

**SONY**<sup>®</sup>

HD CAMERA CONTROL UNIT  
**HXCU-TX70**

CCU CONTROL PANEL  
**HKCU-FP2**

INSTALLATION MANUAL  
1st Edition

## **⚠ 警告**

このマニュアルは、サービス専用です。  
お客様が、このマニュアルに記載された設置や保守、点検、修理などを行うと感電や火災、人身事故につながる可能性があります。  
危険をさけるため、サービストレーニングを受けた技術者のみご使用ください。

## **⚠ WARNING**

This manual is intended for qualified service personnel only.  
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

## **⚠ WARNUNG**

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.  
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegebenen Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

## **⚠ AVERTISSEMENT**

Ce manuel est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

<b>Model Name</b>	<b>Serial No.</b>
HXCU-TX70 (UC): Kings Triax Connector	10001 and Higher
HXCU-TX70 (J): Tajimi Triax Connector	30001 and Higher
HXCU-TX70 (CED): Fischer Triax Connector	40001 and Higher

安全のために、周辺機器を接続する際は、過大電圧を持つ可能性があるコネクタを以下のポートに接続しないでください。

: LAN コネクタ

上記のポートについては本書の指示に従ってください。

For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to the following port(s).

: LAN connector

Follow the instructions for the ports(s).

### **For kundene i Norge**

Dette utstyret kan kobles til et IT-strømfordelingssystem.

### **Attention-when the product is installed in Rack:**

#### **1. Prevention against overloading of branch circuit**

When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.

#### **2. Providing protective earth**

When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

#### **3. Internal air ambient temperature of the rack**

When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

#### **4. Prevention against achieving hazardous condition due to uneven mechanical loading**

When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.

#### **5. Install the equipment while taking the operating temperature of the equipment into consideration**

For the operating temperature of the equipment, refer to the specifications of the Operation Manual.

#### **6. When performing the installation, keep the space away from walls in order to obtain proper exhaust and radiation of heat.**



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# Manual Structure

## Purpose of this manual

This manual is intended for use by trained system engineers and service engineers, and describes information on installing this unit.

## Related manuals

The following manuals are available in this model.

If this manual is required, please contact your local Sony Sales Office/Service Center.

- Operating Instructions CD-ROM (Supplied with the unit)  
This manual is necessary for application and operation of the unit.
- Service Manual (Available on request)  
This manual describes the information items that premise the service based on the block parts.
- Factory Service Manual (Available on request)  
This manual describes the information items that premise the service based on the components parts.





# Section 1

## Installation

### 1-1. Connectors and Cables

#### 1-1-1. Connector Input/Output Signals

##### Input Signals

##### 1. PROMPTER 1, 2

BNC type

Analog composite signal: 1.0 V p-p, 75 Ω

##### 2. REFERENCE IN

BNC type

HD or SD

- HD: SMPTE 274M, tri-level sync, 0.6 V p-p, 75 Ω
- SD: Black burst signal
  - NTSC: 0.286 V p-p, 75 Ω
  - PAL: 0.3 V p-p, 75 Ω

##### 3. SDI RETURN 1, 2

BNC type

HD SDI or SD SDI

- HD SDI: SMPTE 292M, 0.8 V p-p, 75 Ω, 1.485 Gbps/1.4835 Gbps  
BTA-S004B compliant
- SD SDI: SMPTE 259M, 270 Mbps  
Component serial signal

##### 4. VBS RETURN 1, 2

BNC type

Analog composite signal: 1.0 V p-p, 75 Ω

##### Output Signals

##### 5. REFERENCE OUT

BNC type

Loop-through output

HD or SD

- HD: SMPTE 274M, tri-level sync, 0.6 V p-p, 75 Ω
- SD: Black burst signal
  - NTSC: 0.286 V p-p, 75 Ω
  - PAL: 0.3 V p-p, 75 Ω

##### 6. PIX

BNC type

1.0 V p-p, 75 Ω

##### 7. Pr/R/R-Y, Y/G/Y, Pb/B/B-Y

BNC type

- HD component video  
Y/Pb/Pr: 0.7 V p-p, 75 Ω

- HD RGB video  
R/G/B: 0.7 V p-p, 75 Ω
- SD RGB video  
R/G/B: 0.7 V p-p, 75 Ω
- SD component video (NTSC, 75 % color-bar)  
Y: 1.0 V p-p (VIDEO: 0.714 V, SYNC: 0.286 V), 75 Ω  
R-Y/B-Y:
  - 0.756 V p-p, 75 Ω (J)
  - 0.7 V p-p, 75 Ω (UC)
- SD component (PAL, 75 % color-bar)  
Y: 1.0 V p-p (VIDEO: 0.7 V, SYNC: 0.3 V), 75 Ω  
R-Y/B-Y: 0.525 V p-p, 75 Ω

##### 8. SDI OUTPUT 1 to 4

BNC type

HD SDI or SD SDI selectable

- HD SDI: SMPTE 292M, 0.8 V p-p, 75 Ω, 1.485 Gbps/1.4835 Gbps  
BTA-S004B compliant
- SD SDI: SMPTE 259M, 0.8 V p-p, 75 Ω, 270 Mbps  
Component serial signal

##### 9. SYNC/WF

BNC type

SYNC or WF selectable

- SYNC  
HD SYNC or SD SYNC selectable
  - HD: BTA-S001A, tri-level sync, 0.6 V p-p, 75 Ω
  - SD: Composite sync, 0.3 V p-p, 75 Ω
- WF
  - 0.714 V p-p, 75 Ω (NTSC)
  - 0.7 V p-p, 75 Ω (PAL)
  - ENC: 1.0 V p-p, 75 Ω

