SONY. MULTI BIT RATE ROUTING SWITCHER HDS-X3400 HDS-X3600 HDS-X3700

ROUTING SWITCHER CONTROL PANEL **BKS-R3400**

DISTRIBUTION BOARD HKDS-X3010

SDTV SERIAL INPUT BOARD HKDS-X3011

SERIAL INPUT BOARD **HKDS-X3014**

SDTV MATRIX BOARD **HKDS-X3050**

SDTV SERIAL OUTPUT BOARD HKDS-X3051

MATRIX BOARD HKDS-X3060

SERIAL OUTPUT BOARD HKDS-X3064

MAINTENANCE MANUAL Part 1 1st Edition (Revised 1)

≜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ことがあります。 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。

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.

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 angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

AVERTISSEMENT

Ce manual 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-X3400	Serial No. 10001 and Higher
HDS-X3600	Serial No. 10001 and Higher
HDS-X3700	Serial No. 10001 and Higher
BKS-R3400	Serial No. 10001 and Higher
HKDS-X3010	Serial No. 10001 and Higher
HKDS-X3011	Serial No. 10001 and Higher
HKDS-X3014	Serial No. 10001 and Higher
HKDS-X3050	Serial No. 10001 and Higher
HKDS-X3051	Serial No. 10001 and Higher
HKDS-X3060	Serial No. 10001 and Higher
HKDS-X3064	Serial No. 10001 and Higher

CAUTION (For HDS-X3400/X3600/X3700)

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Vorsicht! (Für HDS-X3400/X3600/X3700)

Explosionsgefahr bei unsachgemäßem Austausch der Batterie.

Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

ATTENTION (Pour HDS-X3400/X3600/X3700)

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

ADVARSEL! (Til HDS-X3400/X3600/X3700)

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

Attention-when the product is installed in Rack: (For HDS-X3400/X3600/X3700)

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.

Voor de klanten in Nederland

Dit apparaat bevat een MnO₂-Li batterij voor memory back-up.

Raadpleeg uw leverancier over de verwijdering van de batterij op het moment dat u het apparaat bij einde levensduur afdankt.

Gooi de batterij niet weg. maar lever hem in als KCA.



Bij dit produkt zijn batterijen geleverd. Wanneer deze leeg zijn, moet u ze niet weggooien maar inleveren als KCA.

WARNING

Attaching the BKS-R3400 Routing Switcher Control Panel to the HDS-X3400 disables direct access to the power switch of the HDS-X3400. When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring, or connect the power cord to a socket-outlet which must be provided near the unit and easily accessible, so that the user can turn off the power in case a fault should occur.

WARNUNG

Bei angebrachtem Steuerpult BKS-R3400 ist der Netzschalter der Schalteinheit HDS-X3400 nicht mehr zugänglich.

Beim Einbau des Geräts ist daher im Festkabel ein leicht zugänglicher Unterbrecher einzufügen, oder das Netzkabel muß mit einer in der Nähe des Geräts befindlichen, leicht zugänglichen Wandsteckdose verbunden werden, damit sich bei einer Funktionsstörung die Stromversorgung zum Gerät jederzeit unterbrechen läßt.

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Manual Structure

Purpose of this manual	
-	This manual is the maintenance manual part1 of Multi Bit Rate Routing Switcher
	HSD-X3400/X3600/X3700.
	This manual is intended for use by trained system and service engineers, and
	provides the information that is required to install and maintenance information.
	r
Related manuals	
	Besides this "maintenance manual part 1", the following manuals are available for
	HSD-X3400/X3600/X3700.
	Operation Manual (Supplied with the HDS-X3400/X3600/X3700.)
	This manual describes the outline system connection example and specifications
	Part No.: 3-203-480-0X
	 Installation Manual (Software) (Supplied with the HDS-X3400/X3600/ X3700.)
	This manual describes the software initialization or operation confirmation.
	This manual also describes the information on the main component equipment of a
	routing switcher system as well as this unit.
	Part No.: 3-194-351-0X
	 Maintenance Manual Part 2 (Not supplied with the HDS-X3400/X3600/ X3700.)
	This manual describes the information that premises the parts level
	service(adjustments, schematic diagrams, board layouts, detailed parts list, etc.). If
	this manual is required, please contact your local Sony Sales Office/Service Center.
	Part No: 9-967-892-0X
	Protocol Manual (Not supplied with the HDS-X3400/X3600/X3700.)
	This manual describes the protocol for controlling this unit.
	The manuals below are 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
	ROUTING SWITCHER SYSTEM PROTOCOL AND COMMAND SPECIFICA-
	TIONS
	(Sony cart protocol)
	Part No.: 9-967-261-2X
	DVS-V3232B/6464B Series TECHNICAL MANUAL
	(Sony audio mixer protocol)
	Part No.: 9-967-547-1X

Contents

This manual is organized by following sections.

Section 1 Installation

Explains the information that is required to install (environment, external dimensions, initial setting, etc.).

Section 2 HDS-X3400 Service Overview

Explains fundamental area of the information that is required to service, (removal of cabinet and location of main parts), replace of CPU battery and replacing the main parts.

Section 3 HDS-X3600 Service Overview

Explains fundamental area of the information that is required to service, (removal of cabinet and location of main parts), replace of lithium battery and replacing the main parts.

Section 4 HDS-X3700 Service Overview

Explains fundamental area of the information that is required to service, (removal of cabinet and location of main parts), replace of lithium battery and replacing the main parts.

Section 5 Spare Parts

Describes the parts list including the mounted circuit boards and the repair parts that are required when replacing the major parts.

Section 6 Overall Block Diagrams

Describes the overall block diagram.

Trademarks

Trademarks and registered trademarks used in this manual are follows.

- Ethernet is a registered trademark of Xerox 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 10% to 90% (no condensation) Operating humidity :

Power Supply 1-3.

1-3-1. Power Specifications

HDS-X3700

Power requirements	AC 100 to 240 V $\pm 10\%$
Power frequency	50/60 Hz
Leakage current	AC100 V : 6.2 A (max.)
	AC240 V : 2.6 A (max.)
Inrush current	Power voltage 100 V : 25 A (max.)
	Power voltage 240 V : 80 A (max.)
Power supply capacity	+12 V DC : 41.6 A (max.)
Power consumption	660 VA (max.)

HDS-X3600

Power requirements	AC 100 to 240 V $\pm 10\%$
Power frequency	50/60 Hz
Leakage current	AC100 V : 3.3 A (max.)
	AC240 V : 1.5 A (max.)
Inrush current	Power voltage 100 V : 15 A (max.)
	Power voltage 240 V : 80 A (max.)
Power supply capacity	+12 V DC : 20.8 A (max.)
Power consumption	340 VA (max.)

HDS-X3400

Power requirements	AC 100 to 240 V $\pm 10\%$
Power frequency	50/60 Hz
Leakage current	AC100 V : 0.7 A (max.)
	AC240 V : 0.3 A (max.)
Inrush current	Power voltage 100 V : 20 A (max.)
	Power voltage 240 V : 100 A (max.)

