

Service Manual

1-chip DLP Based Projector



Model No. **PT-RZ470U**
PT-RZ470E
PT-RZ470EA
PT-RW430U
PT-RW430E
PT-RW430EA



- This manual is common to all the models regardless of suffixes of the Model No.
 - K: Black model
 - W: White model

- Points of difference between the RZ370/RW330 series
 - Contrast ratio 10 000:1 → 20 000:1
 - Added "EDGE BLENDING" function
 - Added "BRIGHTNESS CONTROL" function
 - Equipped with "3D SYNC" terminal and added "3D projection" function (VESA standard IR system,DLP Link system)
 - Available in portrait setting

The service technician is required to read and follow the "Safety Precautions" and "Important Safety Notice" in this service manual.

WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.



WARNING : Use Laser Radiation eye and skin protection during servicing



* This projector is a Class 1 laser product, is equipped with a Class 4 laser module to an inside.

CAUTION

Lithium Battery

Risk of explosion if battery is replaced by an incorrect type,
Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.

Precaution

Never use this projector at an altitude of 2,700m or higher.
Using this projector at high altitude, consult your dealer or Authorized Service Center about preparations.

About lead free solder (PbF)

This projector is using the P.C.Board which applies lead free solder.
Use lead free solder in servicing from the standpoint of antipollution for the global environment.

Notes:

- Lead free solder: Sn-Ag-Cu (tin, silver and copper) has a higher melting point (approx. 217°C) than standard solder. Typically the melting point is 30~40 °C higher. When servicing, use a high temperature soldering iron with temperature limitation function and set it to 370 ± 10 °C.
- Be cautious about lead free solder. Sn-Ag-Cu (tin, silver and copper) will tend to splash when heated too high (approx. 600°C or higher).
- Use lead free solder for the P.C.Board (specified on it as "PbF") which uses lead free solder. (When you unavoidably use lead solder, use lead solder after removing lead free solder. Or be sure to heat the lead free solder until it melts completely, before applying lead solder.)
- After soldering to double layered P.C.Boards, check the component side for excess solder which may flow onto the opposite side.

About the identification of the lead free solder P.C.Board.

For the P.C.Board which applies lead free solder, the symbol as shown in the figure below is printed or stamped on the surface or the back of P.C.Board.



For US

IMPORTANT SAFETY NOTICE

There are special parts used in Panasonic DLP Projectors which are important for safety. These parts are shaded on the schematic diagram. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of Panasonic Corporation of North America.

WARNING:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

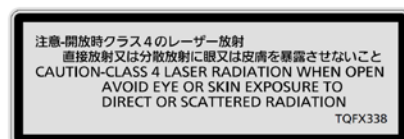
CAUTION : Any unauthorized changes or modifications to this equipment will void the users authority to operate.

Notice on laser

This projector is the Class 1 laser product that complies with IEC 60825-1.



(Top of product)



(Inside of product)

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1. Safety Precautions

1.1. General Guidelines

- For continued safety, no modification of any circuit must be attempted.
- Unplug the power cord from the power outlet before disassembling this projector.
- Use correctly the supplied power cord and must ground it.
- It is advisable to use an isolation transformer in the AC power line before the service.
- Be careful not to touch the rotation part (cooling fan, etc.) of this projector when you service with the upper case removed and the power supply turned ON.
- Observe the original lead dress during the service. If a short circuit is found, replace all the parts overheated or damaged by the short circuit.
- After the service, all the protective devices such as insulation barriers, insulation papers, shields, and isolation R-C combinations must be properly installed.
- After the service, check the leakage current to prevent the customer from getting an electric shock.

1.2. Leakage Current Check

1. Prepare the measuring circuit as shown in Fig.1.
Be sure to use a voltmeter having the performance described in Table 1.
2. Assemble the circuit as shown in Fig. 2. Plug the power cord in a power outlet.
3. Connect M1 to T1 according to Fig. 2 and measure the voltage.
4. Change the connection of M1 from T1 to T2 and measure the voltage again.
5. The voltmeter must read 0.375 V or lower in both of steps 3 and 4. This means that the current must be 0.75mA or less.
6. If the reading is out of the above standard, the projector must be repaired and rechecked before returning to the customer because of a possibility of an electric shock.

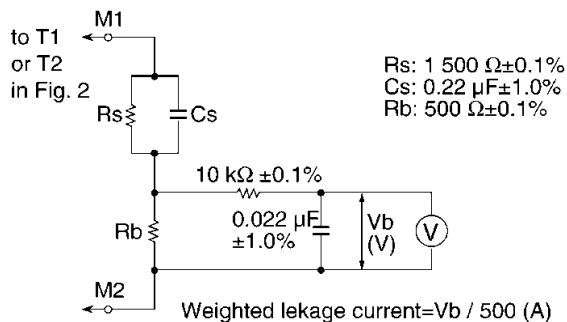


Fig. 1

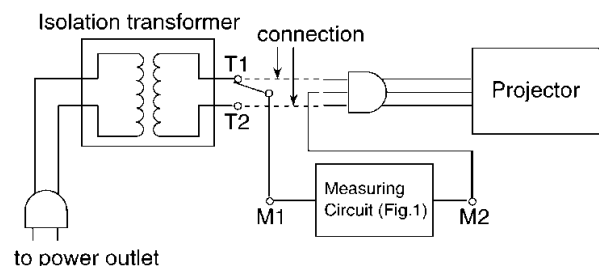


Fig. 2

	Performance
Voltmeter (rms reading)	Accuracy: $\leq 2\%$
	Input resistance: $\geq 1 \text{ M}\Omega$
	Input capacitance: $\leq 200 \text{ pF}$
	Frequency range: 15 Hz to 1 MHz

Table. 1

2. Specifications

Model No.		PT-RZ470U/PT-RZ470E/PT-RZ470EA	PT-RW430U/PT-RW430E/PT-RW430EA
Power supply		AC 100 V - 240 V 50 Hz/60 Hz	
Power consumption		460 W (5.2 A - 2.0 A)	
		0.5 W when [STANDBY MODE] is set to [ECO] 8 W when [STANDBY MODE] is set to [NORMAL] (when fan is stopped)	
DLP chip	Panel size	16.5 mm (0.65") (aspect ratio 16:9)	16.5 mm (0.65") (aspect ratio 16:10)
	Display system	1-unit DLP chip, DLP type	
	Number of pixels	2 073 600 pixels (1 920 x 1 080 dots)	1 024 000 pixels (1 280 x 800 dots)
Lens	Zoom	1.5 to 2.9:1	1.5 to 3.1:1
	Focus	F = 2.0 to 3.4 f = 21.5 mm to 43.0 mm	
Light source		Hybrid light source (LED/laser diode)	
Light output*1		3 500 lm (ANSI)	
Contrast ratio*1		20 000:1	
Applicable scanning frequency*2	For video signal	Horizontal: 15.75 kHz/15.63 kHz, Vertical: 50 Hz/60 Hz	
	For RGB signal	Horizontal: 15 kHz to 100 kHz, Vertical: 24 Hz to 120 Hz PIAS (Panasonic Intelligent Auto Scanning) system	
		Dot clock frequency 162 MHz or lower	
	For YC _B C _R /YP _B P _R signal	• 525i (480i) Horizontal: 15.75 kHz, Vertical: 60 Hz • 525p (480p) Horizontal: 31.5 kHz, Vertical: 60 Hz • 750 (720)/60p Horizontal: 45 kHz, Vertical: 60 Hz • 1125 (1035)/60i Horizontal: 33.75 kHz, Vertical: 60 Hz • 1125 (1080)/50i Horizontal: 28.13 kHz, Vertical: 50 Hz • 1125 (1080)/24sF Horizontal: 27 kHz, Vertical: 48 Hz • 1125 (1080)/30p Horizontal: 33.75 kHz, Vertical: 30 Hz • 1125 (1080)/50p Horizontal: 56.25 kHz, Vertical: 50 Hz	• 625i (576i) Horizontal: 15.63 kHz, Vertical: 50 Hz • 625p (576p) Horizontal: 31.25 kHz, Vertical: 50 Hz • 750 (720)/50p Horizontal: 37.5 kHz, Vertical: 50 Hz • 1125 (1080)/60i Horizontal: 33.75 kHz, Vertical: 60 Hz • 1125 (1080)/24p Horizontal: 27 kHz, Vertical: 24 Hz • 1125 (1080)/25p Horizontal: 28.13 kHz, Vertical: 25 Hz • 1125 (1080)/60p Horizontal: 67.5 kHz, Vertical: 60 Hz
	For DVI-D signal	525p (480p), 625p (576p), 750 (720)/60p, 750 (720)/50p, 1125 (1080)/60i, 1125 (1080)/50i, 1125 (1080)/24p, 1125 (1080)/24sF, 1125 (1080)/25p, 1125 (1080)/30p, 1125 (1080)/60p, 1125 (1080)/50p	
		• Displayable resolution: VGA to WUXGA (non-interlaced) WUXGA signal supports only VESA CVT-RB (Reduced Blanking) signal. • Dot clock frequency: 25 MHz to 162 MHz	
	For HDMI signal	525p (480p), 625p (576p), 750 (720)/60p, 750 (720)/50p, 1125 (1080)/60i, 1125 (1080)/50i, 1125 (1080)/24p, 1125 (1080)/24sF, 1125 (1080)/25p, 1125 (1080)/30p, 1125 (1080)/60p, 1125 (1080)/50p	
		• Displayable resolution: VGA to WUXGA (non-interlaced) WUXGA signal supports only VESA CVT-RB (Reduced Blanking) signal. • Dot clock frequency: 25 MHz to 162 MHz	

*1 Measurement, measuring conditions and method of notation all comply with ISO21118 international standards.

*2 Refer to "List of compatible signals" of operating Instructions, for the types of video signals that can be used with the projector.

Model No.		PT-RZ470U/PT-RZ470E/PT-RZ470EA	PT-RW430U/PT-RW430E/PT-RW430EA
Color system		7 standards (NTSC/NTSC4.43/PAL/PAL-N/PAL-M/SECAM/PAL60)	
Projection screen size		1.02 m (40") to 7.62 m (300")	
Screen aspect ratio		16:9	16:10
Projection method		[FRONT/CEILING], [FRONT/FLOOR], [REAR/CEILING], [REAR/FLOOR]	
Terminal	<COMPUTER IN> terminal	1 set, high-density D-Sub 15 p (female) RGB signal 0.7 V [p-p] 75 Ω (SYNC ON GREEN: 1.0 V [p-p] 75 Ω) SYNC/HD TTL high impedance, automatic positive/negative polarity compatible VD TTL high impedance, automatic positive/negative polarity compatible (SYNC/HD and VD do not support 3 value SYNC.) Y_BP_R signal Y: 1.0 V [p-p] including synchronization signal, P _B P _R : 0.7 V [p-p] 75 Ω	
	<DVI-I IN> terminal	1 set, DVI-I 29 p Digital signal Single link, DVI 1.0 compliant, HDCP compatible RGB signal 0.7 V [p-p] 75 Ω (SYNC ON GREEN: 1.0 V [p-p] 75 Ω) SYNC/HD TTL high impedance, automatic positive/negative polarity compatible VD TTL high impedance, automatic positive/negative polarity compatible Y_BP_R signal Y: 1.0 V [p-p] including synchronization signal, P _B P _R : 0.7 V [p-p] 75 Ω	
	<HDMI IN> terminal	1 set, HDMI 19 pin, HDCP compatible, Deep Color compatible	
	<VIDEO IN> terminal	Audio signal Linear PCM (Sampling frequency: 48 kHz/44.1 kHz/32 kHz)	
	<SERIAL IN> terminal	1 set, Pin jack 1.0 V [p-p] 75 Ω	
	<VARIABLE AUDIO OUT> terminal	D-Sub 9 p, 1 set, RS-232C compliant, for computer control	
	<AUDIO IN> terminal	1 set, M3 stereo mini jack (monitor output, with stereo support) 0 V [rms] to 1.8 V [rms] (variable), output impedance 2.2 kΩ or lower	
	<DIGITAL LINK/LAN> terminal	1 set, M3 stereo mini jack 0.5 V [rms], input impedance 22 kΩ or higher	
	<3D SYNC> terminal	1 set, for RJ-45 network, DIGITAL LINK connection, PLink compatible, 100Base-TX	
Power cable length		1 set, Mini DIN 3 p, for 3D IR transmitter connection	
Outer case		3.0 m (118-1/8")	
Dimensions		Molded plastic	
Weight		Width: 455 mm (17-29/32") Height: 137 mm (5-13/32") (with minimum feet length) Depth: 415 mm (16-11/32") (including lens)	
Noise level ^{*2}		Approx. 11 kg (24.3 lbs.) ^{*1}	
Operating environment		When [LIGHT POWER] is set to [NORMAL]: 35 dB When [LIGHT POWER] is set to [LOW]: 29 dB	
Remote control	Power supply	Operating environment temperature ^{*3} : 0 °C (32 °F) to 45 °C (113 °F) Operating environment humidity: 20 % to 80 % (no condensation)	
	Operating range	DC 3 V (AA/R6/LR6 battery x 2)	
	Weight	Within 15 m (49'2") (when operated directly in front of signal receiver)	
	Dimensions	117 g (4.1 ozs.) (including batteries)	
		Width: 48 mm (1-7/8"), Height: 163 mm (6-13/32"), Depth: 24.5 mm (31/32")	

^{*1} Average value. Weight varies for each product.

^{*2} Measurement, measuring conditions and method of notation all comply with ISO21118 international standards.

^{*3} When using the projector at high altitudes (1 400 m (4 593') – 2 700 m (8 858') above sea level), the operating environment temperature will be 0 °C (32 °F) – 40 °C (104 °F). When the ambient temperature becomes 35 °C (95 °F) or higher, the output light may be reduced to protect the projector.

SECTION 1

Service Information

Model No. PT-RZ470 Series
PT-RW430 Series

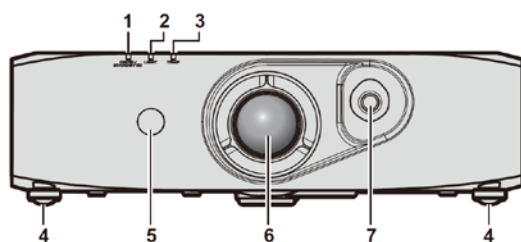
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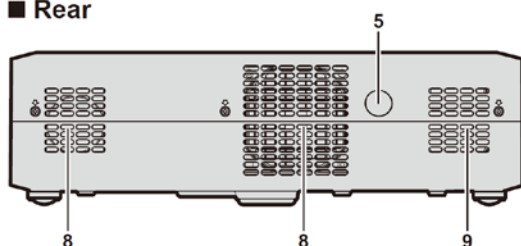
1. The name of each part

1. 1. Projector body

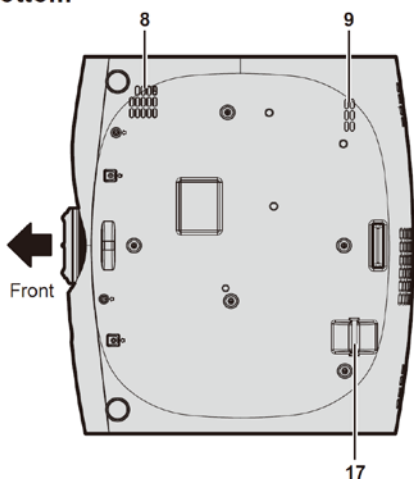
■ Front



■ Rear

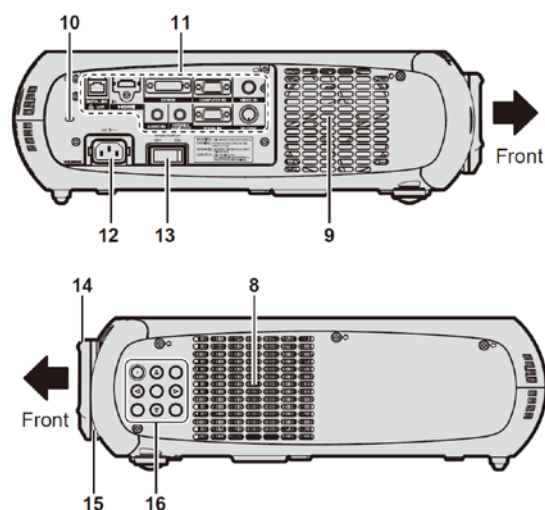


■ Bottom



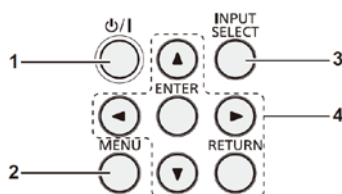
- 1 **Power indicator <ON (G)/STANDBY (R)>**
Displays the status of the power.
- 2 **Light source indicator <LIGHT>**
Displays the status of the light source.

■ Side



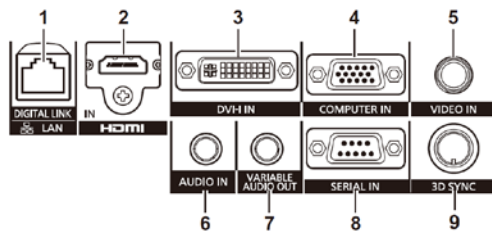
- 3 **Temperature indicator <TEMP>**
Displays the internal temperature status.
- 4 **Adjustable feet**
Adjusts the projection angle.
- 5 **Remote control signal receiver**
- 6 **Projection lens**
- 7 **Lens shift lever**
Adjusts the projection position.
- 8 **Air intake port**
- 9 **Air exhaust port**
- 10 **Security slot**
This security slot is compatible with the Kensington security cables.
- 11 **Connecting terminals**
- 12 **<AC IN> terminal**
Connect the supplied power cord.
- 13 **<MAIN POWER> switch**
Turns on/off the main power.
- 14 **Focus ring**
Adjusts the focus.
- 15 **Zoom ring**
Adjusts the zoom.
- 16 **Control panel**
- 17 **Burglar hook port**
Attaches a burglar prevention cable, etc.

1. 2. Control panel



- 1 **Power <⏻/⏻> button**
Sets the projector to the state where the projector is switched off (standby mode) when the <MAIN POWER> switch on the projector is set to <ON> and in projection mode. Also sets the projector in projection mode when the power is switched off (standby mode).
- 2 **<MENU> button**
Displays the main menu.
- 3 **<INPUT SELECT> button**
Switches the input signal to project.
- 4 **▲▼◀▶ buttons/<RETURN> button/<ENTER> button**
Used to navigate through the menu screen.
Also used to enter a password in [SECURITY] or enter characters.

1. 3. Connecting terminals

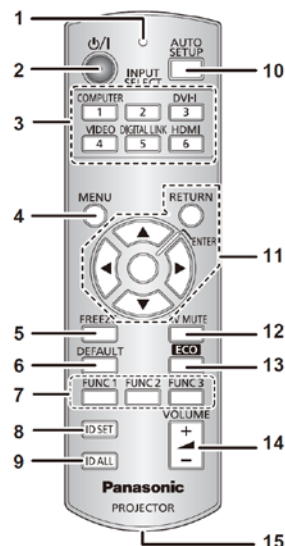


- 1 **<DIGITAL LINK/LAN> terminal**
This is the LAN terminal to connect to the network. This is also used when connecting an audio and video signal sending device via the LAN terminal.
- 2 **<HDMI IN> terminal**
This is the terminal to input HDMI signals.

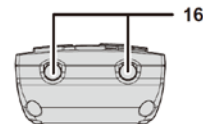
- 3 **<DVI-I IN> terminal**
This is the terminal to input DVI-D and DVI-A signals (RGB signal or $YC_B C_R / YP_B P_R$).
- 4 **<COMPUTER IN> terminal**
This is the terminal to input RGB or $YC_B C_R / YP_B P_R$ signals from a computer.
- 5 **<VIDEO IN> terminal**
This is the terminal to input video signals.
- 6 **<AUDIO IN> terminal**
This is the terminal to input audio signals.
- 7 **<VARIABLE AUDIO OUT> terminal**
This is the terminal to output audio signals input to the projector.
- 8 **<SERIAL IN> terminal**
This is the RS-232C compatible terminal to externally control the projector by connecting a computer.
- 9 **<3D SYNC> terminal**
This terminal is used to connect an IR transmitter to the projector.

1. 4. Remote control

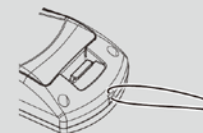
■ Front



■ Top



Attach a strap according to usage condition.



- 1 **Remote control indicator**
Flashes if any button in the remote control is pressed.
- 2 **Power <P> button**
Sets the projector to the standby mode when the <MAIN POWER> switch on the projector is set to <ON>. Also sets the projector in projection mode when the power is switched off (standby mode).
- 3 **Input selection (<COMPUTER>, <DVI-I>, <VIDEO>, <DIGITAL LINK>, <HDMI>) buttons**
Switches the input signal to project. Also used to set the ID number of the remote control and security password.
- 4 **<MENU> button**
Displays the main menu.
- 5 **<FREEZE> button**
Used to pause a video and mute the audio.
- 6 **<DEFAULT> button**
Resets the content of the sub-menu to the factory default.
- 7 **<FUNC1> - <FUNC3> buttons**
Assigns a frequently used operation as a shortcut button.
- 8 **<ID SET> button**
Sets the ID number of the remote control to use for a system using multiple projectors.
- 9 **<ID ALL> button**
Used to simultaneously control all the projectors with one remote control for a system using multiple projectors.
- 10 **<AUTO SETUP> button**
Automatically adjusts the image display position while projecting the image. [PROGRESS] is displayed on the screen while adjusting automatically.
- 11 **▲▼◀▶ buttons/<RETURN> button/<ENTER> button**
Used to navigate through the menu screen. Also used to enter a password in [SECURITY] or enter characters.
- 12 **<AV MUTE> button**
Used to temporarily turn off the audio and video.
- 13 **<ECO> button**
Displays the setting screen related to ECO management.
- 14 **<VOLUME+>/<VOLUME-> button**
Adjusts the audio output volume.
- 15 **Strap hole**
- 16 **Remote control signal transmitter**

2. OSD Menu Navigation

Main menu

The main menu consists of the following 12 items.

When a main menu item is selected, the screen changes to a sub-menu selection screen.

Main menu item	
	[PICTURE]
	[POSITION]
	[ADVANCED MENU]
	[DISPLAY LANGUAGE]
	[3D SETTINGS]
	[DISPLAY OPTION]
	[PROJECTOR SETUP]
	[TEST PATTERN]
	[SIGNAL LIST]
	[SECURITY]
	[NETWORK]
	[DIGITAL LINK]

Sub-menu

The sub-menu of the selected main menu item is displayed, and you can set and adjust items in the sub-menu.

[PICTURE]

Sub-menu item	Factory default
[PICTURE MODE]	[GRAPHIC]*1
[CONTRAST]	[0]
[BRIGHTNESS]	[0]
[COLOR]	[0]
[TINT]	[0]
[COLOR TEMPERATURE]	[DEFAULT]
[DAYLIGHT VIEW]	[AUTO]
[SHARPNESS]	[6]*1
[NOISE REDUCTION]	[OFF]*1
[SYSTEM SELECTOR]	[Y_P_R]*1

*1 Depends on the signal input.

Note

The factory default settings may vary depending on the picture mode.

[POSITION]

Sub-menu item	Factory default
[SHIFT]	—
[ASPECT]	[NORMAL]
[ZOOM]	—
[CLOCK PHASE]	[16]*1
[KEystone]	[0]

*1 Depends on the signal input.

[ADVANCED MENU]

Sub-menu item	Factory default
[DIGITAL CINEMA REALITY]	[AUTO]*1
[BLANKING]	—
[INPUT RESOLUTION]	—
[CLAMP POSITION]	[24]*1
[EDGE BLENDING]	[OFF]
[FRAME RESPONSE]	[NORMAL]
[RASTER POSITION]	—

*1 Depends on the signal input.

Note

Sub-menu items and factory default settings differ depending on the input terminal that is selected.

[DISPLAY LANGUAGE]

The language can be changed to English, German, French, Italian, Spanish, Portuguese, Dutch, Swedish, Finnish, Norwegian, Danish, Polish, Hungarian, Romanian, Czech, Russian, Turkish, Arabic, Kazakh, Vietnamese, Chinese, Korean, Japanese, and Thai.

Note

The on-screen display language of the projector is set to English by default and when [ALL USER DATA] of [INITIALIZE] is executed.

[3D SETTINGS]

Sub-menu item	Factory default
[3D MODE]	[DLP Link]*1
[3D SYNC OUTPUT DELAY]	[0us]
[LEFT/RIGHT SWAP]	[NORMAL]
[3D INPUT FORMAT]	[AUTO]*1
[SAFETY PRECAUTIONS MESSAGE]	[ON]
[3D SAFETY PRECAUTIONS]	—

*1 Depends on the signal input.

[DISPLAY OPTION]

Sub-menu item	Factory default
[COLOR MATCHING]	[OFF]
[SCREEN SETTING]*1	—
[AUTO SIGNAL]	[OFF]
[AUTO SETUP]	—
[COMPUTER IN]	—
[DVI-I IN]	—
[HDMI IN]	—
[DIGITAL LINK IN]	—
[ON-SCREEN DISPLAY]	—
[CLOSED CAPTION SETTING]	—
[BACK COLOR]	[BLUE]
[STARTUP LOGO]	[DEFAULT LOGO]
[SUB MEMORY LIST]	—
[FREEZE]	—
[AV MUTE]	—

*1 Only for the PT-RW430E series.

[PROJECTOR SETUP]

Sub-menu item	Factory default
[PROJECTOR ID]	[ALL]
[PROJECTION METHOD]	[FRONT/FLOOR]
[COOLING CONDITION]	[FLOOR SETTING]
[ECO MANAGEMENT]	—
[BRIGHTNESS CONTROL]	—
[SCHEDULE]	[OFF]
[INITIAL STARTUP]	[LAST MEMORY]
[STARTUP INPUT SELECT]	[LAST USED]
[DIGITAL LINK INPUT]	—
[RS-232C]	—
[FUNCTION BUTTON]	—
[AUDIO SETTING]	—
[STATUS]	—
[DATE AND TIME]	—
[SAVE ALL USER DATA]	—
[LOAD ALL USER DATA]	—
[INITIALIZE]	—
[SERVICE PASSWORD]	—

[TEST PATTERN]

All white, All black, Window, Window (inversion), Color bar (vertical), Color bar (horizontal), 16:9/4:3 aspect frame, Focus

[SIGNAL LIST]

Registered signal list, Registering new signals, Renaming the registered signal, Deleting the registered signal

[SECURITY]

Sub-menu item	Factory default
[SECURITY PASSWORD]	[OFF]
[SECURITY PASSWORD CHANGE]	—
[TEXT DISPLAY]	[OFF]
[TEXT CHANGE]	—
[MENU LOCK]	[OFF]
[MENU LOCK PASSWORD]	—
[CONTROL DEVICE SETUP]	—

[NETWORK]

Sub-menu item	Factory default
[DIGITAL LINK MODE]	[AUTO]
[DIGITAL LINK SETUP]	—
[DIGITAL LINK STATUS]	—
[NETWORK SETUP]	—
[NETWORK CONTROL]	—
[NETWORK STATUS]	—

[DIGITAL LINK]

Switch the input to DIGITAL LINK.

Note

When the optional digital interface box (Model No.: ET-YFB100G) is connected to the <DIGITAL LINK/LAN> terminal, the main menu of ET-YFB100G is displayed. Refer to the user manual supplied with ET-YFB100G for details.

When a twisted-pair-cable transmitter of other manufacturer is connected to the projector, the main menu of the projector is displayed.

Note

Some items may not be adjusted or used for certain signal formats to be input to the projector.

The menu items that cannot be adjusted or used are shown in gray characters, and they cannot be selected.

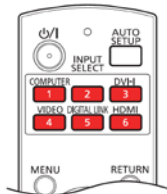
Sub-menu items and factory default settings differ depending on the selected input terminal.

3. Service Mode

This model has Service Mode in addition to regular on screen menu (user mode).
This mode enables some menu settings for the service operation.

3. 1. Setting to Service Mode

1. Press menu button of main body or remote controller and go to "Projector setup" on Main menu.
Then go to sub menu and select "Service Password" and press ENTER button.
2. Input the password "1565" by remote controller and press the ENTER button.
The INPUT SELECT button will change to a number between 1-6.

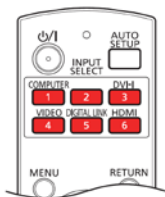


The input number is displayed as *.

3. Press the MENU button. "Service Mode" (Main Menu) will be displayed.

3. 2. Resetting to User Mode

1. Press menu button of main body or remote controller and go to Main menu -> "Projector setup".
Then go to sub menu and select "Service Password" and press ENTER.
2. Input the password "1" by remote controller and press the ENTER button.
The INPUT SELECT button will change to a number between 1-6.



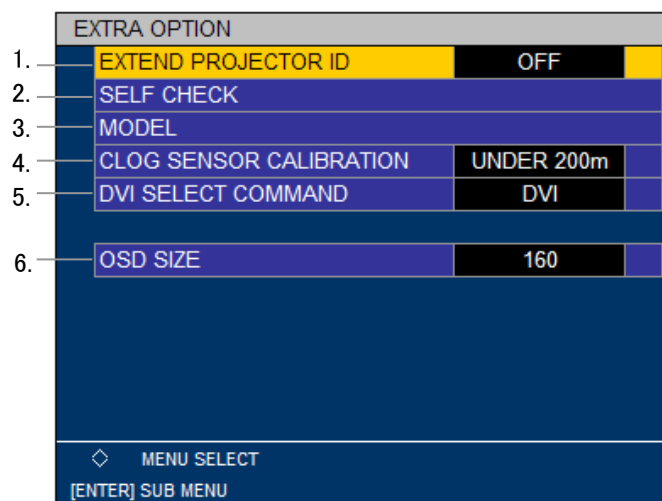
The input number is displayed as *.

3. Press the MENU button. "User Mode" (Main Menu) will be displayed.

3. 3. Function of Service Mode

3. 3. 1. EXT OPTION

"EXTRA OPTION" is added to the bottom of the main menu.



1. EXTEND PROJECTOR ID

- ON : PROJECTOR ID can be set to ALL and 1-64.
- OFF : PROJECTOR ID can be set to ALL and 1-6.

2. SELF CHECK

- Each self check item is displayed.

SELF CHECK		
MAIN	: 1.00.00	SUB : 1.00.00
NETWORK	: 1.00.00	FPGA : 0x2A
BALLAST	: 230	DIGITAL LINK : 1.30.33.1
EMULATE : DEFAULT		
OK INTR.	026/224	
OK INTK.	041/151	
OK DMD.	054/104	
OK TEMP_R	036/101	
OK TEMP_G	036/101	
OK TEMP-B	036/101	
OK WIND.	075/054/+5	
OK LIGHT	200h30m / 1	ON
OK FAN	1111 11	
OK PHOSPHOR	WHEEL	

- Main, Sub microprocessor software version
- Network and FPGA software version
- BALLAST and DIGITAL LINK software version
- Setting and Version of EMULATE
- Internal air temperature check (Celsius/Fahrenheit)
- Intake air temperature check (Celsius/Fahrenheit)
- DMD temperature check (Celsius/Fahrenheit)
- LED-R temperature check (Celsius/Fahrenheit)
- LD unit temperature check (Celsius/Fahrenheit)
- LED-B temperature check (Celsius/Fahrenheit)
- Airflow sensor check (Sensor, AD conversion, Correction value)
- Light source check (lighting accumulative time, number of times the replacement, ON-OFF)
- Fan check (1:Normal/0: Abnormal)
- From the left, LD-G, LED-R, LED-B, DMD, EXHAUST, DRIVER
- Phosphor wheel check

* If check items are indicated with "NG" in red, the projector has an abnormality now.

If the projector has an abnormality in the past and operates normally now, the first self-check screen is indicates in red with "OK". (Except fan error.) Error information is cleared after exiting from self-check mode.

3. MODEL

- Set this when the A-P.C.Board is replaced.
 - If you can copy EEPROM data from the old A-P.C.Board, this setting is unnecessary.
 - This model setting is changed after power restart.

4. CLOG SENSOR CALIBRATION

- Calibrate the clogging sensor circuit.

Execute this after EEPROM(IC1405)/A-P.C.Board or Airflow sensor (M3-P.C.Board) is replaced.

 - Refer to the "SECTION3 (ADJUSTMENT PROCEDURE)" about method.

5. DVI SELECT COMMAND

- Setting for DVI-I input terminal

DVI : Functions as a terminal for DVI input.
(When this item is selected, this terminal can be selected to Digital or Analog with DISPLAY OPTION menu.)

COMPUTER2 : Functions as a terminal for COMPUTER2 input. (Analog mode only.)

6. OSD SIZE (RZ470 only)

Set the on-screen display size.

3. 3. 2. Additional function of each menu

1. "POSITION" menu

The following one item is added.

- DVI EQUALIZER

When noise contamination to DVI input caused by long cable or external device, set this item so that the noise decreases.

2. "ADVANCED" menu.

The following two items are added.

- FRAME LOCK

Set this item when moving picture is disturbed with RGB input.
- EB TESTPATTERN (to "EDGE BLENDING")

The test pattern for edge blending is projected.

OFF : Projecting the input signal.

1 - 7 : Projecting the internally generated test pattern.

* When the PICTURE MODE is set "DYNAMIC", it is OFF.

3. "DISPLAY OPTION" menu

The following one item is added.

- CUT OFF

Red(R), Green(G), Blue(B) color component is selected and display or non-display set.

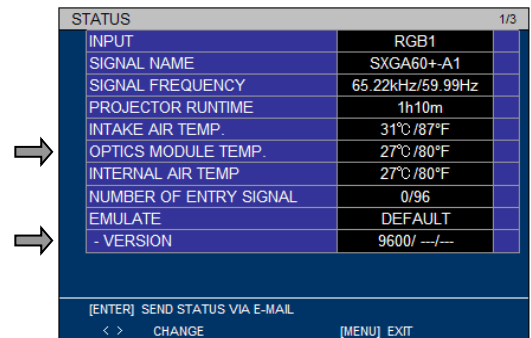
4. "PROJECTOR SETUP" menu

1) The selections below are added on "Emulate" in the sub menu "RS-232C" setting.

