INC

VAA22024-R. 3749. A

作成承認印	配布許可印
ニコン 映像カンパニー 品質保証部 GM	サービス 計画課 M

COOLPIX S210

VMA22024

REPAIR MANUAL

Nikon | NIKON CORPORATION
Tokyo, Japan

Printed in Japan FEB 2008

CONTENTS

Disassembly

⚠ WARNING	
	● There are high voltege parts inside. Be careful of this electric shock, when you remove the cover. ● You must discharge the main condenser according to the instruction of this repair manual after you remove the cover.

Points to notice for Lead-free solder products
・Lead-free solder is used for this product. ・For soldering work, the special solder and soldering iron are required. ・Do not mix the lead-free solder with the conventional solder. ・Use the special soldering iron respectively for lead-free solder and lead solder. They cannot be used in common.

Note : ① Before disassembling, remove the SD card and battery.

② When disassembling, make sure to memorize the processing state of wires, screws to be fixed and their types, etc.

③ Because electrical parts are easily damaged by static electricity, make sure that you are well earthed/grounded.

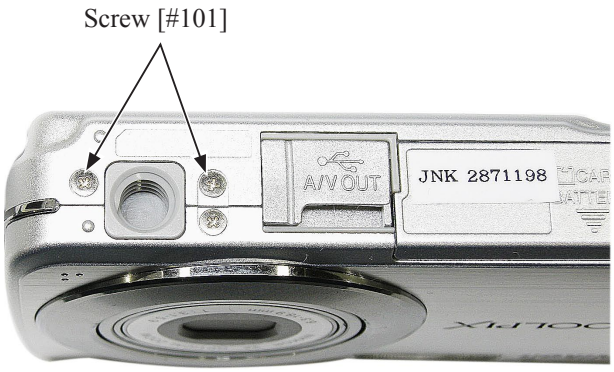
EXTERNAL SCREW

- Remove the two screws [#102].
- Remove the two screws [#101].

Be careful of a difference in size between the upper and lower screws.

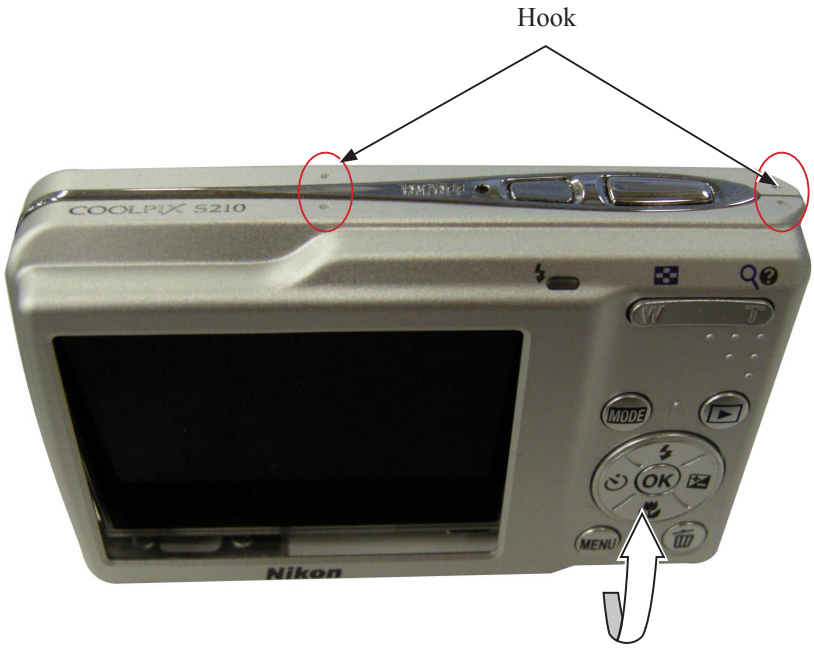
- Remove the two screws [#102].

・Remove the two screws [#101].

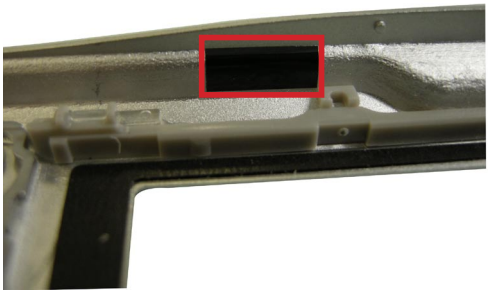


BACK COVER

・Remove the BACK COVER [#119].



・Remove the SPACER .

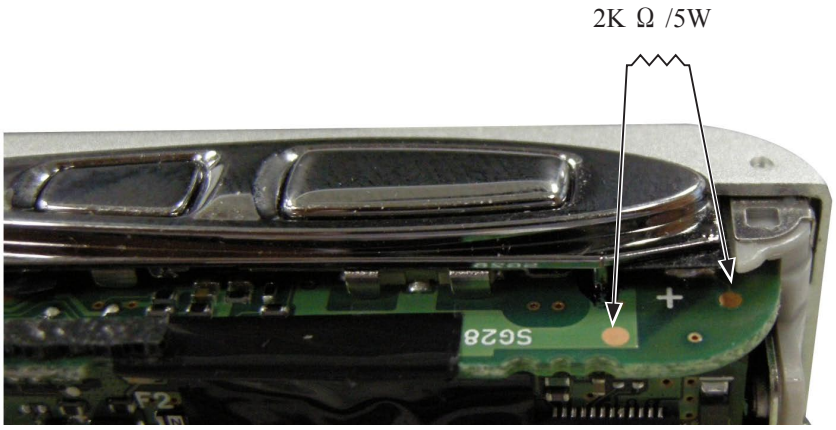


⚠ WARNING

- There are high voltege parts inside. Be careful of this electric shock, when you remove the cover.
- You must discharge the main condenser according to the instruction of this repair manual after you remove the cover.

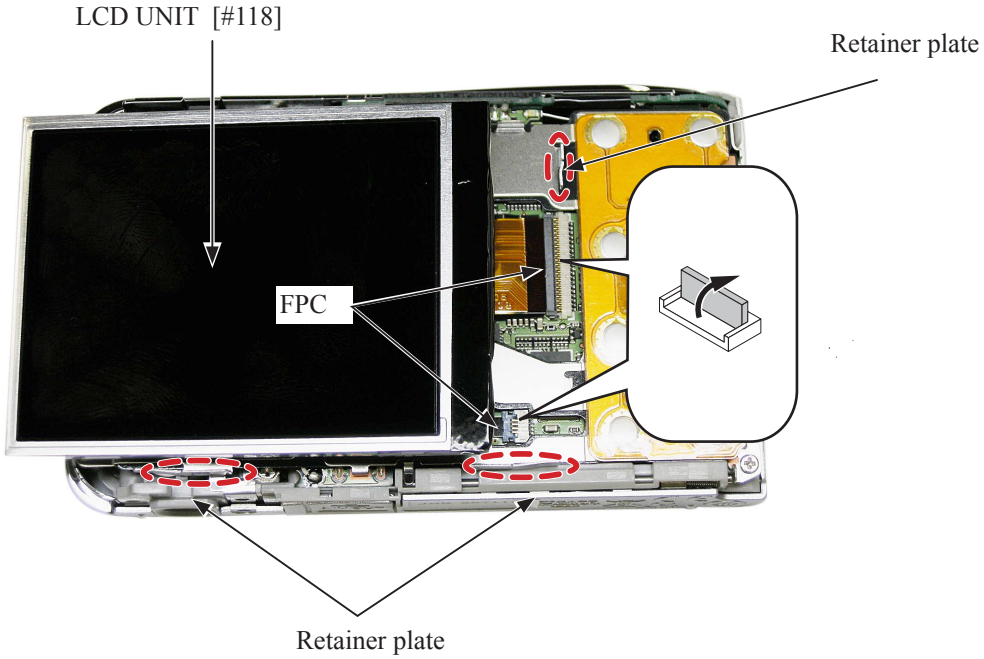
DISCHARGE OF MAIN CONDENSER

Be careful NOT to touch the decoration plate.



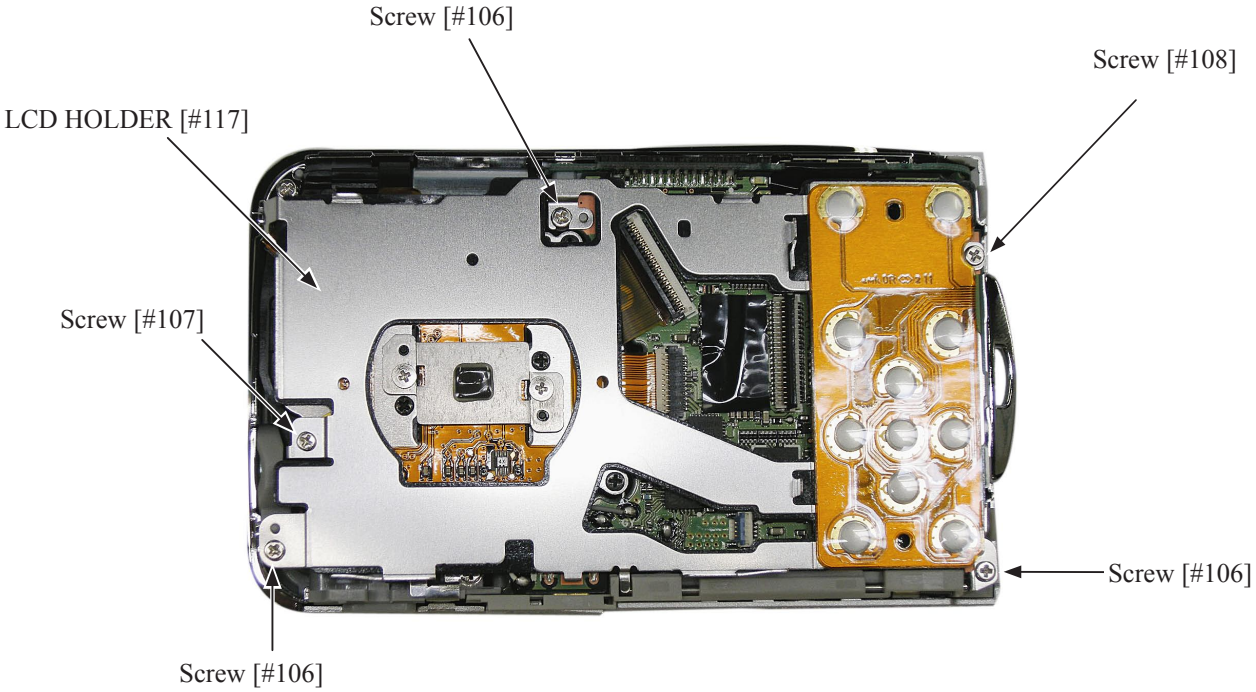
LCD UNIT

- Remove the FPC.
- Remove the LCD UNIT [#118].

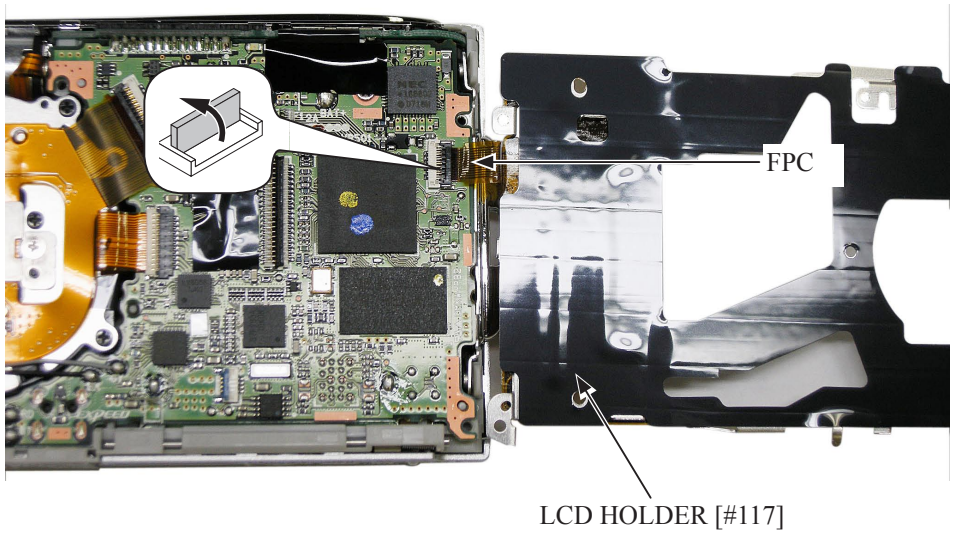


LCD HOLDER

- Take out the screw [#108].
- Take out the screw [#107].
- Take out the three screws [#106].

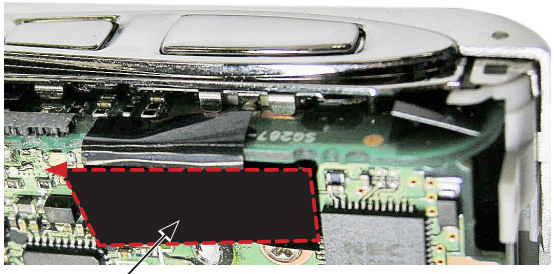


- Remove the LCD HOLDER [#117].
- Remove the FPC.



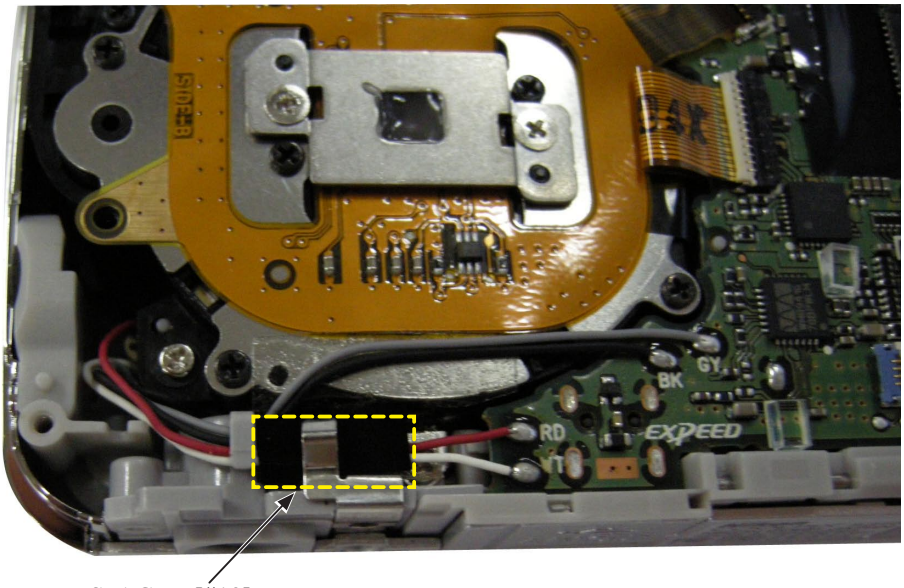
CP-1 PCB

・Remove the SPACER [#120].



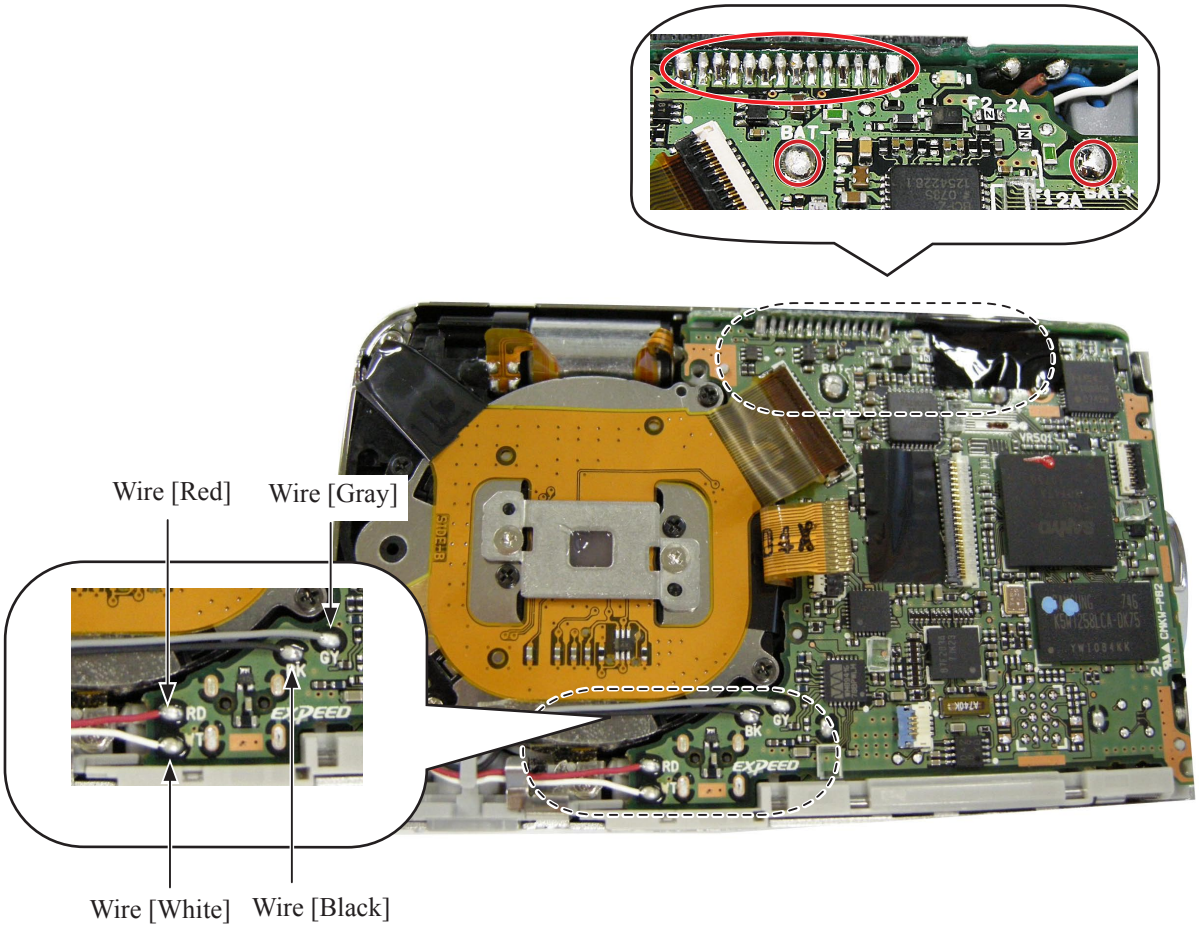
SPACER [#120]

・Remove the SPACER [#19].

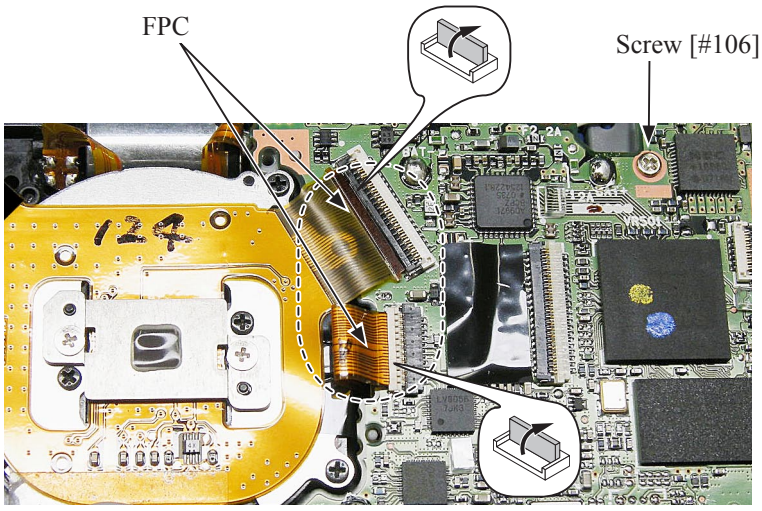


SPACER [#19]

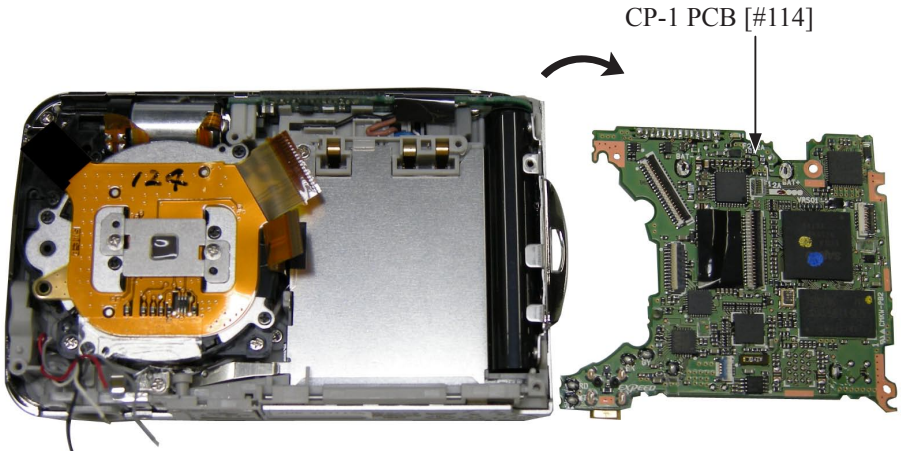
- Unsolder the wires [Gray] and [Black].
- Unsolder the wires [Red] and [White].
- Remove the soldering bridge.



- Take out the screw [#106].
- Remove the FPC.

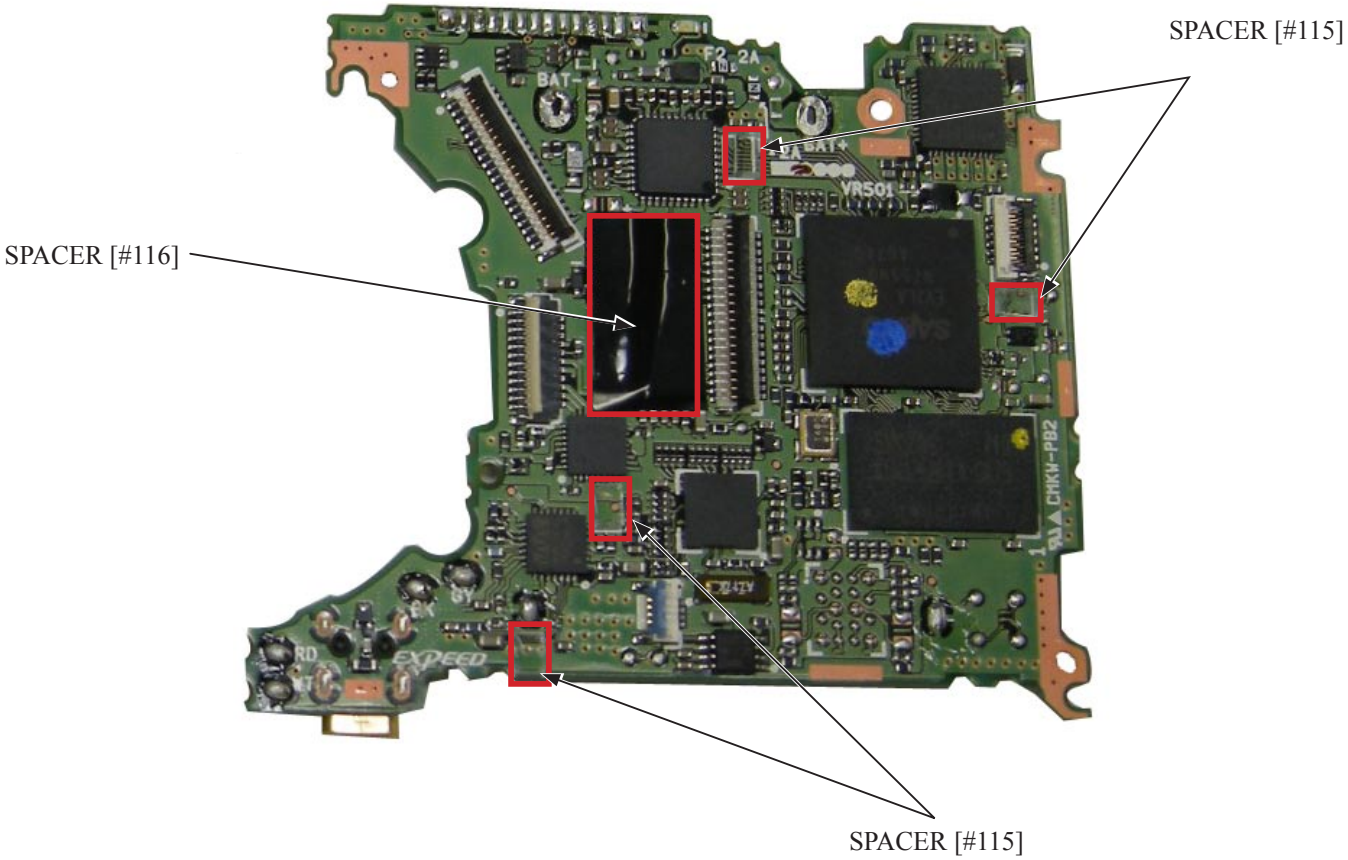


・Remove the CP-1 PCB [#114].



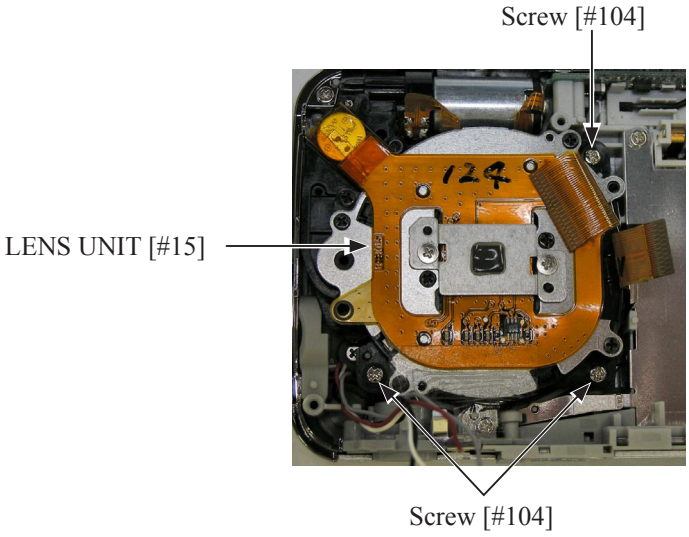
・Remove the SPACER [#116].

・Remove the SPACER [#115].

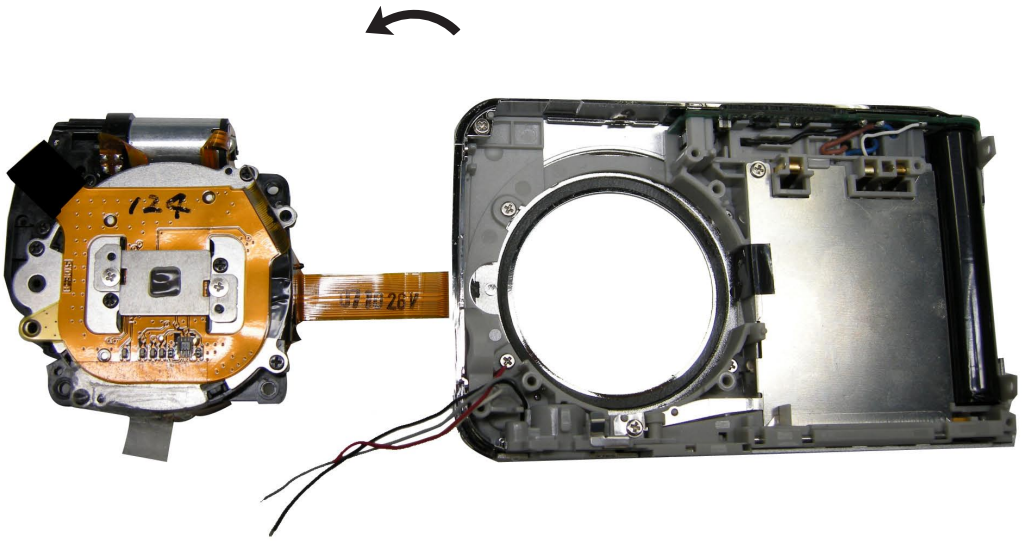


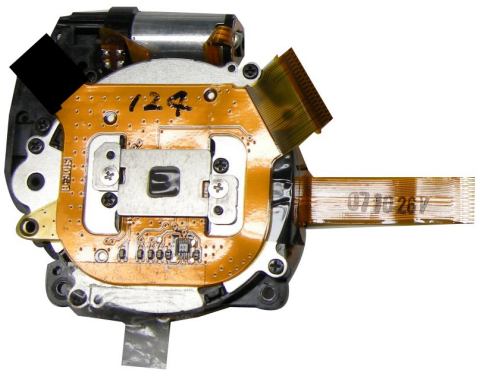
LENS UNIT

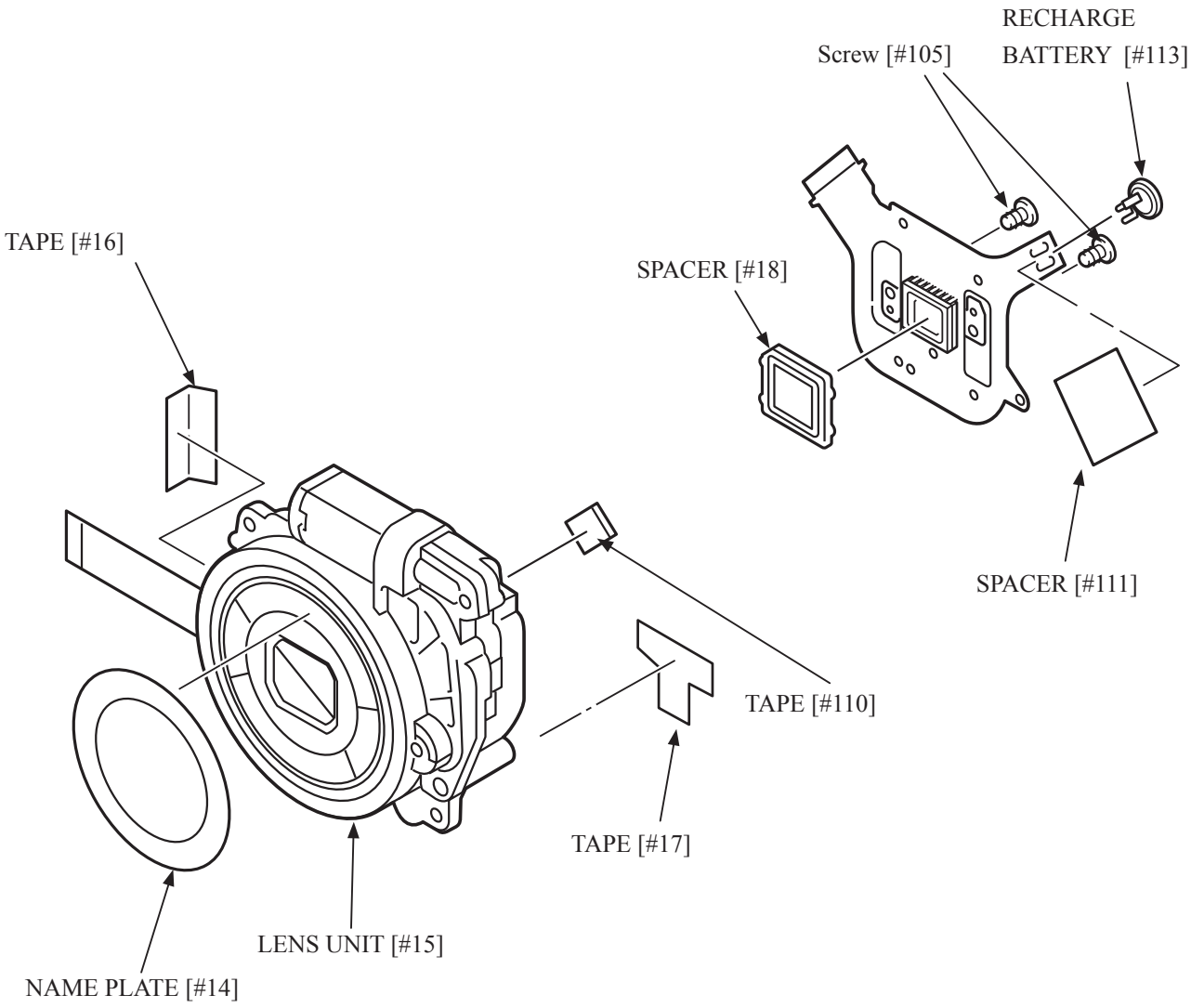
・Take out the three screws [#104].



・Remove the LENS UNIT[#15] .

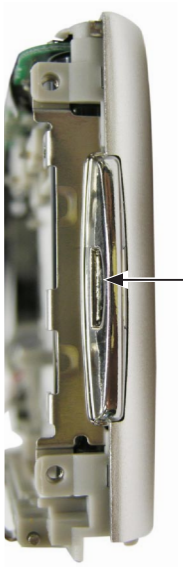




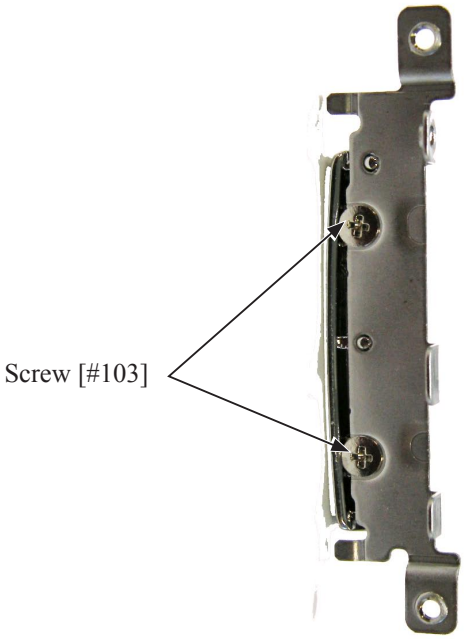

RECHARGE
BATTERY [#113]
Screw [#105]
TAPE [#16]
SPACER [#18]
SPACER [#111]
TAPE [#110]
TAPE [#17]
LENS UNIT [#15]
NAME PLATE [#14]

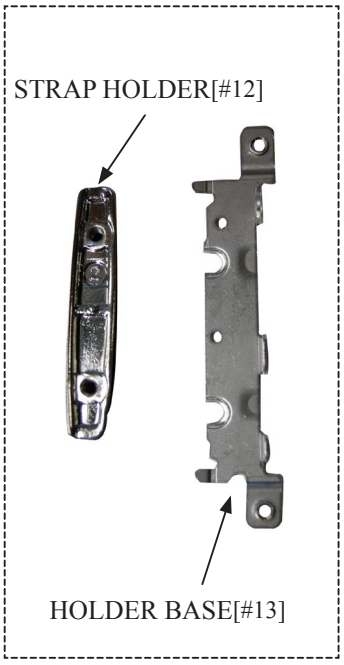
STRAP HOLDER

・Remove the STRAP HOLDER.



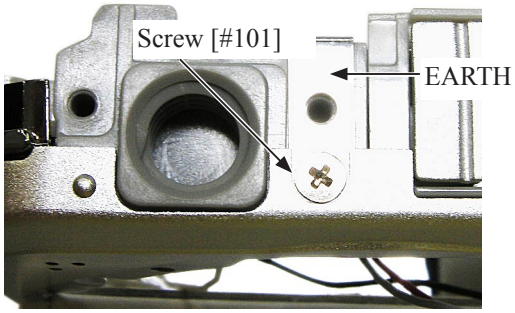
・Take out two screws [#103].

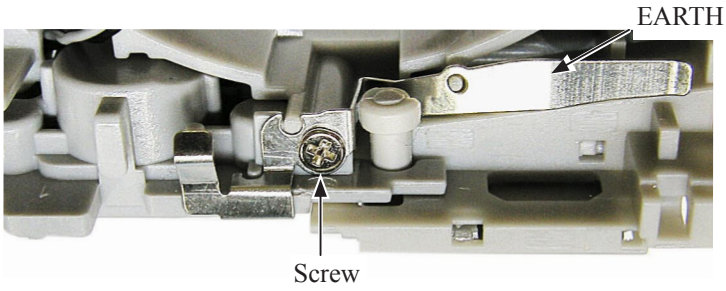




USB COVER

- Remove the screw [#101].
- Then, take out the other screw of the right picture.

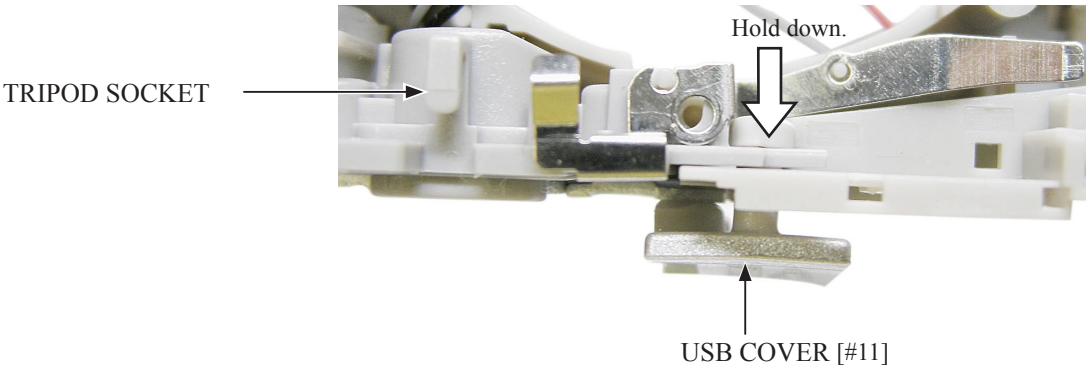




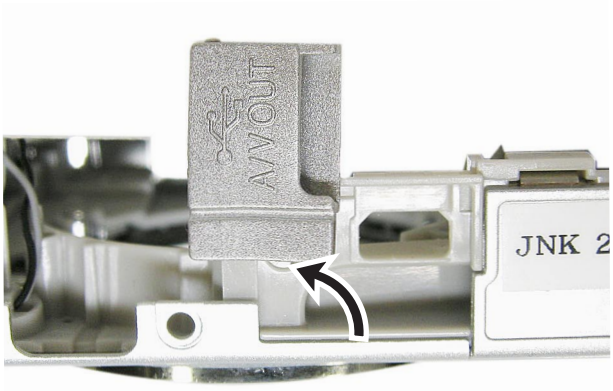
- Remove the EARTH.

(Holding down the USB cover makes it easier to remove the earth.)

- Remove the TRIPOD SOCKET.

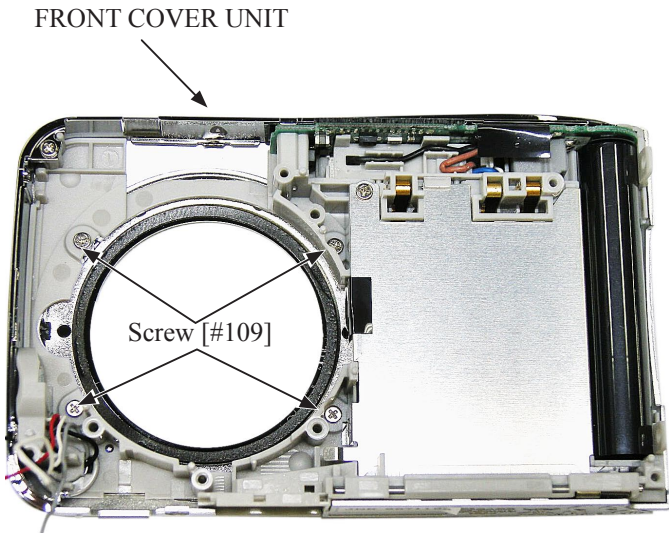


- Turn the USB cover [#11] in the direction of the arrow, and remove it.



