

Safety precautions



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK).
NO USER SERVICEABLE PARTS INSIDE.
REFER TO SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (service) instructions in the literature accompanying the appliance.

WARNING:

- TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.
- THE APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING AND THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.

WARNING:

HAZARDOUS MOVING PARTS
KEEP FINGERS AND OTHER BODY PARTS AWAY.

CAUTION:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

CAUTION:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, REFER CHANGES OF SWITCH SETTINGS INSIDE THE UNIT TO QUALIFIED SERVICE PERSONNEL.

 indicates safety information.

Safety precautions

For CANADA

**This class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme
NMB-003 du Canada.**

FCC Note:

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warning:

To assure continued FCC emission limit compliance, the user must use only shielded interface cables when connecting to external units. Also, any unauthorized changes or modifications to this equipment could void the user's authority to operate it.

Replace battery with part No. CR2032 only.
Use of another battery may present a risk of fire or explosion.
Caution—Battery may explode if mistreated.
Do not recharge, disassemble or dispose of in fire.

<For USA-California Only>

This product contains a CR Coin Cell Lithium Battery which contains Perchlorate Material – special handling may apply.
See www.dtsc.ca.gov/hazardouswaste.perchlorate.

 indicates safety information.

Safety precautions

IMPORTANT SAFETY INSTRUCTIONS

Read these operating instructions carefully before using the unit. Follow the safety instructions on the unit and the applicable safety instructions listed below. Keep these operating instructions handy for future reference.

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this apparatus near water.
- 6) Clean only with dry cloth.
- 7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over. 
- 13) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

 indicates safety information.

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Introduction

- This is a compact stand-alone type of pan-tilt head which is capable of rotating 95 degrees upward and downward and 300 degrees on the horizontal.
- Information on the combinations of the cameras and lenses which can be used with this pan-tilt head can be found in the Specifications section.
Cameras and lenses not mentioned in this section cannot be used. (Page 46)
- The positions and settings for shooting up to 50 points can be entered as data into the preset memory.
- This pan-tilt head can be controlled using a controller (AW-RP301, AW-RP305, AW-RP501, AW-RP505, AW-RP555, AW-RP605A, AW-RP655, AW-RP400 or AW-RP50) and/or a personal computer.
The controller may need to be upgraded to a more recent version so that it will be able to support this pan-tilt head. For details, consult your dealer.

For the purposes of this manual, the model numbers of the units are given as listed in the table below.

Model number of unit	Model number given in manual	Model number of unit	Model number given in manual
AW-E350P	AW-E350	AW-RP301P	AW-RP301
AW-E650P	AW-E650	AW-RP305P	AW-RP305
AW-E750P	AW-E750	AW-RP501P	AW-RP501
AW-E860N	AW-E860	AW-RP505P	AW-RP505
AW-HE870N	AW-HE870	AW-HB505P	AW-HB505
AK-HC1500G	AK-HC1500	AW-RP555N	AW-RP555
AK-HC1800G	AK-HC1800	AW-RP605AN	AW-RP605A
AW-HHD870N	AW-HHD870	AW-RP655N	AW-RP655
AW-PB504N	AW-PB504	AW-RP400N	AW-RP400
AW-LZ16MD55P	AW-LZ16MD55	AW-RP50N	AW-RP50
AW-LZ16MD73P	AW-LZ16MD73	AK-HRP150G	AK-HRP150
AW-LZ17MD9AG	AW-LZ17MD9A	AW-RC400N	AW-RC400
AK-LZ20M85G	AK-LZ20M85	AW-CB400N	AW-CB400
AW-PS300AP	AW-PS300A	AW-CA28T9P	AW-CA28T9
AW-PS550N	AW-PS550	AW-CA15H29G	AW-CA15H29
AW-PS510AN	AW-PS510A	AW-CAK4H1G	AW-CAK4H1

Accessories

Please check the following accessories have been provided.

Operating Instructions	(×1)
Camera cable	(×1)
DC cable	(×1)
Tilting arm	(×1)
Tilting arm fixing screws	
M4 × 12 mm	(×4)
Camera mounting plate	(×1)
Guide screws	
(with flat washers, spring washers)	
M4 × 18 mm	(×2)
Drop-prevention wire	(×1)
Mounting screw for wire	
(with flat washer, spring washer)	
M4 × 8 mm	(×1)

■ Disclaimer of warranty

IN NO EVENT SHALL Panasonic System Networks Co., Ltd. BE LIABLE TO ANY PARTY OR ANY PERSON, EXCEPT FOR REPLACEMENT OR REASONABLE MAINTENANCE OF THE PRODUCT, FOR THE CASES, INCLUDING BUT NOT LIMITED TO BELOW:

- ① ANY DAMAGE AND LOSS, INCLUDING WITHOUT LIMITATION, DIRECT OR INDIRECT, SPECIAL, CONSEQUENTIAL OR EXEMPLARY, ARISING OUT OF OR RELATING TO THE PRODUCT;
- ② PERSONAL INJURY OR ANY DAMAGE CAUSED BY INAPPROPRIATE USE OR NEGLIGENT OPERATION OF THE USER;
- ③ UNAUTHORIZED DISASSEMBLE, REPAIR OR MODIFICATION OF THE PRODUCT BY THE USER;
- ④ INCONVENIENCE OR ANY LOSS ARISING WHEN IMAGES ARE NOT DISPLAYED, DUE TO ANY REASON OR CAUSE INCLUDING ANY FAILURE OR PROBLEM OF THE PRODUCT;
- ⑤ ANY PROBLEM, CONSEQUENTIAL INCONVENIENCE, OR LOSS OR DAMAGE, ARISING OUT OF THE SYSTEM COMBINED BY THE DEVICES OF THIRD PARTY;
- ⑥ LOSS OF REGISTERED DATA CAUSED BY ANY FAILURE.

Installation precautions

Parts to be provided by the customer for installation

This unit comes with a drop-prevention wire (approx. 200 (7-7/8") mm long) and mounting screw for wire.

Provide the following items to install the pan-tilt head and underneath support plate.

- **Embedded anchors:** ×5
(4 locations for M6, 1 location for M8),
or hangers (pages 24 to 28)
- **Hexagon head bolts or nuts (M6: for pan-tilt head):** 4 pcs each
- **Hexagon head bolt or nut (M8: for underneath support plate):**
1 pc each
- **Flat washers (M6):** ×8
- **Flat washer (M8):** ×2
- **Spring washers (M6):** ×8
- **Spring washer (M8):** ×2

For details, refer to page 20.

● Installation locations

- Be absolutely sure to use anchors or hangers for installation.
- A withdrawal strength of at least 340 N (35 kgf) per location is required to install the pan-tilt head.
Fashion the anchors or hangers in such a way that they will be strong enough to support at least 5 times this withdrawal strength.
- When installing the pan-tilt head, be absolutely sure to install the pan-tilt head unit (in 4 locations) and the drop prevention underneath support plate (in 1 location).

Avoid installing and using the unit in the following kinds of locations.

- On surfaces of plasterboard or wood
- On walls (where the unit would be installed sideways)
- Where the unit will be directly exposed to rain or water (including under the eaves and other such places)
- In kitchens and other places with high levels of steam, oil and grease
- Outdoors or places where the temperature will exceed 45 °C (113 °F)
- Cold places where the temperature will drop below -10 °C (14 °F)
- Places where the humidity is higher than 90 %
- Swimming pools and other places where chemicals are used
- At sea and in coastal areas, and places where corrosive gases are given off
- Places exposed to heavy vibrations from vehicles, ships, etc. (the unit is not designed to be installed in vehicles)
- Places near the air outlets of air conditioners, near doors where the outside air comes in and other places where the temperature changes suddenly or drastically

Installation precautions

- **Tightening up the mounting screws**

- Be absolutely sure to use screwdrivers and wrenches for the screws and bolts, and install the unit securely.
- After installing the unit, check that there is no play or looseness.

Installing the pan-tilt head	Clamping torque
Hexagon head bolts (M6)	5.0 N·m (50 kgf·cm)
Hexagon head bolts (M8)	12.0 N·m (120 kgf·cm)

- **If the pan-tilt head is not going to be used, do not leave it standing but ensure without fail that it is removed.**
- **Use the AC adapter (AW-PS300A or AW-PS550) to supply power to the pan-tilt head.**
Do not use other AC adapters or units since they may burst into flames or emit smoke.
- **When handling the pan-tilt head, be absolutely sure to hold it by its base.**
Trouble may be caused if the rotating part is held or rotated by hand.
- **The maximum load is 4 kg (8.8 lbs). However, if the unit's balance cannot be adjusted properly, no guarantees can be made for the unit's functions and performance so refrain from using accessories which add to the unit's weight. (Refer to page 17 for the balance adjustment procedure.)**
- **After installing the pan-tilt head, mount the camera onto it.**
- **When mounting the camera, take every means to ensure that the camera will not become dislodged and prevent it from falling out of place.**
- **Products other than a camera and lens, such as a prompter, may not be mounted on the pan-tilt head.**
- **For the lens, use the recommended lens model (page 46) that corresponds to the camera to be used.**
Do not use a lens that is not among the ones recommended.

Precautions for use

Ensuring that the unit will continue to perform stably for a prolonged period of time

Using the pan-tilt head in a location with high temperatures and high levels of humidity will cause its parts to deteriorate, shortening its service life as a result. Do not place the unit where it will be directly exposed to heat, whether heat radiating from the installation location or heat from a heating appliance, etc.

Handle the unit carefully

Do not drop the unit or subject it to strong impact or vibration. Doing so may cause trouble.

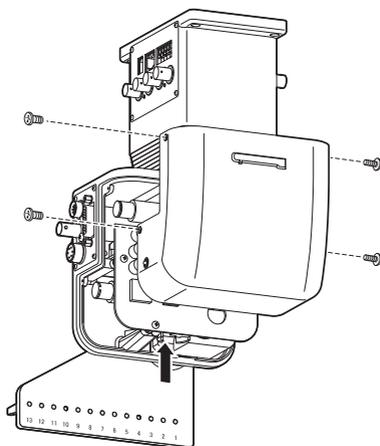
If the pan-tilt head is not going to be used, do not leave it standing but ensure without fail that it is removed.

This pan-tilt head uses a manganese dioxide-lithium battery (CR2032).

Be absolutely sure to remove this battery when disposing of the pan-tilt head or printed circuit boards.

Do not dispose of this type of battery as household garbage.

For details on how to remove the battery, refer to the section on replacing the battery in “Replacement of consumable parts” (page 44).



The unit comes with a safe mode function.

The safe mode function is designed to protect people and personal property from harm and the pan-tilt head from damage.

For further details, refer to “Concerning the safe modes” (page 33).

When one of the safe modes is established, the tally lamps blink, and panning and tilting operations can no longer be performed.

