

**SONY**<sup>®</sup>

ROUTING SWITCHER PROCESSOR

# **HDS-X5800**

33 INPUT BOARD SET

**HKS-5810M**

**HKS-5810SD**

34 CASCADE INPUT BOARD SET

**HKS-5811M**

**HKS-5811SD**

33 INPUT DISTRIBUTION BOARD

**HKS-5820M**

264 × 34 MATRIX BOARD

**HKS-5830M**

**HKS-5830SD**

34 OUTPUT BOARD SET

**HKS-5860M**

**HKS-5860SD**

INSTALLATION MANUAL

1st Edition (Revised 2)

## **⚠ 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.

HDS-X5800	Serial No. 10001 and Higher
HKS-5810M	Serial No. 10001 and Higher
HKS-5810SD	Serial No. 10001 and Higher
HKS-5811M	Serial No. 10001 and Higher
HKS-5811SD	Serial No. 10001 and Higher
HKS-5820M	Serial No. 10001 and Higher
HKS-5830M	Serial No. 10001 and Higher
HKS-5830SD	Serial No. 10001 and Higher
HKS-5860M	Serial No. 10001 and Higher
HKS-5860SD	Serial No. 10001 and Higher

**Attention-when the product is installed in Rack:  
(For HDS-X5800)**

- 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 rear of the unit 10 cm (4 inches) or more away from walls in order to obtain proper exhaust and radiation of heat.**

**When using a LAN cable:**

For safety, do not connect to the connector for peripheral device wiring that might have excessive voltage.

**For the customers in the Netherlands  
Voor de klanten in Nederland**

Hoe u de batterijen moet verwijderen, leest u in de Onderhoudshandleiding.

Gooi de batterij niet weg maar lever deze in als klein chemisch afval (KCA).



**Für Kunden in Deutschland**

Entsorgungshinweis: Bitte werfen Sie nur entladene Batterien in die Sammelboxen beim Handel oder den Kommunen. Entladen sind Batterien in der Regel dann, wenn das Gerät abschaltet und signalisiert "Batterie leer" oder nach längerer Gebrauchsdauer der Batterien "nicht mehr einwandfrei funktioniert". Um sicherzugehen, kleben Sie die Batteriepole z.B. mit einem Klebestreifen ab oder geben Sie die Batterien einzeln in einen Plastikbeutel.



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# Manual Structure

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## Purpose of this manual

This manual is the installation manual of Routing Switcher Processor HDS-X5800 and the optional boards.

This manual is intended for use by trained system and service engineers, and describes the information on installing the HDS-X5800.

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## Related manuals

Besides this Installation Manual, the following manuals are prepared for HDS-X5800 and the optional boards.

- **Operation Manual (Supplied with HDS-X5800)**

This manual describes the application and operation of HDS-X5800.

- **System Setup Manual (Supplied with HDS-X5800)**

This manual describes the software initialization or operation confirmation.

- **e-Manual (Tentative name) (Available on request)**

This electronic manual intended for use by trained system and service engineers describes detailed parts list, block diagrams, schematic diagrams, and board layouts required for parts-level service.

For obtaining, contact your local Sony Sales Office/Service Center.

- **Protocol Manual (Available on request)**

This manual describes the protocol for controlling this unit.

The manual below is provided for the protocol that this unit can support.

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

### S-BUS PROTOCOL AND COMMAND SPECIFICATIONS

(S-BUS remote terminal control protocol)

Part No.: 9-977-477-1X

- **“Semiconductor Pin Assignments” CD-ROM (Available on request)**

This “Semiconductor Pin Assignments” CD-ROM allows you to search for semiconductors used in B&P Company equipment.

Semiconductors that cannot be searched for on this CD-ROM are listed in the maintenance manual for the corresponding unit. The maintenance manual contains a complete list of all semiconductors and their ID Nos., and thus should be used together with the CD-ROM.

Part number: 9-968-546-XX

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## Contents

The following is a summary of all the sections of this manual.

### **Section 1 Installation**

This section describes the operating environment, power supply, installation space, rack mounting, installation of optional boards, connectors, input and output signals of connectors, system connection, extension of inputs/outputs and on-board switch/LED.

### **Section 2 Service Overview**

This section describes the location of main parts, error indication, data backup.

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## Trademarks

Trademarks and registered trademarks used in this manual are follows.

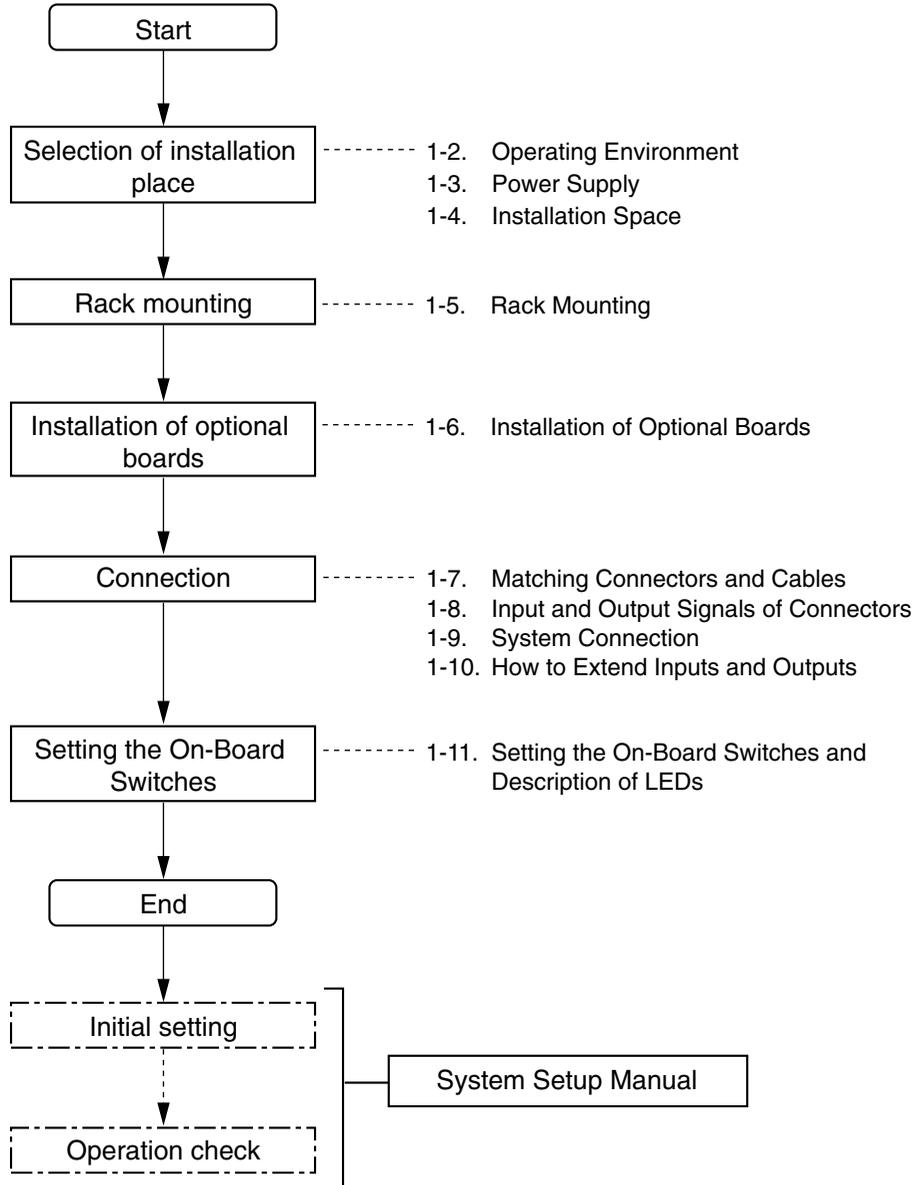
- Ethernet is a registered trademark of Xerox Corporation.
- IBM and AT are registered trademarks of International Business Machines Corporation.
- Pentium is a registered trademark of Intel Corporation.
- Windows is a registered trademark of Microsoft Corporation.

# Section 1 Installation

## 1-1. Installation Procedure

The following chart shows the procedure for installing the unit.

For details of the following chart, refer to the relevant section or related manual.



## 1-2. Operating Environment

### WARNING

Do not install the unit in a place subject to excessive oil vapor, steam, moisture, or dust, otherwise a fire or electric shock may result.

### Notes

- To prevent the temperature rising inside the unit, ensure there is adequate circulation of air near where the unit is installed. Never block the ventilation holes.
- Never install the unit near a heat source.

Operating temperature : 5 °C to 40 °C

Storage temperature : -20 °C to +60 °C

Operating humidity : 10% to 90% (no condensation)

## 1-3. Power Supply

The HDS-X5800 contains the four power supply units as the standard installation.

The units A1 and B1, and the units A2 and B2 back up the two power line systems respectively. Therefore, turn on all of the four power supply units when using the HDS-X5800.

(Refer to Section 2-1 for the location of the power supply units.)

### 1-3-1. Power Specifications

Power requirements	AC 100 to 240 V $\pm$ 10%
Power frequency	50/60 Hz
Current consumption	AC100 V : 12 A (max.) AC240 V : 4 A (max.)
Inrush current	At power voltage of 100 V : 60 A (Maximum when all of the four power supply units are turned on) At power voltage of 240 V : 85 A (Maximum when all of the four power supply units are turned on)
Power consumption	1200 VA (max.)

### Note

The capacity of the AC power must be commensurate with the inrush current. If the capacity of the AC power is not sufficiently large, the breaker of the AC power on the supply side will trip or the unit will not operate normally.

## 1-3-2. Power Cord

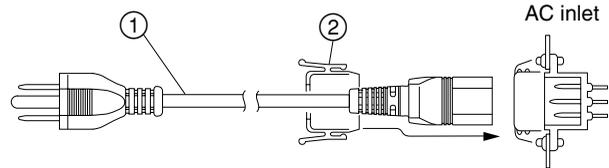
### WARNING

The power cords are not supplied with the unit. Be sure to use power cords that are suitable for the place of operation.

For customers in the U.S.A. and Canada

① Power cord, 125 V 10 A (2.4 m) :  $\Delta$  1-557-377-11

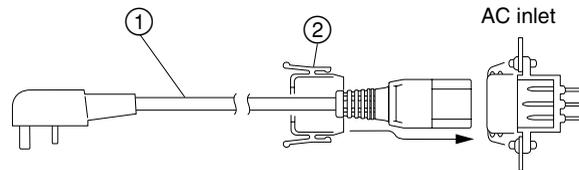
② Plug holder (Black) : 2-990-242-01



For customers in the United Kingdom

① Power cord, 250 V 10 A (2.4 m) :  $\Delta$  1-782-165-11

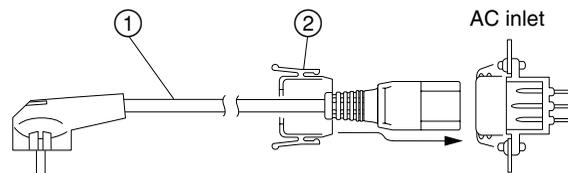
② Plug holder (Brown) : 3-613-640-01



For customers in European countries except the United Kingdom

① Power cord, 250 V 10 A (2.0 m) :  $\Delta$  1-551-631-22

② Plug holder (Brown) : 3-613-640-01



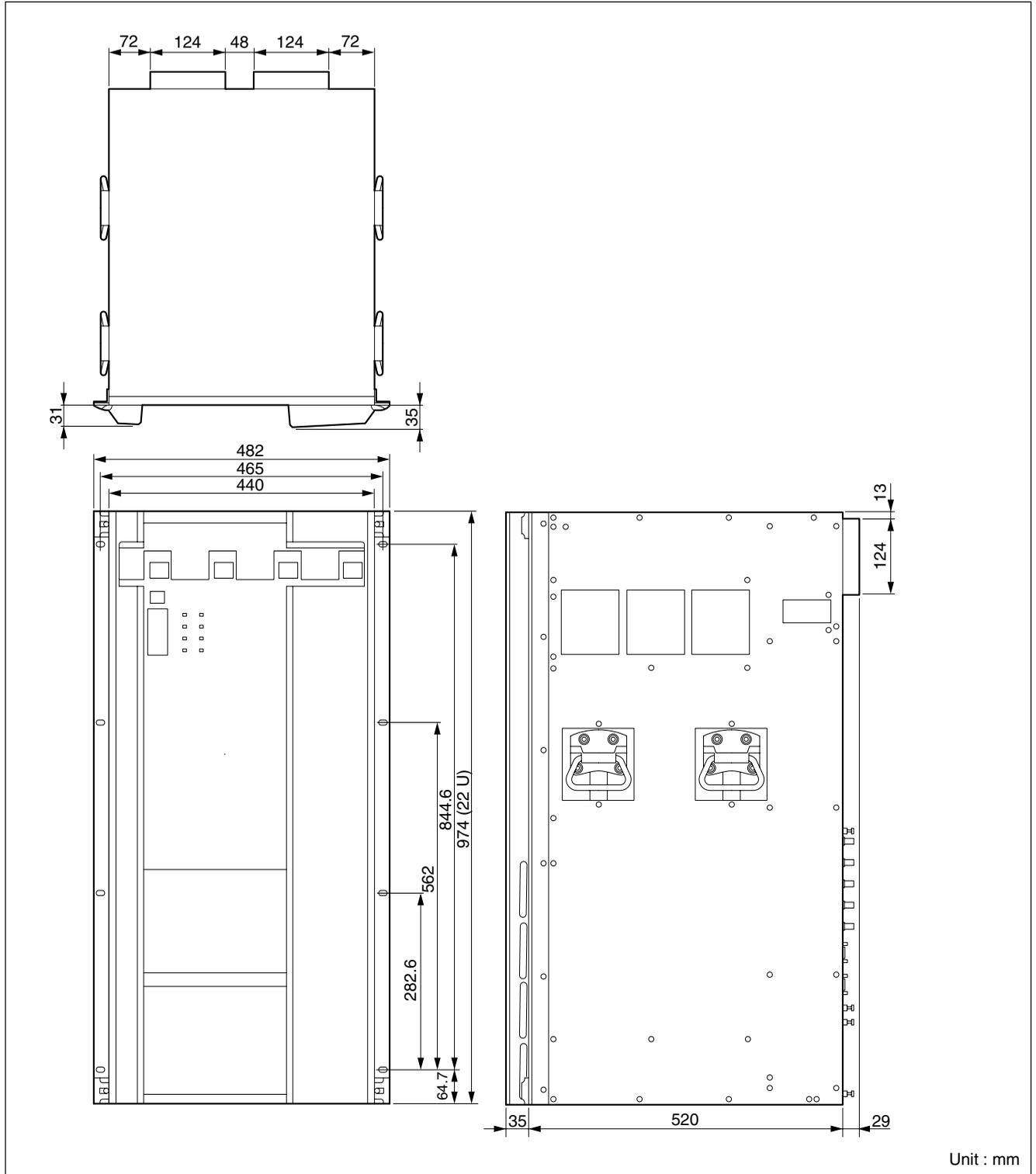
### Note

For the customer outside of the area as shown above, please contact your local Sony Sales Office/Service Center.

## 1-4. Installation Space

### Notes

- The rear side of the unit should be at least 40 cm (16 inches) away from walls for ventilation and maintenance.
- If a fan stops or the exhaust port is blocked, failure or problems may result because the fans at the rear, top, and bottom of the unit cool the air.



## 1-5. Rack Mounting

The HDS-X5800 is mounted in the 19-inch standard rack. To mount the HDS-X5800 in the rack, use the rack mount kit that is supplied with the HDS-X5800 and follow the procedure described below.

### Note

If other than the specified rack mount kit is used, the HDS-X5800 may not be mounted in the 19-inch standard rack.

### Parts of the supplied rack mount kit

- Support angle 2 pcs
- Bracket 4 pcs
- Support angle fixing screw 8 pcs  
(PSW4 × 10 : 7-682-962-01)
- Bracket fixing screw 8 pcs  
(B4 × 10 : 7-682-562-04)

### Other required parts

To mount in the rack, the supplied rack mount parts and the following part are required.

- Screw for rack mounting 4 pcs  
(B5 × 12 : 7-682-576-04)

## 1-5-1. Precautions for Rack Mounting

### WARNING

- Be sure to mount in the rack with four persons or more.
- Mount in the rack in a stable position.
- To prevent the rack from falling or moving, fix the rack on a flat and steady floor using bolt or others.  
If the rack falls due to the weight of the equipment, it may cause death or injury.
- After rack mounting, be sure to tighten the screws on the rack angle and fix the unit in the rack.  
If the screws on the rack angle are not tightened, the unit may slip from the rack and fall, causing injury.

### CAUTION

When mounting the unit in the rack, note the following:

- Be sure to use the supplied rack mount kit.  
If not, injury may result and the equipment may fall due to insufficient strength.
- Be careful not to catch your fingers or hands in the rack mount rail or others.

### Note

If several units are mounted in a rack, it is recommended to install a ventilation fan to prevent temperature rise inside the rack.

### 1-5-2. Rack Mounting Procedure

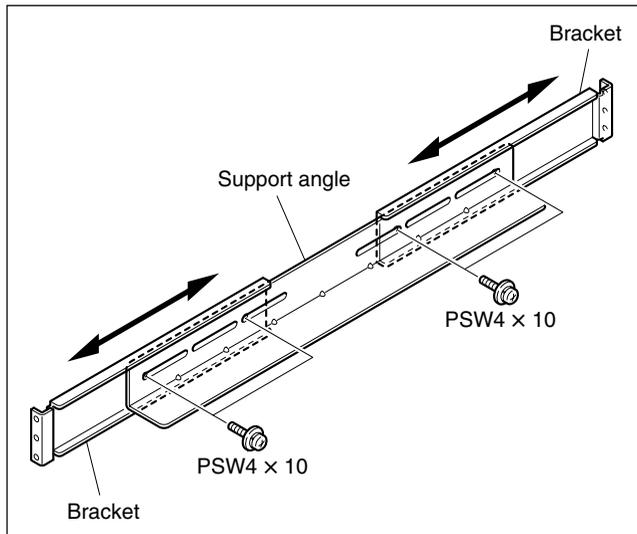
This section describes the rack mounting procedure using the rack mount kit supplied with the HDS-X5800.

#### Note

Tighten the screws to the following torque.

Tightening torque :  $120 \times 10^{-2} \text{ N}\cdot\text{m}$  {12.2 kgf·cm}

1. Attach the bracket to the support angle tentatively using the specified four screws.
2. Loosen the front and rear screws that are tentatively fastened in step 1. Adjust the length of the brackets according to the depth of the rack.  
(The illustration below shows the left bracket.)

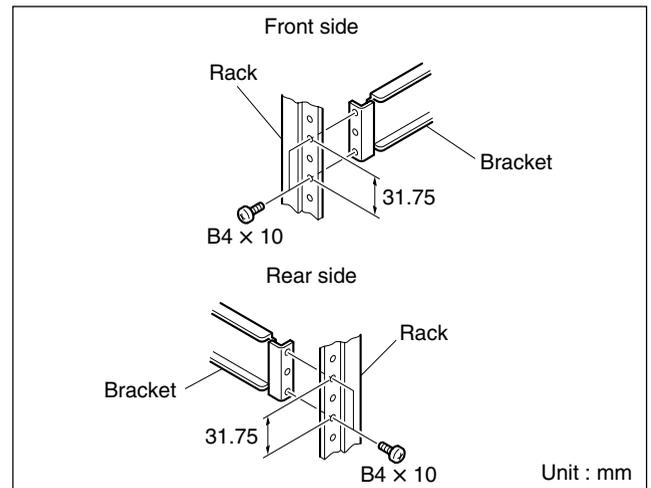


#### Note

Maximum depth of bracket : 750 mm

Minimum depth of bracket : 595 mm

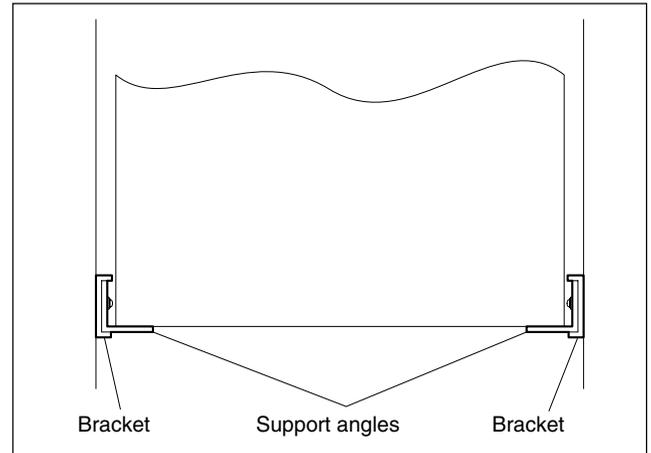
3. Attach the right and left brackets to the rack completely using the specified eight screws.  
(The illustration below shows the left bracket.)



4. Tighten the screws (four screws each on the right and left) for adjusting the length of the bracket completely (the screws that were loosened in step 2).
5. Place the right and left ends of the bottom of the HDS-X5800 on top of the support angles, and slide the equipment to the rear.

#### Note

The support angles support the bottom of the HDS-X5800 as shown below.





## 1-6. Installation of Optional Boards

### Notes

The usable optional boards are different depending on the type of signal to handle.

- The HKS-58xxM is the optional board that supports multi-bit rate signal including the HDTV SDI signal.  
For the signal system that handles the HDTV SDI signal, use the HKS-58xxM boards for all the optional boards starting from input to up to output.
- For the signal system that handles the 270 Mbps serial bit stream signal conforming to the DVB-ASI standard, use the HKS-5830M board for the matrix board. If the HKS-5830SD board is used, an error may occur in the signal.
- To use the HKS-58xxM board, the software in the CPU-339 board in the HDS-X5800 should be upgraded to version 1.20 or higher.

Type of signal	Input board	Distribution board	Matrix board	Output board	Input expansion board
HDTV SDI signal	HKS-5810M	HKS-5820M	HKS-5830M	HKS-5860M	HKS-5811M
SDTV SDI signal	HKS-5810SD/5810M	HKS-5820M	HKS-5830SD/5830M	HKS-5860SD/5860M	HKS-5811SD/5811M
DVB-ASI signal	HKS-5810SD/5810M	HKS-5820M	HKS-5830M	HKS-5860SD/5860M	HKS-5811SD/5811M

### 1-6-1. Table of Optional Boards

There are the following optional boards for the HDS-X5800.

Option name	Board configuration
<b>33 INPUT BOARD SET</b>	
HKS-5810M	Connector board : CNI-11    1 pc
	Connector board : CNI-12    1 pc
HKS-5810SD	Connector board : CNI-13    1 pc
	Connector board : CNI-14    1 pc
<b>34 CASCADE INPUT BOARD SET</b>	
HKS-5811M	Plug-in board : EQ-91    1 pc
	Connector board : CI-29    2 pcs
HKS-5811SD	Plug-in board : EQ-92    1 pc
	Connector board : CI-29    2 pcs
<b>33 INPUT DISTRIBUTION BOARD</b>	
HKS-5820M	Plug-in board : IPM-98    1 pc
<b>264 × 34 MATRIX BOARD</b>	
HKS-5830M	Plug-in board : MX-103    1 pc
HKS-5830SD	Plug-in board : MX-104    1 pc
<b>34 OUTPUT BOARD SET</b>	
HKS-5860M	Connector board : CNO-13    1 pc
	Connector board : CNO-14    1 pc
HKS-5860SD	Connector board : CNO-15    1 pc
	Connector board : CNO-16    1 pc

### 1-6-2. List of Installation Slots

The HDS-X5800 can be configured to the various configurations in order to support the various systems and to expand the functions. Select a proper combination of the plug-in boards and connector boards for these purposes. The respective boards have the specified slots to which they must be inserted. Therefore, confirm that the respective boards are inserted into the specified slots correctly as follows. For the installation method of the respective boards, refer to “1-6-3. Installation/Removal of Plug-in Boards” and “1-6-4. Installation/Removal of Connector Boards”.

