BASE-T, 100BASE-TX, RJ-45
	Dimensions (W x H x D)	80 mm x 118 mm x 138 mm (3-5/32 inches x 4-5/8 inches x 5-7/16 inches)		Automatic recognition of straight/crossover cable Network output image: JPEG, 640x480 (640x360) or 320x240 (320x180), up to 30fps (16:9 video is transmitted in the Letter Box format).
Camera	Image Sensors	1/4.37 type MOS Effective pixels: Motion picture Approx.3.9 mega pixels		Micro-B terminal x 1, Power supply function (power supplied from the USB terminal when there is no power provided from DC input terminal)
	Lens	iA Approx.2x zoom, Digital Approx.4x zoom F2.0 (f=2.15 mm, 35 mm equivalent: 18 mm) Field of view: 95°(horizontal), 56°(vertical) Minimum focus distance: Approx.80 cm (25°C/77°F)		2 ch stereo
		Standard Illumination	1 400 lx	
	Minimum Illumination	20 lx (1/60 in Auto mode)(AW-HE2P), 20 lx (1/50 in Auto mode)(AW-HE2E)		Approx. ±14°[iA Approx.2x zoom] Approx. ±21°[Digital Approx.4x zoom]
	Horizontal Resolution	850 TV line Typ (Center area)		Standard Accessories 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
	Electronic Shutter Speed	1/60 to 1/12000 (AW-HE2P), 1/50 to 1/12000 (AW-HE2E)		
	White Balance	ATW, AWB A, AWB B, Sunny, Cloudy, Indoor1, Indoor2, Fluorescent(TTL type)		

Dimensions



Rear view



Please refer to the latest Information, etc. at the following Panasonic web site.



<http://pro-av.panasonic.net/>

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JQA-0443



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