Power supply capacity +12 V DC : 6.3 A (max.) Power consumption 120 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 the customer in the U.S.A. and Canada

Required Parts

- ① Power Cord, 125 V 10 A (2.4 m) : 1-557-377-11
- 2 Plug Holder B (Black) : 2-990-242-01



For the customer in the United Kingdom **Required Parts**

DK-2401 (EK)

- ① Power Cord, 250 V 10 A (2.4 m)
- 2 Plug Holder B (Black) : 2-990-242-01



For the customer in the all European countries except the United Kingdom **Required Parts**

DK-2401 (AE)

- 1) Power Cord, 250 V 10 A (2.4 m)
- ② Plug Holder B (Black) : 2-990-242-01



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 and side of the unit cool the air.

1-4-1. HDS-X3400



1-4-2. HDS-X3600



1-4-3. HDS-X3700



1-5. Installation of Optional Boards

1-5-1. Table of Optional Boards

There are the following optional boards for the HDS-X3400/X3600/X3700 (HDS-X3000 series).

Option name	Function	Application	Board name
HKDS-X3010	Input distribution board	HDS-X3600/X3700	IPM-95 board
HKDS-X3011	SDTV serial input board	HDS-X3400/X3600/X3700	CNI-7 board
HKDS-X3014	Serial input board	HDS-X3400/X3600/X3700	CNI-5 board
HKDS-X3050	SDTV matrix board	HDS-X3600/X3700	MX-101 board
HKDS-X3051	SDTV serial output board	HDS-X3400/X3600/X3700	CNO-10 board
HKDS-X3060	Matrix board	HDS-X3600/X3700	MX-96 board
HKDS-X3064	Serial output board	HDS-X3400/X3600/X3700	CNO-5 board

1-5-2. Installation of Plug-in Boards

CAUTION

Before installing or removing the boards, be sure to turn off both main switches. If the board is attached or removed with the power on, an electric shock may result or the board may be damaged.

- 1. Remove the front panel. (Refer to Sections 2-1, 3-1 and 4-1.)
- 2. Remove the screws, and then remove the wiring terminal drop-safe assembly.
 X3700: B3 × 5 6 pcs.
 X3600/X3400: B3 × 5 4 pcs.
- 3. Insert the plug-in board into the slot with the eject lever open.

Option name	Board name	Application	Slot at the front
HKDS-X3010 input distribution board	IPM-95	HDS-X3600/ X3700	X3600-1, 7 X3700-1, 3, 13, 15
HKDS-X3050 SDTV matrix board	MX-101	HDS-X3600/ X3700	X3600-3, 5 X3700-5, 7, 9, 11
HKDS-X3060 matrix board	MX-96	HKDS-X3600/ X3700	X3600-3, 5 X3700-5, 7, 9, 11

4. While closing the eject lever in the direction of the arrow ①, push in the plug-in board.



Note

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

5. Attach the front panel in reverse order of steps 1 through 2.

1-5-3. Installation of Connector Board

1. Remove the two screws, and then remove the cover panel.



2. Insert the connector board into the slot horizontally and tighten the two attaching screws.

Option name	Board name	Application	Slot at the rear side
HKDS-X3011 SDTV serial input board	CNI-7	HDS-X3400/ X3600/X3700	IN slot
HKDS-X3014 serial input board	CNI-5	HDS-X3400/ X3600/X3700	IN slot
HKDS-X3051 SDTV serial output board	CNO-10	HDS-X3400/ X3600/X3700	OUT slot
HKDS-X3064 serial output board	CNO-5	HDS-X3400/ X3600/X3700	OUT slot



1-6. Installation of Optional Control Panel (HDS-X3400 only)

1-6-1. Installation of Switch Chips

The switch chips (key top sheet) are not supplied with the optional control panel (BKS-R3400).

Make switch chips referring to the illustration shown below.



To attach the switch chips, use the cap pull tool. Tool No. : 3-179-054-01

- 1. Push down the key top on both sides and insert the cap pull tool in the gap between keys and sides.
- 2. Hold the key top to remove it.



- 3. While holding the cap, pull the cap to remove the diffusion plate, switch chip and key top.
- 4. Insert the switch chip (key top sheet) between the diffusion plate (milky white color) and key top (clear), and assemble them by pushing in the key.



1-6-2. Installation of Control Panel

CAUTION

When the BKS-R3400 is installed, the HDS-X3400 cannot be operated because the power supply switch is covered by the panel.

Put another power supply switch or breaker on the AC line. When attaching or removing the board, be sure to turn off the switch on the AC line or disconnect the power cord. If the board is attached or removed with the power on, an electric shock may result or the board may be damaged.

- 1. Remove the front panel. (Refer to Section 2-1.)
- 2. Replace the rack mount tool with the one supplied with the BKS-R3400.



3. Remove the four screws, and then remove the wiring terminal drop-safe assembly.



4. Open the eject levers in the direction of the arrow ① and remove the VSW-68 board.



 Connect the two flat cables (13P) (330 mm) supplied with the BKS-R3400 to the connectors (CN6 and CN7) of the VSW-68 board.

Note

Connect the flat cable so that the terminal side of the flat cable faces the label side.



 Insert the VSW-68 board into the slot with the ejects lever open and push in the board while closing the eject levers in the direction of the arrow ②.

Note

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

Put the two flat cables through the holes of the wiring terminal drop-safe assembly as shown below.

Note

Put the wires through the hole so that the label sides of the flat cables face to the right.



- 8. Attach the wiring terminal drop-safe assembly using the four screws.
- Connect the flat cables to the connectors (CN1 and CN2) of the SW-1001 board of the control panel according to the label.
- 10. After confirming that the power cord is disconnected or the switch on the AC line is turned off, turn on the power supply switch of the HDS-X3400.
- 11. Attach the control panel while being careful to prevent the flat cables from being caught or pulled.
- 12. Fix the control panel using the two screws (with drop-safe).



1-7. Rack Mounting

The HDS-X3400/X3600/X3700 is mounted in the 19-inch standard rack. To mount the HDS-X3400/X3600/X3700 in the rack, use the specified rack mount kit and follow the procedure described below.

Specified rack mount kit : RMM-10

Note

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

Parts of the RMM-10

Rack tool	2 pcs
 Right rack mount adapter 	1 pc
 Left rack mount adapter 	1 pc
 Rack tool attaching screw 	6 pcs
(B4 × 6 : 7-682-560-09)	
 Rack tool attaching screw 	6 pcs
(B4 × 10 : 7-682-560-10)	

Other required parts

To mount in the rack, the rack mount kit RMM-10 and the following part are required.

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

1-7-1. Precautions for Rack Mounting

WARNING

- 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.
- Be sure to use the specified rack mount kit. If not, injury may result and the equipment may fall due to insufficient strength.
- 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 mount in the rack with two persons or more.
- Be careful not to catch your fingers or hands in the rack mount rail or others.
- Mount in the rack in a stable position.

Note

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

1-7-2. Rack Mounting Procedure

This section describes the rack mounting procedure using the RMM-10 rack mount kit.

Note

Tighten the screws to the following torque. Tightening torque : 120×10^{-2} N•m {12.2 kgf•cm}

1. Attach the rack tool to the side of the equipment using the specified six screws.

Note

Use B4 \times 6 screws.



2. Loosen the screws on the rear of the right and left adapters and adjust the length of the adapter according to the depth of the rack.

(The illustration below shows the left adapter.)