#### Note

If any plug-in board or connector board is inserted into wrong slot, the system error occurs and the HDS-X5800 will not work properly.

Board name	Slots of the front side	Slots of the rear side
CI-29	–	CASCADE IN slot
CNI-11	–	IN 1 slot
CNI-12	–	IN 2 slot
CNI-13	–	IN 1 slot
CNI-14	–	IN 2 slot
CNO-13	–	OUT 1 slot
CNO-14	–	OUT 2 slot
CNO-15	–	OUT 1 slot
CNO-16	–	OUT 2 slot
EQ-91	Connect it to the MX-103 board.	–
EQ-92	Connect it to the MX-104 board.	–
IPM-98	1 IN to 8 IN slot	–
MX-103	1 OUT to 8 OUT slot	–
MX-104	1 OUT to 8 OUT slot	–

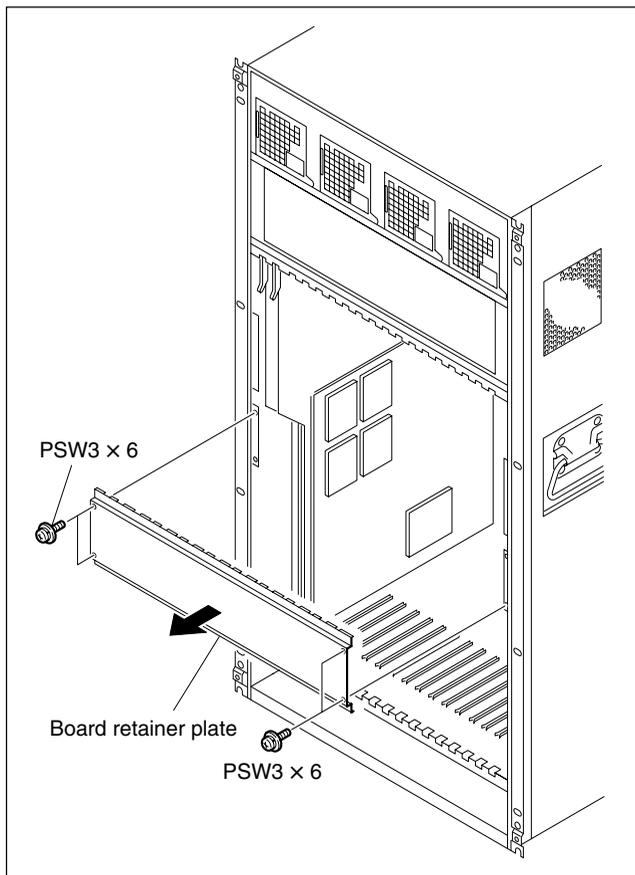
### 1-6-3. Installation/Removal of Plug-in Boards

#### CAUTION

Before installing or removing the boards, be sure to turn off the power switches and disconnect all of the power cords (4 cords) from the wall outlet. If the board is attached or removed with the power on, an electric shock may result or the board may be damaged.

#### On the front panel side

1. Remove the front panel. (Refer to Section 2-2.)
2. Remove the four screws, and then remove the board retainer plate.



### HKS-5820M/5830M/5830SD

#### Installation

1. With the eject lever opened, insert the desired board into the corresponding slot.

#### Note

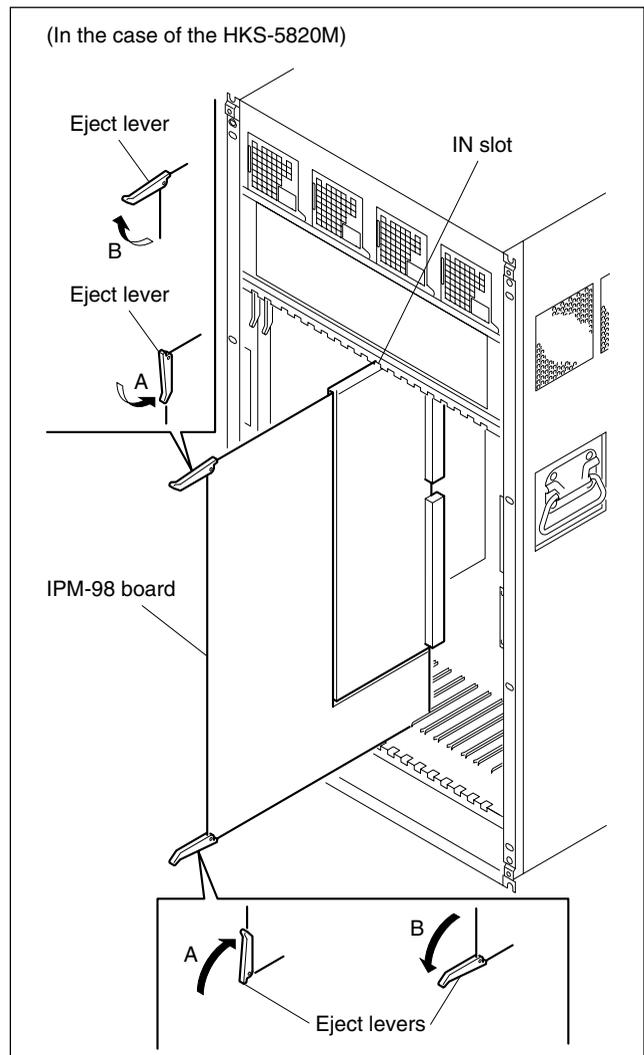
Insert the board while applying equal force to the eject levers at both ends of the board.

Model name	Board name	Installation slot
HKS-5820M	IPM-98	IN slot
HKS-5830M	MX-103	OUT slot
HKS-5830SD	MX-104	OUT slot

2. While closing the eject levers in the direction of the arrow A, push in the board.

#### Note

Check that the board is securely connected to the MB-939 board.



3. Attach the board retainer plate and the front panel.

**Removal**

1. Open the eject levers of the board in the direction of arrow B.
2. Remove the board from the HDS-X5800.

**Note**

Remove the board while applying equal force to the eject levers at both ends of the board.

**HKS-5811M/5811SD (EQ Board)**

The HKS-5811M/5811SD consists of the two types of the boards : EQ board (EQ-91 board/EQ-92 board) and CI-29 boards.

Installation and removal of the EQ board are described below. For the CI-29 board, refer to Section 1-6-4.

**Note**

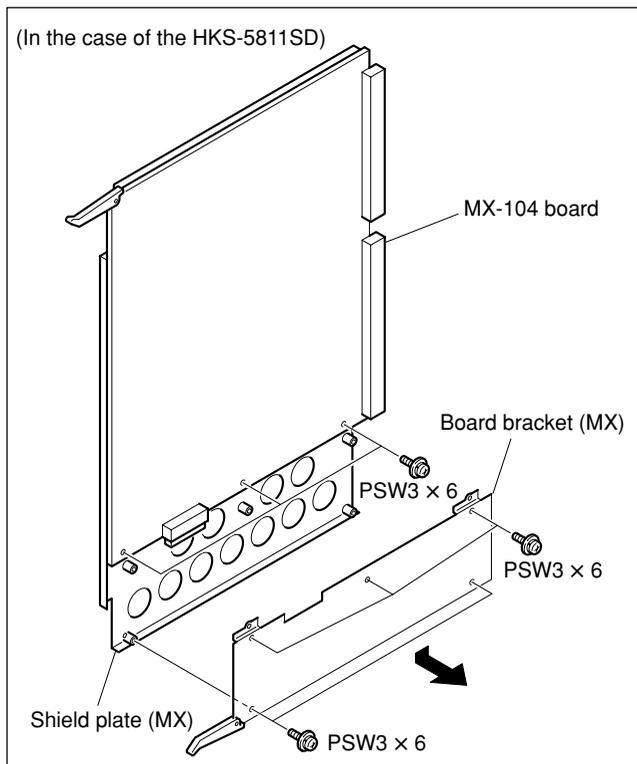
When the EQ board is going to be installed in the existing MX board (MX-103/MX-104 board), remove the MX board from the slot beforehand. (Refer to this section “HKS-5820M/5830M/5830SD”.)

**Installation**

1. Remove the eight screws and remove the board bracket (MX).

**Note**

Keep the removed board bracket (MX).

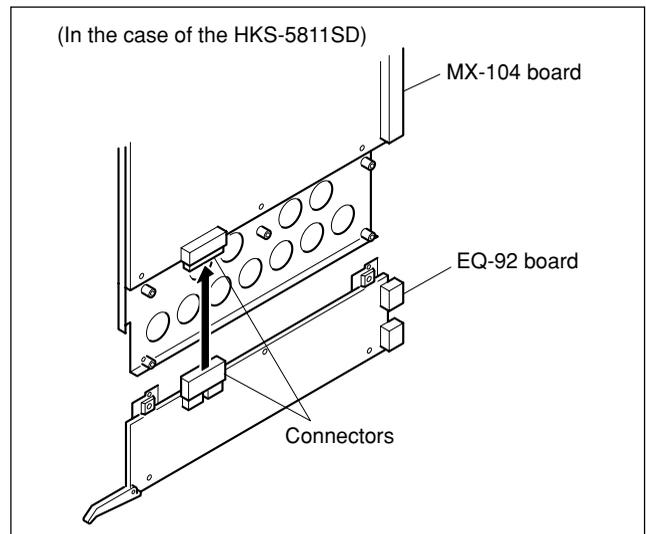


2. Install the desired board into the corresponding shield plate.

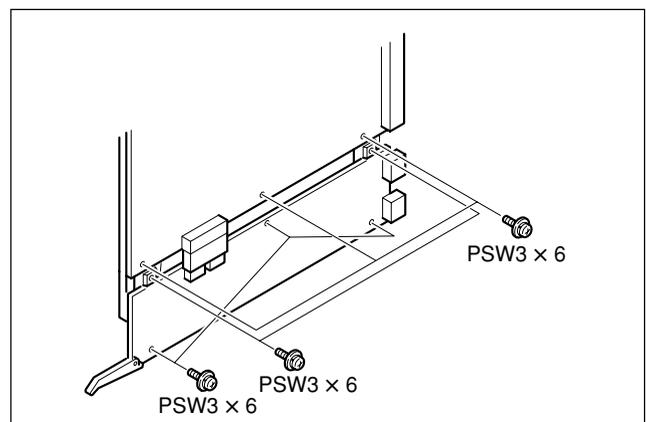
**Notes**

- When inserting the EQ board, be careful that the side-B (soldering side) of the EQ board must not touch the shield plate.
- Check that the EQ board is securely connected.

Model name	Board name	Installation slot
HKS-5811M	EQ-91	Shield plate of the MX-103 board
HKS-5811SD	EQ-92	Shield plate of the MX-104 board



3. Secure the EQ board with the eight screws removed in step 1.



4. Install the MX board. (Refer to this section “HKS-5820M/5830M/5830SD”.)

**Removal**

Remove it by reversing the installation procedure.

### 1-6-4. Installation/Removal of Connector Boards

#### CAUTION

Before installing or removing the boards, be sure to turn off the power switches and disconnect all of the power cords (4 cords) from the wall outlet. If the board is attached or removed with the power on, an electric shock may result or the board may be damaged.

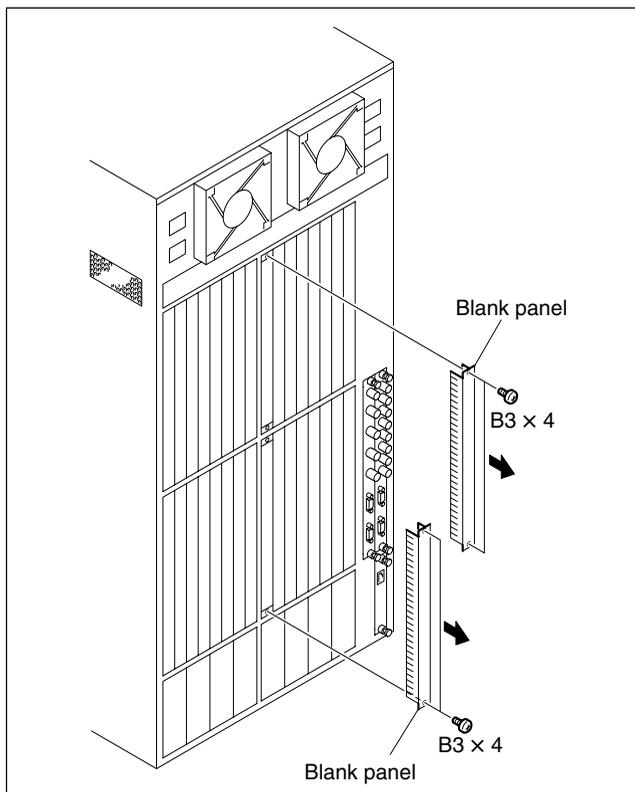
#### HKS-5810M/5810SD/5860M/5860SD

#### Installation

1. Remove the four screws and remove the two blank panels.

#### Note

Keep the removed blank panels.

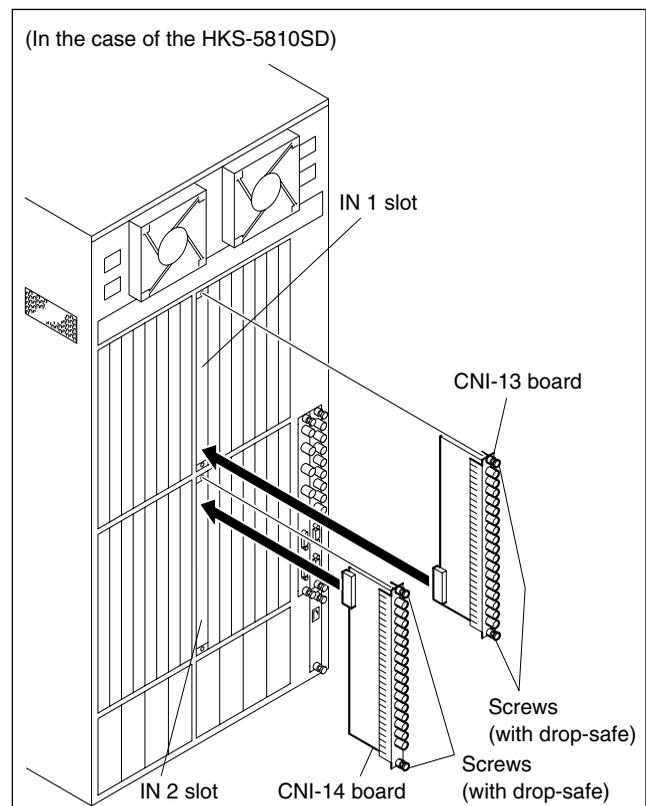


2. Insert the desired board into the corresponding slot and tighten the two screws (with drop-safe) of the each board.

#### Notes

- Insert the board while applying equal force to the screws at both ends of the board.
- Check that the boards are securely connected to the MB-939 board.
- Be careful not to turn them upside down by observing the top and bottom of these boards when installing the each board.

Option name	Board name	Installation slot
HKS-5810M	CNI-11	The IN1 slot of the same position as in the HKS-5820M (IPM-98 board)
	CNI-12	The IN2 slot of the same position as in the HKS-5820M (IPM-98 board)
HKS-5810SD	CNI-13	The IN1 slot of the same position as in the HKS-5820M (IPM-98 board)
	CNI-14	The IN2 slot of the same position as in the HKS-5820M (IPM-98 board)
HKS-5860M	CNO-13	The OUT1 slot of the same position as in the HKS-5830M (MX-103 board)
	CNO-14	The OUT2 slot of the same position as in the HKS-5830M (MX-103 board)
HKS-5860SD	CNO-15	The OUT1 slot of the same position as in the HKS-5830SD (MX-104 board)
	CNO-16	The OUT2 slot of the same position as in the HKS-5830SD (MX-104 board)



## Removal

Remove them by reversing the installation procedure.

### HKS-5811M/5811SD (CI-29 Board)

The HKS-5811M/5811SD consist of the two types of the boards: EQ board and CI-29 boards. Installation and removal of the CI-29 board are described below.

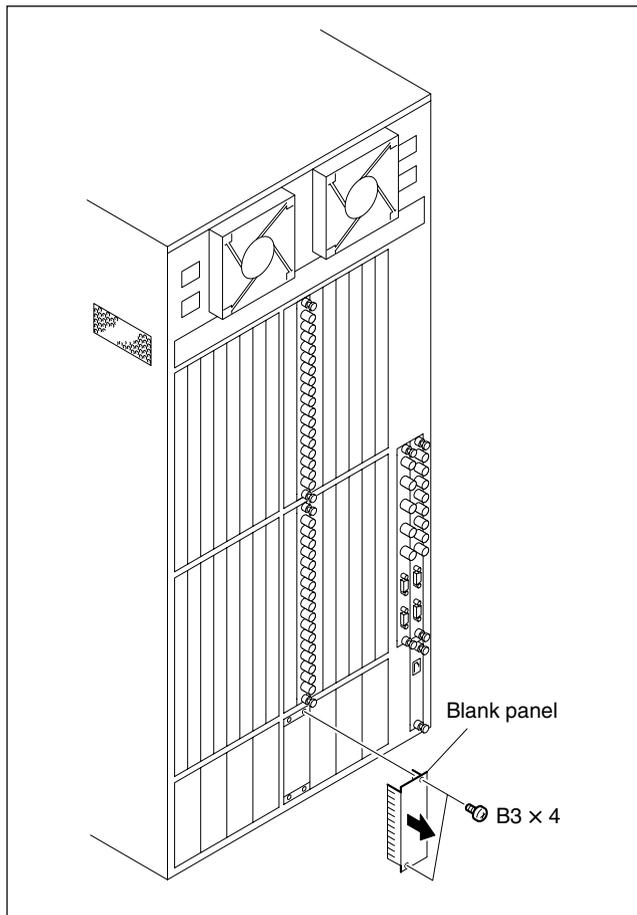
For the EQ board, refer to Section 1-6-3.

## Installation

1. Remove the two screws and remove the blank panel.

### Note

Keep the removed blank panel.

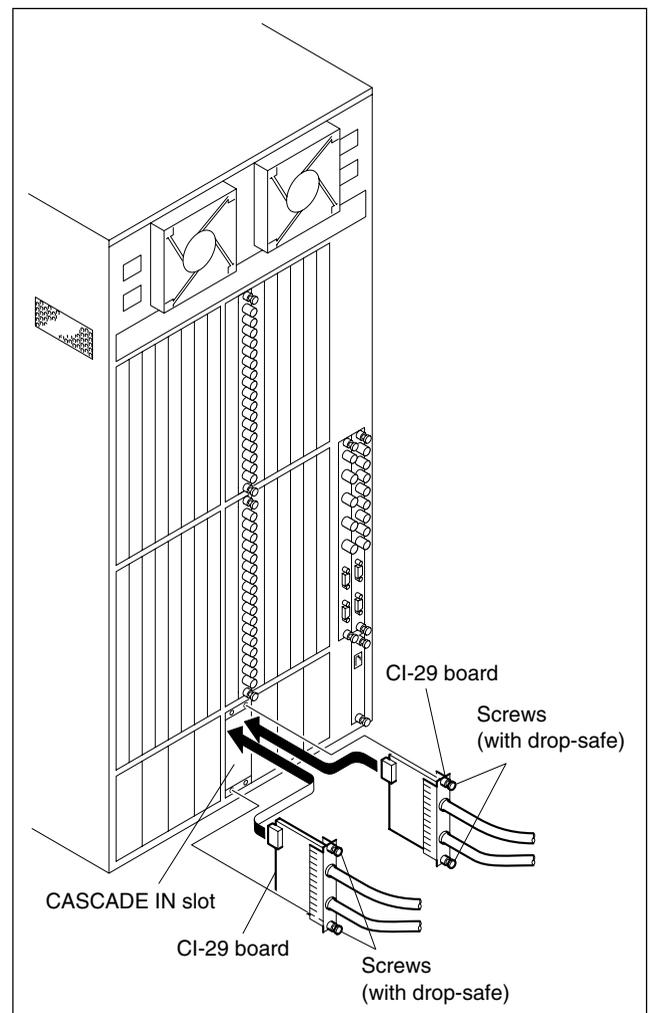


2. Insert a pair of CI-29 boards to the CASCADE IN slot and tighten the two screws (with drop-safe) of the each board.

### Notes

- Insert the board while applying equal force to the screws at both ends of the board.
- Check that the boards are securely connected to the MB-939 board.
- Be careful not to turn them upside down by observing the top and bottom of these boards when installing the each board.

Option name	Board name	Installation slot
HKS-5811M	CI-29 board (2 boards as a pair)	Connector side, The CASCADE IN slot of the same position as in the MX-103 board.
HKS-5811SD	CI-29 board (2 boards as a pair)	Connector side, The CASCADE IN slot of the same position as in the MX-104 board.



## Removal

Remove it by reversing the installation procedure.

## 1-7. Matching Connectors and Cables

To connect the cable to the unit, use the following connectors and cables or their equivalents.

Model name/panel indication	Connector name	Application connector/cable	
		Name	Sony part No.
<b>HDS-X5800</b> REMOTE1 A /B1/B2/C/D REF IN A/B/C/D	BNC, 75 Ω	BNC, 75 Ω BELDEN 8281 cable	—
<b>HKS-5810SD</b> SDTV Serial VIDEO INPUT 1 to 33			
<b>HKS-5860SD</b> SDTV Serial VIDEO OUTPUT 1 to 34			
<b>HKS-5810M</b> Serial VIDEO INPUT 1 to 33	BNC, 75 Ω	BNC, 75 Ω BELDEN 1694 cable	—
<b>HKS-5860M</b> Serial VIDEO OUTPUT 1 to 34			
<b>HDS-X5800</b> REMOTE2 A/B	D-sub 9-pin, Female	D-sub 9-pin, Male Connector 9-pin Male Junction Shell 9-pin	1-560-651-00*1 1-561-749-00
<b>HDS-X5800</b> REMOTE3	D-sub 9-pin, Male	D-sub 9-pin, Female Connector 9-pin Female Junction Shell 9-pin	1-563-815-21 1-561-749-00
<b>HDS-X5800</b> ALARM	D-sub Mini 15-pin, Female	D-sub Mini 15-pin, Male	—
<b>HDS-X5800</b> DATA	RJ-45 modular jack	100BASE-TX standard	—

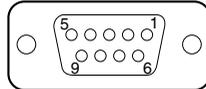
\*1 : The following crimp contact is required for the plug.

AWG#18 to #22 : 1-566-493-21  
 AWG#22 to #24 : 1-564-774-11  
 AWG#24 to #30 : 1-564-775-11

## 1-8. Input and Output Signals of Connectors

The input and output signals of the connectors at the rear panel are as follows.

### REMOTE2 A/B : RS-422A (D-sub 9-pin, Female)

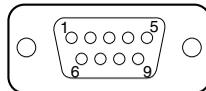


– EXT VIEW –

Pin No.	Signal name	Input/Output	Function
1	FG	–	Frame ground
2	TX (–)	O	Transmitted data (–)
3	RX (+)	I	Received data (+)
4	GND	–	Common ground
5	–	–	No connection
6	GND	–	Common ground
7	TX (+)	O	Transmitted data (+)
8	RX (–)	I	Received data (–)
9	–	–	No connection

The frame ground and the common ground are connected internally inside the system.

### REMOTE3 : RS-232C (D-sub 9-pin, Male)

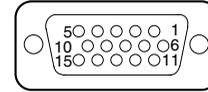


– EXT VIEW –

Pin No.	Signal name	Input/Output	Function
1	DCD	I	Date carrier detect
2	RX	I	Received data
3	TX	O	Transmitted data
4	DTR	O	Data terminal ready
5	GND	–	Signal ground
6	DSR	I	Date set ready
7	RTS	O	Request to send
8	CTS	I	Clear to send
9	–	–	No connection

Pin-6 (DSR) is connected to pin-1 (DCD) internally inside the system.