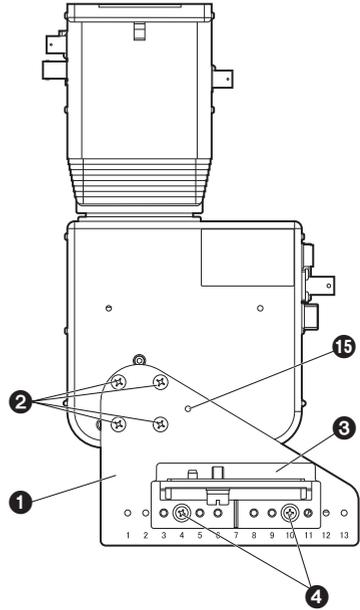
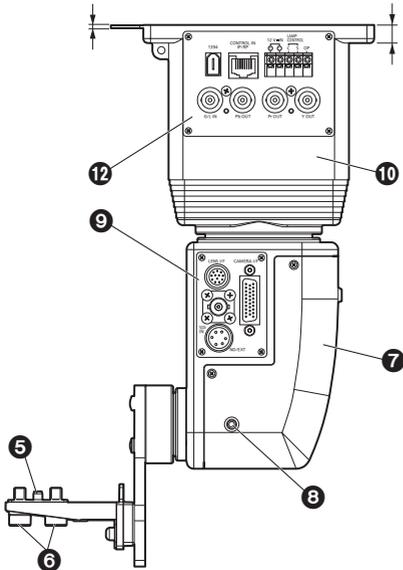
The safe mode is released when the PAN/TILT lever on the controller is returned to its center position.

- If a safe mode is established frequently, consult your dealer.

Parts and their functions

Plate thickness:
1.6 mm (1/16")

Thickness of mounting area:
10 mm (13/32")

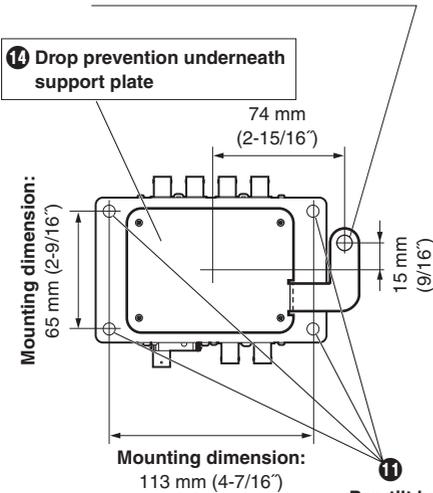


Underneath support plate mounting hole:

$\phi 8.5$ mm

Mounting screw:

Hexagon head bolt (M8)

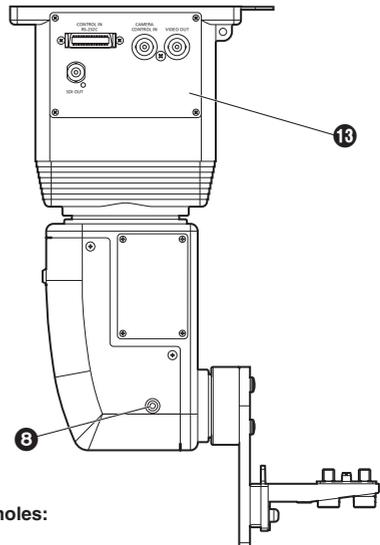


Pan-tilt head mounting holes:

$\phi 6.7$ mm ($\times 4$)

Mounting screws:

Hexagon head bolts (M6)



Parts and their functions

① Tilting arm

This tilts in the vertical direction.

② Tilting arm fixing screws

M4 × 12 mm (4 screws supplied)

③ Camera mounting plate

This is used to mount the camera.
(See page 17)

④ Guide screws

These are used to maintain the camera's balance and anchor the camera mounting plate.

M4 × 18 mm (2 screws supplied)

⑤ Guide pin

This determines the mounting direction of the camera.

⑥ Camera mounting screws (U1/4-20 UNC)

These are used to mount the camera and anchor it securely.
(See page 32)

⑦ Head

This rotates in the horizontal direction.

⑧ Tally lamps (×2)

These light (red) when the tally input is ON.

They blink for several seconds when the unit starts operating, and they also blink when one of the safe modes is established.

⑨ Head connector panel

This is used for connection with the camera and lens.

⑩ Base

⑪ Pan-tilt head mounting holes

These 4 holes are used for mounting the pan-tilt head. (for hexagon head bolts ×4)

⑫ Base connector rear panel

This is used for connection with a controller, an AC adapter or a monitor.

⑬ Base connector front panel

This is used for connection with a camera control, a personal computer or a monitor.

⑭ Underneath support plate

Besides the four locations of pan-tilt head mounting holes, use the hole (ϕ 8.5 mm, one location) of the underneath support plate to anchor the pan-tilt head to prevent the unit from falling.

⑮ Wire attachment hole

This threaded hole is used to attach the drop-prevention wire.
When attaching the wire, use the mounting screw for wire (M4 × 8 mm) supplied.

Installation (Be sure to ask your dealer to install the unit.)

Follow the sequence of steps below to install the unit.

1. **Setting the switches**
2. **Assembling and attaching the tilting arm**
3. **Installing the pan-tilt head**
4. **Mounting the camera and lens**
 - 4-1. **Attaching the drop-prevention wire**
 - 4-2. **Attaching the camera, lens and cables**

1. Setting the switches

Controller selection switch / installation direction switch / landing characteristics settings

Select the controller and set the installation direction and landing characteristics. (RP605 / installation on the ceiling / soft landing are the default settings.)

1. Remove the 4 head cover screws, and remove the cover slowly. (Take care not to disturb the tally LED lamp wiring connections when removing the cover.)
2. Set the SW1, SW2 and SW4 switches on the front printed circuit board as follows.

For AW-RP605A/AW-RP655/AW-RP555/AW-RP400/AW-RP50:

Set SW1 switch to its left-side position (RP605). (Factory setting)

For AW-RP301/AW-RP305/AW-RP501/AW-RP505:

Set SW1 switch to its right-side position (RP501).

For installation on the ceiling:

Set SW2 to its left-side position (HANGING). (Factory setting)

For stand-alone installation:

Set SW2 to its right-side position (DESKTOP).

For a soft landing:

Set SW4 switch No.4 to its top position (ON). (Factory setting)

For a precise landing:

Set SW4 switch No.4 to its bottom position (OFF).

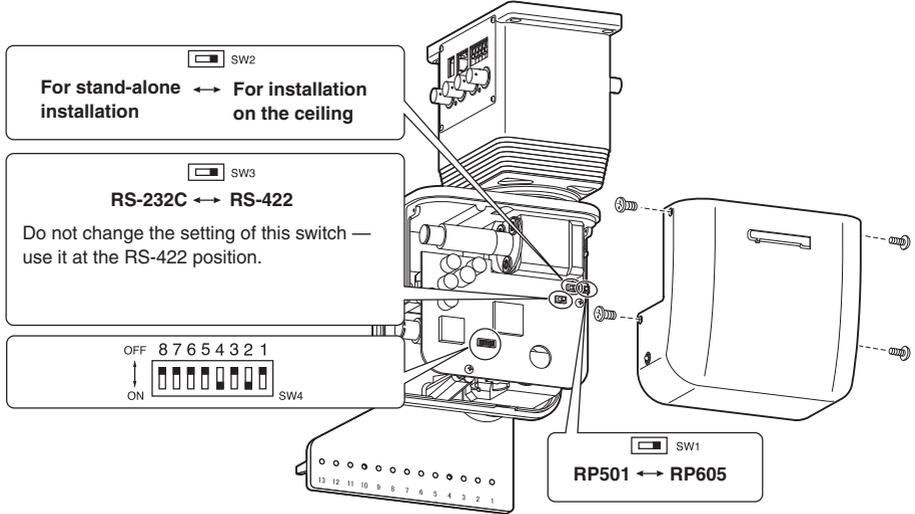
3. Upon completion of the settings, return the head cover to its original position, and secure it with the screws (while taking care not to pinch the wires).

Installing the head cover	Clamping torque
Screws (M2)	0.18 N·m (1.8 kgf·cm)

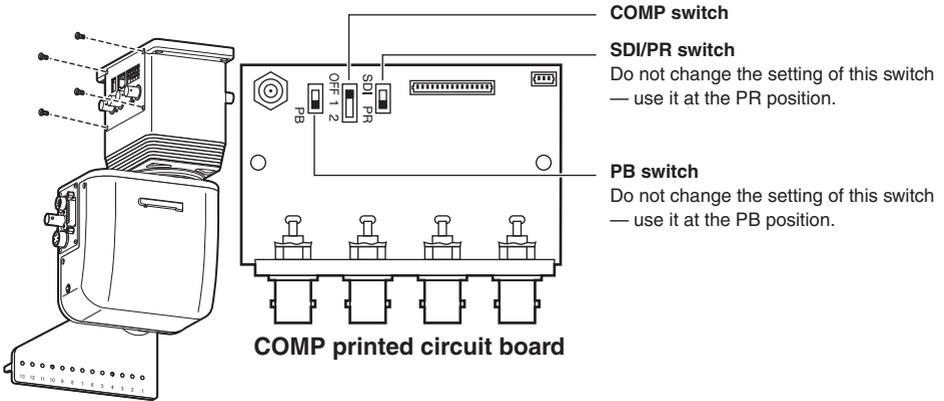
Installation (Be sure to ask your dealer to install the unit.)

<Notes>

- Before setting the switches, make absolutely sure that the power of the AC adapter which is to be connected to the pan-tilt head is set to OFF.
- The controller selection and landing characteristics are not changed simply by selecting the switch positions. They are changed only after the power is turned off and back on again after the switches have been set.
- Do not change the positions of switches #1 to #3 and #5 to #8 of SW4 because these switches are used for maintenance purposes.



Installation (Be sure to ask your dealer to install the unit.)



COMP switch

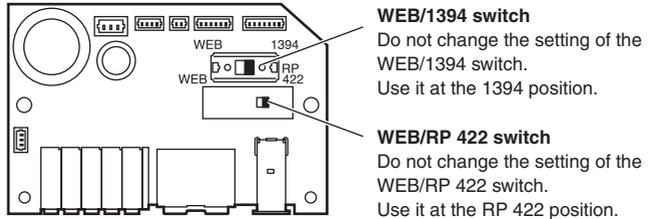
SDI/PR switch

Do not change the setting of this switch
— use it at the PR position.

PB switch

Do not change the setting of this switch
— use it at the PB position.

COMP printed circuit board



WEB/1394 switch

Do not change the setting of the
WEB/1394 switch.
Use it at the 1394 position.

WEB/RP 422 switch

Do not change the setting of the
WEB/RP 422 switch.
Use it at the RP 422 position.

CONNECTOR printed circuit board

<Note>

Before setting the switches, make absolutely sure that the power of the AC adapter which is to be connected to the pan-tilt head is set to OFF.

Installation (Be sure to ask your dealer to install the unit.)

Setting the cable compensation circuit of video signals

(COMP switch of the COMP printed circuit board is set to "OFF" in the default setting.)

This unit comes with a cable compensation function.

Follow the steps below to set the COMP switch.