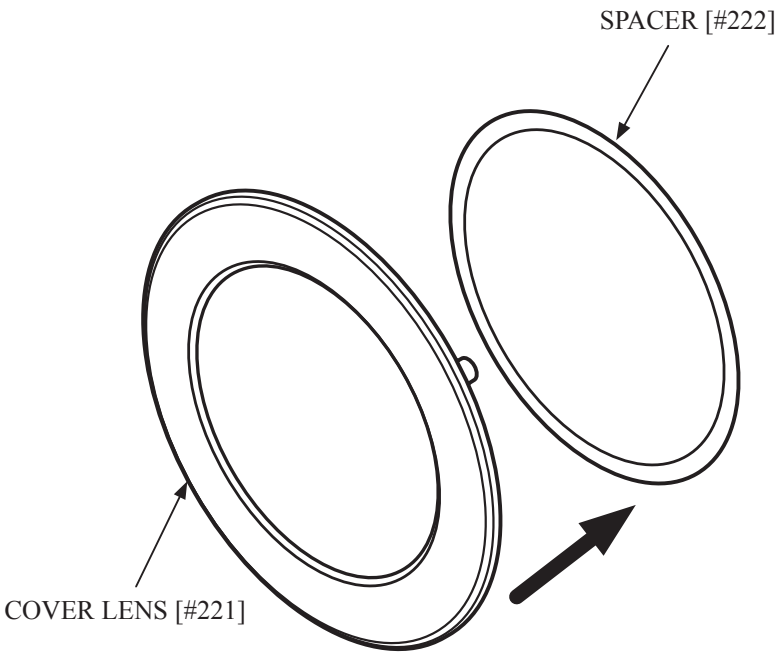
COVER LENS

・Take out the four screws [#109].



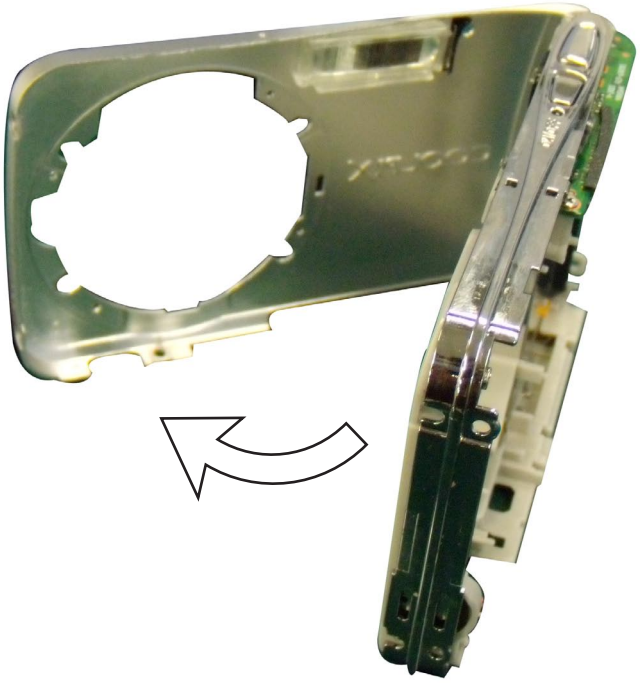
・Remove the COVER LENS [#221].

・Remove the SPACER [#222].

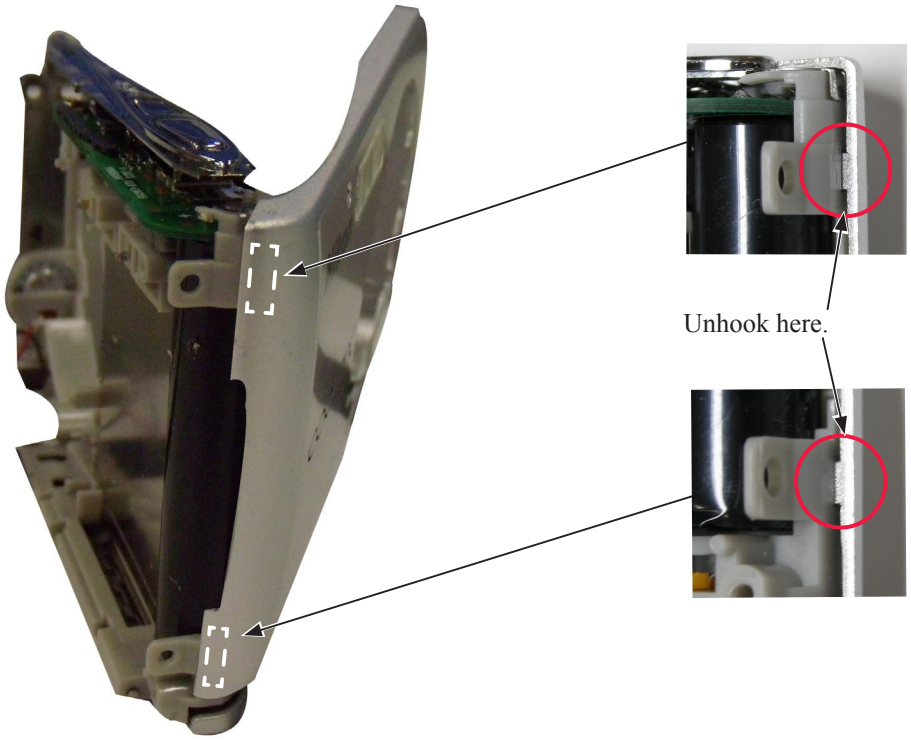


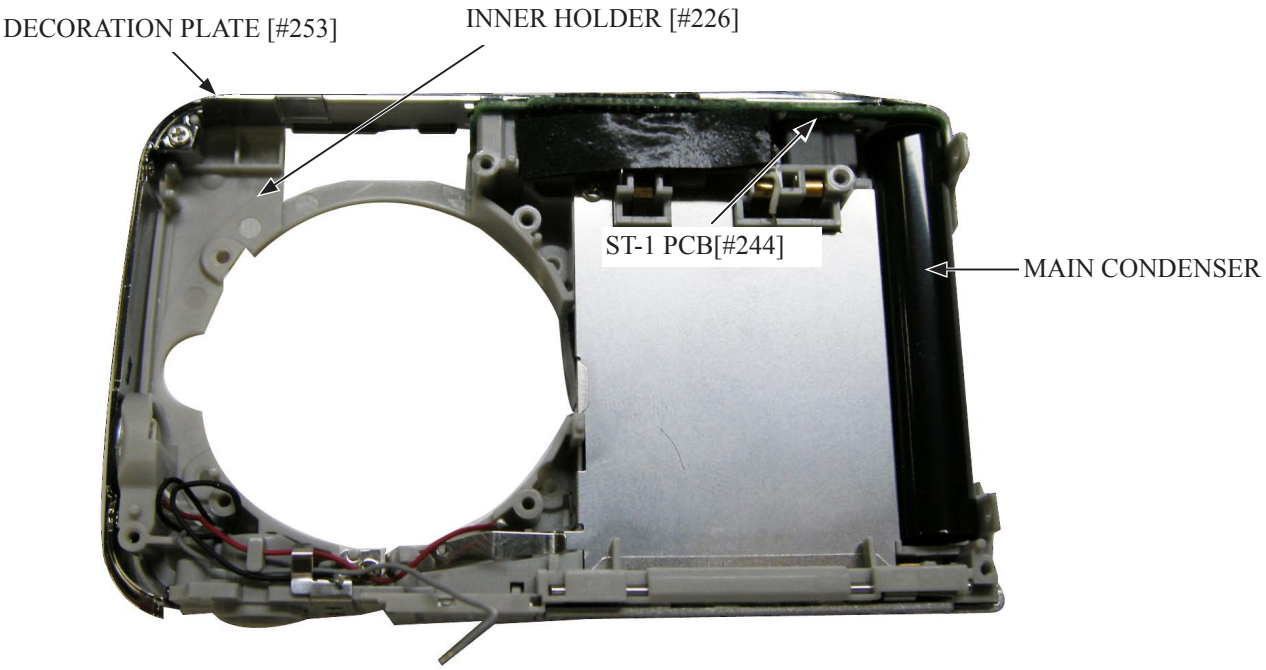
FRONT COVER

・Remove the FRONT COVER[#223].



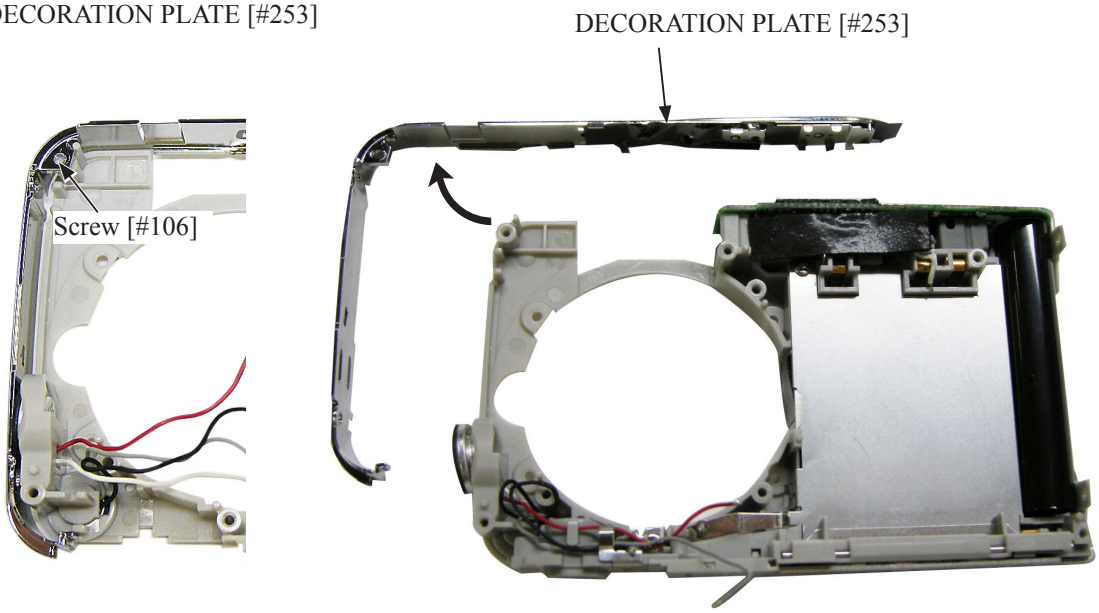
・Release the hook of the condenser side.



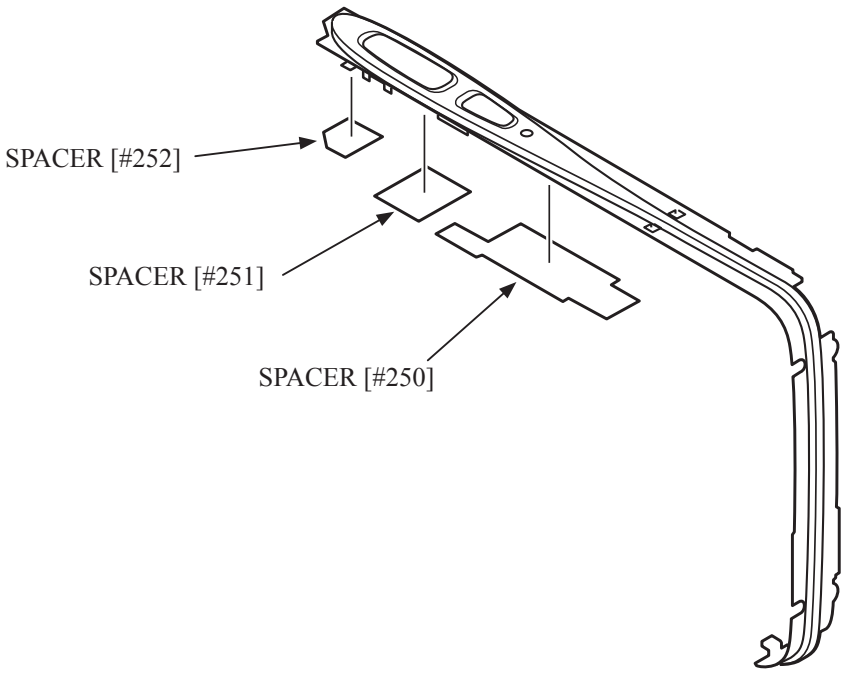

DECORATION PLATE [#253]
INNER HOLDER [#226]
ST-1 PCB[#244]
MAIN CONDENSER

DECORATION PLATE

- Take out the screw [#106].
- Remove the DECORATION PLATE [#253]

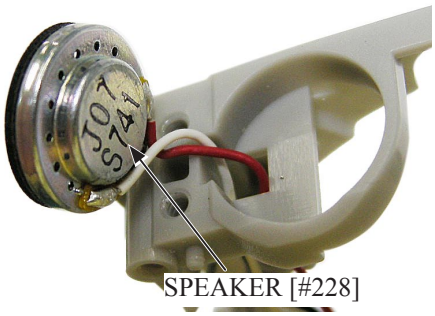


- Remove the SPACER [#250].
- Remove the SPACER [#251].
- Remove the SPACER [#252].

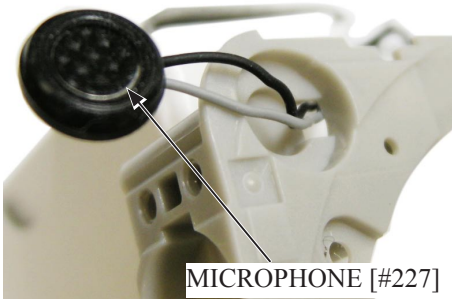


SPEAKER/MICROPHONE

・Remove the SPEAKER [#228].

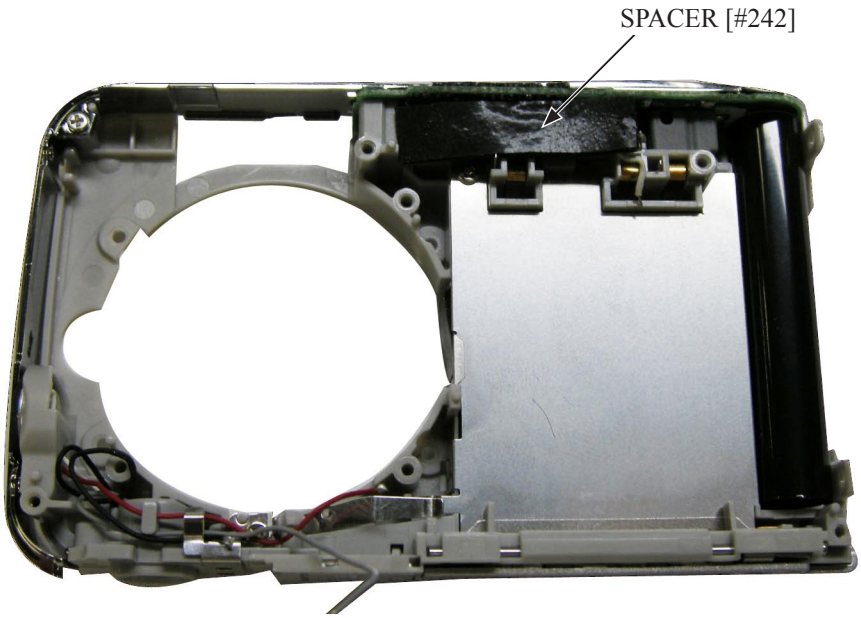


・Remove the MICROPHONE [#227].

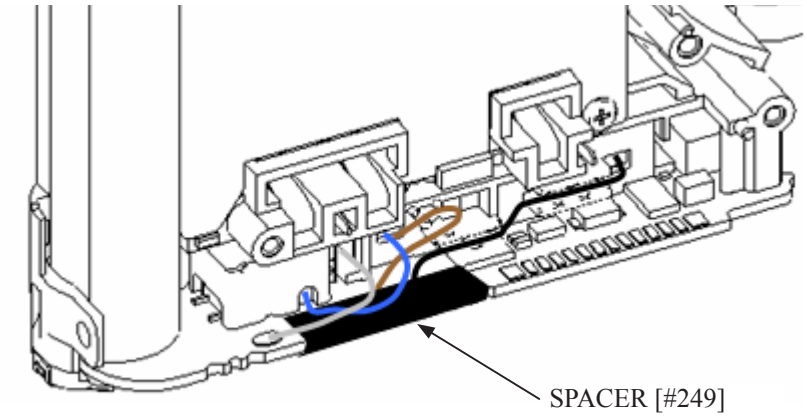


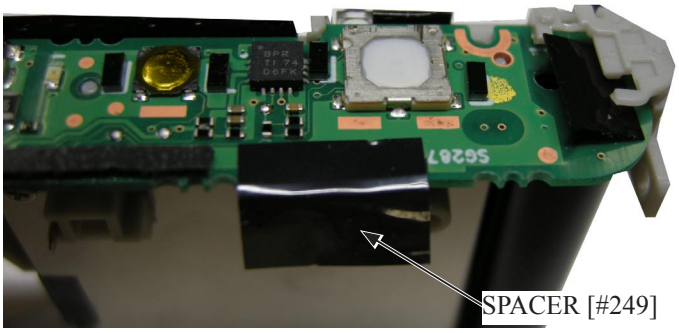
ST-1 PCB

・Remove the SPACER [#242].

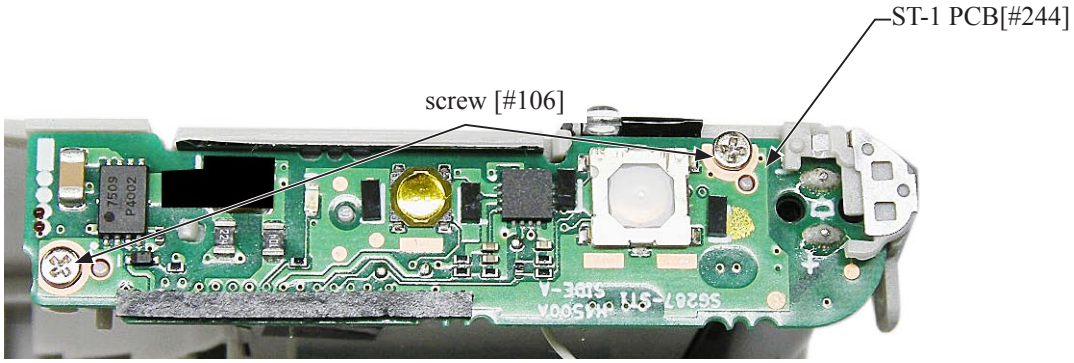


・Remove the SPACER [#249].

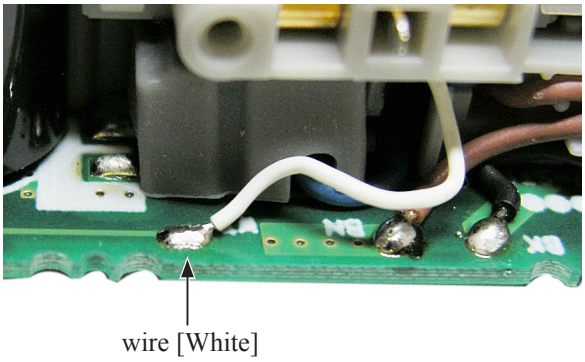




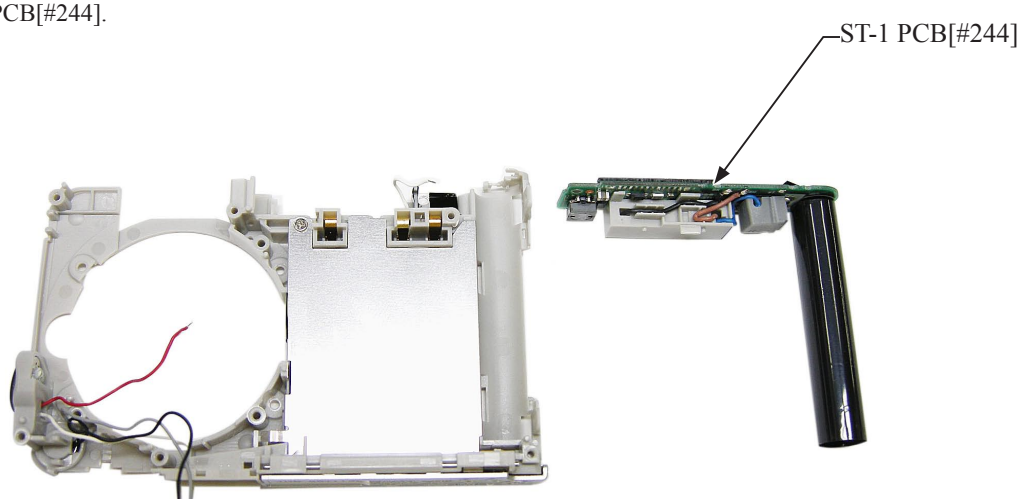
・Take out the screw [#106].



・Unsolder the wire [White].

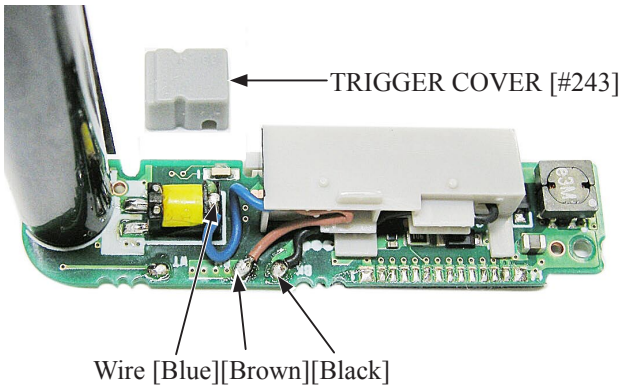


・Remove the ST-1 PCB[#244].



・Remove the TRIGGER COVER [#243].

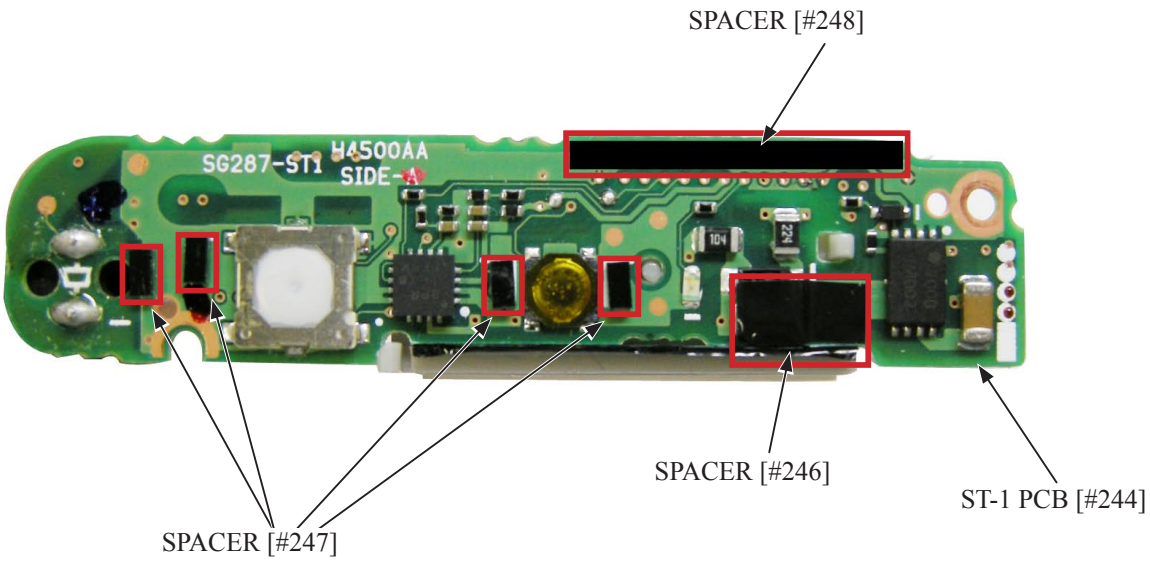
・ Unsolder the wires [Blue] and [Brown] and [Black].



・ Remove the SPACER [#246].

・ Remove the SPACER [#247].

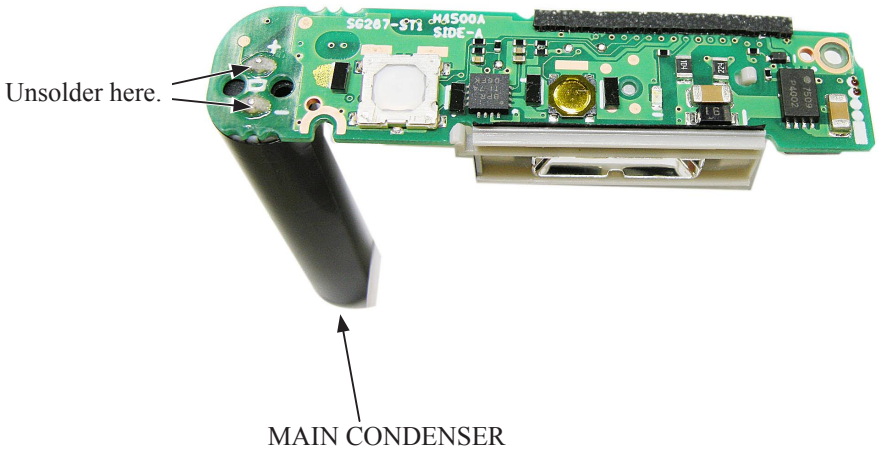
・ Remove the SPACER [#248].



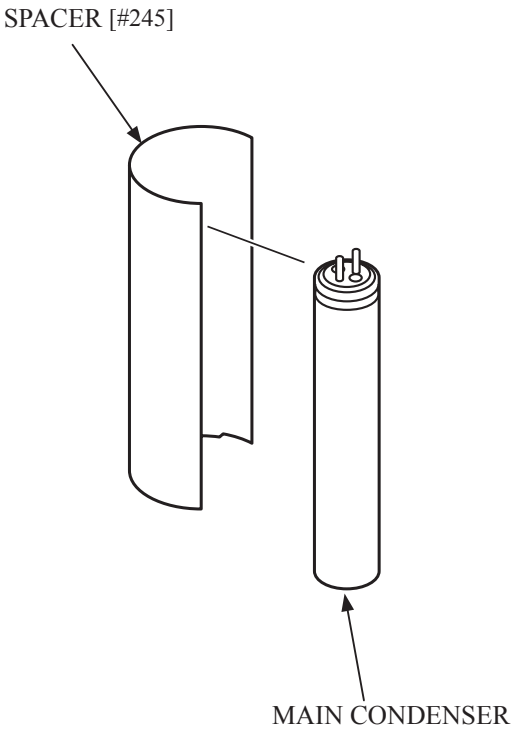
MAIN CONDENSER

・Unsolder at two places.

・Remove the MAIN CONDENSER .

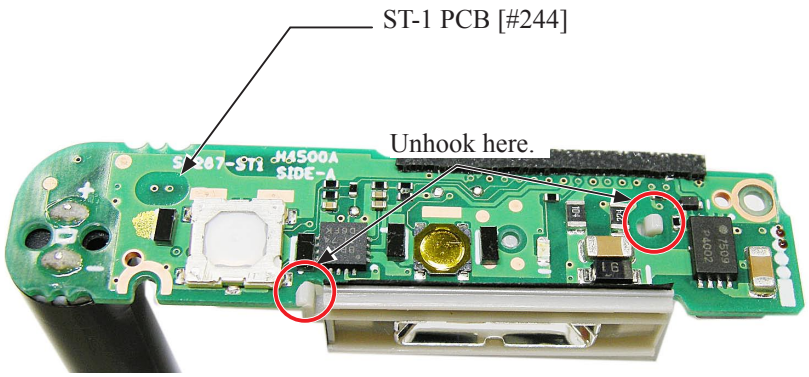


・Peel off SPACER [#245] from the main condenser.

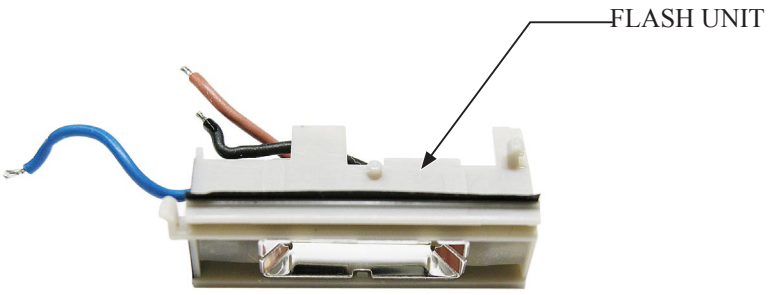


FLASH UNIT

・Unhook at two places.



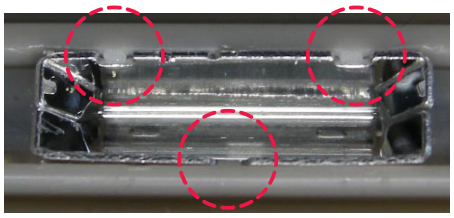
・The FLASH UNIT will come off from the PCB.



・Unhook the FLASH HOLDER at three places, and remove the flash lamp from the front side.

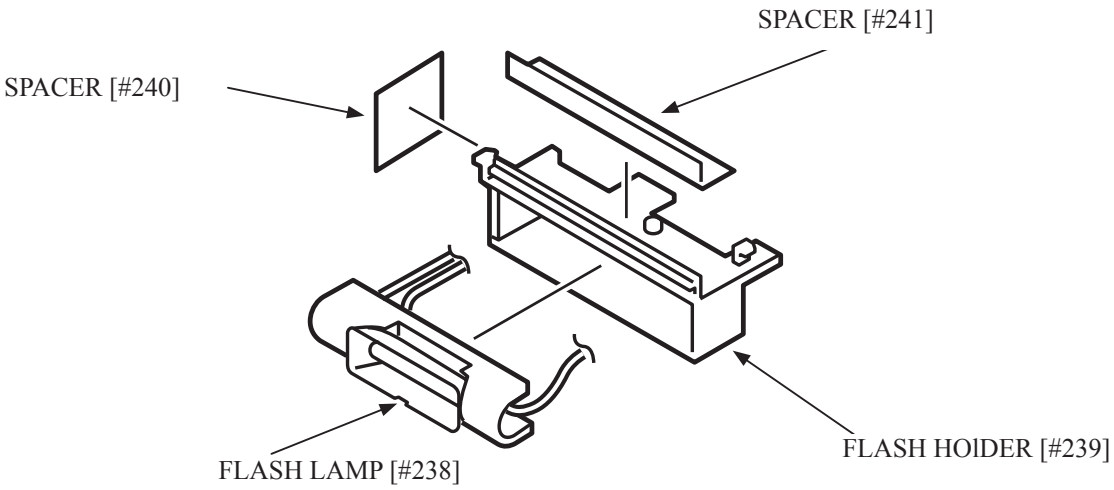
・Remove the SPACER [#240].

・Remove the SPACER [#241].

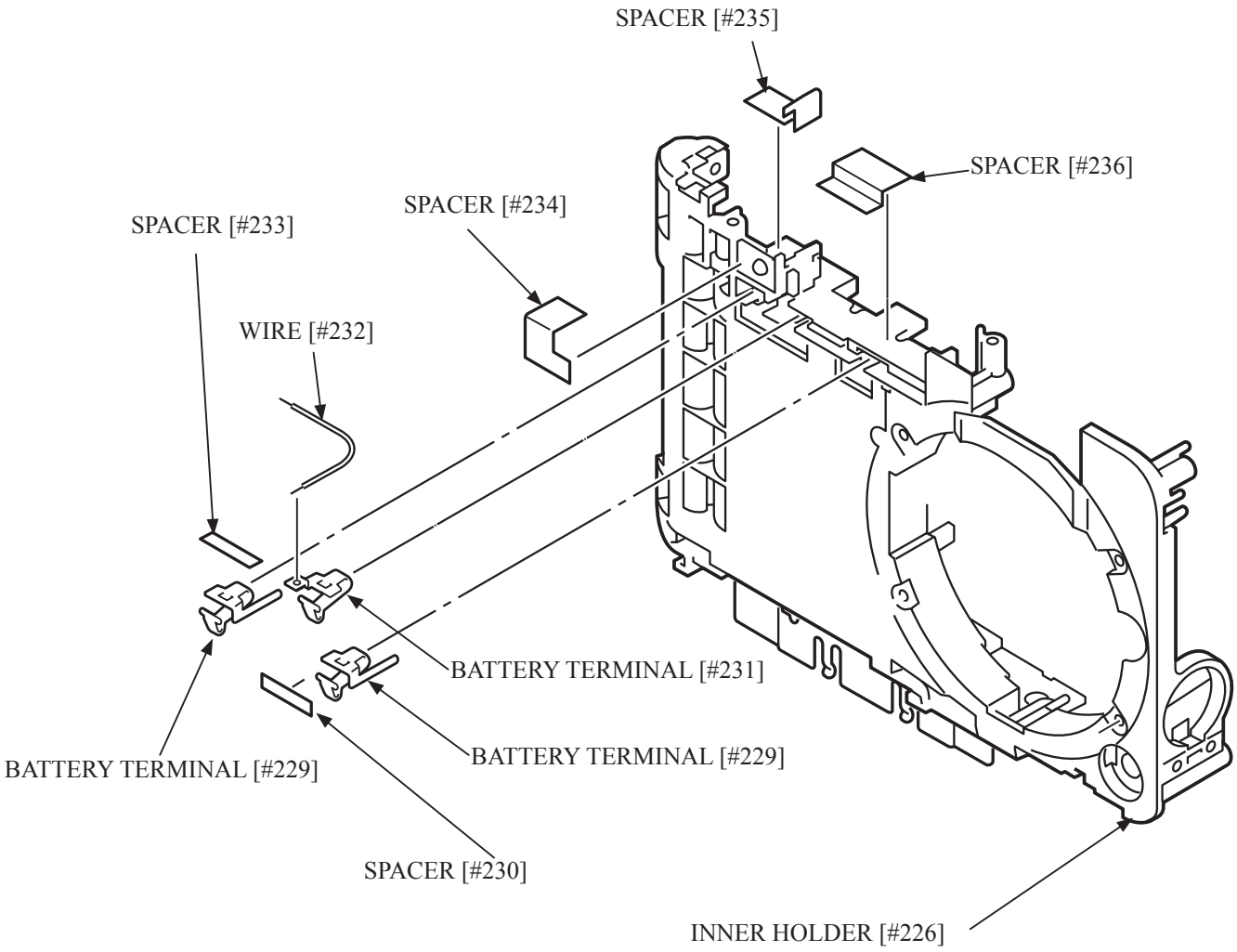


Caution:

The reflector of the flash lamp is easily bent, so handle it with care.



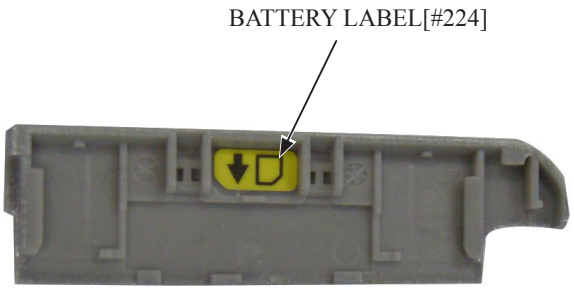
INNER HOLDER



BATTERY COVER

・Remove the BATTERY COVER[#225].

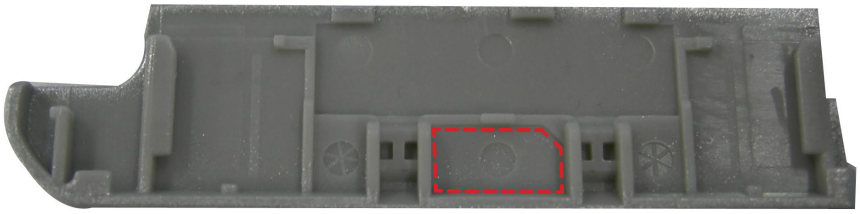
・Remove the BATTERY LABEL[#224].



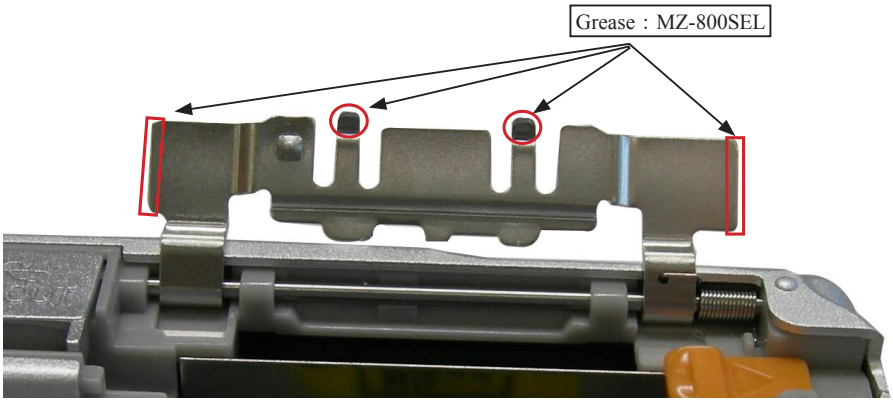
Assembly

BATTERY COVER

・Attach the battery label [#224] inside the frame as below.



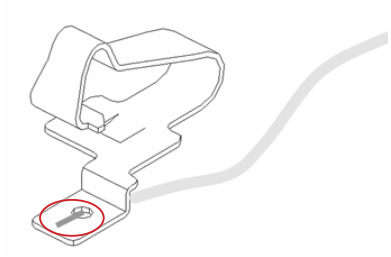
・Apply the grease (MZ-800SEL) to the four places of the plate.



・Mount the BATERY COVER [#225].

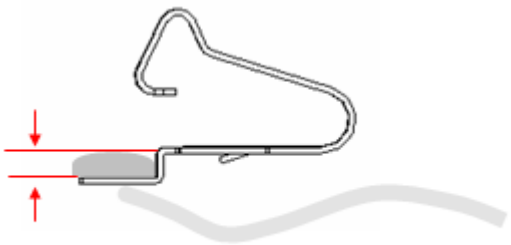
INNER HOLDER

・Solder the BATTERY TERMINAL [#231] and wire [#232].



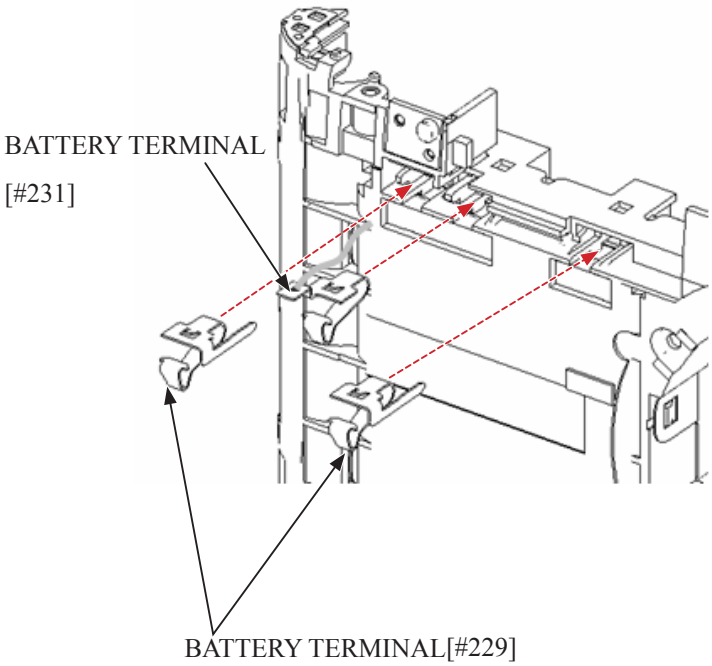
Caution:

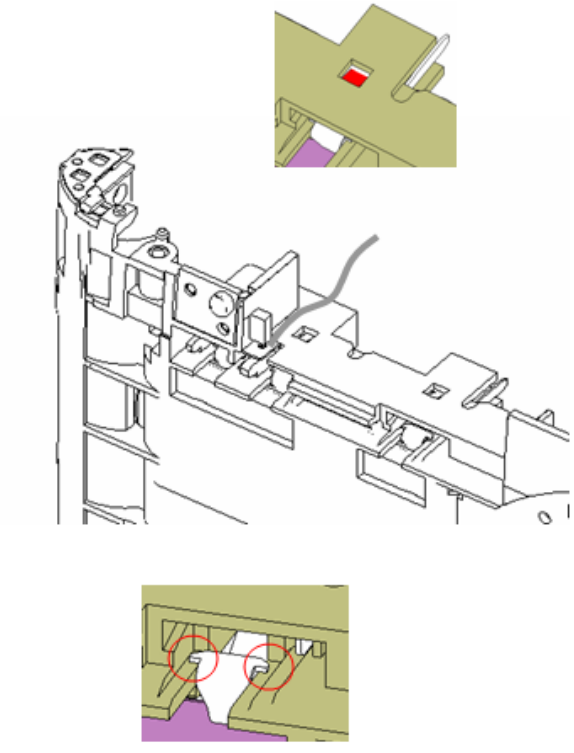
The solder must not be squeezed out from this surface.



