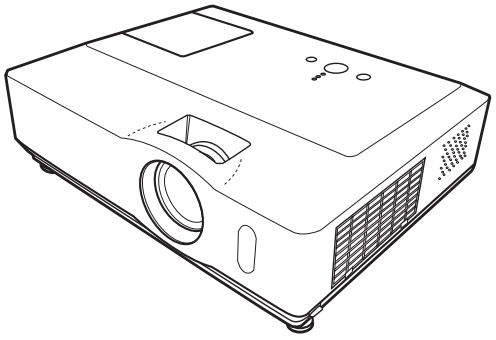
HITACHI

SM0313

SERVICE MANUAL

ED-X31EP(C14B-20)
ED-X33EP(C14B-20)
ED-X31GEP(C14D-20)
ED-X33GEP(C14D-20)



⚠ Warning

The technical information and parts shown in this manual are not to be used for: the development, design, production, storage or use of nuclear, chemical, biological or missile weapons or other weapons of mass destruction; or military purposes; or purposes that endanger global safety and peace. Moreover, do not sell, give, or export these items, or grant permission for use to parties with such objectives. Forward all inquiries to Hitachi Ltd.

Caution

Be sure to read this manual before servicing. To assure safety from fire, electric shock, injury, harmful radiation and materials, various measures are provided in this Hitachi Multimedia LCD Projector.
Be sure to read cautionary items described in the manual to maintain safety before servicing.

Service Warning

1. When replacing the lamp, avoid burns to your fingers, the lamp becomes very hot.
2. Never touch the lamp bulb with a finger or anything else. Never drop it or give it a shock. They may cause bursting of the bulb.
3. This projector is provided with a high voltage circuit for the lamp. Do not touch the electric parts of the power unit (circuit) or the power unit (ballast) after turning on the projector.
4. Do not touch the exhaust fan during operation.
5. The LCD module assembly is likely to be damaged. If replacing the LCD LENS/PRISM assembly, do not hold the FPC of the LCD module assembly.
6. Use the cables which are included with the projector or as specified.

Contents

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

Multimedia LCD Projector

March 2008

1. Features

- High Brightness
- Low Noise
- Rich Connectivity
- Powerful Sound

2. Specifications

Liquid crystal panel	Drive system		TFT active matrix	
	Panel size		1.6cm(0.63 type)	
	Number of pixels		1024 (H) x 768 (V)	
Lamp			220W UHB	
Computer signal	Computer IN	1	Video : Analog 0.7Vp-p(75Ω termination) H/V. sync. : TTL level (positive/negative) Composite sync. : TTL level	
		2		
	Computer OUT		Video:Analog 0.7Vp-p, 75Ω output impedance (positive) H/V. sync.: TTL level (positive/negative) Composite sync.: TTL level	
VIDEO signal	VIDEO IN		1.0Vp-p (75Ω termination)	
	S-VIDEO IN		Y signal: 1.0±0.1Vp-p, (75Ω termination) C signal: 0.286±0.1Vp-p (NTSC burst signal, 75Ω termination) 0.3±0.1Vp-p (PAL/SECAM burst signal, 75Ω termination)	
	COMPONENT VIDEO	Y	1.0±0.1Vp-p, 75Ω termination (positive)	
		C_B/P_B	0.7±0.1Vp-p, 75Ω termination (positive)	
		C_R/P_R	0.7±0.1Vp-p, 75Ω termination (positive)	
AUDIO signal	AUDIO IN 1		200mVrms, 47kΩ or more (max. 2Vrms)	
	AUDIO IN 2			
	AUDIO IN 3 L/R		200mVrms, 47kΩ or more (max. 2Vrms)	
	AUDIO OUT		output impedance 1kΩ (max. 2Vrms)	
RS232C	INPUT		Hi: Max. 20V, Min. 2.6V	Lo: Typ. –20.0V, Max. 0.8V
	OUTPUT		Hi: Typ. 8.0V, Min. 5.0V	Lo: Typ. –7.0V, Max. –5.0V
USB (Mouse)	I/O Level (differential)	Amplitude of differential signal	$\lvert (D^+) - (D^-) \rvert > 0.2V$	
			$D^+ > 2.8V$, $D^- < 0.3V$ or $D^+ > 2.8V$, $D^- < 0.3V$	
		Amplitude of signal	INPUT: “L” = 0.8V or less, “H” = 2.0V or more	
			OUTPUT: “L” = 0.3V or less, “H” = 2.8V ~ 3.6V	
Audio output			7W	
Power supply			AC100~120V/3.5A, AC220~240V/1.5A	
Power consumption			320W	
Dimensions			340 (W) x 100 (H) x 270 (D) mm (Not including protruding parts)	
Weight			3.5kg	
Temperature range			Operation : 5~35°C Storage : -20~60°C	
Accessories			Remote control x1 RGB cable x 1 Power cords x 2 Batteries x 2	User’s manuals x 1 LENS CAP and STRAP x 1 Audio/Video cable x 1

1. Features

- High Brightness
- Low Noise
- Rich Connectivity
- Powerful Sound

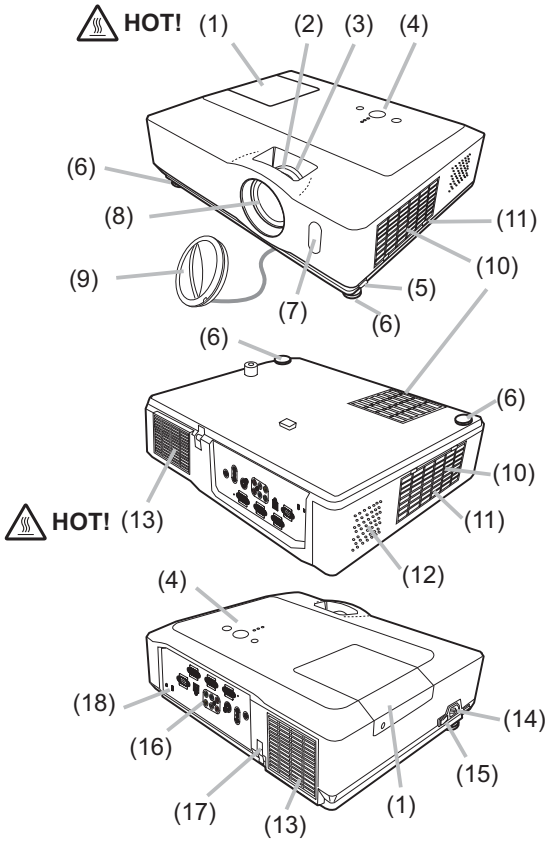
2. Specifications

Liquid crystal panel	Drive system		TFT active matrix	
	Panel size		1.6cm(0.63 type)	
	Number of pixels		1024 (H) x 768 (V)	
Lamp			230W UHB	
Computer signal	Computer IN	1	Video : Analog 0.7Vp-p(75Ω termination) H/V. sync. : TTL level (positive/negative) Composite sync. : TTL level	
		2		
	Computer OUT		Video:Analog 0.7Vp-p, 75Ω output impedance (positive) H/V. sync.: TTL level (positive/negative) Composite sync.: TTL level	
VIDEO signal	VIDEO IN		1.0Vp-p (75Ω termination)	
	S-VIDEO IN		Y signal: 1.0±0.1Vp-p, (75Ω termination) C signal: 0.286±0.1Vp-p (NTSC burst signal, 75Ω termination) 0.3±0.1Vp-p (PAL/SECAM burst signal, 75Ω termination)	
	COMPONENT VIDEO	Y	1.0±0.1Vp-p, 75Ω termination (positive)	
		C_B/P_B	0.7±0.1Vp-p, 75Ω termination (positive)	
		C_R/P_R	0.7±0.1Vp-p, 75Ω termination (positive)	
AUDIO signal	AUDIO IN 1		200mVrms, 47kΩ or more (max. 2Vrms)	
	AUDIO IN 2			
	AUDIO IN 3 L/R		200mVrms, 47kΩ or more (max. 2Vrms)	
	AUDIO OUT		output impedance 1kΩ (max. 2Vrms)	
RS232C	INPUT		Hi: Max. 20V, Min. 2.6V	Lo: Typ. –20.0V, Max. 0.8V
	OUTPUT		Hi: Typ. 8.0V, Min. 5.0V	Lo: Typ. –7.0V, Max. –5.0V
USB (Mouse)	I/O Level (differential)	Amplitude of differential signal	$\lvert (D^+) - (D^-) \rvert > 0.2V$	
			$D^+ > 2.8V$, $D^- < 0.3V$ or $D^+ > 2.8V$, $D^- < 0.3V$	
		Amplitude of signal	INPUT: “L” = 0.8V or less, “H” = 2.0V or more	
			OUTPUT: “L” = 0.3V or less, “H” = 2.8V ~ 3.6V	
Audio output			10W x 1	
Power supply			AC100~120V/3.5A, AC220~240V/1.5A	
Power consumption			320W	
Dimensions			340 (W) x 100 (H) x 270 (D) mm (Not including protruding parts)	
Weight			3.5kg	
Temperature range			Operation : 5~35°C Storage : -20~60°C	
Accessories			Remote control x1 RGB cable x 1 Power cords x 2 Batteries x 2	User’s manuals x 1 LENS CAP and STRAP x 1 Audio/Video cable x 1

3. Names of each part

● Projector

(1) Lamp cover
The lamp unit is inside.
(2) Focus ring
(3) Zoom ring
(4) Control panel
(5) Elevator buttons (x 2)
(6) Elevator feet (x 2)
(7) Remote sensor
(8) Lens
(9) Lens cover
(10) Intake vents
(11) Filter cover
The air filter and intake vent are inside.
(12) Speaker
(13) Exhaust vent
(14) AC inlet
(15) Power switch
(16) Rear panel
(17) Security bar
(18) Security slot

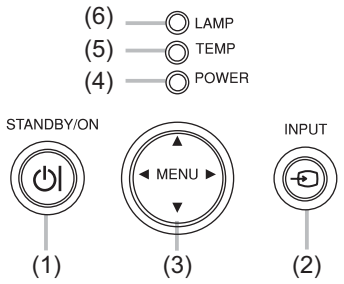


⚠**WARNING** ►**HOT!** : Do not touch around the lamp cover and the exhaust vents during use or just after use, since it is too hot.
►Do not look into the lens or vents while the lamp is on, since the strong light is not good for your eyes.
►Do not handle the elevator buttons without holding the projector, since the projector may drop down.

⚠**CAUTION** ►Maintain normal ventilation to prevent the projector from heating up. Do not cover, block or plug up the vents. Do not place anything that can stick or be sucked to the vents, around the intake vents. Clean the air filter periodically.
►Do not use the security bar and slot to prevent the projector from falling down, since it is not designed for it.

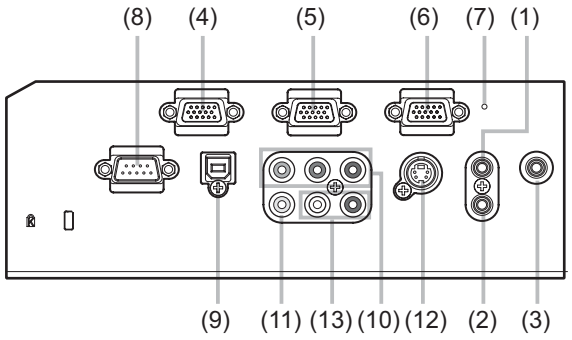
Control panel

(1) STANDBY/ON button
(2) INPUT button
(3) MENU button
    It consists of four cursor buttons.
(4) POWER indicator
(5) TEMP indicator
(6) LAMP indicator



Rear panel

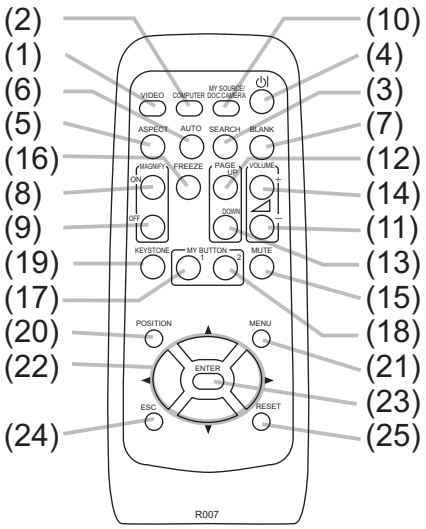
(1) AUDIO IN1 port
(2) AUDIO IN2 port
(3) AUDIO OUT port
(4) COMPUTER IN1 port
(5) COMPUTER IN2 port
(6) MONITOR OUT port
(7) Shutdown switch
(8) CONTROL port
(9) USB port
(10) COMPONENT
    (Y, Cb/Pb, Cr/Pr) ports
(11) VIDEO port
(12) S-VIDEO port
(13) AUDIO IN3 (L,R) ports

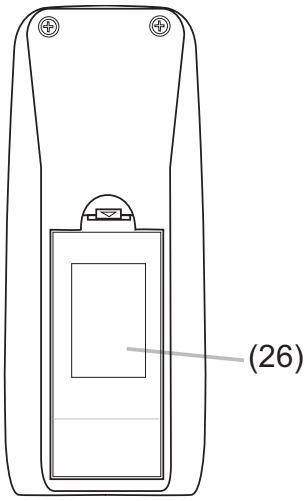


⚠**CAUTION** ►Use the shutdown switch only when the projector is not turned off by normal procedure, since pushing this switch stops operation of the projector without cooling it down.

Remote control

(1) VIDEO button
(2) COMPUTER button
(3) SEARCH button
(4) STANDBY/ON button
(5) ASPECT button
(6) AUTO button
(7) BLANK button
(8) MAGNIFY - ON button
(9) MAGNIFY - OFF button
(10) MY SOURCE/DOC.CAMERA button
(11) VOLUME - button
(12) PAGE UP button
(13) PAGE DOWN button
(14) VOLUME + button
(15) MUTE button
(16) FREEZE button
(17) MY BUTTON - 1 button
(18) MY BUTTON - 2 button
(19) KEYSTONE button
(20) POSITION button
(21) MENU button
(22) ▲/▼/◄/► cursor buttons
(23) ENTER button
(24) ESC button
(25) RESET button
(26) Battery cover





Back of
the remote control

⚠**WARNING** ►Do not look into the beam outlet and point the beam at people and pets while pressing the LASER button, since the beam is not good for eyes.
⚠**CAUTION** ►Note that the laser beam may result in hazardous radiation exposure. Use the laser pointer only for pointing on the screen.

4. Adjustment

4-1 Before adjusting

4-1-1 Selection of adjustment

When any parts in the table 4-1 are changed, choose the proper adjusting items with the chart.

Table 4-1: Relation between the replaced part and adjustment

Replaced part	Adjustment					
	Flicker (Chap.4-2)	Ghost (Chap.4-3)	DC OFF (Chap.4-4)	E-POS (Chap.4-5)	White balance (Chap.4-6)	Color uniformity (Chap.4-7)
Dichroic optics unit	○	○	△	△	△	△
LCD/LENS prism assembly	○	○	○	○	○	○
PWB assembly Main	○	○	○	○	○	○
Lamp unit assembly	△	△	×	×	△	△

○ : means need for adjustment. × : means not need for adjustment.
△ : means recommended.

4-1-2 Setting of condition before adjustments

1. Before starting adjustments, warm up projector for about 10 minutes.
   Turn off the automatic keystone function in OPTION Menu.
   If you changed [AUTO KEYSTONE] from [TURN ON] to [TURN OFF], set to the [TURN ON] after adjustment.
2. Set Zoom Wide to Max. And project an image with more than 1m (40 inches) in diagonal size.
3. Set the lens position to the center, using horizontal and vertical lens shift dials.
4. Normalizing the video adjustments
   Press the [MENU] button to display the EASY menu. If Advanced menu comes up, move to the Easy menu.
   Select the RESET in the EASY menu and press the [▶] or [ENTER] button to open the RESET dialog. Choose the EXECUTE with the [▲] button.
   Note that the projector will not allow you to reset its adjustment values with no signal input.
5. Perform all adjustments from the FACTORY MENU. Operate as follows to display the FACTORY MENU.
   When you use the remote control...
   a. Press the [MENU] button of the remote control to display the Easy menu. (If the Advanced menu appears, move to the Easy menu.)
   b. Select the RESET in the Easy menu, and then press the [▶] or [ENTER] button.
   c. Next, press the [RESET] button one time. And hold the [RESET] button for 3 seconds or longer (the FACTORY MENU will appear).

   When you use the keypad of the projector...
   a. Press the [▲], [▼], [◀] or [▶] button of the projector to display the Easy menu. (If the Advanced menu appears, move to the Easy menu.)
   b. Select the RESET in the Easy menu, and then press the [▶] or [ENTER] button.
   c. Next, press the [▼] button one time. And repress and hold the [▼] button together with the [INPUT] button for 3 seconds or more (the FACTORY MENU will appear).

4-2 Flicker adjustment (V.COM adjustment)

Test pattern for the adjustment

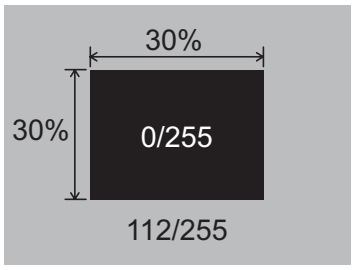
Adjustment procedure

1. Use DAC-P - V.COM - R: in the FACTORY MENU to adjust so that the flicker at the center of the screen is less than the flicker at the periphery. (When the flicker is about the same across the whole screen, adjust so that the flicker at the center of the screen is somewhat less than elsewhere.)
2. In the same way, use DAC-P - V.COM-G: in the FACTORY MENU to adjust the G color flicker.
3. In the same way, use DAC-P - V.COM-B: in the FACTORY MENU to adjust the B color flicker.

NOTE: The test pattern shown on the left sometimes has a horizontal line across the screen.

4-3 Ghost adjustment

Test pattern for the adjustment

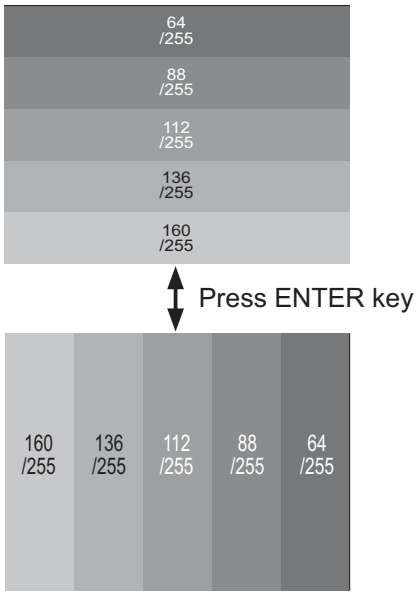


Adjustment procedure

1. Make this adjustment after completing the adjustment in the section 4-2.
   Set 0 to the GHOST R, G, B in OPTION-SERVICE-GHOST Menu.
2. Use DAC-P - GHOST - R: in the FACTORY MENU to adjust so that R color ghost is at a minimum. (Set the adjustment value to default, and then raise the value. When a ghost appears to the left of a vertical line, reduce the value by 6 steps.)
3. In the same way, use DAC-P - GHOST-G: in the FACTORY MENU to adjust so that G color ghost is at a minimum.
4. In the same way, use DAC-P - GHOST-B: in the FACTORY MENU to adjust so that B color ghost is at a minimum.

4-4 DC OFF adjustment (vertical bars adjustment 1)

Test pattern for the adjustment



Adjustment procedure

1. Make this adjustment after completing the adjustment in the section 4-3.
2. Use STRIPE - DCOFF - No. 0 - R : in the FACTORY MENU and use it so that vertical bars are minimized.
3. In the same way, use STRIPE - DCOFF - No. 0 - G : in the FACTORY MENU and use it so that vertical bars are minimized.
4. In the same way, use STRIPE - DCOFF - No. 0 - B : in the FACTORY MENU and use it so that vertical bars are minimized.

4-5 E-POS adjustment (vertical bars adjustment 2)

Test pattern for the adjustment

Adjustment procedure

1. Make this adjustment after completing the adjustment in the section 4-4.
2. Use DAC -P - E-POS - R in the FACTORY MENU and use it so that vertical bars are minimized.
3. In the same way, select DAC-P - E-POS - G and use it so that vertical bars are minimized.
4. In the same way, select DAC-P - E-POS - B and use it so that vertical bars are minimized.

4-6 White balance adjustment (visual inspection)

Preparations

1. Perform these adjustments after the adjustments described in Section 4-5.
2. Reset gamma correction before adjustment.
   - Place the cursor on [GAMMA] in the FACTORY MENU, press the [RESET] key and select RESET.

Adjustment procedure

1. First, adjust the G color.
2. Select GAMMA, SUB-CNT, and G: in the FACTORY MENU. If the background is white solid, press the [ENTER] key on the Remote control transmitter to change to [G] monochrome in the 33-tone grayscale.
3. Adjust GAMMA, SUB-CNT, and G: in the FACTORY MENU so that brightness of 33 steps is best.
4. Don't adjust GAMMA, SUB-BRT, and G: in the FACTORY MENU because we want to keep the best contrast ratio.
5. Then adjust colors R and B.
6. Select GAMMA, SUB-CNT, and G: in the FACTORY MENU. If the background is white solid, press the [ENTER] key on the remote control to change to [W] monochrome in the 33-tone grayscale.
7. Adjust GAMMA, SUB-BRT, R: and B: in the FACTORY MENU so that low-brightness white balance is best.
8. Adjust GAMMA, SUB-CNT, R: and B: in the FACTORY MENU so that middle-brightness white balance is best.
9. Repeat steps 7 to 8 above, and adjust so that brightness white balance of 33 steps is best.

4-7 Color uniformity adjustments

Preparations

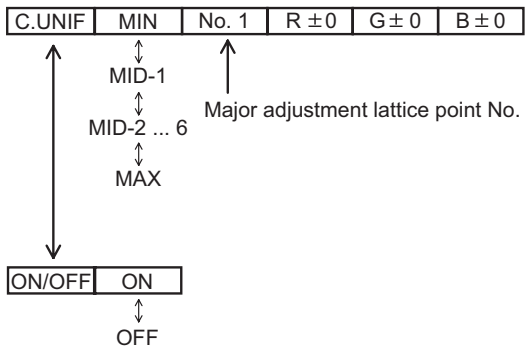
1. Perform these adjustments after the adjustments described in the section 4-6.
2. Make a color uniformity adjustments for the following tones.
   - MIN tone (approx. 7% input signal)
   - MID-1 tone (approx. 14% input signal)
   - MID-2 tone (approx. 21% input signal)
   - MID-3 tone (approx. 29% input signal)
   - MID-4 tone (approx. 36% input signal)
   - MID-5 tone (approx. 50% input signal)
   - MID-6 tone (approx. 61% input signal)
   - MAX tone (approx. 75% input signal)

   NOTE: The brightness level of the test patterns in MID-4 and MID-6 is selectable.
3. Select the [C.UNIF.] in the FACTORY MENU and press the [▶] key. This operation displays the Adjust Tone menu (shown below) on the bottom of the screen.
   To choose the tone to be adjusted, press the [▶] key and then use the [▲] or [▼] key.
   Select the major adjustment lattice point No. and color, and then adjust them.
4. The major adjustment lattice point numbers (a total of 17 points) corresponds to the major adjustment lattice point positions in the diagram on the right. The color uniformity of the entire screen can be adjusted by adjusting the white balance for each of the points starting in order from the low numbers.
5. Adjustment point No.1 should not be adjusted, because it controls the brightness of the entire screen.
6. To temporarily turn correction off, place the cursor on [C.UNIF.] in the Adjust Tone menu and press the [▼] key. The ON/OFF menu appears. Place the cursor on [ON] with the [▶] key and press the [▼] key. To turn it on again, place the cursor on [OFF] and press the [▲] key.
7. Although this adjustment can also be made using internal signals, we will here use the [ENTER] key on the remote control to select the following two signals.
   - Solid monochrome adjustment color (use G color adjustment when a color differential meter is used).
   - Solid white (use for adjustment other than above).
8. Reset color-shading correction before adjustment.
   - When resetting all values of 8 tones and all colors, place the cursor on [C.UNIF.] in the FACTORY MENU, press the [RESET] key and select RESET in the dialog.
   - When resetting only 1 tone, place the cursor on the tone such as MID-1 to be reset, press the [RESET] key and select RESET in the dialog.
   - Single tone and monochrome resets cannot be performed.

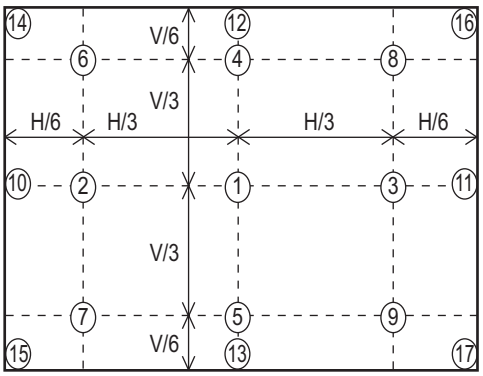
FACTORY MENU

VID-AD
C. UNIF.
DAC-P
GAMMA
STRIPE
OPTION

Adjust tone menu



Major adjustment lattice point position

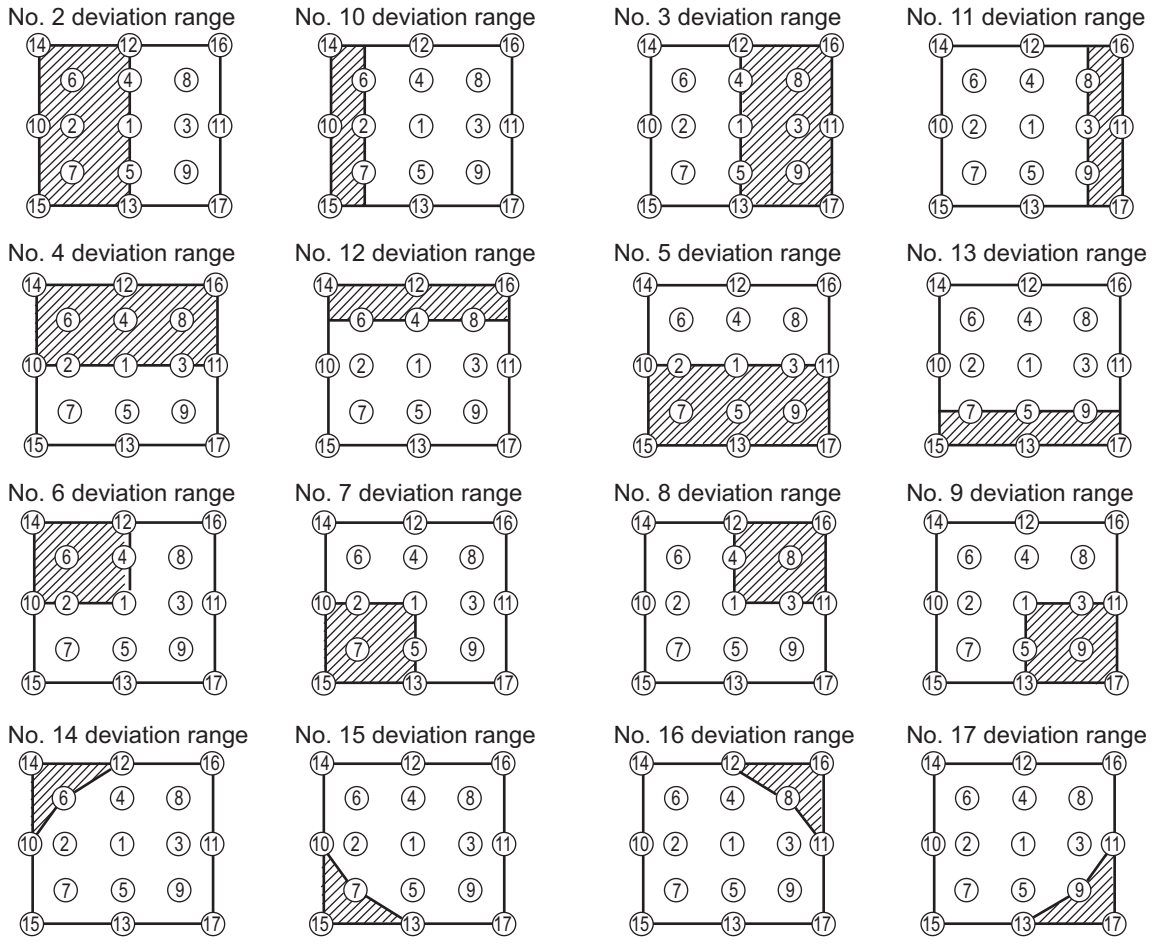


Adjustment procedure 1
(When a color differential meter is used)

1. First adjust the [MID-1] tone [G:].
2. Select adjustment point [No.2][G:].
   When the background is not [G] monochrome, press the [ENTER] key on the remote control to switch to solid [G] monochrome.
3. Measure the illumination at adjustment points No. 2, No.3, No.10 and No.11.
   The values should be:
   No.2 = Y2 [lx] No.10 = Y10 [lx]
   No.3 = Y3 [lx] No.11 = Y11 [lx]
4. No.2 and No.3 adjustment points have the average of Y2 and Y3.
   Y2 = (Y2 + Y3) / 2 ± 2 [%]
   Y3 = (Y2 + Y3) / 2 ± 2 [%]
5. No.10 and No.11 adjustment points have the average of Y10 and Y11.
   Y10 = (Y10 + Y11) / 2 ± 2 [%]
   Y11 = (Y10 + Y11) / 2 ± 2 [%]
6. Then adjust the [MID-1] tone [R] and [B].
   When the background is [G] monochrome, press the [ENTER] key on the remote control to switch to solid white.
7. Measure the color coordinates of adjustment point [No.1] and make a note of them.
   Assume that they are x = x1, y = y1.
   Note: When the CL-100 color and color difference meter is used, the [Δ](delta) mode is convenient. When adjustment point [No.1] color coordinate has been selected, set the slide switch on the side to [Δ](delta) while holding down the [F] button on the front panel. The measurement shown after this displays the deviation from measurement point 1.
8. Measure the color coordinates of measurement point [No.2] and adjust [No.2][R:] and [B:] so that the coordinates are as follows.
   x = x1 ± 0.005 , y = y1 ± 0.010
9. Similarly, measure adjustment points [No.3] to [No.17] and adjust their color coordinates starting in order from the small number points.
   This completes adjustments required for [MID-1].
   Note: Since excessive correction may lead to a correction data overview during internal calculations, use the following values for reference.
   [No.2] to [No.5] ± 40 or less
   [No.6] to [No.9] ± 50 or less
   [No.10] to [No.13] ± 70 or less
   [No.14] to [No.17] ± 120 or less
10. Then adjust the [MIN] tone [G] so that the adjustment values are two times as much as MID-1] tone [G] values.
    This completes [G] color adjustments.
11. Then adjust [MIN] tone [R] and [B].
    Select [No.2] [B:] and press the [ENTER] key on the Remote control transmitter to change to solid white.
12. Measure the color coordinates of adjustment point [No.1] and make a note of them.
    Assume that they are x = x1, y = y1.
13. Now measure the color coordinates of measurement point [No.2] and adjust [No.2][R:] and [B:] so that the coordinates are as follows.
    x = x1 ± 0.005 , y = y1 ± 0.010 (Target)
    x = x1 ± 0.020 , y = y1 ± 0.040
14. Similarly, measure adjustment points [No.3] to [No.17] and adjust their color coordinates starting in order from the small number points.
    This completes [MIN] tone adjustments.
15. Now make similar adjustments for [MID-2] tone. (Adjust [MID-2] tone [G] so that the adjustment data set half as many as [MID-1] tone [G].)
16. Now make similar adjustments for [MID-3], [MID-5], [MAX] tones. (It is not necessary to adjust the [G] data in these tones.)
17. After completing the step 16, set the value of the [MID-4] tone [R]: [No.2] to the mean of the values of the [R]: [No.2] in the [MID-3] and [MID-4] tones.
18. Set all the values for the [No.2] to [No.17] of the [MID-4] tone [R] and [B] in the same way as the step 17.
19. Finally, set the data of the [MID-6] tone [R] and [B] using the values of the [MID-5] and [MAX] tones in the same way as the [MID-4] tone [R] and [B] adjustments in the step 17 and 18.

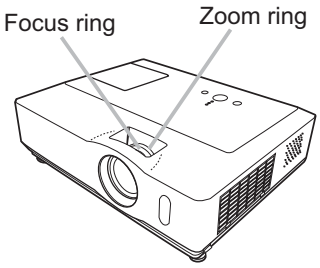
Adjustment procedure 2
(visual inspection)

1. First adjust [MIN] tone [G:].
2. Select [No.2] [G:].
   If the background is [G] monochrome, press the [ENTER] key on the remote control to switch to solid white.
3. View measurement point [No.2] and [No.3]. Lower the [G] color intensity only of the color point whose [G] color is more intense than measurement point [No.1].
4. View measurement point [No.10] and [No.11]. Lower the [G] color intensity only of the color point whose [G] color is more intense than measurement point [No.1], and raise the intensity of the point whose color intensity is lower than measurement point [No.1].
5. Now adjust the [MIN] tone for colors [R] and [B].
6. View measurement points [No.2], [No.3], [No.10] and [No.11]. Adjust the [R] and [B] of each measurement point so that they have the same color as measurement point [No.1].
   Adjustment technique:
   First, adjust [B:] of the point whose color is to be adjusted so that it approximates that of [No.1]. If [R:] is low at this time, the image will have cyan cast, in which case [R:] is increased. On the other hand, if [R:] is excessive, the image will have a magenta cast, in which case [R:] is decreased.
   Overall, a cyan cast makes it easy to see color shading.
7. Next, view measurement points [No.4], [No.5], [No.12], [No.13] and make similar adjustments.
8. Then adjust measurement points [No.6], [No.7], [No.8], [No.9], [No.14], [No.15], [No.16] and [No.17]. This completes the [MIN] tone adjustments.
9. Make similar adjustments for other tones, except the [MID-4] and [MID-6] tones, as described in steps 1 to 8 above.



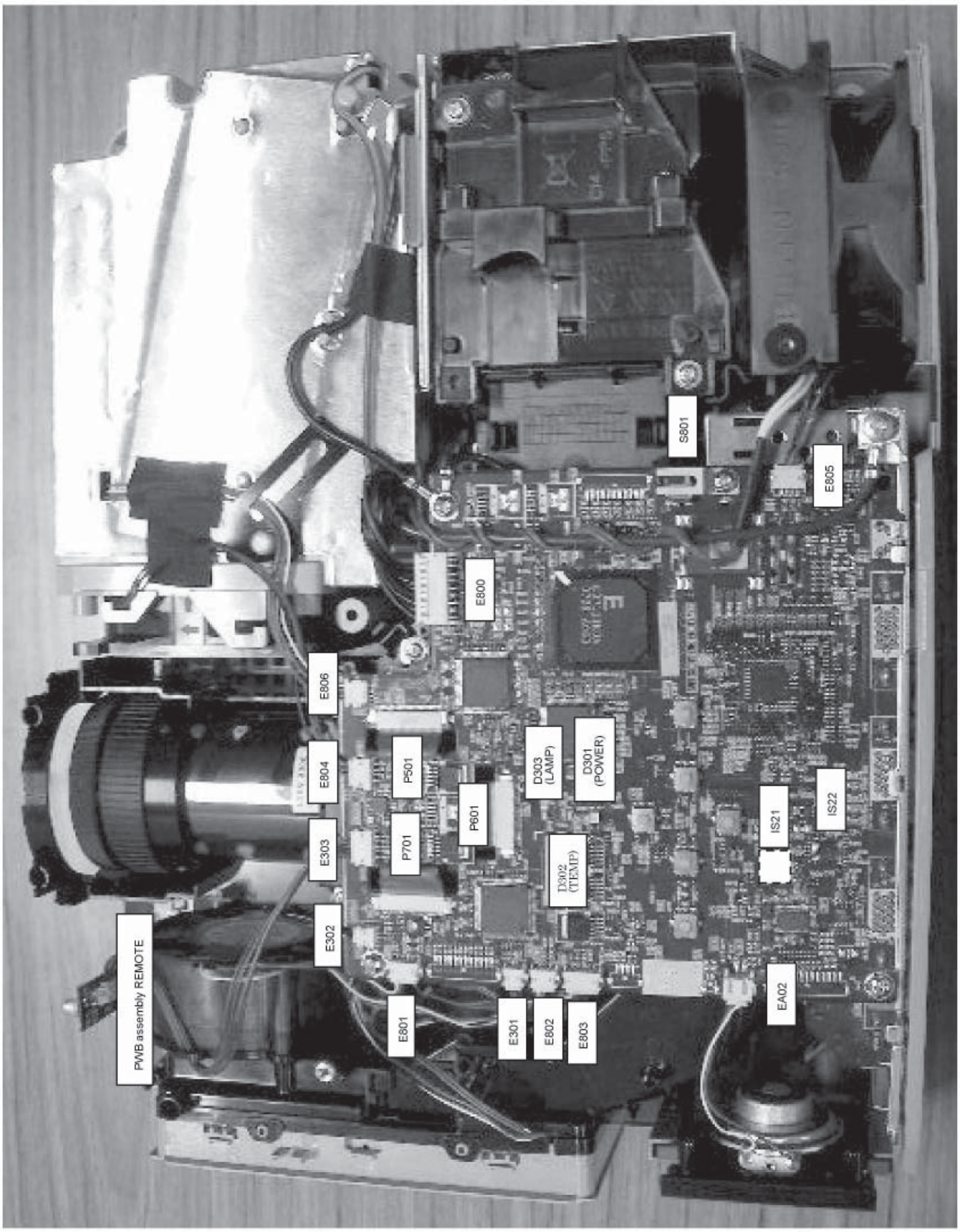
4-8 Adjusting the zoom and focus

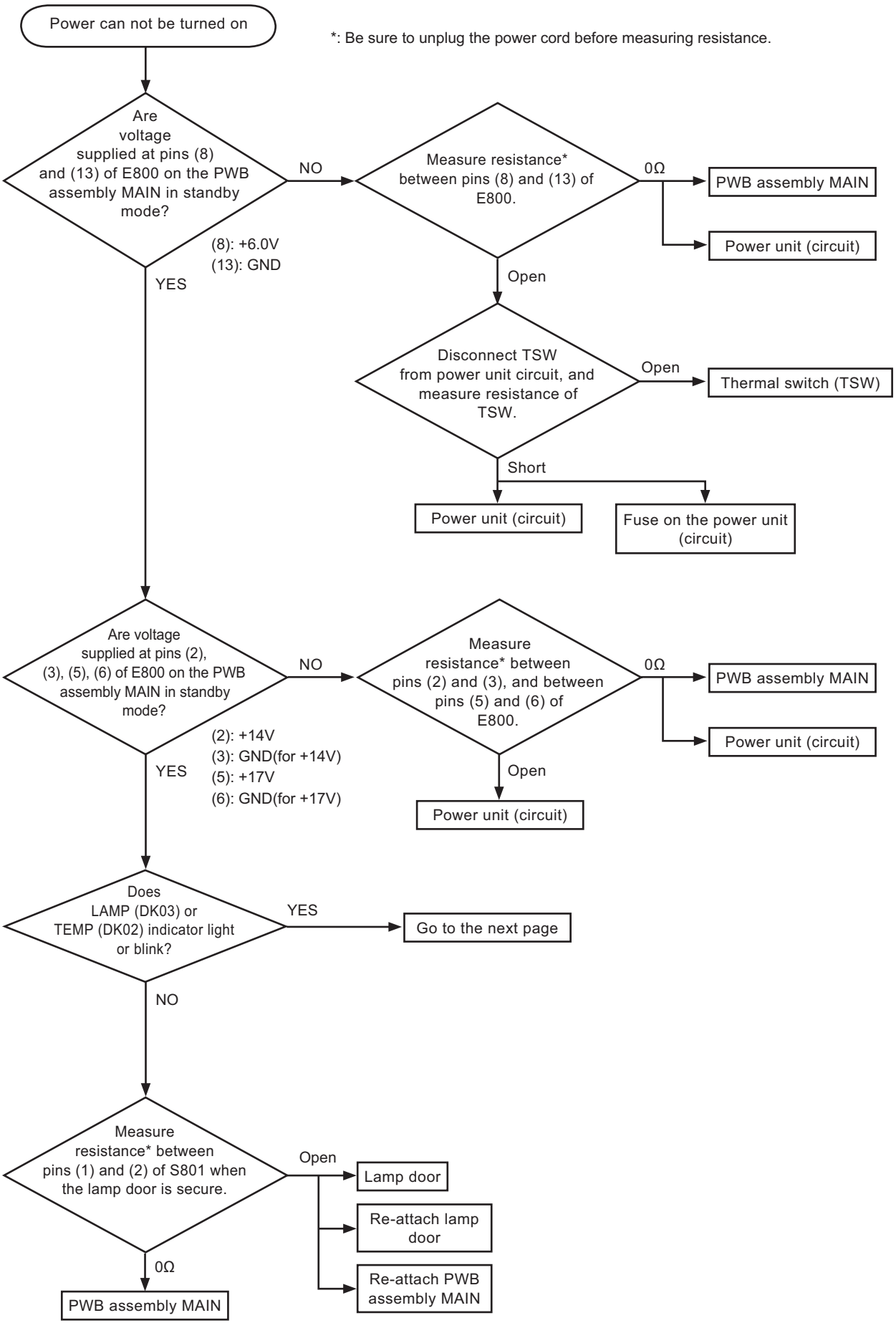
1. Use the zoom ring to adjust the screen size.
2. Use the focus ring to focus the picture.