- | | |
|-----------------------------------|-----------------------------------|
| -MODE_HI (Other company products) | -MODE_MI (Other company products) |
| -MODE_NE (Other company products) | -MODE_SO (Other company products) |
| -MODE_EP (Other company products) | -MODE_IN (Other company products) |
| -MODE_SA (Other company products) | -OTHER (Other company products) |
| -MODE_SH (Other company products) | |

2) The following items are added on "STATUS" sub menu (page 1/3).

- OPTICS MODULE TEMP.
- EMULATE-VERSION

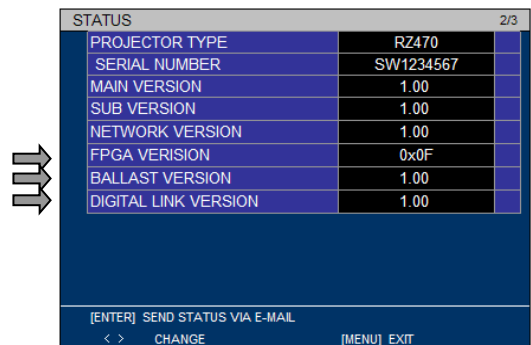


STATUS		1/3
INPUT	RGB1	
SIGNAL NAME	SXGA60+-A1	
SIGNAL FREQUENCY	65.22kHz/59.99Hz	
PROJECTOR RUNTIME	1h10m	
INTAKE AIR TEMP.	31°C/87°F	
OPTICS MODULE TEMP.	27°C/80°F	
INTERNAL AIR TEMP	27°C/80°F	
NUMBER OF ENTRY SIGNAL	0/96	
EMULATE	DEFAULT	
- VERSION	9600/ ---/---	

[ENTER] SEND STATUS VIA E-MAIL
< > CHANGE [MENU] EXIT

3) The following items are added on "STATUS" sub menu (page 2/3).

- FPGA VERSION (software version)
- BALLAST VERSION (software version)
- DIGITAL LINK VERSION (software version)

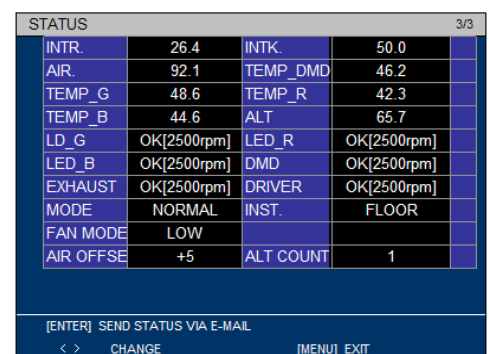


STATUS		2/3
PROJECTOR TYPE	RZ470	
SERIAL NUMBER	SW1234567	
MAIN VERSION	1.00	
SUB VERSION	1.00	
NETWORK VERSION	1.00	
FPGA VERSION	0x0F	
BALLAST VERSION	1.00	
DIGITAL LINK VERSION	1.00	

[ENTER] SEND STATUS VIA E-MAIL
< > CHANGE [MENU] EXIT

4) This page will be added on "STATUS" sub menu (page 3/3).

- Displays the temperature of the various parts, and the number of fan rotation etc.



STATUS				3/3
INTR.	26.4	INTK.	50.0	
AIR.	92.1	TEMP_DMD	46.2	
TEMP_G	48.6	TEMP_R	42.3	
TEMP_B	44.6	ALT	65.7	
LD_G	OK[2500rpm]	LED_R	OK[2500rpm]	
LED_B	OK[2500rpm]	DMD	OK[2500rpm]	
EXHAUST	OK[2500rpm]	DRIVER	OK[2500rpm]	
MODE	NORMAL	INST.	FLOOR	
FAN MODE	LOW			
AIR OFFSE	+5	ALT COUNT	1	

[ENTER] SEND STATUS VIA E-MAIL
< > CHANGE [MENU] EXIT

5. "TEST PATTERN" menu

- The following test patterns are added.

"Flag", "Reverse flag", "Whole red", "Whole green", "Whole blue", "Whole cyan", "Whole magenta", "Whole yellow", "Convergence (RGB bar)" patterns.

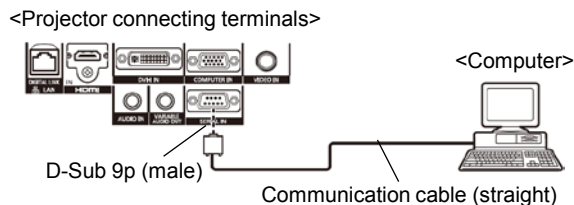
4. External control

4. 1. Control by SERIAL terminal

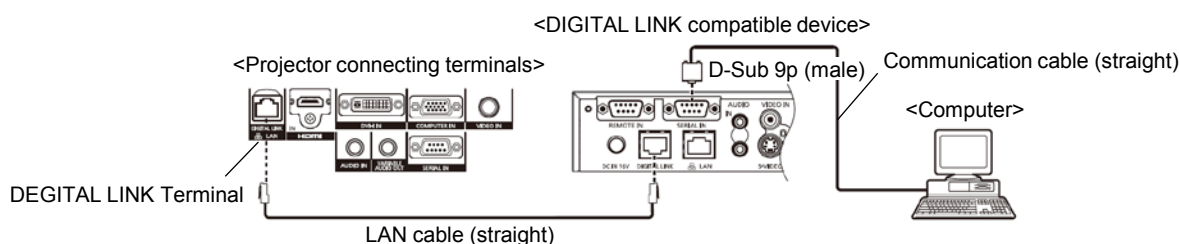
The <SERIAL IN> terminal of the projector conforms with RS-232C so that the projector can be connected to and controlled from a computer.

4. 1. 1. Connecting example

- To connect directly



- To connect using DIGITAL LINK compatible device

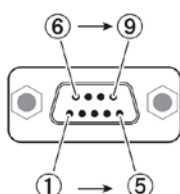


Note : Interface cable is not a standard accessory. Please purchase locally.

RS-232C input select of projector setup menu must be set according to the connection method.

4. 1. 2. Pin assignment and signal

D-sub 9pin(Female)
Outside view



Pin	Signal name	Contents
①	—	NC
②	TXD	Transmitting data
③	RXD	Receiving data
④	—	NC
⑤	GND	Ground
⑥	—	NC
⑦	CTS	Connected each other inside
⑧	RTS	Connected each other inside
⑨	—	NC

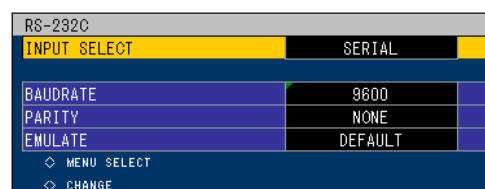
4. 1. 3. Communication condition

Signal level	RS-232C standard
Synchronization	Asynchronous
Baud rate	9 600 bps
Parity	None
Character length	8 bit
Stop bit	1 bit
X Parameter	None
S Parameter	None

(Factory default)

4. 1. 4. Communication condition setting

1. Press MENU button of main body or remote controller.
Go to Main menu → Projector setup. In sub menu, select "RS-232C" and press ENTER.
2. Select communication condition by pressing ▲ ▼ button.
Set it with pressing ◀ ▶ button.
3. Press MENU button 3 times and return to regular display.



4. 1. 5. Specification of cable communication

In case of connecting to PC

Projector (SERIAL IN terminal)	1	NC	NC	1	Computer (DTE specifications)
	2			2	
	3			3	
	4	NC	NC	4	
	5			5	
	6	DSR	NC	6	
	7			7	
	8			8	
	9	NC	NC	9	

4. 1. 6. Basic format

The transmission from PC starts with STX, ID, Command, Parameter and EXT are sent in order.
Parameter is added depending on the control.

1. Basic control command (No parameter)

Hedder (STX)	ID	Separator (Semi colon)	Command	Terminal symbol (ETX)
1 byte	4 bytes	1 byte	3 bytes	1 byte

2. Basic control command (with Parameter)

Hedder (STX)	ID	Separator (Semi colon)	Command	Separator (Colon)	Parameter	Terminal symbol (ETX)
1 byte	4 bytes	1 byte	3 bytes	1 byte	Undefined length	1 byte

3. Basic control command (with sub command)

Hedder (STX)	ID	Separator (Semi colon)	Command	Separator (Colon)	Sub	Calculation
1 byte	4 bytes	1 byte	3 bytes	1 byte	5 bytes	1 byte
Code	Parameter	Terminal symbol (ETX)				
1 byte	5 bytes	1 byte				

4. Calculation

Direction of how to deal the indicated value by parameter

Code	Direction
=	Set the value of indicated value by parameter.
_(underbar)	Add the indicated value by parameter on current value.

5. Code

Direction of plus / minus for the indicated value by parameter

Code	Direction
+	The value indicated by parameter is plus. (If it is 0, set this.)
-	The value indicated by parameter is minus.

6. Parameter

Indicate the setting or adjustment value with right justification.(0 is not suppressed.)

For example, indicate "00001" for the setting value "1".

7. ID for the basic commands

• This projector will respond to the computer only in the following cases.

Respond only when the transmitted ID is matched to this projector's ID.

RESPONSE(ID ALL) in RS232C settings of this projector is ON and the sent ID is ALL.

RESPONSE(ID GROUP) in RS232C settings of this projector is ON.

• Specifically, please refer to "Control Commands List"

8. Response of basic control commands

In accepted period

It depends on each command.

Out of accepted period or no command

Hexadecimal	02h	45h	52h	34h	30h	31h	03h
Character		E	R	4	0	1	

Parameter or REMOTE 2 terminal is active

Hexadecimal	02h	45h	52h	34h	30h	32h	03h
Character		E	R	4	0	2	

9. Note

If a command is transmitted after the light source starts illuminating, there may be a delay in response or the command may not be executed. Try sending or receiving any command after 60 seconds.

When transmitting multiple commands, be sure to wait until 0.5 seconds has elapsed after receiving the response from the projector before sending the next command.

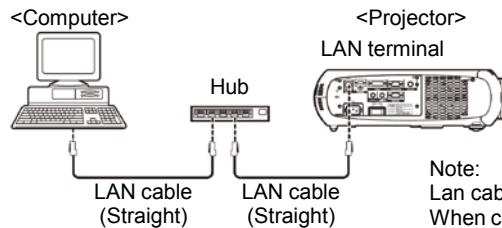
There is a case that it takes some time for responding because of internal processing.

Please set the timeout period to more than 10 seconds until the responses comes back.

4. 2. Control through LAN terminal

- It is possible to control this projector by connecting PC to the LAN terminal on the side of this projector.
- "DIGITAL LINK MODE" of the NETWORK menu, set to [AUTO] or [ETHERNET].
- Connection and command transmission changes depending on Mode (Admin Password is set or not with WEB CONTROL). When setting the password (protect mode), please follow 4.2.2. When not setting the password (non protect mode), please follow 4.2.3.
- The control command is common with SERIAL terminal command, so please refer to "Control command chart".

4. 2. 1. Connection example



Note:
Lan cable and Hub are not standard accessories. Please purchase locally.
When connected directly, cross type cable is recommended.

4. 2. 2. WEB Control Admin for password set (Protect mode)

4. 2. 2. 1. Connecting procedure

1. Get the IP address and port number (default is 1024) of the projector and request the connection to the projector.

IP address and the port number can be get in menu of projector.

IP Address: Get it in Main menu, "Network" → "Network Status"

Port number: Get it in Main menu "Network" → "Network Control" → "Command Port"

2. Receive the response from projector.

Response data Mode: 1 = Protect mode

Data	Space	Mode	Space	Random numbers	Terminal symbol
"NTCONTROL"	' '	'1'	' '	"zzzzzzzz"	(CR)
(ASCII character)	0x20	0x31	0x20	ASCII code hexadecimal	0x0d
9 bytes	1 byte	1 byte	1 byte	8 bytes	1 byte

3. 32bytes hash value is created using the data below by MD5 algorithm.

"xxxxxx:yyyyy:zzzzzzzz"

- xxxxxx : Administrator user name of WEB CONTROL (Default is "admin1")
- yyyyy : Password of admin1 above (Default is "panasonic")
- zzzzzzzz : Random value of 8 bytes got from response data
- : colon : Separator

4. 2. 2. 2. Command transmission

Send with the command style below.

Transmitting data

Header			Data	Terminal symbol
Hash value	'0'	'0'	Control command	(CR)
(Refer to item3 in 4.2.2.1.)	0x30	0x30	(ASCII character)	0x0d
32 bytes	1 byte	1 byte	Non defined length	1 byte

Receiving data

Header		Data	Terminal symbol
'0'	'0'	Control command	(CR)
0x30	0x30	(ASCII character)	0x0d
1 byte	1 byte	Non defined length	1 byte

Error response

Error message <4 bytes>		Terminal symbol <1 byte>
"ERR1"	Command format error	(CR) 0x0d
"ERR2"	Out of parameter	(CR) 0x0d
"ERR3"	Busy or unavailable time	(CR) 0x0d
"ERR4"	Timeout or unavailable time	(CR) 0x0d
"ERR5"	Data length error	(CR) 0x0d
"ERRA"	Invalid password	(CR) 0x0d

Example. Asking command on power condition "QPW"

1. Connection to projector IP = 192.168.0.8 port = 1024
2. Response received Response = "NTCONTROL 1 1aa6c14e" + (CR)
1aa6c14e = 8 byte random value
3. Hash data is created from "admin1 : panasonic : 1aa6c14e" by MD5 algorithm
admin1 = Administrator user name
panasonic = "admin1" password
Hash value = "01466bc27ed8c0b7e607471580c55953"
4. Data transmission Transmitting data = "01466bc27ed8c0b7e607471580c5595300QPW" + (CR)
5. Receiving response Receiving data = "00000" + (CR)
6. Close the communication with projector

4. 2. 3. WEB Control Admin without password setting (Non protect mode)

4. 2. 3. 1. Connecting procedure

1. Get the projector IP address and port number (default is 1024) and request the connection to the projector.

IP address and the port number can be get in menu of projector.

IP Address: Get it in Main menu, "Network" -> "Network Status"

Port number: Get it in Main menu "Network" -> "Network Control" -> "Command Port"

2. Receive the response from projector

Responding data Mode: 0 = Non protect mode

Data	Space	Mode	Terminal symbol
"NTCONTROL"	' '	'0'	(CR)
(ASCII character)	0x20	0x30	0x0d
9 bytes	1 byte	1 byte	1 byte

4. 2. 3. 2. Command transmission

Send the command with the style below.

Transmission data

Header		Data	Terminal symbol
'0'	'0'	Control command	(CR)
0x30	0x30	(ASCII character)	0x0d
1 byte	1 byte	Non defined length	1 byte

Receiving data

Header		Data	Terminal symbol
'0'	'0'	Control command	(CR)
0x30	0x30	(ASCII character)	0x0d
1 byte	1 byte	Non defined length	1 byte

Error response

Error message <4 bytes>		Terminal symbol <1 byte>
"ERR1"	Command format error	(CR) 0x0d
"ERR2"	Out of parameter	(CR) 0x0d
"ERR3"	Busy or unavailable time	(CR) 0x0d
"ERR4"	Timeout or unavailable time	(CR) 0x0d
"ERR5"	Data length error	(CR) 0x0d
"ERRA"	Invalid password	(CR) 0x0d

Example. Asking command on power condition "QPW"

1. Connecting to projector IP = 192.168.0.8 port = 1024
2. Receiving response Response = "NTCONTROL 0 " + (CR)
3. Data transmission Transmitting data = "00QPW" + (CR)
4. Receiving response Receiving data = "00000" + (CR)
5. Close the connection to projector

5. Notification for service operation

5. 1. Before service operation

5. 1. 1. Light source

1. LD(Laser) unit that is mounted on the inside of the light source unit is classified in Class 4 of the safety standards



Laser light can damage the human eye and skin.

It is dangerous, please do not perform energization in the state where the lighting case was disassembled.

2. When the ambient temperature becomes 35 °C (95 °F) or higher, the output light may be reduced to protect the projector.
3. The light source of the projector uses LED and Laser, luminance of the light source will decrease by duration of usage.

The usage time until when the luminance of the light source decreases by half is approximately 20 000 hours.

20 000 hours is the estimated duration, and it varies depending on individual differences and usage conditions.

4. Static electricity or electrical surges will reduce and degrade the reliability of the light source.

When working with the LDs take countermeasures to avoid the generation of static electricity, Use or wear appropriate work clothes, gloves, shoes, grounded wrist straps and other tools to avoid static electricity.

5. 1. 2. DMD chips

1. The DMD chips are precision-made. Note that in rare cases, pixels of high precision could be missing or always lit.
Note that such phenomena does not indicate malfunction.
2. This is not a malfunction. Directing a high-power laser beam onto the lens surface can damage the DMD chips.

5. 1. 3. Lithium battery

1. The lithium battery is used for the internal clock in the A-P.C.Board. So when it consumed it must be replaced.

Lithium battery : CR2032

* Use only specified lithium battery.

* used battery must be scrapped according to the instruction.

2. After replacing the lithium battery, set the "Date and Time" on the sub-menu which in main menu "projector set up".

5. 2. Service

5. 2. 1. Supporting Methods

The basic service policy is shown below.

Service method	Applied parts	
Block replacement P.C.Board replacement	• P-P.C.Board (* Specified components are replaced) • K-P.C.Board • D-P.C.Board • B-P.C.Board • PD-P.C.Board • DMD Block (with FM-P.C.Board) • Lens unit	• M1-P.C.Board (internal) • M2-P.C.Board (intake) • M3-P.C.Board (airflow) • CW-P.C.Board • LD unit • LED-R unit • LED-B unit
Replaced by discrete components	• Other electrical parts / Other mechanical parts	

5. 2. 2. Jig and Tool

1. Hexalobe (TORX type) driver [2.72 mm]
VESSEL T10H or comparable product
Part No. : TZSH07035
2. One-sided screw removal tool
When disassembling the optical block.
Part No. : TZSH07036
3. Hex wrench/Hex ball-point driver
[2.5mm] : Use for the lighting area adjustment.
[3.0mm] : Use for separate the lighting block and the DMD block.
4. Laser safety glass
Wavelength 440 ~ 455nm adaptation, laser light full absorption type.
Part No. : TZSH07038 (or comparable product)



5. 2. 3. Repair

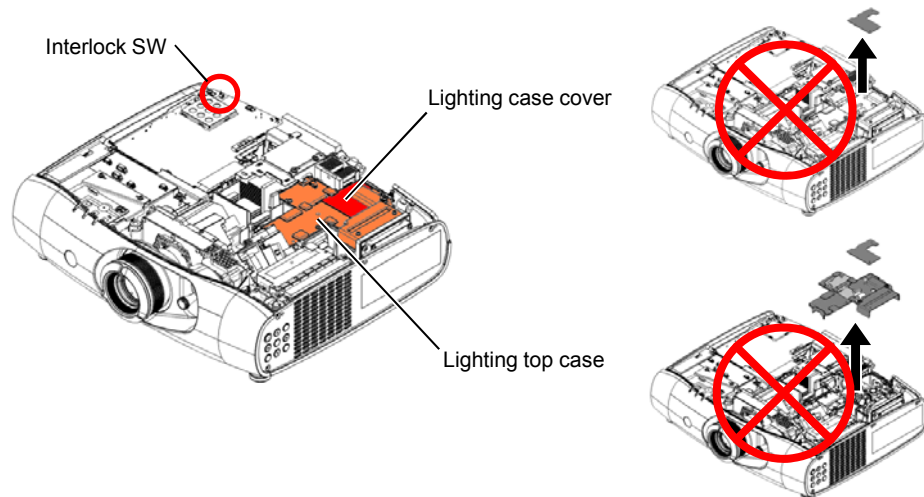
1. Energization check and adjustment, after assembling the lighting block completely.



Whether the Lighting case cover and lighting top case are installed completely, please check the before turning on the power.

The service engineer who works on this model and also other people who are in the same room need to wear the laser safety glasses for avoiding the laser irradiation just in case.

(Usually, if a top case is removed, the interlock switch on A-P.C.Board will detection, and it will stop lighting of a light source.)



2. While the fan is working, do not pull the plug out nor disconnect the breaker.
 - * When the monitor of power supply lamp turns red and the fan stops, disconnecting can be done.
3. Make sure to turn off the power before repair.
 - * When replacing the print board, the internal electrical parts can be broken by the static electricity of clothes or human body. Be careful of static electricity and wear the anti-static electricity globes.
4. After finishing the repair, check whether it works properly or not.

Check the image with 10 steps or gray scales that can show the gradation and perform self-check.

5. 2. 4. Replacement of A-P.C.Board

If replacing A-P.C.Board (assembly), read the ROM data from the old P.C.Board and write it in the new one according to the section 3 "Adjustment".

* Down load the adjustment software from our Projector service web site.

If you cannot transfer the data that uses the service software, remove IC1405/IC1407 from the original board and mount them on the new board.

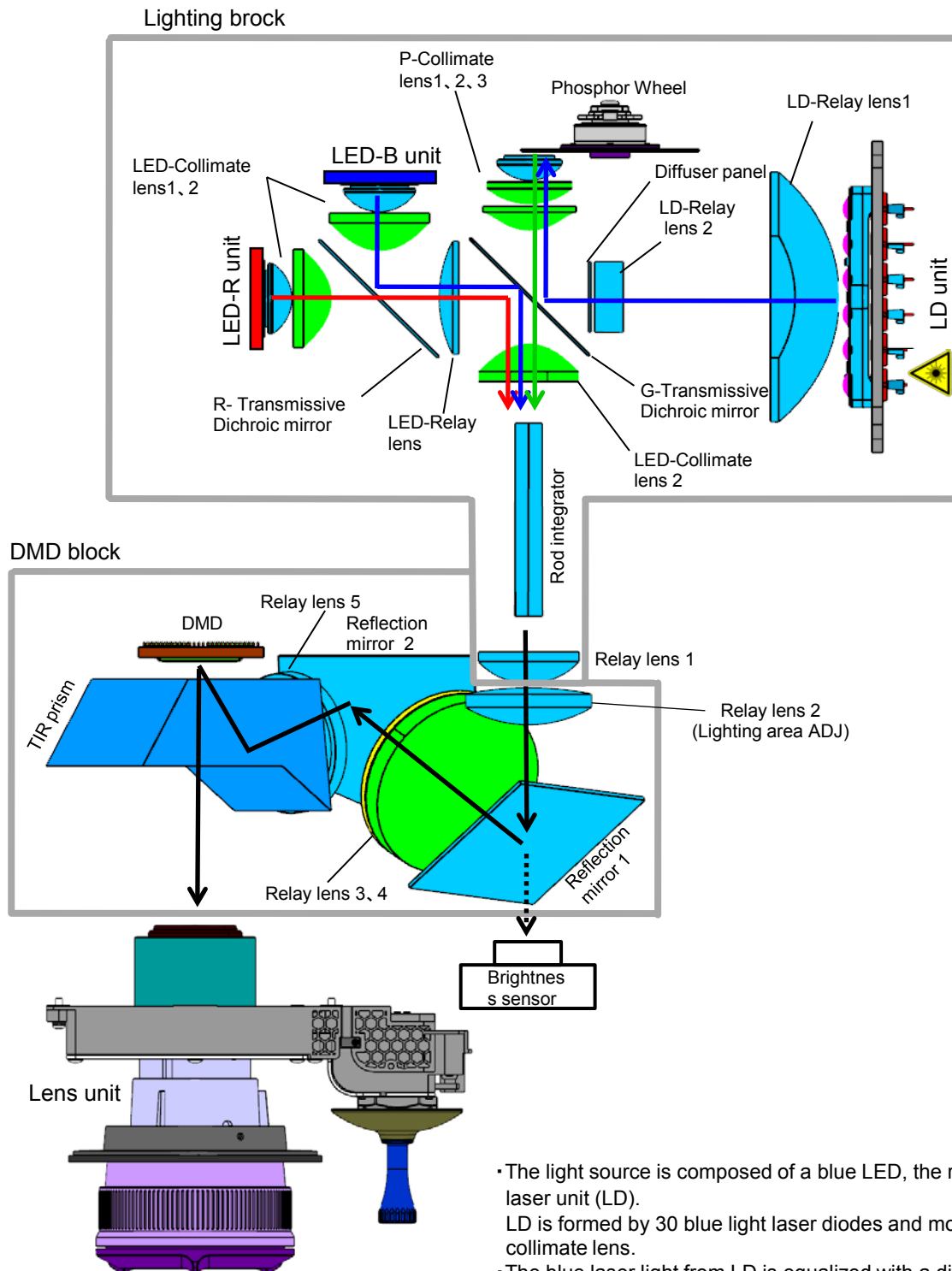
5. 3. Initialization for menu lock password

Follow the procedure below to initialize the password to the default "AAAA".

1. While menu lock password is shown on the screen, press "AUTO SETUP" button on remote controller or operation panel for more than 2 seconds.
2. Press ▼ button for more than 2 seconds.

6. Troubleshooting

6. 1. Optical block overview



- The light source is composed of a blue LED, the red LED and the laser unit (LD). LD is formed by 30 blue light laser diodes and mountain type collimate lens.
- The blue laser light from LD is equalized with a diffusion board, after being condensed by a relay lens 1-2. Then, it reflects with a G-Transmissive Dichroic mirror, and enters into a phosphor wheel.
- It is changed into a green light with a phosphor wheel, it is changed into a parallel light by P-Collimate lens1-3, and enters into a rod integrator.
- The light of each LED, changes emission light into parallel light by each collimate lens, lets each dichroic mirror and each relay lens pass, and enters into a rod integrator.

6. 2. Shutdown system

When something wrong such as stop of fan happens, the projector has a function to be on standby immediately.

Monitor LED indication	Shutdown detection	Possible factor	OSD warning
No flashing or blinking	Power fuse ⇒ K-P.C.B : 10A 250V ⇒ P-P.C.B : 2A 250V ⇒ B-P.C.B : 5A 250V	Blown out of the fuse (with some reason)	—
	Interlock switch	Top cover is not installed.	—
	FPGA initialized or Communication error	Signal processing unit PCB is faulty	—
	Formatter initial error	DMD drive circuit is faulty or Signal processing unit PCB is faulty or Connector connection is faulty	—
STANDBY/ON LED: Red TEMP LED: Lights	Internal air temperature sensor ⇒ Under -45 degrees	Connection problem with Internal air temperature sensor Faulty temperature sensor	—
	Intake air temperature sensor ⇒ Under -45 degrees	Connection problem with Intake air temperature sensor Faulty temperature sensor	—
	DMD temperature sensor ⇒ Under -36 degrees	Connection problem with DMD temperature sensor Faulty temperature sensor	—
	LED-R temperature sensor ⇒ Under -45 degrees	Connection problem with LED-R unit	—
	LED-B temperature sensor ⇒ Under -45 degrees	Connection problem with LED-B unit	—
	LD unit temperature sensor ⇒ Under -36 degrees	Connection problem with LD temperature sensor Faulty temperature sensor	—
TEMP LED Blinks 3 times	Each FAN sense signal is undetectable.	Abnormalities in fan connection Fan failure	—
	Each FAN sense signal ⇒ Less than 70% of target rotations is 120 sec or more.	Abnormality of fan rotation	—
TEMP LED Blinks 2 times (Warning: TEMP LED lights)	Internal air temperature sensor ⇒ More than 70 degrees	Internal air temperature problem Fresh air intake port is blocked up	68 degrees "TEMPERATURE WARNING" 66 degrees warning cancel
	Intake air temperature sensor ⇒ More than 47 degrees	Intake air temperature problem Fresh air intake port is blocked up Outside air temperature is high.	46 degrees "TEMPERATURE WARNING" 45 degrees warning cancel
	DMD temperature sensor ⇒ More than 60 degrees	DMD temperature error. Fresh air intake port is blocked up Failure of the heat sink mounting	58 degrees "TEMPERATURE WARNING" 56 degrees warning cancel
	DMD temperature sensor ⇒ After light source lighting, less than 5 degrees for more than 5 min.	DMD temperature is low. Adjust the Installation environment.	—
	LD unit temperature sensor ⇒ After light source lighting, less than 0 degrees for more than 5 min.	LD unit temperature is low. Adjust the Installation environment.	—
LIGHT LED blinks 3 times	All the light source errors ⇒ Status signal from the driver microcontroller, all light source is other than during normal operation.	All light source lighting failure Driver circuit fault Connection error	—
LIGHT LED blinks 2 times	Phosphor wheel Index signal ⇒ 45 Hz or less	Phosphor wheel fault	—

6. 3. System log data acquisition method

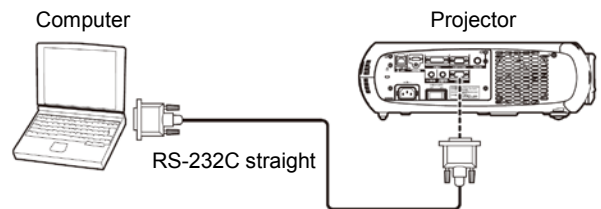
6. 3. 1. Equipment to be used

1. Computer : Use it for collection of log data.
2. Communication cable : D-sub 9pin (male/female RS-232C straight)
3. Service Software : [DataLogBackup.exe] Service software is downloaded from the projector service homepage.

6. 3. 2. Preparation

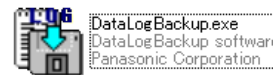
1. Confirm and make a note of "Projector ID", "Transmission speed" and "Parity setting".
2. Correct the serial terminals on the projector and the PC by using a communication cable.

[Caution] ·Set the "SERIAL" in "RS-232C INPUT SELECT" of "PROJECTOR SETUP" menu.

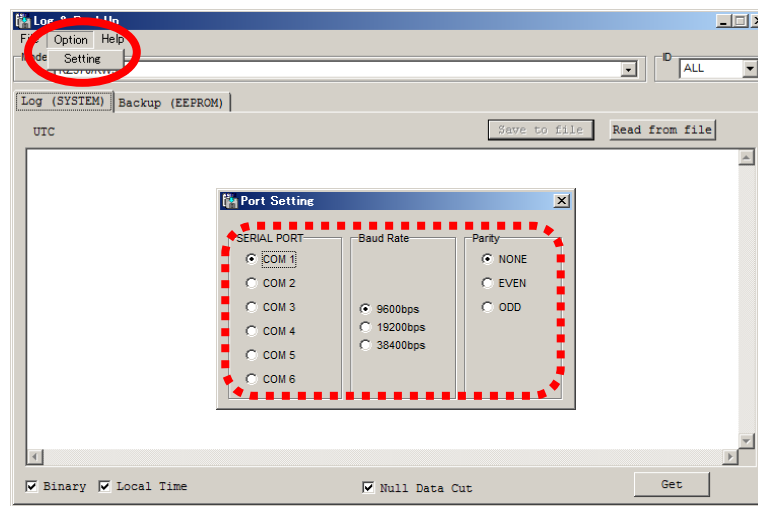


6. 3. 3. Acquisition of log data

1. Switch the projector to "Normal-Standby" mode (POWER indicator is Lighting in red).
2. Start up service software [DataLogBackup.exe] with a computer.



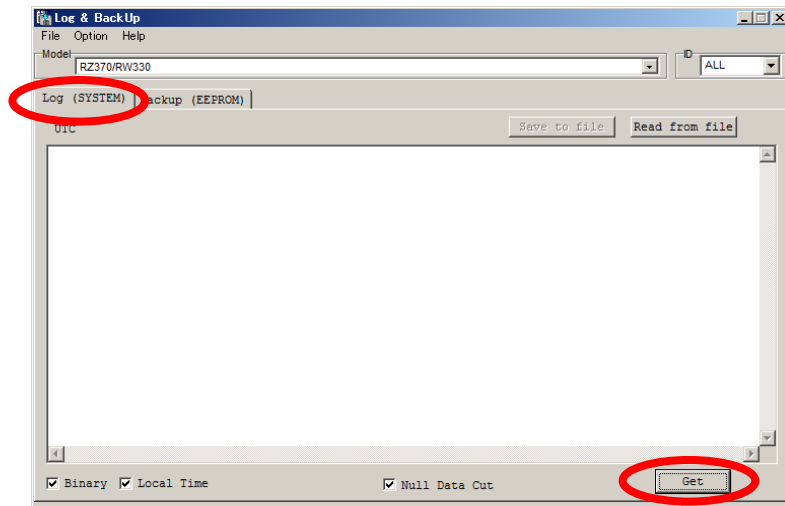
3. Select "Option" → "Setting" and set Serial Port of the computer, Baud Rate and Parity.



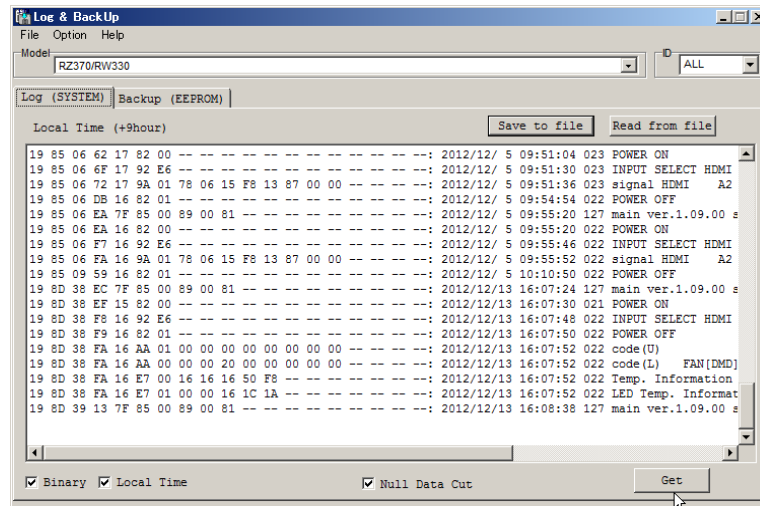
4. Select a model number and ID.