・Set the BATTERY TERMINAL [#231][#229] to the INNER HOlDER[#226].

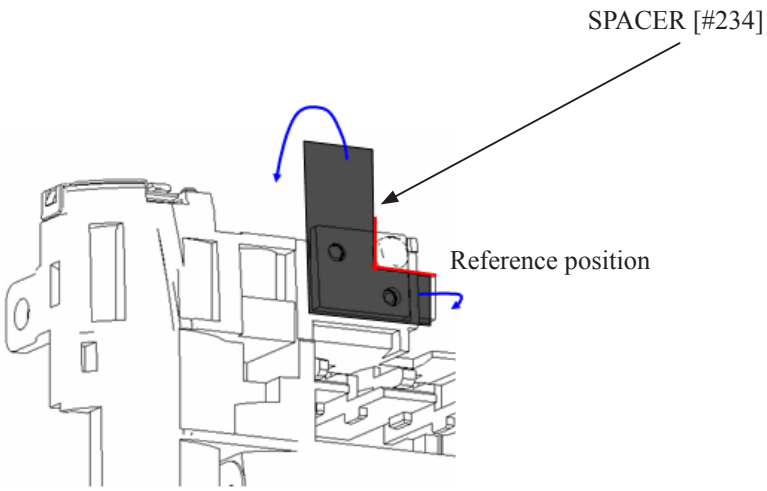
Put into the position where the terminal is locked.

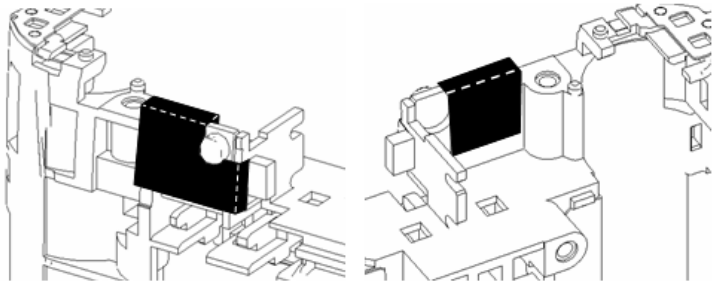




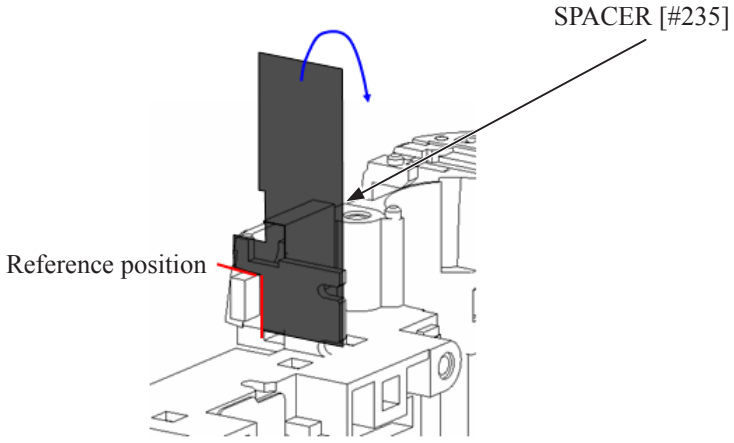
Hook the tip of the battery terminal to the inner holder.

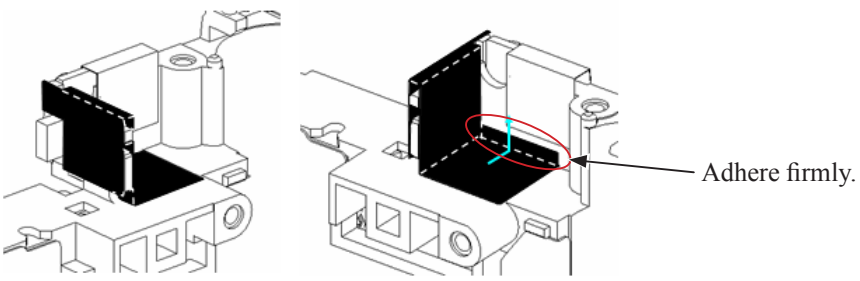
・Adhere the SPACER [#234].



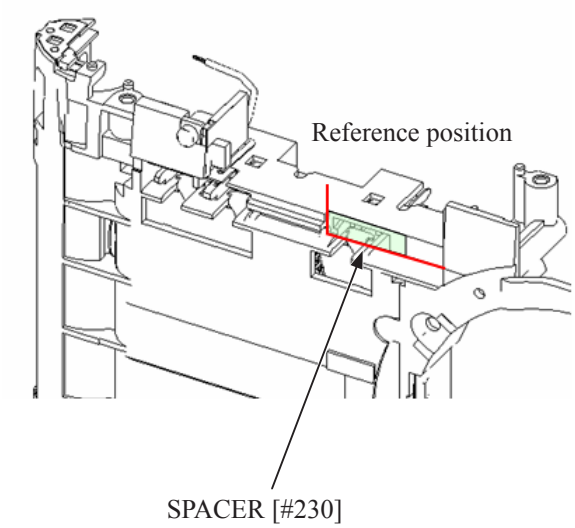


・Adhere the SPACER [#235].

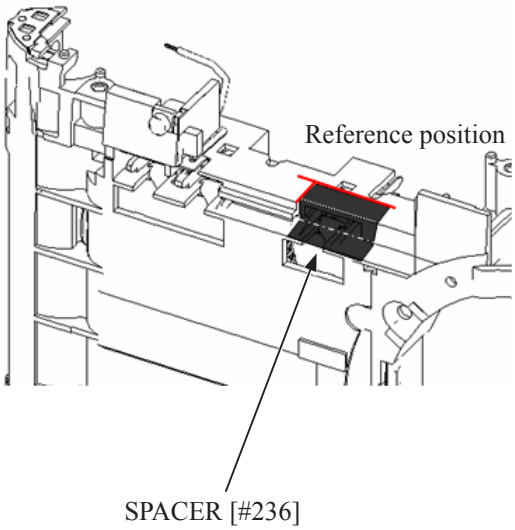




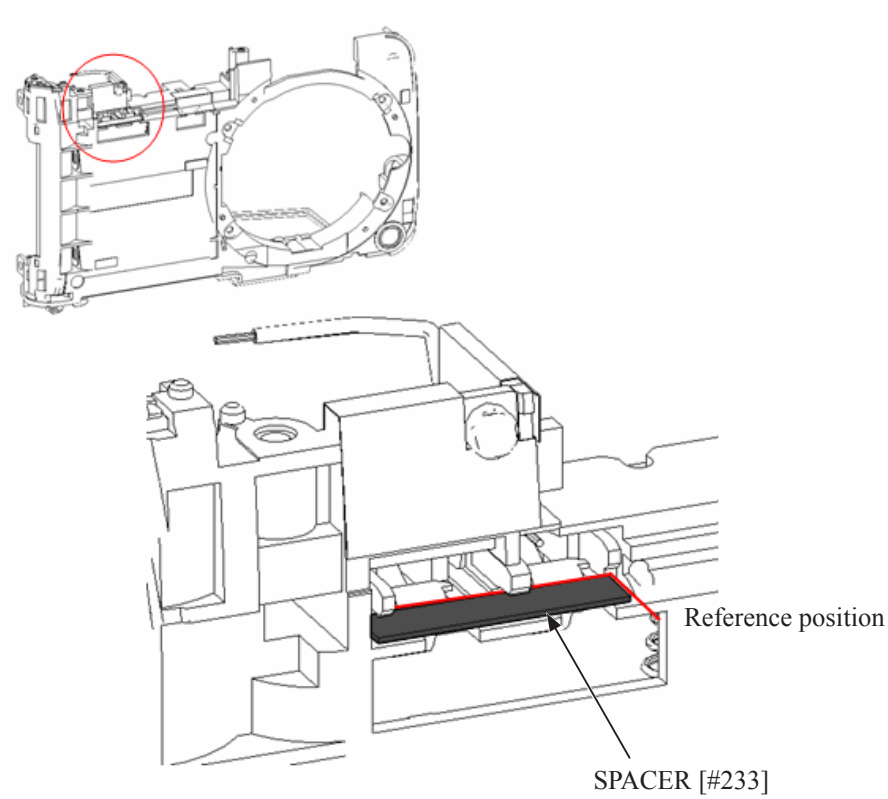
・Adhere the SPACER [#230].



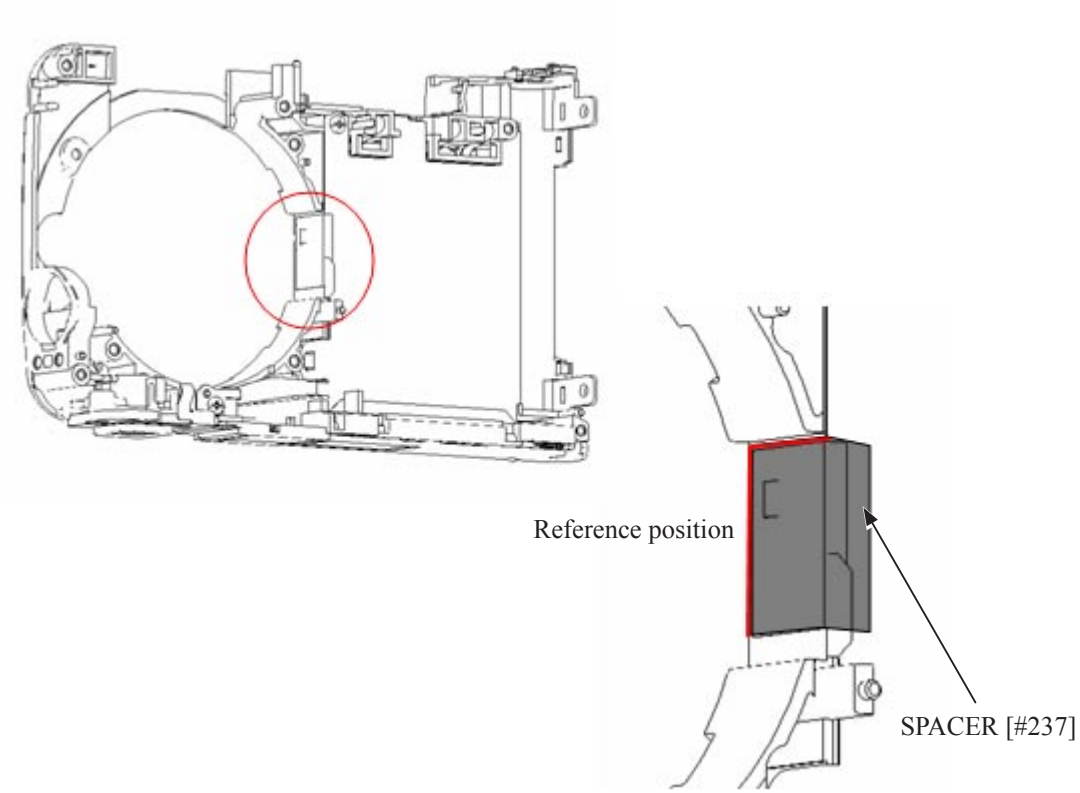
・Adhere the SPACER [#236].



・Adhere the SPACER [#233].

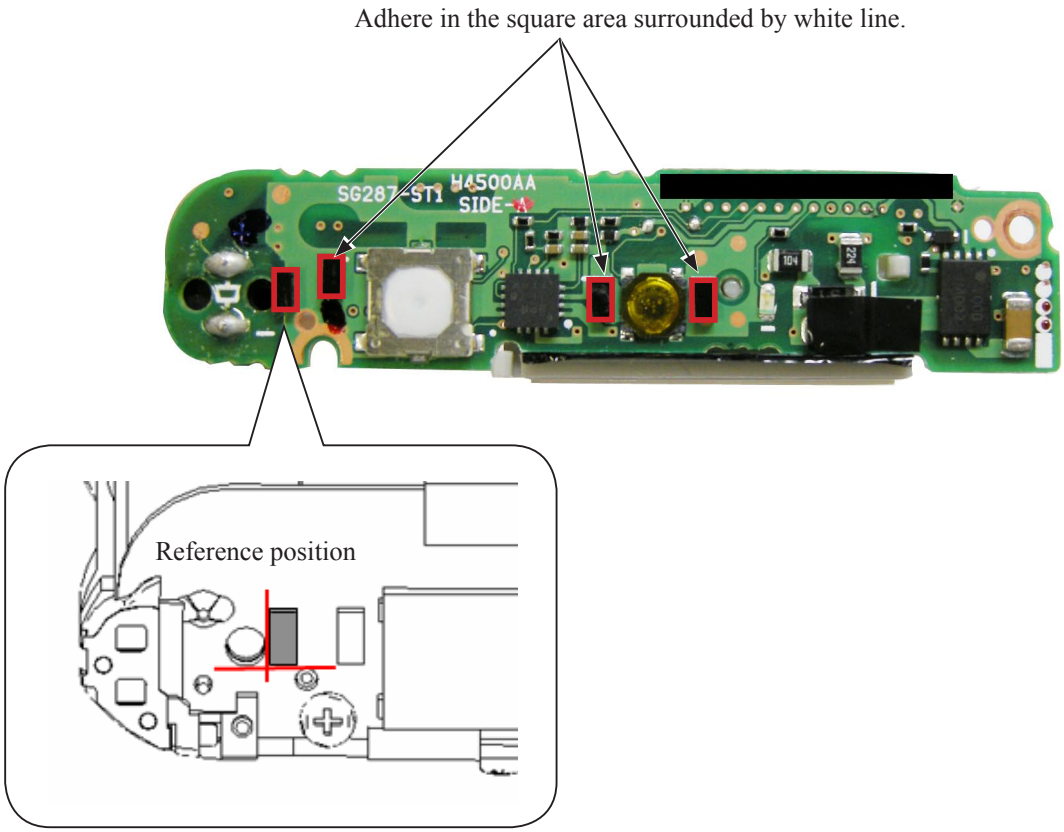


・Adhere the SPACER [#237].

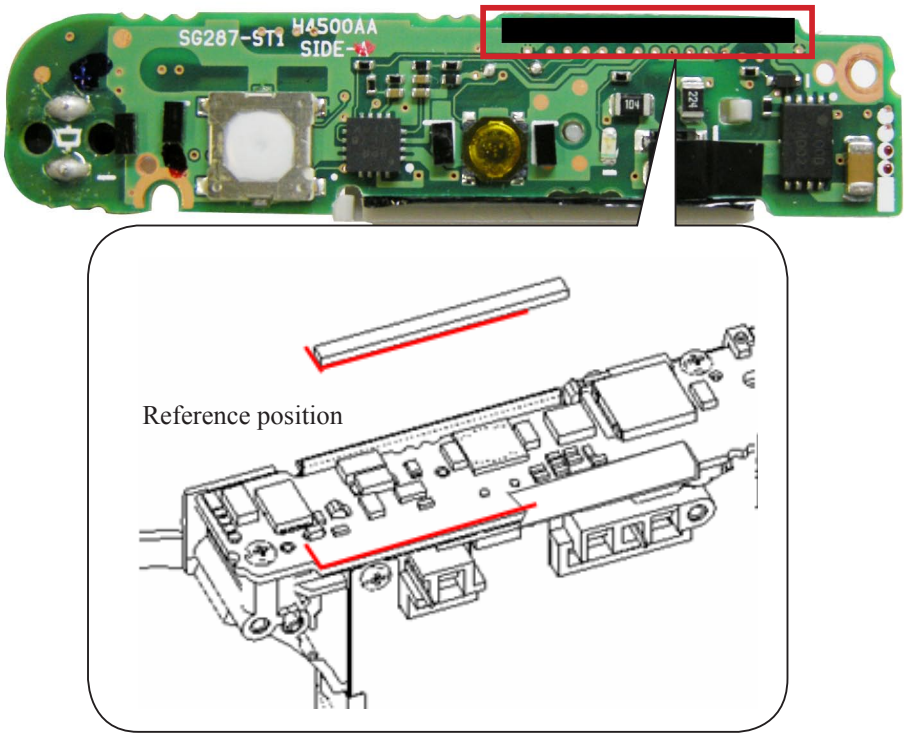


ST-1 PCB

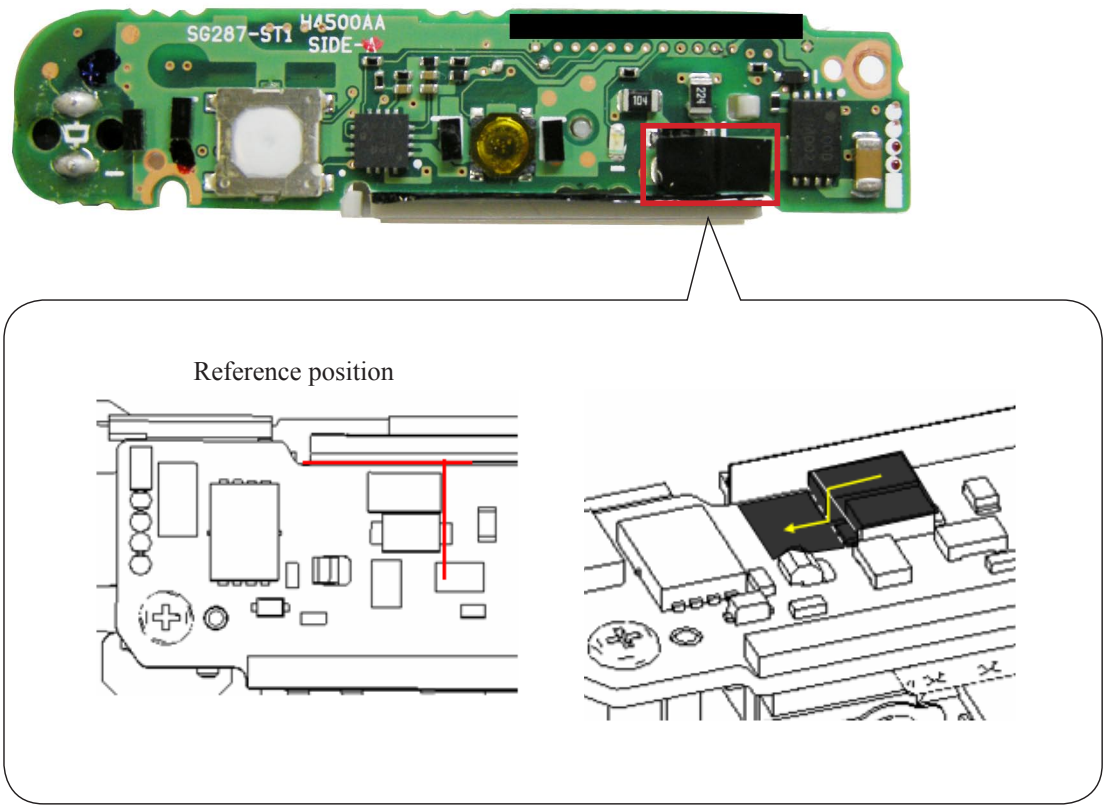
・Adhere the SPACER [#247].



・Adhere the SPACER [#248].

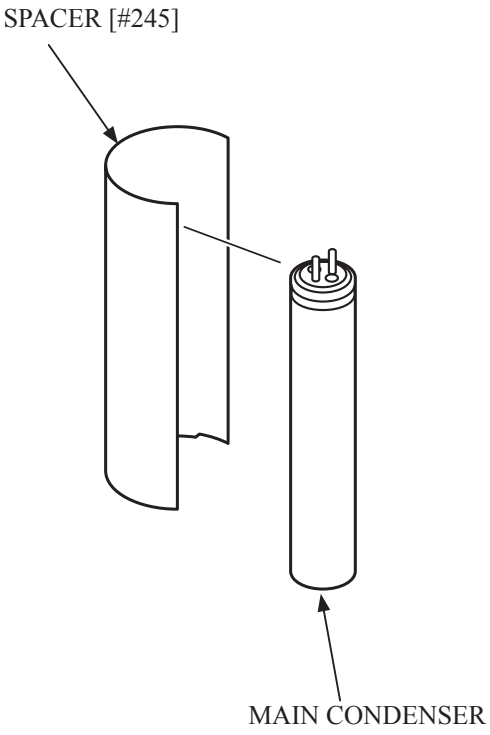


・Adhere the SPACER [#246].



MAIN CONDENSER

・Adhere the SPACER [#245] to the main condenser.

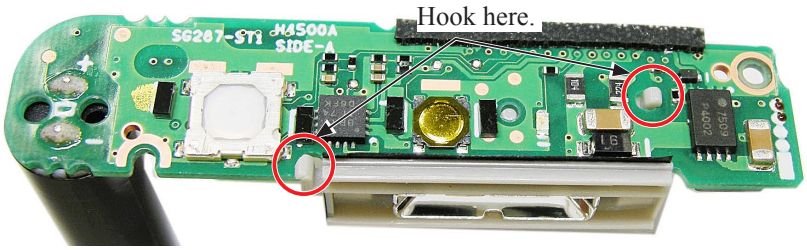


・Mount the MAIN CONDENSER..

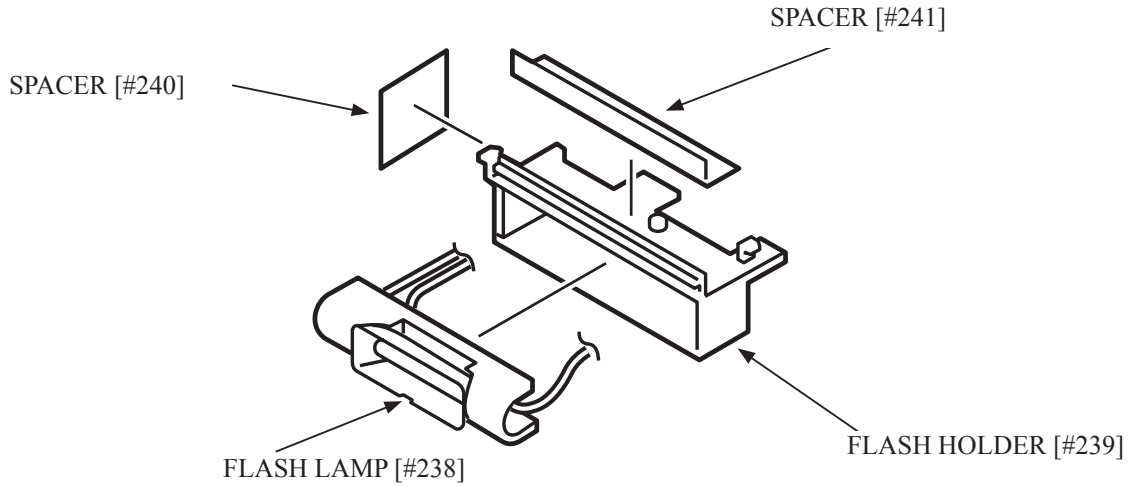
・Solder at two places.

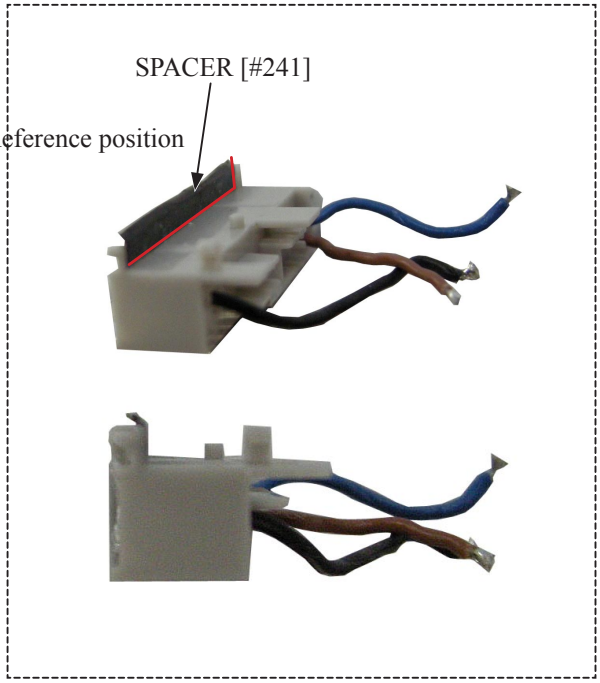
FLASH UNIT

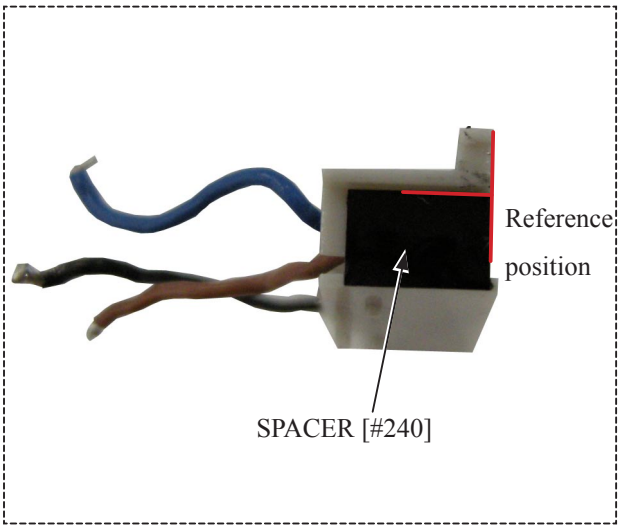
・Hook the FLASH UNIT at two places.

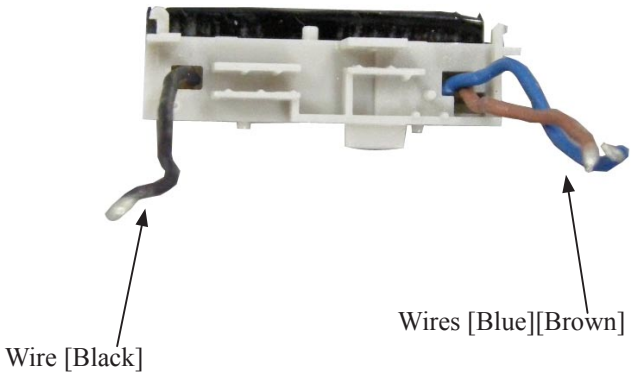


・Adhere the SPACER [#241].
・Adhere the SPACER [#240].
・Mount the FLASH LAMP [#238].



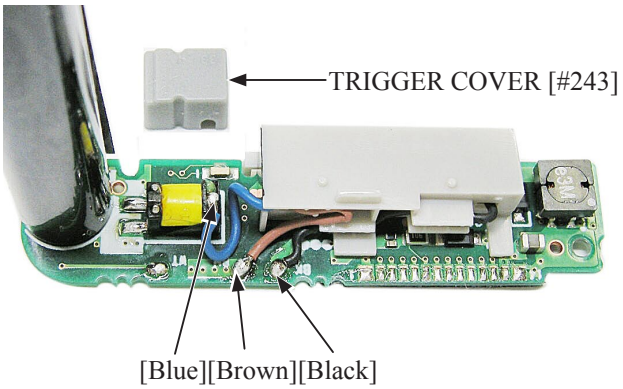






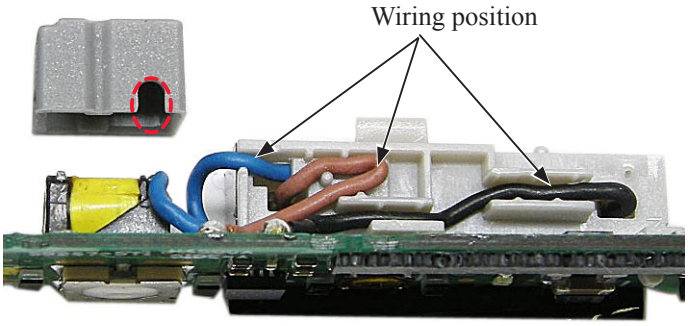
・Solder the wires [Blue] and[Brown] and [Black].

・Adhere the TRIGGER COVER [#243].

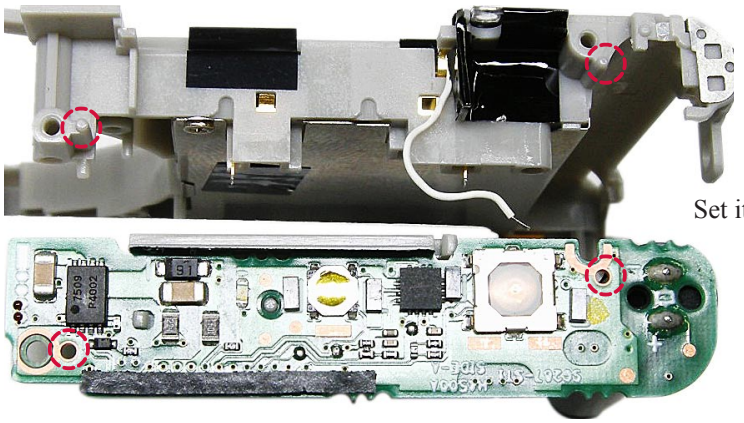


・Be careful of wiring.

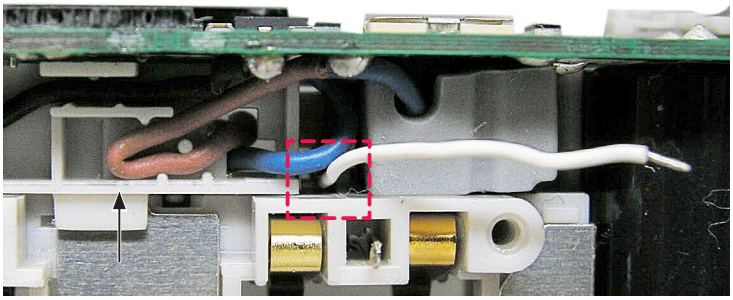
・Be careful of the direction of attaching the trigger cover [#243].



・Mount the ST-1 PCB [#244] on the inner holder [#226].

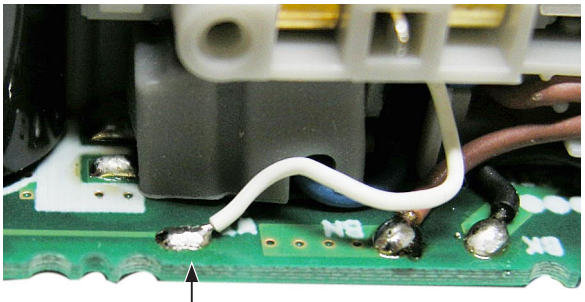


Set it by fitting with the boss.



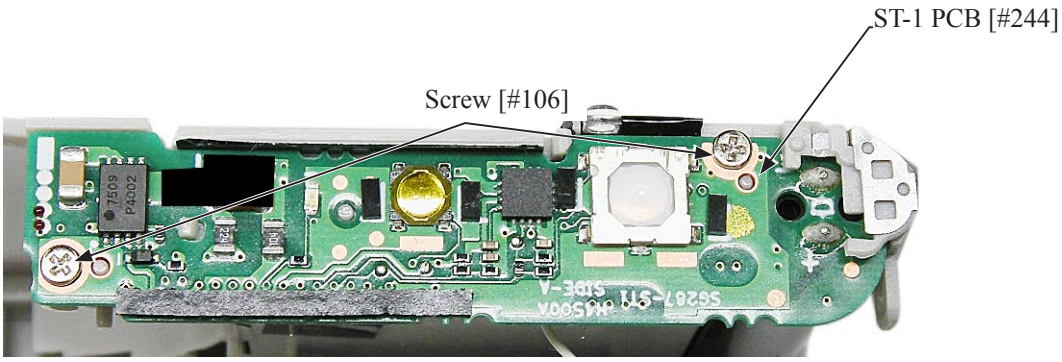
When the PCB is mounted, be careful NOT to pinch the white wire in the strobe tube, etc.

・Solder the wires [White].



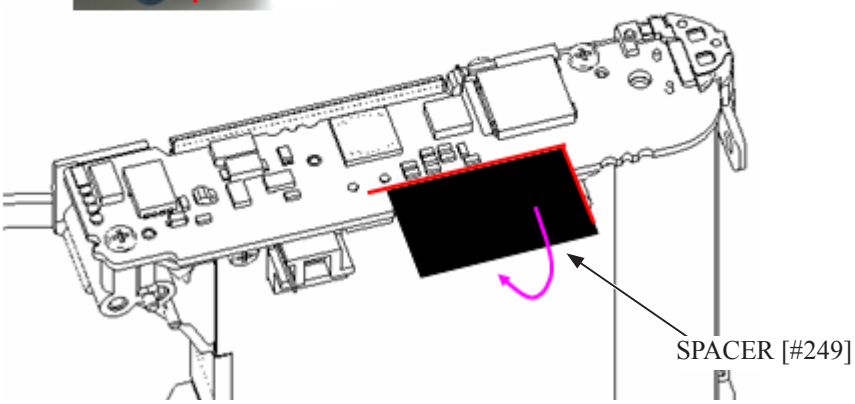
Wire [White]

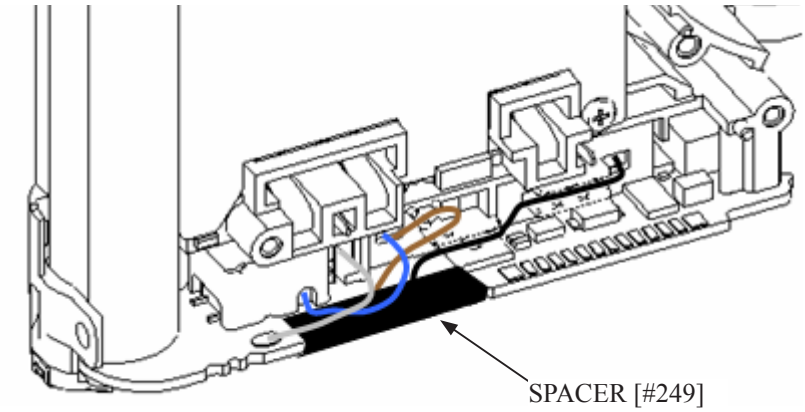
・Tighten the two screws [#106].



・Adhere the SPACER [#249].

Reference position

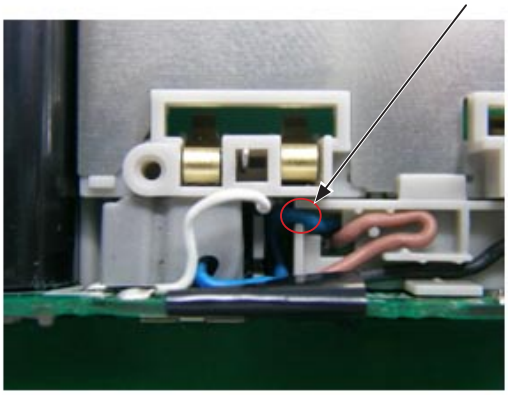


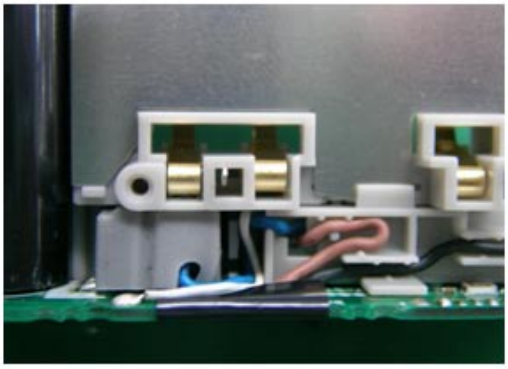


Adhere the SPACER as if it covers the wires [Brown][Black].

・Pass the wire [Blue] in the cutout of the flash holder and arrange it.

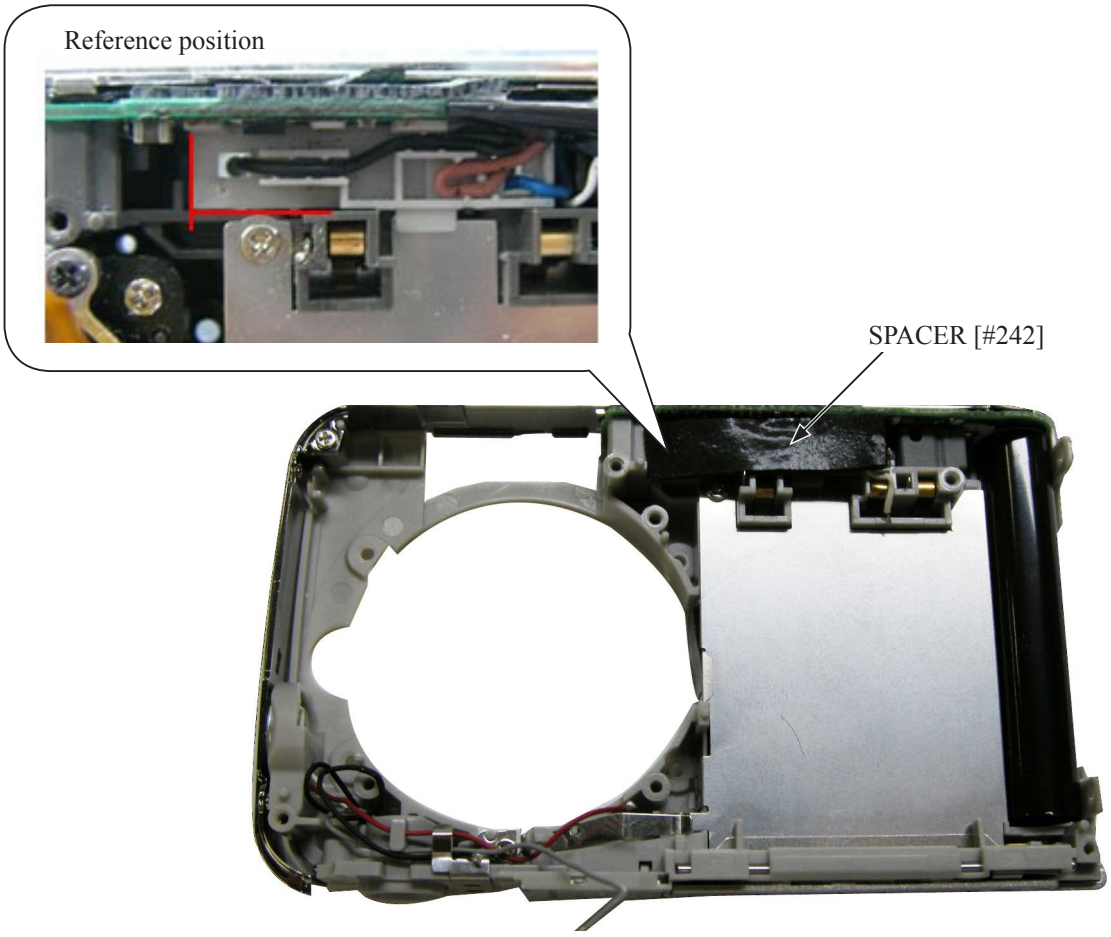
・Arrange the wire [White] as shown in the right picture.





