Section 1
Service Overview

1-1. Checking before Installation

1-1-1. Checking the ROM and Software Version

When connecting the peripheral equipment in the list below to HDC1000/1500, be sure to check that the ROM and software version on each peripheral device is corresponding to the camera to be connected.
If the ROM and software version is lower than the specified below, be sure to perform ROM replacement and updating the software.
If ROM replacement and updating the software are required, contact your local Sony Sales Office/Service Center.

ROM

Peripheral equipment	Board name	Ref No.	Rom version
MSU-700A/750	CPU-293/CPU-286	IC5, IC6/IC5, IC6	Ver. 1.30 or higher
CNU-700	AT-89 or AT-89A	IC4, IC5	Ver. 3.20 or higher
CNU-500	AT-100	IC4, IC5	Ver. 2.80 or higher
RCP-720/721	MPU-79	IC10	Ver. 2.90 or higher
RCP-730/731	MPU-79	IC10	Ver. 2.90 or higher
RCP-740/741	MPU-79	IC10	Ver. 2.90 or higher
RCP-700/701	MPU-92	IC6	Ver. 2.90 or higher
RM-B150	CPU-266	IC4	Ver. 1.00 or higher

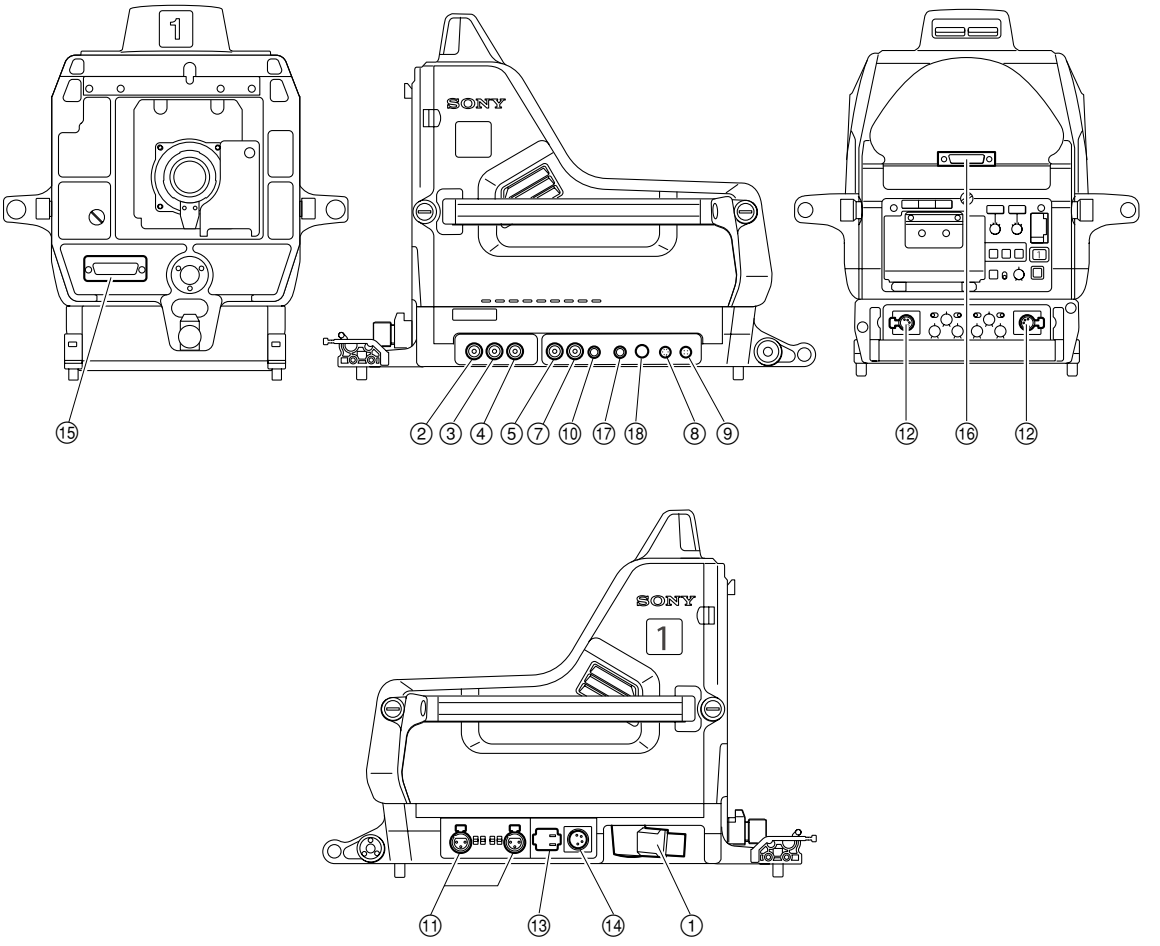
Software

Peripheral equipment	Board name	Software version
RCP-750/751	MPU-123	Ver. 1.21 or higher
RM-B750	MPU-124	Ver. 1.00 or higher
HDCU1000	AT-141	Ver. 1.21 or higher
HDCU1500	AT-149	Ver. 1.00 or higher
MSU-900	CPU-396	Ver. 1.02 or higher

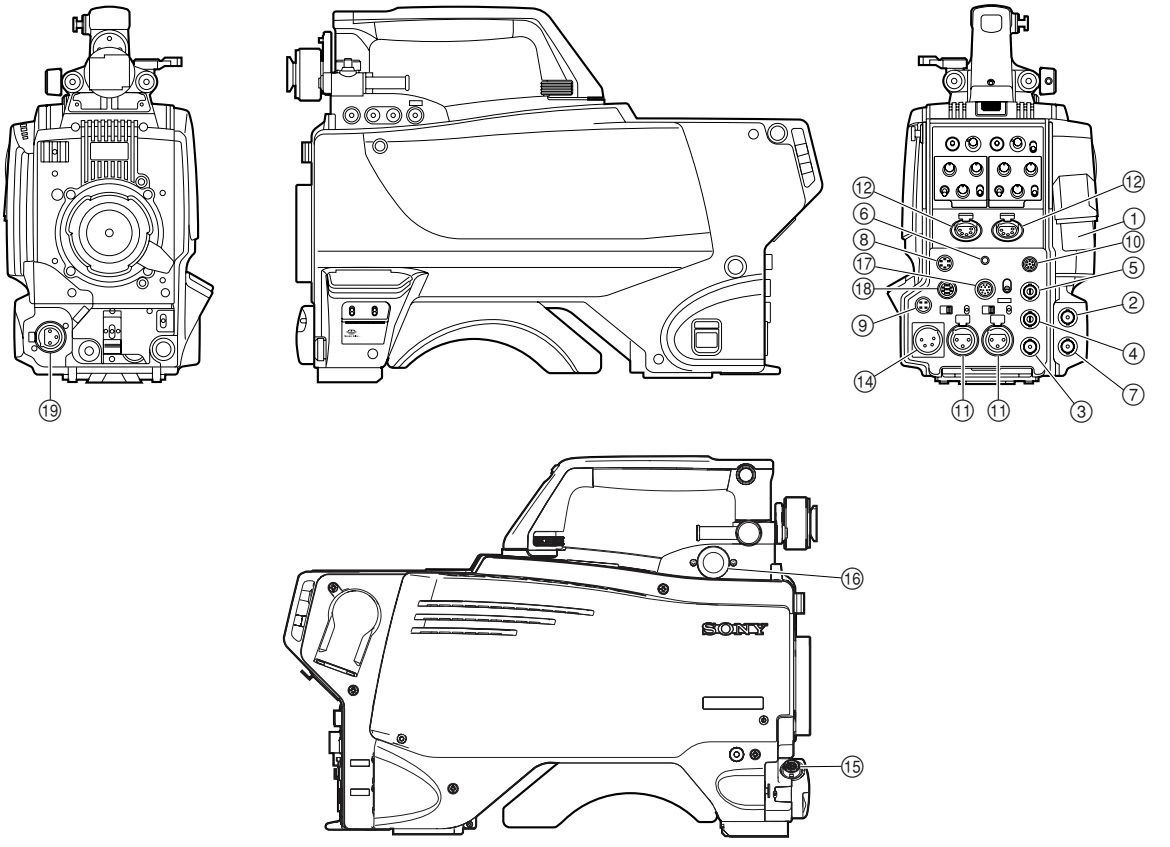
1-2. Connectors and Cables

1-2-1. Connector Input/Output Signals

HDC1000 Connector Layout



HDC1500 Connector Layout



Input/Output Signals

① CCU connector

BTA S-004A/005A/006A compliant 1.485 Gbps serial

Output Signals

② SDI 1

HD SDI signal
BTA-S004A compliant
BNC type 75 Ω, 0.8 V p-p 1.485 Gbps

③ SDI 2

HD SDI signal
BTA-S004A compliant
BNC type 75 Ω, 1.0 V p-p
or
SD SDI signal

④ TEST OUT

BNC type 75 Ω, 1.0 V p-p

⑤ PROMPTER OUT

BNC type 75 Ω, 1.0 V p-p

⑥ EARPHONE OUT (HDC1500)

EARPHONE mini jack

Input Signals

⑤ GENLOCK IN (HDC1500)

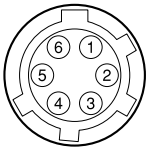
BNC type 75 Ω, 1.0 V p-p

⑤ RET IN (HDC1500)

BNC type 75 Ω, 1.0 V p-p

⑦ Not used

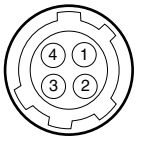
⑧ RET CONTROL (6P FEMALE)



(External view)

No.	Signal	I/O	Specifications
1	INCOM 1 MIC-ON/OFF	IN	Zi ≧ 10 kΩ ON : GND OFF : OPEN
2	INCOM 2 MIC-ON/OFF	IN	Zi ≧ 10 kΩ ON : GND OFF : OPEN
3	GND	——	
4	RET 3-ON/OFF	IN	Zi ≧ 10 kΩ ON : GND OFF : OPEN
5	RET 1-ON/OFF	IN	Zi ≧ 10 kΩ ON : GND OFF : OPEN
6	RET 2-ON/OFF	IN	Zi ≧ 10 kΩ ON : GND OFF : OPEN

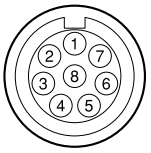
⑨ DC OUT (4P FEMALE)



(External view)

No.	Signal	I/O	Specifications
1	UNREG GND	——	GND for POWER
2	NC		No connection
3	NC		No connection
4	UNREG	OUT	+12 V dc 500 mA (max)

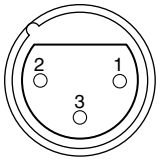
⑩ REMOTE (8P FEMALE)



(External view)

No.	Signal	I/O	Specifications
1	TX-RCP-DATA (X)	OUT	HDC SERIAL DATA
2	TX-RCP-DATA (Y)	OUT	
3	RX-RCP-DATA (X)	IN	HDCU/MSU/RCP/CNU/VCS
4	RX-RCP-DATA (Y)	IN	SERIAL DATA
5	TX-GND	——	GND for TX
6	UNREG-OUT	OUT	+26 V, 200 mA (max)
7	UNREG-GND	——	GND for UNREG-OUT
8	RCP-PIX	OUT	75 Ω, 1.0 V p-p (SD Video)
	CHASSIS GND	——	CHASSIS GND

⑪ AUDIO IN CH1/CH2 (3P FEMALE)

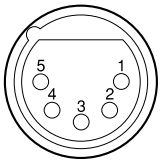


(External view)

No.	Signal	I/O	Specifications
1	AUDIO 1/2 (G)	——	–60 dBu, –50 dBu, –40 dBu,
2	AUDIO 1/2 (X)	IN	–30 dBu, –20 dBu, selectable
3	AUDIO 1/2 (Y)	IN	High impedance, Balanced

(0 dBu = 0.775 Vrms)

⑫ INTERCOM 1/2 (5P FEMALE)

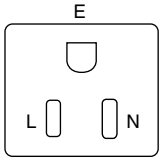


(External view)

