SONY

HD CAMERA CONTROL UNIT

HXCU-TX70

CCU CONTROL PANEL

HKCU-FP2

SERVICE MANUAL

1st Edition

⚠ 警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
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。

⚠ WARNING

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

⚠ WARNUNG

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

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

注意

指定以外の電池に交換すると，破裂する危険があります。
必ず指定の電池に交換してください。
使用済みの電池は，国または地域の法令に従って
処理してください。

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
When you dispose of the battery, you must obey the law in the relative area or country.

ATTENTION

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.
Lorsque vous mettez la batterie au rebut, vous devez respecter la législation en vigueur dans le pays ou la région où vous vous trouvez.

VORSICHT

Explosionsgefahr bei Verwendung falscher Batterien.
Batterien nur durch den vom Hersteller empfohlenen oder einen gleichwertigen Typ ersetzen.
Wenn Sie die Batterie entsorgen, müssen Sie die Gesetze der jeweiligen Region und des jeweiligen Landes befolgen.

FÖRSIKTIGHET!

Fara för explosion vid felaktigt placerat batteri.
Byt endast mot samma eller likvärdig typ av batteri, enligt tillverkarens rekommendationer.
När du kasserar batteriet ska du följa rådande lagar för regionen eller landet.

PAS PÅ

Fare for eksplosion, hvis batteriet ikke udskiftes korrekt.
Udskift kun med et batteri af samme eller tilsvarende type, som er anbefalet af fabrikanten.
Når du bortskaffer batteriet, skal du følge lovgivningen i det pågældende område eller land.

HUOMIO

Räjähdysvaara, jos akku vaihdetaan virheellisesti.
Vaihda vain samanlaiseen tai vastaavantyyppiseen, valmistajan suosittelemaan akkuun.
Noudata akun hävittämisessä oman maasi tai alueesi lakeja.

FORSIKTIG

Eksplosjonsfare hvis feil type batteri settes i.
Bytt ut kun med samme type eller tilsvarende anbefalt av produsenten.
Kasser batteriet i henhold til gjeldende avfallsregler.

注意

如果更换的电池不正确，就会有爆炸的危险。
只更换同一类型或制造商推荐的电池型号。
处理电池时，必须遵守相关地区或国家的法律。

Table of Contents

Manual Structure

1. Service Overview

2. System Setup

3. Maintenance Mode

4. Replacement of Main Parts

5. Electrical Adjustment

6. Spare Parts

7. Diagrams

Manual Structure

Purpose of this manual

This manual describes the information items that premise the service based on the block parts assuming use of system and service engineers.

Related manuals

The following manuals are available in this model.
If this manual is required, please contact your local Sony Sales Office/Service Center.

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

Trademarks

Trademarks and registered trademarks used in this manual are follows.

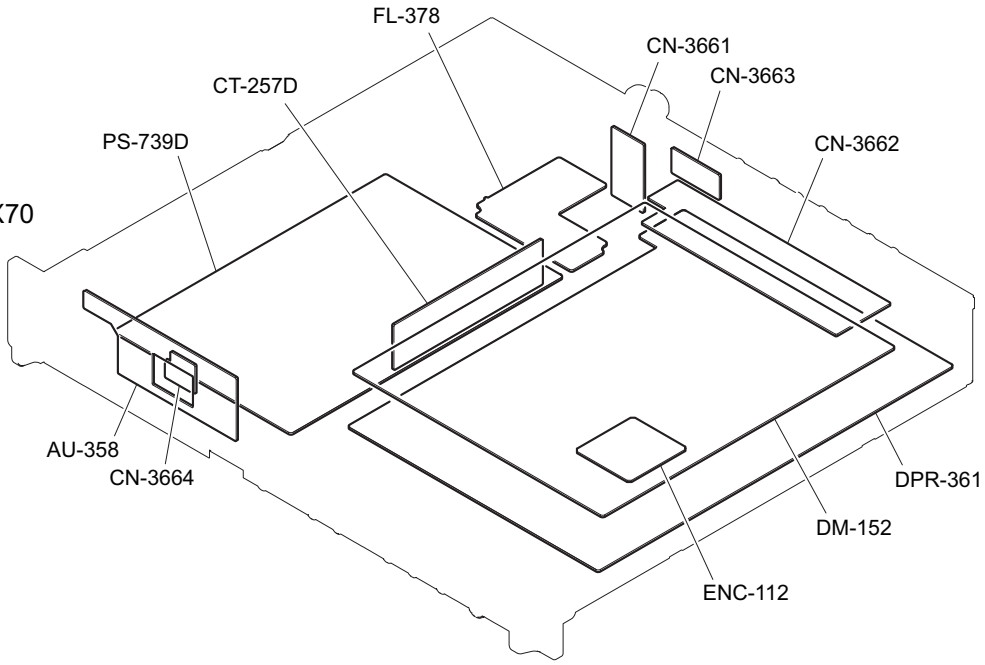
- FRAM is a registered trademark of Ramtron International Corporation.

Other system names and product names written in this manual are usually registered trademarks or trademarks of respective development manufacturers.

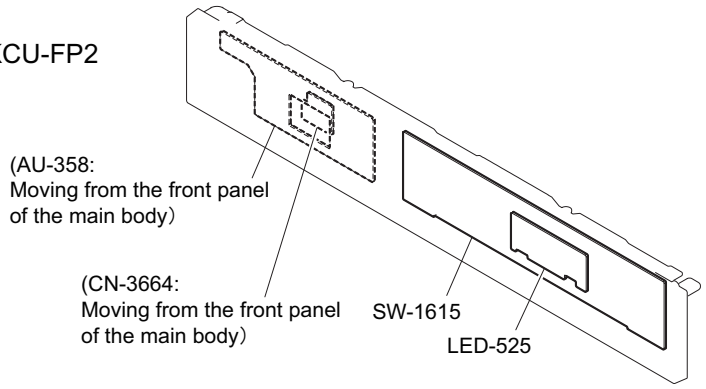
Section 1
Service Overview

1-1. Location of Printed Circuit Boards

HXCU-TX70



HKCU-FP2



1-2. Service Information

1-2-1. Note on Replacement of Lithium Battery

A lithium battery is mounted on the DPR-361 board to backup the real time clock (RTC). If a battery comes to the lifetime, then RTC stops. Therefore, replace the battery and re-set DATE/TIME on the C13 DATE page of the CCU CONFIGURATION menu. (Refer to “Setup Menu” in the Operating Instructions.)

Part No.	Name	Use
⚠ 1-528-174-72	BATTERY, LITHIUM (CR2032 TYPE)	For real time clock (RTC) backup

CAUTION

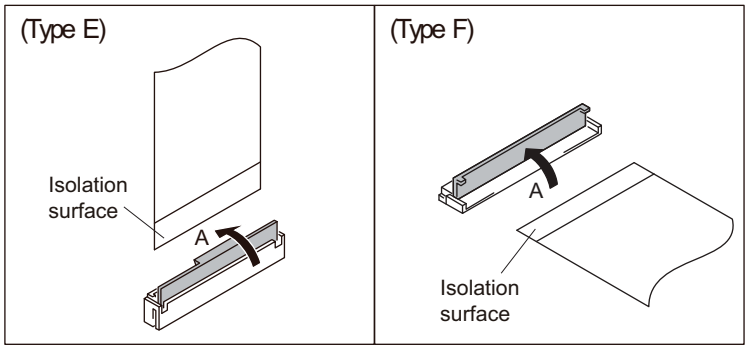
In replacing, ensure that the battery is installed with “+” and “-” poles connected to the correct terminals. Improper connection may cause an explosion or leakage of fluid.

1-3. Flexible Card Wire

1-3-1. Connecting and Disconnecting Flexible Card Wires

Note

- Be very careful not to fold flexible card wires. Life of flexible card wire will be significantly shortened if it is folded.
- Each flexible card wire has conductive side and insulated side. If the flexible card wire is connected in the wrong orientation of the conductive side and the insulated side, the circuit will not function.
- Insert the flexible card wire straight.
- Check that the conductive side of the flexible card wire is not contaminated.



Disconnecting

1. Slide or lift up the portion A in the direction of the arrow to unlock and pull out the flexible card wire.

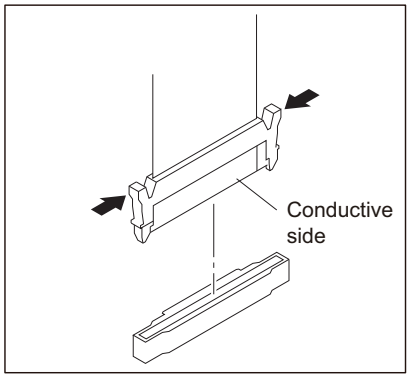
Connecting

1. Slide or lift up the portion A in the direction of the arrow and securely insert the flexible card wire into the deep end of the connector.
2. Return the portion A to its original position and lock the connector.

1-3-2. Connecting and Disconnecting Flexible Card Wires with Connector

Note

- Be very careful not to fold flexible card wires. Life of flexible card wire will be significantly shortened if it is folded.
- Check that the conductive side of the flexible card wire is not contaminated.



Disconnection

1. Disconnect the flexible card wire while pushing both ends of the connector inside.

Connection

1. Check the orientation of the conductive part and firmly insert the flexible card wire into the connector as far as it will go.

1-4. Updating the Software Programs

Software programs stored in the ROM on the DPR-361 board can be updating by using a Memory Stick.
For updating the software programs, follow the procedures below.

1-4-1. Updating the Main Program

Equipment Required

Memory Stick

Check

Check the current main program version with “ROM Version” of status display. (Refer to the Operating Instructions.)

Preparation

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

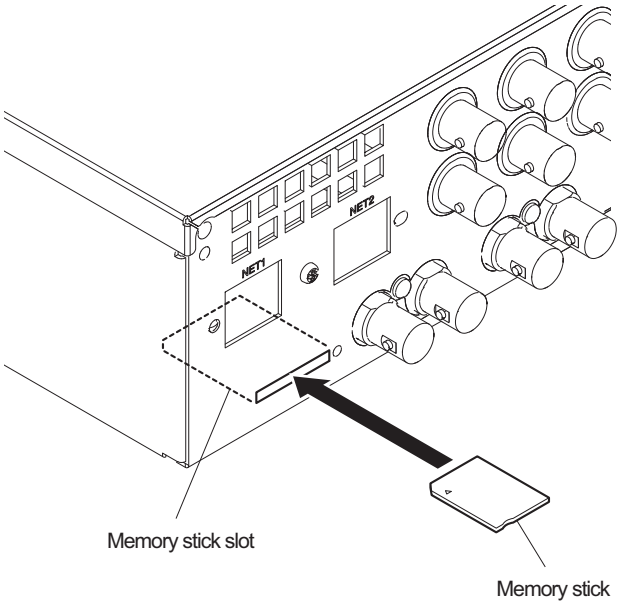
Note

To get the updating program (program files “HSCU300R.rom” and “HSCU300R_BOOT.rom”), contact your local Sony Sales Office/Service Center.

1. Make the following directory on the Memory Stick.
   \MSSONY\PRO\CAMERA\HSCU300R
2. Copy the program files “HSCU300R.rom” and “HSCU300R_BOOT.rom” to the directory made in step 1.

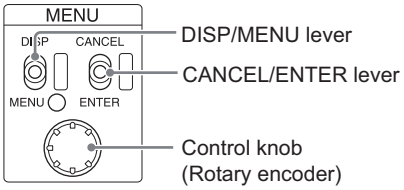
Procedure

1. Turn on the power.
2. Insert the Memory Stick that contains the updating program into the Memory Stick slot on the rear panel.



3. Select VERSION UP EXEC from MAIN on the M02: Firmware Update page of the MAINTENANCE menu.

4. A message “UPDATE MAIN BLOCK ?” appears. Turn the CANCEL/ENTER lever to the ENTER side.



5. Check that “LOADER BLOCK COMPLETE!!“ appears and then “MAIN BLOCK COMPLETE!!” appears.
6. Turn off the power and remove the Memory Stick.
7. When the unit is turned on, the main program is updated and runs.
8. Check that the main program has been updated with “ROM Version” of status display. (Refer to the Operating Instructions.)

1-4-2. Updating the BOOT Program

Equipment Required

Memory Stick

Check

Check the current boot program version with Firmware Update of the MAINTENANCE menu. (Refer to “3-3. MAINTENANCE Menu”)

Preparation

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

Note

To get the updating program (program files “HSCU300R.rom” and “HSCU300R_BOOT.rom”), contact your local Sony Sales Office/Service Center.

1. Make the following directory on the Memory Stick.
   \MSSONY\PRO\CAMERA\HSCU300R
2. Copy the program files “HSCU300R.rom” and “HSCU300R_BOOT.rom” to the directory made in step 1.

Procedure

1. Turn on the power.
2. Insert the Memory Stick that contains the updating program into the Memory Stick slot on the rear panel.
3. Select VERSION UP EXEC from BOOT on the M02: Firmware Update page of the MAINTENANCE menu.
4. A message “UPDATE BOOT BLOCK ?” appears. Turn the CANCEL/ENTER lever to the ENTER side.
5. Check that version update is performed and a message “BOOT BLOCK COMPLETE!!” appears.
6. Turn off the power and remove the Memory Stick.
7. When the unit is turned on, the boot program is updated and runs.
8. Check that the boot program has been updated with Firmware Update of the MAINTENANCE menu. (Refer to the “3-3. MAINTENANCE Menu”)

1-5. Writing and Rewriting the PLD Internal Data

This unit is provided with PLD (Programmable Logic Device). They can be programmed and reprogrammed by the MAIN program.
If the parts listed below needs to be replaced or if PLD needs to be updated, 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 “Spare Parts” of the Factory Service Manual.
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, the PLD has only to be replaced and data needs not to be written only.

1-5-1. Corresponding PLDs

Board name	PLD	ROM
DM-152	IC1701	IC1703
DPR-361	IC700	IC800
	IC2000	IC2050

Equipment Required

Memory Stick

Preparation

Copy the following ROM files to the directory created in the preparation process in “1-4-2. Updating the BOOT Program”.

- sy-pld.rom
- post-pld.rom
- dm-pld.rom

Procedure

1. Turn on the power.
2. Insert the Memory Stick that contains the ROM file for PLD into the Memory Stick slot on the rear panel.
3. Select a PLD to be programmed/reprogrammed from M03:PLD UPDATE of the MAINTENANCE menu.

   Tip

   If there are two or more target PLDs, they can be updated by “ALL” or “AUTO.” (Refer to “3-3. MAINTENANCE Menu”)

4. When a message “XXX VERSION UP EXEC?” (XXX: PLD name) appears, press the ENTER key.
5. Confirm that the PLD has been updated and a message “PLEASE POWER OFF!!” appears.
6. Turn off the power and remove the Memory Stick.
7. When the unit is turned on, the PLD is updated and runs.
8. Check that the main program has been updated with “DPR Diag” and “DM Diag” of status display. (Refer to the Operating Instructions.)

1-6. Periodic Replacement Parts

This table does not describe the guarantee period of part.
The replacement period of each part depends on the environment and condition. Refer to "4. Replacement of Main Parts" for the replacement method of parts.

Part name	Part No.	Check/replacement period
FAN, DC (60 SQUARE)	⚠ 1-855-252-11	Replace every two years (When used for eight hours a day.)

1-7. Notes on Replacement of Circuit Board

Note

After the following IC or the board has been replaced, check M01: SERIAL NO SET of the MAINTENANCE menu. When the board status is shown as “NG”, execute WRITE. After that, confirm that “NG” changes to “OK”.

1-7-1. EEPROM Data

The table below lists data retained in the EEPROM on respective boards.

Note

The part number listed in “Spare Parts”of the Factory Service Manual is for EEPROM which is not programmed. Therefore, program a new EEPROM after replacement. For details, contact your local Sony Sales Office/Service Center.

Board name	Ref. No.	Stored data
DM-152	IC1608	Board adjustment data
	IC2201	Serial number, etc.
DPR-361	IC106	Serial number and board adjustment data
	IC107	MAC address

1-7-2. Actions to Be Taken after Board Replacement/Repair

Board name	Action
DM-152	TRIAX Transmission System Adjustment (Refer to section 5-6.) *1 Setting of the cable length calculation reference value only when IC1608 is replaced *1
DPR-361	SD Signal System Adjustment (Refer to section 5-4.) HD Signal System Adjustment (Refer to section 5-5.) Re-setting of DATE/TIME after replacement of lithium battery

*1: Not necessary when the DM-152 board is replaced.

1-8. Circuit Protection Parts

1-8-1. Circuit Protective Element

This unit is equipped with positive-characteristic thermistors (power thermistors) as circuit protection elements.
The positive-characteristic thermistor limits the electric current flowing through the circuit as the internal resistance increases when an excessive current flows or when the ambient temperature increases.
If the positive-characteristic thermistor works, turn off the main power of the unit and inspect the internal circuit of the unit. After the cause of the fault is eliminated and the positive-characteristic thermistor is cooled down, turn on the main power again. The unit works normally. It takes about one minute to cool down the positive-characteristic thermistor after the main power is turned off.

Board	Ref.No.	Address	Part No.
CN-3662	THP001	A2 (Side A)	⚠1-811-308-21
DPR-361	THP001	G4 (Side A)	⚠1-803-615-21
	THP002	G6 (Side A)	⚠1-802-063-21
	THP003	B7 (Side A)	⚠1-803-353-21
	THP004	G6 (Side A)	⚠1-803-353-21
	THP005	G5 (Side A)	⚠1-803-615-21
	THP006	B7 (Side A)	⚠1-803-353-21
	THP007	E4 (Side A)	⚠1-803-353-21
	THP008	G6 (Side A)	⚠1-803-353-21
	THP010	F6 (Side A)	⚠1-803-615-21
	THP011	F7 (Side A)	⚠1-803-615-21
	THP200	A1 (Side A)	⚠1-771-845-21
	THP260	D5 (Side A)	⚠1-805-725-11
	THP261	E6 (Side A)	⚠1-803-353-21
	THP270	E1 (Side A)	⚠1-805-725-11
	THP272	G7 (Side A)	⚠1-802-243-11
	THP400	A8 (Side A)	⚠1-803-615-21
PS-739D	THP1	G5 (Side A)	⚠1-811-824-11

1-8-2. Fuse

WARNING

Fuses are essential parts for safe operation. Be sure to use the parts specified in this manual. Replacing a fuse with an unspecified one may cause fire or electric shock.

CAUTION

If the fuse is replaced while the main power is kept on, this may cause electric shock.
Before replacing the fuse, not only turn off the POWER switch but also disconnect the cable that is connected to the AC IN connector.

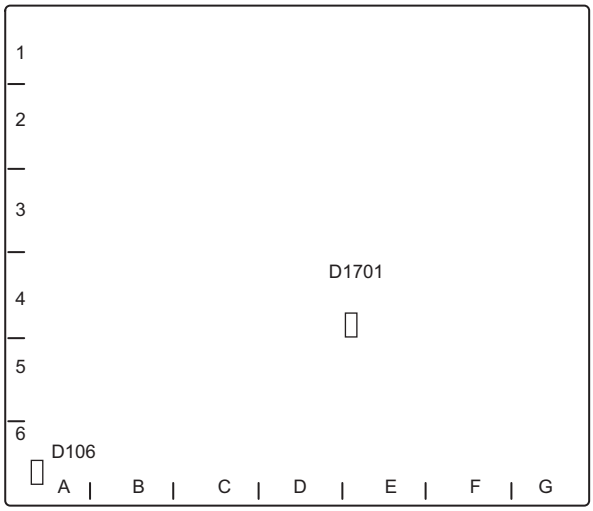
This unit is equipped with fuses. The fuses blow if overcurrent flows in the unit due to an abnormality, In that case, turn off the power of the unit, inspect inside of the unit, and then remove the cause of the overcurrent. After that, replace the defective parts.

Board	Ref. No.	Address	Name	Part No.
PS-739D	F1	H1 (Side A)	FUSE (TIME-LAG TYPE) (10 A /250 V)	⚠1-523-066-11
	R2129	B4 (Side A)	FUSIBLE (0.1 Ω /0.5 W)	⚠1-220-778-11

1-9. Functions of Onboard Parts

1-9-1. Description of Onboard LED Indicators

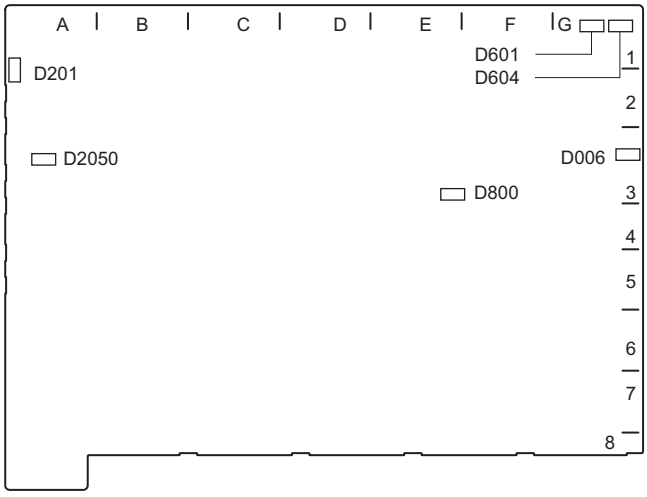
DM-152 Board



DM-152 board (Side A)

Ref.No.	Name	Color	Description	Normal state
D106	PWR-ST	Green	Lights when all power voltages on the DM-152 board are normal.	Lit
D1701	FPGA CONF DONE	Blue	Lights during configuration or when an error occurs, and goes out when the configuration is completed.	Off

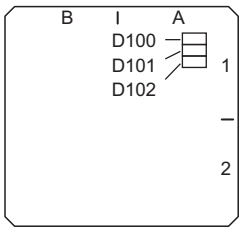
DPR-361 Board



DPR-361 board (Side A)

Ref.No.	Name	Color	Description	Normal state
D006	DPR-POWER	Green	Lights when all power voltages on the DPR-361 board are normal.	Lit
D201	MS-LED	Red/Green	Indicates state of access to the memory stick. Lit red: Access to the memory stick in progress. Do not remove the memory stick. Lit green: The inserted memory stick can be removed.	—
D601	EXT	Green	Lights when the external input Reference signal is detected.	Off
D604	PLL NG	Red	Lights when there is a problem with the PLL on the DPR-361 board.	Off
D800	CONF DONE	Red	Lights during download of FPGA (IC700) data on the DPR-361 board or when a configuration error occurs.	Off
D2050	CONF DONE	Red	Lights during download of FPGA (IC2000) data on the DPR-361 board or when a configuration error occurs.	Off

ENC-112 Board

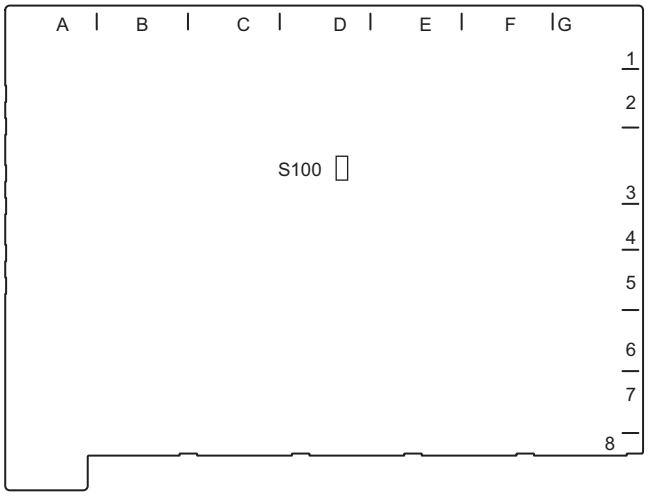


ENC-112 board (Side B)

Ref.No.	Name	Color	Description	通常状態
D100-D102	—	Green	Blinks when IC100 on the ENC-112 board functions correctly.	Blinking

1-9-2. Functions of Onboard Switches

DPR-361 Board



DPR-361 board (Side A)

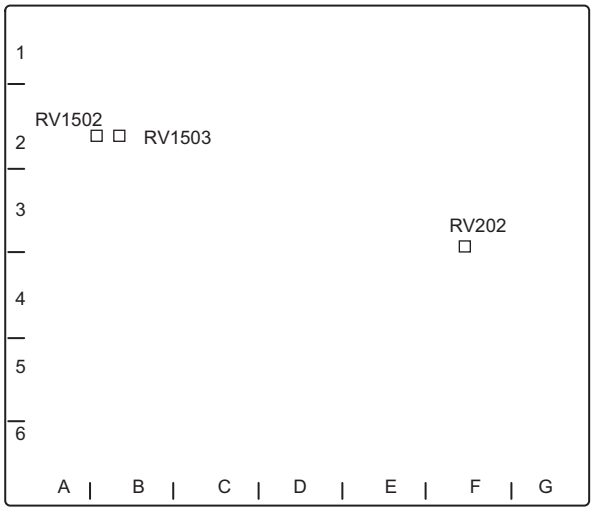
Note

Do not change the settings of unused switches.

Ref.No.	Name	Bit	Description	Factory setting
S100	VerUP	1	Used to enable software update using a memory stick.	OFF
	PLD VerUP	2	Used to enable PLD update using a memory stick.	OFF
	NORMAL/DEBUG	3	Not used	OFF
	NORMAL/DEBUG	4	Not used	OFF

1-9-3. Functions of Onboard Potentiometers

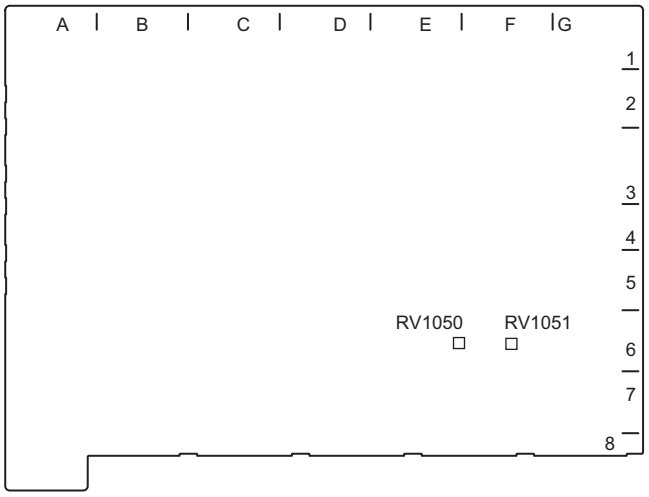
DM-152 Board



DM-152 board (Side A)

Ref.No.	Name	Description
RV202	4MHz CLK LEV ADJ	Used to adjust the 4 MHz CLK level of the OFDM demodulation circuit.
RV1502	1.4MHz TUNE	Used to adjust the 1.4 MHz frequency of the demodulation circuit.
RV1503	TONE ADJ	Adjusts free-running oscillation frequency of the TONE signal detection circuit.

DPR-361 Board



DPR-361 board (Side A)

Ref.No.	Name	Description
RV1050	PROD RTS CANCEL	Adjusts sidetone cancellation amount of the producer line when RTS or Clear-Com is connected.
RV1051	ENG RTS CANCEL	Adjusts sidetone cancellation amount of the engineer line when RTS or Clear-Com is connected.

1-10. Circuit Description

1-10-1. DM-152 Board

The DM-152 board has two blocks: one is for digital triax transmission and the other is for video signal processing.

Digital Triax Transmission Circuit

The transmission circuit consists of an FM signal transmitter/receiver for the tone/sync signals, and an OFDM signal transmitter/receiver for the video/audio/trunk signals and commands.
This circuit has a function to monitor the receiver operation status for the OFDM signal transmitter/receiver control and a function to detect the length of the connected triax cable.

- In the FM receiver, the FM signal (carrier frequency 1.4 MHz) is extracted from the RF signal sent from the camera by the MPX filter and BPF, and is demodulated by IC1516. The demodulated signal is separated into tone signal (16.38 kHz) by the HPF (14 kHz). The tone signal is used to control the main power supply (180 VDC) to the camera.
  In the FM transmitter, the sync signal is FM-modulated with a carrier frequency of 1.0 MHz and is then sent to the CCU while the main power is turned on.
- The OFDM signal receiver circuit consists of two blocks: one is for the F1/F2/F3 low bands and the other is for F4/F5/F6 mid bands to support six waves F1 to F6 for transmission of video/Skin gate/MIC/INCOM/command signals.
  The low-band receiver circuit removes low-frequency noise from F1 to F3 signals that are output from the LPF side of the MPX filter by the HPF (0.9 MHz), and amplifies the signals by the low-noise amplifier, and selects them for each band by the BPF for individual processing.
  The levels of the selected F2 and F3 signals are regulated by the step gain amplifier (that automatically switches amplifier gain to four steps according to input signal level) and the AGC amplifier. Then the signals are converted to signals with a center frequency of 36 MHz by the mixer circuit.
  Since the AGC amplifier does not function in the F1 band, the F1 signal processing circuit configuration is different from that for F2/F3 signals. In the F1 signal processing circuit, the F1 signal is input to the step gain amplifier (IC3402) and then to the mixer circuit. The F1 signal is converted to a signal with a center frequency of 36 MHz, and the signal level is regulated by the AGC amplifier.
  The converted OFDM signals F1, F2, and F3 (36 MHz center frequency) are converted to TS data by the demodulator ICs (IC3404, IC3504, and IC3604), and the serial TS data is output to the video signal processing circuit.
  The mid-band receiver circuit amplifies the F4 to F6 signals that are output from the BPF side of the MPX filter by the low-noise amplifier, and selects them for each band by the BPF for individual processing. Since attenuation in the cable transmission becomes large in the mid signal band, this circuit has a function to switch the low-noise amplifier gain to two steps according to the transmission distance.
  The selected F4 to F6 signals are processed in the same circuit configuration as for the F2 and F3 signals.
- The OFDM signal transmitter circuit consists of two blocks: one is for F7 + F9 bands and the other is for F8 band to support three waves F7 to F9 for transmission of return video/prompter video/INCOM/PGM/command signals.
  The video signal processing circuit generates OFDM signals with D/A conversion. However, because the clock frequency is 183 MHz, this circuit generates OFDM signals with low frequencies (26 + 46 MHz and 36 MHz) but not with direct (F7 + F9) and F8 frequencies, and then converts them to signals with (F7 + F9) and F8 frequencies by the mixer circuit. Then the converted OFDM signals are mixed by the respective output drivers and are output to the camera. Since attenuation in the cable transmission becomes large in the F7 to F9 signal bands, this circuit has a function to switch the output signal level to four levels by the gain control amplifier and ATT according to the transmission distance.