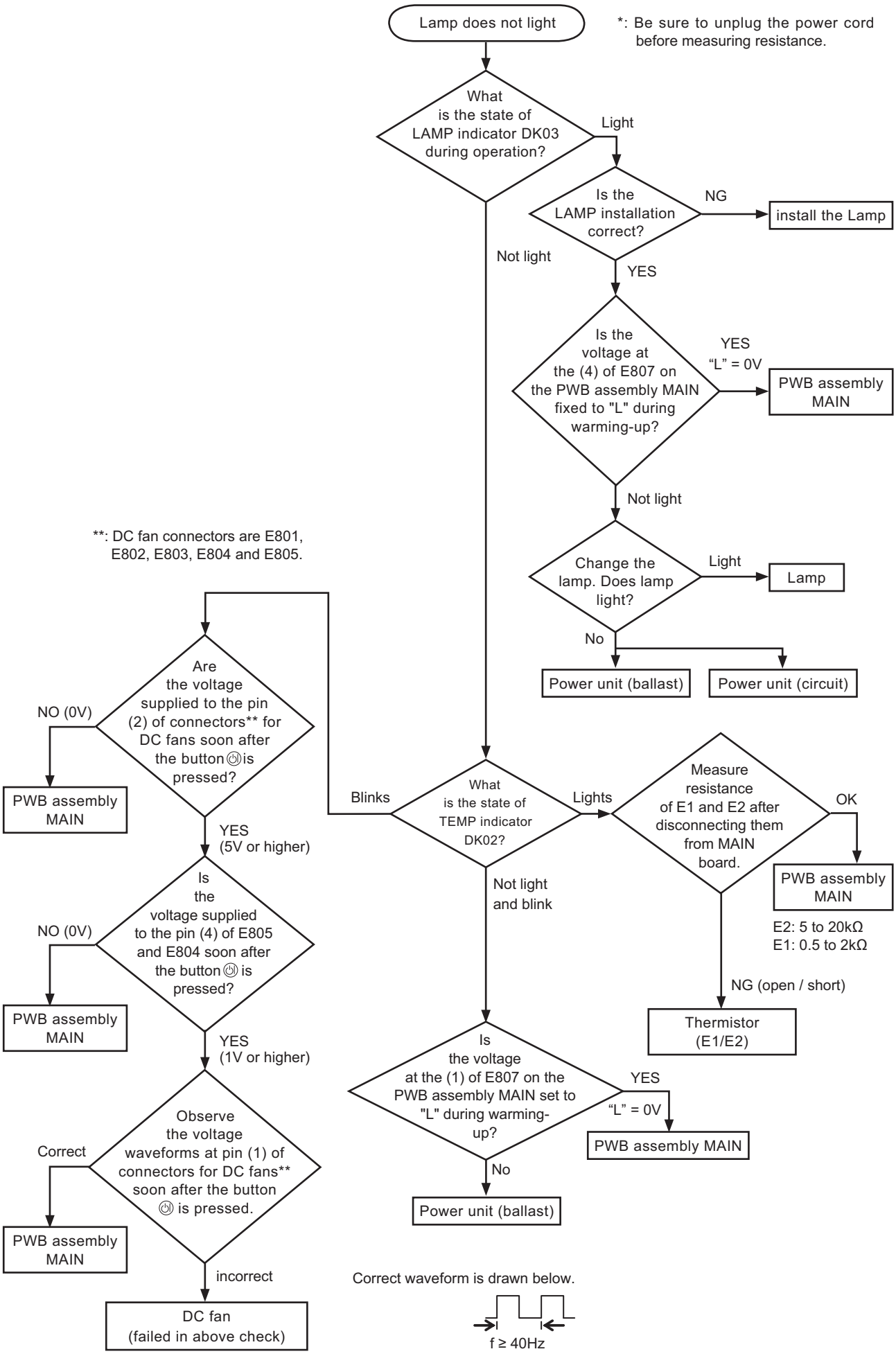


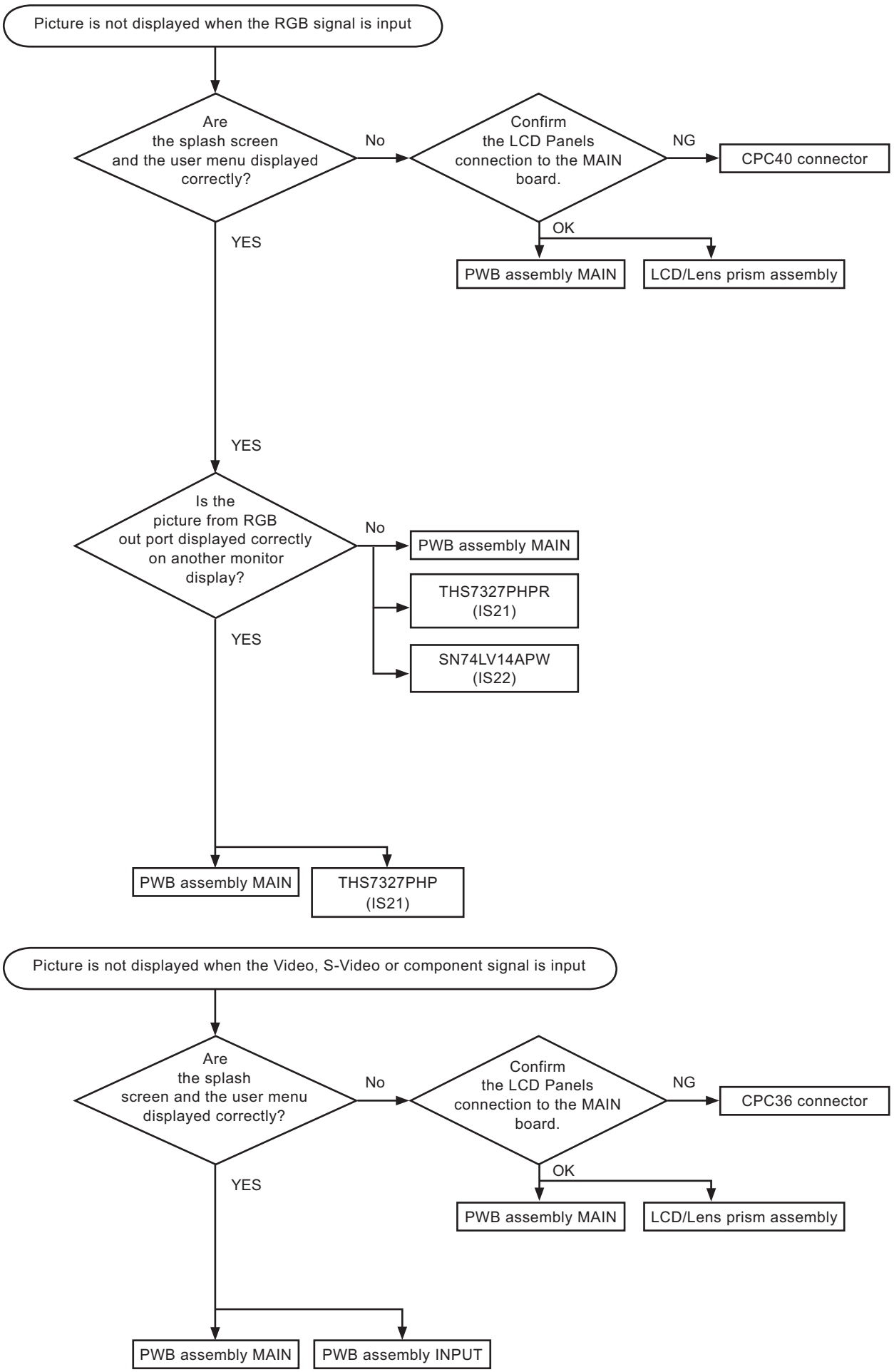
5. Troubleshooting

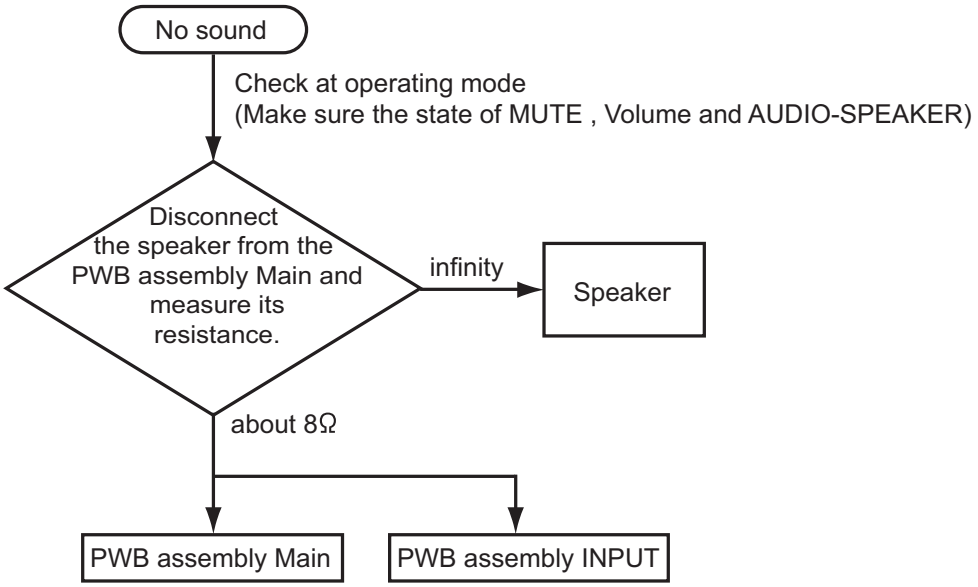
Check points

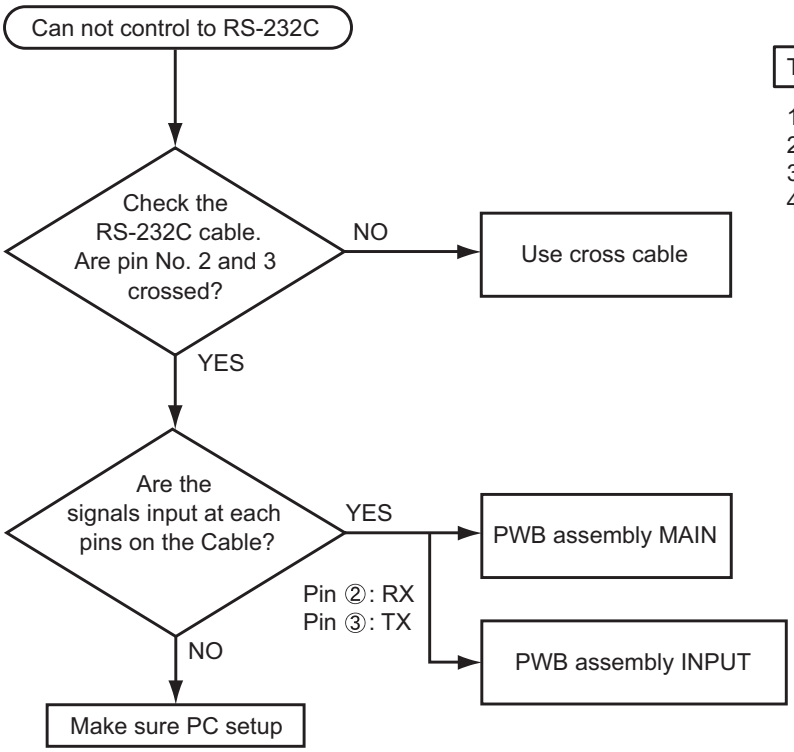



Power can not be turned on
*: Be sure to unplug the power cord before measuring resistance.
Are voltage supplied at pins (8) and (13) of E800 on the PWB assembly MAIN in standby mode?
NO
Measure resistance* between pins (8) and (13) of E800.
0Ω
PWB assembly MAIN
Power unit (circuit)
(8): +6.0V
(13): GND
YES
Open
Disconnect TSW from power unit circuit, and measure resistance of TSW.
Open
Thermal switch (TSW)
Short
Power unit (circuit)
Fuse on the power unit (circuit)
Are voltage supplied at pins (2), (3), (5), (6) of E800 on the PWB assembly MAIN in standby mode?
NO
Measure resistance* between pins (2) and (3), and between pins (5) and (6) of E800.
0Ω
PWB assembly MAIN
Power unit (circuit)
(2): +14V
(3): GND(for +14V)
(5): +17V
(6): GND(for +17V)
YES
Open
Power unit (circuit)
Does LAMP (DK03) or TEMP (DK02) indicator light or blink?
YES
Go to the next page
NO
Measure resistance* between pins (1) and (2) of S801 when the lamp door is secure.
Open
Lamp door
Re-attach lamp door
Re-attach PWB assembly MAIN
0Ω
PWB assembly MAIN


Lamp does not light
*: Be sure to unplug the power cord before measuring resistance.
What is the state of LAMP indicator DK03 during operation?
Light
Not light
Is the LAMP installation correct?
NG
install the Lamp
YES
Is the voltage at the (4) of E807 on the PWB assembly MAIN fixed to "L" during warming-up?
YES "L" = 0V
PWB assembly MAIN
Not light
Change the lamp. Does lamp light?
Light
Lamp
No
Power unit (ballast)
Power unit (circuit)
**: DC fan connectors are E801, E802, E803, E804 and E805.
Are the voltage supplied to the pin (2) of connectors** for DC fans soon after the button ⏻ is pressed?
NO (0V)
PWB assembly MAIN
YES (5V or higher)
Is the voltage supplied to the pin (4) of E805 and E804 soon after the button ⏻ is pressed?
NO (0V)
PWB assembly MAIN
YES (1V or higher)
Observe the voltage waveforms at pin (1) of connectors for DC fans** soon after the button ⏻ is pressed.
Correct
PWB assembly MAIN
incorrect
DC fan (failed in above check)
Blinks
What is the state of TEMP indicator DK02?
Lights
Measure resistance of E1 and E2 after disconnecting them from MAIN board.
OK
PWB assembly MAIN
E2: 5 to 20kΩ
E1: 0.5 to 2kΩ
NG (open / short)
Thermistor (E1/E2)
Not light and blink
Is the voltage at the (1) of E807 on the PWB assembly MAIN set to "L" during warming-up?
YES "L" = 0V
PWB assembly MAIN
No
Power unit (ballast)
Correct waveform is drawn below.
f ≥ 40Hz


Picture is not displayed when the RGB signal is input
Are the splash screen and the user menu displayed correctly?
No
Confirm the LCD Panels connection to the MAIN board.
NG
CPC40 connector
OK
PWB assembly MAIN
LCD/Lens prism assembly
YES
YES
Is the picture from RGB out port displayed correctly on another monitor display?
No
PWB assembly MAIN
THS7327PHPR (IS21)
SN74LV14APW (IS22)
YES
PWB assembly MAIN
THS7327PHP (IS21)
Picture is not displayed when the Video, S-Video or component signal is input
Are the splash screen and the user menu displayed correctly?
No
Confirm the LCD Panels connection to the MAIN board.
NG
CPC36 connector
OK
PWB assembly MAIN
LCD/Lens prism assembly
YES
PWB assembly MAIN
PWB assembly INPUT





The check after parts change

1. PC power supply OFF
2. Connection of cable
3. Projector starting
4. PC starting
   *When not operating :
   PC set up change of cable.

6. Service points

6-1 Lead free solder [CAUTION]

This product uses lead free solder (unleaded) to help preserve the environment. Please read these instructions before attempting any soldering work.

⚠ CAUTION
Always wear safety glasses to prevent fumes or molten solder from getting into the eyes. Lead free solder can splatter at high temperatures (600˚C).

■ Lead free solder indicator

Printed circuit boards using lead free solder are engraved with an "F" or "LF".

■ Properties of lead free solder

The melting point of lead free solder is 40-50˚C higher than leaded solder.

■ Servicing solder

Solder with an alloy composition of Sn-3.0Ag-0.5Cu or Sn-0.7Cu is recommended.
Although servicing with leaded solder is possible, there are a few precautions that have to be taken. (Not taking these precautions may cause the solder to not harden properly, and lead to consequent malfunctions.)

Precautions when using leaded solder

- Remove all lead free solder from soldered joints when replacing components.
- If leaded solder should be added to existing lead free joints, mix in the leaded solder thoroughly after the lead free solder has been completely melted (do not apply the soldering iron without solder).

■ Servicing soldering iron

A soldering iron with a temperature setting capability (temperature control function) is recommended.
The melting point of lead free solder is higher than leaded solder. Use a soldering iron that maintains a high stable temperature (large heat capacity), and that allows temperature adjustment according to the part being serviced, to avoid poor servicing performance.

Recommended soldering iron:

- Soldering iron with temperature control function (temperature range: 320-450˚C)

Recommended temperature range per part:

Part	Soldering iron temperature
Mounting (chips) on mounted PCB	320˚C±30˚C
Mounting (chips) on empty PCB	380˚C±30˚C
Chassis, metallic shield, etc.	420˚C±30˚C

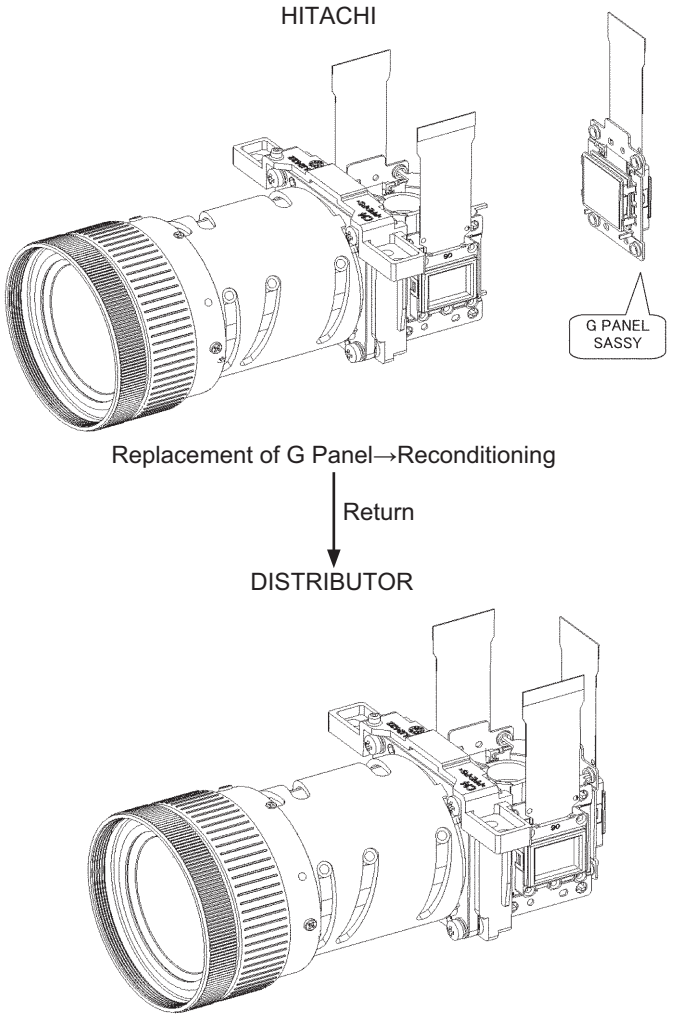
The PWB assembly which has used lead free solder

PWB assembly MAIN
PWB assembly REMOTE
PWB assembly INPUT
POWER UNIT (BALLAST)
POWER UNIT (CIRCUIT)

6-2 Before Replacing The LCD/Lens Prism

You should not replace separately the parts of the liquid crystal LCD/Lens prism because it works properly only when used together. Therefore, regarding these parts, you can either replace part, LCD/Lens prism assembly, or send the whole unit LCD/Lens prism assembly back to HITACHI, where we will replace the malfunctioning part, recondition the device and send it back to you.

Do not disassemble the unit because replacement of separate parts is not possible.



6-3 Cleaning up dust from panels and optical filters

⚠ WARNING
Wear sunglasses to protect your eyes when you maintain the projector with its lamp on.

1. Preparation

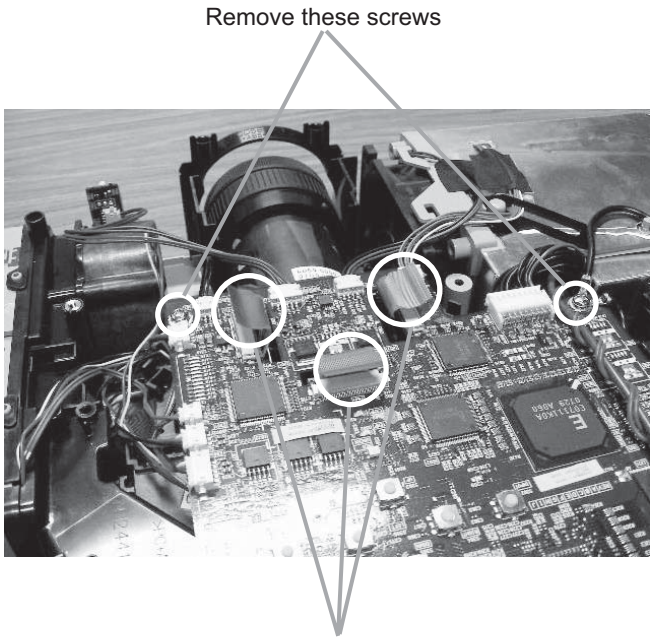
Please prepare cleaning tools and materials as follows. And prepare relatively clean room not to work in additional dust, while removing operation.

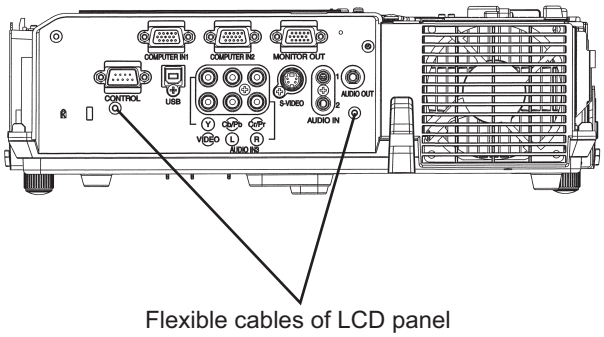
(1) Swab for cleaning : P#: NX32451, "Cotton stick BB-014"
(2) Air duster (Dust blower, spray can)
(3) Vacuum cleaner

2. Disassemble and setting up.

(1) Turn off the projector, and unplug the power cord.
(2) Remove the lamp cover and upper case, according to the disassembling diagram of chapter 8.

(3) Disconnect the LCD panel flexible cables and unscrew PWB assembly MAIN to make it free.





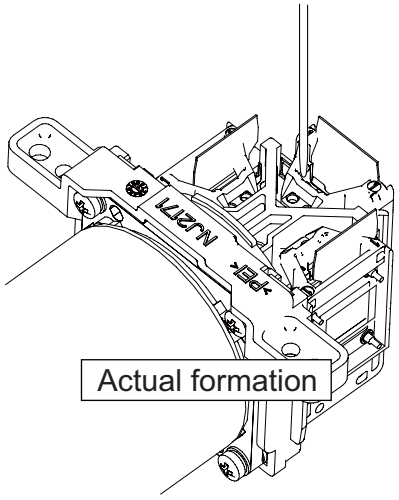
⚠ WARNING

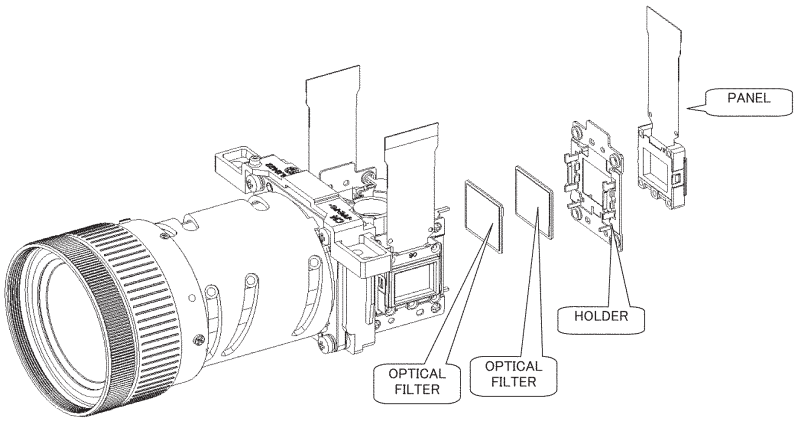
Never put the heavy stress to the main board.
Otherwise, connectors will be damaged.

(4) Press and hold the switch S801 using an insulator during maintenance.

(5) Keep the unscrewed wires away from all of electric parts.

3. Maintenance point



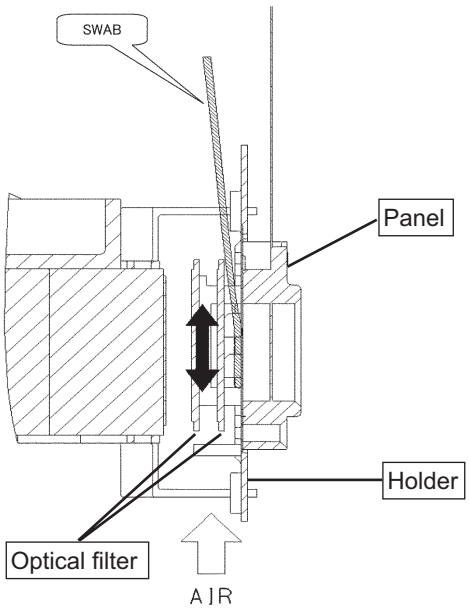


Each color part has same construction.By using swab and air duster, you can easily remove dust from panel and optical filter.

4. Cleaning the panels and optical filters

(1) Turn on the set and lit on the lamp.

(2) By using swab and air duster, remove the dust. Focusing dust makes you check the dust on screen.



- While removing the dust, separated dust will be blown off by air cooling system.
- Please pay attention not to damage panels and optical filters.
- Bend the top of SWAB a little if it is hard to insert the SWAB.

5. Re-assembly

(1) Turn off the set and unplug the power cord.

(2) Remove an insulator from S801.

(3) Screw down the PWB assembly MAIN and connect the LCD panel flexible cables to the PWB assembly MAIN.

(4) Re-assemble the set.

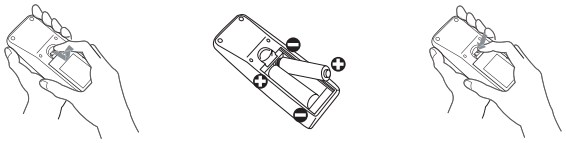
(5) While re-assembling, please clean the intake filter by using a vacuum cleaner.

6-4 Putting batteries

⚠ WARNING

Always handle the batteries with care and use them only as directed. Improper use may result in battery explosion, cracking or leakage, which could result in fire, injury and/or pollution of the surrounding environment.

- Be sure to use only the batteries specified. Do not use batteries of different types at the same time. Do not mix a new battery with used one.
- Make sure the plus and minus terminals are correctly aligned when loading a battery.
- Keep a battery away from children and pets.
- Do not recharge, short circuit, solder or disassemble a battery.
- Do not allow a battery in a fire or water. Keep batteries in a dark, cool and dry place.
- If you observe a leakage of a battery, wipe out the flower and then replace a battery. If the flower adheres your body or clothes, rinse well with water immediately.



- Use the batteries included in this product or two new batteries of the specified type: **HITACHI MAXELL,** part number **LR6** or **R6P**.

1. Remove the battery cover.
   Slide back and remove the battery cover in the direction of the arrow.
2. Insert the batteries.
   Align and insert the two AA batteries according to their plus and minus terminals as indicated in the remote control.
3. Close the battery cover.
   Replace the battery cover in the direction of the arrow and snap it back into place.

The signal settings for the remote control transmitter and the projector's remote sensor can be changed.
If the remote control does not function properly try changing the signal setting.
Changing the signal setting for the remote control transmitter

(1) Setting 1 (FREQ. : NORMAL)
Simultaneously press and hold the VOLUME − and RESET buttons for about 3 seconds.
(2) Setting 2 (FREQ. : HIGH)
Simultaneously press and hold the MAGNIFY OFF and ESC buttons for about 3 seconds.

- Setting 1 is the factory default setting.
- When the batteries are removed from the remote control, user-specified settings are saved for about half a day. If the batteries are removed from the remote control for longer than half a day, the remote will reset to Setting 1.

Changing the signal setting for the projector's remote sensor

Switch between Setting 1 and 2 using the SERVICE/REMOTE FREQ. item found in OPTION MENU.
Use the ▲/▼ button to change the Projector's remote sensor setting.
1:NORMAL ↔ 2:HIGH
Items with a checkmark are on. The factory default setting is for both 1:NORMAL and 2:HIGH to be on.
If the remote control does not function correctly set this to either only 1 or only 2. Neither can be turned off at the same time.

NOTE: The remote control will not function properly if the remote control transmitter settings and the projector's remote sensor settings are not the same.

6-5 Air filter

⚠ WARNING

- Before caring, make sure the power switch is off and the power cable is not plugged in, then allow the projector to cool sufficiently. The care in a high temperature state of the projector could cause an electric shock, a burn and/or malfunction to the projector.
- Use only the air filter of the specified type. Do not use the projector with the air filter and the filter cover removed. It could result in a fire and/or malfunction to the projector.
- The air filter should be cleaned periodically. If the air filter becomes clogged by dust or the like, internal temperatures rise and could cause a fire, a burn and/or malfunction to the projector.

NOTE

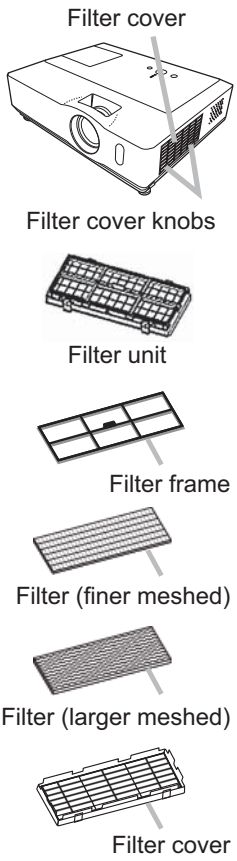
- Please replace the air filter when it is damaged or too soiled, and also when you replace the lamp.
- Please reset the filter time only when you have cleaned or replaced the air filter, for a suitable indication about the air filter.
- The projector may display the message such as “CHECK THE AIR FLOW” or turn itself off, to prevent the internal heat level rising.

If the air filter becomes clogged by dust or the like, internal temperatures rise and could cause a fire, a burn and/or malfunction to the projector. When the indicators or a message prompts to clean the air filter, clean the air filter as soon as possible.
Please check and clean the air filter periodically, even if there is no message.Please replace the air filter when it is damaged or too soiled.

And also when you replace the lamp, please replace the air filter. An air filter of specified type will come together with a replacement lamp for this projector.

1. Turn the projector off, and unplug the power cord. Allow the lamp to cool for at least 45 minutes.
2. When the projector is suspended from the ceiling, apply the vacuum cleaner to and around the filter cover first, to prevent penetration of dust or the like.
3. Pull the filter cover knobs while lifting it. The filter unit which consists of the filter' cover, air filter and filter frame will come off.
4. Use a vacuum cleaner for the filter vent of the projector and the filter frame side of the filter unit.
   If the air filter is damaged or too soiled, replace it according to the following procedure number 5 to 7.
   Otherwise, please jump to the procedure number 8.
5. Pull the filter frame' knob up while holding the filter cover. The filter frame will come off and the air filter will appear.
6. Replace the air filter with new one.
7. Put the filter frame back.
8. Put the filter unit back into the projector.
9. Turn the projector on and reset the filter time using the FILTER TIME item in the EASY MENU.

(1) Press the MENU button to display a menu.
(2) Point at the “FILTER TIME” using the ▼/▲ button, then press the ► button. A dialog will appear.
(3) Press the ▲ button to select “RESET” on the dialog. It performs resetting the filter time.



6-6 Lamp

⚠ WARNING

- The projector uses a high-pressure mercury glass lamp. The lamp can **break with a loud bang, or burn out,** if jolted or scratched, handled while hot, or worn over time. Note that each lamp has a different lifetime, and some may burst or burn out soon after you start using them. In addition, when the bulb bursts, it is possible for **shards of glass** to fly into the lamp housing, and for **gas containing mercury** to escape from the projector's vent holes.

- **About disposal of a lamp** • This product contains a mercury lamp; do not put it in the trash. Dispose of in accord with environmental laws.
For lamp recycling, go to www.lamprecycle.org. (in the US) For product disposal, contact your local government agency or www.eiae.org (in the US) or www.epsc.ca (in Canada).

Disconnect the plug from the power outlet

- If the lamp should break (it will make a loud bang when it does), unplug the power cord from the outlet. Note that shards of glass could damage the projector's internals, or cause injury during handling.
- If the lamp should break (it will make a loud bang when it does), ventilate the room well, and make sure not to breathe the gas that comes out of the projector vents, or get it in your eyes or mouth.
- Before replacing the lamp, turn the projector off and unplug the power cord, then wait at least 45 minutes for the lamp to cool sufficiently. Handling the lamp while hot can cause burns, as well as damaging the lamp.

- Never unscrew except the appointed (marked by an arrow) screws.
- Do not open the lamp cover while the projector is suspended from above. This is dangerous, since if the lamp's bulb has broken, the shards will fall out when the cover is opened.
- Do not use the projector with the lamp cover removed. At the lamp replacing, make sure that the screws are screwed in firmly. Loose screws could result in damage or injury.

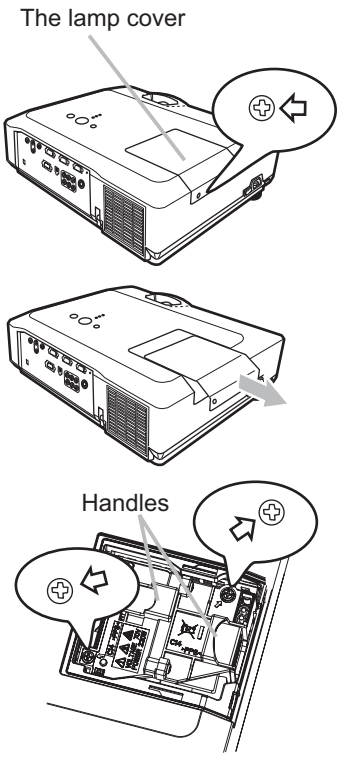
- Use only the lamp of the specified type.
- If the lamp breaks soon after the first time it is used, it is possible that there are electrical problems elsewhere besides the lamp. If this happens, contact your local dealer or a service representative.
- Handle with care: jolting or scratching could cause the lamp bulb to burst during use.
- Using the lamp for long periods of time could cause it dark, not to light up or to burst. When the pictures appear dark, or when the color tone is poor, please replace the lamp as soon as possible. Do not use old (used) lamps; this is a cause of breakage.
- Do not break up the lamp to replace because the structual parts broken up is unavailable.

● Replacing the Lamp

A lamp has a finite product life. Using the lamp for long periods of time could cause the pictures darker or the color tone poor. Note that each lamp has a different lifetime, and some may burst or burn out soon after being started using.

1. Turn the projector off, and unplug the power cord. Allow the projector to cool for at least 45 minutes.
2. Prepare a new lamp.
3. Loosen the screw (marked by arrow) of the lamp cover and then slide the lamp cover to the side to remove it.
4. Loosen the 2 screws (marked by arrow) of the lamp, and slowly pick up the lamp by the handles.
5. Insert the new lamp, and retighten firmly the 2 screws of the lamp that are loosened in the previous process to lock it in place.
6. Slide the lamp cover back in place and firmly fasten the screw of the lamp cover.
7. Turn the projector on and reset the lamp time using the LAMP TIME function in the OPTION menu.

(1) Press the MENU button to display a menu. Only when the EASY MENU has appeared, please perform the next step (2).
(2) Point at the “Go to Advanced Menu …” in the menu using ▼/▲ button, then press the ► button.
(3) Point at the “OPTION” in the left column of the menu using ▼/▲ button, then press the ► button.
(4) Point at the ”LAMP TIME” using ▼/▲ button, then press the ► button. A dialog will appear.
(5) Press the ▲ button to select “RESET” on the dialog. It performs resetting the lamp time.



NOTE
• Please reset the lamp time only when you have replaced the lamp, for a suitable indication about the lamp.

6-7 Other care

⚠ WARNING

Before caring, make sure the power switch is off and the power cable is not plugged in, and then allow the projector to cool sufficiently. The care in a high temperature state of the projector could cause a burn and/or malfunction to the projector.
Avoid wetting the projector or inserting liquids in the projector. It could result in a fire, an electric shock, and and/or malfunction to the projector.
• Don't put a container containing water , cleaner or chemicals near the projector.
• Don't use aerosols or sprays.