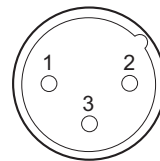
##### 10. VBS 1, 2

BNC type

1.0 V p-p, 75 Ω

##### 11. MIC OUT 1, 2

XLR 3-pin, Male



- External View -

(0 dBu = 0.775 Vrms)

No.	Signal	I/O	Specifications
1	MIC OUT (G)	—	+4 dBu/0 dBu/-20 dBu (Selectable with CCU Menu)
2	MIC OUT (X)	OUT	
3	MIC OUT (Y)	OUT	

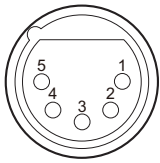
## Input/Output Signals

### 12. CAMERA (optical fiber/triax)

VIDEO, RET VIDEO, INCOM, MIC, COMMAND, PROMPTER, PGM, TRUNK, TONE, POWER

### 13. INTERCOM

XLR 5-pin, Female



- External View -

(0 dBu = 0.775 V rms)

No.	Signal	I/O	Specifications
1	INTERCOM MIC IN (Y)	IN	-20 dBu (CARBON, UNBALANCE) -40 dBu (ECM, UNBALANCE) -60 dBu (DYNAMIC, BALANCE/UNBALANCE)
2	INTERCOM MIC IN (X)	IN	
3	GND	—	GND for INTERCOM
4	INTERCOM L OUT	OUT	8 dBu (VR Max, 250 Ω Load)
5	INTERCOM R OUT	OUT	8 dBu (VR Max, 250 Ω Load)

### 14. REMOTE

8-pin, Female



- External View -

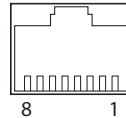
No.	Signal	I/O	Specifications
1	TX (+)	OUT	SERIAL DATA OUT
2	TX (-)	OUT	
3	RX (+)	IN	SERIAL DATA IN
4	RX (-)	IN	
5	TX GND	—	GND for TX

Continued

No.	Signal	I/O	Specifications
6	POWER (+) OUT	OUT	RCP POWER, +30 V
7	POWER (-) OUT	OUT	GND for POWER
8	VIDEO (X)	OUT	75 Ω, 1.0 V p-p
	CHASSIS GND	—	CHASSIS GND

### 15. LAN

8-pin, RJ-45, 10Base-T/100Base-TX

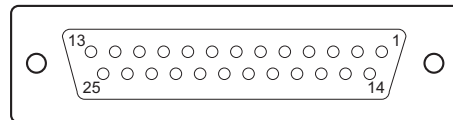


- External View -

No.	Signal	I/O	Specifications
1	TX (+)	OUT	Transmitted Data (+)
2	TX (-)	OUT	Transmitted Data (-)
3	RX (+)	IN	Received Data (+)
4	NC	—	No connection
5	NC	—	No connection
6	RX (-)	IN	Received Data (-)
7	NC	—	No connection
8	NC	—	No connection

### 16. INTERCOM/TALLY/PGM

D-sub 25-pin, Female



- External View -

(0 dBu = 0.775 Vrms)

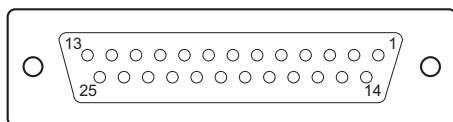
No.	Signal	I/O	Specifications
1	ENG (R) (X) OUT	OUT	ENG SYSTEM RECEIVE 0 dBu BALANCED
2	ENG (R) (Y) OUT	OUT	
3	ENG (G)	—	GND for ENG
4	ENG (T) (X) IN	IN	ENG SYSTEM TALK 0 dBu BALANCED
5	ENG (T) (Y) IN	IN	
6	PGM1 (X) IN	IN	-20 dBu/0 dBu/+4 dBu (Selectable with CCU Menu)
7	PGM1 (Y) IN	IN	
8	PGM1 (G) IN	IN	
9	GND	—	GND for AUX
10	AUX3	—	—
11	R TALLY (X) IN	IN	ON: SHORT OFF: OPEN
12	R TALLY (G) IN	IN	

Continued

No.	Signal	I/O	Specifications
13	GND	—	CHASSIS GND
14	PROD (R) (X) OUT	OUT	PROD SYSTEM RECEIVE 0 dBu BALANCED
15	PROD (R) (Y) OUT	OUT	
16	PROD (G)	—	GND for PROD
17	PROD (T) (X) IN	IN	PROD SYSTEM TALK 0 dBu BALANCED
18	PROD (T) (Y) IN	IN	
19	PGM2 (X) IN	IN	-20 dBu/0 dBu/+4 dBu (Selectable with CCU Menu)
20	PGM2 (Y) IN	IN	
21	PGM2 (G) IN	—	
22	AUX4	—	—
23	AUX5	—	—
24	G TALLY (X) IN	IN	ON: SHORT OFF: OPEN
25	G TALLY (G) IN	IN	

## 17. MIC/WF REMOTE/TRUNK

D-sub 25-pin, Female



- External View -

### Tip

MIC or WF REMOTE is selected by REAR DSUB I/F OTHERS (C14) in the CCU CONFIGURATION menu.