This digital triax transmission circuit is provided with a transmission cable length detection function for transmission distance-based control, a mixer circuit, and a 4MHz clock generator for the OFDM signal demodulation IC.

Video Signal Processing Circuit

The DM-152 board has two circuits for the main-line system and the return system. In the main-line system circuit, the OFDM-modulated signal from the camera is demodulated. Then video signals are transferred to the DPR-361 board. In the return system circuit, the return video signals and the VBS prompter signal from the DPR-361 board are encoded, OFDM-modulated, and are then sent back to the camera.

- In the main-line system circuit, the stream signal demodulated from the signal sent from the transmission block is separated into video signals, audio signals, command signal, and trunk signal. The video signals are sent to the CODEC IC to be decoded to baseband video signals. Video signals to be decoded to baseband by the CODEC IC, audio signals, command signal, and trunk signal sent to the DPR-361 board.
- In the return system circuit, the return video signal from the DPR-361 board is sent to the CODEC IC to be encoded, and is then sent to the OFDM modulation IC. The VBS prompter signal from the DPR-361 board is decoded by the VBS decoder IC, and is then sent to the ENC-112 board to be encoded. The encoded signal is sent to the OFDM modulation IC.
  The OFDM modulation IC multiplexes the return/prompter signals, the command signal sent to the camera, and the audio signal for the intercom to generate two-system signals (F7 + F9 and F8 waves), D/A-converts the multiplexed signal, and then sends it to the transmission circuit.

In addition to these circuits for the main-line and return signal processing systems, the DM-152 board contains an EEPROM that retains signals for the cable length determination adjustment data.

1-10-2. ENC-112 Board

The small ENC-112 board located on the DM-152 board functions as a CODEC of video signals for the prompter. The ICs on this board have MPEG2 encoding/decoding functions, and the CCU side uses the encoding function.

1-10-3. DPR-361 Board

The DPR-361 board has the following functions.

Control Block

The DPR-361 board that contains a microcomputer SH2-DSP (IC100) controls the internal boards and power supply, and performs settings for the system including camera. It also performs command communication with the camera, RCP, and MSU.
Furthermore, this board enables LAN connection by the LAN controller that incorporates a microcomputer.
This board has an HD/SD signal generator and performs genlock with the external reference and between HD and SD signals. Thus it controls entire video signal phases. It also can select HD tri-level sync signal or SD sync signal and output it.

Audio Signal and Tally Processing

- D/A-converts and outputs the MIC signal sent from the DM-152 board.
- Selects and D/A-converts the intercom signals sent from the DM-152 board, and sends them to external circuits.
- A/D-converts the intercom signals and the PGM signal that are input to the unit, and sends them to the DM-152 board.
- R/G tally signal interface

Video Signal Processing Circuit

Video processing of the DPR-361 board is performed for two systems: one is main-line system to transfer video signals of each channel to the rear panel, and the other is return system to transfer return video and prompter signals from the rear panel to the camera.

- Main-line system video signals are sent as LVDS signals from the DM-152 board. The video signals are demodulated to baseband signals by the demodulator circuit (IC2000) and then receive the following processes according to each output.
  - SDI output: :
    The audio signal and the synchronization signal are superimposed on the video signals, and the superimposed signal is converted to HD-SDI or SD-SDI signal, and then the serial signal is output from the rear panel.
  - Analog component output:
    The HD-YPbPr or SD-YCD signal that is output from the video signal processor circuit (IC1500) is RGB-converted according to the output format setting, and the converted signal is D/A-converted. Then the converted analog signal is sent to the rear board.
  - VBS output:
    The SD-YCD signal that is output from the video signal processor circuit (IC1500) is converted to VBS signal by the encoder circuit (IC1101), and the VBS signal is D/A-converted for each PIX, VBS, and WFM output. Then each converted analog signal is sent to the rear board.
- The return and prompter signals that are input from the DPR-361 board and the rear board can handle HD-SDI, SD-SDI, and VBS signals. These signals are switched and the specified signal is selected and sent back to the camera.
  - Phase matching is performed for HD-SDI signals.
  - SD-SDI signals are converted to pseudo-HD signals by the up-conversion processing, and phase matching is performed for the pseudo-HD signals.
  - VBS signals are digitized to the level equivalent to the SD digital component signal, and are then processed in the same way as SD-SDI signals.

In addition to these circuits for the main-line and return signal processing systems, the DPR-361 board contains a character generator for CCU menu output, a WFM stair case signal generator, and an EEPROM that retains signals for the component/VBS video level adjustment data.

1-10-4. CN-3661 Board

CN-3661 board provides two channels of MIC signal output.

1-10-5. CN-3662 Board

The CN-3662 board is connected to the DPR-361 board with flexible wire to output SD analog signals (PIX and VBS signals) to external devices. This board also outputs REFERENCE, PROMPTER, and RET input signals from external devices to the DPR-361 board.
The INCOM/TALLY/PGM connector for interface with external devices outputs input signals to the DPR-361 board.
The 28 V power for the RCP generated on the PS-739D board is output from the CN-3663 board through the CN-3662 board.
The fan power FAN 12V is generated from 15 V on the CN-3662 board and is output. This board also detects fan operation.

1-10-6. CN-3663 Board

CN-3663 board outputs the RCP signal and SYNC/WF signals.

1-10-7. AU-358 Board

AU-358 board contains tally (red/green) and status indicator LEDs, menu operation switches, intercom switches, and a microphone amplifier gain. Selection of the microphone amplifier gain, BIAS power on/off, and balance/unbalance is set by the CCU menu.
The CCU control panel HKCU-FP2 is detected by the AU-358 board, and HKCU-FP2 signals are sent through the AU-358 board.

1-10-8. CN-3664 Board

CN-3664 board contains an intercom connector (XLR-5, female). This board is connected to the AU-358 board.

1-10-9. PS-739D Board

The PS-739D board generates DC 38 V and 180 V for the camera, 28 V for the RCP, and 15 V for the CCU from the AC line power input, and supplies these power voltages. Commercial power 100 to 240 VAC is supplied from the rear AC inlet through the front AC switch. The internal LV converter supplies 15 V for the CCU and 28 V for the RCP. The internal HV converter supplies CAM 38 V and 180 V. When the CCU is connected to the camera, 38 V is output first. After that, when the connected camera is recognized, 180 V is output upon reception of the CAM POWER ON signal from the CCU.

1-10-10. CT-257D Board

The small CT-257D board located on the PS-739D board contains an internal protective circuit, a PLD circuit for CHU output control, and a 28 V output regulator for RCP.

1-11. Lead-free Solder

All boards mounted in this unit use lead-free solder. Be sure to use lead-free solder when repairing the boards of this unit. A lead free mark (LF) indicating that the solder contains no lead is printed on each board. (Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

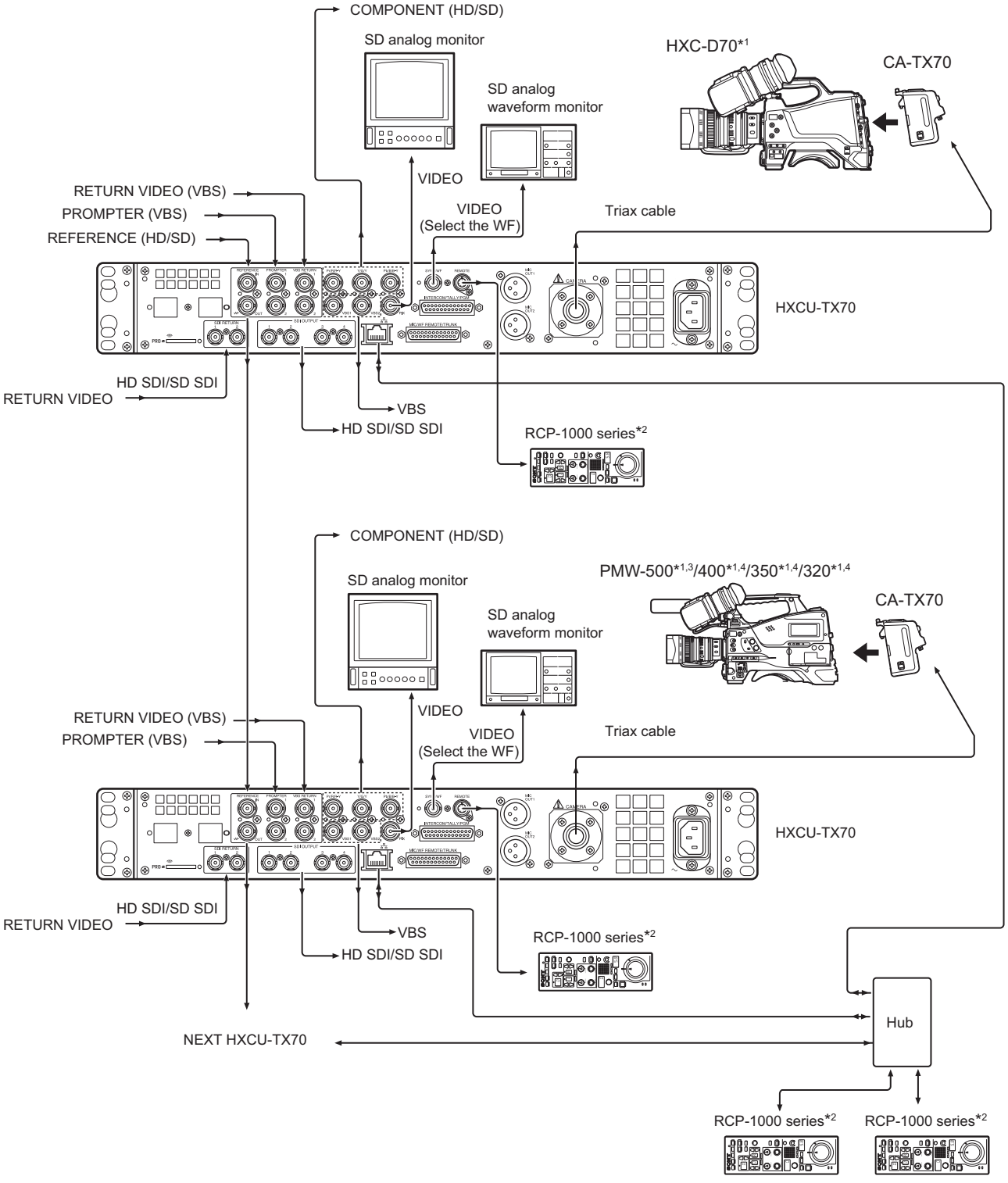
 : LEAD FREE MARK

Note

- The lead-free 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.

Section 2
System Setup

2-1. System Connection



*1: When the CCU is connected, the local power supply (EXT DC) on the camera side cannot be used. Be sure to use the CCU power supply.
*2: Either LAN connection or remote connection is used for connection to the RCP.
*3: Only when the optional CBK-HD02 is installed.
*4: Only when the optional CBK-CE01 is installed.

2-2. Audio System

2-2-1. Intercom System Setting

Two independent intercom lines (producer line and engineer line) are selectable and available in this unit.
This unit supports 4-wire, RTS, and Clear-Com intercom systems. Make settings of the internal switches and menus according to the system to be used.

Selecting Intercom System

Set the intercom system with SYSTEM I/F of the CCU CONFIGURATION menu (C06).
Select an intercom system (CLEAR COM, 4 WIRE, or RTS) according to the system to be used.

Note

When intercom system is set to RTS or CLEAR COM be sure to connect the unit to the RTS or Clear-Com system. Failure to do so will cause the output to oscillate and adversely affect the surrounding circuit.

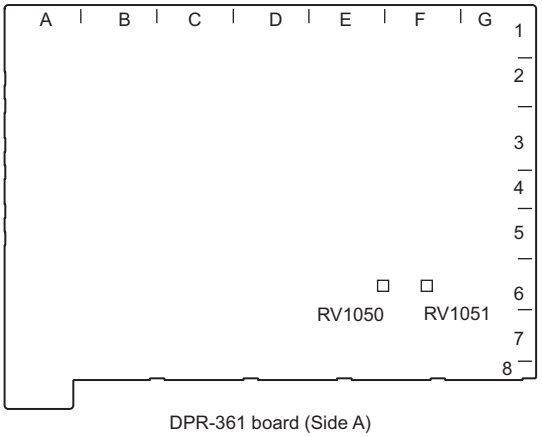
Adjusting RTS Cancellation (RTS/Clear-Com)

Note

Remove the DM-152 board and make adjustment.

When the RTS or Clear-Com system is used, adjust the sidetone cancellation amount using the following procedure. Before beginning adjustment it is recommended to make a copy of setup conditions. You can easily restore the original settings after adjustment.

1. Set the SIDE TONE value of the CCU CONFIGURATION menu (C07) to 0.
2. Set the INTERCOM switch on the front panel to PROD.
3. While speaking to the headset microphone, adjust potentiometer RV1050 (PROD RTS/CC CANCEL) on the DPR-361 board so that the voice heard from the headset becomes minimum.
4. Set the INTERCOM switch on the front panel to ENG.
5. While speaking to the headset microphone, adjust potentiometer RV1051 (ENG RTS CANCEL) on the DPR-361 board so that the voice heard from the headset becomes minimum.
6. Re-set the SIDE TONE value of the CCU CONFIGURATION menu (C07) to the customer settings.



DPR-361 board (Side A)

Setting PGM Audio Signal Input Level

Set the PGM audio signals (PGM1 and PGM2) with PGM1 INPUT and PGM2 INPUT of the CCU CONFIGURATION menu (C06) according to each signal level.
-20, 0, +4 dBu (factory setting: 0 dBu)

Setting Headset Microphone (Front Panel)

1. Set INCOM MIC of the CCU CONFIGURATION menu (C07) according to the microphone type of the headset to be connected to the front INTERCOM connector.
   - Carbon microphone: CARBON (-20 dBu, power supplied))
   - Condenser microphone: ECM (-40 dBu, power supplied))
   - Dynamic microphone: DYNAMIC (-60 dBu, no power supplied) (factory setting)
2. When the dynamic microphone is used, set MIC TYPE of the CCU CONFIGURATION menu (C07) according to the microphone of the headset to be connected to the front INTERCOM connector.
   - BALANCE : Balanced microphone
   - UNBALANCE : Unbalanced microphone (factory setting)

Adjusting Sidetone Volume

Adjust the sidetone volume of the headset connected to the front INTERCOM connector with SIDE TONE of the CCU CONFIGURATION menu (C07) according to the headset to be used. Too high volume of the sidetone may cause howling.

Selecting PGM Audio Signal

Select the PGM audio signal of the headset connected to the front INTERCOM connector to a desired level with PGM SEL of the CCU CONFIGURATION menu (C07).

- PGM1: To select PGM1 (factory setting)
- PGM2: To select PGM2
- PGM1+PGM2: To select PGM1 and PGM2 mixed

Headset output selection

		PGM MIX (CCU CONFIGURATION menu (C07))		
		INCOM + PGM	**OFF**	**L-INCOM/R-PGM**
MIC/PGM switch	ON	Intercom + PGM	Intercom	Left: Intercom Right: PGM
	OFF			
	PGM		PGM	

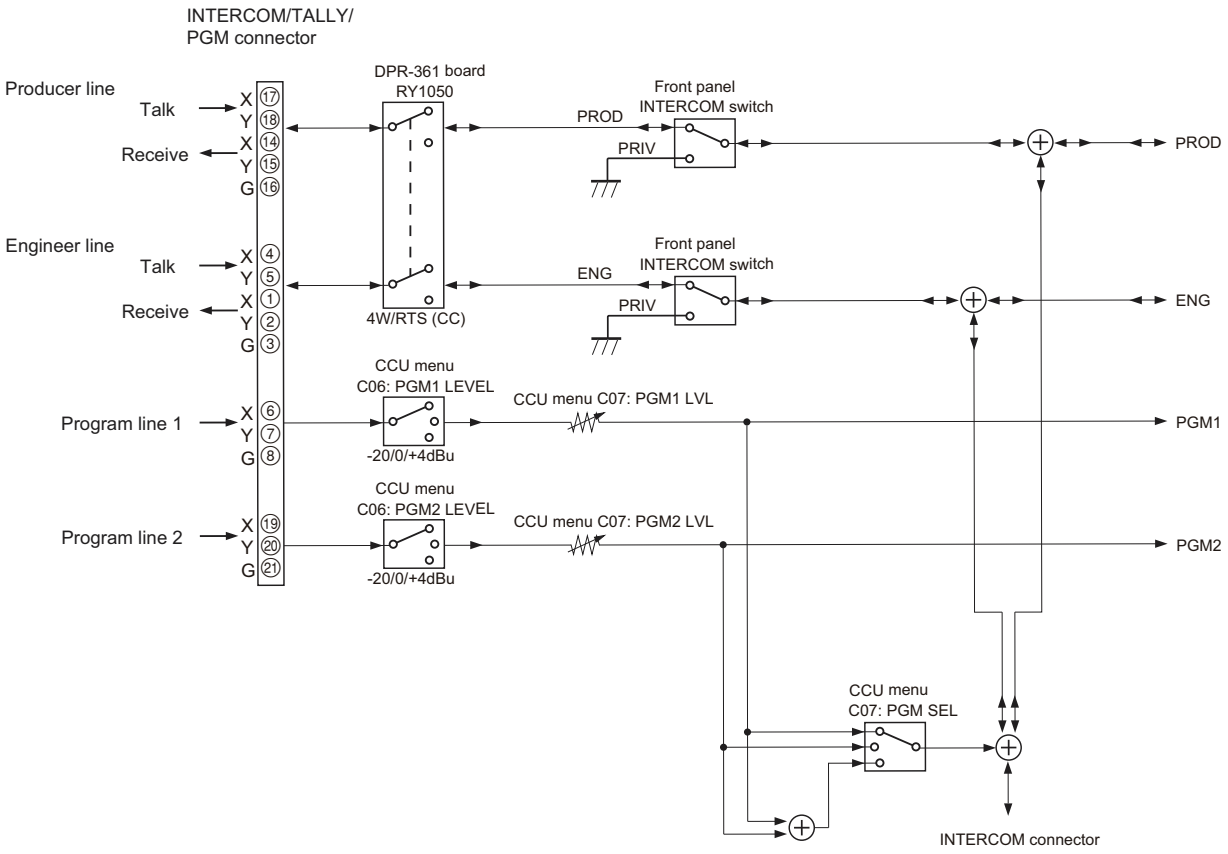
Adjusting PGM Audio Signal Mixing Volume

Adjust the PGM audio signal mixing volume of the headset connected to the front INTERCOM connector to a desired level with PGM1 LVL and PGM2 LVL of the CCU CONFIGURATION menu (C07).

Selecting Intercom Line to Be Connected to the INTERCOM Connector

Select the intercom line to be connected to the front INTERCOM connector as follows with the INTERCOM switch.
Producer line: PROD
Engineer line: ENG
Communication only between CCU and camera: PRIV

Intercom Signal Flow



2-2-2. Microphone Setting

This unit can receive two independent microphone lines (MIC1 and MIC2) from the camera and output them.

Remote Controlling Microphone Input Amplifier Gain

Note

Set the REAR DSUB I/F of the CCU CONFIGURATION menu (C14) to MIC REM.

Remote Control Using the CCU CONFIGURATION Menu

When the MIC/WF REMOTE/TRUNK connector on the rear panel is open or pins 8 and 20 of the MIC/WF REMOTE/TRUNK connector is at a high level, set the gain with CAM MIC GAIN of the CCU CONFIGURATION menu (C05).
20, 30, 40, 50, 60 dB (factory setting: 60 dB)

Remote Control from the MIC/WF REMOTE/TRUNK Connector

The microphone input amplifier gain control is enabled or disabled by pins 8 and 20 of the MIC/WF REMOTE/TRUNK connector on the rear panel.
The microphone input amplifier gain can be set by pins 5 to 7 of the MIC/WF REMOTE/TRUNK connector.

Pin No.		Connector	
8	**20**	**MIC IN CH-1**	**MIC IN CH-2**
L	L	ON	ON

Continued

Pin No.		Connector	
8	**20**	**MIC IN CH-1**	**MIC IN CH-2**
L	H	ON	OFF
H	L	OFF	ON
H	H	Set with CAM MIC GAIN of the C05: MIC/AUDIO	

Pin No.			Gain
7	**6**	**5**	
H	H	H	60 dB
L	H	H	50 dB
H	L	H	40 dB
L	L	H	30 dB
H	H	L	20 dB

H: +5 V or open
L: GND
Input resistance: 100 kΩ (+5 V pull-up)

Adjusting MIC Phase

Adjust the microphone signal phase with MIC OUT DELAY of the CCU CONFIGURATION menu (C05) according to the system to be used.
0 to 3840 FS (factory setting: 0 FS)

Setting MIC Output Level

Set the MIC outputs (MIC1 and MIC2) with MIC1 LEVEL and MIC2 LEVEL of the CCU CONFIGURATION menu (C05) according to each signal level.
–20 dBu, 0 dBu, +4 dBu (factory setting: 0 dBu)

2-3. System Settings

2-3-1. Tally System

This unit supports red tally and green tally systems. Contact supply signal input is supported.

2-3-2. Camera Number Setting

Set the camera number with CCU NO of the NETWORK SETTINGS menu (N03).

2-4. Video Signal System

Video signals of this unit and the equipment used for a camera system were adjusted to the specified levels in the factory shipping process.
Before starting operation, check the signal levels between equipment and adjust them, if necessary.

2-4-1. Input/Output Signal Selection

Select a signal of the input/output connector on the rear panel according to the video system to be implemented.

2-4-2. Signal Phase Adjustment

Adjust signal phases of the unit.
Before starting this adjustment, input the following sync signals to the unit and equipment used.

REFERENCE connector

Input the HD tri-level sync signal or black burst signal.
HD tri-level sync signal: 0.6 Vp-p
Black burst signal:

- NTSC: 0.286 Vp-p
- PAL: 0.3 Vp-p

Adjusting Sync Signal Phase

Note

Set the REAR DSUB I/F of the CCU CONFIGURATION menu (C14) to MIC REM.

Adjust the sync signal phase with S02: GENLOCK PHASE of the SYSTEM OPERATION menu so that the output signal phase matches the phase of the reference signal. The phase can also be adjusted using the RCP-1500 series.

2-4-3. Aspect Ratio Setting for Down-Conversion

Note

Set the REAR DSUB I/F of the CCU CONFIGURATION menu (C14) to MIC REM.

With this unit, this system enables switching of aspect ratio in accordance with various systems for the HD-SD down-conversion.
Set the aspect ratio with the MIC/WF REMOTE/TRUNK connector on the rear panel or with S05:SD ASPECT of the SYSTEM OPERATION menu. It can also be set using the RCP-1500 series.
The following four aspect ratio modes are selectable in this system.

Squeeze	Converts the HD video signal to SD signal with an aspect ratio of 16 : 9 unchanged (16 : 9)
Edge crop	Crops 4 : 3 video part from the HD video signal and converts it to SD signal (4 : 3)
Letterbox	Fits the HD video signal with an aspect ratio of 16 : 9 into a 4 : 3 monitor frame and converts it to SD signal (4 : 3) (Black level is inserted above and below the picture.)
Semi-letterbox	Crops 15 : 9 (or 14 : 9 or 13 : 9) video part from the HD video signal, fits it into a 4 : 3 monitor frame, and then converts it to SD signal (4 : 3) (Black level is inserted above and below the picture.)

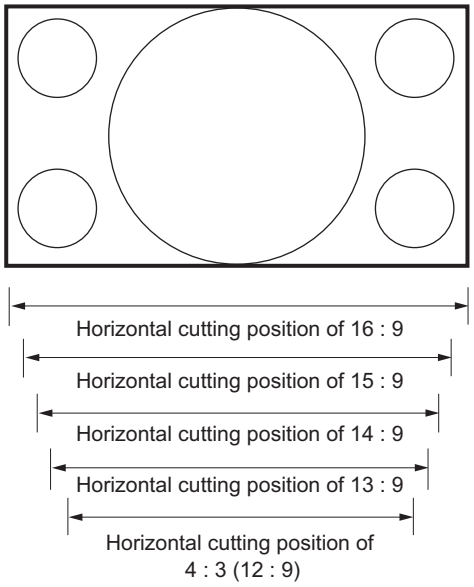
Setting Aspect Ratio with the MIC/WF REMOTE/TRUNK Connector

1. Set pin 17 of the MIC/WF REMOTE/TRUNK connector on the rear panel to low level.
2. Set pins 18 and 19 of the MIC/WF REMOTE/TRUNK connector according to the aspect ratio to be converted.

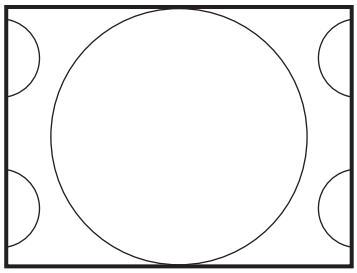
Pin 18 (ASPECT CTRL1)	Pin 19 (ASPECT CTRL2)	Aspect ratio
L	H	Squeeze (16 : 9)
H	H	Edge crop (4 : 3)
L	L	Set with S05:SD ASPECT of the SYSTEM OPERATION menu.
H	L	Letterbox (4 : 3)

Examples of display

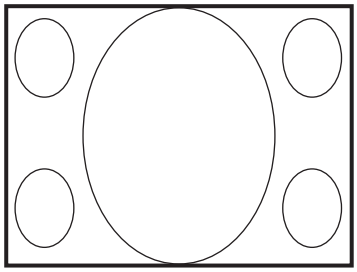
16 : 9 picture (picture from camera)



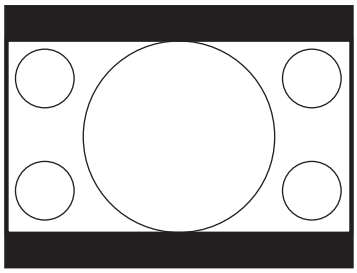
Picture whose aspect ratio is converted (SD output)



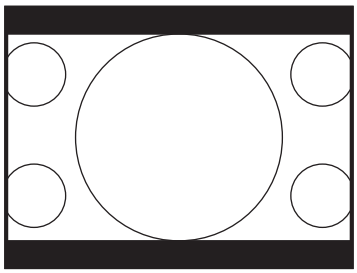
Edge-crop
CROP POSITION can be changed.



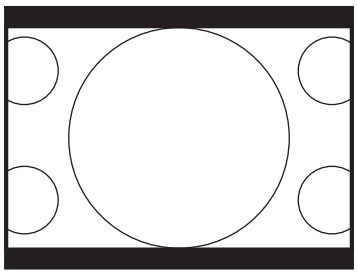
Squeeze
The 16 : 9 ratio picture is output in the SD format without changing the ratio.



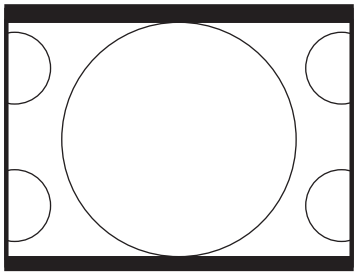
Letter box (16 : 9)
The 16 : 9 ratio picture is inserted into the 4 : 3 ratio picture without changing the ratio and is output in the SD format.



Semi-letter box (15 : 9)
The picture that is cut out with the aspect ratio of 15 : 9, is inserted into the 4 : 3 ratio picture and is output in the SD format.



Semi-letter box (14 : 9)
The picture that is cut out with the aspect ratio of 14 : 9, is inserted into the 4 : 3 ratio picture and is output in the SD format.



Semi-letter box (13 : 9)
The picture that is cut out with the aspect ratio of 13 : 9, is inserted into the 4 : 3 ratio picture and is output in the SD format.

2-4-4. VBS Signal Level Adjustment

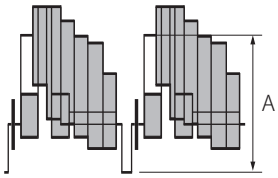
Adjust the VBS signal level that is output from this unit using the color-bar signal.