⚠ CAUTION

Please take right care of the projector according to the following. Incorrect care could cause not only an injury but adverse influence such as discoloration, peeling paint, etc.
• Do not use cleaner or chemicals other than those listed below.
• Do not polish or wipe with hard objects.

● **Inside of the projector**

In order to ensure the safe use of the projector, it needs to clean and inspect the projector about once a year.

● **Caring for the lens**

If the lens is flawed, soiled or fogged, it could cause deterioration of display quality. Please take care of the lens, being cautions of the handling.

1. Turn the projector off, and unplug the power cord. Allow the projector to cool sufficiently.
2. After making sure that the projector is cool adequately, lightly wipe the lens with a commercially available lens-cleaning wipe. Do not touch the lens directly with your hand.

● **Caring for the cabinet and remote control**

Incorrect care could have adverse influence such as discoloration, peeling paint, etc.

1. Turn the projector off, and unplug the power cord. Allow the projector to cool sufficiently.
2. After making sure that the projector is cool adequately, lightly wipe with gauze or a soft cloth.
   If soiling is severe, dip soft cloth in water or a neutral cleaner dilute in water, and wipe lightly after wringing well. Then, wipe lightly with a soft, dry cloth.

6-8 Notice of AUTO adjustment

Use of AUTO adjustment with the image through RGB input optimizes V_POSI, H_POSI, and H_PHASE automatically.

In case that projected image has dark tone around its peripheral, AUTO operation sometimes makes artifacts in the image, shifts capture area and so on. Those failures are caused by period of image data is not exactly distinguished to period of blanking on signal processing.

To avoid such phenomena, AUTO function should be used with the full size picture that has bright tone on its peripheral.

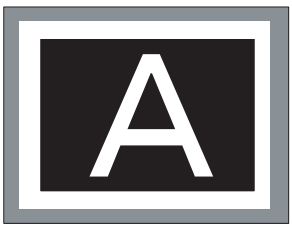


Image when AUTO operates correctly

Image when AUTO fails.

- Noting image of top or bottom lines.
- Shift of the image to East or West.
- Artifacts on image. Etc.

Note

1) The phenomenon at the failure of AUTO adjustment depends on resolution of input source, scene of picture etc.
2) There is no failure above in AUTO with video source through VIDEO, S-VIDEO or COMPONENT input.
   The reason is why recognition of input signal's standard does not need to search the capture range from input signal itself.

6-9 How to deactivate the security functions

This projector is equipped with security functions.

(1)MyScreen PASSWORD

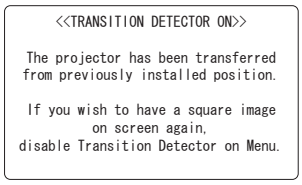
The MyScreen PASSWORD function can be used to prohibit access to the MyScreen function and prevent the currently registered MyScreen image from being overwritten.

(2)PIN LOCK

PIN LOCK is a function which prevents the projector from being used unless a registered Code is input.

(3)Transition detector

Transition detector is a function which prevents the projector from being used if vertical angle of the projector and mirror setting is not same with recorded.



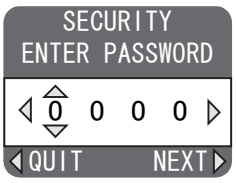
Transition Detector Alarm

(4)MY TEXT

This item allows you to display your own message (MY TEXT) on the START UP screen and INPUT-INFORMATION. It can be protected by a password to prevent it from being overwritten.

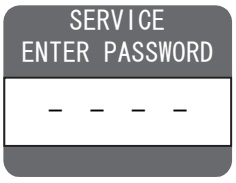
It is possible to deactivate all security functions temporarily with following procedures.

(1) Go to “SECURITY” on OPTION Menu and press the ► button.
Then, ENTER PASSWORD box will be displayed.
(The BOX will be displayed by pressing the [MENU] button (remote) or [▲/▼/◄/►] button (keypad) when Transition Detector Alarm is displayed.)



ENTER PASSWORD box

(2) Press the [Magnify off] button once, then press [Magnify off] button of remote for 3 second or more to display SERVICE PASSWORD box.



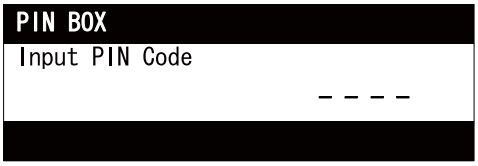
SERVICE PASSWORD box

(3) Enter the Life Key (MENU, ▼, KEYSTONE, ▲). Then all security functions will be deactivated temporarily.

Note: • The Life key can be used up to 30 times. The key cannot be used thereafter. If the Life key cannot be used, see the paragraph of SECURITY in the User’s Manual.
The frequency in which Life key is input will be set to 0 after the registered code is input.
• The SECURITY Menu can not be operated if the SECURITY PASSWORD was released by Life key.
• The Mirror, Keystone and Auto keystone are not memorized though they are possible to operate if Transition Detector was released by Life key.
• The MyScreen Lock on SCREEN Menu keeps “TURN ON” if MyScreen PASSWORD was set when SECURITY PASSWORD was released by Life key.

6-10 PIN LOCK System

If the following PIN BOX menu appears after power on the projector, the PIN LOCK system has been activated. Under such a condition, key operations and signal displaying are inhibited. To open the PIN LOCK system, we need to input the correct 4 digits PIN CODE. If correct PIN CODE is not input in 5 min., the lamp will be automatically turned off.



PIN BOX

Returning repaired unit

Use the Master PIN code. See the paragraph of Releasing the PIN LOCK system deactivation.

Swap unit/Returned unit

Release all security systems. See the paragraph of the PIN LOCK system deactivation.

Releasing the PIN LOCK System

When the PIN BOX menu is displayed, sequentially enter the codes with remote controller as follows. In accordance with remote controller button entry, "∗" mark appears in the PIN BOX menu.

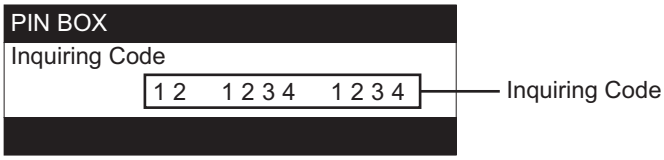
Master PIN codes

1st entry code: Press the "MENU" button.
2nd entry code: Press the "▼" button.
3rd entry code: Press the "KEYSTONE" button.
4th entry code: Press the "▲" button.

Note: The Master PIN codes can be used up to 30 times. The codes cannot be used thereafter. If the Master PIN codes cannot be used, see the paragraph of the PIN LOCK system deactivation.

The PIN LOCK System inactivation

1. When the PIN BOX menu is displayed, press "RESET" for 3 seconds or more in order to get the ID Inquiring Code.



PIN BOX (ID Inquiring Code)

2. Send HITACHI sales company the Inquiring code (10 digits) to inquire the correct PIN code.
3. With the PIN BOX menu displayed, input the correct PIN code. Enter the correct PIN CODE that HITACHI sales company supplied.
4. Open menu and select "TURN OFF" from the PIN LOCK items in the SECURITY menu. Then the PIN BOX menu appears.
   Password is required to display the Security Menu.
   See the Security in OPTION menu: User's Manual - Operating Guide.
5. Input the correct PIN code in the PIN BOX menu.
6. And then, PIN LOCK will be set to "TURN OFF".
7. Deactivate the MyScreen PASSWORD and Transition Detector too.
   Reset the Security Password to the [6971].
   See the Security in OPTION menu: User's Manual - Operating Guide.

6-11 Related Messages

When the unit's power is on, messages such as those shown below may be displayed. When any such message is displayed on the screen, please respond as described below.

Although these messages will be automatically disappeared around several minutes, it will be reappeared every time the power is turned on.

Message	Description
NO INPUT IS DETECTED ***	**There is no input signal.** Please confirm the signal input connection, and the status of the signal source.
SYNC IS OUT OF RANGE *** fH *****kHz fV *****Hz	**The horizontal or vertical frequency of the inputted signal is outside of the response parameters of this unit.** Please confirm the specs for this unit or the signal source specs.
INVALID SCAN FREQ. ***	**An improper signal is input.** Please confirm the specs for your projector or the signal source specs.
CHECK THE AIR FLOW	**The internal portion temperature is rising.** Please turn the power OFF, and allow the unit to cool down at least 20 minutes. After having confirmed the following items, please turn the power ON again. • Is there blockage of the air passage aperture? • Is the air filter dirty? • Does the peripheral temperature exceed 35°C? If the same indication is displayed after the remedy, please set FAN SPEED of the SERVICE item in the OPTION menu to HIGH.
REMINDER ***HRS PASSED AFTER THE LAST FILTER CHECK. FILTER MAINTENANCE IS ESSENTIAL TO REMOVE WARNING MESSAGE, RESET FILTER TIMER. SEE MANUAL FURTHER INFO.	**A note of precaution when cleaning the air filter.** Please immediately turn the power OFF, and clean or change the air filter by referring to the "Air Filter" section of this manual. After you have cleaned or changed the air filter, please be sure to reset the filter timer.

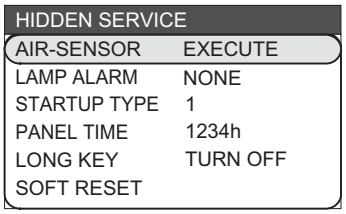
6-12 Regarding the indicator lamps

Lighting and flashing of the POWER indicator, the LAMP indicator, and the TEMP indicator have the meanings as described in the table below. Please respond in accordance with the instructions within the table.

POWER indicator	LAMP indicator	TEMP indicator	Description
Lighting In Orange	Turned off	Turned off	**The projector is in a standby state.**
Blinking In Green	Turned off	Turned off	**The projector is warming up.** Please wait.
Lighting In Green	Turned off	Turned off	**The projector is in an on state.** Ordinary operations may be performed.
Blinking In Orange	Turned off	Turned off	**The projector is cooling down.** Please wait.
Blinking In Red	(discre-tionary)	(discre-tionary)	**The projector is cooling down. A certain error has been detected.** Please wait until the POWER indicator finishes blinking, and then perform the proper measure using the item descriptions below.
Blinking In Red or Lighting In Red	Lighting In Red	Turned off	**The lamp does not light, and there is a possibility that interior portion has become heated.** Please turn the power off, and allow the projector to cool down at least 20 minutes. After the projector has sufficiently cooled down, please make confirmation of the following items, and then turn the power on again. • Is there blockage of the air passage aperture? • Is the air filter dirty? • Does the peripheral temperature exceed 35ºC? If the same indication is displayed after the remedy, please change the lamp referring to the section “Lamp”.
Blinking In Red or Lighting In Red	Blinking In Red	Turned off	**The lamp cover has not been properly fixed (attached).** Please turn the power off, and allow the unit to cool down at least 45 minutes. After the projector has sufficiently cooled down, please make confirmation of the attachment state of the lamp cover. After performing any needed maintenance, turn the power on again.
Blinking In Red or Lighting In Red	Turned off	Blinking In Red	**The cooling fan is not operating.** Please turn the power off, and allow the unit to cool down at least 20 minutes. After the projector has sufficiently cooled down, please make confirmation that no foreign matter has become caught in the fan, etc., and then turn the power on again. If the same indication is displayed after the remedy, please replace a fan.
Blinking In Red or Lighting In Red	Turned off	Lighting In Red	**There is a possibility that the interior portion has become heated.** Please turn the power off, and allow the unit to cool down at least 20 minutes. After the projector has sufficiently cooled down, please make confirmation of the following items, and then turn the power on again. • Is there blockage of the air passage aperture? • Is the air filter dirty? • Does the peripheral temperature exceed 35°C? If the same indication is displayed after the remedy, please set the FAN SPEED of the SERVICE item in the OPTION menu to HIGH.
Lighting In Green	Alternative blinking in Red		**There is a possibility that the interior portion has become overcooled.** Please use the unit within the usage temperature parameters (5°C to 35°C). After the treatment, resent the power to ON. If the same indication is displayed after the treatment, please make sure that the proper cables are connected to each of connectors E301, E302 and E304 on the PWB assembly MAIN.
Lighting In Green	Simultaneous blinking in Red		**It is time to clean the air filter.** Please immediately turn the power OFF, and clean or change the air filter referring to the section “Air Filter”. After cleaning or change the air filter, please be sure to reset the filter timer. After the remedy, resent the power to ON.

NOTE • When the interior portion has become overheated, for safety purposes, the power source is automatically turned off, and the indicator lamps may also be turned off. In such a case, press the “○” (OFF) side of the power switch, and wait at least 45 minutes. After the projector has sufficiently cooled down, please make confirmation of the attachment state of the lamp and lamp cover, and then turn the power on again.

6-13 HIDDEN SERVICE MENU



To display the OSD for “HIDDEN SERVICE MENU” set up.

By the control panel	By the remote control transmitter
1. Display the Advanced menu by the “MENU” button.(If EASY MENU appears, choose “Go to Advanced menu” to display ADVANCED MENU.) 2. Select the “OPTION” on the menu. 3. Continue press the button [◀] first, then press the button [◀] together with “INPUT”, and hold for 3 seconds.	1. Display the menu by the “MENU” button. (If EASY MENU appears, choose “Go to Advanced menu” to display ADVANCED MENU.) 2. Select the “OPTION” on the menu. 3. Press the “MAGNIFY OFF” button. Next hold the “MAGNIFY OFF” button for 3 seconds.

● AIR - SENSOR
Execute this item to adjust the air sensor.

● LAMP ALARM
Select the lamp alarm level. 3 Level ↔ 1 Level ↔ None

● STARTUP TYPE
Select the startup screen type. 1 : shows Hitachi Logo
2 : No Hitachi Logo

● PANEL TIME
Use time of LCD panel. Reset the PANEL TIME whenever you changed the LCD/LENS prism assembly panel.

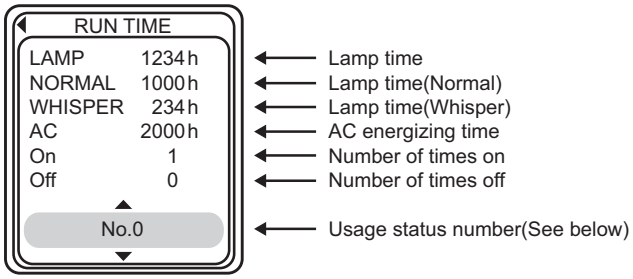
● LONG KEY
Projector react only to the key pressing the remote button for 3 seconds. Turn off ↔ Turn on.
When LONG KEY mode is on, MY BUTTON1 behave as “LONG KEY DISABLE” and MY BUTTON2 behave as “LONG KEY ENABLE”.

● SOFT RESET
If this is executed, all of the user data is initialized.Never use it when not required.

6-14 RUN TIME window

● Set operating time display method (accumulated lamp time display method)

1. Select “OPTION” from the Advanced menu, then place the cursor on the “LAMP TIME”.
2. Press the [▶], [ENTER] or [RESET] button.
3. Press the [Reset] button once, then press [KEYSTONE] button of the remote control for 3 seconds or more to display the screen shown below. (The menu will close after 10 seconds if there are no further operations.)
4. Use [▲] or [▼] to select the usage status number. (The usage status is as shown below.)



Usage status number

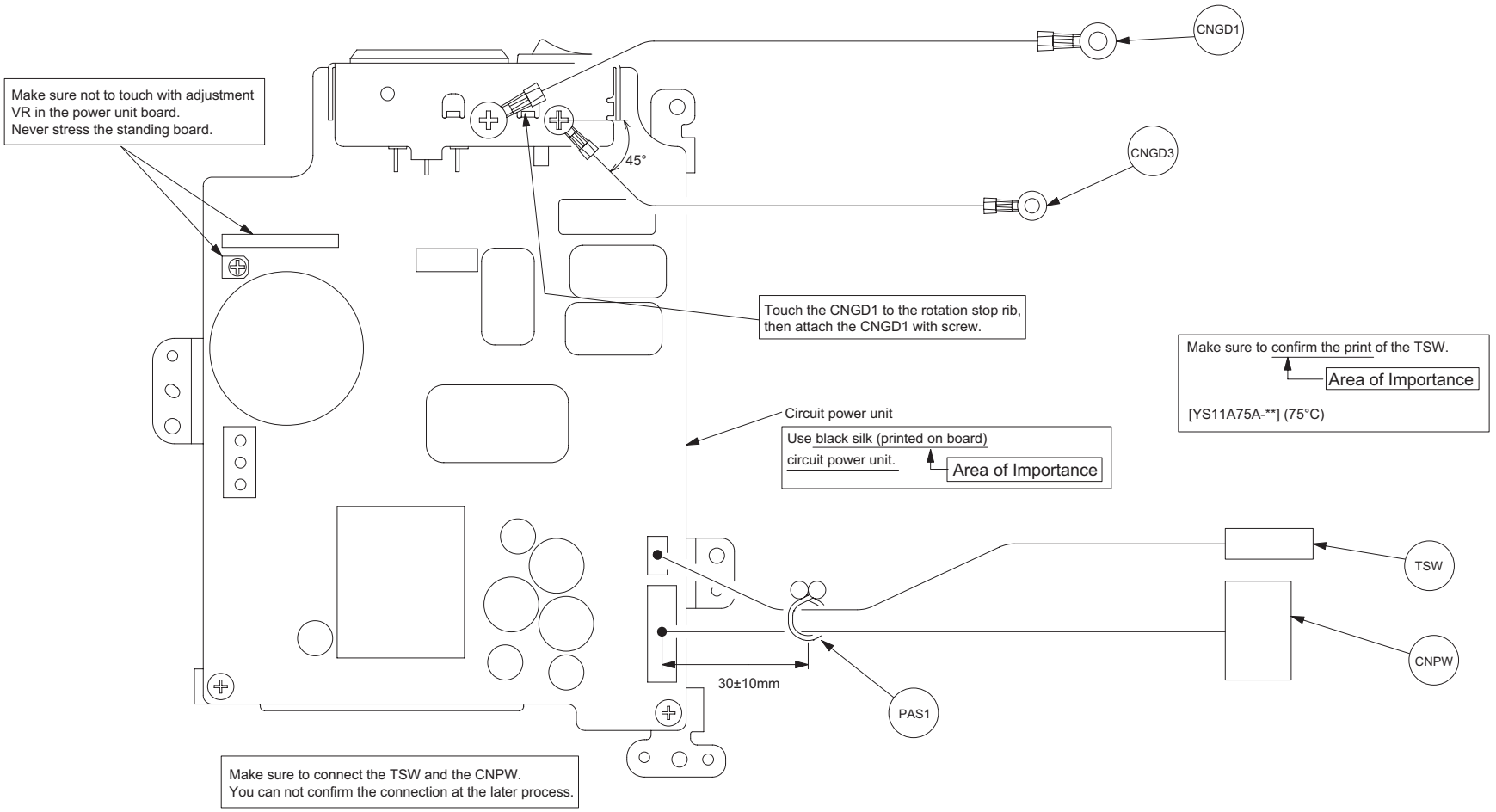
0 ..... Total usage status
1 ..... Current usage status
2 ..... Usage status before first reset
3 ..... Usage status before second reset
||
9 ..... Usage status before eighth reset

Wiring of the circuit power unit

(1) Attach the CNGD1 and the CNGD3 with screw.
(2) Connect the TSW after you confirmed the print of the TSW.
(3) Connect the CNPW.
(4) Bundle the CNPW and the TSW with purse lock (PAS1).

Area of Importance

The operations with this symbol have implications with laws/standards. It is possible to be in violation of these laws/standards in the case that these operations are not carried out according to the instructions. Assemble according to the operation instructions.



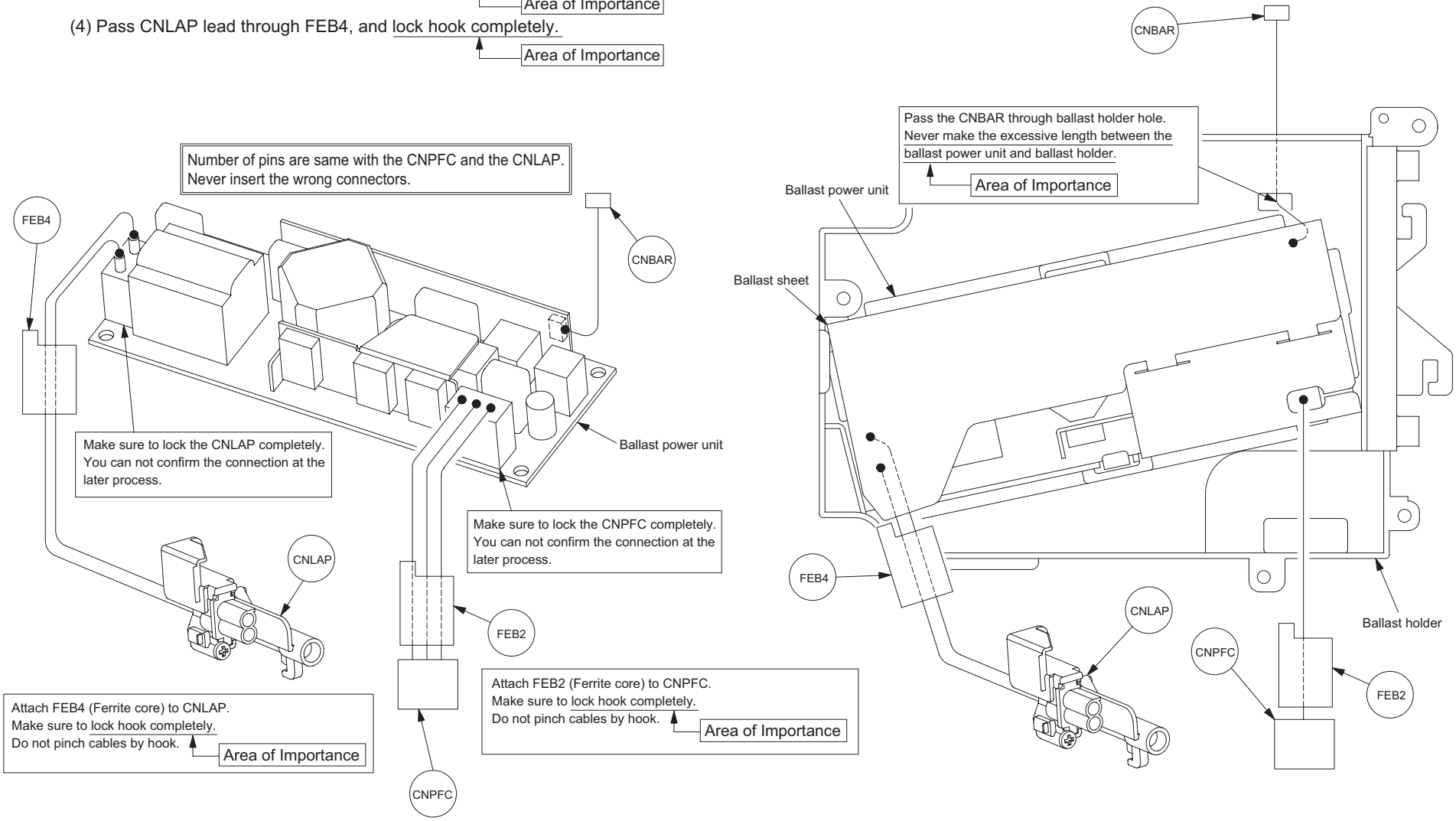
Wiring diagram 1

Preparation of the ballast power unit

(1) Connect the CNBAR, the CNPFC and the CNLAP.
(2) Use Ballast power unit white or white marked CNPFC connector is mounted.
(3) Pass CNPFC lead through FEB2, and lock hook completely.
Area of Importance
(4) Pass CNLAP lead through FEB4, and lock hook completely.
Area of Importance

Wiring after attaching the ballast power unit

(1) Style the CNBAR, the CNPFC and the CNLAP.



Wiring diagram 2

Assembling of the power unit block

The assembly order of the power block

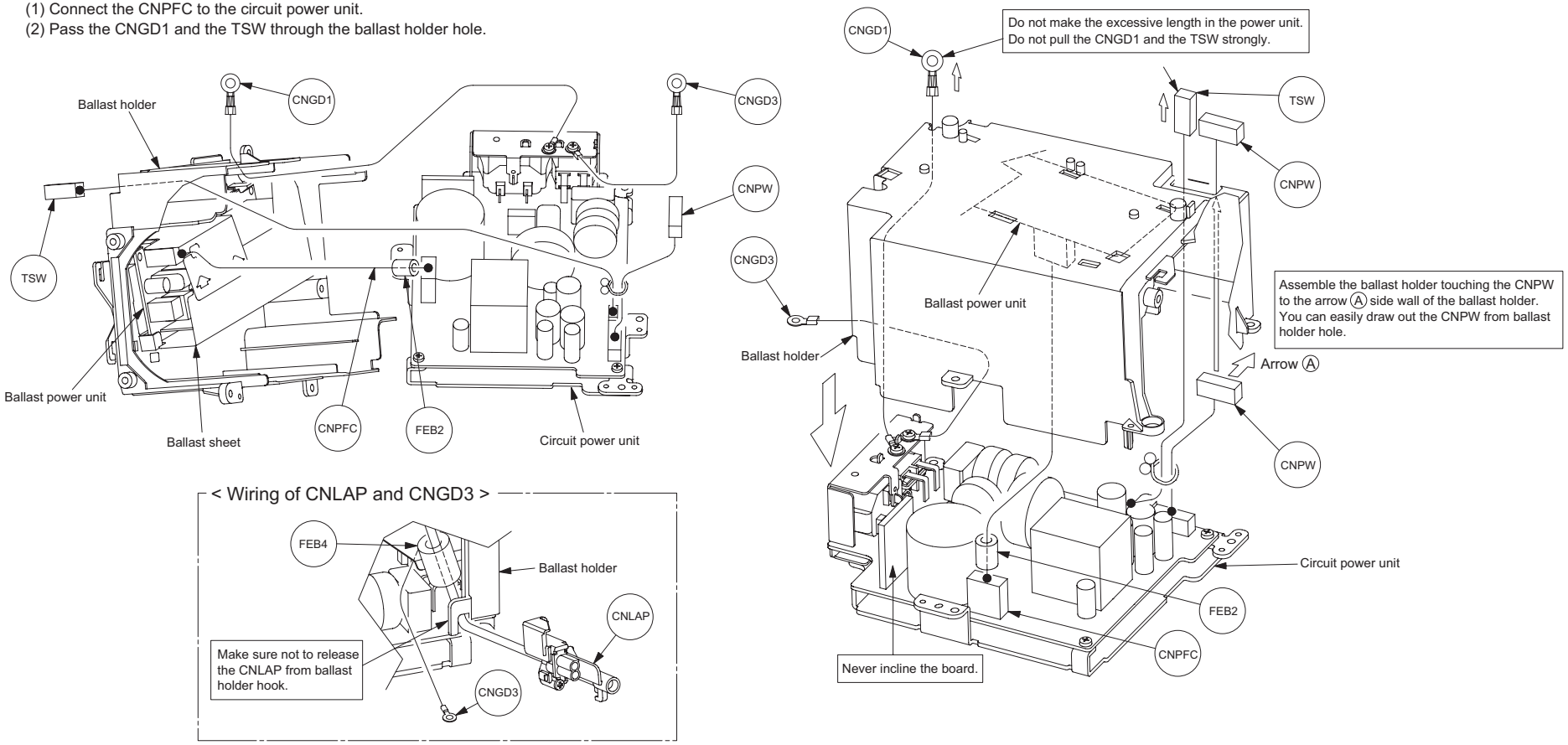
Assemble the circuit power unit and ballast power unit (Ballast holder) by the following procedures.
Refer the wiring of the power unit block (Next page) to style the cables, after you assembled the power unit block.

1. Connection of the circuit power unit and the ballast power unit, Preparation for assembling.

(1) Connect the CNPFC to the circuit power unit.
(2) Pass the CNGD1 and the TSW through the ballast holder hole.

2. Assembling of the circuit power unit and ballast power unit.

(1) Attach the ballast holder to the circuit power unit drawing out the CNPW.
Assemble the ballast holder and the circuit power unit touching the CNPW to the arrow Ⓐ side wall of the ballast holder.
You can easily draw out the CNPW.
(2) Draw out the CNPW from the ballast holder hole, then style the CNGD1 and the TSW.
Do not make the excessive length in the power unit.
Do not pull the CNGD1 and the TSW strongly, otherwise connector might be released.
(3) Style the igniter lead (CNLAP) on the ballast sheet.
Make sure not to release the CNLAP from ballast holder hook, then attach the ballast holder with screws.



Wiring diagram 3

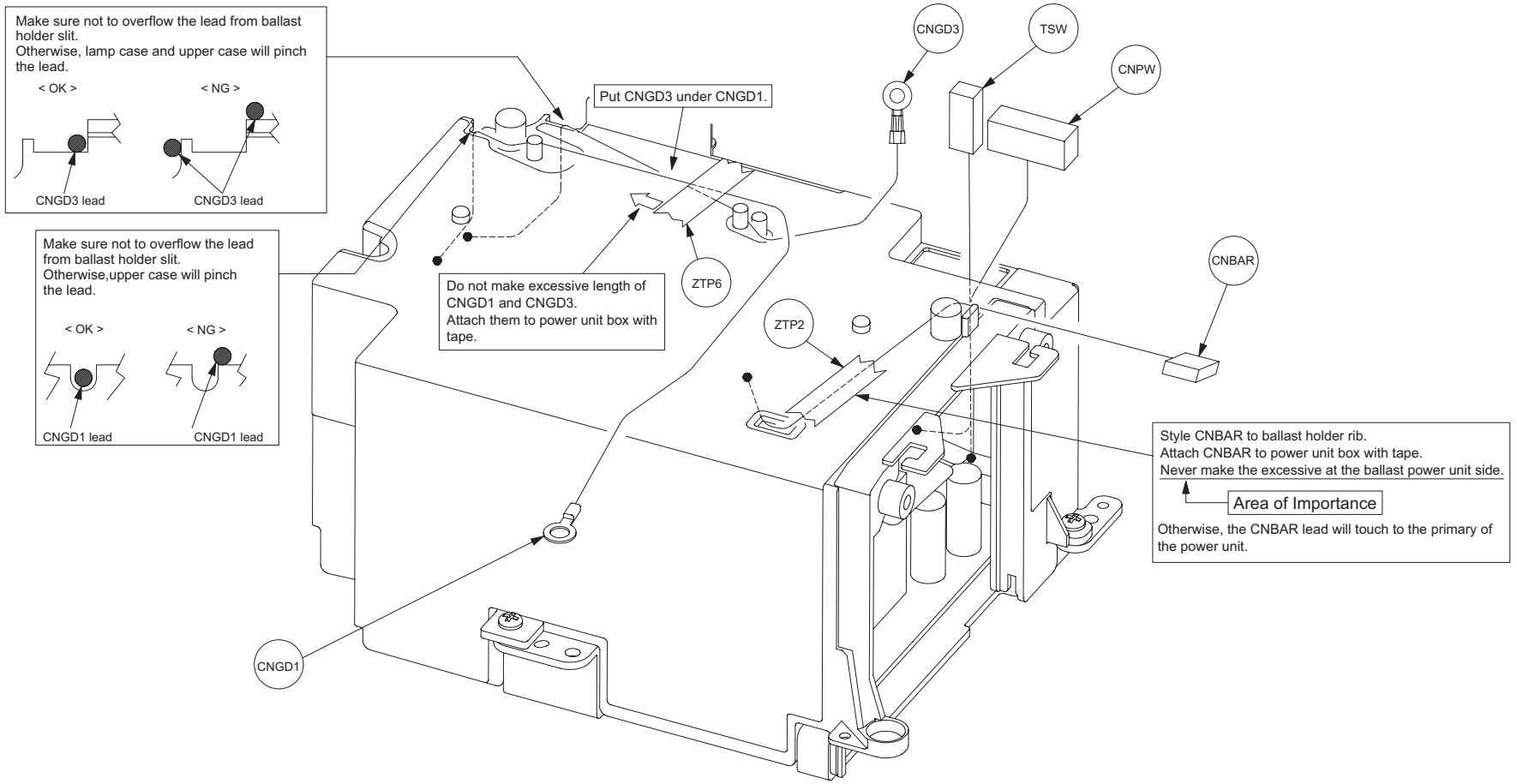
Wiring of the power unit

Style of the power unit assembling

(1) Style CNBAR to ballast holder rib, and fix with ZTP2.
(2) Attach the CNDG1 to a ballast holder boss.
- Make sure not to overflow the lead from ballast holder slit. (Otherwise, upper case will pinch the lead.)
- Do not make excessive length at the power unit side.

(3) Attach the CNGD3 to a ballast holder boss.
- Make sure not to overflow the lead from ballast holder slit. (Otherwise, lamp case and ballast holder will pinch the lead.)
- Do not make excessive length at the power unit side.

(4) Combine CNGD3 and CNGD1, and fix with ZTP6.

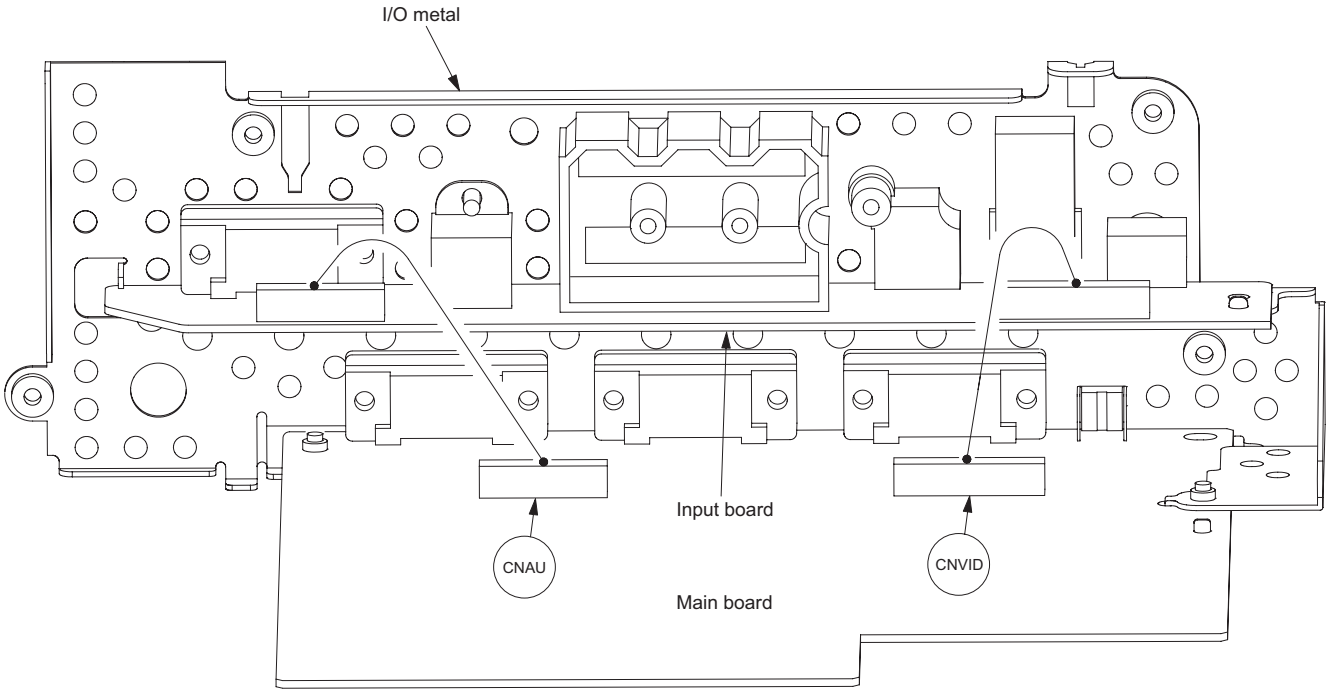


Wiring diagram 4

Preparation of the main board assembling

Wiring of the input board assembling

(1) Connect Main board and Input board with CNVID and CNAU.
Refer to following procedure.
① Insert to main board connector.
② Insert to Input board connector.
③ Attach Input board to I/O metal.

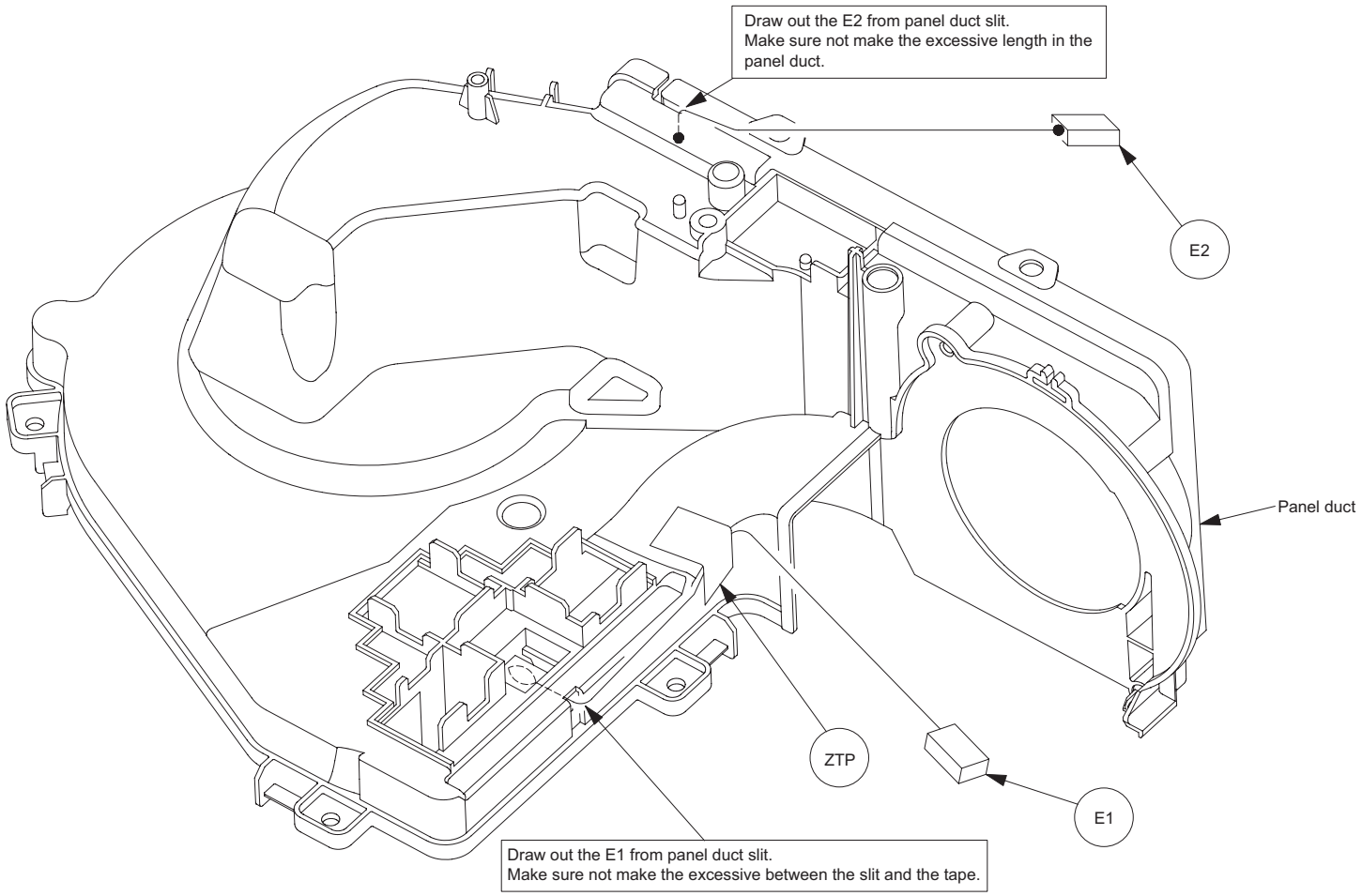


Wiring diagram 5

Preparation of the panel duct

Wiring of the panel duct assembling

(1) Draw out the E1 from the panel duct incision.
Style the E1 along the side of panel duct, then fix the E1 with tape.
(2) Attach the E2 to the panel duct with screw, then draw out the E2 from panel duct slit.
Make sure not make the excessive length in the panel duct.