No.	Signal	I/O	Specifications
1	EXT-INCOM-T (Y)	IN	–20 dBu (CARBON MIC)
2	EXT-INCOM-T (X)	IN	–60 dBu (DYNAMIC MIC)
3	GND	——	
4	EXT-INCOM-R (X)	OUT	0 dBu
5	EXT-INCOM-PGM (X)	OUT	0 dBu

(0 dBu = 0.775 Vrms)

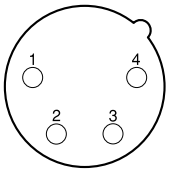
⑬ AC OUT (HDC1000) (For service personnel only)



(External view)

No.	Signal	I/O	Specifications
E	GND	——	CHASSIS GND
N	UTL (C)	OUT	AC 100 V, 200 VA or below
L	UTL (H)	OUT	

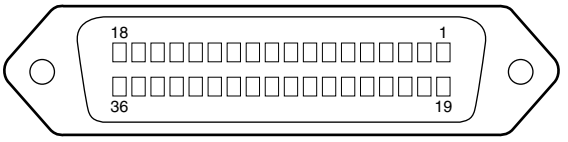
⑭ DC IN (4P MALE)



(External view)

No.	Signal	I/O	Specifications
1	EXT_DC (C)	——	GND for DC (+)
2	NC		No connection
3	NC		No connection
4	EXT_DC (H)	IN	+10.5 to 17 V dc

⑮ LENS (36P FEMALE) (HDC1000)



(External view)

No.	Signal	I/O	Specifications
1	NC		No connection
2	NC		No connection
3	NC		No connection
4	LENS +12 V	OUT	+12 V (at 2 A)
5	GND (LENS)	——	GND for +12 V (LENS)
6	GND (SIG)	——	GND
7	NC		No connection
8	LENS-EXT-A	IN	*2
9	LENS-EXT-B	IN	*2
10	LENS-EXT-C	IN	*2
11	LENS-SERVO	OUT	ON : GND OFF : High impedance
12	IRIS-POSI	IN	Zi ≧ 10 kΩ 2 to 7 V “3.4 ± 0.1 V (F16)” “6.2 ± 0.1 V (F2.8)”
13	ZOOM-POSI	IN	Zi ≧ 10 kΩ 2 to 7 V “2 V (WIDE), 7 V (TELE)”
14	RET 1-ON	IN	Zi ≧ 10 kΩ ON : GND OFF : High impedance
15	RET 2-ON	IN	Zi ≧ 10 kΩ ON : GND OFF : High impedance
16	FOCUS-POSI	IN	Zi ≧ 10 kΩ 2 to 7 V “2 V (MIN), 7 V (∞)”
17	IRIS-CONT	OUT	2 to 7 V “3.4 ±0.1 V (F16)” “6.2 ±0.1 V (F2.8)” Zo ≦ 1 kΩ
18	IRIS-AUTO /MANU	OUT	AUTO : GND MANU : High impedance Zo ≦ 1 kΩ
19	NC		No connection
20	NC		No connection
21	LENS R TALLY	OUT	ON : GND OFF : High impedance Zo ≦ 1 kΩ
22	LENS-PUPIL-POSI	IN	Zi ≧ 10 kΩ 1 to 4 V 1 V : –7.5° 4 V : +7.5°
23	RET 3-ON	IN	Zi ≧ 10 kΩ ON : GND OFF : High impedance
24	LENS-ADR-A	IN	*1
25	LENS-ADR-B	IN	*1
26	LENS-ADR-C	IN	*1
27	LENS-ADR-D	IN	*1
28	EXT 1-ON	OUT	ON : GND OFF : High impedance
29	EXT 2-ON	OUT	ON : GND OFF : High impedance
30	F DEM (FAR)	IN	No connection
31	INCOM 1-ENG/PROD	IN	Zi ≧ 10 kΩ ENG : GND PRD : High impedance
32	INCOM 2-ENG/PROD	IN	Zi ≧ 10 kΩ ENG : GND PRD : High impedance
33	INCOM 1-MIC-ON	IN	Zi ≧ 10 kΩ ON : GND OFF : High impedance
34	INCOM 2-MIC-ON	IN	Zi ≧ 10 kΩ ON : GND OFF : High impedance
35	F-CONT-SIG	OUT	No connection
36	F-DEM (NEAR)	IN	No connection

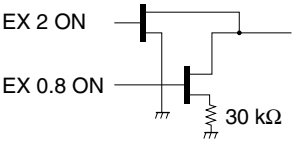
*1 Zi ≧ 10 kΩ
1 : High impedance
0 : 0 $^{+0.5}_{-0}$ V
LENS ADRS 0 (low-order bit)
LENS ADRS 3 (high-order bit)

*2 Zi ≧ 10 kΩ
1 : High impedance
0 : 0 ±0.5 V

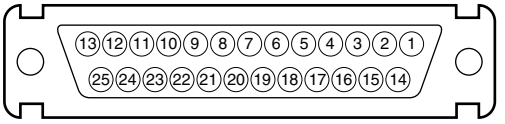
EX1	EX2	EX3	MODE
1	1	1	EXTENDER OFF
1	0	1	EXT-1 (× 1.5) ON
0	1	1	EXT-2 (× 2) ON
0	0	1	EXT-3 (× 2.5) ON

⑮ LENS (12P FEMALE) (HDC1500)

(External view)

No.	Signal	I/O	Specifications
1	RET VIDEO ENABLE	IN	ENABLE : 0 V DISABLE : +5 V or OPEN
2	VTR CTL	IN	ENABLE : 0 V DISABLE : +5 V or OPEN
3	GND	——	GND for UNREG
4	SERVO MA/AT	OUT	AUTO : +5 V MANU : 0 V or OPEN
5	IRIS POSITION	OUT	+3.4 V (F16) to +6.2 V (F2.8)
6	UNREG	OUT	+10.5 V to +17 V
7	IRIS POSITION	IN	+3.4 V (F16) to +6.2 V (F2.8)
8	IRIS AT/MA	OUT	AUTO IRIS : 0 V MANUAL IRIS : +5 V
9	EXTENDER ON/OFF	IN	EX 2 ON : GND EX 0.8 ON : 30 kΩ to GND OFF : OPEN 
10	ZOOM POSITION	IN	WIDE : 2 V TELE : 7 V
11	FOCUS POSI (/LENS RX)	IN	∞ : 7 V min. : 2 V
12	(LENS TX)	OUT	

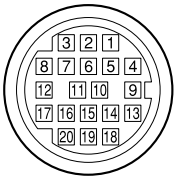
⑯ VF (25P FEMALE) (HDC1000)



(External view)

No.	Signal	I/O	Specifications
1	VF-Y (X)	OUT	1.0 V p-p, Zo = 75 Ω
2	VF-GND (Pr)	——	GND for VF-Pr (X)
3	VF-Pr (X)	OUT	0.7 V p-p, Zo = 75 Ω
4	VF-GND (Pb)	——	GND for VF-Pb (X)
5	VF-Pb (X)	OUT	0.7 V p-p, Zo = 75 Ω
6	PEAKING LEVEL	IN	0 to 5 V dc
7	VF-UNREG	OUT	+10.5 to +20 V
8	VF-UNREG		
9	NC		No connection
10	S-DATA	IN/OUT	TTL level
11	TALLY (R)-VF	OUT	ON : +5 V OFF : 0 V
12	EFFECT	OUT	ON : +5 V OFF : 0 V
13	NC		No connection
14	VF-GND (Y)	——	GND for VF-Y (X)
15	S-CK	OUT	TTL level
16	BATT IND	OUT	ON : +5 V OFF : 0 V
17	CHASSIS GND	——	GND
18	TALLY (G)-VF	OUT	ON : +5 V OFF : 0 V
19	GND (UNREG)	——	GND for VF-UNREG
20	GND (UNREG)		
21	VF-SEL	IN	BW : 0 V COLOR : +5 V
22	H EXPAND	OUT	ON : GND OFF : +5 V
23	NC		No connection
24	NC		No connection
25	V EXPAND	OUT	ON : GND OFF : +5 V

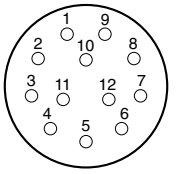
⑯ VF (20P FEMALE) (HDC1500)



(External view)

No.	Signal	I/O	Specifications
1	S-DATA	IN/OUT	TTL level
2	NC		No connection
3	NC		No connection
4	SCK	OUT	TTL level
5	NC		No connection
6	NC		No connection
7	NC		No connection
8	G TALLY	OUT	ON : 5 V OFF : GND
9	NC		No connection
10	NC		No connection
11	NC		No connection
12	Y VIDEO	OUT	1.0 V p-p, Zo = 75 Ω
13	VIDEO GND	——	GND for VIDEO
14	Pb VIDEO	OUT	±0.35 V p-p, Zo = 75 Ω
15	Pr VIDEO	OUT	±0.35 V p-p, Zo = 75 Ω
16	NC		No connection
17	R TALLY	OUT	ON : 5 V OFF : GND
18	NC		No connection
19	UNREG GND	——	GND for UNREG
20	UNREG	OUT	+10.5 V to +17 V

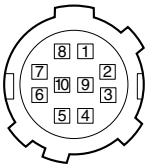
⑰ CRANE (12P FEMALE)



(External view)

No.	Signal		I/O	Specifications
1	Pr VIDEO (X)		OUT	±0.35 V p-p, Zo = 75 Ω
2	Pb VIDEO (X)		OUT	±0.35 V p-p, Zo = 75 Ω
3	NC			No connection
4	TRUNK	TX DATA 1	OUT	for RS-232C DATA
		or		
		TX DATA 0 (Y)	OUT	for RS-422A DATA
5	TRUNK	TX DATA 0	OUT	for RS-232C DATA
		or		
		TX DATA 0 (X)	OUT	for RS-422A DATA
6	TRUNK	RX DATA 0	IN	for RS-232C DATA
		or		
		RX DATA 0 (X)	IN	for RS-422A DATA
7	TRUNK	RX DATA 1	IN	for RS-232C DATA
		or		
		RX DATA 0 (Y)	IN	for RS-422A DATA
8	GND (VIDEO)		——	GND for VIDEO
9	Y VIDEO (X)		OUT	1.0 V p-p, Zo = 75 Ω
10	GND		——	GND for SCL/SDA
11	SCL EXT-VF		OUT	TTL level
12	SDA EXT-VF		IN/OUT	TTL level

⑱ TRACKER (10P FEMALE)

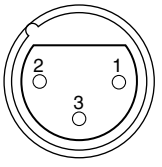


(External view)

No.	Signal	I/O	Specifications
1	TRACKER RECEIVE	OUT	TRACKER RECEIVE –20 dBu unbalanced
2	GND (TALK)	——	GND for TRACKER TALK
3	GND (RECEIVE/ PGM/TL)	——	GND for RECEIVE/PGM/TL
4	TRACKER PGM	OUT	–20 dBu unbalanced
5	UNREG	OUT	+12 V (+10.5 to +17.0 V)
6	GND (UNREG)	——	GND for UNREG
7	TRACKER TALK (X)	IN	TRACKER TALK 0 dBu /–20 dBu
8	TRACKER TALK (Y)	IN	High impedance balanced
9	G TALLY	OUT	ON : GND OFF : High impedance (Open collector)
10	R TALLY	OUT	ON : GND OFF : High impedance (Open collector)

(0 dBu = 0.775 Vrms)

⑲ MIC 1 IN (3P FEMALE) (HDC1500)



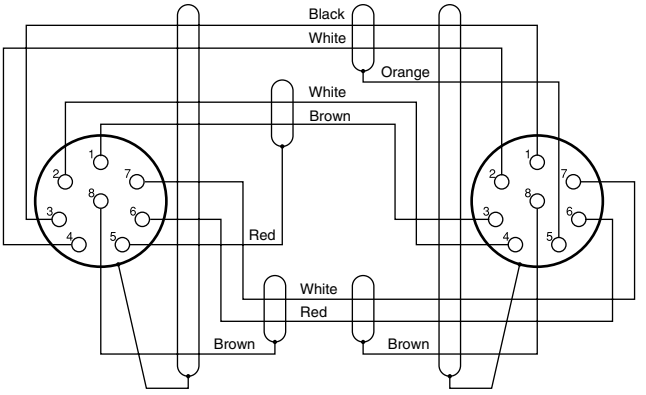
(External view)