Note Maximum depth of adapter : 750 mm Minimum depth of adapter : 595 mm

HDS-X3400/X3600/X3700

3. Attach the right and left adapters to the rack completely using the specified six screws.





- Tighten the screws (B4 × 6 : two screws each on the right and left) for adjusting the length of the adapter completely (the screws that were loosened in step 2).
- 5. Remove the front panel of the equipment. (Refer to Sections 2-1, 3-1 and 4-1.)
- 6. Align the groove of the rack tool at the side of the equipment with the rail, and slide the equipment to the rear.

Note



The rack tools are hooked on the rails as shown below.

7. Fix the rack angle in the rack using the specified screws.





8. Attach the front panel to the equipment. (Refer to Sections 2-1, 3-1 and 4-1.)

1-8. Matching Connectors and Cables

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

Model name/panel indication	Connector name	Application connector/cable		
		Name	Sony part No.	
HDS-X3400 REMOTE 1 REF IN HDS-X3600 REMOTE 1 A/B REMOTE 4 (Monitor) REF A/B IN HDS-X3700 REMOTE 1 A/B/C REMOTE 4 (Monitor) REF A/B IN HKDS-X3011 SDTV Serial VIDEO INPUT 1 to 16 HKDS-X3051 SDTV Serial VIDEO OUTPUT 1 to 16 SDTV Serial VIDEO MONITOR OUTPU	BNC, 75 Ω T	BNC, 75 Ω BELDEN8281 cable	-	
HKDS-X3014 Serial VIDEO INPUT 1 to 16 HKDS-X3064 Serial VIDEO OUTPUT 1 to 16 Serial VIDEO MONITOR OUTPUT	BNC, 75 Ω	BNC, 75 Ω BELDEN1694 cable	-	
HDS-X3400 REMOTE 2 HDS-X3600/X3700 REMOTE 2 A/B	D-sub 9-pin, Female	D-sub 9-pin, Male Connector 9-pin Male Junction Shell 9-pin	1-560-651-00 1-561-749-00	
HDS-X3400/X3600/X3700 REMOTE 3	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	
HDS-X3600/X3700 ALARM	D-sub Mini 15-pin, Female	D-sub Mini 15-pin, Male Connector 15-pin Male Junction Shell 15-pin	-	
HDS-X3400 NETWORK HDS-X3600/X3700 NETWORK A/B	RJ-45 modular jack *1	_	_	

*1 : Conforms to the IEEE 802.3 Ethernet 10BASE-T standards.

1-9. Input and Output Signals of Connectors

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

REMOTE 2 (HDS-X3400) REMOTE 2 A/B (HDS-X3600/X3700) :

RS-422A (D-sub 9-pin, Female)



Pin No.	Signal name	Function	
1	FG	Frame ground	
2	TX (–)	Transmitted data (-)	
3	RX (+)	Received data (+)	
4	GND	Common ground	
5	-	Non connect	
6	GND	Common ground	
7	TX (+)	Transmitted data (+)	
8	RX (–)	Received data (-)	

REMOTE 3 (HDS-X3400/X3600/X3700) :

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

9

Non connect

Pin No.	Signal name	Function	
1	_	Non connect	
2	RX	Received data	
3	ТХ	Transmitted data	
4	DTR	Data terminal ready	
5	GND	Signal ground	
6	DSR	Data set ready	
7	RTS	Request to send	
8	CTS	Clear to send	
9	_	Non connect	

ALARM (HDS-X3600/X3700) : D-sub Mini 15-pin, Female



Pin No.	Signal name	Function
1	GND	Signal ground
2	RELAY-1A	RELAY-1A
3	-	Non connect
4	RELAY-1B	RELAY-1B
5	GND	Signal ground
6	GND	Signal ground
7	-	Non connect
8	-	Non connect
9	-	Non connect
10	GND	Signal ground
11	GND	Signal ground
12	RELAY-2A	RELAY-2A
13	-	Non connect
14	RELAY-2B	RELAY-2B
15	GND	Signal ground

Note

Specifications of the alarm output

Voltage : Maximum DC 20 V between RELAY A and B, and between RELAY and GND

Current : Maximum 0.3 A

Operations : Relationship between the power supply status LED of the unit and ALARM output

Status LED	Lights in green	Flashes in green	Lights in red	Flashes in red
Between RELAY-1 A and B	CLOSE	CLOSE	OPEN	CLOSE
Between RELAY-2 A and B	CLOSE	CLOSE	CLOSE	OPEN

When the main power of the unit is turned off, RELAY-1 and 2 are opened.

NETWORK (HDS-X3400/X3600/X3700) :

10BASE-T (8-pin, Modular jack)

1 8
000000000

- EXT VIEW -

Pin No.	Signal name	Function
1	TDB	Transmitted data B (negative)
2	TDA	Transmitted data A (positive)
3	RDB	Received data B (negative)
4	-	Non connect
5	_	Non connect
6	RDA	Received data A (positive)
7	-	Non connect
8	-	Non connect

1-10. System Connection

1-10-1. S-BUS Data Link

The multi bit rate routing switcher system is connected with the S-BUS data link using a 75Ω 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)*	Multi bit rate routing switcher HDS-X3700 (multi bit rate routing switcher)	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-X3600 (multi bit rate routing switcher) HDS-X3400 (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-R3210 (X-Y control unit) BKS-R3209 (32 button control unit) BKS-R1607 (universal control unit) BKS-R1608 (16 button control unit) BKS-R3206 (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	PC 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 inside the routing switcher.

Note

Switchers other than the HDS-X3000 series can be also set as a primary station. In this case, some functions are limited.



The following flow shows an example of the connection when the HDS-X3700 is set as a primary station.

Precautions for connection

- For the multi bit rate routing switcher that is used as the primary station, set the S/P selector switch on the CPU-317 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-X3000 series) 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 5C-2V 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 REMOTE 1 connectors of each switcher with a 75 Ω terminator.
- Among the REMOTE 1 connectors of the secondary routing switcher, only a single REMOTE 1 connector can be used.
- The REMOTE 4 connectors (monitor line) can be connected to the remote control unit BKS-R1607/ R1608/R3209/R3210 (version 3.00 and higher).

How to use the T-type bridge

The B type of T-type bridge is supplied with the HDS-X3000 series. Prepare coaxial cable (5C-2V) of 50 cm or less and use the T-type bridge as follows.



1-11. Description of Switches/Controls/ LEDs on Boards

1-11-1. CPU-317 Board (HDS-X3400/X3600/ X3700)



(Side A/component side)

① D100 and D101 : ERROR No. display on 7segment LED

The error number is displayed when an error occurs during self-diagnostics. The contents of the respective errors are shown in the following table. When two or more errors occur at the same time, the error No. of the first error is displayed.

Error No.	Contents
00	Normal run
27	The S-BUS line is disconnected (detected whether the line is terminated by 75 Ω or not).
40	Cross-point error Existence/absence detected at the input and output terminals do not agree.
50	Battery backup error The contents of the backup data cannot be guaranteed.
60	Sync signal error The reference video signal cannot be detected even though the sync mode (SYNC) is selected by switch S2-3 on the CPU-317 board.
70	Fan error The fan installed in the unit has stopped.
71	MX fan error The fan installed in the matrix board has stopped.
72	Temperature rise error The temperature inside the unit has risen abnormally.
73	Insufficient power supply capacity The total demand power of the optional board mounted in the unit exceeds the power supply capacity.
80	ROM/RAM error An error occurs when the ROM check-sum and the RAM writing test are performed immediately after reset. The error occurs only once when the ROM version is upgraded. However, the CPU- 317 board is judged defective if the error display does not change even when the system is reset.
FE	Flash writing error The system cannot start because the program was not downloaded normally.
FF	CPU board operation error Normally, the error appears temporarily then disappears when the system is reset. If the error display does not change when the system is reset, the CPU-317 board is defective.