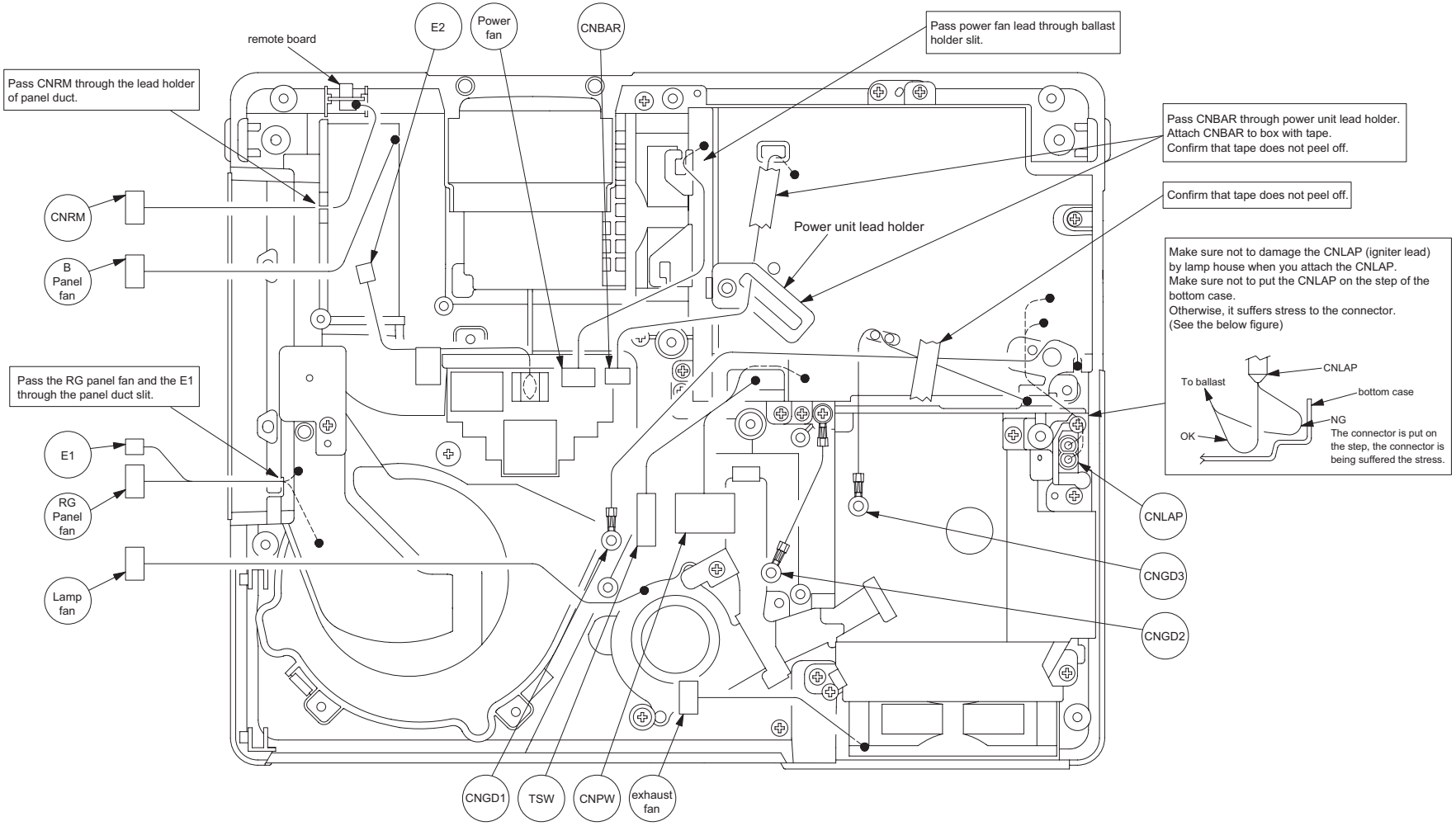


Wiring diagram 6

Attaching the power unit

Wiring of the power unit attaching

(1) Attach the CNGD2. (Attach the lamp house with this screw too.)
(2) Pass the power fan and the CNBAR through the ballast holder slit.
Make sure not make the excessive length at the fan side.
(3) Attach the CNLAP to the lamp holder (bottom case). Make sure not to damage the lead.
(4) Pass the RG panel fan and the E1 through the panel duct slit. Attach them to the panel duct.
(5) Connect the CNRM to the remote board. Then attach the remote board to the bottom case.
(6) Pass the CNRM through the lead holder of panel duct.
(7) Pass CNBAR through power unit lead holder. Then, Attach power unit lead holder to ballast holder.

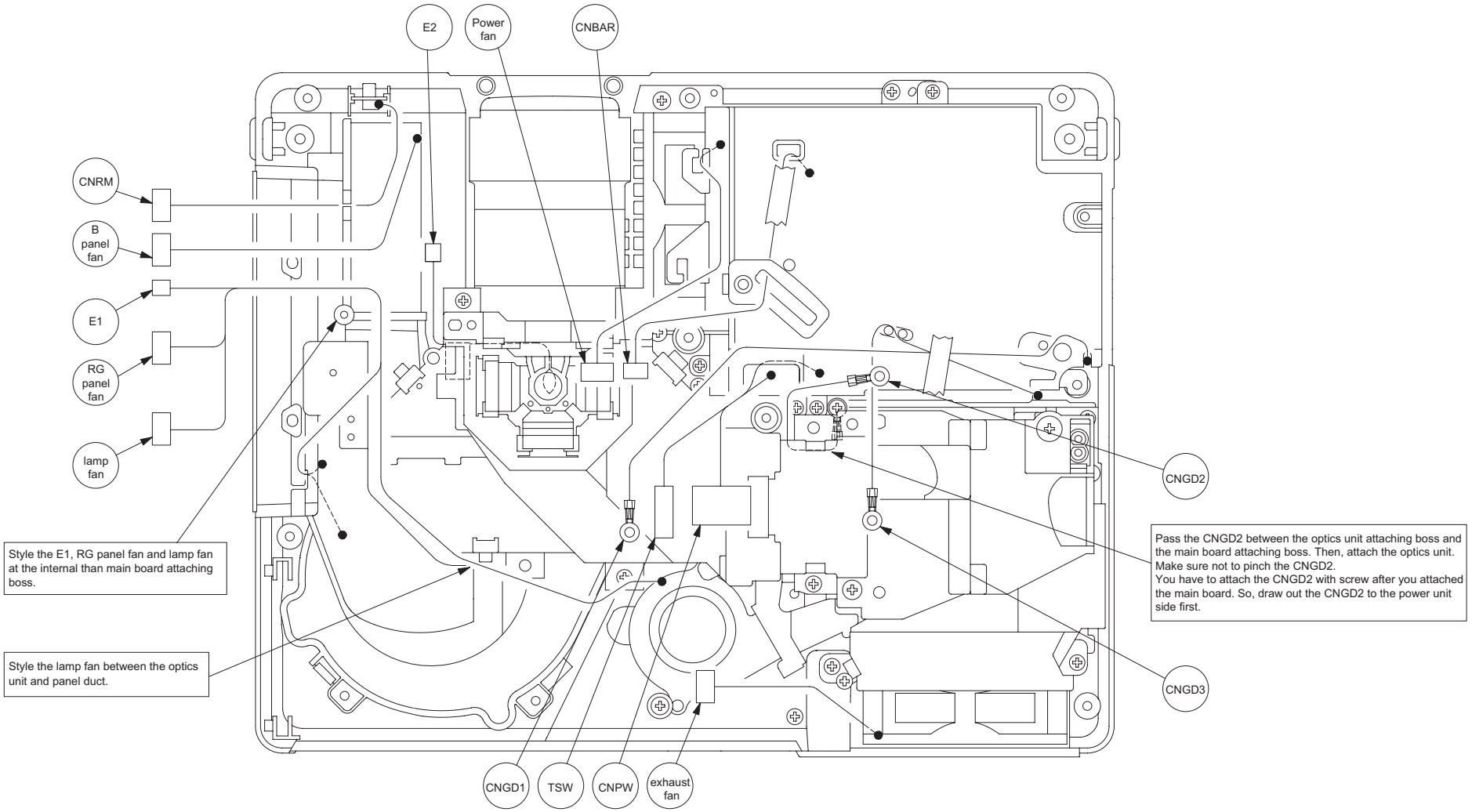


Wiring diagram 7

Attaching the optics unit

(1) Pass the CNGD2 between the optics unit attaching boss and the main board attaching boss. Then, attach the optics unit.
(2) Style the E1, RG panel fan and lamp fan at the internal than main board attaching boss.

Wiring of the optics unit attaching

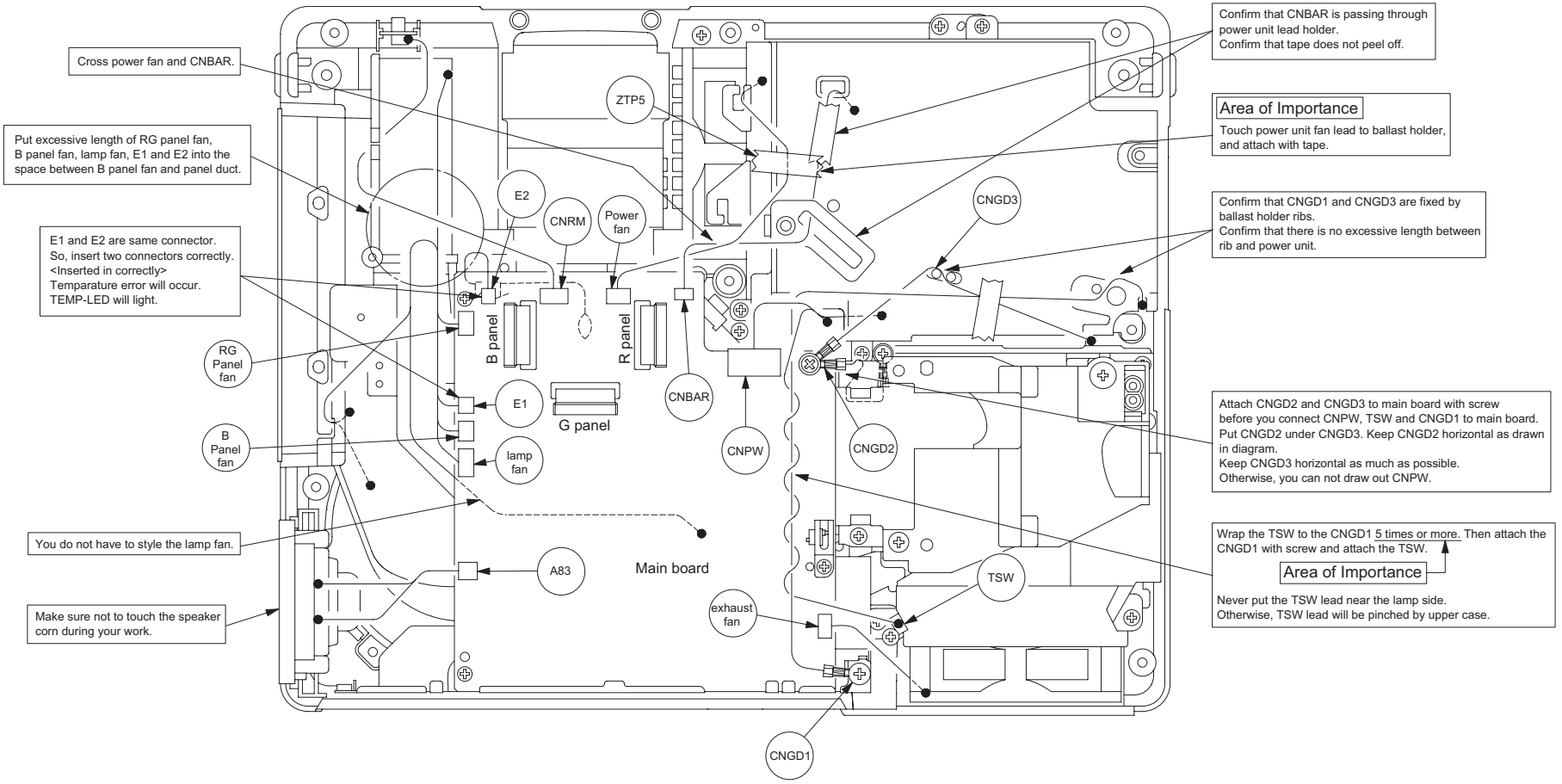


Wiring diagram 8

Attaching the main board

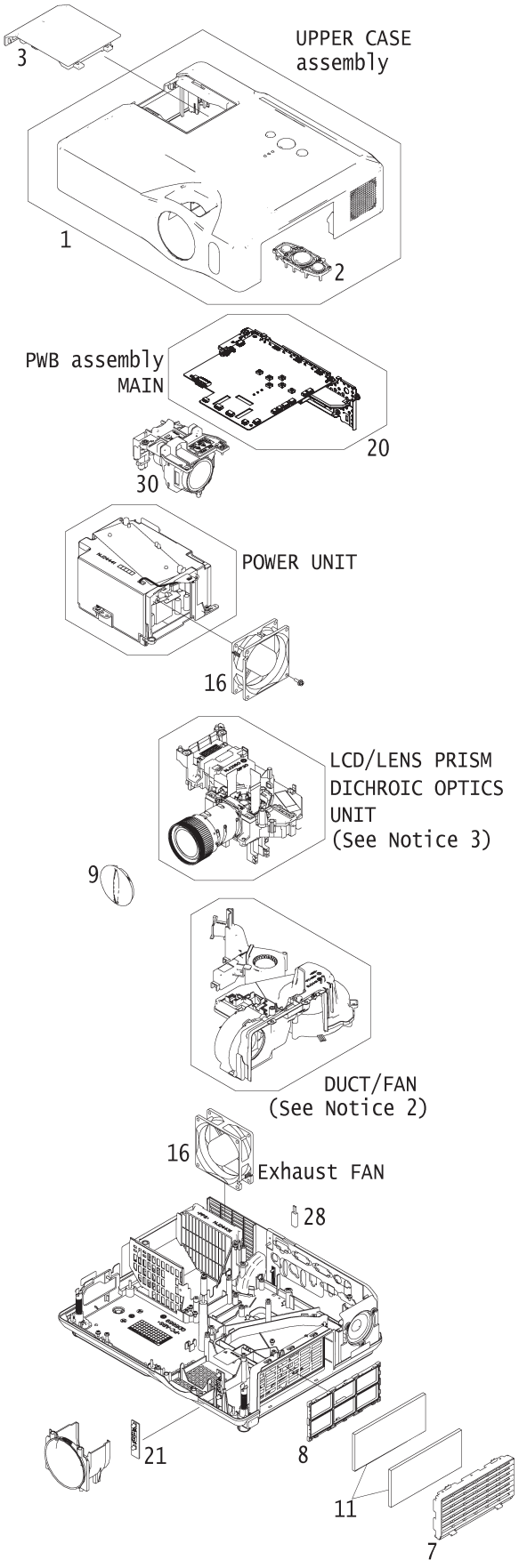
Wiring of the main board attaching

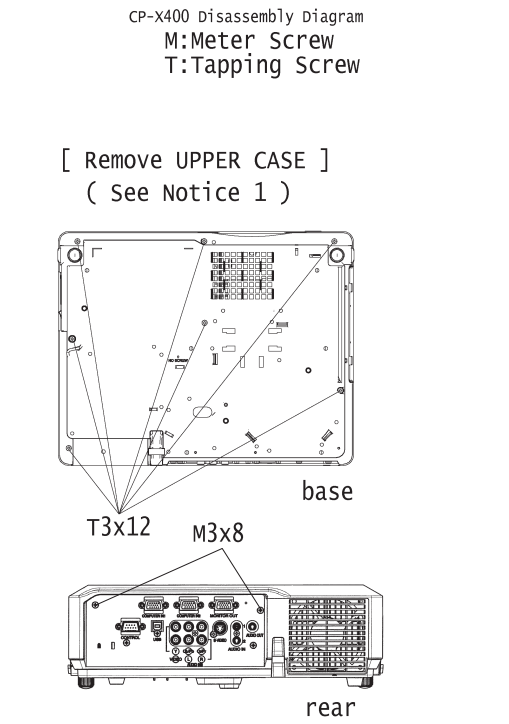
(1) Attach main board after you connected exhaust fan. Attach main board with CNGD2 and CNGD3 by screw. Put CNGD2 under CNGD3.
(2) Connect CNPW. Put TSW and CNGD1 under CNPW.
(3) Connect RG panel fan, B panel fan, lamp fan, E1, E2 and CNRM.
Put excessive length of each cables into the space between B panel fan and panel duct.
Otherwise, upper case will pinch cables.
(4) Cross CNBAR and power fan. Then, connect to main board. Otherwise, upper case will pinch cables. Touch power fan lead to ballast holder shield and attach with tape.
Area of Importance
(5) Connect flexible cables (LCD panel).
(6) Wrap TSW to CNGD1 5 times. Then, attach CNGD1 and TSW.
(7) Attach speaker after you styled cables.

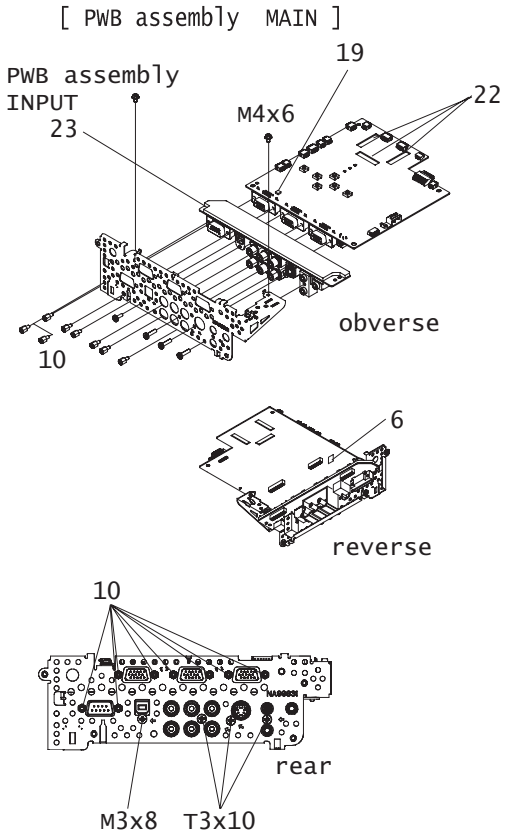


Wiring diagram 9

8. Disassembly diagram



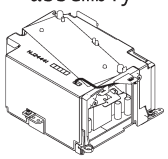




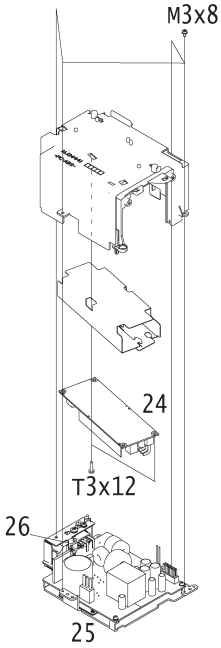
CP-X400 Disassembly Diagram
M:Meter Screw
T:Tapping Screw

[POWER UNIT]

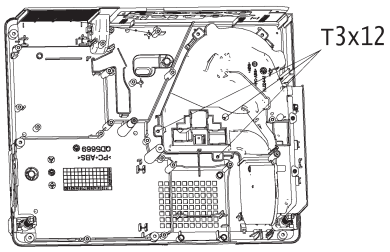
assembly



disassembly

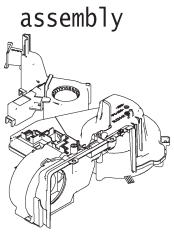


[Remove PANEL DUCT assembly]

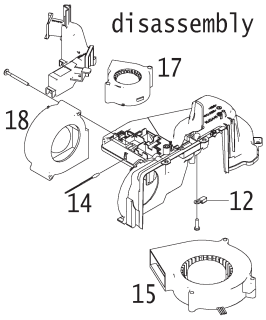


[DUCT/FAN]

assembly

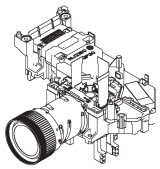


disassembly

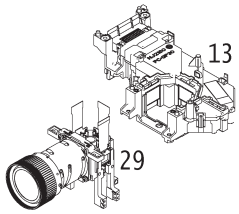


[LCD/LENS PRISM
DICHROIC OPTICS UNIT]

assembly



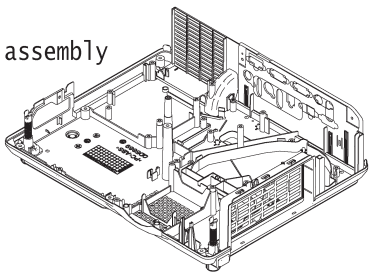
disassembly



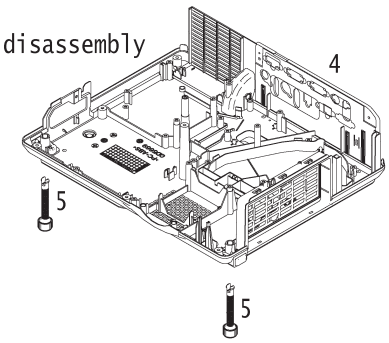
(See Notice 7)

[BOTTOM CASE assembly]

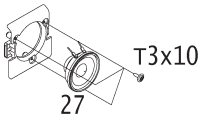
assembly



disassembly



[SPEAKER assembly]



Notice

1. Detach and attach the upper case.

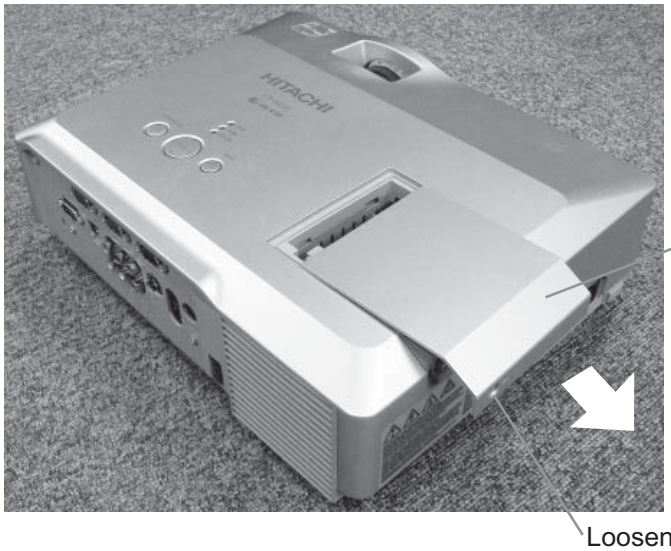
Follow the procedure below to detach and attach the upper case.

When disassembling

a. Remove the Lamp door.

⚠CAUTION

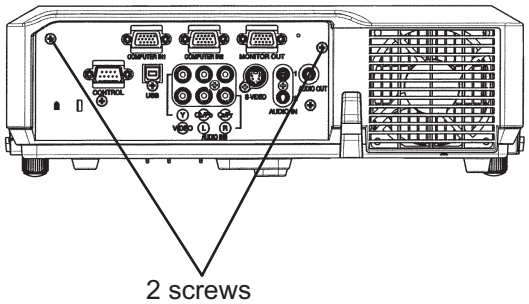
The lamp door must be removed before the upper case when disassembling the machine. If the upper case is detached with the lamp door installed, the MAIN board might be damaged.

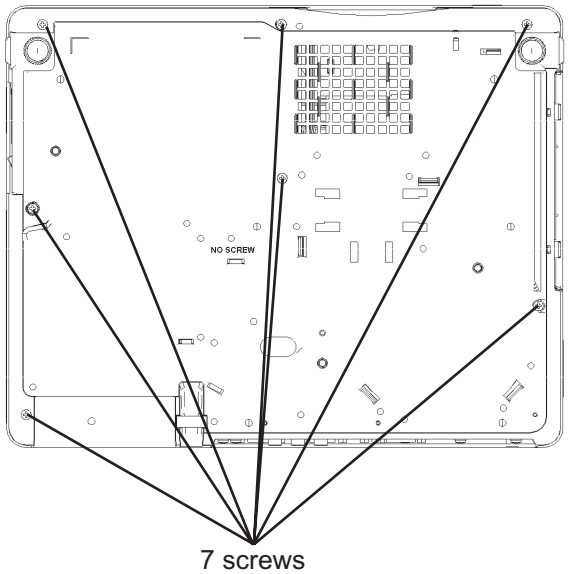


b. Remove 7 screws on the bottom and 3 screws on the rear to detach the upper case.

⚠CAUTION

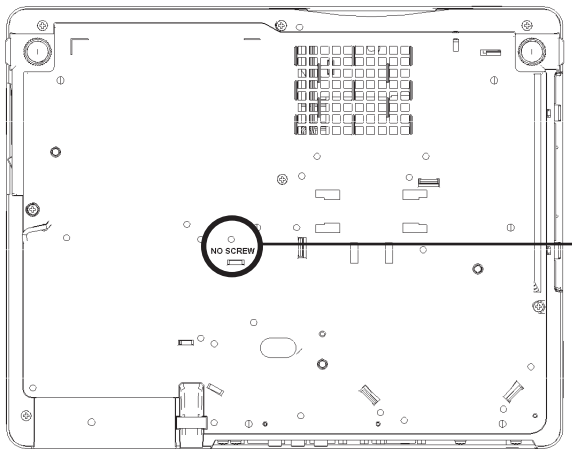
These are not screw holes. Do NOT insert a screw or screwdriver into them to avoid damaging the inside.





When assembling

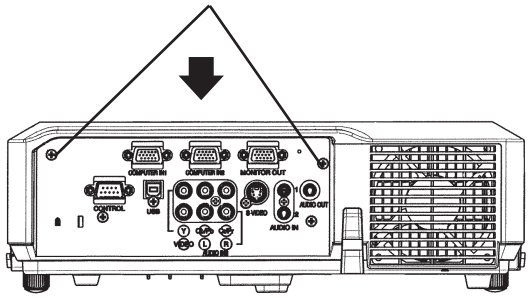
a. Tighten 7 screws on the bottom and 2 screws on the rear after attaching the upper case with the lamp door separated.



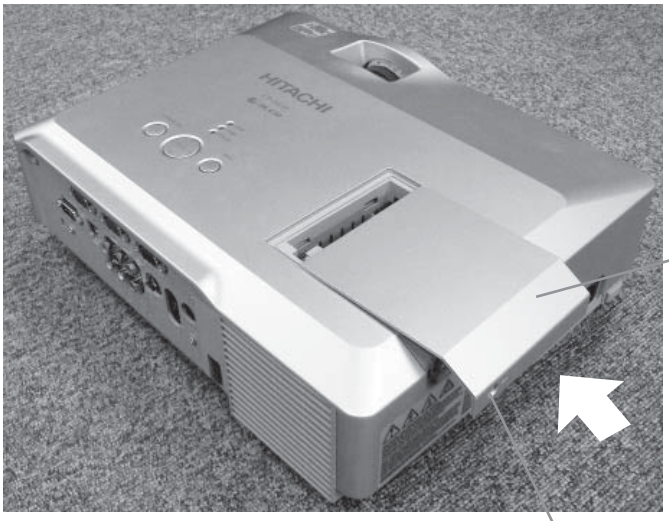
⚠CAUTION

These are not screw holes. Do NOT insert a screw or screwdriver into them to avoid damaging the inside.

In order not to make a gap between the upper and the bottom cases, tighten these screws while pressing down the upper case in the direction of the arrow. Be careful not to bend the outside casing.(Torque:0.39-0.59N•m)



b. Attach the Lamp door.



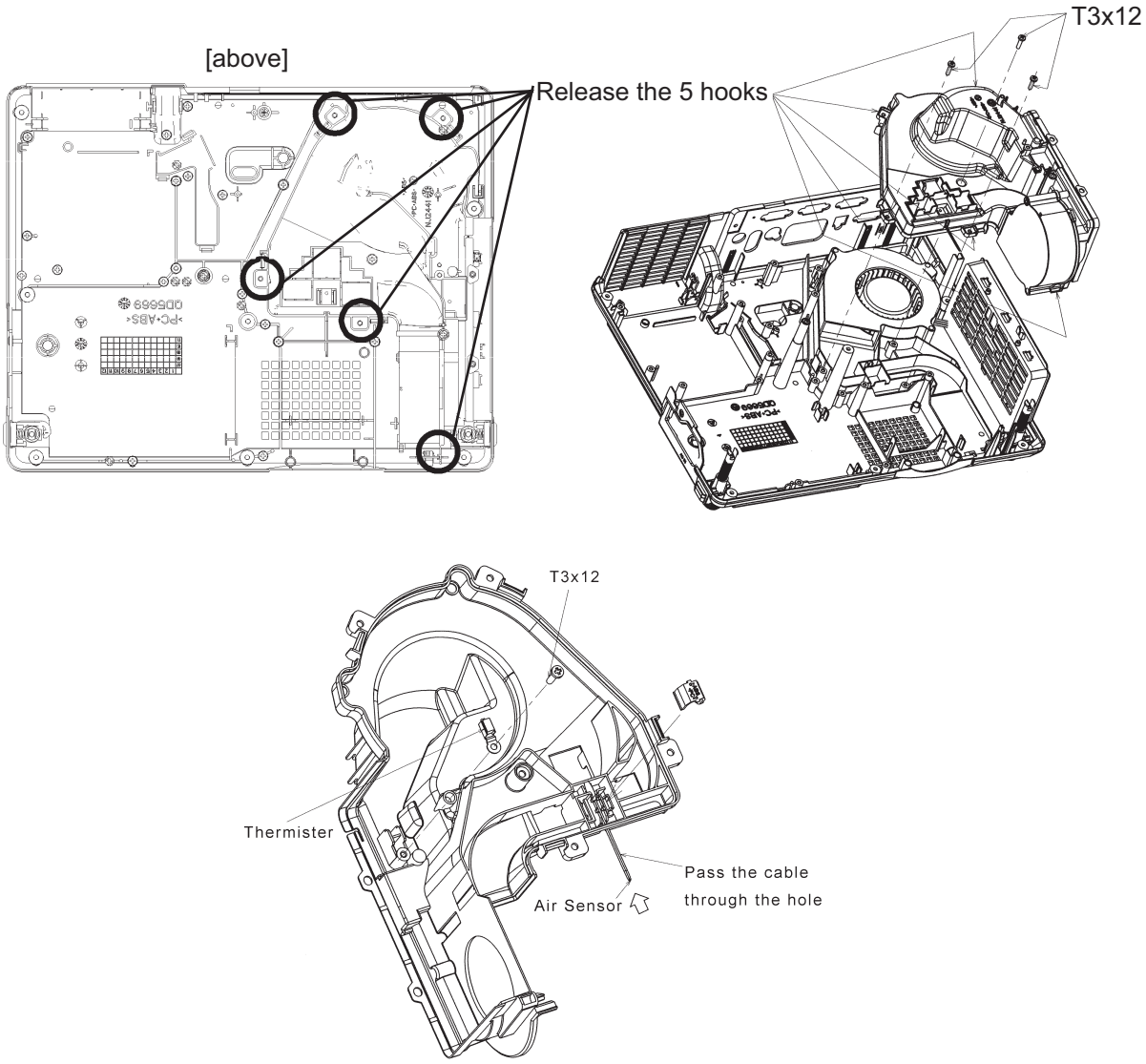
⚠CAUTION

Tighten this screw using a manual screwdriver.

2. Detaching and attaching the Panel Fan Duct assembly

When disassembling

Remove 1 screws and unhook the panel fan duct assembly as shown in the diagram.

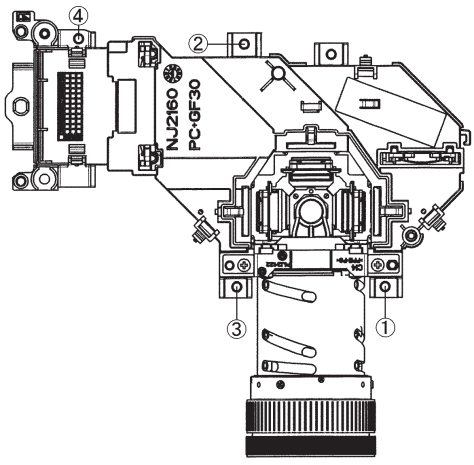


When assembling

(1) Put the thermistor and Air sensor in the correct position on the Panel duct as shown in the diagram.

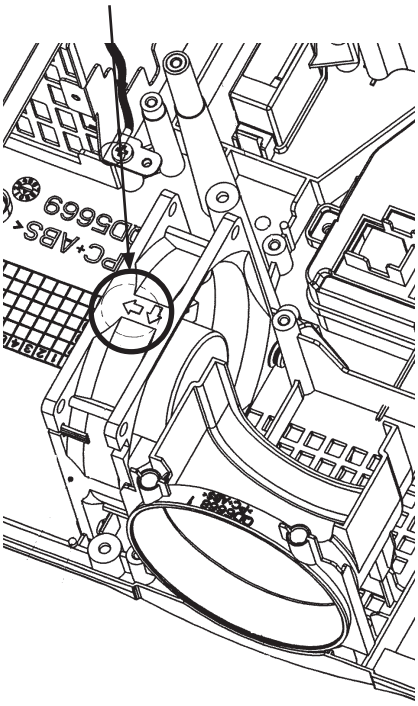
3. Attaching the dichroic optics unit

Put the dichroic optics unit on the bottom case, and tighten screws in order of 1, 2, 3 and 4 as shown in the diagram.



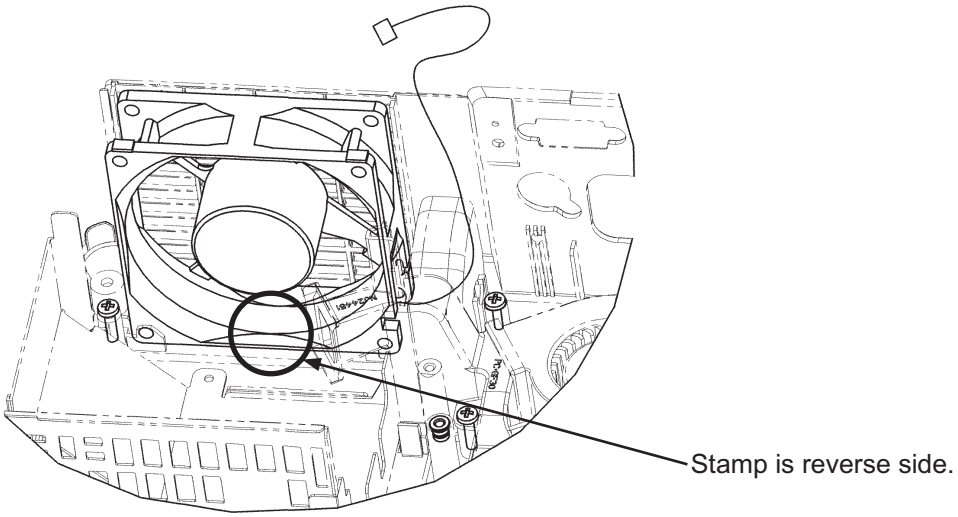
4. Attaching the power unit FAN.

Never attach the FAN to the wrong direction.
Refer the stamp on the FAN when you attach the power unit FAN.



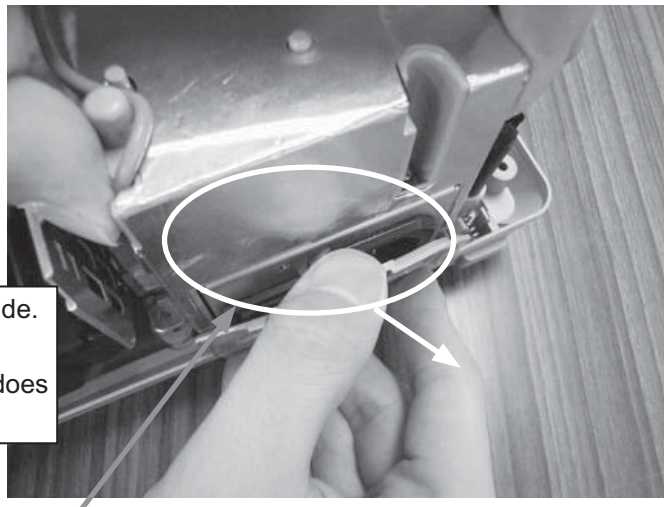
5. Attaching the exhaust FAN.

Never attach the FAN to the wrong direction.
Refer the diagram when you attach the exhaust FAN.

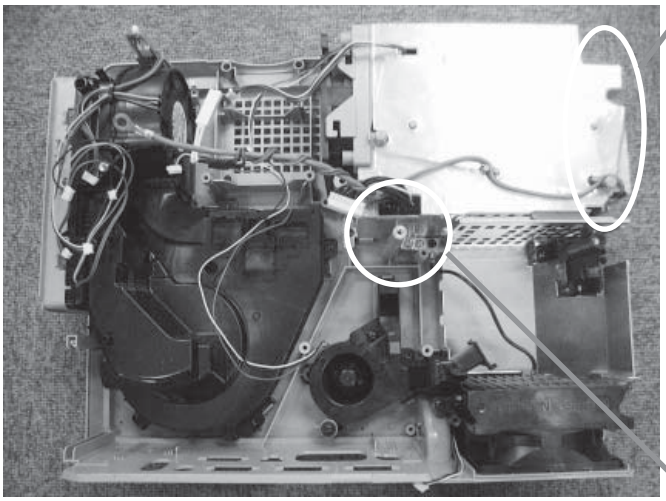


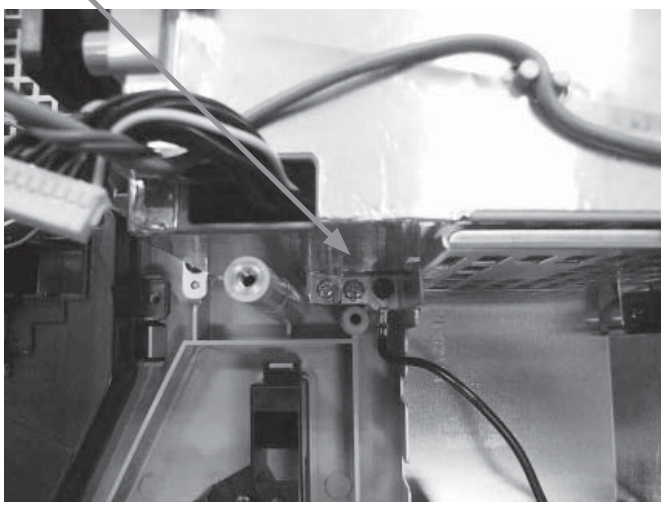
6. Attaching the power unit.