No.	Signal	I/O	Specifications
1	MIC 1 (G)	——	–60 dBu, –50 dBu, –40 dBu,
2	MIC 1 (X)	IN	–30 dBu, –20 dBu, selectable
3	MIC 1 (Y)	IN	High impedance, Balanced

(0 dBu = 0.755 Vrms)

1-2-2. Wiring Diagrams for Cables

CCA-5 Cable



— 8P CONNECTOR (MALE) —
(WIRING SIDE)

1-2-3. Connection Connectors/Cables

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

Indication	Connection connector/cable
TEST OUT PROMPTER OUT SDI 1/2 (BNC)	1-569-370-12 Plug, BNC
AUDIO IN CH1/CH2 MIC 1 IN (3P FEMALE)	1-508-084-00 XLR, 3P Male or ITT Cannon XLR-3-12C equivalent
RET CONTROL (6P FEMALE)	1-560-078-00 Plug, 6P Male or HIROSE HR10-7PA-6P equivalent
DC OUT (4P FEMALE)	1-566-425-11 Plug, 4P Male or HIROSE HR10A-7P-4P equivalent
INTERCOM 1/2 (5P FEMALE)	1-508-370-11 XLR, 5P Male or ITT Cannon XLR-5-12C equivalent
DC IN (4P MALE)	1-508-362-00 XLR, 4P Female or ITT Cannon XLR-4-11C equivalent, or Cable assembly 1-551-577-00 (Supplied with AC-550/550CE)
CRANE (12P FEMALE)	1-819-261-11 Connector, Round Type 12P
REMOTE (8P FEMALE)	• 1-766-848-11 Plug, 8P Male or CCA-5 cable assembly (CCA-5-10 (10 m) /CCA-5-3 (3 m)) (option) ∗2 ∗3 • REMOTE cable 1-783-372-11 (supplied with RM-B150, 10 m) ∗1 ∗2 ∗3
TRACKER (10P FEMALE)	1-506-522-12 Connector, Round Type 10P

∗1: Use of REMOTE cable enables to monitor video signals. (The pin 8 is available for the video signal line.)
The down-converted SD signal is output.

∗2: If using a cable of length different from a standard product, contact your local Sony Sales Office/Service Center.

Note

∗3: The pin 8 of CCA-5 cable is GND (ground).
The pin 8 of REMOTE cable is not GND (ground).

1-2-4. Note in connecting CCU connector

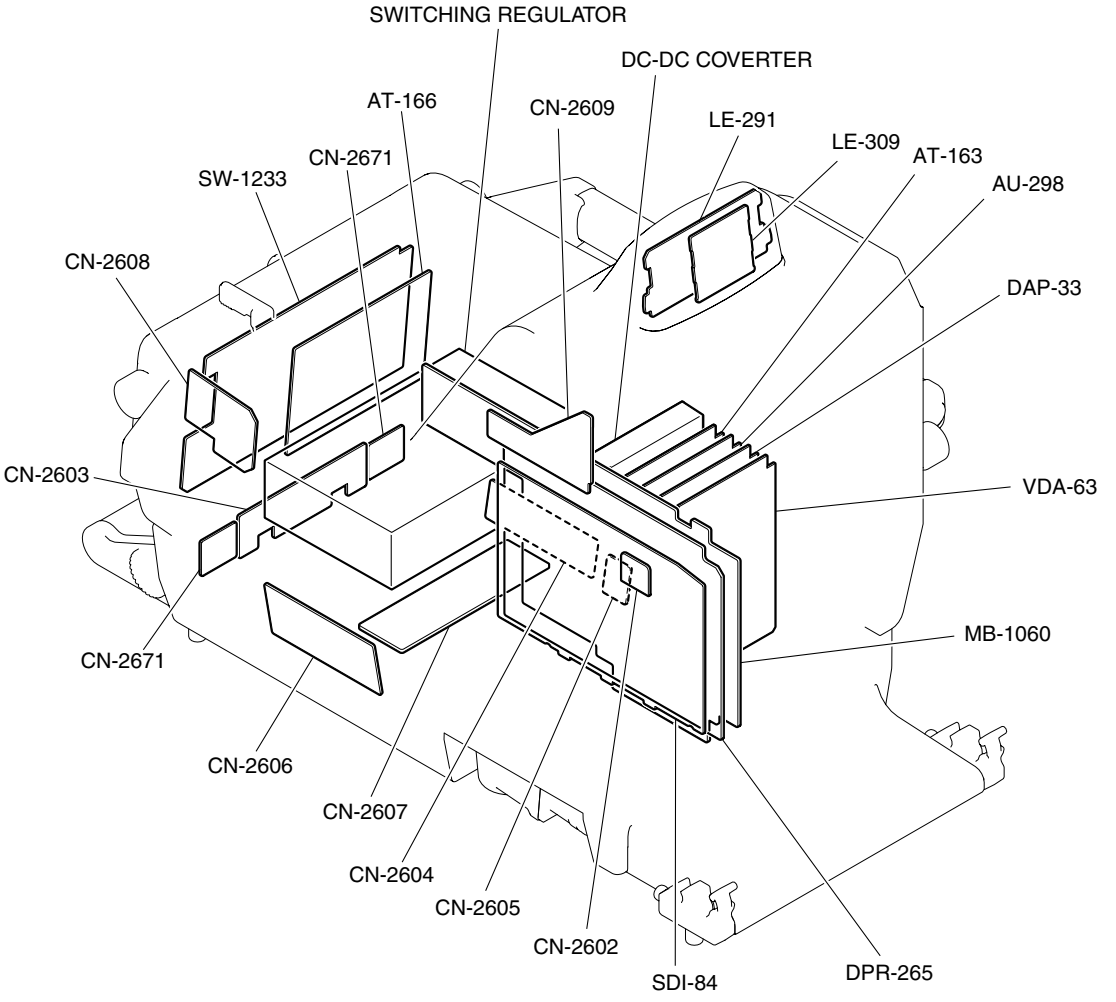
It is recommendable to clean the optical contact portions mentioned below before connecting this unit to the camera control unit.

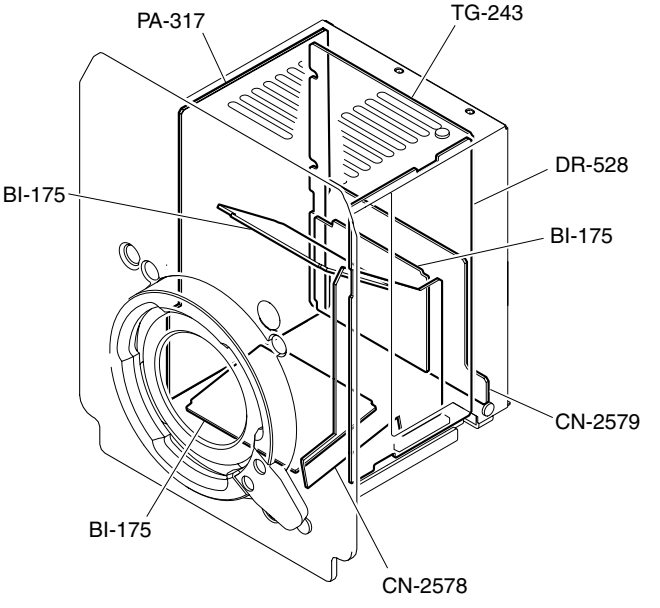
- CCU connector of this unit
- Camera connector of the camera control unit
- Optical/Electrical cable

For details on a cleaning method, refer to Section 1-8 “Cleaning of Connector/Cable”.

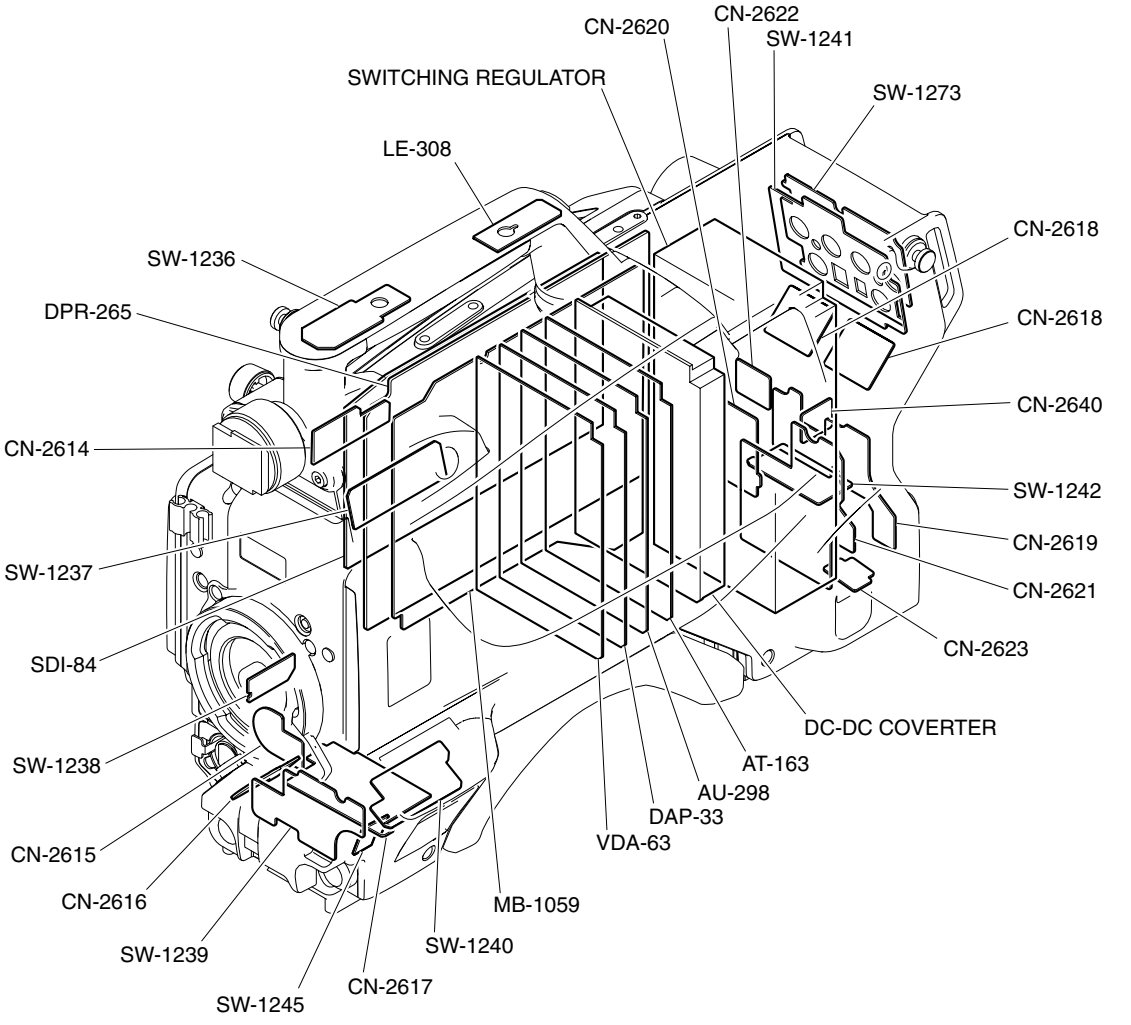
1-3. Location of Printed Circuit Boards

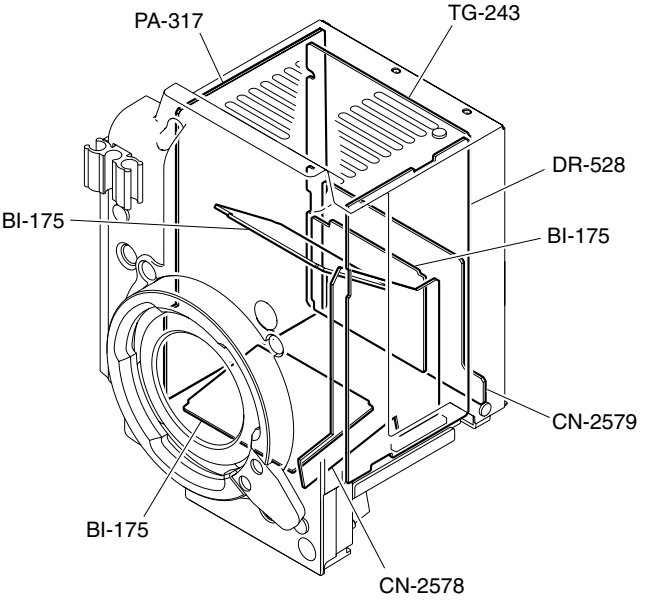
HDC1000





HDC1500


CN-2620
CN-2622
SW-1241
SWITCHING REGULATOR
SW-1273
LE-308
CN-2618
SW-1236
DPR-265
CN-2618
CN-2640
CN-2614
SW-1242
CN-2619
SW-1237
CN-2621
SDI-84
CN-2623
DC-DC COVERTER
SW-1238
AT-163
AU-298
DAP-33
VDA-63
CN-2615
CN-2616
MB-1059
SW-1239
SW-1240
CN-2617
SW-1245