D1 (H-5) : RS-422-A TX LED

Turns on for about 0.15 second when data is output to the RS-422 line of the REMOTE 2A (HDS-X3600/X3700) or the REMOTE 2 (HDS-X3400) connector.

D2 (H-5) : RS-422-A RX LED

Turns on for about 0.15 second when data is received from the RS-422 line of the REMOTE 2A (HDS-X3600/X3700) or the REMOTE 2 (HDS-X3400) connector.

D3 (H-5) : RS-422-B TX LED (HDS-X3600/X3700)

Turns on for about 0.15 second when data is output to the RS-422 line of the REMOTE 2B connector.

D4 (H-5) : RS-422-B RX LED (HDS-X3600/X3700)

Turns on for about 0.15 second when data is received from the RS-422 line of the REMOTE 2B connector.

D5 (H-5) : ACTIVE LED

Turns on when the bus can communicate with the exterior.

D6 (J-5) : PRIMARY LED

Turns on when the CPU-317 board is set to the primary station.

D7 (J-5) : RUN LED

Turns on when the CPU board runs normally.

D8 (J-5) : ERROR LED

Turns on when self-diagnostics are performed periodically and an error occurs. (It turns on in case of a cross-point error, fan stoppage, temperature rise error, insufficient power capacity, ROM/RAM error, disconnection of the S-BUS line (detected whether the line is terminated by 75 Ω or not) or backup CPU/backup power supply unit (HDS-X3600/X3700) operation error with the CPU/power supply installed.)

D9 (H-4) : ACTIVE LED

Turns on when the network can communicate.

D10 (H-4) : 10BASE-T MODE LED

Turns on when the unit is connected to the network by 10BASE-T.

D11 (H-4) : 100BASE-TX MODE LED

Turns on when the unit is connected to the network by 100BASE-TX.

D12 (L-4): RUN LED

Turns on when the CPU board runs normally.

D13 (L-4): FAIL LED

Turns on when a system error occurs in the unit.

D14 (K-4) : DV LED

Displays whether the video reference signal exists or not.

D15 (A-5) : +5 V LED

Turns on when the +5 V power supply operation is normal, and turns off when the operation is abnormal.

D16 (A-5) : +3 V LED

Turns on when the +3 V power supply operation is normal, and turns off when the operation is abnormal.

D18 (A-5) : -5 V LED

Turns on when the -5 V power supply operation is normal, and turns off when the operation is abnormal. (Turns off in the HDS-X3000 series because -5 V power supply operation is not performed.)

D19 (H-4) : RX LED

Turns on when data is received from the modular jack.

D20 (H-4) : TX LED

Turns on when data is output from the modular jack.

D21 (H-4) : LINK LED

Turns on when the network is connected.

D22 (H-4) : COLL LED

Turns on when collision occurred on the network when the network is connected.

D27 (B-5) : +12V LED

Turns on when the +12 V power supply operation is normal, and turns off when the operation is abnormal.

S1 (D-5) : STATION ID setting switch 8-pin piano type switch

This switch is used to set the station address of the unit in the data link when the unit is connected to the S-BUS data link using the REMOTE 1 connector.



indicates the switch lever position.)

S2-2 : The station ID is fixed to "1" when the S/P selector switch is open (primary station).

S2-2 : S/P selector switch is turned close (secondary station), set the station address to any number other than "0", "1" or "255". The address must be selected so that the station address is not duplicated with the address of other secondary stations.



Setting example

Bit Station address	1	2	3	4	5	6	7	8
8	0	0	0	1	0	0	0	0
50	0	1	0	0	1	1	0	0
200	0	0	0	1	0	0	1	1

S2 (E-5) : STATUS setting switch 8-pin piano type switch



Factory setting (indicates the switch lever position.)

BIT1 : REMOTE 1 baud rate switch

This switch is used to set the baud rate of the S-BUS data link connected to the REMOTE 1 connector. The setting of other equipment that is connected to the same S-BUS data link must be the same. When the 1250 kbps baud rate is selected, a 75 Ω terminator must be connected to both ends of the cable.

OPEN : 1250 kbps CLOSE : 312 kbps

BIT2 : S/P selector switch

This switch is used to select whether the unit operates as a primary station or a secondary station when it is connected to the S-BUS data link with the REMOTE 1 connector.

OPEN : PRIMARY (Operates as a primary station.) CLOSE : SECONDARY (Operates as a secondary station.)

BIT3 : SYNC/ASYNC selector switch

This switch selects whether the input video signals are switched synchronously or asynchronously with the reference video signal that is input to the REF IN connector. The unit operates asynchronously even if this switch is set to SYNC, unless the reference video signal is input to the REF IN connector. In this case, this is detected as an error.

OPEN : ASYNC (asynchronous mode) CLOSE : SYNC (synchronous mode)

BIT4 : REMOTE 3 baud rate setting switch

This switch is used to select whether the RS-232C transfer speed is 38400 bps or 9600 bps when the REMOTE 3 connector of the unit is used.

OPEN : 9600 bps CLOSE : 38400 bps

BIT5 : Table data size setting switch

This switch selects either 128 bytes or 32 bytes for the size of the S-BUS table that the primary station outputs. When setting 32 bytes and setting the sync selector of the REF IN A channel to ODD, the S-BUS remote enters the frame sync mode.

In the frame sync mode, the unit ID numbers that can be connected are fixed to 2 to 15.

OPEN : 32 bytes CLOSE : 128 bytes

BIT6 and 7 : Not used.

Use the switches with the default setting (CLOSE) as shipped from the factory.

BIT8 : Debug mode switch

Use the switch normally with the default setting (CLOSE) as shipped from the factory.

S5 (E-5) : TEST rotary switch

This switch is used for adjustment in the factory. Do not change the setting.



Factory setting

1-11-2. CPU-294 Board (HDS-X3600/X3700)



(Side A/component side)

D300 (H-12) : SP LED

The reference status (REF A or B) checked by the status LEDs D301 to D305 is monitored every second, and this LED turns off when the status LEDs are checking REF A, and turns on when the status LEDs are checking REF B.

D301 (H-12) : HD p LED

Turns on when the HDTV progressive signal is input to the REF IN connector.

D302 (H-12) : HD i LED

Turns on when the HDTV interlace signal is input to the REF IN connector.

D303 (H-12) : PAL LED

Turns on when the PAL signal is input to the REF IN connector.

D304 (H-12) : NTSC p LED

Turns on when the NTSC progressive signal is input to the REF IN connector.

D305 (H-12) : NTSC i LED

Turns on when the NTSC interlace signal is input to the REF IN connector.

D503 (J-12) : S-BUS TX LED

Turns on for about 0.15 second when data is output to the REMOTE 1 connector.