Refer the diagram when you attach the power unit.



Pull the AC inlet frame to the outside.
Then, attach the power unit.
Make sure that the bottom case does not come in contact with AC SW.





⚠CAUTION

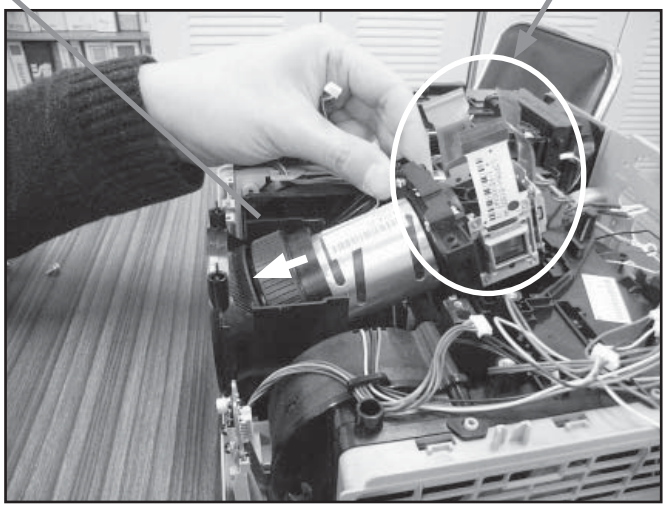
Never use the wrong screws.
M3 x 6 with lock washer.

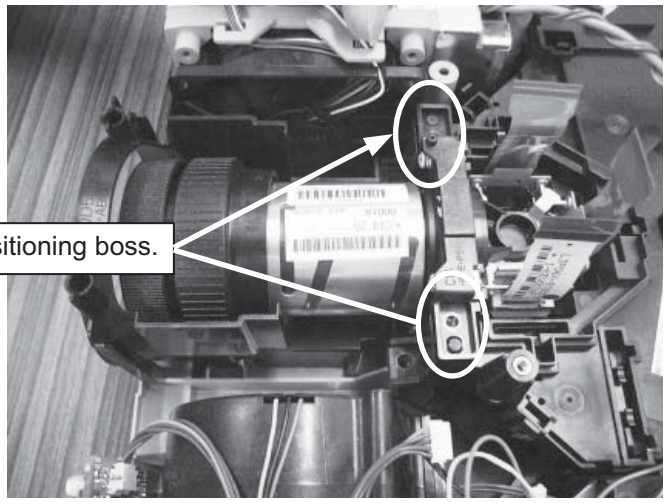
7. Attaching the Lens prism ASSY.

Refer the diagram when you attach the Lens prism ASSY.

(2) Attach the LCD prism ASSY inserting the top of the Lens to the lens enclosure.

Never touch the LCD to any parts when you attach the LCD prism ASSY.





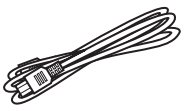
Insert vertically to the positioning boss.

9. Replacement Parts list

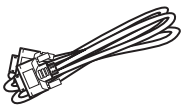
THE UPDATED PARTS LIST

FOR THIS MODEL IS

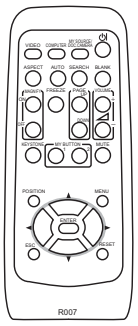
AVAILABLE ON ESTA



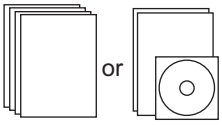
Power Cord



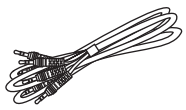
RGB Cable



Remote Control



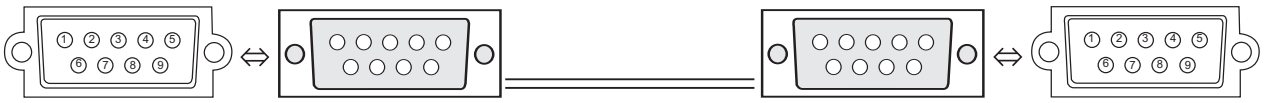
Instruction manual



Audio/Video cable

Lens cover and strap

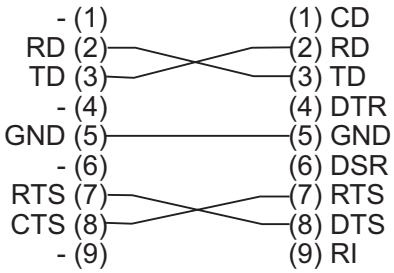
5. RS-232C communication



CONTROL port of the projector

RS-232C cable (cross)

RS-232C port of the computer



Connecting the cable

1. Turn off the projector and the computer.
2. Connect the CONTROL port of the projector with a RS-232C port of the computer by a RS-232C cable (cross). Use the cable that fulfills the specification shown in the previous page.
3. Turn the computer on, and after the computer has started up turn the projector on.

Communications setting

19200bps, 8N1

1. Protocol

Consist of header (7 bytes) + command data (6 bytes)

2. Header

BE + EF + 03 + 06 + 00 + CRC_low + CRC_high
CRC_low: Lower byte of CRC flag for command data
CRC_high: Upper byte of CRC flag for command data

3. Command data

Command data chart

byte_0	byte_1	byte_2	byte_3	byte_4	byte_5
Action		Type		Setting code	
low	high	low	high	low	high

Action (byte_0 - 1)

Action	Classification	Content
1	Set	Change setting to desired value.
2	Get	Read projector internal setup value.
4	Increment	Increment setup value by 1.
5	Decrement	Decrement setup value by 1.
6	Execute	Run a command.

Requesting projector status (Get command)

(1) Send the following request code from the PC to the projector.
Header + Command data ('02H' + '00H' + type (2 bytes) + '00H' + '00H')
(2) The projector returns the response code *'1DH' + data (2 bytes)* to the PC.

Changing the projector settings (Set command)

(1) Send the following setting code from the PC to the projector.
Header + Command data ('01H' + '00H' + type (2 bytes) + setting code (2 bytes))
(2) The projector changes the setting based on the above setting code.
(3) The projector returns the response code *'06H'* to the PC.

Using the projector default settings (Reset Command)

(1) The PC sends the following default setting code to the projector.
Header + Command data ('06H' + '00H' + type (2 bytes) + '00H' + '00H')
(2) The projector changes the specified setting to the default value.
(3) The projector returns the response code *'06H'* to the PC.

Increasing the projector setting value (Increment command)

(1) The PC sends the following increment code to the projector.
Header + Command data ('04H' + '00H' + type (2 bytes) + '00H' + '00H')
(2) The projector increases the setting value on the above setting code.
(3) The projector returns the response code *'06H'* to the PC.

Decreasing the projector setting value (Decrement command)

(1) The PC sends the following decrement code to the projector.
Header + Command data ('05H' + '00H' + type (2 bytes) + '00H' + '00H')
(2) The projector decreases the setting value on the above setting code.
(3) The projector returns the response code *'06H'* to the PC.

When the projector cannot understand the received command

When the projector cannot understand the received command, the error code *'15H'* is sent back to the PC.
Sometimes the projector cannot properly receive the command. In such a case, the command is not executed and the error code *'15H'* is sent back to the PC. If this error code is returned, send the same command again.

When the projector cannot execute the received command.

When the projector cannot execute the received command, the error code *'1CH' + 'xxxxH'* is sent back to the PC.
When the data length is greater than indicated by the data length code, the projector ignore the excess data code. Conversely when the data length is shorter than indicated by the data length code, an error code will be returned to the PC.

NOTE • Operation cannot be guaranteed when the projector receives an undefined command or data.
• Provide an interval of at least 40ms between the response code and any other code.
• The projector outputs test data when the power supply is switched ON, and when the lamp is lit. Ignore this data.
• Commands are not accepted during warm-up.

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
Power	Set	Turn off	BE EF	03	06 00	2A D3	01 00	00 60	00 00
		Turn on	BE EF	03	06 00	BA D2	01 00	00 60	01 00
		Get	BE EF	03	06 00	19 D3	02 00	00 60	00 00
			[Example return] 00 00 [Off] 01 00 [On] 02 00 [Cool down]						
Input Source	Set	COMPUTER1	BE EF	03	06 00	FE D2	01 00	00 20	00 00
		COMPUTER2	BE EF	03	06 00	3E D0	01 00	00 20	04 00
		COMPONENT	BE EF	03	06 00	AE D1	01 00	00 20	05 00
		S-VIDEO	BE EF	03	06 00	9E D3	01 00	00 20	02 00
		VIDEO	BE EF	03	06 00	6E D3	01 00	00 20	01 00
		Get	BE EF	03	06 00	CD D2	02 00	00 20	00 00
Error Status		Get	BE EF	03	06 00	D9 D8	02 00	20 60	00 00
			[Example return] 00 00 [Normal] 01 00 [Cover error] 02 00 [Fan error] 03 00 [Lamp error] 04 00 [Temp error] 05 00 [Air flow error] 06 00 [Lamp time error] 07 00 [Cold error] 08 00 [Filter error]						
BRIGHTNESS		Get	BE EF	03	06 00	89 D2	02 00	03 20	00 00
		Increment	BE EF	03	06 00	EF D2	04 00	03 20	00 00
		Decrement	BE EF	03	06 00	3E D3	05 00	03 20	00 00
BRIGHTNESS Reset		Execute	BE EF	03	06 00	58 D3	06 00	00 70	00 00
CONTRAST		Get	BE EF	03	06 00	FD D3	02 00	04 20	00 00
		Increment	BE EF	03	06 00	9B D3	04 00	04 20	00 00
		Decrement	BE EF	03	06 00	4A D2	05 00	04 20	00 00
CONTRAST Reset		Execute	BE EF	03	06 00	A4 D2	06 00	01 70	00 00
PICTURE MODE	Set	NORMAL	BE EF	03	06 00	23 F6	01 00	BA 30	00 00
		CINEMA	BE EF	03	06 00	B3 F7	01 00	BA 30	01 00
		DYNAMIC	BE EF	03	06 00	E3 F4	01 00	BA 30	04 00
		BOARD(BLACK)	BE EF	03	06 00	E3 EF	01 00	BA 30	20 00
		BOARD(GREEN)	BE EF	03	06 00	73 EE	01 00	BA 30	21 00
		WHITEBOARD	BE EF	03	06 00	83 EE	01 00	BA 30	22 00
		DAYTIME	BE EF	03	06 00	E3 C7	01 00	BA 30	40 00
		Get	BE EF	03	06 00	10 F6	02 00	BA 30	00 00
			[Example return] 00 00 [Normal] 01 00 [Cinema] 04 00 [Dynamic] 10 00 [Custom] 20 00 [BOARD(BLACK)] 21 00 [BOARD(GREEN)] 22 00 [WHITEBOARD] 40 00 [DAY TIME]						
GAMMA	Set	#1 DEFAULT	BE EF	03	06 00	07 E9	01 00	A1 30	20 00
		#1 CUSTOM	BE EF	03	06 00	07 FD	01 00	A1 30	10 00
		#2 DEFAULT	BE EF	03	06 00	97 E8	01 00	A1 30	21 00
		#2 CUSTOM	BE EF	03	06 00	97 FC	01 00	A1 30	11 00
		#3 DEFAULT	BE EF	03	06 00	67 E8	01 00	A1 30	22 00
		#3 CUSTOM	BE EF	03	06 00	67 FC	01 00	A1 30	12 00
		#4 DEFAULT	BE EF	03	06 00	F7 E9	01 00	A1 30	23 00
		#4 CUSTOM	BE EF	03	06 00	F7 FD	01 00	A1 30	13 00
		#5 DEFAULT	BE EF	03	06 00	C7 EB	01 00	A1 30	24 00
		#5 CUSTOM	BE EF	03	06 00	C7 FF	01 00	A1 30	14 00
		#6 DEFAULT	BE EF	03	06 00	57 EA	01 00	A1 30	25 00
		#6 CUSTOM	BE EF	03	06 00	57 FE	01 00	A1 30	15 00
		Get	BE EF	03	06 00	F4 F0	02 00	A1 30	00 00

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
User Gamma Pattern	Set	Off	BE EF	03	06 00	FB FA	01 00	80 30	00 00
		9 steps gray scale	BE EF	03	06 00	6B FB	01 00	80 30	01 00
		15 steps gray scale	BE EF	03	06 00	9B FB	01 00	80 30	02 00
		Ramp	BE EF	03	06 00	0B FA	01 00	80 30	03 00
	Get		BE EF	03	06 00	C8 FA	02 00	80 30	00 00
User Gamma Point 1	Get		BE EF	03	06 00	08 FE	02 00	90 30	00 00
	Increment		BE EF	03	06 00	6E FE	04 00	90 30	00 00
	Decrement		BE EF	03	06 00	BF FF	05 00	90 30	00 00
User Gamma Point 2	Get		BE EF	03	06 00	F4 FF	02 00	91 30	00 00
	Increment		BE EF	03	06 00	92 FF	04 00	91 30	00 00
	Decrement		BE EF	03	06 00	43 FE	05 00	91 30	00 00
User Gamma Point 3	Get		BE EF	03	06 00	B0 FF	02 00	92 30	00 00
	Increment		BE EF	03	06 00	D6 FF	04 00	92 30	00 00
	Decrement		BE EF	03	06 00	07 FE	05 00	92 30	00 00
User Gamma Point 4	Get		BE EF	03	06 00	4C FE	02 00	93 30	00 00
	Increment		BE EF	03	06 00	2A FE	04 00	93 30	00 00
	Decrement		BE EF	03	06 00	FB FF	05 00	93 30	00 00
User Gamma Point 5	Get		BE EF	03	06 00	38 FF	02 00	94 30	00 00
	Increment		BE EF	03	06 00	5E FF	04 00	94 30	00 00
	Decrement		BE EF	03	06 00	8F FE	05 00	94 30	00 00
User Gamma Point 6	Get		BE EF	03	06 00	C4 FE	02 00	95 30	00 00
	Increment		BE EF	03	06 00	A2 FE	04 00	95 30	00 00
	Decrement		BE EF	03	06 00	73 FF	05 00	95 30	00 00
User Gamma Point 7	Get		BE EF	03	06 00	80 FE	02 00	96 30	00 00
	Increment		BE EF	03	06 00	E6 FE	04 00	96 30	00 00
	Decrement		BE EF	03	06 00	37 FF	05 00	96 30	00 00
User Gamma Point 8	Get		BE EF	03	06 00	7C FF	02 00	97 30	00 00
	Increment		BE EF	03	06 00	1A FF	04 00	97 30	00 00
	Decrement		BE EF	03	06 00	CB FE	05 00	97 30	00 00
COLOR TEMP	Set	HIGH	BE EF	03	06 00	0B F5	01 00	B0 30	03 00
		CUSTOM-1 (HIGH)	BE EF	03	06 00	CB F8	01 00	B0 30	13 00
		MID	BE EF	03	06 00	9B F4	01 00	B0 30	02 00
		CUSTOM-2 (MID)	BE EF	03	06 00	5B F9	01 00	B0 30	12 00
		LOW	BE EF	03	06 00	6B F4	01 00	B0 30	01 00
		CUSTOM-3 (LOW)	BE EF	03	06 00	AB F9	01 00	B0 30	11 00
		Hi-BRIGHT-1	BE EF	03	06 00	3B F2	01 00	B0 30	08 00
		CUSTOM-4 (Hi-BRIGHT-1)	BE EF	03	06 00	FB FF	01 00	B0 30	18 00
		Hi-BRIGHT-2	BE EF	03	06 00	AB F3	01 00	B0 30	09 00
		CUSTOM-5 (Hi-BRIGHT-2)	BE EF	03	06 00	6B FE	01 00	B0 30	19 00
		Hi-BRIGHT-3	BE EF	03	06 00	5B F3	01 00	B0 30	0A 00
		CUSTOM-6 (Hi-BRIGHT-3)	BE EF	03	06 00	9B FE	01 00	B0 30	1A 00
	Get		BE EF	03	06 00	C8 F5	02 00	B0 30	00 00
COLOR TEMP GAIN R	Get		BE EF	03	06 00	34 F4	02 00	B1 30	00 00
	Increment		BE EF	03	06 00	52 F4	04 00	B1 30	00 00
	Decrement		BE EF	03	06 00	83 F5	05 00	B1 30	00 00
COLOR TEMP GAIN G	Get		BE EF	03	06 00	70 F4	02 00	B2 30	00 00
	Increment		BE EF	03	06 00	16 F4	04 00	B2 30	00 00
	Decrement		BE EF	03	06 00	C7 F5	05 00	B2 30	00 00

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
COLOR TEMP GAIN B	Get		BE EF	03	06 00	8C F5	02 00	B3 30	00 00
	Increment		BE EF	03	06 00	EA F5	04 00	B3 30	00 00
	Decrement		BE EF	03	06 00	3B F4	05 00	B3 30	00 00
COLOR TEMP OFFSET R	Get		BE EF	03	06 00	04 F5	02 00	B5 30	00 00
	Increment		BE EF	03	06 00	62 F5	04 00	B5 30	00 00
	Decrement		BE EF	03	06 00	B3 F4	05 00	B5 30	00 00
COLOR TEMP OFFSET G	Get		BE EF	03	06 00	40 F5	02 00	B6 30	00 00
	Increment		BE EF	03	06 00	26 F5	04 00	B6 30	00 00
	Decrement		BE EF	03	06 00	F7 F4	05 00	B6 30	00 00
COLOR TEMP OFFSET B	Get		BE EF	03	06 00	BC F4	02 00	B7 30	00 00
	Increment		BE EF	03	06 00	DA F4	04 00	B7 30	00 00
	Decrement		BE EF	03	06 00	0B F5	05 00	B7 30	00 00
COLOR	Get		BE EF	03	06 00	B5 72	02 00	02 22	00 00
	Increment		BE EF	03	06 00	D3 72	04 00	02 22	00 00
	Decrement		BE EF	03	06 00	02 73	05 00	02 22	00 00
COLOR Reset	Execute		BE EF	03	06 00	80 D0	06 00	0A 70	00 00
TINT	Get		BE EF	03	06 00	49 73	02 00	03 22	00 00
	Increment		BE EF	03	06 00	2F 73	04 00	03 22	00 00
	Decrement		BE EF	03	06 00	FE 72	05 00	03 22	00 00
TINT Reset	Execute		BE EF	03	06 00	7C D1	06 00	0B 70	00 00
SHARPNESS	Get		BE EF	03	06 00	F1 72	02 00	01 22	00 00
	Increment		BE EF	03	06 00	97 72	04 00	01 22	00 00
	Decrement		BE EF	03	06 00	46 73	05 00	01 22	00 00
SHARPNESS Reset	Execute		BE EF	03	06 00	C4 D0	06 00	09 70	00 00
MY MEMORY Load	Set	1	BE EF	03	06 00	0E D7	01 00	14 20	00 00
		2	BE EF	03	06 00	9E D6	01 00	14 20	01 00
		3	BE EF	03	06 00	6E D6	01 00	14 20	02 00
		4	BE EF	03	06 00	FE D7	01 00	14 20	03 00
MY MEMORY Save	Set	1	BE EF	03	06 00	F2 D6	01 00	15 20	00 00
		2	BE EF	03	06 00	62 D7	01 00	15 20	01 00
		3	BE EF	03	06 00	92 D7	01 00	15 20	02 00
		4	BE EF	03	06 00	02 D6	01 00	15 20	03 00
PROGRESSIVE	Set	TURN OFF	BE EF	03	06 00	4A 72	01 00	07 22	00 00
		TV	BE EF	03	06 00	DA 73	01 00	07 22	01 00
		FILM	BE EF	03	06 00	2A 73	01 00	07 22	02 00
	Get		BE EF	03	06 00	79 72	02 00	07 22	00 00
VIDEO NR	Set	LOW	BE EF	03	06 00	26 72	01 00	06 22	01 00
		MID	BE EF	03	06 00	D6 72	01 00	06 22	02 00
		HIGH	BE EF	03	06 00	46 73	01 00	06 22	03 00
	Get		BE EF	03	06 00	85 73	02 00	06 22	00 00
ASPECT	Set	4:3	BE EF	03	06 00	9E D0	01 00	08 20	00 00
		16:9	BE EF	03	06 00	0E D1	01 00	08 20	01 00
		14:9	BE EF	03	06 00	CE D6	01 00	08 20	09 00
		SMALL	BE EF	03	06 00	FE D1	01 00	08 20	02 00
		NORMAL	BE EF	03	06 00	5E DD	01 00	08 20	10 00
	Get		BE EF	03	06 00	AD D0	02 00	08 20	00 00

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
OVER SCAN	Get		BE EF	03	06 00	91 70	02 00	09 22	00 00
	Increment		BE EF	03	06 00	F7 70	04 00	09 22	00 00
	Decrement		BE EF	03	06 00	26 71	05 00	09 22	00 00
OVER SCAN Reset	Execute		BE EF	03	06 00	EC D9	06 00	27 70	00 00
V POSITION	Get		BE EF	03	06 00	0D 83	02 00	00 21	00 00
	Increment		BE EF	03	06 00	6B 83	04 00	00 21	00 00
	Decrement		BE EF	03	06 00	BA 82	05 00	00 21	00 00
V POSITION Reset	Execute		BE EF	03	06 00	E0 D2	06 00	02 70	00 00
H POSITION	Get		BE EF	03	06 00	F1 82	02 00	01 21	00 00
	Increment		BE EF	03	06 00	97 82	04 00	01 21	00 00
	Decrement		BE EF	03	06 00	46 83	05 00	01 21	00 00
H POSITION Reset	Execute		BE EF	03	06 00	1C D3	06 00	03 70	00 00
H PHASE	Get		BE EF	03	06 00	49 83	02 00	03 21	00 00
	Increment		BE EF	03	06 00	2F 83	04 00	03 21	00 00
	Decrement		BE EF	03	06 00	FE 82	05 00	03 21	00 00
H SIZE	Get		BE EF	03	06 00	B5 82	02 00	02 21	00 00
	Increment		BE EF	03	06 00	D3 82	04 00	02 21	00 00
	Decrement		BE EF	03	06 00	02 83	05 00	02 21	00 00
H SIZE Reset	Execute		BE EF	03	06 00	68 D2	06 00	04 70	00 00
AUTO ADJUST	Execute		BE EF	03	06 00	91 D0	06 00	0A 20	00 00
COLOR SPACE	Set	AUTO	BE EF	03	06 00	0E 72	01 00	04 22	00 00
		RGB	BE EF	03	06 00	9E 73	01 00	04 22	01 00
		SMPTE240	BE EF	03	06 00	6E 73	01 00	04 22	02 00
		REC709	BE EF	03	06 00	FE 72	01 00	04 22	03 00
		REC601	BE EF	03	06 00	CE 70	01 00	04 22	04 00
	Get		BE EF	03	06 00	3D 72	02 00	04 22	00 00
COMPONENT	Set	COMPONENT	BE EF	03	06 00	4A D7	01 00	17 20	00 00
		SCART RGB	BE EF	03	06 00	DA D6	01 00	17 20	01 00
	Get		BE EF	03	06 00	79 D7	02 00	17 20	00 00
C-VIDEO FORMAT	Set	AUTO	BE EF	03	06 00	A2 70	01 00	11 22	0A 00
		NTSC	BE EF	03	06 00	C2 74	01 00	11 22	04 00
		PAL	BE EF	03	06 00	52 75	01 00	11 22	05 00
		SECAM	BE EF	03	06 00	52 70	01 00	11 22	09 00
		NTSC4.43	BE EF	03	06 00	62 77	01 00	11 22	02 00
		M-PAL	BE EF	03	06 00	C2 71	01 00	11 22	08 00
		N-PAL	BE EF	03	06 00	32 74	01 00	11 22	07 00
	Get		BE EF	03	06 00	31 76	02 00	11 22	00 00
S-VIDEO FORMAT	Set	AUTO	BE EF	03	06 00	E6 70	01 00	12 22	0A 00
		NTSC	BE EF	03	06 00	86 74	01 00	12 22	04 00
		PAL	BE EF	03	06 00	16 75	01 00	12 22	05 00
		SECAM	BE EF	03	06 00	16 70	01 00	12 22	09 00
		NTSC4.43	BE EF	03	06 00	26 77	01 00	12 22	02 00
		M-PAL	BE EF	03	06 00	86 71	01 00	12 22	08 00
		N-PAL	BE EF	03	06 00	76 74	01 00	12 22	07 00
	Get		BE EF	03	06 00	75 76	02 00	12 22	00 00

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
FRAME LOCK – COMPUTER1	Set	TURN OFF	BE EF	03	06 00	3B C2	01 00	50 30	00 00
		TURN ON	BE EF	03	06 00	AB C3	01 00	50 30	01 00
	Get		BE EF	03	06 00	08 C2	02 00	50 30	00 00
FRAME LOCK – COMPUTER2	Set	TURN OFF	BE EF	03	06 00	7F C2	01 00	54 30	00 00
		TURN ON	BE EF	03	06 00	EF C3	01 00	54 30	01 00
	Get		BE EF	03	06 00	4C C2	02 00	54 30	00 00
COMPUTER IN1	Set	SYNC ON G ON	BE EF	03	06 00	CE D6	01 00	10 20	03 00
		SYNC ON G OFF	BE EF	03	06 00	5E D7	01 00	10 20	02 00
	Get		BE EF	03	06 00	0D D6	02 00	10 20	00 00
COMPUTER IN2	Set	SYNC ON G ON	BE EF	03	06 00	32 D7	01 00	11 20	03 00
		SYNC ON G OFF	BE EF	03	06 00	A2 D6	01 00	11 20	02 00
	Get		BE EF	03	06 00	F1 D7	02 00	11 20	00 00
KEYSTONE V	Get		BE EF	03	06 00	B9 D3	02 00	07 20	00 00
	Increment		BE EF	03	06 00	DF D3	04 00	07 20	00 00
	Decrement		BE EF	03	06 00	0E D2	05 00	07 20	00 00
KEYSTONE V Reset	Execute		BE EF	03	06 00	08 D0	06 00	0C 70	00 00
AUTO KEYSTONE EXECUTE	Execute		BE EF	03	06 00	E5 D1	06 00	0D 20	00 00
WHISPER	Set	BRIGHT	BE EF	03	06 00	3B 23	01 00	00 33	00 00
		NORMAL	BE EF	03	06 00	AB 22	01 00	00 33	01 00
	Get		BE EF	03	06 00	08 23	02 00	00 33	00 00
MIRROR	Set	NORMAL	BE EF	03	06 00	C7 D2	01 00	01 30	00 00
		H:INVERT	BE EF	03	06 00	57 D3	01 00	01 30	01 00
		V:INVERT	BE EF	03	06 00	A7 D3	01 00	01 30	02 00
		H&V:INVERT	BE EF	03	06 00	37 D2	01 00	01 30	03 00
	Get		BE EF	03	06 00	F4 D2	02 00	01 30	00 00
STANDBY MODE	Set	NORMAL	BE EF	03	06 00	D6 D2	01 00	01 60	00 00
		SAVING	BE EF	03	06 00	46 D3	01 00	01 60	01 00
	Get		BE EF	03	06 00	E5 D2	02 00	01 60	00 00
MONITOR OUT - COMPUTER1	Set	COMPUTER1	BE EF	03	06 00	3E F4	01 00	B0 20	00 00
		TURN OFF	BE EF	03	06 00	CE B5	01 00	B0 20	FF 00
	Get		BE EF	03	06 00	0D F4	02 00	B0 20	00 00
MONITOR OUT - COMPUTER2	Set	COMPUTER2	BE EF	03	06 00	CE F7	01 00	B4 20	04 00
		TURN OFF	BE EF	03	06 00	FE B4	01 00	B4 20	FF 00
	Get		BE EF	03	06 00	3D F5	02 00	B4 20	00 00
MONITOR OUT - VIDEO	Set	COMPUTER1	BE EF	03	06 00	C2 F5	01 00	B1 20	00 00
		COMPUTER2	BE EF	03	06 00	02 F7	01 00	B1 20	04 00
		TURN OFF	BE EF	03	06 00	32 B4	01 00	B1 20	FF 00
	Get		BE EF	03	06 00	F1 F5	02 00	B1 20	00 00
MONITOR OUT - S-VIDEO	Set	COMPUTER1	BE EF	03	06 00	86 F5	01 00	B2 20	00 00
		COMPUTER2	BE EF	03	06 00	46 F7	01 00	B2 20	04 00
		TURN OFF	BE EF	03	06 00	76 B4	01 00	B2 20	FF 00
	Get		BE EF	03	06 00	B5 F5	02 00	B2 20	00 00

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
MONITOR OUT - COMPONENT	Set	COMPUTER1	BE EF	03	06 00	F2 F4	01 00	B5 20	00 00
		COMPUTER2	BE EF	03	06 00	32 F6	01 00	B5 20	04 00
		TURN OFF	BE EF	03	06 00	02 B5	01 00	B5 20	FF 00
	Get		BE EF	03	06 00	C1 F4	02 00	B5 20	00 00
MONITOR OUT - STANDBY	Set	COMPUTER1	BE EF	03	06 00	F2 F4	01 00	BF 20	00 00
		COMPUTER2	BE EF	03	06 00	32 F6	01 00	BF 20	04 00
		TURN OFF	BE EF	03	06 00	02 B5	01 00	BF 20	FF 00
	Get		BE EF	03	06 00	C1 F4	02 00	BF 20	00 00
VOLUME-COMPUTER1	Get		BE EF	03	06 00	CD CC	02 00	60 20	00 00
	Increment		BE EF	03	06 00	AB CC	04 00	60 20	00 00
	Decrement		BE EF	03	06 00	7A CD	05 00	60 20	00 00
VOLUME-COMPUTER2	Get		BE EF	03	06 00	FD CD	02 00	64 20	00 00
	Increment		BE EF	03	06 00	9B CD	04 00	64 20	00 00
	Decrement		BE EF	03	06 00	4A CC	05 00	64 20	00 00
VOLUME-COMPONENT	Get		BE EF	03	06 00	01 CC	02 00	65 20	00 00
	Increment		BE EF	03	06 00	67 CC	04 00	65 20	00 00
	Decrement		BE EF	03	06 00	B6 CD	05 00	65 20	00 00
VOLUME-S-VIDEO	Get		BE EF	03	06 00	75 CD	02 00	62 20	00 00
	Increment		BE EF	03	06 00	13 CD	04 00	62 20	00 00
	Decrement		BE EF	03	06 00	C2 CC	05 00	62 20	00 00
VOLUME-VIDEO	Get		BE EF	03	06 00	31 CD	02 00	61 20	00 00
	Increment		BE EF	03	06 00	57 CD	04 00	61 20	00 00
	Decrement		BE EF	03	06 00	86 CC	05 00	61 20	00 00
VOLUME - AUDIO OUT STANDBY	Get		BE EF	03	06 00	D9 CF	02 00	6F 20	00 00
	Increment		BE EF	03	06 00	BF CF	04 00	6F 20	00 00
	Decrement		BE EF	03	06 00	6E CE	05 00	6F 20	00 00
MUTE	Set	TURN OFF	BE EF	03	06 00	46 D3	01 00	02 20	00 00
		TURN ON	BE EF	03	06 00	D6 D2	01 00	02 20	01 00
	Get		BE EF	03	06 00	75 D3	02 00	02 20	00 00
SPEAKER	Set	TURN ON	BE EF	03	06 00	FE D4	01 00	1C 20	01 00
		TURN OFF	BE EF	03	06 00	6E D5	01 00	1C 20	00 00
	Get		BE EF	03	06 00	5D D5	02 00	1C 20	00 00
AUDIO-COMPUTER1	Set	AUDIO1	BE EF	03	06 00	6E DC	01 00	30 20	01 00
		AUDIO2	BE EF	03	06 00	9E DC	01 00	30 20	02 00
		AUDIO3	BE EF	03	06 00	0E DD	01 00	30 20	03 00
		Turn off	BE EF	03	06 00	FE DD	01 00	30 20	00 00
	Get		BE EF	03	06 00	CD DD	02 00	30 20	00 00
AUDIO-COMPUTER2	Set	AUDIO1	BE EF	03	06 00	5E DD	01 00	34 20	01 00
		AUDIO2	BE EF	03	06 00	AE DD	01 00	34 20	02 00
		AUDIO3	BE EF	03	06 00	3E DC	01 00	34 20	03 00
		Turn off	BE EF	03	06 00	CE DC	01 00	34 20	00 00
	Get		BE EF	03	06 00	FD DC	02 00	34 20	00 00
AUDIO-COMPONENT	Set	AUDIO1	BE EF	03	06 00	A2 DC	01 00	35 20	01 00
		AUDIO2	BE EF	03	06 00	52 DC	01 00	35 20	02 00
		AUDIO3	BE EF	03	06 00	C2 DD	01 00	35 20	03 00
		Turn off	BE EF	03	06 00	32 DD	01 00	35 20	00 00
	Get		BE EF	03	06 00	01 DD	02 00	35 20	00 00

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
AUDIO-S-VIDEO	Set	AUDIO1	BE EF	03	06 00	D6 DD	01 00	32 20	01 00
		AUDIO2	BE EF	03	06 00	26 DD	01 00	32 20	02 00
		AUDIO3	BE EF	03	06 00	B6 DC	01 00	32 20	03 00
		Turn off	BE EF	03	06 00	46 DC	01 00	32 20	00 00
	Get		BE EF	03	06 00	75 DC	02 00	32 20	00 00
AUDIO-VIDEO	Set	AUDIO1	BE EF	03	06 00	92 DD	01 00	31 20	01 00
		AUDIO2	BE EF	03	06 00	62 DD	01 00	31 20	02 00
		AUDIO3	BE EF	03	06 00	F2 DC	01 00	31 20	03 00
		Turn off	BE EF	03	06 00	02 DC	01 00	31 20	00 00
	Get		BE EF	03	06 00	31 DC	02 00	31 20	00 00
AUDIO OUT STANDBY	Set	AUDIO1	BE EF	03	06 00	7A DF	01 00	3F 20	01 00
		AUDIO2	BE EF	03	06 00	8A DF	01 00	3F 20	02 00
		AUDIO3	BE EF	03	06 00	1A DE	01 00	3F 20	03 00
		Turn off	BE EF	03	06 00	EA DE	01 00	3F 20	00 00
	Get		BE EF	03	06 00	D9 DE	02 00	3F 20	00 00
REMOTE FREQ. NORMAL	Set	Off	BE EF	03	06 00	FF 3D	01 00	30 26	00 00
		On	BE EF	03	06 00	6F 3C	01 00	30 26	01 00
	Get		BE EF	03	06 00	CC 3D	02 00	30 26	00 00
REMOTE FREQ. HIGH	Set	Off	BE EF	03	06 00	03 3C	01 00	31 26	00 00
		On	BE EF	03	06 00	93 3D	01 00	31 26	01 00
	Get		BE EF	03	06 00	30 3C	02 00	31 26	00 00
LANGUAGE	Set	ENGLISH	BE EF	03	06 00	F7 D3	01 00	05 30	00 00
		FRANÇAIS	BE EF	03	06 00	67 D2	01 00	05 30	01 00
		DEUTSCH	BE EF	03	06 00	97 D2	01 00	05 30	02 00
		ESPAÑOL	BE EF	03	06 00	07 D3	01 00	05 30	03 00
		ITALIANO	BE EF	03	06 00	37 D1	01 00	05 30	04 00
		NORSK	BE EF	03	06 00	A7 D0	01 00	05 30	05 00
		NEDERLANDS	BE EF	03	06 00	57 D0	01 00	05 30	06 00
		PORTUGUÊS	BE EF	03	06 00	C7 D1	01 00	05 30	07 00
		日本語	BE EF	03	06 00	37 D4	01 00	05 30	08 00
		简体中文	BE EF	03	06 00	A7 D5	01 00	05 30	09 00
		繁體中文	BE EF	03	06 00	37 DE	01 00	05 30	10 00
		한글	BE EF	03	06 00	57 D5	01 00	05 30	0A 00
		SVENSKA	BE EF	03	06 00	C7 D4	01 00	05 30	0B 00
		РУССКИЙ	BE EF	03	06 00	F7 D6	01 00	05 30	0C 00
		SUOMI	BE EF	03	06 00	67 D7	01 00	05 30	0D 00
		POLSKI	BE EF	03	06 00	97 D7	01 00	05 30	0E 00
		TÜRKÇE	BE EF	03	06 00	07 D6	01 00	05 30	0F 00
	Get		BE EF	03	06 00	C4 D3	02 00	05 30	00 00
MENU POSITION H	Get		BE EF	03	06 00	04 D7	02 00	15 30	00 00
	Increment		BE EF	03	06 00	62 D7	04 00	15 30	00 00
	Decrement		BE EF	03	06 00	B3 D6	05 00	15 30	00 00
MENU POSITION H Reset	Execute		BE EF	03	06 00	DC C6	06 00	43 70	00 00
MENU POSITION V	Get		BE EF	03	06 00	40 D7	02 00	16 30	00 00
	Increment		BE EF	03	06 00	26 D7	04 00	16 30	00 00
	Decrement		BE EF	03	06 00	F7 D6	05 00	16 30	00 00
MENU POSITION V Reset	Execute		BE EF	03	06 00	A8 C7	06 00	44 70	00 00