PA-317
TG-243
DR-528
BI-175
BI-175
CN-2579
BI-175
CN-2578

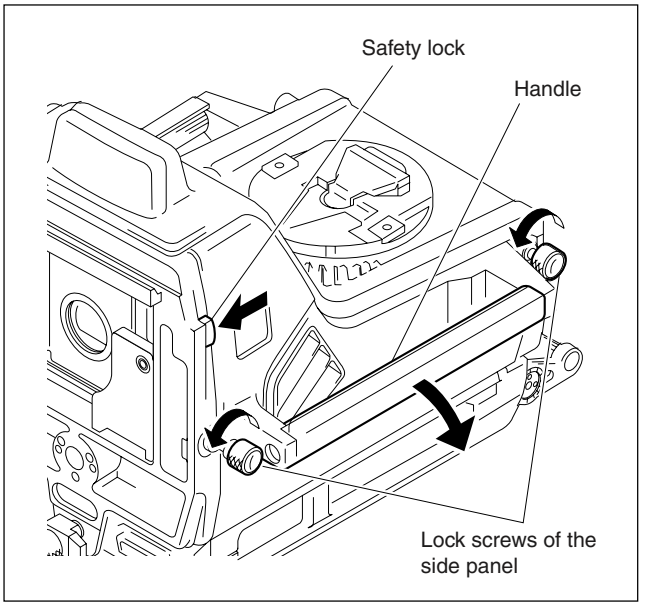
1-4. Opening/Closing the Side Panel

HDC1000

1. Unscrew the two lock screws of the side panel.
2. While sliding the safety lock toward the lens, open the side panel by holding the handle.
3. Close the side panel and tighten securely the lock screws of the side panel.

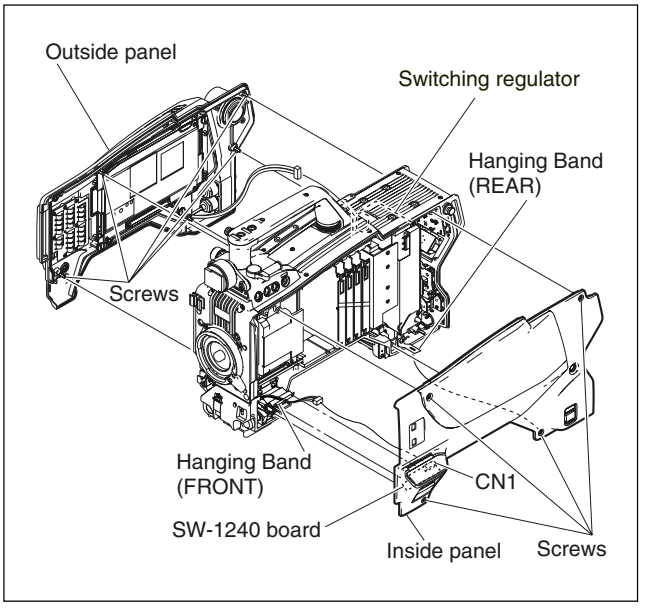
Note

Closing the side panel brings the safety lock to an automatic locking.



HDC1500

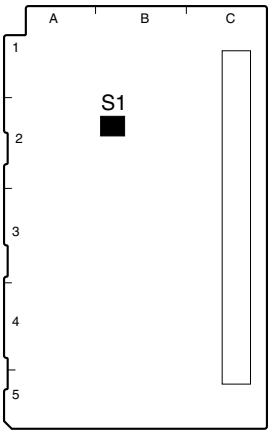
1. Unscrew the nine screws as shown in the figure, then open the inside panel and outside panel.
2. Release the hanging band (FRONT) and hanging band (REAR) from the inside panel.
3. Disconnect the harness from the connector (CN1) on the SW-1240 board, and remove the inside panel.
4. Disconnect the harness from the switching regulator connector, and remove the outside panel.



5. Reinstall the panels by reversing the steps above.

1-5. Switch Settings

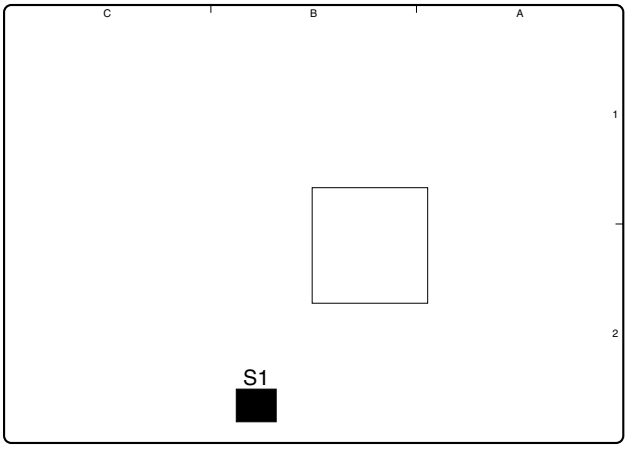
AT-163 Board



AT-163 BOARD (SIDE A)

Ref. No.	Name	Description	Factory setting
S1-1	Reserve	Not used (Fixed to OFF)	OFF
S1-2	All Preset	FRAM clear	OFF
S1-3	Reserve	Not used (Fixed to OFF)	OFF
S1-4	Firmware Load	Forcibly upgrading of firmware	OFF

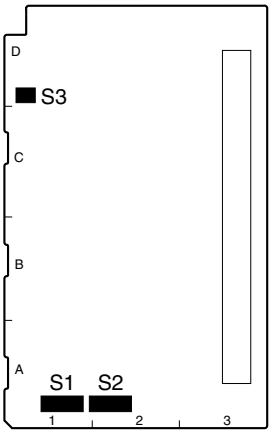
AT-166 Board (HDC1000)



AT-166 BOARD (SIDE B)

Ref. No.	Name	Description	Factory setting
S1-1	ICE	Not used (Fixed to OFF)	OFF
S1-2	WRITER	Switch ON for software upgrading	OFF
S1-3	TEST1	Not used (Fixed to OFF)	OFF
S1-4	TEST2	Not used (Fixed to OFF)	OFF

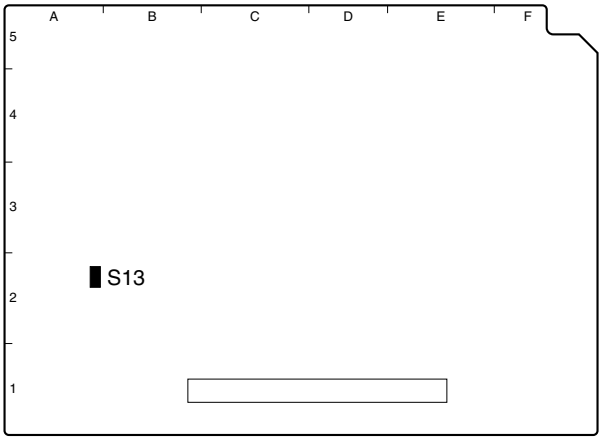
AU-298 Board



AU-298 BOARD (SIDE A)

Ref. No.	Name	Description	Factory setting
S1	Reserve	Not used (Fixed to OFF)	NORM
S2	Reserve	Not used (Fixed to OFF)	NORM
S3-1	AB POWER MIC1	Switch ON to supply +12 V for MIC POWER to the microphone connected to the AUDIO IN CH1 connector.	OFF
S3-2	AB POWER MIC2	Switch ON to supply +12 V for MIC POWER to the microphone connected to the AUDIO IN CH2 connector.	OFF

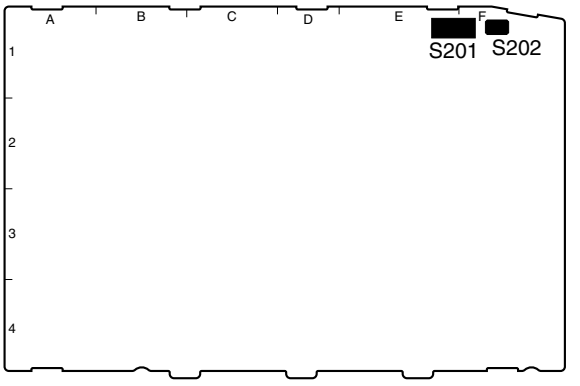
DPR-265 Board



DPR-265 BOARD (SIDE A)

Ref. No.	Name	Description	Factory setting
S13	Reserve	Not used (Fixed to OFF)	OFF

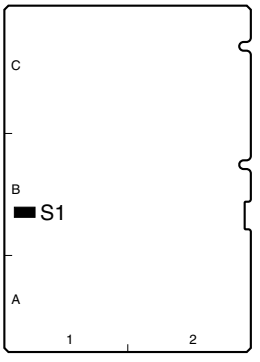
SDI-84 Board



SDI-84 BOARD (SIDE A)

Ref. No.	Name	Description	Factory setting
S201-1, 2	Test	Not used (Fixed to OFF)	OFF
S201-3	Reserve	Not used (Fixed to OFF)	OFF
S201-4 to 8	Test	Not used (Fixed to OFF)	OFF
S202	LD RESET	Not used (Fixed to OFF)	OFF

TG-243 Board



TG-243 BOARD (SIDE A)

Ref. No.	Name	Description	Factory setting
S1	Test	Not used	OFF

1-6. Notes for Replacing Parts

There are two kinds of types (gold and silver) in the parts below used in this unit.
- Flexible card wires
- Boards
- Connectors on the board (for flexible card wires)

When replacing the parts above, be sure to follow the instructions described in "1-6-1. Notes for Replacing the Flexible Card Wire", "1-6-2. Notes for Replacing the Board", and "1-6-3. Notes for Replacing the Connector on the Board".
Be sure to use the specified parts. Using un-specified parts causes the change in the characteristics of this unit and the unit does not work properly.
Spare parts are listed in the spare parts list of "Spare Parts" Section. In the spare parts list, (GOLD) or (SILVER) is put after each part name to distinguish two kinds of types (gold and silver).

1-6-1. Notes for Replacing the Flexible Card Wire

When replacing the flexible card wires listed below, confirm the conductive (terminal) part color of the flexible card wires and follow the procedure below.

1. Replace the flexible card wire with a flexible card wire whose conductive part is gold when the conductive part of a flexible card wire is gold.
   Note
   For the board on which a connector whose contact surface is gold is used, "G" is put after the board name by silk-screen printing or a "G" seal is attached to the empty space on the board. Example: AT-166G

2. Replace the flexible card wire with a flexible card wire whose conductive part is silver when the conductive part of a flexible card wire is silver. In this case, silk "G" or a "G" seal is not put on the board name.