5. Select "Log (SYSTEM)" and click "Get" button.



6. Log is displayed.



6. 3. 4. Error cord of system log

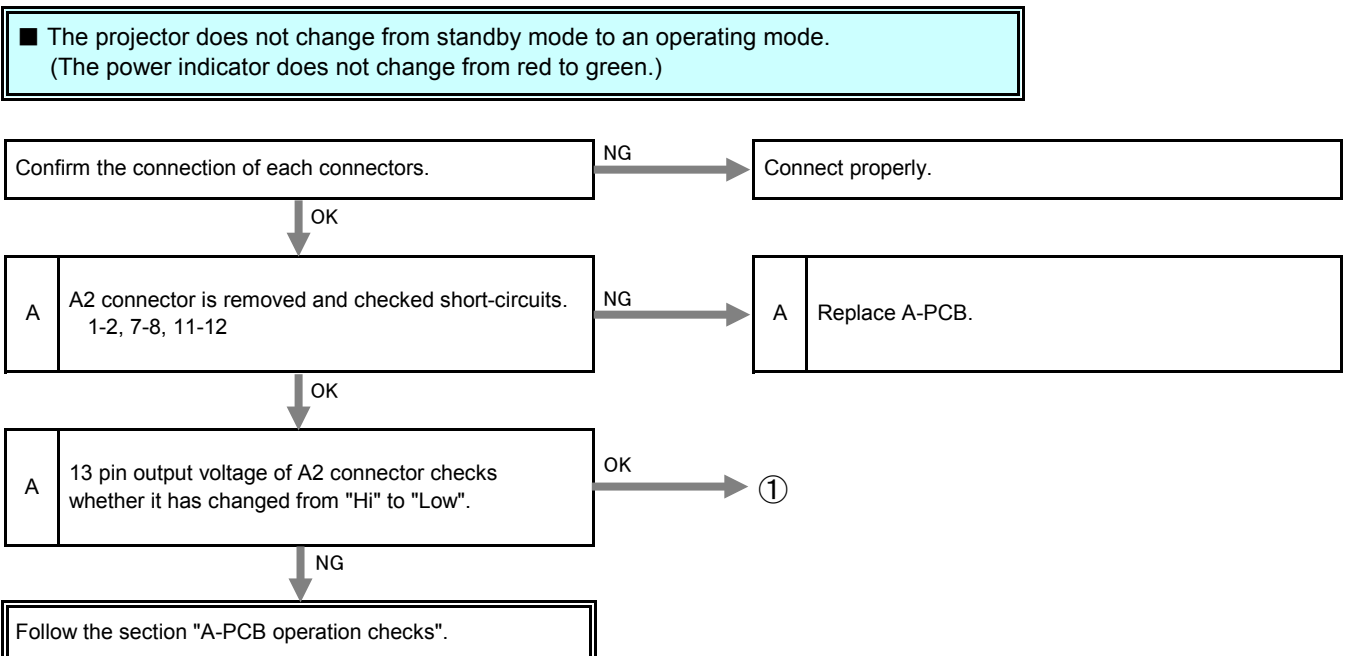
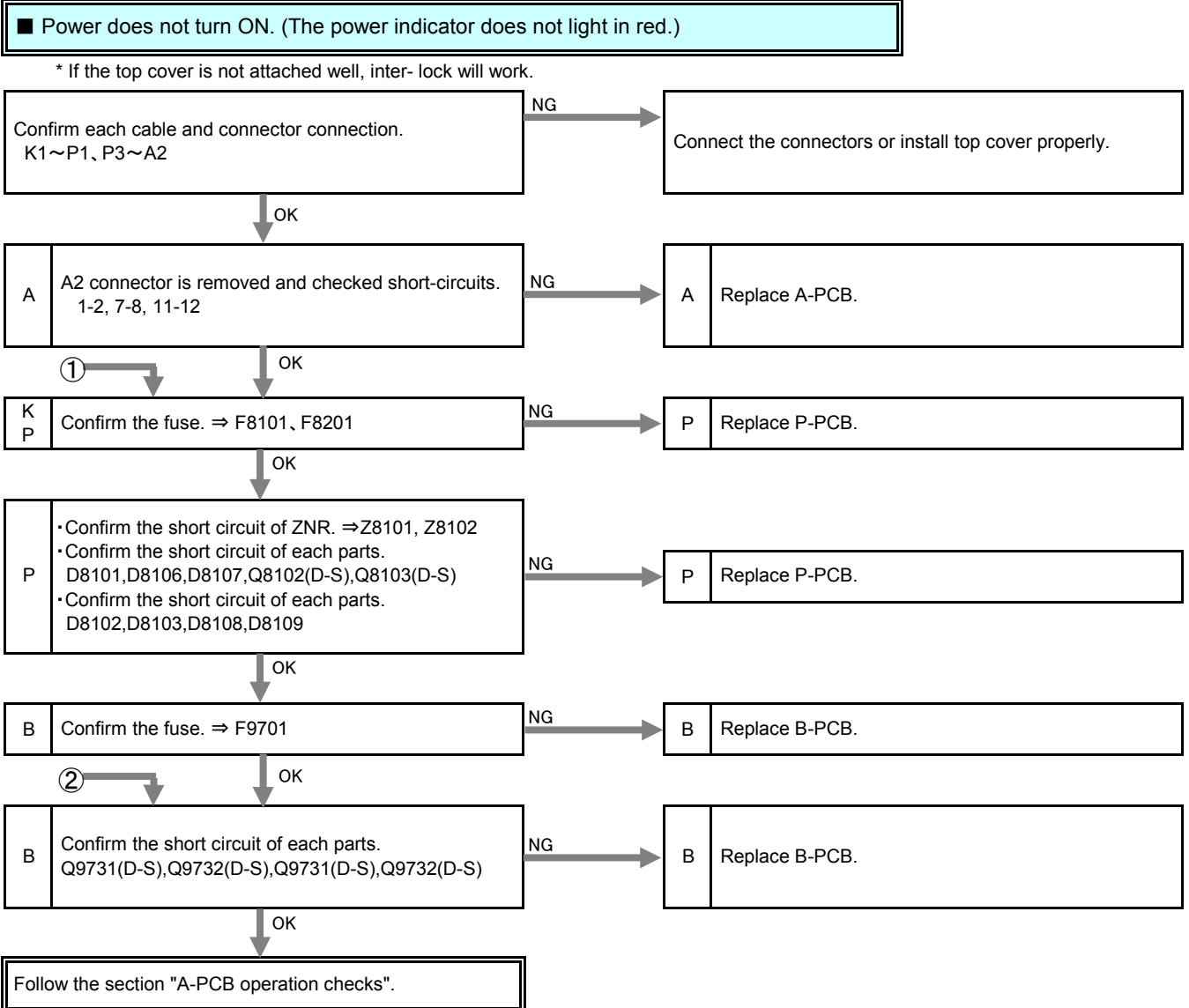
Bit	Error code (hex)	Factor	Description
0	00000000 00000001	Internal temperature warning	The temperature inside this projector has become high.
1	00000000 00000002	DMD temperature warning	- Is the ventilation (intake/exhaust) ports blocked ?
2	00000000 00000004	Intake temperature warning	- The ambient temperature may be too high.
3	00000000 00000008	DMD low temperature warning	The ambient temperature may be too low.
4	00000000 00000010	LED-R temperature warning	Temperature of the light source is high.
5	00000000 00000020	LD-G temperature warning	- Is the ventilation (intake/exhaust) ports blocked ?
6	00000000 00000040	LED -B temperature warning	- The ambient temperature may be too high.
7	00000000 00000080	Internal temperature error	The temperature inside this projector has become high and shut down.
8	00000000 00000100	DMD temperature error	
9	00000000 00000200	Intake temperature error	
10	00000000 00000400	DMD low temperature error	The ambient temperature is low, has been shut down.
11	00000000 00000800	LED-R temperature error	The temperature of light source has become high and shut down.
12	00000000 00001000	LD-G temperature error	
13	00000000 00002000	LED-B temperature error	
14	00000000 00004000	Phosphor wheel error	Rotational speed of the phosphor wheel is abnormal.
15	00000000 00008000	Phosphor wheel error	
16	00000000 00010000	Laser Detection error	Non luminous or optical axis misalignment of laser
17	00000000 00020000	Unused	There is a possibility that the light source has failed.
18	00000000 00040000	Unexpected LED-R off	
19	00000000 00080000	Unexpected LD(G1) off	
20	00000000 00100000	Unexpected LD(G2) off	
21	00000000 00200000	Unexpected LD(G3) off	
22	00000000 00400000	Unexpected LED-B off	Failed to start lighting.
23	00000000 00800000	LED-R failed to light	
24	00000000 01000000	LD(G1) failed to light	
25	00000000 02000000	LD(G2) failed to light	
26	00000000 04000000	LD(G3) failed to light	
27	00000000 08000000	LED-B failed to light	Unused
28	00000000 10000000	Unused	
29	00000000 20000000	Cover open error	Top cover has been removed.
30	00000000 40000000	Unused	Luminance sensor communication error.
31	00000000 80000000	Luminance sensor warning	
32	00000001 00000000	Internal temperature sensor trouble	Breaking of Internal temperature sensor, or disconnect of connector A21.
33	00000002 00000000	DMD temperature sensor trouble	Breaking of DMD temperature sensor, or disconnect of connector A23.
34	00000004 00000000	Intake temperature sensor trouble	Breaking of intake temperature sensor, or disconnect of connector A22.
35	00000008 00000000	Unused	Battery replacement for the internal clock.
36	00000010 00000000	Unused	
37	00000020 00000000	Battery low voltage warning	Breaking of LED-R temperature sensor, or disconnect of connector A24.
38	00000040 00000000	LED-R temperature sensor trouble	
39	00000080 00000000	LD-G temperature sensor trouble	Breaking of LD-G temperature sensor, or disconnect of connector A25.
40	00000100 00000000	LED-B temperature sensor trouble	Breaking of LED-B temperature sensor, or disconnect of connector A26.
41	00000200 00000000	Unused	Fan or fan drive circuit is malfunction. Fan replacement.
42	00000400 00000000	FAN 1(LED-G) warning/error	
43	00000800 00000000	FAN 2(LED-R) warning/error	
44	00001000 00000000	FAN 3(LED-B) warning/error	
45	00002000 00000000	FAN 4(DMD) warning/error	
46	00004000 00000000	FAN 5(EXHAUST) warning/error	
47	00008000 00000000	FAN 6(DRIVER) warning/error	Unused
48	00010000 00000000	Unused	
49	00020000 00000000	Unused	
50	00040000 00000000	Unused	
51	00080000 00000000	Unused	
52	00100000 00000000	Unused	
53	00200000 00000000	Unused	
54	00400000 00000000	Unused	
55	00800000 00000000	Unused	
56	01000000 00000000	Unused	
57	02000000 00000000	Unused	Unused
58	04000000 00000000	Unused	
59	08000000 00000000	Unused	
60	10000000 00000000	Unused	
61	20000000 00000000	Unused	
62	40000000 00000000	Unused	
63	80000000 00000000	Unused	

Bit	Error code (hex)	Factor	Description
64	00000000 00000001	Emitter connection error	The device connected to 3D SYNC is not compatible. Please reconfirm connection.
65	00000000 00000002	Unused	
66	00000000 00000004	Unused	
67	00000000 00000008	Unused	
68	00000000 00000010	Unused	
69	00000000 00000020	Unused	
70	00000000 00000040	Unused	
71	00000000 00000080	Unused	
72	00000000 00000100	Unused	
73	00000000 00000200	Unused	
74	00000000 00000400	Unused	
75	00000000 00000800	Unused	
76	00000000 00001000	Unused	
77	00000000 00002000	Unused	
78	00000000 00004000	Unused	
79	00000000 00008000	Unused	
80	00000000 00010000	FPGA configuration error	Signal processing circuit is malfunction.
81	00000000 00020000	Unused	
82	00000000 00040000	Unused	
83	00000000 00080000	Unused	
84	00000000 00100000	Unused	
85	00000000 00200000	Unused	
86	00000000 00400000	Unused	
87	00000000 00800000	Driver 1 communication error	Internal circuit is malfunction.
88	00000000 01000000	Driver 2 communication error	Internal circuit is malfunction.
89	00000000 02000000	Unused	
90	00000000 04000000	Unused	
91	00000000 08000000	Unused	
92	00000000 10000000	Unused	
93	00000000 20000000	Unused	
94	00000000 40000000	Unused	
95	00000000 80000000	Unused	
96	00000001 00000000	Unused	
97	00000002 00000000	Network microprocessor communication error.	Network microprocessor no response.
98	00000004 00000000	Sub microprocessor communication error.	Sub microprocessor no response.
99	00000008 00000000	IIC communication error.	Internal circuit is malfunction.
100	00000010 00000000	IIC communication error.	
101	00000020 00000000	IIC communication error.	
102	00000040 00000000	Unused	
103	00000080 00000000	Unused	
104	00000100 00000000	Unused	
105	00000200 00000000	Unused	
106	00000400 00000000	Unused	
107	00000800 00000000	Unused	
108	00001000 00000000	Unused	
109	00002000 00000000	Unused	
110	00004000 00000000	Unused	
111	00008000 00000000	Unused	
112	00010000 00000000	Unused	
113	00020000 00000000	Unused	
114	00040000 00000000	Unused	
115	00080000 00000000	Unused	
116	00100000 00000000	Unused	
117	00200000 00000000	Unused	
118	00400000 00000000	Unused	
119	00800000 00000000	Unused	
120	01000000 00000000	Unused	
121	02000000 00000000	Unused	
122	04000000 00000000	FM communication error.	FM communication error.
123	08000000 00000000	Unused	
124	10000000 00000000	Unused	
125	20000000 00000000	Unused	
126	40000000 00000000	Unused	
127	80000000 00000000	Internal error	Main microprocessor circuit is malfunction.

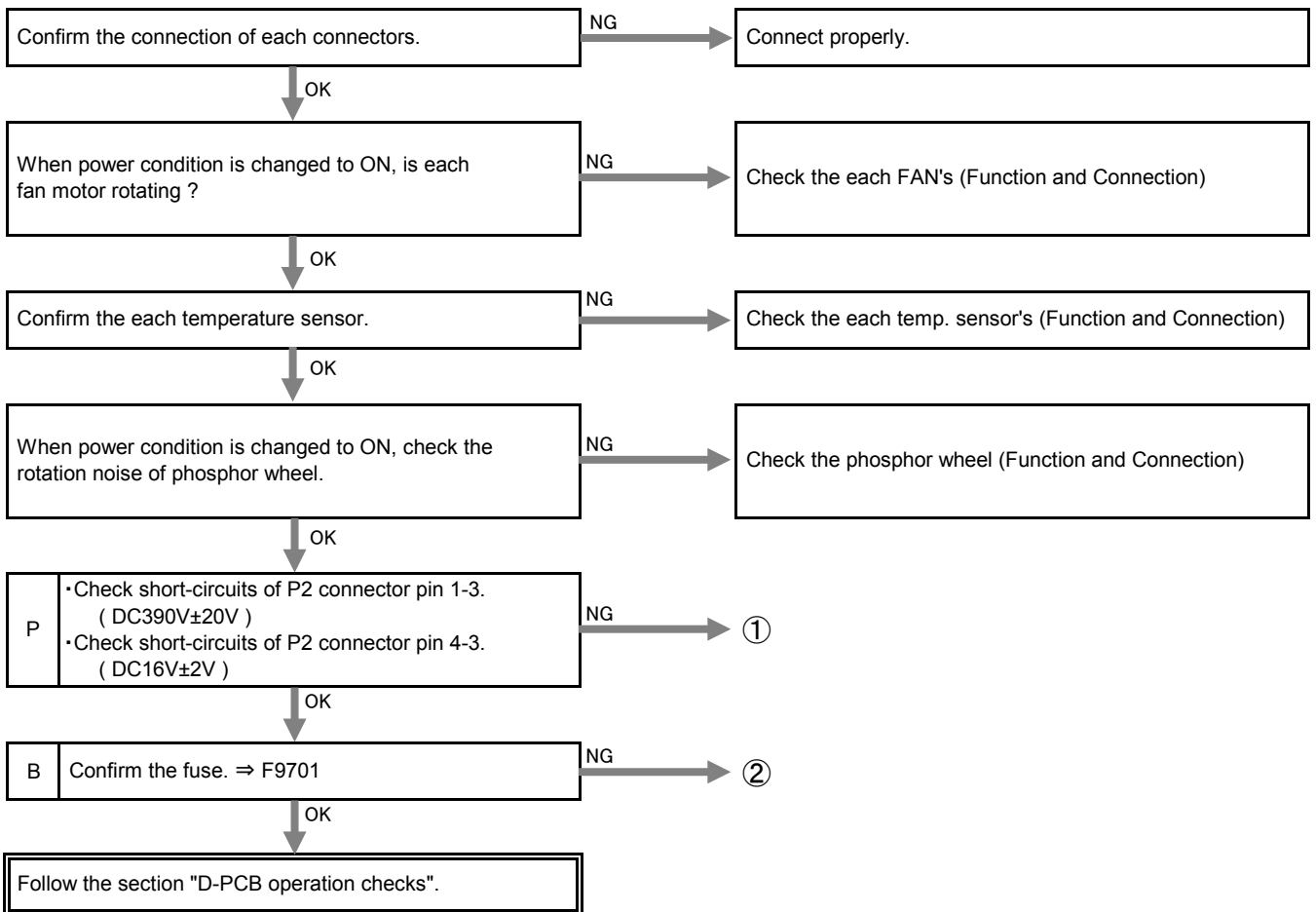
6. 4. Troubleshooting

* The letters in the left of inspection items indicate the P.C. Boards related to their respective descriptions.

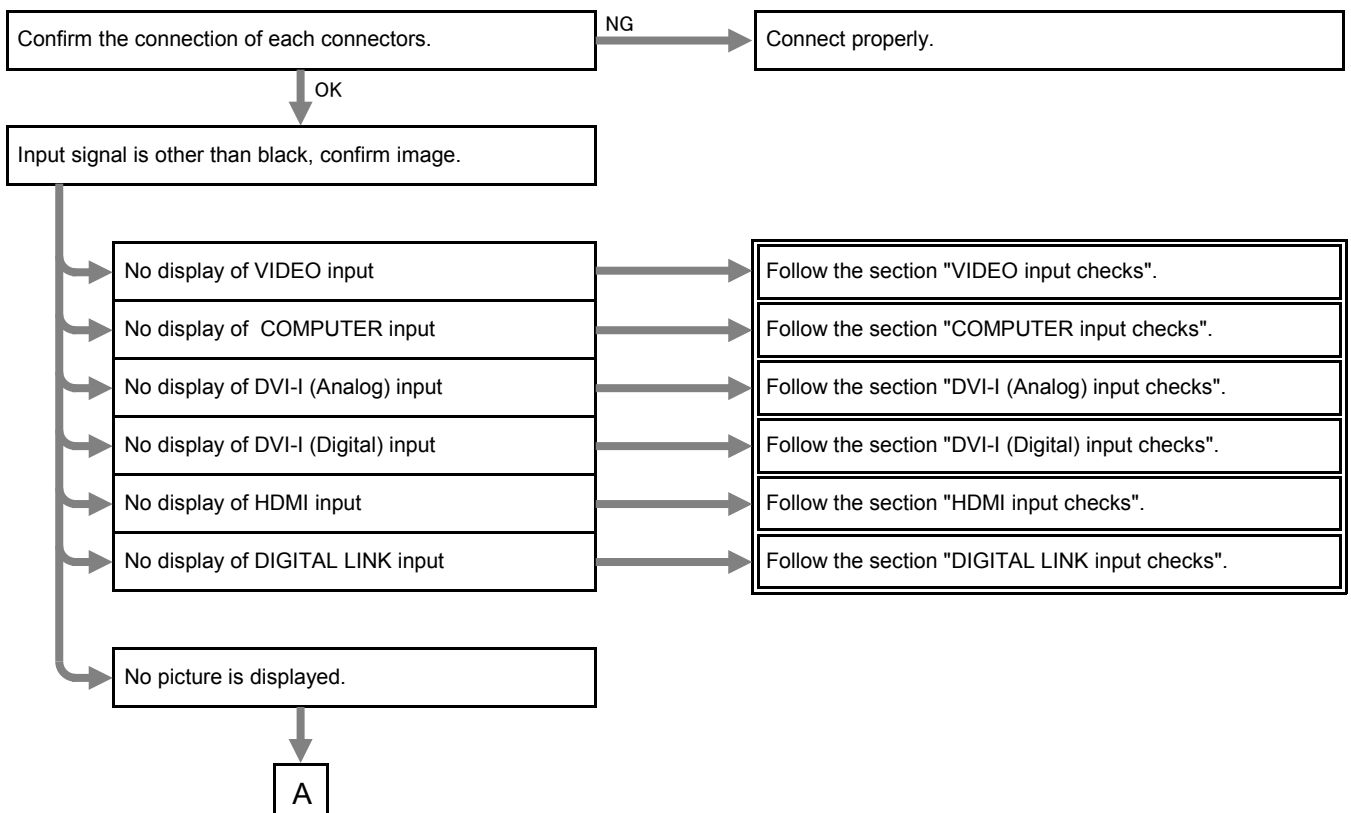
* Please be sure to perform check, after assembling a lighting block completely.

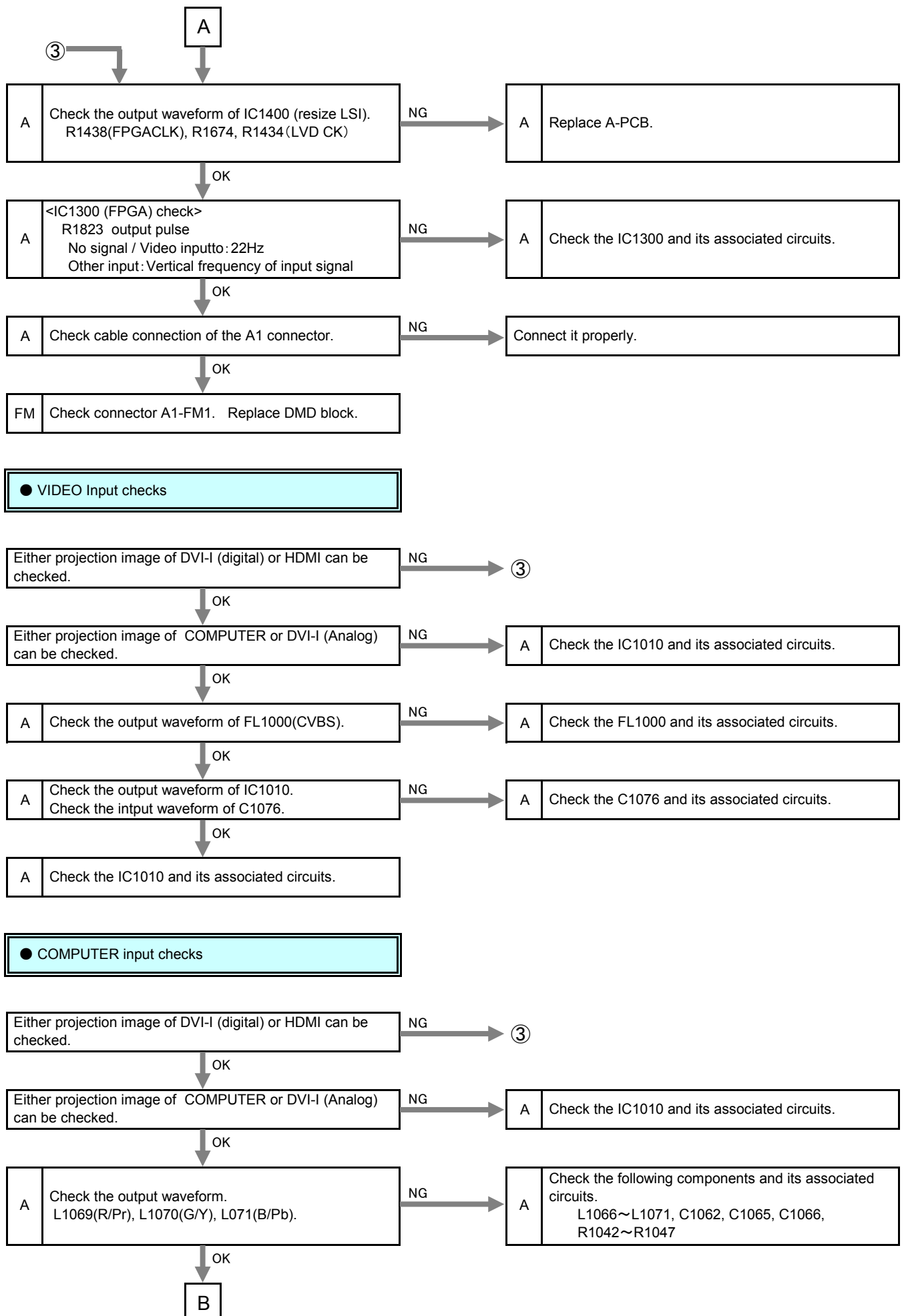


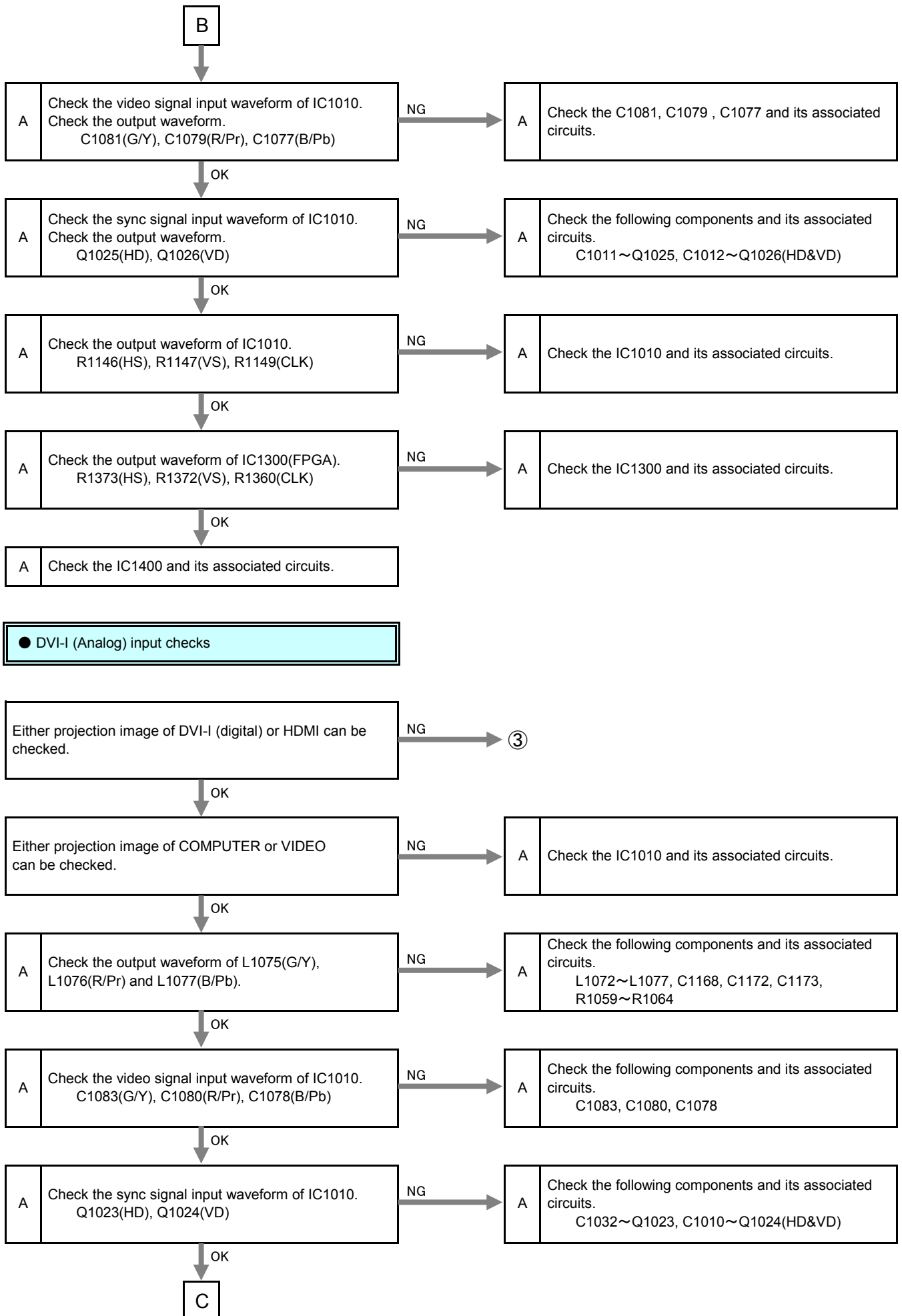
■ Light source does not turn ON.

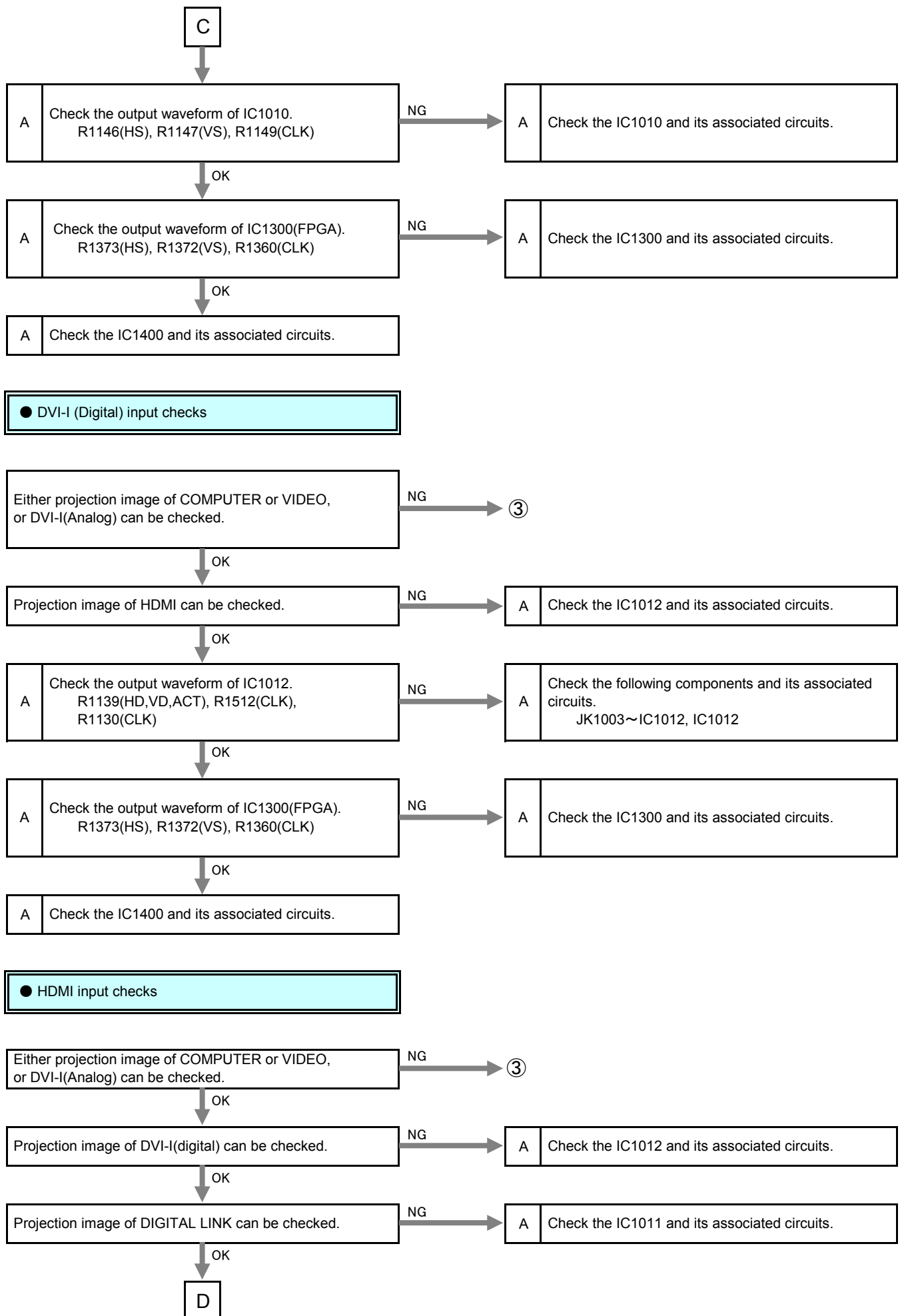


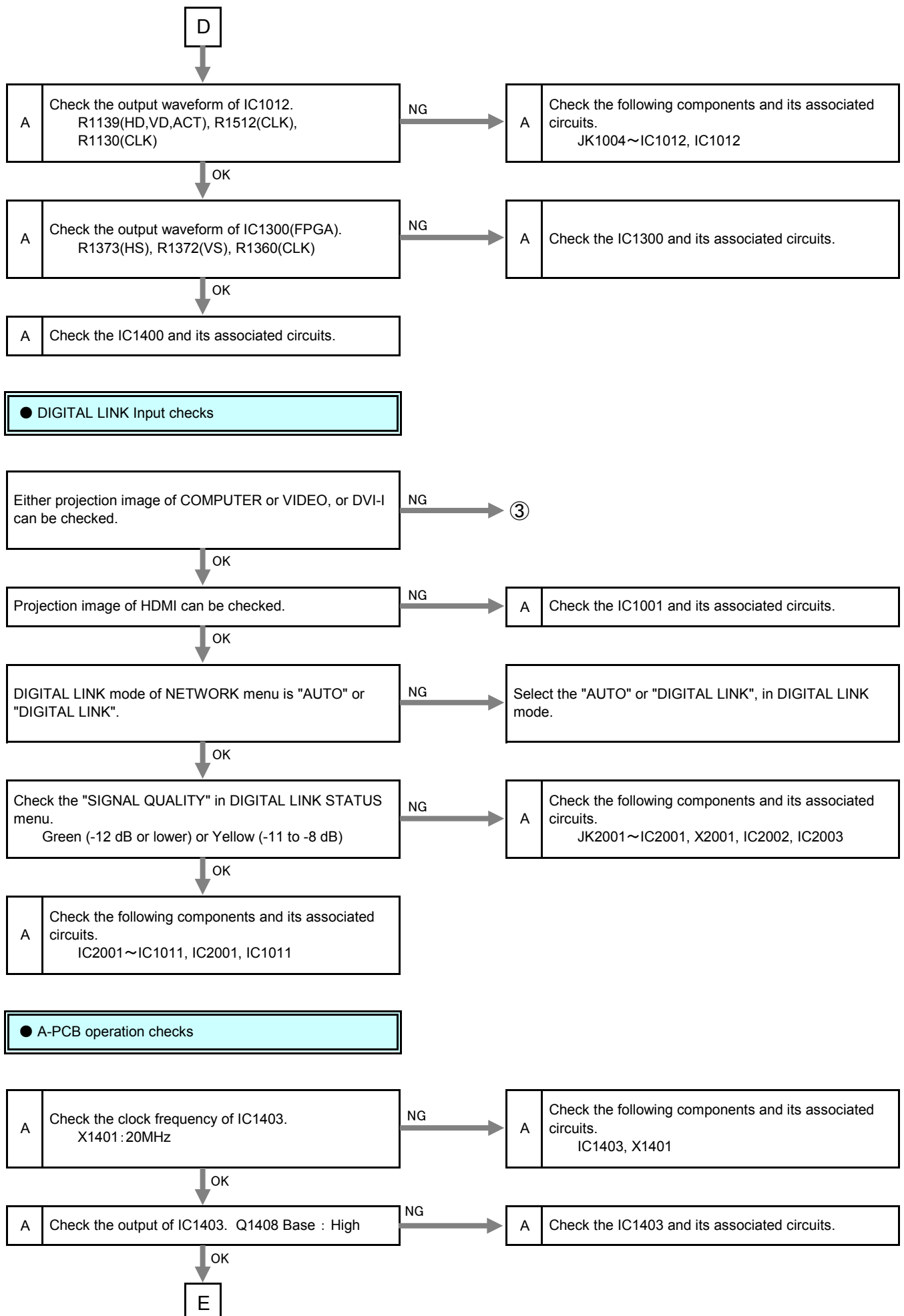
■ Projection image does not output.