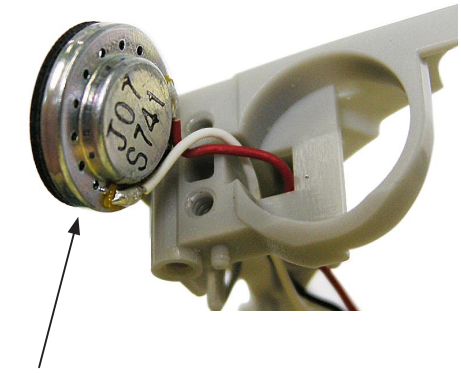
[White] wire must NOT be put over [Blue] wire.

・Adhere the SPACER [#242]

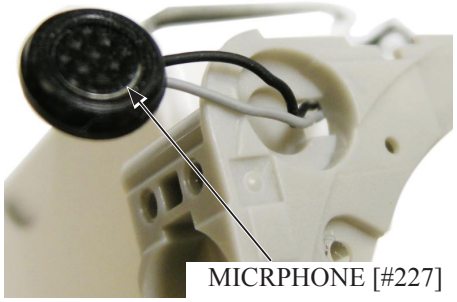


SPEAKER/MICRPHONE

・Set the SPEAKER [#228]

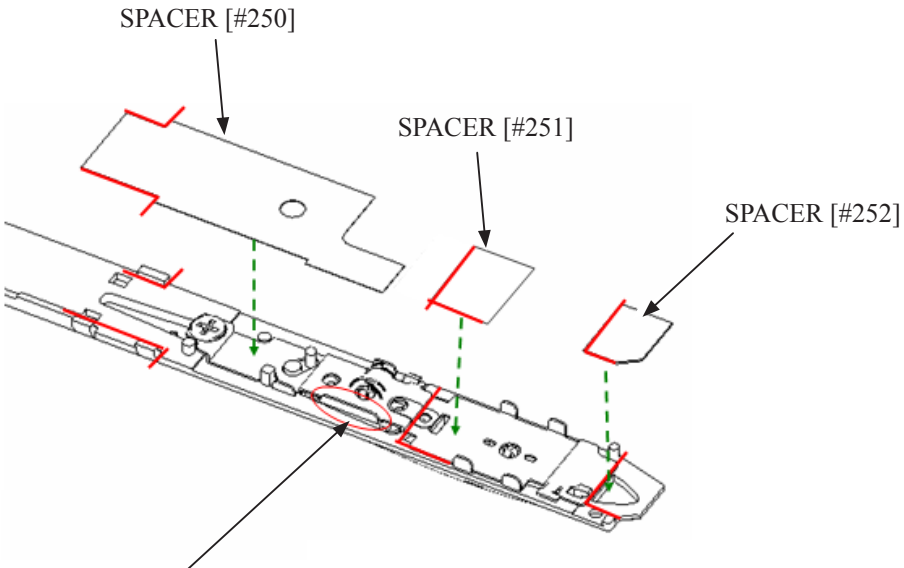


・Set the MICRPHONE [#227]

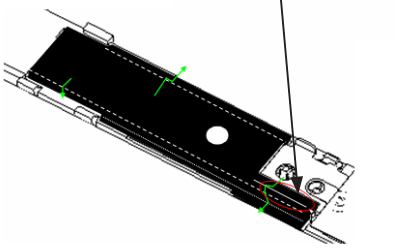


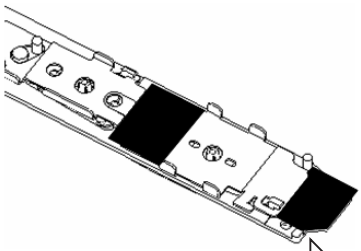
DECORATION PLATE

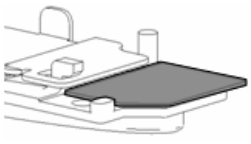
- Adhere the SPACER [#250].
- Adhere the SPACER [#251].
- Adhere the SPACER [#252].



Adhere the SPACER along the edge of the convex portion of the plate.

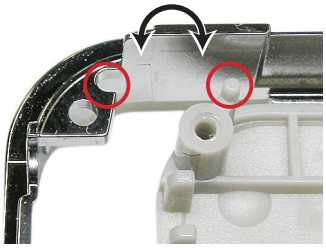


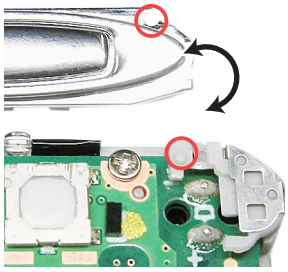




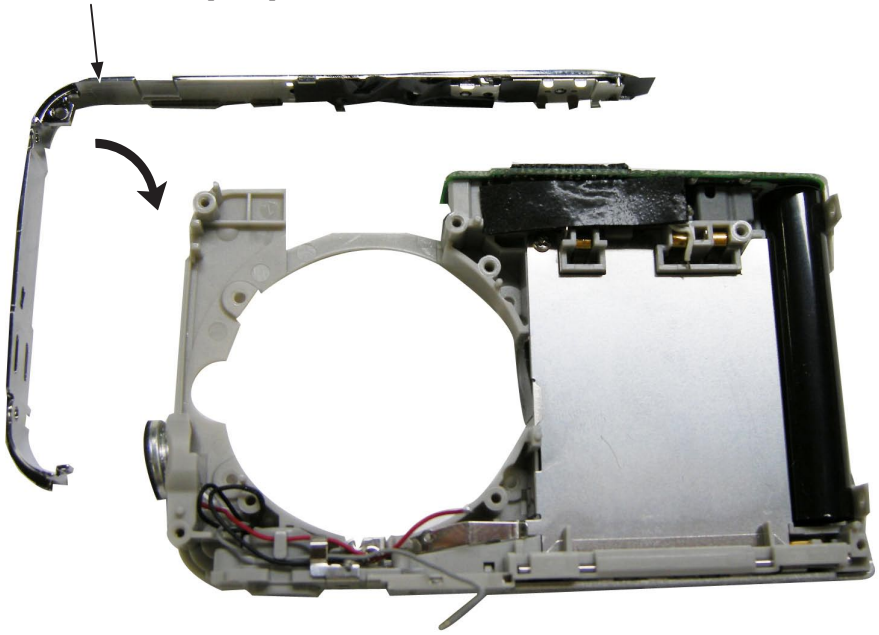
The SPACER must be put under the plate.

・Install the DECORATION PLATE [#253] by aligning it with the bosses.

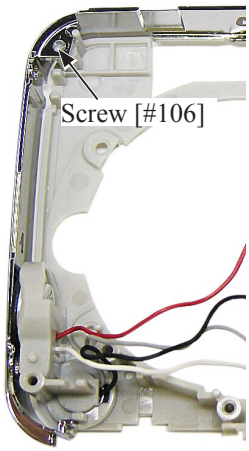




DECORATION PLATE [#253]



・Tighten the screw [#106].

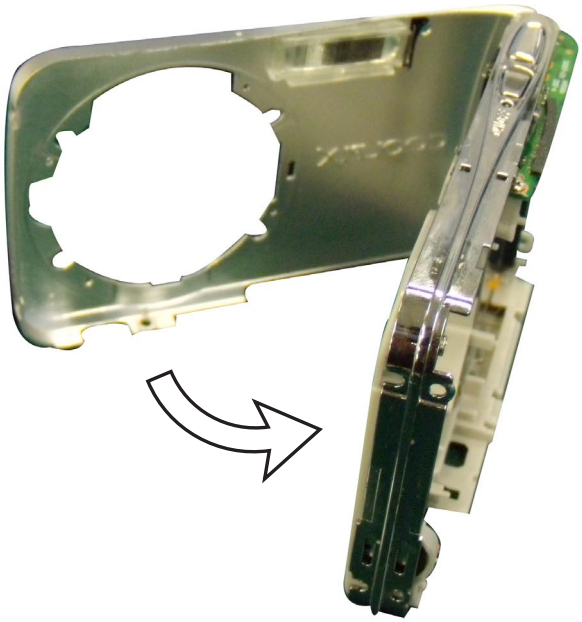


FRONT COVER

・Engage the hook from top to bottom in numeric order.

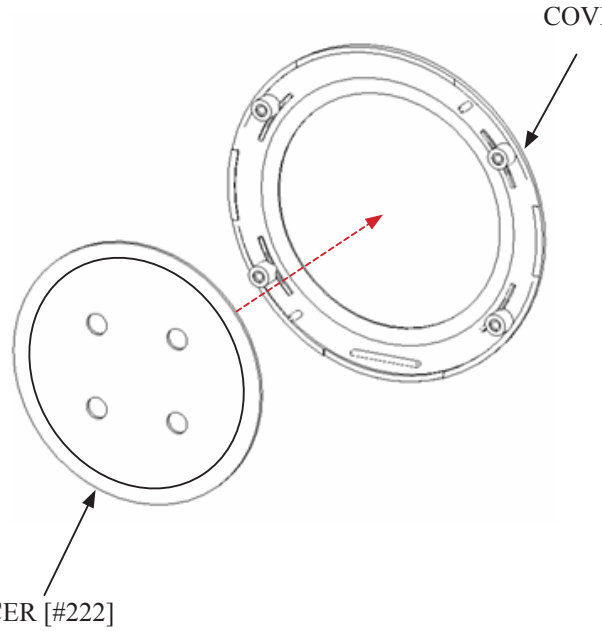
In order to make the procedure easier, hook ① first and then ② as if pulling downwards.

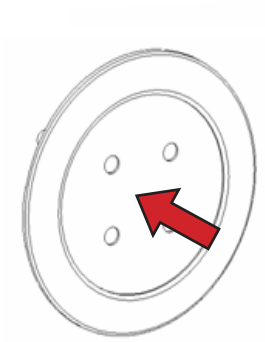
・Attach the FRONT COVER [#223] to the INNER HOLDER [#226].



COVER LENS

・Adhere the SPACER [#222].



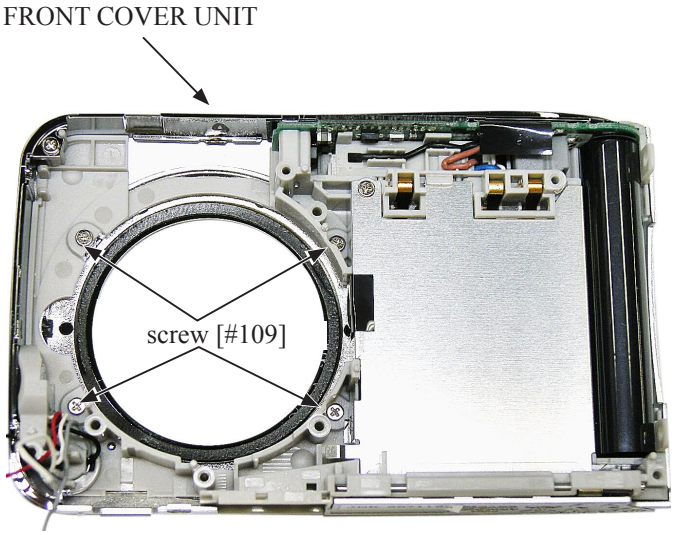


For removing the unnecessary portion (center) of the SPACER, push it toward the inside from the outside.

・Fit with bosses.

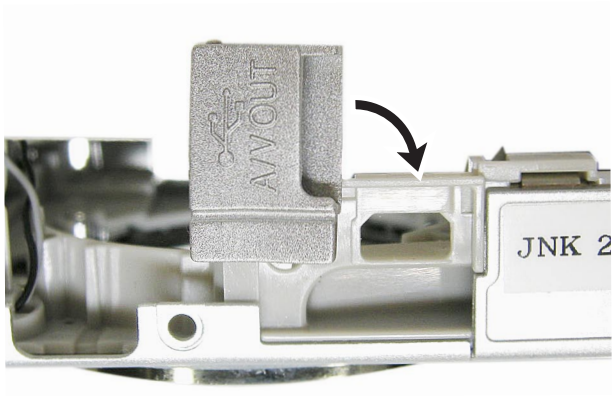
This part must face downwards.

・Tighten the four screws [#109].



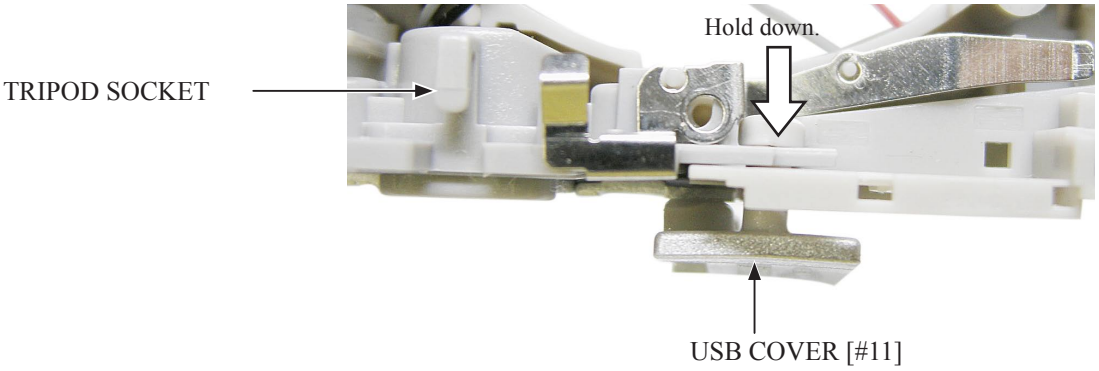
USB COVER

・Put the USB cover [#11] upright as below, and turn it in the direction of the arrow to set.



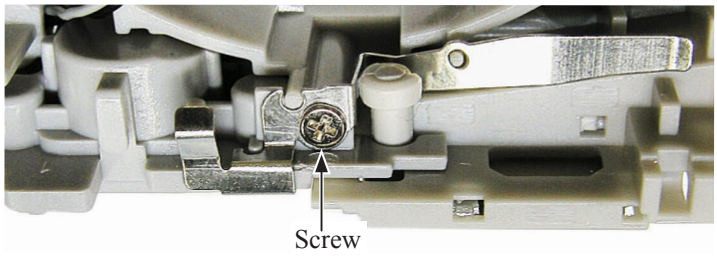
・Set the EARTH.
(Holding down the USB cover makes it easier to set the earth.)

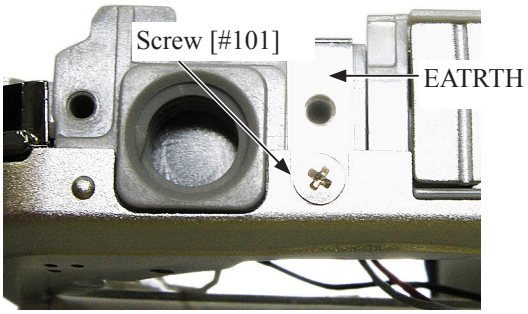
・Set the TRIPOD SOCKET.



・Tighten the screw of the below picture.

・Then, tighten the other screw [#101].



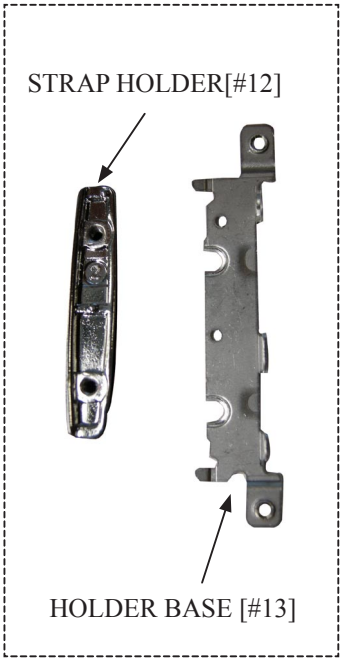


STRAP HOLDER

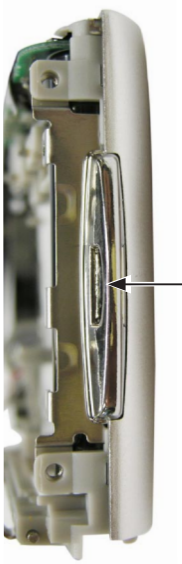
・Tighten the two screws [#103]

Screw [# 103]

Set it by fitting it with the boss.



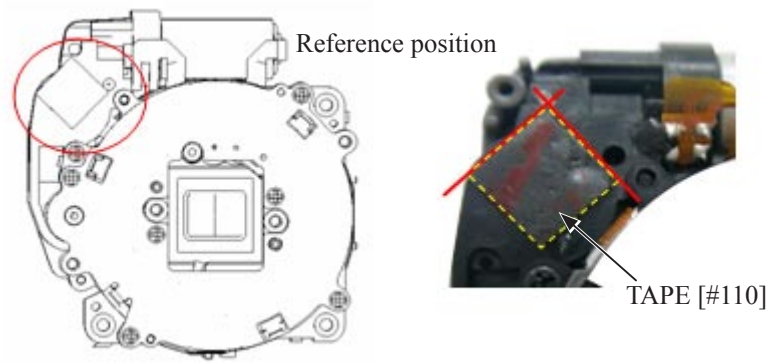
・Set the STRAP HOLDER.



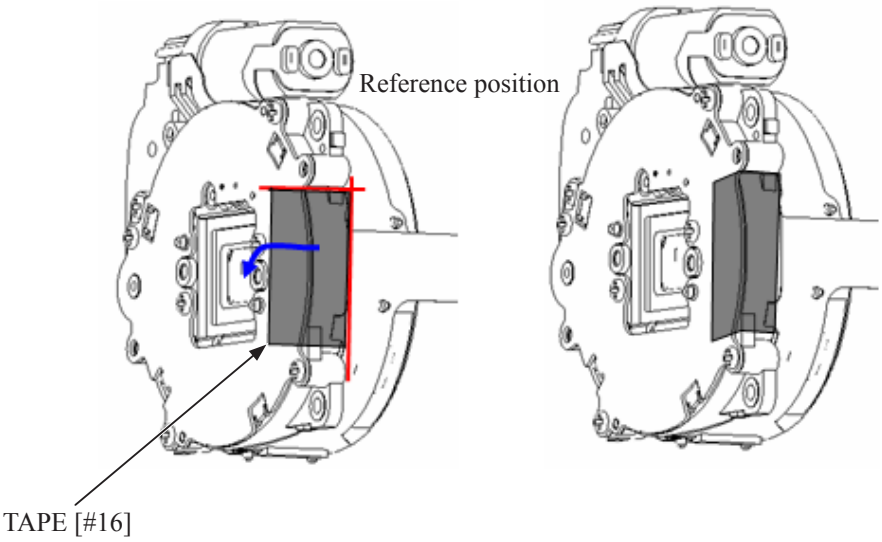
STRAP HOLDER

LENS UNIT

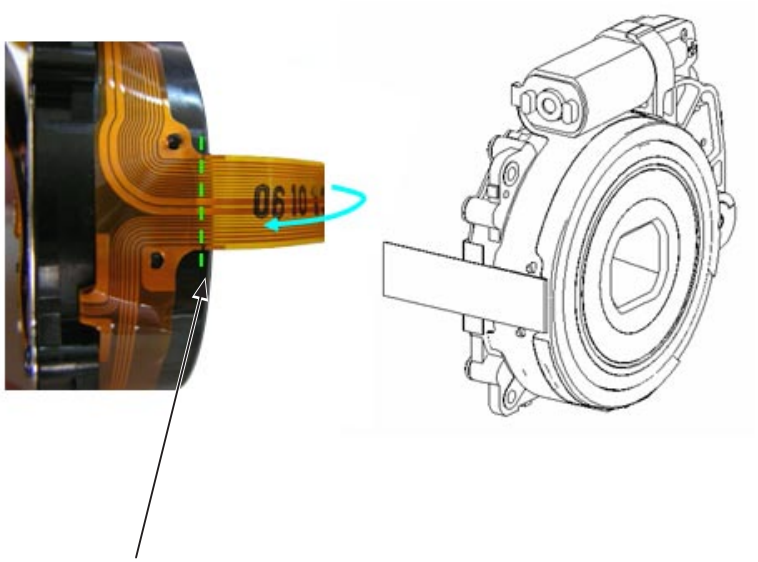
・Adhere the TAPE [#110].



・Adhere the TAPE [#16].

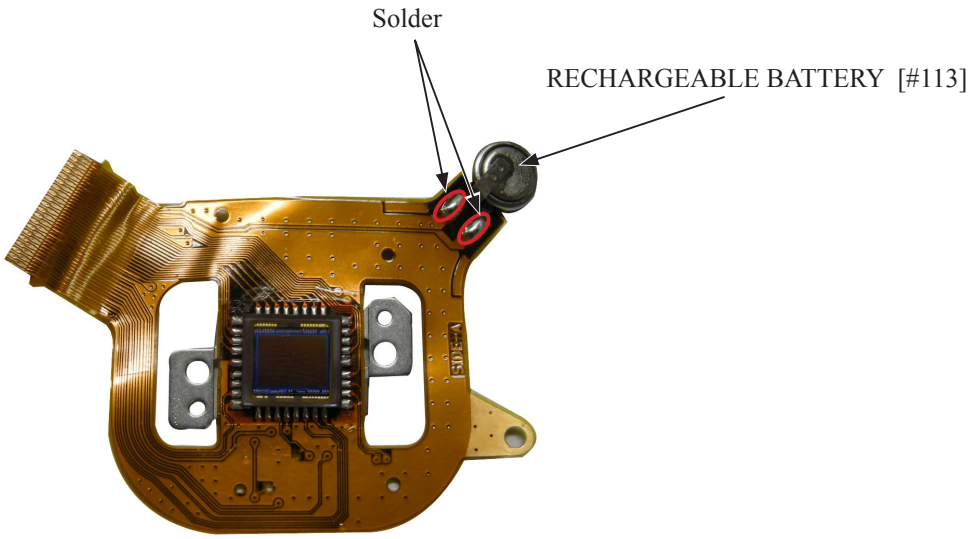


・Fold the FPC as below.

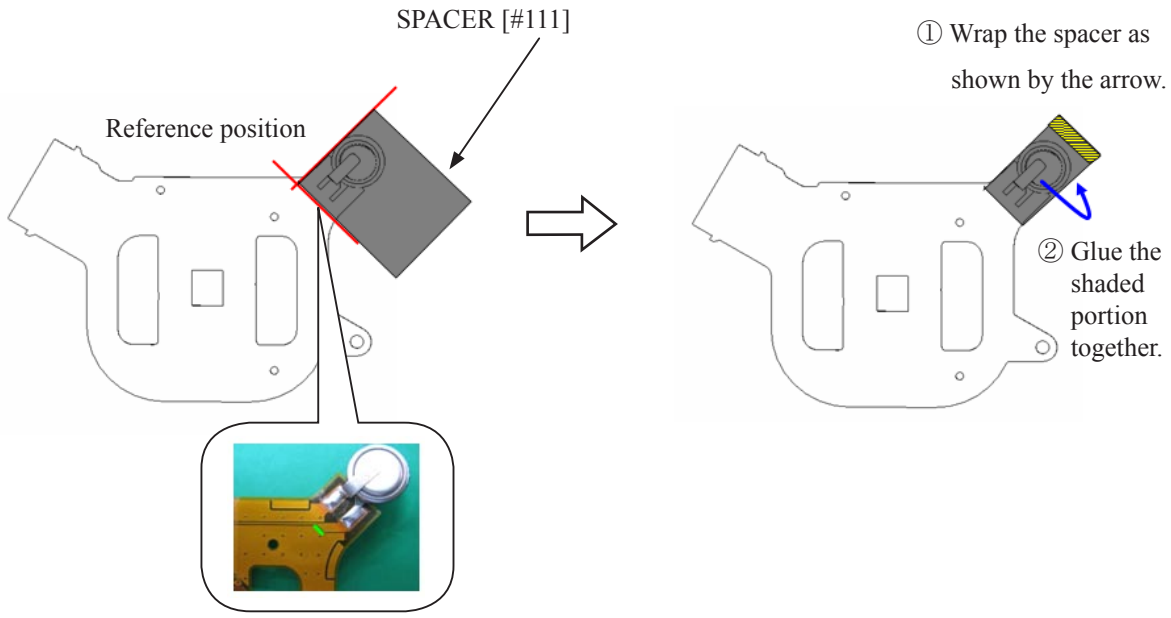


Fold the FPC along the marked dot line.

・Solder at the two places.

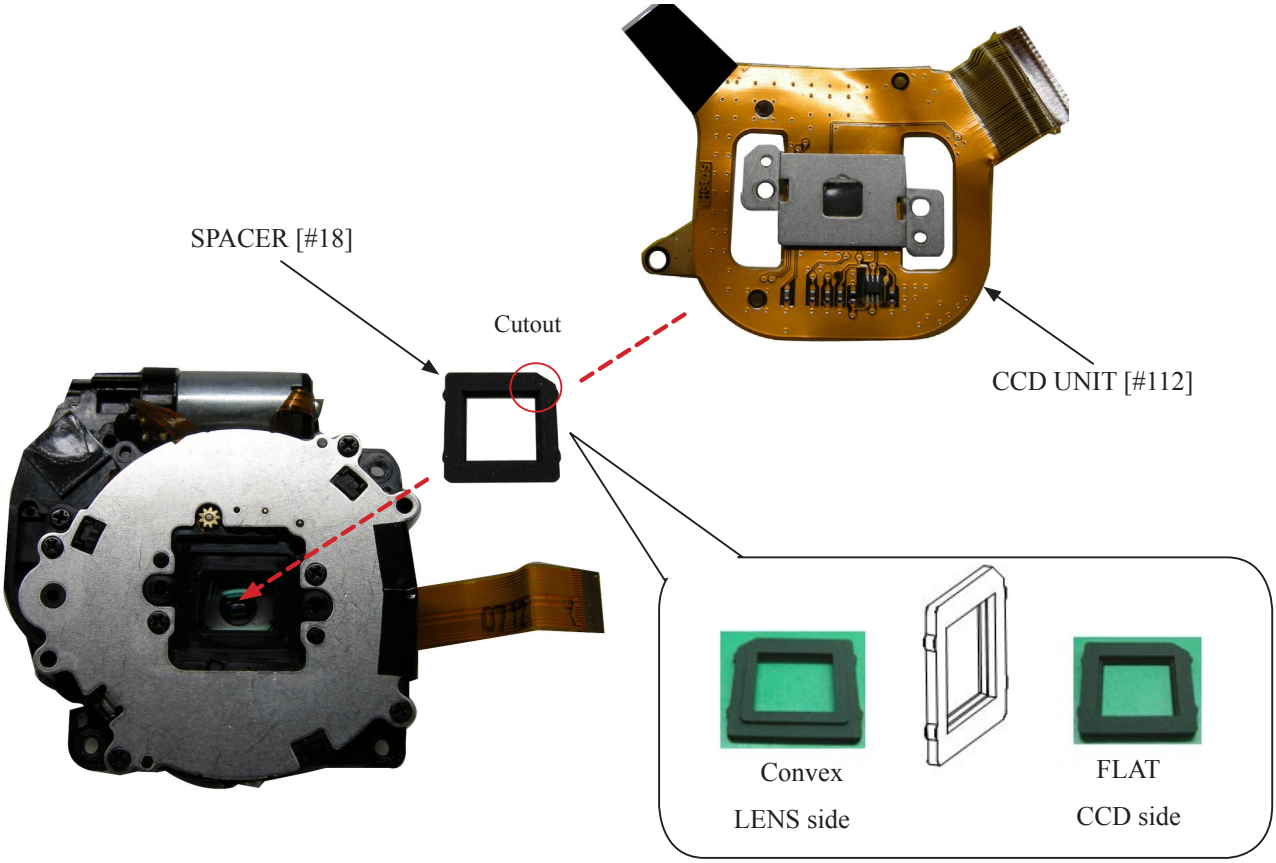


・Adhere the SPACER [#111].

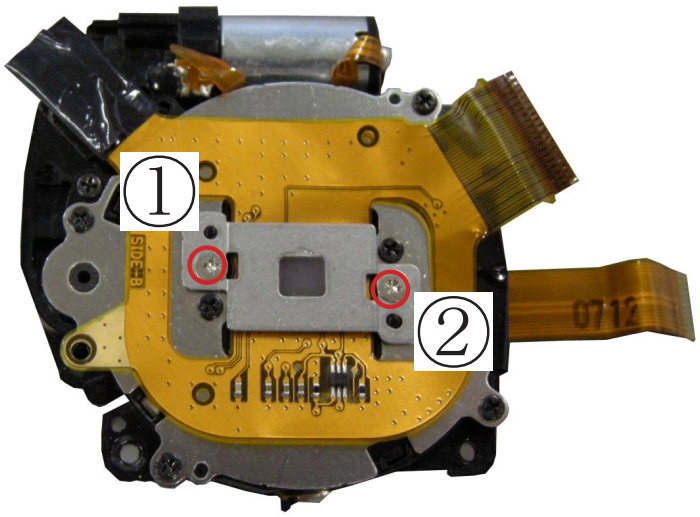


・Set the SPACER [#18].

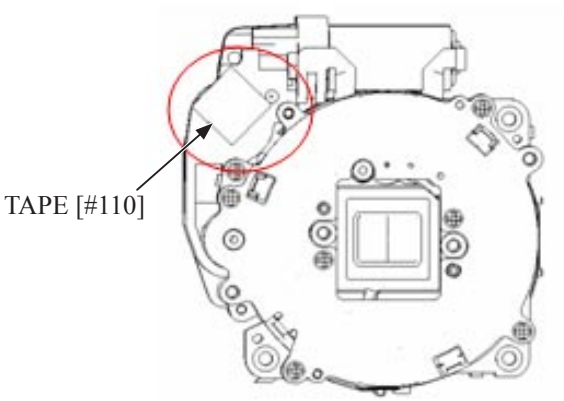
・Mount the CCD UNIT [#112].

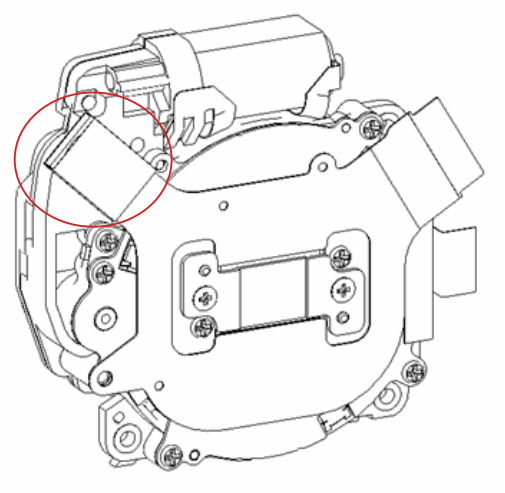


・Tighten the screws [#105] in numeric order from ① to ② .

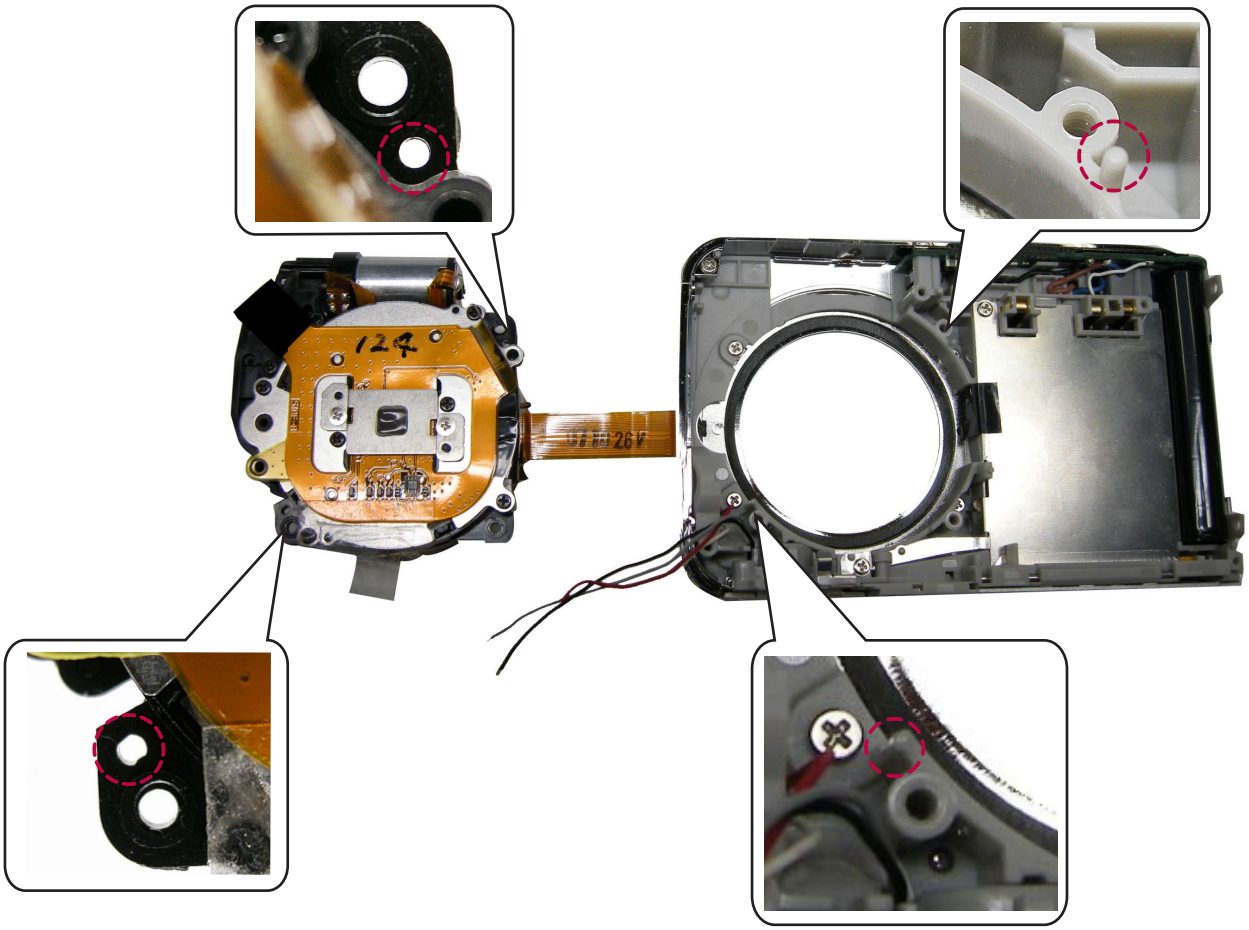


・Peel off the backing paper of TAPE [#110], and attach the tape to CCD UNIT.

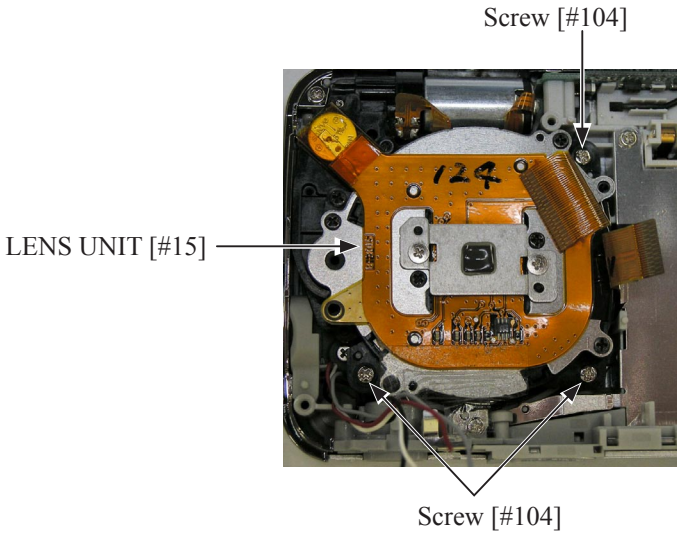




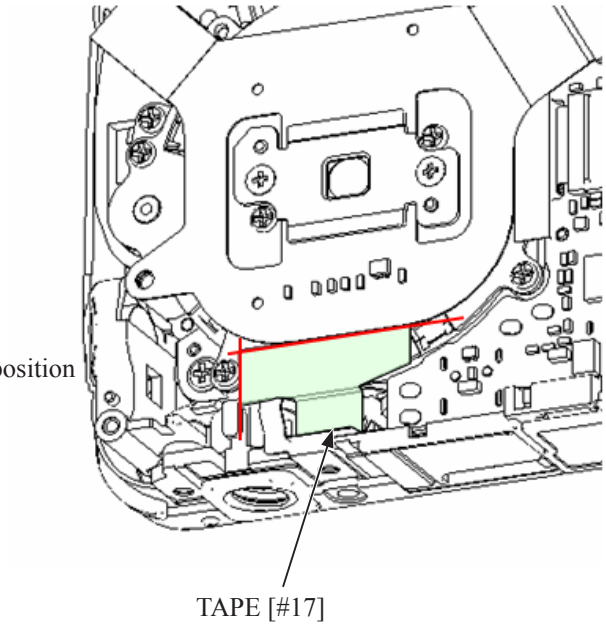
・ Install the LENS UNIT [#15] by fitting with the bosses.



・ Tighten the three screws [#104].

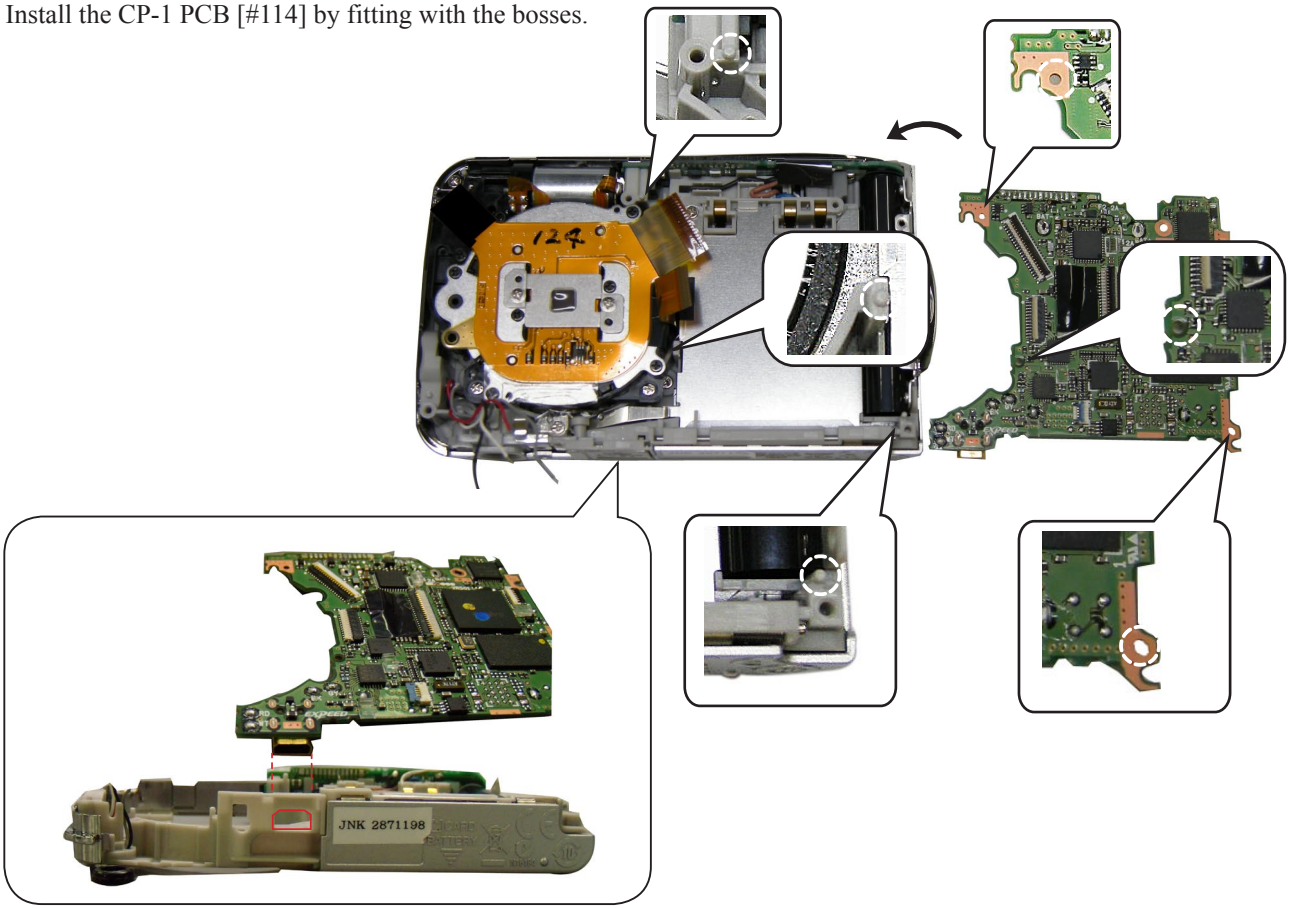


・Adhere the TAPE [#17].