No.	Signal	I/O	Specifications
1	+ 5.5 V OUT	OUT	Max. 250 mA
2	TALLY GND	—	GND for TALLY
3	G TALLY OUT	OUT	ON (GND): Max. 30 mA IN
4	R TALLY OUT	OUT	ON (GND): Max. 30 mA IN
5	WF REMOTE: RECALL2 (G)	OUT	LOW ACTIVE
	MIC REMOTE: CAM MIC AMP GAIN CTRL 2 IN	IN	Refer to “Specification 1 of MIC CONT”
6	WF REMOTE: RECALL3 (B)	OUT	LOW ACTIVE
	MIC REMOTE: CAM MIC AMP GAIN CTRL 1 IN	IN	Refer to “Specification 1 of MIC CONT”
7	WF REMOTE: RECALL1 (R)	OUT	LOW ACTIVE
	MIC REMOTE: CAM MIC AMP GAIN CTRL 0 IN	IN	Refer to “Specification 1 of MIC CONT”

Continued

No.	Signal	I/O	Specifications
8	WF REMOTE: RECALL4 (SEQ)	OUT	LOW ACTIVE
	MIC REMOTE: MIC GAIN CTRL ON/OFF IN	IN	Refer to “Specification 2 of MIC CONT”
9	SEQ CTRL OUT(X)	OUT	OPEN COLLECTOR + (PNP)/- (NPN)
10	STAIR CASE OUT (G)	—	GND for STAIR CASE OUT (X)
11	RX (-)	IN	TRUNK DATA IN
12	TX (+)	OUT	TRUNK DATA OUT
13	GND	—	GND for +5.5 V
14	GND	—	GND for WF REMOTE
15	TALLY OUT	OUT	R/G TALLY OUT ON (GND): MAX 30 mA IN
16	PREVIEW OUT	OUT	ON (GND): OPEN COLLECTOR
17	WF REMOTE: RECALL5 (ENC)	OUT	LOW ACTIVE
	MIC REMOTE: ASPECT REMOTE ON/OFF IN	IN	L: REMOTE
18	WF REMOTE: RECALL6 (R+B)	OUT	LOW ACTIVE
	MIC REMOTE: ASPECT CTRL1 IN	IN	Refer to “Specification of ASPECT”
19	WF REMOTE: RECALL7 (R+G)	OUT	LOW ACTIVE
	MIC REMOTE: ASPECT CTRL2 IN	IN	Refer to “Specification of ASPECT”
20	WF REMOTE: RECALL8 (G+B)	OUT	LOW ACTIVE
	MIC REMOTE: MIC GAIN CTRL ON/OFF IN	IN	Refer to “Specification 2 of MIC CONT”
21	SEQ CTRL OUT (G)	—	GND for SEQ CTRL OUT (X)
22	STAIR CASE OUT (X)	OUT	Refer to “Stair Case signal”
23	GND	—	GND for TRUNK
24	RX (+)	IN	TRUNK DATA IN
25	TX (-)	OUT	TRUNK DATA OUT

- Specification 1 of MIC CONT

CTRL0	CTRL1	CTRL2	CAM MIC AMP GAIN
H	H	H	60 dB
L	H	H	50 dB
H	L	H	40 dB
L	L	H	30 dB
H	H	L	20 dB

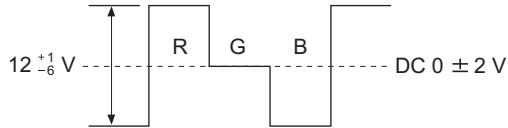
- Specification 2 of MIC CONT

8 pin	20 pin	MIC GAIN CONT
L	L	MIC 1 and MIC 2 ON
L	H	MIC 1 ON
H	L	MIC 2 ON
H	H	INTERNAL set

- Specification of ASPECT

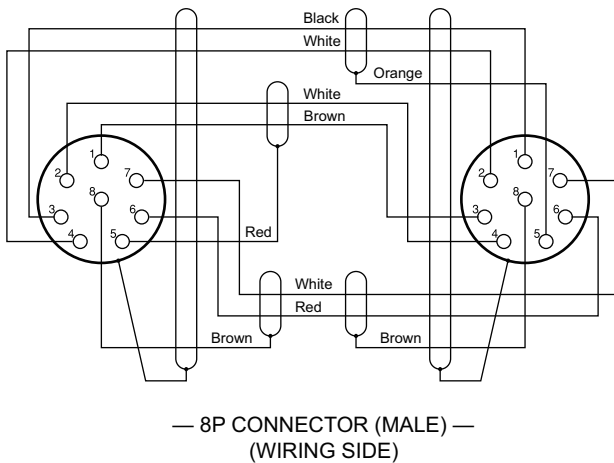
CTRL1	CTRL2	ASPECT
L	H	SQ (16 : 9)
H	H	EC (4 : 3)
L	L	INTERNAL set
H	L	LB

- Stair Case signal



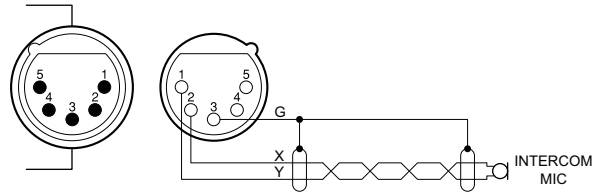
## 1-1-2. Wiring Diagrams for Cables

### CCA-5 Cable (for REMOTE connector)

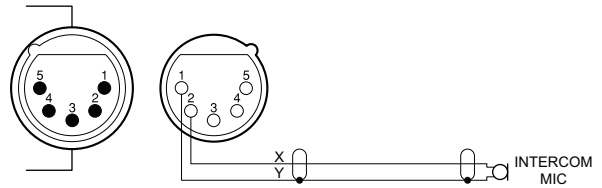


## INTERCOM MIC Cable

1. Balance (BALANCE in MIC TYPE menu)



2. Unbalance (UNBALANCE in MIC TYPE menu)



## 1-1-3. Connection Connectors/Cables

Connection made with the connector panels during installation or service, should be made with the connectors/complete cable assemblies specified in the following list, or equivalent parts.