### ALARM : D-sub Mini 15-pin, Female



– EXT VIEW –

Pin No.	Signal name	Input/Output	Function
1	ALARM-3	O	Alarm drive-3
2	ALARM-1	O	Alarm drive-1
3	ALARM-4	O	Alarm drive-4
4	GND	–	Ground
5	ALARM-5	O	Alarm drive-5
6 to 8	GND	–	Ground
9	ALARM-6	O	Alarm drive-6
10	GND	–	Ground
11	GND	–	Ground
12	ALARM-2	O	Alarm drive-2
13 to 15	GND	–	Ground

#### Note

Specifications of the alarm output

Open collector output

Voltage that can be applied to the terminal : 0 to 20 V

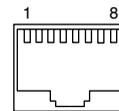
Pull-in current :

Maximum 50 mA when the output transistor is saturated (output terminal voltage is 1 V or less).

Output terminal voltage × pull-in current < 50 mV when the output transistor is non-saturated.

### DATA :

10BASE-T/100BASE-TX (RJ-45 8-pin Modular jack)



– EXT VIEW –

Pin No.	Signal name	Input/Output	Function
1	TDB	O	Transmitted data B
2	TDA	O	Transmitted data A
3	RDB	I	Received data B
4	BI_D3+	–	(*1)
5	BI_D3–	–	(*1)
6	RDA	I	Received data A
7	BI_D4+	–	(*1)
8	BI_D4–	–	(*1)

\*1 : This signal line is not used in this system. It is connected to the termination circuit inside the system.

## 1-9. System Connection

### 1-9-1. S-BUS Data Link

The routing switcher system is connected with the S-BUS data link using a 75  $\Omega$  coaxial cable.

The main equipment of the S-BUS data link is shown in the table below.

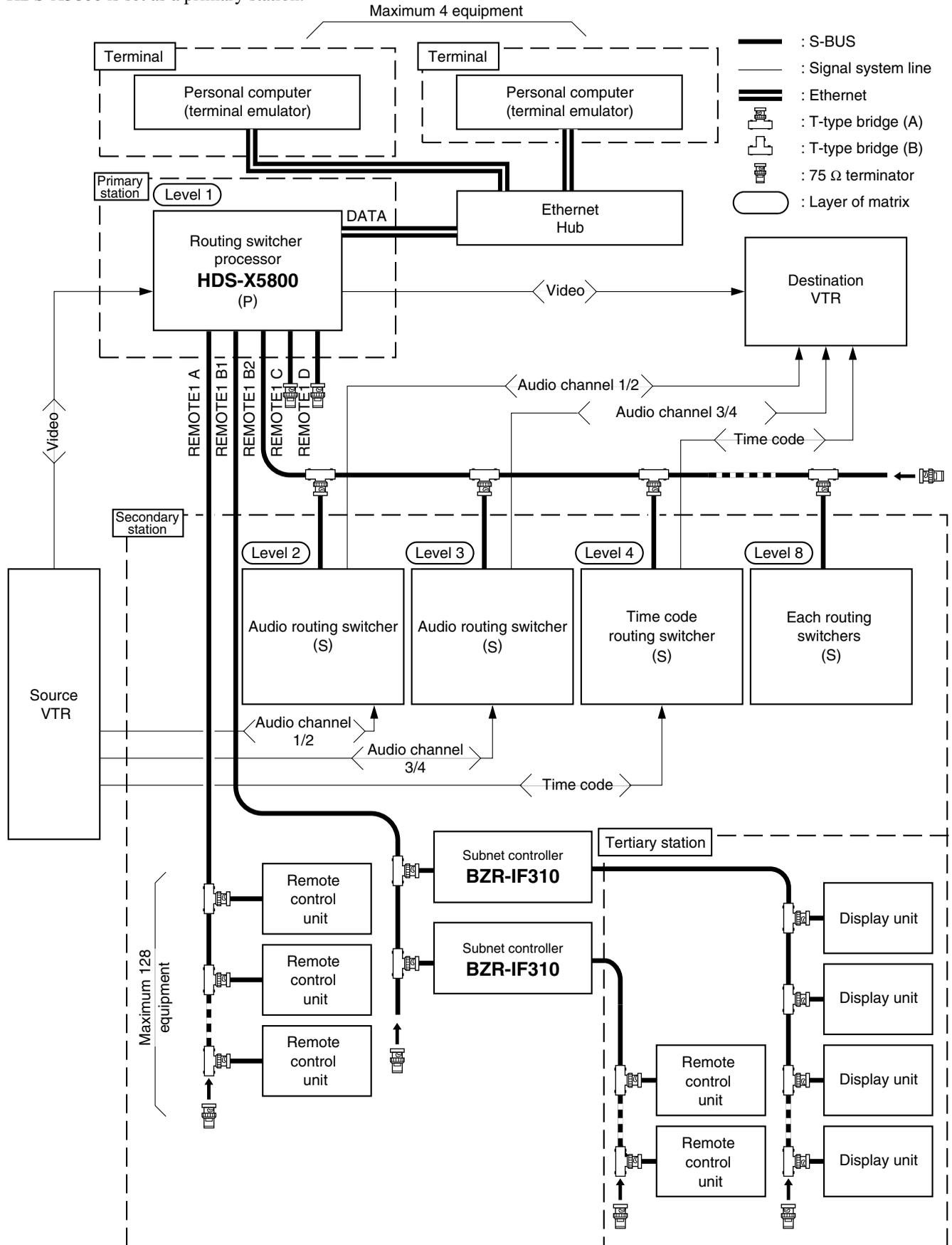
Type in S-BUS data link	Model (function name)	Quantity	Function/rule
Primary station (P)*	Routing switcher HDS-X5800 (routing switcher processor)	1	Controls the entire S-BUS data link. Can also function as a secondary station.
Secondary station (S)*	Switcher DVS-V6464B/M (video routing switcher) HDS-X3400/X3600/X3700 (multi bit rate routing switcher) DVS-A3232 (audio routing switcher) DVS-RS1616 (RS-422A remote routing switcher) DVS-TC3232 (time code routing switcher)  Remote control unit BKS-R3220 (X-Y control unit) BKS-R3219 (32 button control unit) BKS-R1617 (universal control unit) BKS-R1618 (16 button control unit) BKS-R3216 (8 destination control unit) BKS-R3280 (single status display unit) BKS-R3281 (single status display unit)	253 (max.)	Controls the individual secondary station. Communicates in accordance with the commands from the primary station.
Terminal	Personal computer (terminal emulator)	1	Establishes the various setups of the system. The errors that have occurred in the S-BUS line are displayed and managed by the emulator.

※: (P) and (S) indicate the setting of the S/P selector switch on the CPU board in the routing switcher.

#### Note

Switchers other than the HDS-X5800 can be also set as a primary station. In this case, some functions are limited.

The following diagram shows an example of the connection for the data link of the S-BUS when the HDS-X5800 is set as a primary station.

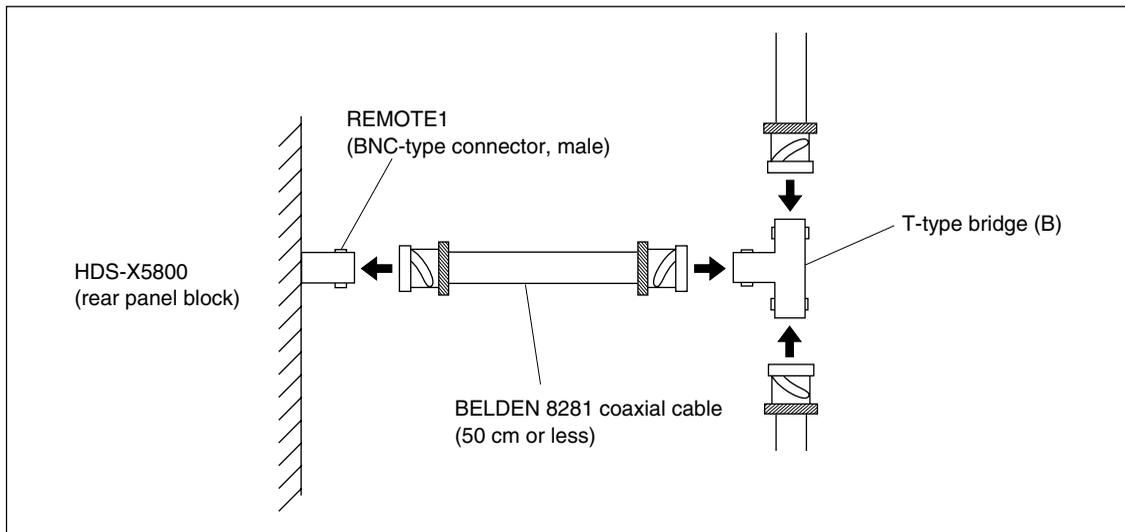


### Precautions for connection

- For the routing switcher that is used as the primary station, set the S/P selector switch on the CPU board to the “P” position.
- For the routing switcher that is used as the secondary station, set the M/S switch on the CPU board (S/P selector switch in the HDS-X5800) to the “S” position.
- A primary station can control up to 253 secondary stations.
- A single S-BUS line can be connected to up to 128 secondary stations.
- The maximum length of a single S-BUS line cable is 500 m (when the BELDEN 8281 cable is used).
- Terminate the T-type bridge that is connected to the last machine of the S-BUS line with a 75 Ω terminator. Also, terminate the unused REMOTE1 connector of each switcher with a 75 Ω terminator.
- Among the REMOTE1 connectors of the secondary routing switcher, two or more REMOTE1 connectors can be used.

### How to use the T-type bridge

The B type of T-type bridge is supplied with the HDS-X5800. Prepare coaxial cable (BELDEN 8281) of 50 cm or less and use the T-type bridge as follows.



## 1-10. How to Extend Inputs and Outputs

### 1-10-1. Equipment Required for System Extension

The HDS-X5800 can process the 1024 inputs × 1024 outputs at the maximum.

Number of matrix inputs and outputs can be increased by connecting the following equipment.

The HDS-X5800 configuration can be flexibly extended in accordance with the required number of matrix inputs and outputs. Model names and quantity of the required equipment for the typical matrix sizes are shown below.

For extending the system to the matrix sizes other than the followings, find out the model names and calculate the quantity that are required for the desired system extension using the following equations.

**Notes**

The usable optional boards are different depending on the type of signal to handle.

- The HKS-58xxM is the optional board that supports multi-bit rate signal including the HDTV SDI signal.

For the signal system that handles the HDTV SDI signal, use the HKS-58xxM boards for all the optional boards starting from input to up to output.

- For the signal system that handles the 270 Mbps serial bit stream signal conforming to the DVB-ASI standard, use the HKS-5830M board for the matrix board. If the HKS-5830SD board is used, an error may occur in the signal.
- To use the HKS-58xxM board, the software in the CPU-339 board in the HDS-X5800 should be upgraded to version 1.20 or higher.

**How to read the table**

- The letters “a” to “j” are the algebraic number that indicates quantity of the machines. Round up the numbers under decimal point to integer (whole number).
- The total quantity that is actually required is shown as the number without parenthesis ( ). The numbers of machines that are shown with parenthesis ( ) are shown for your reference in order to calculate the required quantity of other models.

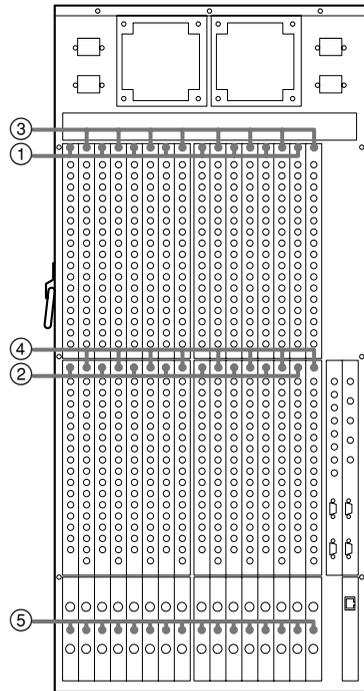
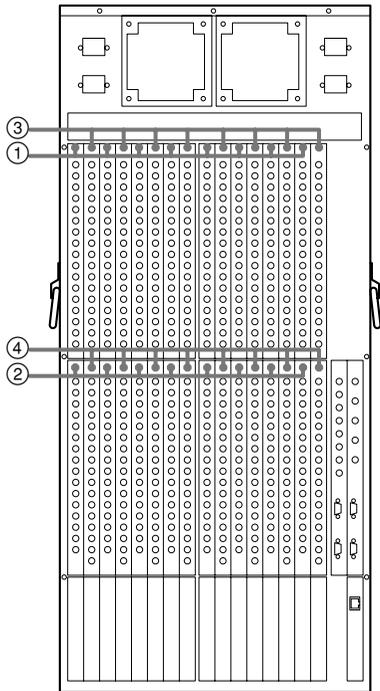
Model	Quantity	Number of matrixes				
		264 × 272	528 × 272	264 × 544	528 × 544	1024 × 1024
HDS-X5800	a (total quantity) = b × c	1	2	2	4	16
	b = (number of inputs) divided by 264	(1)	(2)	(1)	(2)	(4)
	c = (number of outputs) divided by 272	(1)	(1)	(2)	(2)	(4)
HKS-5810M HKS-5810SD Input (connector) board	d (total quantity) = e × c	8	16	16	32	128
	e = (number of inputs) divided by 33	(8)	(16)	(8)	(16)	(32)
HKS-5811M HKS-5811SD Cascade connection board	f (total quantity) = (b-1) × g	—	8	—	16	93
HKS-5820M Input (plug-in) board	The same quantity as HKS-5810M/5810SD	8	16	16	32	128
HKS-5830M HKS-5830SD Matrix board	h (total quantity) = g × b	8	16	16	32	124
	g = (number of outputs) divided by 34	(8)	(8)	(16)	(16)	(31)
HKS-5860M HKS-5860SD Output (connector) board	The same quantity as HKS-5830M/5830SD	8	16	16	32	124
PFV-SP3300* Signal processing unit	i = j divided by 17 (When HKPF-SP003 is installed in all of the 17 slots)	—	—	16	32	61
HKPF-SP003* Signal distribution board	j = (number of inputs)	—	—	264	528	1024

\* : Because the HKPF-SP003 is capable of six distributions of a signal, it is suited for the HDS-X5800 that requires four distribution at the maximum.

The HKPF-SP003 is installed in the PFV-SP3300.

### 1-10-2. How to Configure Optional Boards

The following examples of configuring the optional boards are possible to extend inputs and outputs.



#### Multi-bit Rate System (Including the HDTV system)

	Board name	Model	Maximum required numbers
①	CNI-11	HKS-5810M	8
②	CNI-12		
③	CNO-13	HKS-5860M	8
④	CNO-14		
① and ② of the front side	IPM-98	HKS-5820M	8
③ and ④ of the front side	MX-103	HKS-5830M	8

#### Multi-bit Rate System (Including the HDTV system)

	Board name	Model	Maximum required numbers
①	CNI-11	HKS-5810M	8
②	CNI-12		
③	CNO-13	HKS-5860M	8
④	CNO-14		
⑤	CI-29	HKS-5811M	8
① and ② of the front side	IPM-98	HKS-5820M	8
③ and ④ of the front side	MX-103	HKS-5830M	8
	EQ-91	HKS-5811M	8

#### SDTV System

	Board name	Model	Maximum required numbers
①	CNI-13	HKS-5810SD	8
②	CNI-14		
③	CNO-15	HKS-5860SD	8
④	CNO-16		
① and ② of the front side	IPM-98	HKS-5820M	8
③ and ④ of the front side	MX-104	HKS-5830SD	8

#### SDTV System

	Board name	Model	Maximum required numbers
①	CNI-13	HKS-5810SD	8
②	CNI-14		
③	CNO-15	HKS-5860SD	8
④	CNO-16		
⑤	CI-29	HKS-5811SD	8
① and ② of the front side	IPM-98	HKS-5820M	8
③ and ④ of the front side	MX-104	HKS-5830SD	8
	EQ-92	HKS-5811SD	8

### 1-10-3. Cascade Connection Example

In order to extend the input, the optional 34 cascade input board set (HKS-5811M or HKS-5811SD) should be installed in the HDS-X5800. Up to eight sets of the 34 cascade input board set can be installed in a single HDS-X5800.

#### Procedure

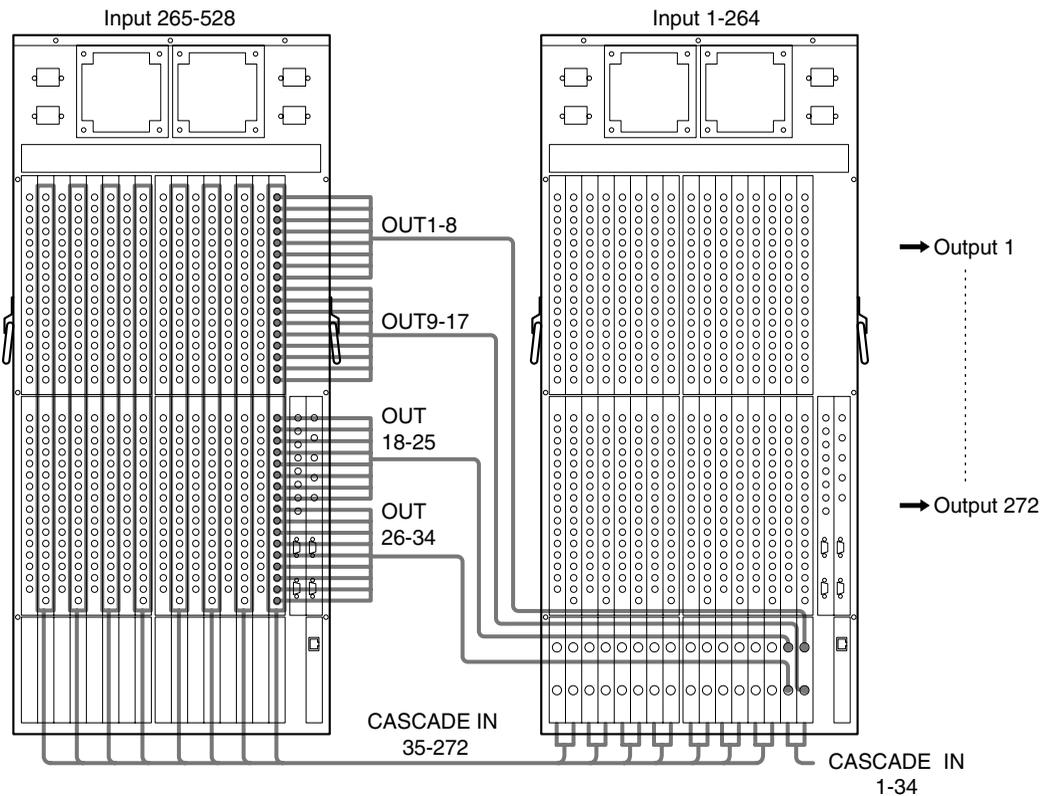
1. Install the HKS-5811M or the HKS-5811SD in the HDS-X5800.

#### Note

Connect the EQ-91 board to the MX-103 board or connect the EQ-92 board to the MX-104 board. Install the CI-29 boards in the CASCADE IN slot. (Refer to “1-6. Installation of Optional Boards”.)

2. Connect the cascade input cables as shown in the following illustration.  
According to the numbers that are attached to the cables, connect the 1st cable to the OUT1 connector and connect the 2nd cable to the OUT2 connector. Also, connect the 1st cable of the CH18-34 of the CASCADE IN slot to the OUT18 connector and connect the 2nd cable to the OUT19 connector.
3. Establish the various setups referring to Section 1-10-6.

#### Connection



### 1-10-4. Output Extension Example

In order to extend the output, the optional distributors (signal processing unit PFV-SP3300 and the built-in signal distribution board HKPF-SP003 or equivalent) are required.

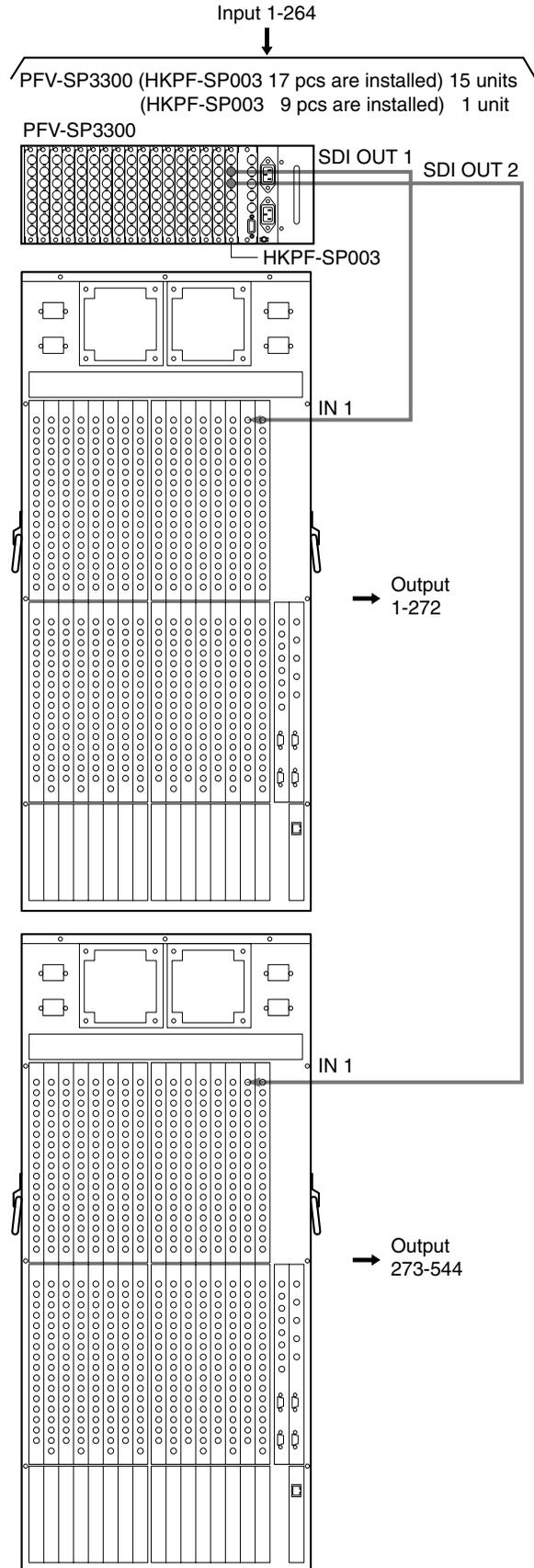
**Note**

The signal distribution board HKPF-SP003 or equivalent is required as many as the number of inputs.

**Procedure**

1. Connect the signal processing unit PFV-SP3300 with the signal distribution board HKPF-SP003 to the HDS-X5800 as shown in the following illustration. Connect them in accordance with the number of outputs to be extended.
2. Establish the various setups referring to Section 1-10-6.

**Connection**



### 1-10-5. Input/Output Extension Example

In order to extend both of the input and output, combination of the input extension and the output extension that are described before are used.