D504 (J-12) : S-BUS RX LED

Turns on for about 0.15 second when data for local station is received from the REMOTE 1 connector.

D601 (J-12) : MONITOR S-BUS TX LED

Turns on for about 0.15 second when data is output to the MONITOR S-BUS data link of the REMOTE 1 connector.

D602 (J-12) : MONITOR S-BUS RX LED

Turns on for about 0.15 second when data is input to the MONITOR S-BUS data link of the REMOTE 1 connector.

S3 (K-8) : Not used 4-pin DIP switch



Factory setting (Indicates the switch lever position.)

Use the switch with the default setting (OFF) as shipped from the factory.

1-11-3. VSW-68 Board (HDS-X3400)



(Side A/component side)

1 D1 to D8, D201 to D208 : IN LED

Turns on when a signal is input to each channel (1 to 16), and turns off when a signal is not input.

② D1601 to D1616 : OUT LED

Turns on when a signal is output to each channel (1 to 16), and turns off when a signal is not output.

③ D1801 and D1802 : +5 V LED

Turns on when the +5 V power supply operation is normal, and turns off when the operation is abnormal.

④ D1803 and D1804 : CNI/CNO LED

Turns on when the power supply operation of the connector board is normal, and turns off when the operation is abnormal.

D1617 (D-7) : RC4 LED

Turns on when the re-clockers of channels 13 to 16 are operating.

D1618 (D-7) : RC3 LED

Turns on when the re-clockers of channels 9 to 12 are operating.

D1619 (D-7) : RC2 LED

Turns on when the re-clockers of channels 5 to 8 are operating.

D1620 (C-7) : RC1 LED

Turns on when the re-clockers of channels 1 to 4 are operating.

D2001 (B-8) : +3.3 V LED

Turns on when the +3.3 V power supply operation is normal, and turns off when the operation is abnormal.

D2002 (B-10) : +7 V LED

Turns on when the +7 V power supply operation is normal, and turns off when the operation is abnormal.

D2803 (K-7) : STX LED

Turns on for about 0.5 second when data is output to the S-BUS data link of the REMOTE 1 connector. It turns on continuously when the unit is used as the primary station and when the unit is operated internally if the unit is used as the secondary station.

D2804 (K-7) : SRX LED

Turns on for about 0.5 second when the unit receives data that is addressed to the local station from the S-BUS data link via the REMOTE 1 connector.

S1601 (C-9) : Re-clocker BYPASS CONTROL switch 8-pin DIP switch



Factory setting (indicates the switch lever position.)

BIT1 and 2 : Not used.

Use the switches with the default setting (OFF) as shipped from the factory.

BIT3 : Remote/Local control selector switch

ON : Local OFF : Remote

BIT4 : Not used.

Use the switch with the default setting (OFF) as shipped from the factory.

BIT5 : Channels 13 to 16 BYPASS switch

ON : Channels 13 to 16 BYPASS ON OFF : Channels 13 to 16 BYPASS OFF

BIT6 : Channels 9 to 12 BYPASS switch

ON : Channels 9 to 12 BYPASS ON OFF : Channels 9 to 12 BYPASS OFF

BIT7 : Channels 5 to 8 BYPASS switch

ON : Channels 5 to 8 BYPASS ON OFF : Channels 5 to 8 BYPASS OFF

BIT8 : Channels 1 to 4 BYPASS switch

ON : Channels 1 to 4 BYPASS ON OFF : Channels 1 to 4 BYPASS OFF

RV3001 (C-9) : Control for H-DRV timing adjustment

The control is used to adjust the H-DRV timing during HD-TV reference signal input.

Note

This control does not exist on the boards whose suffix is -11.



⁽Side A/component side)

D1 to D4, D201 to D204, D401 to D404, D601 to D604, D801 to D804, D1001 to D1004, D1201 to D1204, D1401 to D1404 : IN LED

Turn on when a signal is input to each of channels 1 to 32, and turn off when a signal is not input.

② D1801 and D1802 : +5 V LED

Turn on when the +5 V power supply operation is normal, and turn off when the operation is abnormal.

③ D1803 and D1804 : CNI (B)/CNI (A)

Turn on when the power supply operation of the connector board is normal, and turn off when the operation of the connector board is abnormal or the connector board is not installed.

1-11-5. CNI-7 Board (HKDS-X3011)



(Side A/component side)

D301 (E-1) : +5 V LED

Turns on when the +5 V power supply operation is normal, and turns off when the operation is abnormal.

1-11-6. CNI-5 Board (HKDS-X3014)



D301 (E-1) : +5 V LED

Turns on when the +5 V power supply operation is normal, and turns off when the operation is abnormal.

1-11-7. MX-96 Board (HKDS-X3060)



(Side A/component side)

Note

Do not change the settings of the controls that are described as "Factory use only".

① D4801 to D4832 : OUT LED

Turn on when a signal is output from each of channels 1 to 32, and turn off when a signal is not output.

2 D5403 and D5404 : FAN 1/FAN 2 LED

Light in green when the fan on the matrix IC runs normally, and light in red when the fan runs abnormally.

③ D5701, D5702 and D6001 : +5 V LED

Turn on when the +5 V power supply operation is normal, and turn off when the operation is abnormal.

(4) D5703 and D5704 : CNO (A)/CNO (B) LED

Turn on when the power supply operation of the connector board is normal, and turn off when the operation of the connector board is abnormal or the connector board is not installed.

(5) D6009 and D6010: +3 V LED

Turn on when the +3 V power supply operation is normal, and turn off when the operation is abnormal.

D4501 (A-6) : M-OUT LED

Turns on when a signal is output from MONITOR OUT and turn off when a signal is not output.

D4833 (A-2) : RC1 LED

Turns on when the re-clockers of channels 1 to 8 are operating.

D4834 (A-2) : RC2 LED

Turns on when the re-clockers of channels 9 to 16 are operating.

D4835 (A-2) : RC3 LED

Turns on when the re-clockers of channels 17 to 24 are operating.

D4836 (A-2) : RC4 LED

Turns on when the re-clockers of channels 25 to 32 are operating.

S4801 (B-8) : Re-clocker BYPASS CONTROL switch 8-pin DIP switch



Factory setting (indicates the switch lever position.)

BIT1 and 2 : Not used.

Use the switches with the default setting (OFF) as shipped from the factory.

BIT3 : Remote/Local control selector switch

ON : Local OFF : Remote

BIT4 : MONITOR BYPASS switch

ON : MONITOR BYPASS ON OFF : MONITOR BYPASS OFF

BIT5 : Channels 25 to 32 BYPASS switch

ON : Channels 25 to 32 BYPASS ON OFF : Channels 25 to 32 BYPASS OFF

BIT6 : Channels 17 to 24 BYPASS switch

ON : Channels 17 to 24 BYPASS ON OFF : Channels 17 to 24 BYPASS OFF

BIT7 : Channels 9 to 16 BYPASS switch

ON: Channels 9 to 16 BYPASS ON OFF : Channels 9 to 16 BYPASS OFF

BIT8 : Channels 1 to 8 BYPASS switch

ON: Channels 1 to 8 BYPASS ON OFF : Channels 1 to 8 BYPASS OFF

6 RV601 to RV616, RV901 to RV916, RV1201 to RV1216, RV1501 to RV1516 : Factory use only Do not change the default setting (mechanical center) as shipped from the factory. Note

This control does not exist on the boards whose suffix is -11.