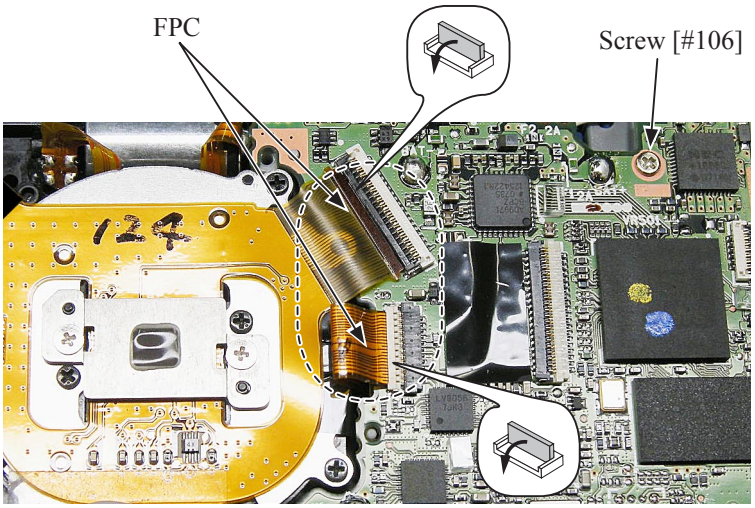
CP-1 PCB

・Install the CP-1 PCB [#114] by fitting with the bosses.

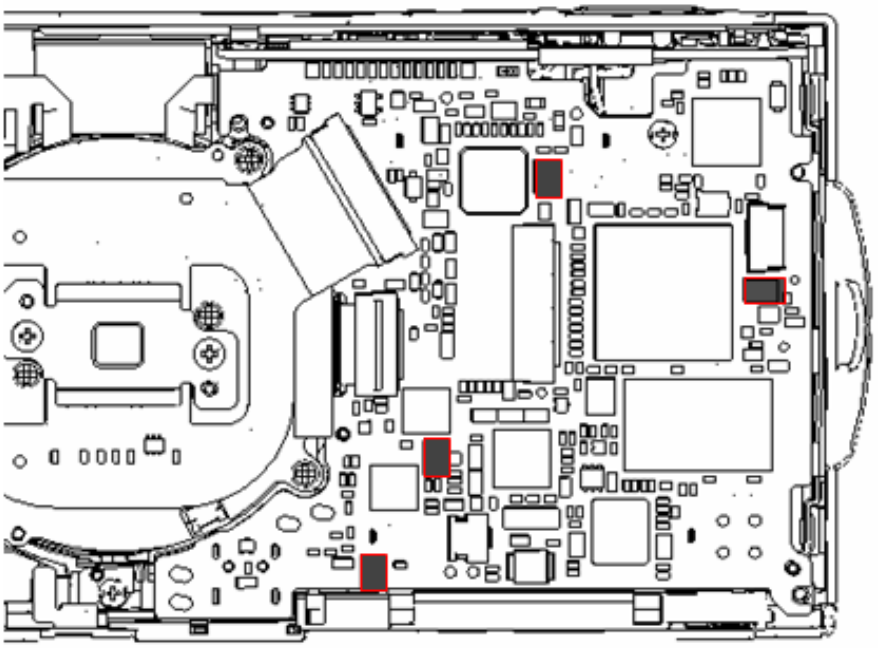


・Set the FPC.

・Tighten the screw [#106].



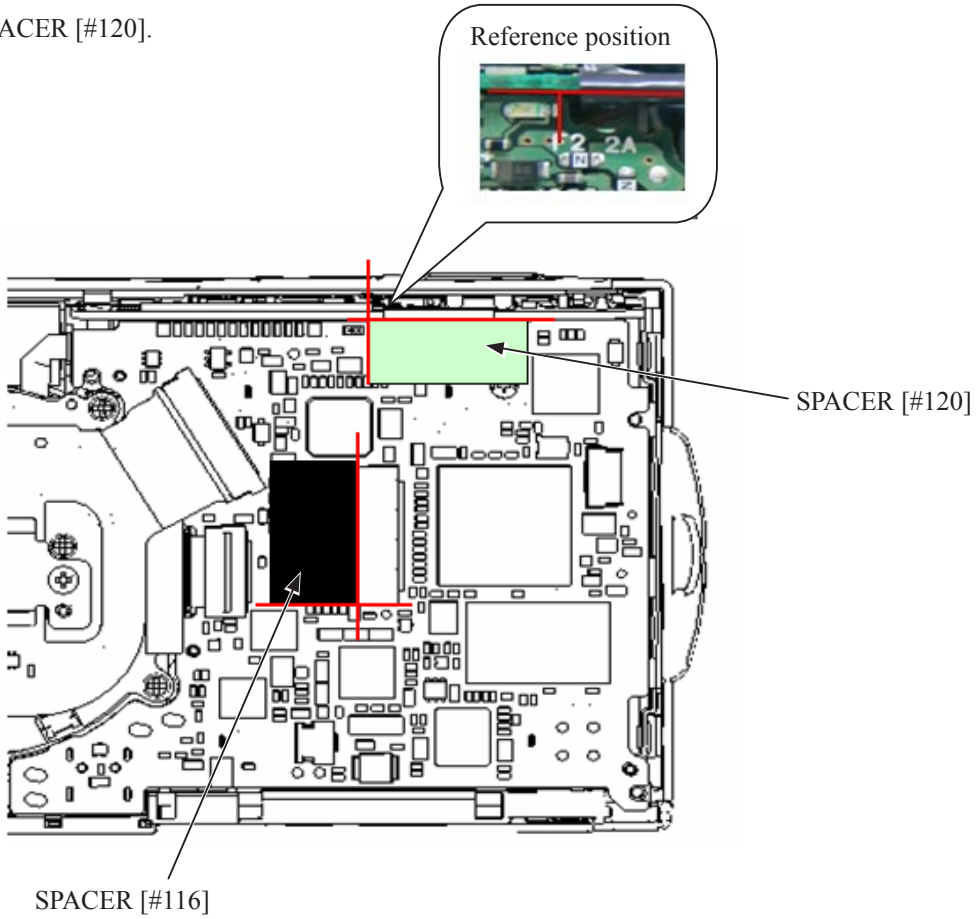
・Adhere the SPACER [#115].



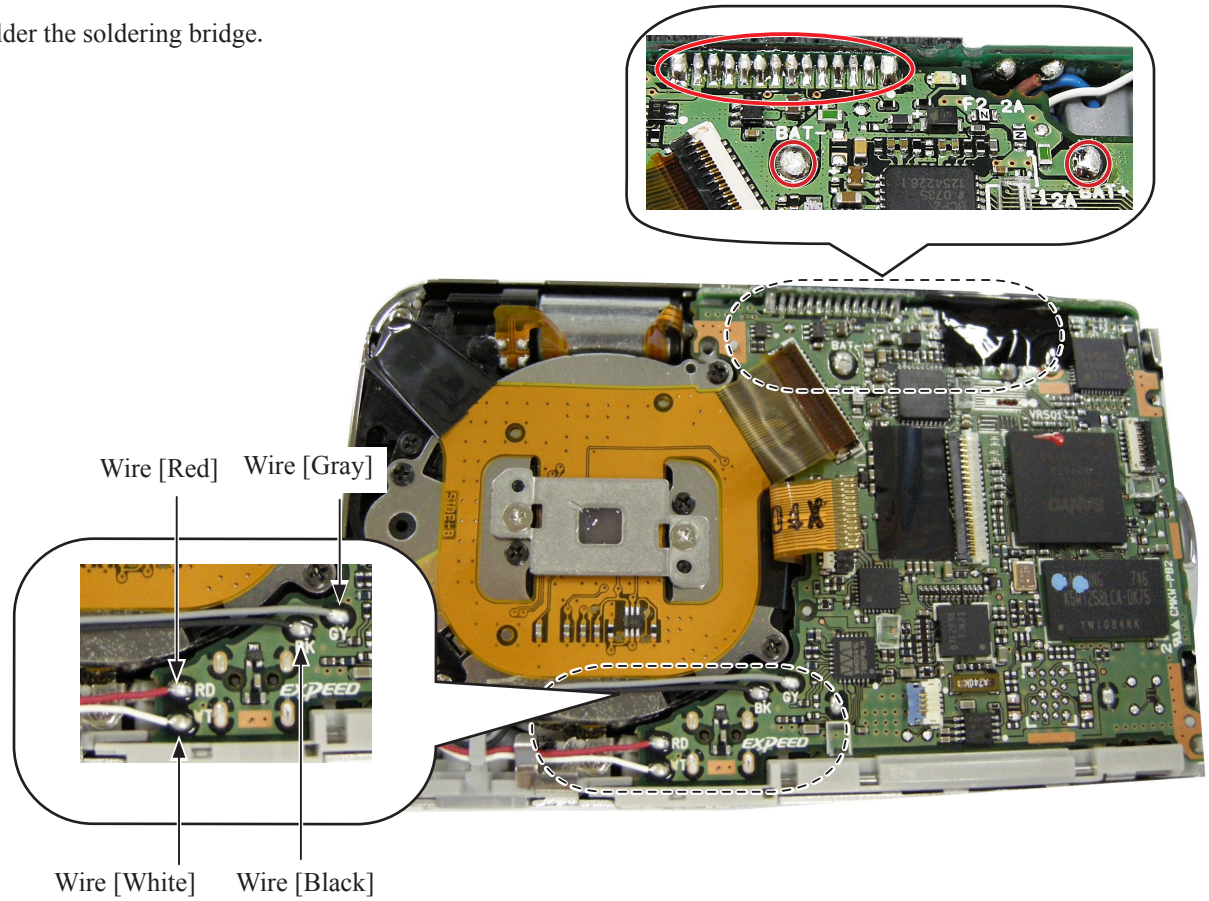
Adhere in the square area surrounded by white line.

・Adhere the SPACER [#116].

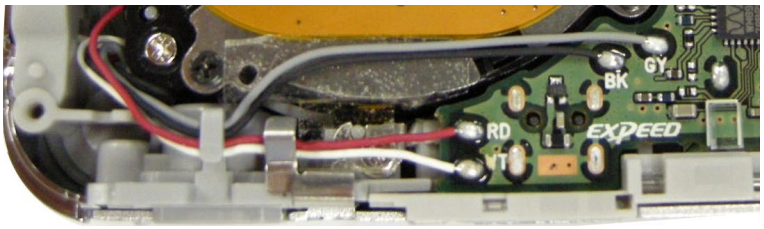
・Adhere the SPACER [#120].



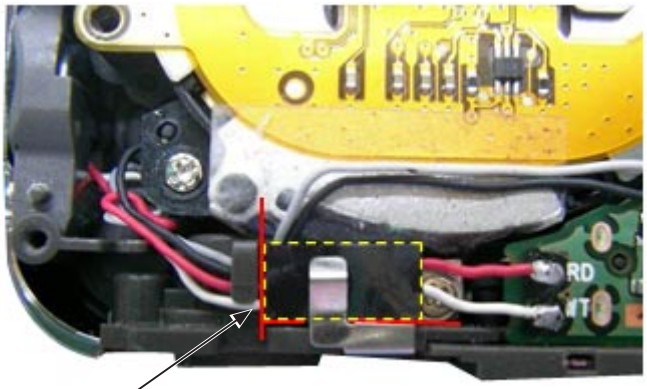
- Solder the wires [Gray] and [Black].
- Solder the wires [Red] and [White].
- Solder the soldering bridge.



- Arrange all the wires [Gray][Black][Red][White] as below.

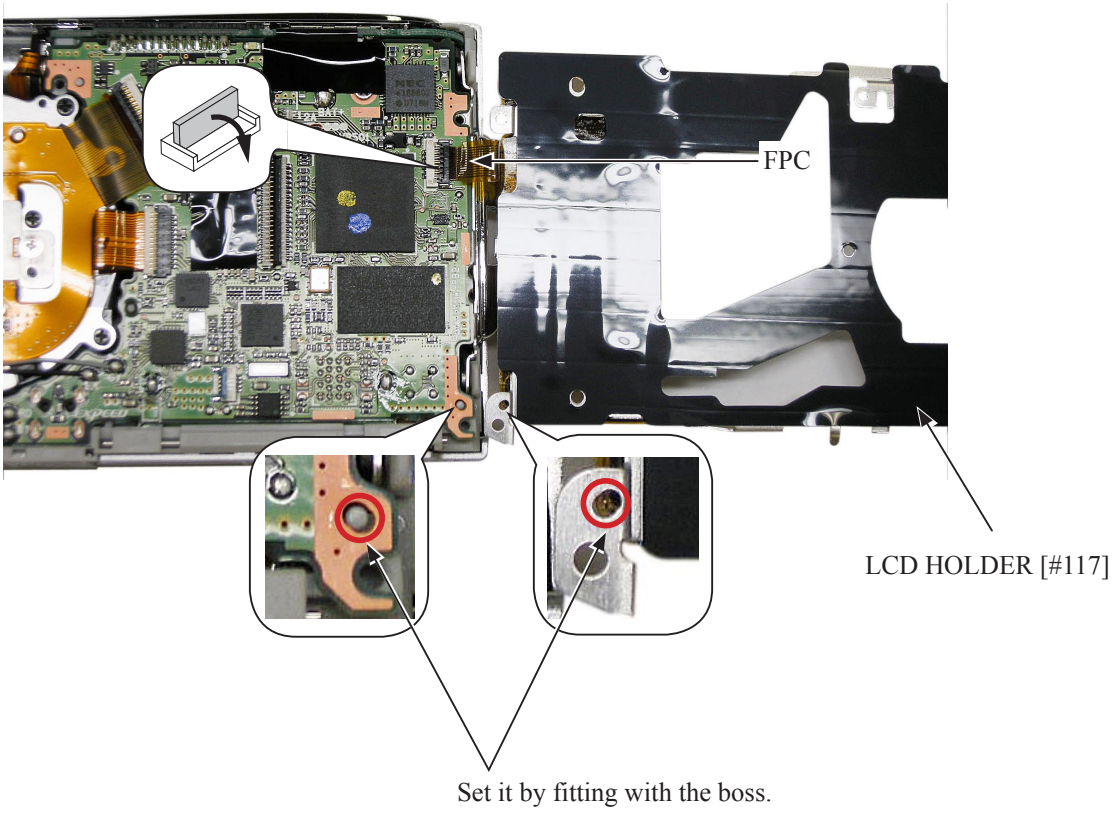


・Set the SPACER [#19].

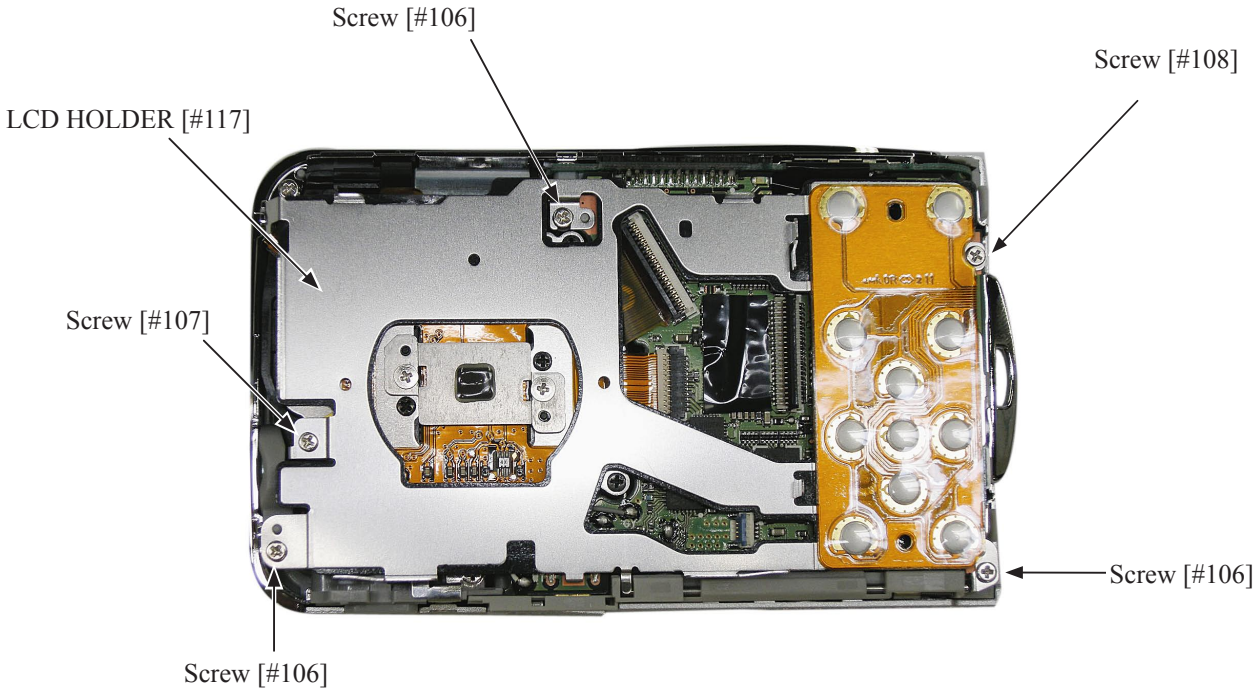


LCD HOLDER

・Set the LCD HOLDER.

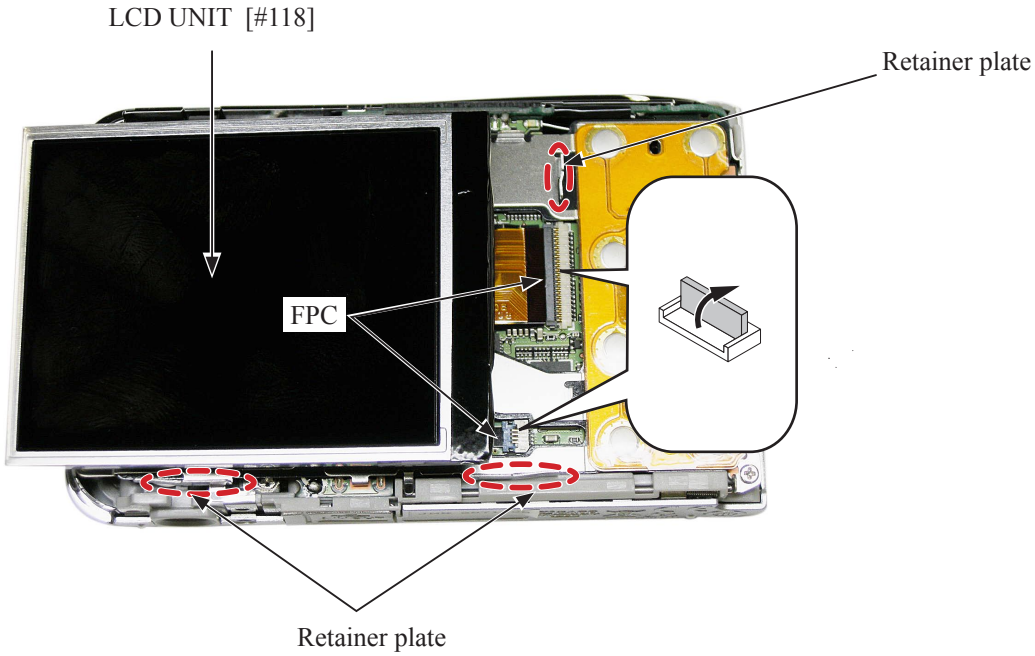


- Tighten the screw [#108].
- Tighten the screw [#107].
- Tighten the three screws [#106]



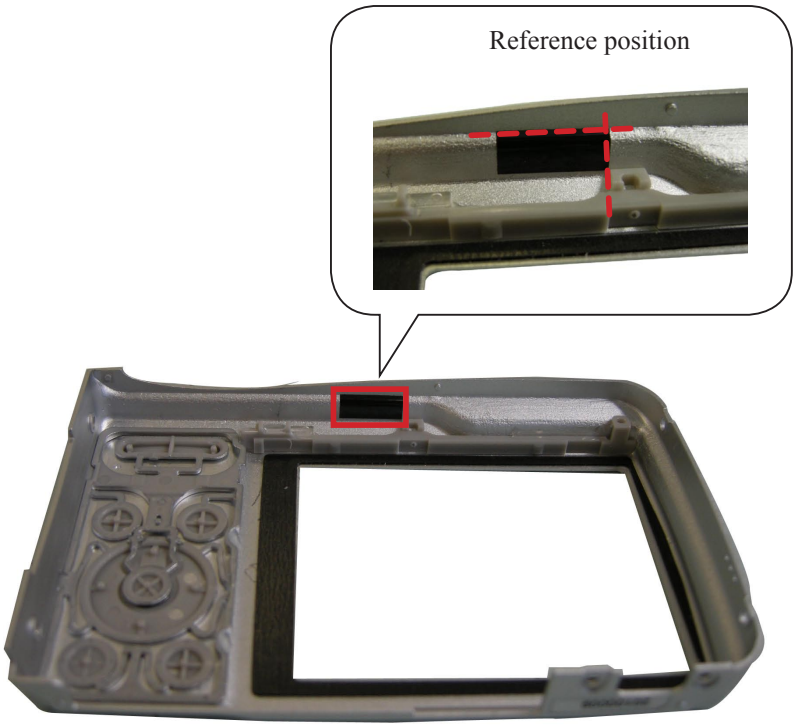
LCD UNIT

- Set the FPC.
- Mount the LCD UNIT [#118].

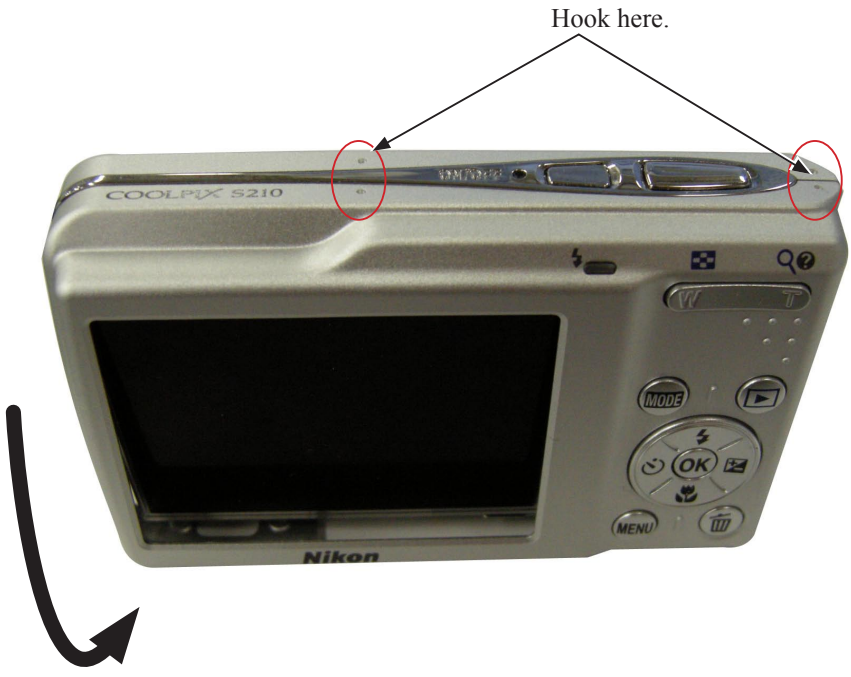


BACK COVER

・Adhere the SPACER.

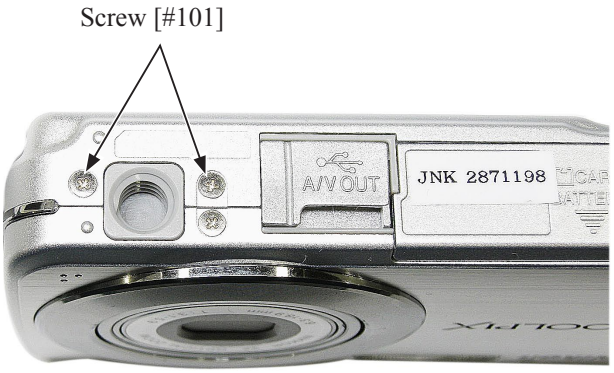


・Install the REAR COVER [#119].



EXTERNAL SCREW

・Tighten the two screws [#101].



・Tighten the two screws [#102].

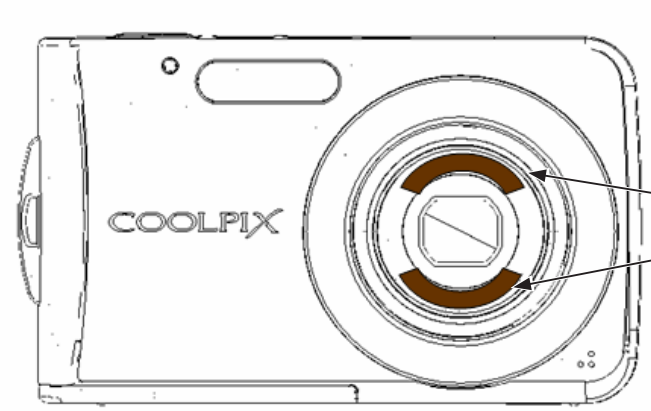
・Tighten the two screws [#102].

・Tighten the two screws [#101].

Be careful of a difference in size between the upper and lower screws.

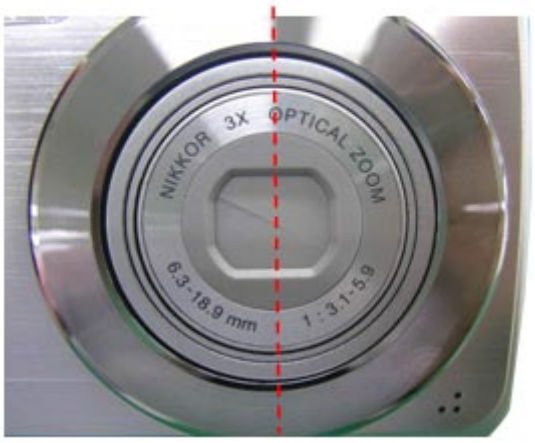
NAME PLATE

・Adhere the NAME PLATE [#14].



Reference position of double-stick tape.

"O" letter must be positioned in the center.



ADJUSTMENT

1. Equipment

   IBM compatible PC/AT ・ **AC adapter EH-62D** ・ **USB cable (UC-E6)**

2. Servicing tools

   Pattern box, color meter, luminance meter, calibration software (J65098), ajustment collimator (J63090)

3. Adjustments / order

   1. Firmware up
   2. Lens adjustment
   3. AWB adjustment
   4. CCD white dot defect compensation
   5. CCD black dot/white dot defect adjustment
   6. USB storage information registration

For the USB connection of S210, ONLY "PTP" is available.
Using "Win2000" needs installation of the driver and restart of the PC. For the driver, use INF folder in "DSCCAL Ver.1.59" folder.

4. Firmware upgrading

Device

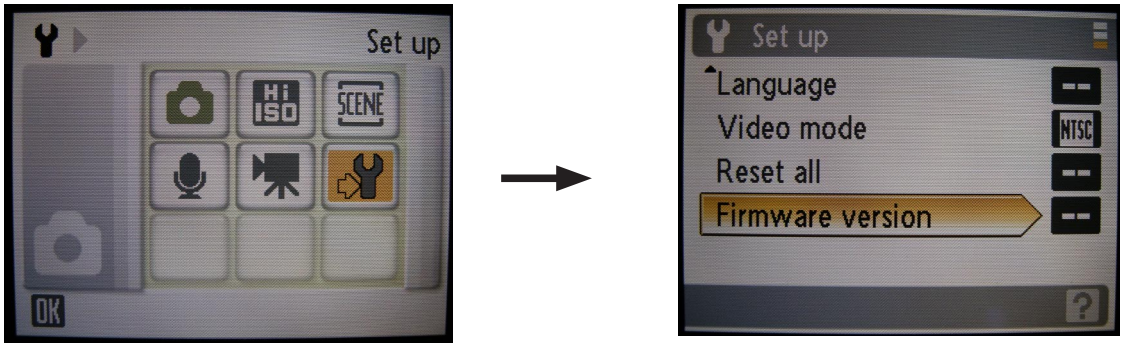
- AC adapter EH-62D
- SD card to be used for upgrading the firmware: 1 pc.

[Creating the upgrading SD-card]

1) Format the SD card by PC.
2) Make a folder named “firmware” in the root directory of the SD card.
3) Copy “firmware. bin” in the folder made in the above 2).

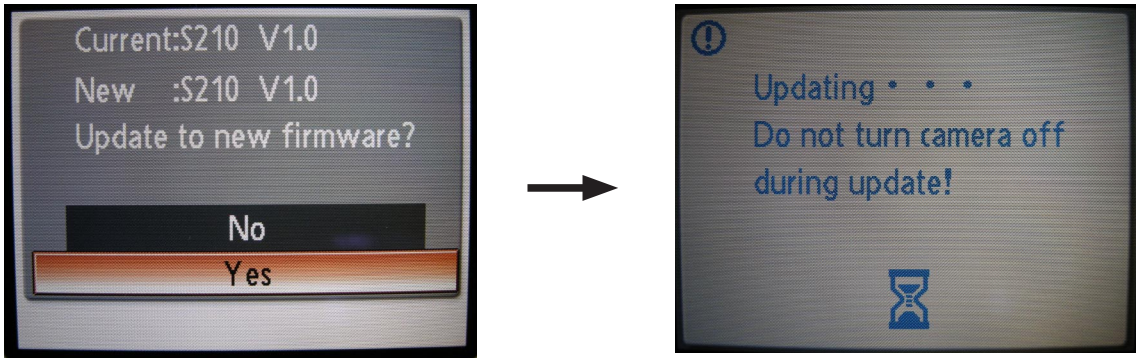
Procedure

- Turn camera OFF, and insert the upgrading SD-card.
- Connect the camera to the AC adapter.
- Turn camera ON.
- Press “MODE” button. Set to “SET UP”
- Select “Firmware version”.

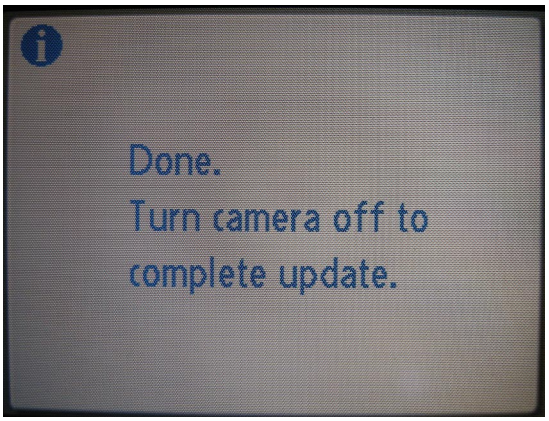


- The screen for updating comes up. Select "Yes".

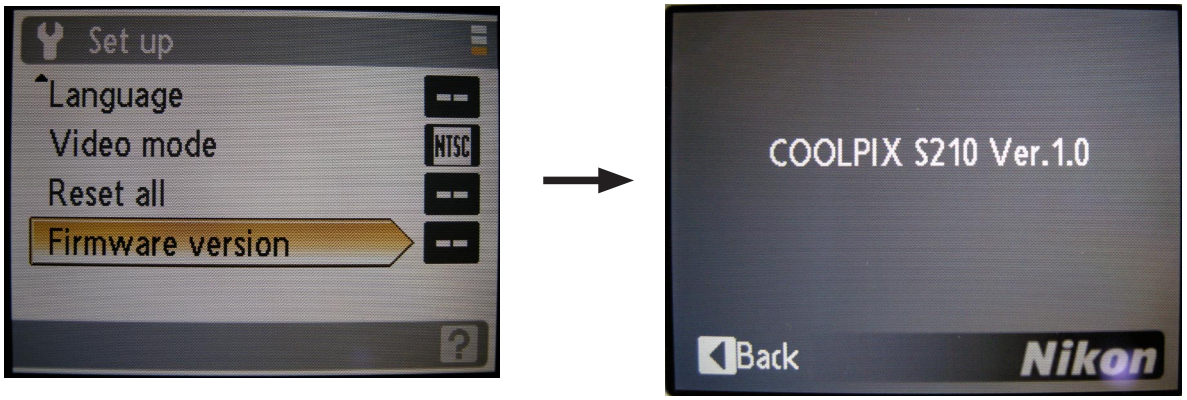
  Note: Do NOT turn power OFF during updating.



- The message that indicates the completion appears.
- Turn camera OFF and remove the SD card.



- Turn camera ON to check the version.
- Turn camera OFF to end the procedure.



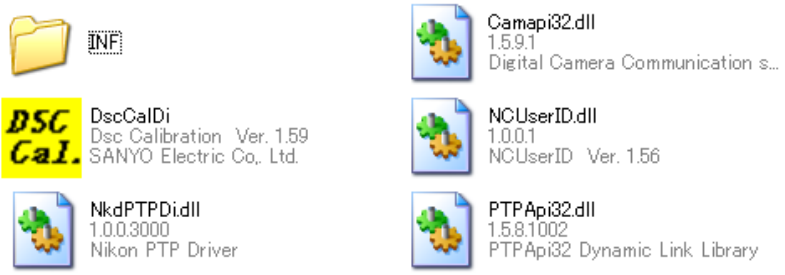
5. Setup

1) System requirements

- Windows® 2000, XP
- CD-ROM drive
- USB port
- Hard disk drive with 15 MB or more memory space
- IBM-compatible PC/AT with Pentium or higher processor
- 3.5-inch 2HD diskette drive
- Free memory of 256MB or more
- VGA or SVGA monitor with 256 or more color display

2) Installation of the calibration software (J65098)

- Insert the calibration software installation disc into the disc drive.
- Open Explorer.
- Copy the folder in the floppy disk drive to an optional folder.



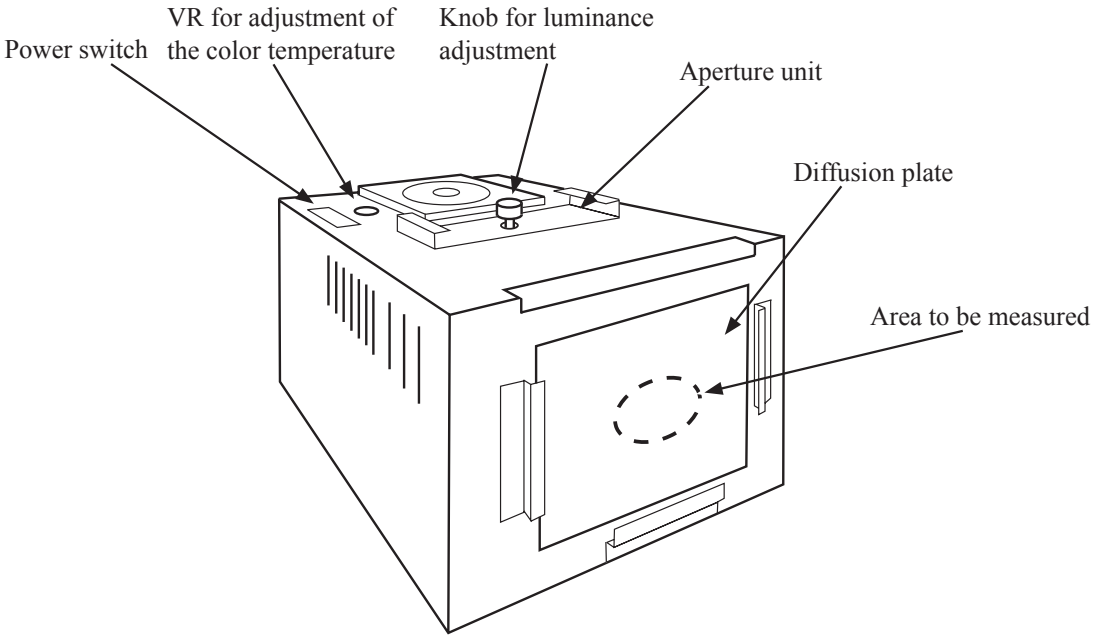
6. Pattern box

Before using the pattern box, turn its power on to carry out "Aging" approx. 30 minutes: the color temperature must be adjusted to 3100 ± 20K by the color meter, and the luminance must be adjusted to 900 ± 20cd/m^2 by the luminance meter. When the pattern box is used and for a while even after the power turns off, the lamp and its surroundings are subject to high temperatures, so handle them with care.

・ Procedure for correcting Pattern Box

Note: Be sure to perform "aging".

1) Measure the measuring point (center of diffusion plate) with the Color Meter (J63081).
2) Adjust the pattern box so that the color temperature must be 3100 ± 20K by using "VR for adjustment of the color temperature".
3) Measure the center of the diffusion plate with the Luminance Meter BM-3000 (J63068 BM3000).
4) Adjust the pattern box so that the luminance must be 900 ± 20cd/m^2 by using "Knob for luminance adjustment".
5) Repeat from 1) to 4) so that the color temperature must be 3100 ± 20k and luminance must be 900 ± 20cd/m^2



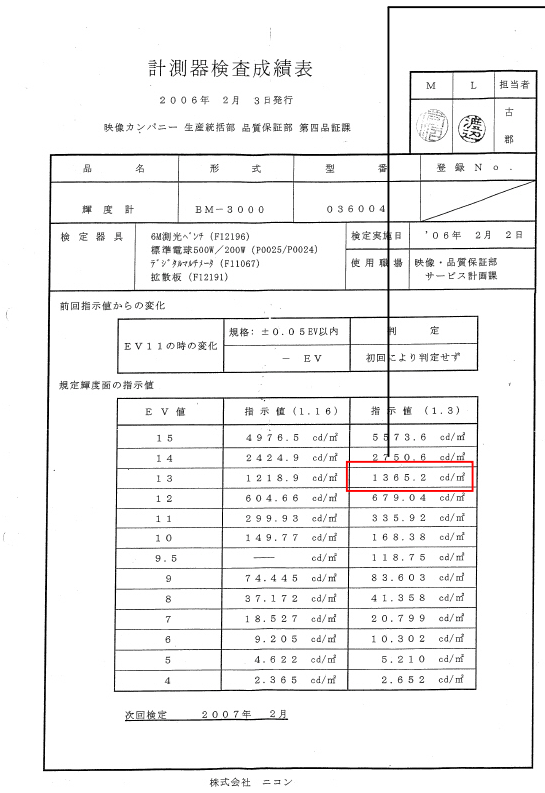
Caution

The luminance of pattern box is measured by [BM-3000], but sometimes the measurement result of each [BM-3000] varies. Therefore, to keep the same luminance without such variation, the method by using the inspection report which is supplied with BM-300 is as follows.

The inspection report is in Japanese only. Refer to data only at overseas service facilities.

Procedure

Find the corresponding value by crossing K=1.3 and EV13 in the accessory inspection report, and calculate by putting the corresponding value into the below formula.



計測器検査成績表

２００６年　２月　３日発行

映像カンパニー 生産統括部 品質保証部 第四品証課

M	L	担当者
		古都

品　名	形　式	型　番	登録Ｎｏ．
輝　度　計	ＢＭ－３０００	０３６００４	

検定器具	6M測光ﾍﾝﾅ (F12196) 標準電球500W／200W (P0025/P0024) ﾃﾞｼﾞﾀﾙﾏﾙﾁﾒｰﾀ (F11067) 拡散板 (F12191)	検定実施日	'０６年　２月　２日
		使用職場	映像・品質保証部 サービス計画課

前回指示値からの変化

ＥＶ１１の時の変化	規格：±０．０５EV以内	判　定
	－　ＥＶ	初回により判定せず

規定輝度面の指示値

ＥＶ値	指示値（1.16）	指示値（1.3）
１５	４９７６．５　cd/㎡	５５７３．６　cd/㎡
１４	２４２４．９　cd/㎡	２７５０．６　cd/㎡
１３	１２１８．９　cd/㎡	１３６５．２　cd/㎡
１２	６０４．６６　cd/㎡	６７９．０４　cd/㎡
１１	２９９．９３　cd/㎡	３３５．９２　cd/㎡
１０	１４９．７７　cd/㎡	１６８．３８　cd/㎡
９．５	――　cd/㎡	１１８．７５　cd/㎡
９	７４．４４５　cd/㎡	８３．６０３　cd/㎡
８	３７．１７２　cd/㎡	４１．３５８　cd/㎡
７	１８．５２７　cd/㎡	２０．７９９　cd/㎡
６	９．２０５　cd/㎡	１０．３０２　cd/㎡
５	４．６２２　cd/㎡	５．２１０　cd/㎡
４	２．３６５　cd/㎡	２．６５２　cd/㎡

次回検定　　２００７年　２月

株式会社　ニコン

e.g.

$$\frac{168.89 \times \boxed{1365.2\text{cd/ m}^2}}{256\ \text{Coefficient}} = \boxed{900\text{cd/ m}^2}$$

Coefficient

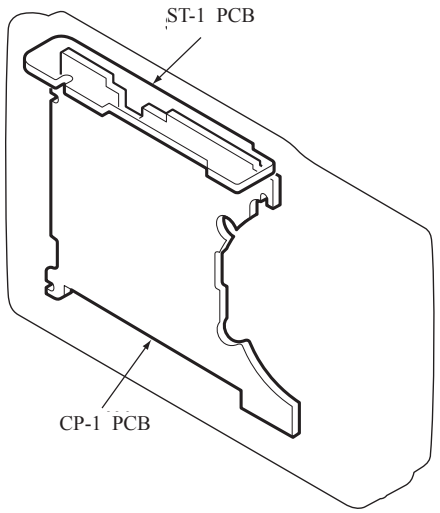
The calculated result corresponds to "EV12.4" of the inspection report.

7. Adjustments required when parts are replaced

	Lens	AWB	CCD black / white dot defect adjustment	Firmware up
Lens unit	○	○	○	×
OPLF	○	○	○	×
LCD unit	×	×	×	×
CA-1 PCB(CCD)	○	○	○	×
CP1 PCB	○	○	○	○
ST1 PCB	×	×	×	×

○ Adjustment is necessary.

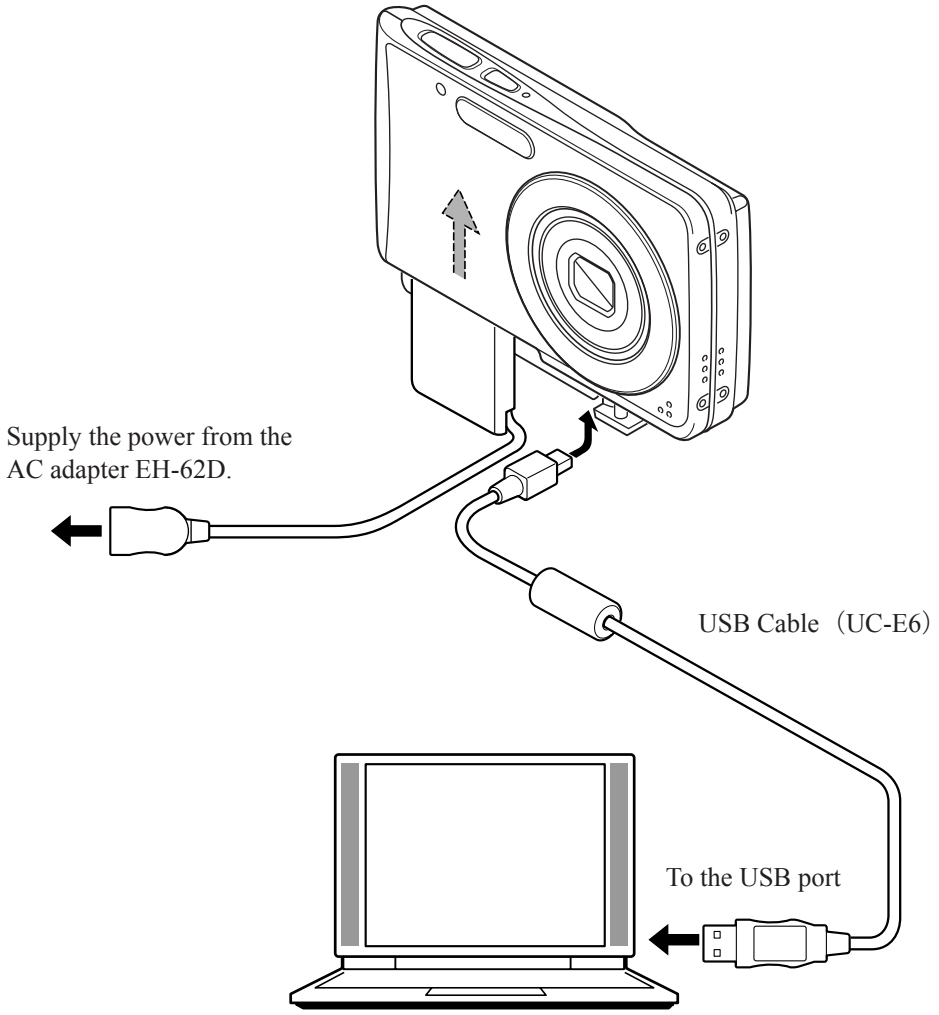
× Adjustment is not necessary.



8. Connecting the camera to the computer

1) Insert the camera connector of the cable to the USB port of the cradle correctly.

2) Connect to the USB port of the personal computer.

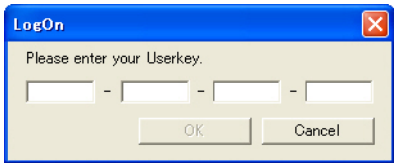


9. Calibration software

- Connect the camera to the personal computer with USB.
- Turn the camera on.
- When the calibration software starts, the following is displayed on the PC monitor.

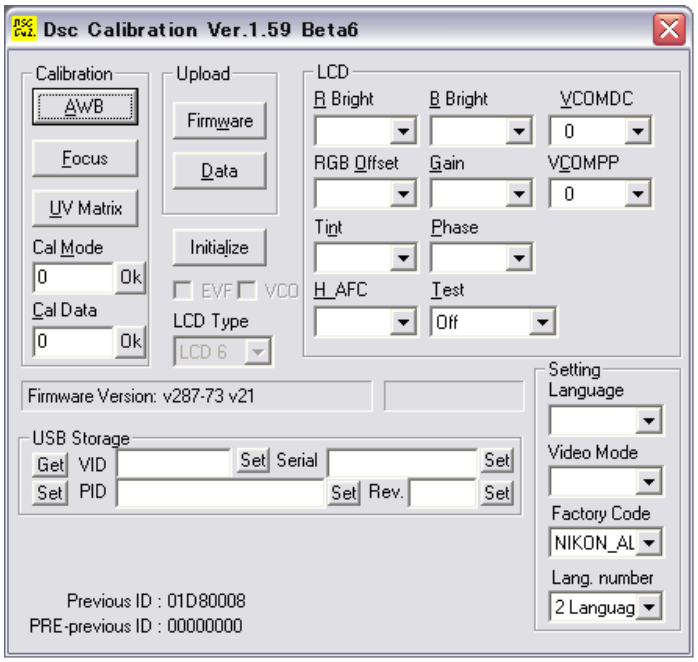
Calibration software

- Input “Userkey”. (Refer to TI07023.)



- When “Userkey” is correct, the adjustment display appears.

Note: After inputting “Userkey”, the adjustment display appears from the first.



10. Lens adjustment

DscCalDi
Dsc Calibration Ver. 1.59
SANYO Electric Co,. Ltd.

Calibration software

[Preparations]

- Turn on the power switch of the adjustment collimator (C-DSC) J63090.
- Turn the camera on.

[Conditions]

- Set “nearest distance” for the distance between the adjustment collimator and camera (front surface of lens).

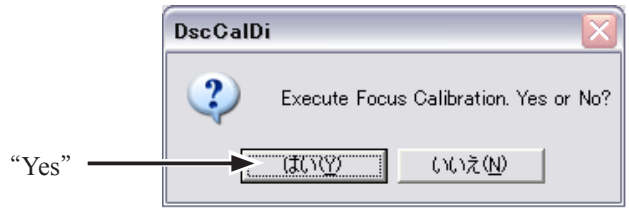
[How to adjust]

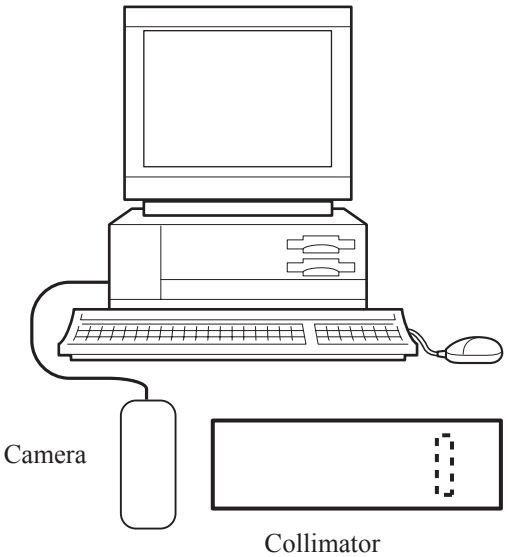
- To set the center of the Siemens star chart on the center of the camera screen, check it on the LCD monitor beforehand.
- Double-click “DscCalDi.exe”.
- Click “Focus”, then “Yes”.
- Lens adjustment value will appear on the screen.

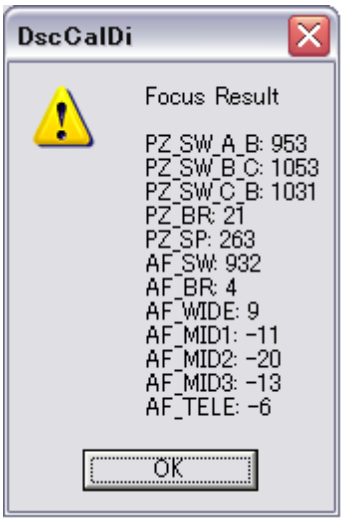
Standard for judgment

PZ_SW_A_B : PZ1 = 945 ≦ PZ1+PBR ≦ 1010	AF_BR : ABR = 0 ≦ ABR ≦ 12
PZ_SW_B_C : PZ2 = 1051 ≦ PZ2+PBR ≦ 1116	AF_WIDE : ZW = − 54 ≦ ZW ≦ 47
PZ_SW_C_B : PZ3 = 1006 ≦ PSZ3+PBR ≦ 1116	AF_MID1 : ZM1 = − 86 ≦ ZM1 ≦ 48
PZ_BR : PBR = 0 ≦ PBR ≦ 45	AF_MID2 : ZM2 = − 114 ≦ ZM2 ≦ 57
PZ_SP : PSP = 210 ≦ PSP ≦ 320	AF_MID3 : ZM3 = − 107 ≦ ZM3 ≦ 76
AF_SW : ASW = 893 ≦ ASW ≦ 985	AF_TELE : ZT = − 108 ≦ ZT ≦ 94

- Click “OK”.







Result of adjustment

11. AWB adjustment

[Preparations]

- Pattern Box (Color temperature: 3100 ± 20K, Luminance: 900 ± 20cd/m^2)

[Conditions]

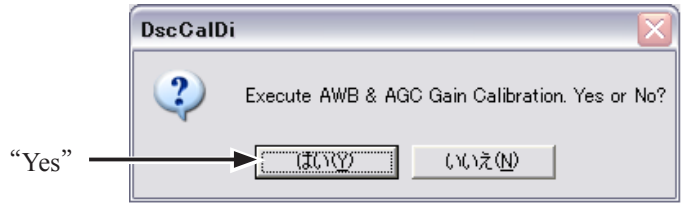
- Fix the pattern box so that the distance may be “0cm” between the pattern box and camera (front surface of lens).

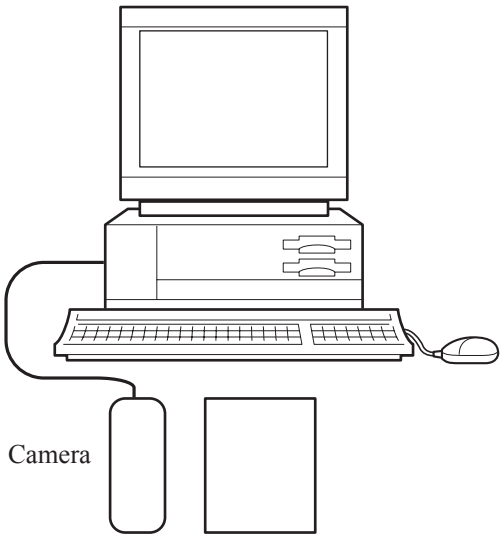
  Note) Do not allow outside light to enter in.

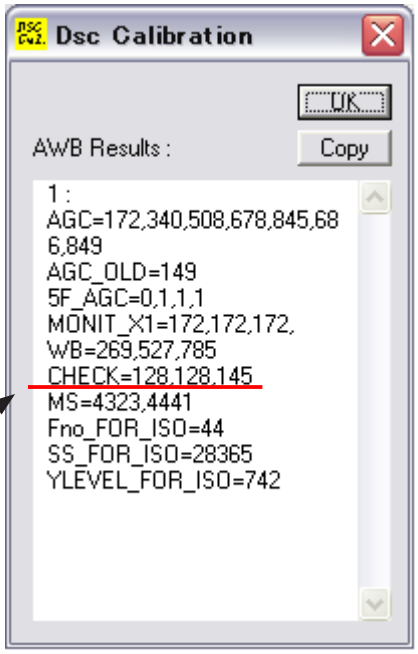
[How to adjust]

- Double-click on “DscCa1Di.exe”.
- Click “AWB”, then “Yes”.
- AWB adjustment values will appear on the screen.

  Judgment standard: CHECK=128 ± 2, 128 ± 2, 130 ± 40
- Click “OK”.







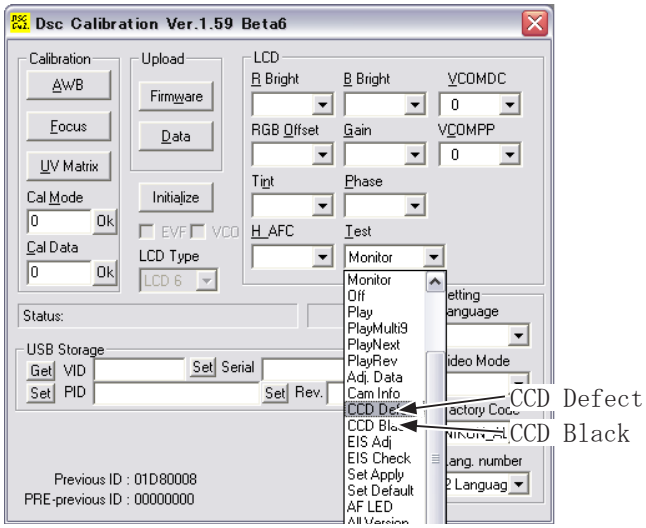
12. CCD white dot defect compensation

[Conditions]

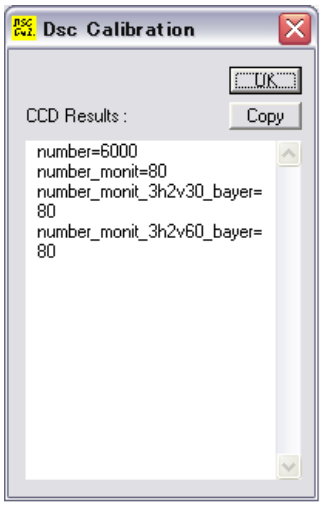
- With the lens shutter being closed, read the defect of CCD pixels. Then, make the correction data and rewrite the data by the following procedure.
  Correct the upper level of defective 6000 pixels from the brightest number of CCD pixels..

[How to adjust]

- Double-click on "DscCa1Di.exe".
- Select "CCD Defect" from Test menu of Calibration Software and click the "OK". Refer to <FIG-1>.
- After adjustment, the adjustment value will appear on the screen. Refer to <FIG-2>.



<FIG-1>



Judgmental standard
In case of "NG",
"detect_ng" will appear.

<FIG-2>

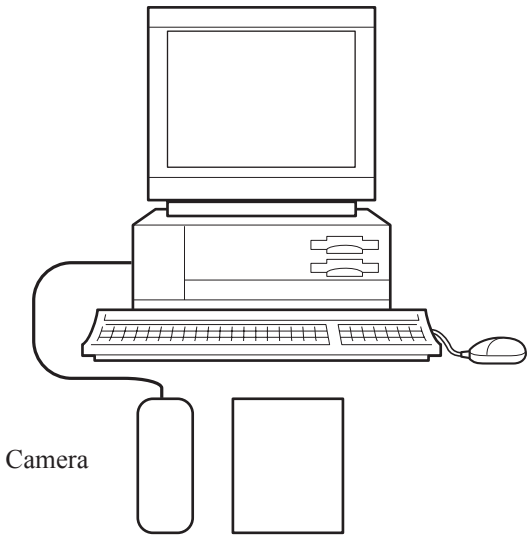
13. CCD black dot/white dot defect adjustment

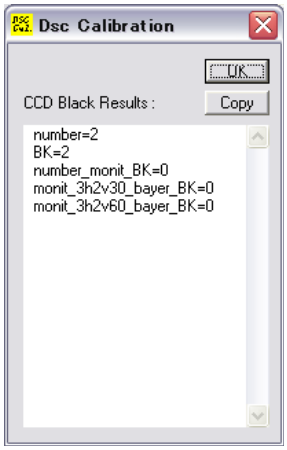
[Conditions]

- Fix the camera so that only the white part of the pattern box must be displayed on the screen. (Prevent the outside light from entering as far as circumstances allow.)
- With the lens shutter being opened, read the defect (black dots) of CCD pixels. Then, make the correction data and rewrite the data by the following procedure.
  Correct the upper level of defective 256 pixels (black dots in bright place) of CCD pixels.

[How to adjust]

- Double-click on "DscCa1Di.exe".
- Select "CCD Black" from "Test" and then click "Yes". Refer to <FIG-1>.
- After adjustment, the adjustment value will appear on the screen. Refer to <FIG-3>.





Judgmental standard
In case of "NG", "detect_ng BLACK"or "detect_ng WHITE" will appear.

<FIG-3>

14. USB storage information registration

USB storage data is important when the camera is connected to a computer via a USB connection.

If there are any errors in the USB storage data, or if it has not been registered, the USB specifications will not be satisfied, so always check and register the USB storage data.

[How to adjust]

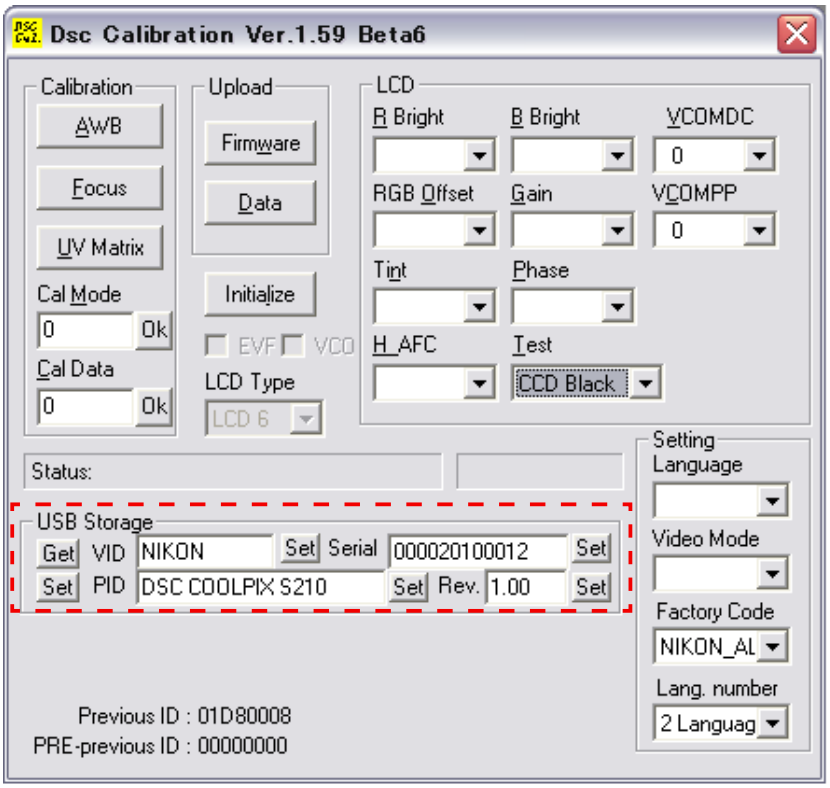
1. Connect the camera to a computer.
2. Double-click on the "DscCa1Di.exe".
3. Click on the "Get" button in the USB storage window and check the USB storage data.

   VID: NIKON

   PID: DSC COOLPIX S210

   Serial:

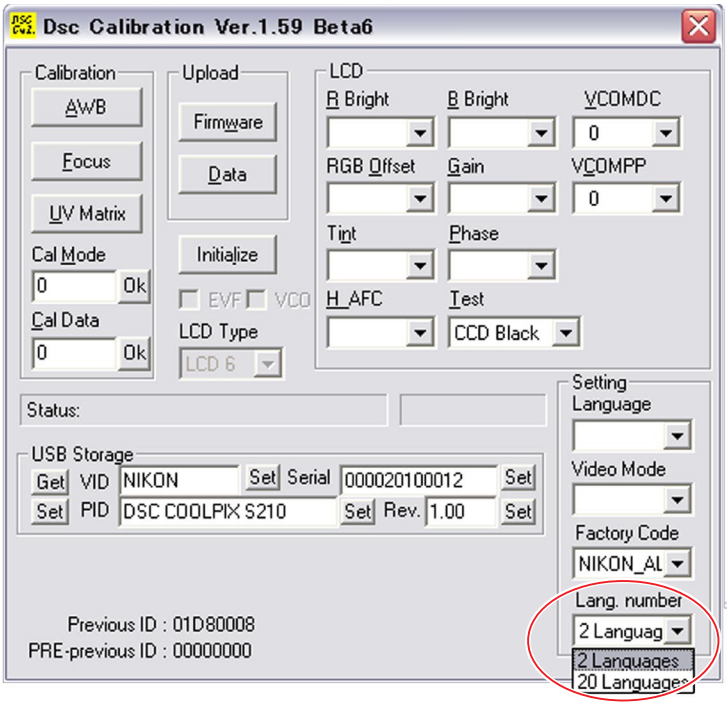
   Rev. : 1.00
4. Check the "Serial" in the above USB storage data. If the displayed value is different from the serial number of the camera bottom, enter the number of the camera bottom, and click the "Set" button.
5. Check VID and Rev. entries in the USB storage data. If any of them are different from the values in the above 3., enter the details of 3. and click the "Set" button.



15. Language setting

"Lang, number" enables to select either "2 Languages" or "20 Languages".

Caution) Select "2 Languages" for Japanese models.



2 Languages

20 Languages

16. Factory default

How to set:

1. Provide power via battery or AC adapter. （Card is not necessary.）
2. Turn camera ON.
3. Press "MODE" button. Set to "AUTO"
3. Turn camera OFF.
4. While pressing "MENU" button, set the zoom lever to "W" or "T". In this state, turn power ON.
5. After the start-up, turn camera OFF.

Setting the factory default is completed. If the power is turned to ON for the next time, the screen for setting language will appears.

1. OUTLINE OF CIRCUIT DESCRIPTION

1-1. CCD CIRCUIT DESCRIPTION

1. IC Configuration

The CCD peripheral circuit block basically consists of the following ICs.
IC913 (ICX646CQZ) CCD imager
IC905 (AD9971BCPZRL) CDS, AGC, A/D converter, H driver
IC901 (LR366877) V driver

2. IC913 (CCD)

Interline type CCD image sensor
Optical size 1/2.5 type
Effective pixels 3264 (H) x 2448 (V)
Pixels in total 3336 (H) x 2484 (V)
Optical black
Horizontal (H) direction: Front 6 pixels, Rear 30 pixels
Vertical (V) direction: Front 10 pixels, Rear 2 pixels
Dummy bit number Horizontal : 14

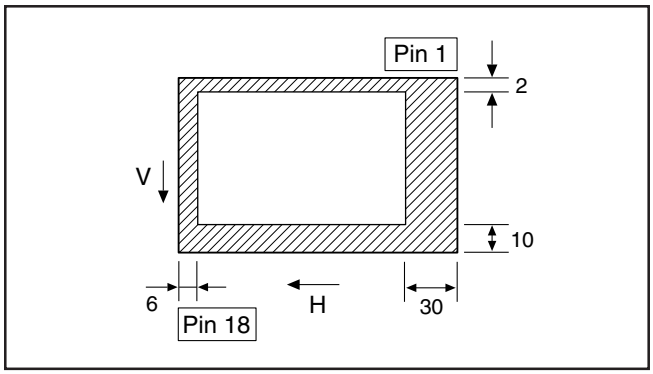


Fig. 1-1.Optical Black Location (Top View)

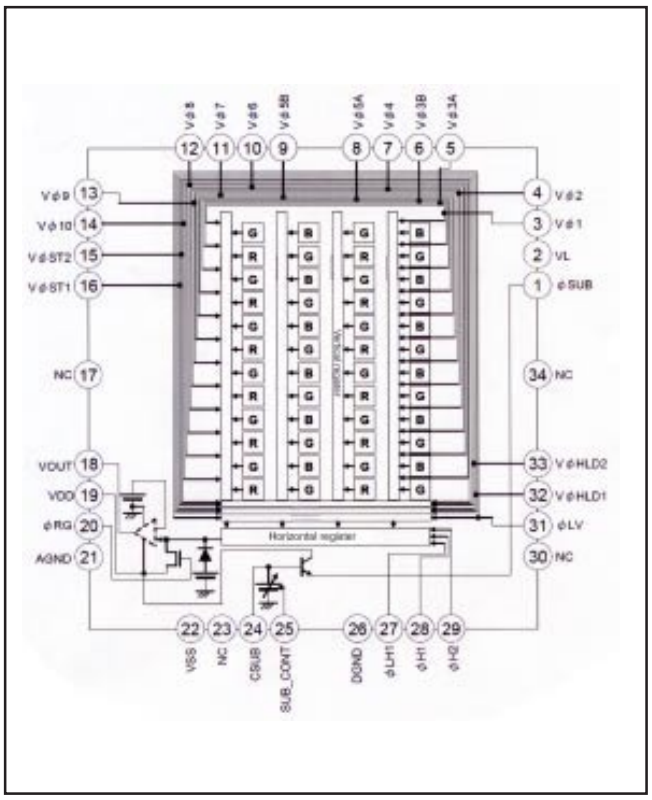


Fig. 1-2. CCD Block Diagram

Pin No.	Symbol	Pin Description	Pin No.	Symbol	Pin Description
1	øSUB	Substrate clock	18	V_{OUT}	Signal output
2	V_L	Protection transistor bias	19	V_{DD}	Circuit power
3	$V_{ø1}$	Vertical register transfer clock	20	øRG	Reset gate clock
4	$V_{ø2}$	Vertical register transfer clock	21	AGND	GND
5	$V_{ø3A}$	Vertical register transfer clock	22	VSS	GND
6	$V_{ø3B}$	Vertical register transfer clock	23	NC	NC
7	$V_{ø4}$	Vertical register transfer clock	24	C_{SUB}	Substrate bias
8	$V_{ø5A}$	Vertical register transfer clock	25	SUB_CONT	Substrate bias control
9	$V_{ø5B}$	Vertical register transfer clock	26	DGND	GND
10	$V_{ø6}$	Vertical register transfer clock	27	øLH1	Horizontal register transfer clock
11	$V_{ø7}$	Vertical register transfer clock	28	øH1	Horizontal register transfer clock
12	$V_{ø8}$	Vertical register transfer clock	29	øH2	Horizontal register transfer clock
13	$V_{ø9}$	Vertical register transfer clock	30	NC	NC
14	$V_{ø10}$	Vertical register transfer clock	31	øLV	Vertical - horizontal shift clock
15	$V_{øST2}$	Vertical storage control 2	32	$V_{øHLD1}$	Vertical signal hold 1
16	$V_{øST1}$	Vertical storage control 1	33	$V_{øHLD2}$	Vertical signal hold 2
17	NC	NC	34	NC	NC

Table 1-1. CCD Pin Description

3. IC905 (H Driver) and IC901 (V Driver)

An H driver and V driver are necessary in order to generate the clocks (vertical transfer clock, horizontal transfer clock and electronic shutter clock) which driver the CCD. IC901 is a V driver, and the XV1-XV15 signals which are output from IC101 are the vertical transfer clocks, and the XSG signal which are output is superimposed at IC901 in order to generate a ternary pulse. In addition, the XSUB signal which is output from IC101 is used as the sweep pulse for the electronic shutter. H driver has inside IC905 and generate H1, H2 and RG clock at IC905.

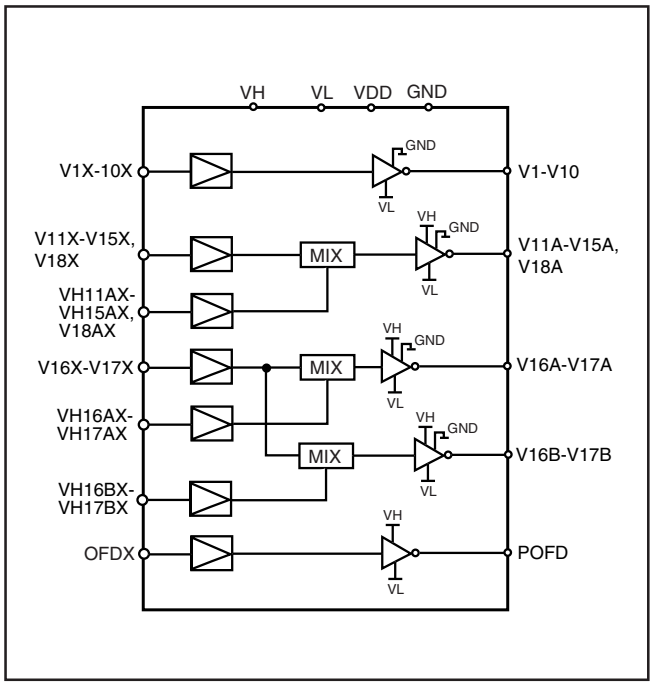


Fig. 1-3. IC901 Block Diagram

4. IC905 (CDS, AGC Circuit and A/D Converter)

The video signal which is output from the CCD is input to pins (25) of IC905. There are inside the sampling hold block, AGC block and A/D converter block. Settings of sampling phase and AGC amplifier is carried out by serial data of pins (32), (33) and (34). The video signal is converted A/D converter, and output to LVDS.

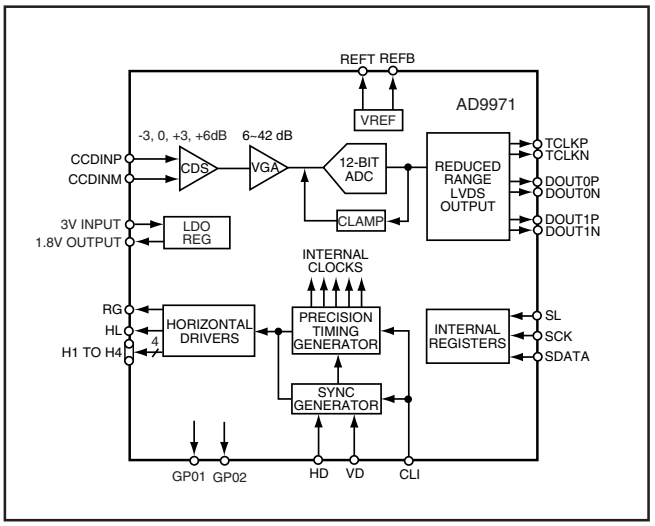


Fig. 1-4. IC905 Block Diagram

1-2. CP1 CIRCUIT DESCRIPTION

1. Circuit Description

1-1. Signal processor (SG)

1. Signal preprocessing block

This block processes the raw data for the CCD.

2. Color synchronization block

This block color synchronizes the raw data and converts it to YUV.

3. YUV processing block

This block carries out luminance correction and generates the Y, Cu and Cv signals.

4. Zoom processing block

This block carries out processes such as zoom processing for the Y, Cu and Cv signals.

1-2. BUF-A

After the data is received from signal processing (SG), it is converted into data arrays for each mode, and then a write request to the SDRAM is output to the SDRAM control. The BUF-A is further divided into the BUF-A1 block, BUF-A2 block and BUF-A3 block.

1-3. BUF-D

The data is read from the SDRAM and converted to data arrays for each mode and is then output to signal processing.

1-4. AE/AWB and AF calculation circuit (AEAF)

When the data is received from signal processing (SG), evaluation values are calculated for AF and for AE/AWB, and then it is written to each of the 16 horizontal areas in the SDRAM via the SDRAM control.

1-5. BUF-BC

The image data and the character data for the OSD (On Screen Displays) are read from the SDRAM and displayed on the monitor and the LCD.

1-6. SDRAM Ctrl

This controls the SDRAM access requests.

1-7. BUF-E/BUF-F and JPEG controller

This carries out compression and expansion of JPEG data and outputs write and read requests to the SDRAM.

1-8. TGSG

The TG is the signal generator which drives the CCD (8 million pixels) and carries out drive mode control.
The SG is the signal generator which creates the reference for the video sync signals.

1-9. SIES

This block carries out image stabilizer compensation, image rotation and pixel mixing.

2. Outline of Operation

When the shutter opens, the serial signals (“take a picture” commands) from the 8-bit microprocessor is input to ASIC (IC101) and operation starts. When the TG/SG drives the CCD, picture data passes through the A/D and CDS, and is then input to the ASIC as 12-bit digital signal. The AF, AE, AWB, shutter, and AGC value are computed from this data, and three exposures are made to obtain the optimum picture. The data which has already been stored in the SDRAM is read by the CPU and color generation is carried out. Each pixel is interpolated from the surrounding data as being either R, G and B primary color data to produce R, G and B data. At this time, correction of the lens distortion which is a characteristic of wide-angle lenses is carried out. After AWB and γ processing are carried out, a matrix is generated and aperture correction is carried out for the Y, V and U signals, and the data is then compressed by the JPEG method by (JPEG) and is then written to card memory (SD card).
When the data is to be output to an external device, it is taken data from the memory and output via the USB. When played back on the LCD and monitor, data is transferred from memery to the SDRAM, and the data elongated by JPEG decorder is displayed over the SDRAM display area.

3. LCD Block

The LCD display circuit is located on the CP1 board, and consists of components such as a power circuit and VCOM control circuit.
The signals from the ASIC are 8-bit digital signals, that is input to the LCD directly. The 8-bit digital signals are converted to RGB signals inside the LCD driver circuit. The LCD is input signals from ASIC directly to the LCD, and function such as image quality are controlled.
In addition, the timing pulses for signals other than the video signals are also input from the ASIC directory to the LCD.

4. Lens drive block

4-1. Zoom drive

The parallel signals (ZIN1 and ZIN2) which are output from the ASIC (IC101) are used to drive (ZOUT1 and ZOUT2) by the motor driver IC, and then used to drive the zoom DC motor. Detection of the standard zooming positions is carried out by means of signal (ZPROUT) from the photoreflector by ASIC is detecting inside the lens block. Also, detection of the zooming positions is carried out by the ASIC (IC101) counting the photointerruptor (ZPIOUT).

4-2. Focus drive

The serial data signals (L_ST, L_DATA, L_SCLK, L_STB and FCLK) which are output from the ASIC (IC101) are used to drive (FOUT1, FOUT2, FOUT3 and FOUT4) by the motor driver IC (IC951), and are then used to drive the stepping motor for focusing operation. Detection of the standard focusing positions is carried out by means of signal (FPIOUT) from the photointerruptor by ASIC (IC101) is detecting inside the lens block.

4-3. ND filter

The serial data signals (L_ST, L_DATA, L_SCLK and L_STB) which are output from the ASIC (IC101) are used to drive (IOUT1 and IOUT2) by the motor driver IC (IC951), and are then used to drive the iris steps by meter-motor.

4-4. Shutter drive

The shutter drive signals (SIN1 and SIN2) which is output from the ASIC (IC101) is used to drive the shutter constant (IOUT2/SOUT1 and SOUT2) by the motor driver IC (IC951), and then mecha shutter is opened and closed by moving magnet motor.

1-3. PWA POWER CIRCUIT DESCRIPTION

1. Outline

This is the main power circuit, and is comprised of the following blocks.
Switching controller (IC501)
Analog +13 V (A) power output (L5005, Q5005)
Analog -7.5 V (A) power output (L5004, Q5004, IC502)
Analog +3.5 V (A) power output (IC505)
VDD3 power output (L5002)
VDD 1.2 power output (L5003)
VDD 1.8 power output (IC504)
Backlight system power output (L5007, Q5007)
Motor system power BOOST 4.5 V output (L5301)

2. Switching Controller (IC501)

This is the basic circuit which is necessary for controlling the power supply for a PWM-type switching regulator, and is provided with seven built-in channels and linear regulator is provided with one built-in channel (CH8). This model is used six built-in channels for switching regulator.
Only CH1 (BOOST 4.5 V), CH2 (VDD 3), CH3 (VDD 1.2), CH4 (-7.5 V (A)), CH5 (+13 V (A)) and CH7 (backlight) are used.
Feedback from CH1 (BOOST 4.5 V), CH2 (VDD 3), CH3 (VDD 1.2), CH4 (-7.5 V (A)) and CH5 (+13 V (A)) power supply outputs are received, and the PWM duty is varied so that each one is maintained at the correct voltage setting level.
Feedback for the backlight power (CH7) is provided to the both ends voltage of registance so that regular current can be controlled to be current that was setting.

2-1. Short-circuit protection circuit

If output is short-circuited for the length of time determined by the condenser which is connected to Pin (1) of IC501, all output is turned off. The control signal (P ON) are recontrolled to restore output.