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
BLANK	Set	MyScreen	BE EF	03	06 00	FB CA	01 00	00 30	20 00
		ORIGINAL	BE EF	03	06 00	FB E2	01 00	00 30	40 00
		BLUE	BE EF	03	06 00	CB D3	01 00	00 30	03 00
		WHITE	BE EF	03	06 00	6B D0	01 00	00 30	05 00
		BLACK	BE EF	03	06 00	9B D0	01 00	00 30	06 00
	Get		BE EF	03	06 00	08 D3	02 00	00 30	00 00
BLANK On/Off	Set	TURN OFF	BE EF	03	06 00	FB D8	01 00	20 30	00 00
		TURN ON	BE EF	03	06 00	6B D9	01 00	20 30	01 00
	Get		BE EF	03	06 00	C8 D8	02 00	20 30	00 00
START UP	Set	MyScreen	BE EF	03	06 00	CB CB	01 00	04 30	20 00
		ORIGINAL	BE EF	03	06 00	0B D2	01 00	04 30	00 00
		TURN OFF	BE EF	03	06 00	9B D3	01 00	04 30	01 00
	Get		BE EF	03	06 00	38 D2	02 00	04 30	00 00
MyScreen LOCK	Set	TURN OFF	BE EF	03	06 00	3B EF	01 00	C0 30	00 00
		TURN ON	BE EF	03	06 00	AB EE	01 00	C0 30	01 00
	Get		BE EF	03	06 00	08 EF	02 00	C0 30	00 00
MESSAGE	Set	TURN OFF	BE EF	03	06 00	8F D6	01 00	17 30	00 00
		TURN ON	BE EF	03	06 00	1F D7	01 00	17 30	01 00
	Get		BE EF	03	06 00	BC D6	02 00	17 30	00 00
TEMPLATE	Set	TEST PATTERN	BE EF	03	06 00	43 D9	01 00	22 30	00 00
		DOT-LINE1	BE EF	03	06 00	D3 D8	01 00	22 30	01 00
		DOT-LINE2	BE EF	03	06 00	23 D8	01 00	22 30	02 00
		DOT-LINE3	BE EF	03	06 00	B3 D9	01 00	22 30	03 00
		DOT-LINE4	BE EF	03	06 00	83 DB	01 00	22 30	04 00
	Get		BE EF	03	06 00	70 D9	02 00	22 30	00 00
AUTO SEARCH	Set	TURN OFF	BE EF	03	06 00	B6 D6	01 00	16 20	00 00
		TURN ON	BE EF	03	06 00	26 D7	01 00	16 20	01 00
	Get		BE EF	03	06 00	85 D6	02 00	16 20	00 00
AUTO KEYSTONE	Set	TURN OFF	BE EF	03	06 00	EA D1	01 00	0F 20	00 00
		TURN ON	BE EF	03	06 00	7A D0	01 00	0F 20	01 00
	Get		BE EF	03	06 00	D9 D1	02 00	0F 20	00 00
AUTO ON	Set	TURN OFF	BE EF	03	06 00	3B 89	01 00	20 31	00 00
		TURN ON	BE EF	03	06 00	AB 88	01 00	20 31	01 00
	Get		BE EF	03	06 00	08 89	02 00	20 31	00 00
AUTO OFF	Get		BE EF	03	06 00	08 86	02 00	10 31	00 00
	Increment		BE EF	03	06 00	6E 86	04 00	10 31	00 00
	Decrement		BE EF	03	06 00	BF 87	05 00	10 31	00 00
LAMP TIME	Get		BE EF	03	06 00	C2 FF	02 00	90 10	00 00
LAMP TIME Reset	Execute		BE EF	03	06 00	58 DC	06 00	30 70	00 00
FILTER TIME	Get		BE EF	03	06 00	C2 F0	02 00	A0 10	00 00
FILTER TIME Reset	Execute		BE EF	03	06 00	98 C6	06 00	40 70	00 00

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
MY BUTTON-1	Set	COMPUTER1	BE EF	03	06 00	3A 33	01 00	00 36	00 00
		COMPUTER2	BE EF	03	06 00	FA 31	01 00	00 36	04 00
		COMPONENT	BE EF	03	06 00	6A 30	01 00	00 36	05 00
		S-VIDEO	BE EF	03	06 00	5A 32	01 00	00 36	02 00
		VIDEO	BE EF	03	06 00	AA 32	01 00	00 36	01 00
		INFORMATION	BE EF	03	06 00	FA 3E	01 00	00 36	10 00
		AUTO KEYSTONE V	BE EF	03	06 00	6A 3F	01 00	00 36	11 00
		MY MEMORY	BE EF	03	06 00	9A 3F	01 00	00 36	12 00
		PICTURE MODE	BE EF	03	06 00	0A 3E	01 00	00 36	13 00
		FILTER RESET	BE EF	03	06 00	3A 3C	01 00	00 36	14 00
		AV MUTE	BE EF	03	06 00	AA 38	01 00	00 36	19 00
		TEMPLATE	BE EF	03	06 00	CA 39	01 00	00 36	1B 00
	Get		BE EF	03	06 00	09 33	02 00	00 36	00 00
MY BUTTON-2	Set	COMPUTER1	BE EF	03	06 00	C6 32	01 00	01 36	00 00
		COMPUTER2	BE EF	03	06 00	06 30	01 00	01 36	04 00
		COMPONENT	BE EF	03	06 00	96 31	01 00	01 36	05 00
		S-VIDEO	BE EF	03	06 00	A6 33	01 00	01 36	02 00
		VIDEO	BE EF	03	06 00	56 33	01 00	01 36	01 00
		INFORMATION	BE EF	03	06 00	06 3F	01 00	01 36	10 00
		AUTO KEYSTONE V	BE EF	03	06 00	96 3E	01 00	01 36	11 00
		MY MEMORY	BE EF	03	06 00	66 3E	01 00	01 36	12 00
		PICTURE MODE	BE EF	03	06 00	F6 3F	01 00	01 36	13 00
		FILTER RESET	BE EF	03	06 00	C6 3D	01 00	01 36	14 00
		AV MUTE	BE EF	03	06 00	56 39	01 00	01 36	19 00
		TEMPLATE	BE EF	03	06 00	36 38	01 00	01 36	1B 00
	Get		BE EF	03	06 00	F5 32	02 00	01 36	00 00
MY SOURCE	Set	COMPUTER1	BE EF	03	06 00	FA 30	01 00	20 36	00 00
		COMPUTER2	BE EF	03	06 00	3A 3A	01 00	20 36	04 00
		COMPONENT	BE EF	03	06 00	AA 3B	01 00	20 36	05 00
		S-VIDEO	BE EF	03	06 00	9A 39	01 00	20 36	02 00
		VIDEO	BE EF	03	06 00	6A 39	01 00	20 36	01 00
	Get		BE EF	03	06 00	C9 38	02 00	20 36	00 00
MAGNIFY	Get		BE EF	03	06 00	7C D2	02 00	07 30	00 00
	Increment		BE EF	03	06 00	1A D2	04 00	07 30	00 00
	Decrement		BE EF	03	06 00	CB D3	05 00	07 30	00 00
FREEZE	Set	NORMAL	BE EF	03	06 00	83 D2	01 00	02 30	00 00
		FREEZE	BE EF	03	06 00	13 D3	01 00	02 30	01 00
	Get		BE EF	03	06 00	B0 D2	02 00	02 30	00 00
CLOSED CAPTION DISPLAY	Set	TURN OFF	BE EF	03	06 00	FA 62	01 00	00 37	00 00
		TURN ON	BE EF	03	06 00	6A 63	01 00	00 37	01 00
		AUTO	BE EF	03	06 00	9A 63	01 00	00 37	02 00
	Get		BE EF	03	06 00	C9 62	02 00	00 37	00 00
CLOSED CAPTION MODE	Set	CAPTIONS	BE EF	03	06 00	06 63	01 00	01 37	00 00
		TEXT	BE EF	03	06 00	96 62	01 00	01 37	01 00
	Get		BE EF	03	06 00	35 63	02 00	01 37	00 00
CLOSED CAPTION CHANNEL	Set	1	BE EF	03	06 00	D2 62	01 00	02 37	01 00
		2	BE EF	03	06 00	22 62	01 00	02 37	02 00
		3	BE EF	03	06 00	B2 63	01 00	02 37	03 00
		4	BE EF	03	06 00	82 61	01 00	02 37	04 00
	Get		BE EF	03	06 00	71 63	02 00	02 37	00 00

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
Power	Set	Turn off	BE EF	03	06 00	2A D3	01 00	00 60	00 00
		Turn on	BE EF	03	06 00	BA D2	01 00	00 60	01 00
	Get		BE EF	03	06 00	19 D3	02 00	00 60	00 00
			[Example return] 00 00 [Off] 01 00 [On] 02 00 [Cool down]						
Input Source	Set	COMPUTER1	BE EF	03	06 00	FE D2	01 00	00 20	00 00
		COMPUTER2	BE EF	03	06 00	3E D0	01 00	00 20	04 00
		COMPONENT	BE EF	03	06 00	AE D1	01 00	00 20	05 00
		S-VIDEO	BE EF	03	06 00	9E D3	01 00	00 20	02 00
		VIDEO	BE EF	03	06 00	6E D3	01 00	00 20	01 00
	Get		BE EF	03	06 00	CD D2	02 00	00 20	00 00
Error Status	Get		BE EF	03	06 00	D9 D8	02 00	20 60	00 00
			[Example return] 00 00 [Normal] 01 00 [Cover error] 02 00 [Fan error] 03 00 [Lamp error] 04 00 [Temp error] 05 00 [Air flow error] 06 00 [Lamp time error] 07 00 [Cold error] 08 00 [Filter error]						
BRIGHTNESS	Get		BE EF	03	06 00	89 D2	02 00	03 20	00 00
	Increment		BE EF	03	06 00	EF D2	04 00	03 20	00 00
	Decrement		BE EF	03	06 00	3E D3	05 00	03 20	00 00
BRIGHTNESS Reset	Execute		BE EF	03	06 00	58 D3	06 00	00 70	00 00
CONTRAST	Get		BE EF	03	06 00	FD D3	02 00	04 20	00 00
	Increment		BE EF	03	06 00	9B D3	04 00	04 20	00 00
	Decrement		BE EF	03	06 00	4A D2	05 00	04 20	00 00
CONTRAST Reset	Execute		BE EF	03	06 00	A4 D2	06 00	01 70	00 00
PICTURE MODE	Set	NORMAL	BE EF	03	06 00	23 F6	01 00	BA 30	00 00
		CINEMA	BE EF	03	06 00	B3 F7	01 00	BA 30	01 00
		DYNAMIC	BE EF	03	06 00	E3 F4	01 00	BA 30	04 00
		BOARD(BLACK)	BE EF	03	06 00	E3 EF	01 00	BA 30	20 00
		BOARD(GREEN)	BE EF	03	06 00	73 EE	01 00	BA 30	21 00
		WHITEBOARD	BE EF	03	06 00	83 EE	01 00	BA 30	22 00
		DAYTIME	BE EF	03	06 00	E3 C7	01 00	BA 30	40 00
	Get		BE EF	03	06 00	10 F6	02 00	BA 30	00 00
			[Example return] 00 00 [Normal] 01 00 [Cinema] 04 00 [Dynamic] 10 00 [Custom] 20 00 [BOARD(BLACK)] 21 00 [BOARD(GREEN)] 22 00 [WHITEBOARD] 40 00 [DAY TIME]						
GAMMA	Set	#1 DEFAULT	BE EF	03	06 00	07 E9	01 00	A1 30	20 00
		#1 CUSTOM	BE EF	03	06 00	07 FD	01 00	A1 30	10 00
		#2 DEFAULT	BE EF	03	06 00	97 E8	01 00	A1 30	21 00
		#2 CUSTOM	BE EF	03	06 00	97 FC	01 00	A1 30	11 00
		#3 DEFAULT	BE EF	03	06 00	67 E8	01 00	A1 30	22 00
		#3 CUSTOM	BE EF	03	06 00	67 FC	01 00	A1 30	12 00
		#4 DEFAULT	BE EF	03	06 00	F7 E9	01 00	A1 30	23 00
		#4 CUSTOM	BE EF	03	06 00	F7 FD	01 00	A1 30	13 00
		#5 DEFAULT	BE EF	03	06 00	C7 EB	01 00	A1 30	24 00
		#5 CUSTOM	BE EF	03	06 00	C7 FF	01 00	A1 30	14 00
		#6 DEFAULT	BE EF	03	06 00	57 EA	01 00	A1 30	25 00
		#6 CUSTOM	BE EF	03	06 00	57 FE	01 00	A1 30	15 00
	Get		BE EF	03	06 00	F4 F0	02 00	A1 30	00 00

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Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
User Gamma Pattern	Set	Off	BE EF	03	06 00	FB FA	01 00	80 30	00 00
		9 steps gray scale	BE EF	03	06 00	6B FB	01 00	80 30	01 00
		15 steps gray scale	BE EF	03	06 00	9B FB	01 00	80 30	02 00
		Ramp	BE EF	03	06 00	0B FA	01 00	80 30	03 00
	Get		BE EF	03	06 00	C8 FA	02 00	80 30	00 00
User Gamma Point 1	Get		BE EF	03	06 00	08 FE	02 00	90 30	00 00
	Increment		BE EF	03	06 00	6E FE	04 00	90 30	00 00
	Decrement		BE EF	03	06 00	BF FF	05 00	90 30	00 00
User Gamma Point 2	Get		BE EF	03	06 00	F4 FF	02 00	91 30	00 00
	Increment		BE EF	03	06 00	92 FF	04 00	91 30	00 00
	Decrement		BE EF	03	06 00	43 FE	05 00	91 30	00 00
User Gamma Point 3	Get		BE EF	03	06 00	B0 FF	02 00	92 30	00 00
	Increment		BE EF	03	06 00	D6 FF	04 00	92 30	00 00
	Decrement		BE EF	03	06 00	07 FE	05 00	92 30	00 00
User Gamma Point 4	Get		BE EF	03	06 00	4C FE	02 00	93 30	00 00
	Increment		BE EF	03	06 00	2A FE	04 00	93 30	00 00
	Decrement		BE EF	03	06 00	FB FF	05 00	93 30	00 00
User Gamma Point 5	Get		BE EF	03	06 00	38 FF	02 00	94 30	00 00
	Increment		BE EF	03	06 00	5E FF	04 00	94 30	00 00
	Decrement		BE EF	03	06 00	8F FE	05 00	94 30	00 00
User Gamma Point 6	Get		BE EF	03	06 00	C4 FE	02 00	95 30	00 00
	Increment		BE EF	03	06 00	A2 FE	04 00	95 30	00 00
	Decrement		BE EF	03	06 00	73 FF	05 00	95 30	00 00
User Gamma Point 7	Get		BE EF	03	06 00	80 FE	02 00	96 30	00 00
	Increment		BE EF	03	06 00	E6 FE	04 00	96 30	00 00
	Decrement		BE EF	03	06 00	37 FF	05 00	96 30	00 00
User Gamma Point 8	Get		BE EF	03	06 00	7C FF	02 00	97 30	00 00
	Increment		BE EF	03	06 00	1A FF	04 00	97 30	00 00
	Decrement		BE EF	03	06 00	CB FE	05 00	97 30	00 00
COLOR TEMP	Set	HIGH	BE EF	03	06 00	0B F5	01 00	B0 30	03 00
		CUSTOM-1 (HIGH)	BE EF	03	06 00	CB F8	01 00	B0 30	13 00
		MID	BE EF	03	06 00	9B F4	01 00	B0 30	02 00
		CUSTOM-2 (MID)	BE EF	03	06 00	5B F9	01 00	B0 30	12 00
		LOW	BE EF	03	06 00	6B F4	01 00	B0 30	01 00
		CUSTOM-3 (LOW)	BE EF	03	06 00	AB F9	01 00	B0 30	11 00
		Hi-BRIGHT-1	BE EF	03	06 00	3B F2	01 00	B0 30	08 00
		CUSTOM-4 (Hi-BRIGHT-1)	BE EF	03	06 00	FB FF	01 00	B0 30	18 00
		Hi-BRIGHT-2	BE EF	03	06 00	AB F3	01 00	B0 30	09 00
		CUSTOM-5 (Hi-BRIGHT-2)	BE EF	03	06 00	6B FE	01 00	B0 30	19 00
		Hi-BRIGHT-3	BE EF	03	06 00	5B F3	01 00	B0 30	0A 00
		CUSTOM-6 (Hi-BRIGHT-3)	BE EF	03	06 00	9B FE	01 00	B0 30	1A 00
	Get		BE EF	03	06 00	C8 F5	02 00	B0 30	00 00
COLOR TEMP GAIN R	Get		BE EF	03	06 00	34 F4	02 00	B1 30	00 00
	Increment		BE EF	03	06 00	52 F4	04 00	B1 30	00 00
	Decrement		BE EF	03	06 00	83 F5	05 00	B1 30	00 00
COLOR TEMP GAIN G	Get		BE EF	03	06 00	70 F4	02 00	B2 30	00 00
	Increment		BE EF	03	06 00	16 F4	04 00	B2 30	00 00
	Decrement		BE EF	03	06 00	C7 F5	05 00	B2 30	00 00

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Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
COLOR TEMP GAIN B	Get		BE EF	03	06 00	8C F5	02 00	B3 30	00 00
	Increment		BE EF	03	06 00	EA F5	04 00	B3 30	00 00
	Decrement		BE EF	03	06 00	3B F4	05 00	B3 30	00 00
COLOR TEMP OFFSET R	Get		BE EF	03	06 00	04 F5	02 00	B5 30	00 00
	Increment		BE EF	03	06 00	62 F5	04 00	B5 30	00 00
	Decrement		BE EF	03	06 00	B3 F4	05 00	B5 30	00 00
COLOR TEMP OFFSET G	Get		BE EF	03	06 00	40 F5	02 00	B6 30	00 00
	Increment		BE EF	03	06 00	26 F5	04 00	B6 30	00 00
	Decrement		BE EF	03	06 00	F7 F4	05 00	B6 30	00 00
COLOR TEMP OFFSET B	Get		BE EF	03	06 00	BC F4	02 00	B7 30	00 00
	Increment		BE EF	03	06 00	DA F4	04 00	B7 30	00 00
	Decrement		BE EF	03	06 00	0B F5	05 00	B7 30	00 00
COLOR	Get		BE EF	03	06 00	B5 72	02 00	02 22	00 00
	Increment		BE EF	03	06 00	D3 72	04 00	02 22	00 00
	Decrement		BE EF	03	06 00	02 73	05 00	02 22	00 00
COLOR Reset	Execute		BE EF	03	06 00	80 D0	06 00	0A 70	00 00
TINT	Get		BE EF	03	06 00	49 73	02 00	03 22	00 00
	Increment		BE EF	03	06 00	2F 73	04 00	03 22	00 00
	Decrement		BE EF	03	06 00	FE 72	05 00	03 22	00 00
TINT Reset	Execute		BE EF	03	06 00	7C D1	06 00	0B 70	00 00
SHARPNESS	Get		BE EF	03	06 00	F1 72	02 00	01 22	00 00
	Increment		BE EF	03	06 00	97 72	04 00	01 22	00 00
	Decrement		BE EF	03	06 00	46 73	05 00	01 22	00 00
SHARPNESS Reset	Execute		BE EF	03	06 00	C4 D0	06 00	09 70	00 00
MY MEMORY Load	Set	1	BE EF	03	06 00	0E D7	01 00	14 20	00 00
		2	BE EF	03	06 00	9E D6	01 00	14 20	01 00
		3	BE EF	03	06 00	6E D6	01 00	14 20	02 00
		4	BE EF	03	06 00	FE D7	01 00	14 20	03 00
MY MEMORY Save	Set	1	BE EF	03	06 00	F2 D6	01 00	15 20	00 00
		2	BE EF	03	06 00	62 D7	01 00	15 20	01 00
		3	BE EF	03	06 00	92 D7	01 00	15 20	02 00
		4	BE EF	03	06 00	02 D6	01 00	15 20	03 00
PROGRESSIVE	Set	TURN OFF	BE EF	03	06 00	4A 72	01 00	07 22	00 00
		TV	BE EF	03	06 00	DA 73	01 00	07 22	01 00
		FILM	BE EF	03	06 00	2A 73	01 00	07 22	02 00
	Get		BE EF	03	06 00	79 72	02 00	07 22	00 00
VIDEO NR	Set	LOW	BE EF	03	06 00	26 72	01 00	06 22	01 00
		MID	BE EF	03	06 00	D6 72	01 00	06 22	02 00
		HIGH	BE EF	03	06 00	46 73	01 00	06 22	03 00
	Get		BE EF	03	06 00	85 73	02 00	06 22	00 00
ASPECT	Set	4:3	BE EF	03	06 00	9E D0	01 00	08 20	00 00
		16:9	BE EF	03	06 00	0E D1	01 00	08 20	01 00
		14:9	BE EF	03	06 00	CE D6	01 00	08 20	09 00
		SMALL	BE EF	03	06 00	FE D1	01 00	08 20	02 00
		NORMAL	BE EF	03	06 00	5E DD	01 00	08 20	10 00
	Get		BE EF	03	06 00	AD D0	02 00	08 20	00 00

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Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
OVER SCAN	Get		BE EF	03	06 00	91 70	02 00	09 22	00 00
	Increment		BE EF	03	06 00	F7 70	04 00	09 22	00 00
	Decrement		BE EF	03	06 00	26 71	05 00	09 22	00 00
OVER SCAN Reset	Execute		BE EF	03	06 00	EC D9	06 00	27 70	00 00
V POSITION	Get		BE EF	03	06 00	0D 83	02 00	00 21	00 00
	Increment		BE EF	03	06 00	6B 83	04 00	00 21	00 00
	Decrement		BE EF	03	06 00	BA 82	05 00	00 21	00 00
V POSITION Reset	Execute		BE EF	03	06 00	E0 D2	06 00	02 70	00 00
H POSITION	Get		BE EF	03	06 00	F1 82	02 00	01 21	00 00
	Increment		BE EF	03	06 00	97 82	04 00	01 21	00 00
	Decrement		BE EF	03	06 00	46 83	05 00	01 21	00 00
H POSITION Reset	Execute		BE EF	03	06 00	1C D3	06 00	03 70	00 00
H PHASE	Get		BE EF	03	06 00	49 83	02 00	03 21	00 00
	Increment		BE EF	03	06 00	2F 83	04 00	03 21	00 00
	Decrement		BE EF	03	06 00	FE 82	05 00	03 21	00 00
H SIZE	Get		BE EF	03	06 00	B5 82	02 00	02 21	00 00
	Increment		BE EF	03	06 00	D3 82	04 00	02 21	00 00
	Decrement		BE EF	03	06 00	02 83	05 00	02 21	00 00
H SIZE Reset	Execute		BE EF	03	06 00	68 D2	06 00	04 70	00 00
AUTO ADJUST	Execute		BE EF	03	06 00	91 D0	06 00	0A 20	00 00
COLOR SPACE	Set	AUTO	BE EF	03	06 00	0E 72	01 00	04 22	00 00
		RGB	BE EF	03	06 00	9E 73	01 00	04 22	01 00
		SMPTE240	BE EF	03	06 00	6E 73	01 00	04 22	02 00
		REC709	BE EF	03	06 00	FE 72	01 00	04 22	03 00
		REC601	BE EF	03	06 00	CE 70	01 00	04 22	04 00
	Get		BE EF	03	06 00	3D 72	02 00	04 22	00 00
COMPONENT	Set	COMPONENT	BE EF	03	06 00	4A D7	01 00	17 20	00 00
		SCART RGB	BE EF	03	06 00	DA D6	01 00	17 20	01 00
	Get		BE EF	03	06 00	79 D7	02 00	17 20	00 00
C-VIDEO FORMAT	Set	AUTO	BE EF	03	06 00	A2 70	01 00	11 22	0A 00
		NTSC	BE EF	03	06 00	C2 74	01 00	11 22	04 00
		PAL	BE EF	03	06 00	52 75	01 00	11 22	05 00
		SECAM	BE EF	03	06 00	52 70	01 00	11 22	09 00
		NTSC4.43	BE EF	03	06 00	62 77	01 00	11 22	02 00
		M-PAL	BE EF	03	06 00	C2 71	01 00	11 22	08 00
		N-PAL	BE EF	03	06 00	32 74	01 00	11 22	07 00
	Get		BE EF	03	06 00	31 76	02 00	11 22	00 00
S-VIDEO FORMAT	Set	AUTO	BE EF	03	06 00	E6 70	01 00	12 22	0A 00
		NTSC	BE EF	03	06 00	86 74	01 00	12 22	04 00
		PAL	BE EF	03	06 00	16 75	01 00	12 22	05 00
		SECAM	BE EF	03	06 00	16 70	01 00	12 22	09 00
		NTSC4.43	BE EF	03	06 00	26 77	01 00	12 22	02 00
		M-PAL	BE EF	03	06 00	86 71	01 00	12 22	08 00
		N-PAL	BE EF	03	06 00	76 74	01 00	12 22	07 00
	Get		BE EF	03	06 00	75 76	02 00	12 22	00 00

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Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
FRAME LOCK – COMPUTER1	Set	TURN OFF	BE EF	03	06 00	3B C2	01 00	50 30	00 00
		TURN ON	BE EF	03	06 00	AB C3	01 00	50 30	01 00
	Get		BE EF	03	06 00	08 C2	02 00	50 30	00 00
FRAME LOCK – COMPUTER2	Set	TURN OFF	BE EF	03	06 00	7F C2	01 00	54 30	00 00
		TURN ON	BE EF	03	06 00	EF C3	01 00	54 30	01 00
	Get		BE EF	03	06 00	4C C2	02 00	54 30	00 00
COMPUTER IN1	Set	SYNC ON G ON	BE EF	03	06 00	CE D6	01 00	10 20	03 00
		SYNC ON G OFF	BE EF	03	06 00	5E D7	01 00	10 20	02 00
	Get		BE EF	03	06 00	0D D6	02 00	10 20	00 00
COMPUTER IN2	Set	SYNC ON G ON	BE EF	03	06 00	32 D7	01 00	11 20	03 00
		SYNC ON G OFF	BE EF	03	06 00	A2 D6	01 00	11 20	02 00
	Get		BE EF	03	06 00	F1 D7	02 00	11 20	00 00
KEYSTONE V	Get		BE EF	03	06 00	B9 D3	02 00	07 20	00 00
	Increment		BE EF	03	06 00	DF D3	04 00	07 20	00 00
	Decrement		BE EF	03	06 00	0E D2	05 00	07 20	00 00
KEYSTONE V Reset	Execute		BE EF	03	06 00	08 D0	06 00	0C 70	00 00
AUTO KEYSTONE EXECUTE	Execute		BE EF	03	06 00	E5 D1	06 00	0D 20	00 00
WHISPER	Set	BRIGHT	BE EF	03	06 00	3B 23	01 00	00 33	00 00
		NORMAL	BE EF	03	06 00	AB 22	01 00	00 33	01 00
	Get		BE EF	03	06 00	08 23	02 00	00 33	00 00
MIRROR	Set	NORMAL	BE EF	03	06 00	C7 D2	01 00	01 30	00 00
		H:INVERT	BE EF	03	06 00	57 D3	01 00	01 30	01 00
		V:INVERT	BE EF	03	06 00	A7 D3	01 00	01 30	02 00
		H&V:INVERT	BE EF	03	06 00	37 D2	01 00	01 30	03 00
	Get		BE EF	03	06 00	F4 D2	02 00	01 30	00 00
STANDBY MODE	Set	NORMAL	BE EF	03	06 00	D6 D2	01 00	01 60	00 00
		SAVING	BE EF	03	06 00	46 D3	01 00	01 60	01 00
	Get		BE EF	03	06 00	E5 D2	02 00	01 60	00 00
MONITOR OUT - COMPUTER1	Set	COMPUTER1	BE EF	03	06 00	3E F4	01 00	B0 20	00 00
		TURN OFF	BE EF	03	06 00	CE B5	01 00	B0 20	FF 00
	Get		BE EF	03	06 00	0D F4	02 00	B0 20	00 00
MONITOR OUT - COMPUTER2	Set	COMPUTER2	BE EF	03	06 00	CE F7	01 00	B4 20	04 00
		TURN OFF	BE EF	03	06 00	FE B4	01 00	B4 20	FF 00
	Get		BE EF	03	06 00	3D F5	02 00	B4 20	00 00
MONITOR OUT - VIDEO	Set	COMPUTER1	BE EF	03	06 00	C2 F5	01 00	B1 20	00 00
		COMPUTER2	BE EF	03	06 00	02 F7	01 00	B1 20	04 00
		TURN OFF	BE EF	03	06 00	32 B4	01 00	B1 20	FF 00
	Get		BE EF	03	06 00	F1 F5	02 00	B1 20	00 00
MONITOR OUT - S-VIDEO	Set	COMPUTER1	BE EF	03	06 00	86 F5	01 00	B2 20	00 00
		COMPUTER2	BE EF	03	06 00	46 F7	01 00	B2 20	04 00
		TURN OFF	BE EF	03	06 00	76 B4	01 00	B2 20	FF 00
	Get		BE EF	03	06 00	B5 F5	02 00	B2 20	00 00

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Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
MONITOR OUT - COMPONENT	Set	COMPUTER1	BE EF	03	06 00	F2 F4	01 00	B5 20	00 00
		COMPUTER2	BE EF	03	06 00	32 F6	01 00	B5 20	04 00
		TURN OFF	BE EF	03	06 00	02 B5	01 00	B5 20	FF 00
	Get		BE EF	03	06 00	C1 F4	02 00	B5 20	00 00
MONITOR OUT - STANDBY	Set	COMPUTER1	BE EF	03	06 00	F2 F4	01 00	BF 20	00 00
		COMPUTER2	BE EF	03	06 00	32 F6	01 00	BF 20	04 00
		TURN OFF	BE EF	03	06 00	02 B5	01 00	BF 20	FF 00
	Get		BE EF	03	06 00	C1 F4	02 00	BF 20	00 00
VOLUME-COMPUTER1	Get		BE EF	03	06 00	CD CC	02 00	60 20	00 00
	Increment		BE EF	03	06 00	AB CC	04 00	60 20	00 00
	Decrement		BE EF	03	06 00	7A CD	05 00	60 20	00 00
VOLUME-COMPUTER2	Get		BE EF	03	06 00	FD CD	02 00	64 20	00 00
	Increment		BE EF	03	06 00	9B CD	04 00	64 20	00 00
	Decrement		BE EF	03	06 00	4A CC	05 00	64 20	00 00
VOLUME-COMPONENT	Get		BE EF	03	06 00	01 CC	02 00	65 20	00 00
	Increment		BE EF	03	06 00	67 CC	04 00	65 20	00 00
	Decrement		BE EF	03	06 00	B6 CD	05 00	65 20	00 00
VOLUME-S-VIDEO	Get		BE EF	03	06 00	75 CD	02 00	62 20	00 00
	Increment		BE EF	03	06 00	13 CD	04 00	62 20	00 00
	Decrement		BE EF	03	06 00	C2 CC	05 00	62 20	00 00
VOLUME-VIDEO	Get		BE EF	03	06 00	31 CD	02 00	61 20	00 00
	Increment		BE EF	03	06 00	57 CD	04 00	61 20	00 00
	Decrement		BE EF	03	06 00	86 CC	05 00	61 20	00 00
VOLUME - AUDIO OUT STANDBY	Get		BE EF	03	06 00	D9 CF	02 00	6F 20	00 00
	Increment		BE EF	03	06 00	BF CF	04 00	6F 20	00 00
	Decrement		BE EF	03	06 00	6E CE	05 00	6F 20	00 00
MUTE	Set	TURN OFF	BE EF	03	06 00	46 D3	01 00	02 20	00 00
		TURN ON	BE EF	03	06 00	D6 D2	01 00	02 20	01 00
	Get		BE EF	03	06 00	75 D3	02 00	02 20	00 00
SPEAKER	Set	TURN ON	BE EF	03	06 00	FE D4	01 00	1C 20	01 00
		TURN OFF	BE EF	03	06 00	6E D5	01 00	1C 20	00 00
	Get		BE EF	03	06 00	5D D5	02 00	1C 20	00 00
AUDIO-COMPUTER1	Set	AUDIO1	BE EF	03	06 00	6E DC	01 00	30 20	01 00
		AUDIO2	BE EF	03	06 00	9E DC	01 00	30 20	02 00
		AUDIO3	BE EF	03	06 00	0E DD	01 00	30 20	03 00
		Turn off	BE EF	03	06 00	FE DD	01 00	30 20	00 00
	Get		BE EF	03	06 00	CD DD	02 00	30 20	00 00
AUDIO-COMPUTER2	Set	AUDIO1	BE EF	03	06 00	5E DD	01 00	34 20	01 00
		AUDIO2	BE EF	03	06 00	AE DD	01 00	34 20	02 00
		AUDIO3	BE EF	03	06 00	3E DC	01 00	34 20	03 00
		Turn off	BE EF	03	06 00	CE DC	01 00	34 20	00 00
	Get		BE EF	03	06 00	FD DC	02 00	34 20	00 00
AUDIO-COMPONENT	Set	AUDIO1	BE EF	03	06 00	A2 DC	01 00	35 20	01 00
		AUDIO2	BE EF	03	06 00	52 DC	01 00	35 20	02 00
		AUDIO3	BE EF	03	06 00	C2 DD	01 00	35 20	03 00
		Turn off	BE EF	03	06 00	32 DD	01 00	35 20	00 00
	Get		BE EF	03	06 00	01 DD	02 00	35 20	00 00

(continued on next page)

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
AUDIO-S-VIDEO	Set	AUDIO1	BE EF	03	06 00	D6 DD	01 00	32 20	01 00
		AUDIO2	BE EF	03	06 00	26 DD	01 00	32 20	02 00
		AUDIO3	BE EF	03	06 00	B6 DC	01 00	32 20	03 00
		Turn off	BE EF	03	06 00	46 DC	01 00	32 20	00 00
	Get		BE EF	03	06 00	75 DC	02 00	32 20	00 00
AUDIO-VIDEO	Set	AUDIO1	BE EF	03	06 00	92 DD	01 00	31 20	01 00
		AUDIO2	BE EF	03	06 00	62 DD	01 00	31 20	02 00
		AUDIO3	BE EF	03	06 00	F2 DC	01 00	31 20	03 00
		Turn off	BE EF	03	06 00	02 DC	01 00	31 20	00 00
	Get		BE EF	03	06 00	31 DC	02 00	31 20	00 00
AUDIO OUT STANDBY	Set	AUDIO1	BE EF	03	06 00	7A DF	01 00	3F 20	01 00
		AUDIO2	BE EF	03	06 00	8A DF	01 00	3F 20	02 00
		AUDIO3	BE EF	03	06 00	1A DE	01 00	3F 20	03 00
		Turn off	BE EF	03	06 00	EA DE	01 00	3F 20	00 00
	Get		BE EF	03	06 00	D9 DE	02 00	3F 20	00 00
REMOTE FREQ. NORMAL	Set	Off	BE EF	03	06 00	FF 3D	01 00	30 26	00 00
		On	BE EF	03	06 00	6F 3C	01 00	30 26	01 00
	Get		BE EF	03	06 00	CC 3D	02 00	30 26	00 00
REMOTE FREQ. HIGH	Set	Off	BE EF	03	06 00	03 3C	01 00	31 26	00 00
		On	BE EF	03	06 00	93 3D	01 00	31 26	01 00
	Get		BE EF	03	06 00	30 3C	02 00	31 26	00 00
LANGUAGE	Set	ENGLISH	BE EF	03	06 00	F7 D3	01 00	05 30	00 00
		FRANÇAIS	BE EF	03	06 00	67 D2	01 00	05 30	01 00
		DEUTSCH	BE EF	03	06 00	97 D2	01 00	05 30	02 00
		ESPAÑOL	BE EF	03	06 00	07 D3	01 00	05 30	03 00
		ITALIANO	BE EF	03	06 00	37 D1	01 00	05 30	04 00
		NORSK	BE EF	03	06 00	A7 D0	01 00	05 30	05 00
		NEDERLANDS	BE EF	03	06 00	57 D0	01 00	05 30	06 00
		PORTUGUÊS	BE EF	03	06 00	C7 D1	01 00	05 30	07 00
		SVENSKA	BE EF	03	06 00	C7 D4	01 00	05 30	0B 00
		РУССКИЙ	BE EF	03	06 00	F7 D6	01 00	05 30	0C 00
		SUOMI	BE EF	03	06 00	67 D7	01 00	05 30	0D 00
		POLSKI	BE EF	03	06 00	97 D7	01 00	05 30	0E 00
		TÜRKÇE	BE EF	03	06 00	07 D6	01 00	05 30	0F 00
		DANSK	BE EF	03	06 00	A7 DF	01 00	05 30	11 00
		ČESKY	BE EF	03	06 00	57 DF	01 00	05 30	12 00
		MAGYAR	BE EF	03	06 00	C7 DE	01 00	05 30	13 00
		ROMÂNĂ	BE EF	03	06 00	F7 DC	01 00	05 30	14 00
		SLOVENSKI	BE EF	03	06 00	67 DD	01 00	05 30	15 00
		HRVATSKI	BE EF	03	06 00	97 DD	01 00	05 30	16 00
		ΕΛΛΗΝΙΚΑ	BE EF	03	06 00	07 DC	01 00	05 30	17 00
	Get		BE EF	03	06 00	C4 D3	02 00	05 30	00 00
MENU POSITION H	Get		BE EF	03	06 00	04 D7	02 00	15 30	00 00
	Increment		BE EF	03	06 00	62 D7	04 00	15 30	00 00
	Decrement		BE EF	03	06 00	B3 D6	05 00	15 30	00 00
MENU POSITION H Reset	Execute		BE EF	03	06 00	DC C6	06 00	43 70	00 00

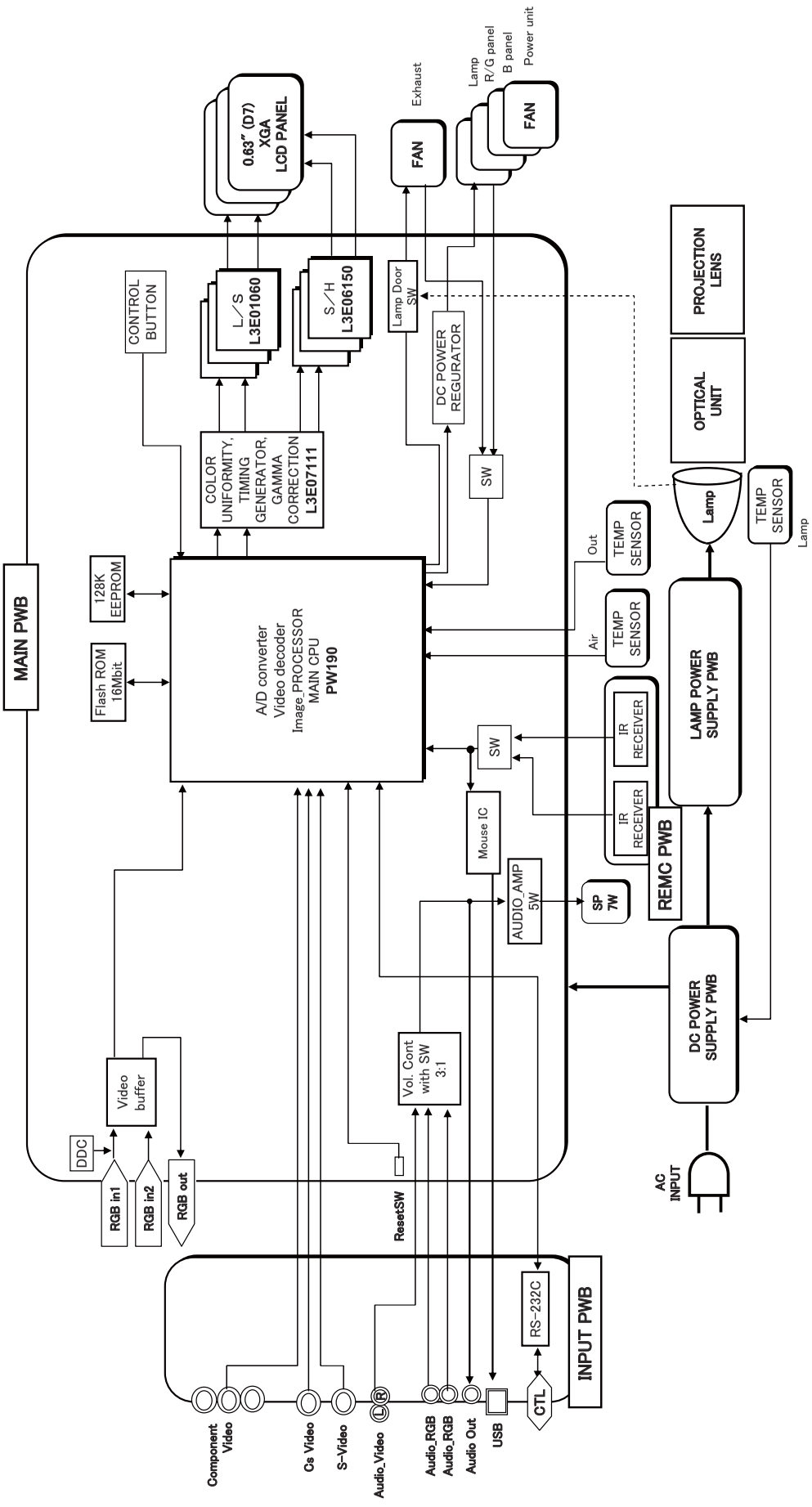
(continued on next page)