#### Procedure

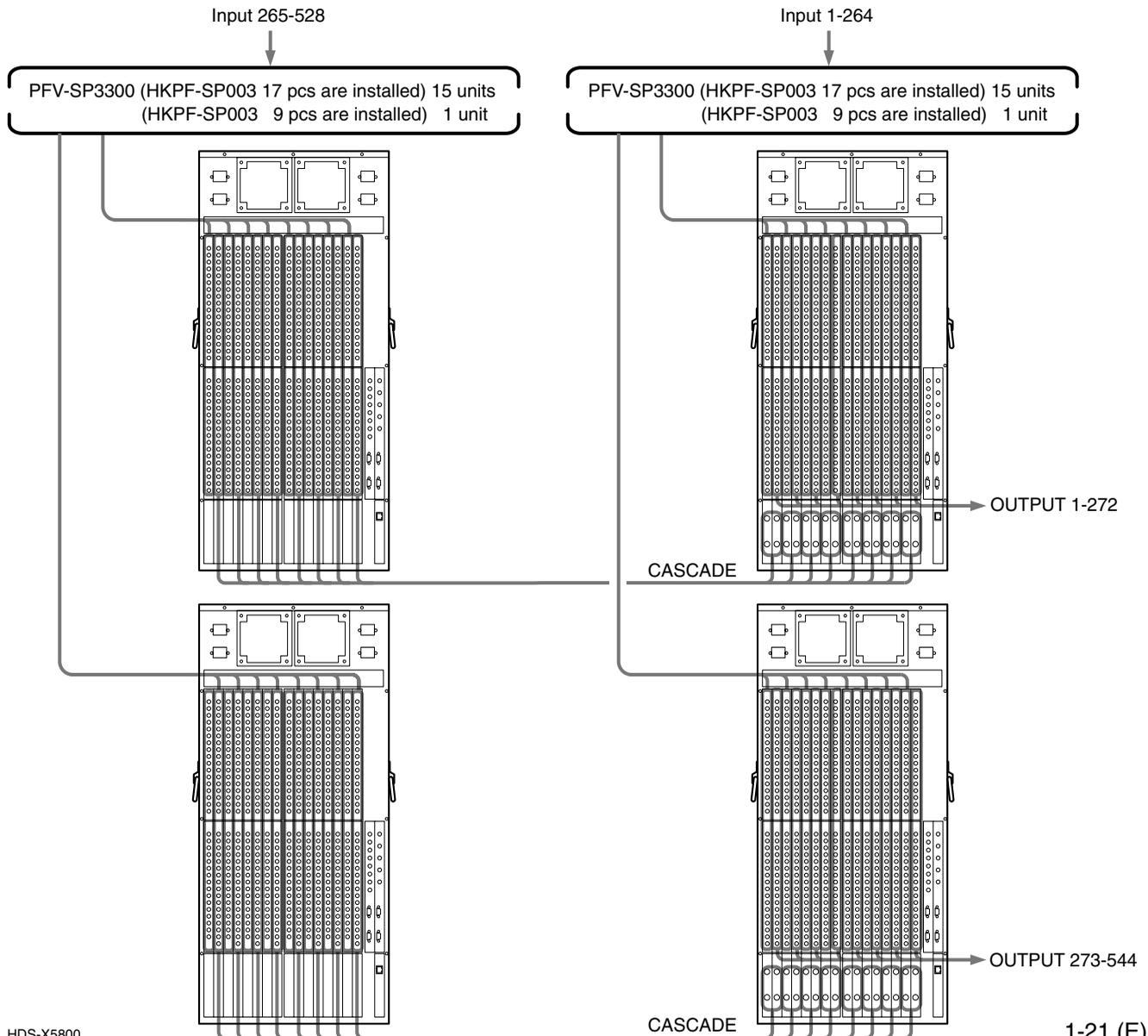
1. Install the HKS-5811M or the HKS-5811SD in the HDS-X5800.

**Note**

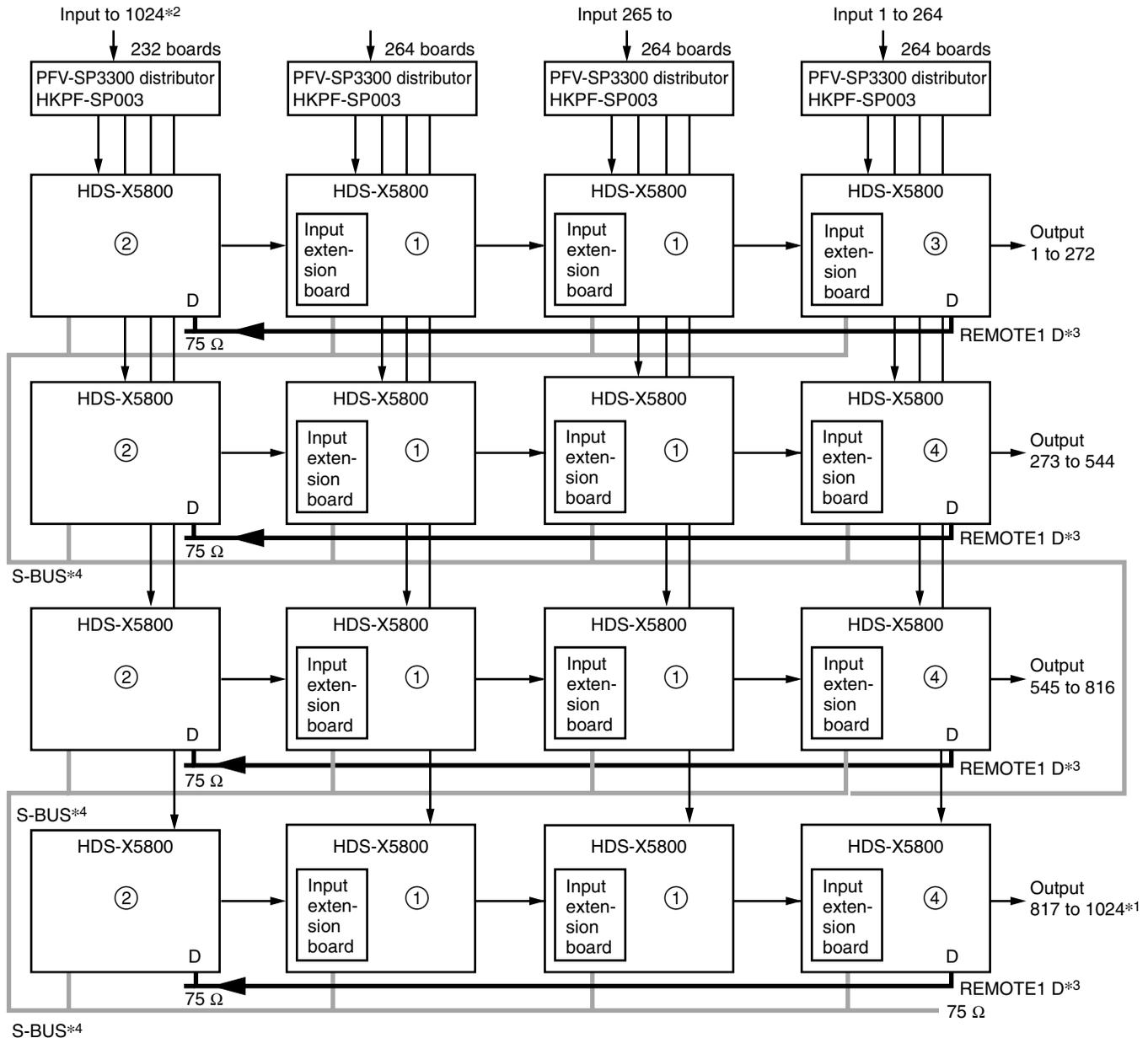
Connect the EQ-91 board to the MX-103 board or connect the EQ-92 board to the MX-104 board. Install the CI-29 boards in the CASCADE IN slot. (Refer to “1-6. Installation of Optional Boards”.)

2. Connect the cascade input cables as shown in the following illustration. According to the numbers that are attached to the cables, connect the 1st cable to the OUT1 connector and connect the 2nd cable to the OUT2 connector. Also, connect the 1st cable of the CH18-34 of the CASCADE IN slot to the OUT18 connector and connect the 2nd cable to the OUT19 connector.
3. Connect the signal processing unit PFV-SP3300 with the signal distribution board HKPF-SP003 to the HDS-X5800 as shown in the following illustration. Connect them in accordance with the number of outputs to be extended.

#### Connection



### 1-10-6. Control System Connection Example and Setup



- \*1 : 1025 up to 1088 cannot be controlled.
- \*2 : 1025 up to 1056 cannot be controlled.
- \*3 : Connect the REMOTE1 D connector using coaxial cable and terminate the ② end with 75 Ω terminator.
- \*4 : Connect the REMOTE1 connector using S-BUS cable (coaxial cable) and terminate the final device of the secondary station with 75 Ω terminator.

#### Notes

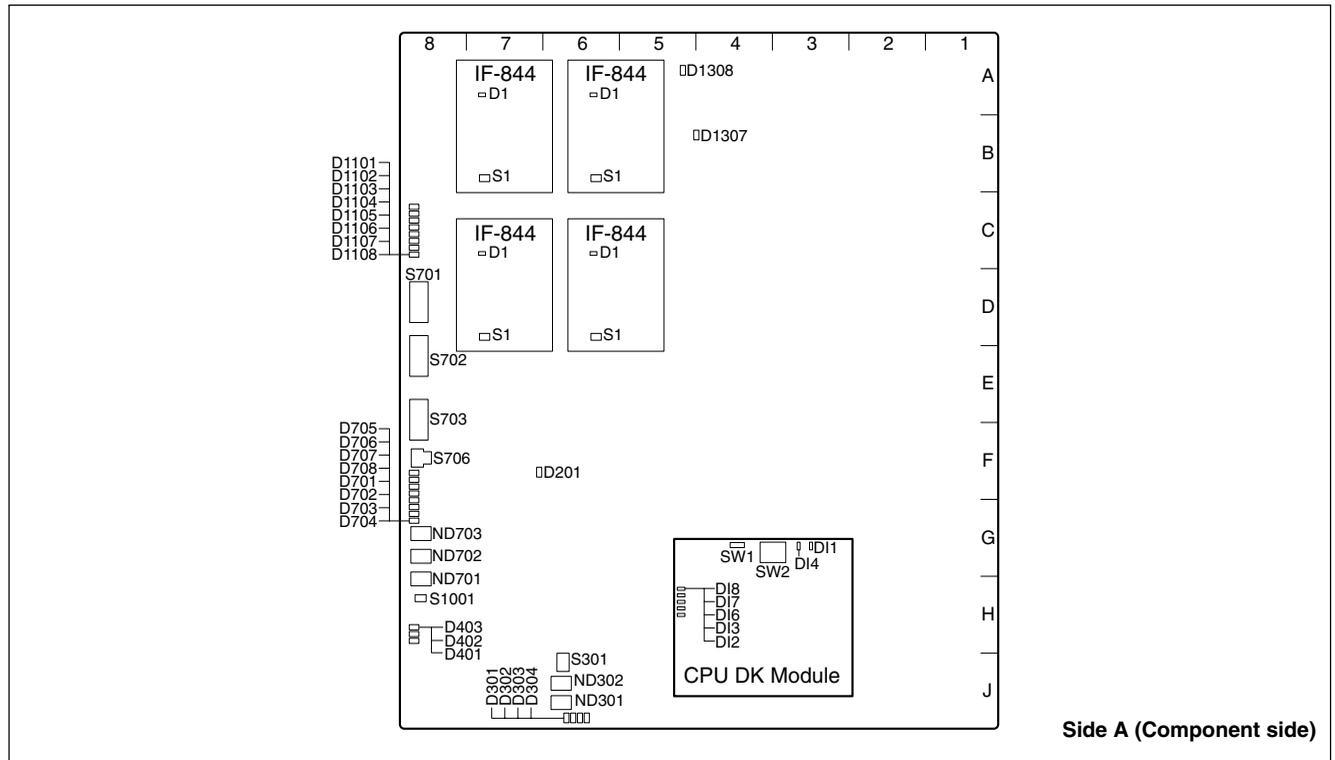
- REMOTE1D provides output in the right and accepts input in the left in the cascade connection as shown in the illustration.
- REMOTE1 A, B, and C have the same function.
- Be sure to terminate the un-used REMOTE1 connectors with 75 Ω terminator in both primary and secondary stations.

#### Switch settings of S702/CPU-339 board

- ① Bits 1 to 4 to the DOWN position
- ② Set the BIT1 through 4 to the DOWN position and set BIT8 to the UP (OPEN) position.  
Establish the CASCADE FORMAT setup of the menu item [Z]. (Refer to the System Setup Manual.)
- ③ Bits 1 to 4 to the UP (OPEN) position
- ④ Bits 1 to 3 to the DOWN position and bits 4, 8 to the UP (OPEN) position

## 1-11. Setting the On-Board Switches and Description of LEDs

### 1-11-1. CPU-339 Board (HDS-X5800)



#### <LEDs>

##### Status of the REMOTE 1 connector (Data send/receive with S-BUS data link)

Ref. No.	(Address)	LED name	Status when lights up (Lights for 0.015 second)
D1101	(C-8)	REMOTE1 A RX	Received data from data link of the REMOTE1 A connector.
D1102	(C-8)	REMOTE1 A TX	Sent data to data link of the REMOTE1 A connector.
D1103	(C-8)	REMOTE1 B RX	Received data from data link of the REMOTE1 B1 or B2 connector.
D1104	(C-8)	REMOTE1 B TX	Sent data to data link of the REMOTE1 B1 or B2 connector.
D1105	(C-8)	REMOTE1 C RX	Received data from data link of the REMOTE1 C connector.
D1106	(C-8)	REMOTE1 C TX	Sent data to data link of the REMOTE1 C connector.
D1107	(C-8)	REMOTE1 D RX	Received data from data link of the REMOTE1 D connector.
D1108	(C-8)	REMOTE1 D TX	Sent data to data link of the REMOTE1 D connector.

##### Status of the REMOTE 2 connector (Data send/receive with S-BUS data link)

Ref. No.	(Address)	LED name	Status when lights up (Lights for 0.015 second)
D705	(F-8)	REMOTE2 A RX	Received data from data link of the REMOTE2 A connector.
D706	(F-8)	REMOTE2 A TX	Sent data to data link of the REMOTE2 A connector.
D707	(F-8)	REMOTE2 B RX	Received data from data link of the REMOTE2 B connector.
D708	(F-8)	REMOTE2 B TX	Sent data to data link of the REMOTE2 B connector.

**Status of the entire system**

Ref. No.	(Address)	LED name	Status when lights up
D701	(G-8)	ACTIVE	Control is executed. (The CPU-339 board on which D701 lights up is mainly running.)
D702	(G-8)	REMOTE1 B PRIMARY ON	REMOTE1 B1 or B2 is set to the primary station.
D703	(G-8)	RUN	The program on the CPU-339 board is running correctly.
D704	(G-8)	ERROR	An abnormality is detected by the self-diagnostics. <b>Note</b> Error code is indicated on ND701 to ND703.
ND703	(G-8)	ERROR No. 7SEG	When an abnormality is detected by the self-diagnostics, its error code is indicated. (For details of the error code, refer to Section 2-3.)
ND702	(G-8)		
ND701	(G-8)		

**Status of the data link that is connected to DATA LAN (DATA connector)**

Ref. No.	(Address)	LED name	Status when lights up
D403	(H-8)	ACT	Sending data to the data link or receiving data from the data link.
D402	(H-8)	LINK	Being connected to the data link.
D401	(H-8)	100/10	Equipment on the data link is operating on 100BASE-TX.

**Status of others**

Ref. No.	(Address)	LED name	Status when lights up
D1308	(A-5)	+3 V	Power supply circuit supplying +3.3 V is operating.
D1307	(B-5)	+5 V	Power supply circuit supplying +5 V is operating.
D201	(F-7)	–	Factory use.
ND302	(J-6)	LEFT	Factory use.
ND301	(J-6)	RIGHT	Factory use.
D301	(J-6)	M7	Factory use.
D302	(J-6)	M6	Factory use.
D303	(J-6)	M5	Factory use.
D304	(J-6)	M4	Factory use.

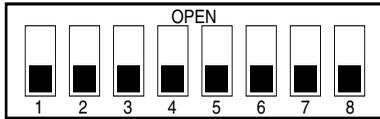
<Switches>

**Note**

The two CPU-339 boards that are inserted in slots A and B, must have the exactly same setup.

**S701 (D-8) : Station ID/Unit IP setting switch**

**8-pin piano-type switch**



Factory setting

(■ indicates the switch lever position.)

Set the unit ID for communication with external devices.

Even if the setting is changed while the power is on, the unit ID is not updated.

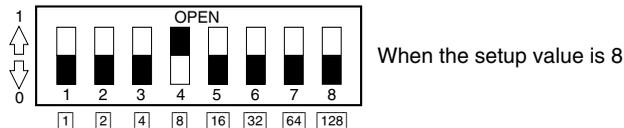
In order to change the unit ID, change the setting. Then either turn off the main power and back on, or press the reset switch on the CPU-339 board.

Set the station ID of the HDS-X5800 when the HDS-X5800 is connected to the S-BUS data link as follows.

When the HDS-X5800 is used as the primary station, the station ID is set to “1” regardless of setting of this switch.

When the HDS-X5800 is used as the secondary station, set the station ID to any number other than “0”, “1” and “255”. Be careful not to duplicate the same number of the other equipment in the secondary station when setting the station ID.

**Setup example**

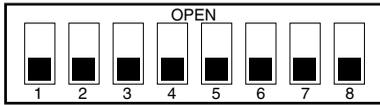


<Setup value>

8 : 0 0 0 1 0 0 0 0      1 ; OPEN (Up position)  
 30 : 0 1 1 1 1 0 0 0      0 ; CLOSE (DOWN position)  
       ↳ (16 + 8 + 4 + 2)  
 254 : 0 1 1 1 1 1 1 1  
       ↳ (128 + 64 + 32 + 16 + 8 + 4 + 2)

When the switch S703-6 is set to CLOSE (DOWN position), this switch is used for the IP address when connected to the DATA LAN and is fixed to “10.64.5.1”.

**S702 (E-8) : REMOTE 1 SELECT switch**  
**8-pin piano-type switch**



Factory setting

(■ indicates the switch lever position.)

**BIT1 to BIT4 : S/P selector switch**

**BIT1 : REMOTE1 A**

**BIT2 : REMOTE1 B (B1, B2)**

**BIT3 : REMOTE1 C**

**BIT4 : REMOTE1 D**

Used to assign the HDS-X5800 either to the primary station or to the secondary station. Set the bit switch from bits 1 to 4 in accordance with the connector used.

UP (OPEN) position : PRIMARY (Operates as the primary station)

DOWN position : SECONDARY (Operates as the secondary station)

Set the four selector switches in accordance with the desired operations and connections as shown below. At the same time, the switches whose setup values are automatically determined depending on the operations and connections so that the setup values cannot be made valid even though they are set, are shown as follows.

**Note**

Even if the setting is changed while the power is on, the operation mode is not updated.

In order to change the operation mode, change the setting. Then either turn off the main power and back on, or press the reset switch on the CPU-339 board.

Operation and connection	S702-1 A-S/P	S702-2 B-S/P	S702-3 C-S/P	S702-4 D-S/P	S702-8 CAS	S703-5 128/32
HDS-X5800 operates as the primary station	P	P	P	P	Valid	Valid
HDS-X5800 operates as the primary station and the REMOTE1 C is used to extend the MVS-8000 series at the same time	P	P	S	P	Invalid*	Valid
HDS-X5800 operates as the primary station and the REMOTE1 C, 1 D are used to extend the MVS-8000 series at the same time	P	P	S	S	Invalid*	Valid
HDS-X5800 operates as the secondary station	S	S	–	S	Valid	Invalid
HDS-X5800 is used as the secondary station in the cascade connection and at the same time it is connected where it outputs a video signal (equivalent to ③ and ④ on Section 1-10-6 on page 1-24) in the entire cascade system	S	S	–	P	Valid	Invalid

P : PRIMARY

S : SECONDARY

\* : Be sure to set to the DOWN position.

**BIT5 to BIT7 : Baud rate selector switch****BIT5 : REMOTE1 A****BIT6 : REMOTE1 C****BIT7 : REMOTE1 D**

Sets the baud rate when the HDS-X5800 is connected to the S-BUS data link using the above connectors.

Set BIT5 to BIT7 in accordance with the connectors used. All of the equipment that are connected to the same S-BUS data link must have the same setting for the baud rate speed. Even when a setting is changed while the power is on, the setting is reflected on the operation of the HDS-X5800.

If there is any possibility to disconnect the cables between the equipment while they are operating, set the switch to the DOWN position.

UP (OPEN) position : 1250 kbps

DOWN position : 312 kbps

**Note**

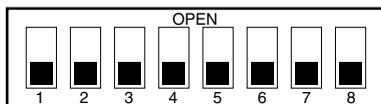
Baud rate of the REMOTE1 B is fixed to 312 kbps.

**BIT8 : Cascade selector switch**

Used to extend the inputs depending on the cascade connection. Set this switch to the UP (OPEN) position in the HDS-X5800s that connect to the cascade.

Even if the setting is changed while the power is on, the operation mode is not updated.

In order to change the operation mode, change the setting. Then either turn off the power and back on, or press the reset switch on the CPU-339 board.

**S703 (E-8) :****8-pin piano-type switch**

Factory setting

(■ indicates the switch lever position.)

**BIT1 : Virtual matrix function valid/invalid selector switch**

Set this switch when you want to use the virtual matrix function. Even if the setting is changed while the power is on, the operation mode is not updated.

In order to change the operation mode, change the setting. Then either turn off the power and back on, or press the reset switch on the CPU-339 board.

UP (OPEN) position : Virtual matrix functions.

DOWN position : Virtual matrix does not function.

**BIT2 : Cross-level Tie Line function valid/invalid selector switch**

Set this switch when you want to enable the cross-level tie line function when the tie line system is constructed using the HDS-X5800. Even if the setting is changed while the power is on, the operation mode is not updated.

In order to change the operation mode, change the setting. Then either turn off the power and back on, or press the reset switch on the CPU-339 board.

UP (OPEN) position : Cross-level tie line function is made valid.

DOWN position : Cross-level tie line function is made invalid.

**BIT3 : Tie Line full display function valid/invalid selector switch**

Set this switch when you want to enable the cross-level tie line full display function when the tie line system is constructed using the HDS-X5800.

UP (OPEN) position : Cross-level tie line full display function is made valid.

DOWN position : Cross-level tie line full display function is made invalid.

**BIT4 : SYNC/ASYNC selector switch**

Used to select whether the communication on the REMOTE1 data link is carried out in synchronization with the input reference signal that is connected to the REF IN A connector, or is communicated asynchronous with the input reference signal. However, the routing switcher system will operate in the asynchronous mode if the reference video signal is not input to the REF IN A connector even if this switch is set to the SYNC position. Even when a setting is changed while the power is on, the setting is reflected on the operation of the HDS-X5800.

UP (OPEN) position : ASYNC (asynchronous mode)

DOWN position : SYNC (synchronous mode)

**BIT5 : Table data size selector switch**

Used to select whether the S-BUS table data size that is output is 128 bytes or 32 bytes while the HDS-X5800 is a primary station in the S-BUS data link connected by the REMOTE1 B connector. When this switch is set to the 32 bytes mode, set the S703-4 to the DOWN position. When the sync selector of the REF IN A channel is set to ODD using the setup menu while the sync signal is being input to the REF IN A connector, the S-BUS control enters the frame sync mode. In the frame sync mode, the connectable station ID is fixed to position 2 to 15. Even when a setting is changed while the power is on, the setting is reflected on the operation of the HDS-X5800.

UP (OPEN) position : 32 bytes

DOWN position : 128 bytes

**BIT6 : Unit ID/IP setting method selector switch**

Used to select the method of setting the IP address in the data link that is connected to the DATA connector. Even if the setting is changed while the power is on, the operation mode is not updated. In order to change the operation mode, change the setting. Then either turn off the power and back on, or press the reset switch on the CPU-339 board.

UP (OPEN) position : A value that is set from a personal computer connected to RE-MOTE3 becomes valid.

DOWN position : The IP address is fixed to "10.64.5.1".

**Note**

For the details of the IP address setting, refer to Section 1-12.

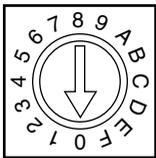
**BIT7 : Not used**

**BIT8 : Debug mode selector switch**

This switch is factory use only. Do not change this setting.

**S706 (F-8) : Test rotary switch**

Run the system with 0 (default) position of this switch.



Factory setting

**Notes**

- When this switch is set to any position of 2 to 5 while the power is on, the setting is reflected on the operation of the HDS-X5800. Set this switch to 0 to return to the normal operation.
- Even the setting is changed to A to F while the power is on, the operation mode is not updated. In order to change the operation mode to A to F, change the setting. Then re-start the CPU-339 board (either turn off the power and back on, or press the reset switch on the CPU-339 board). Set this switch to 0 and re-start the CPU-339 board to return to the normal operation.