Connector Name	Connector/Cable
CAMERA (triax)	Triax <ul style="list-style-type: none"> <li>• UC: KINGS triax connector</li> <li>• J: Tajimi Electronics triax connector</li> <li>• CED: FISCHER triax connector</li> </ul>
<ul style="list-style-type: none"> <li>• PROMPTER 1, 2</li> <li>• REFERENCE IN/OUT</li> <li>• SYNC/WF</li> <li>• VBS 1, 2</li> <li>• PIX</li> <li>• Pr/R/R-Y, Y/G/Y, Pb/B/B-Y</li> <li>• VBS RETURN 1, 2 (BNC)</li> </ul>	1-564-742-11 PLUG, BNC or B-B Cable assembly (1.5 m, optional)
<ul style="list-style-type: none"> <li>• SDI OUTPUT 1 to 4</li> <li>• SDI RETURN 1, 2 (BNC)</li> </ul>	1-569-370-12 PLUG, BNC or 5C-FB coaxial cable (Fujikura products recommended)
MIC OUT 1, 2 (3P, Male)	1-508-083-00 XLR 3P Female or CANNON XLR-3-11C equivalent
<ul style="list-style-type: none"> <li>• INTERCOM/TALLY/PGM</li> <li>• MIC/WF REMOTE/TRUNK (D-sub 25P, Female)</li> </ul>	1-766-367-11 D-sub 25P, Male JAE DB-25PF-N equivalent (Available shell: JAE DB-C2-J9-R equivalent)
REMOTE (8P, Female)	1-766-848-11 PLUG, 8P Male or CCA Cable assembly (optional) CCA-5-10 (10 m), CCA-5-3 (3 m)

Continued

<b>Connector Name</b>	<b>Connector/Cable</b>
INTERCOM (5P, Female)	1-508-370-11 XLR 5P, Male or CANNON XLR-5-12C equivalent
LAN (8P, RJ-45)	LAN cable (commercially available, shield type, category 5 or higher)

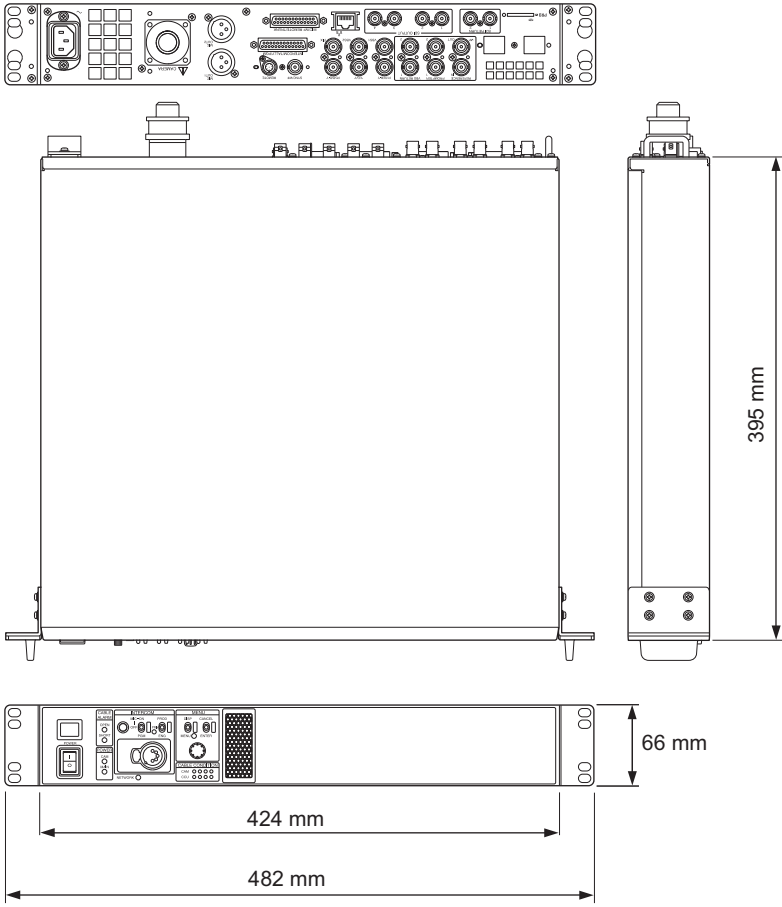
## 1-2. Power Cord

To get a power cord, please contact your local Sony Sales Office/Service Center.

### **WARNING**

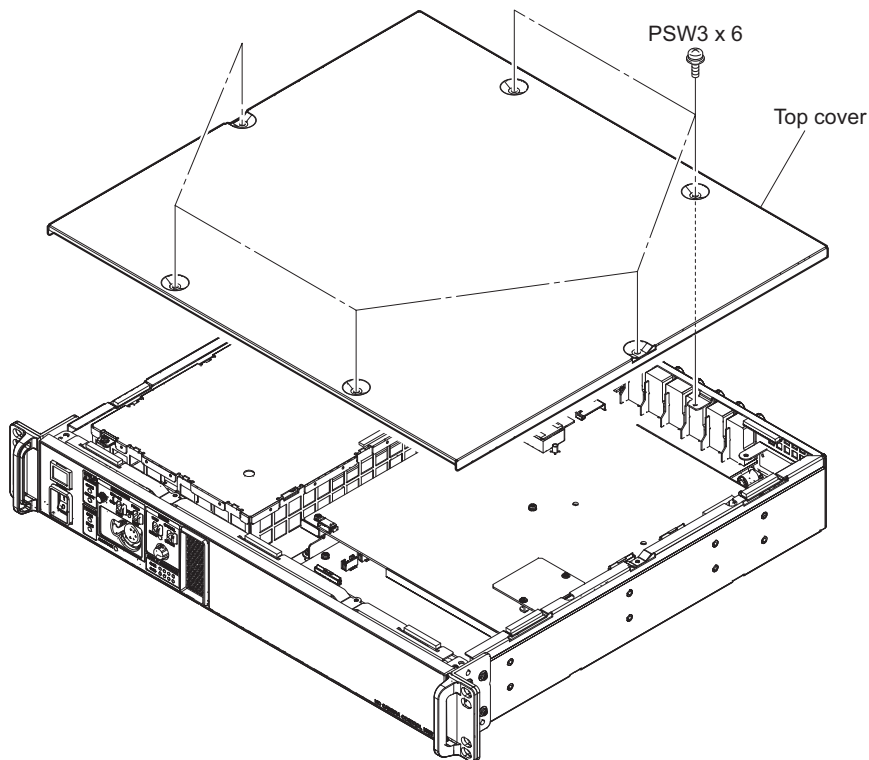
- Use the approved Power Cord (3-core mains lead)/Appliance Connector/Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.
- Use the Power Cord (3-core mains lead)/Appliance Connector/Plug conforming to the proper ratings (Voltage, Ampere).
- Never use an damaged power cord.