1-11-8. CNO-5 Board (HKDS-X3064)



(Side A/component side)

D301 (E-1): +5 V LED

Turns on when the +5 V power supply operation is normal, and turns off when the operation is abnormal.

1-11-9. CNO-10 Board (HKDS-X3051)



(Side A/component side)

D301 (E-1) : +5 V LED

Turns on when the +5 V power supply operation is normal, and turns off when the operation is abnormal.

1-11-10. MX-101 Board (HKDS-X3050)



(Side A/component side)

Note

Do not change the settings of the controls that are described as "Factory use only".

(1) D4801 to D4832 : OUT LED

Turn on when a signal is output from each of channels 1 to 32, and turn off when a signal is not output.

(2) D5403 and D5404 : FAN 1/FAN 2 LED

Light in green when the fan on the matrix IC runs normally, and light in red when the fan runs abnormally.

③ D5701, D5702 and D6001 : +5 V LED

Turn on when the +5 V power supply operation is normal, and turn off when the operation is abnormal.

④ D5703 and D5704 : CNO (A)/CNO (B) LED

Turn on when the power supply operation of the connector board is normal, and turn off when the operation of the connector board is abnormal or the connector board is not installed.

(5) D6009 and D6010: +3 V LED

Turn on when the +3 V power supply operation is normal, and turn off when the operation is abnormal.

D4501 (A-6) : M-OUT LED

Turns on when a signal is output from MONITOR OUT and turn off when a signal is not output.

⑥ RV601 to RV616, RV901 to RV916, RV1201 to RV1216, RV1501 to RV1516 : Factory use only

Do not change the default setting (mechanical center) as shipped from the factory.

Note

This control does not exist on the boards whose suffix is -11.

1-11-11. CKG-28 Board (HDS-X3600)



⁽Side A/component side)

Note

This control does not exist on the boards whose suffix is -11.

RV101 (B-3) : Control for H-DRV timing adjustment

The control is used to adjust the H-DRV timing during HD-TV reference signal input.

1-11-12. CN-1875 Board (HDS-X3700)



(Side A/component side)

Note

This control does not exist on the boards whose suffix is -11.

RV101 (B-3) : Control for H-DRV timing adjustment

The control is used to adjust the H-DRV timing when REF IN A connector input of the HD-TV reference signal.

RV201 (C-3) : Control for H-DRV timing adjustment

The control is used to adjust the H-DRV timing when REF IN B connector input of the HD-TV reference signal.

Section 2 HDS-X3400 Service Overview

2-1. Removing/Installing the Front Panel

Removal

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



Installation

Attach the front panel in reverse order of the removal procedure.

2-2. Location of Main Parts



2-3. Cleaning the Filter

WARNING

Be sure to turn off the power switch and disconnect the power cord from the outlet before starting any work.

CAUTION

- The temperature inside the unit increases if dust adheres to the filter and the ventilation holes are blocked. Touching inside the unit while it is hot may result in burn injuries.
- Clean the filter on the rear of the front panel periodically because the filter tends to gather dust (once every two months).

Procedure

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



Note

If the filter is very dusty, it should be washed in water, and then dried completely.

2-4. Replacing the CPU Battery

2-4-1. Replacing the Lithium Battery (CR2025)

A lithium battery is mounted on the VSW-68 board for backing up RAM data and the internal clock. The lifespan of the battery is about three years under normal use.

The table data set using the control terminal is stored in RAM on the VSW-68 board. Before replacing the lithium battery, back up the settings using the BZR-20 backup software. (Refer to Section 2-5.)

Use the specified battery in the case of replacement.

Ref. No.	Address	Item
BT2201	(L-8)	Lithium battery (CR2025)

Replacement Procedure

(Start)
Upload the data (Refer to Section 2-5-2.)
Replace the battery
Set the clock and download the data
(Refer to the installation manual of ROUTING SWITCHER
SYSTEM.)
(End)

2-4-2. Lithium Battery for Backup (M4T28-BR12SH1)

A lithium battery is mounted on IC41 of the CPU-317 board for backing up the clock. The lifespan of the battery is about ten years under normal use. When the battery needs to be replaced, contact your local Sony Sales Office.

2-5. Data Backup

For Sample Screen of a Personal Computer

In this manual, small letters are used on the sample screens. However, capital letters can be entered unless otherwise specified. When Enter "1" is given, enter only 1. The quotation marks ("") must not be entered.

The letters and symbols on the sample screens have the following meanings.

Sample	Description	
C : ¥>	Message displayed automatically by a program	
install c :	Characters to be typed by user	
Ą	Enter key/Return key	
<u>ц</u>	Space bar (One space is made.)	

2-5-1. Installing BZR-20

The BZR-20 operates in MS-DOS Version 6.2 or DOS mode of Windows 95/98.

Use an IBM PC/AT compatible personal computer in which the terminal software has been already installed.

Note

Quit all applications before starting to install in DOS mode of Windows 95/98.

- 1. Insert the BZR-20 floppy disk (FD) into the FD drive of the personal computer.
- Select the FD drive ("A" drive in this document) containing the BZR-20 FD as the directory.
 C:¥>a:
- 3. Install the BZR-20 software onto the hard disk.

```
A:¥>install c: 🛃
```

4. Enter as follows.

The mode enters the EDIT command, and the PATH is added to the AUTOEXEC.BAT file.

```
A : ¥>c : ৶
C : ¥ROUTER>cd∟.. ৶
C : ¥>edit autoexec.bat৶
PATH C : ¥ ; C : ¥VZ ; C : ¥TOOLS¥BAT ; … ; c : ¥router>
```

- 5. Save the AUTOEXEC.BAT file, then quit the EDIT command.
- 6. Remove the FD from the drive.
- 7. Restart the personal computer.

2-5-2. Data Backup (Uploading)

Note

For details of the menu screens and setting procedure, refer to the installation manual for setting up the routing switcher system.

To obtain the Routing Switcher System Installation Manual, contact your local Sony Sales Office.

- 1. Install the BZR-20 software. (Refer to Section 2-5-1.)
- 2. Turn on the power of all the equipment on the S-BUS data link.
- 3. Connect a personal computer to the REMOTE 3 terminal of the HDS-X3000 series using the RS-232C cross cable (9-pin to 9-pin).
- 4. Turn on the power of the personal computer.
- 5. Start up the terminal software of the personal computer.
- 6. Press the |Ctr|| and |x|| keys at the same time. (Ctrl + x) The menu screen of the primary station is displayed.
- 7. Select "Z: SET UNIT DETECTABLE" and change the settings of the secondary stations to be backed up to "enable".
 - (1) Move the cursor under the ID number of the secondary station whose data is to be backed up.
 - (2) Press the Enter key. A question mark "?" appears.

Note

- A question mark "?" means that the unit is enabled. When the Enter key is pressed again, the question mark "?" disappears.
- Take note of the setup value so that the original setup value can be restored upon completing backup.
- 8. Press the Ctrl and e keys at the same time, and then press the Ctrl and x keys at the same time. (Ctrl + e, Ctrl + x)

The system returns to the menu screen of the primary station.