0 : Normal operation

The error that is detected first by self-diagnostics is indicated on ND701, ND702, and ND703 as an error code. The error code that is displayed first, is kept stored until the CPU-339 board is re-started or until this switch is set to the position 5.

- 1 : Not used
- 2 : The total count of the errors that are detected by self-diagnostics is displayed (decimal number) on ND701, ND702, and ND703. When the reset switch on the CPU-339 board is pressed or this switch is set to "5", the total count is re-set to "000".
- 3 : The output connector number of the cross-point error that is detected first after the CPU-339 board is re-started or after this switch is set to the position 5, is displayed (decimal number) on ND701, ND702, and ND703. This error information is kept until the CPU-339 board is re-started.
- 4 : The input connector number of the cross-point error that is detected first after the CPU-339 board is re-started or after this switch is set to the position 5, is displayed (decimal number) on ND701, ND702, and ND703. This error information is kept until the CPU-339 board is re-started.
- 5 : The error code that is being displayed on ND701, ND702, and ND703 is reset and "000" is displayed.
- 6, 7 : Not used
- 8 : Factory use only  
Used for adjustment in the factory.  
If this mode is executed, all of the set data are deleted. Before executing this mode, implement the backup of the setup data using the attached BZR-20 software. After execution of the this mode, return the setup data.
- 9 : Not used
- A : Cross-point test  
Checks the signal transmission circuit and detection circuit.  
All of the input connectors to which the signals are supplied, are switched one connector after another in the order starting from the smaller number of the output connectors (from OUT1 to OUT272). If presence and absence of the signal do not match between the input signals and the output signals (cross-point error), the output connector number in problem are displayed on the ND701, ND702, ND703 (decimal notation.) The message "000" appears when there is not problem. If only one input signal is connected, this test is executed once and the machine enters the standby state until the input signal shows any change. If two or more input signals are supplied, this test is repeated starting from the smaller number of the input connector.

- B :** Cross-point test  
It checks the signal transmission circuit and detection circuit.  
Contents of this test are the same as those of the previous item A. However, if an error occurs, the input terminal numbers in problem are displayed on the ND701, ND702, and ND703 (decimal notation).
- C :** Clears the system status log.
- D :** Returns all of the setup items to the default setup when shipped from the factory. However, the IP address is not initialized.
- E :** IP address setting mode  
Used to set the IP address.  
Refer to Section 1-12 for the IP address setting procedure.
- F :** Downloading mode  
This is the mode for service maintenance.

**S1001 (H-8) : Reset switch**

Resets the CPU-339 board.

**S301 (J-6) :**

This switch is factory use only.

S/N 10020 and higher :

The default setting is all ON.

S/N 10001 through 10019 :

The default setting is all OFF.

**<LED on IF-844 board>****D1 (B-1) : SRX**

Lights about 0.015 second when it receives.

**<Switch on IF-844 board>****S1 (B-3) : RESET**

Reset switch of MPU on the IF-844 board.

**<LEDs on the CPU DK module>****DI1 (green) : CD (Card Detect) status LED**

Lights on when the CPU-DK module is inserted correctly to the CPU-339 board.

**DI4 (green) : +3.3 V**

Indicates the status of the power supplied to the CPU-DK module.

Lights on while the power is on.

**DI8 (green) : STATUS1 LED**

Used for maintenance purpose. Lights in normal operation.

**DI7 (green) : STATUS2 LED**

Used for maintenance purpose. Lights off in normal operation.

**DI6 (green) : STATUS3 LED**

Used for maintenance purpose. Lights off in normal operation.

**DI3 (green) : STATUS4 LED**

Used for maintenance purpose. Lights off in normal operation.

**DI2 (green) : RUN status LED**

Lights on when the CPU-DK module starts operating.

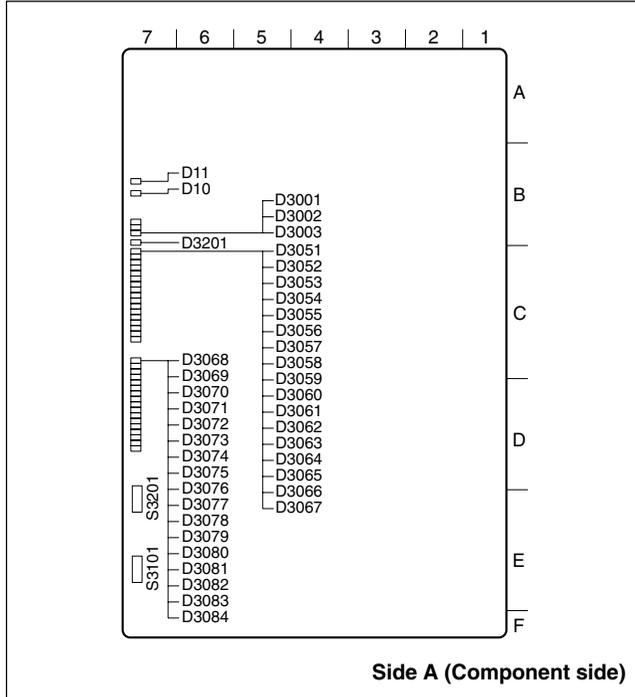
**<Switches on the CPU DK module>****SW1 : RESET switch**

Resets the CPU-DK module.

**SW2 : MODE switch****8-pin DIP switch**

This switch is factory use only. Do not change this setting. The default setting is all OFF.

### 1-11-2. MX-103 Board (HKS-5830M)



#### <LEDs>

##### **D10, D11 (A-7) : +3.3 V-1, +3.3 V-2 LED**

Lights on when +3.3 V power supply is normal.

##### **D3001, D3002, D3003 (B-7) : CNO 1/CNO 2/CAS**

Lights on when the power supply operation of the connector board that is installed in the back of this board and that of the cascade input board are normal. If the power supply operation of the connector board and cascade input board is abnormal, or if the connector board and cascade input board are not installed, it lights off.

D3001 indicates status of the upper connector board (CNO1). D3002 indicates status of the lower connector board (CNO2). D3003 indicates status of the cascade input board (CAS).

##### **D3051 to D3084 (C-7, D-7) : OUT LED**

Lights on when the respective channels of 1 to 34 are outputting the signal. It turns off when the signal is not output.

##### **D3201 (B-7) : RE-CLOCKING DIAG LED**

Lights on when all of the re-clocker ICs are set in the normal operation setup. It turns off if any single channel is not set in the normal operation setup.

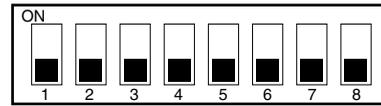
#### **Note**

The normal operation setup means the following status.

Re-clock : ON (Bypass : OFF)  
 Bit rate selection : AUTO (Manual selection : OFF)  
 Mode : SMPTE (DVB-ASI : OFF)

#### <Switches>

##### **S3101 (E-7) : Re-clocker IC setting switch 1 8-pin DIP switch**



Factory setting  
 (■ indicates the switch lever position.)

##### **BIT1 to BIT4 : Re-clock bypass switch**

**BIT1 : Setting OUTPUT1 through OUTPUT8**

**BIT2 : Setting OUTPUT9 through OUTPUT17**

**BIT3 : Setting OUTPUT18 through OUTPUT25**

**BIT4 : Setting OUTPUT26 through OUTPUT34**

Used to bypass the re-clocking (waveform shaping) of signal in units of 8 output channels or 9 output channels.

ON : Bypass ON (Re-clock OFF)

OFF : Bypass OFF (Re-clock ON)

#### **Notes**

- Set to “Bypass OFF” during normal operation.  
 If it is set to “Bypass ON”, an error may occur in the equipment connected to the lower layer (refer to “1-9. System Connection”) of the HDS-X5800.
- Bypass ON/OFF can be also set using the setup menu of secondary station. However, the “Bypass ON” setting has priority.  
 If “Bypass ON” is set by secondary station, setting of “Bypass OFF” becomes invalid even if it is set by the switch.

##### **BIT5 to BIT8: DVB-ASI mode switch**

**BIT5 : Setting OUTPUT1 through OUTPUT8**

**BIT6 : Setting OUTPUT9 through OUTPUT17**

**BIT7 : Setting OUTPUT18 through OUTPUT25**

**BIT8 : Setting OUTPUT26 through OUTPUT34**

Used to select the DVB-ASI mode when handling the DVB-ASI signal in units of 8 output channels or 9 output channels.

ON : DVB-ASI mode

OFF : SMPTE mode

#### **Notes**

- When the DVB-ASI mode is selected, the SMPTE signals cannot be handled.
- The mode can be also set using the setup menu of secondary station. However, the “DVB-ASI mode” setting has priority.  
 If “DVB-ASI mode” is set by secondary station, setting of “SMPTE mode” becomes invalid even if it is set by the switch.

### S3102 (D-7) : Re-clocker IC setting switch 2 8-pin DIP switch



Factory setting

(■ indicates the switch lever position.)

### BIT1 to BIT4 : Signal output slope setting switch other than the standard specification

**BIT1 : Setting OUTPUT1 through OUTPUT8**

**BIT2 : Setting OUTPUT9 through OUTPUT17**

**BIT3 : Setting OUTPUT18 through OUTPUT25**

**BIT4 : Setting OUTPUT26 through OUTPUT34**

Used to set slope of the output signal in units of 8 output channels or 9 output channels when handling the signals other than the SMPTE specification bit rate (143 Mbps, 177 Mbps, 270 Mbps, 360 Mbps, 540 Mbps, 1483.5 Mbps and 1485 Mbps) and the signals other than the DVB-ASI signal (270 Mbps).

ON : SMPTE292M specification output slope

OFF : SMPTE259M specification output slope

#### Notes

- In the case of the SMPTE specification bit rate signal and the DVB-ASI signal (270 Mbps), slope of output signal is automatically set so that setting of this becomes invalid.

<Automatic setting value>

1483.5/1485 Mbps : SMPTE292M  
specification output  
slope

Other than 1483.5/1485 Mbps : SMPTE259M  
specification output  
slope

- This switch setting is valid only when the output board is HKS-5860M.

If the output board is HKS-5860SD, slope of output signal is fixed to the SMPTE259M specification output slope and this switch setting becomes invalid.

### BIT5 to BIT8 : Bit rate manual setting switch

**BIT5 : Bit rate setting-1**

**BIT6 : Bit rate setting-2**

**BIT7 : Bit rate setting-3**

**BIT8 : Manual setting ON/OFF**

Bit rate of all of the 34 channels are set at once.

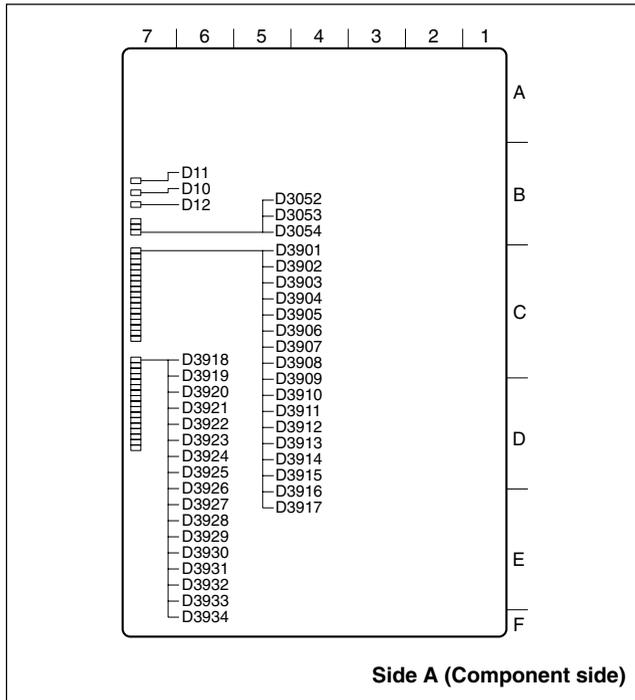
Bit rate	BIT5	BIT6	BIT7	BIT8
Automatic setting	–	–	–	OFF
143 Mbps	OFF	OFF	OFF	ON
177 Mbps	ON	OFF	OFF	ON
270 Mbps	OFF	ON	OFF	ON
360 Mbps	ON	ON	OFF	ON
540 Mbps	OFF	OFF	ON	ON
1483.5/1485 Mbps	ON	OFF	ON	ON

– : Don't care.

#### Notes

- Set BIT8 to OFF (bit rate automatic setting mode) during normal operation.
- Manual setting of the bit rate is set to all of the 34 channels at once. It cannot be set individually for each channel.

**1-11-3. MX-104 Board (HKS-5830SD)**



**<LEDs>**

**D10 (B-7) : +5 V LED**

Lights on when +5 V power supply is normal.

**D11 (B-7) : +4.1 V LED**

Lights on when +4.1 V power supply is normal.

**D12 (B-7) : +3.3 V LED**

Lights on when +3.3 V power supply is normal.

**D3052, D3053, D3054 (B-7) : CNO 1/CNO 2/CAS**

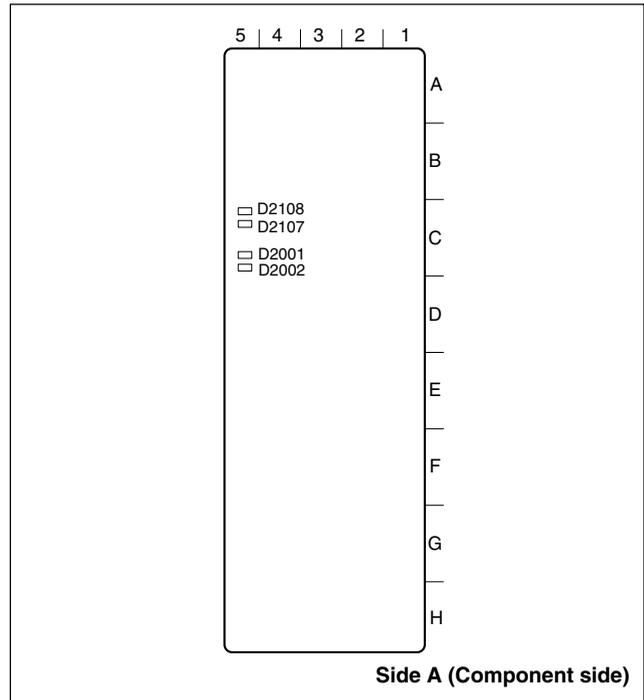
Lights on when the power supply operation of the connector board that is installed in the back of this board, and that of the cascade input board are normal. If the power supply operation is abnormal, or if the connector board and cascade input board are not installed, it lights off.

D3052 indicates status of the upper connector board (CNO1). D3053 indicates status of the lower connector board (CNO2). D3054 indicates status of the cascade input board (CAS).

**D3901 to D3934 (C-7, D-7) : OUT LED**

Lights on when the respective channels of 1 to 34 are outputting the signal. It turns off when the signal is not output.

**1-11-4. IPM-98 Board (HKS-5820M)**



**<LEDs>**

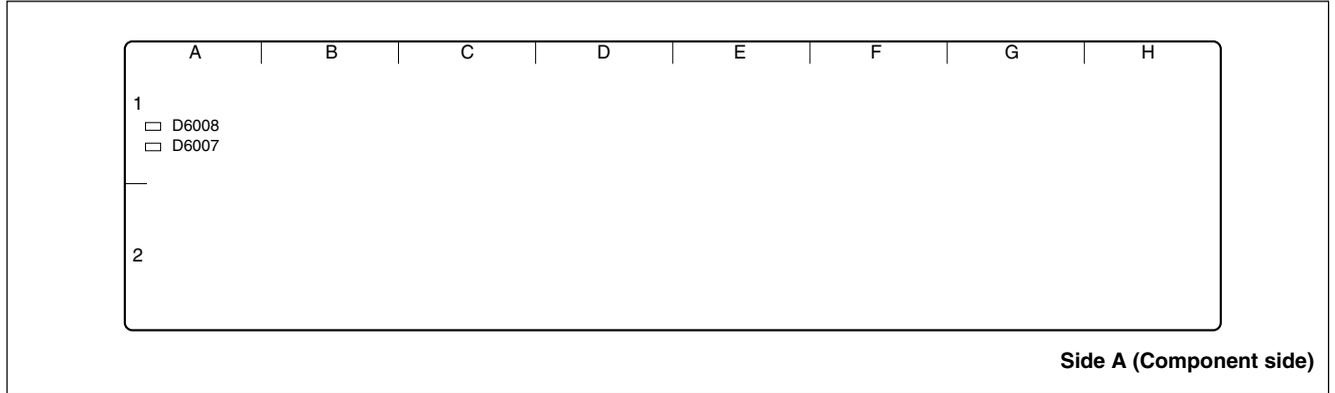
**D2001, D2002 (C-5) : REA1/REA2**

Lights on when operation of the connector board that is installed in the back of this board, is normal. It turns off when the power supply circuit of the connector board is faulty or when the connector board is not installed. D2001 indicates status of the upper connector board (REA1). D2002 indicates status of the lower connector board (REA2).

**D2107, D2108 (C-5) : +3.3 V LED**

Lights on when +3.3 V power supply is normal.

**1-11-5. EQ-91 Board (HKS-5811M)**

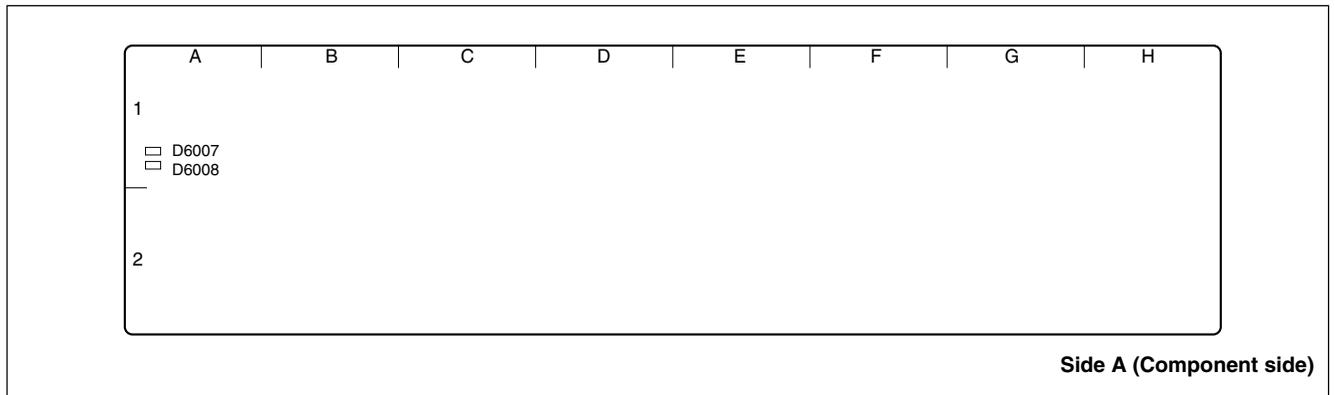


**<LEDs>**

**D6007, D6008 (A-1) : +5 V-1, +5 V-2 LED**

Lights on when +5 V power supply is normal.

**1-11-6. EQ-92 Board (HKS-5811SD)**

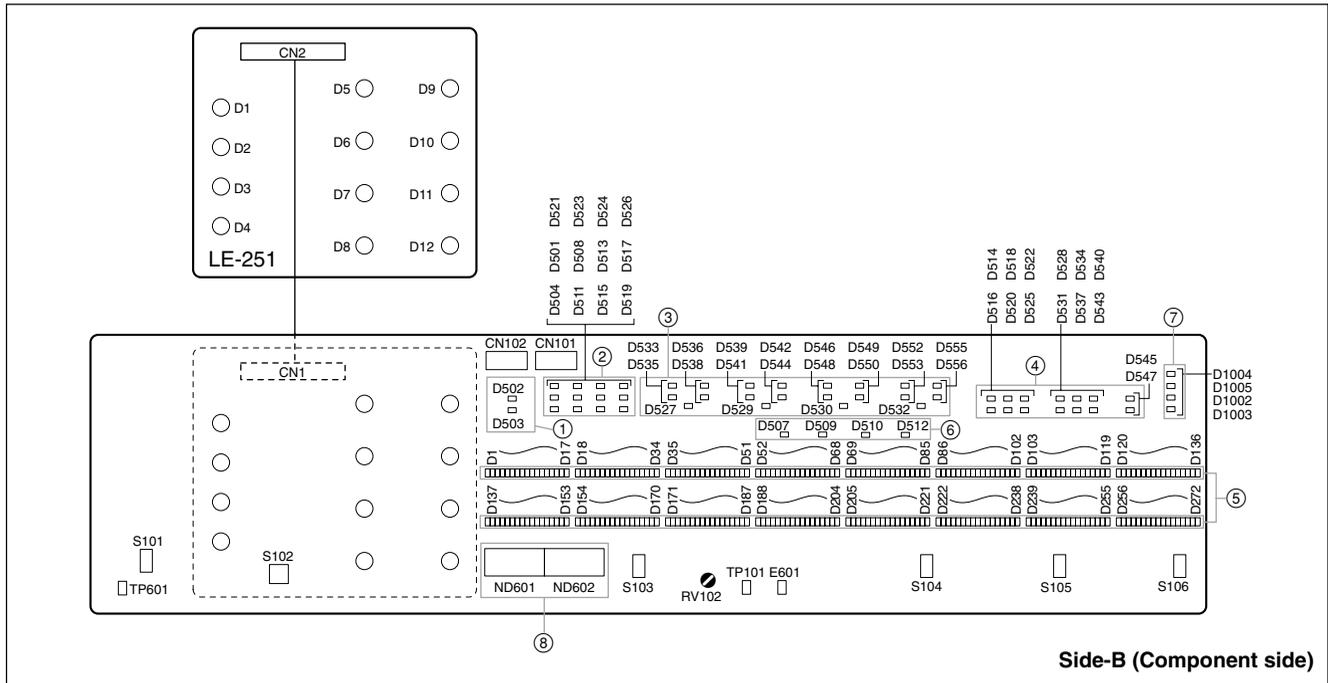


**<LEDs>**

**D6007, D6008 (A-1) : +5 V-1, +5 V-2 LED**

Lights on when +5 V power supply is normal.

### 1-11-7. FP-129 Board (HDS-X5800)



**<LEDs>**

**① ACTIVE CPU BOARD**

- D502 : CPU MAIN SLOT A**
- D503 : CPU MAIN SLOT B**

Lights in green when it is working as the main CPU, and lights off when it is working as a backup CPU.

**② REMOTE1 STATUS**

REMOTE1 A to D systems status indication

**D504, D511, D515, D519 : REMOTE1 1250**

- D504 : REMOTE1 A**
- D511 : REMOTE1 B**
- D515 : REMOTE1 C**
- D519 : REMOTE1 D**

Lights off : Communication speed is not 1250 kbps.  
 Lights in green : Communication speed is 1250 kbps.  
 Lights in red : An error occurs in the primary station.

**D501, D508, D513, D517 : REMOTE1 312**

- D501 : REMOTE1 A**
- D508 : REMOTE1 B**
- D513 : REMOTE1 C**
- D517 : REMOTE1 D**

Lights off : Communication speed is not 312 kbps.  
 Lights in green : Communication speed is 312 kbps.  
 Lights in red : An error occurs in the primary station.

**D521, D523, D524, D526 : REMOTE1 PRIM**

- D521 : REMOTE1 A**
- D523 : REMOTE1 B**
- D524 : REMOTE1 C**
- D526 : REMOTE1 D**

Lights off : Working as a secondary station.

Lights in green : Working as a primary station.

Flashes in green : Working in the frame sync mode as a primary station.

**③ REFERENCE STATUS**

REFERENCE A to D systems status indication

**D527, D529, D530, D532 :**

**REFERENCE PROGRESSIVE**

- D527 : REF A**
- D529 : REF B**
- D530 : REF C**
- D532 : REF D**

Lights in green when the reference input signal is progressive.