When the conductive part is gold (HDC1000)

Board	Flexible card wire		Board
	Pin	Gold : Parts No.	
AT-166G	30	1-831-132-11	SW-1233G
CN-2609G	30	1-831-118-11	MB-1060G
CN-2579G	40	1-831-658-11	PA-317G
CN-2579G	30	1-831-656-11	DR-528G
DR-528G	45	1-831-659-11	TG-243G

When the conductive part is silver (HDC1000)

Board	Flexible card wire		Board
	Pin	Silver : Parts No.	
AT-166	30	1-823-558-11	SW-1233
CN-2609	30	1-757-644-11	MB-1060
CN-2579	40	1-830-485-11	PA-317
CN-2579	30	1-830-735-11	DR-528
DR-528	45	1-830-484-11	TG-243

When the conductive part is gold (HDC1500)

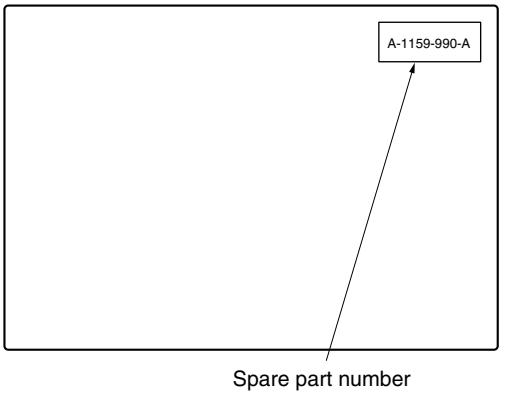
Board	Flexible card wire		Board
	Pin	Gold : Parts No.	
CN-2619G	40	1-831-662-11	MB-1059G
CN-2621G	36	1-831-663-11	MB-1059G
MB-1059G	36	1-831-661-11	SW-1273G
CN-2579G	40	1-831-658-11	PA-317G
CN-2579G	30	1-831-656-11	DR-528G
DR-528G	45	1-831-659-11	TG-243G

When the conductive part is silver (HDC1500)

Board	Flexible card wire		Board
	Pin	Silver : Parts No.	
CN-2619	40	1-830-483-11	MB-1059
CN-2621	36	1-830-752-11	MB-1059
MB-1059	36	1-830-482-11	SW-1273
CN-2579	40	1-830-485-11	PA-317
CN-2579	30	1-830-735-11	DR-528
DR-528	45	1-830-484-11	TG-243

1-6-2. Notes for Replacing the Board

Replace the board with a board of the same number as the spare part number of the board to be removed when replacing a board.
Example: A spare part number is put on the board.



A spare part number is put on side A or B of the board by silk-screen printing or a spare part code label (spare part number) is attached on side A or B.

1-6-3. Notes for Replacing the Connector on the Board

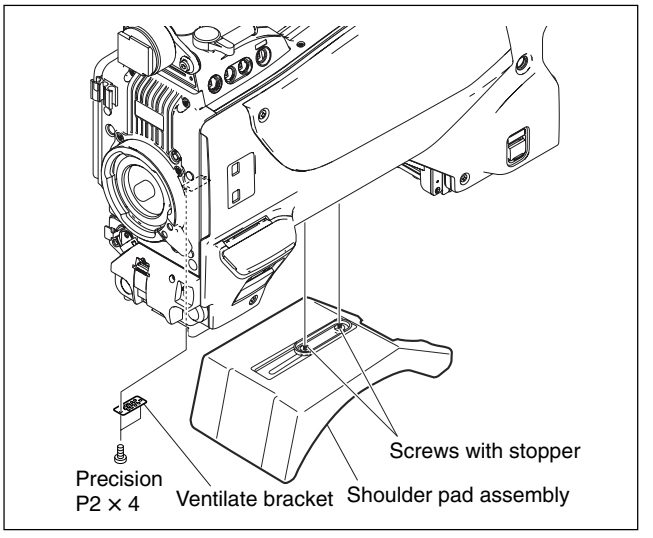
There are two types of connectors for the flexible card wire mounted on the board used in this unit. Distinguish them in the procedure below when replacing these connectors.

1. The contact surface of the connector used for a board is gold when the conductive part of a flexible card wire is gold.
   In a spare parts list, (GOLD) is put after the part name.
2. The contact surface of the connector used for a board is silver when the conductive part of a flexible card wire is silver.
   In a spare parts list, (SILVER) is put after the part name.

1-7. Cleaning the Vent Portion of the Fan (HDC1500 only)

The ventilate bracket for preventing from dust is attached in the vent portion of the fan. Clean the ventilate bracket every two or three months. Clogging may cause the temperature increases inside the camera and result in a trouble.

1. Loosen the two screws with stopper, and remove the shoulder pad assembly.
2. Remove the two screws, and remove the ventilate bracket.
3. Remove dust on the ventilate bracket with a vacuum cleaner.



1-8. Cleaning of Connector/Cable

The photo receptive condition of the optical connector can be checked at OPTICAL CONDITION of the DPR board of the camera control unit.

When lit in green: Normal (−17 dBm or above)
When lit in yellow: Normal (−17 to −20 dBm)
When lit in red: Abnormal (Less than −20 dBm)

When lit in red, be sure to clean the optical contact portions.
When lit in yellow, cleaning is recommended.
The attenuation of the photo-receptive level may cause transmission error between the camera and HDCU. In the case of attenuation, be sure to clean optical contact portions proceeding as follows. The optical contact portions exist in the optical connector on the camera or HDCU, and in the optical/electrical cables.

1-8-1. When the Optical Connector Cleaner (Commercially Available) is Available

Tools required

- Optical connector cleaner (commercially available)
  Product name: CLETOP®
  14100402 or 14100403 (stick type) or equivalent
  14100402: 2.0 mm
  14100403: 2.0/2.5 mm double ended

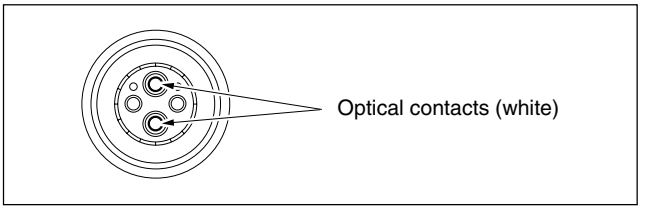
Notes

- Alcohol is not necessary during cleaning.
- Number of possible wipes is one cleaning per a piece. Do not reuse it.

Cleaning procedure

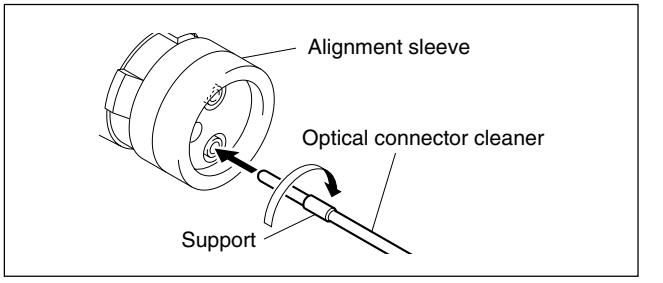
[Male connector]

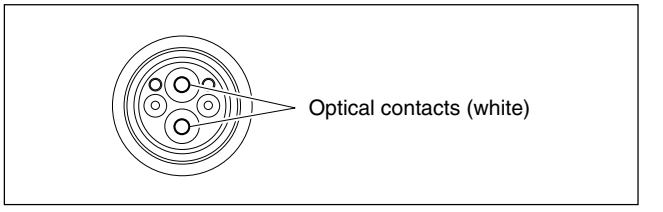
Clean the tip of the white optical contacts using the optical connector cleaner.



[Female connector]

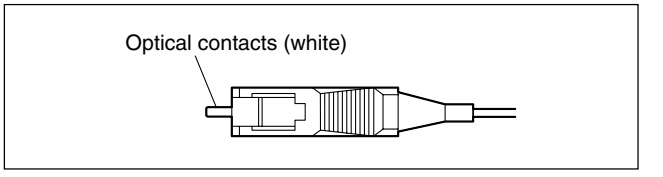
1. Insert the optical connector cleaner straight. Ensure that it is held straight when inserting.
2. Apply sufficient pressure (approximately 600 g to 700 g) to ensure that the optical contact is a little depressed.
3. While pressing the optical connector cleaner against the tip of the optical contact, rotate the optical connector cleaner by 4 to 5 turns clockwise. Holding the optical connector cleaner at around its support facilitates to apply the pressure.





[Connector]

Clean the tip of the white optical contacts using the optical connector cleaner.



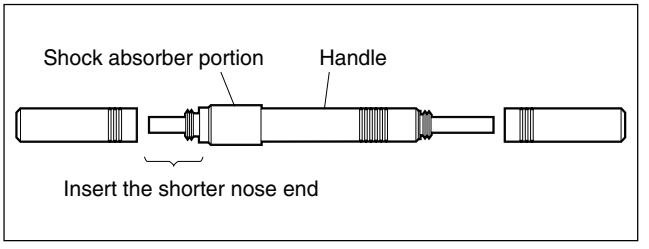
1-8-2. When the Optical Connector Cleaner (Commercially Available) is not Available

Tools required

- Alignment sleeve remover HC-001
  (for female connector)
  Sony P/N: J-6480-010-A

Note

Insert the shorter nose end when removing/installing the alignment sleeve.
Grasp not the shock absorber portion of the remover but the handle in use.



- Alcohol (commercially available)
- Cotton swabs (commercially available)

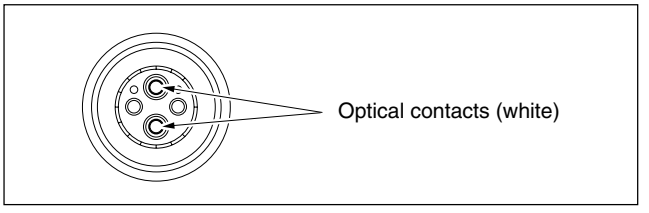
Note

Use a cotton swab whose diameter is about 4 mm.
If a cotton swab whose diameter exceeds 5 mm is used, the cotton swab cannot be inserted into the end of the connector and the tip of the optical contact cannot be cleaned.

Cleaning Procedure

[Male connector]

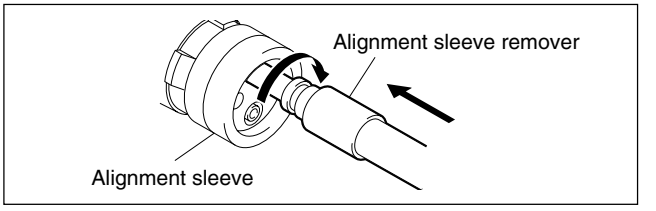
Clean the tip of the white optical contacts by a cotton swab moistened with alcohol.



[Female connector]

The optical contacts for female connector are in an unexposed state. In cleaning, it is necessary to be exposed by removing the alignment sleeve in advance. Proceed as follows.

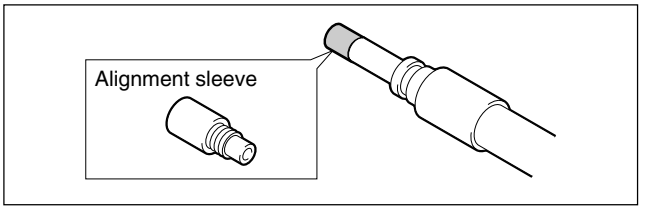
1. Insert the alignment sleeve remover into the alignment sleeve in the straight line and turn it clockwise.



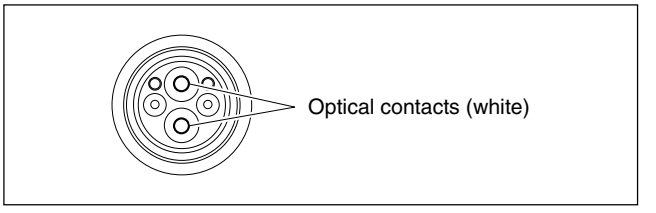
2. When the turn stops, pull out the remover in the straight line forcedly.