### 1-3. Outside Dimensions

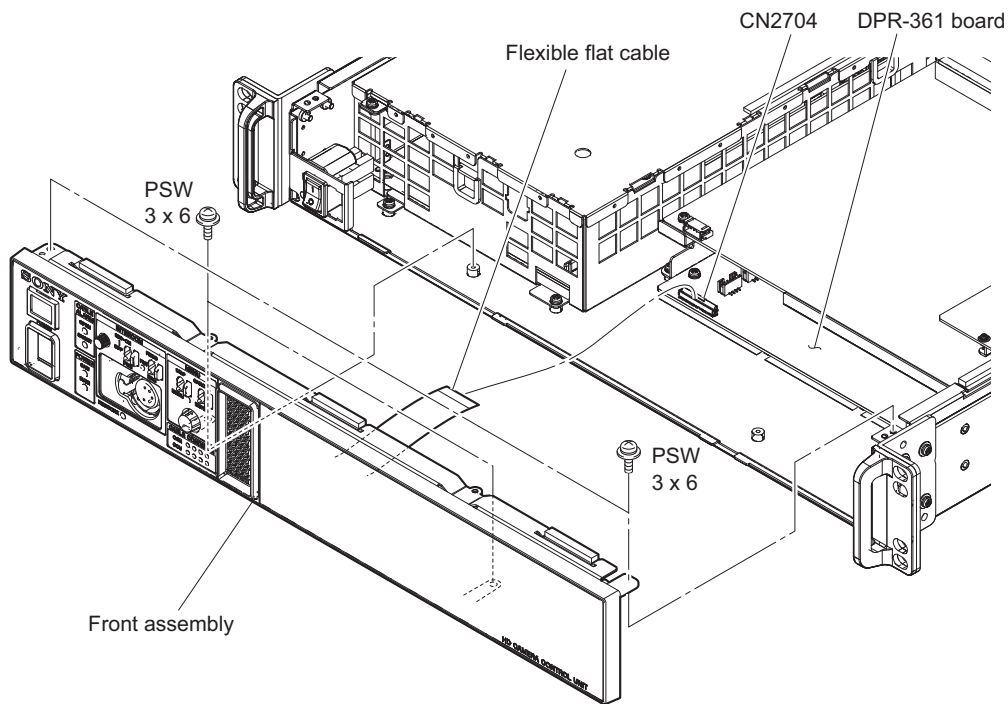


## 1-4. Installing the HKCU-FP2

1. Remove the six screws to detach the top cover.



2. Disconnect the flexible flat cable from the connector (CN2704) on the DPR-361 board.
3. Remove the four screws to detach the front assembly.