**D533, D539, D546, D552 : REFERENCE 525**

- D533 : REF A**
- D539 : REF B**
- D546 : REF C**
- D552 : REF D**

Lights in green when the reference input signal is 525 (NTSC).

**D535, D541, D548, D553 : REFERENCE 625****D535 : REF A****D541 : REF B****D548 : REF C****D553 : REF D**

Lights in green when the reference input signal is 625 (PAL).

**D536, D542, D549, D555 : REFERENCE 1125****D536 : REF A****D542 : REF B****D549 : REF C****D555 : REF D**

Lights in green when the reference input signal is 1125 (HD).

**D538, D544, D550, D556 : REFERENCE 750****D538 : REF A****D544 : REF B****D550 : REF C****D556 : REF D**

Lights in green when the reference input signal is 750 (HD).

**④ FAN STATUS****D514 : FAN (TOP) L1 (rear left on top of the unit)****D516 : FAN (TOP) L2 (front left on top of the unit)****D518 : FAN (TOP) C1 (rear center on top of the unit)****D520 : FAN (TOP) C2 (front center on top of the unit)****D522 : FAN (TOP) R1 (rear right on top of the unit)****D525 : FAN (TOP) R2 (front right on top of the unit)****D528 : FAN (BOTTOM) L1 (rear left in the bottom of the unit)****D531 : FAN (BOTTOM) L2 (front left in the bottom of the unit)****D534 : FAN (BOTTOM) C1 (rear center in the bottom of the unit)****D537 : FAN (BOTTOM) C2 (front center in the bottom of the unit)****D540 : FAN (BOTTOM) R1 (rear right in the bottom of the unit)****D543 : FAN (BOTTOM) R2 (front right in the bottom of the unit)****D545 : FAN (REAR) 1 (rear left of the unit)****D547 : FAN (REAR) 2 (rear right of the unit)**

Fan status indication. It Lights in green when the fan is working normally. It Lights in red when the fan has an error.

**⑤ SIGNAL STATUS****D1 to D272 : DETECT INPUT/OUTPUT/IN ERR/OUT ERR**

When the LED is set in the mode in which presence/absence of the input/output signal is displayed, its presence or absence is displayed. When the LED is set in the mode in which location of error of the input/output signal is displayed, its presence or absence of error is displayed. The indication mode of the LED is switched by the switch S105.

Lights in green : Signal is present.

Flashes in green : Error occurs.

Lights off : No signal/No error  
(Different depending on the display mode)**⑥ Mode selection of signal status (D1 to D272)****D507 : INPUT**

In the mode in which presence/absence of input signal is indicated, it flashes in green.

**D509 : OUTPUT**

In the mode in which presence/absence of output signal is indicated, it flashes in green.

**D510 : IN ERR**

In the mode in which error of input signal is indicated, it flashes in green.

**D512 : OUT ERR**

In the mode in which error of output signal is indicated, it flashes in green.

**⑦ COMMUNICATION STATUS****D1002 : COM RUN**

Operating status of the CPU on the FP-129 board is indicated.

Lights in green : CPU is running.

Lights off : CPU operation is faulty.

**D1003 : COM ERR**

Operating status of the CPU on the FP-129 board is indicated.

Lights in red : An error occurs in CPU.

Lights off : CPU operation is faulty.

**D1004 : COM TX**

Operating status of the CPU on the FP-129 board is indicated.

Lights in green when sending data to the main CPU.

**D1005 : COM RX**

Operating status of the CPU on the FP-129 board is indicated.

Lights in green when receiving data from the main CPU.

## ⑧ Character display

### ND601, ND602 :

The network IP address, S-BUS station ID and error message are displayed.

The display is switched by the switch S103.

#### <Switches>

### S101 : RESET

Resets the FP-129 board.

### S102 : Rotary switch

This switch is factory use only. Do not change this setting.

### S103 : MENU

The display of the character displays (ND601 and ND602) is switched.

### S104 : LED TEST

All of the LEDs (D1002 to D1004) on the FP-129 board light on.

### S105 : DISPLAY SELECT

The display modes of the D1 to D272 are switched.

### S106 : DISPLAY ON/OFF

It triggers ON/OFF of the LEDs on the FP-129 board. (Except for D1002 to D1004)

#### <Connectors>

### CN101 :

Connector for factory use only.

### CN102 :

Connector for writing into PLD (IC114)

#### <Variable resistor/TEST terminals>

### RV102 : Variable resistor for temperature adjustment

### TP101 : Check terminal for temperature adjustment

### TP601 : +5 V power voltage check terminal

#### <LEDs on LE-251 board>

### D1 : DC +12 V A

Power supply unit A system status indication  
Lights in green when working normally. If the power supply A system has an error, it lights in red. (Lights off when both power supplies A1 and A2 are not inserted.)

### D2 : DC +12 V B

Power supply unit B system status indication  
Lights in green when working normally. If the power supply B system has an error, it lights in red. (Lights off when both power supplies B1 and B2 are not inserted.)

### D3 : CPU RUN A

Status indication of the CPU-339 board in slot A  
Lights in green when working normally. If the CPU-339 board has a faulty operation, it lights in red. (Lights off when the CPU-339 board is not inserted in the slot A.)

### D4 : CPU RUN B

Status indication of the CPU-339 board in slot B  
Lights in green when working normally. If the CPU-339 board has a faulty operation, it lights in red. (Lights off when the CPU-339 board is not inserted in the slot B.)

### D5 : FAN

Status indication of fan  
Lights in green when all (14) fans are working normally. If a fan is faulty, it lights in red.

### D6 : TEMPERATURE

Status indication of temperature inside the machine  
Lights in green during normal operation. Lights in red when temperature inside the machine goes abnormally high.

### D7 : BOARD

Status indication of option boards  
Lights in green during normal operation. Lights in red when abnormality occurs in any of the option boards.

### D8 : REMOTE

Status indication of REMOTE1  
Lights in green during normal operation. Lights in red when the S-BUS link is faulty.

### D9 : REF A

Status of indication of reference A system  
Lights in green when the reference video signal is normally input. Lights in red when there is abnormality.  
(Lights off when the setting not to synchronize the signal with the REFERENCE signal at the REF IN A connector, is selected and at the same time when the reference video signal is not inputted.)

**D10 : REF B**

Status indication of reference B system

Lights in green when the reference video signal is normally input. Lights in red when there is abnormality.

(Lights off when the setting not to synchronize the signal with the REFERENCE signal at the REF IN A connector, is selected and at the same time when the reference video signal is not inputted.)

**D11 : REF C**

Status indication of reference C system

Lights in green when the reference video signal is normally input. Lights in red when there is abnormality.

(Lights off when the setting not to synchronize the signal with the REFERENCE signal at the REF IN A connector, is selected and at the same time when the reference video signal is not inputted.)

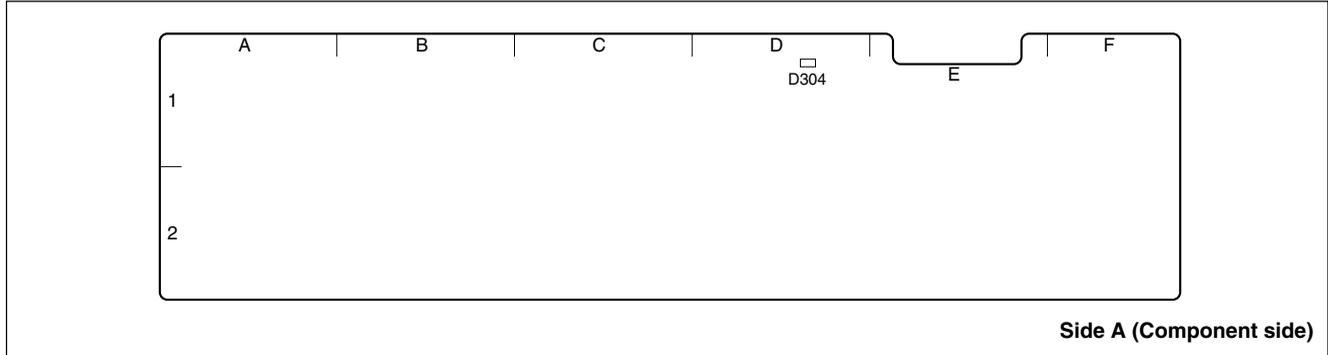
**D12 : REF D**

Status indication of reference D system

Lights in green when the reference video signal is normally input. Lights in red when there is abnormality.

(Lights off when the setting not to synchronize the signal with the REFERENCE signal at the REF IN A connector, is selected and at the same time when the reference video signal is not inputted.)

### 1-11-8. CNI-11 Board (HKS-5810M)

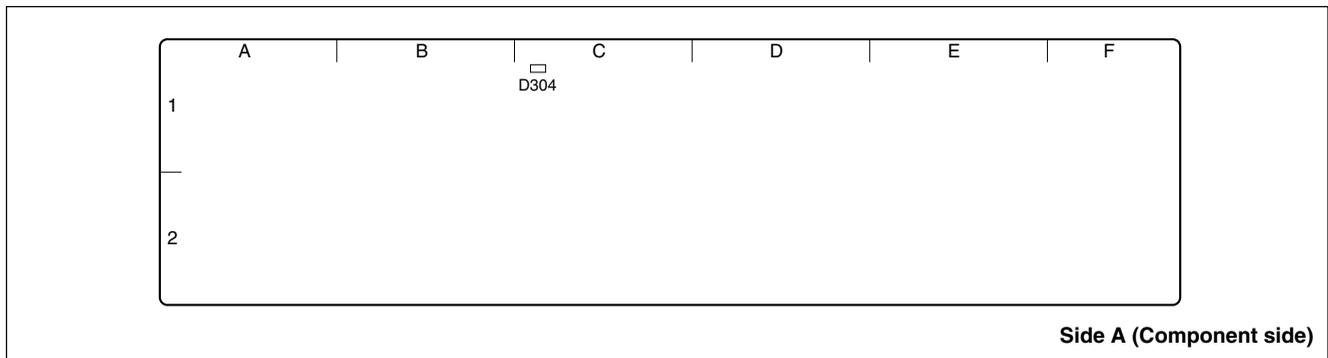


<LED>

**D304 (D-1) : +3.3 V LED**

Lights on when +3.3 V power supply is normal.

### 1-11-9. CNI-12 Board (HKS-5810M)

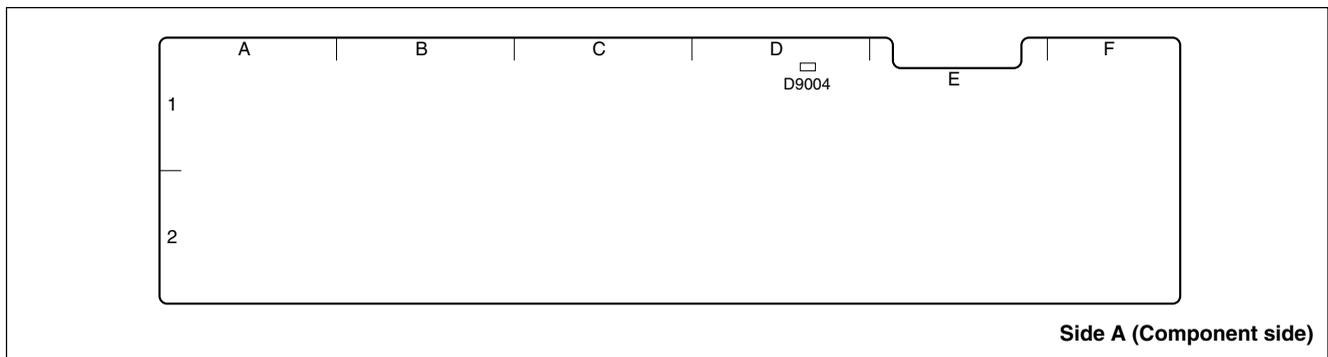


<LED>

**D304 (C-1) : +3.3 V LED**

Lights on when +3.3 V power supply is normal.

### 1-11-10. CNI-13 Board (HKS-5810SD)

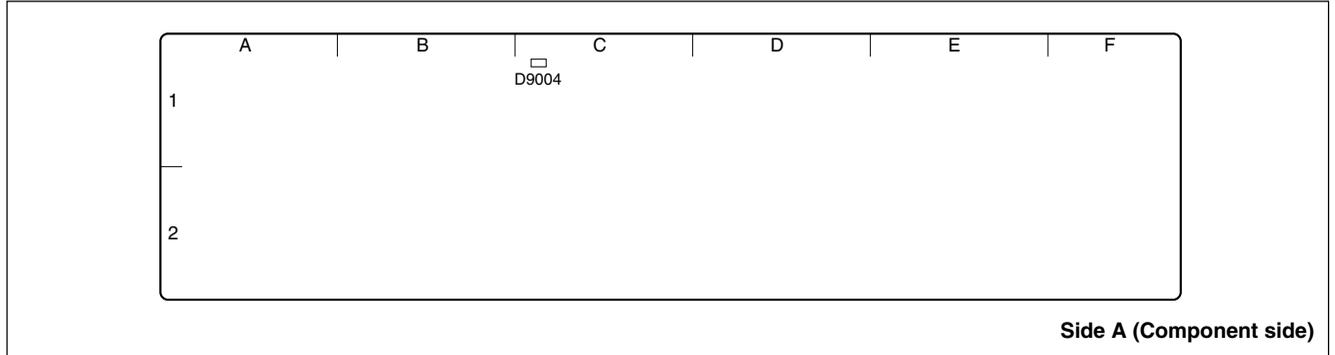


<LED>

**D9004 (D-1) : +5.0 V LED**

Lights on when +5 V power supply is normal.

**1-11-11. CNI-14 Board (HKS-5810SD)**

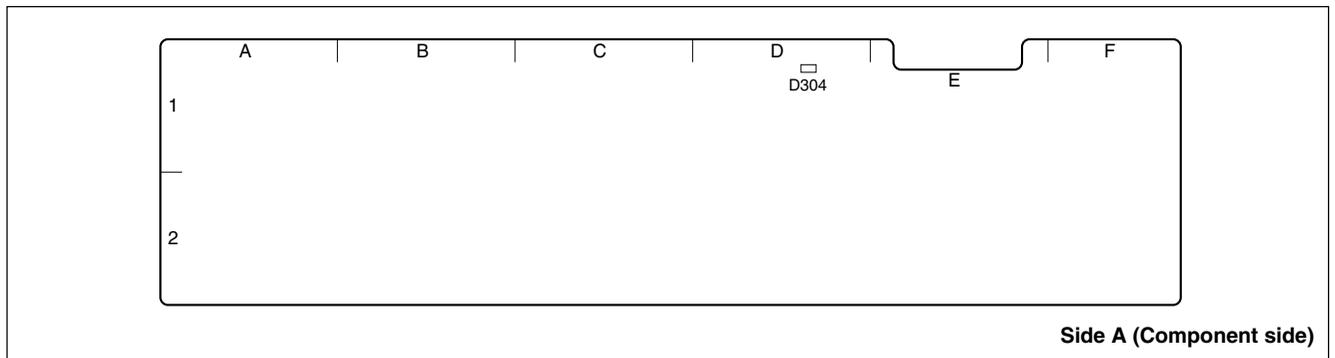


**<LED>**

**D9004 (C-1) : +5.0 V LED**

Lights on when +5 V power supply is normal.

**1-11-12. CNO-13 Board (HKS-5860M)**

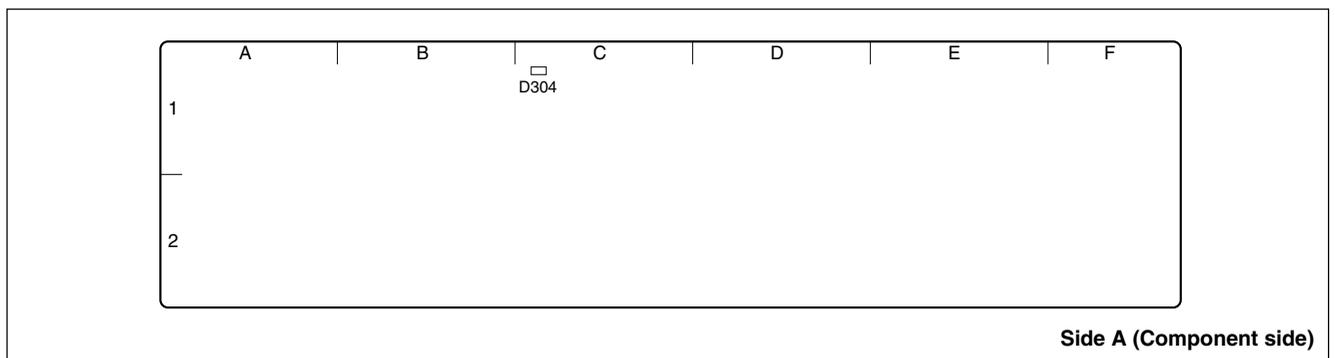


**<LED>**

**D304 (D-1) : +3.3 V LED**

Lights on when +3.3 V power supply is normal.

**1-11-13. CNO-14 Board (HKS-5860M)**

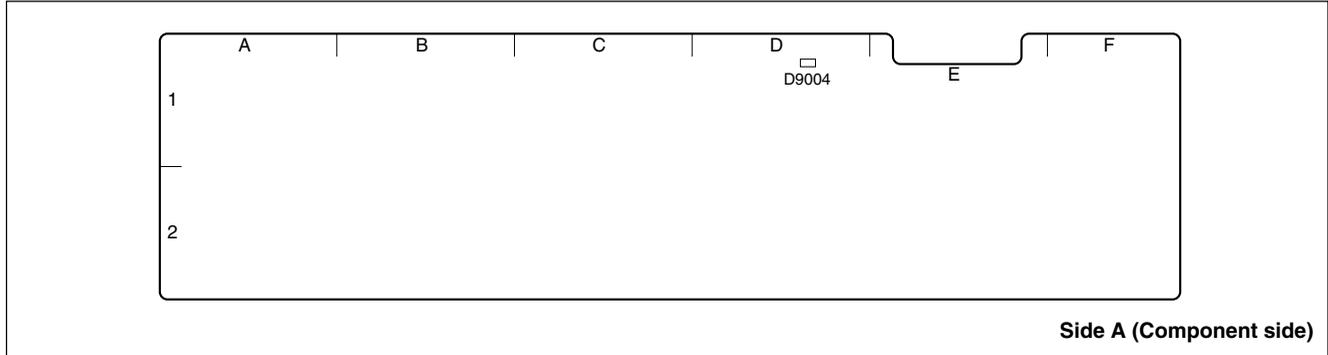


**<LED>**

**D304 (C-1) : +3.3 V LED**

Lights on when +3.3 V power supply is normal.

### 1-11-14. CNO-15 Board (HKS-5860SD)

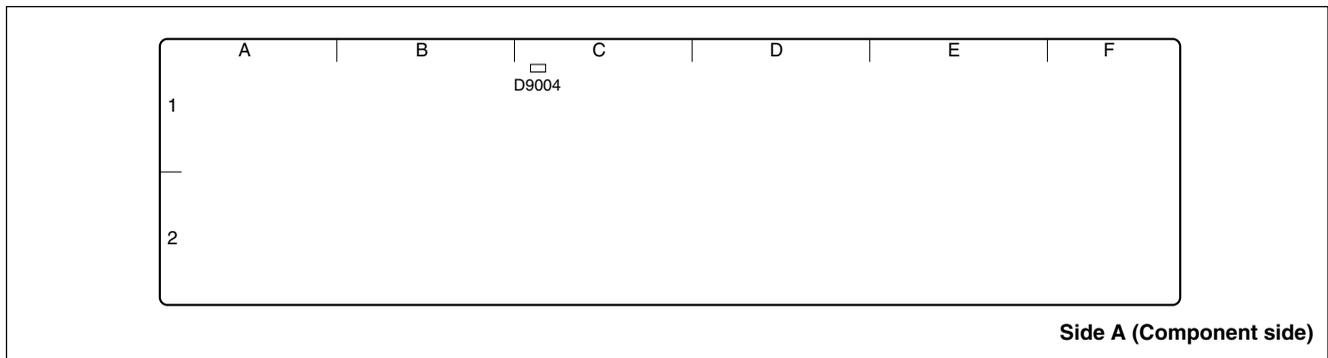


<LED>

#### D9004 (D-1) : +5.0 V LED

Lights on when +5 V power supply is normal.

### 1-11-15. CNO-16 Board (HKS-5860SD)

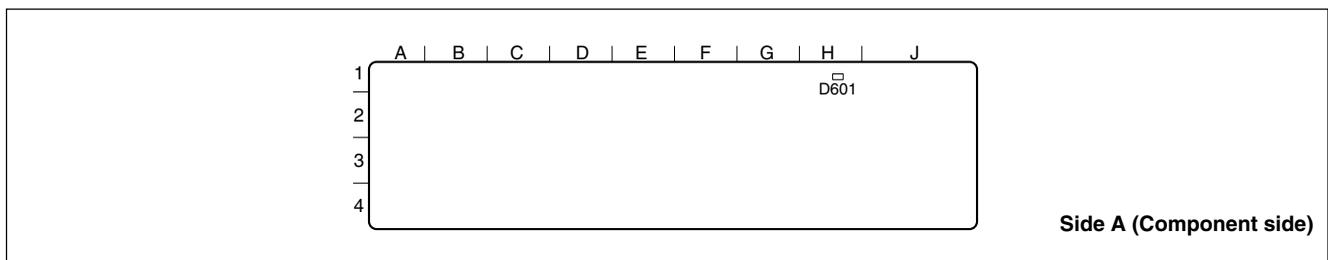


<LED>

#### D9004 (C-1) : +5.0 V LED

Lights on when +5 V power supply is normal.

### 1-11-16. SPG-16 Board (HDS-X5800)

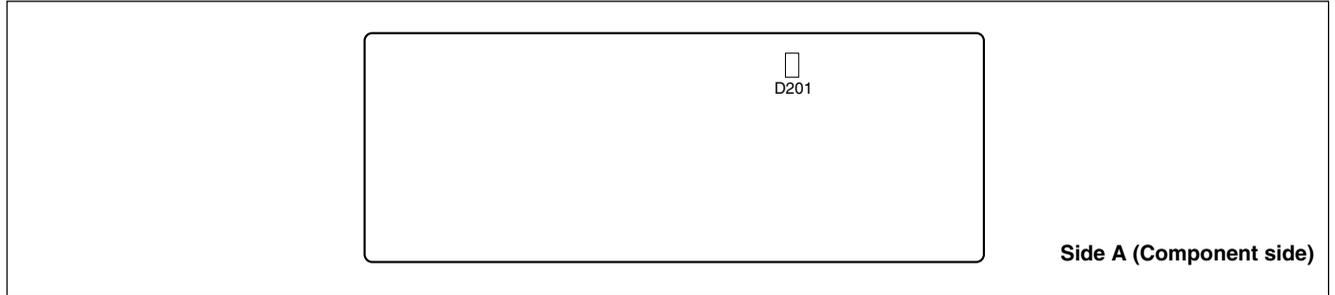


<LED>

#### D601 (H-1) : POWER LED

Lights on when the +12 V power supplied from the power supply units A1 and A2 or those of B1 and B2 are normal.