Adjustment Procedure

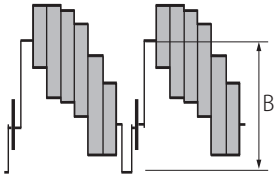
Adjust the VBS signal level with VBS LEVEL of M05: ANALOG VIDEO in the MAINTENANCE menu.
Equipment: SD waveform monitor
Test Point: VBS connector / CN-3662 board
Specification:

- A = 140 ±1 IRE（75 Ω termination）
- B = 1000 ±7 mVp-p（75 Ω termination）

NTSC (UC, J)



PAL (CED)



2-4-5. Waveform Monitor Signal Level Adjustment

The video output signal of the unit can be checked using the waveform monitor connected to the SYNC/WF connector.
Adjust the WF output signal level using the color-bar signal.

Note

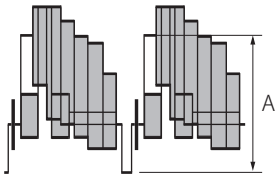
Set the SYNC/WFM-OUT of the CCU CONFIGURATION menu (C14) to WFM.

WF Output Signal Level Adjustment Procedure

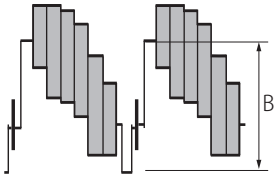
Adjust the WF output signal level with WFM LEVEL of M05: ANALOG VIDEO in the MAINTENANCE menu.
Equipment: SD waveform monitor
Test Point: SYNC/WF connector / CN-3663 board
Specification:

- A = 140 ±1 IRE（75 Ω termination）
- B = 1000 ±7 mVp-p（75 Ω termination）

NTSC (UC, J)



PAL (CED)

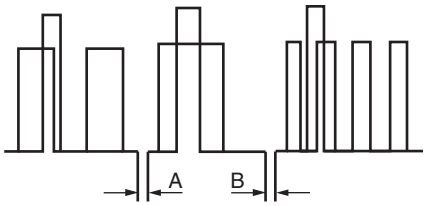


2-4-6. Stair Case Signal Adjustment Procedure

Adjust the stair case signal to display signals in the sequential mode on the waveform monitor. Make this adjustment when signals in the sequential mode are not displayed correctly on the waveform monitor.
When the waveform monitor is connected to the unit, adjust the stair case signal with STAIR LEVEL and STAIR DC of M06: ADC ADJUST in the MAINTENANCE menu.

1. Press the SEQ button of the "WAVEFORM MONITOR button" or "MONITOR SELECT button" of RCP-1000/1500, etc.
2. Adjust the position of the signal to be displayed with STAIR DC.
3. Adjust intervals A and B (shown in the figure below) of the signal to be displayed with STAIR LEVEL, so that A and B are nearly equal.

When the SEQ button of the "WAVEFORM MONITOR button" or "MONITOR SELECT button" of RCP-1000/1500, etc. is pressed, the waveform monitor control signal of the unit is output in synchronization with the SYNC/WF connector output signal.



Note

The sequential mode control varies with the waveform monitor used. Change the polarity of control by the WFM SEQ setting of the CCU CONFIGURATION menu (C14) as required.
If the stair case signal cannot be adjusted properly even by changing the polarity of control, adjust it on the waveform monitor side.

2-4-7. Picture Monitor Signal Level Adjustment

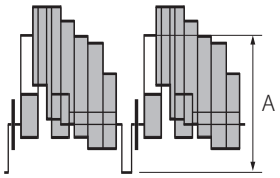
The video output signal of the unit can be checked using the waveform monitor connected to the PIX connector. Adjust the PIX output signal level using the color-bar signal.

PIX Output Signal Level Adjustment Procedure

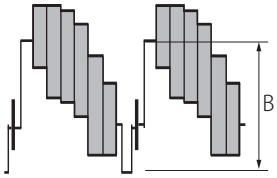
Adjust the PIX output signal level with PIX LEVEL of M05: ANALOG VIDEO in the MAINTENANCE menu.
Equipment: SD waveform monitor
Test Point: PIX connector / CN-3662 board
Specification:

- A = 140 ±1 IRE（75 Ω termination）
- B = 1000 ±7 mVp-p（75 Ω termination）

NTSC (UC, J)



PAL (CED)



2-4-8. RETURN Input Signal

Set the format of the return signal to be input to the RETURN INPUT connector (SDI RETURN 1, 2 and VBS RETURN 1, 2) using S06: RETURN SET in the SYSTEM OPERATION menu of the unit.

Section 3
Maintenance Mode

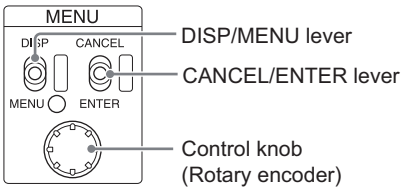
This unit can display the status of this unit and entire system on the video monitor connected to the PIX connector to check and change settings.

3-1. Preparations

3-1-1. Starting/Exiting the Maintenance Mode

Starting

1. When the status screen or menu screen is displayed, hide the screen.
   - When the status screen is displayed, turn the DISP/MENU lever to the DISP side once.
   - When the menu screen is displayed, turn the DISP/MENU lever to the MENU side once.
2. While pressing the CONTROL knob, turn the CANCEL/ENTER lever quickly to the ENTER side twice.
3. Turn the DISP/MENU lever to the MENU side within two seconds.



4. Check that the following screen appears. If it does not appear, repeat steps 1 to 3.

```
 **CCU MENU**
→SYSTEM OPERATION
 CCU CONFIGURATION
 NETWORK SETTINGS
 VE OPERATION
 MAINTENANCE
```

Exiting

1. When the status screen or menu screen is displayed, hide the screen.
2. Turn the CANCEL/ENTER lever quickly to the CANCEL side twice.

Changing Setting Values

To enter:
Press the CONTROL knob.

To cancel:
Turn the CANCEL/ENTER lever to the CANCEL side before pressing the CONTROL knob. The setting of the selected item is restored.

To suspend:

Turn the DISP/MENU lever to the MENU side. The menu disappears. To restart the setting operation, turn the DISP/MENU lever again to the MENU side.

3-1-2. Memory Stick

The following types of Memory Stick are available for this unit.

- Memory Stick Duo
- Memory Stick PRO Duo (Up to 2 GB)

3-2. VE OPERATION Menu

V01: REFERENCE

Menu screen	Item	Description
<REFERENCE> →V01 TOP STORE FILE STANDARD ALL PRESET READ (MS →CAM) WRITE(CAM→MS) M.S FORMAT FILE ID : CAM CODE: DATE	STORE FILE	Registers the current values of the VE OPERATION menu and MAINTENANCE menu as reference.
	STANDARD	Calls the registered standard state.
	ALL PRESET	Restores the factory settings.
	READ (MS → CAM)	Reads the reference file from the memory stick and transfers it to the camera.
	WRITE (CAM → MS)	Writes the reference file stored in the camera to the memory stick.
	M.S FORMAT	Formats the memory stick.
	FILE ID	Displays and edits the comment information of the reference file stored in the memory stick.
	CAM CODE	Model name information of the reference file stored in the memory stick
	DATE	Reference file save date information stored in the memory stick

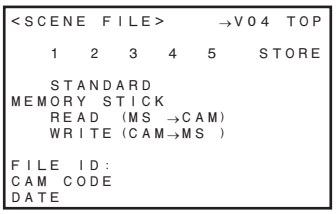
V02: LENS FILE

Menu screen	Item	Description
<LENS FILE> →V02 TOP STORE FILE No. : 1 NAME: A10x4.8	STORE FILE	Registers the current adjustment values as a lens file selected with “No.” (1 to 16)
	No.	Selects a file corresponding to the mounted lens from the lens file (16 types)
	NAME	Displays and edits the lens name selected with “No.” (1 to 16).

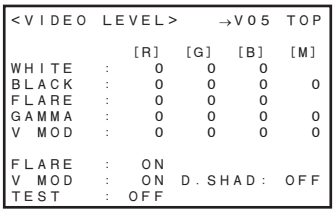
V03: OHB FILE

Menu screen	Item	Description
<OHB FILE> →V03 TOP STORE FILE	STORE FILE	Registers the current adjustment values as an OHB file

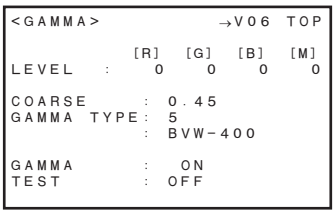
V04: SCENE FILE

Menu screen	Item	Description
	1 to 5, STORE	When STORE operation is not used: Call the relevant scene file using the file number selection menu. After that, the indication of “STORE” is highlighted. To cancel the call, select the file number again.
		When STORE operation is used: Place the cursor at “STORE” and turn the CANCEL/ENTER lever to the ENTER side. A message “STORE NO?” appears and the indication of "STORE" is highlighted. Save the relevant scene file using the file number selection menu.
	STANDARD	Calls the registered reference file.
	READ (MS → CAM)	Reads the scene file from the memory stick and transfers it to the camera.
	WRITE (CAM → MS)	Acquires the scene file stored in the camera using the file transfer, and writes it to the memory stick.
	FILE ID	Comment information of the reference file stored in the memory stick (It can be edited from the menu)
	CAM CODE	Model name information of the scene file stored in the memory stick
	DATE	Scene file save date information stored in the memory stick

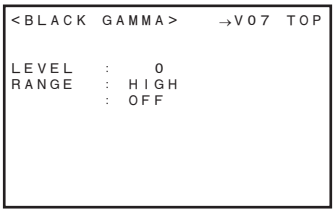
V05: VIDEO LEVEL

Menu screen	Item	Setting
	WHITE R/G/B	±99
	BLACK R/G/B/M	±99
	FLARE R/G/B	±99
	GAMMA R/G/B/M	±99
	V MOD R/G/B/M	±99
	FLARE	ON/OFF
	V MOD	ON/OFF
	D.SHAD	ON/OFF
	TEST	OFF/1/2

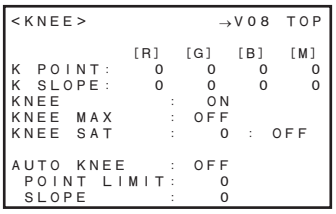
V06: GAMMA

Menu screen	Item	Setting
	LEVEL R/G/B/M	±99
	COARSE	0.90 to 0.35
	GAMMA TYPE	1 to 7
		Type / Name 1 / ×3.5 2 / ×4.5 3 / CAMCORDER 4 / ×5.0 5 / BVW-400 6 / SMPTE-240M 7 / ITU-R709
	GAMMA	ON/OFF
	TEST	OFF/1/2

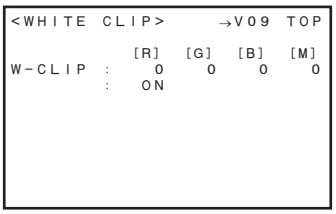
V07: BLACK GAMMA

Menu screen	Item	Setting
	LEVEL	±99
	RANGE	LOW/MID L/MID H/HIGH ON/OFF

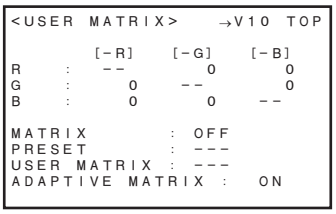
V08: KNEE

Menu screen	Item	Setting
	K POINT R/G/B/M	±99
	K SLOPE R/G/B/M	±99
	KNEE	ON/OFF
	KNEE MAX	ON/OFF
	KNEE SAT	±99 ON/OFF
	AUTO KNEE	OFF/AUTO
	POINT LIMIT	±99
	SLOPE	±99

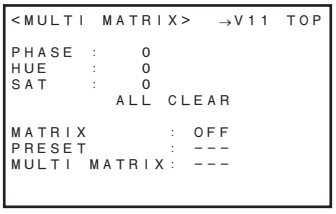
V09: WHITE CLIP

Menu screen	Item	Setting
	W-CLIP R/G/B/M	±99 ON/OFF

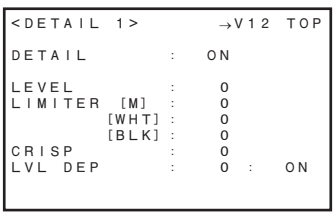
V10: USER MATRIX

Menu screen	Item	Setting
	MATRIX R-G/R-B	±99
	MATRIX G-R/G-B	±99
	MATRIX B-R/B-G	±99
	MATRIX	ON/OFF
	PRESET	ON/OFF
	USER MATRIX	ON/OFF
	ADAPTIVE MATRIX	ON/OFF

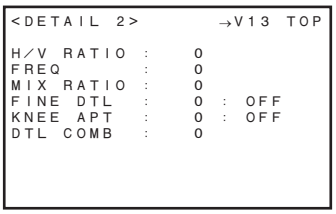
V11: MULTI MATRIX

Menu screen	Item	Setting	Description
	PHASE	0, 23, 45, 68, 90, 113, 135, 158, 180, 203, 225, 248, 270, 293, 315, 338	Selects an angle (from 16 angles) that varies the multi-matrix correction function
	HUE	±99	Adjusts the multi-matrix correction value of hue for each PHASE (16 angles)
	SAT	±99	Adjusts the multi-matrix correction value of saturation for each PHASE (16 angles)
	ALL CLEAR		Clears HUE and SAT of all 16 angles to 0.
	MATRIX	ON/OFF	
	PRESET	ON/OFF	
	MULTI MATRIX	ON/OFF	

V12: DETAIL 1

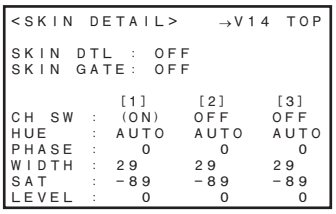
Menu screen	Item		Setting
	DETAIL		ON/OFF
	LEVEL		±99
	LIMITER	[M]	±99
		[WHT]	±99
		[BLK]	±99
	CRISP		±99
	LEVEL DEP		±99 ON/OFF

V13: DETAIL 2

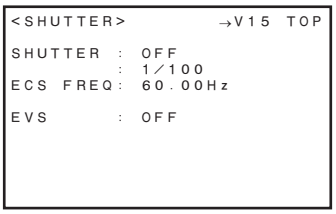
Menu screen	Item	Setting
	H/V RATIO	±99
	FREQ	±99
	MIX RATIO	±99
	FINE DTL	±99 ON/OFF
	KNEE APT	±99 ON/OFF
	DTL COMB	±99

V14: SKIN DETAIL

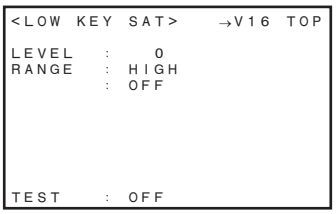
This unit controls only channel [1].

Menu screen	Item	Setting	Description
	SKIN DTL	ON/OFF	
	SKIN GATE	ON/OFF	
	CH SW 1/2/3	ON/OFF	
	HUE 1/2/3		Place the cursor at "AUTO" and turn the CANCEL/ENTER lever to the ENTER side. A message "AUTO HUE1:STAND-BY" appears and the cursor changes to "?". When the CANCEL/ENTER lever is turned to the ENTER side again, AUTO HUE is executed.
	PHASE 1/2/3	0, 359 to 270 to 180 to 90	The setting value decreases when the rotary encoder is rotated clockwise.
	WIDTH 1/2/3	±99	
	SAT 1/2/3	±99	
	LEVEL 1/2/3	±99	

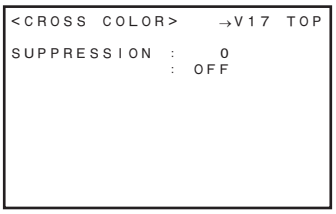
V15: SHUTTER

Menu screen	Item	Setting
	SHUTTER (SPEED)	ON/OFF 1/100 → 1/125 → ... → 1/2000 → ECS → 1/100
	ECS FREQ	
	EVS	ON/OFF

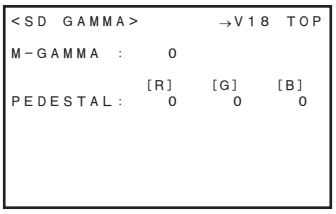
V16: LOW KEY SAT

Menu screen	Item	Setting
	LEVEL	±99
	RANGE	LOW/MID L/MID H/HIGH ON/OFF
	TEST	OFF/1/2

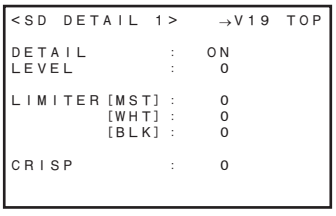
V17: CROSS COLOR

Menu screen	Item	Setting
	SUPPRESSION	±99 ON/OFF

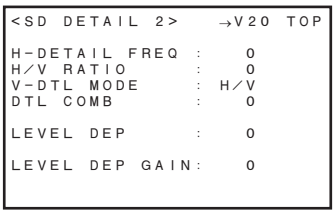
V18: SD GAMMA

Menu screen	Item	Setting
	M-GAMMA	±99
	PEDESTAL R/G/B	±99

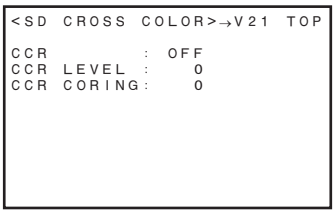
V19: SD DETAIL 1

Menu screen	Item		Setting
	DETAIL		ON/OFF
	LEVEL		±99
	LIMITER	[MST]	±99
		[WHT]	±99
		[BLK]	±99
	CRISP		±99

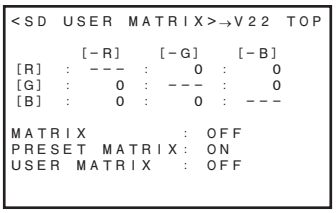
V20: SD DETAIL 2

Menu screen	Item	Setting
	H-DETAIL FREQ	±99
	H/V RATIO	±99
	V-DTL MODE	H/V, V ONLY
	DTL COMB	±99
	LEVEL DEP	±99
	LEVEL DEP GAIN	±99

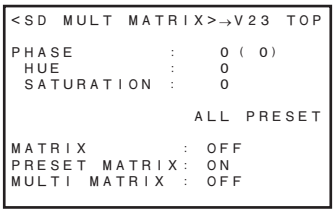
V21: SD CROSS COLOR

Menu screen	Item	Setting
	CCR	ON/OFF
	CCR LEVEL	±99
	CCR CORING	±99

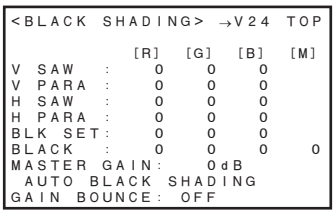
V22: SD USER MATRIX

Menu screen	Item	Setting
	R-G/R-B	±99
	G-R/G-B	±99
	B-R/B-G	±99
	MATRIX	ON/OFF
	PRESET MATRIX	ON/OFF
	USER MATRIX	ON/OFF

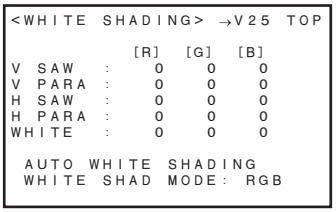
V23: SD MULTI MATRIX

Menu screen	Item	Setting	Description
	PHASE	0, 23, 45, 68, 90, 113, 135, 158, 180, 203, 225, 248, 270, 293, 315, 338	Selects an angle (from 16 angles) that varies the SD multi-matrix correction function
	HUE	±99	Adjusts the SD multi-matrix correction value of hue for each PHASE (16 angles)
	SATURATION	±99	Adjusts the SD multi-matrix correction value of saturation for each PHASE (16 angles)
	ALL PRESET		
	MATRIX	ON/OFF	
	PRESET MATRIX	ON/OFF	
	MULTI MATRIX	ON/OFF	

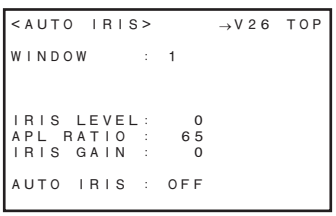
V24: BLACK SHADING

Menu screen	Item	Setting	Description
	V SAW R/G/B	±99	
	V PARA R/G/B	±99	
	H SAW R/G/B	±99	
	H PARA R/G/B	±99	
	BLK SET R/G/B	±99	
	BLACK R/G/B/M	±99	
	MASTER GAIN	–3dB to +12dB	
	AUTO BLACK SHADING		To execute: Place the cursor at “AUTO BLACK SHADING”, and turn the CANCEL/ENTER lever to the ENTER side.
			To cancel: Turn the CANCEL/ENTER lever to the ENTER side during execution.
	GAIN BOUNCE	ON/OFF	

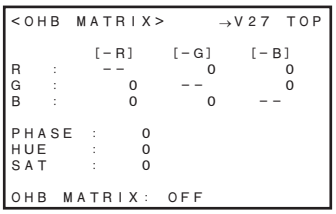
V25: WHITE SHADING

Menu screen	Item	Setting	Description
	V SAW R/G/B	±99	
	V PARA R/G/B	±99	
	H SAW R/G/B	±99	
	H PARA R/G/B	±99	
	WHITE R/G/B	±99	
	AUTO WHITE SHADING		To execute: Place the cursor at “AUTO WHITE SHADING” and turn the CANCEL/ENTER lever to the ENTER side.
			To cancel: Turn the CANCEL/ENTER lever to the ENTER side during execution.
	WHITE SHAD MODE	RB/RGB	

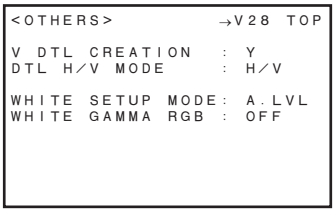
V26: AUTO IRIS

Menu screen	Item	Setting
	WINDOW	1 to 6
	IRIS LEVEL	±99
	APL RATIO	±99
	IRIS GAIN	±99
	AUTO IRIS	ON/OFF

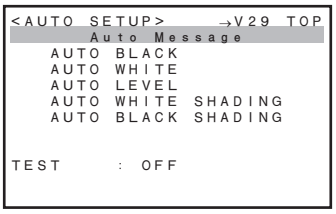
V27: OHB MATRIX

Menu screen	Item	Setting	Description
	R-G/R-B	±99	
	G-R/G-B	±99	
	B-R/B-G	±99	
	PHASE	0, 23, 45, 68, 90, 113, 135, 158, 180, 203, 225, 248, 270, 293, 315, 338	Selects an angle (from 16 angles) that varies the OHB matrix correction function
	HUE	±99	Adjust the OHB multi-matrix correction value of hue for each PHASE (16 angles)
	SAT	±99	Adjusts the OHB multi-matrix correction value of saturation for each PHASE (16 angles)
	OHB MATRIX	ON/OFF	

V28: OTHERS

Menu screen	Item	Setting
	V DTL CREATION	NAM/G/R+G/Y
	DTL H/V MODE	H/V, V ONLY
	WHITE SETUP MODE	A.LVL/RGB
	WHITE GAMMA RGB	ON/OFF

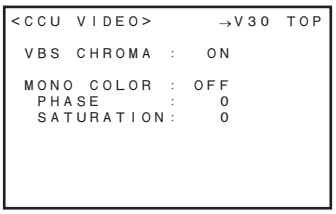
V29: AUTO SETUP

Menu screen	Item	Setting	Description
	AUTO BLACK		To execute: Place the cursor at the item to be adjusted. Turn the CANCEL/ENTER lever to the ENTER side.
	AUTO WHITE		
	AUTO LEVEL		
	AUTO WHITE SHADING		
	AUTO BLACK SHADING		To cancel: Turn the CANCEL/ENTER lever to the ENTER side during execution.
	TEST	OFF/1/2	

The following messages are displayed in the shaded Auto Message.

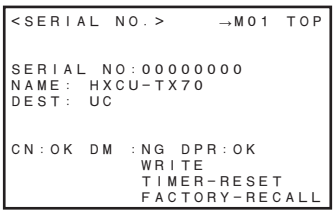
Adjustment item	Preparation for execution	During execution	Normal end	Abnormal end	Cancel
AUTO BLACK	—	ABB: EXECUTING	ABB: OK	ABB: NG	ABB: BREAK
AUTO WHITE	—	AWB: EXECUTING	AWB: OK	AWB: NG	AWB: BREAK
AUTO LEVEL	—	LEVEL AUTO: EXECUTING	LEVEL AUTO: OK	LEVEL AUTO: NG	LEVEL AUTO: BREAK
AUTO WHITE SHADING	—	AWS: EXECUTING	AWS: OK	AWS: NG	AWS: BREAK
AUTO BLACK SHADING	—	ABS: EXECUTING	ABS: OK	ABS: NG	ABS: BREAK

V30: CCU VIDEO

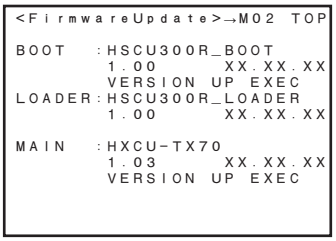
Menu screen	Item	Setting	Description
	VBS CHROMA	ON/OFF	
	MONO COLOR	ON/OFF	
	PHASE	0, 359 to 270 to 180 to 90	The setting value decreases when the rotary encoder is rotated clockwise.
	SATURATION	±99	

3-3. MAINTENANCE Menu

M01: SERIAL NO SET

Menu screen	Item	Setting	Description
	SERIAL NO	00000000 to 99999999	The setup information is stored in the EEPROM on the CN-3662 board, DM-152 board, and DPR-361 board.
	NAME	HXCU-TX70	
	DEST	J Japan UC United States CE Europe	
	WRITE		Writes the setup information to the EEPROM. Place the cursor at "WRITE" and turn the CANCEL/ENTER lever to the ENTER side. A message "SERIAL NO WRITE OK?" appears. Turn the CANCEL/ENTER lever to the ENTER side again to perform the processing.
	TIMER-RESET		Resets the timer for displaying power-on hours
	FACTORY-RECALL		Resets all the setting values except the following items to the factory settings • Media access control (MAC) address • Serial number • Power-on hours display timer • Setting values stored in the EEPROM on the CN-3662 board, DM-152 board, and DPR-361 board through the PLD

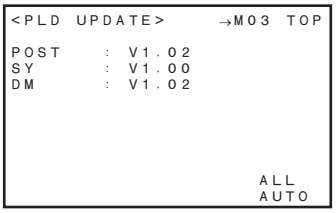
M02: Firmware Update

Menu screen	Item	Description
	BOOT	BOOT version information
	VERSION UP EXEC	Place the cursor at "VERSION UP EXEC" and turn the CANCEL/ENTER lever to the ENTER side. A message "UPDATE BOOT BLOCK ?" appears. Turn the CANCEL/ENTER lever to the ENTER side again to perform the processing.
	LOADER	LOADER version information
	MAIN	MAIN version information
	VERSION UP EXEC	Place the cursor at "VERSION UP EXEC" and turn the CANCEL/ENTER lever to the ENTER side. A message "UPDATE MAIN BLOCK ?" appears. Turn the CANCEL/ENTER lever to the ENTER side again to perform the processing.

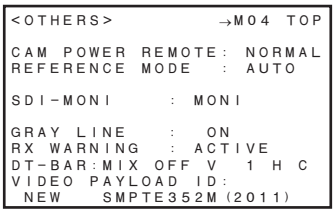
If an error is detected during memory stick read operation, any of the following messages is displayed.

- MS NOT FOUND: Memory stick is not inserted
- MS-FILE NOT FOUND: The target file is not found in the memory stick
- MS-FILE SIZE ERR: File size is not correct
- MS-FILE READ ERR: Memory stick read error

M03: PLD UPDATE

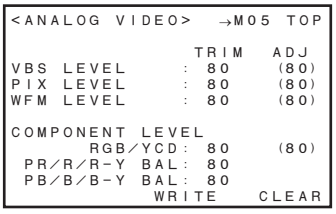
Menu screen	Item	Description
	POST	POST version information
	SY	SY version information
	DM	DM version information
	ALL	Upgrades all ROM files stored in the Memory Stick.
	AUTO	Upgrades only files later than the current version of relevant ROMs in the Memory Stick.

M04: OTHERS

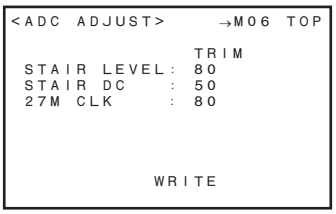
Menu screen	Item	Setting
	CAM POWER REMOTE	NORMAL/BACKUP
	REFERENCE MODE	AUTO/MANUAL
	SDI-MONI	CLEAN/MONI
	GRAY LINE	ON/OFF
	RX WARNING	ACTIVE
	DT-BAR	MIX ON/MIX OFF
	VIDEO PAYLOAD ID	NEW SMPTE352M(2011) /OLD SMPTE352M(2010)

M05: ANALOG VIDEO

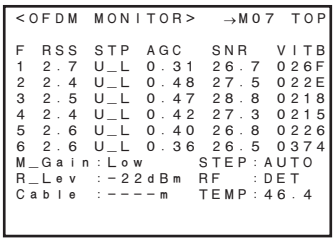
VBS/PIX/WF connector output cropping level adjustment. The setting values are stored in the EEPROM on the DPR-361 board.