Note

The alignment sleeve can be removed/reinstalled with the sleeve itself attached to the tip of the remover. Great care should be taken so as not to lose or damage the alignment sleeve.
(Alignment sleeve: Sony P/N 9-980-074-01)



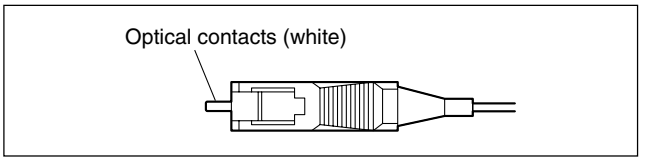
3. Clean the tip of the white optical contacts by a cotton swab moistened with alcohol.



4. Insert the remover with the alignment sleeve attached to its tip, and push it until it clicks.
5. Rotate the remover counterclockwise to install the alignment sleeve, and extract the remover.

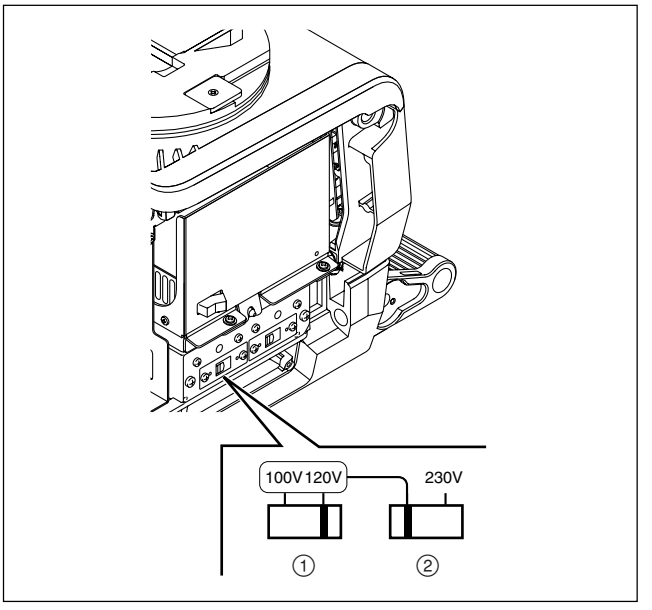
[Connector]

Clean the tip of the white optical contacts by a cotton swab moistened with alcohol.

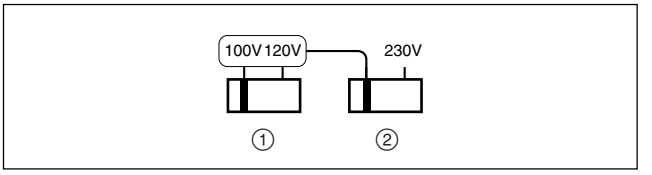


1-9. Setting the Utility Out Voltage (HDC1000)

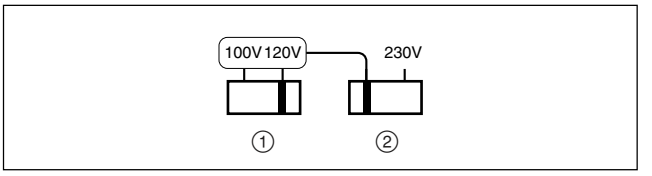
Set the utility out voltage in accordance with the voltage of peripheral devices when they are connected to the camera. The setting of the utility out voltage can be made by the combination of the switches ① and ② in the figure.



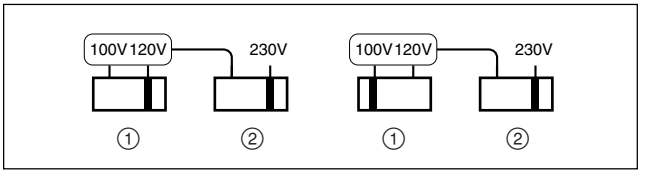
• When setting to 100 V, set as shown below.



• When setting to 120 V, set as shown below.



• When setting to 230 V, set as shown below.
Setting of the switch ① is not required.



1-10. Notes on Flexible Card Wire

1-10-1. Disconnecting/Connecting Flexible Card Wire

The flexible card wires are used between the boards of HDC1000 and HDC1500. Take care not to bend forcedly these flexible card wires. This shortens the wire life.

HDC1000
- Between CN-2579 and DR-528
- Between CN-2579 and PA-317
- Between TG-243 and DR-528
- Between AT-166 and SW-1233
- Between MB-1060 and CN-2609

HDC1500
- Between CN-2579 and DR-528
- Between CN-2579 and PA-317
- Between TG-243 and DR-528
- Between MB-1059 and CN-2619
- Between MB-1059 and CN-2621
- Between MB-1059 and SW-1273

Type-A

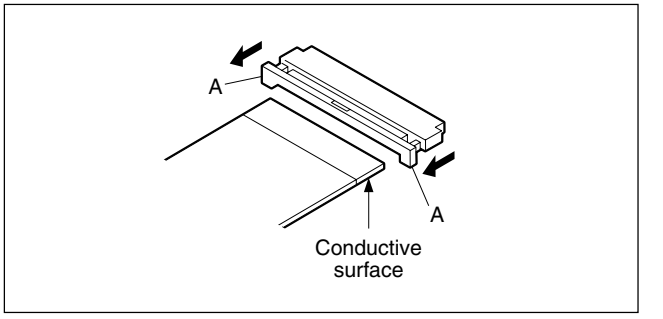
Disconnecting

Slide portions A in the direction of the arrow to unlock and pull out the flexible card wire.

Connecting

Notes
- Be careful not to insert the flexible card wire obliquely.
- Check that the conducive surface of the flexible card wire is not soiled with dust.

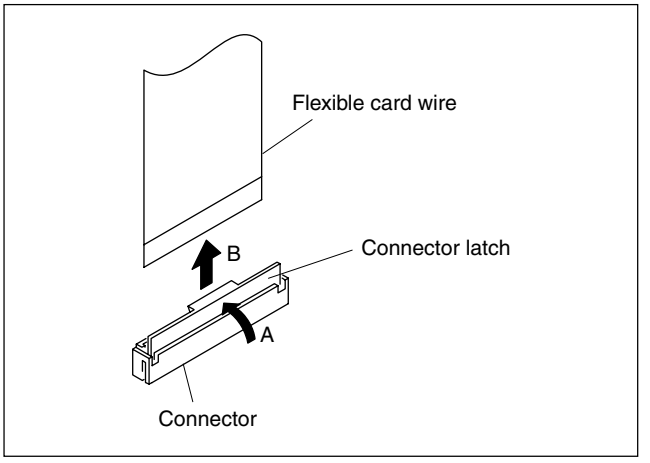
1. Slide portions A in the direction of the arrow and insert the flexible card wire with the conductive surface downward as far as it will go.
2. Slide portions A in the reverse direction to lock.



Type-B

Disconnecting

1. Open the connector latch in the direction of arrow A to release the lock.
2. Remove the flexible card wire in the direction of arrow B.

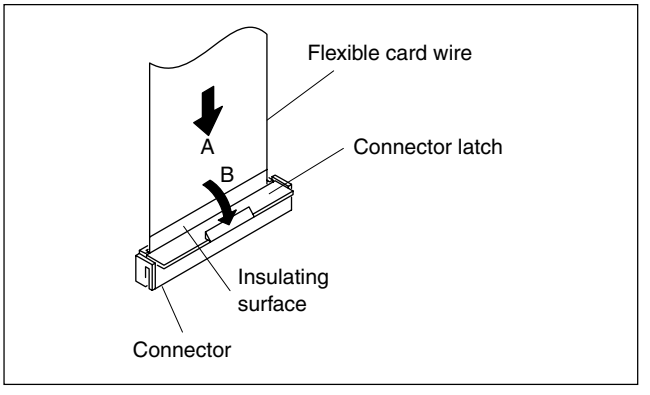


Connecting

Notes

- Be careful not to insert the flexible card wire obliquely.
- Check that the conductive surface of the flexible card wire is not soiled with dust.

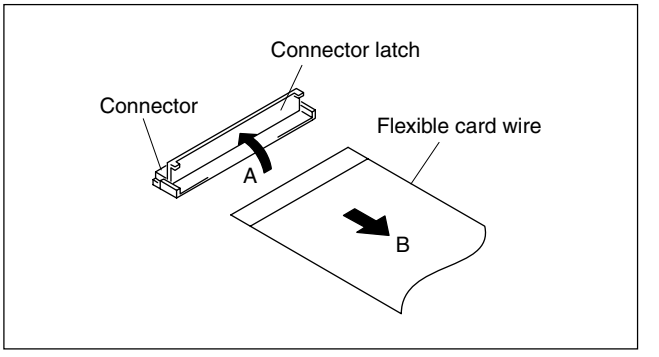
1. Hold the flexible card wire with its insulating surface facing to the front, and insert it in the direction of arrow A.
2. Close the connector latch in the direction of arrow B to lock it.



Type-C

Disconnecting

1. Open the connector latch in the direction of arrow A to release the lock.
2. Remove the flexible card wire in the direction of arrow B.

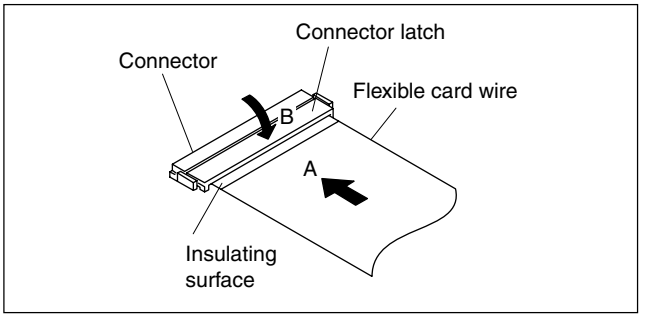


Connecting

Notes

- Be careful not to insert the flexible card wire obliquely.
- Check that the conductive surface of the flexible card wire is not soiled with dust.

1. Hold the flexible card wire with its insulating surface facing upward, and insert it in the direction of arrow A.
2. Close the connector latch in the direction of arrow B to lock it.



1-10-2. Forming of the Flexible Card Wire

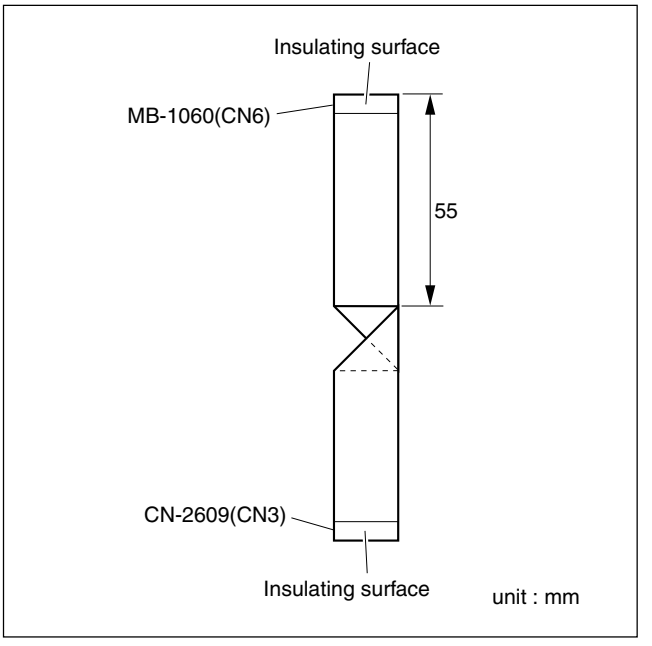
If using a new flexible card wire, be sure to fold it by hand it as shown in the figure before installation.

Note

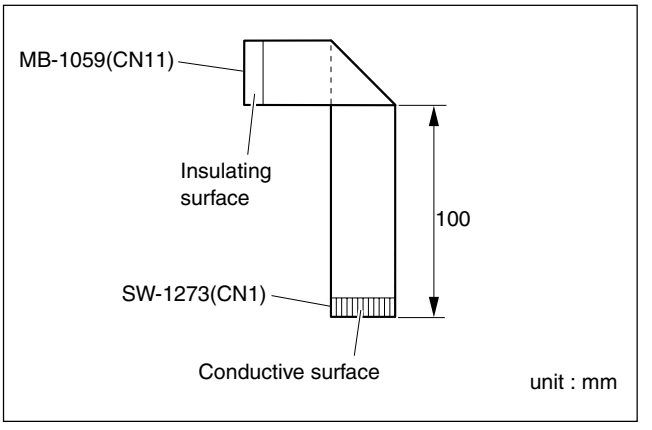
Never fold it back after being formed once.