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
MENU POSITION V	Get		BE EF	03	06 00	40 D7	02 00	16 30	00 00
	Increment		BE EF	03	06 00	26 D7	04 00	16 30	00 00
	Decrement		BE EF	03	06 00	F7 D6	05 00	16 30	00 00
MENU POSITION V Reset	Execute		BE EF	03	06 00	A8 C7	06 00	44 70	00 00
BLANK	Set	MyScreen	BE EF	03	06 00	FB CA	01 00	00 30	20 00
		ORIGINAL	BE EF	03	06 00	FB E2	01 00	00 30	40 00
		BLUE	BE EF	03	06 00	CB D3	01 00	00 30	03 00
		WHITE	BE EF	03	06 00	6B D0	01 00	00 30	05 00
		BLACK	BE EF	03	06 00	9B D0	01 00	00 30	06 00
	Get		BE EF	03	06 00	08 D3	02 00	00 30	00 00
BLANK On/Off	Set	TURN OFF	BE EF	03	06 00	FB D8	01 00	20 30	00 00
		TURN ON	BE EF	03	06 00	6B D9	01 00	20 30	01 00
	Get		BE EF	03	06 00	C8 D8	02 00	20 30	00 00
START UP	Set	MyScreen	BE EF	03	06 00	CB CB	01 00	04 30	20 00
		ORIGINAL	BE EF	03	06 00	0B D2	01 00	04 30	00 00
		TURN OFF	BE EF	03	06 00	9B D3	01 00	04 30	01 00
	Get		BE EF	03	06 00	38 D2	02 00	04 30	00 00
MyScreen LOCK	Set	TURN OFF	BE EF	03	06 00	3B EF	01 00	C0 30	00 00
		TURN ON	BE EF	03	06 00	AB EE	01 00	C0 30	01 00
	Get		BE EF	03	06 00	08 EF	02 00	C0 30	00 00
MESSAGE	Set	TURN OFF	BE EF	03	06 00	8F D6	01 00	17 30	00 00
		TURN ON	BE EF	03	06 00	1F D7	01 00	17 30	01 00
	Get		BE EF	03	06 00	BC D6	02 00	17 30	00 00
TEMPLATE	Set	TEST PATTERN	BE EF	03	06 00	43 D9	01 00	22 30	00 00
		DOT-LINE1	BE EF	03	06 00	D3 D8	01 00	22 30	01 00
		DOT-LINE2	BE EF	03	06 00	23 D8	01 00	22 30	02 00
		DOT-LINE3	BE EF	03	06 00	B3 D9	01 00	22 30	03 00
		DOT-LINE4	BE EF	03	06 00	83 DB	01 00	22 30	04 00
	Get		BE EF	03	06 00	70 D9	02 00	22 30	00 00
TEMPLATE On/Off	Set	TURN OFF	BE EF	03	06 00	BF D8	01 00	23 30	00 00
		TURN ON	BE EF	03	06 00	2F D9	01 00	23 30	01 00
	Get		BE EF	03	06 00	8C D8	02 00	23 30	00 00
AUTO SEARCH	Set	TURN OFF	BE EF	03	06 00	B6 D6	01 00	16 20	00 00
		TURN ON	BE EF	03	06 00	26 D7	01 00	16 20	01 00
	Get		BE EF	03	06 00	85 D6	02 00	16 20	00 00
AUTO KEYSTONE	Set	TURN OFF	BE EF	03	06 00	EA D1	01 00	0F 20	00 00
		TURN ON	BE EF	03	06 00	7A D0	01 00	0F 20	01 00
	Get		BE EF	03	06 00	D9 D1	02 00	0F 20	00 00
AUTO ON	Set	TURN OFF	BE EF	03	06 00	3B 89	01 00	20 31	00 00
		TURN ON	BE EF	03	06 00	AB 88	01 00	20 31	01 00
	Get		BE EF	03	06 00	08 89	02 00	20 31	00 00
AUTO OFF	Get		BE EF	03	06 00	08 86	02 00	10 31	00 00
	Increment		BE EF	03	06 00	6E 86	04 00	10 31	00 00
	Decrement		BE EF	03	06 00	BF 87	05 00	10 31	00 00
LAMP TIME	Get		BE EF	03	06 00	C2 FF	02 00	90 10	00 00
LAMP TIME Reset	Execute		BE EF	03	06 00	58 DC	06 00	30 70	00 00
FILTER TIME	Get		BE EF	03	06 00	C2 F0	02 00	A0 10	00 00
FILER TIME Reset	Execute		BE EF	03	06 00	98 C6	06 00	40 70	00 00

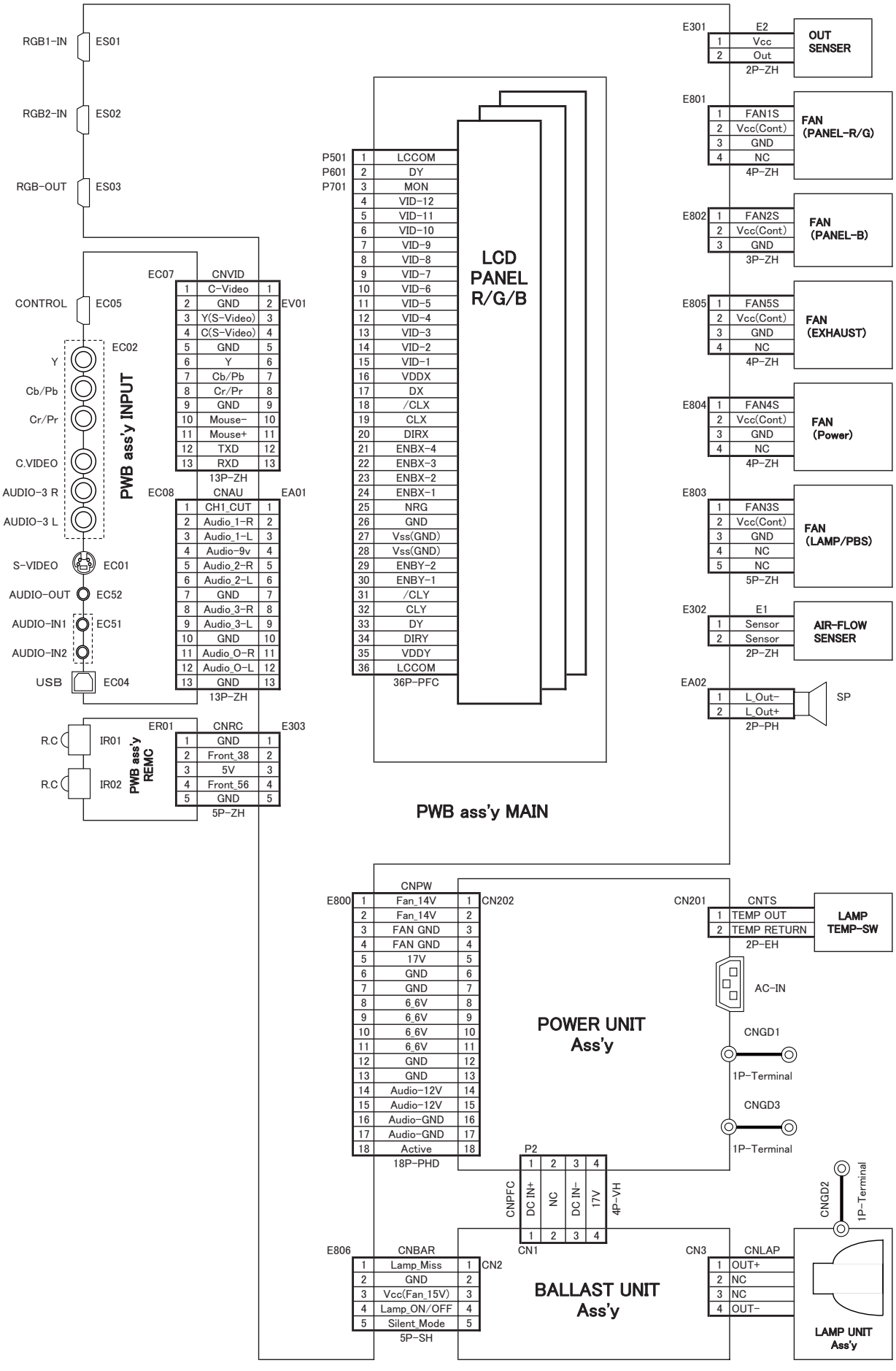
(continued on next page)

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
MY BUTTON-1	Set	COMPUTER1	BE EF	03	06 00	3A 33	01 00	00 36	00 00
		COMPUTER2	BE EF	03	06 00	FA 31	01 00	00 36	04 00
		COMPONENT	BE EF	03	06 00	6A 30	01 00	00 36	05 00
		S-VIDEO	BE EF	03	06 00	5A 32	01 00	00 36	02 00
		VIDEO	BE EF	03	06 00	AA 32	01 00	00 36	01 00
		INFORMATION	BE EF	03	06 00	FA 3E	01 00	00 36	10 00
		AUTO KEYSTONE V	BE EF	03	06 00	6A 3F	01 00	00 36	11 00
		MY MEMORY	BE EF	03	06 00	9A 3F	01 00	00 36	12 00
		PICTURE MODE	BE EF	03	06 00	0A 3E	01 00	00 36	13 00
		FILTER RESET	BE EF	03	06 00	3A 3C	01 00	00 36	14 00
		AV MUTE	BE EF	03	06 00	AA 38	01 00	00 36	19 00
		TEMPLATE	BE EF	03	06 00	CA 39	01 00	00 36	1B 00
	Get		BE EF	03	06 00	09 33	02 00	00 36	00 00
MY BUTTON-2	Set	COMPUTER1	BE EF	03	06 00	C6 32	01 00	01 36	00 00
		COMPUTER2	BE EF	03	06 00	06 30	01 00	01 36	04 00
		COMPONENT	BE EF	03	06 00	96 31	01 00	01 36	05 00
		S-VIDEO	BE EF	03	06 00	A6 33	01 00	01 36	02 00
		VIDEO	BE EF	03	06 00	56 33	01 00	01 36	01 00
		INFORMATION	BE EF	03	06 00	06 3F	01 00	01 36	10 00
		AUTO KEYSTONE V	BE EF	03	06 00	96 3E	01 00	01 36	11 00
		MY MEMORY	BE EF	03	06 00	66 3E	01 00	01 36	12 00
		PICTURE MODE	BE EF	03	06 00	F6 3F	01 00	01 36	13 00
		FILTER RESET	BE EF	03	06 00	C6 3D	01 00	01 36	14 00
		AV MUTE	BE EF	03	06 00	56 39	01 00	01 36	19 00
		TEMPLATE	BE EF	03	06 00	36 38	01 00	01 36	1B 00
	Get		BE EF	03	06 00	F5 32	02 00	01 36	00 00
MY SOURCE	Set	COMPUTER1	BE EF	03	06 00	FA 30	01 00	20 36	00 00
		COMPUTER2	BE EF	03	06 00	3A 3A	01 00	20 36	04 00
		COMPONENT	BE EF	03	06 00	AA 3B	01 00	20 36	05 00
		S-VIDEO	BE EF	03	06 00	9A 39	01 00	20 36	02 00
		VIDEO	BE EF	03	06 00	6A 39	01 00	20 36	01 00
	Get		BE EF	03	06 00	C9 38	02 00	20 36	00 00
MAGNIFY	Get		BE EF	03	06 00	7C D2	02 00	07 30	00 00
	Increment		BE EF	03	06 00	1A D2	04 00	07 30	00 00
	Decrement		BE EF	03	06 00	CB D3	05 00	07 30	00 00
FREEZE	Set	NORMAL	BE EF	03	06 00	83 D2	01 00	02 30	00 00
		FREEZE	BE EF	03	06 00	13 D3	01 00	02 30	01 00
	Get		BE EF	03	06 00	B0 D2	02 00	02 30	00 00
CLOSED CAPTION DISPLAY	Set	TURN OFF	BE EF	03	06 00	FA 62	01 00	00 37	00 00
		TURN ON	BE EF	03	06 00	6A 63	01 00	00 37	01 00
		AUTO	BE EF	03	06 00	9A 63	01 00	00 37	02 00
	Get		BE EF	03	06 00	C9 62	02 00	00 37	00 00
CLOSED CAPTION MODE	Set	CAPTIONS	BE EF	03	06 00	06 63	01 00	01 37	00 00
		TEXT	BE EF	03	06 00	96 62	01 00	01 37	01 00
	Get		BE EF	03	06 00	35 63	02 00	01 37	00 00
CLOSED CAPTION CHANNEL	Set	1	BE EF	03	06 00	D2 62	01 00	02 37	01 00
		2	BE EF	03	06 00	22 62	01 00	02 37	02 00
		3	BE EF	03	06 00	B2 63	01 00	02 37	03 00
		4	BE EF	03	06 00	82 61	01 00	02 37	04 00
	Get		BE EF	03	06 00	71 63	02 00	02 37	00 00

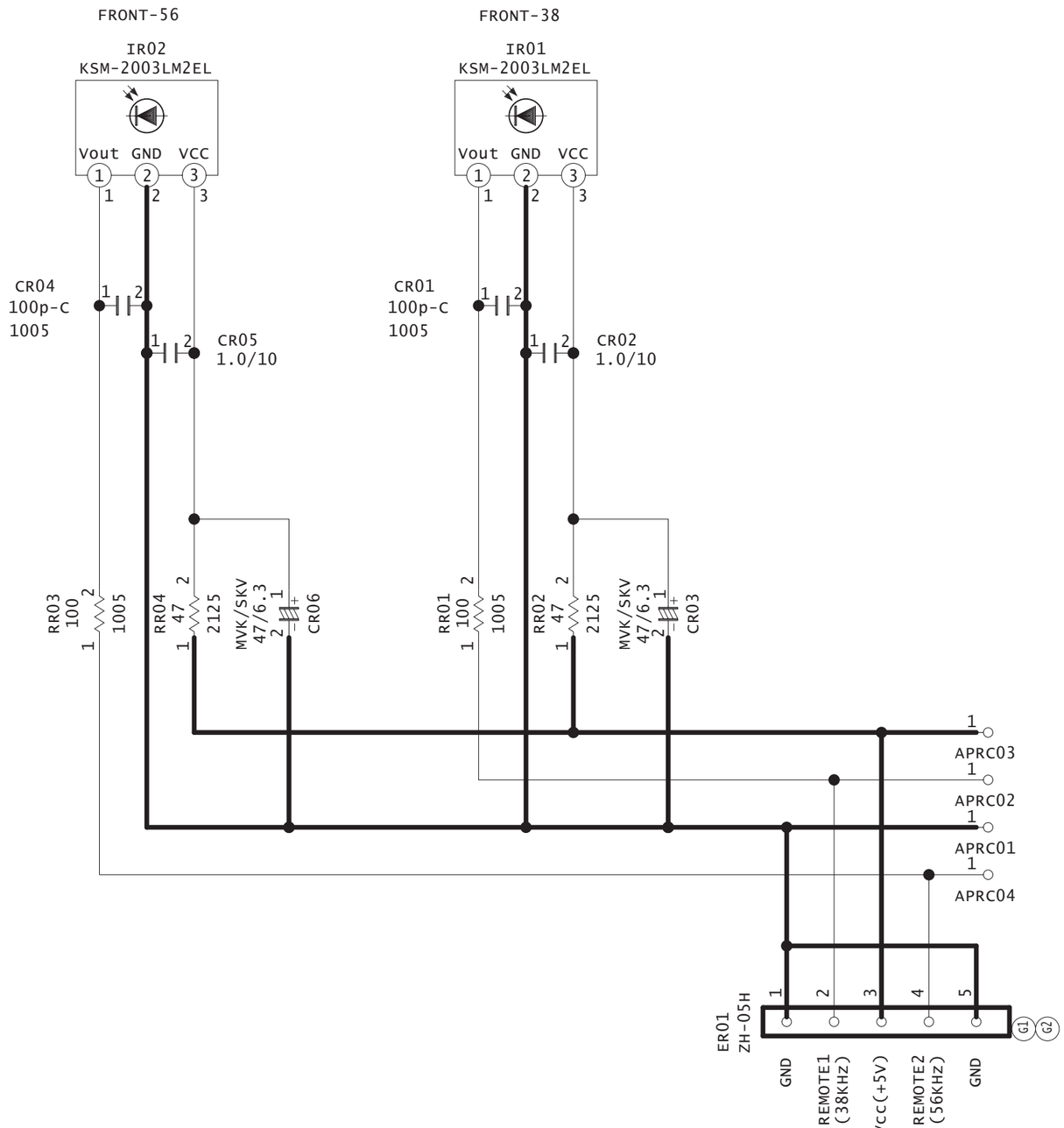
11. Block diagram



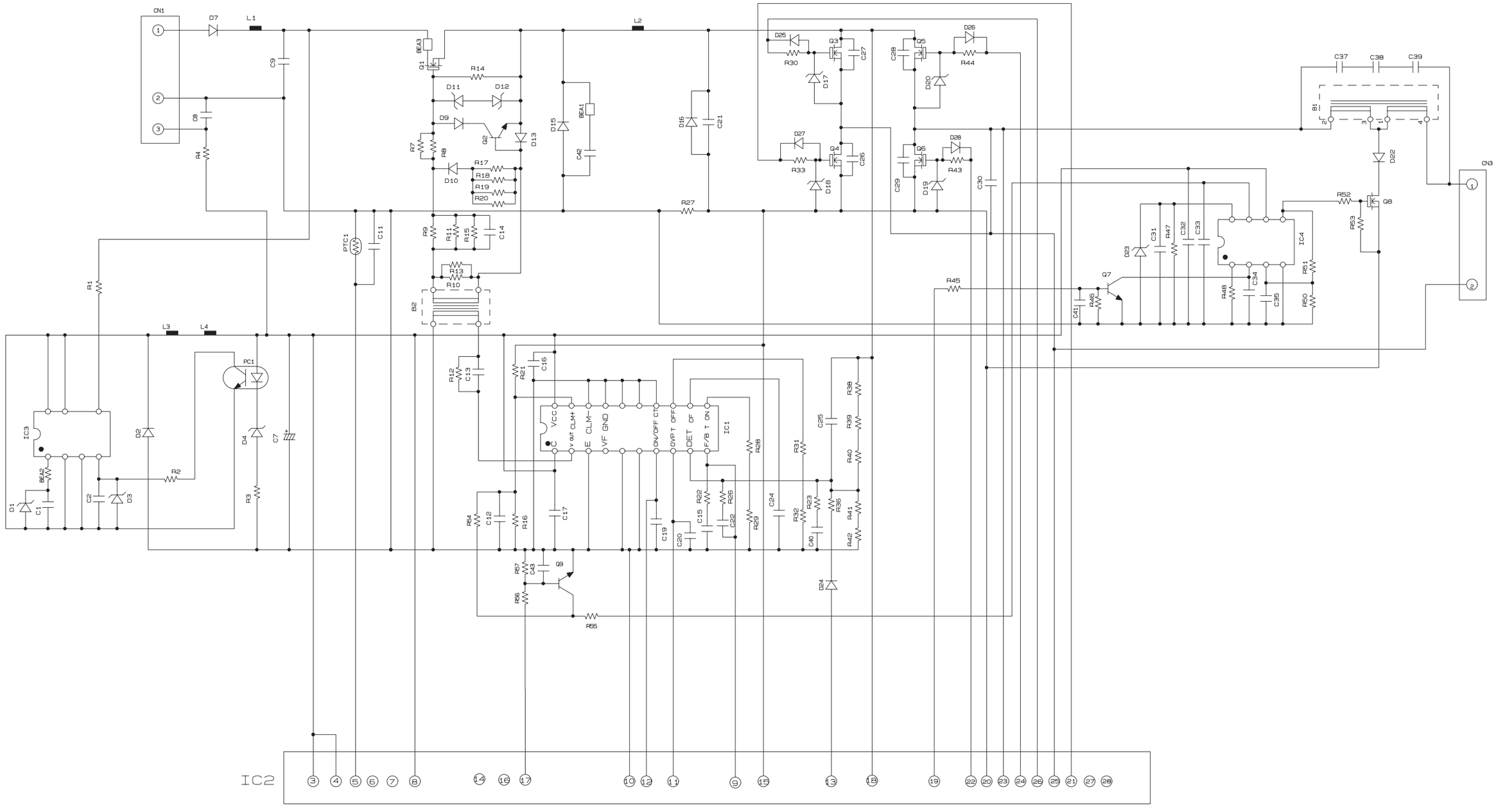
12. Connector connection diagram



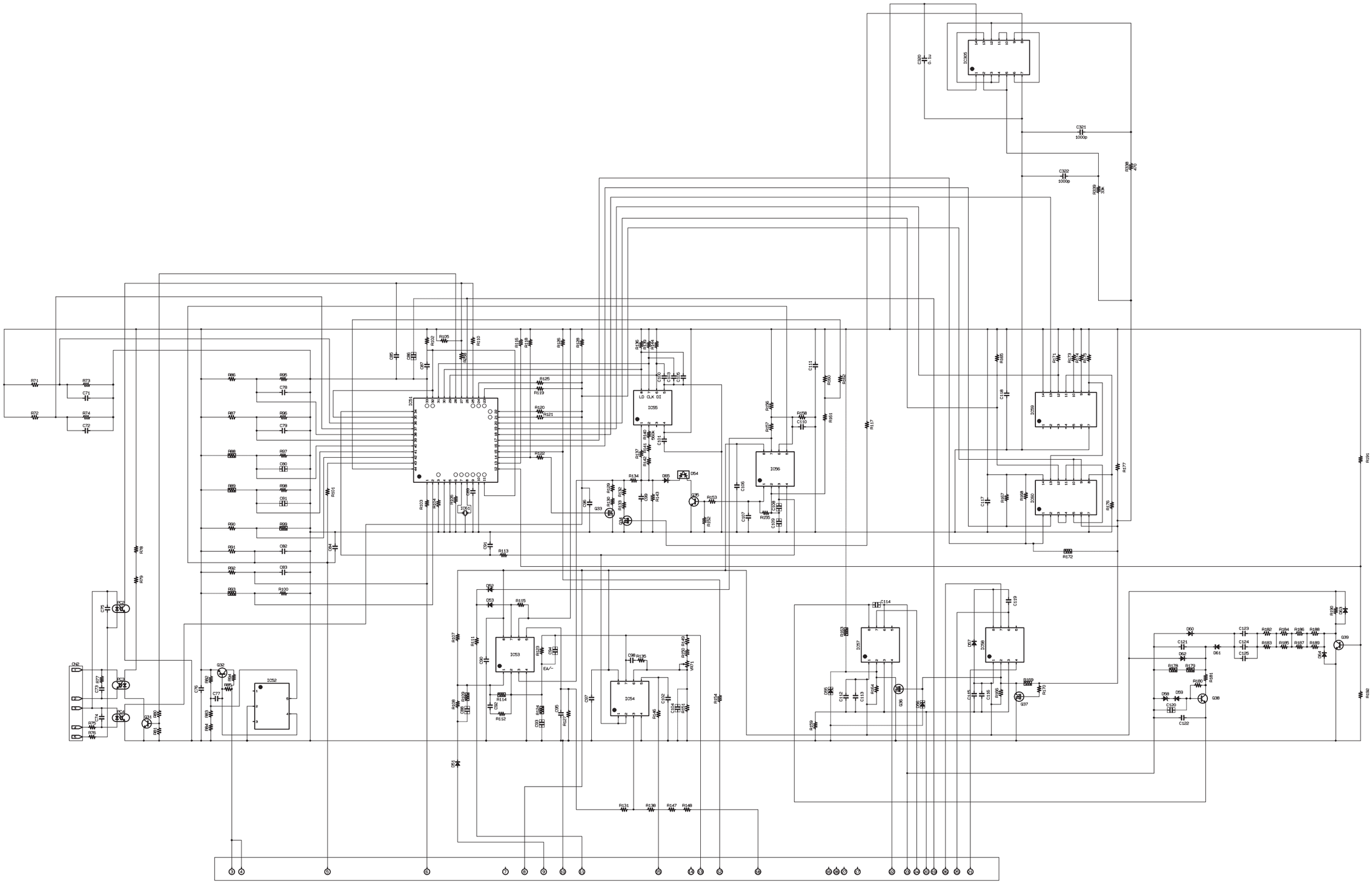
13. Basic Circuit Diagram



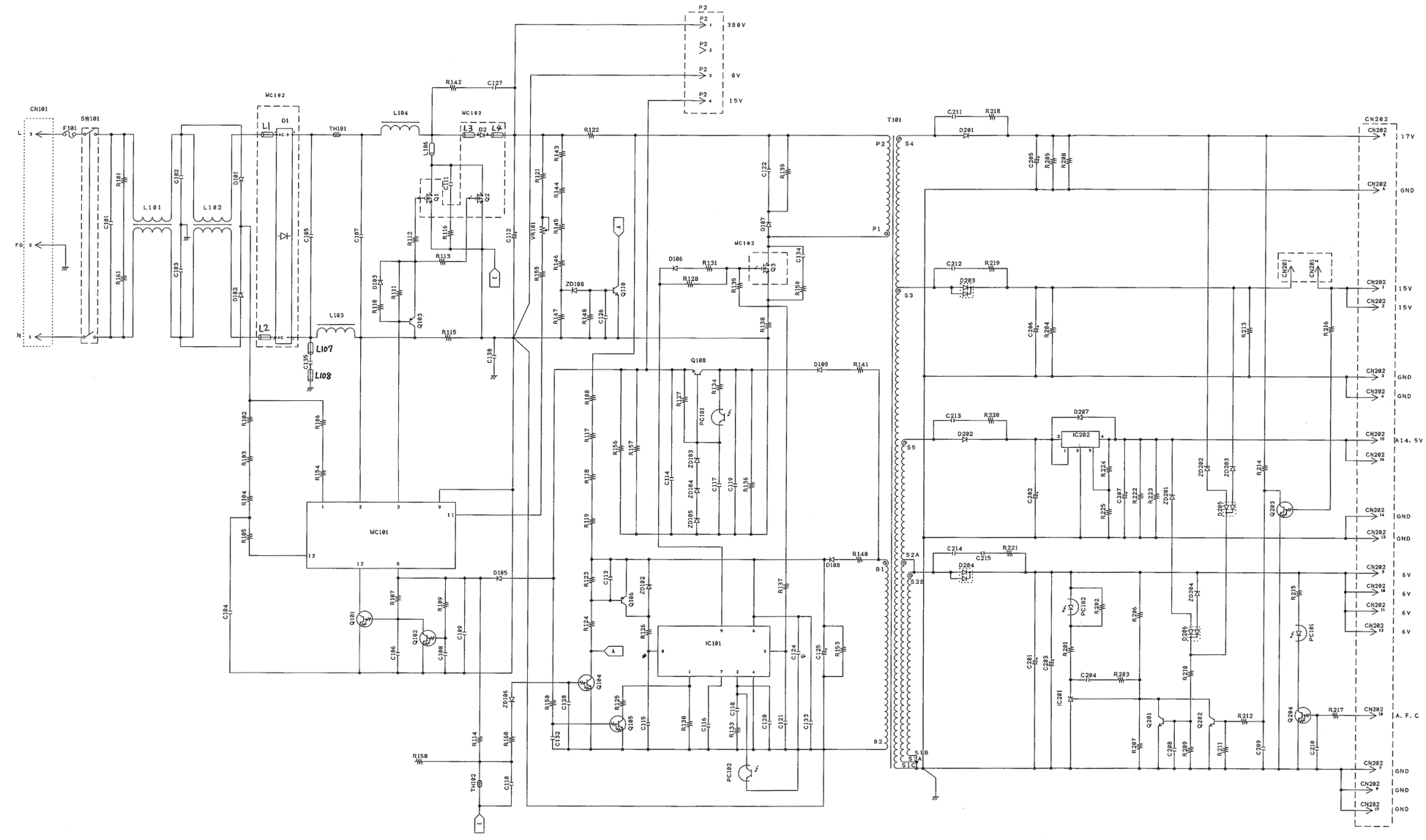
SM0313	REMOTE PWB ASSEMBLY - SHEET 1 of 1	HITACHI



SM0313	POWER UNIT (BALLAST) - SHEET 1 of 2	HITACHI



SM0313	POWER UNIT (BALLAST) - SHEET 2 of 2	HITACHI

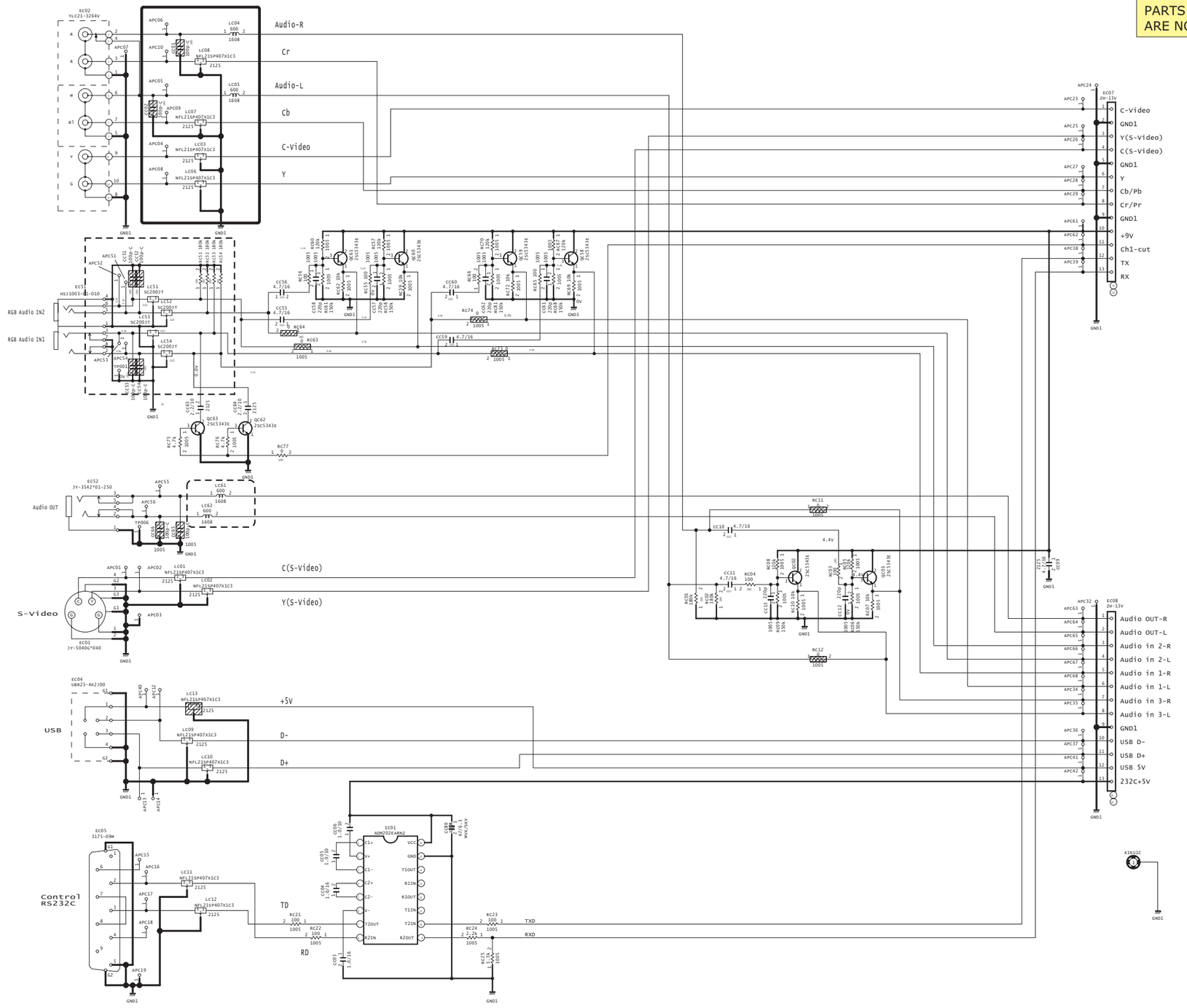


SM0313

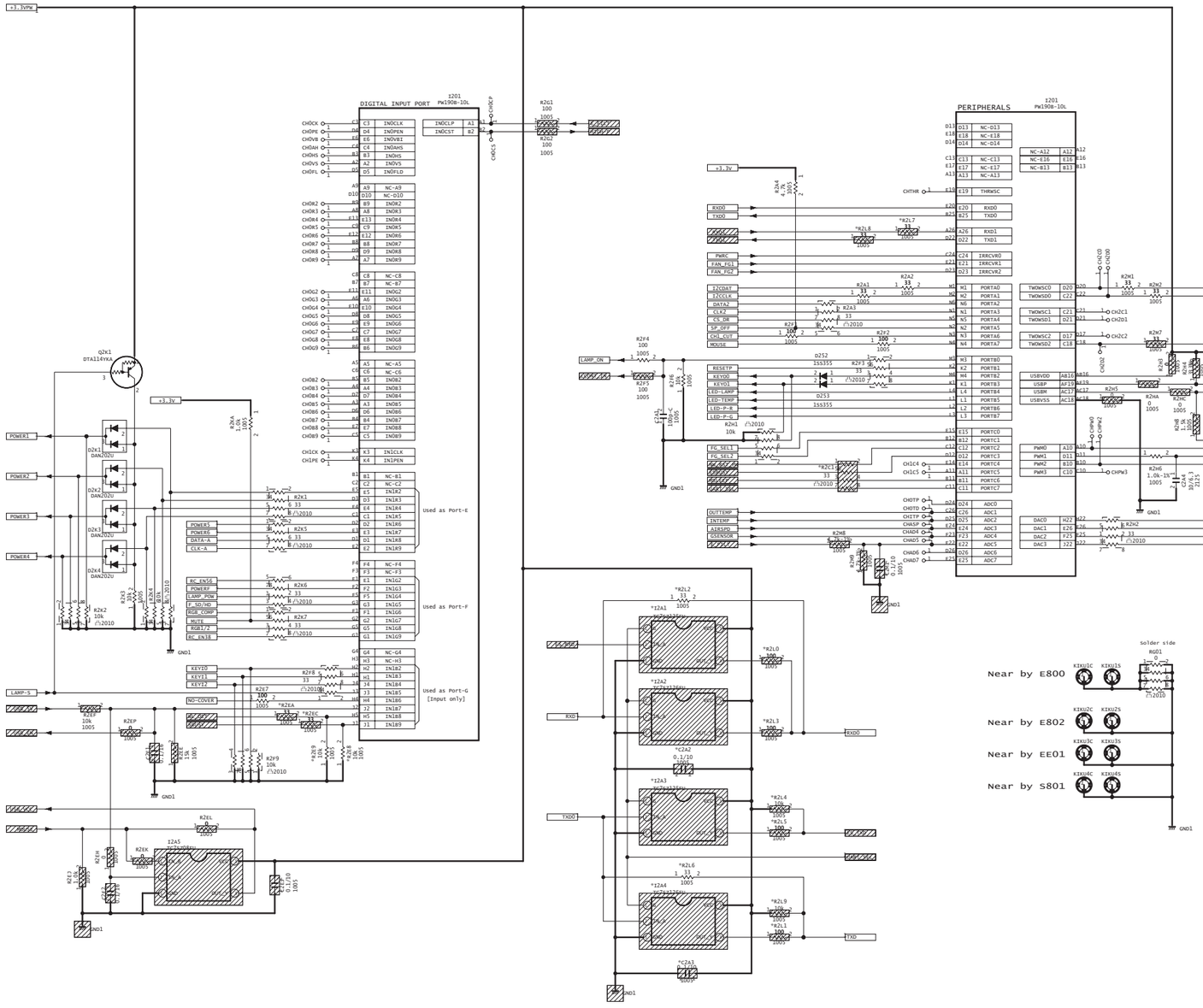
POWER UNIT (CIRCUIT) - SHEET 1 of 1

HITACHI

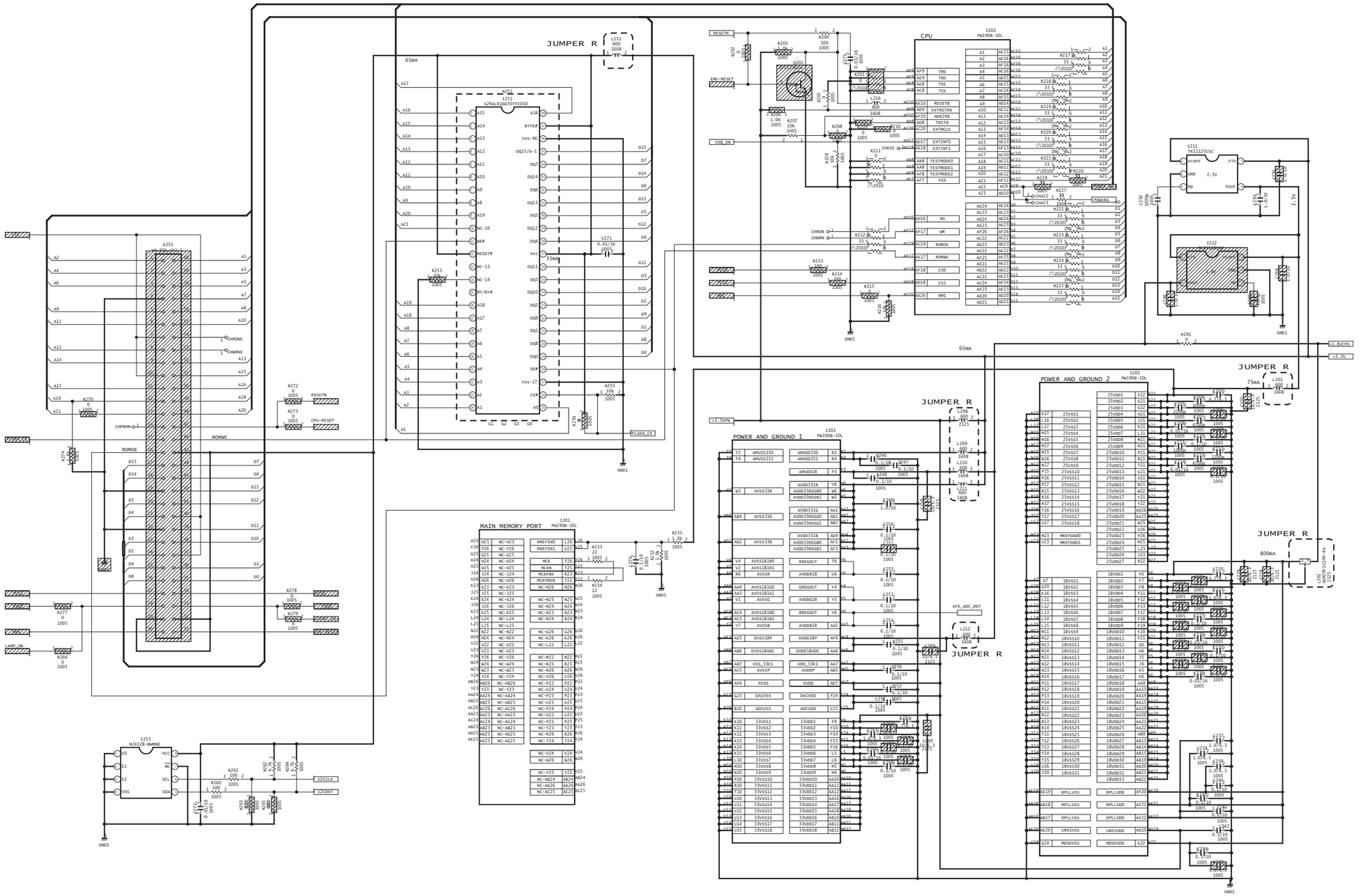
NOTE
PARTS MARKED WITH HATCHING
ARE NOT MOUNTED IN THIS MODEL.