Menu screen	Item	Setting	Description
	VBS LEVEL TRIM	00h to FFh	
	PIX LEVEL TRIM		
	WFM LEVEL TRIM		
	COMPONENT LEVEL		
	RGB/YCD TRIM		
	PR/R/R-Y BAL TRIM		
	PB/B/B-Y BAL TRIM		
	VBS LEVEL ADJ	00h to FFh	Only display
	PIX LEVEL ADJ		
	WFM LEVEL ADJ		
	COMPONENT LEVEL		
	RGB/YCD ADJ		
	PR/R/R-Y BAL ADJ		
	PB/B/B-Y BAL ADJ		
	WRITE		Writes the above cropping setting values to the EE-PROM.
	CLEAR		Clears the above adjustment values.

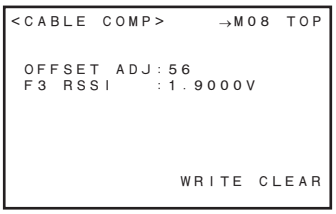
M06: ADC ADJUST

Menu screen	Item	Setting	Description
	STAIR LEVEL TRIM		Adjusts interval of WF SEQ waveform
	STAIR DC TRIM		Adjusts position of WF SEQ waveform
	27M CLK TRIM		Adjusts 27 MHz oscillating frequency
	WRITE		Writes the above setting values to the EEPROM.

M07: OFDM MONITOR

Menu screen	Item	Description
	F1	6 MHz
	F2	16 MHz
	F3	26 MHz
	F4	46 MHz
	F5	56 MHz
	F6	66 MHz
	RSS of F1 to F6	0.0 V to 3.3 V: Receive signal tuning output voltage
	STP of F1 to F6	U_L/Low/Mid/Hi: Step gain amplifier operating status
	AGC of F1 to F6	0.20 V to 3.27 V: AGC amplifier control voltage
	SNR of F1 to F6	SN measurement value of the OFDM demodulation IC input signal
	VITB of F1 to F6	OFDM signal reception status
	M_Gain	Low/Hi: Receiver amplifier gain of F4 to F6
	STEP	AUTO (HOLD): Step gain switching operation setting status of the step gain amplifier(CXA3793R)
	R_Lev	+10dBm/0dBm/-11dBm/-22dBm: OFDM output level of F7 to F9
	RF	NO/DET: RF signal detection status
	Cable	Cable length display (Fujikura φ8.5 mm cable conversion value)
	TEMP	RF signal drive circuit ambient temperature

M08: CABLE COMP

Menu screen	Item	Setting	Description
	OFFSET ADJ	00h to FFh	Sets the cable length calculation reference value (F3 RSSI). For details, refer to "Setting the cable length calculation reference value (F3 RSSI)" **Note** Do not usually change this value.
	F3 RSSI		Displays the cable length calculation reference value (F3 RSSI)
	WRITE		Writes the above setting values to the EEPROM.
	CLEAR		Clears the above adjustment values.

Setting the cable length calculation reference value (F3 RSSI)

Note

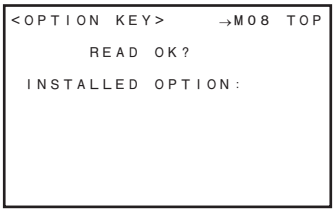
Change this setting only when IC1608 or IC3601 on the DM-152 is replaced.

- Preparation

  Connect the unit to the camera with the TRIAX cable.

  Use either one of the following TRIAX cables.
  - A 500-meter Fujikura φ8.5 mm cable
  - Cable with attenuation characteristics of 18.5 ±1 dB (at 26 MHz)
  - Cable with attenuation characteristics of 38.5 ±2 dB (at 100 MHz)
- Setting Procedure
  1. Turn on the unit and the camera.
  2. Open M08: CABLE COMP of the MAINTENANCE menu.
  3. Adjust the OFFSET ADJ value so that the F3 RSSI value becomes 1.9000V.
  4. Place the cursor at “WRITE” and write the adjustment value to the EEPROM.

M09: OPTION KEY

Menu screen	Item	Description
	INSTALLED OPTION	Installed option name display

Section 4
Replacement of Main Parts

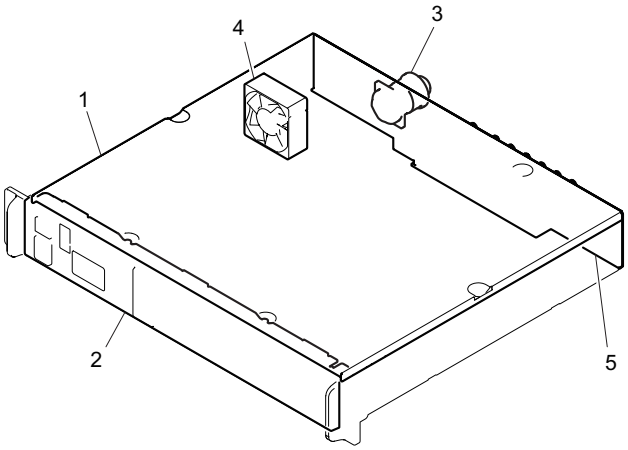
4-1. General Information for Parts Replacement

4-1-1. Index

This section describes replacement procedures of the parts listed below.

Mechanical parts

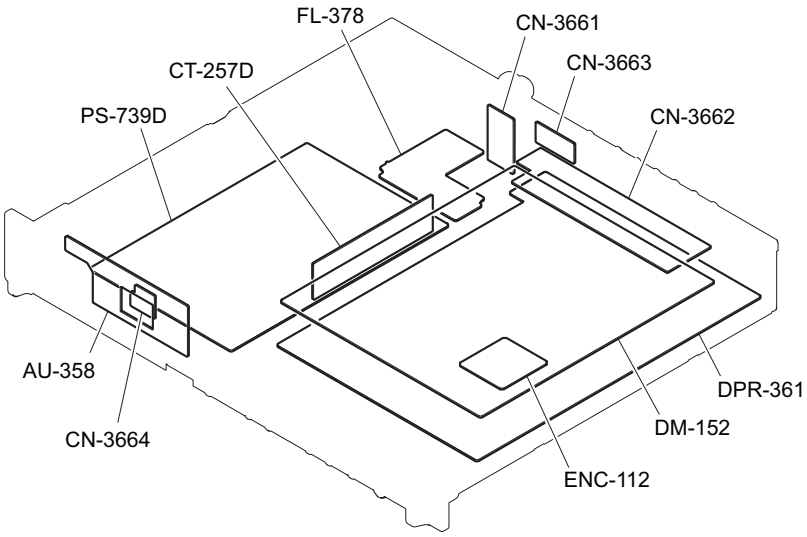
No.	Part Name	Procedure
1	Top Cover	"4-2. Top Cover"
2	Front Assembly	"4-3. Front Assembly"
3	TRIAX Connector Assembly	"4-7. TRIAX Connector Assembly"
4	DC Fan	"4-11. DC Fan"
5	Rear Assembly	"4-12. Rear Assembly"



Mounted Circuit Boards

After replacing/repairing the mounted circuit boards (or the assembling parts including them), perform the steps after replacement/repair.

Part Name	Procedure	Steps after replacement/repair
AU-358	"4-9. AU-358 Board"	-
CN-3661	"4-14. CN-3661 Board"	-
CN-3662	"4-15. CN-3662 Board"	-
CN-3663	"4-16. CN-3663 Board"	-
CN-3664	"4-10. CN-3664 Board"	-
DM-152	"4-5. DM-152 Board"	"1-7. Notes on Replacement of Circuit Board"
DPR-361	"4-13. DPR-361 Board"	"1-7. Notes on Replacement of Circuit Board"
ENC-112	"4-4. ENC-112 Board"	-
FL-378	"4-8. FL-378 Board"	-
PS-739D	"4-6. PS-739D Board"	-



4-1-2. Tightening Torque

Torque driver and screw tightening torque

General screws are used in this unit. Be sure to use a torque driver and tighten screws to the specified tightening torque.

Tightening torque
M2.6: 0.53 ±0.07 N·m
M3: 0.80 ±0.12 N·m
M4: 1.4 ±0.2 N·m

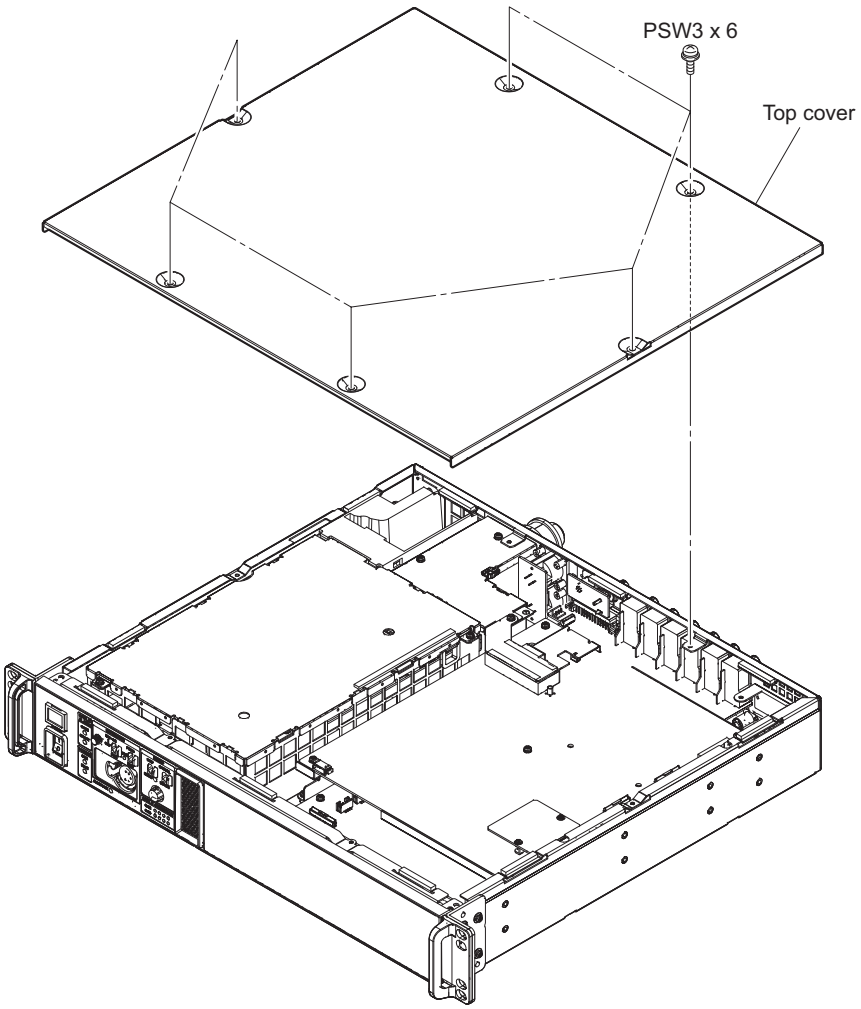
Tip

- When using the torque driver with the notation of cN· m, interpret it as follows.
  Example: 0.8 N· m = 80 cN· m
- Since small screws are used in the unit, they may fall into the unit when they are removed and installed. To prevent screws from falling, it is recommended that the bit of each torque driver be magnetized to a degree that prevents screws from falling.

4-2. Top Cover

Procedure

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



2. Install the removed parts by reversing the steps of removal.

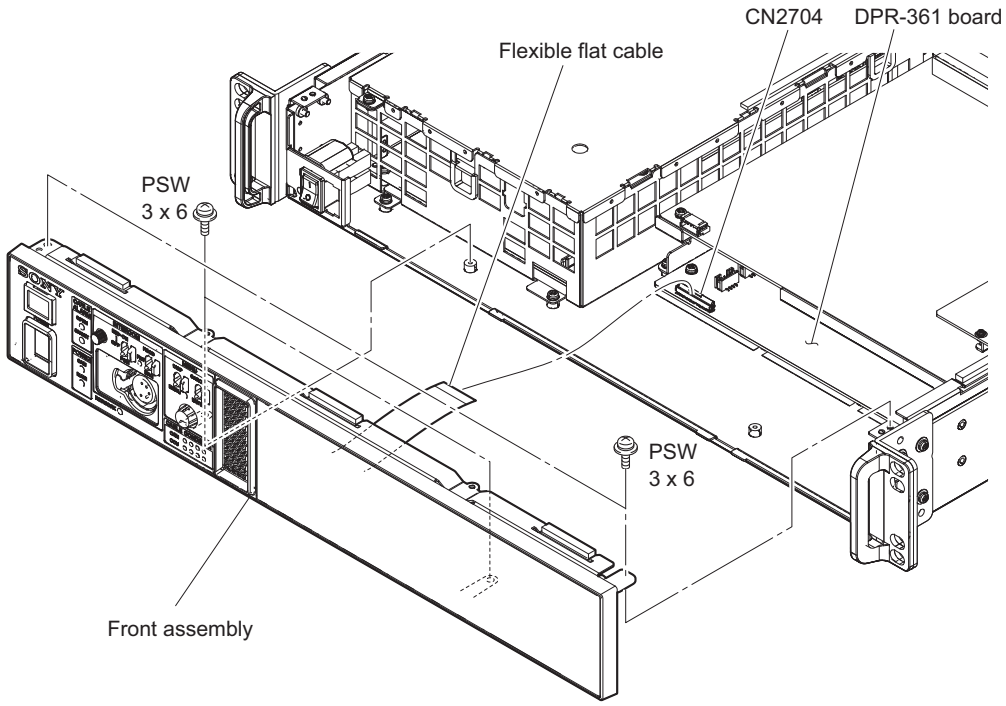
4-3. Front Assembly

Preparation

1. Remove the top cover. (Refer to “4-2. Top Cover”)

Procedure

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



3. Install the removed parts by reversing the steps of removal.

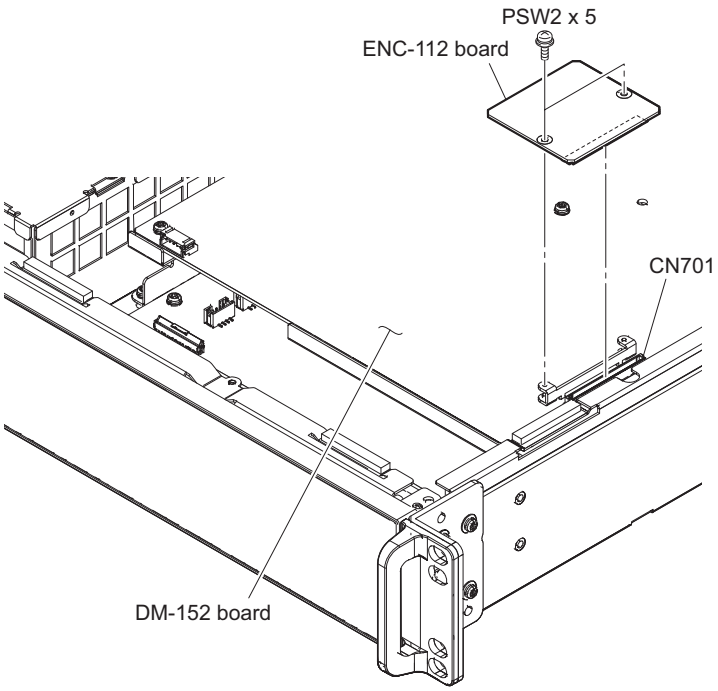
4-4. ENC-112 Board

Preparation

1. Remove the top cover. (Refer to “4-2. Top Cover”)

Procedure

1. Remove the two screws.
2. Remove the ENC-112 board from the connector (CN701) on the DM-152 board.



3. Install the removed parts by reversing the steps of removal.

4-5. DM-152 Board

Preparation

1. Remove the top cover. (Refer to "4-2. Top Cover")
2. Remove the ENC-112 board. (Refer to "4-4. ENC-112 Board")

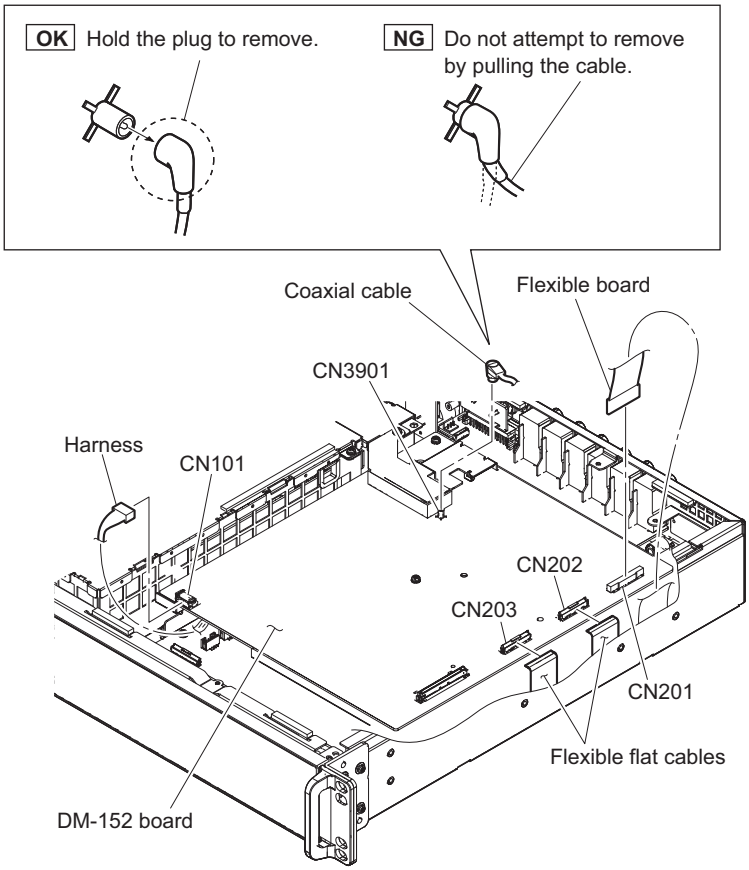
Procedure

1. Disconnect the harness from the connector (CN101) on the DM-152 board.
2. Disconnect the two flexible flat cables from the two connectors (CN202, CN203) on the DM-152 board.
3. Disconnect the flexible board from the connector (CN201) on the DM-152 board.

4. Disconnect the coaxial cable from the connector (CN3901) on the DM-152 board.

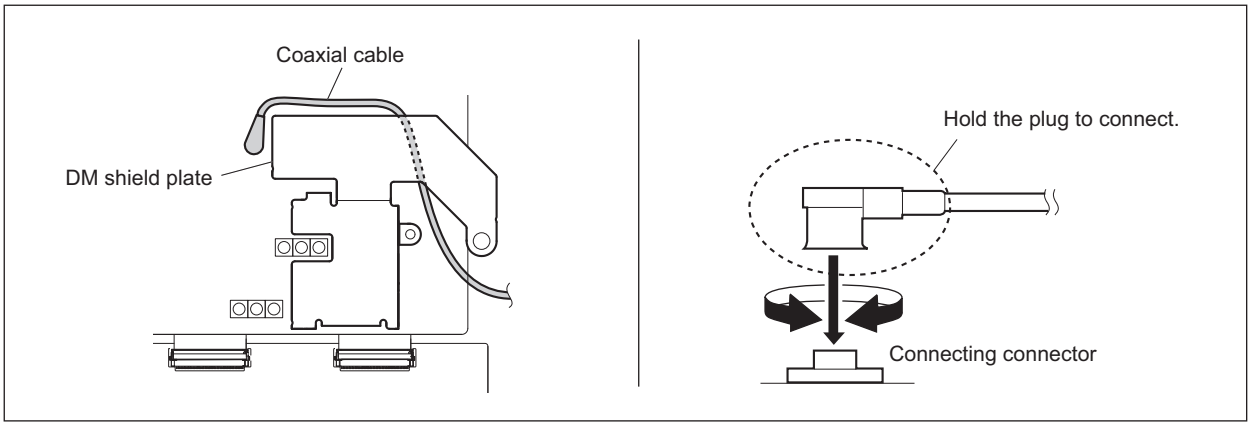
Note

Be sure to hold the plug when disconnecting the coaxial cable. Do not pull the cable.



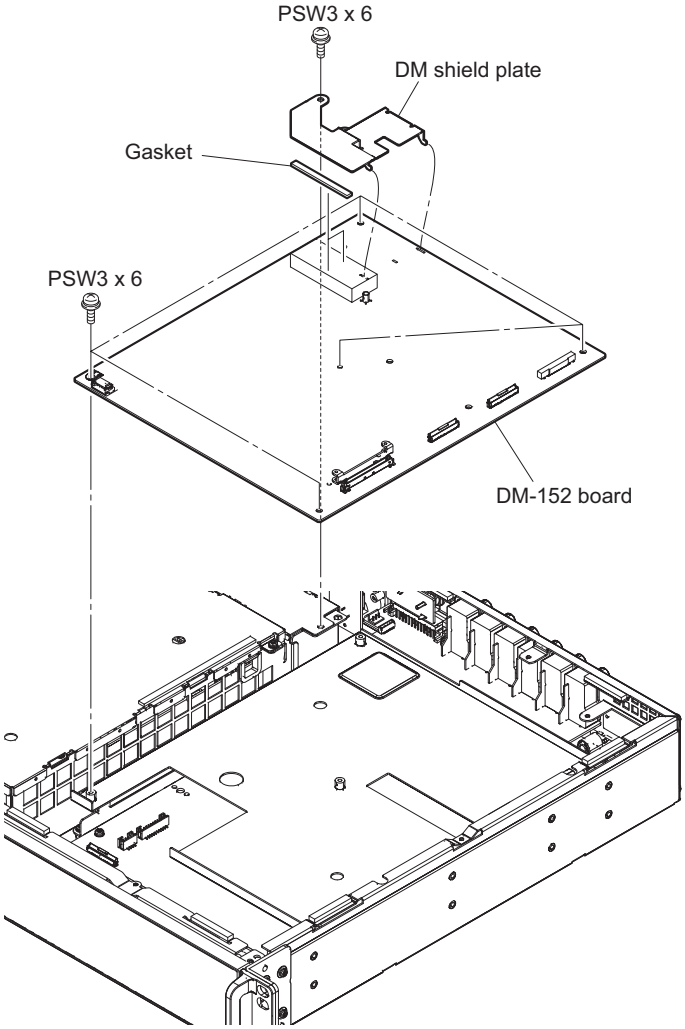
Note

When installing the coaxial cable, arrange the cable as shown in the figure.
Hold the plug of the coaxial cable, and connect it perpendicularly to the connector. Push the plug into the connector while turning it clockwise and counterclockwise several times.



5. Remove the screw to detach the DM shield plate.
6. Remove the five screws to detach the DM-152 board.

7. Remove the two gaskets.



8. Install the removed parts by reversing the steps of removal.

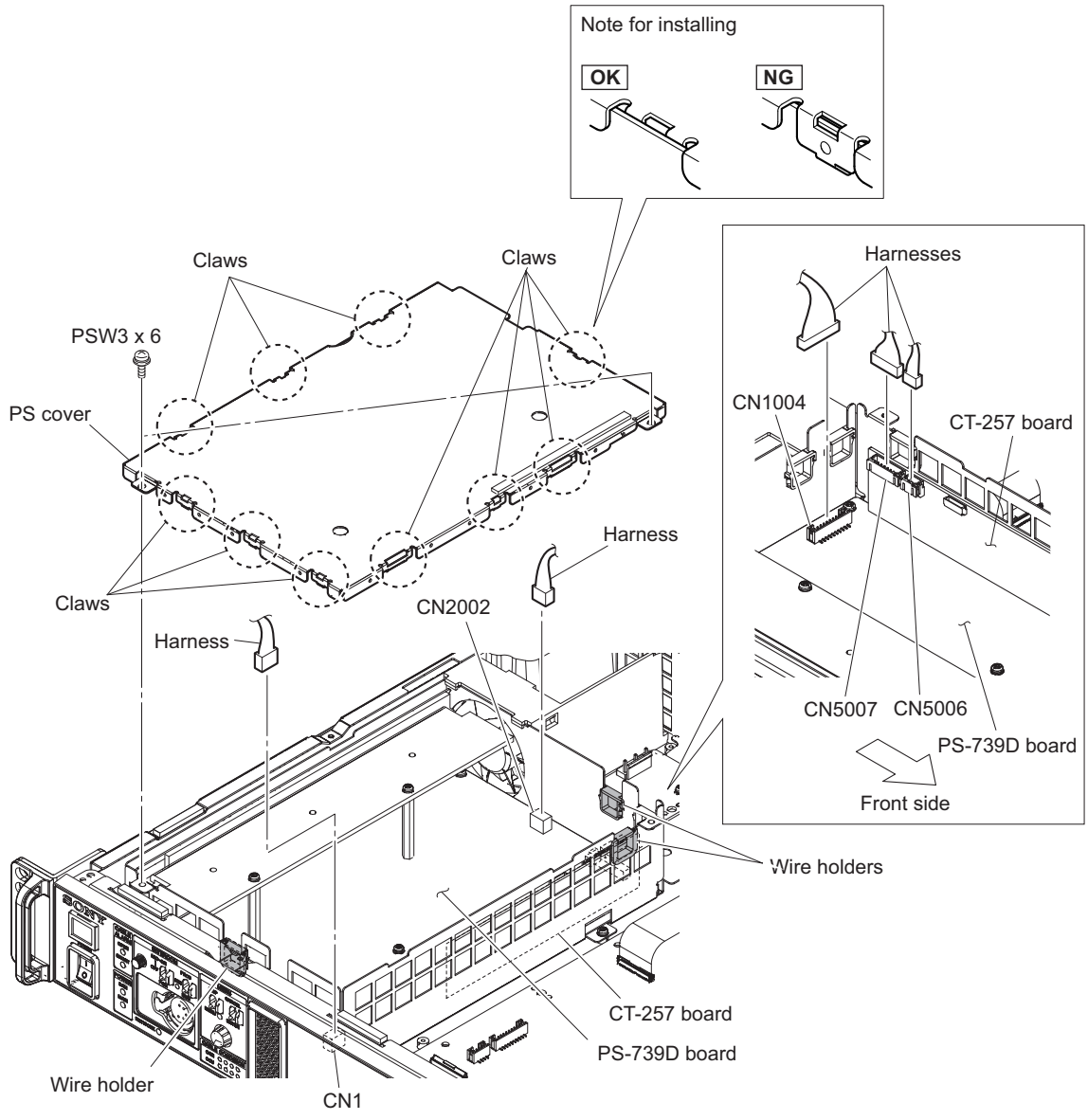
4-6. PS-739D Board

Preparation

1. Remove the top cover. (Refer to "4-2. Top Cover")

Procedure

1. Remove the two screws to detach the PS cover.
2. Open the three wire holders.
3. Disconnect the three harnesses from the three connectors (CN1, CN1004, and CN2002) on the PS-739D board.
4. Disconnect the two harnesses from the two connectors (CN5006, CN5007) on the CT-257 board.

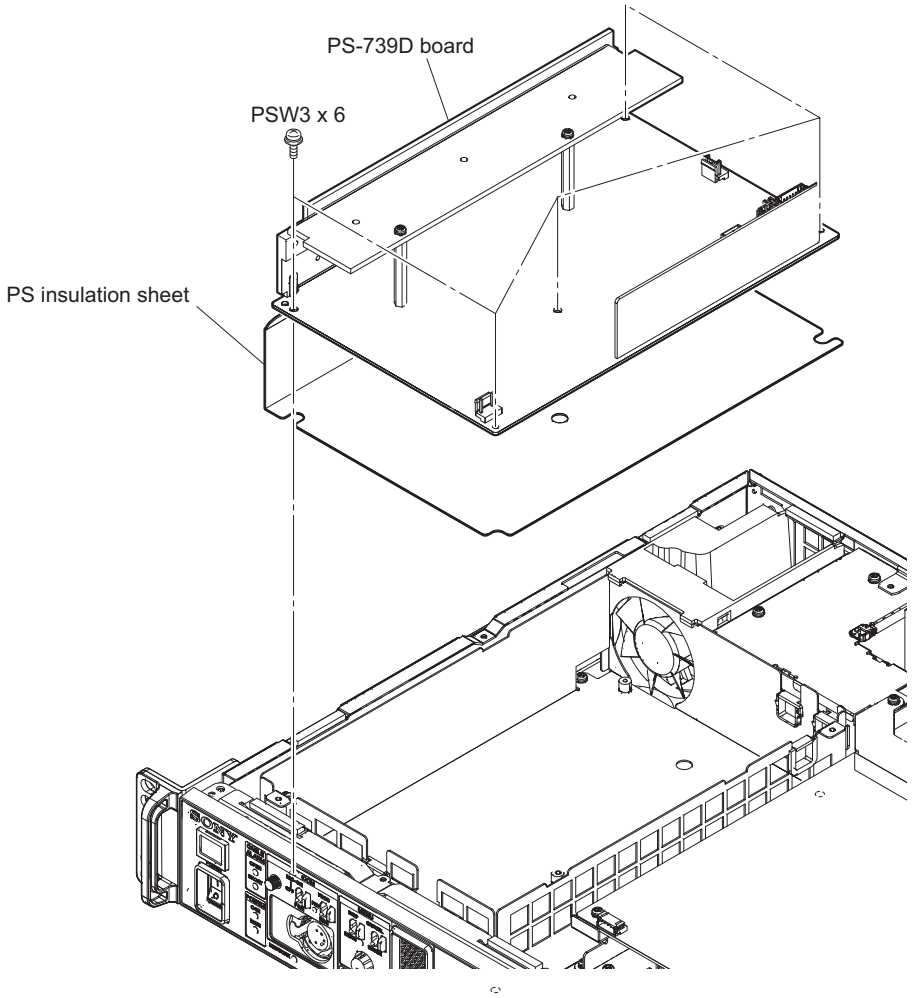


Note

When installing the PS cover, attach ten claws to the PS cover as shown in the figure.