HDC1000

• MB-1060 board CN6 ↔ CN-2609 board CN3



• MB-1059 board CN11 ↔ SW-1273 board CN1



1-11. Notes on Replacement of Circuit Board

1-11-1. Description on EEPROM Data

The table below gives the stored data of EEPROM (FRAM) on every printed circuit board.

Board	Ref. No.	Stored data
AT-163	IC133, IC139, IC141, IC142	Board adjustment data (VDA, DPR), and paint data
	IC403	PLD data
TG-243/247	IC6	PLD data
	IC39	RPN compensation data
	IC40	CCD adjustment data
AU-298	IC11, IC12, IC13	Status of the stand by intercom
SDI-84	IC212	PLD data
VDA-63	IC109	PLD data
DAP-33	IC202	PLD data

Notes

- When the replacement is needed, remove the IC attached to the former board and replace it to the new board.
- The IC listed above cannot be replaced because it is the EEPROM (NV-RAM) that is the storing data inherent in the board. The part number listed in “Spare Parts” is for EEPROM (NV-RAM) which is not programmed. If replacement is needed, contact your local Sony Sales Office/Service Center.

1-11-2. Adjustment after Replacement of Board

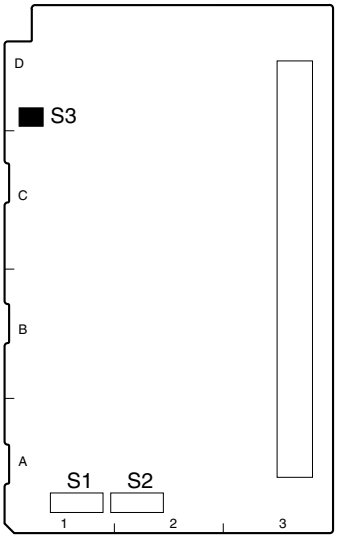
When replacing or repairing the board, perform the electrical alignment referring to Section 3.

1-12. How to Supply a Power of +12 V

HDC1000 and HDC1500 can supply +12 V for MIC POWER to the microphone connected to the AUDIO IN connector.

Setting Procedure

Set the switch S3 on the AU-298 board to ON, and set on the MIC POWER switch of AUDIO IN connector referring to the Operation Manual.



AU-298 BOARD (SIDE A)

Ref. No.	Contents
S3-1	Switch ON to supply +12 V for MIC POWER to the microphone connected to the AUDIO IN CH1 connector.
S3-2	Switch ON to supply +12 V for MIC POWER to the microphone connected to the AUDIO IN CH2 connector.

1-13. Upgrading the Software

The ROM (IC109 and IC301 on the AT-163 board) version can be upgraded using the Memory Stick.
For upgrading the software, follow the procedure shown below.

1-13-1. Upgrading the MAIN Program

HDC1000

Tool

Memory Stick

Preparation

Copy the upgrading program to the Memory Stick in the following steps.

Note

To get the upgrading program (program files "hdc1000.rom" and "boot.rom"), contact your local Sony Sales Office/Service Center.

(1) Make the following directory on the Memory Stick.
¥MSSONY¥PRO¥CAMERA¥HDC1000

(2) Copy the program files "hdc1000.rom" and "boot.rom" to the directory made by step (1).

Procedures

1. Open the right side panel. (Refer to Section 1-4.)
2. Set the switch S1-4 on the AT-163 board to "ON".
3. Insert the Memory Stick in which the upgrading program is already saved.
4. Turn on the power.
   The upgrading status is displayed on the screen of the view finder.
5. When the version upgrade is completed, the message "Complete" will be displayed.
6. Turn off the power, and re-set the switch S1-4 on the AT-163 board to "OFF".

HDC1500

Tool

Memory stick

Preparation

Copy the upgrading program to the Memory Stick in the following steps.

Note

To get the upgrading program (program files "hdc1000.rom" and "boot.rom"), contact your local Sony Sales Office/Service Center.

(1) Make the following directory on the Memory Stick.
¥MSSONY¥PRO¥CAMERA¥HDC1000

(2) Copy the program files "hdc1000.rom" and "boot.rom" to the directory made by step (1).

Procedures

1. Insert the Memory Stick in which the upgrading program is already saved.
2. Turn on the power while pressing the RET 2 button on the camera front and rotary encoder simultaneously.
   The upgrading status is displayed on the screen of the view finder.
3. When the version upgrade is completed, the message "Complete" will be displayed.

1-13-2. Upgrading the Boot Program

Tools

- Memory Stick
- ROM-28 board: (Sony Part No. : A-8326-017-A)
- Extension board EX-738: (Sony Part No. : A-8327-351-A)

Preparation

1. Copy the upgrading program to the Memory Stick in the following steps.

   Note

   To get the upgrading program (program files "hdc1000.rom" and "boot.rom"), contact your local Sony Sales Office/Service Center.

   (1) Make the following directory on the Memory Stick.
   ¥MSSONY¥PRO¥CAMERA¥HDC1000

   (2) Copy the program files "hdc1000.rom" and "boot.rom" to the directory made by step (1).

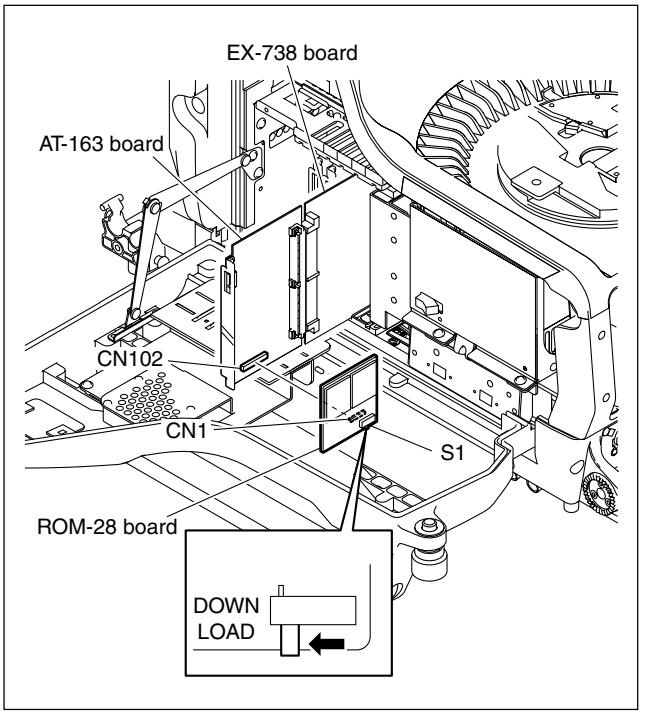
2. Save the upgrading Boot program in the ROMs H (IC2) and L (IC3) on the ROM-28 board.

   Note

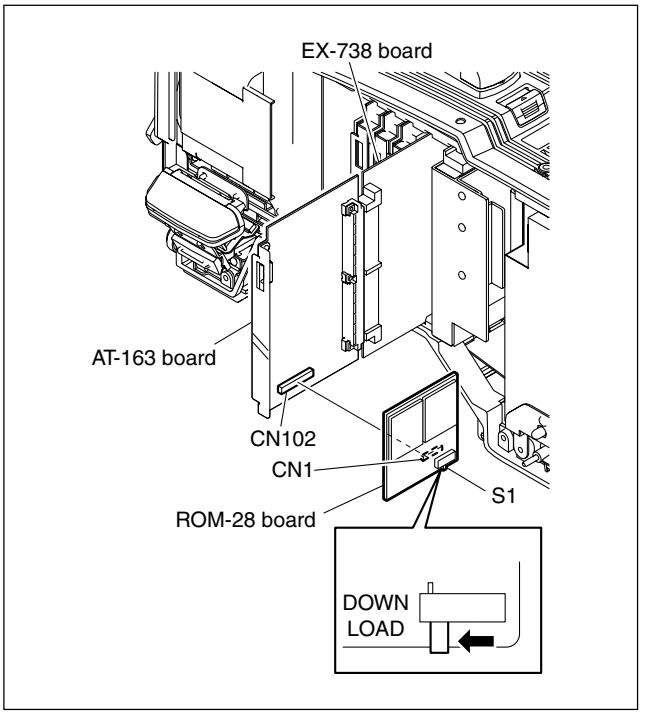
   For details of saving the upgrading program, contact your local Sony Sales Office/Service Center.

Procedures

1. Open the right side panel (HDC1000), or inside panel (HDC1500). (Refer to Section 1-4.)
2. Extend the AT-163 board using the EX-738 board.
3. Insert the Memory Stick in which the upgrading program is already saved.
4. Connect the connector CN1 on the ROM-28 board to the connector CN102 on the AT-163 board.
5. Set the switch S1 on the ROM-28 board to DOWN LOAD side.
6. Turn on the power.
   The upgrading status is displayed on the screen of the view finder.
7. When the version upgrade is completed, the message "Complete" will be displayed.
8. Turn off the power, and remove the ROM-28 board.
9. Put back the AT-163 board to the original position.
10. Turn on the power. The unit will start with the boot program upgraded.



HDC1000



HDC1500

1-14. Writing and Rewriting the PLD Internal Data

This unit uses the PLD (Programmable Logic Device) that supports the e-Production (EPR) system to write and rewrite the internal data.
If the part listed below needs to be replaced or to be upgraded, contact your local Sony Sales Office/Service Center.

Note

The part number of PLD (or ROM for PLD) in which data is not written yet, is shown in "Section 1. Spare Parts" of Maintenance Manual Volume 2.
Therefore, if part replacement is required, write the data by the following procedure.
In the case of the PLD type that runs on the program stored in external ROM, data needs not to be written only by replacing the part if the specific PLD only is defective.

e-Production system has the advantages shown below.

- To write/rewrite the PLD internal data:
  1. The standard fixture (cable) can be used.
  2. The standard software (PLD Download Tool) can be used.
- The PLD internal data is controlled in the Sony Database Server under the name of Project file (E_xxx_xxx_xx_xx).
- The printed circuit board is equipped with the standard connector (EPR connector) to write the PLD internal data. The indication "EPR" is shown on the printed circuit board.

Corresponding PLD

PLD (Ref No./board name)	EPR connector (Ref No./board name)	Project file No.
IC404/AT-163 IC403/AT-163 *1	CN401/AT-163	*6 E_xxx_xxx_xx_xx
IC201/DAP-33 IC202/DAP-33 *2	CN2/DAP-33	*6 E_xxx_xxx_xx_xx
IC408/SDI-84 IC212/SDI-84 *3	CN202/SDI-84	*6 E_xxx_xxx_xx_xx
IC9/TG-243 IC6/TG-243 *4	CN2/TG-243/247	*6 E_xxx_xxx_xx_xx
IC110/VDA-63 IC109/VDA-63 *5	CN100/VDA-63	*6 E_xxx_xxx_xx_xx

*1: IC403/AT-163 is the ROM for IC404/AT-163.
*2: IC202/DAP-33 is the ROM for IC201/DAP-33.
*3: IC212/SDI-84 is the ROM for IC408/SDI-84.
*4: IC6/TG-243 is the ROM for IC9/TG-243.
*5: IC109/VDA-63 is the ROM for IC110/VDA-63.
*6: The file name changes when upgrading.

Equipment required

- PLD download fixture
  (Sony part number: J-7120-140-A)
  The cable to connect PC to this unit.
- PC
  A PC having parallel port.
  A PC in which the PLD Download Tool software is already installed.
  For the applicable OS and the operating environment, refer to "Download Tool Operating Instruction for Device Programming".