- 9. Quit the terminal software.
- 10. Insert a formatted FD into the disk drive of the personal computer.
- 11. Enter as follows.

C:¥>a:4		
_A:¥> <u>∗</u> 셑		
≜	Enter "a1".	

Note

"a1" is a command to start the backup software.

Set the REMOTE 3 baud rate switch S2-4 on the CPU-317 board to CLOSE (38400).

12. Enter "1" on the Function menu. ("1. RECEIVE" is selected.) The Execution menu screen is displayed.



13. To back up the data of the primary stations, enter "1" on the Execution menu. ("1. All the data of primary station" is selected.)

To back up the data of the secondary stations, enter "2". ("2. The data of secondary stations" is selected.)

The data is backed up to the FD.

- 14. Enter "9" twice. ("9. Quit" is selected.) The backup mode is terminated.
- 15. Start up the terminal software.
- 16. Press the |Ctrl| and |x| keys at the same time. (Ctrl + x) The menu screen of the primary station is displayed.
- 17. Select "Z : SET UNIT DETECTABLE" and return the settings of the secondary stations to their previous settings (the settings before changing the settings to enabled in step 7).
- 18. Quit the terminal software.

Note

The BZR-1000 cannot be used with the unit.

2-5-3. Data Downloading

After installing the BZR-20 according to Section 2-5-1, perform the following procedures.

- 1. Insert the FD containing the data into the FD drive of the personal computer.
- 2. Enter as follows.



"a1" is a command to start up the backup software. Set the REMOTE 3 baud rate switch S2-4 on the CPU-317 board to CLOSE (38400).

3. Enter "3" on the Function menu. ("3. SEND" is selected.) The Execution menu screen is displayed.



- 4. Enter "1" on the Execution menu. ("1. All the data of primary station" is selected.) The stored data is downloaded to the HDS-X3000 series. To restore the data of the secondary stations, enter "2". ("2. The data of secondary stations" is selected.)
 5. Enter "0" twice. ("0. Ouit" is calcated.)
- 5. Enter "9" twice. ("9. Quit" is selected.) The backup mode is terminated.

2-6. Replacing the Main Parts

WARNING

Be sure to turn off the power switch and disconnect the power cord from the outlet before starting any work. Replacing with the power on may result in electric shock or damage to boards.

2-6-1. Replacing the Power Unit

Removal

- 1. Remove the front panel. (Refer to Section 2-1.)
- 2. Remove the two screws, and then pull out the switching regulator while holding the handle.



Installation

- 1. Attach a new switching regulator in reverse order of the removal procedure.
- Adjust the power supply voltage. (Refer to Section 2-6-3.)

CAUTION

If installation of the power supply unit is incomplete, the contact resistance of the connector increases and can cause damage to parts or smoke. Be sure to tighten the fixing screws of the power supply unit. Do not turn on the main power before the fixing screws have been tightened securely.

2-6-2. Replacing the Fan

(Left fan)

Removal

- 1. Loosen the attaching screw, and then pull out the fan assembly while holding the attaching screw.
- 2. Disconnect the fan harness from the connector (CN1) of the HN-271 board.
- 3. Remove the two screws (P4 \times 6), and then remove the fan.



Installation

Attach a new fan in reverse order of the removal procedure.

(Right fan) Removal

- 1. Loosen the two attaching screws, and then pull out the CN assembly while holding the attaching screws.
- 2. Loosen the wiring terminal drop-safe on the CN-1888 board, and then disconnect the fan connector from the connector (CN6).
- 3. Remove the two screws (P4 \times 6), and then remove the fan.



Installation

Attach a new fan in reverse order of the removal procedure.

2-6-3. Adjusting the Power Supply Voltage

Note

When installing the unit, changing the board layout or replacing the power supply unit, be sure to adjust the power supply voltage.

Required equipment : Digital voltmeter

Adjustment Procedure

- 1. Remove the front panel. (Refer to Section 2-1.)
- 2. Remove the four screws, and then remove the wiring terminal drop-safe assembly. (Refer to Section 1-5-2.)
- Connect the digital voltmeter to the GND terminal (CNT-7) and +12 V terminal (CNT-8) on the CPU-317 board.



- 4. Turn on the power of the power supply unit.
- 5. Adjust the adjustment volume of the power supply unit so that the voltage satisfies the specifications.

Specifications : +12.0 ± 0.1 V



Procedure after Adjustment

- 1. Remove the digital voltmeter.
- 2. Attach the wiring terminal drop-safe assembly using the four screws. (Refer to Section 1-5-2.)
- 3. Attach the front panel. (Refer to Section 2-1.)

Section 3 HDS-X3600 Service Overview

3-1. 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

Attach the front panel in reverse order of the removal procedure.

3-2. Location of Main Parts



3-3. Cleaning the Filter

For details of cleaning the filter, refer to Section 2-3.

3-4-1. Replacing the Lithium Battery (CR2025)

A lithium battery is mounted on the CPU-294 board for backing up RAM data and the internal clock.

The lifespan of the battery is about three years under normal use.

The table data set using the control terminal is stored in RAM on the CPU-294 board.

Before replacing the lithium battery, back up the settings using the BZR-20 backup software. (Refer to Section 2-5.)

Use the following battery for replacement.

Ref. No.	Address	Item
BT100	(J-12)	Lithium battery (CR2025)

Replacement Procedure



3-4-2. Lithium Battery for Backup (M4T28-BR12SH1)

A lithium battery is mounted on IC41 of the CPU-317 board for backing up the clock.

The lifespan of the battery is about ten years under normal use.

When the battery needs to be replaced, contact your local Sony Sales Office.

3-5. Data Backup

For details of data backup, refer to Section 2-5.

3-6. Replacing the Main Parts

WARNING

Be sure to turn off the power switch and disconnect the power cord from the outlet before starting any work. Replacing with the power on may result in electric shock or damage to boards.

3-6-1. Replacing the Power Unit

Removal

- 1. Remove the front panel. (Refer to Section 3-1.)
- 2. Remove the two screws, and then pull out the switching regulator while holding the handle.



Installation

Attach a new switching regulator in reverse order of the removal procedure.

CAUTION

If installation of the power supply unit is incomplete, the contact resistance of the connector increases and can cause damage to parts or smoke. Be sure to tighten the fixing screws of the power supply unit. Do not turn on the main power before the fixing screws have been tightened securely.

3-6-2. Replacing the Fan

Removal

1. Loosen the two screws of the fan to be replaced, and then pull out the fan while holding the handle.



- 2. Remove the two screws (PSW3 \times 5), and then remove the fan panel.
- 3. Remove the two screws (B3 \times 5), and then remove the fan fixing plate.
- 4. Remove the fan and disconnect the connector (CN2) from the HN-276 board.



Installation

Attach a new fan in reverse order of the removal procedure.

3-6-3. Adjusting the Power Supply Voltage

Note

When installing the unit, changing the board layout or replacing the power supply unit, be sure to adjust the power supply voltage.

Required equipment : Digital voltmeter

Adjustment Procedure

- 1. Remove the front panel. (Refer to Section 3-1.)
- 2. Remove the four screws, and then remove the wiring terminal drop-safe assembly. (Refer to Section 1-5-2.)
- Connect the digital voltmeter to the GND terminal (CNT-7) and +12 V terminal (CNT-8) on the CPU-317 board.