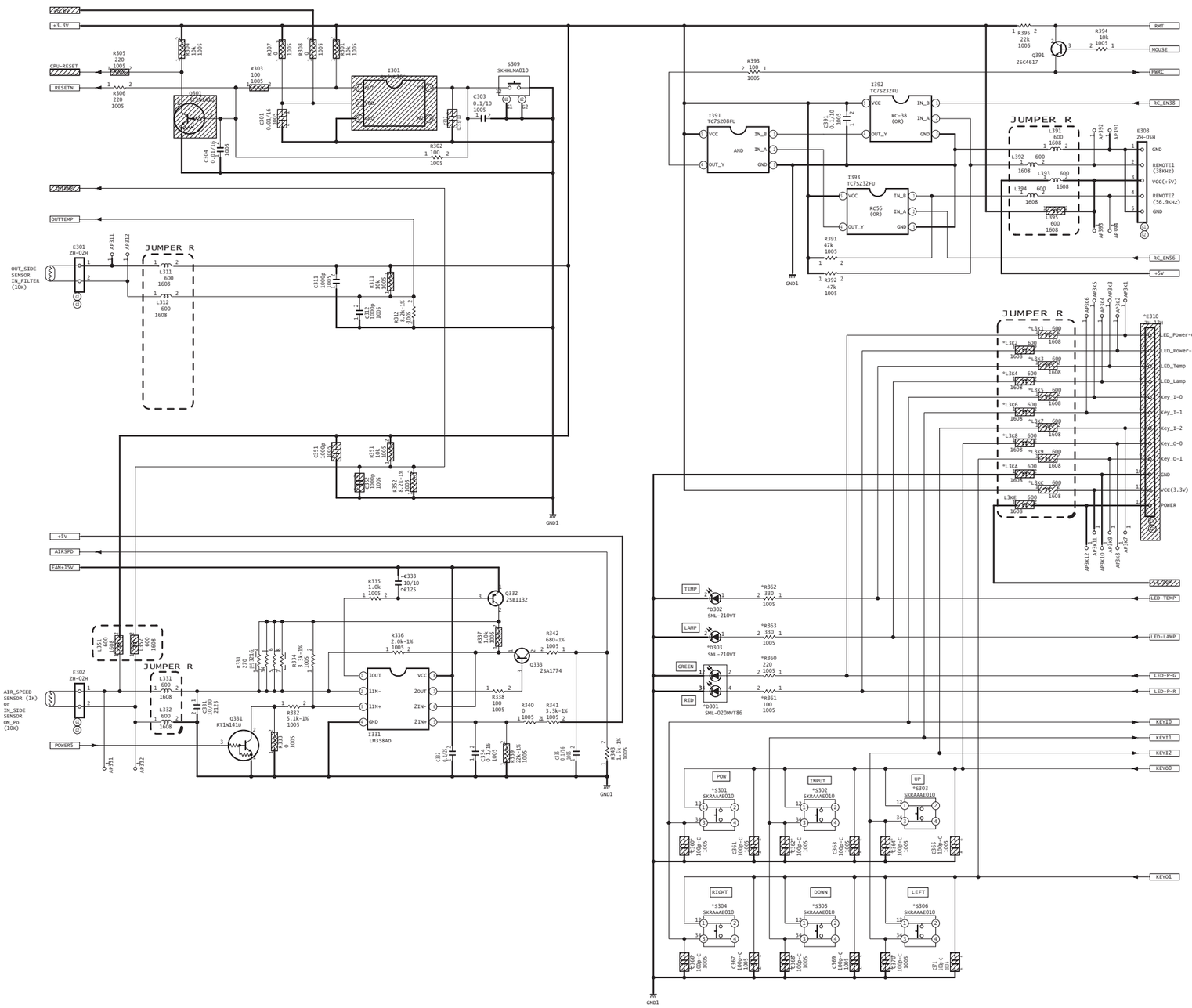


NOTE
PARTS MARKED WITH HATCHING
ARE NOT MOUNTED IN THIS MODEL.



NOTE
PARTS MARKED WITH HATCHING
ARE NOT MOUNTED IN THIS MODEL.



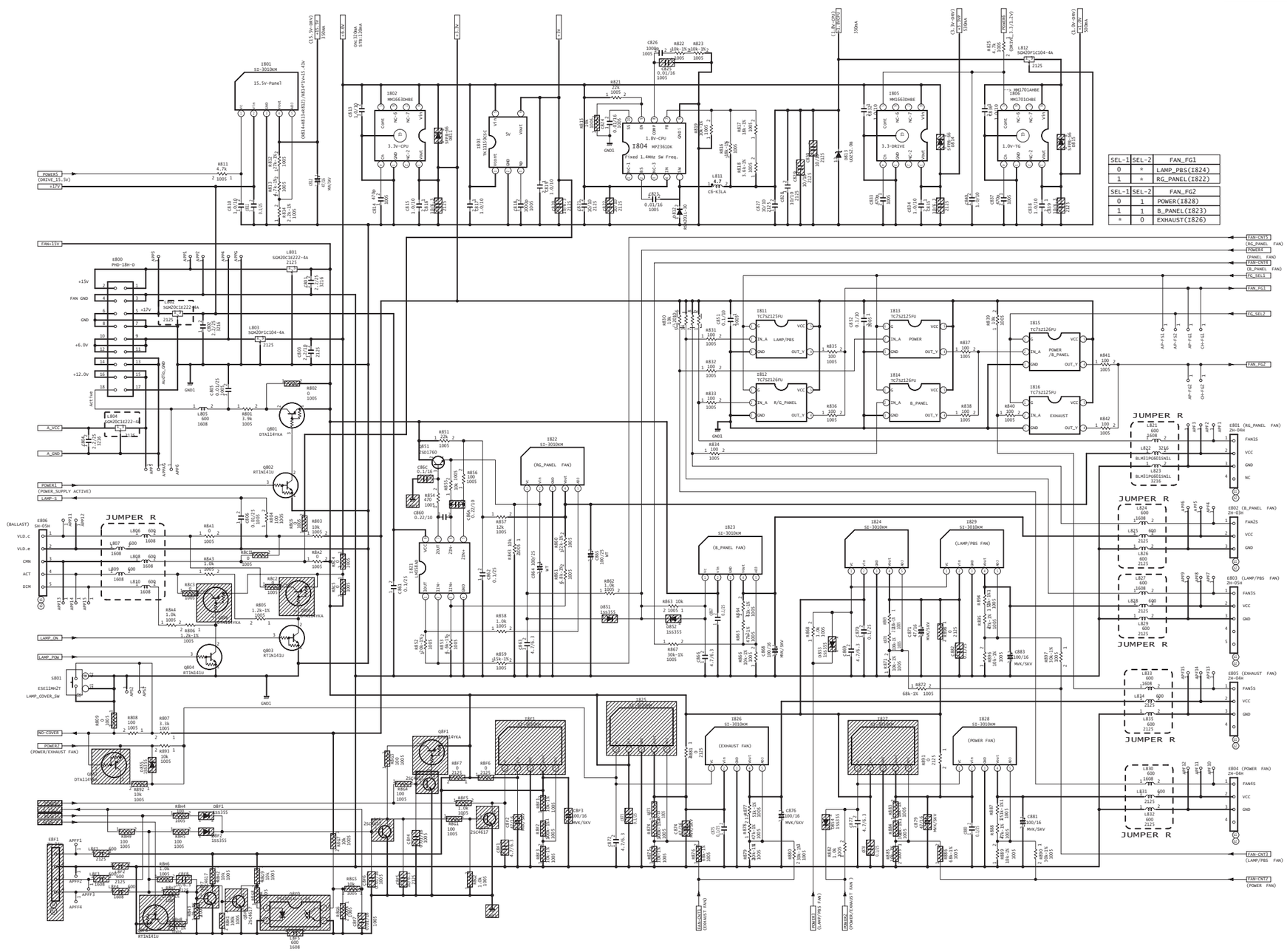


NOTE
PARTS MARKED WITH HATCHING
ARE NOT MOUNTED IN THIS MODEL.

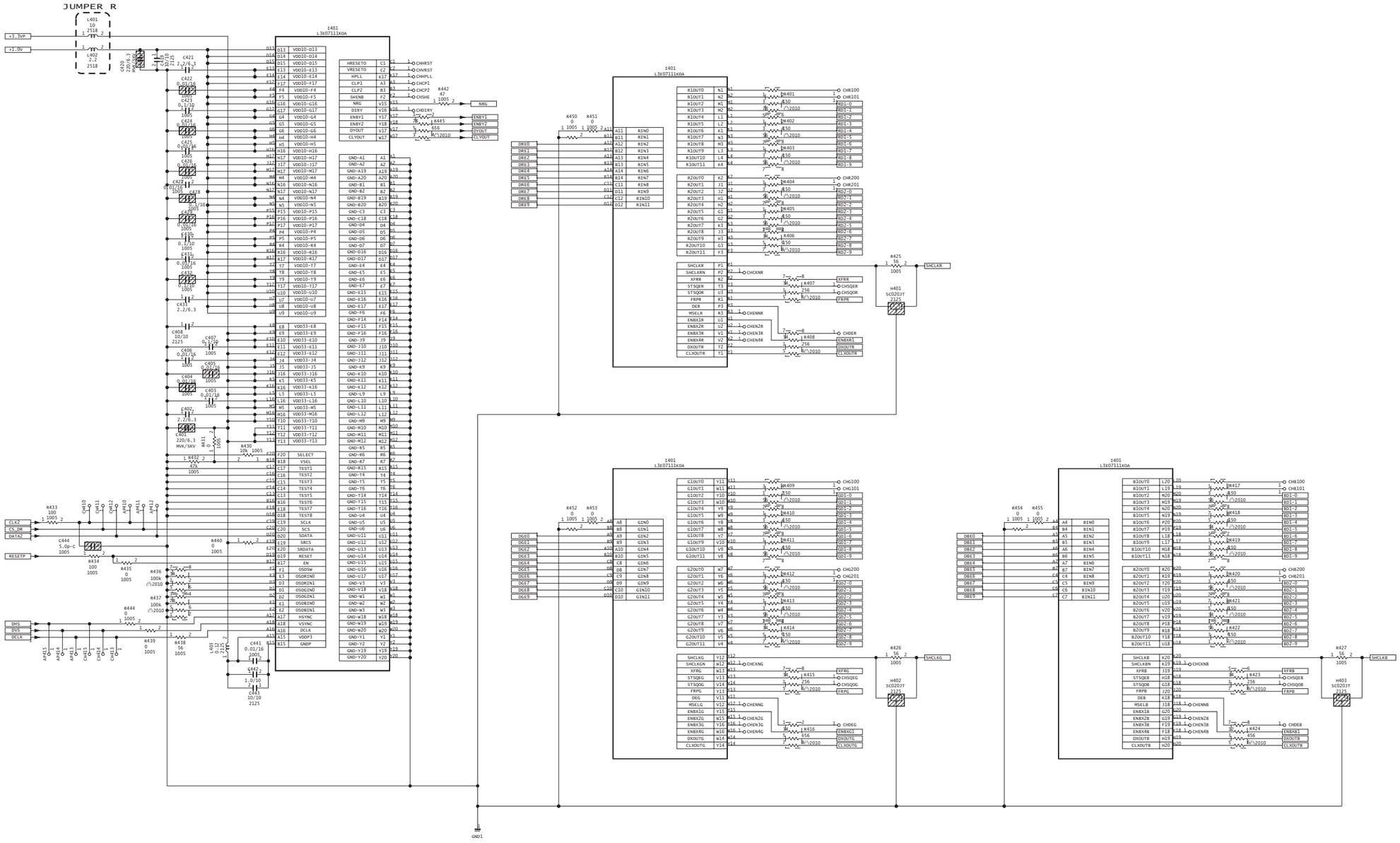
NOTE
PARTS MARKED WITH HATCHING
ARE NOT MOUNTED IN THIS MODEL.

SEL-1	SEL-2	FAN_FG1
0	*	LAMP_PBS(1824)
1	*	RG_PANEL(1822)

SEL-1	SEL-2	FAN_FG2
0	1	POWER(1828)
1	1	B_PANEL(1823)
*	0	EXHAUST(1826)



NOTE
PARTS MARKED WITH HATCHING
ARE NOT MOUNTED IN THIS MODEL.



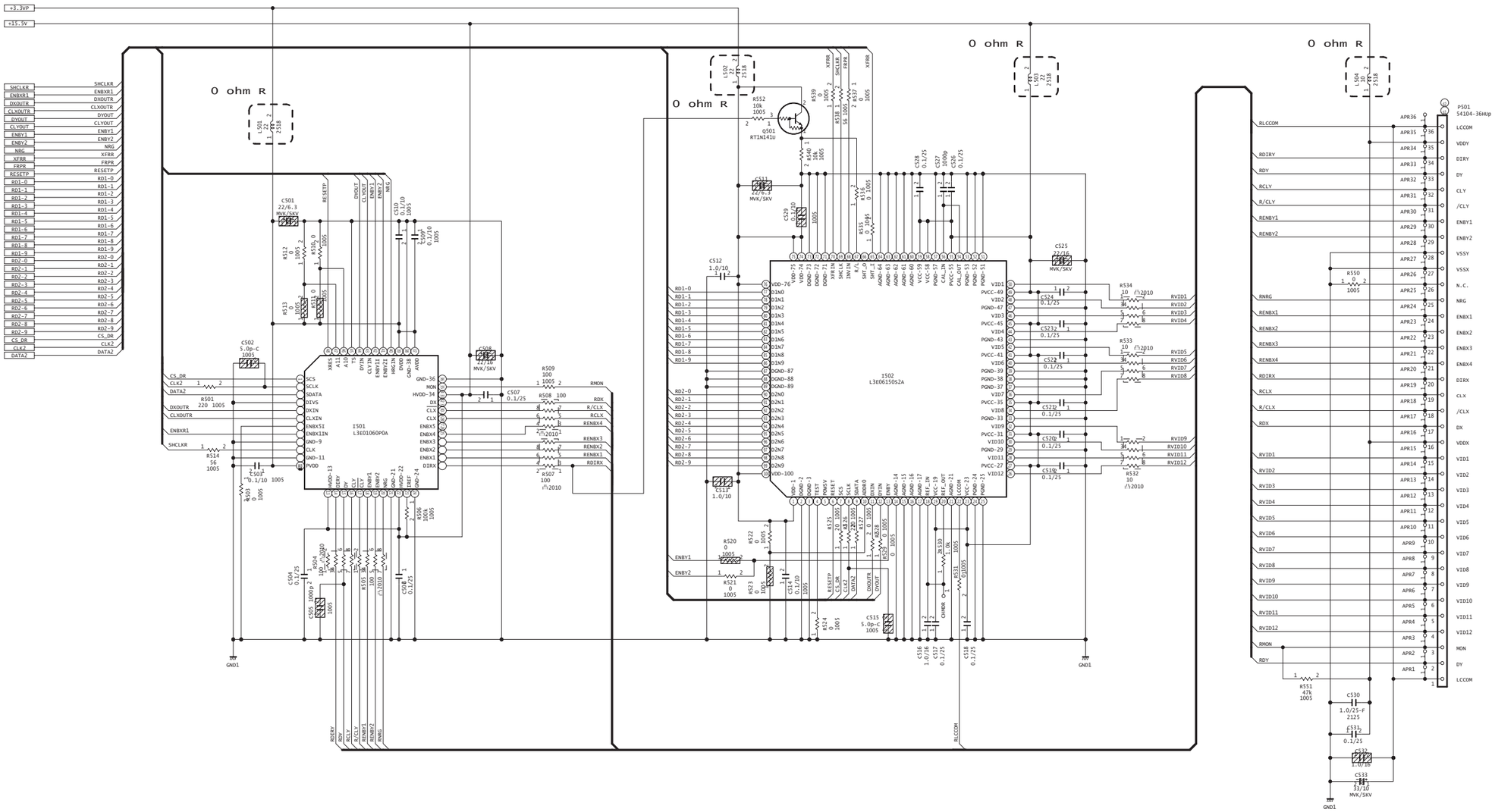
SM0313

MAIN BOARD CIRCUIT - SHEET 5 of 12

HITACHI

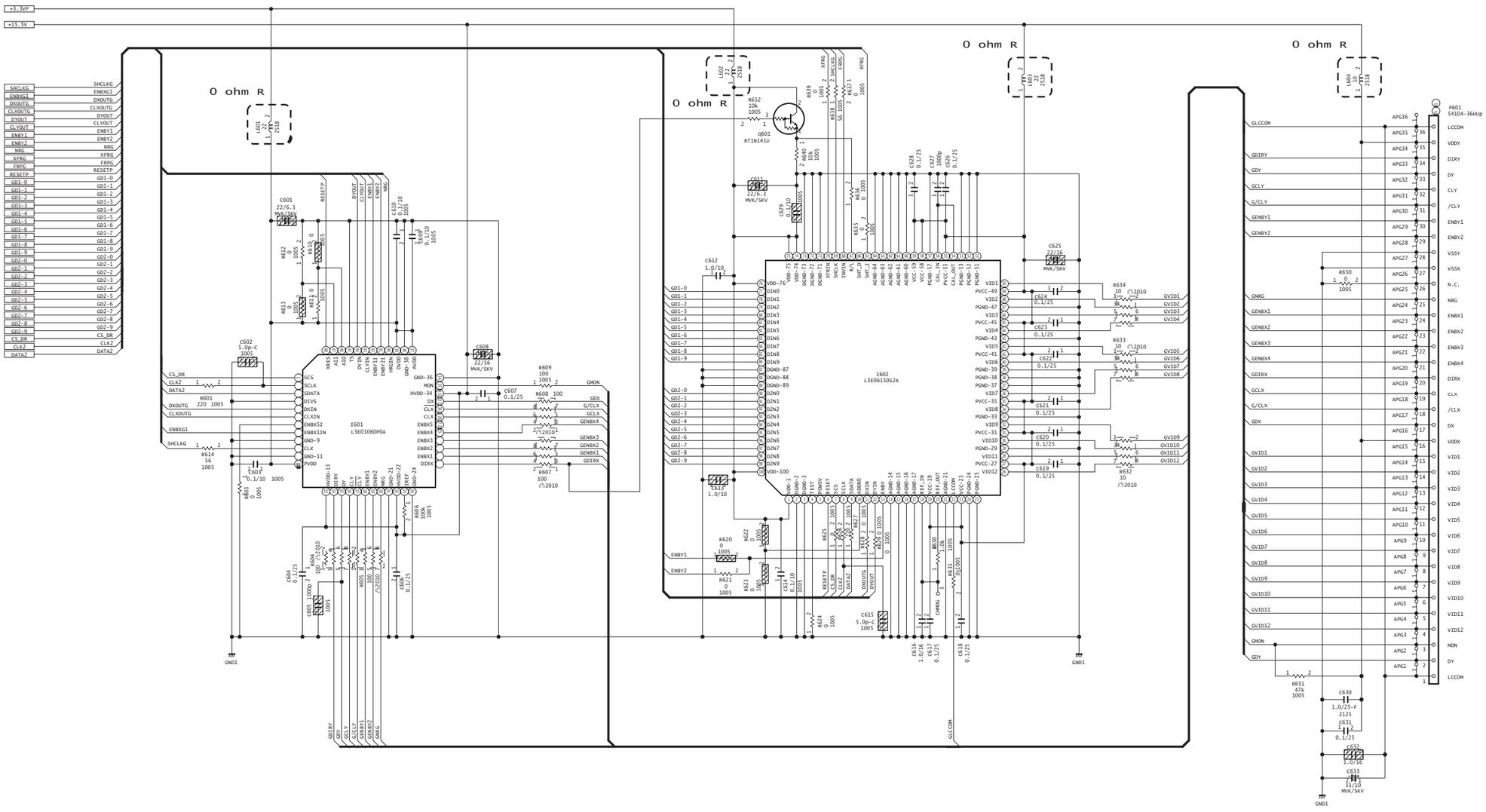
NOTE
PARTS MARKED WITH HATCHING
ARE NOT MOUNTED IN THIS MODEL.

C14 R Panel Part



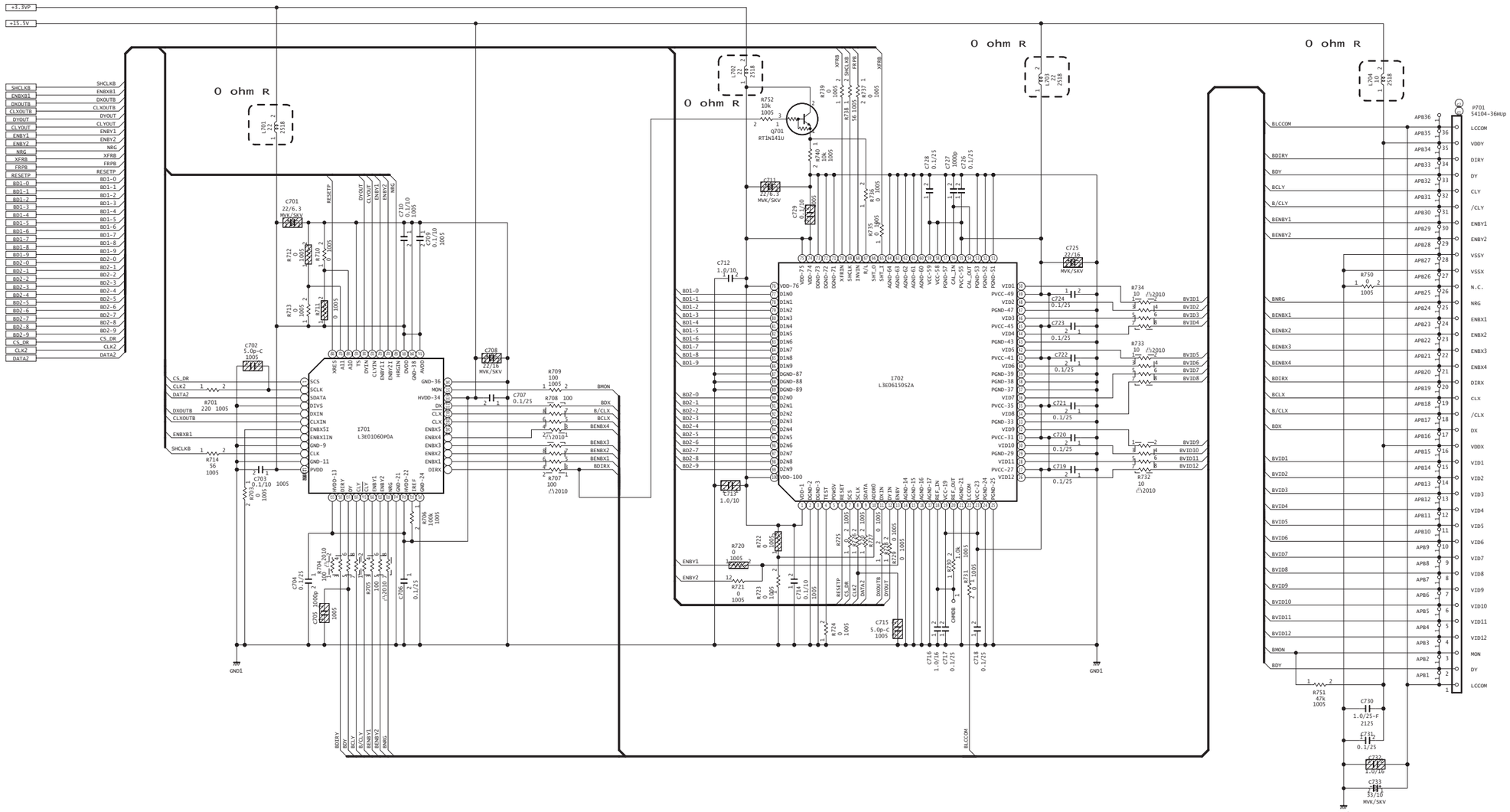
NOTE
PARTS MARKED WITH HATCHING
ARE NOT MOUNTED IN THIS MODEL.

C14 G Panel Part

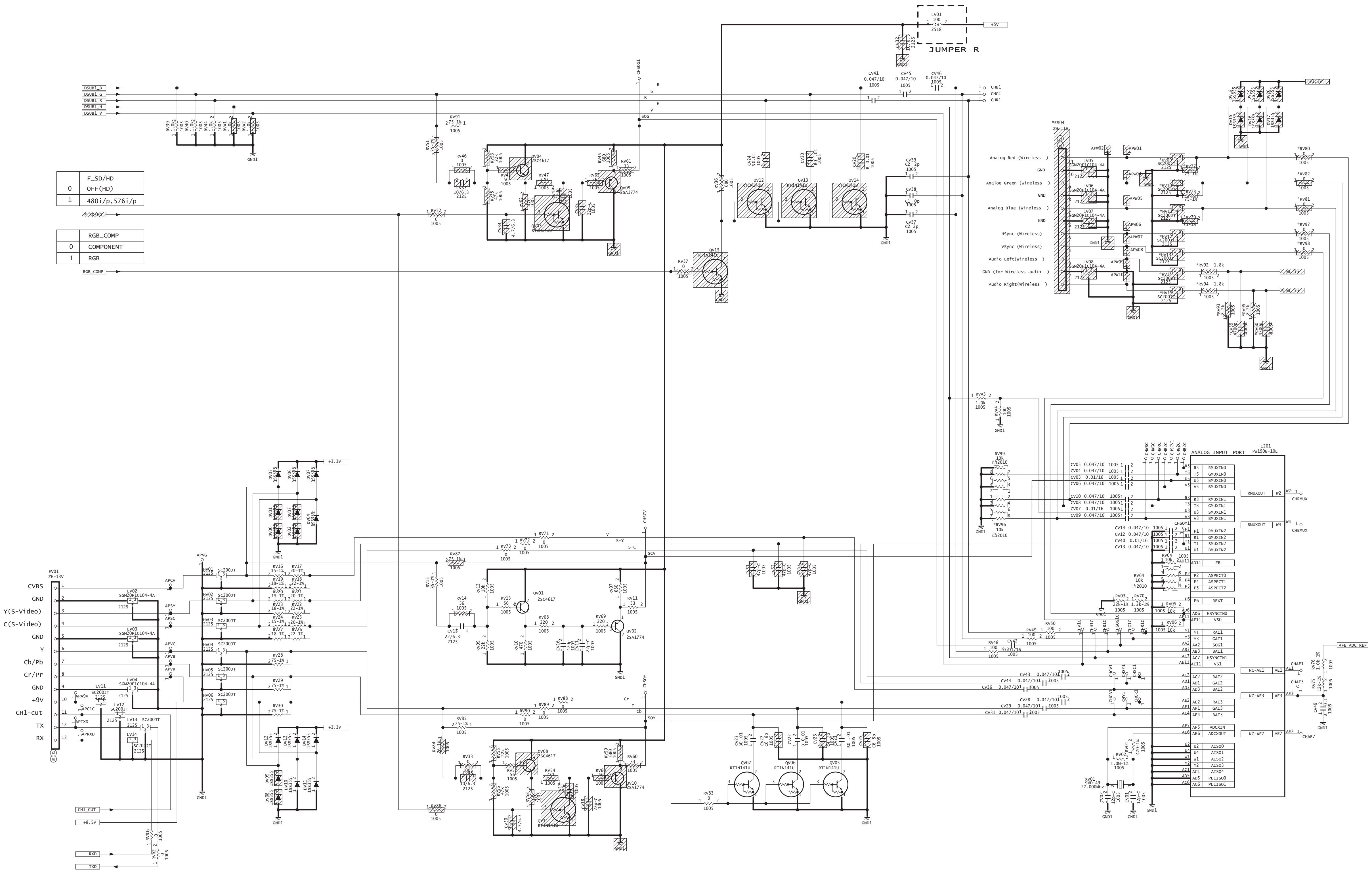


NOTE
PARTS MARKED WITH HATCHING
ARE NOT MOUNTED IN THIS MODEL.

C14 B Panel Part



NOTE
PARTS MARKED WITH HATCHING
ARE NOT MOUNTED IN THIS MODEL.



SM0313 | MAIN BOARD CIRCUIT - SHEET 9 of 12 | HITACHI

NOTE
PARTS MARKED WITH HATCHING
ARE NOT MOUNTED IN THIS MODEL.

COMPUTER IN 1

COMPUTER IN 2

MONITOR OUT

B1
G1
R1
H1
V1
B2
G2
R2
H2
V2
B Out
G Out
R Out
H Out
V Out

JUMPER R

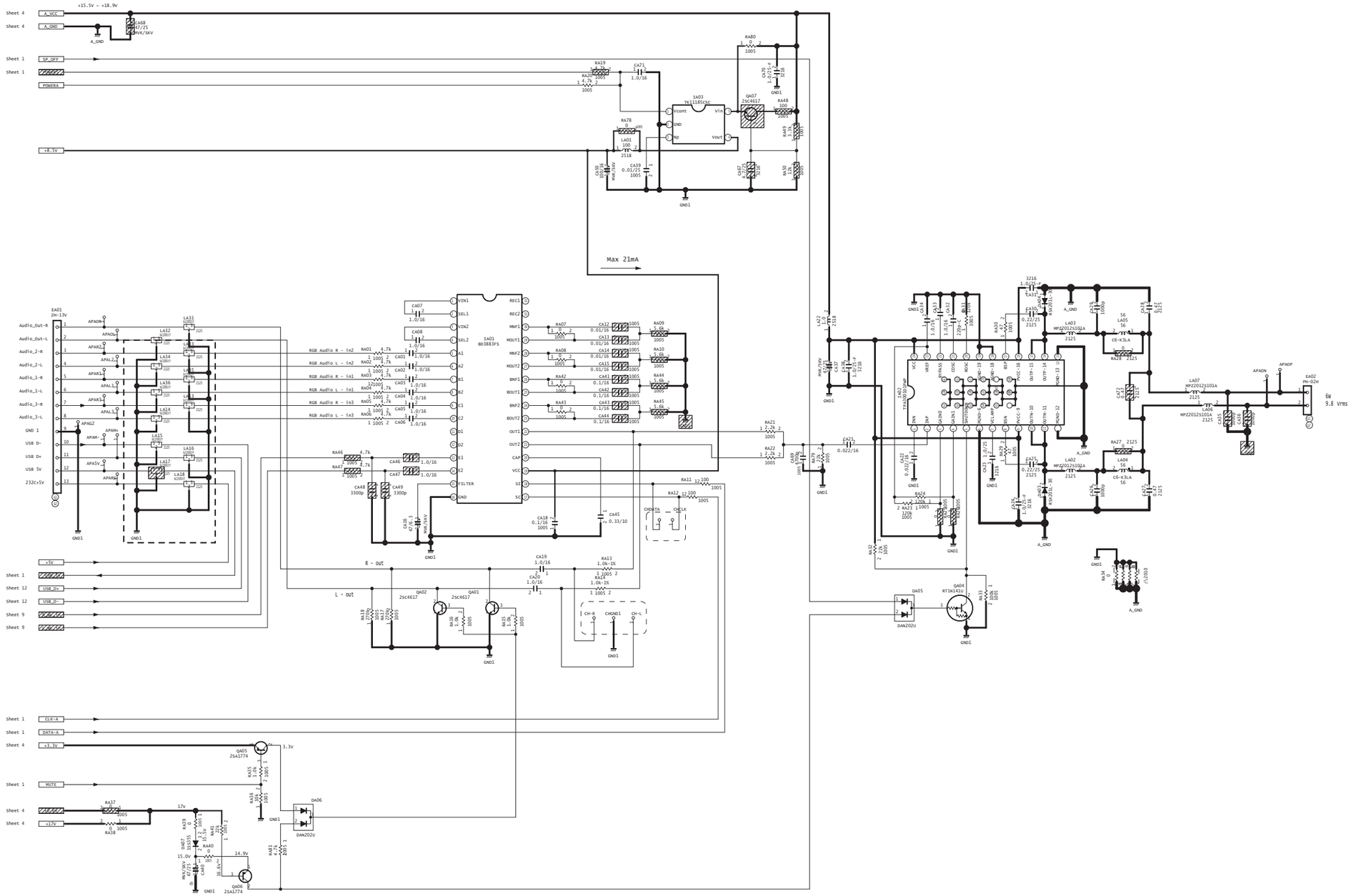
JUMPER R

I2C SLAVE ADDR.
58h/59h

L:RGB1/H:RGB2

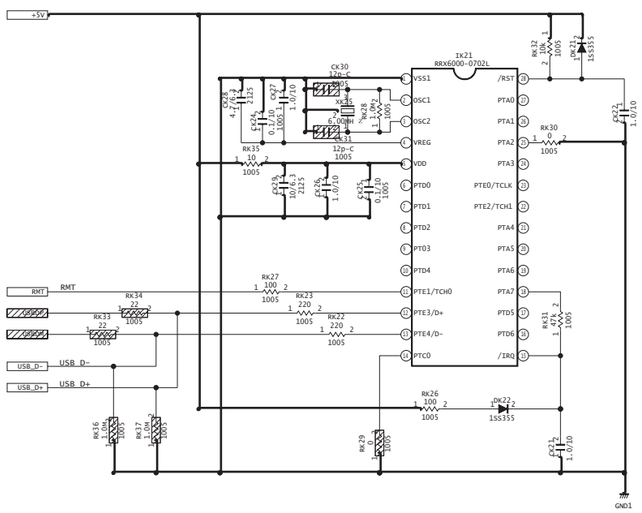
SM0313	MAIN BOARD CIRCUIT - SHEET 10 of 12	HITACHI

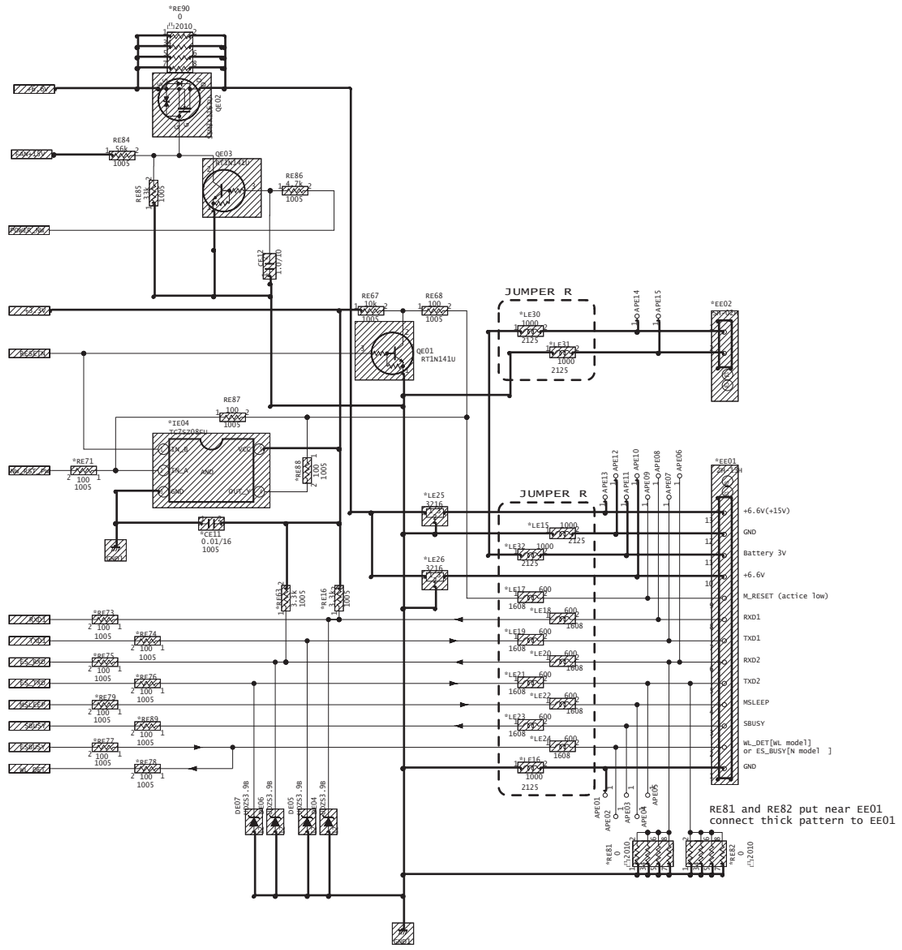
NOTE
PARTS MARKED WITH HATCHING
ARE NOT MOUNTED IN THIS MODEL.



SM0313	MAIN BOARD CIRCUIT - SHEET 11 of 12	HITACHI

NOTE
PARTS MARKED WITH HATCHING
ARE NOT MOUNTED IN THIS MODEL.





Basic circuit diagram list

PWB assembly REMOTE
POWER UNIT BALLAST 1
POWER UNIT BALLAST 2
POWER UNIT CIRCUIT
PWB assembly INPUT
PWB assembly MAIN 1
PWB assembly MAIN 2
PWB assembly MAIN 3
PWB assembly MAIN 4
PWB assembly MAIN 5
PWB assembly MAIN 6
PWB assembly MAIN 7
PWB assembly MAIN 8
PWB assembly MAIN 9
PWB assembly MAIN 10
PWB assembly MAIN 11
PWB assembly MAIN 12

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