5. Remove the five screws to detach the PS-739D board.

6. Remove the PS insulation sheet.



7. Install the removed parts by reversing the steps of removal.

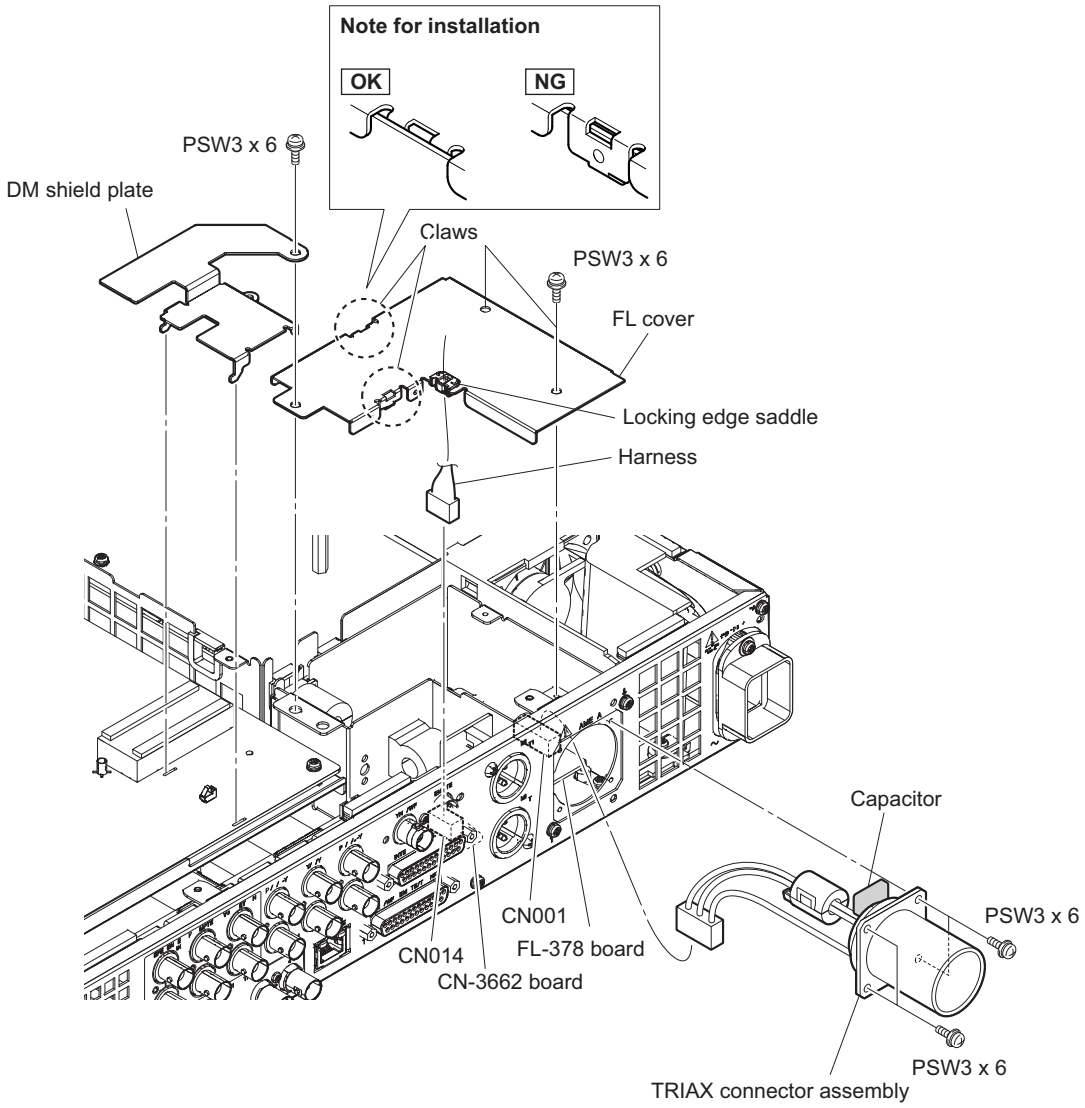
4-7. TRIAX Connector Assembly

Preparation

1. Remove the top cover. (Refer to "4-2. Top Cover")

Procedure

1. Open the locking edge saddle and disconnect the harness from the connector (CN014) on the CN-3662 board.
2. Remove the screw to detach the DM shield plate.
3. Remove the two screws to detach the FL cover.
4. Disconnect the harness from the connector (CN001) on the FL-378 board.
5. Remove the four screws to detach the TRIAX connector assembly.



(Illustration: UC connector)

Tip

- When installing the TRIAX connector assembly, carefully install it paying attention to the capacitor shown in the figure.
- Attach two claws of the FL cover as shown in the figure.

6. Install the removed parts by reversing the steps of removal.

4-8. FL-378 Board

Preparation

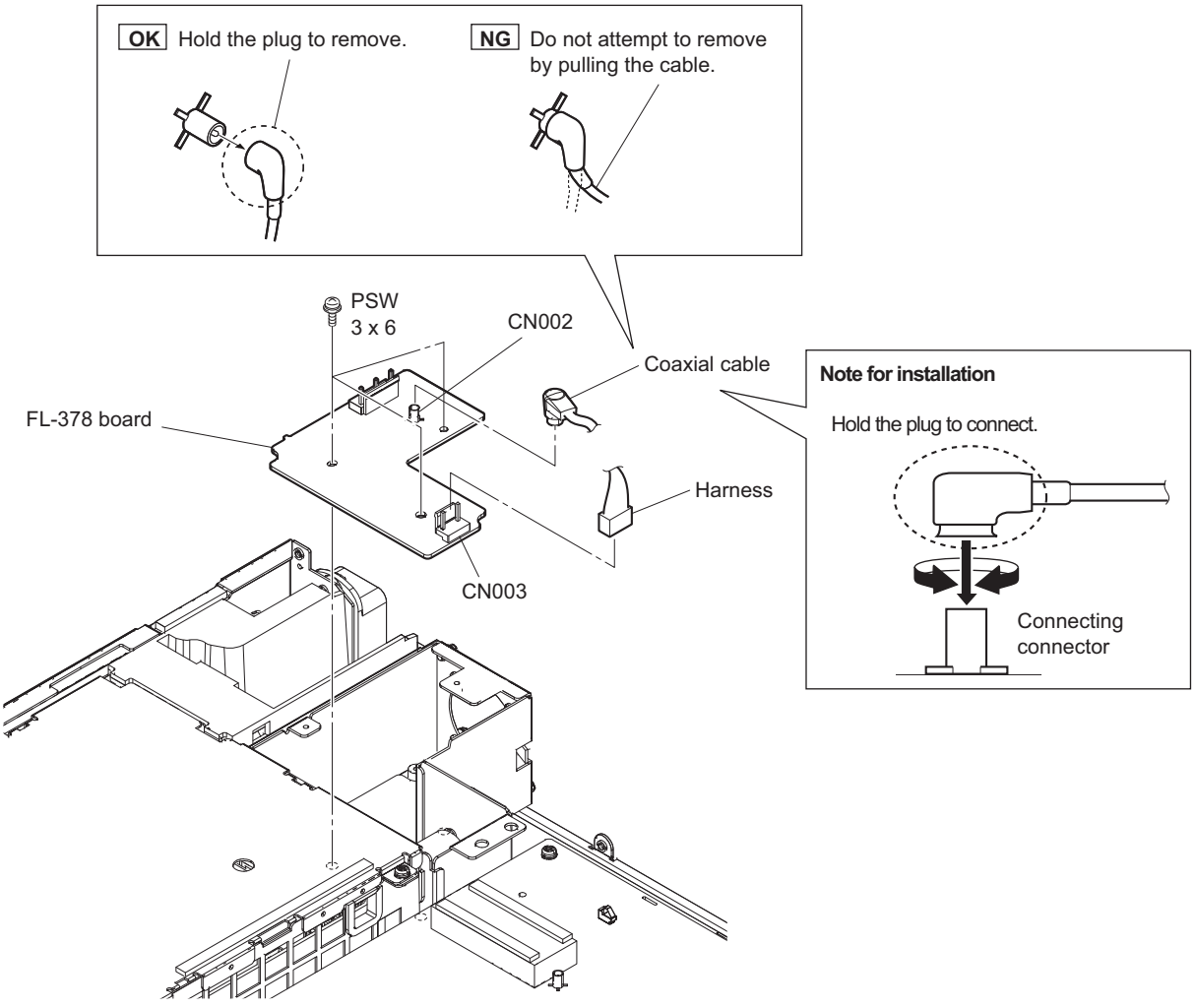
1. Remove the top cover. (Refer to "4-2. Top Cover")
2. Remove the DM shield plate and the FL cover. (Refer to "4-7. TRIAX Connector Assembly")

Procedure

1. Disconnect the harness from the connector (CN003) on the FL-378 board.
2. Disconnect the coaxial cable from the connector (CN002) on the FL-378 board.
3. Remove the three screws to detach the FL-378 board.

Note

Be sure to hold the plug when disconnecting the coaxial cable. Do not pull the cable.



Note

Hold the plug of the coaxial cable, and connect it perpendicularly to the connector. Push the plug into the connector while turning it clockwise and counterclockwise several times.

4. Install the removed parts by reversing the steps of removal.

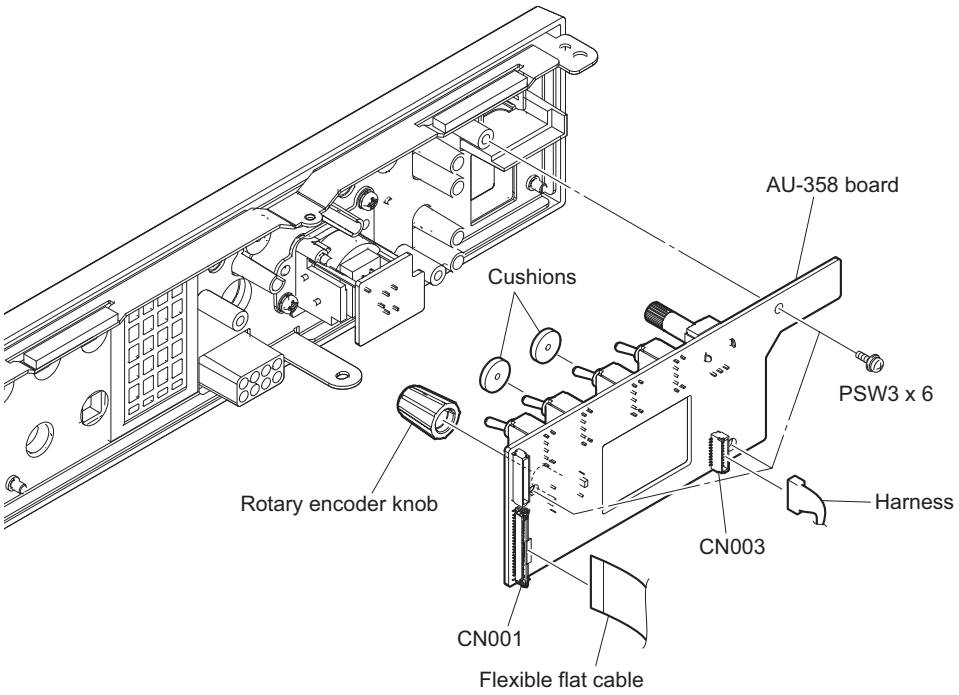
4-9. AU-358 Board

Preparation

1. Remove the top cover. (Refer to"4-2. Top Cover")
2. Remove the front assembly. (Refer to "4-3. Front Assembly")

Procedure

1. Disconnect the harness from the connector (CN003) on the AU-358 board.
2. Disconnect the flexible flat cable from the connector (CN001) on the AU-358 board.
3. Remove the three screws to detach the AU-358 board.
4. Remove the rotary encoder knob.
5. Remove the two cushions.



6. Install the removed parts by reversing the steps of removal.

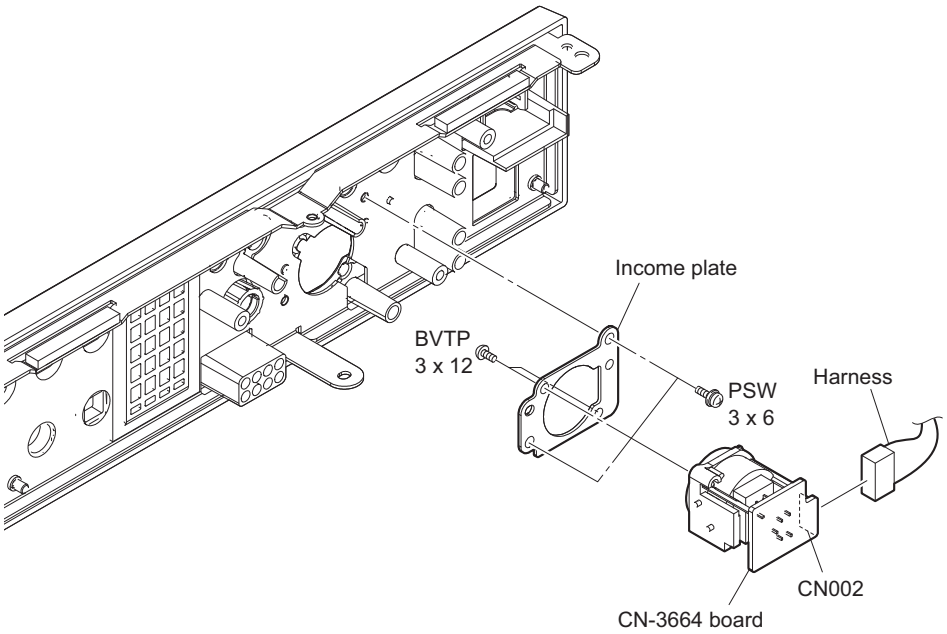
4-10. CN-3664 Board

Preparation

1. Remove the top cover. (Refer to "4-2. Top Cover")
2. Remove the front assembly. (Refer to "4-3. Front Assembly")
3. Remove the AU-358 board. (Refer to "4-9. AU-358 Board")

Procedure

1. Disconnect the harness from the connector (CN002) on the CN-3664 board.
2. Remove the two screws (PSW3 x 6) to detach the income plate and the CN-3664 board.
3. Remove the two screws (BVTP3 x 12) to detach the CN-3664 board.



4. Install the removed parts by reversing the steps of removal.

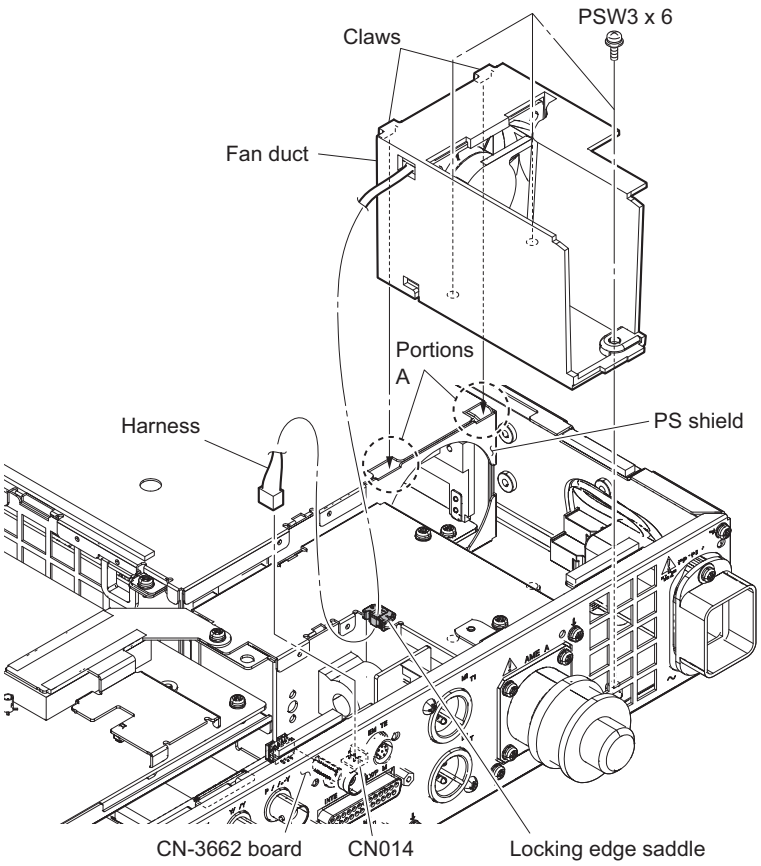
4-11. DC Fan

Preparation

1. Remove the top cover. (Refer to “4-2. Top Cover”)

Procedure

1. Open the locking edge saddle and disconnect the harness from the connector (CN014) on the CN-3662 board.
2. Remove the three screws to detach the fan duct.

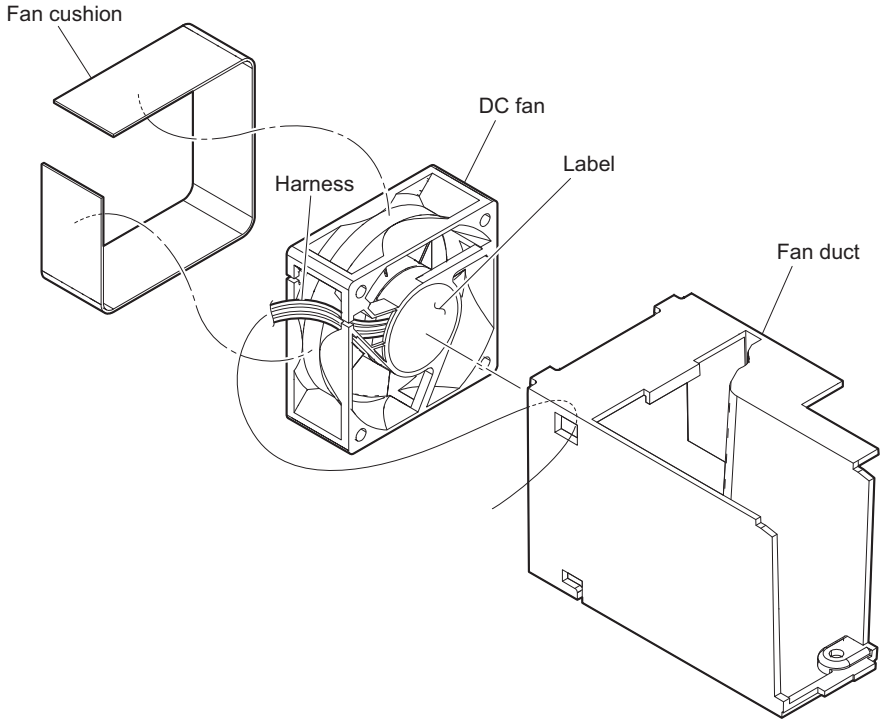


Note

When installing the fan duct, fit the two claws with the two portions A of the PS shield.

3. Remove the DC fan.

4. Remove the fan cushion.



Note

Install the DC fan carefully paying attention to the label side and the harness position.

5. Install the removed parts by reversing the steps of removal.

4-12. Rear Assembly

Preparation

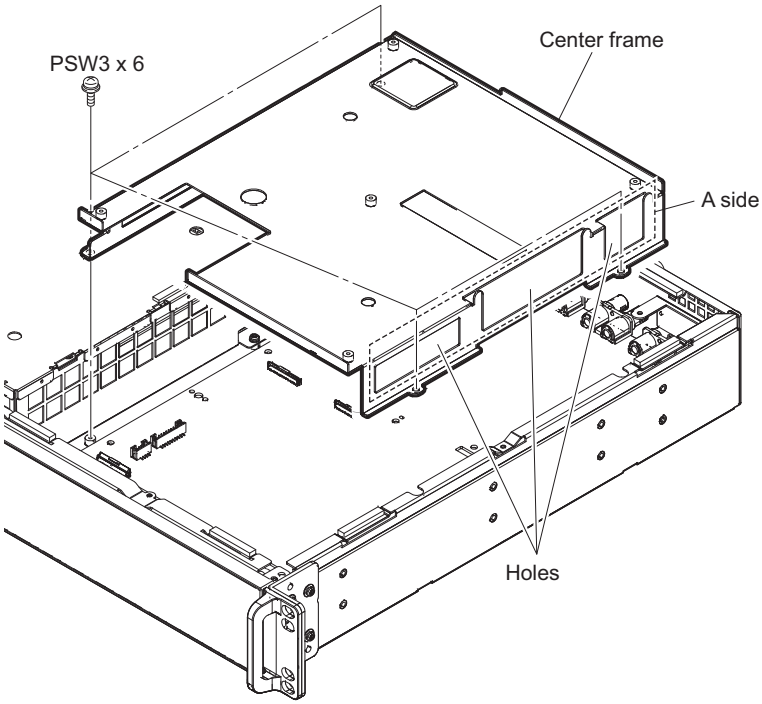
1. Remove the top cover. (Refer to"4-2. Top Cover")
2. Remove the DM-152 board. (Refer to "4-5. DM-152 Board")

Procedure

1. Remove the four screws and lift up the A side and then detach the center frame.

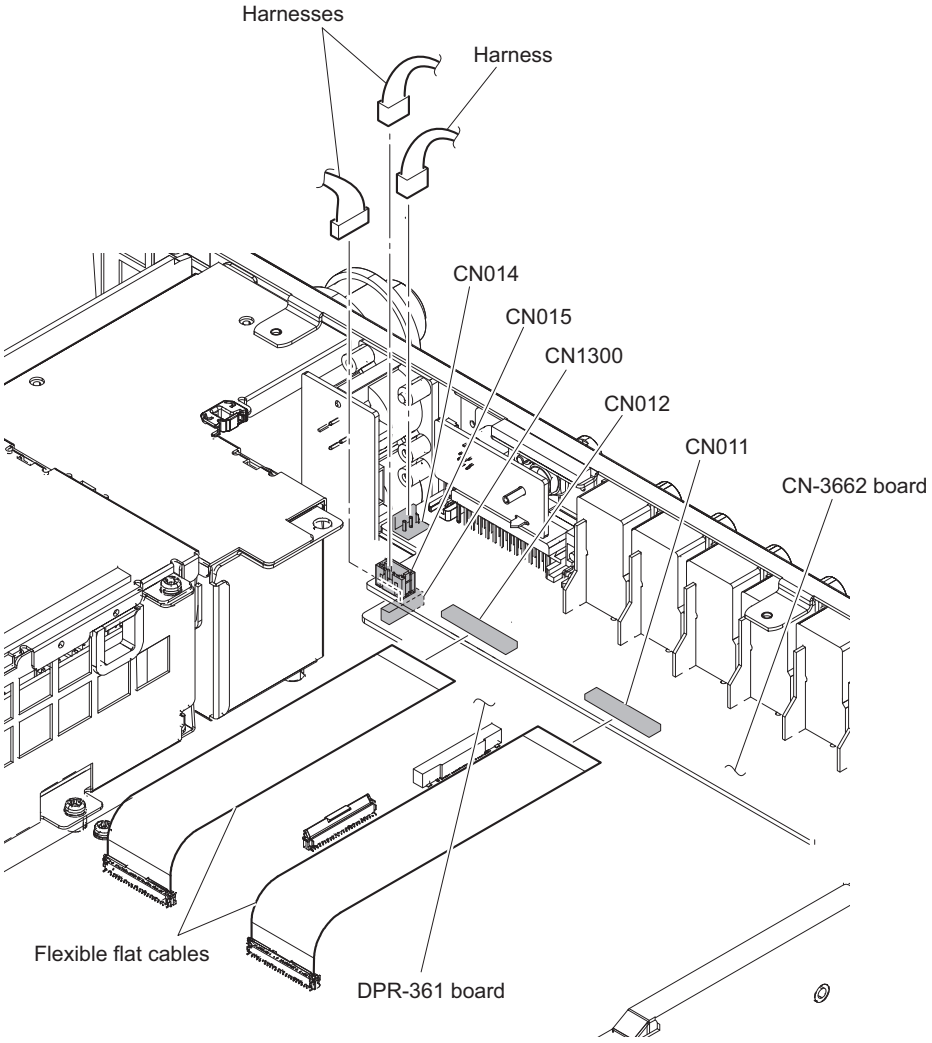
   Note

   When removing the center frame, be careful not to damage the harnesses in the A side.



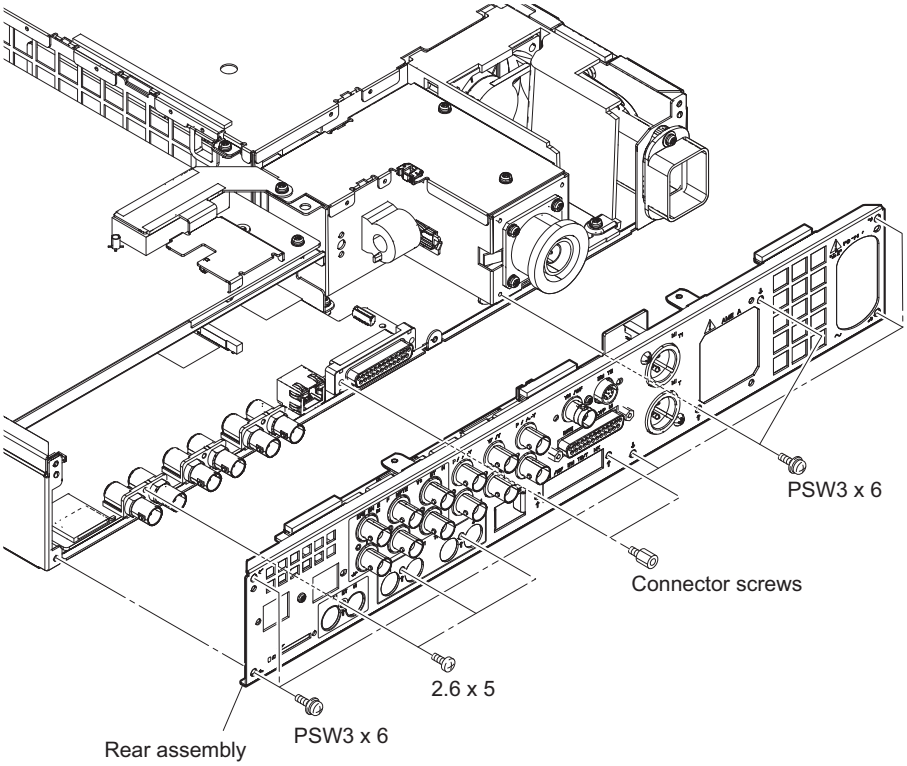
2. Disconnect the two flexible flat cables from the two connectors (CN011, CN012) on the CN-3662 board.
3. Disconnect the two harnesses from the two connectors (CN014, CN015) on the CN-3662 board.

4. Disconnect the harness from the connector (CN1300) on the DPR-361 board.



5. Remove the three screws (2.6 x 5).
6. Remove the two connector screws.

7. Remove the seven screws (PSW3 x 6) to detach the rear assembly.



8. Install the removed parts by reversing the steps of removal.

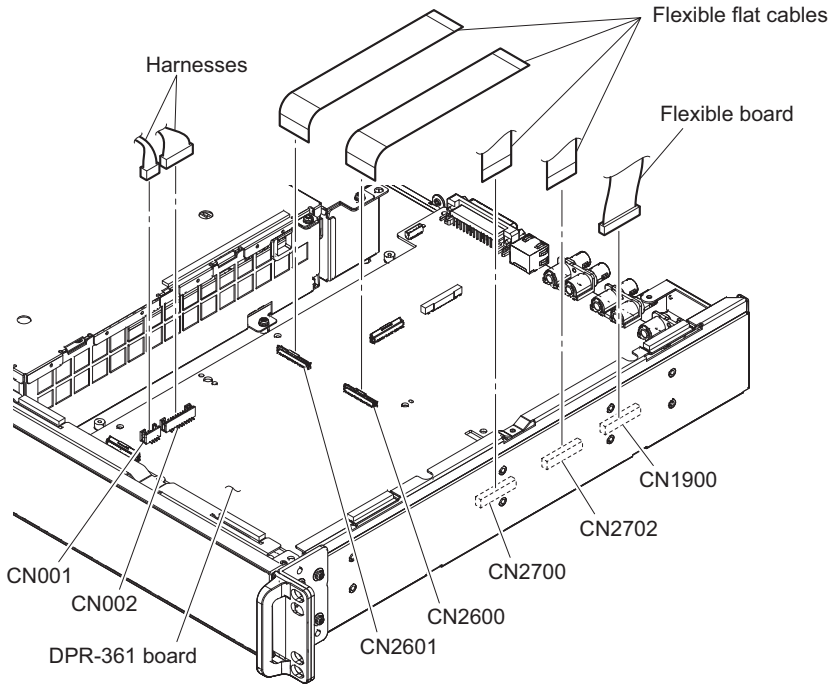
4-13. DPR-361 Board

Preparation

1. Remove the top cover. (Refer to "4-2. Top Cover")
2. Remove the DM-152 board. (Refer to "4-5. DM-152 Board")
3. Remove the rear assembly. (Refer to "4-12. Rear Assembly")

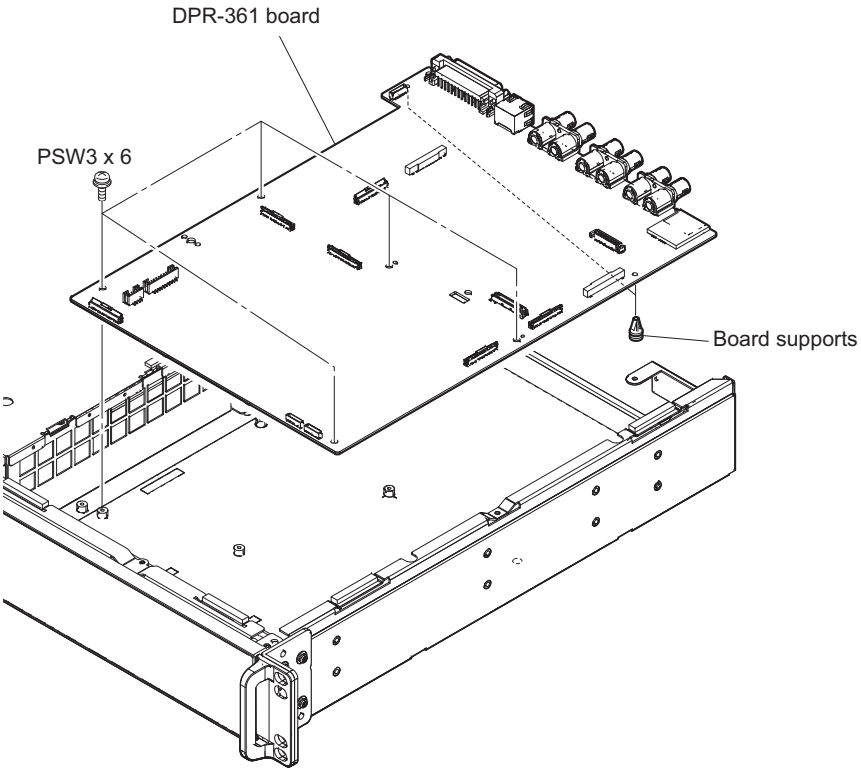
Procedure

1. Disconnect the two harnesses from the two connectors (CN001, CN002) on the DPR-361 board.
2. Disconnect the four flexible flat cables from the four connectors (CN2600, CN2601, CN2700, and CN2702) on the DPR-361 board.
3. Disconnect the flexible board from the connector (CN1900) on the DPR-361 board.