Data writing procedure

Data writing procedure in the PLD (or ROM for PLD) is outlined below.
For details of data writing procedure, refer to "Download Tool Operating Instruction for Device Programming", which is available in the same site where the PLD Download Tool software is available.

1. Prepare the Project file.
   Note
   Download the Project file from the Sony Database Server.
2. Turn off the power of this unit. Connect the PC parallel port to the EPR connector of the target board using the PLD download fixture (cable).
3. Turn on the power of this unit.
   Start the Download Tool software and read the Project file.
4. Program the PLD (or ROM for PLD) with the Download Tool software.
5. Upon completion of programming, check that error message is not displayed. Turn off the power of this unit and back on.

1-15. Note on Replacement of Lithium Battery

A lithium battery is mounted on the DAP-33 board to back up Real Time Clock (RTC).
If a battery comes to the lifetime, then RTC stops.
Therefore the battery replacement is required.

DAP-33 board/CR2032 : Sony part No. (1-528-174-11)

CAUTION

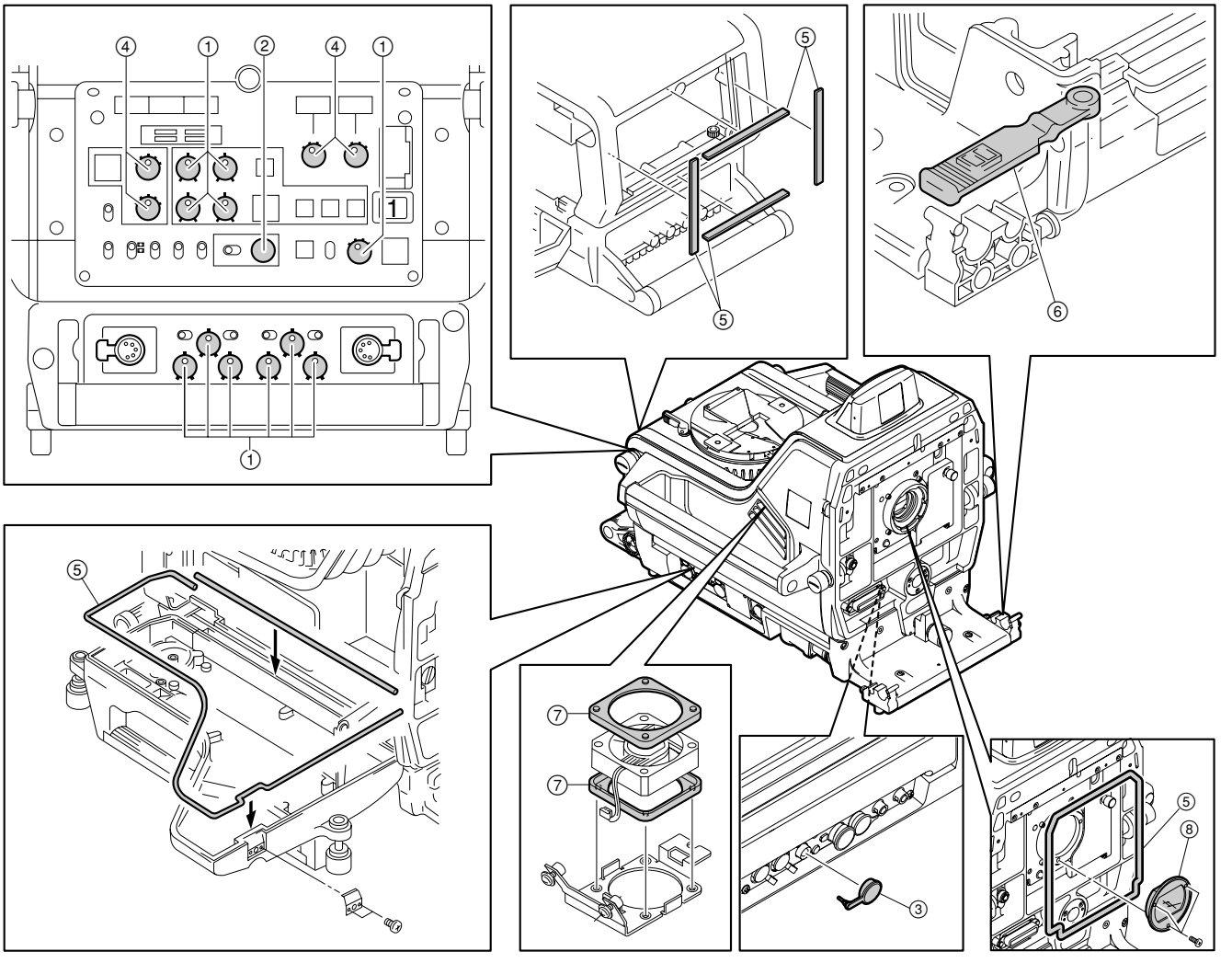
In replacing, ensure that the battery is installed with "+" and "–" poles connected to the correct terminals.
An improper connection may cause an explosion or leakage of fluid.

1-16. Recommended Replacing Parts

1-16-1. HDC1000

Following parts are recommended replacing parts. The optical filter unit may become clouded with the lapse of time. By such a cloudy optical filter unit, the characteristics of this camera could not fully exploited, therefore replace it if necessary.
Besides, the parts made of rubber used for this camera may become cracked and split with the lapse of time, therefore also replace it if necessary.

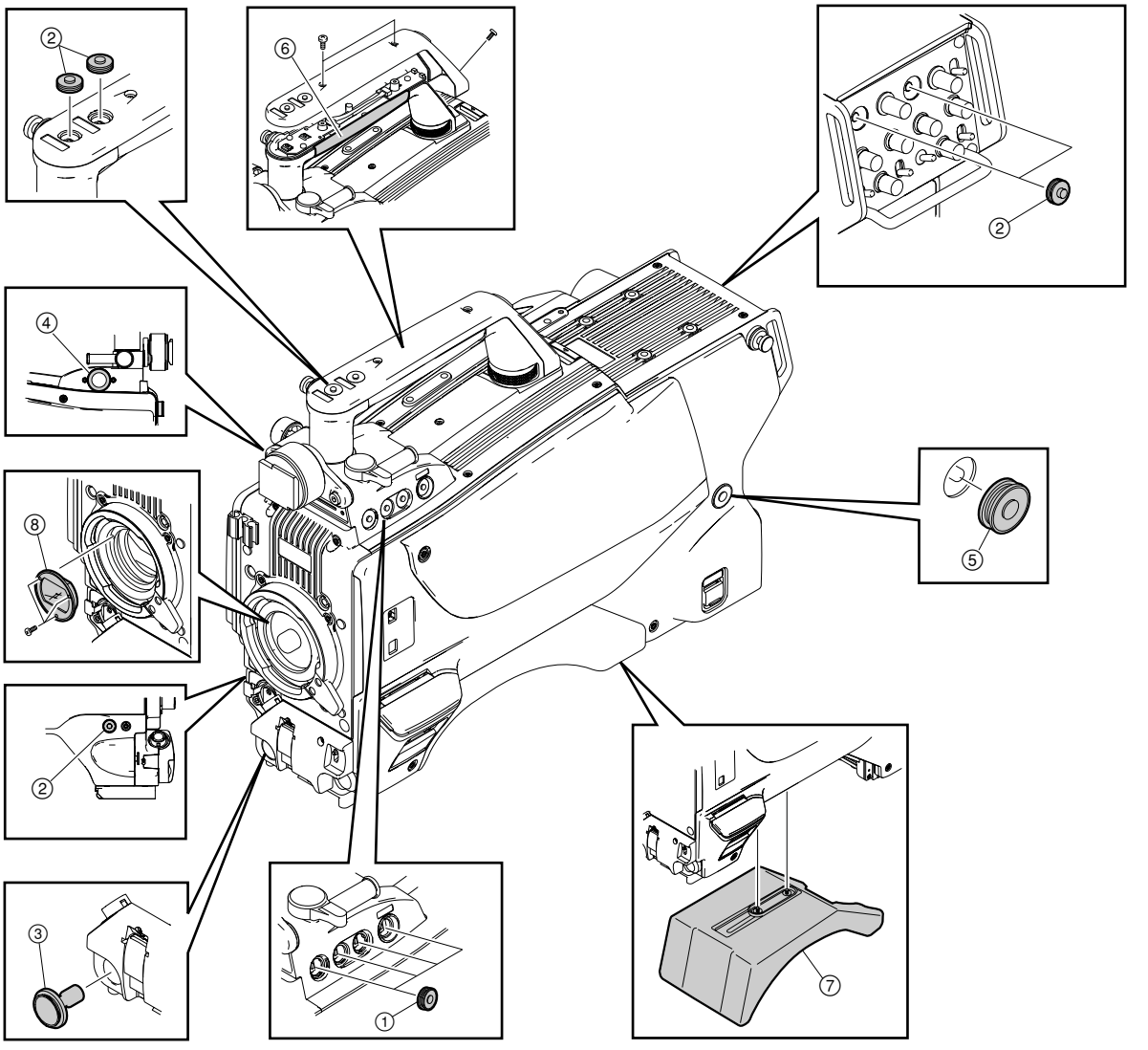
No.	Description	Sony Part No.
①	KNOB (DIA 3) ASSY, VOLUME	X-3167-563-X
②	KNOB, VOLUME 6	3-602-483-0X
③	CAP, CONNECTOR	3-605-338-0X
④	KNOB, VOLUME DIA.6	3-872-577-0X
⑤	SHIELD CUSHION (C)	3-615-750-6X
⑥	BAND, CLAMP	3-612-712-0X
⑦	PACKING, FAN	3-627-260-0X
⑧	FILTER UNIT, OPTICAL	1-758-483-11



1-16-2. HDC1500

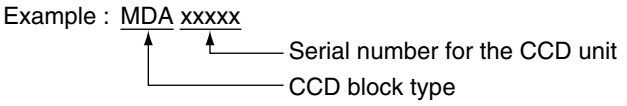
Following parts are recommended replacing parts. The optical filter unit may become clouded with the lapse of time. By such a cloudy optical filter unit, the characteristics of this camera could not fully exploited, therefore replace it if necessary.
Besides, the parts made of rubber used for this camera may become cracked and split with the lapse of time, therefore also replace it if necessary.

No.	Description	Sony Part No.
①	COVER, SWITCH	3-676-244-0X
②	COVER, SWITCH	3-676-244-2X
③	BUTTON, VTR START	3-679-668-0X
④	PACKING, VF	3-710-024-0X
⑤	CALL COVER	3-857-347-0X
⑥	SHEET, HANDLE	3-872-563-0X
⑦	PAD ASSY, SHOULDER	A-8286-163-X
⑧	FILTER UNIT, OPTICAL	1-758-483-11



1-17. Description of CCD Block Number

Every CCD unit has its own ID number called CCD block number. It shows the CCD block type and serial number for the CCD block.
The CCD block number label is put in the CCD unit.



Model	CCD block type
HDC1000 HDC1500	MDA

For replacing the CCD unit, refer to Section 2-1.

1-18. Optional Fixtures

Name	Sony Part No.	Remarks
EX-738 Board	A-8327-351-A	For extension of plug-in boards
Extension assy, DPR-197	A-8344-327-A	For extension of DPR-265 and SDI-84 boards.
Alignment sleeve remover HC-001	J-6480-010-A	For female connector LEMO® DCC.91.312.5LA or equivalent
PLD download fixture	J-7120-140-A	PLD data download cable

1-19. Notes on Repair Parts

1. Safety Related Components Warning

WARNING

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

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.

4. Harness

Harnesses with no part number are not registered as spare parts.
In need of repair, get components shown in the list and repair using them.

1-20. Unleaded Solder

Boards requiring use of unleaded solder are printed with a lead free mark (LF) indicating the solder contains no lead. (Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Notes

- Be sure to use the unleaded solder for the printed circuit board printed with the lead free mark.
- The unleaded solder melts at a temperature about 40 °C higher than the ordinary solder, therefore, it is recommended to use the soldering iron having a temperature regulator.
- The ordinary soldering iron can be used but the iron tip has to be applied to the solder joint for a slightly longer time. The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful.