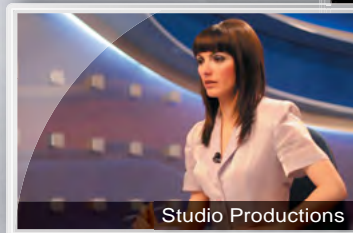# Panasonic

HD Remote Camera System Solutions

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-HE870

HD Integrated Camera AW-HE120W/K

HD Integrated Camera AW-HE60S/H

HD Integrated Camera AW-HE2

Live Image Production with Panasonic

High-Quality Monitoring

Weather and Traffic Cameras

Sports

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

Outdoor Pan-Tilt Head
AW-PH650

Multi-Purpose Camera
AK-HC1800G

HD Convertible Camera
AW-HE870

Indoor Pan-Tilt Head
AW-PH405

Lecture

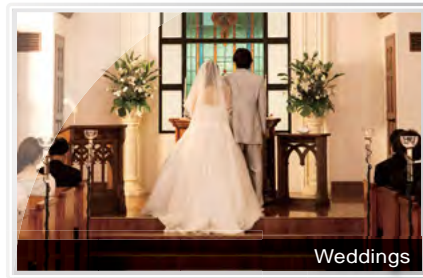Multi-Purpose Camera
AK-HC1500G

Studio Productions

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

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

Remote Camera Systems

Convenient for capturing images at concerts, weddings and more

Halls/Theaters

Weddings

HD Integrated Camera
AW-HE120W/K

HD Integrated Camera
AW-HE60S/H

HD Integrated Camera
AW-HE2

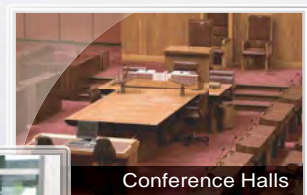Device for Control/Monitoring via IP
(AW-HE60/HE2)

Remote Camera Controller
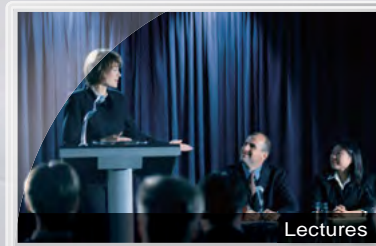## AW-RP120G

Remote Camera Controller
AW-RP50

Compact Live Switcher
AW-HS50

Conference Halls

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

Lectures

Seminars

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

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 × 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.

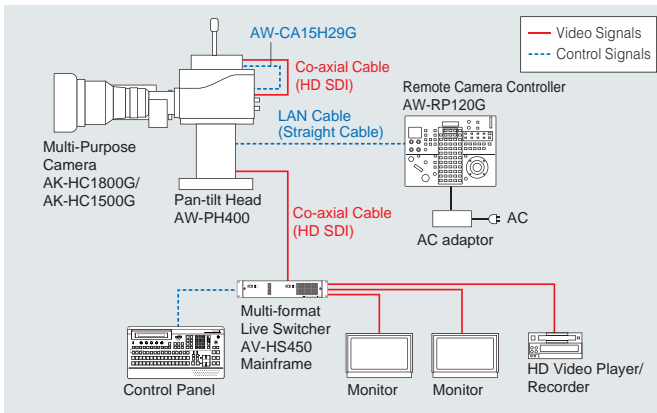**System example**

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

* The AC Adaptor provided with the unit is not shown in the above figure.

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).
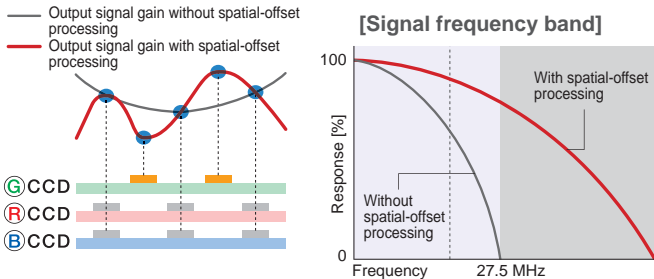• Quiet pan-tilt motion is ideal for shooting in a quiet studio.

[Key Products]
AK-HC1800G AW-PH405 AV-HS450
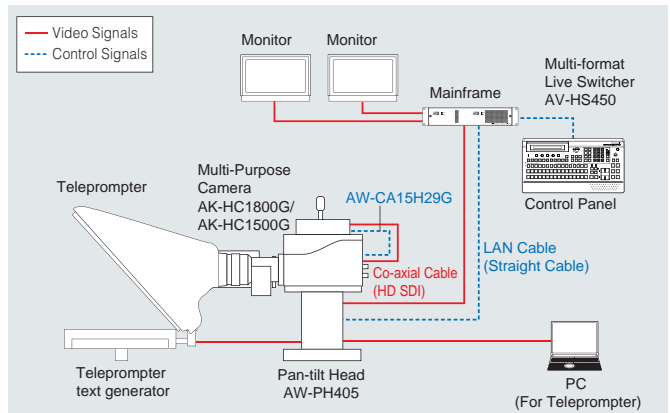
Panasonic's CCD technology and signal processing produce high-quality.

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

ⒼCCD
ⓇCCD
ⒷCCD

[Signal frequency band]

Response [%]

With spatial-offset processing

Without spatial-offset processing

Frequency   27.5 MHz

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.

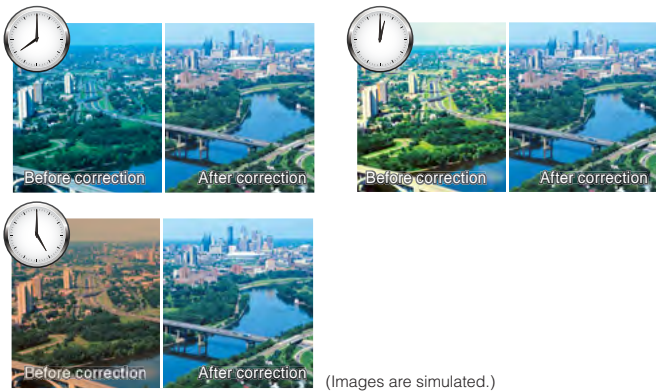## ● CCD accumulative drive allows high sensitivity.

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.

Before correction   After correction

Before correction   After correction

Before correction   After correction

(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.)

Before correction   After correction

Before correction   After correction
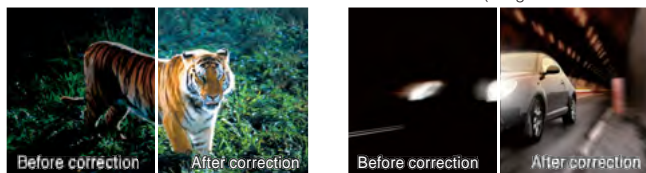
Automatically controls variable gain in dark scenes

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 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.

● Images with the Dynamic Range Stretch (DRS) Effect

Image with DRS OFF

Image with DRS ON

Blown highlights are suppressed

Blocked shadows are suppressed
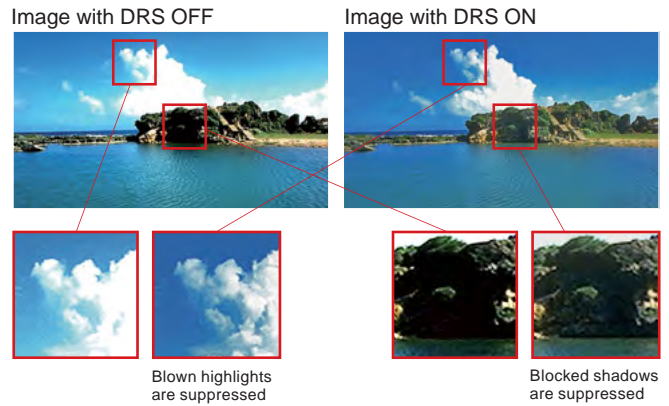
(Images are simulated.)

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.)

Image with HD VIDEO GAMMA

Image with CINE GAMMA

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

24p

VFR

60p

You can vary the number of frames per second (4 fps to 60 fps), just as a film camera. This lets you use the distinctive undercranking and overcranking speed effects of film cameras.
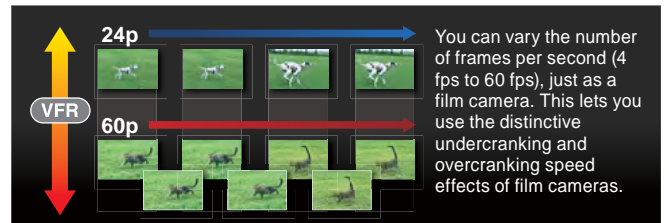
(Images are simulated.)