1. Remove the 4 screws of the base connector rear panel, and draw out the panel toward you.
2. Select the setting of the COMP switch on the COMP printed circuit board at the panel rear.
3. Return the panel to its original position, and attach it using the screws.

Installing the panel	Clamping torque
Screws (M2)	0.18 N·m (1.8 kgf·cm)

<Note>

Fine adjustments cannot be undertaken with the unit's cable compensation function. Use a controller or cable compensator to perform fine adjustments.

When using the AW-RP400, AW-RP655, AW-RP555 or AW-RP50 controller and/or personal computer

(These controllers do not have a cable compensation function so the AW-RC400 cable compensator must be provided separately.)

Cable length (BELDEN 8281)	Switch setting
0 m to 500 m (0 ft. to 1640 ft.)	OFF (Factory setting)
500 m to 1000 m (1640 ft. to 3281 ft.)	2

When using the AW-RP501 controller or the AW-HB505 multiport hub

Cable length (BELDEN 8281)	Switch setting
0 m to 300 m (0 ft. to 984 ft.)	OFF (Factory setting)
300 m to 500 m (984 ft. to 1640 ft.)	1

When using the AW-RP605A controller

Cable length (BELDEN 8281)	Switch setting
0 m to 500 m (0 ft. to 1640 ft.)	OFF (Factory setting)
500 m to 1000 m (1640 ft. to 3281 ft.)	2

<Note>

Before setting the switches, make absolutely sure that the power of the AC adapter which is to be connected to the pan-tilt head is set to OFF.

Installation (Be sure to ask your dealer to install the unit.)

2. Assembling and attaching the tilting arm

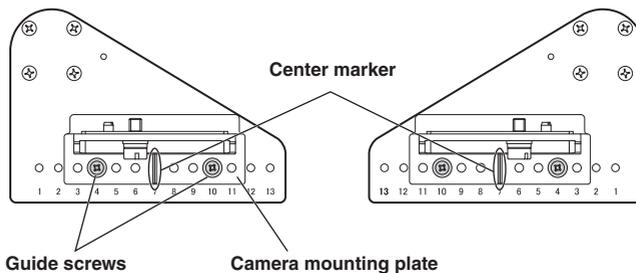
When assembling the tilting arm, tighten up its screws using the specified torque.
After attaching the arm, check that there is no play in its mounting.
The steps taken to attach the arm differ depending on the installation direction.

1. Attaching the camera mounting plate

Attach the camera mounting plate to the tilting arm using the two guide screws (M4 × 18 mm) supplied.

For installation on the ceiling

For stand-alone installation



- Attach the camera mounting plate in such a way that the center marker of the plate is aligned with the position of the applicable number for the tilting arm (see table below).

① When using the AK-HC1500, AK-HC1800 or AW-HE870 camera

Lens \ Camera	AK-HC1500/AK-HC1800	AW-HE870
AK-LZ20M85	6	6
HAs18x7.6BMD	8	8
ZA12x4.5BMD	11	11
ZA12x4.5BEMD	11	11
ZA17x7.6BMD	9	9
ZA17x7.6BEMD	9	9
ZA22x7.6BMD	11	11
ZA22x7.6BEMD	10	11
XA20sx8.5BMD	6	6
HJ22ex7.6B ITS	11	11
HJ17ex7.6B ITS	9	9
KJ22ex7.6B ITS	11	11
KJ17ex7.7B ITS	9	9
KJ13x6B KTS	9	9

Installation (Be sure to ask your dealer to install the unit.)

② When using the AW-E860 or AW-E750 camera

Lens	Camera	AW-E860	AW-E750
	AW-LZ17MD9A		7

③ When using the AW-E650 camera and AW-LZ16MD73 lens: 4

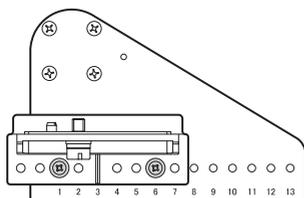
④ When using the AW-E350 camera and AW-LZ16MD55 lens: 4

- When installing the optional card in the camera, align the center marker with the number which is decremented by 1, and install.

■ Refer to the table provided below for details of the positions where the guide screws are mounted in relation to the center marker of the camera mounting plate.

Center marker position	Mounting positions of screws	
1	—	—
2	1	5
3	1	6
4	1	7
5	2	8
6	3	9
7	4	10
8	5	11
9	6	12
10	7	13
11	8	13
12	9	13
13	—	—

Example: Mounting position when the center marker is aligned with number “3”.



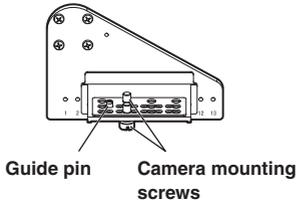
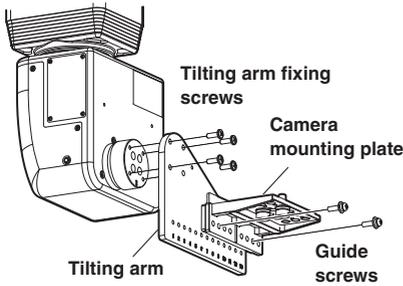
Installation (Be sure to ask your dealer to install the unit.)

2. Attaching the tilting arm

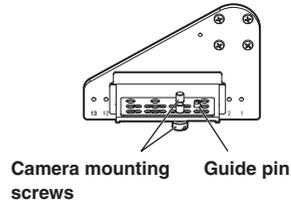
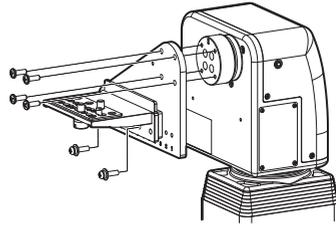
Attach the tilting arm to the pan-tilt head using the four tilting arm fixing screws (M4 × 12 mm) supplied.

- Attach the tilting arm to the pan-tilt head in the direction shown in the figure below.
- Attach the guide pin and camera mounting screws to the camera mounting plate on the positions as shown in the figure below.
- Tighten up the guide pin using a slot-head screwdriver.

For installation on the ceiling



For stand-alone installation



Warning Be absolutely sure to use the fixing screws provided with the unit.

Use of any other screws may cause the tilting arm to fall out of position or a load to be applied to the rotation operation in the tilting direction, possibly causing trouble or triggering the establishment of one of the safe modes.

Tighten the fixing screws using the clamping torque below, and check that there is no play in the tilting arm.

Attaching the plate and arm	Clamping torque
<ul style="list-style-type: none"> ● Tilting arm fixing screws ● Guide screws 	1.5 N·m (15 kgf·cm)

Installation (Be sure to ask your dealer to install the unit.)

3. Installing the pan-tilt head

■ Pan-tilt head mounting conditions

Pan-tilt head mass (weight)	Approx. 3.5 kg (7.7 lbs)
Mounting specifications	Installation on the ceiling or stand-alone installation
Compatible cameras	AW-E350, AW-E650, AW-E655, AW-E750, AW-E860, AW-HE870, AK-HC1500, AK-HC1800
Camera mass (weight)	Approx. 1.5 kg (3.3 lbs) max.
Camera anti-drop measures	Wire provided used for mounting
Compatible lenses	AW-LZ16MD55, AW-LZ16MD73, AW-LZ17MD9A, AK-LZ20M85, HAs18x7.6BMD, ZA12x4.5B(E)MD, ZA17x7.6B(E)MD, ZA22x7.6B(E)MD, XA20sx8.5BMD, HJ22ex7.6B ITS, HJ17ex7.6B ITS, KJ22ex7.6B ITS, KJ17ex7.7B ITS, KJ13x6B KTS
Lens mass (weight)	Approx. 2.0 kg (4.4 lbs) max.
Cable mass (weight)	Approx. 0.3 kg (0.7 lbs)
Total mass (weight)	Approx. 7.5 kg (16.5 lbs)

Mounting the pan-tilt head	
Recommended screws	No. of screws
Hexagon head bolts (M6)	4 pcs

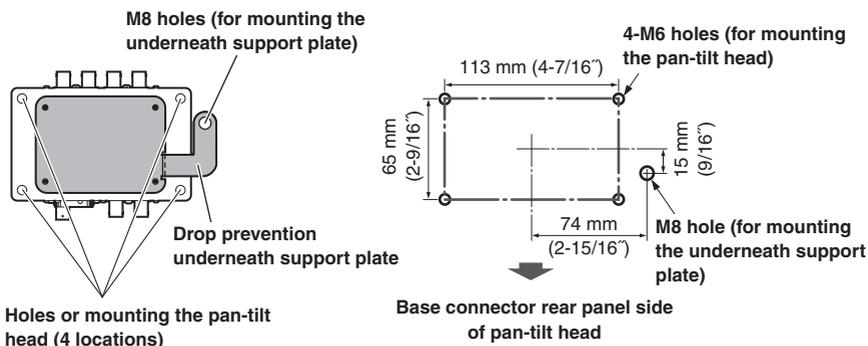
Mounting the plate	
Recommended screw	No. of screw
Hexagon head bolt (M8)	1 pc

■ Parts to be provided by the customer for installation

When installing the pan-tilt head, check the “Pan-tilt head mounting conditions” described above, and be sure to follow the instructions below.

A hole for the drop prevention underneath support plate is provided on the bottom of the pan-tilt head separately from the holes used to mount the pan-tilt head.

<Positions and dimensions of the mounting holes>



Check the positions and dimensions of the mounting holes above, and check which is the base connector rear panel side. Then decide in which direction the pan-tilt head is to be mounted, and fashion the anchors or provide the hangers.

Installation (Be sure to ask your dealer to install the unit.)

Provide the following items to install the pan-tilt head and underneath support plate.

- ① **Embedded anchors (M6 size): ×4 (for the pan-tilt head)**
(M8 size): ×1 (for the underneath support plate)
 - For the installation positions and dimensions of the anchors, refer to the drawing on page 11.
- ② **Hexagon head bolts or nuts (M6: 4 pcs each, M8: 1 pc each)**

Thickness of pan-tilt head area	10 mm (13/32")	: ×4
Thickness of underneath support plate	1.6 mm (1/16")	: ×1

 - When using bolts to install the pan-tilt head and underneath support plate, decide on their respective lengths after factoring in the dimensions given above.
- ③ **Flat washers, spring washers (M6: 8 pcs each, M8: 2 pcs each)**
- ④ **Hangers**

Installation (Be sure to ask your dealer to install the unit.)

■ Installing the pan-tilt head

When installing the pan-tilt head, check the “Pan-tilt head mounting conditions” (page 20), and be sure to follow the instructions below.

In order to prevent accidents caused by the pan-tilt head dropping out or falling off, be absolutely sure to install a drop prevention underneath support plate separately from the pan-tilt head.

Do not install the unit on its side because it will not be able to operate or perform as originally designed.