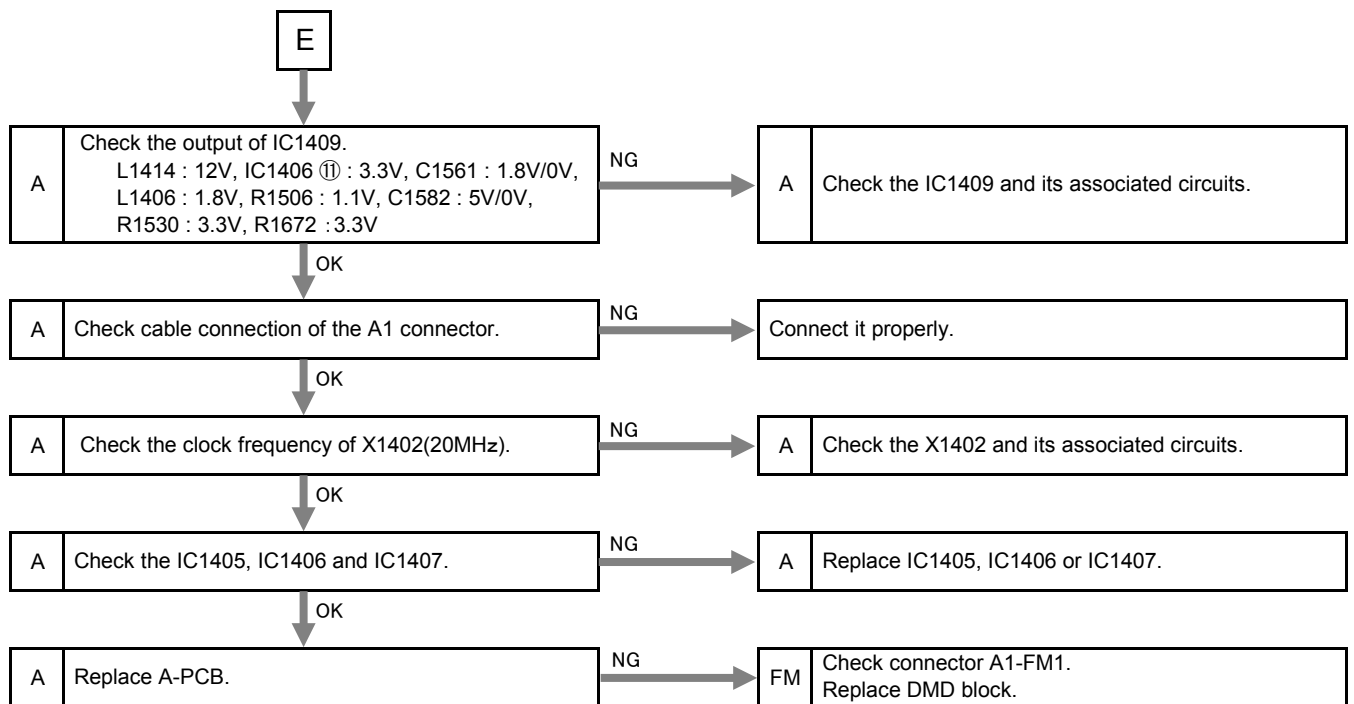




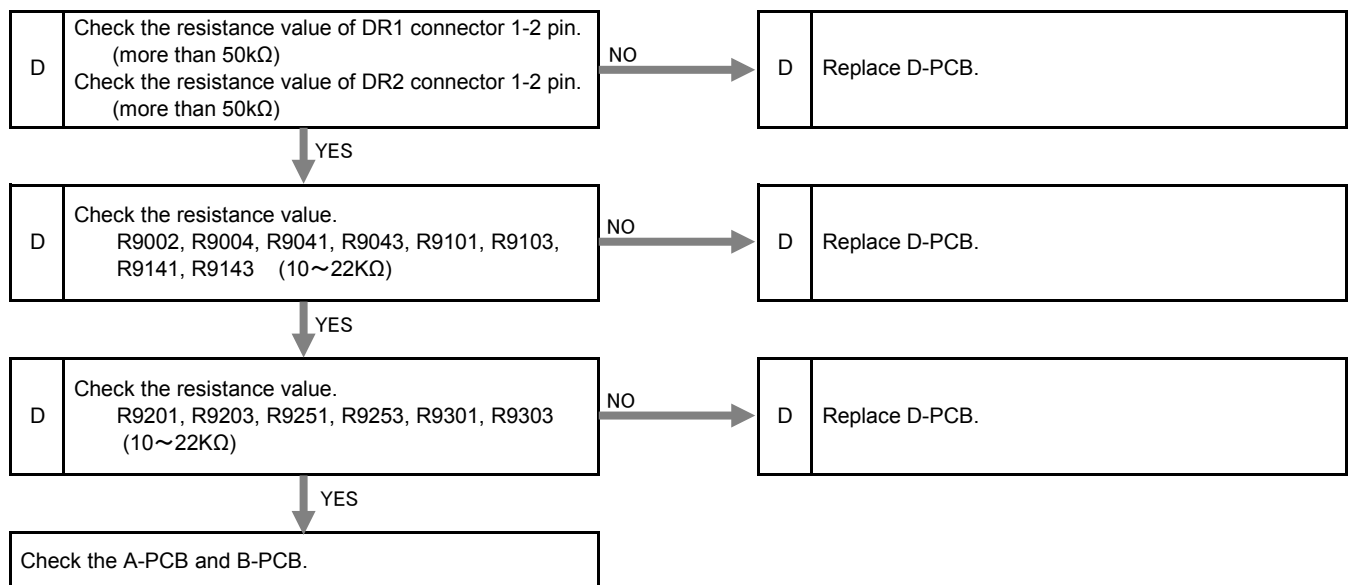




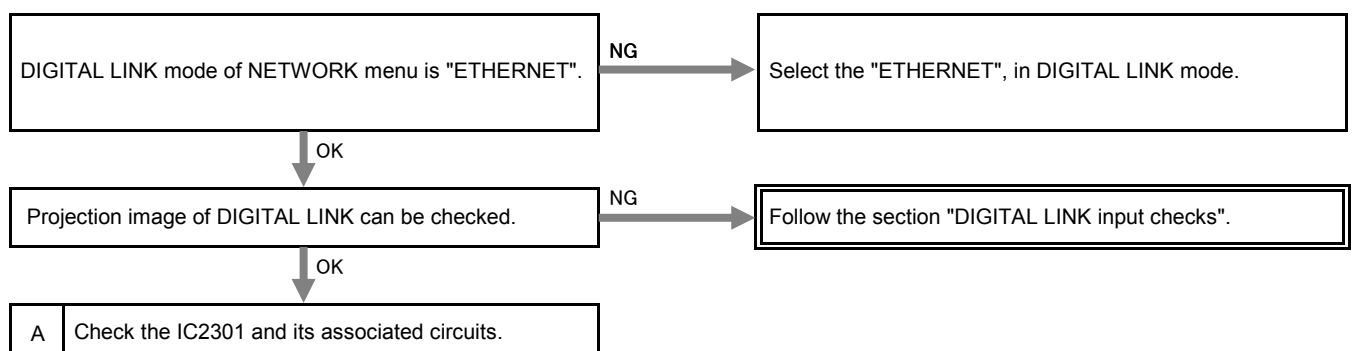




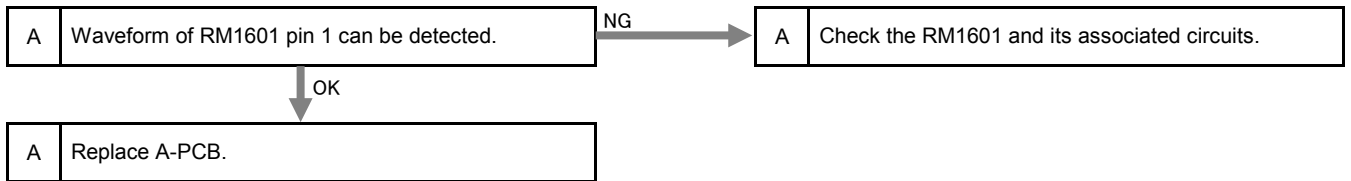
● D-PCB operation checks



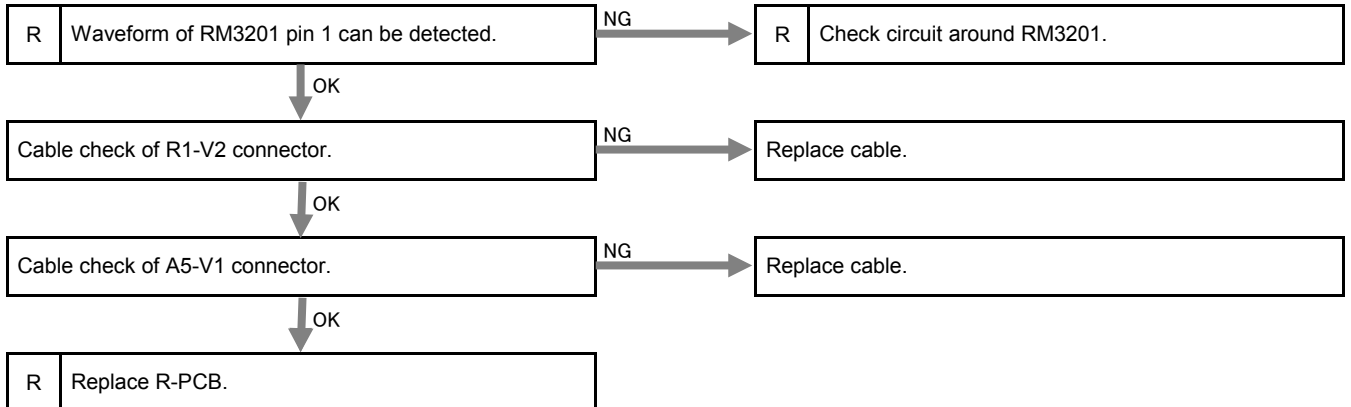
■ Network does not work.



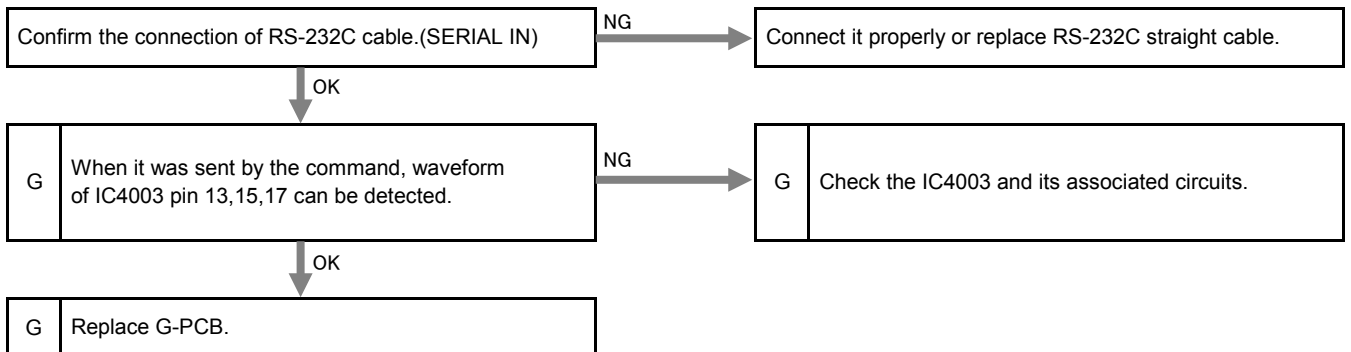
■ Remote controller does not work. (only rear side)



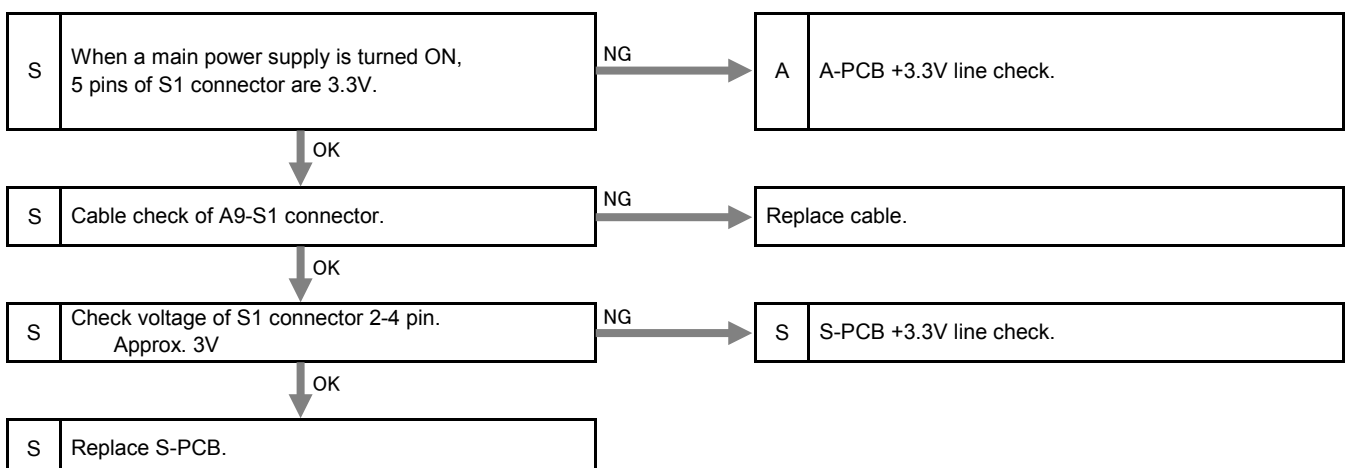
■ Remote controller does not work. (only front side)



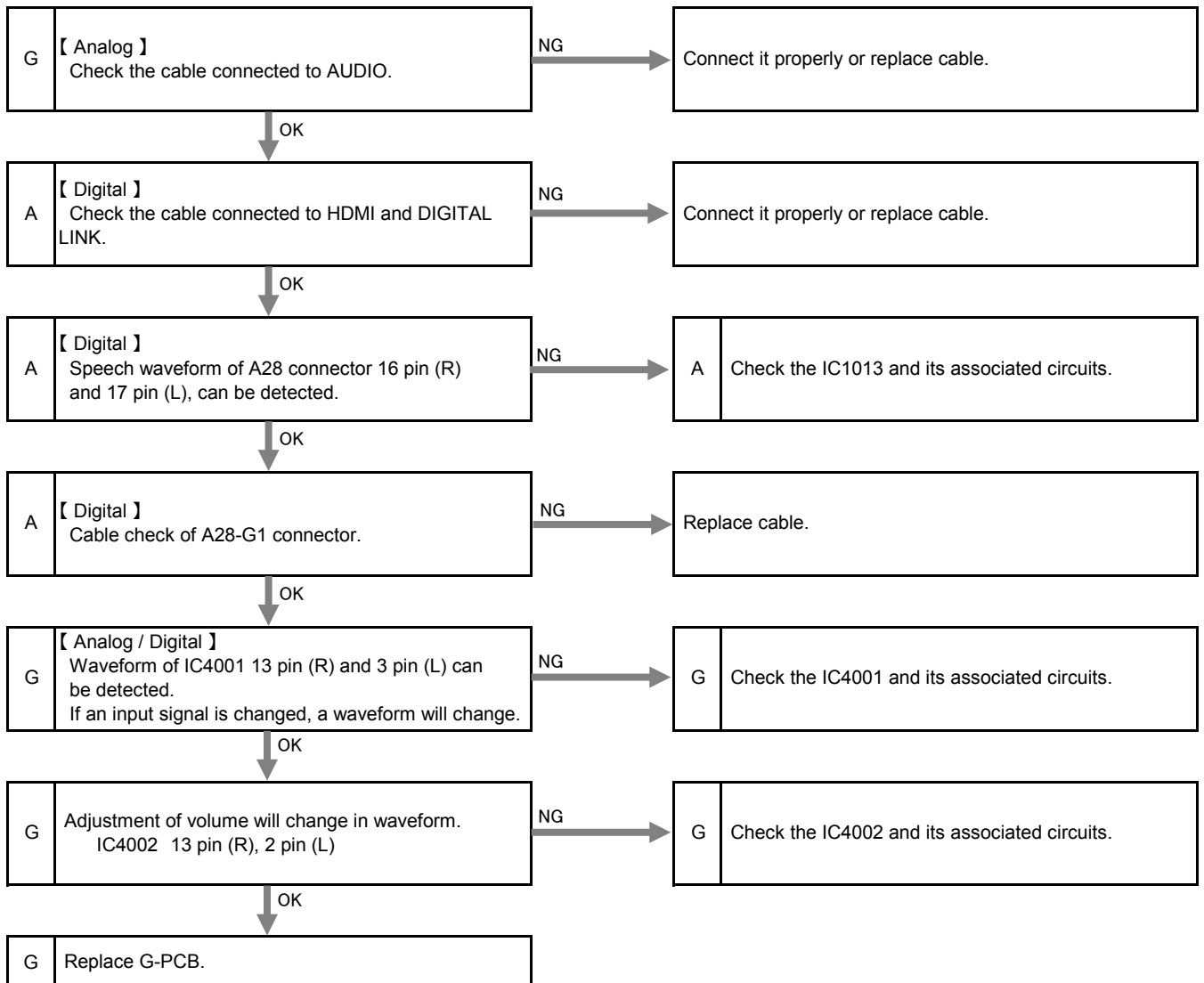
■ SERIAL IN does not work.



■ Control panel does not work.



■ Audio function does not work



SECTION 2

Disassembly Procedures

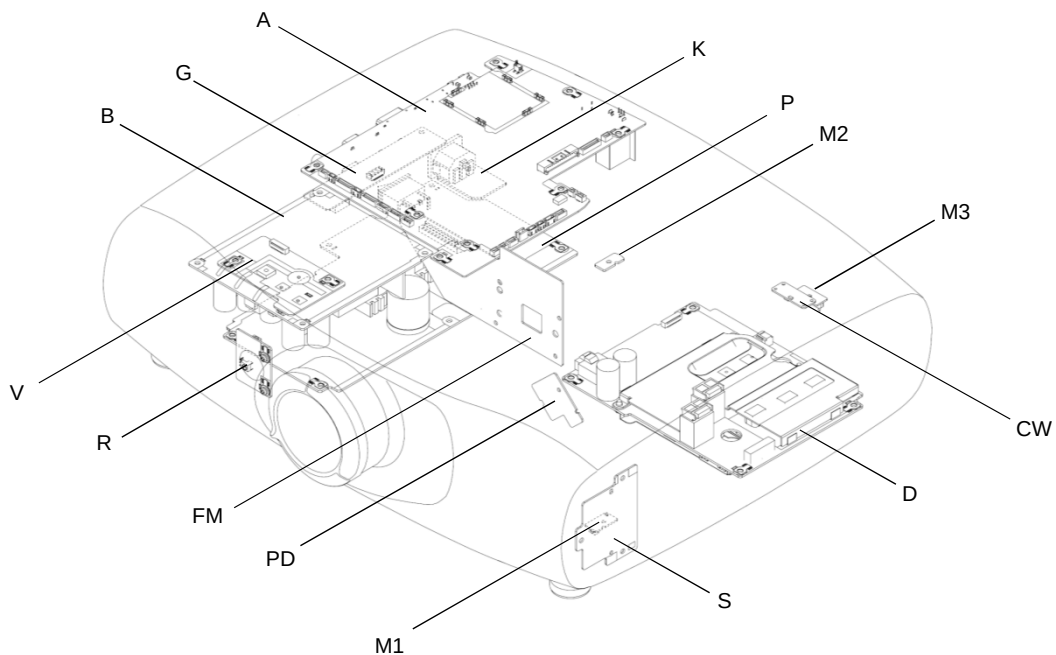
Model No. PT-RZ470 Series
PT-RW430 Series

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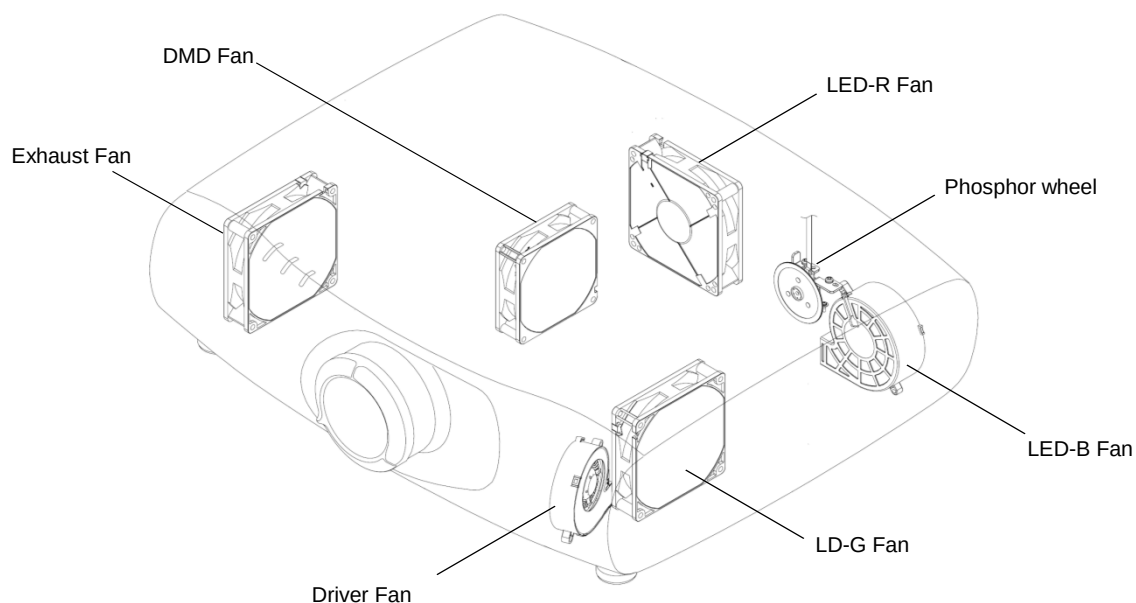
1. Parts Location

1. 1. Electrical Parts Location (P.C.Board)

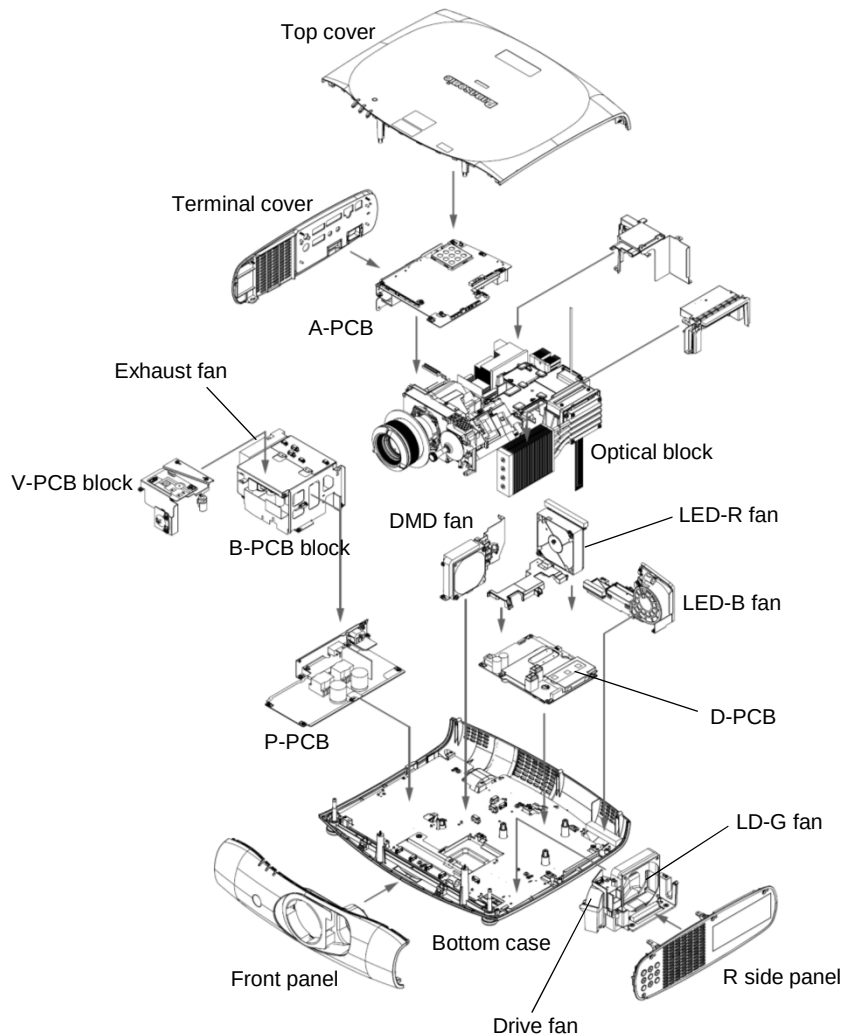


Board name	Outline of functions	Board name	Outline of functions
A	Image processing system / Central processing unit	M1	Temperature sensor (Internal air)
G	Interface of control terminals	M2	Temperature sensor (Intake air)
PD	Color sensor	M3	Air flow sensor
FM	Formatter for DMD	B	Power supply for driver units
S	Control switch panel	D	Driver circuit for Laser Diodes/LEDs
V	Indicator	P	Power supply for whole unit
R	Front IR receiver	K	AC power inlet with fuse
CW	Phosphor wheel rotation sensor		

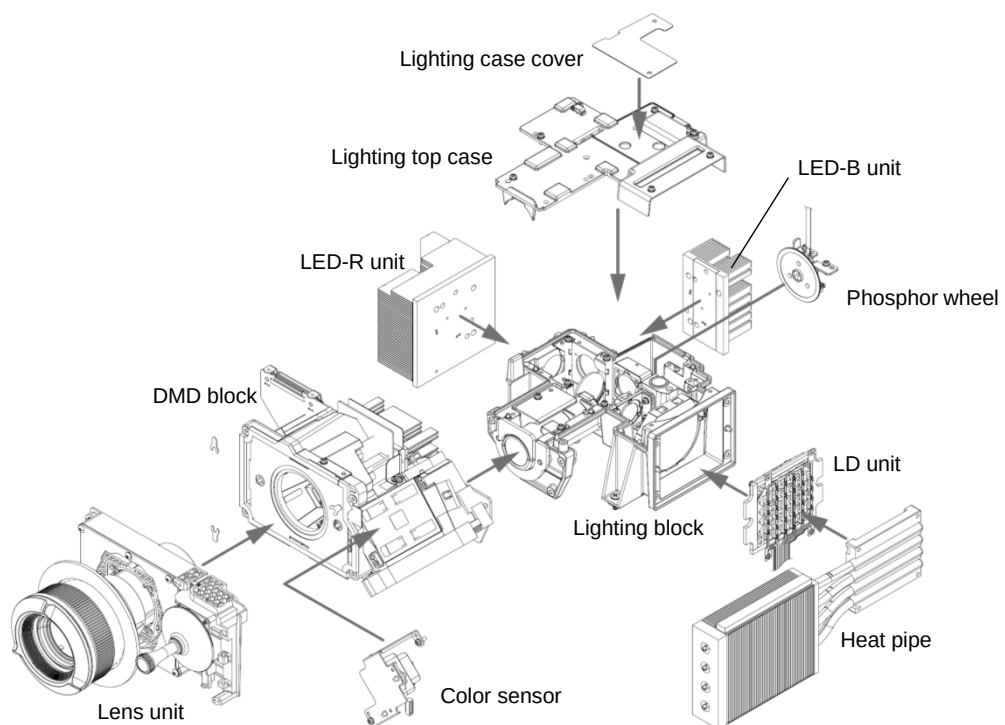
1. 2. Electrical Parts Location (Fan)



1. 3. Mechanism element parts location



1. 4. Optical parts location



2. Disassembly Instructions

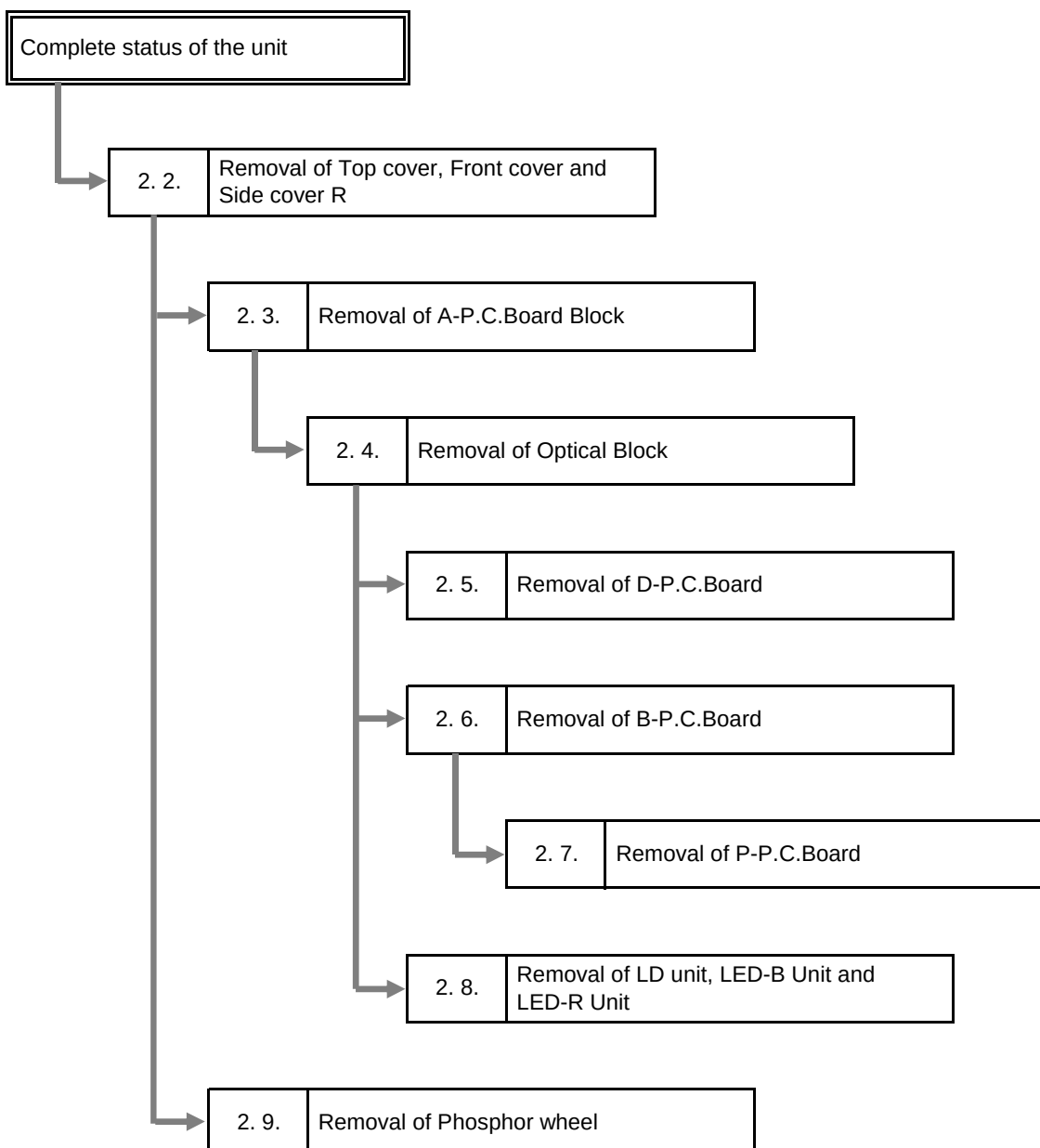
Tools

1. Hexlobe (TORX type) driver
When disassembling the top cover.
Part No. : TZSH07035
2. One-sided screw removal tool
When disassembling the optical block.
Part No. : TZSH07036
3. Hex wrench
When separating a lighting block and DMD block.
Please use the Hex wrench on the commercially available.



2. 1. Flowchart for Disassembly

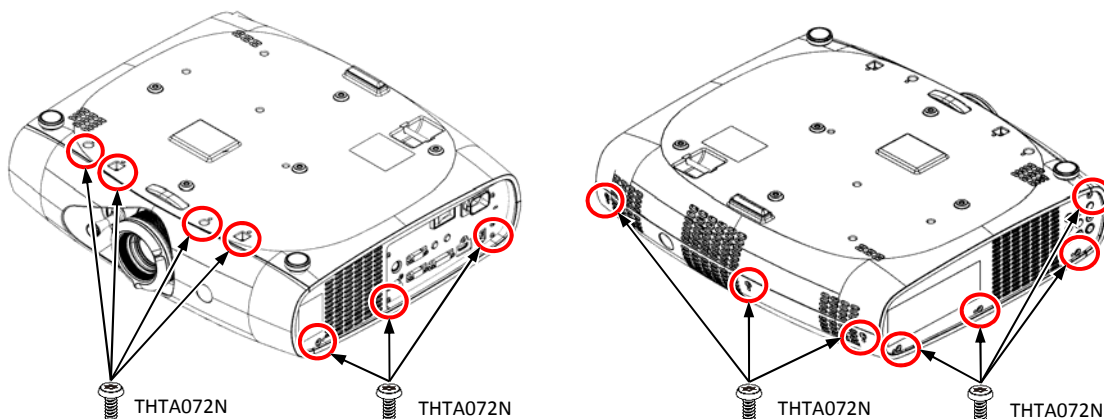
- * Before Disassembly the projector, turn off the POWER switch and disconnect the power plug from the wall outlet.
- * Please wear protective gloves, not to be hurt with a metal part or a shield board.
- * When assembling, reverse the disassembly procedures.
- * When tore off sticky tapes and sponges, please use a new thing without reusing it on the occasion of assembling.



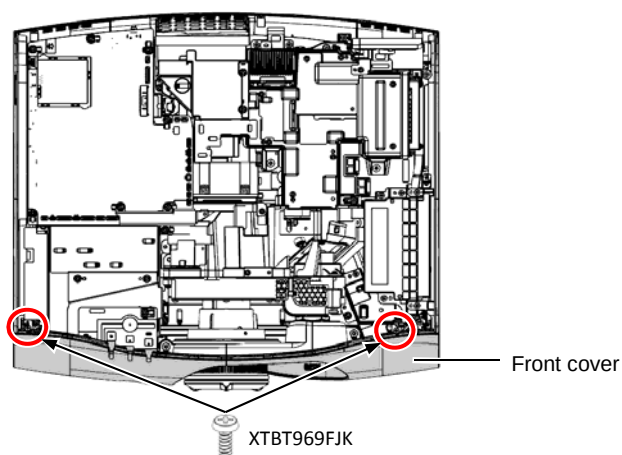
2. 2. Removal of Top cover, Front cover and Side cover R

1. Remove 14 screws (TORX type : silver tap screw) then open the top cover.

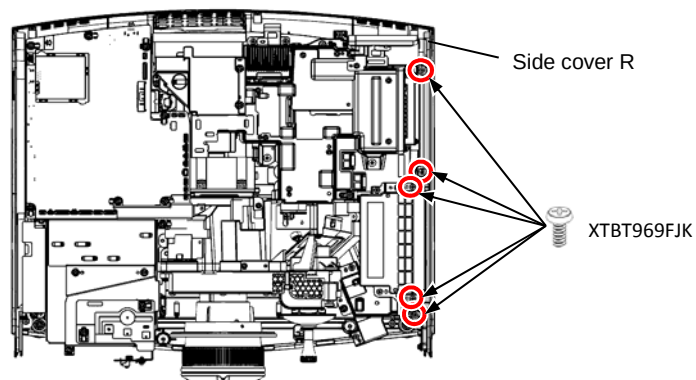
* Please use Hexlobe (TORX type) driver.



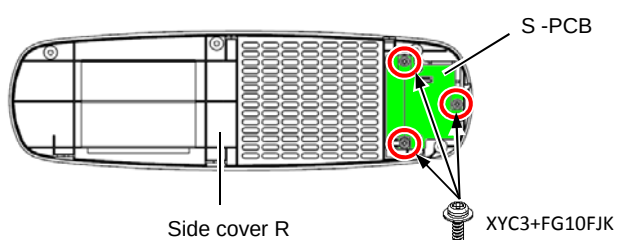
2. Remove 2 screws (ordinal + type : black tap screw) then remove the front cover.



3. Remove 5 screws (ordinal + type : black tap screw) then remove the Side cover R.

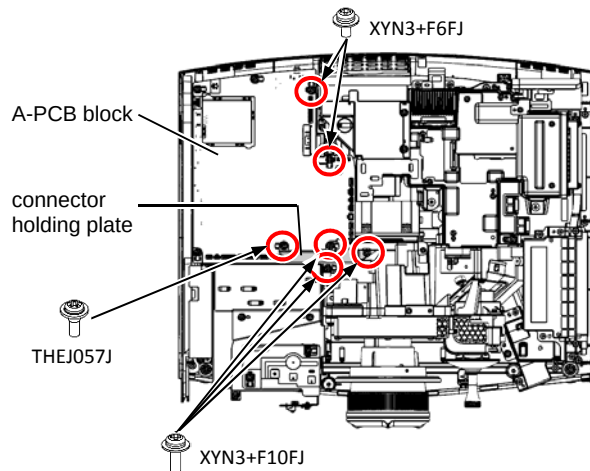


* Remove 3 screws (ordinal + type : black tap screw with washers) then remove S-PCB from Side cover R.

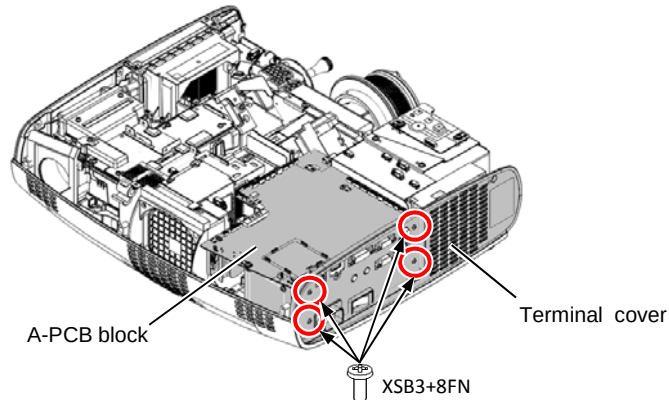


2. 3. Removal of A-P.C.Board Block

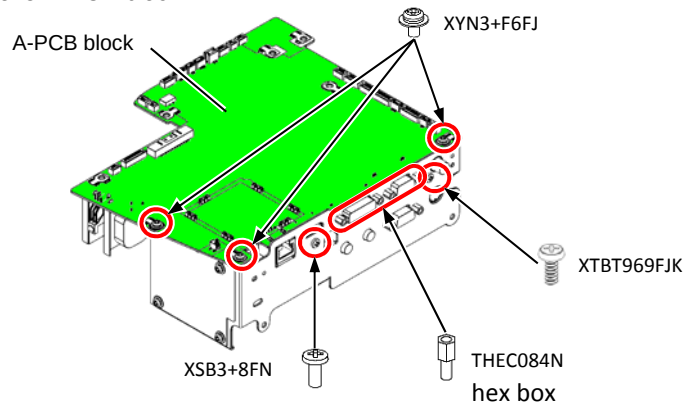
1. Remove top cover, front cover and side cover R following the procedure 2.2
2. 1) Remove 4 screws (ordinal + type: silver screw with washers) then remove the connector holding plate.
2) Remove 2 screws (ordinal + type: silver screw with washers) at the center/rear area of the body.



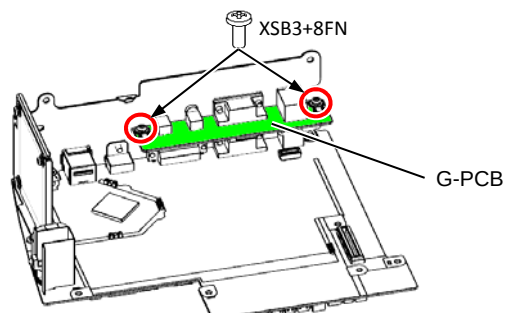
3. Remove 4 screws (ordinal + type silver screw) then remove the terminal cover from A-PCB block.



4. Remove 9 screws (3 x ordinal silver screws with washers, 1 ordinal silver screw, 1 ordinal black tap screw and 4 hex box screws) then remove A-PCB block.

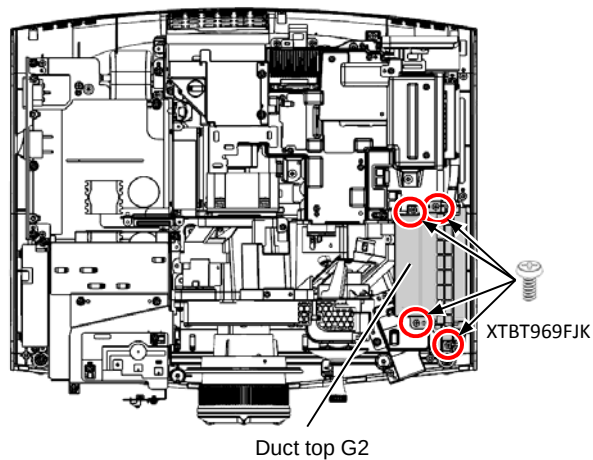


- * Remove 2 screws (ordinal silver screws) then remove G-PCB.

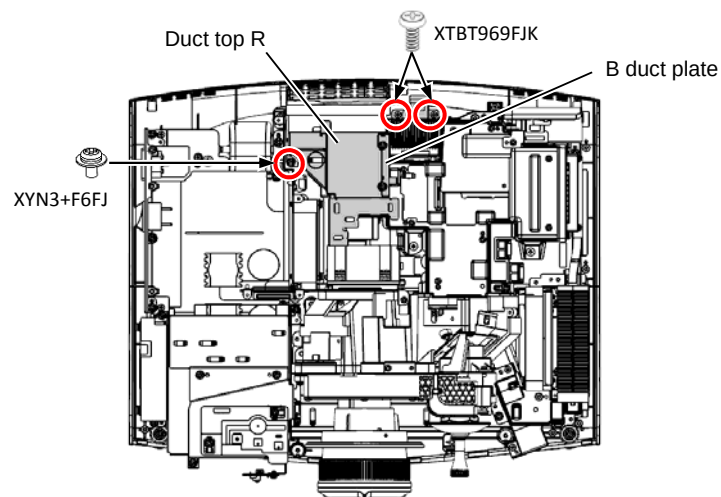


2. 4. Removal of Optical Block

1. Remove top cover, front cover and side cover R following the procedure 2.2
2. Remove A-PCB block in accordance with the procedure 2.3 1-2-3
3. Remove 4 screws (ordinal +type black tap screws) then remove the duct top G2.



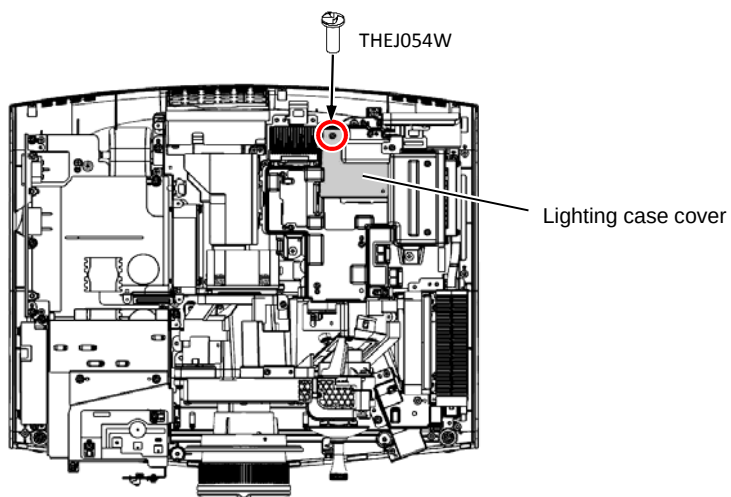
4. Remove 3 screws (2 x black tap screws and 1 silver screw with washers) then remove duct top R and B duct plate.



5. Remove one screw (one way screw) then remove the lighting case cover.

* Use the One-sided screw removal tool. (ref to TZSH07036).

* When tightening the screws, please use a flat-blade screwdriver.



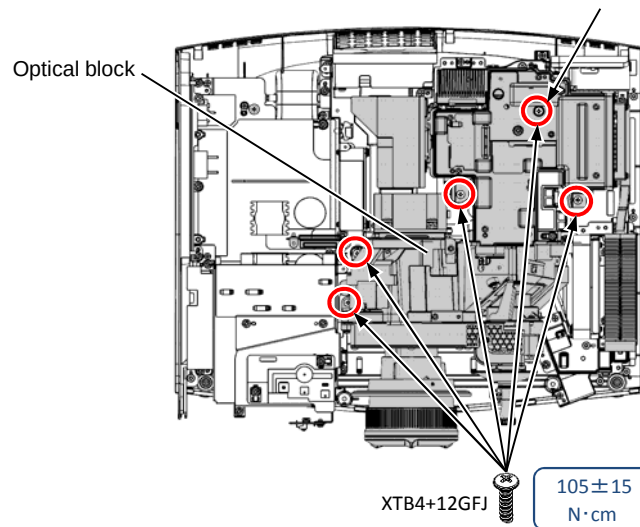
6. Remove 5 screws (5 x ordinal +type silver tap screws) then remove the optical block.

* Disconnect the flex cable on D-PCB from the laser unit, then proceed the removal step of optical block.

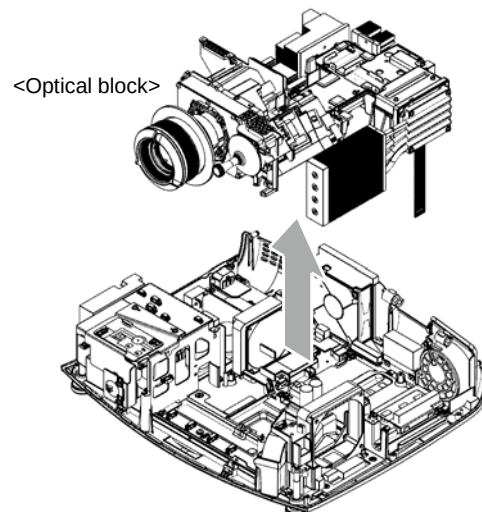
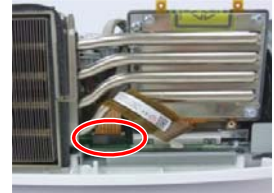
* Lift the optical block a little, then disconnect 2 cables on D-PCB from LED unit.

* Disconnect 1 cable on PD-PCB.

* Peel off the aluminum tape at the position of screw hole.

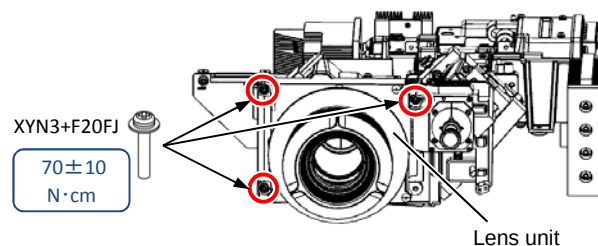


[CAUTION]
Unplug the Flex cable before
remove the optical block.

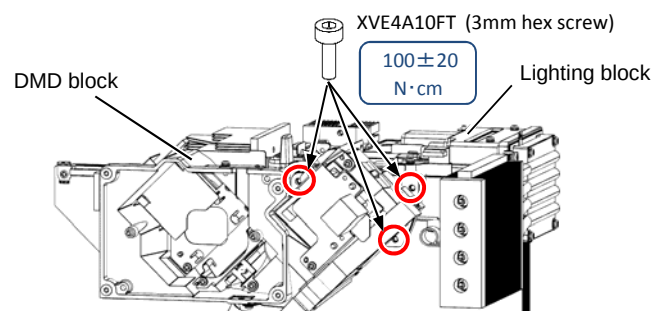


7. Remove 3 screws (ordinal + type silver screws with washers) then remove the lens unit from the DMD block.

* Please watch carefully not to loose the SIM spacers between lens unit and DMD block.

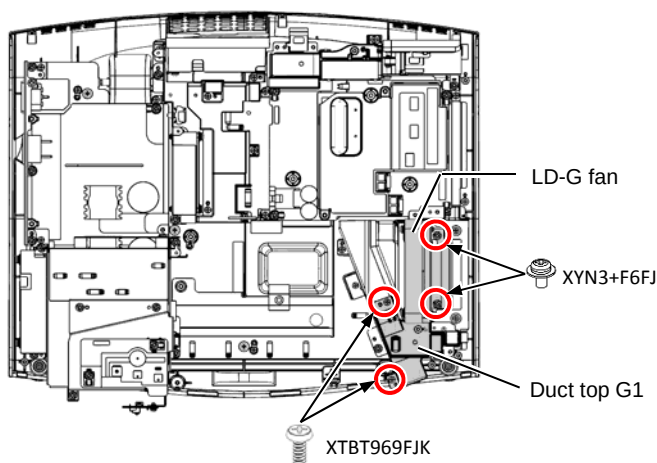


8. Remove 3 screws (3mm hex screws) then separate the DMD block from the lighting block.

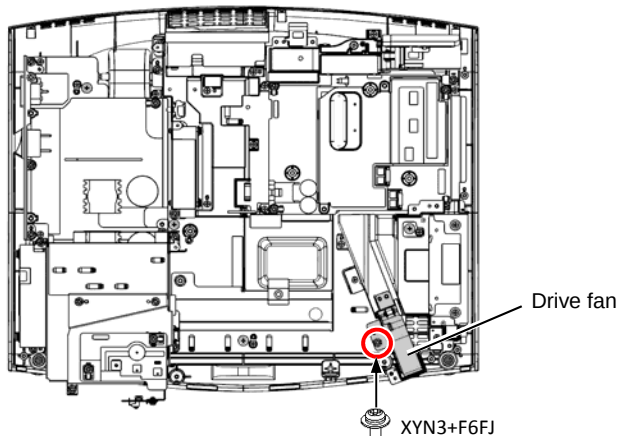


2. 5. Removal of D-P.C.Board

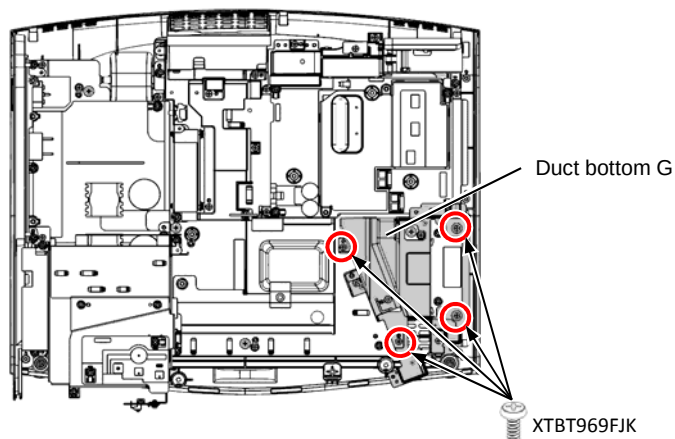
1. Remove optical block in accordance with the procedure till 2.4 6.
2. 1) Remove 2 screws (ordinal + type black tap screw) then remove duct top G1.
2) Remove 2 screws (ordinal + type silver screw with washers) then remove LD-G fan.



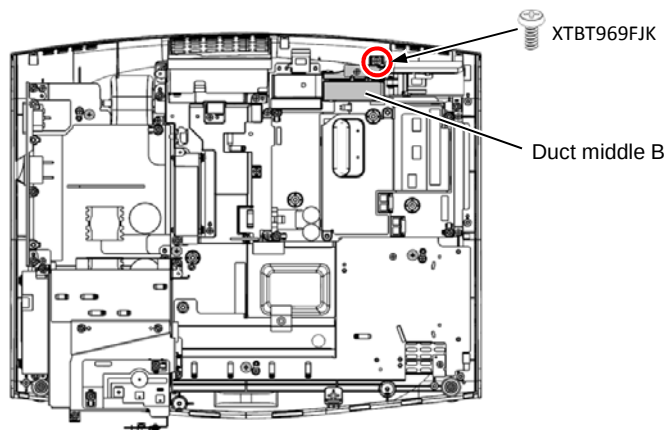
3. Remove 1 screw (ordinal + type silver screw with washers) then remove Drive fan.



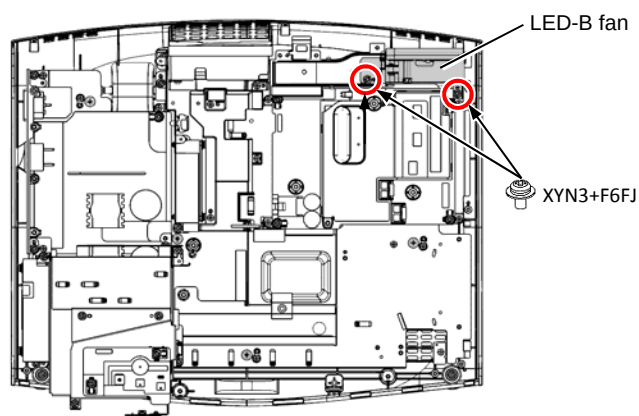
4. Remove 4 screws (ordinal + type black tap screws) then remove the duct bottom G.



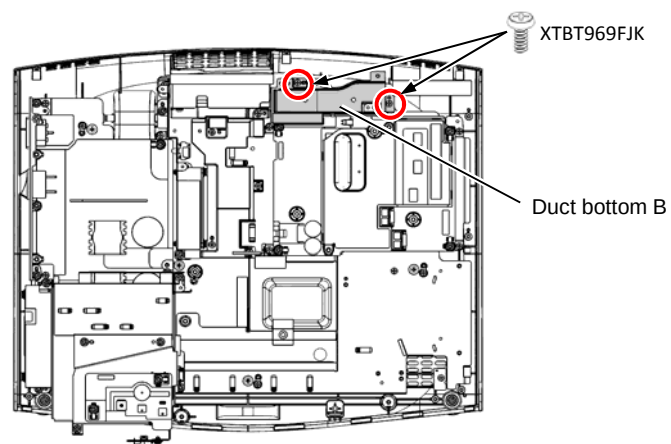
5. Remove 1 screw (ordinal + type black tap screw) then remove the duct middle B.



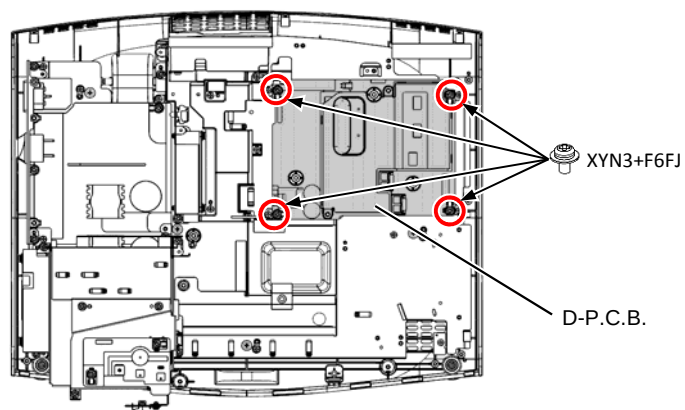
6. Remove 2 screws (ordinal + type silver screws with washers) then remove LED-B fan.



7. Remove 2 screws (ordinal + type black tap screws) then remove the duct bottom B.

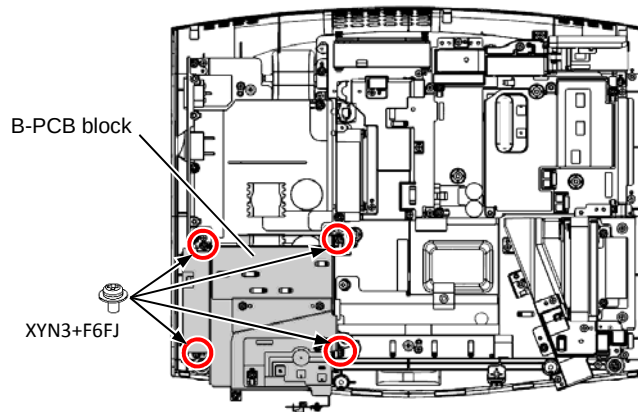


8. Remove 4 screws (ordinal + type silver screws with washers) then remove D-PCB.

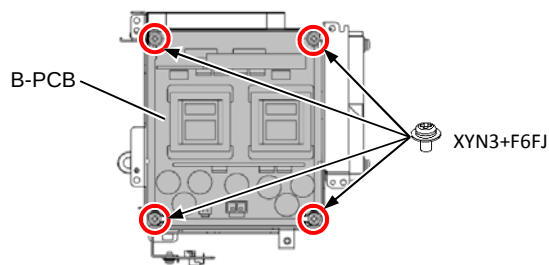


2. 6. Removal of B-P.C.Board

1. Remove optical block in accordance with the procedure till 2.4 6.
2. Remove 4 screws (ordinal + type silver screws with washers) then remove the B-PCB block.

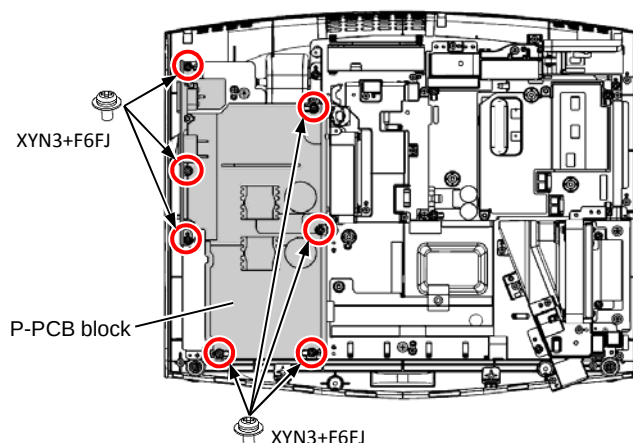


3. Remove 4 screws (ordinal + type silver screws with washers) then remove B-PCB.



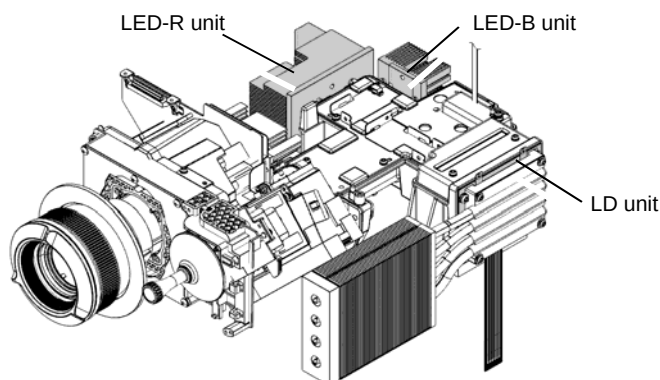
2. 7. Removal of P-P.C.Board

1. Remove B-PCB in accordance with the procedure till 2.6 2.
2. Remove 7 screws (ordinal + type silver screws with washers) then remove P-PCB block.

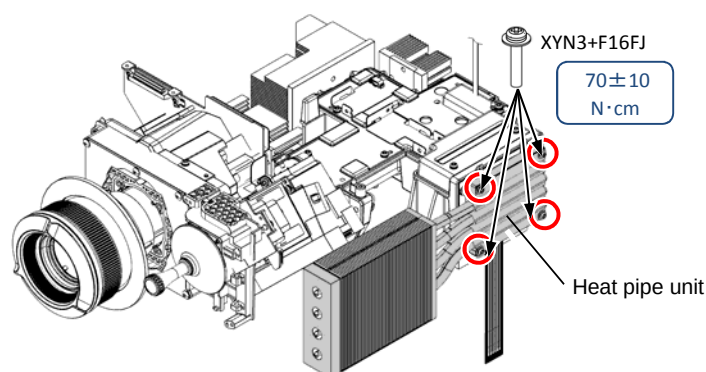


2. 8. Removal of LD unit, LED-B Unit and LED-R Unit

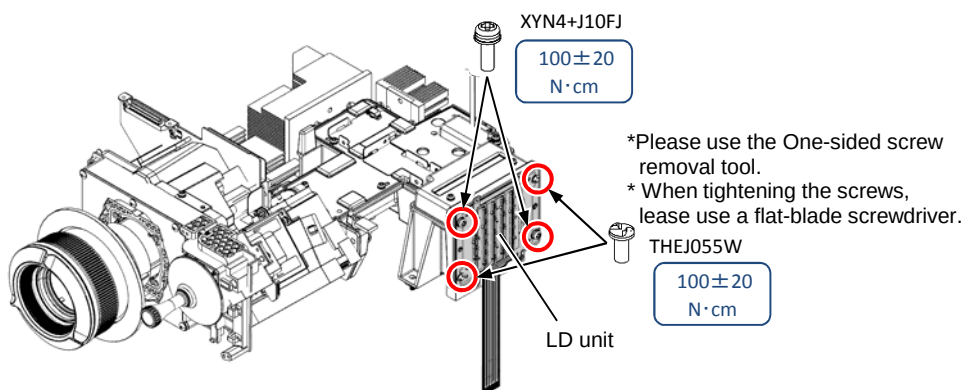
1. Remove optical block in accordance with the procedure till 2.4 6.



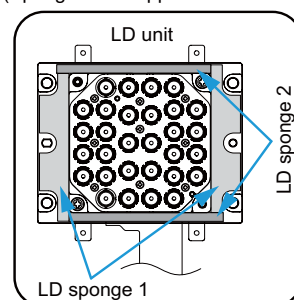
2. Remove 4 screw (ordinal + type silver screws with washers) then remove the heat pipe unit.



3. Remove 4 screws (one way screws) then remove LD unit.

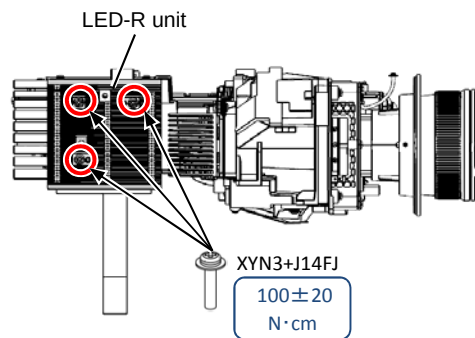
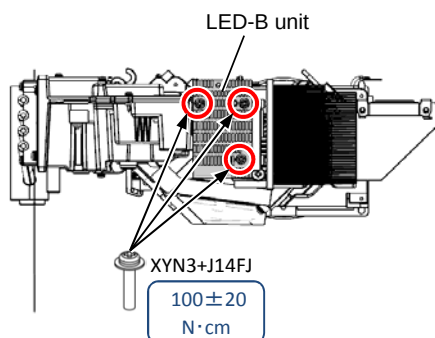


LD unit dustproof sponge position
(Sponges are supplied with LD unit.)



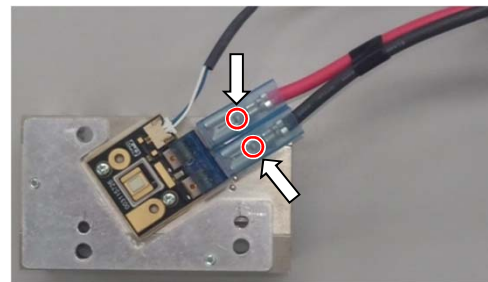
[Note] Please refer to the "Procedure for Assembling of LD unit and Heat-pipe unit (page DIS-15)"
about assembling and grease painting procedure.

4. Remove 3 screws on each color (ordinal + type silver screws with washers) then remove LED-B unit and LED-R unit.



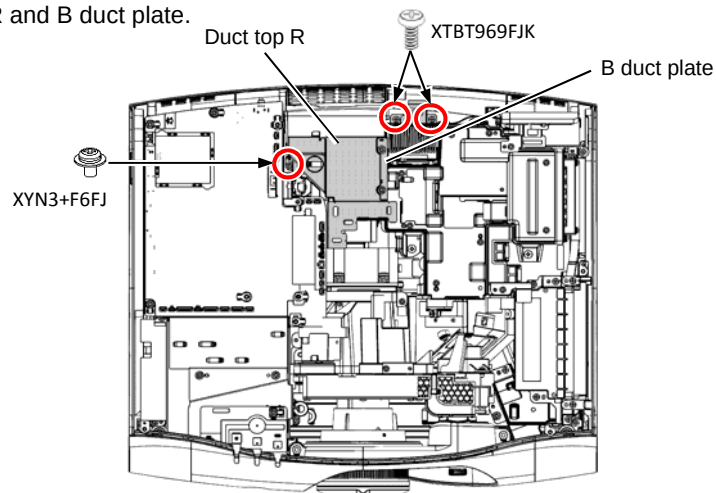
< Notice >

- * Please pull horizontally the flat type connection terminal of the LED unit, while holding the part of an arrow.

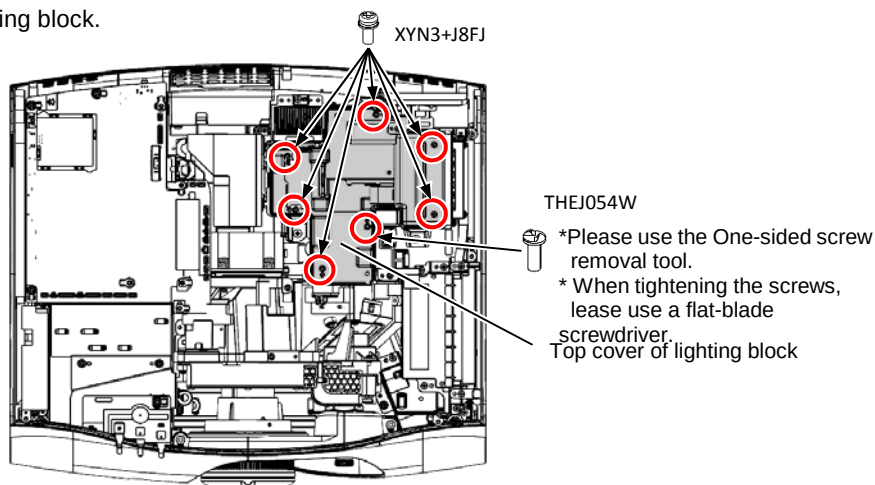


2. 9. Removal of Phosphor wheel

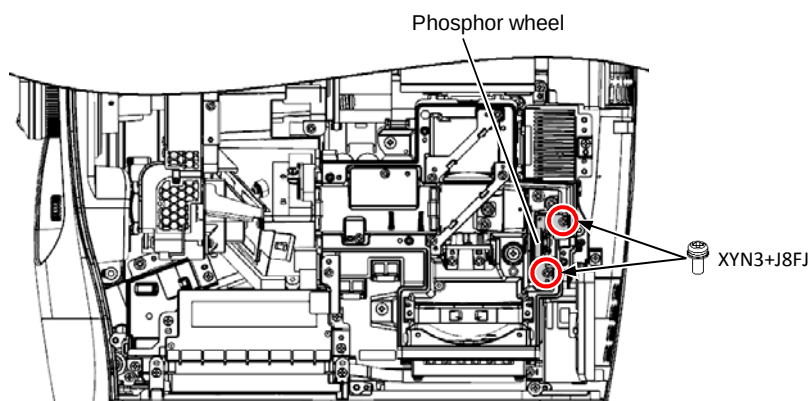
1. Remove top cover in accordance with the procedure till 2.2 1
2. Remove 3 screws (2 x ordinal type black tap screws and 1 x ordinal + type silver screw with washers) then remove duct top R and B duct plate.



3. Remove 7 screws (6 x ordinal + type silver screws with washers and 1 one way screw) then remove the top cover of lighting block.



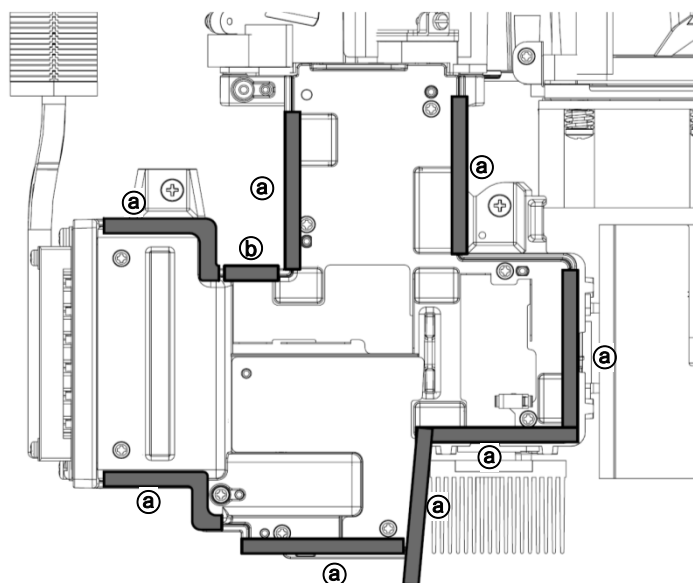
4. Remove 2 screws (ordinal + type screws with washers) then remove the phosphor wheel.



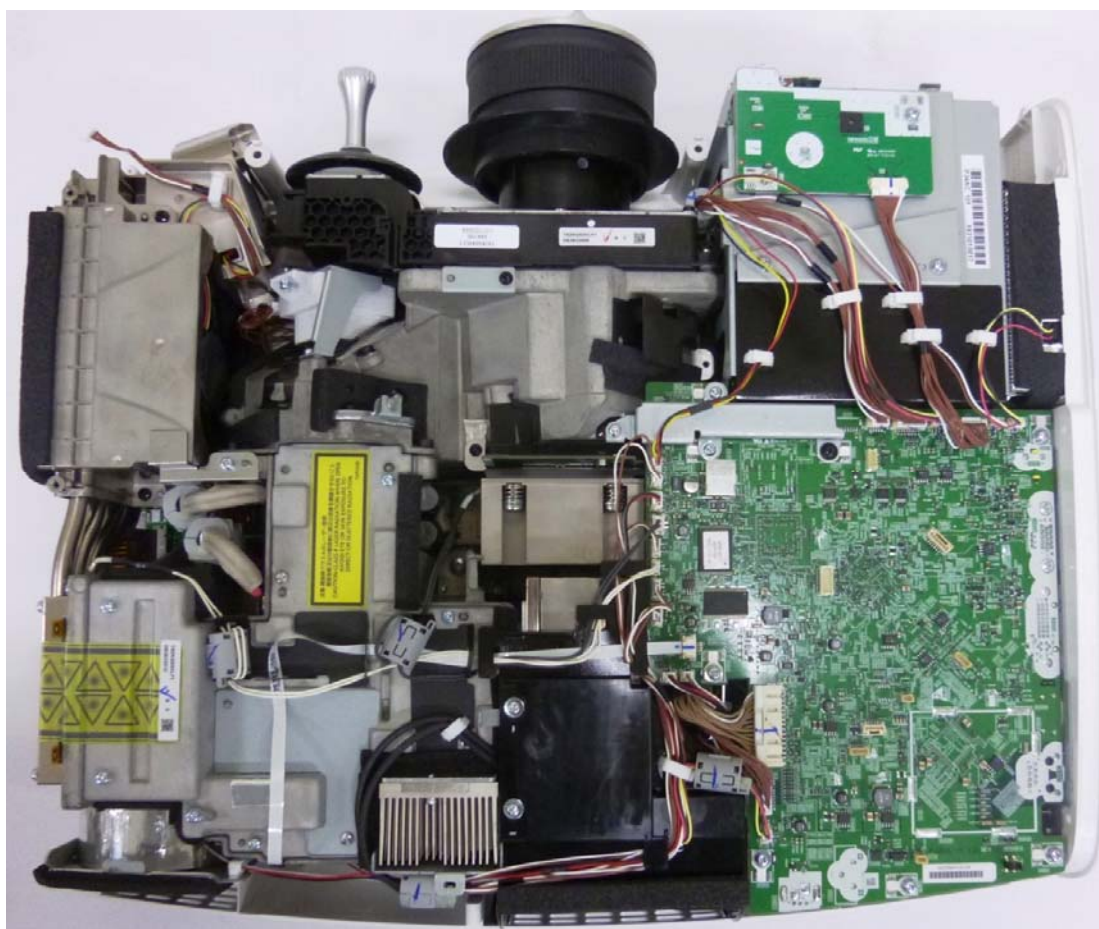
5. When assembling, the sponge of a lighting top case sticks a new sponge on the original position.

Ⓐ : TMKH589 × 8

Ⓑ : TMKH512 × 1



< Reference > Wiring diagram



2.10. Procedure for Assembling of LD unit and Heat-pipe unit

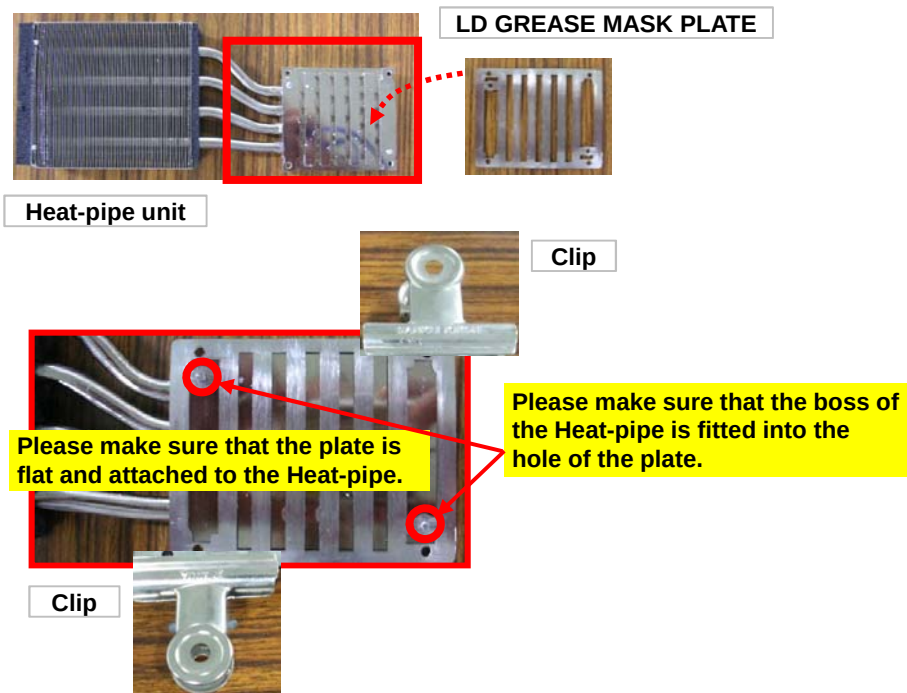
2.10.0. Preparation

Necessary tools and grease

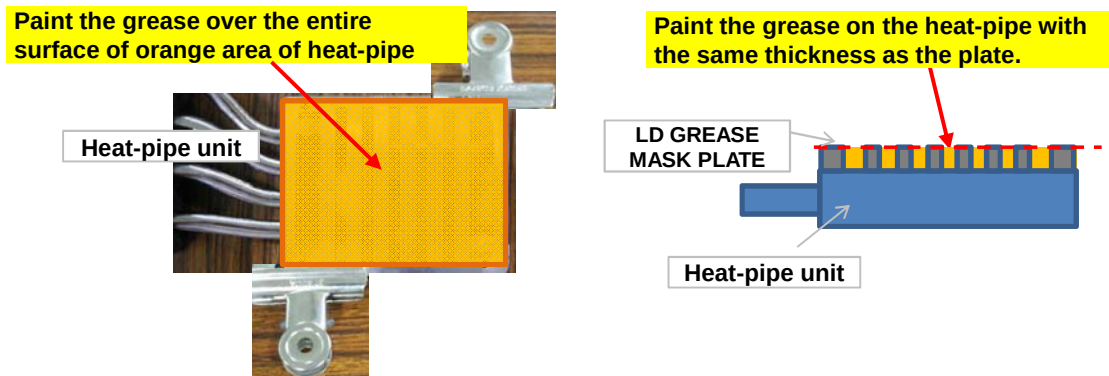
No.	Item	Trmark
1	Philips screw driver (Normal ones)	
2	Torque driver (60 cN·m ~ 80 cN·m) • Bits (① +bit No.1, ② + bit No.2)	
3	LD GREASE MASK PLATE • Part No. : TZSH07039	
4	Spatula	For painting the grease
5	Grease • Please make sure to use the grease below for assembling LD unit and Heat-pipe. • Please purchase this grease locally. [Information of grease] Manufacturer : Shin-Etsu Chemical Co.,Ltd Item : Thermal Interface compounds (High reliability) Model : G-776 Packing : 100g or 1kg	Please contact service department of VSBD for the detail.

2.10.1. Greasing for Heat-pipe unit

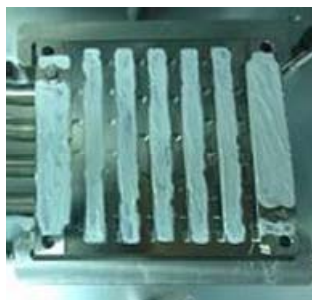
1. Set a LD GREASE MASK PLATE on a Heat-pipe unit by clips as shown below.



2. Paint the grease on the Heat-pipe unit by spatula.



3. Remove the LD GREASE MASK PLATE.

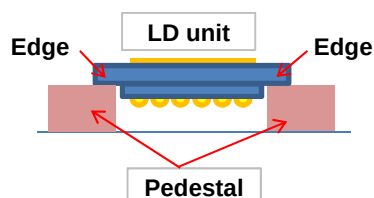


2.10.2. Greasing for Heat-pipe unit

< Caution for LD unit >

- Don't put a LD unit on the desk otherwise LD lenses may be damaged.
Please prepare some pedestals and use these as shown below.
- Don't touch the LD lenses on the LD unit.
- Don't touch the terminal of flexible cable on the LD unit.

Don't put the LD unit on the desk

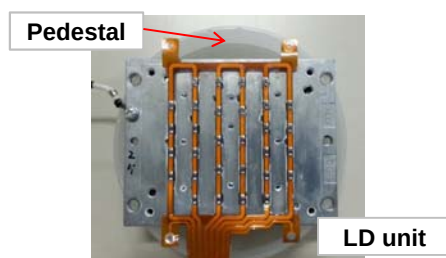


LD lenses

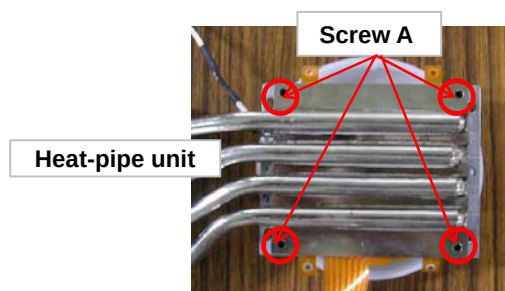


Don't touch the terminal

1. Set the LD unit on a Pedestal.



2. Set the Heat-pipe unit on the LD unit.
3. Tighten 4 screws A (Original silver screws with washers) by torque driver.



Tightening torque
• Screw A : 70 ± 10 cN·m

SECTION 3

Adjustments

Model No. PT-RZ470 Series
PT-RW430 Series

CONTENTS

1. Adjustment items and procedure	ADJ-2
1. 1. Lighting area adjustment	
1. 2. Lens tilt adjustment	
1. 3. EEPROM Data transfer	
1. 4. Model information setup	
1. 5. Airflow sensor calibration	
1. 6. Drive current, White balance, Color luminance adjustment	
1. 7. Color luminance adjustment	
2. Software Update procedure	ADJ-13
2. 1. Update by LAN Terminal connection (Main, Sub, Network Microprocessor)	
2. 2. Update by Serial Terminal Cnnection (Main, Sub ,DIGITAL LINK Microprocessor)	

1. Adjustment item and a procedure

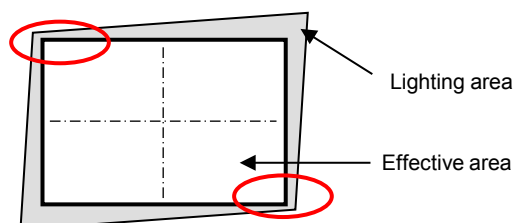
When the following components in this projector are replaced, adjustments are required. Adjust each item according to the table below.

Adjustment Items	Replaced parts	Remarks
1.1. Lighting area adjustment	DMD block / Optical block each part	
1.2. Lens tilt adjustment	DMD block / Lens unit	
1.3. EEPROM data transfer	A-P.C.Board	Save data to a PC before A-PCB exchange and write it into a new A-PCB.
1.4. Model information setup	A-P.C.Board	When 1.3 Data Transfer is successful, this is not necessary.
1.5. Airflow sensor compensation	A-P.C.Board / M3-P.C.Board	Adjust to after EEPROM data transmission is completed.
1.6. Drive Current, White balance, Color luminance adjustment	LD, LED-R, LED-B, Phosphor wheel	
1.7. Color luminance adjustment	PD-P.C.Board	

1. 1. Lighting area adjustment

1. 1. 1. Lighting area confirmation

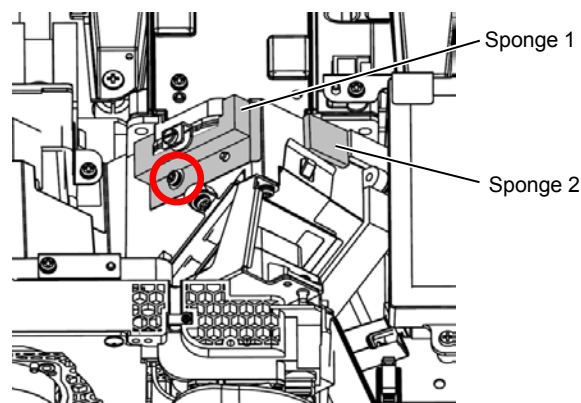
- After replacing the DMD block, check if any shade is visible in the DMD effective display area.
* Make the projection environment as dark as possible and project an all-white and all-black pattern (internal test pattern) for this check.
- When the Lighting area interferes with the effective area, adjust the lighting area.



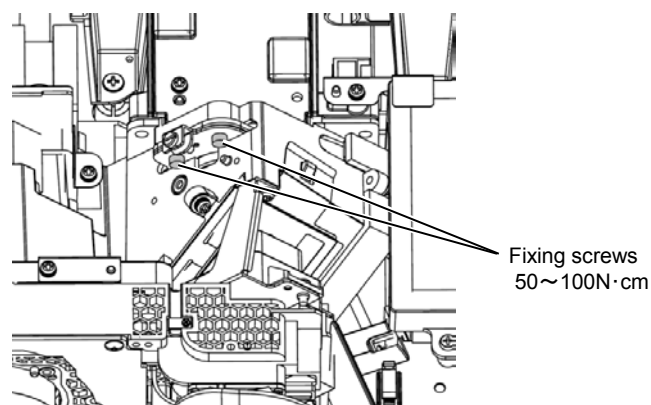
1. 1. 2. Lighting area adjustment

- Projection "All White" in internal test pattern.
(light power "NORMAL" and picture mode "DYNAMIC")
- Remove the sponge1 (one screw) and sponge2.

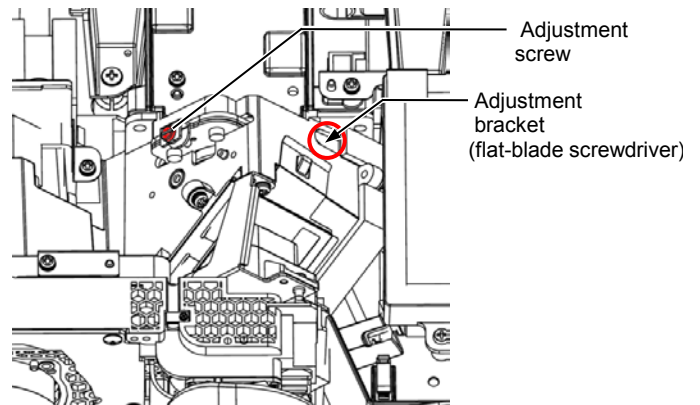
* Do not reuse sponges, please replace the new sponge.



- Loosen the fixing screws (2 pcs) in hex driver (2.5mm).



4. Adjustment screw coordinates the horizontal direction of the Lighting area with flat-blade screwdriver.
 - * Rotation of a screw is stopped in the middle position where a lighting area edge appears in right and left.
5. Adjustment bracket coordinates the vertical direction of the Lighting area with flat-blade screwdriver.
 - * Rotation of a screw is stopped in the middle position where a lighting area edge appears in up and down.

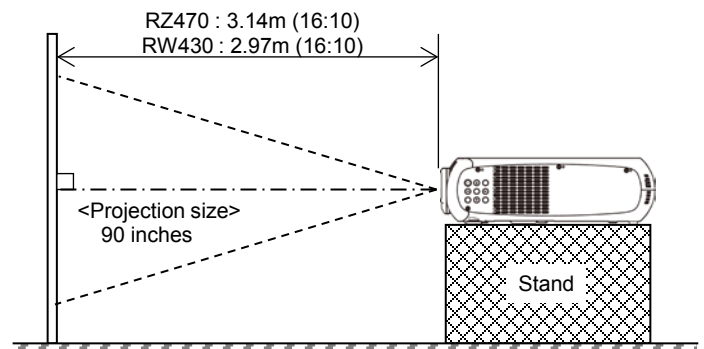


6. When adjustment is completed, tighten two fixation screws.
7. Stick the new sponge1 and sponge2, to original position.
 - * Do not reuse the old sponges.

1. 2. Lens Tilt Adjustment

1. 2. 1. Preparation

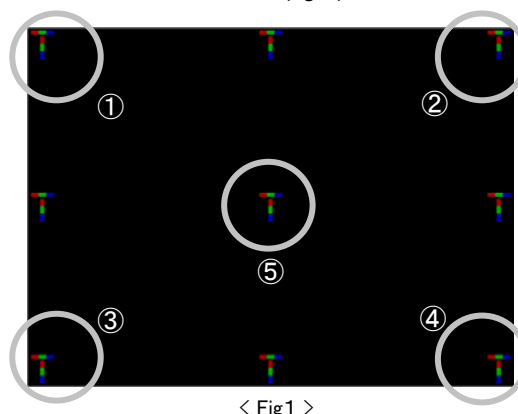
- < Projector setting before optical adjustment >
 - * Fix the shift position to the center and set the zoom ring to wide end.
 - * Installs so that a projection screen size is 2.29m(90") diagonal.
 - * Installs so that a projection lens light axis and screen center may become the same height.
 - * Installs so that a lens optic axis may become perpendicular to a screen.



1. 2. 2. Focus Confirmation

Note: It is necessary for the light axis to be perpendicular to the screen to make correct confirmation and adjustment.

1. Go into the Serviceman mode and select "Convergence pattern" in internal test pattern.
2. Rotate the focus ring and set the focus balance of ① to ⑤ (fig 1).



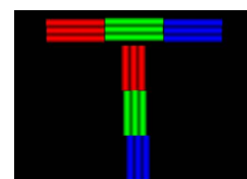
< Fig1 >

3. Judgement

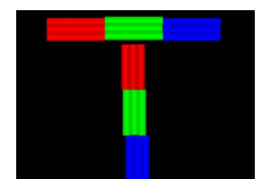
It is OK with C level or higher when ① to ⑤ focus balance is set.

- A: Each dot can be seen clearly. (There is a gap between dots.)
- B: Each line can be seen clearly. (There is a gap between lines.)
- C: Each line can be recognized but border of each line is not clear.
- D: Each line cannot be recognized.

In case of D, please adjust the lens tilt adjustment.



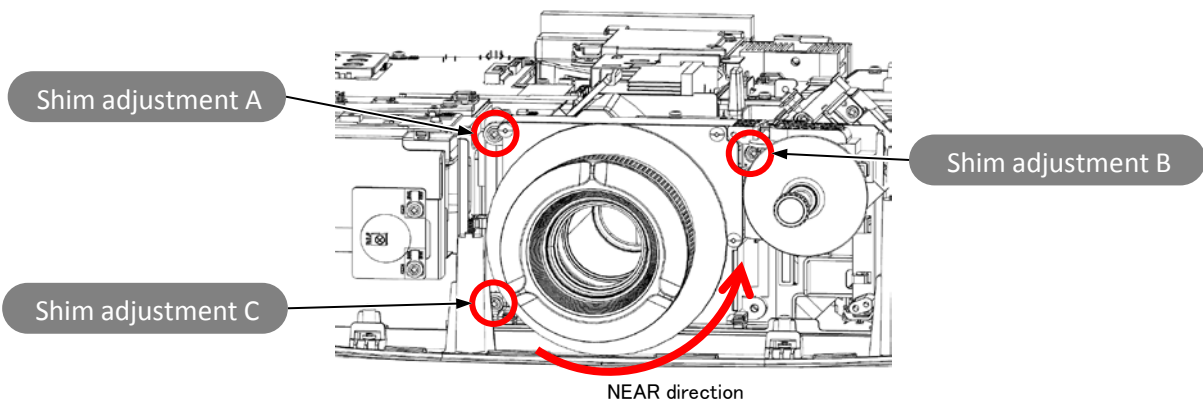
Limit in OK level



NG level

1. 2. 3. Lens Tilt adjustment

1. Rotate focus ring to NEAR direction and stop it where it focuses at last of 4 corners (①②③④).



2. Measure the distance of best focus points and the screen for 3 locations other than last focused corner.

* Define that Maximum measured distance as X1st and 2nd distance as X2nd.

3. Make the shim adjustment based on the measured value and the chart below.

* 0.3mm thick shim is set as the factory default. Correction combining Sim of 0.1 mm/0.3 mm if needed.

Part number : 0.3mm sim TENC5815, 0.1mm sim TENC5816

- (1) In case of " $X1st - X2nd \geq 0.2X1st$ "

X1st position	Shim adjustment Position	Shim adjustment value		
		$35 < X1st \leq 70cm$	$70 < X1st \leq 105cm$	$105 < X1st \leq 140cm$
①	B	+0.1 mm	+0.2 mm	+0.3 mm
②	A	+0.1 mm	+0.2 mm	+0.3 mm
③	A	-0.1 mm	-0.2 mm	-0.3 mm
④	C	+0.1 mm	+0.2 mm	+0.3 mm

- (2) In case of " $X1st - X2nd < 0.2X1st$ " <Tilt for H direction>

X1st position	Shim adjustment Position	Shim adjustment value		
		$35 < X1st \leq 70cm$	$70 < X1st \leq 105cm$	$105 < X1st \leq 140cm$
①, ③	A & C	-0.1 mm	-0.2 mm	-0.3 mm
②, ④	B	-0.1 mm	-0.2 mm	-0.3 mm

- (3) In case of " $X1st - X2nd < 0.2X1st$ " <Tilt for V direction>

X1st position	Shim adjustment Position	Shim adjustment value		
		$35 < X1st \leq 70cm$	$70 < X1st \leq 105cm$	$105 < X1st \leq 140cm$
①, ②	C	-0.1 mm	-0.2 mm	-0.3 mm
③, ④	A & B	-0.1 mm	-0.2 mm	-0.3 mm

4. Whne the adjustment is finished, reconfirm it with procedure in "1.2.2 focus confirmation".

1. 3. EEPROM data transfer

1. 3. 1. Required equipments

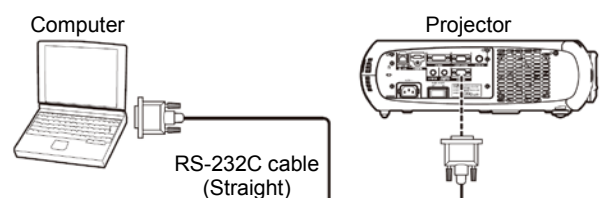
1. Computer : Use it for the transfer of backup data.
2. Communication cable : D-sub 9pin (male/female RS-232C straight)
3. Service Software : [DataLogBackup tool] Service software is downloaded from the projector service homepage.

1. 3. 2. Connection Preparations

1. Confirm the projector's ID, baudrate, prity and take a memo.
2. Connect the SERIAL IN terminal of projector and PC with a RS-232C cable.

[Caution]

- Computer, please set so as not to standby or shutdown.
- Set the "SERIAL" in "RS-232C INPUT SELECT" of "PROJECTOR SETUP" menu.

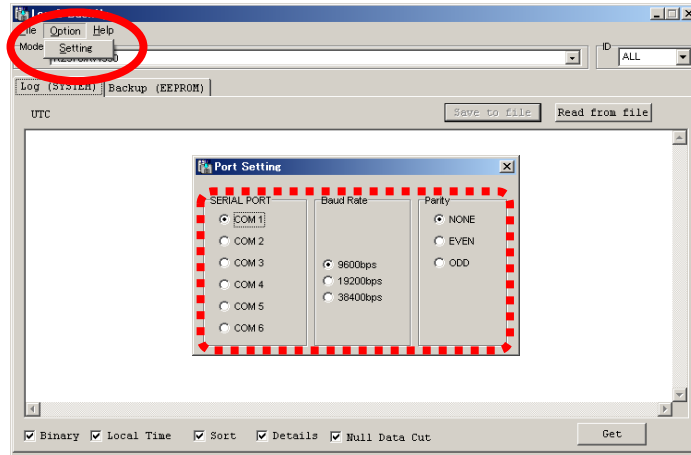


1. 3. 3. Backup the EEPROM data (It is before circuit board exchange)

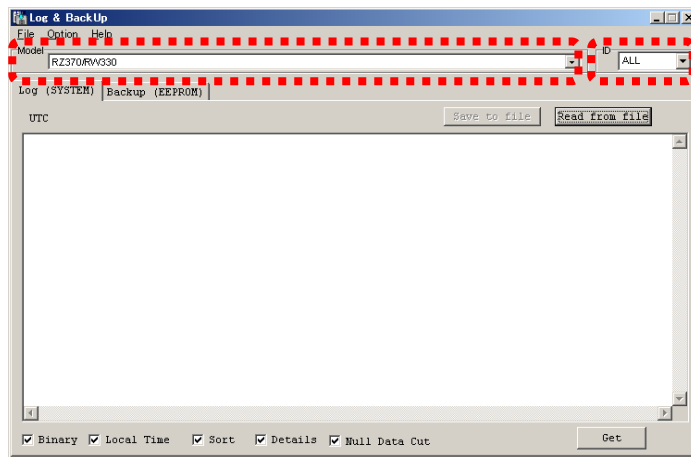
1. Switch the projector to "Normal-Standby" mode (POWER indicator is Lighting in red).
2. Start up service software [DataLogBackup.exe] with a computer.



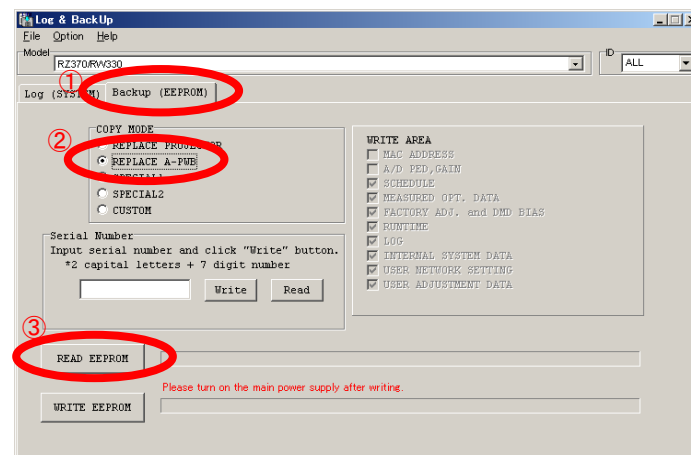
3. Select "Option " → " Setting" and set Serial Port of the computer, Baud Rate and Parity.



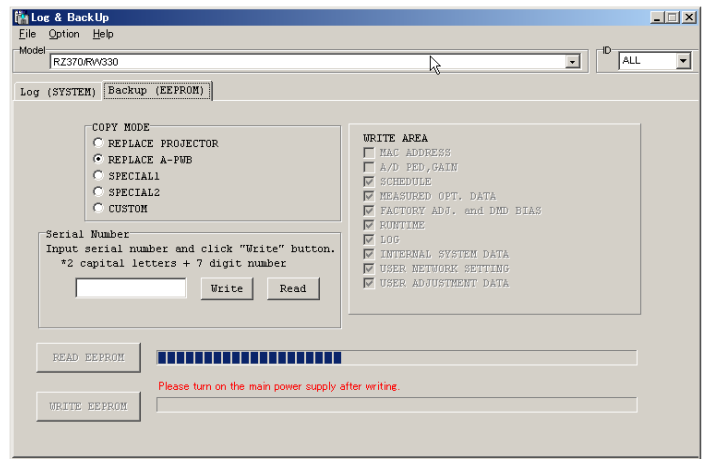
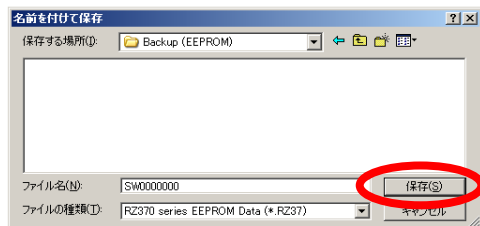
4. Select a model number and ID.



5. 1) Select "Backup (EEPROM)".
- 2) Checkmark in "REPLACE A-PWB" of "COPY MODE".
- 3) Click an [READ EEPROM] button.



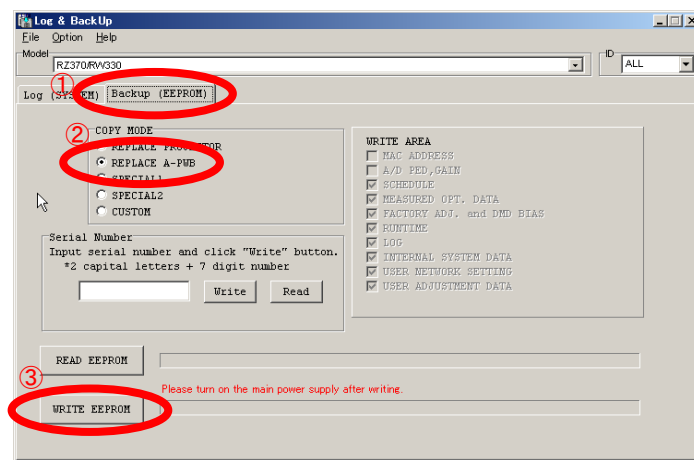
6. Select the save place and click the [Save(S)] button.



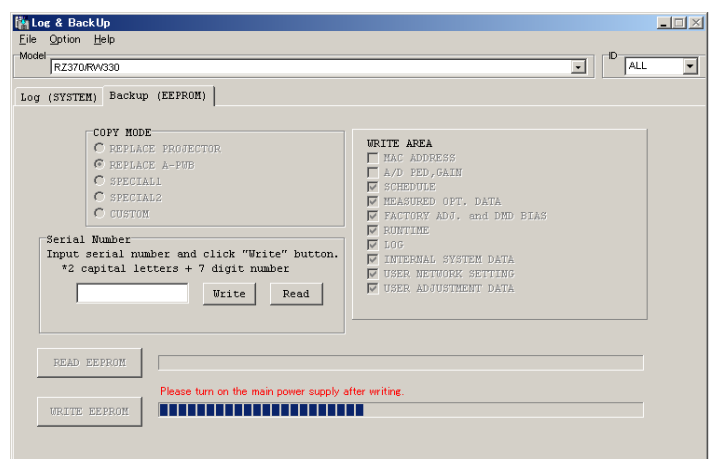
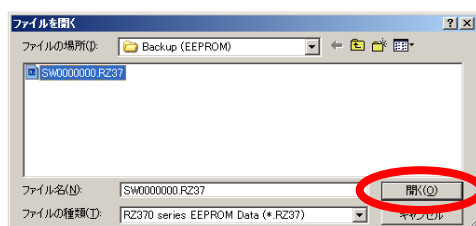
7. When the progress bar reaches the right-side end, and "READ/WRITE button" returns to normal display from grayed out, save of data is complete. Select "File" → "Quit", and please be finished.

1. 3. 4. Restore the Backup EEPROM data (After circuit board exchange)

1. Switch the projector to "Normal-Standby" mode (POWER indicator is Lighting in red).
2. Start up service software [DataLogBackup.exe] with a computer.
3. Select "Option" → "Setting" and set Serial Port of the computer, Baud Rate and Parity.
4. Select a model number and ID.
5. 1) Select "Backup" (an EEPROM).
- 2) Checkmark in "REPLACE A-PWB" of "COPY MODE".
- 3) Click an [WRITE EEPROM] button.



6. Select the file and click the [OPEN(O)] button.

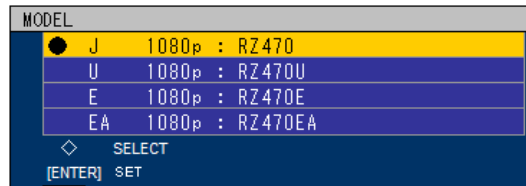


7. When the progress bar reaches the right-side end, and "READ/WRITE button" returns to normal display from grayed out, write of data is complete. Select "File" → "Quit", and please be finished.

8. If the restoration of data is completed, turn the MAIN POWER off then MAIN POWER on.

1. 4. Model Information Setup

1. Setting to Service mode and select sub menu "MODEL" of main menu "EXTRA OPTION".
2. Select Model number then push ENTER button.
3. Reboot the projector. Confirm the Model number is correctly set.

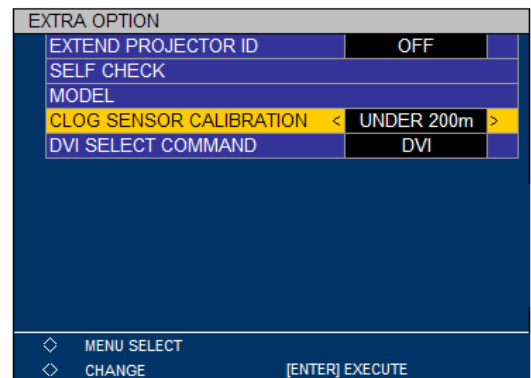


1. 5. Airflow Sensor Calibration

Adjusting air flow sensor value in the electronic circuit.

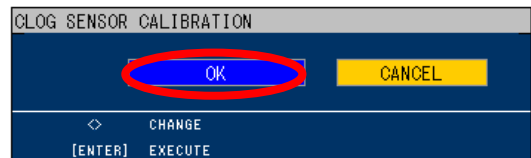
- * Process should be made on the complete unit at table top mode with angle adjuster feet set to default (flat).
- * Unit needs to be clearly away from other heat producing items (such as air conditioner, high temp)

1. Go into Service Mode then open main Menu--> EXTRA OPTION.
Select "Clog Sensor Calibration" in the Sub menu.
2. Select the meters above the sea level of the work place
and push the "ENTER" button.



3. Select "OK" and push ENTER button. Then calibration starts.

- * While calibrating, the image becomes all white.
- * Do not turn off the projector while calibration process is on going.



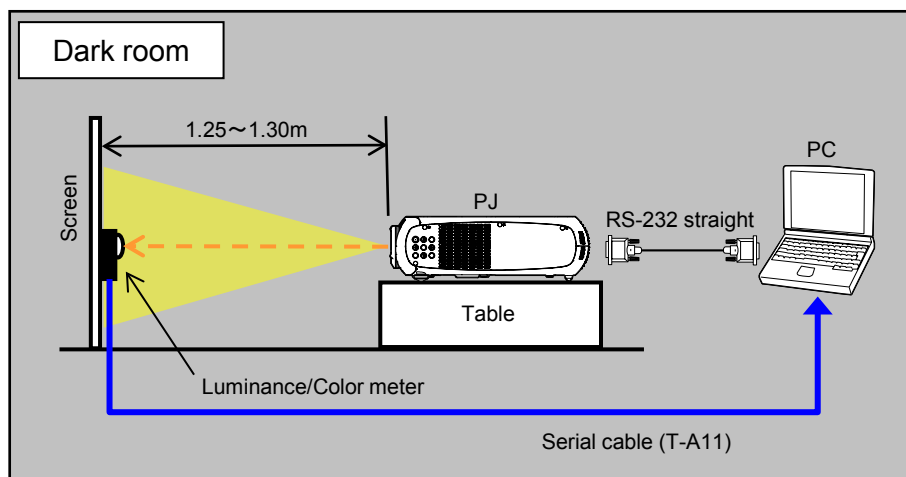
4. After about 15 min, projector returns to show normal image, then calibration completed.
Reboot the projector and check if the unit works OK.

1. 6. Drive Current, White balance, Color luminance adjustment

This process shows how to adjust each light source device (LED-R, LED-B, LD, Phosphor wheel) driving level. Please follow these process when these devices are replaced.

1. 6. 1. Necessary equipments

1. Dark room : To measure the light level/color points.
2. Screens : Appros 40 inch diagonal size white mat type screen.
3. Luminance/Color meter : recommend Konica-Minolta CL-200.
4. Serial cable from Luminance/Color meter to PC : In case using CL-200, T-A11 is the type number.
5. PC : To make communication between Luminance/Color meter to the projector.
6. Serial cable : RS-232C streight with D-sub9 male/female type for communicationg between PC to projector.
7. Service tool software : SSI_Service_Tool (Please download from service web page)

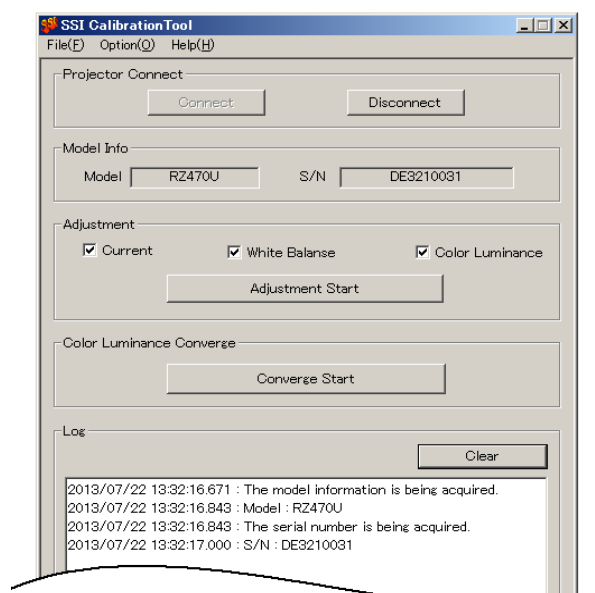
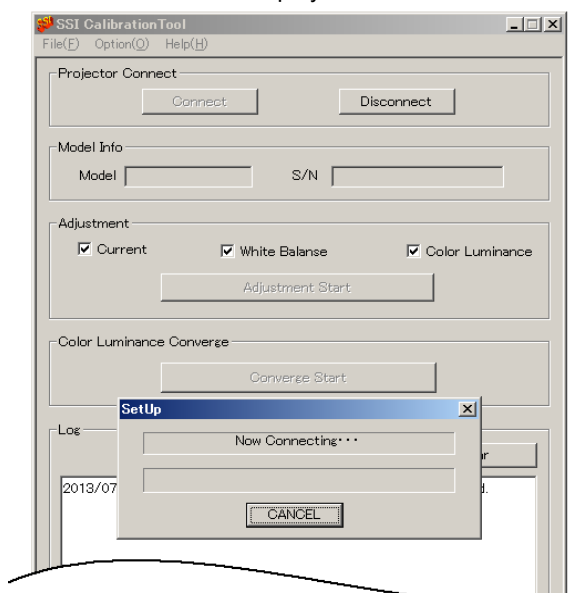


1. 6. 2. Preparation

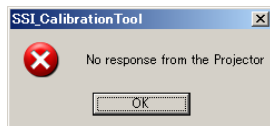
1. Set the projector lens at center position with wide end zoom.
2. Set the throw distance at 1.25~1.30m (approx 40inch)
3. Connect serial cable between projector and PC.
4. Connect Serial cable (T-A11) between Luminance/Color meter (CL-200A).

1. 6. 3. Start up the equipments

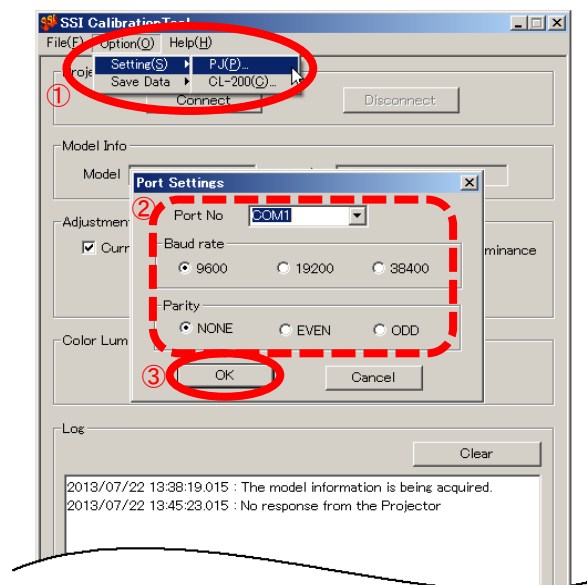
1. Power on the projector.
2. Start-up the service tool software "SSI_Service_Tool" on the PC.
3. Communicate automatically, when start the SSI_Service_Tool.
 - "Model Info" will be displayed if it succeeds in communication.



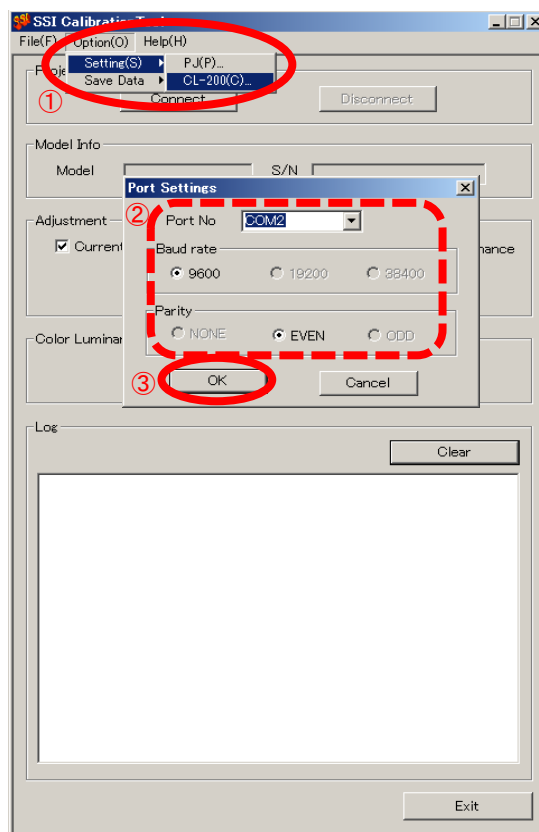
- Case of a communication fault, it is displayed as "No response from the Projector".



In this case, select [Option] ⇒ [Setting] ⇒ [PJ].
Projector and computer is connected [Port No], [Baud Rate], [Parity] please set correctly.

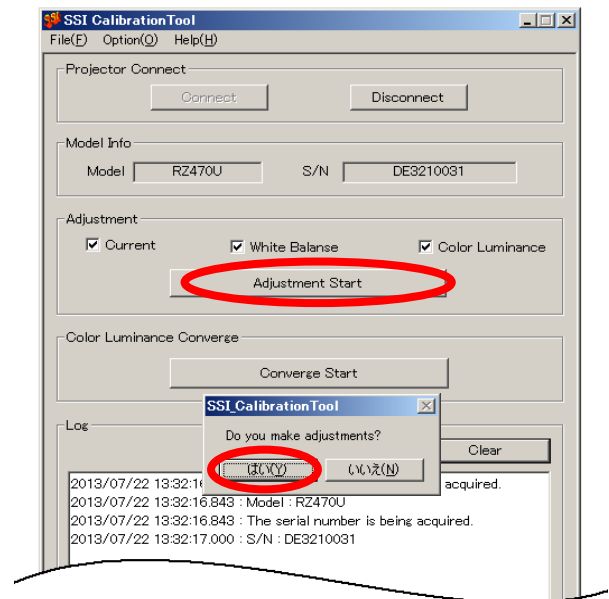


- 1) Select to [Option] => [Setting] => [CL-200].
- 2) CL-200 and computer is connected [Port No], [Baud Rate], [Parity] please set.
- 3) [OK] button is clicked after a setup is completed.

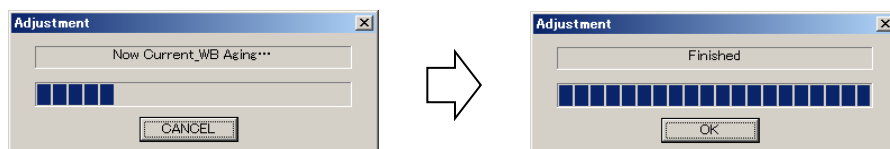


1. 6. 4. Adjustment

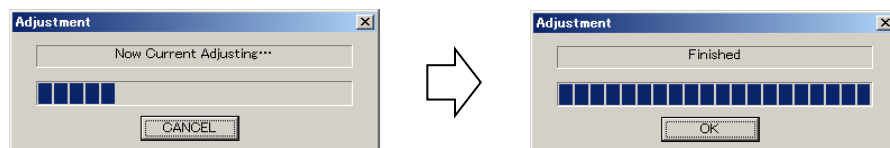
- 1) Put a check mark into all Adjustment items, and click the [Adjustment Start] button.
- 2) Click the [yes] button of an adjustment start confirmation message.



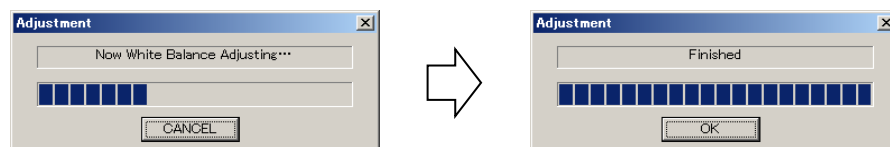
2. Aging is started for "current adjustment" and "White Balance adjustment". (About 15 minutes)
When the progress bar reaches the right end, aging is complete. ("Finished" message is displayed)



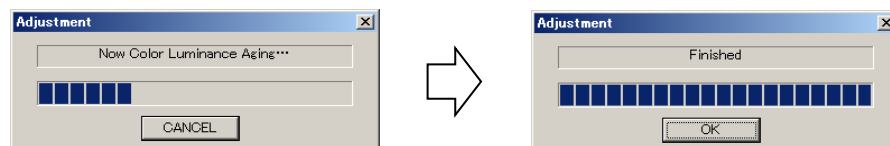
3. Click the [OK] button or after 3 seconds progress, will start Current adjustment.
When the progress bar reaches the right end, Current adjustment is complete. ("Finished" message is displayed)



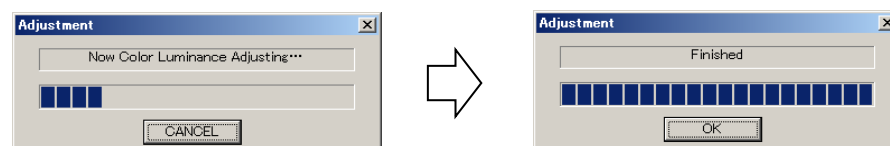
4. Click the [OK] button or after 3 seconds progress, will start White Balance adjustment.
When the progress bar reaches the right end, White Balance adjustment is complete. ("Finished" message is displayed)



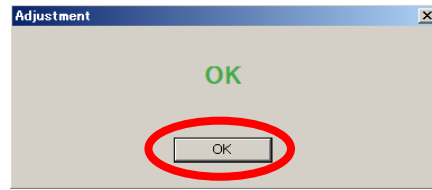
5. Aging is started for "Color Luminance adjustment".
When the progress bar reaches the right end, aging is complete. ("Finished" message is displayed)



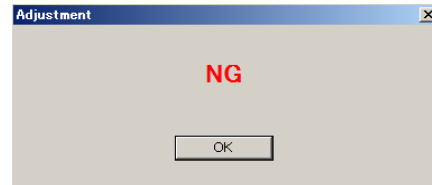
6. Click the [OK] button or after 3 seconds progress, will start Color Luminance adjustment.
When the progress bar reaches the right end, Color Luminance adjustment is complete.
("Finished" message is displayed)



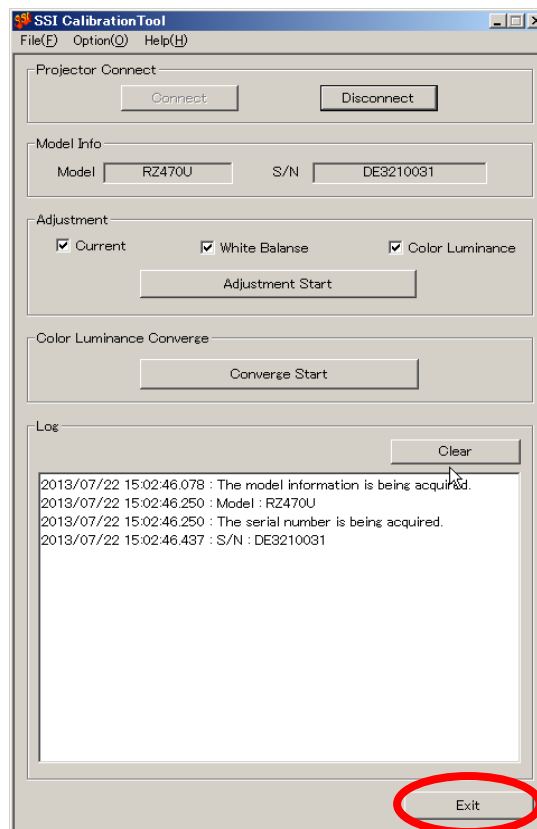
7. When all adjustment process are completed, click "OK" button or click "X", then return to the service tool screen.



[Note] When displayed as "NG", please redo adjustment again.



8. Please close the service tool by clicking the [Exit] button.



9. Reboot projector and check if it works fine.

1. 7. Color luminance adjustment

When PD-PCB is replace, Color luminance adjustment is required.

1. 7. 1. Necessary equipment

* Same as "1. 6. 1."

1. 7. 2. Preparation

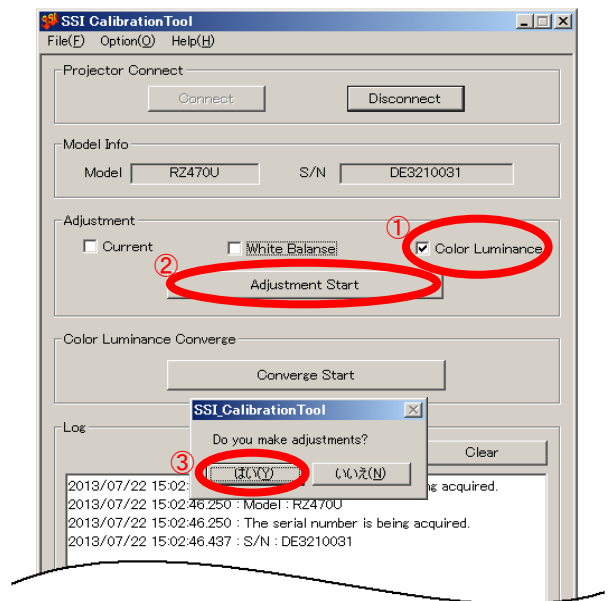
* Same as "1. 6. 2."

1. 7. 3. Start up equipments

* Same as "1. 6. 3."

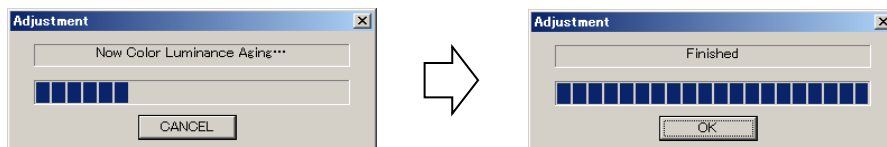
1. 7. 4. Adjustment

- 1) Select only "Color Luminance" of an adjustment item puts in a check mark. (un-check the other items)
- 2) Click the [Adjustment Start] button.
- 3) Click the [yes] button of an adjustment start confirmation message.



2. Aging is started for "Color Luminance adjustment".

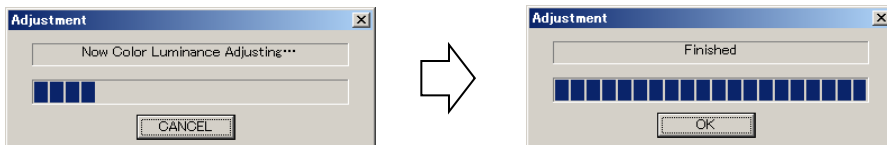
When the progress bar reaches the right end, aging is complete. ("Finished" message is displayed)



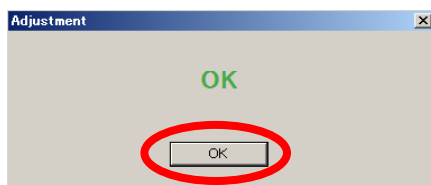
3. Click the [OK] button or after 3 seconds progress, will start Color Luminance adjustment.

When the progress bar reaches the right end, Color Luminance adjustment is complete.

("Finished" message is displayed)



4. When all adjustment process are completed, click "OK" button or click "X", then return to the service tool screen.



[Note] When displayed as "NG", please redo adjustment again.

5. Please close the service tool by clicking the [Exit] button.
6. Reboot projector and check if it works fine.

2. Software Update procedure

- * LAN terminal connection, be able to update the Main, Sub, Network microprocessor software.
- * Serial terminal connection, be able to update Main, Sub, DIGITAL LINK microprocessor software.

2. 1. Update by the LAN terminal connection (Main/Sub/Network)

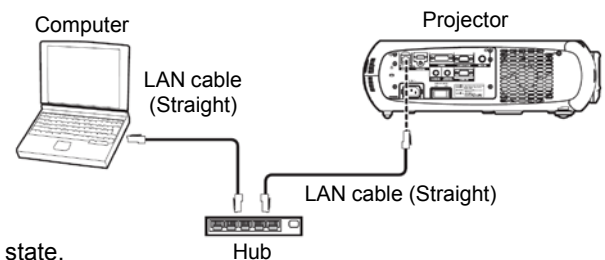
2. 1. 1. Equipment to be used

1. Computer : Use it for the transfer of backup Software.
2. Communication cable : LAN cable. (When is connected directly; crossing cable)
3. Service Software : [MainSubNet Update Tool.exe] Service software is downloaded from the projector service homepage.
4. Microprocessor Software: Please download the file from the projector service homepage to the PC.

2. 1. 2. Connection Preparations

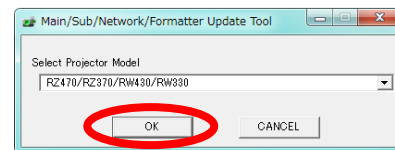
1. Confirm the network IP address of the projector and take a note.
2. Set the IP address of the computer to the approximate value of the projector IP address.
3. Connect the LAN terminal of the projector to the PC with a LAN cable.

- * Set up a PC in advance, prevent be in the standby/ shut-down state.
- * "DIGITAL LINK MODE" of the NETWORK menu on projector, set to [AUTO] or [ETHERNET].

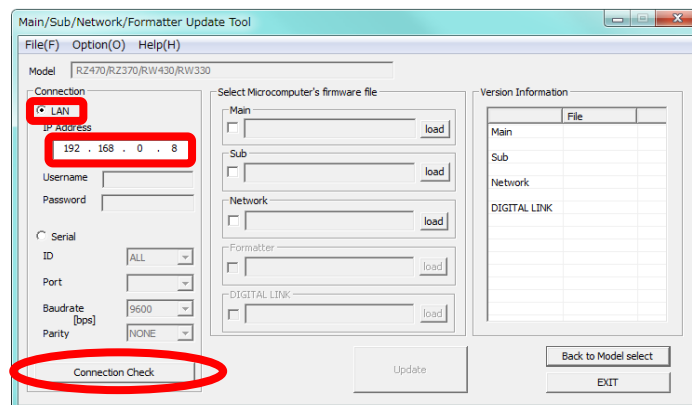


2. 1. 3. Update procedure

1. Switch the projector to "Normal-Standby" mode (POWER indicator is Lighting in red).
2. Start up service software with a computer, select Model, and then click the [OK] button..

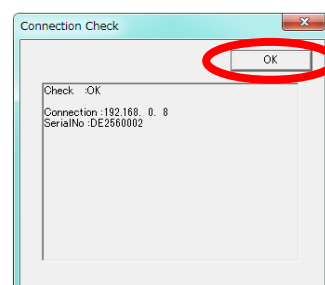


3. Select "LAN" in "Connection" and input the IP address of the projector, and click [Connection Check] button.

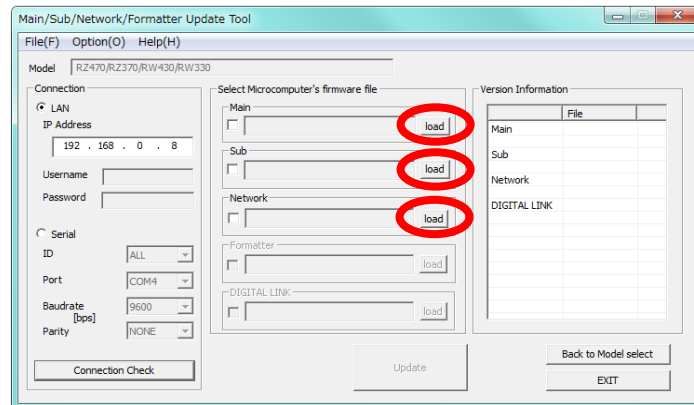


4. A result of the connection confirmation is displayed.

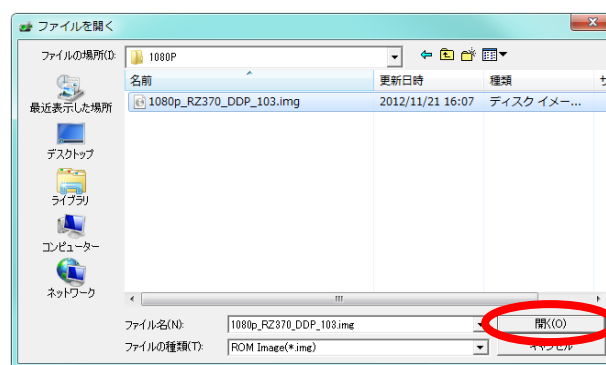
- " Check : OK " → Click [OK] button and advance next.
- " Check : NG " → Come back to item 3., and please confirm whether setting is right.



5. Select Microprocessor to update, and click [load] button.



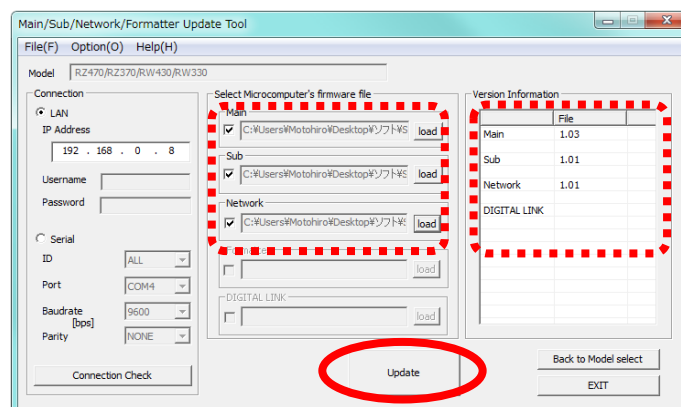
6. Appoint the microcomputer software that took in a computer beforehand, and click [Open] button.



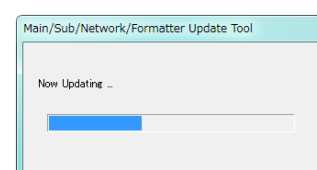
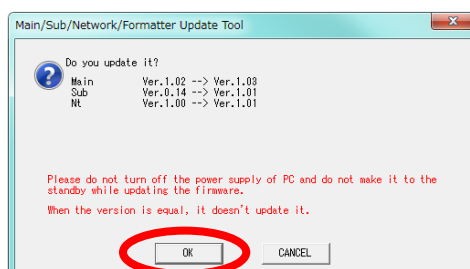
7. When load of the microcomputer software is completed, a checkmark and path and a version are displayed.

* When do not do update in Microprocessor Software which did load, exclude a checkmark of Microprocessor to fall under.

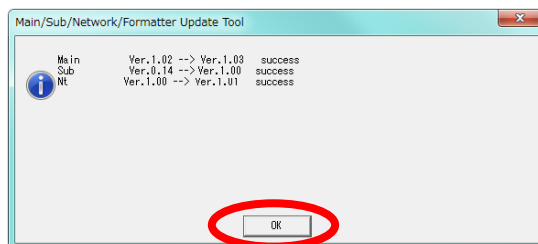
Confirm that it is OK and click [Update].



8. Click [OK] button, and start update.

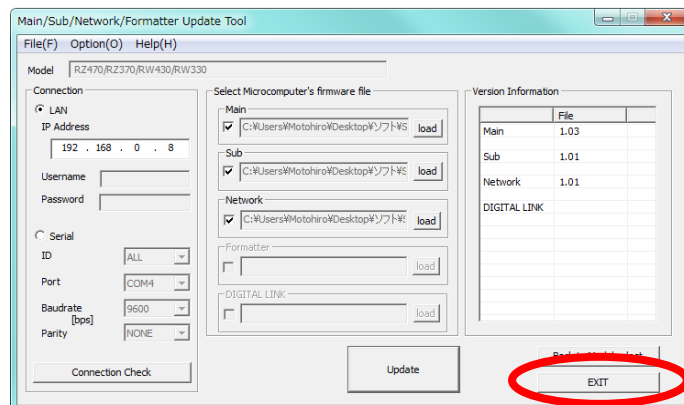


9. If completion and a message are displayed, click [OK] button.



Note : The update for same version software is skipped..

10. Click [EXIT]button, and please be finished.



* Reboot Projector, and please confirm whether the version of the Microprocessor Software is updated definitely, with sub menu " STATUS" of the main menu " PROJECTOR SETUP" .

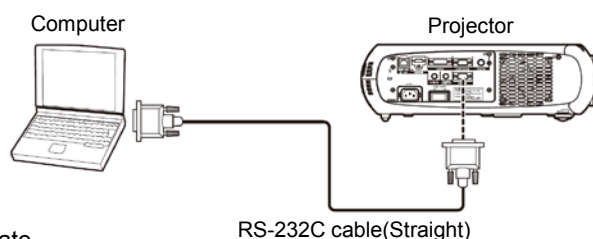
2. 2. Update by the SERIAL terminal connection (Main/Sub)

2. 2. 1. Equipment to be used

1. Computer : Use it for the transfer of backup data.
2. Communication cable : D-sub 9pin (male/female RS-232C straight)
3. Service Software : [MainSubNet Update Tool.exe] Service software is downloaded from the projector service homepage.
4. Microprocessor Software: Please download the file from the projector service homepage to the PC.

2. 2. 2. Connection Preparations

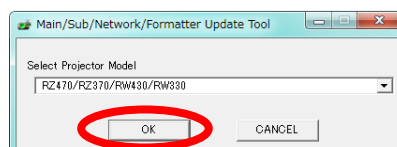
1. Confirm the projector's ID, baudrate, prity and take a memo.
2. Connect the SERIAL IN terminal of projector and PC with a RS-232C cable.



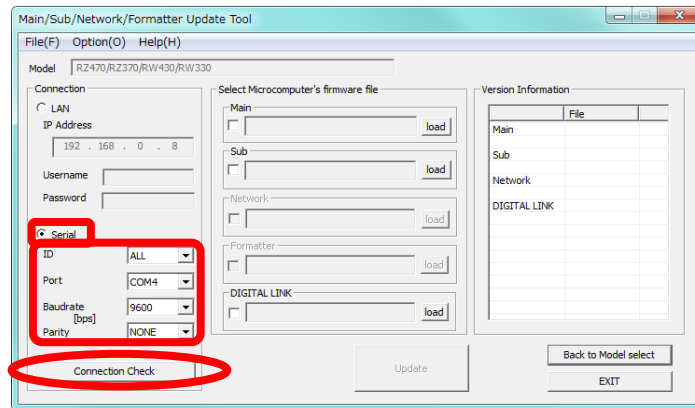
* Set up a PC in advance, prevent be in the standby/ shut-down state.

2. 2. 3. Update procedure

1. Switch the projector to "Normal-Standby" mode (POWER indicator is Lighting in red).
2. Start up service software with a computer, select Model, and then click the [OK] button.