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
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-HE870

(Lens not included)

2/3 type Lens Mount	Progressive 3CCD	HD/SD

HD	59.94Hz(AW-HE870N)1080/59.94i*, 720/59.94p*
	50Hz(AW-HE870E)1080/50i*, 720/50p*

SD	59.94Hz(AW-HE870N) 480/59.94i
	50Hz(AW-HE870E)576/50i

* Optional card (AW-HHD870) is required.

Option Card

HD/SD SDI output card
AW-HHD870

■ With this optional card, AW-HE870 supports HD/SD SDI outputs.

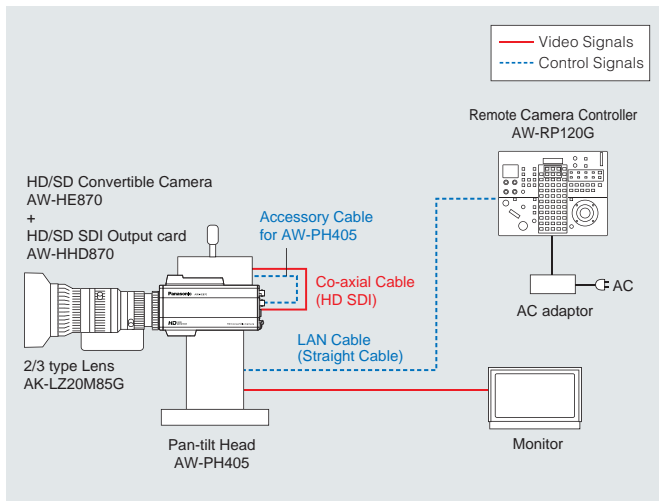## System example

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-HE870 AW-PH405 AW-RP120G

Video Signals
Control Signals

Remote Camera Controller
AW-RP120G

HD/SD Convertible Camera
AW-HE870
+
HD/SD SDI Output card
AW-HHD870

Accessory Cable for AW-PH405

Co-axial Cable (HD SDI)

LAN Cable (Straight Cable)

AC

AC adaptor

2/3 type Lens
AK-LZ20M85G

Pan-tilt Head
AW-PH405

Monitor

* The AC Adaptor provided with the unit is not shown in the above figure.

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-HE870 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-HE870. It can be helpful for system transition from SD to HD.

*1 Some functions require different operations from the SD cameras.
*2 Compatible models: AW-PH360,PH400,PH405,PH650, 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.

A pan tilt head
AW-PH405 and
AW-HE870 combination.

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*4
 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.

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.

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 (Approx. 0.6 m)

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 NC35 (at 30 °/s)
- Stop accuracy: (±3 arcminutes) (0.05 °)
- Maximum 50 preset memories
- Maximum control distance: 1 000 m
- Teleprompter output
- A removable tally light is included
- Both ENG lenses and MD 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)

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
- Stop accuracy: Under ±30 arcseconds (0.008 °)
- Quietness: Under NC30 (at 30 ° /s)
- Maximum 50 preset memories
- Special high speed protocol
- A removable tally light is included
- Maximum control distance: 500 m (Maximum 1 500 m using the protocol converter AW-IF400G with remote camera controller AW-RP120G or AW-RP50)
- Both ENG lenses and 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)
Accessory	Camera cable (Approx. 0.6 m)

◉ Outdoor Pan-Tilt Head

AW-PH650

Waterproof design for stable shooting in a variety of weather conditions

- Pan range: Approx. ±160 °, Tilt range: Approx. 50 ° to 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

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]
Maximum load	Approx. 10 kg (Approx. 22.0 lb)
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 × 11-1/6 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 (W×H×D) : 114 mm × 91 mm × 170 mm(4-1/2 inches × 3-19/32 inches × 6-11/16 inches)

17x Zoom Lens
AW-LZ17MD9AG

- Focal length: 9 mm-155 mm (F1.9-F2.6)
Weight: Approx. 1.3 kg (Approx. 2.87 lb)[excluding lens hood]
Dimensions (W×H×D) : 123 mm × 120 mm × 214 mm(4-7/8 inches × 4-3/4 inches × 8-7/16 inches)

◉ Cables

Name	Model	Lengh	Remote Camera	Pan-Tilt Head	Controller	Note
Multi-interface Cable	AW-CA20T6G	1 m	AW-HE60S/H		AW-RP120G AW-RP50	Seriel controll, Composite /Component Output
Cable for indoor pan-tilt head connection	AW-CA15H29G	0.7 m	AK-HC1800G AK-HC1500G	AW-PH360 AW-PH405 AW-PH400	AW-RP120G AW-RP50	Remote camera - Pan-Tilt Head connection*1
Pan-tilt cable kit	AW-CAK4H1G	0.7 m/ 3 m	AK-HC1800G AK-HC1500G	AW-PH360 AW-PH405 AW-PH400	AK-HRP150G ★	
Camera control cable	AW-CA50T8G	10 m	AW-HE870		AK-HPP200G	Direct connection with the AW-HE870 and AK-HRP200G

★Discontinued Products

*1 To connect the AW-HE870 with the AW-PH360/AW-PH405/AW-PH400/AW-PH650 pan-tilt head, or to connect the AK-HC1500G/AK-HC1800G with the 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

For indoor use

AW-HE120W/K

| 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-HE120W (White Model)
*Suspended (Hanging) style

AW-HE120K (Black Model)
*Stand-alone (Desktop) style

HDMI
HIGH-DEFINITION MULTIMEDIA INTERFACE

Option

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

Direct Ceiling Mount Bracket
WV-Q105A

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.

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.

—— Video Signals
----- Control Signals

HD Integrated Camera
AW-HE120W/K

HD Integrated Camera*
AW-HE120W/K

Accessory AC adaptor

AC

SDI video signal

Accessory AC adaptor

Monitor1

Monitor2

LAN cable (straight cable)

Switching hub

LAN cable (straight cable)

Monitor

Monitor

Compact Live Switcher
AW-HS50

AC adaptor

Remote Camera Controller
AW-RP120G

*The AC adaptor provided with the unit is not shown in the above figure.
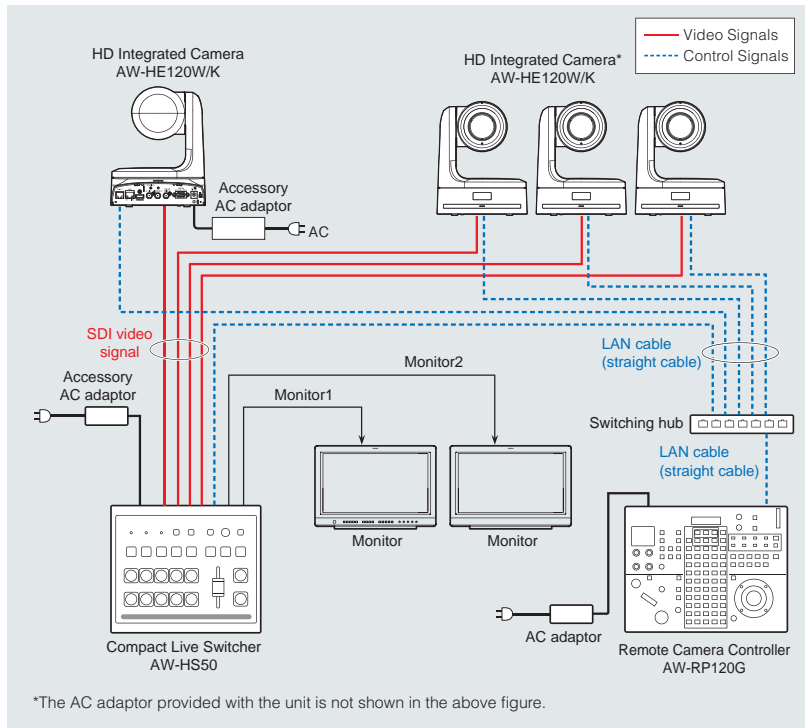
Integrated Pan-tilt camera with a compact body and simple system configuration

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.

228 mm
180 mm

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)

Light
Prism
Image sensor

The 3MOS system offers three times light utilisation of a 1MOS system.
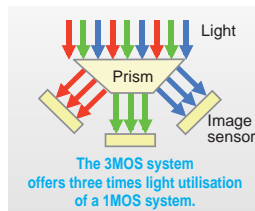
A 20x optical zoom lens covers wide-angle to ultra telephoto shots.

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.
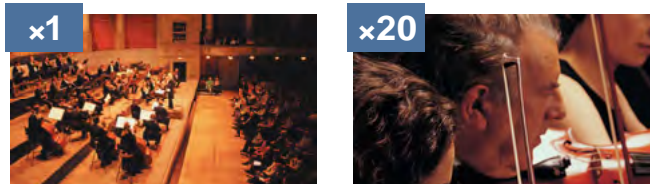
×1   ×20

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

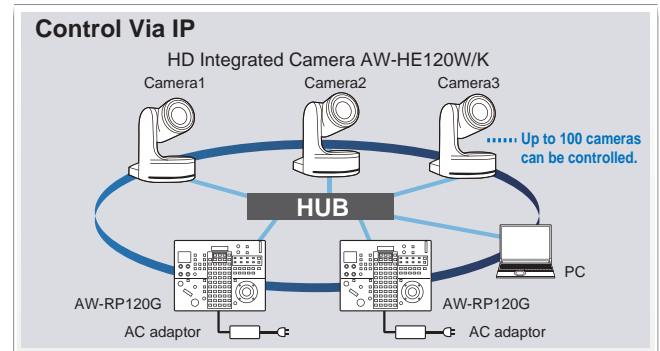## A wide range pan-tilt, high-speed control, and silent design apply for versatile operations.

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 ±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.

Top view | front | Side view
175° 175° | 210° 30°
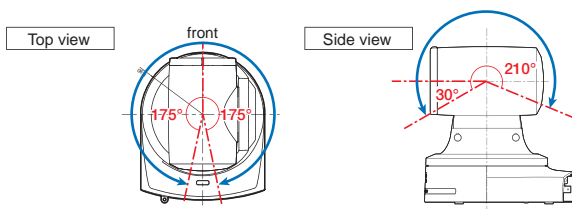
Supporting IP to simplify connection and setup, and ensures comfortable operation.

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.

Control Via IP
HD Integrated Camera AW-HE120W/K
Camera1   Camera2   Camera3
Up to 100 cameras can be controlled.
HUB
AW-RP120G   AW-RP120G   PC
AC adaptor   AC adaptor

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.

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

(Images are simulated.)

DRS ON
Both highlights and shadows are clearly visible

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 **For indoor use**

AW-HE60S [SDI Model]

HD Integrated Camera **For indoor use**

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

Suspended (Hanging) style

HDMI
HIGH-DEFINITION MULTIMEDIA INTERFACE
(AW-HE60H only)

Stand-alone (Desktop) style

Option

Wireless remote control
AW-RM50G

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

Direct Ceiling Mount Bracket
WV-Q105A

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-preventation 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.
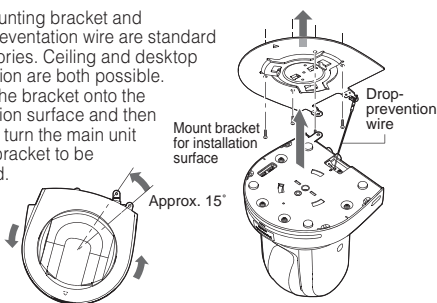
Mount bracket for installation surface

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.

HD Integrated Camera AW-HE60S

HD Integrated Camera* AW-HE60S

— Video Signals
---- Control Signals

Accessory AC adaptor

LAN cable (straight cable)

SDI video signal

Monitor2

Monitor1

Switching hub

LAN cable (straight cable)

Accessory AC adaptor

Compact Live Switcher AW-HS50

Monitor

Monitor

Accessory AC adaptor

Remote Camera Controller AW-RP50
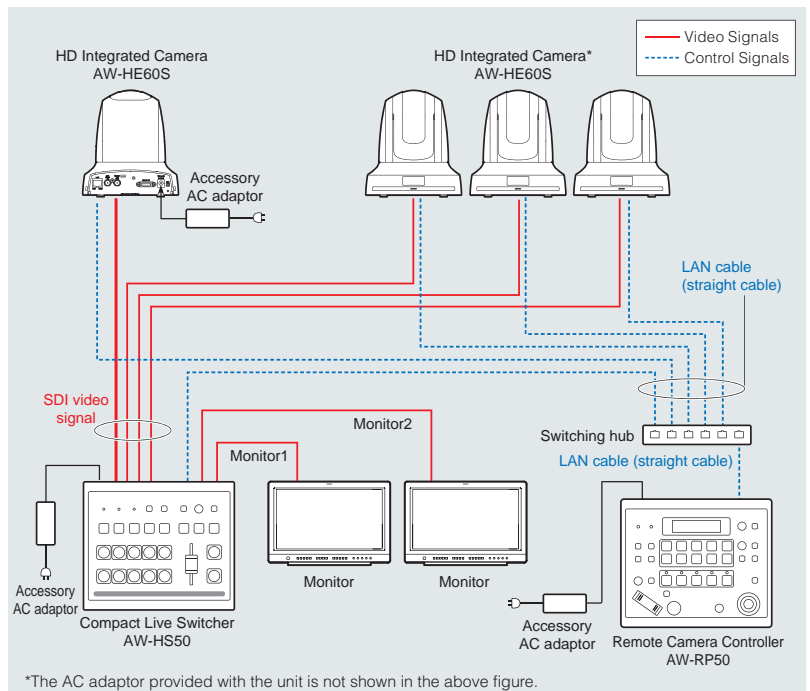
*The AC adaptor provided with the unit is not shown in the above figure.

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

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.

178 mm

160 mm

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.

×1

×18

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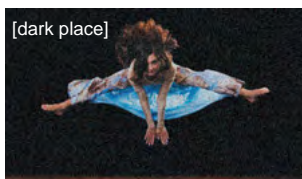(Images are simulated.)

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

● Dynamic Range Strech(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.

[dark place]

loss of resolution

afterimage

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

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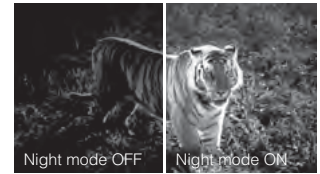Afterimage and some loss of resolution appear

(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.

Night mode OFF   Night mode ON
(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-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.

● 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.

Live screen   Multi screen

*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

● 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.

● 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

HD Integrated Camera

AW-HE2   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

HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE

Option

Wireless remote control
AW-RM50G

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

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

Optimal for both hanging and desktop installation.

The mounting bracket and drop-preventation 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]
① ② ③

Drop-prevention wire
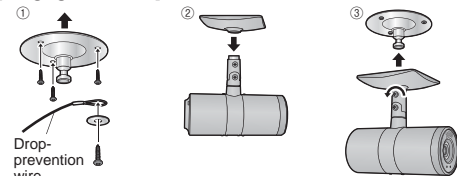
• Tightening torque: 1.176 N·m (12 kgf·cm)

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

HD Integrated Camera
AW-HE120W/K[Main camera]

HD Integrated Camera*
AW-HE2

— Video Signals
---- Control Signals

Accessory AC adaptor

HDMI   HDMI   HDMI

HDMI→SDI Converter

SDI video signal

Accessory AC adaptor

LAN cable (straight cable)

Monitor1   Monitor2

Switching hub

LAN cable (straight cable)

Monitor   Monitor

Compact Live Switcher AW-HS50

Accessory AC adaptor

Remote Camera Controller AW-RP50
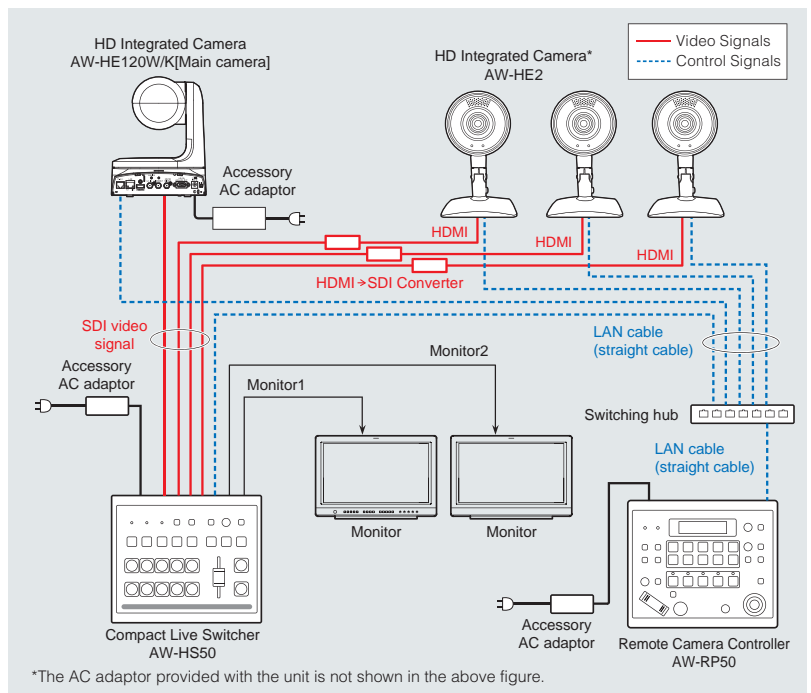
*The AC adaptor provided with the unit is not shown in the above figure.

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.

118 mm

138 mm

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.

×1

×2

Ultra-wide shooting with a 95 °
horizontal viewing angle

High-quality zoom with
Super 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-RP120G[3] and AW-RP50[3] 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.)

*3 In case controlling the AW-HE2 from the controller, it is possible to control only functions supported by the AW-HE2.

● 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-RP120G[3], AW-RP50[3] or wireless remote control.

PinP

Zoom
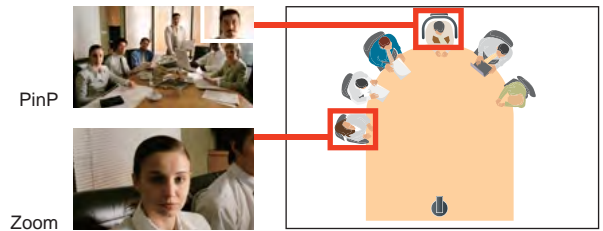
(Images are simulated.)

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-RP120G[3], AW-RP50[3] 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.

Live screen

*4 For more information, see page 17

Video/Audio output and power supply via USB[5]

Single USB cable is enough for Video/Audio output and battery charging[6] with PC.
Combined with various tele-communication software, USB Video/Audio output shows its value in wide range of applications, such as Web conference, distant learning, and remote production.

*5 When installing additional cameras, it is necessary to upgrade the version if the cameras were manufactured before January 2014. For details, see "Support & Download" on the Panasonic Website (http://pro-av.panasonic.net/en/).
*6 Available only with devices meeting USB battery charging spec standard.

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.

Optional Products

Remote Camera Controller
AW-RP120G
• AC adaptor (DC12 V) is required separately.

(Rear View)

Supporting Remote Cameras and Pan/Tilt Heads[*1]

• HD integrated cameras
AW-HE50S/H[*2], AW-HE60S/H, AW-HE120W/K, AW-HE100[*2], AW-HE2
• Cameras (used with supporting pan/tilt head)
AK-HC1500G, AK-HC1800G, AW-HE870, AW-E860[*2], AW-E750[*2], AW-E650[*2], AW-E350[*2]
• Pan/tilt heads
AW-PH360, AW-PH405, AW-PH650, AW-PH400 (requires AW-IF400G)

[*1] Controllable items vary depending on the model. [*2] Production discontinued.

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-RP120G 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.

Power supply	DC12 V/0.5 A (DC Input range: DC10 V to DC16 V)
Power consumption	6.0 W
Weight	Approx. 3.0 kg (Approx. 6.61 lb)
Dimensions (W × H × D)	Approx. 342 mm x 77 mm x 265 mm
	(Approx. 13-15/32 inches x 3-1/32 inches x 10-7/16 inches)[excluding protrusions]

• AC adaptor(DC12 V) is required separately.

Remote Camera Controller
AW-RP50

(Rear View)

Supporting Remote Cameras and Pan/Tilt Heads[*1]

• HD integrated cameras
AW-HE50S/H[*2], AW-HE60S/H, AW-HE120W/K, AW-HE100[*2], AW-HE2
• Cameras (used with supporting pan/tilt head)
AK-HC1500G, AK-HC1800G, AW-HE870, AW-E860[*2], AW-E750[*2], AW-E650[*2], AW-E350[*2]
• Pan/tilt heads
AW-PH360, AW-PH405, AW-PH650, AW-PH400 (requires AW-IF400G)

[*1] Controllable items vary depending on the model. [*2] Production discontinued.

Compact, easy-to-operate remote controller

• **IP Control**
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.
• **Multi-Control**
Up to 5 AW-RP50 can simultaneously controll one AW-HE60* and/or AW-HE120* and/or AW-HE2* unit.
• **Serial Control**
Up to 5 cameras/pan-tilt heads can be controlled via serial connection. External control is available by using RS232C.
• **AW-HS50 Link**
Linkage with AW-HS50 is available via IP connection, which realizes more smooth operation.
• **Preset Memory**
Up to 100 preset memories are available.
• **Compact design**
Compact panel desing for easy control.

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

* 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)

Supporting Remote Cameras

- **HD integrated cameras**
  AW-HE120W/K, AW-HE60S/H, AW-HE50S/H[*1]
- **Cameras**
  AK-HC3800G/GS[*2], AK-HC3500[*1][*2], AK-HC1800G, AK-HC1500G, AW-HE870

*1 Production discontinued. *2 When power is supplied from the camera control unit.

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[*3] 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[*4] and lens file[*4] can be saved an to a SD memory card. SD memory cards can also be used for firmware upgrades.[*4]
- **IP Connection**[*5]
  A LAN terminal enables IP connection via Ethernet (RJ45 LAN cable).[*5]

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

Power supply	DC12 V
Power consumption	4.2 W
Weight	Approx. 1.3 kg (Approx. 2.87 lb)
Dimensions (W × H × D)	92 mm × 308 mm × 55 mm (3-5/8 inches × 12-1/8 inches × 2-3/16 inches)[excluding protrusions]

- AC adaptor(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 Live Switcher
AW-HS50

(Rear View)

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
- Frame synchronizers on all inputs
- 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
- PinP, AUX Bus, Frame Store and Keyer functions also included

Power supply	DC12 V ±10 % (AC adaptor provided)
Power consumption	2.0 A (With DC12 V input)
Weight	Approx. 1.4 kg (Approx. 3.08 lb)
Dimensions (W × H × D)	210 mm × 67 mm × 177 mm (8-1/4 inches x 2-5/8 inches x 6-15/16 inches) [excluding protrusions]
Accessory	AC adaptor, Power cable

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

Power supply	DC10.8 V to DC16 V
Power consumption	1.5 W
Weight	Approx. 0.4 kg (Approx. 0.88 lb)
Dimensions (W × H × 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-PS550

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

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 × H × D)	52 mm × 34.5 mm × 118 mm (2-1/16 inches x 1-3/8 inches x 4-5/8 inches) [excluding protrusions]
Accessories	Power cable × 1 DC cable with ø5.5 plug: Approx. 3 m × 1 DC cable with ø6.5 plug: Approx. 3 m × 1

* 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

Serial Control

HD Remote Camera

Multi-Purpose Camera
AK-HC1800G[*4]
• 2/3 type 2.2 mega pixels 3CCD

Down converter Board
AK-HDC1500G

Multi-Purpose Camera
AK-HC1500G[*4]
• 2/3 type 1 mega pixels 3CCD

HD SDI Output Board
AK-HDC1500G
* Not available in some areas

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

HD Convertible Camera
AW-HE870[*4]
• 2/3 type 3CCD

SDI Output Card
AW-HHD870

**2/3 type
17x Zoom Lens**
AW-LZ17MD9AG

HD Integrated Camera
AW-HE120W/K
• 1/3 type Full-HD 3MOS

HD Integrated Camera
AW-HE60S/H
• 1/3 type Full-HD MOS

Pan-tilt Head

Control cable: Local procurement*1

Camera control cable **AW-CA50T8G**

Indoor Pan-tilt Head
AW-PH360[*3]
• 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)

Max.1 000 m

Indoor Pan-tilt Head
AW-PH405
• Pan: Approx. ±150 °, Tilt: 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)

Max.1 000 m

Indoor Pan-tilt Head
AW-PH400
• Pan: Approx. ±200 °, Tilt: Approx. ±150 °
• 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)

Max.500 m

Outdoor Pan-tilt Head
AW-PH650
• Pan: Approx. ±160 ˚, Tilt: Approx. 50 ˚ to Approx. -95 ˚
• Maximum pan speed 20 °/s
• Stop accuracy ±5 arcminutes (0.08 °)
• Quietness: Under NC40 (at 20 °/s)
• Maximum load: Approx. 10 kg (Approx. 22 lb)
• Heater, wiper and defroster functions for the housing can be controlled by the controller

Max.1 000 m

Multi-interface Cable **AW-CA20T6G**

CAT5 Coupler

- - - - Control Cable
——— Serial Control Cable (LAN Cable/CAT-5 or faster)
——— IP Control Cable (LAN Cable/CAT-5 or faster)
——— * Use AW-CA15H29G when connecting AK-HC1800G/HC1500G with AW-PH360/PH400/PH405.
* Use bundled cables of Pan-tilt Head when connecting AK-HC1800G/HC1500G with AW-PH650 or when connecting AW-HE870 with AW-PH360/PH400/PH405/PH650.

# of Remote Acquiring.

Controller

Remote Operation Panel
AK-HRP200G[*2][*5]

Max.1 000 m

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

Up to 19 HD Integrated Camera units can be controlled via IP.

Remote Camera Controller
AW-RP120G[*3]

Protocol Converter
AW-IF400G[*3]

Max.1 000 m

Remote Camera Controller
AW-RP50[*5]

- 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.

Max.1 000 m

Max.1 000 m

Control using web browser[*6]

- 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)

Max.100 m

Ethernet Cable (LAN Cable /CAT-5 or faster)

Wireless LAN Access Point

Max.1 000 m (multiple)

HUB

Max.100 m

HD Remote Camera

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

Max.100 m

HD Integrated Camera
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.

Compact Live Switcher
AW-HS50
- 5 inputs and 3 outputs (SDI standard)

Max.100 m

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.

* 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.

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

Lineup to Meet Various Needs

	Box Camera			Integrated Camera		
	Lens is not included	Lens is not included	Lens is not included			
	AK-HC1800	**AK-HC1500**	**AW-HE870**	**AW-HE120W/K**	**AW-HE60S/H**	**AW-HE2**
General Lens / Pan Tilt System	Exchangeable (2/3 type bayonet mount) / Optional			Integrated		
Control	Serial		Serial	Serial / IP / IR		IP / IR
Power Requirements	DC 12 V		DC 12 V	DC 12 V (AC Adaptor supplied)	DC 12 V (AC Adaptor supplied)	DC 5 V (AC Adaptor supplied)
Power Consumption	17 W		18.5 W	DC 12 V 1.75 A	DC 12 V 1.3 A(H)/1.4 A(S)	3.6 W
Weight	Approx. 1.5 kg(3.3 lbs)		Approx. 1.2 kg(2.65 lbs)	Approx. 3.0 kg(6.61 lbs)	Approx. 1.4 kg(3.1 lbs)	Approx. 0.244 kg(0.538 lbs)
Dimension (W x H x D) Excluding protrusions, cable cover, mount bracket	90 mm x117 mm x160 mm (3-9/16 inches x 4-5/8 inches x 6-5/16 inches)		83 mm x104.5 mm x192 mm (3-1/4 inches x 4-1/8 inches x 7-9/16 inches)	180 mm x 228 mm x 220 mm (7-3/32 inches x 8-31/32 inches x 8-21/32 inches)	160 mm x 178 mm x 166 mm (6-5/16 inches x 7 inches x 6-9/16 inches)	80 mm x 118 mm x 138 mm (3-5/32 inches x 4-5/8 inches x 5-7/16 inches)
Camera Image Sensors	2/3 type IT,CCD x3 2.2M	2/3 type IT,CCD x3 1.0M	2/3 type IT,CCD x3	1/3 type Full-HD 3MOS	1/3 type Full-HD MOS	1/4.37 type MOS Effective pixel for movie 3.91M
Lens	–		–	Mortorized zoom 20x,Digital zoom 10x F1.6 to F3.4 f=4.5 mm to 90 mm 35 mm equivalent: 32.13 mm to 642.5 mm	Mortorized zoom F1.x,Digital zoom 10x F1.6 to F2.8 f=4.7 mm to 84.6 mm 35 mm equivalent:36.9 mm to 664.5 mm	iA zoom 2x, Digital zoom 4x F2.0 f=2.15 mm 35 mm equivalent:18 mm
Field of View Horizontal	–			62.13°(wide) to 3.22°(tele)	56.3° (wide) to 3.3° (tele)	95 °
Field of View Vertical	–			36.34°(wide) to 1.54°(tele)	32.5° (wide) to 1.9° (tele)	56 °
Field of View Diagonal	–			68.57°(wide) to 3.5° (tele)	63.6° (wide) to 3.7° (tele)	102°
Focus	–		–	Auto/Manual	Auto/Manual	Auto
Focus Distance	–		–	Entire zoom range：800 mm Wide end:400 mm	Entire zoom range：1 000 mm Wide end:300 mm	Minimum focus distance：800 mm Wide end:400 mm
Sensitivity	F10/F11	F10	–	–	–	–
Horizontal Resolution	–		–	1 000 TV lines(Center area)	850 TV lines(Center area)	850 TV lines(Center area)
Minimum Illumination	0.015 lx(F1.4/68 dB)		–	7 lx(F1.6/18 dB)	3 lx(F1.6/36 dB)	20 lx(F2.0)
Gain	Maximum 72 dB by using Gain up circuit, CCD accumulation and horizontal/vertical addition		-6 dB to 18 dB, AGC	Auto, 0 dB to 18 dB	Auto, 0 dB to 18 dB	–
Frame mix	0 dB to 24 dB		–	0 dB to 24 dB	0 dB to 18 dB	–
ND Filter	Clear,1/4,1/16,1/64		–	Through,1/4,1/16,1/64	–	–
P/T Mechanism Preset	No			Up to 100		Up to 9
Pan/Tilt Operation Speed	–		–	Max 60° /s	Max 90° /s	–
Panning Range	–		–	±175°	±175°	Approx. ±23° (when iA zoom 2x) Approx. ±35° (when Digital zoom 4x)
Tilting Range	–		–	-30° to 210°	-30° to 90°	Approx. ±14° (when iA zoom 2x) Approx. ±21° (when Digital zoom 4x)
Quietness	–		–	NC35	NC35 (at normal speed) NC40 (at fastest speed when preset)	–
System Output Signal Format 1080/59.94p	–	–	–	●	●	●
1080/50p	–	–	–	●	●	●
1080/60i	–	●	–	–	–	–
1080/59.94i	●	●	●(60 Hz model) (Using AW-HHD870N)	●	●	●
1080/50i	●	●	●(50 Hz model) (Using AW-HHD870N)	●	●	●
1080/30PsF	●	●	–	–	–	–
1080/29.97PsF	●	●	–	–	●	–
1080/25PsF	●	●	–	–	●	–
1080/24PsF	●	●	–	–	–	–
1080/23.98PsF	●	●	–	–	–	–
720/60p	–	●	–	–	–	–
720/59.94p	–	●	●(60 Hz model) (Using AW-HHD870N)	●	●	●
720/50p	–	●	●(50 Hz model) (Using AW-HHD870N)	●	●	●
576/50p	–	–	–	●	●	●
576/50i	–	–	●(50 Hz model)	●	●	–
480/59.94p	–	–	–	●	●	●
480/59.94i	–	–	●(60 Hz model)	●	●	–
Video Output HD SDI	●		●(Using AW-HHD870N)	●	●(S model)	–
SD SDI	●(Using AK-HDC1500G)		●(Using AW-HHD870N)	●	●(S model)	–
HDMI	–		–	●	●(H model)	●
Composite	●(Using AK-HDC1500G)		●	●	●(Using AW-CA20T6G)	–
Analog out	–		●(Y/PB/PR,RGB,Y/C)	●(Y/PB/PR,RGB)	●(Y/PB/PR) (Using AW-CA20T6G)	–
USB	–		–	–	–	●
Video Output Connector	BNC x1(HD SDI) *With Option Board AK-HHD1500G BNC(HD SDI) x1 can be added		BNC x1(VIDEO OUT) *With Option Card AW-HHD870 BNC(HD/SD SDI) x2 can be added	BNC(HD/SD SDI) x1 BNC(VIDEO OUT) x1 HDMI x1 D-sub 15 pin (Analog Out) x1	BNC(HD/SD SDI) x1 (S model) HDMI x1(H model) Multi Interface x1	HDMI x1 USB Micro-B x1
Audio Output	–		–	–	–	●Linear PCM
Synchronization System	Internal/External(3SY/BB)		Internal/External(BB)	Internal/External(3SY/BB)	Internal/External(BB) (S model) Internal (H model)	Internal
Function Video over IP	–	–	–	–	●	●
Night mode	–	–	–	–	●	–
Built-In Microphone	–	–	–	–	–	●
DRS (Dinamic Renge Stretch)	–	●	–	●	●	●
Noise Reduction	–	–	–	–	●	–
VFR	–	●	–	–	–	–
CineGanma	–	●	–	–	–	–
Intelligent auto white balance	●	–	–	–	–	–

18

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 × H × D)	90 mm × 117 mm × 160 mm (3-9/16 inches × 4-5/8 inches × 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)×1 120(V)	1 370 (H)×744 (V)
	Effective Number of Pixels	1 920(H)×1 080(V)	1 280 (H)×720 (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)	
	Gain	Maximum 72 dB by using gain up circuit, CCD accumulation and horizontal/vertical addition	
	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)	
Input/Output Connector	Video Output	HD SDI (BNC×1)	
	SYNC input	SYNC input (GL input 3 value SYNC/BB)	
	Camera Connector Control System	D-sub 15 pin×1	
		Asynchronous (EIA-422)	
	Lens Connector 1	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

(Front)

117 mm (4-5/8 inches) · 44.5 mm (1-3/4 inches) · 90 mm (3-9/16 inches)

(Side)

Panasonic

13.2 mm (17/32 inches) · 160 mm (6-5/16 inches) · 12 mm (15/32 inches)

(Top)

Mounting screws(inch screws) 1/4-20UNC,Depth: 10 mm (3/8 inches)

20 mm (13/16 inches) · 90 mm (3-9/16 inches) · 13.2 mm (17/32 inches) · 40.5 mm (1-5/8 inches) · 14 mm (9/16 inches) · 160 mm (6-5/16 inches) · 12 mm (15/32 inches)

(Bottom)

16 mm (5/8 inches) · 50.8 mm (2 inches) · Mounting screws(Inch Screws) 1/4-20UNC,Depth: 10mm (3/8 inches) · Mounting screws(Inch Screws) 3/8-16UNC,Depth: 10 mm (3/8 inches) · 20 mm (13/16 inches) · 13.2 mm (17/32 inches) · 40.5 mm (1-5/8 inches) · 160 mm (6-5/16 inches) · 12 mm (15/32 inches)

Rear view

(for AK-HC1500G only)

DC+12 V (only applies to AK-HC1500G)

• The photograph shows AK-HC1500G.

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

	AK-HC1800G	AK-HC1500G
Pin No.	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/E					
General	Power Requirements	DC 12 V		**Camera**	Registration		0.05 % (Entire screen, excluding effects of lens)
	Power Consumption	18.5 W			White Balance		AWB A/B (R/B painting), ATW 3 200 K/5 600 K preset
	Operating Temperature	-10°C to 45°C (14°F to 113°F) (Preheating is necessary for activation below 0°C)			Black Balance		Auto (R/B painting)
					Synchronization System		Internal/External synchronization BB (BNC×1, D-sub 50 pin×1)
	Allowable Humidity Range	20 % to 90 %		**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 pin×1) RGB : 1.0 V[p-p]/75 Ω (D-sub 50 pin x 1)
	Storage Temperature	-20°C to 60°C (-4°F to 140°F)			SD Format	Continous Output	59.94 Hz (AW-HE870N)	VIDEO OUT : 1.0 V[p-p]/75 Ω (BNC×1, D-sub 50 pin×1) Y/C Y : 1.0 V[p-p]/75 Ω C: 0.286 V[p-p]/75 Ω (burst) (D-sub 50 pin×1)
	Weight	Approx.1.2 kg (Approx.2.65 lbs)					50 Hz (AW-HE870E)	VIDEO OUT : 1.0 V[p-p]/75 Ω (BNC×1, D-sub 50 pin×1) Y/C Y : 1.0 V[p-p]/75 Ω C: 0.3 V[p-p]/75 Ω (burst) (D-sub 50 pin×1)
	Dimensions (W × H × D)	83 mm × 104.5 mm × 192 mm (3-1/4 inches × 4-1/8 inches × 7-9/16 inches) (excluding protrusions)				Switched by menu	59.94 Hz (AW-HE870N)	Y/PB/PR Y : 1.0 V[p-p]/75 Ω PB/PR: 0.7 V[p-p]/75 Ω (D-sub 50 pin×1) RGB : 1.0 V[p-p]/75 Ω (D-sub 50 pin×1) Y/C Y : 1.0 V[p-p]/75 Ω C: 0.286 V[p-p]/75 Ω (burst) (D-sub 50 pin×1)
Camera	Image Sensors	2/3 type IT,CCD x3					50 Hz (AW-HE870E)	Y/PB/PR Y : 1.0 V[p-p]/75 Ω PB/PR: 0.525 V[p-p]/75 Ω (D-sub 50 pin×1) RGB : 1.0 V[p-p]/75 Ω (D-sub 50 pin×1) Y/C Y : 1.0 V[p-p]/75 Ω C: 0.3 V[p-p]/75 Ω (burst) (D-sub 50 pin×1)
	Lens Mount	2/3 type bayonet mount		**Input/Output Connector**	VIDEO OUT		BNC×1
	Optical System	Dichroic prism optical system, F1.4			GEN LOCK IN		BNC×1
	Gain Selection	-6 dB to 18 dB (1 dB in step), AGC			IRIS		12 pin round x1
	Electronic Shutter Speed	59.94 Hz (AW-HE870N)	1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, ELC, Synchro-scan (61.19 Hz to 1466 Hz)		DC12 V		DC×1
		50 Hz (AW-HE870E)	1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, ELC, Synchro-scan (50.99 Hz to 1478 Hz)		I/F REMOTE		D-sub 50 pin×1
	Color Bar	59.94 Hz (AW-HE870N)	SMPTE				
		50 Hz (AW-HE870E)	FULL		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)
	Output Format	59.94 Hz (AW-HE870N)	1080/59.94i*, 720/59.94p*, 480/59.94i				
		50 Hz (AW-HE870E)	1080/50i*, 720/50p*, 576/50i				
	Standard Illumination, Color Temperature	2 000 lx (F10, 3 200 K)					

* Optional card (AW-HHD870) is required.

Dimensions

(Front)

17.5 mm (11/16 inches)
104.5 mm (4-1/8 inches)
77 mm (3-1/32 inches)
34 mm (1-5/32 inches)
83 mm (3-5/16 inches)
10 mm (3/8 inches)

(Side)

Panasonic AW-HE870
HD HIGH DEFINITION   HD Convertible Camera
12 mm (15/32 inches)
171 mm (6-3/4 inches)
9 mm (3/8 inches)

(Top)

20 mm (13/16 inches)
32 mm (1-1/4 inches)
Mounting screws (Inch Screws) 1/4-20UNC,Depth: 10 mm (3/8 inches)

(Bottom)

20 mm (13/16 inches)
32 mm (1-1/4 inches)
18 mm (11/16 inches)
Mounting screws (Inch Screws) 1/4-20UNC,Depth: 10mm (3/8 inches)

Rear view

* As of April,2014

Specifications

		AW-HE120WP/WE/KP/KE				
General	Power Requirements	DC 12 V (AC adaptor supplied)	Camera	Scene File		Scene1, Scene2, Scene3, Scene4
	Power Consumption	DC 12 V 1.75 A		Output Format	HD	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)				
	Allowable Humidity Range	35 % to 90 % (no condensation)			SD	576/50p*2, 576/50i, 480/59.94p*2, 480/59.94i
	Storage Temperature	-20°C to 50°C (-4°F to 122°F)		Synchronization System		Internal/External synchronization (BBS/Tri-level sync)
	Weight	Approx.3.0 kg (Approx 6.61 lbs) (Including mount bracket)	Input Connector	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)	Output Connector	HDMI		HDMI×1
Camera	Image Sensors	1/3 type Full-HD 3MOS		HD/SD SDI OUT		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
	ND Filter	Through, 1/4, 1/16, 1/64		HD/SD ANALOG OUT		Y/P$_B$/P$_R$ or R/G/B D-sub 15 pin x 1
	Focus	Switching between auto and manual	Input/Output Connector	LAN		LAN connector for IP control (RJ-45)
	Focus distance	Entire zooming range: 800 mm, Wide end: 400 mm		RS-422		CONTROL IN RS422A (RJ-45)
	Color Separation Optical System	3MOS	Pan-Tilt Mechanism	Pan/Tilt Operation Speed		MAX 60°/s
	Minimum Illumination	7 lx (50 IRE, F1.6, 18 dB)		Panning Range		±175°
	Horizontal Resolution	1 000 TV lines Typ (Center area)		Tilting Range		-30° to 210°
	Gain Selection	Auto, 0 dB to 18 dB		Quietness		NC35
	Frame Mix*1	0 dB, 6 dB, 12 dB, 18 dB, 24 dB				
	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
		50 Hz: 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000				
	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-Q105A).

Dimensions

(Front)

(Side)

Rear view

* As of April,2014
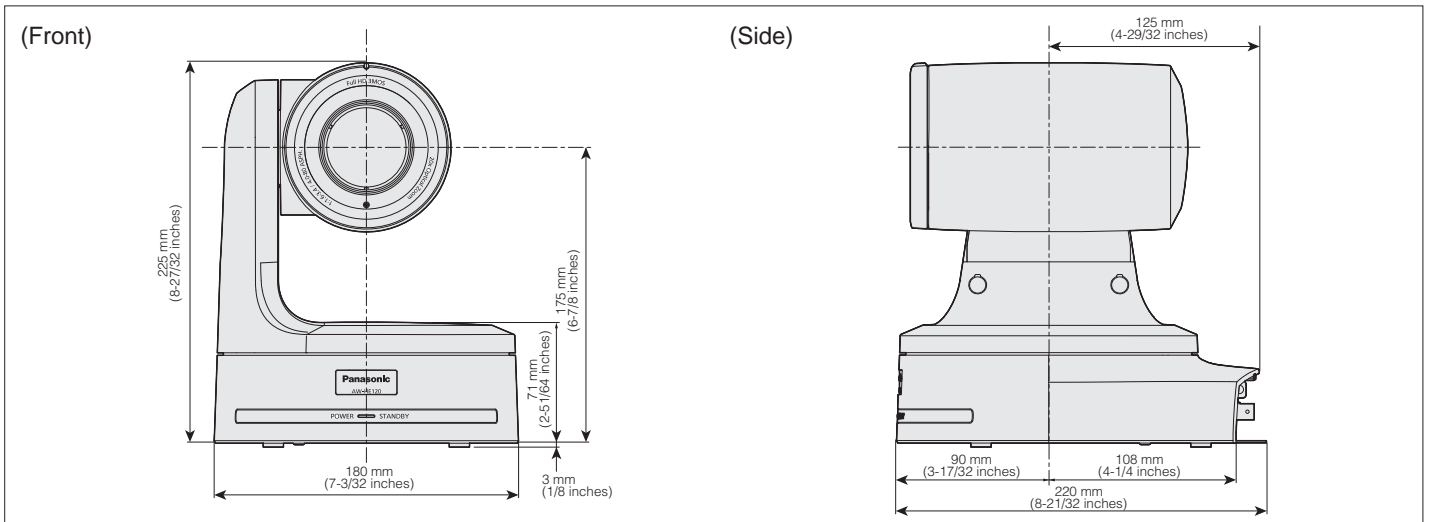
Specifications

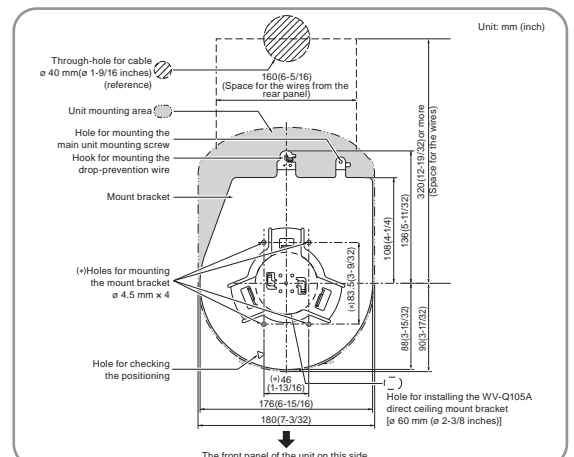|		AW-HE60SN/SE/HN/HE					
General	Power Requirements	DC 12 V (AC adaptor supplied)		Camera	Scene File		FullAuto, Manual1, Manual2, Manual3
	Power Consumption	DC 12 V 1.3 A (AW-HE60H), 1.4 A (AW-HE60S)			Output Format	HD	1080/59.94p*1, 1080/59.94i, 1080/50p*1, 1080/50i, 1080/29.97PsF, 1080/25PsF, 720/59.94p, 720/50p
	Operating Temperature	0°C to 40°C (32°F to 104°F)				SD	576/50p*1, 576/50i, 480/59.94p*1, 480/59.94i
	Allowable Humidity Range	20 % to 90 % (no condensation)			Synchronization SystemScene		Internal synchronization (AW-HE60H), Internal/External synchronization (BBS) (AW-HE60S)
	Storage Temperature	-20°C to 50°C (-4°F to 122°F)		Output Connector	Input Connector		DC 12 V IN, EXT SYNC IN (BNC) (AW-HE60S only) *BBS (Black Burst Sync) signal supported
	Weight	Approx.1.4 kg (Approx.3.1 lbs)			HDMI		HDMIx1 (AW-HE60H)
	Dimensions (W × H × D)	160 mm × 178 mm × 166 mm (6-5/16 inches × 7 inches × 6-9/16 inches) (excluding protrusions, cable cover, direct ceiling mount bracket)			SDI		BNCx1 Compliant with the SMPTE292M/SMPTE259M standards / 75 Ω (AW-HE60S)
Camera	Image Sensors	1/3 type Full-HD MOS			Composite		MULTI-I/Fx1 1.0 V [p-p] / 75 Ω
	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)			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
	Focus	Switching between auto and manual				SD 59.94 Hz	MULTI-I/Fx1 Y: 1.0 V[p-p] / 75 Ω, PB/PR: 0.7 V[p-p] / 75 Ω
	Focus distance	Entire zooming range: 1.0 m (3.3 ft.), Wide end: 30 cm (0.98 ft.)				50 Hz	Y: 1.0 V[p-p] / 75 Ω, PB/PR: 0.525 V[p-p] / 75 Ω
	Color Separation Optical System	On-chip color filter system		Input/Output Connector	LAN		LAN connector for IP control (10BASE-T/100BASE-T, RJ-45)
	Minimum Illumination	3 lx (50 IRE, F1.6, 36 dB)			RS-422		MULTI-I/Fx1 CONTROL IN RS422A*3
	Horizontal Resolution	850 TV lines Typ (Center area)		Pan-Tilt Mechanism	Pan/Tilt Operation Speed		MAX 90°/s
	Gain Selection	Auto, 0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 15 dB, 18 dB			Panning Range		±175°
	Frame Mix	0 dB, 6 dB, 12 dB, 18 dB			Tilting Range*4		90° to -30°
	Electronic Shutter Speed	59.94 Hz	1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000		Quietness		NC35 (at normal speed), NC40 (at fastest speed when preset)
		50 Hz	1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000	Standard Accessories			Mount bracket for installation surface (Hanging*5/Desktop), Drop-prevention wire (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 (2 m[6.6 ft]), AC adaptor
	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					

*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/RP 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-Q105A).

Dimensions

(Front)　(Side)

Rear view

AW-HE60HN/HE

AW-HE60SN/SE

* As of April,2014

AW-HE2P/E

Specifications

<table>
<tr><th colspan="3"></th><th colspan="2">AW-HE2P/E</th></tr>
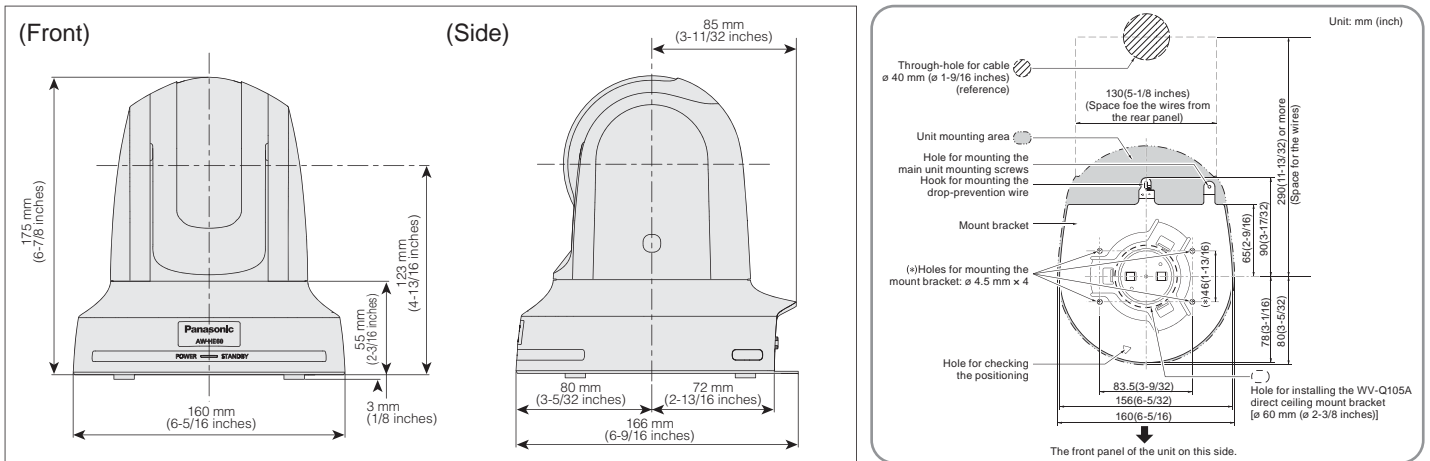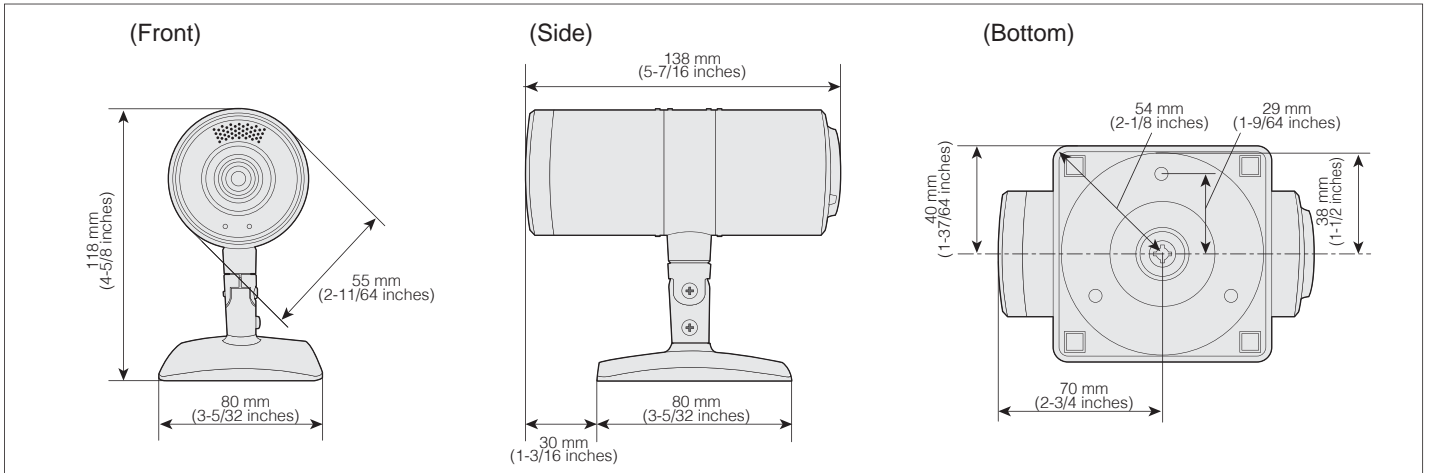<tr><td rowspan="9">General</td><td colspan="2">Power Requirements</td><td colspan="2">DC 5.0 V (AC adaptor supplied)</td></tr>
<tr><td colspan="2">Power Consumption</td><td colspan="2">3.6 W</td></tr>
<tr><td colspan="2">Operating Temperature</td><td colspan="2">0°C to 40°C (32°F to 104°F)</td></tr>
<tr><td colspan="2">Allowable Humidity Range</td><td colspan="2">-10 % to 80 % (no condensation)</td></tr>
<tr><td colspan="2">Storage Temperature</td><td colspan="2">-10°C to 60°C (14°F to 140°F)</td></tr>
<tr><td colspan="2">Storage Humidity Range</td><td colspan="2">0 % to 90 % (no condensation)</td></tr>
<tr><td colspan="2">Weight</td><td colspan="2">Approx.0.244 kg (Approx.0.538 lbs)</td></tr>
<tr><td colspan="2" rowspan="2">Dimensions (W × H × D)</td><td colspan="2">80 mm x 118 mm x 138 mm</td></tr>
<tr><td colspan="2">(3-5/32 inches x 4-5/8 inches x 5-7/16 inches)</td></tr>
</table>

		AW-HE2P/E
General	Power Requirements	DC 5.0 V (AC adaptor supplied)
	Power Consumption	3.6 W
	Operating Temperature	0°C to 40°C (32°F to 104°F)
	Allowable Humidity Range	-10 % to 80 % (no condensation)
	Storage Temperature	-10°C to 60°C (14°F to 140°F)
	Storage Humidity Range	0 % to 90 % (no condensation)
	Weight	Approx.0.244 kg (Approx.0.538 lbs)
	Dimensions (W × H × D)	80 mm x 118 mm x 138 mm (3-5/32 inches x 4-5/8 inches x 5-7/16 inches)
Camera	Image Sensors	1/4.37 type MOS Effective pixels: Motion picture Approx.3.9 mega pixels
	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)
	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)
	Horizontal Resolution	850 TV line Typ (Center area)
	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)
	Output Format HD	1080/59.94p, 1080/59.94i, 1080/50p, 1080/50i, 720/59.94p, 720/50p
	Output Format SD	576/50p, 480/59.94p

	AW-HE2P/E
Synchronization System	Internal synchronization
Video Output Connector	HDMI x 1
Audio Output Connector	HDMI x 1, Linear PCM
Network	10BASE-T, 100BASE-TX, RJ-45 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).
USB	Micro-B terminal x 1, Power supply function (power supplied from the USB terminal when there is no power provided from DC input terminal) Video Output : USB VIdeo Class Compression Motion JPEG Resolution 1920x1080(MAX),1280x720,640x360 Frame rate 30 fps(MAX)* Audio Output : USB Audio Class Compression Linear PCM
Microphone	2 ch stereo
Pan-Tilt Mechanism — Panning Range	Approx. ±23°[iA Approx.2x zoom] Approx. ±35°[Digital Approx.4x zoom]
Pan-Tilt Mechanism — Tilting Range	Approx. ±14°[iA Approx.2x zoom] Approx. ±21°[Digital Approx.4x zoom]
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

* Depending on your environment and audio input conditions, the rate may vary.

Dimensions

(Front)

(Side)

(Bottom)

118 mm (4-5/8 inches)
55 mm (2-11/64 inches)
80 mm (3-5/32 inches)

138 mm (5-7/16 inches)
80 mm (3-5/32 inches)
30 mm (1-3/16 inches)

54 mm (2-1/8 inches)
29 mm (1-9/64 inches)
40 mm (1-37/64 inches)
38 mm (1-1/2 inches)
70 mm (2-3/4 inches)

Rear view

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

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

Panasonic®

[Countries and Regions]

Argentina	+54 11 4122 7200	Kuwait	+96 522431385	Taiwan	+886 2 2227 6214
Australia	+61 (0) 2 9491 7400	Lebanon	+96 11665557	Thailand	+662 731 8888
Bahrain	+973 252292	Malaysia	+60 3 7809 7888	Turkey	+90 216 578 3700
Brazil	+55 11 3889 4035	Mexico	+52 55 5488 1000	U.A.E. (for All Middle East)	
Canada	+1 905 624 5010	Netherlands, Belgium			+971 4 8862142
China	+86 10 6515 8828		+31 73 640 2729	Ukraine	+380 44 4903437
Hong Kong	+852 2313 0888	New Zealand	+64 9 272 0100	U.K.	+44(0)1344 70 69 13
Czech Republic:	+421 (0) 903 447 757	Norway	+47 67 91 78 00	U.S.A.	+1 877 803 8492
Denmark	+45 43 20 08 57	Pakistan	+92 5370320 (SNT)	Vietnam	+65 6277 7284
Egypt	+20 2 23938151	Palestine	+972 2 2988750		
Finland, Latvia, Lithuania, Estonia		Panama	+507 229 2955		
	+358 (9) 521 52 53	Philippines	+65 6277 7284		
France	+33 (0) 1 47 91 64 00	Poland	+48 (22) 338 1100		
Germany, Austria, Switzerland		Portugal	+351 21 425 77 04		
	+49 (0) 6103 313887	Romania, Albania, Bulgaria, Macedonia			
Greece	+30 210 96 92 300		+40 (0) 729 164 387		
Hungary	+36 (1) 382 60 60	Russia & CIS	+7 495 9804206		
India	+91 1860 425 1860	Saudi Arabia	+96 626444072		
Indonesia	+65 6277 7284	Singapore	+65 6277 7284		
Iran		Slovak Republic, Croatia, Serbia,			
(Vida)	+98 21 2271463	Bosnia, Montenegro, Slovenia			
(Panasonic Office)+98 2188791102			+421 (0) 903 447 757		
Italy	+39 02 6788 367	South Africa	+27 11 3131622		
Jordan	+962 6 5859801	Spain	+34 (93) 425 93 00		
Kazakhstan	+7 727 298 0891	Sweden	+46 (8) 680 26 41		
Korea	+82 2 2106 6641	Syria	+963 11 2318422/4		

CERTIFIED JQA MANAGEMENT SYSTEM
ISO 9001
JQA-0443

ISO 14001 JACO
EC98J2010

UKAS MANAGEMENT SYSTEMS
051

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