4. Remove the five screws to detach the DPR-361 board.

5. Remove the two board supports from the DPR-361 board.



6. Install the removed parts by reversing the steps of removal.

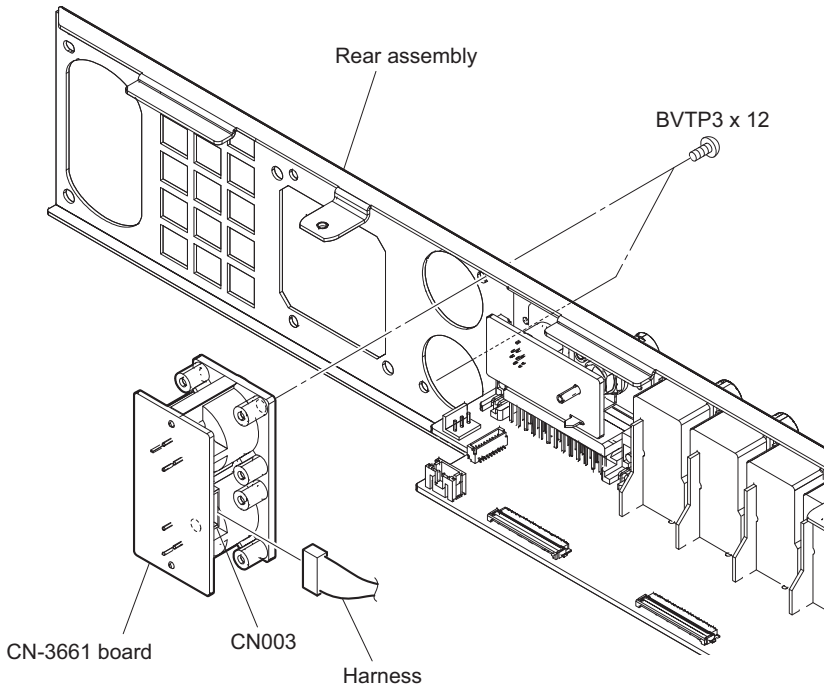
4-14. CN-3661 Board

Preparation

1. Remove the top cover. (Refer to "4-2. Top Cover")
2. Remove the rear assembly. (Refer to "4-12. Rear Assembly")

Procedure

1. Remove the two screws (BVTP3 x 12) to detach the CN-3661 board.
2. Disconnect the harness from the connector (CN003) on the CN-3661 board.



3. Install the removed parts by reversing the steps of removal.

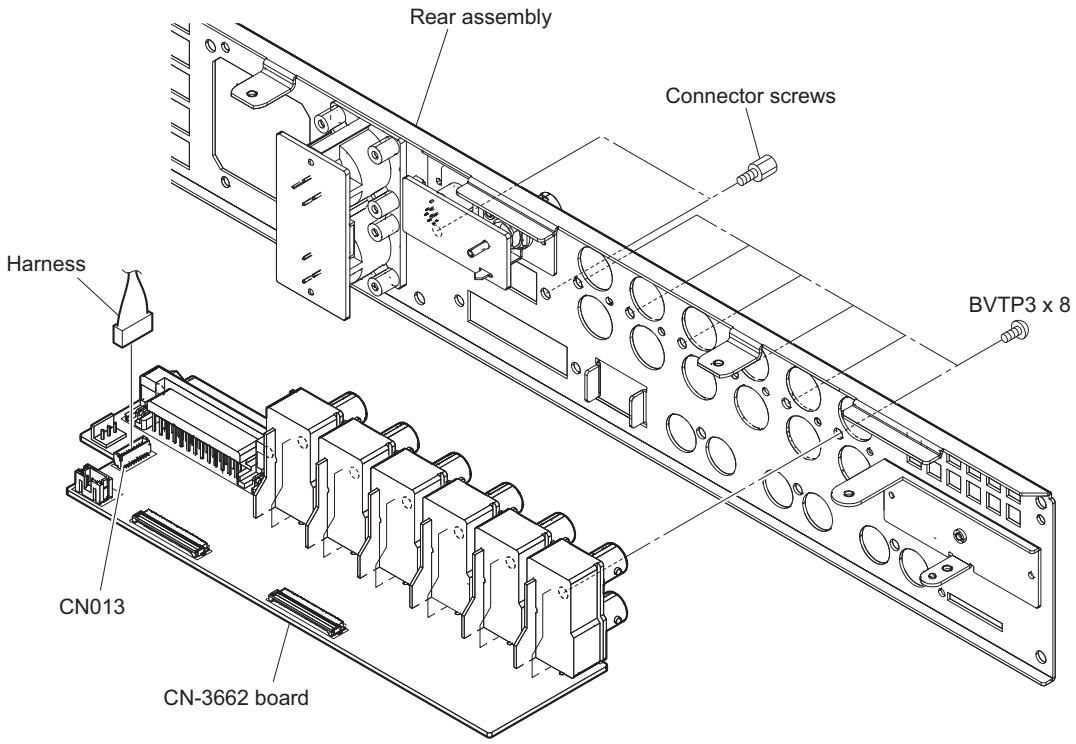
4-15. CN-3662 Board

Preparation

1. Remove the top cover. (Refer to "4-2. Top Cover")
2. Remove the rear assembly. (Refer to "4-12. Rear Assembly")

Procedure

1. Disconnect the harness from the connector (CN013) on the CN-3662 board.
2. Remove the six screws (BVTP3 x 8) and the two connector screws to detach the CN-3662 board.



3. Install the removed parts by reversing the steps of removal.

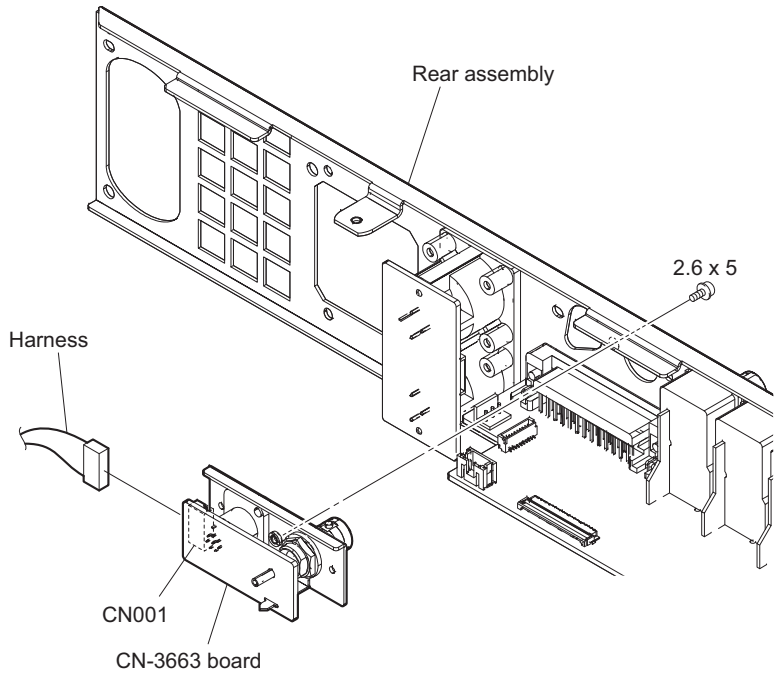
4-16. CN-3663 Board

Preparation

1. Remove the top cover. (Refer to “4-2. Top Cover”)
2. Remove the rear assembly. (Refer to “4-12. Rear Assembly”)

Procedure

1. Remove the screw to detach the CN-3663 board.
2. Disconnect the harness from the connector (CN001) on the CN-3663 board.



3. Install the removed parts by reversing the steps of removal.

Section 5
Electrical Adjustment

5-1. Preparation

5-1-1. Equipment Required

- SD waveform/vector monitor
- Analog HD waveform monitor
- Oscilloscope: Tektronix TDS460A or equivalent
- Frequency counter: Advantest TR5821AK or equivalent
- Audio oscillator: Tektronix SG-5010 or equivalent
- Audio analyzer
- FM signal generator: ROHDE & SCHWARZ SMHU58 or equivalent

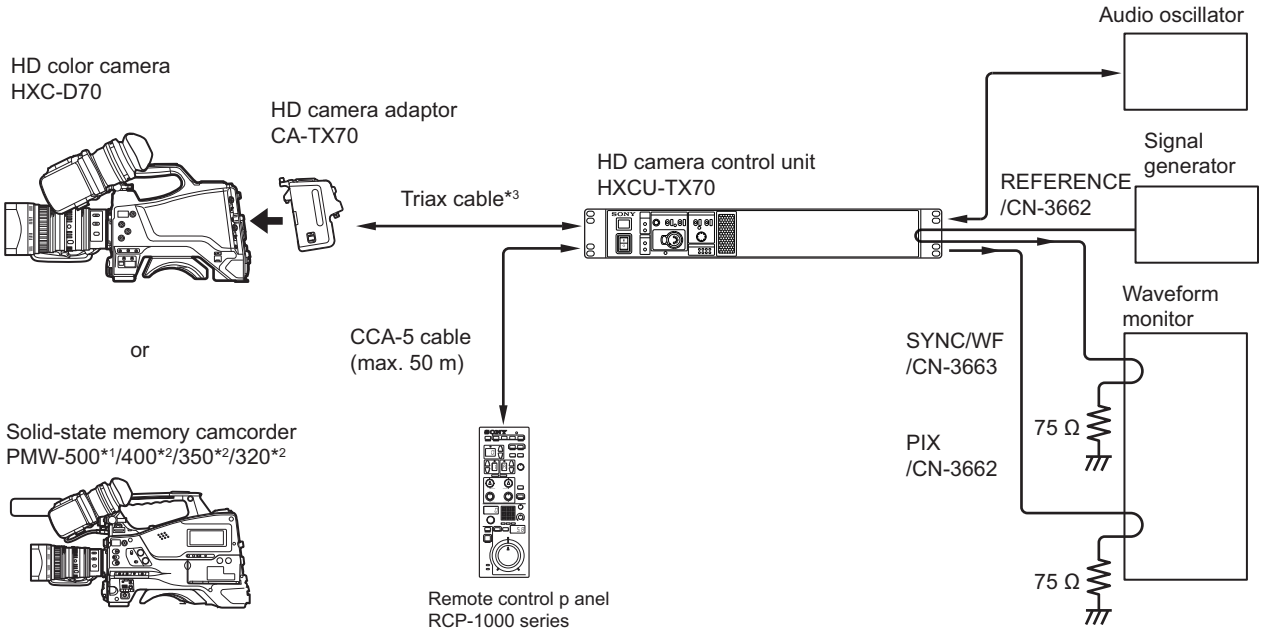
Related equipment

- HD color camera HXC-D70 or solid-state memory camcorder PMW-500/400/350/320
- HD camera adaptor CA-TX70
- Remote control panel RCP-1000 series

Precautions on Adjustments

- Warm up the unit for about 10 minutes before starting adjustments.
- All measuring equipment must have been calibrated.
- "Initial Settings" must have been completed.
- Adjustments for HD color camera must have been completed.

Connection of Equipment



*1: Only when the optional CBK-HD02 is installed.
*2: Only when the optional CBK-CE01 is installed.
*3: Transmittable cable attenuation: 3.8 to 45.6 dB (100 MHz)
When Fujikura φ8.5 mm cable is used: 50 to 600 m

Initial Settings

Make the following settings before starting adjustments.

After each adjustment is completed, be sure to restore the previous settings.

- CCU CONFIGURATION menu
  C06: INTERCOM → SYSTEM I/F → RTS
  C06: INTERCOM → TERMINATION → ON
  C07: FRONT INCOM → INCOM MIC → CARBON
  C07: FRONT INCOM → MIC GAIN → 0dB
- Front panel
  INTERCOM switch → PROD

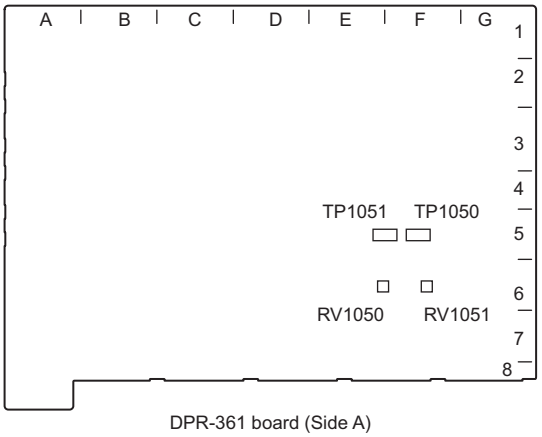
Except for these settings, do not change the switch settings made when the unit was shipped. (Refer to "1-9-2. Functions of Onboard Switches")

5-2. Audio System Adjustment

5-2-1. RTS Intercom Adjustment Check

Precautions

- This adjustment is described on condition that the audio oscillator output impedance is 600 Ω.
- Potentiometers RV1050 and RV1051 on the DPR-361 board have been adjusted according to the customer's system. Check this adjustment only when the system intercom output is repaired.



DPR-361 board (Side A)

Preparation

Note

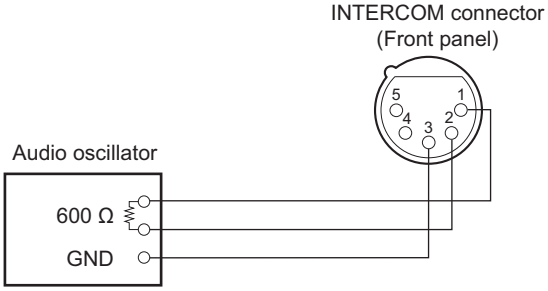
Remove the DM-152 board and make adjustment.

CCU CONFIGURATION menu setting

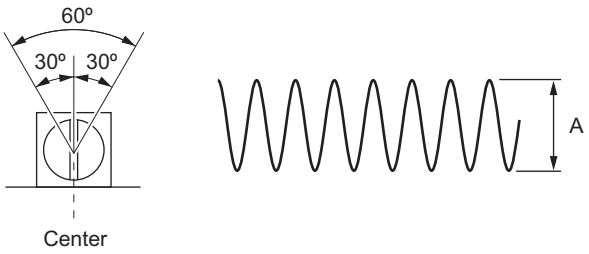
Page name	Item	Settings
C06: INTERCOM	SYSTEM I/F	RTS
C07: FRONT INCOM	INCOM MIC	CARBON

Check (PROD CANCEL)

1. Set the INTERCOM switch on the front panel to PROD.
2. Input a sine wave (1 kHz, 220 mVp-p (-20 dBu)) to pin 2 (X), pin 1 (Y), and pin 3 (G) of the INTERCOM connector from the audio oscillator.

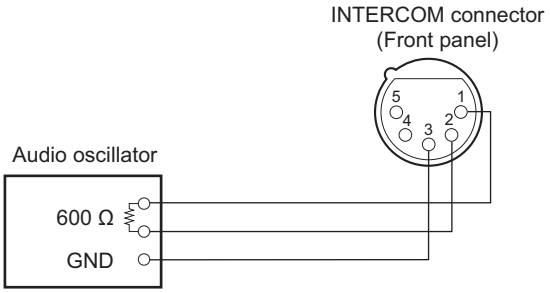


3. PROD CANCEL check
   Equipment: Oscilloscope
   Test Point: TP1051 (F-5) /DPR-361 board
   Adjusting Point: RV1050 (PROD RTS CANCEL) /DPR-361 board
   Specification: There must be a point where “A” becomes the minimum within the range (60°) shown in the figure.

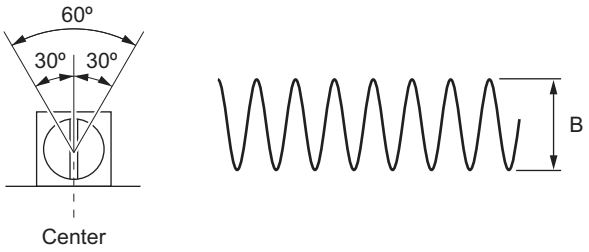


Check (ENG CANCEL)

1. Set the INTERCOM switch on the front panel to ENG.
2. Input a sine wave (1 kHz, 220 mV p-p (-20 dBu)) to pin 2 (X), pin 1 (Y), and pin 3 (G) of the INTERCOM connector from the audio oscillator.



3. ENG CANCEL check
   Equipment: Oscilloscope
   Test Point: TP1050 (F-5) /DPR-361 board
   Adjusting Point: RV1051 (ENG RTS CANCEL) /DPR-361 board
   Specification: There must be a point where “B” becomes the minimum within the range (60°) shown in the figure.



Setting after Adjustment

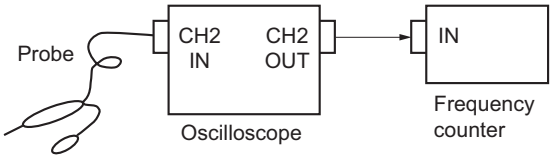
After this adjustment is completed, set the switch and CCU CONFIGURATION menu to the previous state.

5-3. Video/Reference Signal System Adjustment

5-3-1. 27 MHz VCO Free-Running Adjustment

Preparation

- Disconnect the cable from the REFERENCE INPUT connector on the rear panel.
- Connect the measuring equipment as shown in the figure.
- Start this adjustment after 10 minutes have elapsed from power-on.



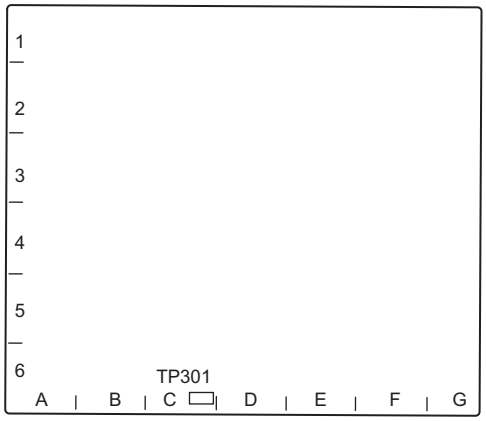
Adjustment

Equipment: Frequency counter and oscilloscope
Test Point: TP301 (C-6) / DM-152 board
Adjusting Point: MAINTENANCE menu (M06) → 27M CLK TRIM

Tip

CCU MENU → MAINTENANCE → M06: ADC ADJUST

Specification: 27,000,000 ±50 Hz



DM-152 board (Side A)

Setting after Adjustment

After this adjustment is completed, reconnect the disconnected cable.

5-3-2. STAIR CASE Adjustment

Precautions

This adjustment is used tentatively when a repair is made.
This adjustment must be made again according to the waveform monitor characteristics at the system setup.

Adjustment

Equipment: Oscilloscope

Test Point: Pin 22 of the MIC/WF REMOTE/TRUNK connector / DPR-361board

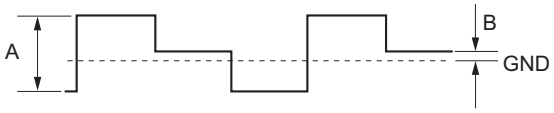
Adjusting Point: MAINTENANCE menu (M06) → STAIR LEVEL TRIM/STAIR DC TRIM

Tip

CCU MENU → MAINTENANCE → M06: ADC ADJUST

Specification:

- A = 4.0 ±0.5 Vp-p
- B = 0 ±0.5 Vdc



5-4. SD Signal System Adjustment

5-4-1. VBS Output Level Adjustment

Preparation

CCU CONFIGURATION menu setting

Page name	Item	Settings
C01: COLOR BAR	SD BAR	For NTSC: NTSC100% For PAL: PAL100%
C10: VIDEO ADJUST	VBS LEVEL	0
	VBS CHROMA	0

Adjustment

Equipment: SD waveform monitor
Test Point: VBS 1 output connector / CN-3662 board
Adjusting Point: MAINTENANCE menu (M05) → VBS LEVEL TRIM

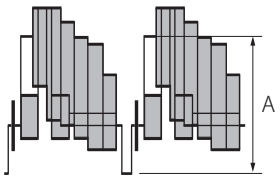
Tip

CCU MENU → MAINTENANCE → M05: ANALOG VIDEO

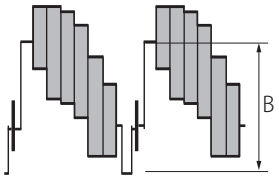
Specification:

- A = 140 ±1 IRE (75 Ω termination)
- B = 1000 ±7 mV (75 Ω termination)

NTSC (UC, J)



PAL (CED)



5-4-2. PIX Output Level Adjustment

Preparation

CCU CONFIGURATION menu setting

Page name	Item	Settings
C01: COLOR BAR	SD BAR	For NTSC: NTSC100% For PAL: PAL100%
C10: VIDEO ADJUST	PIX LEVEL	0
	PIX CHROMA	0

Adjustment

Equipment: SD waveform monitor
Test Point: PIX OUT connector / CN-3662 board

Adjusting Point: MAINTENANCE menu (M05) → PIX LEVEL TRIM

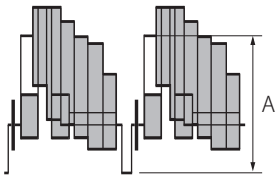
Tip

CCU MENU → MAINTENANCE → M05: ANALOG VIDEO

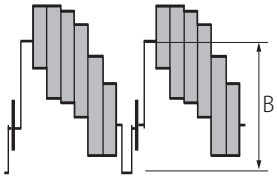
Specification:

- A = 140 ±1 IRE (75 Ω termination)
- B = 1000 ±7 mV (75 Ω termination)

NTSC (UC, J)



PAL (CED)



5-4-3. WF Output Level Adjustment

Preparation

CCU CONFIGURATION menu setting

Page name	Item	Settings
C01: COLOR BAR	SD BAR	For NTSC: NTSC100% For PAL: PAL100%
C10: VIDEO ADJUST	WF LEVEL	0
	WF CHROMA	0
C14: OTHERS	SYNC/WFM-OUT	WFM

Adjustment

Equipment: SD waveform monitor
Test Point: SYNC/WF connector / CN-3663 board
Adjusting Point: MAINTENANCE menu (M05) → WF LEVEL

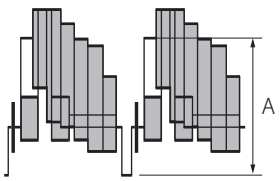
Tip

CCU MENU → MAINTENANCE → M05: ANALOG VIDEO

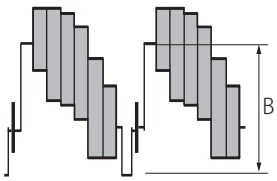
Specification:

- A = 140 ±1 IRE (75 Ω termination)
- B = 1000 ±7 mV (75 Ω termination)

NTSC (UC, J)



PAL (CED)



5-4-4. Y/R-Y/B-Y Output Level Adjustment (SD)

Precautions

The Y/R-Y/B-Y output level adjustment (HD) must have been completed. (Refer to "5-5-1. Y/R-Y/B-Y Output Level Adjustment (HD)")

Preparation

SYSTEM OPERATION menu setting

Page name	Item	Settings
S04: OUTPUT FORMAT	COMPONENT	SD YCD

CCU CONFIGURATION menu setting

Page name	Item	Settings
C01: COLOR BAR	SD BAR	For NTSC: FULL For PAL: EBU
C10: VIDEO ADJUST	COMPONENT LEVEL	0

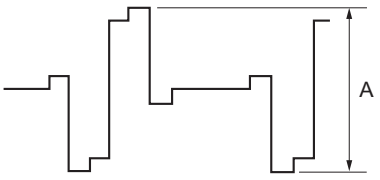
Adjustment

1. R-Y signal level adjustment
   Equipment: SD waveform monitor
   Test Point: R-Y connector / CN-3662 board
   Adjusting Point: MAINTENANCE menu (M05) → COMPONENT LEVEL → PR/R/R-Y BAL TRIM

   Tip

   CCU MENU → MAINTENANCE → M05: ANALOG VIDEO

   Specification:
   - A = 756 ±5 mV (NTSC (J), SET UP: OFF) (75 Ω termination)
   - A = 700 ±5 mV (NTSC (UC), SET UP: ON) (75 Ω termination)
   - A = 525 ±5 mV (PAL (CED)) (75 Ω termination)



2. B-Y signal level adjustment

   Equipment: SD waveform monitor

   Test Point: B-Y connector / CN-3662 board

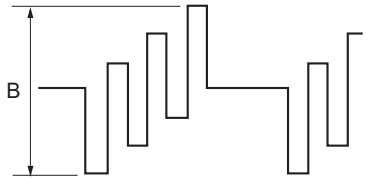
   Adjusting Point: MAINTENANCE menu (M05) → COMPONENT LEVEL → PB/B/B-Y BAL TRIM

   Tip

   CCU MENU → MAINTENANCE → M05: ANALOG VIDEO

   Specification:

   - B = 756 ±5 mV (NTSC (J), SET UP: OFF) (75 Ω termination)
   - B = 700 ±5 mV (NTSC (UC), SET UP: ON) (75 Ω termination)
   - B = 525 ±5 mV (PAL (CED)) (75 Ω termination)



3. After these adjustments are completed, select “WRITE” to store the setting values.

5-5. HD Signal System Adjustment

5-5-1. Y/R-Y/B-Y Output Level Adjustment (HD)

Preparation

SYSTEM OPERATION menu setting

Page name	Item	Settings
S04: OUTPUT FORMAT	COMPONENT	HD YPbPr

CCU CONFIGURATION menu setting

Page name	Item	Settings
C01: COLOR BAR	HD BAR	BAR 16:9 (100%)
C10: VIDEO ADJUST	COMPONENT LEVEL	0

Adjustment

1. Y signal level adjustment
   Equipment: Analog HD waveform monitor
   Test Point: Y connector / CN-3662 board
   Adjusting Point: MAINTENANCE menu (M05) → COMPONENT LEVEL → RGB/YCD TRIM

   Tip

   CCU MENU → MAINTENANCE → M05: ANALOG VIDEO

   Specification: A = 700 ±5 mV (75 Ω termination)

2. R-Y signal level adjustment

   Note

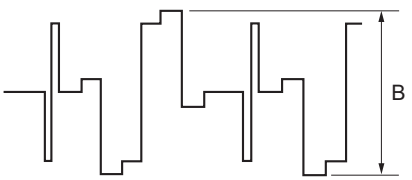
   Perform R-Y signal level adjustment after Y signal level adjustment is completed.

   Equipment: Analog HD waveform monitor
   Test Point: Pr connector / CN-3662 board
   Adjusting Point: MAINTENANCE menu (M05) → COMPONENT LEVEL → PR/R/R-Y BAL TRIM

   Tip

   CCU MENU → MAINTENANCE → M05: ANALOG VIDEO

   Specification: B = 700 ±5 mV (75 Ω termination)



3. B-Y signal level adjustment

Note

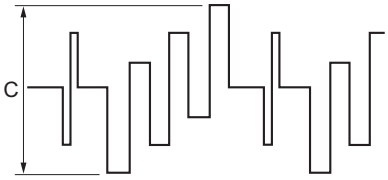
Perform B-Y signal level adjustment after Y signal level adjustment is completed.

