

Operating Instructions **Excerpted Version**

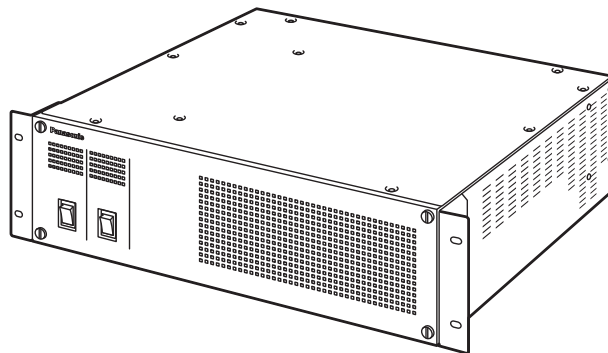
Main Frame

Model No. **AV-HS60U1P**

Model No. **AV-HS60U2P**

Model No. **AV-HS60U1E**

Model No. **AV-HS60U2E**



This manual is an excerpted version of the Operating Guide. For more information, please visit the Panasonic website (<http://pro-av.panasonic.net/en/manual/index.html>), and refer to the Operating Guide (PDF).

Before operating this product, please read the instructions carefully and save this manual for future use. Please carefully read the "Read this first!" (P. 2 to 7) of this Manual before use.

Read this first! (For AV-HS60U1P/AV-HS60U2P)

 indicates safety information.

WARNING:

Installation should only be performed by qualified installation personnel.
Improper installation may result in the entire apparatus falling down and causing injury.



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 (servicing) instructions in the literature accompanying the appliance.

WARNING:

This equipment must be grounded.
To ensure safe operation, the three-pin plug must be inserted only into a standard three-pin power outlet which is effectively grounded through normal household wiring.
Extension cords used with the equipment must have three cores and be correctly wired to provide connection to the ground. Wrongly wired extension cords are a major cause of fatalities.
The fact that the equipment operates satisfactorily does not imply that the power outlet is grounded or that the installation is completely safe. For your safety, if you are in any doubt about the effective grounding of the power outlet, please consult a qualified electrician.

WARNING:

- To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture.
- To reduce the risk of fire or electric shock, keep this equipment away from all liquids. Use and store only in locations which are not exposed to the risk of dripping or splashing liquids, and do not place any liquid containers on top of the equipment.

WARNING:

This equipment is compliant with Class A of CISPR 32.
In a residential environment this equipment may cause radio interference.

WARNING:

Always keep screws out of the reach of babies and small children.

WARNING:

Fuse replacement should only be performed by qualified personnel.
For continued protection against risk of fire, replace only with the same type; 3.15 AH - 250 V fuse for F1/F2.

CAUTION:

To reduce the risk of fire or electric shock, refer mounting of the optional interface boards to qualified service personnel.

CAUTION:

To reduce the risk of fire or electric shock and annoying interference, use the recommended accessories only.

CAUTION:

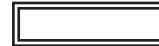
In order to maintain adequate ventilation, do not install or place this unit in a bookcase, built-in cabinet or any other confined space. To prevent risk of electric shock or fire hazard due to overheating, ensure that curtains and any other materials do not obstruct the ventilation.

CAUTION:

The mains plug of the power supply cord shall remain readily operable.
The AC receptacle (mains socket outlet) shall be installed near the equipment and shall be easily accessible. To completely disconnect this equipment from the AC mains, disconnect the power cord plug from the AC receptacle.

CAUTION:

A coin type battery is installed inside of the unit. Do not expose the unit to excessive heat such as sunshine, fire or the like.



indicates safety information.

CAUTION:

This apparatus can be operated at a voltage in the range of 100 – 240 V AC.
Voltages other than 120 V are not intended for U.S.A. and Canada.
Operation at a voltage other than 120 V AC may require the use of a different AC plug. Please contact either a local or foreign Panasonic authorized service center for assistance in selecting an alternate AC plug.

CAUTION:

- Keep the temperature inside the rack to between 5 °C to 40 °C.
- Bolt the rack securely to the floor so that it will not topple over when Main Frame is drawn out.

FCC NOTICE (USA)

This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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. If DVI-D port is to be used it must be connected to PC by compatible interface cable with two ferrite cores. Also, any unauthorized changes or modifications to this equipment could void the user's authority to operate it.

NOTIFICATION (Canada)

CAN ICES-003(A)/NMB-003(A)

<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

Battery recycling symbol (valid only in Taiwan)

臺灣限定的廢電池回收標識。



廢電池請回收



WARNING:

THIS PRODUCT CONTAINS A COIN BATTERY

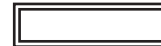
Keep coin battery out of the reach of infants and small children whether the battery is new or used. Severe or fatal injuries can occur within 2 hours of ingestion. Seek medical attention immediately.

IMPORTANT SAFETY INSTRUCTIONS

- 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.



S3125A

Read this first! (For AV-HS60U1E/AV-HS60U2E)

indicates safety information.

WARNING:

Installation should only be performed by qualified installation personnel.
Improper installation may result in the entire apparatus falling down and causing injury.

WARNING:

This equipment must be earthed.
To ensure safe operation, the three-pin plug must be inserted only into a standard three-pin power point which is effectively earthed through the normal household wiring.
Extension cords used with the equipment must have three cores and be correctly wired to provide connection to the earth. Wrongly wired extension cords are a major cause of fatalities.
The fact that the equipment operates satisfactorily does not imply that the power point is earthed or that the installation is completely safe. For your safety, if you are in any doubt about the effective earthing of the power point, please consult a qualified electrician.

WARNING:

- To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture.
- To reduce the risk of fire or electric shock, keep this equipment away from all liquids. Use and store only in locations which are not exposed to the risk of dripping or splashing liquids, and do not place any liquid containers on top of the equipment.

WARNING:

Always keep screws out of the reach of babies and small children.

WARNING:

Fuse replacement should only be performed by qualified personnel.
For continued protection against risk of fire, replace only with the same type; 3.15 AH - 250 V fuse for F1/F2.

WARNING:

This equipment is compliant with Class A of CISPR 32.
In a residential environment this equipment may cause radio interference.

CAUTION:

Do not remove panel covers by unscrewing.
To reduce the risk of electric shock, do not remove the covers. No user serviceable parts inside.
Refer servicing to qualified service personnel.

CAUTION:

To reduce the risk of fire or electric shock, refer mounting of the optional interface boards to qualified service personnel.

CAUTION:

To reduce the risk of fire or electric shock and annoying interference, use the recommended accessories only.

CAUTION:

In order to maintain adequate ventilation, do not install or place this unit in a bookcase, built-in cabinet or any other confined space. To prevent risk of electric shock or fire hazard due to overheating, ensure that curtains and any other materials do not obstruct the ventilation.

CAUTION:

The mains plug of the power supply cord shall remain readily operable.
The AC receptacle (mains socket outlet) shall be installed near the equipment and shall be easily accessible. To completely disconnect this equipment from the AC mains, disconnect the power cord plug from the AC receptacle.

CAUTION:

A coin type battery is installed inside of the unit.
Do not expose the unit to excessive heat such as sunshine, fire or the like.

CAUTION:

- Keep the temperature inside the rack to between 5 °C to 40 °C.
- Bolt the rack securely to the floor so that it will not topple over when Main Frame is drawn out.



indicates safety information.

Caution for AC Mains Lead

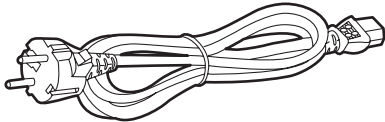
FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.

This product is equipped with 2 types of AC mains cable. One is for continental Europe, etc. and the other one is only for U.K.

Appropriate mains cable must be used in each local area, since the other type of mains cable is not suitable.

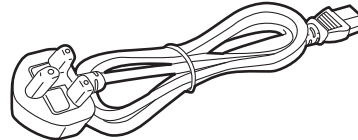
FOR CONTINENTAL EUROPE, ETC.

Not to be used in the U.K.



FOR U.K. ONLY

If the plug supplied is not suitable for your socket outlet, it should be cut off and appropriate one fitted.



FOR U.K. ONLY

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.

A 13 amp fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 13 amps and that it is approved by ASTA or BSI to BS1362.

Check for the ASTA mark  or the BSI mark  on the body of the fuse.

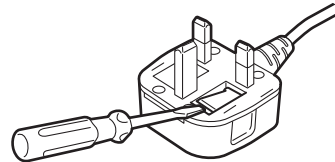
If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover the plug must not be used until a replacement cover is obtained.

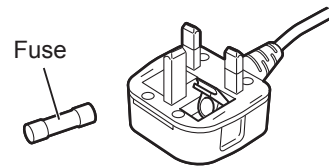
A replacement fuse cover can be purchased from your local Panasonic Dealer.

How to replace the fuse

1. Open the fuse compartment with a screwdriver.



2. Replace the fuse.



Manufactured by:

Panasonic Connect Co., Ltd.
4-1-62 Minoshima, Hakata-ku, Fukuoka 812-8531, Japan

Importer:

Panasonic Connect Europe GmbH
Authorized Representative in EU:
Panasonic Testing Centre
Winsbergring 15, 22525 Hamburg, Germany

Importer for UK:

Panasonic Connect UK,
a branch of Panasonic Connect Europe GmbH,
Maxis 2, Western Road, Bracknell, Berkshire, RG12 1RT



EMC NOTICE FOR THE PURCHASER/USER OF THE APPARATUS

1. Pre-requisite conditions to achieving compliance with the above standards

<1> Peripheral equipment to be connected to the apparatus and special connecting cables

- The purchaser/user is urged to use only equipment which has been recommended by us as peripheral equipment to be connected to the apparatus.
- The purchaser/user is urged to use only the connecting cables described below.

<2> For the connecting cables, use shielded cables which suit the intended purpose of the apparatus.

- Video signal connecting cables
Use double shielded coaxial cables, which are designed for 75-ohm type high-frequency applications, for SDI (Serial Digital Interface).
Coaxial cables, which are designed for 75-ohm type high-frequency applications, are recommended for analog video signals.
- Audio signal connecting cables
If your apparatus supports AES/EBU serial digital audio signals, use cables designed for AES/EBU.
Use shielded cables, which provide quality performance for high-frequency transmission applications, for analog audio signals.
- Other connecting cables (IEEE1394, USB)
Use double shielded cables, which provide quality performance for high-frequency applications, as connecting cables.
- When connecting to the DVI signal terminal, use a cable with a ferrite core.
- If your apparatus is supplied with ferrite core(s), they must be attached on cable(s) following instructions in this manual.

2. Performance level

The performance level of the apparatus is equivalent to or better than the performance level required by these standards.

However, the apparatus may be adversely affected by interference if it is being used in an EMC environment, such as an area where strong electromagnetic fields are generated (by the presence of signal transmission towers, cellular phones, etc.). In order to minimize the adverse effects of the interference on the apparatus in cases like this, it is recommended that the following steps be taken with the apparatus being affected and with its operating environment:

1. Place the apparatus at a distance from the source of the interference.
2. Change the direction of the apparatus.
3. Change the connection method used for the apparatus.
4. Connect the apparatus to another power outlet where the power is not shared by any other appliances.

AEEE Yönetmeliğine Uygundur.
AEEE Complies with Directive of Turkey.

To remove the battery

Back-up Battery (Lithium Battery)

- For the removal of the battery for disposal at the end of its service life, please consult your dealer.

ІНФОРМАЦІЯ ПРО ПІДТВЕРДЖЕННЯ ВІДПОВІДНОСТІ ПРОДУКТУ

Виробник:	Panasonic Connect Co., Ltd.	Панасонік Коннект Ко., Лтд.
Адреса виробника:	Fukuoka, Japan	Фукуока Японія
Країна походження:	Japan	Японія

Уповноважений Представник:	ТОВ "ПАНАСОНІК УКРАЇНА ЛТД"
Адреса Уповноваженого Представника:	вул. Васильківська, буд. 30, м. Київ, 03022, Україна

Примітки:

Термін служби виробу	7 років
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Дату виготовлення можна визначити за комбінацією букв і цифр серійного номера, що розташований на маркувальній таблиці виробу.

Приклад:

X X XXXXXXX

Рік: остання цифра року (0 – 2020, 1 – 2021, ... 9 – 2029)
Місяць: А – Січень, В – Лютий... L – Грудень

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How to read this document

■ Abbreviations

The following abbreviations are used in this document.

- The model numbers of the Main Frames AV-HS60U1P/AV-HS60U2P, AV-HS60U1E/AV-HS60U2E are described as “AV-HS60U1”/“AV-HS60U2”.
- The model numbers of the Control Panels AV-HS60C1P/AV-HS60C2P, AV-HS60C1E/AV-HS60C2E are described as “AV-HS60C1”/“AV-HS60C2”.
- The model numbers of the Control Panels AV-HS60C4P and AV-HS60C4E are described as “AV-HS60C4”.
- The model number of the Menu Panel AV-HS60C3G is described as “AV-HS60C3”.

Overview

Overview

AV-HS60U1/AV-HS60U2 is the Main Frame AV-HS60U1/AV-HS60U2 which configures the switcher system of AV-HS6000. AV-HS60U1 is the single power supply model, and AV-HS60U2 is the redundant power supply model. For detailed operations, refer to the Operating Guide of the AV-HS6000 series.

Ratings display

The name, model number, and electrical ratings of the unit are indicated on its side panel.

Installation

Refer to the Operating Guide of the AV-HS6000 series.

Accessories

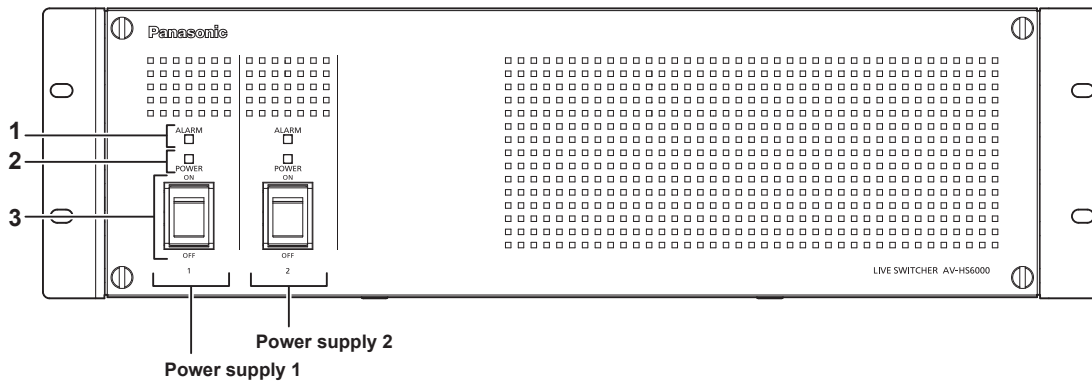
- AC cable
 - AV-HS60U1P: 1 cable, AV-HS60U2P: 2 cables
 - AV-HS60U1E: 2 cables, AV-HS60U2E: 4 cables
- Rack-mounted rear panel support bracket
- Screws for the rack-mounted rear panel support bracket: 8 screws
- Operating Guide of the AV-HS6000 series (Excerpted Version)

NOTE

- After removing the product from its container, dispose of the AC cable cap and packing materials in an appropriate manner.

Part Names and Functions

Front panel



1 Alarm indicator <ALARM>

Lights up when the cooling fan of the Main Frame AV-HS60U1/AV-HS60U2 has stopped or when there are problems (voltage declines) with the power supply. In such cases, an alarm message is displayed on the Menu Panel AV-HS60C3. For the redundant power supply model (AV-HS60U2), an alarm will be displayed if both <POWER> switches of the power supply 1 and the power supply 2 have not turned on.

When an alarm has occurred, details of the problem can be checked from the <SYS> button on the top menu → [MAINTENANCE] → [Alarm] tab. Alarm status can be output from the alarm output port of the <GPI IN> terminal on the Main Frame AV-HS60U1/AV-HS60U2 to external devices.

- AV-HS60U1 does not have the alarm indicator for the power supply 2.

2 Power indicator <POWER>

Lights up when power is input into the <AC IN 1>/<AC IN 2> terminal and also when the <POWER> switches of the power supply 1 and the power supply 2 are set to <ON>.

- AV-HS60U1 does not have the power indicator for the power supply 2.

3 <POWER> switch

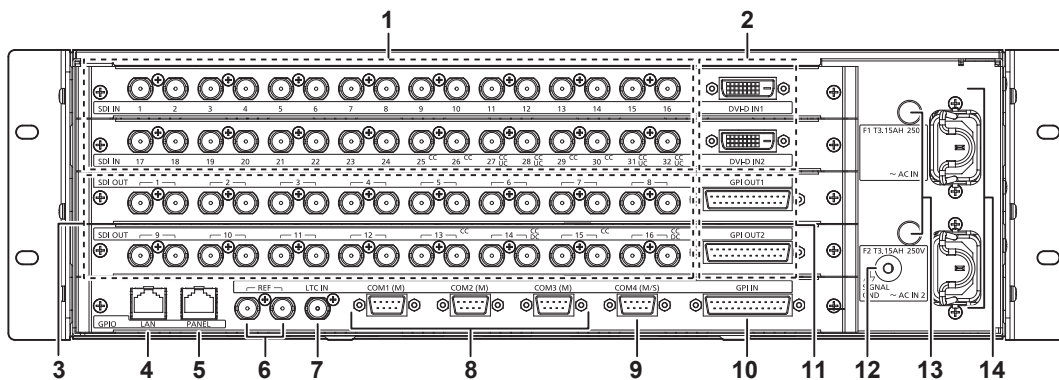
Turns power on/off.

- The single power supply model (AV-HS60U1) does not have the <POWER> switch for the power supply 2.
- When turning off the power of the redundant power supply model (AV-HS60U2), set both <POWER> switches for the power supply 1 and the power supply 2 to <OFF>.

NOTE

- When an alarm has occurred, stop using the unit immediately, and be sure to contact your dealer.

Rear panel



1 <SDI IN 1> to <SDI IN 32> terminals (connector: BNC×32/signal: SDI IN)

<SDI IN 25> to <SDI IN 32> terminals are equipped with color correctors.

The <SDI IN 27>/<SDI IN 28>/<SDI IN 31>/<SDI IN 32> terminals are equipped with up-converters.

2 <DVI-D IN1>/<DVI-D IN2> terminals (connector: DVI-D×2/signal: DVI-D IN)

Connects DVI-D output devices such as a computer using DVI-D cables.

- The DVI-I connector cable cannot be used.

3 <SDI OUT 1> to <SDI OUT 16> terminals (connector: BNC×32/signal: SDI OUT)

Assigns SDI OUT signals from the <IN OUT> button on the top menu → [SDI OUT] → [Assign] tab. (2 distributions each)

<SDI OUT 13> to <SDI OUT 16> terminals are equipped with color correctors.

<SDI OUT 14>/<SDI OUT 16> terminals are equipped with down-converters.

4 <LAN> terminal (connector: RJ-45/signal: 100Base-TX)

Connects second and further Control Panels AV-HS60C1/AV-HS60C2/AV-HS60C4, menu operation computers, and external devices.

- Images from the Control Panel AV-HS60C1/AV-HS60C2/AV-HS60C4 connected to this terminal cannot be displayed on the Menu Panel AV-HS60C3.

- 5 <PANEL> terminal (connector: RJ-45/signal: 100Base-TX)**
Connects the Control Panel AV-HS60C1/AV-HS60C2/AV-HS60C4.
- 6 <REF> terminal (connector: BNC×2/signal: Genlock)**
Loop-through output in the external sync mode. If the loop-through output is not going to be used, provide a 75 Ω termination. Black burst signals are output from both terminals in the internal sync mode.
- 7 <LTC IN> terminal (connector: BNC/signal:LTC)**
This is the LTC (linear time code) input terminal.
- 8 <COM1 (M)>/<COM2 (M)>/<COM3 (M)> terminals (connector: D-sub 9-pin (female) ×3, inch screw/signal: RS-422)**
Used for master connection of external devices.
- 9 <COM4 (M/S)> terminal (connector: D-sub 9-pin (female), inch screw/signal: RS-422)**
Used for master connection/slave connection of external devices.
 - Master connection and the slave connection can be switched from the <SYS> button on the top menu → [PERIPHERAL] → [General] tab → [MF COM4] column → [Master/Slave].
- 10 <GPI IN> terminal (connector: D-sub 25-pin (female), inch screw/signal: GPI IN)**
Equipped with 18 contact input ports (GPI IN) that control the unit externally, and an alarm output port (ALARM OUT).
- 11 <GPI OUT1>/<GPI OUT2> terminals (connector: D-sub 25-pin (female) ×2, inch screw/signal: GPI OUT)**
Equipped with 48 output ports (GPI OUT) that output tallies and status information from the unit.
- 12 <SIGNAL GND> terminal (signal: SG)**
Connects to the ground of the system.
- 13 <F1>/<F2> terminals**
(Fuse)
- 14 <AC IN 1>/<AC IN 2> terminals (signal: AC)**
Connects one end of the supplied AC cable to this terminal and the other end to the AC outlet. (AC 100 V to 240 V, 50 Hz/60 Hz)
 - The supplied AC cable has a 3-pin plug with a grounding terminal. Connect to a 3-pin power outlet which is equipped with a grounding terminal.
 - If a 3-point power outlet is not available, be sure to consult your dealer.

 **NOTE**

- For the cable connecting to the <SDI IN 1> to <SDI IN 32> terminals, <SDI OUT 1> to <SDI OUT 16> terminals, <REF> terminal, or <LTC IN> terminal, use a 5C-FB compliant double-shielded cable.
- For the cable connecting to the <DVI-D IN1>/<DVI-D IN2> terminals, use a double-shielded cable.
- For the cable connecting to the <LAN> terminal, <PANEL> terminal, <COM1 (M)>/<COM2 (M)>/<COM3 (M)>/<COM4 (M/S)> terminals, <GPI IN> terminal, or <GPI OUT1>/<GPI OUT2> terminals, use a shielded cable.

Notification when the power is turned on for the first time

When using the products for the first time, connect the Control Panel AV-HS60C1/AV-HS60C2/AV-HS60C4 to the <PANEL> terminal of the Main Frame AV-HS60U1/AV-HS60U2, and then turn on the power.

Depending on the combination of the purchased Main Frame and the Control Panel, the version of the firmware for each may not match.

When the version of the firmware for the Main Frame and the Control Panel does not match, the Control Panel will not correctly boot when the power is turned on.

Boot status when the versions do not match

Two buttons out of PST/B bus crosspoint buttons in the ME line in front will blink. One button will blink in green, and the other will blink in red. (Fig. 1)

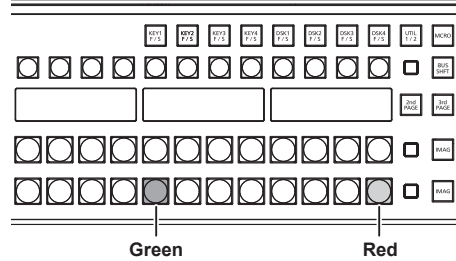


Fig. 1

- When it goes into this status, it is necessary to match the firmware version of the Control Panel to the Main Frame.
- If it does not go into this status and the Control Panel boots normally, the firmware versions of the Main Frame and the Control Panel do match.
- Check the latest software information and perform the version update of the software if necessary. For details, refer to “To perform the version update of the software” (page 12).

■ To match the firmware version of the Control Panel to the Main Frame

The firmware of the Control Panel is updated when the following operation is performed. Once the update is correctly performed, the firmware version of the Control Panel will match with the firmware version of the Main Frame, and it will boot in normal status.

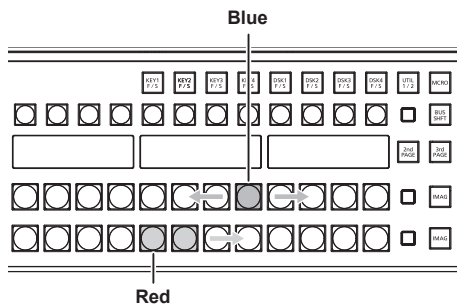


Fig. 2

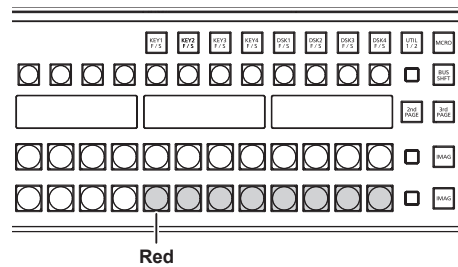


Fig. 3

1 Press the button blinking in red (Fig. 1).

Update of the firmware is started.

- Status when the firmware of the Control Panel is being updated (Fig. 2)

- Eight buttons out of the PGM/A bus crosspoint buttons in the ME line in front will repeatedly blink in blue from left to right.
- Eight buttons out of the PST/B bus crosspoint buttons in the ME line in front will blink in red sequentially from left to right.

Update of the firmware will complete after approximately two minutes.

- Status when the update of the firmware of the Control Panel is completed

- Eight buttons out of the PST/B bus crosspoint buttons in the ME in front will continue to blink in red. (Fig. 3)
- Depending on the version of the firmware of the Main Frame, the Control Panel may automatically reboot. The firmware of the Control Panel is updated correctly for this too.

2 Turn off the power of the Main Frame and the Control Panel.

- Turn off the power after completing the update of the firmware of the Control Panel.
- Do not turn off the power of the Main Frame and the Control Panel while the firmware of the Control Panel is still updating (Fig. 2).

3 Turn on the power of the Main Frame and the Control Panel.

Control Panel is booted and the menu screen is displayed in the menu panel when the firmware is correctly updated.

4 Select the <SYS> button → [MAINTENANCE] → [Boot] tab → [Initial] column → [Initial] button.

5 Select [OK] in the confirmation screen.

The AV-HS6000 is initialized.

Go on to the procedure in “To perform the version update of the software” (page 12).

■ To perform the version update of the software

Check the latest software information and perform the version update of the software if necessary.

1 Check the <SYS> button → [MAINTENANCE] → [Status] tab → [System Version] column → [System Version].

2 Perform the version update of the software if necessary.

Check the latest software information in the following website, and perform the software version update if necessary.
<https://pro-av.panasonic.net/> (English only)

Specifications

Power supply
 AC \sim 100 V to 240 V, 50 Hz/60 Hz
 Power consumption
 110 W

AV-HS60U2 supports redundant power supply.

indicates safety information.

Video terminal

<SDI IN 1> to <SDI IN 32> terminals	During Standard mode	
	32 lines	
	<ul style="list-style-type: none"> Connectors: BNC×32 <SDI IN 27>, <SDI IN 28>, <SDI IN 31>, and <SDI IN 32> terminals are equipped with up-converters. <SDI IN 25> to <SDI IN 32> terminals are equipped with color correctors. 	
	HD-SDI	HD serial digital, SMPTE292M (BTA S-004) standard compliant <ul style="list-style-type: none"> 0.8 V [p-p] ±10% (75 Ω) Automatic equalizer 100 m (328 ft) (when 1.5 Gbps/5C-FB cable is used)
SD-SDI	SD serial digital, SMPTE259M standard compliant <ul style="list-style-type: none"> 0.8 V [p-p] ±10% (75 Ω) Automatic equalizer 200 m (656 ft) (when 5C-2V cable is used) 	
During 3G mode		
16 lines		
<ul style="list-style-type: none"> Connector: BNC×16(only the odd numbered terminals can be used) The even numbered terminals <SDI IN 2>, <SDI IN 4> ... <SDI IN 32> cannot be used. <SDI IN 25>, <SDI IN 27>, <SDI IN 29>, and <SDI IN 31> terminals are equipped with color correctors. 		
During 4K mode		
4K signal × eight lines		
<ul style="list-style-type: none"> Connector: BNC × 32 (constructs one line of 4K signal with four terminals) Can use the 4K signal in SQD format and 2SI format 		
3G-SDI	3G serial digital, SMPTE424M standard compliant <ul style="list-style-type: none"> 0.8 V [p-p] ±10% (75 Ω) Automatic equalizer 100 m (328 ft) (when 3 Gbps/5C-FB cable is used) 3G-SDI Level A, 3G-SDI Level B 	
<DVI-D IN1>/<DVI-D IN2> terminals	2 lines Digital RGB: XGA (1024×768), WXGA (1280×768), SXGA (1280×1024), WSXGA+ (1680×1050), UXGA (1600×1200), WUXGA (1920×1200) Vertical frequency: 60 Hz Video format inputs: 1080/50p, 1080/59.94p, 1080/50i, 1080/59.94i, 720/50p, 720/59.94p <ul style="list-style-type: none"> Connectors: DVI-D×2 The terminals do not support HDCP. The DVI-I connector cable cannot be used. For the DVI-D connector cable, use a cable with a length of up to 5 m (16.4 ft). <DVI-D IN1>/<DVI-D IN2> terminal cannot be used during the 3G mode and the 4K mode. 	

Specifications

<SDI OUT 1> to <SDI OUT 16> terminals	During Standard mode 16 lines (two distribute outputs per line) <ul style="list-style-type: none"> • Connectors: BNC×32 • ME1PGM, ME1PVW, ME1CLN, ME1KEYPVW, ME2PGM, ME2PVW, ME2CLN, ME2KEYPVW, DSKPGM1, DSKPGM2, DSKPVW1, DSKPVW2, DSK1CLN, DSK2CLN, DSK3CLN, DSK4CLN, SEL KEYPVW, MV1 to MV4, and AUX1 to AUX16 can be assigned. 	
	HD-SDI	HD serial digital, SMPTE292M (BTA S-004) standard compliant <ul style="list-style-type: none"> • Output level: 0.8 V [p-p] ±10% • Rise time: Less than 270 ps (HD) • Fall time: Less than 270 ps (HD) • Difference between rise time and fall time: 100 ps or less (HD) • Alignment jitter: 0.2 UI (130 ps) or less (HD) • Timing jitter: 1.0 UI or less (HD) • Eye aperture ratio: 90% or more • DC offset: 0±0.5 V
	SD-SDI	SD serial digital, SMPTE259M standard compliant <ul style="list-style-type: none"> • Output level: 0.8 V [p-p] ±10% • Rise time: 1.5 ns or less • Fall time: 1.5 ns or less • Difference between rise time and fall time: 0.5 ns or less • Jitter: 0.2 UI or less
During 3G mode 3G-SDI output: Eight lines (two distribute outputs per line) HD-SDI output: Two lines (two distribute outputs per line) <ul style="list-style-type: none"> • Connector <ul style="list-style-type: none"> 3G-SDI: BNC×16(odd numbered terminals only) HD-SDI: BNC×4 (<SDI OUT 14> and <SDI OUT 16> terminals only) • 3G-SDI signal is not output from the even numbered terminals. <ul style="list-style-type: none"> - No signal is output from the <SDI OUT 2>, <SDI OUT 4> ... <SDI OUT 12> terminals. - The HD-SDI signal converted to the 1080i format is output from the <SDI OUT 14> and <SDI OUT 16> terminals. This signal is converted to the 1080i format by decimating the 1080p signal output from the <SDI OUT 13> and <SDI OUT 15> terminals. • <SDI OUT 13> and <SDI OUT 15> terminals are equipped with color correctors. The same color corrector setting is also applied to <SDI OUT 14> and <SDI OUT 16> terminals. • ME1PGM, ME1PVW, ME1CLN, ME1KEYPVW, ME2PGM, ME2PVW, ME2CLN, DSKPGM1, DSKPGM2, DSKPVW1, DSKPVW2, DSK1CLN, DSK2CLN, SEL KEYPVW, MV1 to MV2, and AUX1 to AUX8 can be assigned. 		
During 4K mode 4K signal output: Three lines (two distribute outputs per line) 2K signal output: Two lines (two distribute outputs per line) <ul style="list-style-type: none"> • Connector <ul style="list-style-type: none"> 3G-SDI (for 4K signal): BNC × 24 (terminal number 1 to 12) 3G-SDI (for 2K signal): BNC × 4 (terminal number 13 and 15) HD-SDI (for 2K signal): BNC × 4 (terminal number 14 and 16) • The 4K signal is output in SQD format. • The HD-SDI signal converted to the 1080i format is output from the <SDI OUT 14> and <SDI OUT 16> terminals. This signal is converted to the 1080i format by decimating the 1080p signal output from the <SDI OUT 13> and <SDI OUT 15> terminals. • ME1PGM, ME1PVW, ME1CLN, ME1KEYPVW, ME2PGM, ME2PVW, ME2CLN, DSKPGM1, DSKPGM2, DSKPVW1, DSKPVW2, DSK1CLN, DSK2CLN, SEL KEYPVW, MV1 to MV2, and AUX1 to AUX8 can be assigned. 		
	3G-SDI	3G serial digital, SMPTE424M standard compliant <ul style="list-style-type: none"> • Output level: 0.8 V [p-p] ±10% • Rise time: 135 ps or less • Fall time: 135 ps or less • Difference between rise time and fall time: 50 ps or less • Alignment jitter: 0.3 UI or less • Timing jitter: 2.0 UI or less • DC offset: 0±0.5 V • 3G-SDI Level B
Signal formats	SD	480/59.94i, 576/50i
	HD	1080/59.94i, 1080/50i, 720/59.94p, 720/50p, 1080/29.97PsF, 1080/25PsF, 1080/24PsF, 1080/23.98PsF
	3G	1080/59.94p, 1080/50p
	4K	2160/59.94p, 2160/50p
Signal processing	Y:P _B :P _R	4:2:2 10 bits
	R:G:B	4:4:4 8 bits
ME number	2ME	

Synchronous terminal

<REF> terminal	In Genlock mode: Black burst or Tri-level Sync input signals (with loop-through) <ul style="list-style-type: none"> • If the loop-through output is not used, provide a 75 Ω termination. In internal sync mode: Black burst output signal $\times 2$ <ul style="list-style-type: none"> • Connector: BNC • Same field frequencies as those of the system formats supported • In the 1080/24PsF and 1080/23.98PsF formats, only Genlock mode supported • In the 1080/23.98PsF format, black burst signals with 10 Field ID (SMPTE318M standard compliant) or Tri-level Sync signals supported 	
<LTC IN> terminal	This is the LTC (linear time code) input terminal <ul style="list-style-type: none"> • Connector: BNC • Impedance: 1 kΩ • Level: 1 to 2 V [p-p] 	
Video delay time	During Standard mode	
	1 line (H)	When the frame synchronizer is set to [Off], and the up-converter is set to [Off]
	1 frame (F)	When the frame synchronizer is set to on, or the up-converter is set to [On]
	<ul style="list-style-type: none"> • When the signals have passed through PinP, DVE, MultiView, down-converter, or DVI-IN, a maximum delay of 1 frame is applied in each case. 	
	During 3G mode	
	2 lines (H)	When the frame synchronizer is set to [Off]
	2 frames (F)	When the frame synchronizer is set to [On]
	<ul style="list-style-type: none"> • Maximum of 2 frame delay is added to each when passed through PinP, DVE, or MultiView. 	
	During 4K mode	
1 frame (F)	The frame synchronizer is always on.	
<ul style="list-style-type: none"> • Maximum of 2 frame delay is added to each when passed through PinP, DVE, or MultiView. • For details on other added delays, refer to "3G mode/4K mode" in Operating Guide (PDF). 		

Control terminal

<LAN> terminal	Compatible with 100Base-TX and AUTO-MDIX (For IP control) <ul style="list-style-type: none"> • Connection cable: LAN cable (CAT5E), max. 100 m (328 ft), STP (Shielded Twisted Pair) cable recommended • Connector: RJ-45
<PANEL> terminal	Compatible with 100Base-TX and AUTO-MDIX (For Control Panel AV-HS60C1/AV-HS60C2/AV-HS60C4 connection) <ul style="list-style-type: none"> • Connection cable (supplied with AV-HS60C1/AV-HS60C2/AV-HS60C4): LAN cable (CAT5E), straight cable, STP (Shielded Twisted Pair), 10 m (32.8 ft) • Connector: RJ-45
<COM1 (M)>/<COM2 (M)>/<COM3 (M)> terminals	RS-422 control terminal For master connection for controlling external devices <ul style="list-style-type: none"> • Connector: D-sub 9-pin (female) $\times 3$, inch screw
<COM4 (M/S)> terminal	RS-422 control terminal For master/slave connection for controlling external devices <ul style="list-style-type: none"> • Connector: D-sub 9-pin (female), inch screw • Switchable between master connection and slave connection by the menu
<GPI IN> terminal	GPI IN: 18 inputs, general-purpose, photocoupler sensing ALARM OUT: 1 output, open collector output (negative logic) <ul style="list-style-type: none"> • Connector: D-sub 25-pin (female), inch screw
<GPI OUT1>/<GPI OUT2> terminals	GPI OUT: 48 outputs, selected from general purpose, tally Open collector output <ul style="list-style-type: none"> • Connector: D-sub 25-pin (female) $\times 2$, inch screw

 **NOTE**

- Use with the same segment is recommended for the devices which are connected to the unit. If the unit is connected to the devices whose segments are different, events dependent upon the settings inherent to the network equipment, for instance, may occur. Thoroughly check the connections with the devices to which the unit will be connected prior to the start of operation.

Other

Ambient operating temperature	0 °C to 40 °C (32 °F to 104 °F)
Humidity	10% to 90% (no condensation)
Dimensions (W×H×D)	482 mm×132 mm×418 mm (18-31/32 inches×5-3/16 inches×16-15/32 inches) (excluding protrusions) 3RU
Mass	AV-HS60U1: Approx. 12.6 kg (27.8 lbs.) (excluding accessories) AV-HS60U2: Approx. 13.5 kg (29.7 lbs.) (excluding accessories)

■ For AV-HS60U1E/AV-HS60U2E

Inrush current, measured according to European standard EN55103-1, on initial switch-on: 3 A, after a supply interruption of 5 s: 35 A (Each mains input)



Disposal of Old Equipment and Batteries

Only for European Union and countries with recycling systems

These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries must not be mixed with general household waste.

For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points in accordance with your national legislation.

By disposing of them correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment.



For more information about collection and recycling, please contact your local municipality, dealer or supplier.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

Note for the battery symbol (bottom symbol):

This symbol might be used in combination with a chemical symbol. In this case it complies with the requirement set by the Directive for the chemical involved.