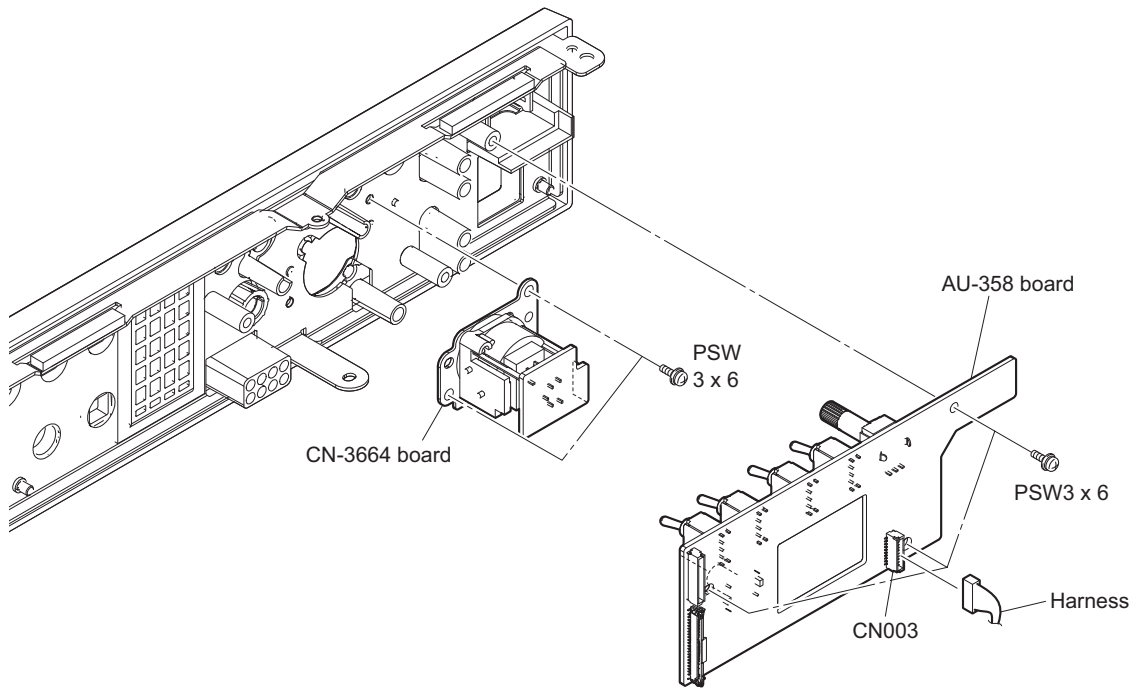


### Note

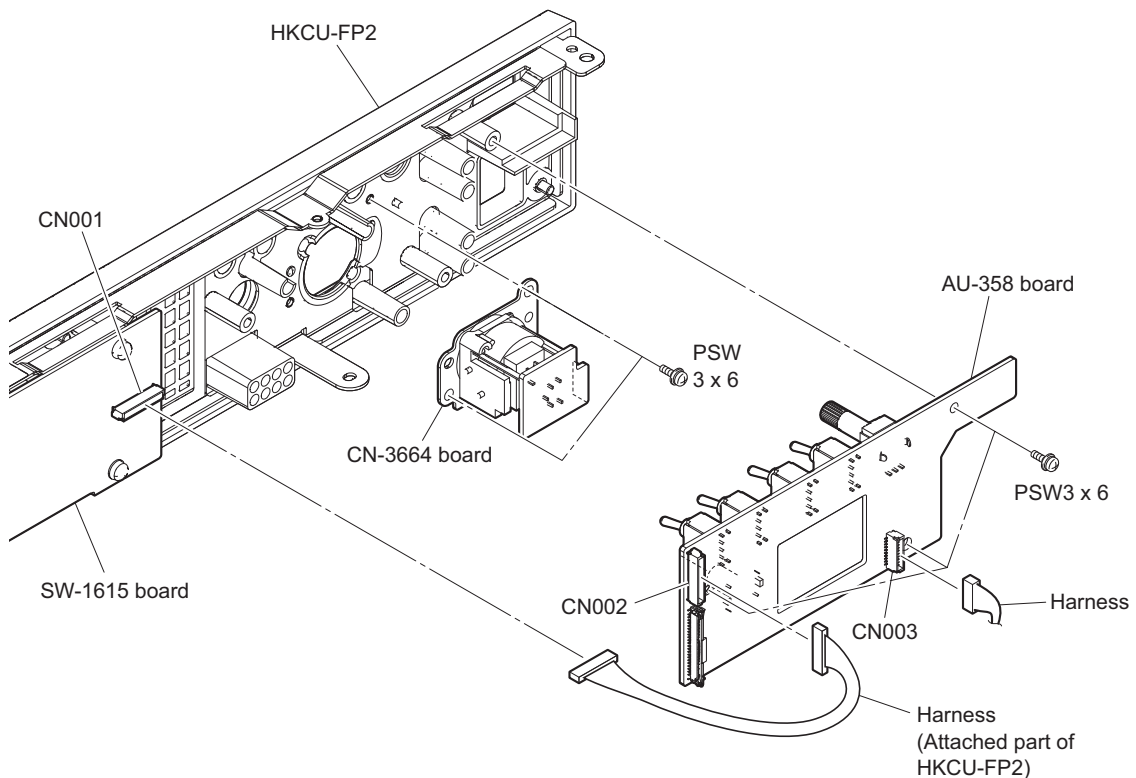
Be very careful not to fold the flexible card wire. Life of flexible card wire will be significantly shortened if it is folded.



4. Disconnect the harness from the connector (CN003) on the AU-358 board.
5. Remove the three screws to detach the AU-358 board.
6. Remove the two screws to detach the CN-3664 board.



7. Attach the CN-3664 board to the HKCU-FP2 with the two screws.
8. Attach the AU-358 board to the HKCU-FP2 with the three screws.
9. Connect the harness to the connector (CN003) on the AU-358 board.
10. Connect the attached harness to the connector (CN002) on the AU-358 board and the connector (CN001) on the SW-1615 board.



11. Install the HKCU-FP2 with the four screws.
12. Connect the flexible flat cable to the connector (CN2704) on the DPR-361 board.
13. Check that the HKCU-FP2 is recognized correctly on the status screen.

**Tip**

Front Panel on the screen shows the status of the HKCU-FP2.

```
*Diagnosis*      2/13

DPR   :OK
DM    :OK
Front Panel :OK
```

## 1-5. Mounting the Unit in a 19-Inch Rack

This unit can be mounted in a 19-inch EIA standard rack (height: 1.5U).

### WARNING

- Secure the rack to the floor.  
If the rack falls due to the weight of equipment, it may result in death or serious injury.  
Secure the rack to the floor without fail to prevent it from falling or moving.
- Do not mount the unit at a floor height of more than 1 m.  
Fall of the rack may result in death or serious injury.  
Mount the unit in the rack that is secured to the floor at a floor height within about 1 m.

## PREPARATIONS

### CAUTION

Be sure to use specified rack-mount rails.

If unspecified rack-mount rails are used, the equipment in the rack may fall due to insufficient strength, which may result in injury.