Equipment: Analog HD waveform monitor
Test Point: Pb connector / CN-3662 board
Adjusting Point: MAINTENANCE menu (M05) → COMPONENT LEVEL → PB/B/B-Y BAL TRIM

Tip

CCU MENU → MAINTENANCE → M05: ANALOG VIDEO

Specification: C = 700 ±5 mV (75 Ω termination)



4. After these adjustments are completed, select “WRITE” to store the setting values.

5-5-2. RGB Output Level Adjustment

Precautions

The Y/R-Y/B-Y output level adjustment (HD) must have been completed. (Refer to “5-5-1. Y/R-Y/B-Y Output Level Adjustment (HD)”)

Preparation

SYSTEM OPERATION menu setting

Page name	Item	Settings
S04: OUTPUT FORMAT	COMPONENT	HD RGB

CCU CONFIGURATION menu setting

Page name	Item	Settings
C10: VIDEO ADJUST	COMPONENT LEVEL	0

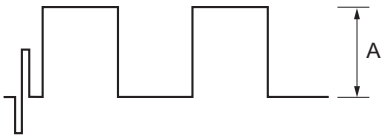
Adjustment

1. R signal level adjustment
   Equipment: Analog HD waveform monitor
   Test Point: R connector / CN-3662 board
   Adjusting Point: MAINTENANCE menu (M05) → COMPONENT LEVEL → PR/R/R-Y BAL TRIM

   Tip

   CCU MENU → MAINTENANCE → M05: ANALOG VIDEO

   Specification: A = 700 ±5 mVp-p (75 Ω termination) (when 100% color-bar is used)

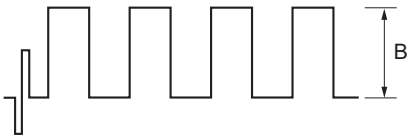


2. B signal level adjustment
   Equipment: Analog HD waveform monitor
   Test Point: B connector / CN-3662 board
   Adjusting Point: MAINTENANCE menu (M05) → COMPONENT LEVEL → PB/B/B-Y BAL TRIM

   Tip

   CCU MENU → MAINTENANCE → M05: ANALOG VIDEO

   Specification: B = 700 ±5 mVp-p (75 Ω termination) (when 100% color-bar is used)



3. After these adjustments are completed, select "WRITE" to store the setting values.

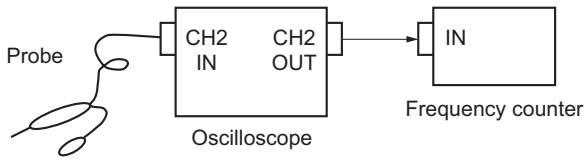
5-6. TRIAX Transmission System Adjustment

5-6-1. 1.0-MHz Modulation Circuit Adjustment

Frequency Adjustment

Preparation

- Disconnect the camera.
- If the camera is connected, turn off the CAMERA POWER switch on the inside panel.
- Connect the measuring equipment as shown in the figure.



Adjustment

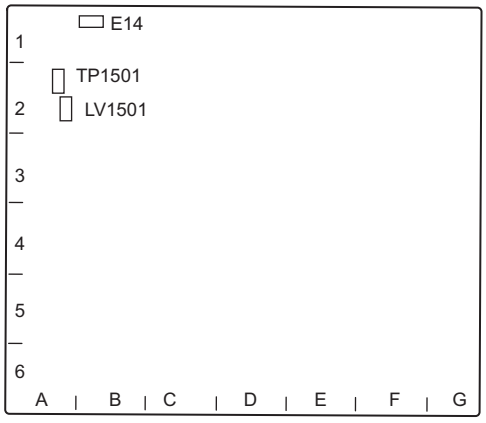
Equipment: Frequency counter

Test Point:

- TP1501 (A-2)/DM-152 board
- GND: E14 (B-1)/DM-152 board

Adjusting Point: LV1501 (A-2)/DM-152 board

Specification: 1000 ±5 kHz



DM-152 board (Side A)

5-6-2. 1.4-MHz Demodulation Circuit Adjustment

Preparation

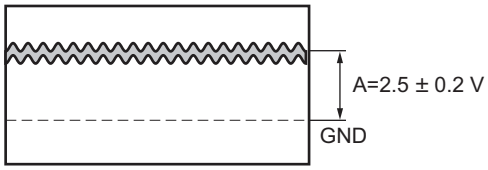
- Disconnect the coaxial cable from the connector CN3901 on the DM-152 board, and then connect the FM signal generator to CN3901.
- FM signal generator settings
  Carrier frequency: 1.4 MHz
  AF frequency: 1 kHz
  Output level: -15 dBm
  Dev: ±0 kHz

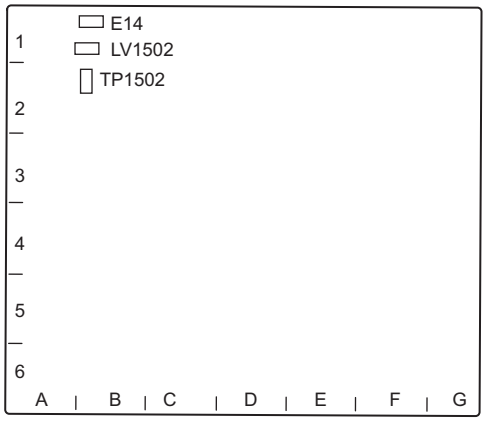
Adjustment

Equipment: Oscilloscope
Test Point:

- TP1502 (B-2)/DM-152 board
- GND: E14 (B-1)/DM-152 board

Adjusting Point: LV1502 (B-1)/DM-152 board
Specification: 2.5 ±0.2 V





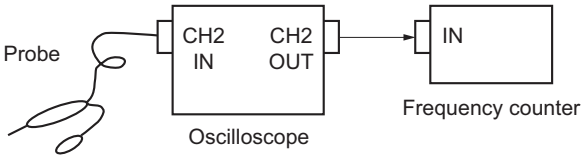
DM-152 board (Side A)

5-6-3. Tone Detection Frequency Adjustment

Frequency Adjustment

Preparation

- Disconnect the coaxial cable from the connector CN3901 on the DM-152 board.
- Connect the measuring equipment as shown in the figure.

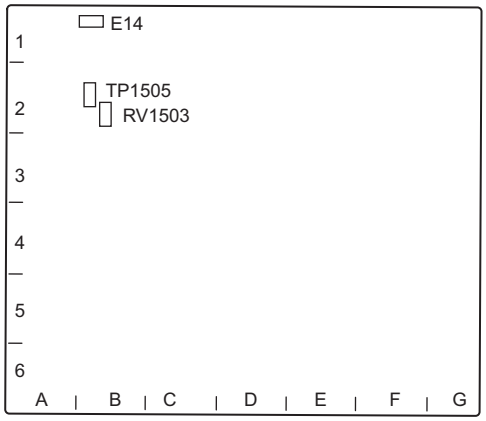


Adjustment

Equipment: Frequency counter
Test Point:

- TP1505 (B-2)/DM-152 board
- GND: E14 (B-1)/DM-152 board

Adjusting Point: RV1503 (B-2)/DM-152 board
Specification: 16.38 ±0.10 kHz



DM-152 board (Side A)

Setting after Adjustment

After the adjustment, connect the coaxial cable to the connector CN3901 on the DM-152 board.

Section 6
Spare Parts

6-1. Note 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.

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.

1. 安全重要部品

⚠警告

⚠印のついた部品は安全性を維持するために重要な部品です。したがって，交換する時は必ず指定の部品を使ってください。

2. 部品の共通化

ソニーから供給する補修用部品は，セットに使われているものと異なることがあります。
これは部品の共通化，改良等によるものです。

3. 部品の在庫

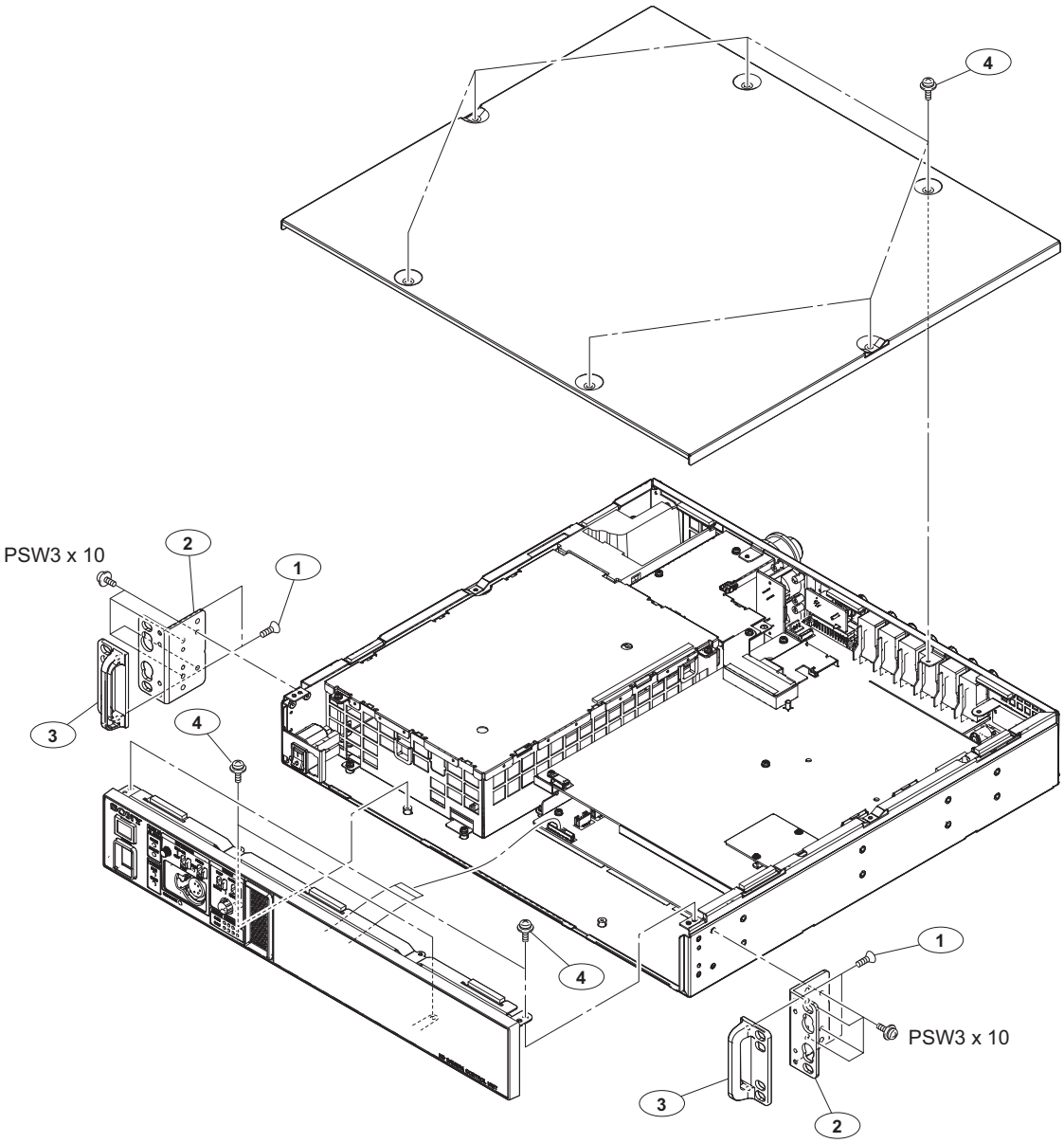
部品表の SP（Supply code）欄に “o” で示される部品は在庫していないことがあり，納期が長くなることがあります。

4. ハーネス

部品番号の記載されていないハーネスは，サービス部品として登録されていません。

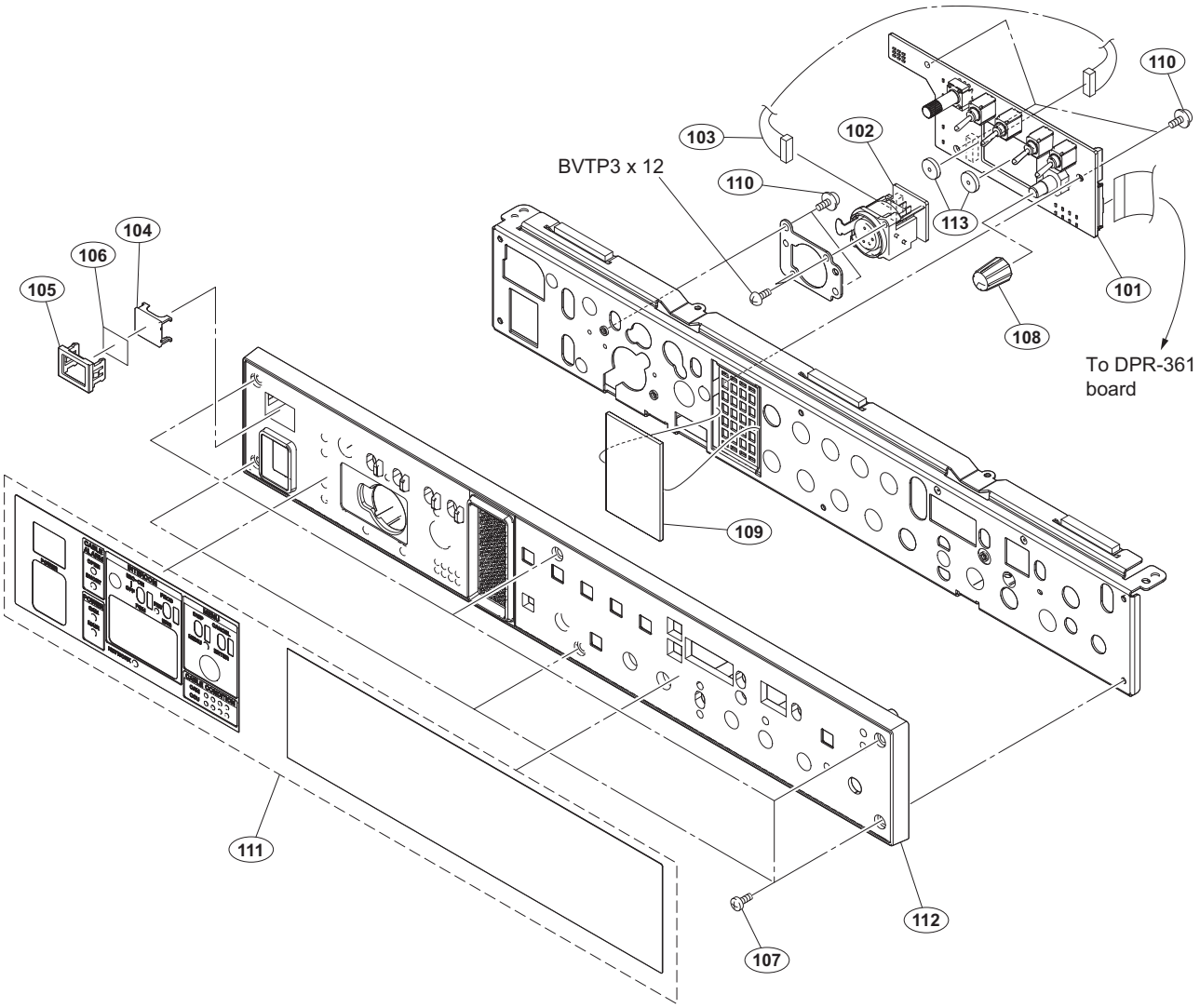
6-2. Exploded Views

Top Cover



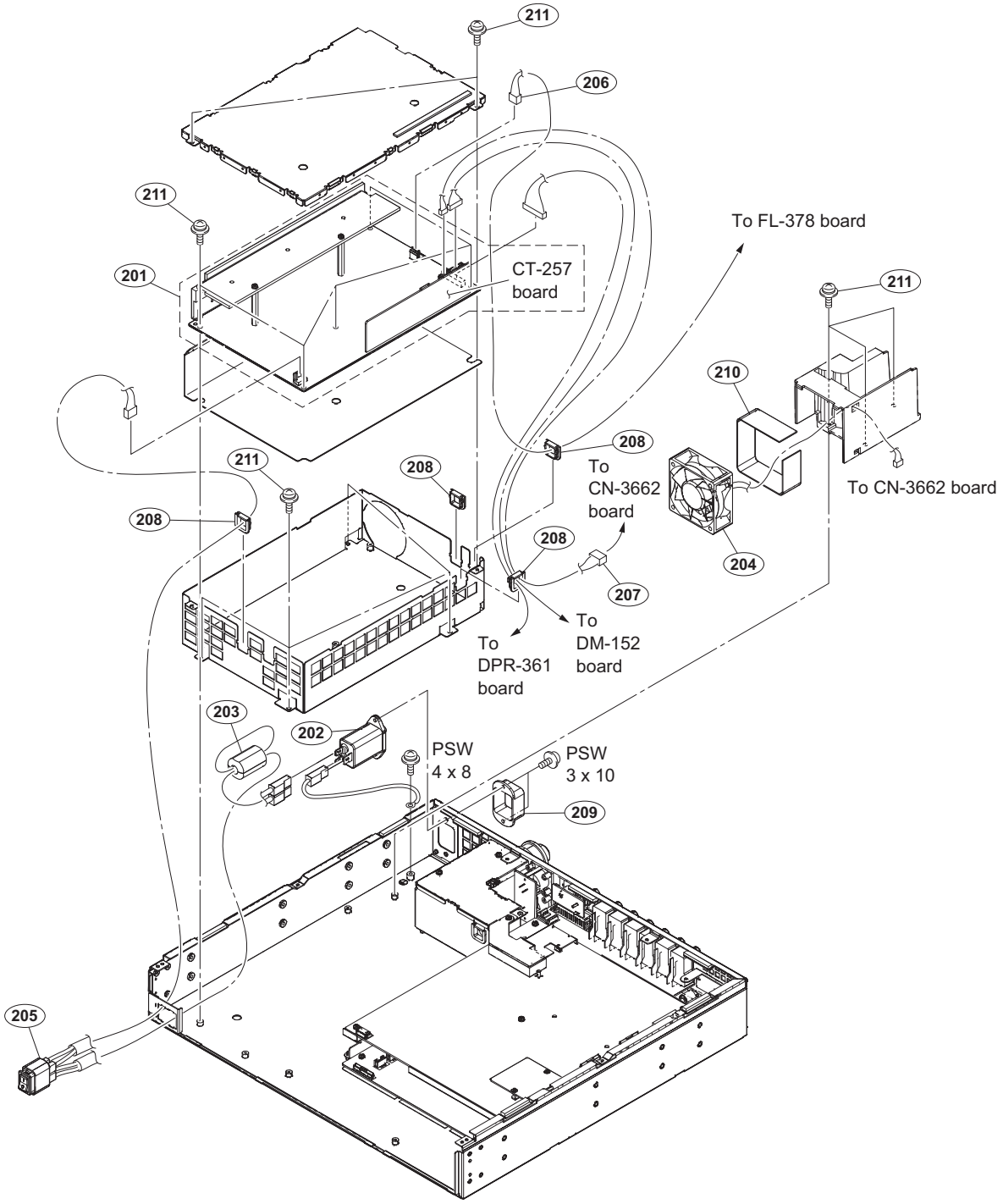
No.	Part No.	SP	Description
1	2-580-644-01	s	SCREW, +KTP2 3X8
2	4-299-632-01	s	RACK BRACKET(U)
3 ⚠	4-299-661-01	s	RACK BRACKET COVER
4	4-382-854-51	s	SCREW (M3X6), P, SW (+)
	7-682-949-01	s	SCREW +PSW 3X10

Front Panel



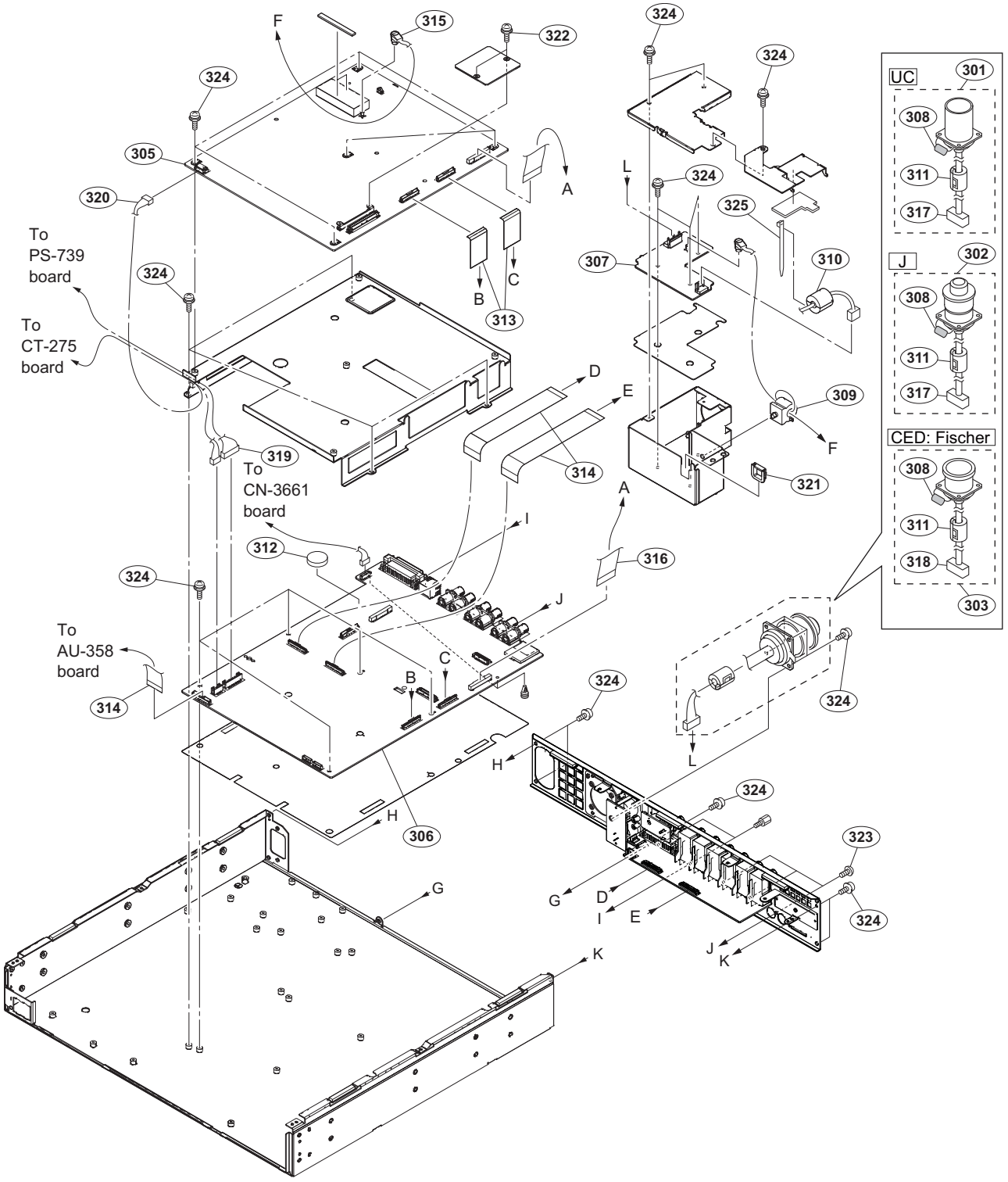
No.	Part No.	SP	Description
101	A-1974-724-A	s	MOUNTED CIRCUIT BOARD, AU-358
102	A-1974-725-A	s	MOUNTED CIRCUIT BOARD, CN-3664
103	1-969-952-11	s	HARNESS, SUB (CN)
104	2-139-192-01	s	FRAME, INDICATOR WINDOW
105	2-139-193-02	s	WINDOW, INDICATOR
106	2-249-353-01	s	COVER, LAMP
107	3-725-295-21	s	SCREW, (+) (B3) [B3X5]
108	4-139-232-01	s	KNOB, ROTARY ENCODER
109	4-299-635-02	s	FILTER
110	4-382-854-51	s	SCREW (M3X6), P, SW (+)
111	⚠ 4-476-729-02	s	SHEET, FRONT PANEL
112	⚠ 4-477-678-02	s	PANEL, FRONT
113	4-486-742-01	s	CUSHION
	7-685-648-91	s	SCREW +BVTP 3X12 TYPE2 TT (B)

Power



No.	Part No.	SP	Description
201	A-1947-741-A	s	MOUNTED CIRCUIT BOARD, PS-739D
202	⚠ 1-251-378-12	s	INLET (WITH NOISE FILTER)
203	⚠ 1-482-018-11	s	FERRITE CORE (GRFC-8)
204	⚠ 1-855-252-11	s	FAN, DC (60 SQUARE)
205	⚠ 1-966-632-21	s	SUB HARNESS (AC IN)
206	1-969-949-11	s	HARNESS, SUB (PS)
207	1-969-950-11	s	HARNESS, SUB (RCP)
208	2-433-598-01	s	HOLDER (LT-11U), WIRE
209	⚠ 2-990-241-02	s	HOLDER (A), PLUG
210	4-139-239-01	s	FAN CUSHION
211	4-382-854-51	s	SCREW (M3X6), P, SW (+)
	7-682-949-01	s	SCREW +PSW 3X10
	7-682-961-01	s	SCREW +PSW 4X8

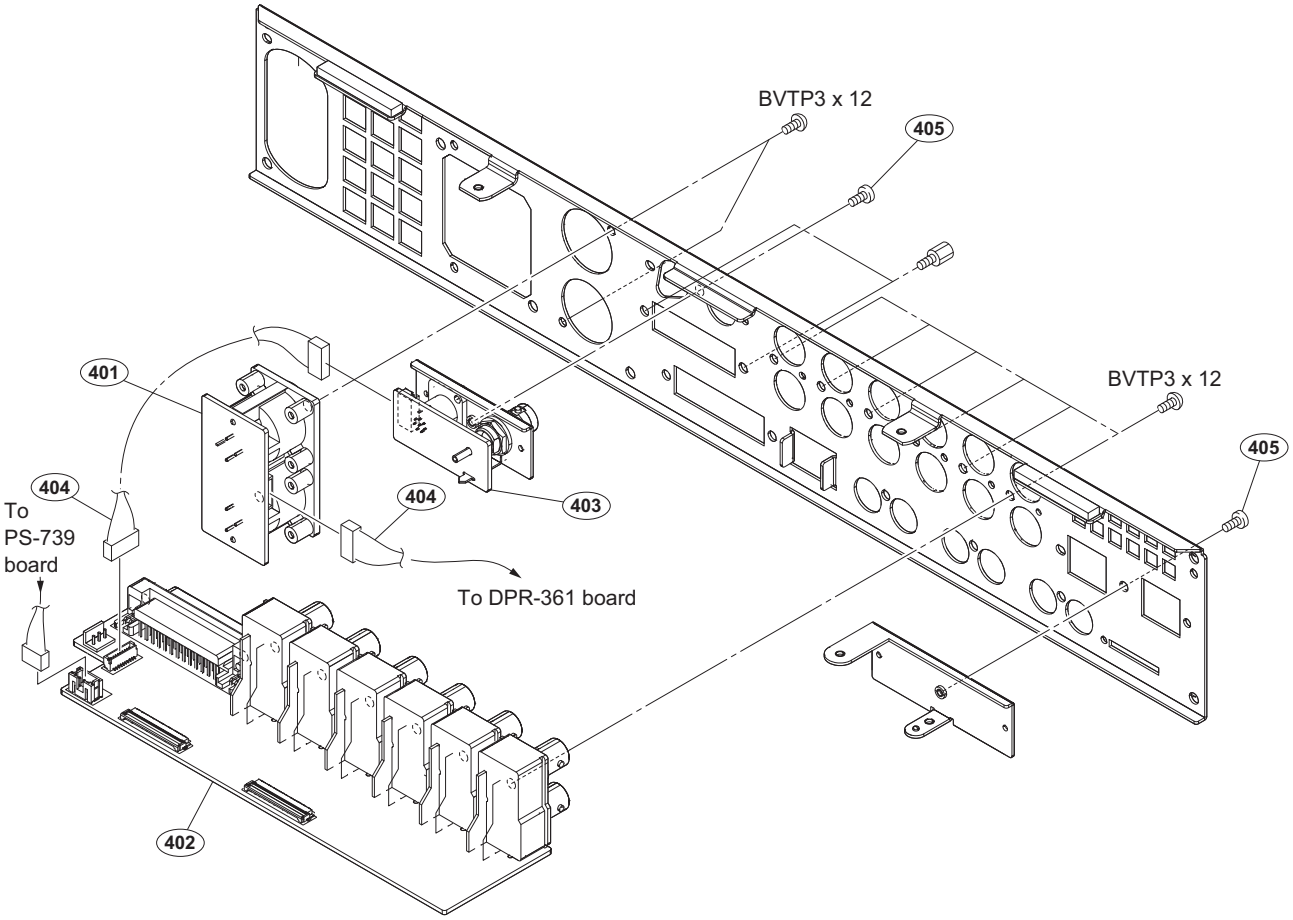
Chassis


F
315
322
324
305
320
A
To
PS-739
board
To
CT-275
board
B
C
313
319
To
CN-3661
board
D
E
314
I
312
316
J
To
AU-358
board
C
B
314
H
306
G
K
L
307
325
310
309
F
321
UC
301
308
311
317
J
302
CED: Fischer
318
303
323