- The installation surface must have a withdrawal strength of at least 340 N (35 kgf) for each anchor used.
- After fashioning the anchors or hangers, install the pan-tilt head, and take measures to prevent it from dropping.
- After the pan-tilt head has been installed, mount the camera onto the pan-tilt head.
- Embed the anchors to the depth recommended by the manufacturer of the anchors.
- Use M6 bolts or nuts for the pan-tilt head mounting holes (4 locations) to install the pan-tilt head.
- Use the M8 bolt or nut for the underneath support plate hole (1 location) to install the underneath support plate.
- When mounting onto anchors with external threads, check that the anchor bolts protrude at least 7 mm (9/32”) from the nuts used to mount the pan-tilt head and underneath support plate. (Fig. 1)
- When mounting onto anchors with internal threads, check that the bolts engage with the female anchors to a depth at least two times the bolt diameter. (Fig. 2)
- Be absolutely sure to use the flat washers and spring washers for the hexagon head bolts and nuts.

Recommended tightening torque:

Bolts	Clamping torque
Hexagon head bolts (M6)	5.0 N·m (50 kgf·cm)
Hexagon head bolt (M8)	12.0 N·m (120 kgf·cm)

For tightening, use a torque wrench with which the torque can be specified.

- Avoid installation on plaster board or wooden surfaces since these surfaces are not strong enough.
- Install the pan-tilt head so as to ensure that none of the components mounted on the pan-tilt head or cables will come into contact with any objects in the vicinity when the pan-tilt head rotates.

Contact between the unit and an object in the vicinity may trigger the safe mode function.

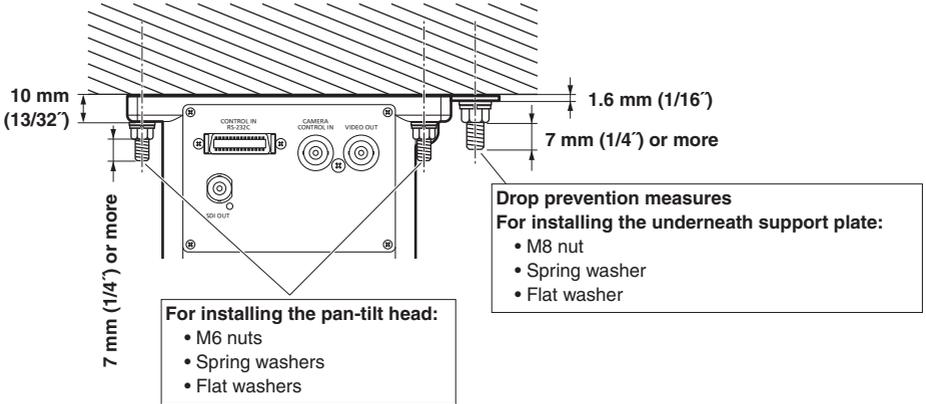
For further details, refer to “Concerning the safe modes” (page 33).

Installation (Be sure to ask your dealer to install the unit.)

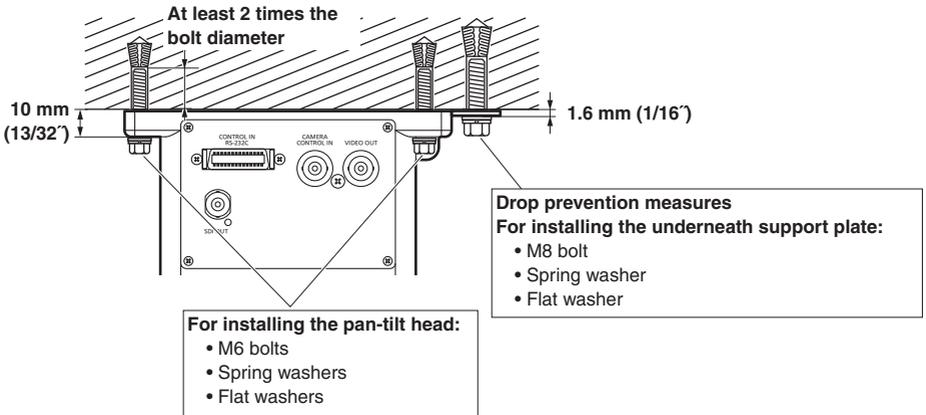
- When the pan-tilt head is not going to be used any longer, do not leave it in place but be absolutely sure to dispose of it.
- Tighten up the screws and bolts using the specified torque. If they are tightened using too much torque, the thread ridges will be damaged, and the pan-tilt head may fall. Conversely, if they are tightened using too little torque, the screws may come loose.
- Use a torque driver or torque wrench in order to tighten the parts at the specified torque.
- There are limits on the torque range that can be specified by torque drivers and torque wrenches. Use the specified torque values that are recommended as a reference, and use the appropriate torque driver or torque wrench.
- Do not use impact drivers or electrical drivers whose torque is difficult to control since doing so may damage the screws and bolts.

Installation (Be sure to ask your dealer to install the unit.)

When installing onto a major structural component
(concrete with a thickness of 120 mm (4-3/4") or more)



[Anchor with an external thread] Fig. 1

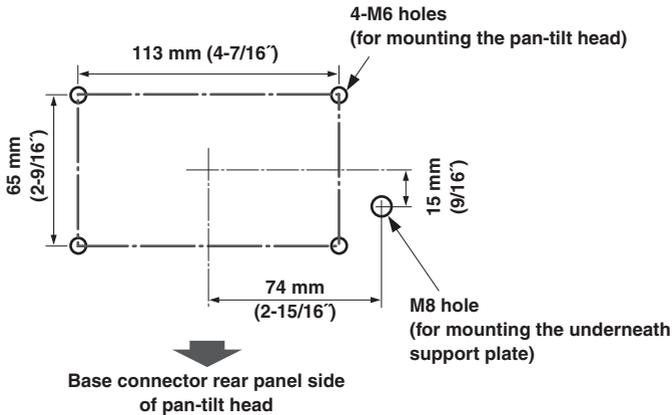


[Anchor with an internal thread] Fig. 2

Installation

(Be sure to ask your dealer to install the unit.)

<Positions and dimensions of mounting holes>



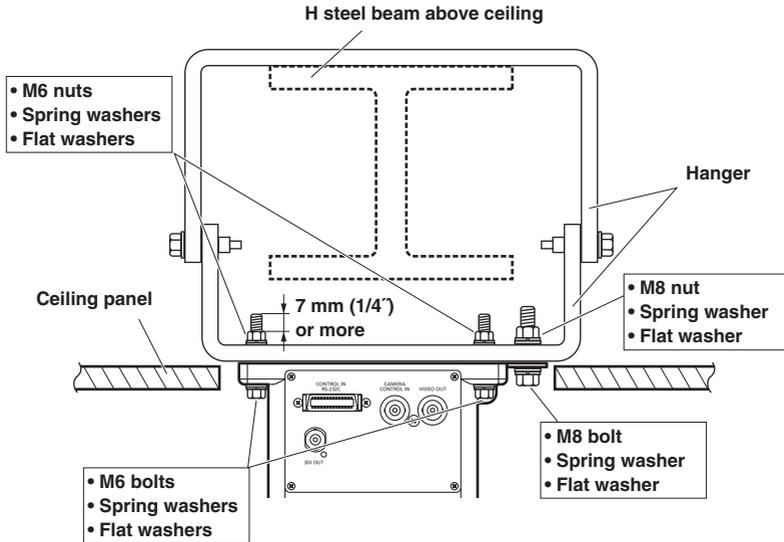
Check the positions and dimensions of the mounting holes above, and check which is the base connector rear panel side. Then decide in which direction the pan-tilt head is to be mounted, and fashion the anchors.

Note Determine the length of the external threads or depth of the internal threads of the anchors after factoring in the thickness of the mounting areas of the pan-tilt head (10 mm (13/32")) and thickness of the drop prevention underneath support plate (1.6 mm (1/16")).

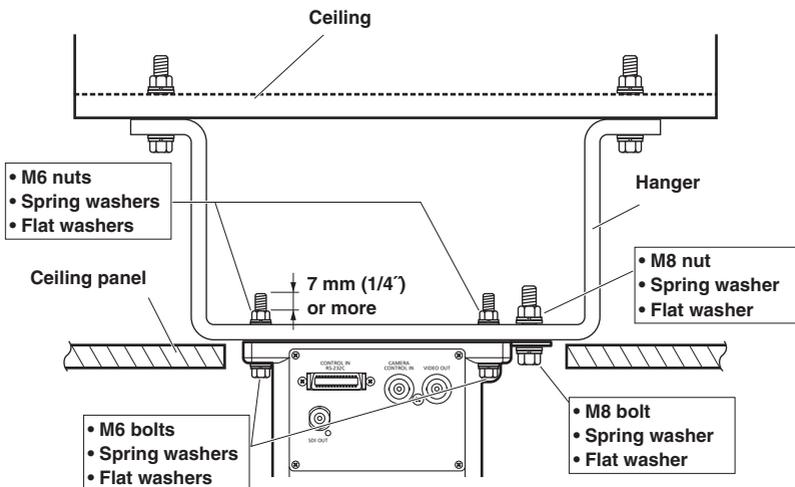
Installation (Be sure to ask your dealer to install the unit.)

When installing onto a major structural component (such as plaster board)

- Avoid installation on a structural component that cannot provide the prescribed strength.



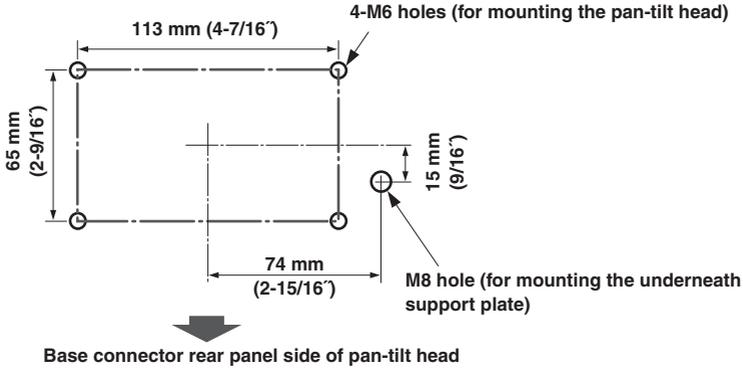
[Installation on an H steel beam above the ceiling]



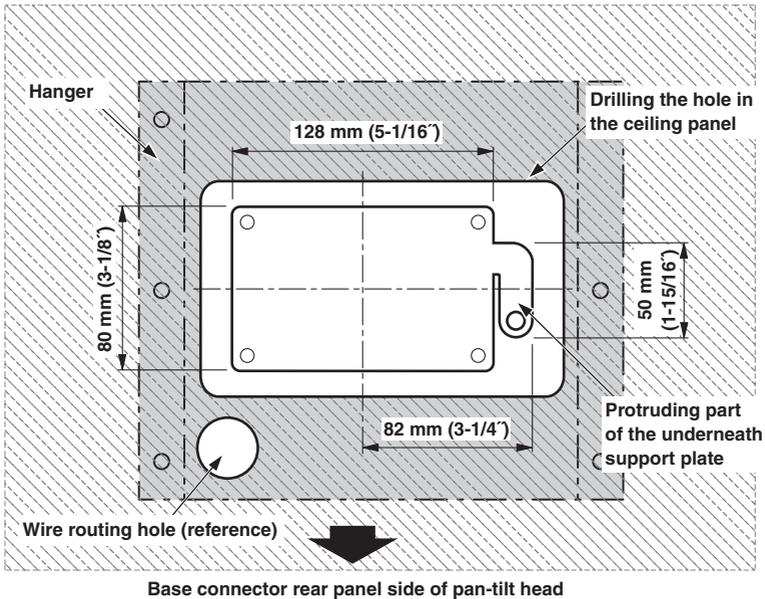
[Installation directly onto the ceiling]

Installation (Be sure to ask your dealer to install the unit.)