4. Turn on the power of the main power supply unit (upper unit), and then turn off the backup power supply unit (lower unit).

5. Adjust the adjustment volume of the main power supply unit so that the voltage satisfies the specifications.

Specifications : +11.95 \pm 0.05 V



- 6. Turn off the power of the main power supply unit, and then turn on the backup power supply unit.
- 7. Adjust the backup power supply unit in the same way as step 5.
- 8. Turn on the powers of the main power supply unit and backup power supply unit and confirm that the power supply voltage satisfies the specifications.

Specifications : +12.0 ± 0.1 V

Procedure after Adjustment

- 1. Remove the digital voltmeter.
- 2. Attach the wiring terminal drop-safe assembly using the four screws. (Refer to Section 1-5-2.)
- 3. Attach the front panel. (Refer to Section 3-1.)

Section 4 HDS-X3700 Service Overview

4-1. 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

Attach the front panel in reverse order of the removal procedure.

4-2. Location of Main Parts



4-3. Cleaning the Filter

For details of cleaning the filter, refer to Section 2-3.

4-4. Replacing the CPU Battery

4-4-1. Replacing the Lithium Battery (CR2025)

For details of replacing the lithium battery, refer to Section 3-4-1.

4-4-2. Lithium Battery for Backup (M4T28-BR12SH1)

A lithium battery is mounted on the IC41 of the CPU-317 board for backing up the clock.

The lifespan of the battery is about ten years under normal use.

When the battery needs to be replaced, contact your local Sony Sales Office.

4-5. Data Backup

For details of data backup, refer to Section 2-5.

4-6. Replacing the Main Parts

WARNING

Be sure to turn off the power switch and disconnect the power cord from the outlet before starting any work. Replacing with the power on may result in electric shock or damage to boards.

4-6-1. Replacing the Power Unit

Removal

- 1. Remove the front panel. (Refer to Section 4-1.)
- 2. Remove the three screws, and then pull out the switching regulator while holding the handle.



Installation

- 1. Attach a new switching regulator in reverse order of the removal procedure.
- Adjust the power supply voltage. (Refer to Section 4-6-3.)

CAUTION

If installation of the power supply unit is incomplete, the contact resistance of the connector increases and can cause damage to parts or smoke. Be sure to tighten the fixing screws of the power supply unit. Do not turn on the main power before the fixing screws have been tightened securely.

4-6-2. Replacing the Fan

(Side fans) Removal

- 1. Loosen the two attaching screws.
- 2. Pull out the fan while holding the attaching screws.



- 3. Remove the screw (PSW3 × 8), and then remove the HN-273 board.
- 4. Remove the connector. In case of fan 1 : CN3 In case of fan 2 : CN2 In case of fan 3 : CN1
- 5. Remove the two screws (B3 \times 5) securing the fan, and then remove the fan.



Installation

Attach a new fan in reverse order of the removal procedure.

Notes

- Pay attention to the ventilation direction.
- When attaching the fan, push in the harness between the fan and panel so that the harness is not caught.

(Right fan)

Removal

- 1. Remove the six screws, and then remove the fan cover.
- 2. Remove the connector of the fan to be replaced.
 - In case of fan 4 : CN3 In case of fan 5 : CN2
 - In case of fan 6 : CN1



3. Remove the two screws, and then remove the fan.

Installation

Attach a new fan in reverse order of the removal procedure.

Notes

- Pay attention to the ventilation direction.
- When attaching the fan, push in the harness between the fan and panel so that the harness is not caught.

4-6-3. Adjusting the Power Supply Voltage

Note

When installing the unit, changing the board layout or replacing the power supply unit, be sure to adjust the power supply voltage.

Required equipment : Digital voltmeter

Adjustment Procedure

- 1. Remove the front panel. (Refer to Section 4-1.)
- 2. Remove the six screws, and then remove the wiring terminal drop-safe assembly. (Refer to Section 1-5-2.)
- Connect the digital voltmeter to the GND terminal (CNT-7) and +12 V terminal (CNT-8) on the CPU-317 board.



4. Turn on the power of the main power supply unit (upper unit), and then turn off the backup power supply unit (lower unit).

5. Adjust the adjustment volume of the main power supply unit so that the voltage satisfies the specifications.

Specifications : +11.95 ± 0.05 V



- 6. Turn on the power of the main power supply unit, and then turn off the backup power supply unit.
- 7. Adjust the backup power supply unit in the same way as step 5.
- 8. Turn on the powers of the main power supply unit and backup power supply unit and confirm that the power supply voltage satisfies the specifications.

Specifications : +12.0 ± 0.1 V

Procedure after Adjustment

- 1. Remove the digital voltmeter.
- 2. Attach the wiring terminal drop-safe assembly using the six screws. (Refer to Section 1-5-2.)
- 3. Attach the front panel. (Refer to Section 4-1.)

Section 5 Spare Parts

5-1. Notes on Repair Parts

1. Safety Related Components Warning WARNING

The components identified by the △ mark in the schematic diagram, exploded view and electrical parts list are critical to safe operation. If the specified parts are not used, fire or electric shock may result.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.

Parts list has the present standardized repair parts.

3. Stock of Parts

Parts marked with "o" at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

5-2. Spare Parts

When replacing the plug-in boards or main parts, use the following parts.

Plug-in Boards

Model name (board name)	Parts for replacement
HDS-X3400	
CN-1877 board	A-8323-968-A
CN-1888 board	A-8323-969-A
CPU-317 board	A-8323-982-A : Replace with the VSW-68 board
VSW-68 board	
HDS-X3600	
CKG-28 board	A-8323-979-A
HN-269 board	A-8323-960-A
CPU-294 board	A-8323-980-A : Replace with the CPU-294 board
CPU-317 board	
HDS-X3700	
CN-1875 board	A-8323-981-A
CPU-294 board	A-8323-980-A : Replace with the CPU-294 board
CPU-317 board	
BKS-R3400	
SW-1001 board	Replace with commercially available products
HKDS-X3010	
IPM-95 board	Replace with commercially available products
HKDS-X3011	
CNI-7 board	Replace with commercially available products
HKDS-X3014	
CNI-5 board	Replace with commercially available products
HKDS-X3050	
MX-101 board	Replace with commercially available products
HKDS-X3051	
CNO-10 board	Replace with commercially available products
HKDS-X3060	
MX-96 board	Replace with commercially available products
HKDS-X3064	
CNO-5 board	Replace with commercially available products

Main Parts

Model name (board name)	Parts for replacement	
HDS-X3400		
Switching regulator DC fan	1-468-481-11 1-698-667-11	
HDS-X3600		
Switching regulator DC fan	1-468-480-11 1-698-890-11	
HDS-X3700		
Switching regulator DC fan	1-468-479-11 1-698-890-11	

Section 6 Overall Block Diagrams

6-1. HDS-X3400



6-2. HDS-X3700





6-3. HDS-X3600



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SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5 mA. Leakage current can be measured by any one of three methods.

- A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
- 2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
- 3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 5.25 V, so analog meters must have an accurate lowvoltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20 V AC range are suitable. (See Fig. A)



HDS-X3400 (SY) HDS-X3600 (SY) HDS-X3700 (SY) E 3-203-538-02

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