Chassis

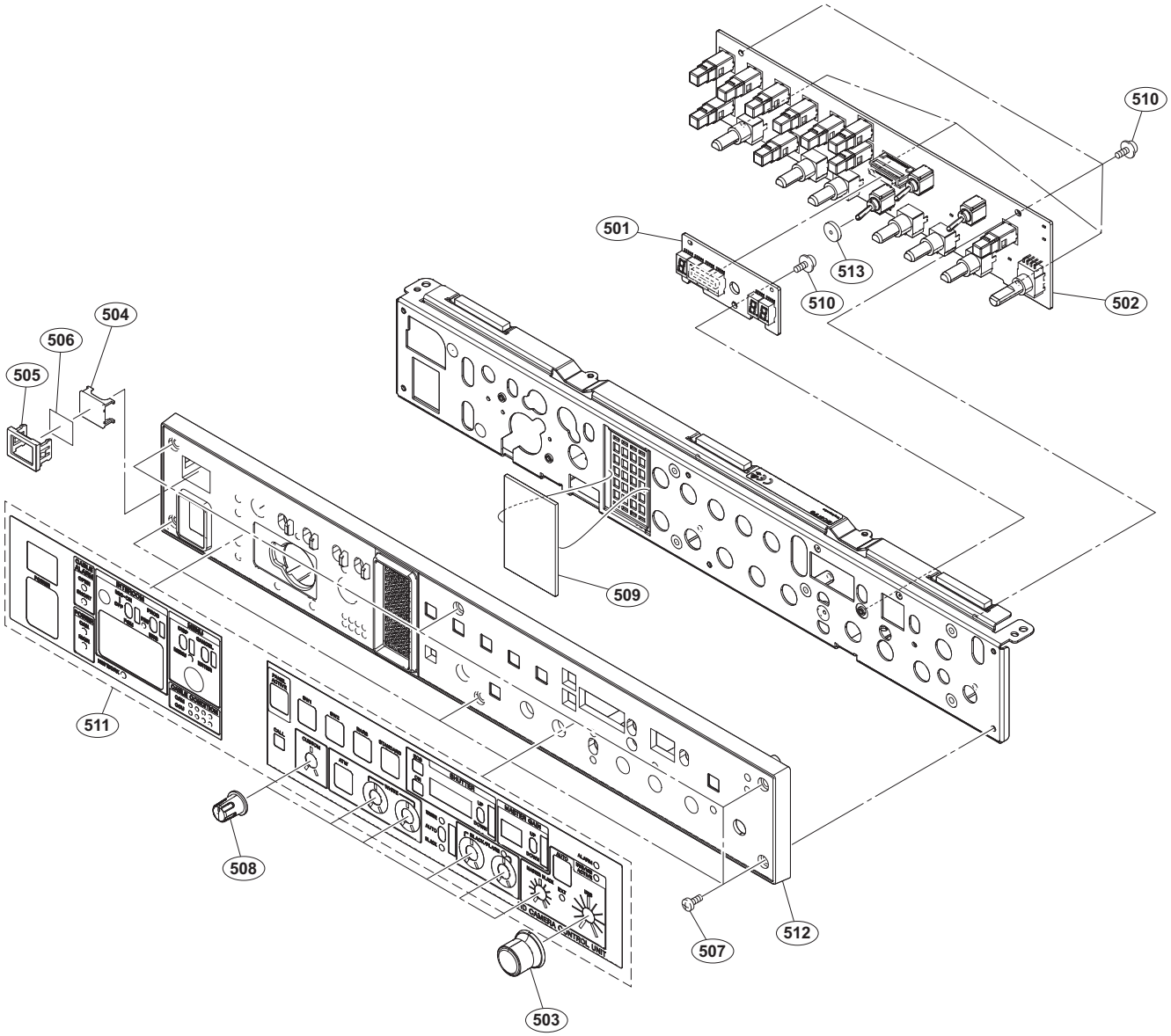
No.		Part No.	SP	Description
301	⚠	A-1707-005-A	s	TRIAX (UC) ASSY
302	⚠	A-1707-006-A	s	TRIAX (J) ASSY
303	⚠	A-1707-007-A	s	TRIAX (CE) ASSY
305		A-1973-539-A	s	MOUNTED CIRCUIT BOARD, DM-152
306		A-1974-701-A	s	MOUNTED CIRCUIT BOARD, DPR-361
307		A-1974-720-A	s	MOUNTED CIRCUIT BOARD, FL-378
308	⚠	1-136-191-11	s	CAP, METALIZED FILM 0.22MF
309		1-481-530-31	s	FILTER, CLAMP (FERRITE CORE)
310		1-482-042-11	s	FERRITE CORE
311		1-500-082-21	s	CLAMP, SLEEVE FERRITE
312	⚠	1-528-174-72	s	BATTERY, LITHIUM (CR2032 TYPE)
313		1-831-068-11	s	CABLE, FLEXIBLE FLAT (45 CORE)
314		1-831-108-11	s	CABLE, FLEXIBLE FLAT (45 CORE)
315		1-836-794-11	s	CABLE, CONNECTOR WITH COAXIAL
316		1-839-904-11	s	FPC WITH CONNECTOR (DPR-SDI)
317		1-966-630-11	s	SUB HARNESS (TRIAX-CCU (K, T)) (UC, J)
318		1-966-631-11	s	SUB HARNESS (TRIAX-CCU (F)) (CED: Fischer)
319		1-969-948-11	s	HARNESS, SUB (CONTROL)
320		1-969-951-11	s	HARNESS, SUB (UNREG)
321		2-433-598-01	s	HOLDER (LT-11U), WIRE
322		2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
323		3-637-901-02	s	SCREW M2.6X5 [B2.6X5]
324		4-382-854-51	s	SCREW (M3X6), P, SW (+)
325		3-655-653-01	s	BAND (TAITON), BINDING

Rear Panel



No.	Part No.	SP	Description
401	A-1974-722-A	s	MOUNTED CIRCUIT BOARD, CN-3661
402	A-1974-723-A	s	MOUNTED CIRCUIT BOARD, CN-3662
403	A-1974-729-A	s	MOUNTED CIRCUIT BOARD, CN-3663
404	1-969-952-11	s	HARNESS, SUB (CN)
405	3-637-901-02	s	SCREW M2.6X5 [B2.6X5]
	7-685-648-91	s	SCREW +BVTP 3X12 TYPE2 TT (B)

HKCU-FP2



No.		Part No.	SP	Description
501		A-1974-726-A	s	MOUNTED CIRCUIT BOARD, LED-525
502		A-1974-728-A	s	MOUNTED CIRCUIT BOARD, SW-1615
503		X-3679-302-2	s	KNOB,VOLUME ASSY
504		2-139-192-01	s	FRAME, INDICATOR WINDOW
505		2-139-193-02	s	WINDOW, INDICATOR
506		2-249-353-01	s	COVER, LAMP
507		3-725-295-21	s	SCREW, (+) (B3) [B3X5]
508		3-870-021-01	s	KNOB, AU-VR
509		4-299-635-02	s	FILTER
510		4-382-854-51	s	SCREW (M3X6), P, SW (+)
511	⚠	4-476-729-11	s	SHEET, FRONT PANEL
512	⚠	4-477-678-11	s	PANEL, FRONT
513		4-486-742-01	s	CUSHION

6-3. Supplied Accessories

HXCU-TX70

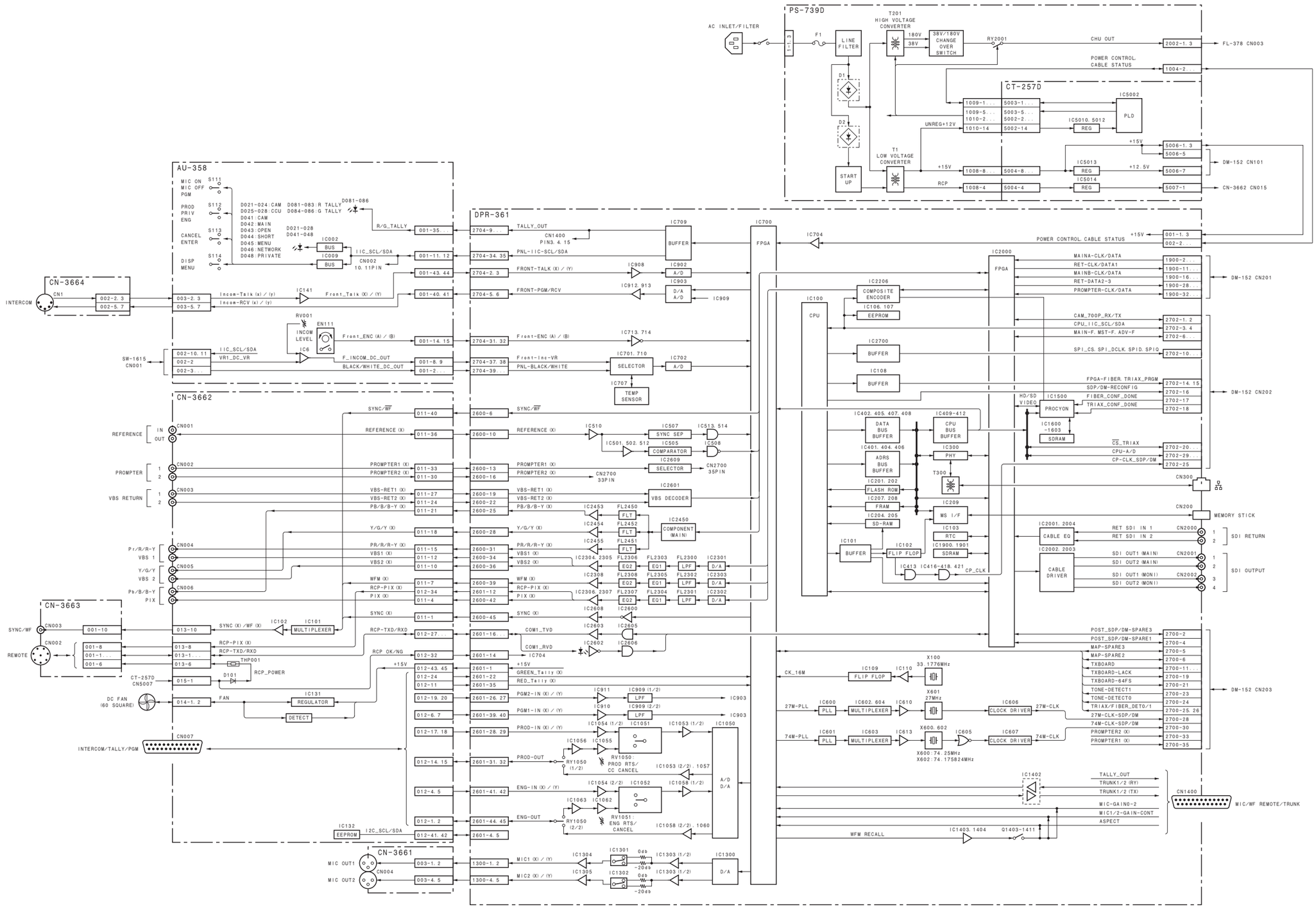
Q'ty	Part No.	SP	Description
1pc	2-249-307-01	s	INDICATOR, REMOTE
1pc	⚠ 4-479-628-01	s	CD-ROM PACK

HKCU-FP2

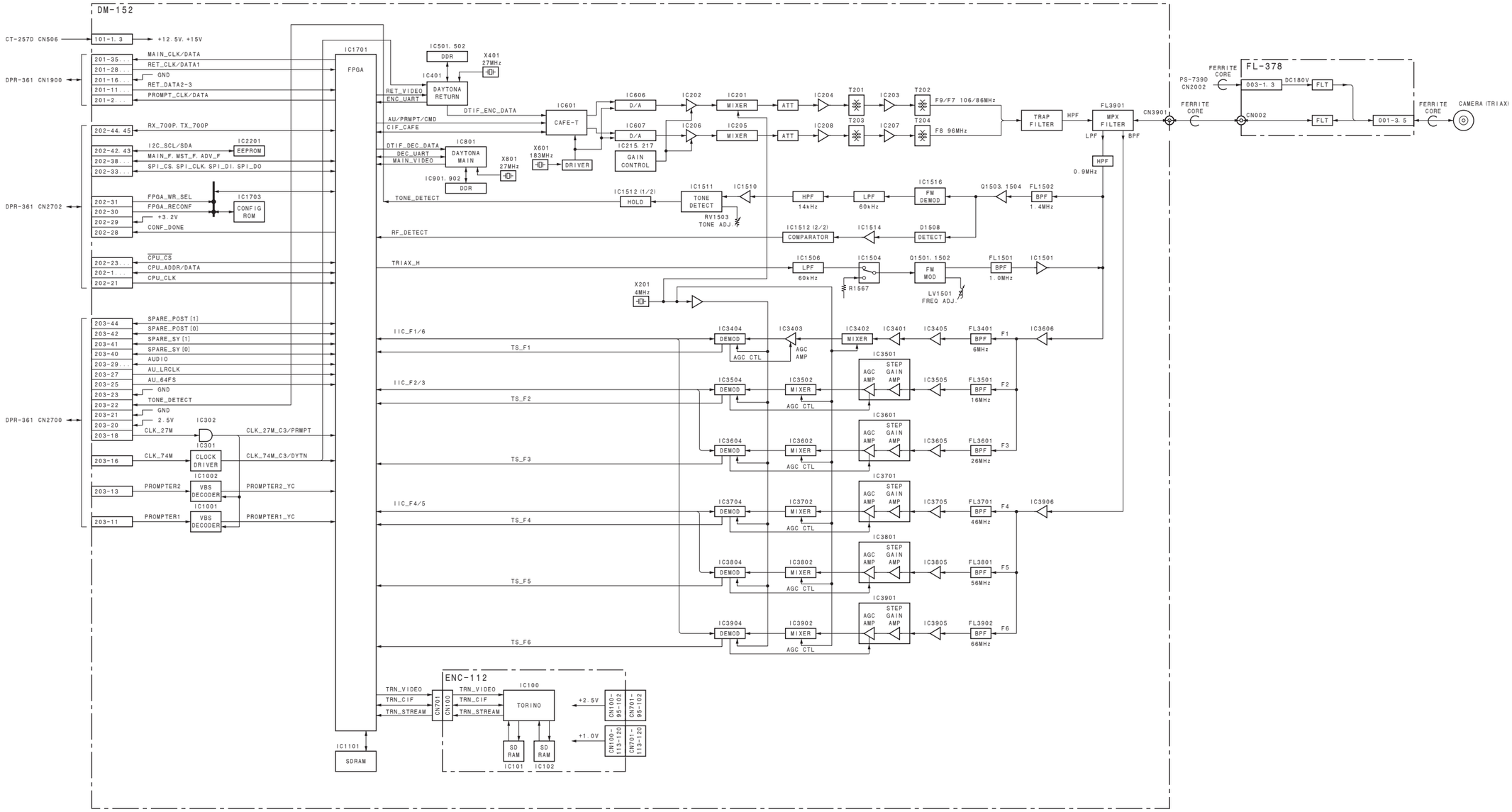
Q'ty	Part No.	SP	Description
1pc	1-969-953-11	s	HARNESS, SUB (PANEL)

Section 7
Diagrams

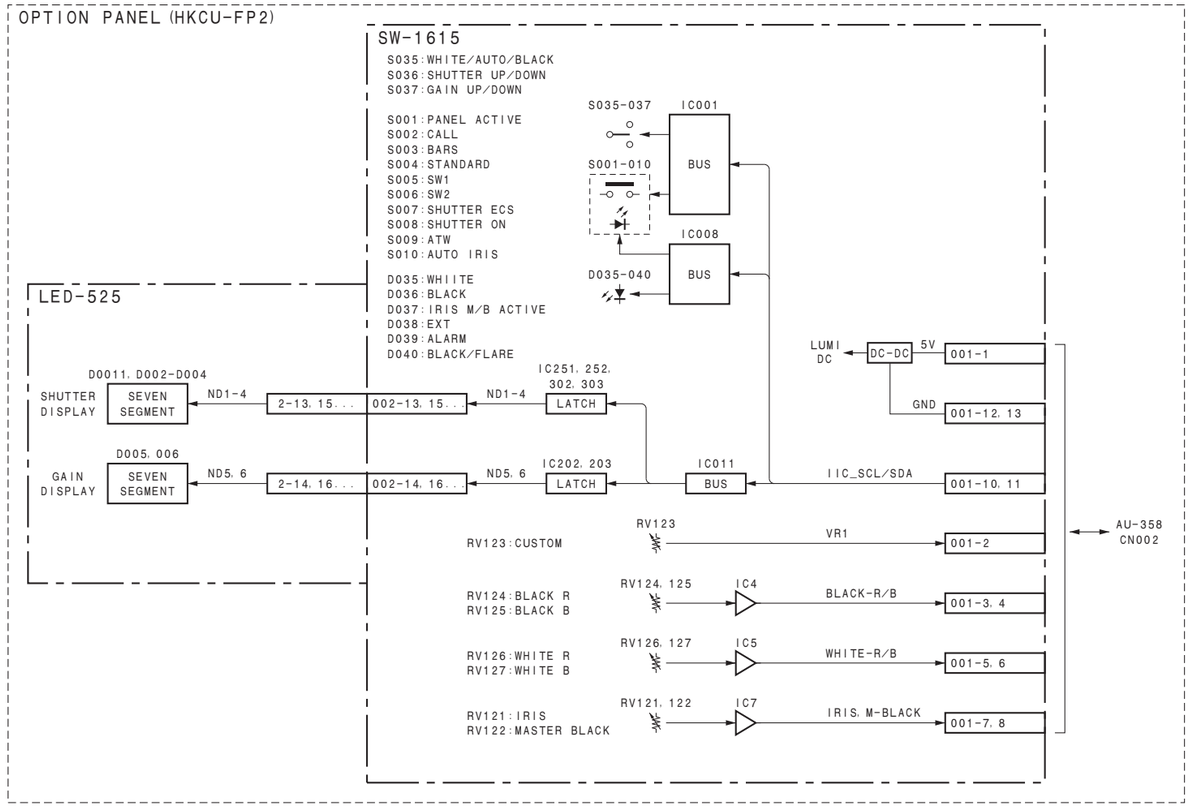
Block Diagrams
Overall (1/3)



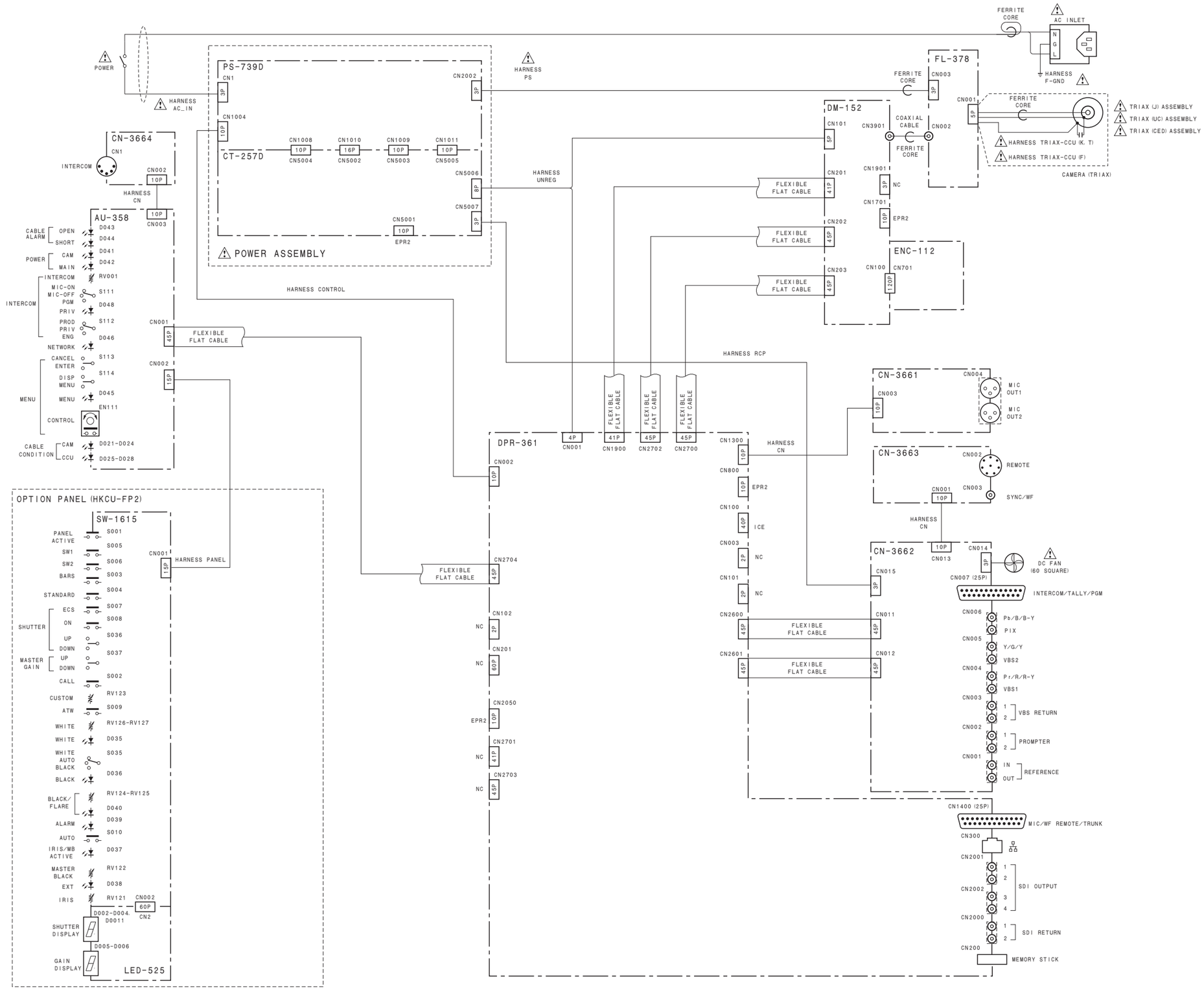
Overall (2/3)


DM-152
CT-257D CN506
101-1, 3
+12.5V, +15V
DPR-361 CN1900
201-35...
MAIN_CLK/DATA
201-28...
RET_CLK/DATA1
201-16...
GND
201-11...
RET_DATA2-3
201-2...
PROMPT_CLK/DATA
202-44, 45
RX_700P, TX_700P
202-42, 43
I2C_SCL/SDA
IC2201
EEPROM
202-38...
MAIN_F_MST_F, ADV_F
202-33...
SPI_CS, SPI_CLK, SPI_DI, SPI_DO
DPR-361 CN2702
202-31
FPGA_WR_SEL
202-30
FPGA_RECONF
IC1703
CONFIG ROM
202-29
+3.2V
202-28
CONF_DONE
202-23...
CPU_CS
202-1...
CPU_ADDR/DATA
202-21
CPU_CLK
203-44
SPARE_POST [1]
203-42
SPARE_POST [0]
203-41
SPARE_SY [1]
203-40
SPARE_SY [0]
203-29...
AUDIO
203-27
AU_LRCLK
203-25
AU_64FS
203-23
GND
203-22
TONE_DETECT
DPR-361 CN2700
203-21
GND
203-20
2.5V
203-18
CLK_27M
IC302
IC301
CLK_27M_C3/PRMPT
203-16
CLK_74M
CLOCK DRIVER
CLK_74M_C3/DYTN
203-13
PROMPTER2
IC1002
VBS DECODER
PROMPTER2_YC
203-11
PROMPTER1
IC1001
VBS DECODER
PROMPTER1_YC
IC1701
FPGA
IC1101
SDRAM
IC501, 502
DDR
X401
27MHz
IC401
DAYTONA RETURN
RET_VIDEO
ENC_UART
DTIF_ENC_DATA
AU/PRMPT/CMD
CIF_CAFE
IC601
CAFE-T
DTIF_DEC_DATA
DEC_UART
MAIN_VIDEO
IC801
DAYTONA MAIN
X801
27MHz
IC901, 902
DDR
X601
183MHz
DRIVER
TONE_DETECT
IC606
D/A
IC607
D/A
IC215, 217
GAIN CONTROL
IC202
IC201
MIXER
IC206
IC205
MIXER
ATT
IC204
T201
IC203
T202
F9/F7 106/86MHz
ATT
IC208
T203
IC207
T204
F8 96MHz
TRAP FILTER
HPF
FL3901
MPX FILTER
LPF
BPF
HPF
0.9MHz
CN3901
FERRITE CORE
PS-739D
CN2002
FL-378
003-1, 3
DC18V
FLT
FERRITE CORE
CN002
FLT
001-3, 5
FERRITE CORE
CAMERA (TRIAX)
IC1512 (1/2)
HOLD
IC1511
TONE DETECT
IC1510
RV1503
TONE ADJ.
HPF
14kHz
LPF
60kHz
IC1516
FM DEMOD
Q1503, 1504
FL1502
BPF
1.4MHz
RF_DETECT
IC1512 (2/2)
COMPARATOR
IC1514
D1508
DETECT
TRIAX_H
IC1506
LPF
60kHz
IC1504
R1567
Q1501, 1502
FM MOD
LV1501
FREQ ADJ.
FL1501
BPF
1.0MHz
IC1501
X201
4MHz
IIC_F1/6
TS_F1
IC3404
DEMOD
AGC CTL
IC3403
AGC AMP
IC3402
MIXER
IC3401
IC3405
FL3401
BPF
6MHz
F1
IC3606
IC3501
STEP GAIN AMP
AGC AMP
IIC_F2/3
TS_F2
IC3504
DEMOD
IC3502
MIXER
AGC CTL
IC3505
FL3501
BPF
16MHz
F2
IC3601
STEP GAIN AMP
AGC AMP
IIC_F3/4
TS_F3
IC3604
DEMOD
IC3602
MIXER
AGC CTL
IC3605
FL3601
BPF
26MHz
F3
IC3701
STEP GAIN AMP
AGC AMP
IIC_F4/5
TS_F4
IC3704
DEMOD
IC3702
MIXER
AGC CTL
IC3705
FL3701
BPF
46MHz
F4
IC3906
IC3801
STEP GAIN AMP
AGC AMP
IIC_F5/6
TS_F5
IC3804
DEMOD
IC3802
MIXER
AGC CTL
IC3805
FL3801
BPF
56MHz
F5
IC3901
STEP GAIN AMP
AGC AMP
TS_F6
IC3904
DEMOD
IC3902
MIXER
AGC CTL
IC3905
FL3902
BPF
66MHz
F6
ENC-112
TRN_VIDEO
TRN_CIF
TRN_STREAM
CN701
CN100
TRN_VIDEO
TRN_CIF
TRN_STREAM
IC100
TORINO
SD RAM
IC101
SD RAM
IC102
+2.5V
+1.0V
CN100-95-102
CN701-95-102
CN100-113-120
CN701-113-120

Overall (3/3)


OPTION PANEL (HKCU-FP2)
SW-1615
S035:WHITE/AUTO/BLACK
S036:SHUTTER UP/DOWN
S037:GAIN UP/DOWN
S001:PANEL ACTIVE
S002:CALL
S003:BARS
S004:STANDARD
S005:SW1
S006:SW2
S007:SHUTTER ECS
S008:SHUTTER ON
S009:ATW
S010:AUTO IRIS
D035:WHIITE
D036:BLACK
D037:IRIS M/B ACTIVE
D038:EXT
D039:ALARM
D040:BLACK/FLARE
S035-037
IC001
BUS
S001-010
IC008
BUS
D035-040
BUS
LED-525
LUMI DC
DC-DC
5V
001-1
GND
001-12. 13
D0011. D002-D004
SHUTTER DISPLAY
SEVEN SEGMENT
ND1-4
2-13. 15. . .
002-13. 15. .
ND1-4
IC251. 252. 302. 303
LATCH
D005. 006
GAIN DISPLAY
SEVEN SEGMENT
ND5. 6
2-14. 16. . .
002-14. 16. .
ND5. 6
IC202. 203
LATCH
IC011
BUS
IIC_SCL/SDA
001-10. 11
RV123
VR1
001-2
RV123:CUSTOM
RV124. 125
IC4
BLACK-R/B
001-3. 4
RV124:BLACK R
RV125:BLACK B
RV126. 127
IC5
WHITE-R/B
001-5. 6
RV126:WHITE R
RV127:WHITE B
RV121. 122
IC7
IRIS. M-BLACK
001-7. 8
RV121:IRIS
RV122:MASTER BLACK
AU-358
CN002

Frame Wiring



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.

1. 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 low-voltage 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)

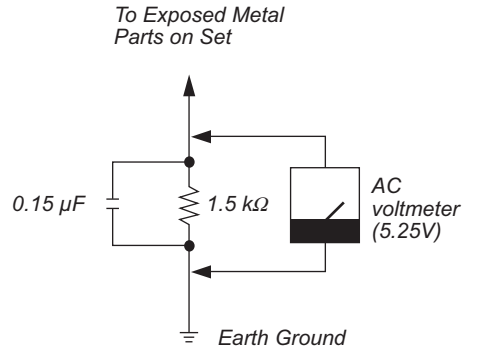


Fig A. Using an AC voltmeter to check AC leakage.

HXCU-TX70 (UC)
HXCU-TX70 (J)
HXCU-TX70 (CED)　J, E
9-878-491-01

Sony Corporation

Printed in Japan
2013. 10 08
© 2013