<Positions and dimensions of mounting holes>



<Ceiling panel: Penetrated hole dimensions>



Check the positions and dimensions of the mounting holes, the dimensions of the penetrated hole in the ceiling panel, and check which is the base connector rear panel side as shown above. Then decide in which direction the pan-tilt head is to be mounted, and drill the holes for the hangers and for the penetrated hole in the ceiling panel.

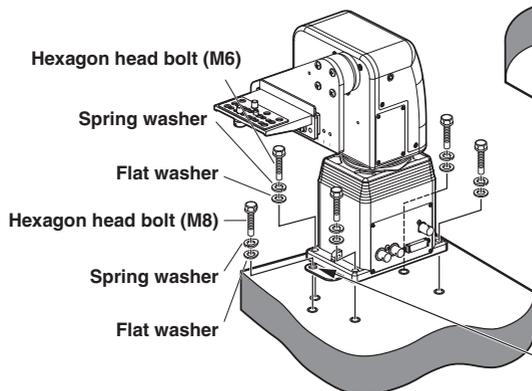
Notes

- Provide a hanger that can be coupled with the H steel beam above the ceiling, and attach the pan-tilt head to it.
- Be absolutely sure to use the bolts or nuts and flat washers and spring washers for the installation.

Installation (Be sure to ask your dealer to install the unit.)

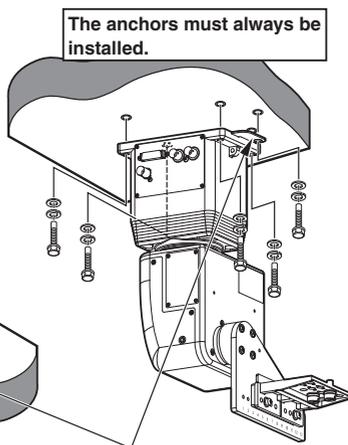
<When using anchors with an internal thread>

<For stand-alone installation>



The anchors must always be installed.

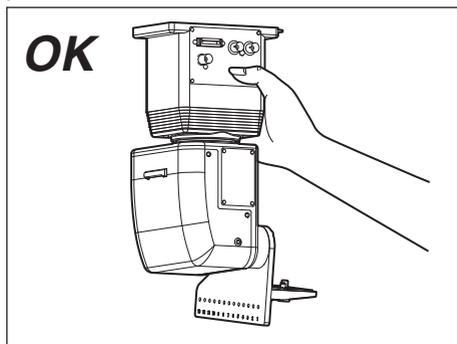
<For installation on the ceiling>



Secure the underneath support plate by tightening bolt.

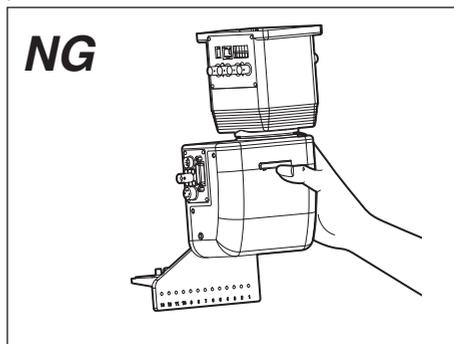
OK example:

The unit is secured by holding its base part.



NG example:

The unit is installed by holding its tilting part.



Notes

- Use a torque wrench whose torque can be specified to tighten the hexagon head bolts or nuts at the torque levels listed in the table below. After tightening the bolts, check for play.

Installing the pan-tilt head	Clamping torque
Hexagon head bolts or nuts (M6)	5.0 N·m (50 kgf·cm)
Hexagon head bolt (M8)	12.0 N·m (120 kgf·cm)

- When installing the pan-tilt head, do not forcibly turn the “head” or “tilting arm” manually. Doing so may result in malfunctioning.

Installation (Be sure to ask your dealer to install the unit.)

4. Mounting the camera and lens

As the lens, use one of the recommended lenses listed under “Cameras and lenses supported” (page 46) that matches the camera used.

Do not use a lens that is not among the ones recommended.

- Use the lens fixing ring knob to tighten the lens securely, and check for play. Check the hood for play as well.

Installation (Be sure to ask your dealer to install the unit.)

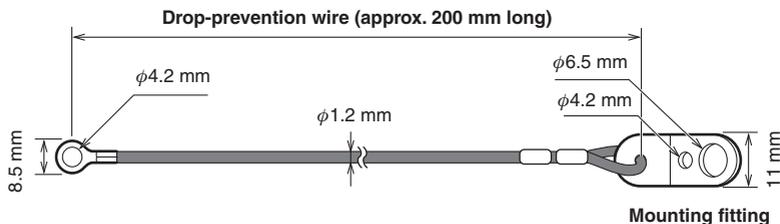
4-1. Attaching the drop-prevention wire

A drop-prevention wire is provided with the unit.

Follow the instructions below to use it to couple the camera to the pan-tilt head.

Notes

- When attaching the wire, be absolutely sure to use a Phillips-head screwdriver to tighten the 2 mounting screws securely.

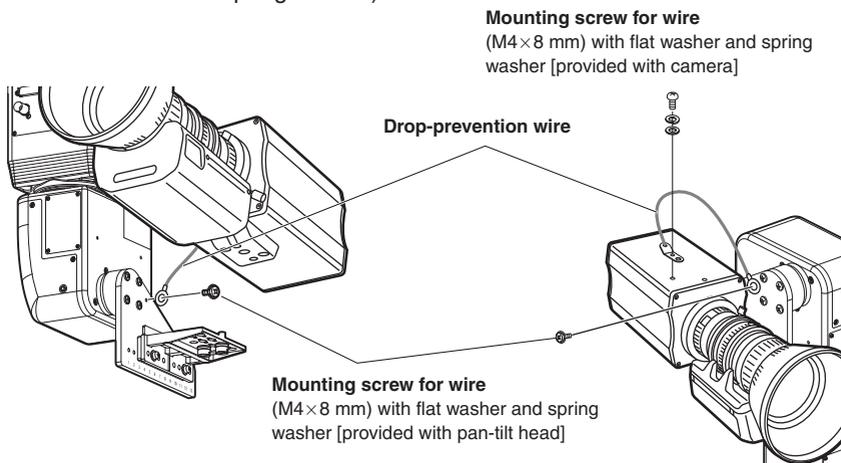


- Tighten up the mounting screw at the torque levels specified in the table below, and then check that there is no play.

Attaching the wire	Hole diameter	Clamping torque
Mounting screws (Inch thread)	$\phi 6.5$ mm	2.0 N·m (20 kgf·cm)
Mounting screws (M4)	$\phi 4.2$ mm	1.5 N·m (15 kgf·cm)

For AW-E350/AW-E650

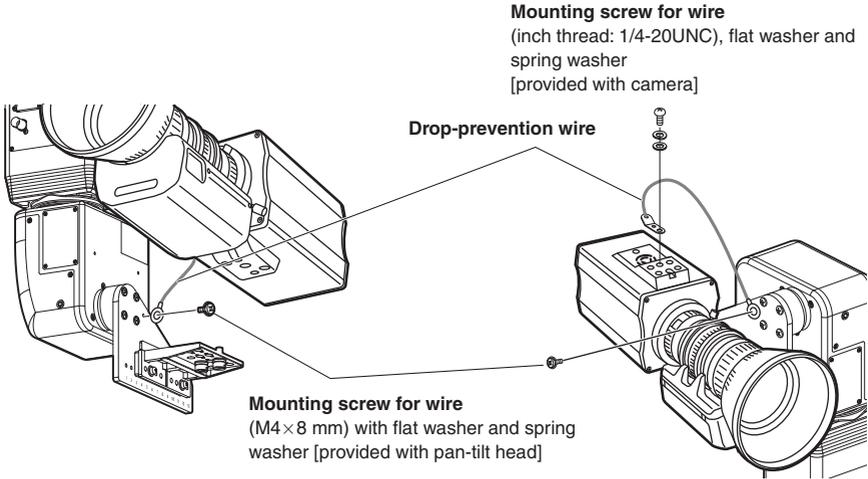
- Use the mounting screw for wire (M4×8 mm with flat washer and spring washer) to attach one end of the wire to the pan-tilt head's arm.
- Attach one end of the wire (use the $\phi 4.2$ mm hole in the mounting fitting) to the threaded hole on top of the camera using the mounting screw for wire (M4×8 mm with flat washer and spring washer).



Installation (Be sure to ask your dealer to install the unit.)

For AW-E750/AW-E860/AW-HE870/AK-HC1500/AK-HC1800

1. Use the mounting screw for wire (M4×8 mm with flat washer and spring washer) to attach one end of the wire to the pan-tilt head's arm.
2. Attach one end of the wire (use the $\phi 6.5$ mm hole in the mounting fitting) to the threaded hole for mounting the camera using the mounting screw for wire (inch thread: 1/4-20UNC), flat washer and spring washer.



Installation (Be sure to ask your dealer to install the unit.)

4-2. Attaching the camera, lens and cables

When mounting a camera to the pan-tilt head, take appropriate measures to prevent the camera from falling or being stolen.

1. Place the camera on the camera mounting plate and insert the guide pin into the guide hole on the camera.
2. After provisionally securing the camera, be absolutely sure to use a flathead screwdriver to tighten the 2 camera mounting screws securely.
3. After mounting the camera, check that it is firmly attached and that there is no play.
4. Connect the camera cable and lens cable.

Attaching the camera	Clamping torque
Mounting screws (Inch thread)	2.0 N·m (20 kgf·cm)

<Note>

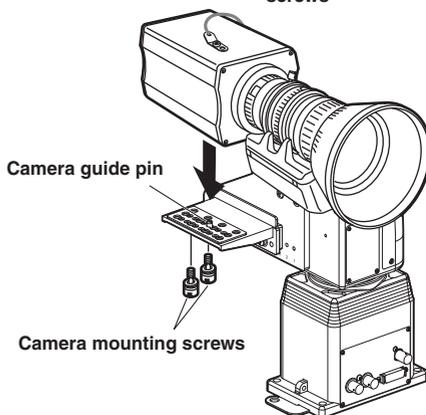
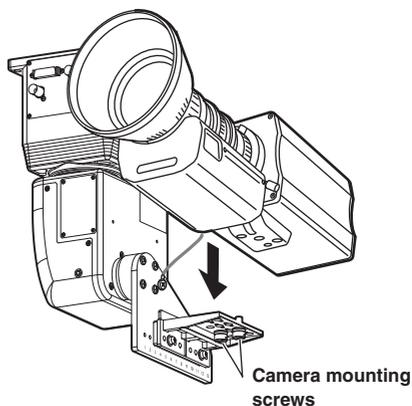
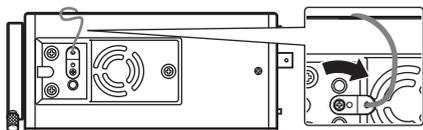
- Be sure to tighten all screws firmly with a screwdriver or similar tool.

Adjusting slack in the drop-prevention wire

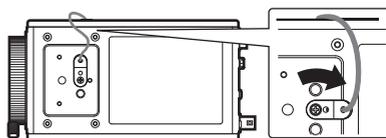
The drop-prevention wire length allows for some degree of slack.

Remove any slack after attaching the camera to the pan-tilt head by twisting the wire around as shown in the figure at right, then firmly tighten the screw to fix it in place.

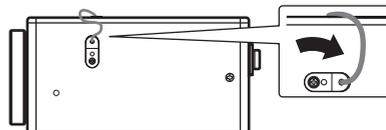
With the AW-E750/AW-E860/AW-HE870



With the AK-HC1500/AK-HC1800



With the AW-E350/AW-E650



Installation (Be sure to ask your dealer to install the unit.)

Concerning the safe modes

This pan-tilt head comes with two safe modes for protecting people and personal property from harm and the pan-tilt head from damage.

When one of the safe modes is established, the tally lamps blink, and panning and tilting operations can no longer be performed.

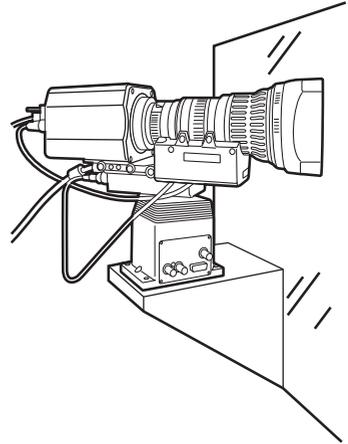
Be absolutely sure to adjust the balance when mounting the camera on the pan-tilt head. One of the safe modes may be established if the camera is not properly balanced.

1. Collision-triggered safe mode

The collision-triggered safe mode is established when the arm of the pan-tilt head or an accessory installed on the head has collided with an obstacle or person.

The safe mode is released when the PAN/TILT lever on the controller is returned to its center position.

Ensure that there are no obstructions or people in the surrounding area.



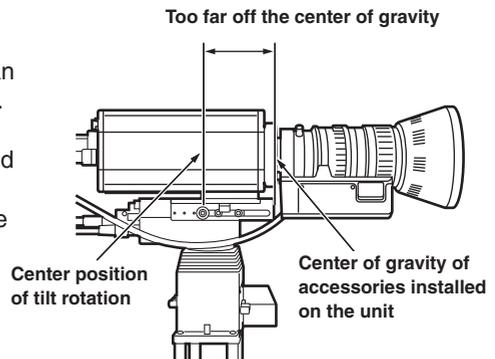
View showing collision with a wall, etc.

2. Overload-triggered safe mode

The overload-triggered safe mode is established if the balance is upset when an accessory is installed on the pan-tilt head.

The safe mode is released when the PAN/TILT lever on the controller is returned to its center position.

Check whether the camera mounting plate has been mounted correctly.

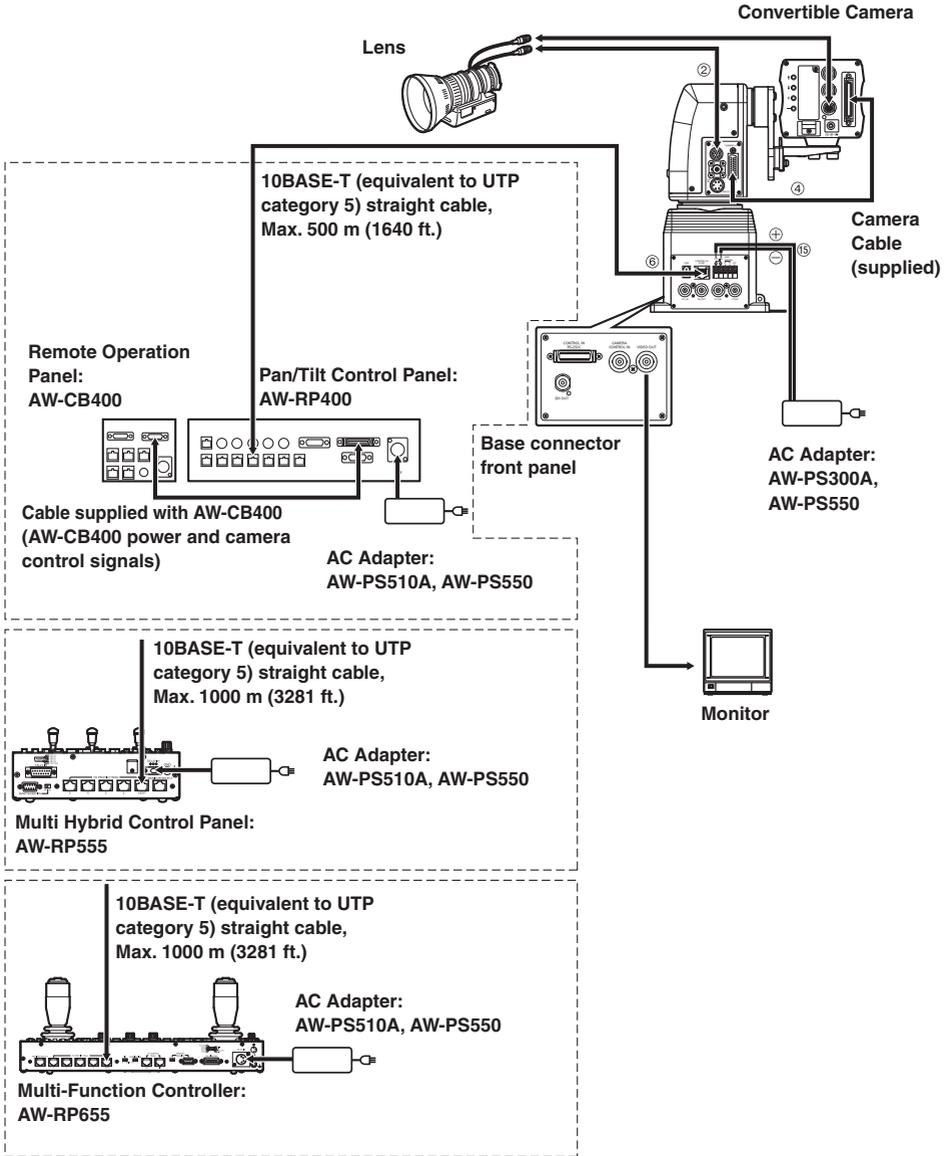


View of unacceptable mounting balance

Connections

Example of connections ①

■ When using a convertible camera and the AW-RP400, AW-RP555 or AW-RP655 controller

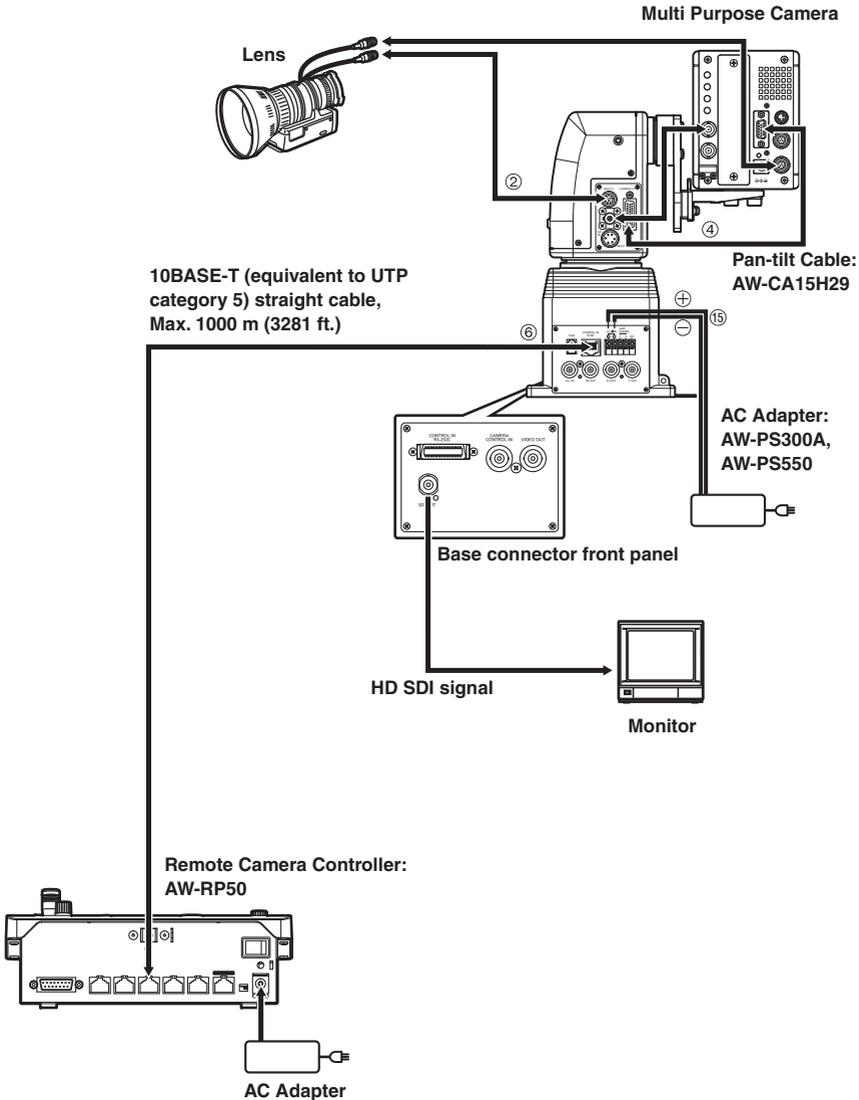


Connections

Example of connections ②

■ When using a multi-purpose camera and the AW-RP50 controller

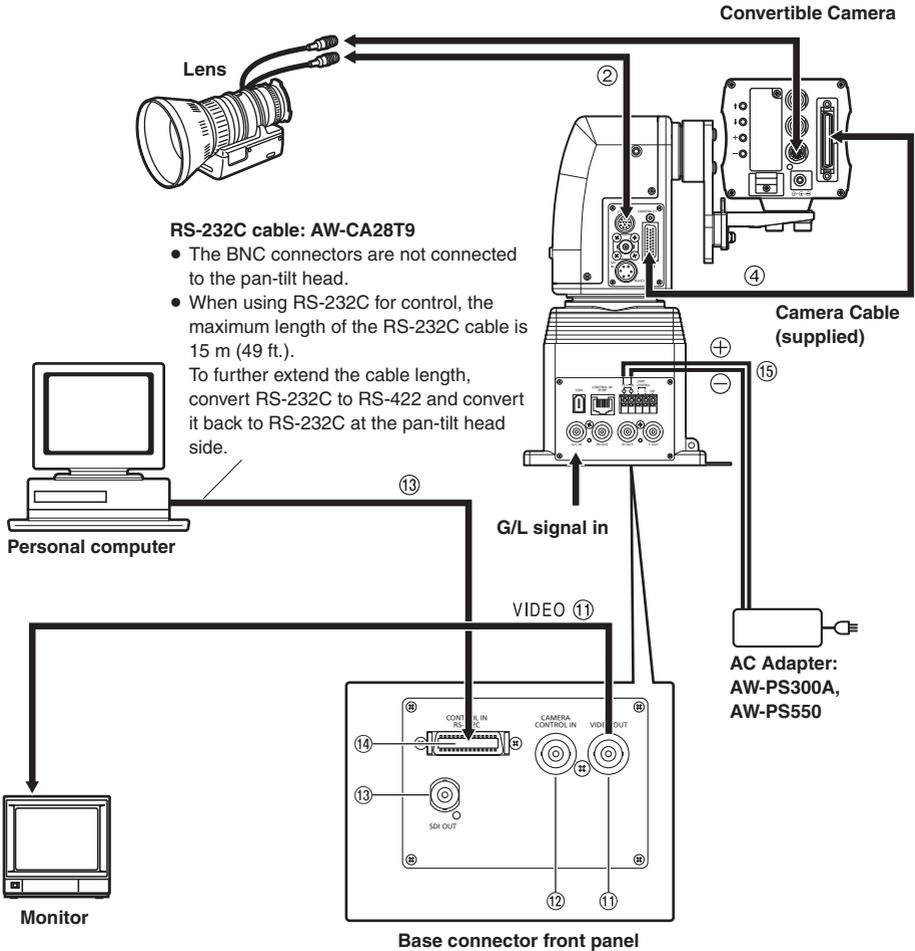
Note Select "4" as the setting for the PROTOCOL item on the SETTING menu of the multi-purpose camera (AK-HC1500 or AK-HC1800).



Connections

Example of connections ③

■ When using a convertible camera and RS-232C control



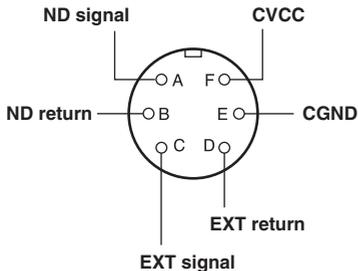
Connections

Head connector panel

The camera and lens control cables are connected to this panel.

① ND/EXT connector

This is for controlling the ND filter and lens extender of the power lens unit. Connect it when using a power lens unit equipped with an ND filter and lens extender function.



(As viewed from cable end)

② LENS I/F connector

This is for controlling the zoom/focus functions of the power lens unit. Connect the remote (zoom/focus) control cable of the power lens unit here.

③ SDI IN connector

This is for SDI signal input. Connect this to the HD SDI OUT connector on the AK-HC1500 or AK-HC1800 or to the SDI OUT connector on the SDI card (AW-HHD870 or AW-PB504) installed in the camera.

Use a coaxial cable (BNC) for the connecting cable.

Cable used when HD-SDI signals are input:

5C-FB, 70 to 80 cm (27-9/16" to 31-1/2")

Cable used when SD-SDI signals are input:

5C-2V, 70 to 80 cm (27-9/16" to 31-1/2")

④ CAMERA I/F connector

This is for camera control. Connect this to the I/F REMOTE connector on the camera with the supplied camera cable. When controlling the AK-HC1500 or AK-HC1800, use the optional pan-tilt cable (AW-CA15H29) or cable kit (AW-CAK4H1).

Connections

Connecting the base connector rear panel and the base connector front panel

⑤ 1394 connector

Connect the AK-HRP150 to this connector when controlling the camera (AK-HC1500 or AK-HC1800) using the AK-HRP150. Obtain the optional cable kit (AW-CAK4H1) to make this connection.

<Note>

- This unit cannot be controlled directly using an IEEE1394 interface.

⑥ CONTROL IN IP/RP connector

This is for camera/pan-tilt head control signals.

It is connected to the control input/output connector on the controller. Use a 10BASE-T straight cable (UTP category 5) for the connecting cable.

<Notes>

- Depending on the controller to be used, it may be necessary to change the switch positions.
For the switch positions, refer to “1. Setting the switches” (page 13).
- DO NOT insert any telephone line connector to this terminal.

⑦ Y OUT connector

This is for camera video signal output. Connect this to a monitor, etc. Use a coaxial cable (BNC) for the connecting cable.

⑧ Pr OUT connector

This is for camera video signal output. Connect this to a monitor, etc.

⑨ Pb OUT connector

This is for camera video signal output. Connect this to a monitor, etc. Use a coaxial cable (BNC) for the connecting cable.

⑩ G/L IN connector

This is for genlock signal input. The genlock signals differ depending on the type of camera which is mounted. Input the genlock signals supported by the camera concerned. Use a coaxial cable (BNC) for the connecting cable.

Connections

⑪ VIDEO OUT connector

This is for camera video signal output. Connect this to a monitor, etc. Use a coaxial cable (BNC) for the connecting cable.

⑫ CAMERA CONTROL IN connector

This is for camera control signal input. Connect this to the CAMERA CONTROL OUT connector on the controllers (AW-RP501/AW-RP505), or multiport hub (AW-HB505). Use a coaxial cable (BNC) for the connecting cable.

⑬ SDI OUT connector

This is for SDI signal output. Connect this to a monitor, etc. Use a coaxial cable (BNC) for the connecting cable.

Cable used when HD-SDI signals are output:

5C-FB, up to 80 m (262.5 ft.)

Cable used when SD-SDI signals are output:

5C-2V, up to 150 m (492 ft.)

⑭ CONTROL IN RS-232C connector

This is for RS-232C control signal input from the personal computer. Use the AW-CA28T9 cable (option) for the connecting cable. The AW-CA28T9 is 10 m (33 ft.) long. When extending the length, please use an RS-422, converting back to the RS-232C at the pan-tilt head.

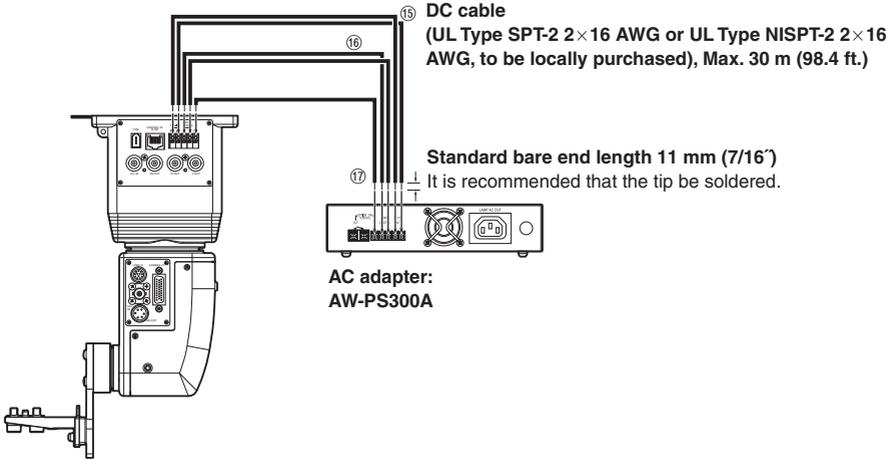
<Notes>

- When connecting with the controllers (AW-RP605A, AW-RP555, AW-RP655 or AW-RP400) at the same time, connect with controller's REMOTE terminal.
- When the controller (AW-RP301, AW-RP305, AW-RP501 or AW-RP505) and a personal computer are to be used at the same time, the camera is controlled by the controller if the controller is connected to the ⑫ CAMERA CONTROL IN connector. If this connector is not connected, it is controlled by the personal computer.
- Information such as pan-tilt head position, lens zoom, focus, iris, etc. can be accessed by the personal computer, however, white balance set by the controller cannot be accessed.

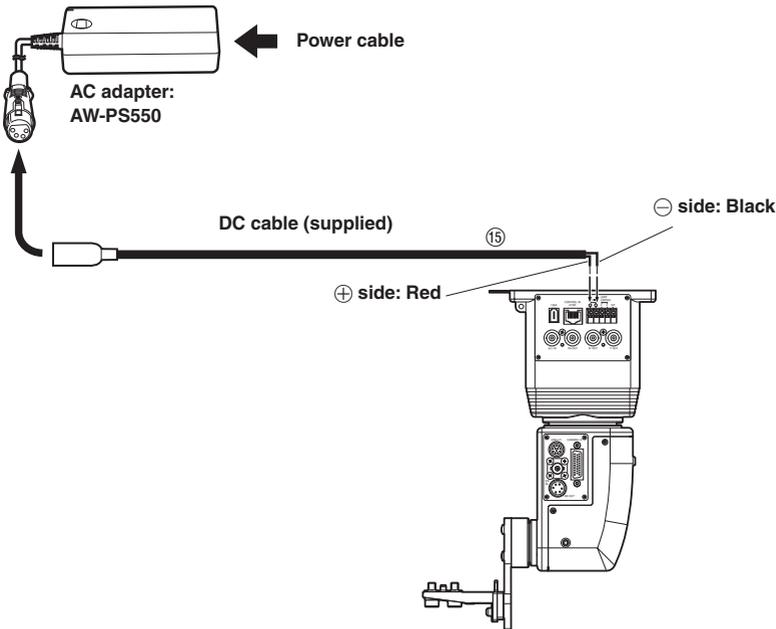
Connections

Connecting the AC adapter for use with the pan-tilt head

AW-PS300A



AW-PS550



Connections

⑮ DC 12V IN connector (terminal block) [When connecting the AW-PS300A]

Connect this to the DC 15V OUT connector on the AW-PS300A. (The voltage output from the AW-PS300A is set to 15 V; this takes into consideration the voltage drops due to the possible extension of the DC cable between the pan-tilt head and AW-PS300A.)

Make sure that the positive ⊕ and negative ⊖ ends of the wires are connected to the same signs on the connector.

Use a cable with a nominal cross section of 1.25 mm² or more that meets the UL specifications for the connection. The maximum allowable cable length is 30 meters (98.4 ft.).

Applicable (usable) wire

- UL Type SPT-2 2×16 AWG or
- UL Type NISPT-2 2×16 AWG

[When connecting the AW-PS550]

Use the DC cable (3 meters (9.8 ft.)) supplied to connect the AW-PS550. Connect the red wire of the DC cable to the ⊕ side on the terminal block, and the black wire to the ⊖ side. The DC cable supplied must be used without fail for this connection.

⑯ LAMP CONTROL connector (terminal block)

Connect this only when the power of a halogen lamp is to be supplied from the AC adapter for use with the pan-tilt head (AW-PS300A).

This connector is connected to LAMP CONTROL on the AC adapter for the pan-tilt head.

The symbols C and S on the wires must match the same symbols on the connector.

Use a cable with a nominal cross section of 0.3 mm² or more that meets the UL specifications for the connection. The maximum allowable cable length is 30 meters (98.4 ft.).