3. Analog +13 V (A) Power Output

+13 V (A) is output. Feedback for the +13 V (A) is provided to the switching controller (Pin (39) of IC501) so that PWM control can be carried out.

4. Analog -7.5 V Power Output

-7.5 V (A) is output. Feedback for the -7.5 V (A) is provided to the switching controller (Pin (38) of IC501) so that PWM control can be carried out. -7.5 V is output by the linear regulator IC (IC502) in order to ensure output voltage precision.)

5. Analog 3.5 V Power Output

+3.5 V (A) is output. +3.5 V (A) output is so that voltage control can be carried out at the internal circuit of linear regulator IC (IC503).

6. VDD3 Power Output

VDD3 (3.25 V) is output. Feedback for the VDD3 is provided to the swiching controller (Pin (45) of IC501) so that PWM control can be carried out.

7. VDD 1.2 Power Output

VDD 1.2 (1.2 V) is output. Feedback for the VDD 1.2 is provided to the swiching controller (Pin (44) of IC501) so that PWM control can be carried out.

8. VDD 1.8 Power Output

VDD 1.8 (1.8 V) is output. VDD 1.8 output is so that voltage control can be carried out at the internal circuit of linear regulator IC (IC582).

9. Backlight Power Output

Regular current (high brightness: approximately 20 mA, low brightness: approximately 9 mA) is being transmitted to LED for LCD backlight. Feedback for the both ends voltage of registance that is being positioned to in series LED are provided to the switching controller (Pin (42) of IC501) so that PWM control to be carried out.

10. Motor System Power Output

BOOST 4.5 V is output. Feedback for the BOOST 4.5 V output is provided to (Pin (36) of IC501) so that PWM control can be carried out.

1-4. SYA CIRCUIT DESCRIPTION

1. Configuration and Functions

For the overall configuration of the SYA block diagram, refer to the block diagram. The SYA block centers around a 8-bit microprocessor (IC301), and controls camera system condition (mode). The 8-bit microprocessor handles the following functions.
1. Operation key input, 2. backup and clock control in case of no battery, 3. Power ON/OFF control, 4. Storobe condensor charge control, 5. Card, USB and AV jack detection, 6. LED lighting control.

Pin	Signal	I/O	Outline
1	SCK	O	Serial clock
2	AV JACK	I	AV JACK detection
3	NOT USED	-	-
4	NOT USED	-	-
5	HSCON	O	Gyro sensor high speed charge signal
6	BEEP	O	Buzzer
7	LCD PWM	O	LCD backlight brightness current control
8	PW_LED (G)	O	Power LED ON/OFF control
9	VDD2	-	VDD2
10	VSS2	-	VSS2
11	SELF_LED (R)	O	Self timer LED ON/OFF control
12	BACK_LED (R)	O	Back LED (red) ON/OFF control
13	MAIN RESET	O	System reset
14	NAND RESET	O	OneNAND reset
15	SCAN IN0	I	Keymatrix input
16	SCAN IN1	I	Keymatrix input
17	PW_ON	I	POWER key detection
18	PLAY	I	PLAY key detection
19	UTX	O	Debugger
20	NOT USED	-	-
21	WIDE	I	ZOOM WIDE key detection
22	TELE	I	ZOOM TELE key detection
23	NOT USED	-	-
24	NOT USED	-	-
25	OK	I	OK key detection
26	SHUTTER 1st	I	Shutter 1st detection
27	P ON	O	D/D converter (digital system) ON/OFF signal
28	PLLEN	O	PLL oscillation ON/OFF control
29	USB_CNT	I	USB insertion detection
30	SCAN IN3	I	Keymatrix input
31	SCAN IN2	I	Keymatrix input
32	SCAN OUT2	O	Keymatrix output
33	SCAN OUT1	O	Keymatrix output
34	SCAN OUT0	O	Keymatrix output
35	VSS3	-	VSS3
36	VDD3	-	VDD3
37	(DBGP2)	-	Terminal for on-tip debugger
38	(DBGP1/CLK)	-	Terminal for on-tip debugger
39	(DBGP0/DATA0)	-	Terminal for on-tip debugger
40	NOT USED	-	-
41	NOT USED	-	-
42	CARD	I	SD card detection
43	CARD ON	O	Card part pull-up power

44	CHG_ON	O	Strobo charge control
45	COMREQ/ZBOOT	I	Command request
46	BACKUP_CTL	O	Backup battery charge control
47	NOT USED	-	-
48	BAT_TEMP	I	Battery temperature detection
49	BAT_OFF	I	Battery OFF detection signal input
50	SREQ	I	Serial communication request signal
51	SHUTTER 2nd	I	Shutter 2nd detection
52	NOT USED	-	-
53	RESET	I	Backup reset detection
54	XCIN	I	Clock oscillation terminal for clock (32.768 kHz)
55	XCOUT	O	Clock oscillation terminal for clock (32.768 kHz)
56	VSS1	-	VSS1
57	NOT USED	-	-
58	NOT USED	-	-
59	VDD1	-	VDD1
60	BATTERY	I	Battery voltage detection
61	VMONIT	I	Main condensor charging voltage detection
62	TEMP	-	Camera (SD) temperature detection
63	SO	O	Serial data output
64	SI	I	Serial data input

Table 4-1. 8-bit Microprocessor Port Specification

2. Setting of external port and communication

The SYA block carries out overall control of camera operation by detecting the input from the keyboard and the condition of the camera circuits. The 8-bit microprocessor reads the signals from each sensor element as input data and outputs this data to the camera circuits (ASIC) as operation mode setting data. Fig. 4-1 shows the internal communication between the 8-bit microprocessor and ASIC.

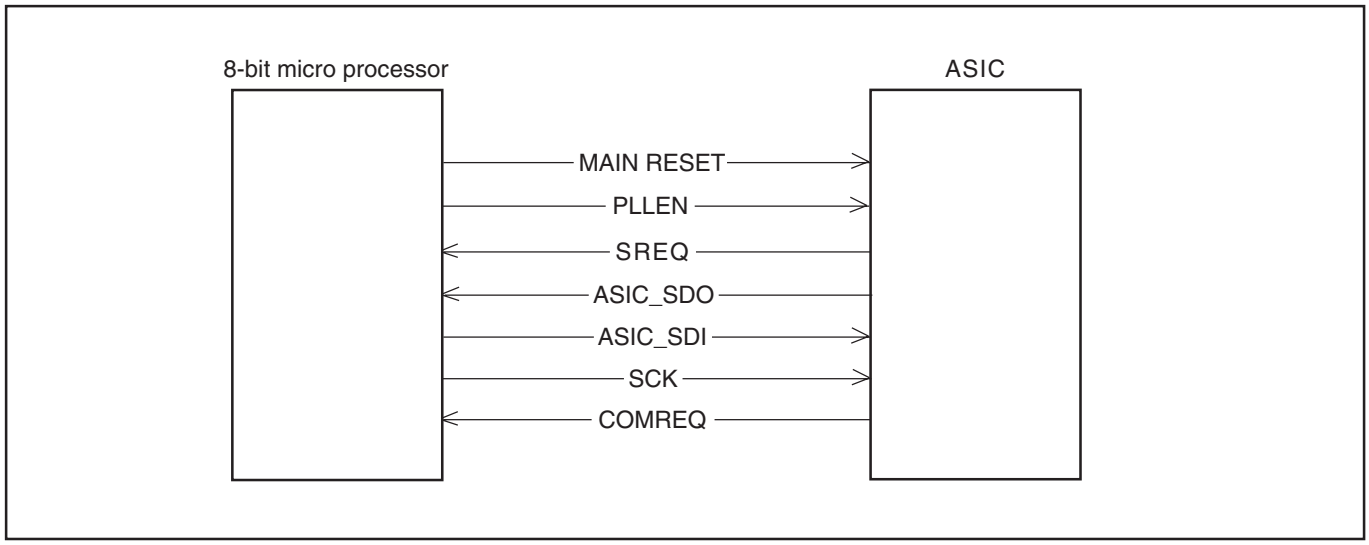


Fig. 4-1 Internal Bus Communication System

3. Key Operaiton

For details of the key operation, refer to the instruction manual.

SCAN OUT \ SCAN IN	0	1	2	3
0	MODE	LEFT	MENU	TEST
1	UP	DOWN	-	PW_TEST
2	-	RIGHT	DEL	-

Table 4-2. Key Operation

4. Power Supply Control

The 8-bit microprocessor controls the power supply for the overall system.

The following is a description of how the power supply is turned on and off. When the battery is attached, IC501 is operating and creating 3.9 V (POWER ON: 3.9 V → 4.5 V), a regulated 3.2 V voltage is normally input to the 8-bit microprocessor (IC301) by IC302, clock counting and key scanning is carried out even when the power switch is turned off, so that the camera can start up again.

When the power switch is off, the 8-bit microprocessor halts 4 MHz of the built-in main clock, and operates 32.768 kHz of subclock.

When the battery is removed, the 8-bit microprocessor halts 4 MHz of the built-in main clock, and operates clock counting by 32.768 kHz of sub clock.

Also, the battery for backup is charged 10 hours from it to be attached.

When the power switch is on, the 8-bit microprocessor starts processing. The 8-bit microprocessor first sets the PON signal at pin (27) to High, and then turn on the power circuit. After PON signal is to High, sets external port of ASIC after approximately 40 ms. According to setting of this external port, carry out setting of the operating frequency and oscillation control in the ASIC. Also, it starts communication with ASIC, and confirms the system is operative.

When the through image is operating, set the PAON signal (ASIC) and PAON4 signal (ASIC) to High and then turn on the CCD. When the through image is playing, set the PAON signal and PAON4 signal to Low and then turn off the CCD. When LCD panel turns on, set BL ON signal (ASIC) to High, and turn on the backlight power.

When the power switch is off, PON, PAON, PAON4 and BLON signals to Low and the power supply to the whole system is halted. The 8-bit microprocessor halts oscillation of the built-in main clock, and set operation mode of clock ocillation.

	ASIC, memory	CCD	8bit CPU	LCD MONITOR
Power supply voltage	1.2 V, 1.8 V 3.2 V	13.0 V, -7.5 V 3.5 V	3.2 V	3.25 V
Power OFF	OFF	OFF	32.768 KHz	OFF
Through image	ON	ON	4MHz	ON
Playback mode	ON	OFF	4MHz	ON

Table 4-3. Power supply control

総合結線図
OVERALL WIRING

CA1

SD

LENS

AV & USB

CN143 (DMA): 12 WP, 11 CARD/WP, 10 CARD, 9 DATA2, 8 DATA1, 7 DATA0, 6 VSS, 5 CLOCK, 4 VDD, 3 VSS, 2 COMMAND, 1 DATA3

CN951 (DMA): 23 Shutter_4, 22 Shutter_3, 21 Shutter_3, 20 Aperture_2, 19 Aperture_1, 18 Zoom_PR_A, 17 Zoom_PR_EK, 16 Zoom_PR_C, 15 Zoom_motor_+, 14 Zoom_motor_+, 13 Zoom_motor_-, 12 Zoom_motor_-, 11 Zoom_PI_C, 10 Zoom_PI_EK, 9 Zoom_PI_A, 8 LD_PI_A, 7 LD_PI_EK, 6 LD_PI_C, 5 LD_motor_A+, 4 LD_motor_B-, 3 LD_motor_B+, 2 LD_motor_A-, 1

CN110 (DMA): 8 USB_VDD, 7 USB D(-), 6 GND, 5 USB D(+), 4 ZAV_JACK, 3 AUDIO-OUT, 2 VIDEO_OUT, 1 GND

SPEAKER
JW184 SP-/WT 1 — SP-
JW183 SP+/RD 1 — SP+
(DMA)

MIC
JW181 MIC/GY 1
JW182 GND/BK 1
(DMA)

BATTERY
PWA: BAT+ CL503, BAT- CL504

CN911 — CN901

CN911		CN901
BACKUPGND	1	1 BACKUPGND
BACKUPBAT	2	2 BACKUPBAT
GND	3	3 GND
LV	4	4 LV
VHLD1	5	5 VHLD1
VHLD2	6	6 VHLD2
GND	7	7 GND
SUB	8	8 SUB
GND	9	9 GND
V1	10	10 V1
V2	11	11 V2
V3A	12	12 V3A
V3B	13	13 V3B
V4	14	14 V4
V5A	15	15 V5A
V5B	16	16 V5B
V6	17	17 V6
V7	18	18 V7
V8	19	19 V8
V9	20	20 V9
V10	21	21 V10
VST2	22	22 VST2
VST1	23	23 VST1
GND	24	24 GND
VL	25	25 VL
GND	26	26 GND
RG	27	27 RG
GND	28	28 GND
+13V(A)	29	29 +13V(A)
GND	30	30 GND
VOUT	31	31 VOUT
GND	32	32 GND
SUBCONT	33	33 SUBCONT
GND	34	34 GND
HL	35	35 HL
GND	36	36 GND
H1	37	37 H1
H2	38	38 H2
GND	39	39 GND

CAA
Z1 Z2

CP1
(DMA)
(CAA)
(PWA)
(SYA)

CN301 (SYA): 1 GND, 2 BAT_T, 3 SELF_LED(R), 4 CHG, 5 FLCTL, 6 VMONIT, 7 AL3.2V, 8 PW_LED, 9 SHUTTER_1st, 10 SHUTTER_2nd, 11 PW_ON, 12 +13V(A), 13 UNREGST, 14 GND

CN541: 1 GND, 2 BAT_T, 3 SELF_LED(R), 4 CHG, 5 FLCTL, 6 VMONIT, 7 AL3.2V, 8 PW_LED, 9 SHUTTER_1ST, 10 SHUTTER_2ND, 11 PW_ON, 12 +13V(A)], 13 UNREGST, 14 GND

JW543 BAT_T

ST1

JW541 XAN — JW542 XKT

TRANS TRIGGER (1, 2, 3)

XAN, TRG, XKT

FLASH REFLECTOR

W1-14000/SG287-JNK

CN171 (DMA): 1 VGL, 2 C21M, 3 C21P, 4 C22M, 5 C22P, 6 C23M, 7 C23P, 8 VGH, 9 C13P, 10 C13M, 11 VCL, 12 VCIOUT, 13 VCC2, 14 C12P, 15 C12M, 16 C11P, 17 C11M, 18 DDVDH, 19 VREG1OUT, 20 GND, 21 DCLK, 22 GND, 23 VSYNC, 24 HSYNC, 25 DB7, 26 DB6, 27 DB5, 28 DB4, 29 DB3, 30 DB2, 31 DB1, 32 DB0, 33 CS, 34 SCL, 35 SDI, 36 IOVCC, 37 VCOML, 38 VCOMH, 39 VDD, 40 VCC1, 41 GND (Z2, Z1)

CN172 (DMA): 1 LCDCA, 2 LCDCA, 3 LCDAN, 4 LCDAN (Z2, Z1)

CN302 (SYA): 1 GND, 2 SCAN IN 2, 3 PLAY, 4 GND, 5 OK, 6 SCAN OUT 2, 7 SCAN IN 1, 8 SCAN OUT 1, 9 SCAN IN 0, 10 SCAN OUT 0, 11 WIDE, 12 TELE, 13 GND (Z2, Z1)

LCD

LCD BACK-LIGHT

SW UNIT

CP1(DMA) 回路図
CP1(DMA) CIRCUIT DIAGRAM

DMA (MAIN)

DMA (LCD)

DMA (LENS)

IC101
EV2LA
QEV2LA------N

SYSTEM ASIC

IC121
K5W1258LCA-DK75
QXXAGB019---N

PROGRAM FLASH
SDRAM

TO PWA

TO CAA

TO LCD
CN171
1AVA21TFL410G

TO LCD BACK-LIGHT
CN172
1AVA21TFL02G

LENS DRIVER

TO LENS
CN951
1AVA21TNZ20G

TO SD
CN143
1AVA21TMB12GG

TO SYA

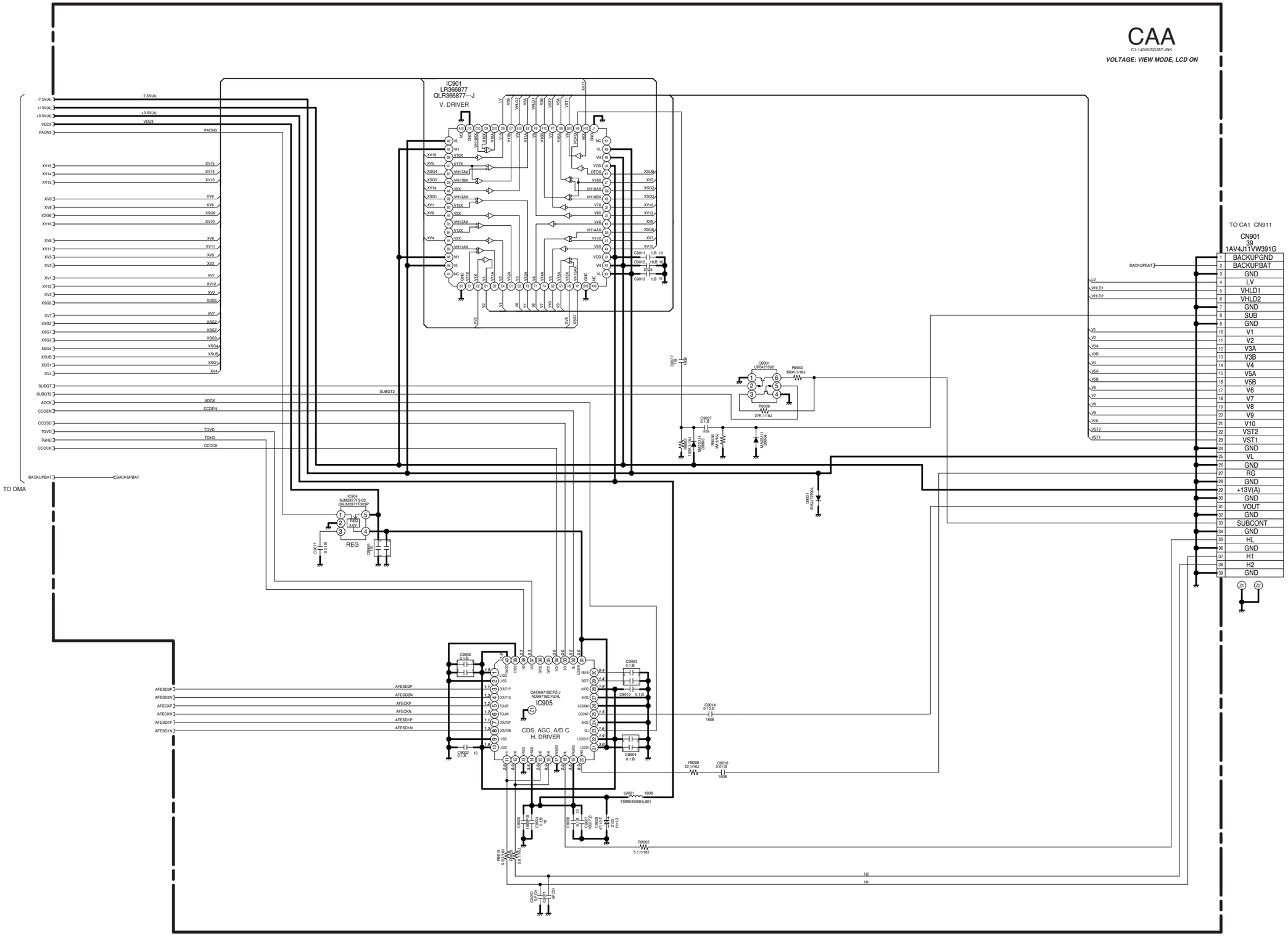
TO MIC

TO SPEAKER

IC181
WM8941SEFL-RV
QWM8941SEFL-J
AUDIO CODEC
VIDEO AMP

TO AV & USB

CP1(CAA) 回路図
CP1(CAA) CIRCUIT DIAGRAM

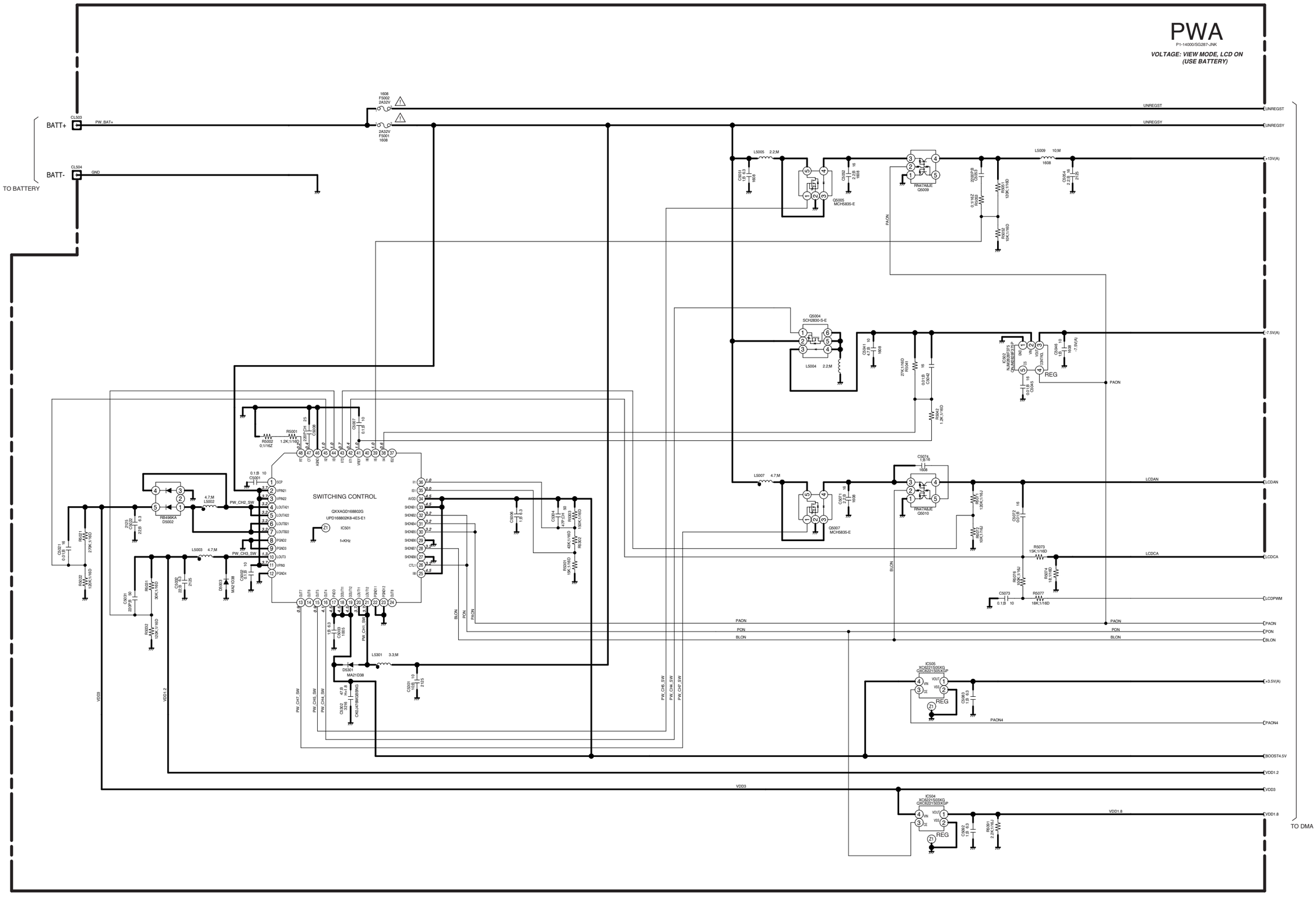


CP2(PWA) 回路図
CP2(PWA) CIRCUIT DIAGRAM

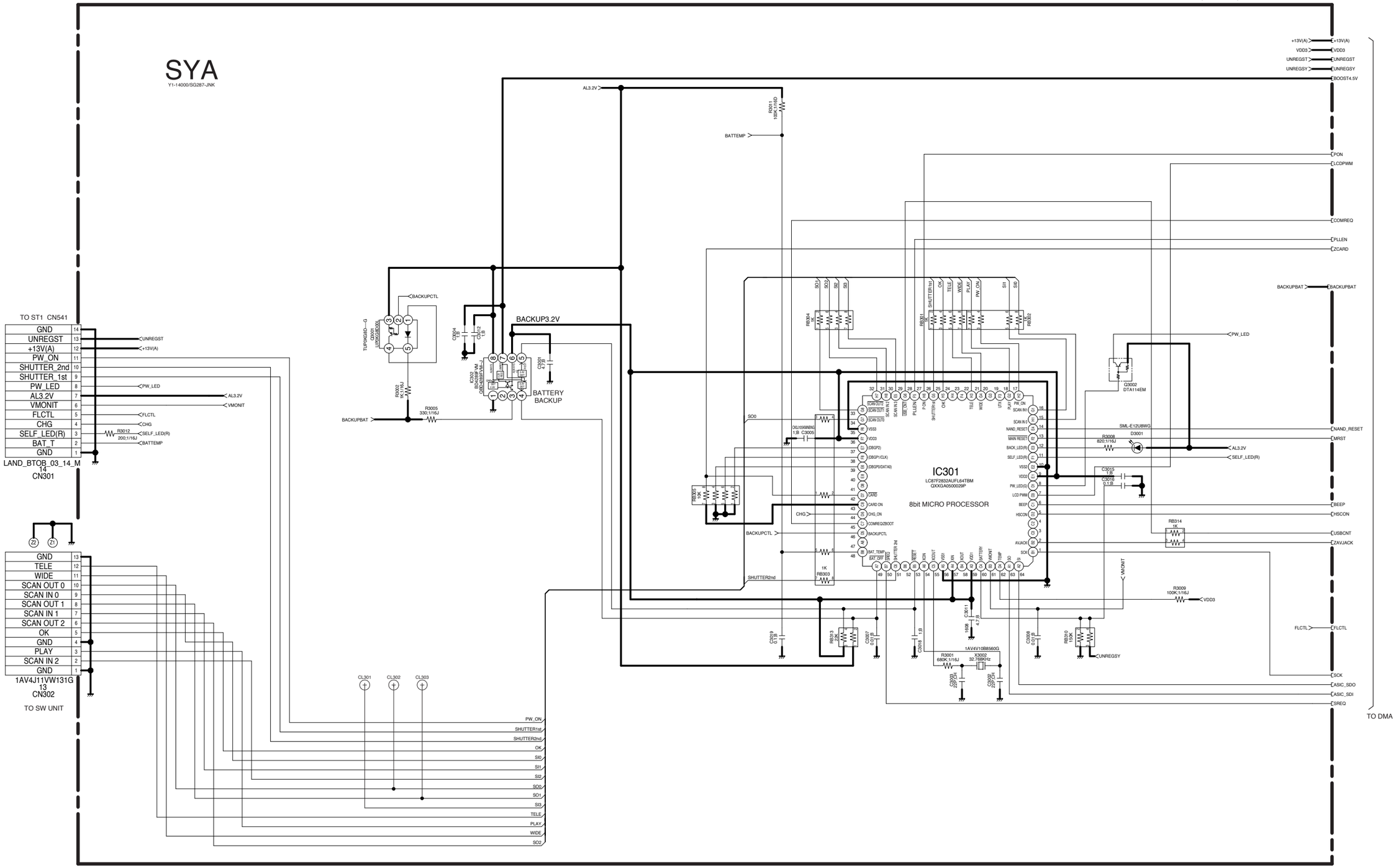
PWA

P1-14000/SQ287-JNK

VOLTAGE: VIEW MODE, LCD ON (USE BATTERY)