**1-11-17. RM-192 Board (HDS-X5800)**

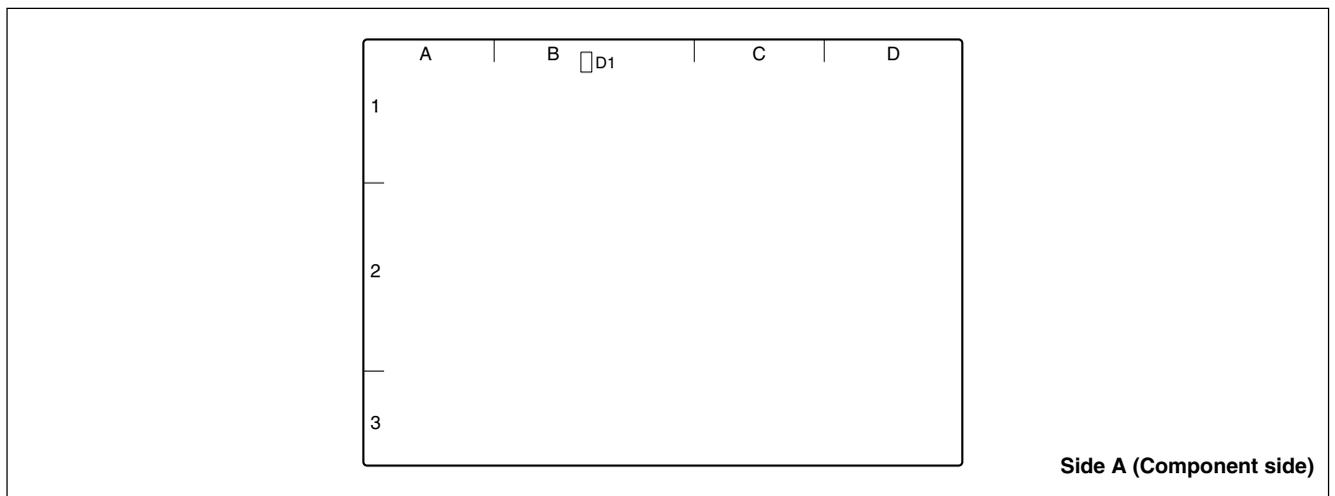


<LED>

**D201 : +12 V LED**

Lights on when the +12 V power supplied from the power supply units A1 and A2 or those of B1 and B2 are normal.

**1-11-18. TR-127 Board (HDS-X5800)**



<LED>

**D1 (B-1) : +12 V LED**

Lights on when +12 V power supply is normal.

## 1-12. Setting IP Address

The method of setting IP address differs depending on the switch S703-6 (unit ID/IP setting method selector switch) on the CPU-339 board.

When the switch S703-6 is set in the UP (OPEN) position, connect a personal computer to the REMOTE3 connector and set the IP address by the following procedure. When the switch S703-6 is set in the DOWN position, the IP address is automatically set from the setting of other switches.

---

### When the switch S703-6 is set to the UP (OPEN) position

#### Note

When the IP address is set in the main CPU-339 board, the same value is automatically set in the backup CPU-339 board.

#### Procedure

1. Turn off the power of the HDS-X5800.
2. Connect a personal computer to the REMOTE3 connector.
3. Set the switch S706/CPU-339 board to "E".
4. Turn on the power of the HDS-X5800.
5. The IP address that is being set at present is displayed on the monitor display of the personal computer. (XX.XX.X.X indicates the IP address.)  
IP ADDRESS = XX.XX.X.X
6. Press the **Enter** key. (Machine enters the IP address entry mode.)
7. Type the IP address value.
8. Press the **Enter** key to terminate the setting.
9. Turn off the power and then back on.
10. Check to see that the set IP address is displayed on the monitor display of the personal computer.
11. Set the switch S706/CPU-339 board to "0" and turn off the power and then back on or press the reset switch (S1001) to return to the normal operation mode.

---

### When the switch S703-6 is set to the DOWN position

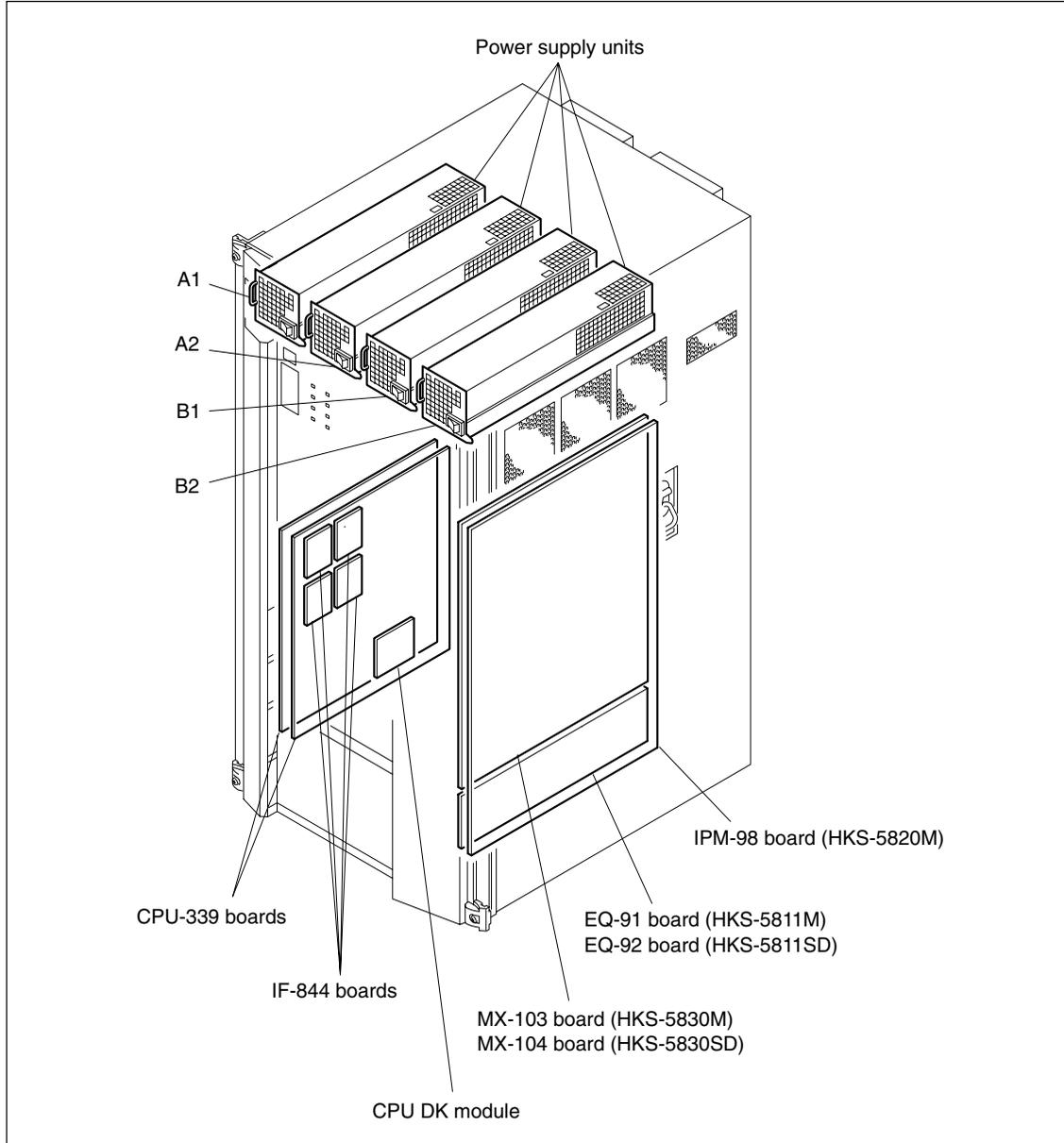
When the switch S702-2/CPU-339 board is set to the UP (OPEN) position (i, e, when the HDS-X5800 is set as the primary station), IP address is fixed to 10.64.5.1

When the switch S702-2/CPU-339 board is set to the DOWN position, the network function does not work.

## Section 2 Service Overview

### 2-1. Main Parts Location

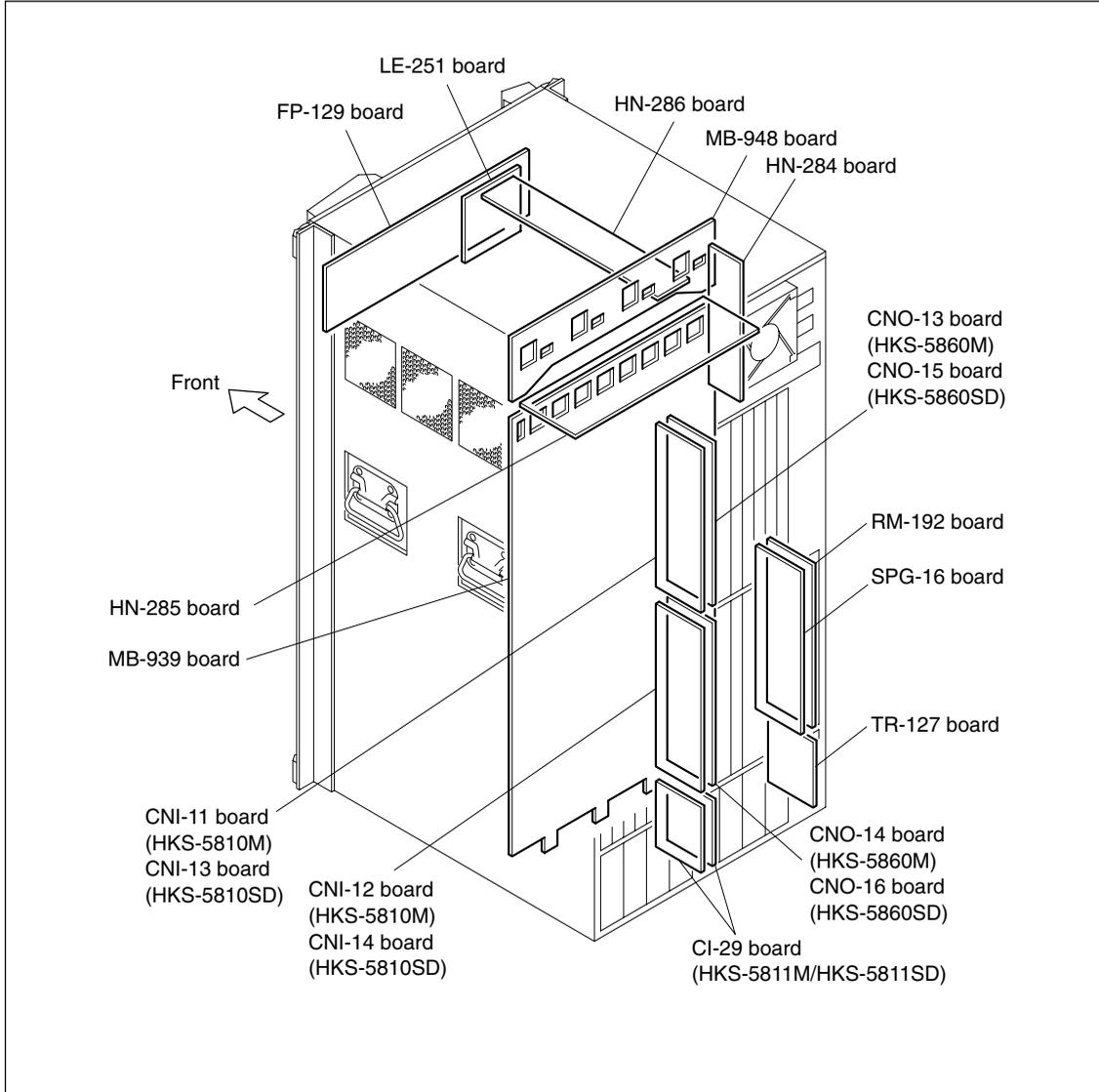
#### Front side



#### Installation slots of the optional boards (plug-in boards)

Board name	Slot
EQ-91	Connect it to the MX-103 board.
EQ-92	Connect it to the MX-104 board.
IPM-98	1 IN to 8 IN slot
MX-103	1 OUT to 8 OUT slot
MX-104	1 OUT to 8 OUT slot

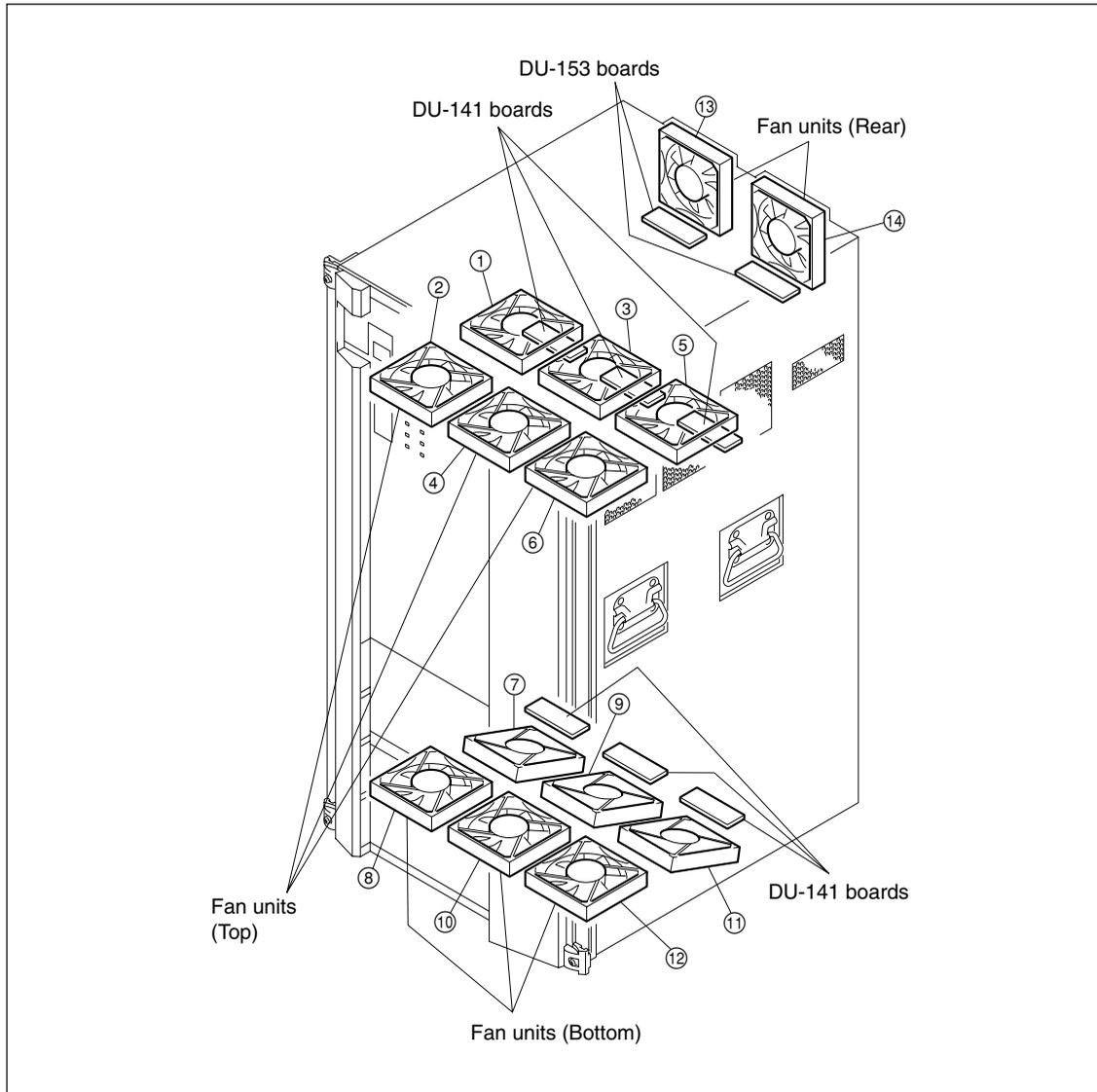
**Rear side**



**Installation slots of the optional boards (connector boards)**

Board name	Slot
CI-29	CASCADE IN slot
CNI-11	IN 1 slot
CNI-12	IN 2 slot
CNI-13	IN 1 slot
CNI-14	IN 2 slot
CNO-13	OUT 1 slot
CNO-14	OUT 2 slot
CNO-15	OUT 1 slot
CNO-16	OUT 2 slot

## Fan



## FAN (TOP)

① L1 (LEFT1)

② L2 (LEFT2)

③ C1 (CENTER1)

④ C2 (CENTER2)

⑤ R1 (RIGHT1)

⑥ R2 (RIGHT2)

## FAN (BOTTOM)

⑦ L1 (LEFT1)

⑧ L2 (LEFT2)

⑨ C1 (CENTER1)

⑩ C2 (CENTER2)

⑪ R1 (RIGHT1)

⑫ R2 (RIGHT2)

## FAN (REAR)

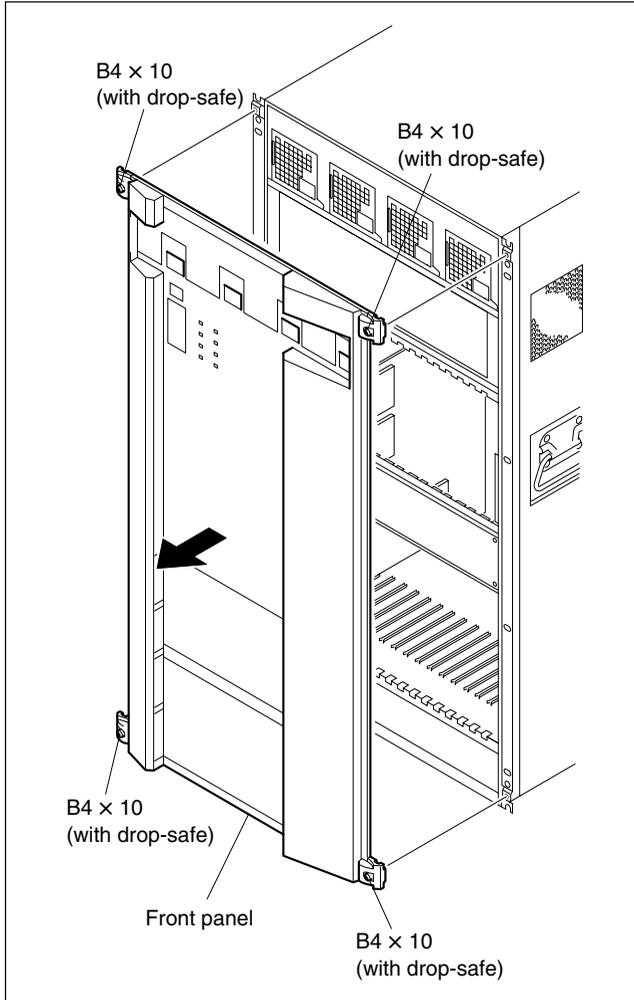
⑬ 1

⑭ 2

## 2-2. Removing/Installing the Front Panel

### Removal

Loosen the four screws (with drop-safe), and then remove the front panel in the direction of the arrow.



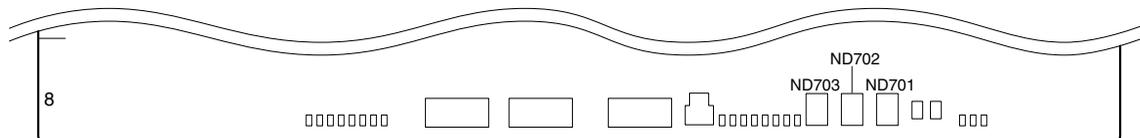
### Installation

Insert the front panel securely into the main unit and tighten the four screws.

## 2-3. Error Indication

This section describes errors that are indicated on the ERROR No. indicator on the CPU-339 board or indicated on the front panel LED together with their remedies.

### 2-3-1. Error Number Display on the CPU-339 Board



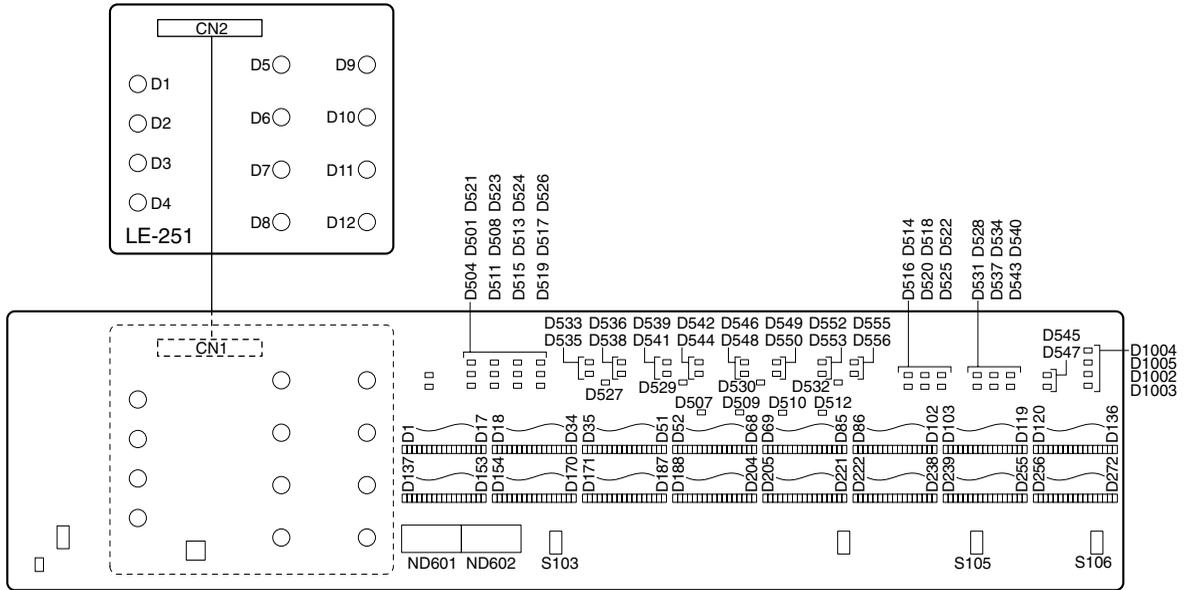
#### ND701, ND702, ND703

If any abnormality is detected by self-diagnostics, its error code is displayed. Contents of the respective error codes are shown below. If two or more errors occur at the same time, only the error code that is detected first is displayed. In order to display the second error, either remove the cause of the first error or clear the display by setting the rotary switch (S706) on the CPU-339 board to “5” position.

Error code	Contents	Remedy
000	Normal operation	—
027	The S-BUS line has the open circuit. (Detected by use or not use of the 75-ohm terminator.)	Install the 75-ohm terminator.
040	Cross-point error Presence/absence of the signal in the input connector does not match with that in the output connector at the set cross-point.	Check operation of the input and output boards and replace the defective board.
050	Battery backup error This code appears after the power is turned on or immediately after resetting the system when the setup data contents that are backed up by battery cannot be guaranteed.	Download the backup data by referring to Section 2-6-3.
060	Sync signal error Reference video signal is not input even though the operating mode is selected in the status that the cross-point should be switched in synchronization with the reference video signal.	Connect the input reference signal to the REF IN connector.
070	Fan stop One or more fans among what are installed in the HDS-X5800 stop.	Replace the fan unit.
072	Temperature rise error Temperature inside the HDS-X5800 has increased exceeding the specified temperature.	Check ambient temperature and ventilation of the equipment.
080	ROM/RAM error This code appears after the power is turned on or immediately after resetting the system when result of ROM differs from the value stored in RAM, or when the write checksum contents differ from the read contents as the result of RAM writing test. This code appears only once after the program version is upgraded. When this code does not appear, the program version is not upgraded normally.	Replace the CPU-339 board.
0FE	Flash memory write error The system does not start up because the program is not downloaded correctly.	Re-download the program. (For the downloading procedure, refer to the Maintenance Manual.)
FFF	CPU board operation error During the normal operation, this code appears momentarily after resetting the system, and the number changes to each status number. If the code “FFF” is kept displayed, the program does not start up.	Replace the CPU-339 board.

### 2-3-2. Front Panel Status Indication (LE-251/FP-129 Board)

An approximate status such as occurrence or non-occurrence of error is indicated by the LED on the LE-251 board. On the other hand, detailed status of error is indicated by the LED on the FP-129 board. Therefore, check the details of the error that is indicated by the LED on the LE-251 board, from the LED on the FP-129 board.



FP-129 board (Side B)

## LEDs on the LE-251 board

Name of LED	Ref. No.	Contents	Status			Remedy	
			Lights off	Lights in green	Lights in red		
DC+12 V	A	D1	Status of the power supply system A	The power supply unit is disconnected.	Normal	The power supply system A has abnormality. <ul style="list-style-type: none"> <li>• The power supply unit A1 has abnormality.</li> <li>• The power supply unit A2 has abnormality.</li> </ul>	Check that the POWER switch of the power supply unit is turned on. Check the connection of the power cable. Replace the defective power supply unit.
	B	D2	Status of the power supply system B	The power supply unit is disconnected.	Normal	The power supply system B has abnormality. <ul style="list-style-type: none"> <li>• The power supply unit B1 has abnormality.</li> <li>• The power supply unit B2 has abnormality.</li> </ul>	
CPU RUN	A	D3	Status of the CPU board in slot A	CPU-339 board is not inserted in the slot.	Normal	Operation of the CPU-339 board is abnormal.	Replace the defective CPU-339 board.
	B	D4	Status of the CPU board in slot B				
FAN		D5	Status of the fan in the HDS-X5800	--	All of the fans (total 14 fans) are normal.	One or more fans inside the HDS-X5800 are defective. (Locate the defective fan by referring to "When D5 on the LE-251 lights in red" of the LEDs on the FP-129 board as described in this section.)	Replace the defective fan of the HDS-X5800.
TEMPERATURE		D6	Status of temperature inside the HDS-X5800	--	Normal	The temperature inside the HDS-X5800 has increased exceeding the specified temperature.	Check ambient temperature and ventilation of the equipment.
BOARD		D7	Status of the optional boards (including cross-point error)	--	Normal	One or more optional boards are defective.	Replace the defective optional board.
REMOTE		D8	Status of REMOTE1	--	Normal	Any fault occurs on the S-BUS link. (Locate the cause of the error by referring to "When D8 on the LE-251 lights in red" of the LEDs on the FP-129 board as described in this section.)	Check connection with the equipment that does not return any response. Make a correct connection. Attach a 75-ohm terminator.
REF	A	D9	Status of REFERENCE A system	Normal (Reference video signal is not input to REF IN when the equipment is set in the mode that the cross-point is switched in asynchronous with reference signal.)	Normal (Reference video signal is input to REF IN.)	Abnormal. <ul style="list-style-type: none"> <li>• Reference video signal is not input to REF IN when the equipment is set in the mode that the cross-point is switched in asynchronous with reference signal.</li> <li>• The reference signal that is not supported, is input.</li> </ul> (Find out which of the above two is the cause of the trouble, by referring to "When D9 to D12 on the LE-251 light in red" of the LEDs on the FP-129 board as described in this section.)	Input the reference signal to the REF IN connector. Switch the cross-points in synchronous with the reference video signal. (Select ASYNC.)
	B	D10	Status of REFERENCE B system				
	C	D11	Status of REFERENCE C system				
	D	D12	Status of REFERENCE D system				

**LEDs on the FP-129 board**

LEDs on the FP-129 board light on when the switch S106 (DISPLAY ON/OFF) is pressed.

**Note**

The display mode of the LEDs of D1 to D272 is switched when the switch S105 (DISPLAY SELECT) is pressed. You can know which of the display modes is selected as present, by finding out which of either D507 or D509 or D510 or D512 turns on.

Name of LED		Ref. No.	Contents	Status			
				Lights on off	Lights in green	Flashing in green	Lights in red
INPUT		D1 to D272	Indicates presence/absence of the input signal when D507 (INPUT) lights in green.	No signal	Signal is present.	---	---
OUTPUT				No signal	Signal is present.	---	---
IN ERR				No error		Error occurs.	---
OUT ERR				No error		Error occurs.	---
COM	TX	D1004	Operating status of the CPU on the FP-129 board	Data is not transmitted.	Data transmission to the main CPU	---	---
	RX	D1005		Data is not received.	Data reception from the main CPU	---	---
	RUN	D1002		CPU operation is defective.	CPU is operating.	---	---
	ERR	D1003		CPU operation is defective.	---	---	Any error occurs.

Name of LED		Ref. No.	Contents	Status
Character display	8 characters	ND601, 602	General purpose character display	<ul style="list-style-type: none"> <li>• LAN IP address</li> <li>• S-BUS station ID</li> <li>• Error code (The same contents as those of the Error No. indicator on the CPU board.)</li> </ul> Either one of the above three is displayed. Display contents can be switched when S103 (MENU) is pressed.

- When D5 on the LE-251 lights in red

Name of LED	Ref. No.	Contents	Status	Lights in red		Remedy
				Lights in green	Lights in red	
FAN (TOP)	L1	D514	Status of the fan in the HDS-X5800 (Top of the HDS-X5800)	Normal	Fan in the rear left on top of the HDS-X5800 is abnormal.	Replace the defective fan.
	L2	D516			Fan in the front left on top of the HDS-X5800 is abnormal.	
	C1	D518			Fan in the rear center on top of the HDS-X5800 is abnormal.	
	C2	D520			Fan in the front center on top of the HDS-X5800 is abnormal.	
	R1	D522			Fan in the rear right on top of the HDS-X5800 is abnormal.	
	R2	D525			Fan in the front right on top of the HDS-X5800 is abnormal.	
FAN (BOTTOM)	L1	D528	Status of the fan in the HDS-X5800 (Bottom of the HDS-X5800)	Normal	Fan in the rear left on the bottom of the HDS-X5800 is abnormal.	Replace the defective fan.
	L2	D531			Fan in the front left on the bottom of the HDS-X5800 is abnormal.	
	C1	D534			Fan in the rear center on the bottom of the HDS-X5800 is abnormal.	
	C2	D537			Fan in the front center on the bottom of the HDS-X5800 is abnormal.	
	R1	D540			Fan in the rear right on the bottom of the HDS-X5800 is abnormal.	
	R2	D543			Fan in the front right on the bottom of the HDS-X5800 is abnormal.	
FAN (REAR)	1	D545	Status of the fan in the HDS-X5800 (Rear of the HDS-X5800)	Normal	Fan in the left (when viewed from the front) on rear of the HDS-X5800 is abnormal.	Replace the defective fan.
	2	D547			Fan in the right (when viewed from the front) on rear of the HDS-X5800 is abnormal.	

- When D8 on the LE-251 lights in red

Name of LED	Ref. No.	Contents	Error status	Lights in red		Remedy
				Lights in red	Lights in red	
REMOTE1 (REM1A)	312	D501	Status of the REMOTE1 system A	The system A has fault when REMOTE1 A is primary station (D521 lights in green). (75-ohm terminator is disconnected.)	The system A has fault when REMOTE1 A is primary station (D521 lights in green). (75-ohm terminator is disconnected.)	Check connection of the equipment. Install the 75-ohm terminator.
	1250	D504				
REMOTE1 (REM1B)	312	D508	Status of the REMOTE1 system B	The system B has fault when REMOTE1 B is primary station (D523 lights in green). (75-ohm terminator is disconnected.)	The system B has fault when REMOTE1 B is primary station (D523 lights in green). (75-ohm terminator is disconnected.)	Check connection of the equipment. Install the 75-ohm terminator.
	1250	D511				
REMOTE1 (REM1C)	312	D513	Status of the REMOTE1 system C	The system C has fault when REMOTE1 C is primary station (D524 lights in green). (75-ohm terminator is disconnected.)	The system C has fault when REMOTE1 C is primary station (D524 lights in green). (75-ohm terminator is disconnected.)	Check connection of the equipment. Install the 75-ohm terminator.
	1250	D515				
REMOTE1 (REM1D)	312	D517	Status of the REMOTE1 system D	The system D has fault when REMOTE1 D is primary station (D526 lights in green). (75-ohm terminator is disconnected.)	The system D has fault when REMOTE1 D is primary station (D526 lights in green). (75-ohm terminator is disconnected.)	Check connection of the equipment. Install the 75-ohm terminator.
	1250	D519				

- When D9 on the LE-251 lights in red

Name of LED	Ref. No.	Contents	Status	Error status	Remedy	
<b>Lights off</b>						
REFERENCE (REF A)	525	D533	Status of REFERENCE A system	The 525 (NTSC) signal is not inputted to the REF A connector.	All of the 5 LEDs light off. (Reference video signal is not inputted even though the equipment is set in the mode that the cross-points are switched in synchronous with reference signal.)	Input the reference video signal to the REF IN connector. Cancel the mode to switch the cross-points in synchronous with the reference signal. (Set the system to ASYNC.)
	625	D535		The 625 (PAL) signal is not inputted to the REF A connector.		
	1125	D536		The 1125 (HD) signal is not inputted to the REF A connector.		
	750	D538		The 750 (HD) signal is not inputted to the REF A connector.		
	PROGRESSIVE	D527		It is not the progressive reference signal.		

- When D10 on the LE-251 lights in red

Name of LED	Ref. No.	Contents	Status	Error status	Remedy	
<b>Lights off</b>						
REFERENCE (REF B)	525	D539	Status of REFERENCE B system	The 525 (NTSC) signal is not inputted to the REF B connector.	All of the 5 LEDs light off. (Reference video signal is not inputted even though the equipment is set in the mode that the cross-points are switched in synchronous with reference signal.)	Input the reference video signal to the REF IN connector. Cancel the mode to switch the cross-points in synchronous with the reference signal. (Set the system to ASYNC.)
	625	D541		The 625 (PAL) signal is not inputted to the REF B connector.		
	1125	D542		The 1125 (HD) signal is not inputted to the REF B connector.		
	750	D544		The 750 (HD) signal is not inputted to the REF B connector.		
	PROGRESSIVE	D529		It is not the progressive reference signal.		

- When D11 on the LE-251 lights in red

Name of LED	Ref. No.	Contents	Status	Error status	Remedy
			<b>Lights off</b>		
REFERENCE (REF C)	525	D546	Status of REFERENCE C system	The 525 (NTSC) signal is not inputted to the REF C connector.	All of the 5 LEDs light off. (Reference video signal is not inputted even though the equipment is set in the mode that the cross-points are switched in synchronous with reference signal.)  Input the reference video signal to the REF IN connector. Cancel the mode to switch the cross-points in synchronous with the reference signal. (Set the system to ASYNC.)
	625	D548		The 625 (PAL) signal is not inputted to the REF C connector.	
	1125	D549		The 1125 (HD) signal is not inputted to the REF C connector.	
	750	D550		The 750 (HD) signal is not inputted to the REF C connector.	
PROGRESSIVE	D530			It is not the progressive reference signal.	

- When D12 on the LE-251 lights in red

Name of LED	Ref. No.	Contents	Status	Error status	Remedy
			<b>Lights off</b>		
REFERENCE (REF D)	525	D552	Status of REFERENCE D system	The 525 (NTSC) signal is not inputted to the REF D connector.	All of the 5 LEDs light off. (Reference video signal is not inputted even though the equipment is set in the mode that the cross-points are switched in synchronous with reference signal.)  Input the reference video signal to the REF IN connector. Cancel the mode to switch the cross-points in synchronous with the reference signal. (Set the system to ASYNC.)
	625	D553		The 625 (PAL) signal is not inputted to the REF D connector.	
	1125	D555		The 1125 (HD) signal is not inputted to the REF D connector.	
	750	D556		The 750 (HD) signal is not inputted to the REF D connector.	
PROGRESSIVE	D532			It is not the progressive reference signal.	

## 2-4. Cleaning Filter

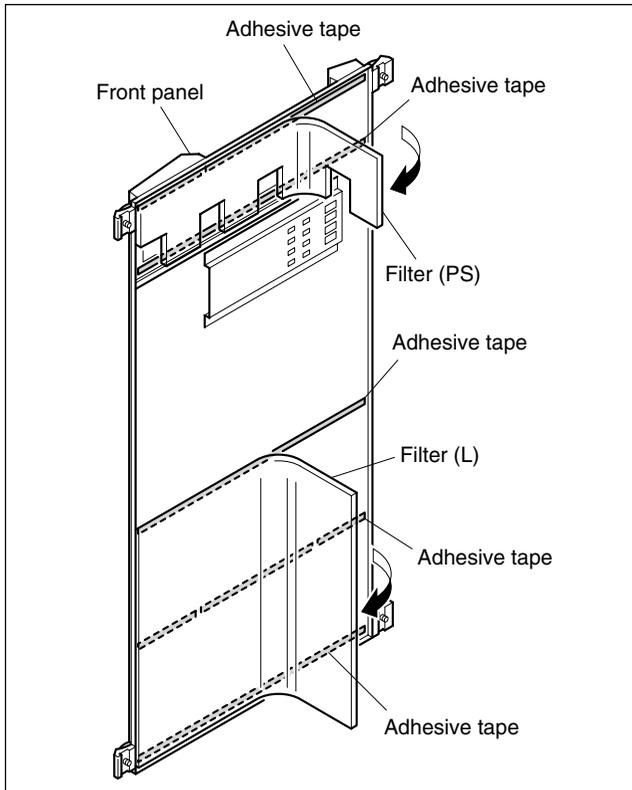
### Note

If dust adheres to the filter, the ventilation holes are blocked and airflow inside the machine is also blocked so that the temperature inside the unit increases. Clean the filter periodically once every two months.

1. Remove the front panel. (Refer to Section 2-2.)
2. Remove the dust from the filter using a vacuum.

### Notes

- If the filter is very dusty, it is recommended to remove the filter from adhesive tape and wash it in water.
  - If the filter is washed in water, dry it completely.
3. Install the front panel. (Refer to Section 2-2.)



## 2-5. CPU Battery

A lithium battery is mounted on the CPU-339 board for backing up RAM and for driving internal watch while the power is turned off.

Replace the battery before the replacement time shown below comes.

Status of usage of this machine	Replacement time
The battery has never been replaced since purchase of this machine.	Non power-on period of this machine is shorter than approx. 3 years. (Because consumption of battery has started already at the time of purchase of this machine.)
The battery is replaced by the new battery last time.	Non power-on period of this machine is approx. 3 years.
This machine has been used with always power-on.	Period of usage of this machine is shorter than 5 years. (Because the battery life is 5 years and the consumption of the battery has already started at the time of purchase of this machine.)

Refer to Maintenance Manual for the replacement procedure of the CPU battery.

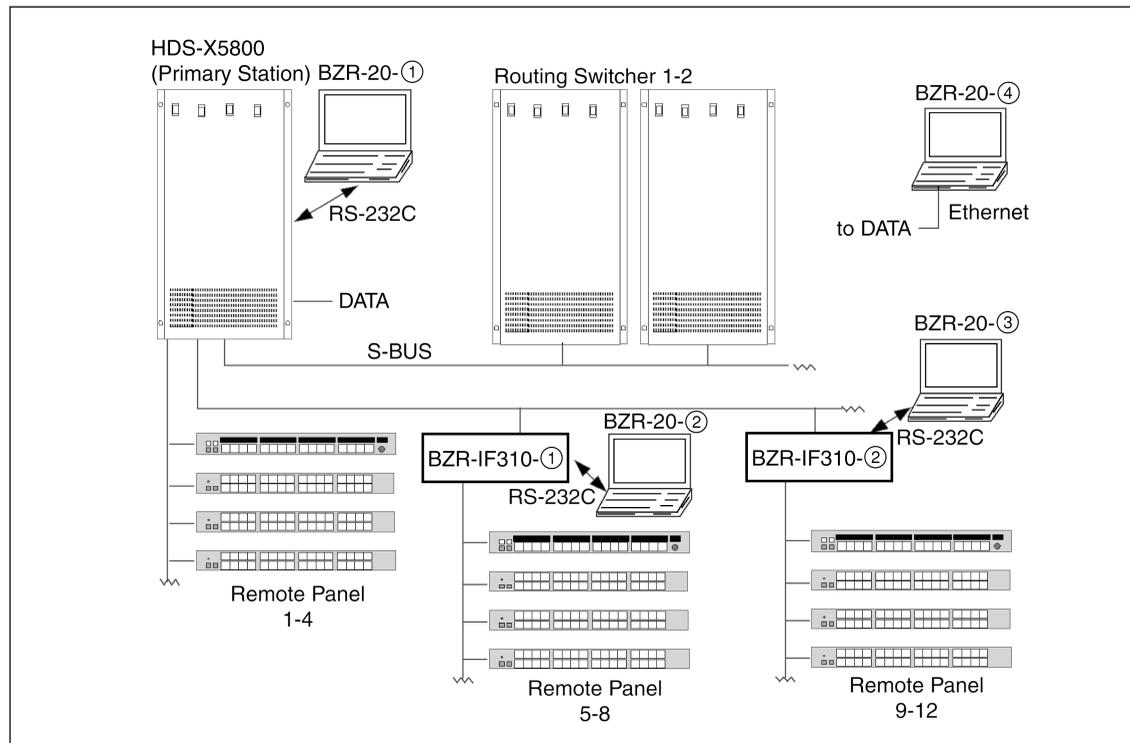
## 2-6. Data Backup

The table data that are set from the personal computer (to be abbreviated as PC hereafter) are stored in the RAM on the CPU-339 board. Backing up the stored data is recommended in the case of emergency such as data are damaged or lost.

Backing up the stored data is performed using the software BZR-20 supplied with the HDS-X5800.

### 2-6-1. Connection

Connect the equipment as shown below for uploading and downloading the stored data.



Method of connecting each BZR-20 that is shown in the illustration, and the stored data that can be uploaded and/or downloaded are described below.

BZR-20	Connection	Connection method	Setup data that can be uploaded/downloaded
BZR-20-①	REMOTE3 connector of the HDS-X5800 and a PC	RS-232C crossover cable (9-pin to 9-pin)	The various setup data of the primary station (HDS-X5800), the Routing Switchers 1 to 2, the Remote Panels 1 to 4, and the BZR-IF310-① to ②
BZR-20-②	Primary station (BZR-IF310-①) and a PC	RS-232C crossover cable (9-pin to 9-pin)	The various setup data of the Remote Panels 5 to 8, and the BZR-IF310-①
BZR-20-③	Primary station (BZR-IF310-②) and a PC	RS-232C crossover cable (9-pin to 9-pin)	The various setup data of the Remote Panels 9 to 12, and the BZR-IF310-②
BZR-20-④	DATA connector of the primary station and a PC	Ethernet	The various setup data of the primary station (HDS-X5800), the Routing Switchers 1 to 2, the Remote Panels 1 to 4, and the BZR-IF310-① to ②

## 2-6-2. Installing BZR-20

The BZR-20 can be used in the IBM PC/AT compatible PC in which Windows 98/2000 is installed.

### Operating environment

Hardware :	IBM PC/AT compatible PC in which Windows 98/2000 is installed
CPU :	Pentium compatible CPU with clock of 233 MHz or higher
Main memory :	64 MB or more
Hard disk empty space :	10 MB or more
Display :	Resolution of 800 × 600 dots or more
Serial I/F :	RS-232C or Ethernet

### Procedure

1. Insert the BZR-20 Disk1 into disk drive of the PC.
2. Copy all of the programs in the Disk1 to any folder in the hard disk.

**Note**

When creating a new folder, be sure to use only alphanumeric characters.

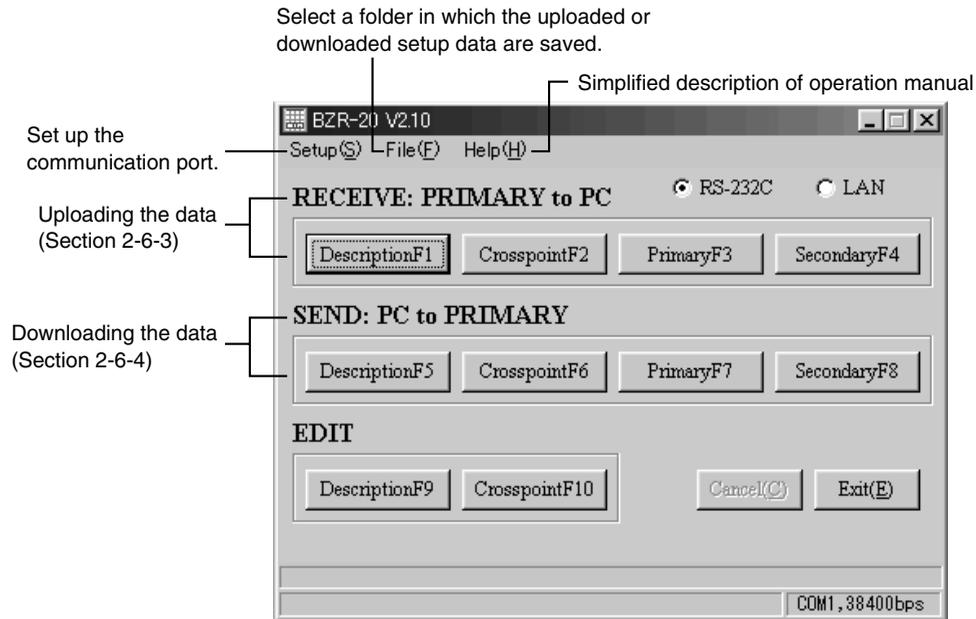
The folder name using any characters other than alphanumeric characters will be corrupted.

3. Remove the Disk1 and insert Disk2.
4. Copy all of the programs in the Disk2 to the same folder as those of the Disk1.
5. Remove the Disk2.
6. Upon completion of copying, double-click the “setup.exe” icon.
7. Installation program starts up. Perform installation following the instructions on screen.

### 2-6-3. Uploading Data

Upload the various setup data of the system equipment is executed from primary stations to a PC.

1. Install the BZR-20 software. (Refer to Section 2-6-2.)
2. Turn on the power of all the equipment on the S-BUS data link.
3. Connect the PC to the REMOTE3 connector or the DATA (Ethernet) connector of the HDS-X5800 (or connect the PC to each equipment). (Refer to Section 2-6-1.)
4. Turn on the power of the PC.
5. Start up the BZR-20 software by clicking the BZR-20 icon. The following menu appears.



6. Select a desired folder (any folder in the hard disk or FD drive) in which the uploaded setup data are saved, from the File (F) menu of the menu bar. Press **OK**.

**Note**

You cannot create a new folder at this step.

7. Select the desired button from “RECEIVE: PRIMARY to PC” column that suits to the contents of the uploaded data and press the button.

**DescriptionF1** : It uploads the names of the total 2048 connectors of the SOURCE (input) and DESTINATION (output) that are assigned to the primary station.

**CrosspointF2** : It uploads the latest cross-point data (1024 sources and 1024 destinations, level: 8) that are saved in the primary station.

**PrimaryF3** : It uploads the setup data that are saved in the primary station. (The data as the secondary station that are stored in the primary station are uploaded at the same time.)

**Note**

When uploading the setup data that are stored in the primary station, name of the connector and the cross-point data are not included.

**SecondaryF4** : It uploads the setup data of the equipment that is connected to the S-BUS remote.

Press **Cancel (C)** to stop uploading.

8. When uploading is completed, press **Exit (E)** and close the BZR-20 window.

### 2-6-4. Downloading Data

Downloads the various setup data that are saved in a PC, to the system equipment through primary station.

1. Install the BZR-20 software. (Refer to Section 2-6-2.)
2. Connect the PC to the HDS-X5800 (or connect the PC to each equipment) and start up the BZR-20 software. (Refer to Section 2-6-3, steps 2 to 5.)
3. Select a desired folder (the folder in the hard disk or FD drive) in which the setup data are saved, from the File (F) menu of the menu bar. Press **OK**.

**Note**

You cannot create a new folder at this step.

4. Select the desired button from “SEND: PRIMARY to PRIMARY” column that suits to the contents of the downloaded data and press the button.

**DescriptionF5** : It downloads the names of the total 2048 connectors of the SOURCE (input) and DESTINATION (output) that are stored in the PC.

**CrosspointF6** : It downloads the latest cross-point data (1024 sources and 1024 destinations, level: 8) that are saved in the PC.

**PrimaryF7** : It returns the setup data of the primary station to the original state. (The data as the secondary station that are stored in the primary station are also returned to the original state.)

**Note**

The name of the connector and the cross-point data are not downloaded.

**SecondaryF8** : It downloads the setup data of the secondary equipment that is connected to the S-BUS remote. Either all of the setup data that are stored in the specified folder, or any single specified secondary station can be selected for downloading.

Press **Cancel (C)** to stop downloading.

5. When downloading is completed, press **Exit (E)** and close the BZR-20 window.

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