⑰ OP connector (terminal block)

Connect this only when the OP SW CONTROL OUT connector on the AC adapter for use with the pan-tilt head (AW-PS300A) is to be used.

Connect it to the OPTION SW CONTROL IN connector on the AC adapter for use with the pan-tilt head (AW-PS300A).

Use a cable with a nominal cross section of 0.3 mm² or more that meets the UL specifications for the connection. The maximum allowable cable length is 30 meters (98.4 ft.).

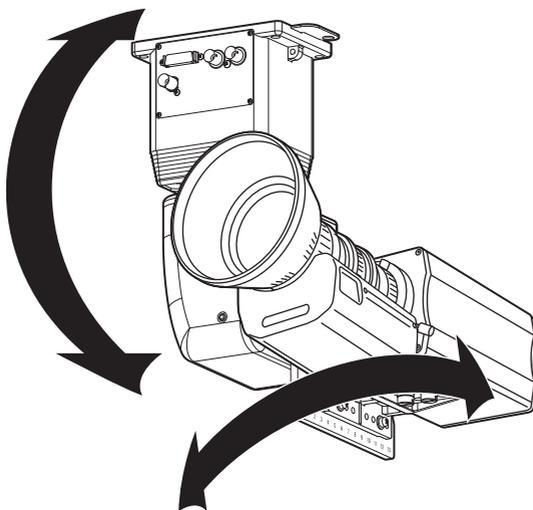
Limiters

Be absolutely sure to set the limiters (travel range) of the pan-tilt head before use. Depending on where the pan-tilt head system has been installed, obstacles may be present within the travel range with which the camera may come into contact. Contact with any such obstacle by the camera may cause malfunctioning or accidents. In this case, contact can be prevented by setting the limiters directly before any such obstacle.

The controller is used to set the limiters.

The positions of 4 limiters — namely, the upper, lower, left-most and right-most limits of the travel range — can be set.

Once they have been set, the positions will not be lost even after the power has been turned off.



For details on the limiter settings, refer to the operating instructions of the controller.

Troubleshooting

Symptom	Cause and remedial action	Reference page
No pan-tilt head power.	<ul style="list-style-type: none"> • Has the power plug of the AC adapter been connected properly to the AC outlet? • Has the AC adapter been connected properly? <p>Check the power plug and connections with the AC adapter.</p>	— 40, 41
No camera power.	<ul style="list-style-type: none"> • Has the unit been connected properly to the camera? • Has the unit been connected properly to the controller? <p>Check the connections with the camera and controller.</p>	34 to 39
The tally lamps blink, and no pan/tilt operations are performed.	<ul style="list-style-type: none"> • The safe mode function has been triggered. <p>Check for a collision with an obstacle or for an overload condition.</p>	33
No communication with the controller.	<ul style="list-style-type: none"> • Has the controller selection switch been set properly? <p>Check the switch setting.</p>	13, 14
The unit rotates in the opposite direction to the direction of its operation from the controller.	<ul style="list-style-type: none"> • Has the installation direction switch been set properly? <p>Check the switch setting.</p>	13, 14
The video signals are not displayed properly.	<ul style="list-style-type: none"> • Has the cable compensation selector switch been set properly? <p>Check the switch settings.</p>	15, 16

Replacement of consumable parts

■ Replacing the battery

The battery lasts for about 5 years. The pan-tilt head stores the preset positions, limiter positions and other data in its memory. Although this data is retained even after the power has been turned off, it will be lost when the power is turned off once the battery has reached the end of its service life.

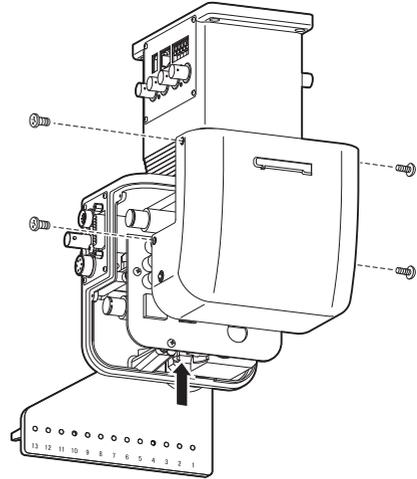
Replace the battery once it has lost its effectiveness. (The pan-tilt head uses a CR2032 manganese dioxide-lithium battery.)

Removing the battery

1. Remove the 4 cover screws, and remove the head cover.
2. Press the battery in the direction shown by the arrow in the figure, and slide it.
3. From this position, lift the battery from the bottom of its arrow area.
4. Once the arrow part of the battery has been removed from the battery holder, pull the battery forward and out to remove it completely.

Installing the new battery

1. With the "+" pole of the new battery turned toward you, insert the end into the battery holder from the direction of the arrow.
2. While pushing the battery in the direction of the arrow, push it right into the holder.



■ Replacing the motor

Replace the motor if it is not working properly.

- Consult your dealer on how to replace the motor.

■ Replacing the gear

Replace the gear when its preset stop accuracy has deteriorated.

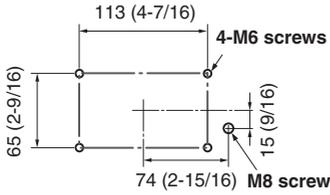
- Consult your dealer on how to replace the gear.

The motor and gear are consumable parts. They must be replaced at regular intervals.

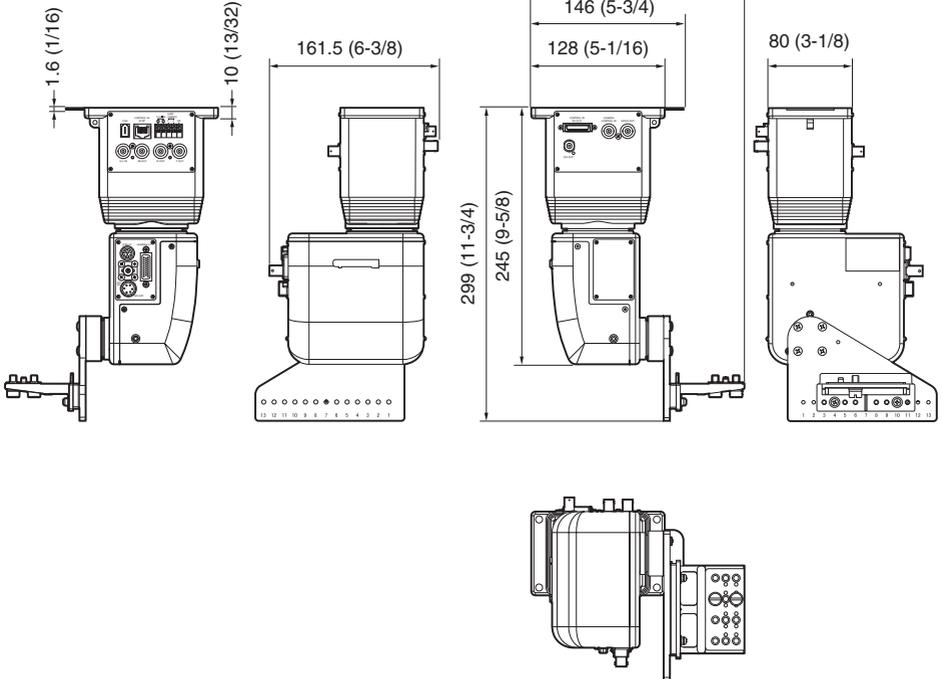
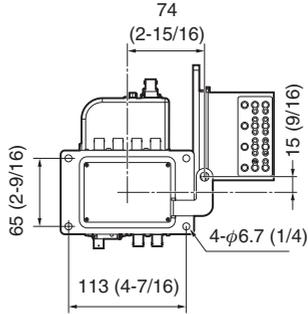
Appearance

Unit: mm (inch)

<Mounting hole specifications>



Base connector rear panel side
of pan-tilt head



Specifications

Power supply:	DC +12 V (connector)
Power consumption:	DC +12 V 3 A (camera power included), DC +12 V 1.3 A (pan-tilt head only)

 indicates safety information.

■ General

Allowable operating temperature:

-10 °C to +45 °C (14 °F to 113 °F)

Allowable operating humidity:

Max. 90 % (no condensation)

Mass (weight):

Approx. 3.5 kg (7.7 lbs)

Dimensions (W × H × D):

146 × 245 × 161.5 mm (5-3/4" × 9-5/8" × 6-3/8")

Finish: AV ivory paint (color resembling Munsell 7.9Y 6.8/0.8)

Controllers supported:

AW-RP301, AW-RP305, AW-RP501, AW-RP505, AW-RP555, AW-RP605, AW-RP605A, AW-RP655, AW-RP400, AW-RP50, AK-HRP150
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✳ It may be necessary to update the controller version in order to support the unit.

For details, consult your dealer.

Cameras and lenses supported:

Camera	Lens
AK-HC1500 AK-HC1800 AW-HE870	AK-LZ20M85 Lenses made by Fujifilm Corporation: HAs18x7.6BMD, ZA12x4.5B(E)MD, ZA17x7.6B(E)MD, ZA22x7.6B(E)MD, XA20sx8.5BMD Lenses made by Canon Inc: HJ22ex7.6B ITS, HJ17ex7.6B ITS, KJ22ex7.6B ITS, KJ17ex7.7B ITS, KJ13x6B KTS
AW-E860 AW-E750	AW-LZ17MD9A
AW-E650	AW-LZ16MD73
AW-E350	AW-LZ16MD55

✳ Do not use a camera or lens which is not listed in the table above.

✳ Lenses with a driver that is on the side when the lens is mounted on the camera, can only be used for stand alone installation.

It can also be used for installation on the ceiling when the camera has been reverse mounted using the "SCAN REVERSE" function of the AK-HC1500 or AK-HC1800.

Specifications

■ Connectors

Input connectors:

DC 12 V IN (terminal block), G/L IN (BNC), SDI IN (BNC),
CAMERA CONTROL IN (BNC)

Output connectors:

VIDEO OUT (BNC), SDI OUT (BNC), Y OUT (BNC), Pr OUT (BNC),
Pb OUT (BNC), OP (terminal block)

Input/Output connectors:

CAMERA I/F (29-pin square connector), LENS I/F (12-pin round connector),
ND/EXT (6-pin round connector), CONTROL IN IP/RP (RJ-45),
CONTROL IN RS-232C (28-pin square connector), 1394,
LAMP CONTROL C, S (terminal block)

■ Functions/performance

Tilt range:

190 degrees (approx. ± 95 degrees) or more

* Tilt range may be subject to restrictions depending on the mounted camera
cable, lens, etc.

Panning range:

300 degrees (approx. ± 150 degrees) or more

Maximum operating speed:

30 degrees/sec. for panning, 25 degrees/sec. for tilting

Repeatability:

Less than $\pm 3'$

Noise level:

Less than NC30

■ Optional accessories

Pan-tilt Cable:

AW-CA15H29

Cable Kit:

AW-CAK4H1

Mass (weight) and Dimensions indicated above are approximate.
Specifications are subject to change without notice.

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