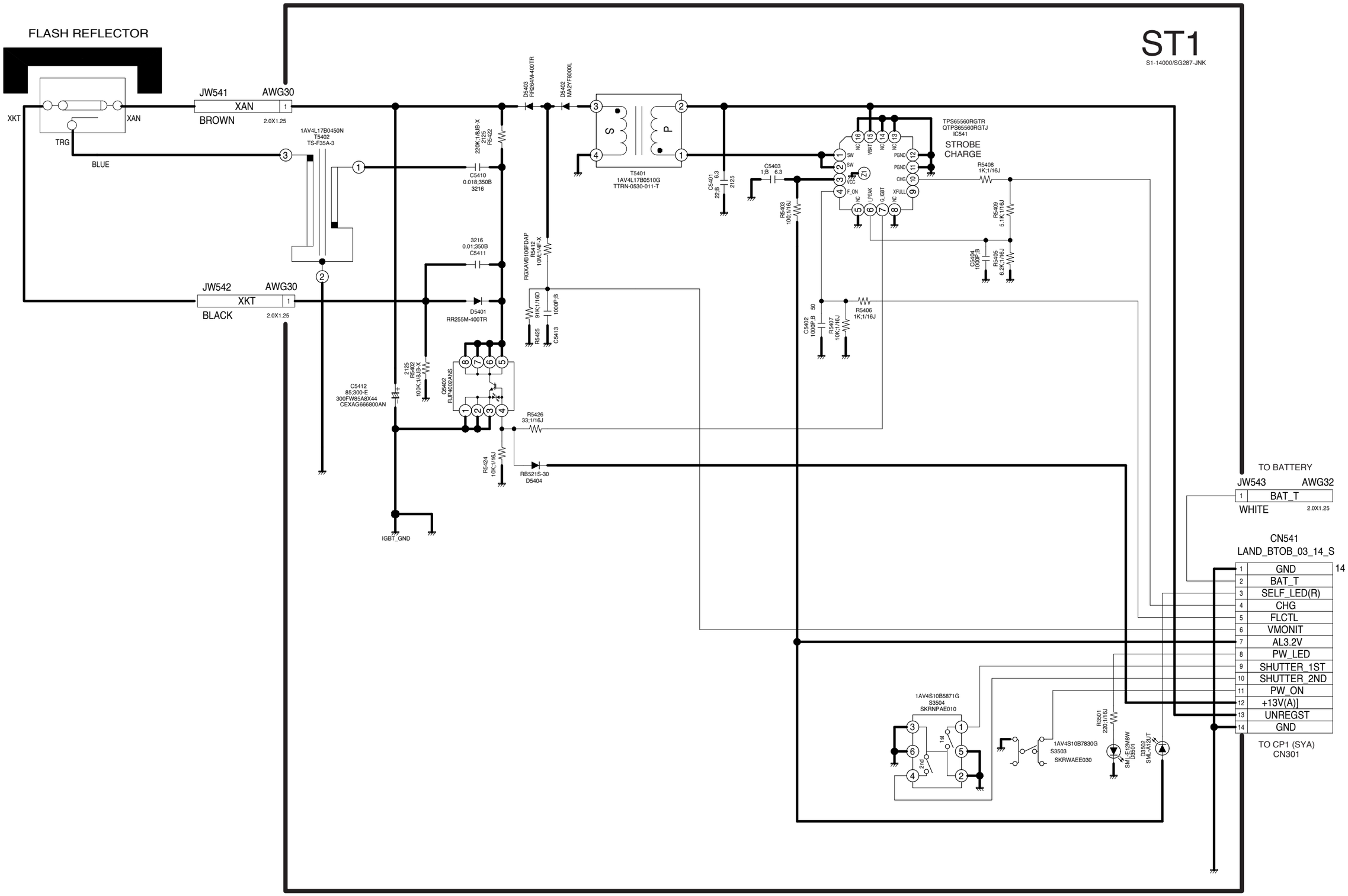


CP1(SYA) 回路図
CP1(SYA) CIRCUIT DIAGRAM

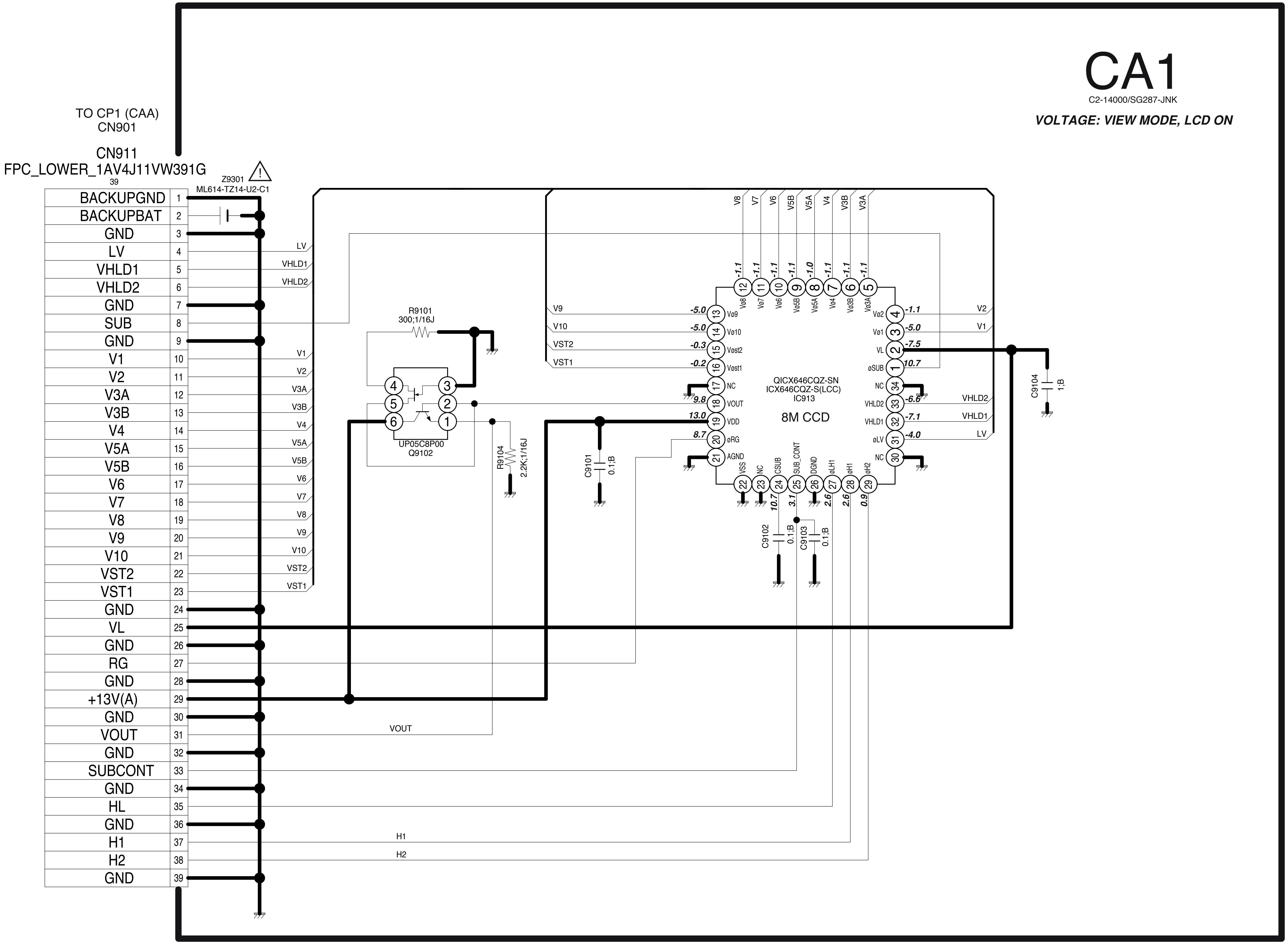


SCAN IN / SCAN OUT	0	1	2	3
0	MODE	LEFT	MENU	TEST
1	UP	DOWN	–	PW_TEST
2	–	RIGHT	DEL	–

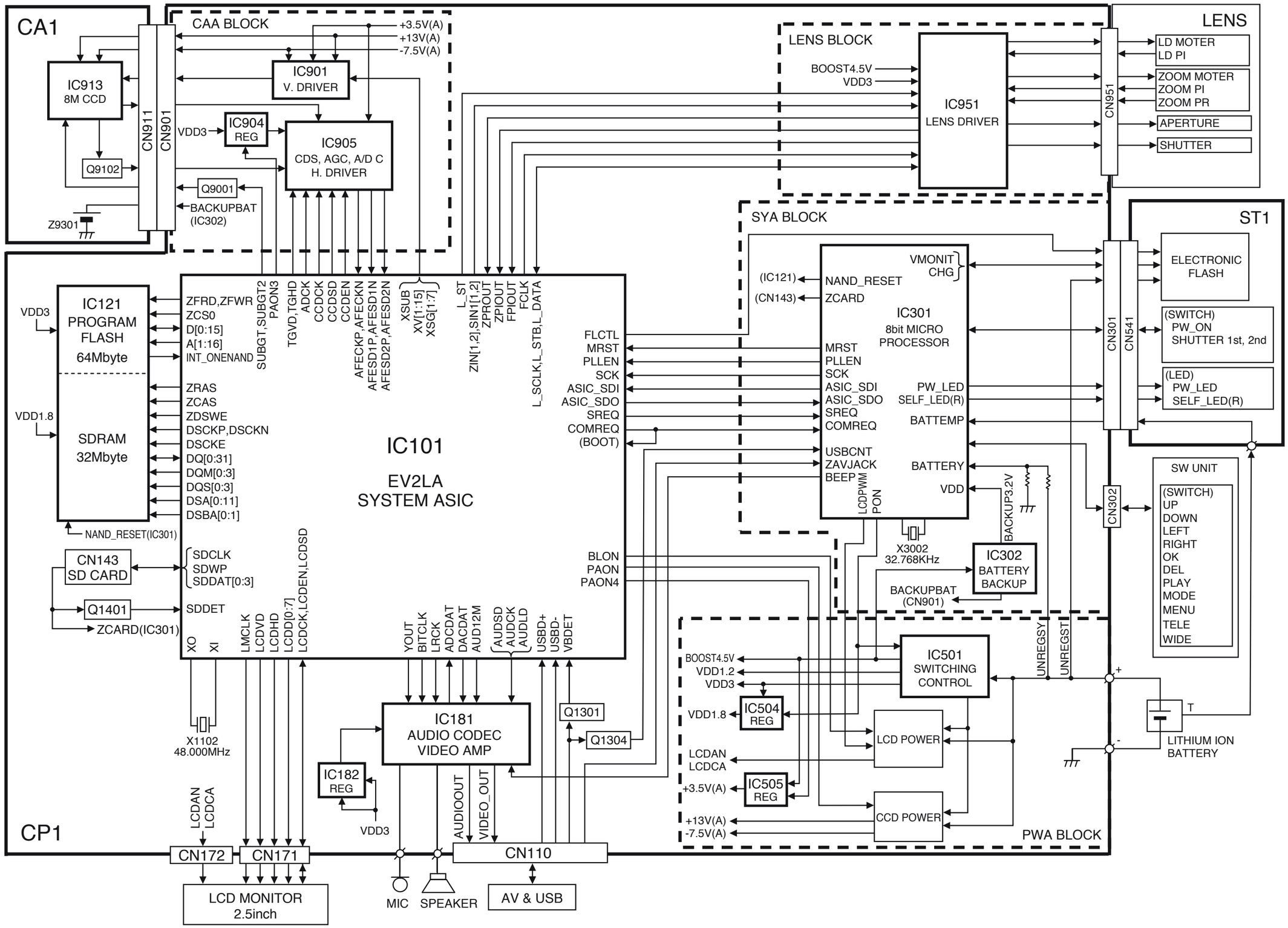
ST1 回路図
ST1 CIRCUIT DIAGRAM



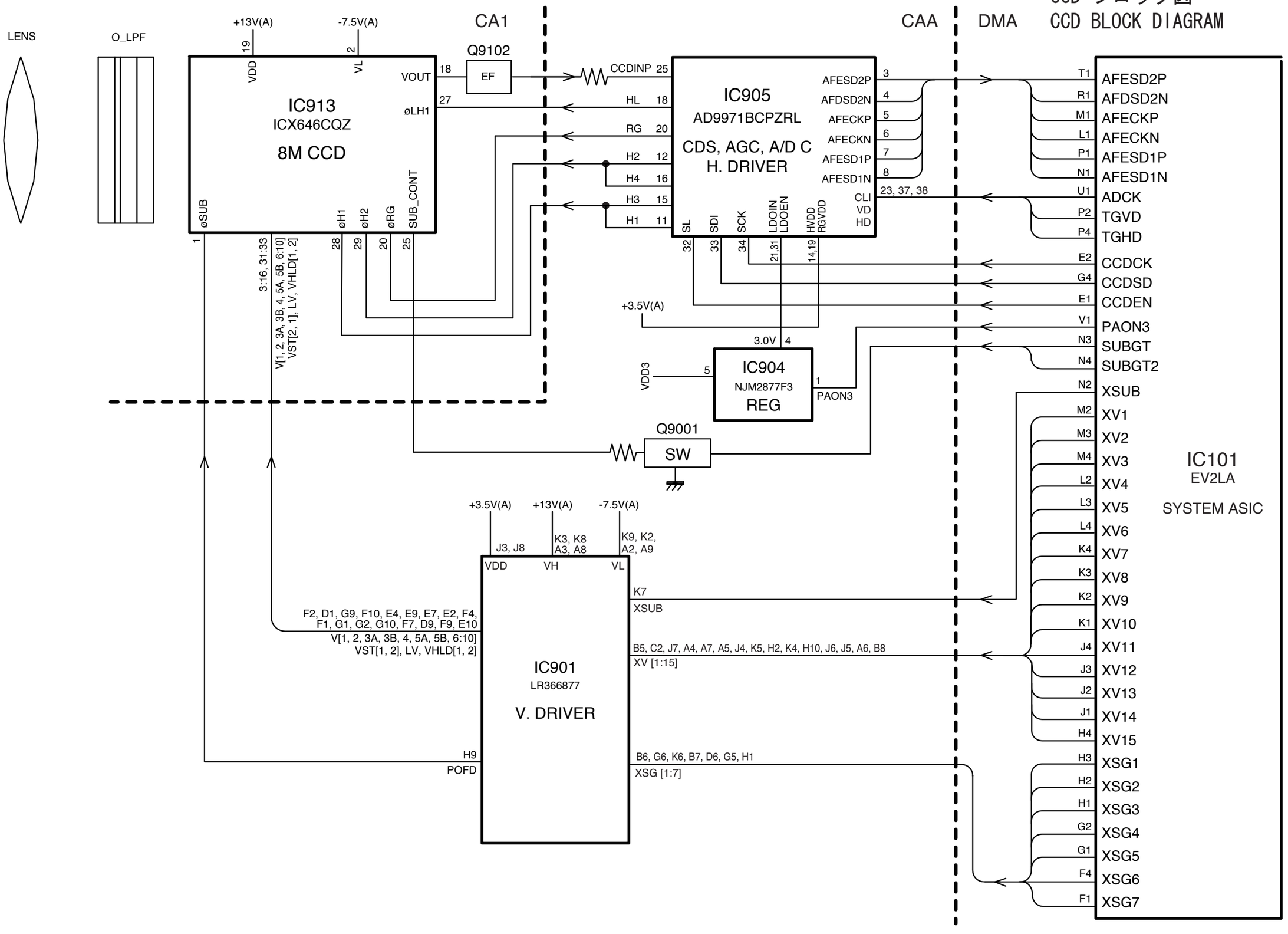
CA1 回路図
CA1 CIRCUIT DIAGRAM



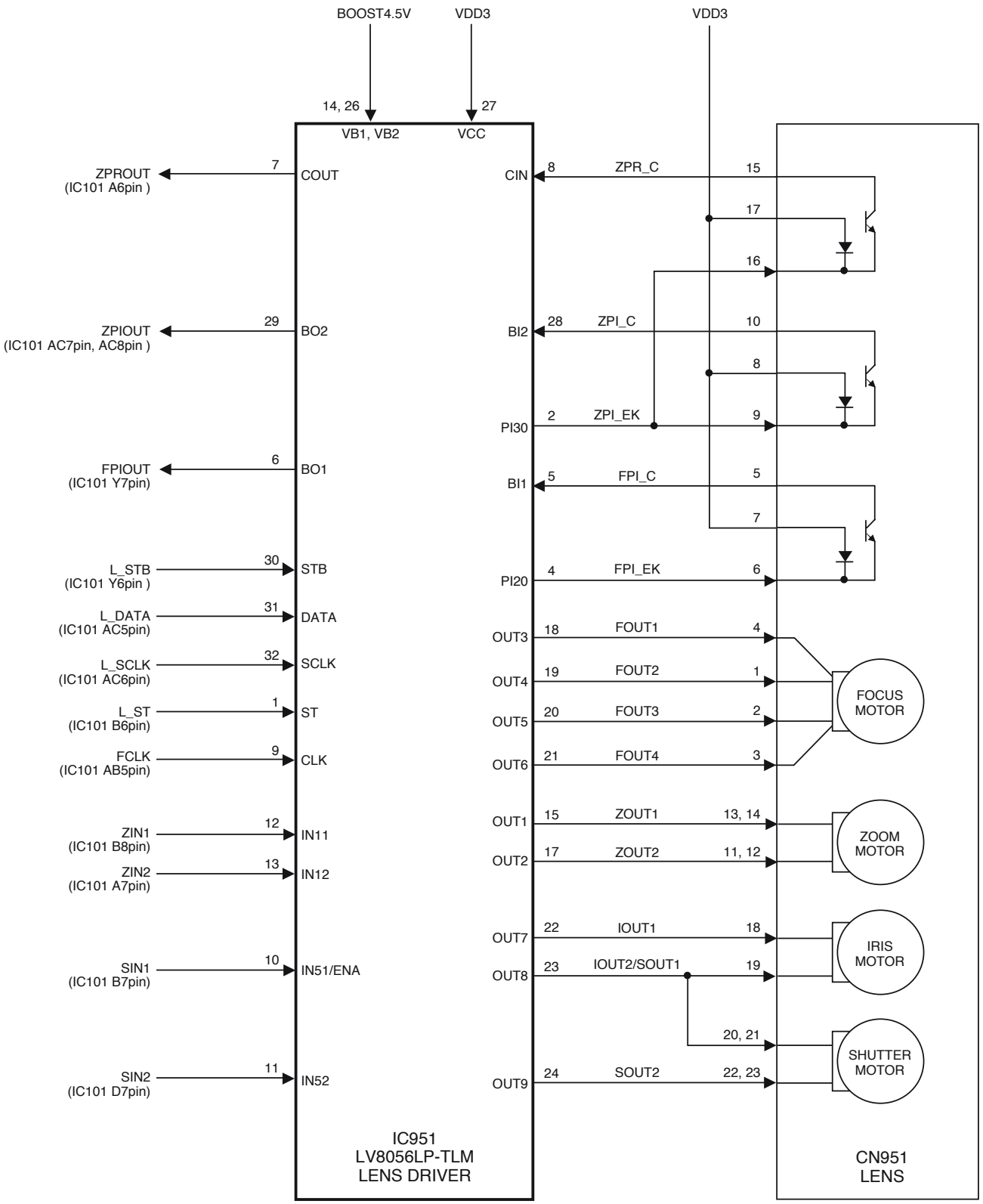
総合ブロック図
OVERALL BLOCK DIAGRAM



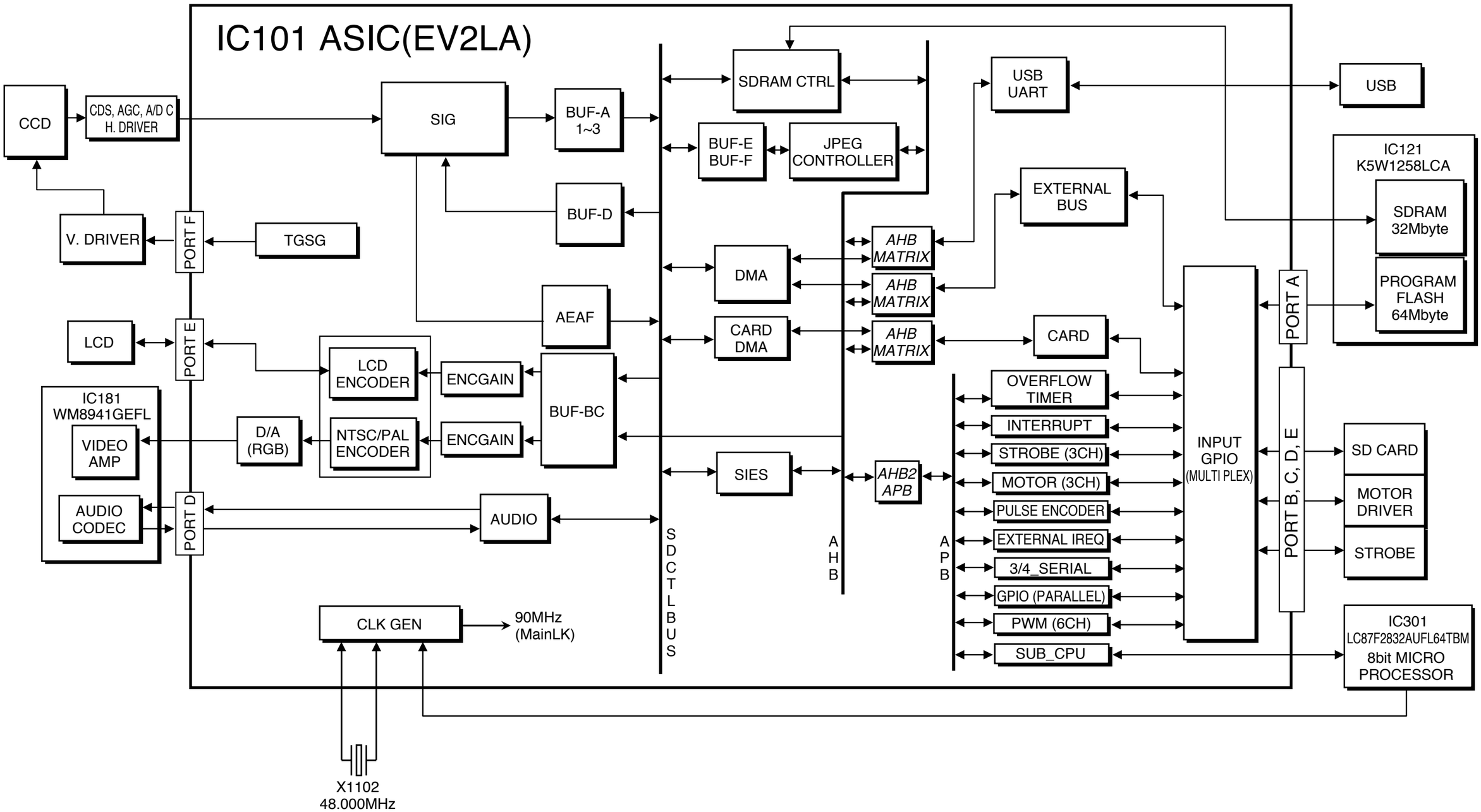
CCD ブロック図
CCD BLOCK DIAGRAM



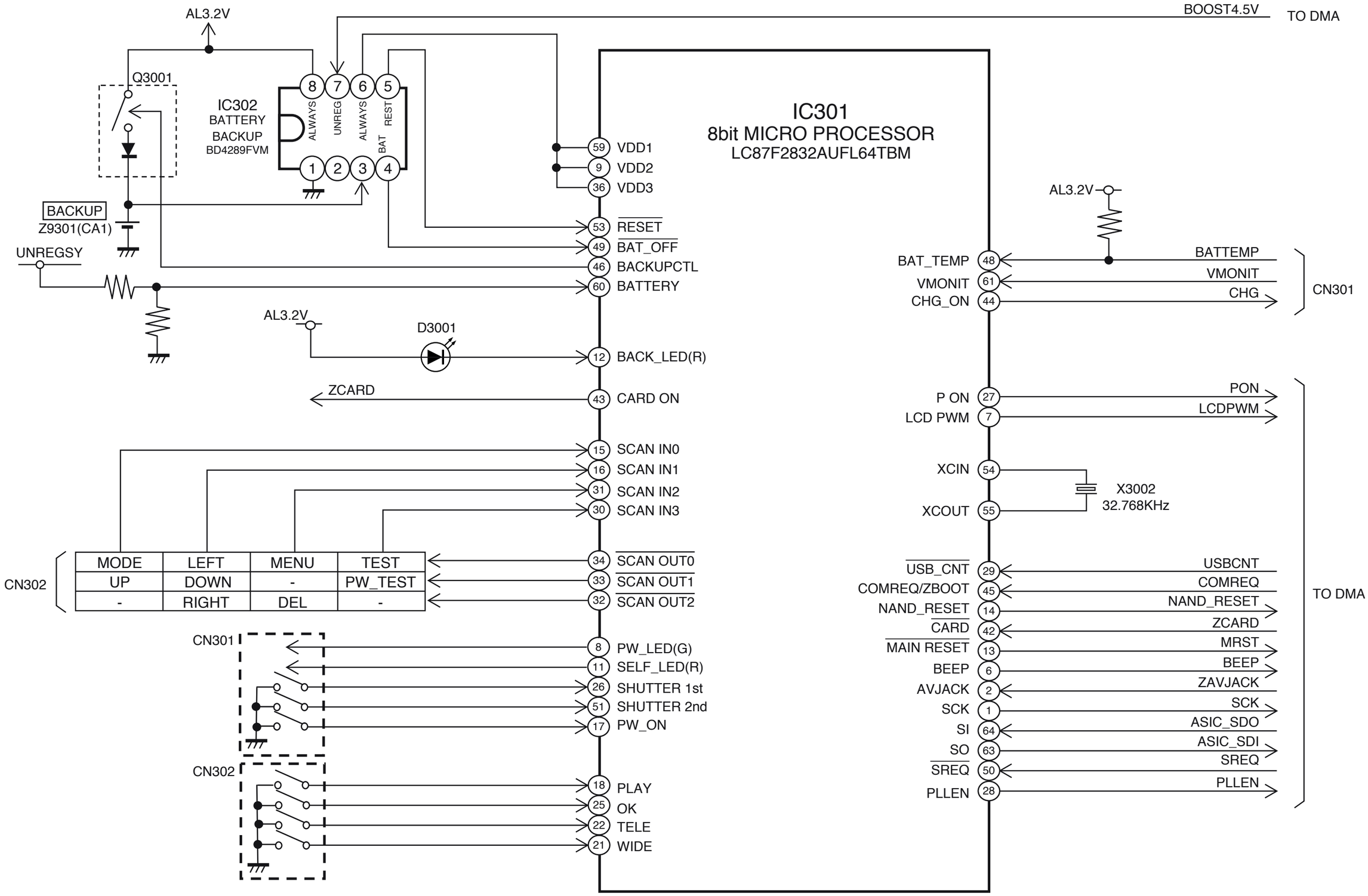
LENS ブロック図
LENS BLOCK DIAGRAM



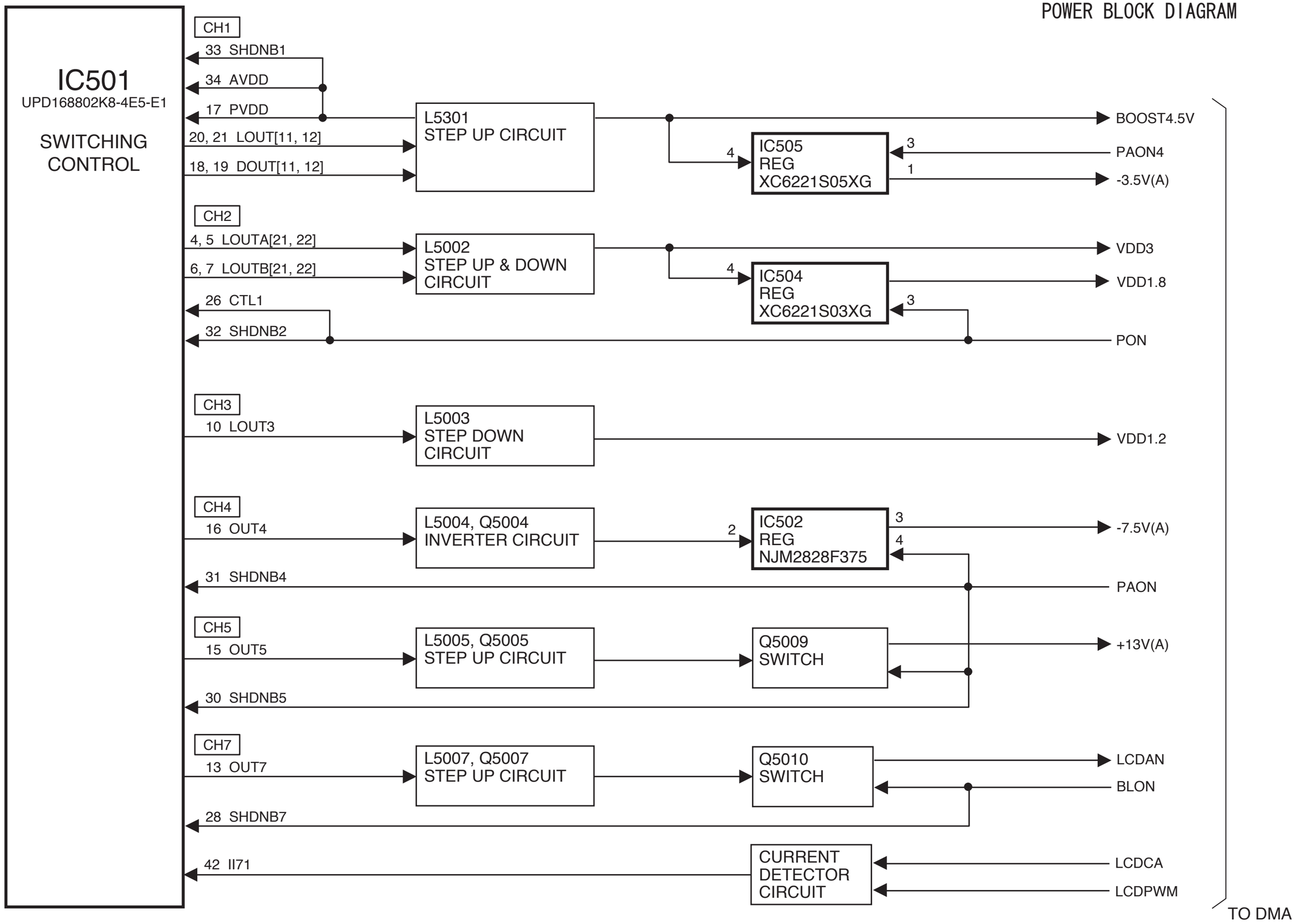
ASIC ブロック図
ASIC BLOCK DIAGRAM



SYSTEM CONTROL ブロック図
SYSTEM CONTROL BLOCK DIAGRAM

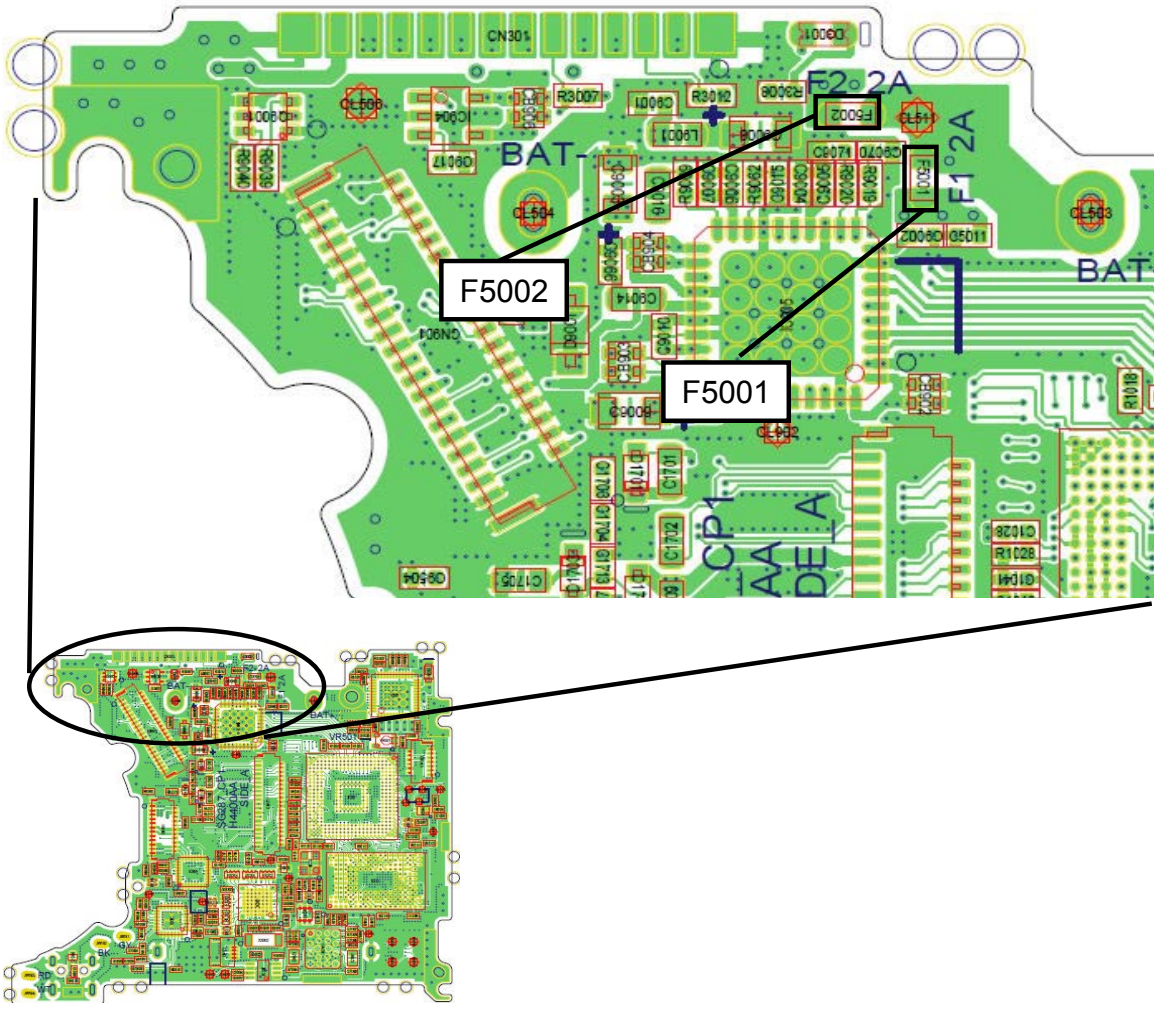


POWER ブロック図
POWER BLOCK DIAGRAM



FUSE ARRANGEMENT

SIDE-A



FUSE	Function of FUSE	Phenomenon when FUSE has blown out	Rating
F5001	Protects when the DC/DC converter circuit malfunctions.	The power is not turned on.	32V/2A
F5002	Protects when the speed light charging circuit malfunctions.	The speed light is not charged.	32V/2A

INSPECTION STANDARDS

Items	Judgment standards	Remarks
External view		
Gap/Difference in height	・General components Gap: 0.2mm or less Difference in height: 0.15mm or less (When the lens-barrel is retracted, gap between the lens-barrel & zoom frame on flattened surface: 0.25mm or less; When the lens-barrel is extended, gap between zoom frame & name plate: 0.2mm or less) ・Gap between upper (decoration) plate & front/rear covers: 0.2mm or less ・When the battery cover is opened/closed: Gap between side cover & the front/rear covers: 0.2mm or less; Gap between front & rear covers at the bottom: 0.3mm or less Difference in height: 0.3mm or less ・The difference in height for the battery cover must not be protruded from the front cover.	Visual observation
Outside and inside status	・No noticeable damage, stain, sink mark, welded mark, unevenness, crack or oil exudation. ・No noticeable noise when pushing the main body. ・No light leakage or reflection from the inside through the joint clearance. (Check it by naked eyes under fluorescent lamp and natural sunshine.) ・No noticeable leakage of light, when Self/SB/ monitor LCD/ power LED lights up. (Check in the dark.)	
Operation/Operability		
Operation/Shaking/ Shock	・No irregularities nor irregular noise while operating. (Shake the camera while operating.) (Lightly hit the camera onto the Linoleum-laid desk while operating.) (Give a palm shock while operating.)	Secondary battery
Operability of buttons / PWS	・No button stuck down. ・Proper clicking feeling on each button. ・"Click" sound is made before turning on SW. (Make a check in normal operation.) (Check it by pushing one-sidedly, pushing lightly, holding down and pushing with chatter.)	

Items	Judgment standards	Remarks
	・Clear clicking feeling and smooth touching. Neither outstanding "caught/rubbed-in-mechanism" touch NOR gap . (Make a check in normal operation.) (If there is a play, do not move the switch to the “OFF” side excessively.)	
Operation/Operability		
Operation touch	・No irregular conditions when operating a lever or knob by hand. (Operate the camera in the actual photography procedure and check the operation touch.)	
Each cover	・When closed, there must not be an extreme play. ・Each cover can be opened/closed without any outstanding "caught-in-mechanism" touch or "rubbed-in-mechanism" touch or abnormal noise. (Open and close each cover and check it.)	
Lens performance		
Focal length	Wide-end position (Design:6.5mm) 6.3 mm ± 5% Tele-end position (Design: 18.65mm) 18.9 mm ± 5%	Focal lengthmeasuring instrument Lens drive tool
Open aperture F No.	Wide-end position (Design: F3.18) F3.1 ± 5% Tele-end position (Design: F6.00) F5.9 ± 5%	Focal lengthmeasuring instrument Lens drive tool
Peripheral light reduction	・Against the center of the screen, the luminance of the nearest periphery should be as shown below. Wide: Infinity 25% or more Near distance 20% or more Tele: 35% or more Difference between right & left: 35% or less ・Against the picture center, the luminance at 70% of the image height must be 55% or more.	Photoshop

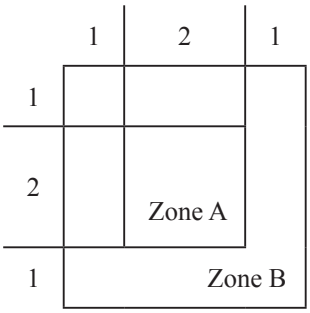
<table>
<tr><th>Items</th><th>Judgment standards</th><th>Remarks</th></tr>
<tr><td>Lens capacity
Ghost/Flare
Point light source
Surface light source</td><td>・No outstanding ghost/flare.
・No outstanding flare at the center.</td><td>Visual observation</td></tr>
<tr><td>Distortion</td><td>・No outstanding deformation.
（Design (∞) W : -1.5%,　T : +0.6%）</td><td>Visual observation</td></tr>
<tr><td>Dust in a picture</td><td>・No outstanding dust in a picture.
・When the picture center (within the circle whose diameter is 80% of the short side) is Zone I and its outside is Zone II, the light reduction against the periphery must be as follows :
<table>
<tr><td></td><td>a</td><td>b</td></tr>
<tr><td>Zone Ⅰ</td><td>4 or less</td><td>0</td></tr>
<tr><td>Zone Ⅱ</td><td>10 or less</td><td>2 or less</td></tr>
</table>
a : 1.5% or less
b : More than 1.5% and less than 3.0%</td><td>Photoshop
CRT monitor
PC</td></tr>
<tr><td>Lens barrel
Zoom / Focus</td><td>・No abnormal action (for example, the unit operates one-sidedly or its operation is not smooth or it is caught).
(As changing the camera's posture, check it in all the directions.)</td><td>Visual observation</td></tr>
<tr><td>AF
Distance measurement operation</td><td>・In the case of normal AF: Focus must be fit at the picture center.
・In the case of the out-of-focus object: Focus must be fit at the 2m point.
・In the case of the scene mode: Focus must be fit in the selected area.</td><td>Visual observation</td></tr>
<tr><td>Shortest photograph distance
Normal
Macro</td><td>Focus must be fit at the following distance.
・Z00 ～ Z12 60cm ～ 1m
・Z00 ～ Z01 10cm</td><td>Tape measure
EIAJ chart</td></tr>
<tr><td>Shooting with a speed light
Light adjustment accuracy</td><td>・Tele-end: 0.5 ～ 2.8m
・Wide-end: 0.5 ～ 5.3m
In the above range, 0.2 ± 0.5 EV or less
(Shooting mode: AUTO Max. sensitizing when ISO800, Speed light: Anytime flash)</td><td>Standard reflection plate</td></tr>
</table>

Items	Judgment standards	Remarks
Guide No. FULL (ISO100・m)	・5.2 ± 0.4 EV (Charge for 10 seconds with the new secondarybattery and perform measurement within 1 second.)	Flash meter Secondary battery
Recycle time	・Within 6 seconds ・Charge a new rechargeable battery for 10 seconds and carry out full flashing within 1 second. Then, measure the time taken until the speed light LED finishes blinking while pressing lightly the shutter release button (including the ON/OFF time of the monitor LCD).	Stop watch Secondary battery
Wrong flash	・Wrong flash must not occur. [Check by loading/unloading a battery, giving a light shock and operating mode buttons except S2 (release button).]	Secondary battery
Image quality		
Resolution in AF	The resolution must correspond to the following values in all the postures of the EIA J chart evaluation. < High quality of image > Center : 1150 TV pcs or more. Periphery : 750 TV pcs or more. ・Take a picture on condition that aperture is “open” in the AUTO mode and image quality priority mode. ・Equip the 5100K viewer with a chart on condition that the distance of 0.3m or more is set for the whole area and shoot an object in the full range of angle of view. ・Then, open the recorded image data file through Photoshop and check the resolution visually. ・Check each posture and the difference of zoom reciprocation. ・Take a picture in each quality mode. ・Measure the TV resolution lines at center.	EIAJ chart Photoshop Siemens chart
Resolution in "Macro"	Center : 950 TV lines or more. (Take a picture at "close" distance W and T and in the high image quality mode.) (Check the resolution at "close" distance (W(Z00) ～ Z01 : 10cm, Z03 : 15cm, Z06・Z08・Z11 : 40cm and T (Z12) : 60cm).)	EIAJ chart Photoshop Siemens chart

Items	Judgment standards	Remarks
Infinity set by manual	・The resolution must correspond to the following value in the whole zoom area. Center horizontal/vertical: 950 TV pcs or more. (Take a picture for the whole zoom area in the high image quality mode.) (Shoot the infinity collimator image on condition that aperture is open in the scene distance view/night view mode and the image quality priority mode.) (Then, open the recorded image data file through Photoshop and check the resolution visually.)	Infinity chart
AF (10 ～ 0.3m)	・The resolution must correspond to the following value in the whole zoom area. Standard of quality performance when AF (10 ～ 0.3m): 1150TV lines or more	
AF (0.3 ～ 0.04m)	・The resolution must correspond to the following value in the whole zoom area. Center horizontal/vertical: 1000 TV pcs or more. (Take a picture for the whole zoom area in the high image quality mode.) (Measure the TV resolution lines at center.) (Check each posture and the difference of zoom reciprocation.)	
Out of focus	<Out of focus> (The whole zoom area) Center horizontal/vertical: more than 1000 TV lines. (Measure the TV resolution lines at center.) (Check each posture and the difference of zoom reciprocation.) [Put a chart at the distance of 2m, set it in the out of focus condition, and shoot it. (Use a white paper for setting the out-of-focus condition.)]	EIAJ chart Photoshop Siemens chart

Items	Judgment standards	Remarks
Gradation/luminance level	[Histogram's gray average value] ・Black: 12 ± 5 Gray: 150 ± 10 White: 225 ± 15 ・Equip the 5100K viewer with a scale and shoot an object in the full range of angle of view while the AUTO mode and the image quality priority mode are set. ・Open the recorded image data file through Photoshop and pick up a measurement section with the each color (its central area 64 × 64 pixels) with the rectangle selector tool. ・Read the histogram's gray value and the gray standard deviation. ・Area to be measured Luminance level: Upper left 1 step: Black, 6 steps: Gray, Center: White Lower left 6 steps: Gray, 11 steps: Black	5100K viewer ITE γ 0.45 Gray scale (standard) Photoshop
Noise	[Histogram's standard deviation] ・ISO64 Max. standard deviation of each R/G/B/Y: 3.5 or less ・ISO400 Max. standard deviation of each R/G/B/Y: 6.0 or less ・Measurement section Upper left 2 step: Black, 6 steps: Gray, Lower left 6 steps: Gray, 11 steps: Black	5100K viewer ITE γ 0.45 Gray scale (standard) Photoshop

Items	Judgment standards	Remarks
Color reproduction	(1) Put the image mode back on the initial setting. (2) Set "Macbeth" chart in the standard light-source equipment. Setting position: Approx. 25cm-distance from the bottom of the equipment to the center of the chart (3) Set ISO sensitivity to "64". (4) Under light source, set the WB to "Preset" on the Neutral 5 of "Macbeth" chart (3rd from the right of the bottom) at TELE-end position. (Estimated distance: 3cm） (5) At WIDE zoom position, set the distance from a object of shooting so that "Macbeth" chart occupies approx. 1/4 area of the monitor frame. (6) "Macbeth" chart must be in the center of the screen. (7) Be careful so that others than "Macbeth" chart do NOT appear in the image. (8) Shoot by cancelling flashlight. (9) Read the value of RGB in the center of each color, and convert to "L*", "a*", and "b*". (10) In measuring, set the rectangle selector tool (64 × 64 pixels). ・Through general-purpos software such as Photoshop, read the average of RGB on the information palette. Camera settings: AF area: Center VR: OFF Read each RGB value of "13 blue", "14 green", "15 red", "16 yellow", "17 magenta", and "18 cyan" in the above "64×64" size. Then, confirm whether the data converted to "L*", "a*", and "b*" is " ⊿C ≦ 6", compared with the reference value.	Color bar chart Photoshop
LCD and others		
Monitor LCD View	・Brightness: Min170cd/m^2 (Typ. 250cd/m^2) ・Color reproduction Wx = 0.31 ± 0.05 Wy = 0.33 ± 0.05 ・The monitor LCD must comply with the SY monitor LCD performance standard.	Visual observation AC power supply

<table>
<tr><th>Items</th><th>Judgment standards</th><th>Remarks</th></tr>
<tr><td>Visual field ratio</td><td>・No shading in the LCD display range.
・The inclination of the image and the monitor frame must be 0.5° or less.
・The vertical difference and horizontal difference of the black belt width in the image periphery must be within 0.3mm.
・Video image on the monitor: 96 to 100%
・Play-back image: 96 to 100%</td><td>Visual observation</td></tr>
<tr><td>Dot defect</td><td>・Reproduce each single color of R, G, B and white and check visually.
 

・Defect in line : None
・Defect in pixels : Following figures or less.
<table>
<tr><td></td><td>Bright Pixels</td><td>Dim Pixels</td></tr>
<tr><td>Zone A</td><td>0</td><td>2</td></tr>
<tr><td>Zone B</td><td>1</td><td>2</td></tr>
<tr><td>Total</td><td colspan="2">2</td></tr>
</table>
・ Bright pixels : Visible through the 5% ND filter
・ Dim (black) pixel: Dark appearing pixels
・ Continuous dim pixels: Counted as one up to 2 pixels.</td><td>Visual observation</td></tr>
<tr><td>Self-LED
LED blinks/lights</td><td>・Make sure that it is possible to check the blinking status.</td><td>Stop watch</td></tr>
</table>

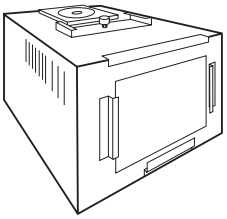
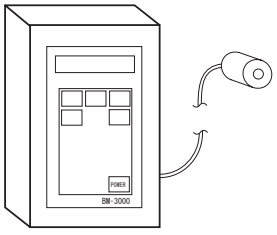
Items	Judgment standards	Remarks
Electric characteristics		
Consumption current Stand-by (idle) current	・When card is not used: 0.27mA or less (when the power switch is OFF) ・When card is used: 0.39mA or less (when the power switch is OFF)	Constant voltage power supply Ammeter
Start (Photography)	・12mA or less (at "Sleep") ・0.75mW or less (when the power switch is OFF ・1.1A or less (AUTO start monitor is ON.)	
B. C voltage		
Level 1	・3.63 ± 0.1V	
Level 2	・3.23 ± 0.1V	
Level 3	・2.78 ± 0.1V (Power OFF)	
When voltage increases		
Level 1	・3.8 ± 0.1V	
Level 2	・3.4 ± 0.1V	
Regulation for the battery "half" mark	・85 + 5 % (23℃) ・65 ± 10 % (10℃) ・Connect the constant-voltage power supply, and decrease the power supply voltage until 1 sec. before the measurement. Then, measure the voltage under the following conditions (excluding "When voltage increases"). ・Level 1 : The battery "half" mark lights on the monitor LCD. ・Level 2 : The "no battery capacity" warning appears on the monitor LCD. ・Level 3 : Power OFF ・As for Level 1 voltage, measure the voltage when half-pressing the shutter release button, too. ・As for measuring the voltage at "Level 3", the power must be automatically turned off 30 seconds after reaching "Level 2". No regulation on voltage.	

Items	Judgment standards	Remarks
	・When voltage increases, connect the constant-voltage power supply and check the voltage at Level 3 ("Battery exhausted"). Then, turn off the power, increase the voltage in increments of 0.1V and turn the SW from OFF to ON. Measure the voltage under the following conditions. (When voltage changes, be sure to turn off the power.) ・Level 1 : The battery mark is turned off on the monitor LCD. ・Level 2 : The battery "half" mark lights on the monitor LCD.	

工具一覧表　Tool List

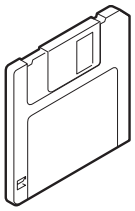
※：新規工具

※：New tool

工具番号 Tool No.	名　称 Name	備　考 Remarks
J63080	パターンボックス　LV-1450DC Pattern Box　LV-1450DC 	共通 Common E2100, E2200, E3100, E3200, E3500, E3700, E4100, E4200, E4300, E4600, E4800, E5100, E5200, E5400, E5600, E5700, E5900, E7600, E7900, E8400, E8700, E8800, S1, S2, S3, S4, S5, S6, S7, S7c, S8, S9, S10, S50, S50c, S51, S51c, S200, S500, S510, S700, P1, P2, P3, P4, P5000 P5100, P50 L1, L2, L3, L5, L6, L12, L14
J63080A	交換用ハロゲンランプ（LV-1450DC 用） Spare Harogen Lamp　(For LV-1450DC) 	LV-1450DC Exclusive
J63081	カラーメータ（ミノルタカラーメータⅢF） Color Meter(Minolta Color meter Ⅲ F) 	共通 Common
J63068	輝度計 BM-3000 Luminance Meter BM-3000 	共通 Common

※：新規工具

※：New tool

工具番号 Tool No.	名　　称 Name	備　考 Remarks
※ J65098	キャリブレーションソフト (Ver.1.59) Calibration Software (Ver.1.59) 	共通 Common E775, E885, E995, E2100, E2200, E2500, E3100, E3200, E3500, E3700, E4100, E4300, E4500, E4600, E4800, E5000, E5100, E5400, E5600, E5700, E5900, E7600, E7900, E8400, E8700, E8800, S1, S2, S3, S4, S5, S6, S7, S7c,S8, S10, S500, S510, S700, S200 L2, L3, L6, L12, L14 P1, P2, P50, P5000, P5100
J63090	コリメータ (C-DSC) Collimator (C-DSC) 	共通 Common
MZ-800SEL	ドライサーフ　MZ-800SEL DRY SURF　MZ-800SEL	