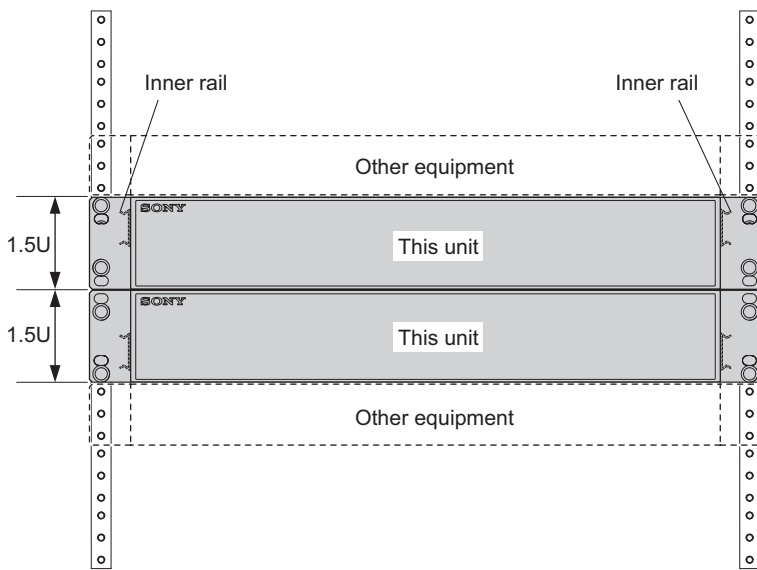
Manufacturer: Accuride Japan

- Slide rail: 1 set  
Accuride Japan Model 305A-18 (457 mm)
- Front bracket: 2  
Sony Part No.: 2-142-214-01
- Rear bracket: 2  
Sony Part No.: 2-142-215-01
- Screw (B4 x 8) : 14
- Screw (B5 x 8) : 8
- Screw (PWH4 x 20) : 2
- Nut: 2
- Plate nut: 2  
Sony Part No.: 3-651-812-00
- Rack mount rail screw (PSW5 x 25): 4

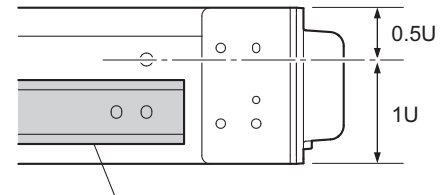
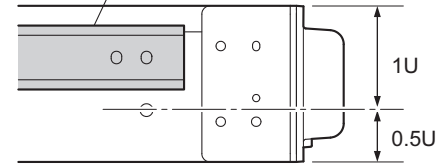
### 1-5-1. Mounting the Unit in the Rack

This unit is mounted in the rack by attaching the inner rails at the upper or lower part 1U of height 1.5U.

The rail attaching position varies depending on the unit mounting height in the rack.

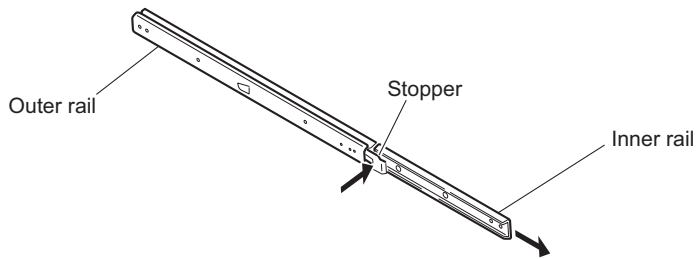


When mounting this unit under other equipment, install the inner rail at the upper part (1U) of the unit.



When mounting this unit above other equipment, install the inner rail at the lower part (1U) of the unit.

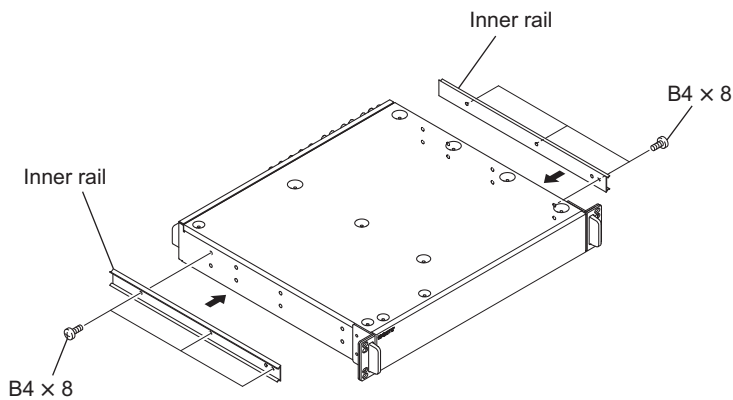
1. Pull out the inner rail while pressing the rail stopper.



2. Install the inner rail to the unit with six screws (B4 x 8).

**Tip**

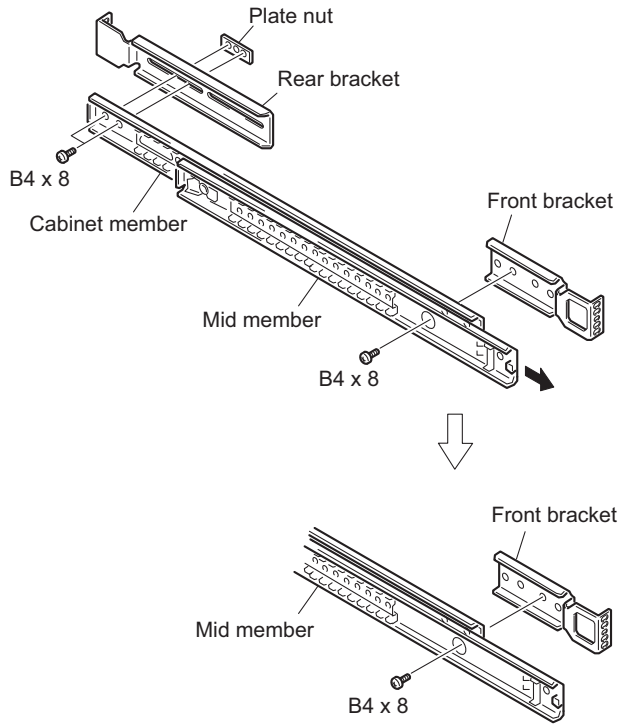
This figure shows attaching the inner rails at the upper part. The same method applies for attaching the inner rails at the lower part.



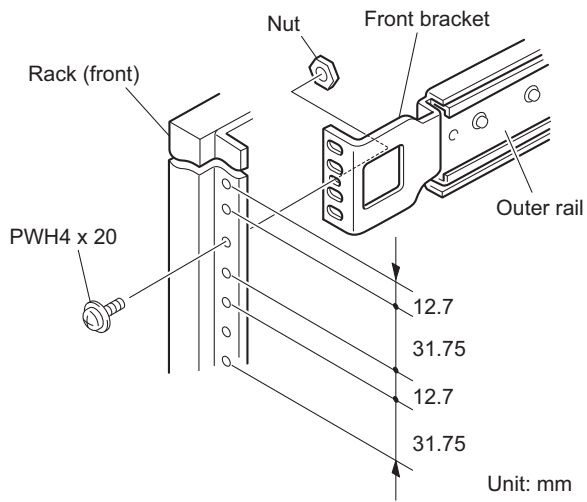
3. Attach the front and rear brackets to the outer rail with eight screws (B4 x 8).

**Note**

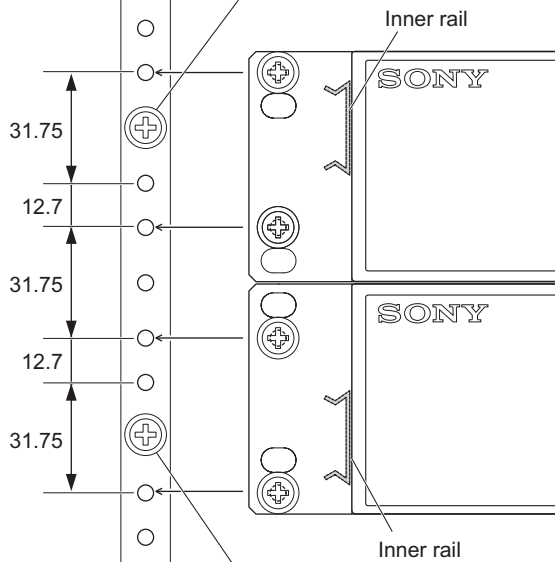
- When attaching the front bracket, slide the middle member to the position where the screw hole in the cabinet member is visible from the hole in the middle member shown in the figure.
- When attaching the rear bracket, adjust the bracket position according to the depth of the rack.



4. Attach the front bracket to the inside of the rack mount position with two screws (PWH4 x 20).

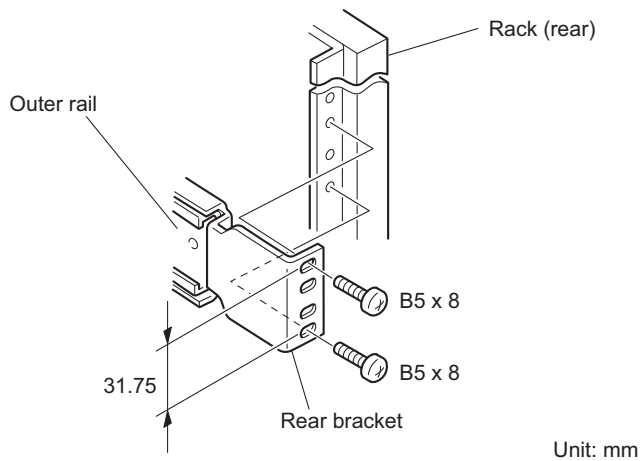


When the inner rail is installed at the upper part (1U) of the unit, attach the front bracket at this position.



When the inner rail is installed at the lower part (1U) of the unit, attach the front bracket at this position.

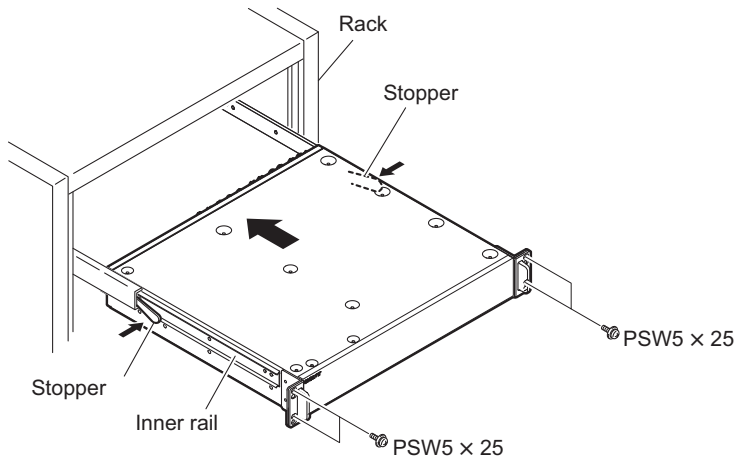
5. Attach the rear bracket to the outside of the rack mount position with four screws (B5 x 8).



- Set the unit in the rack while pressing the inner rail stopper into the outer rail as far as it will go.

**Note**

- This rack mounting work must be done by two or more workers so as not to hurt the worker's waist.
- Failure to tighten the rack angle screws may cause the unit to slide and fall from the rack, resulting in injury. After the unit has been mounted, be sure to tighten all the screws.
- When setting and drawing the mounted unit, be careful not to catch your fingers by the rails.
- If balance is lost when mounting and removing the unit, it may fall, resulting in injury. Mount or remove the unit carefully maintaining a stable posture.



- After the unit has been set in the rack, secure the unit to the rack with four screws (PSW5 x 25).







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HXCU-TX70 (CED)  
HXCU-TX70 (J) J, E  
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