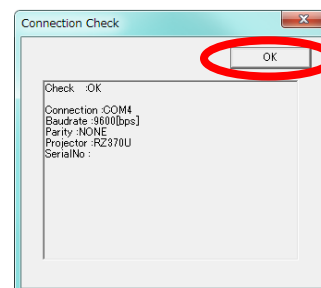


3. Select "Serial" in "Connection" and input the ID, Port, Baudrate, Parity , and click [Connection Check] button.

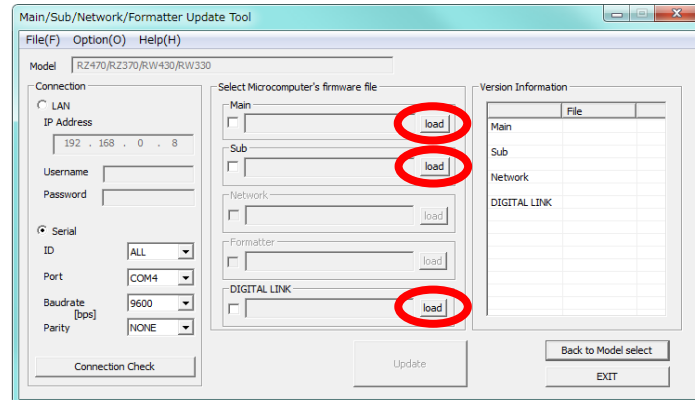


4. A result of the connection confirmation is displayed.

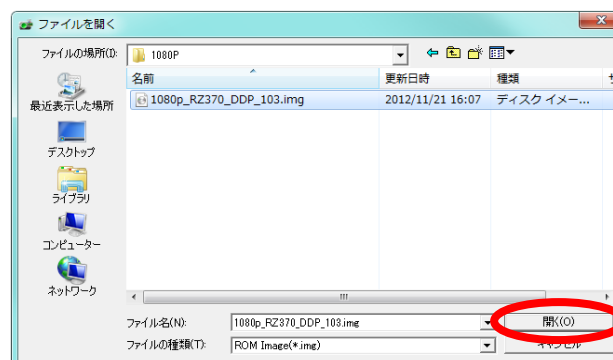
- " Check : OK " → Click [OK] button and advance next.
- " Check : NG " → Come back to item 3., and please confirm whether setting is right.



5. Select Microprocessor to update, and click [load] button.

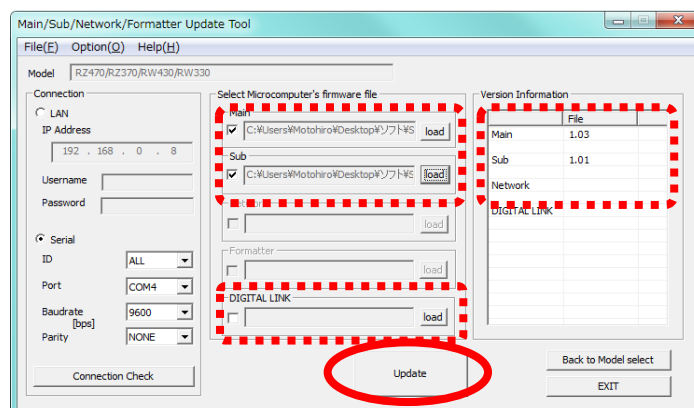


6. Appoint the microcomputer software that took in a computer beforehand, and click [Open] button.

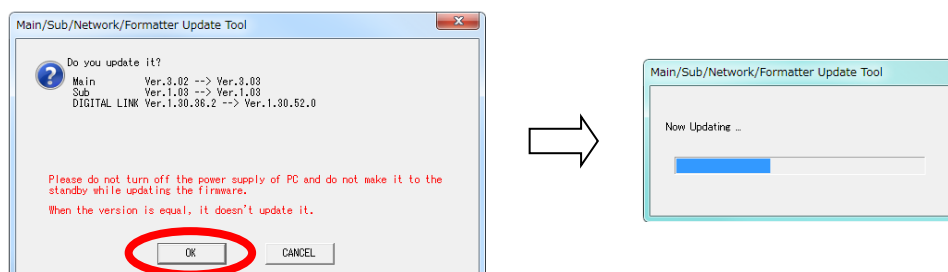


7. When load of the microcomputer software is completed, a checkmark and path and a version are displayed.
- * When do not do update in Microprocessor Software which did load, exclude a checkmark of Microprocessor to fall under.

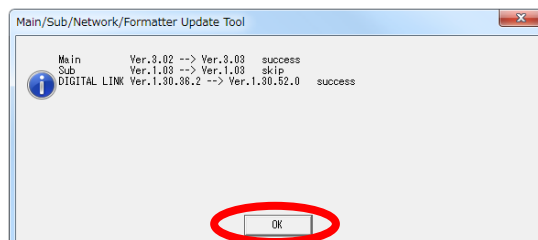
Confirm that it is OK and click [Update].



8. Click [OK] button, and start update.

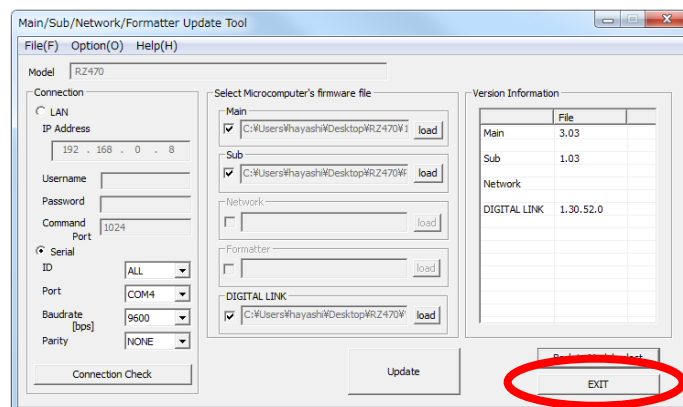


9. If completion and a message are displayed, click [OK] button.



Note : The update for same version software is skipped..

10. Click [EXIT]button, and please be finished.



- * Reboot Projector, and please confirm whether the version of the Microprocessor Software is updated definitely, with sub menu " STATUS" of the main menu " PROJECTOR SETUP" .

SECTION 4

Schematic Diagram

Model No. **PT-RZ470 Series**
PT-RW430 Series

CONTENTS

1. Block Diagram	DIA-2
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1.2. Signal Processing	
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3.3. S / V / R -P.C.Board	
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4.1. A -P.C.Board	
4.2. G / S / V / R -P.C.Board	

Important Safety Notice

Components identified by the international symbol  have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified ones.

■Notes

1. Resistor
All the resistors are carbon 1/4W resistors, unless marked as follows.
The unit of resistance is an OHM [Ω] (K=1 000 M=1 000000).

	: Nonflammable		: Metal Oxide
	: Solid		: Metal Film
	: Wire Wound		: Fuse
2. Capacitor

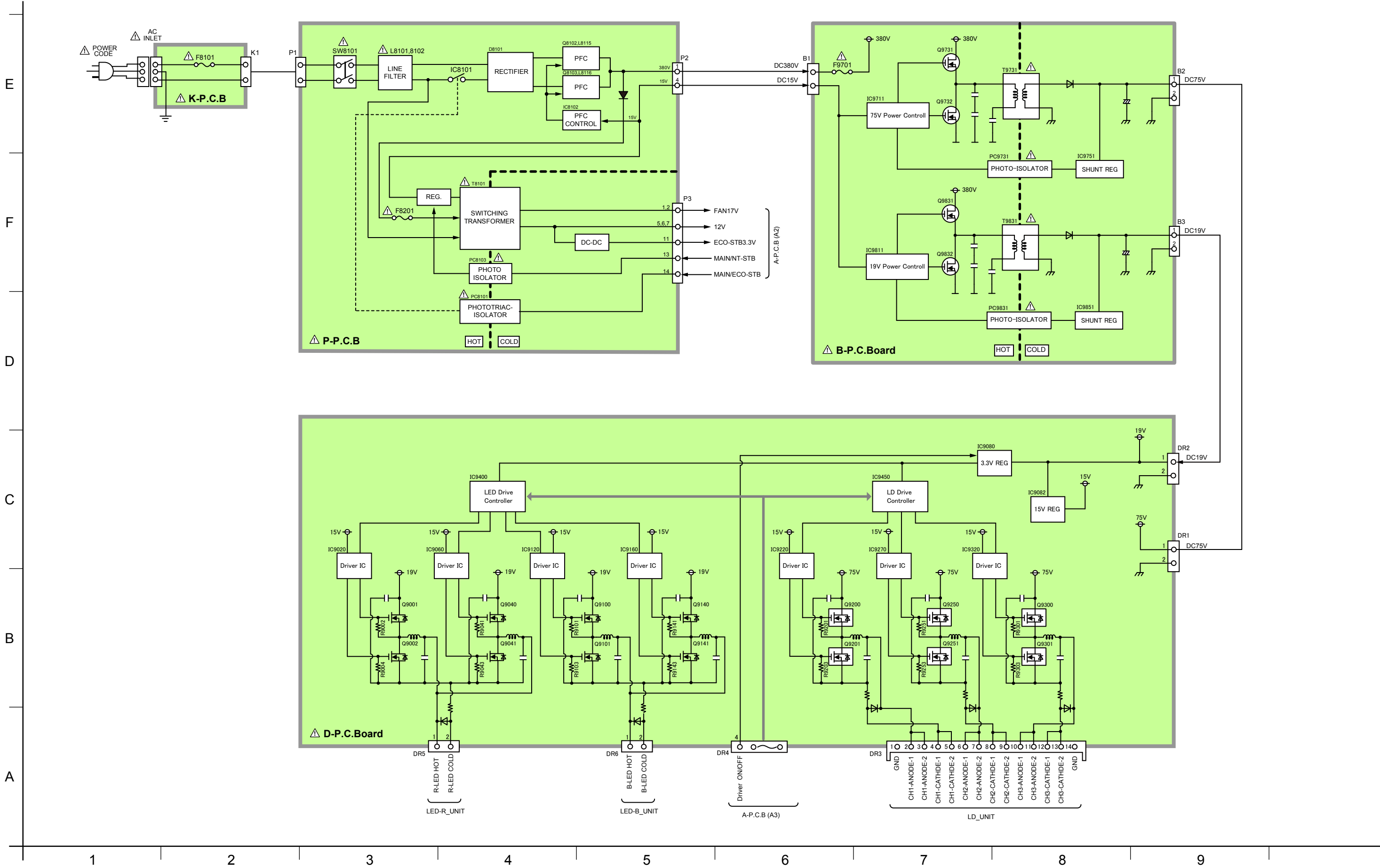
	: Temperature Compensation		: Electrolytic
	: Polyester		: Bipolar
	: Metalized Polyester		: Dipped Tantalum
	: Polypropylene		: Z-Type
3. Coil
The unit of inductance is a H, unless otherwise noted.
4. Test Point
 : Test Point
5. HOT and COLD indications
The power circuit board contains a circuit area using a separate power supply to isolate the ground connection. The circuit is defined by HOT and COLD indications in the schematic diagram. Take the precautions below:
6. This schematic diagram is the latest at the time of printing and the subject to change without notice.

■Precautions

1. NEVER touch the HOT part or the HOT and COLD parts at the same time, or you may get an electric shock.
2. NEVER short-circuit the HOT and COLD circuits, or the fuse may blow and the parts may break.
3. NEVER connect an instrument such oscilloscope to the HOT and COLD circuit simultaneously, or the fuse may blow. Connect the ground of instruments to the ground of the circuit being measured.
4. MAKE SURE to unplug the power cord from the power outlet before removing the chassis.
5. Be sure to make your orders of replacement parts according to parts list section.

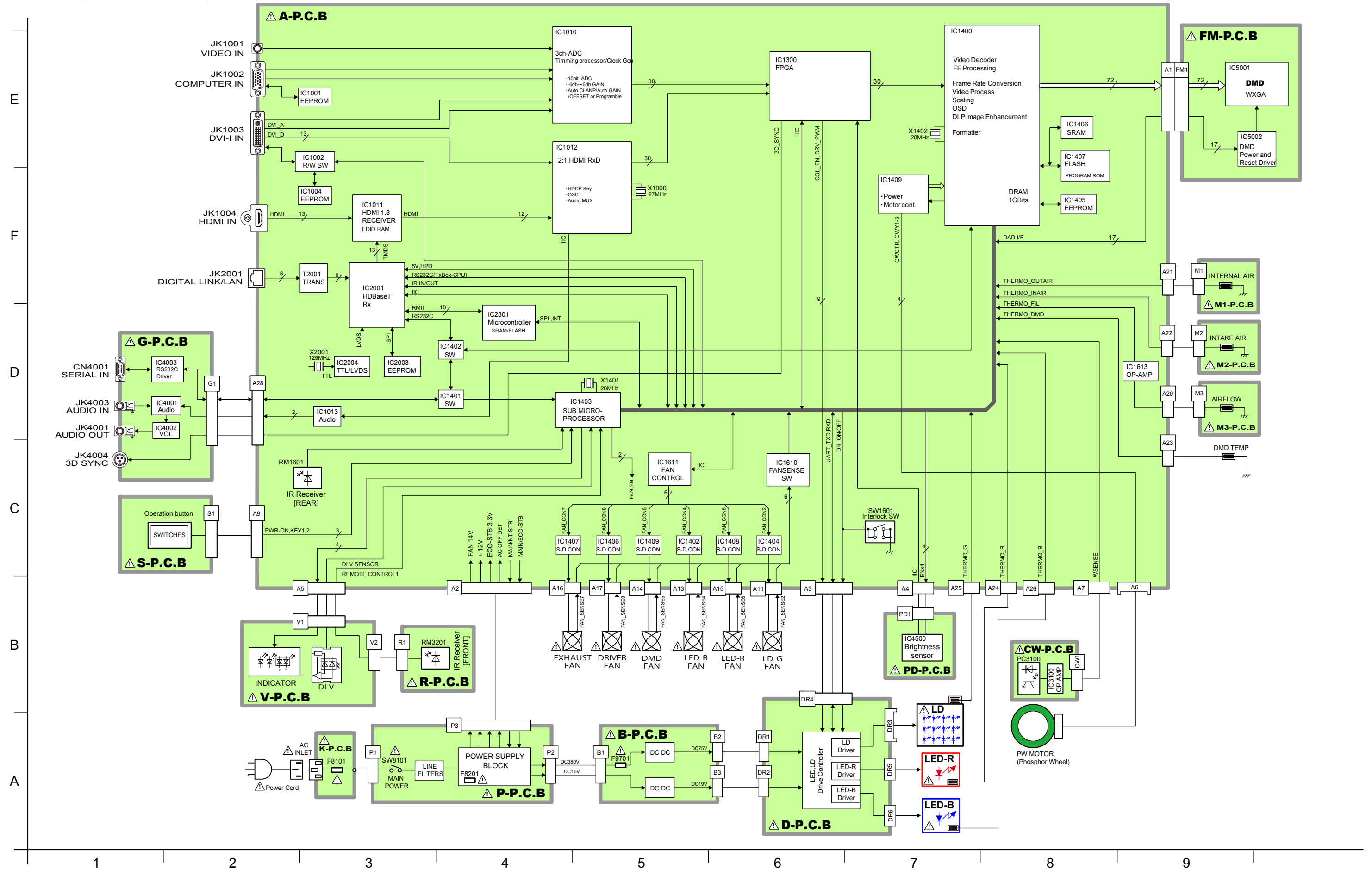
1. Block Diagram

1.1. Power Supply and Ballast

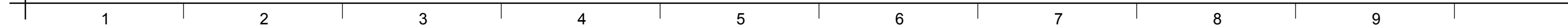


1. Block Diagram

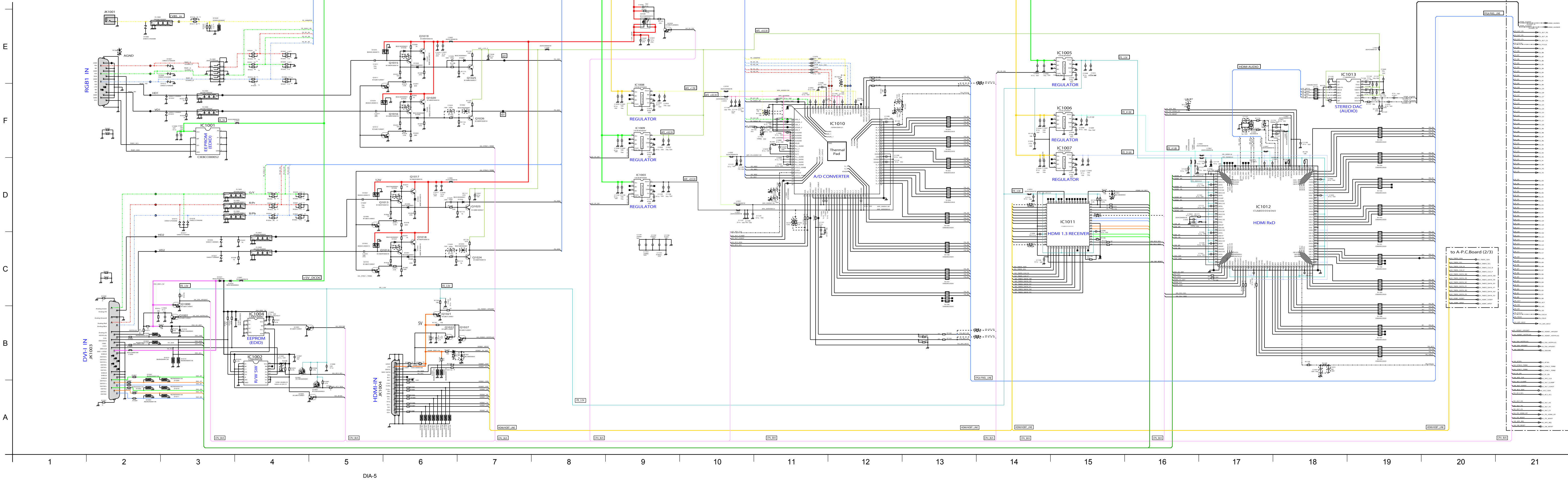
1.2. Signal Processing



A — B — C — D — E — F —

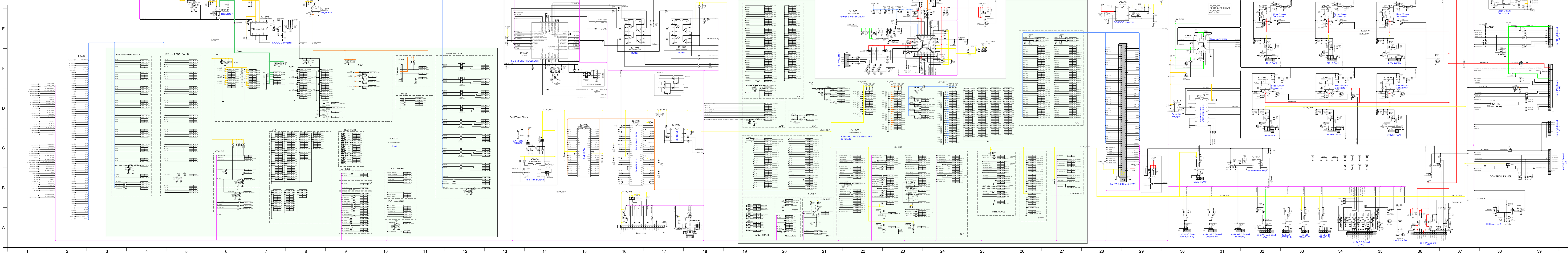


3.1. A -P.C.Board (1/3)

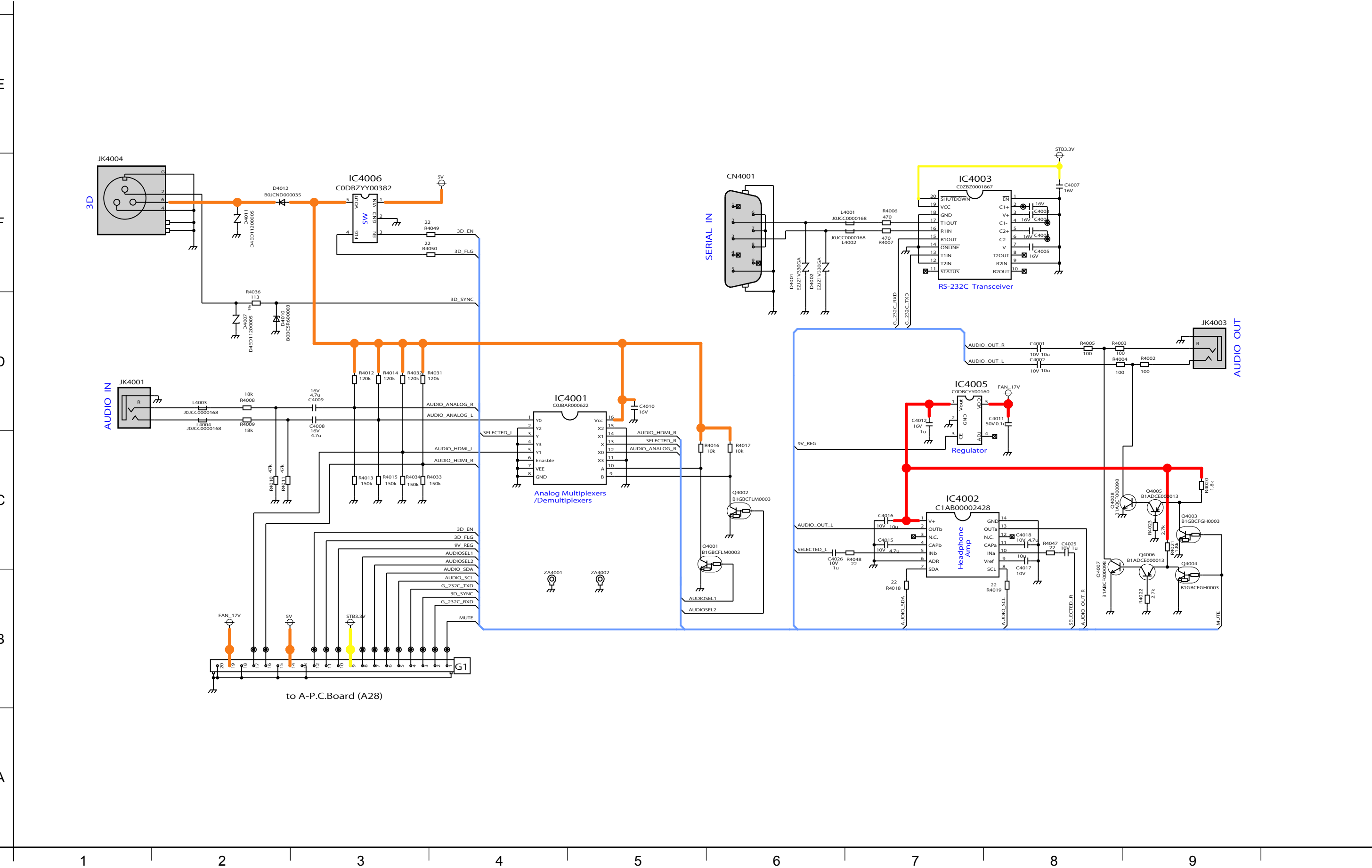


3.1. A -P.C.Board (2/3)

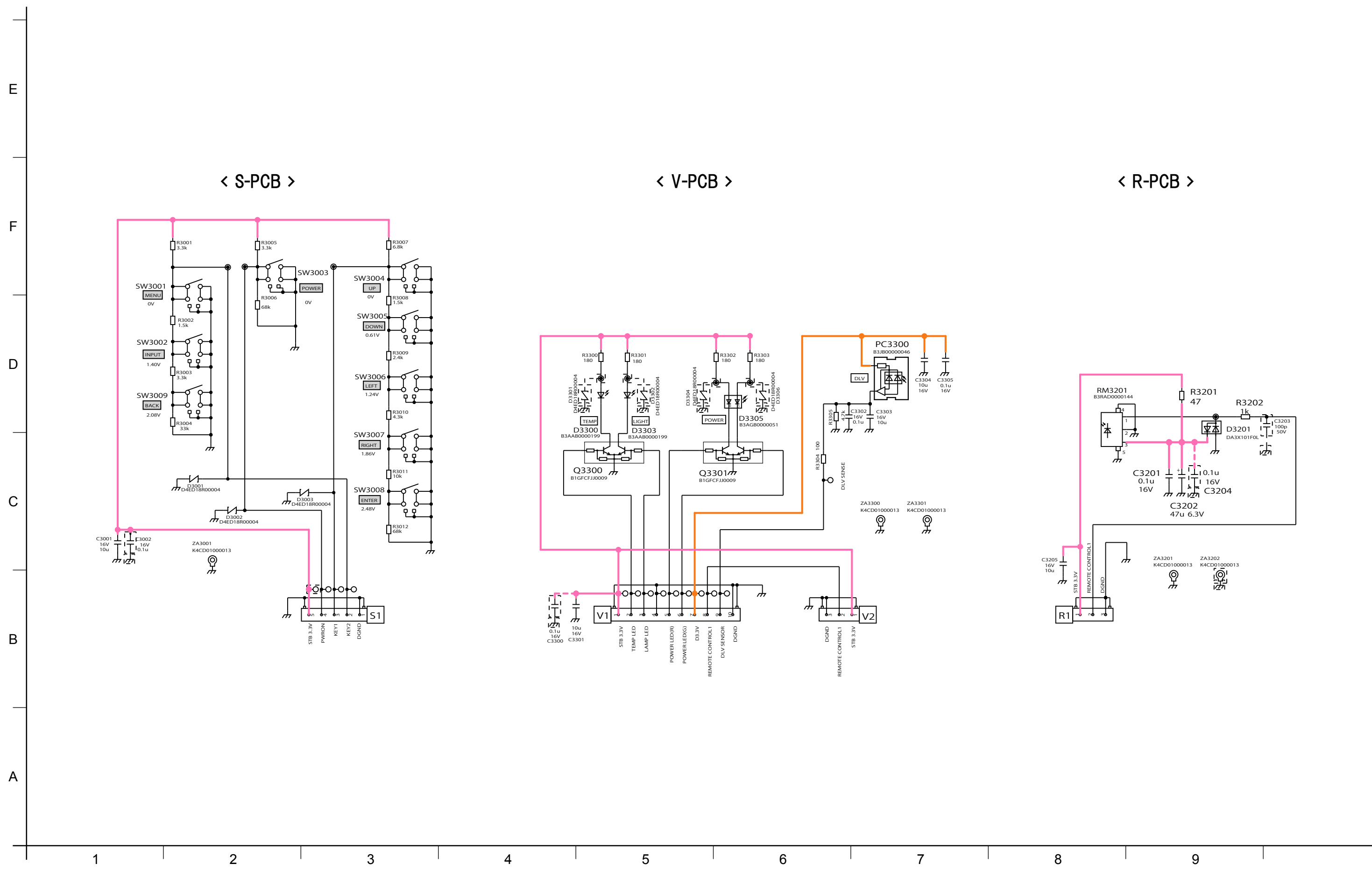
3.1. A -P.C.Board (3/3)



3. Schematic
3.2. G -P.C.Board

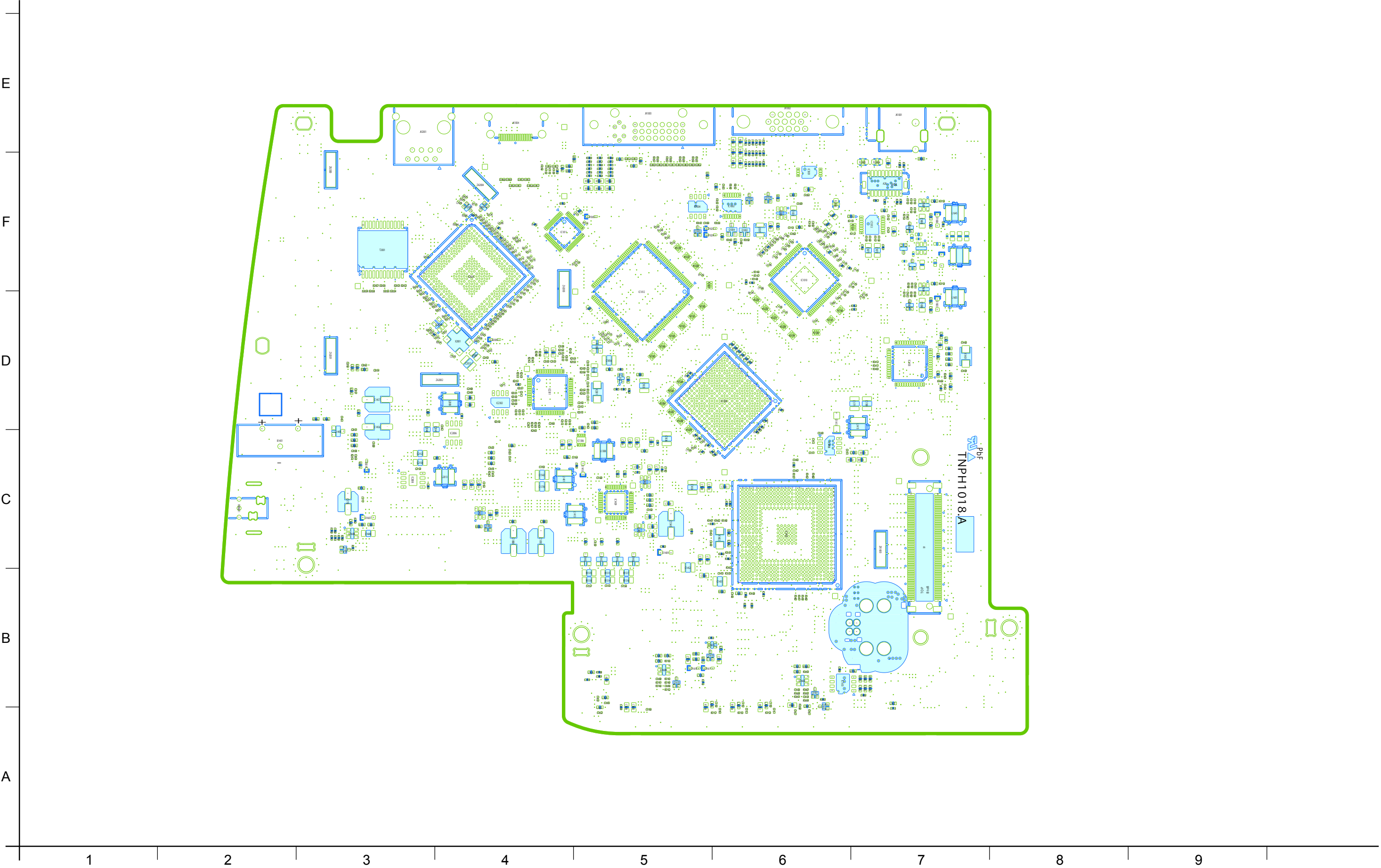


3. Schematic
3.3. S / V / R -P.C.Board



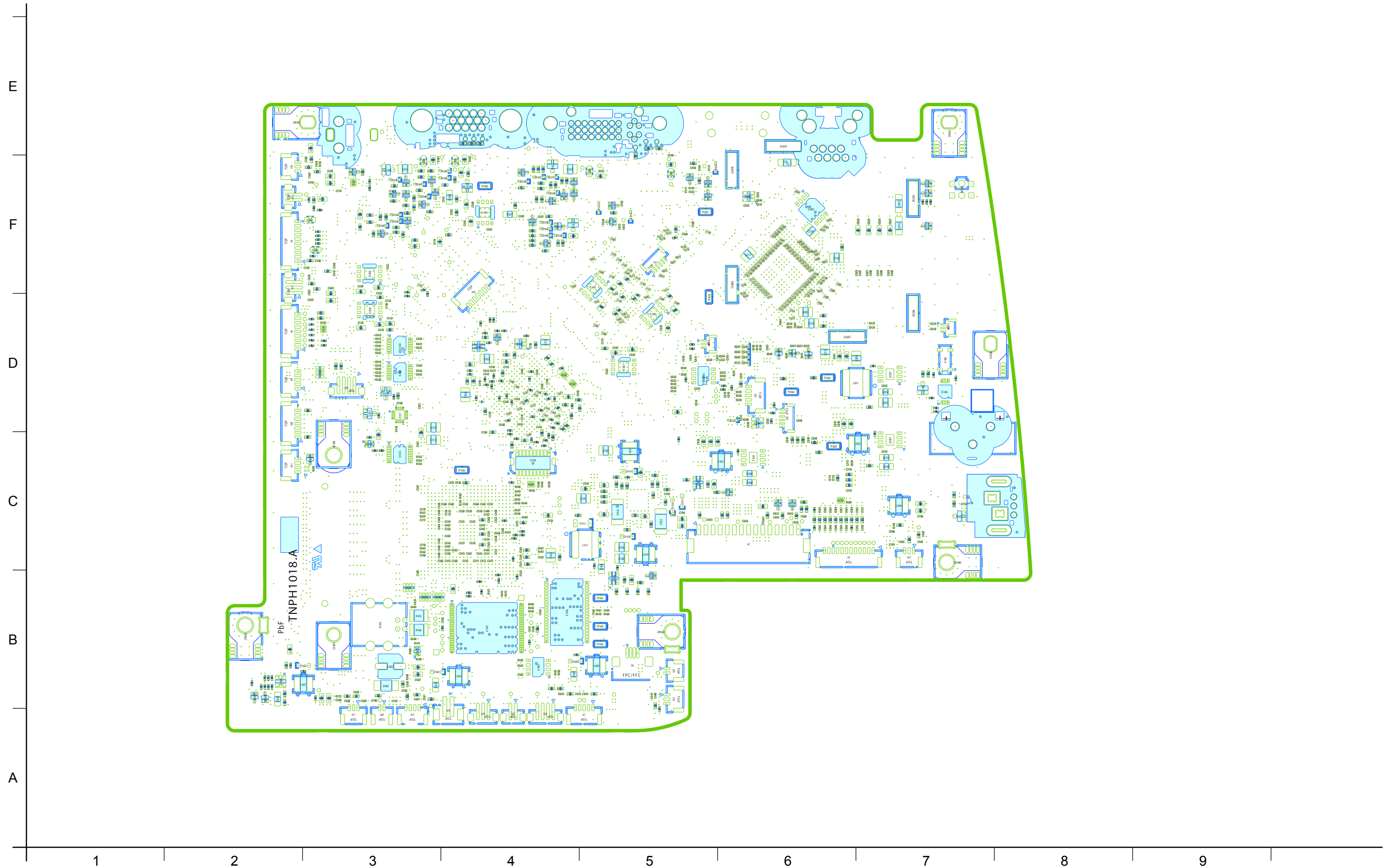
4. Circuit Boards Diagram

4.1. A -P.C.Board (A-side)



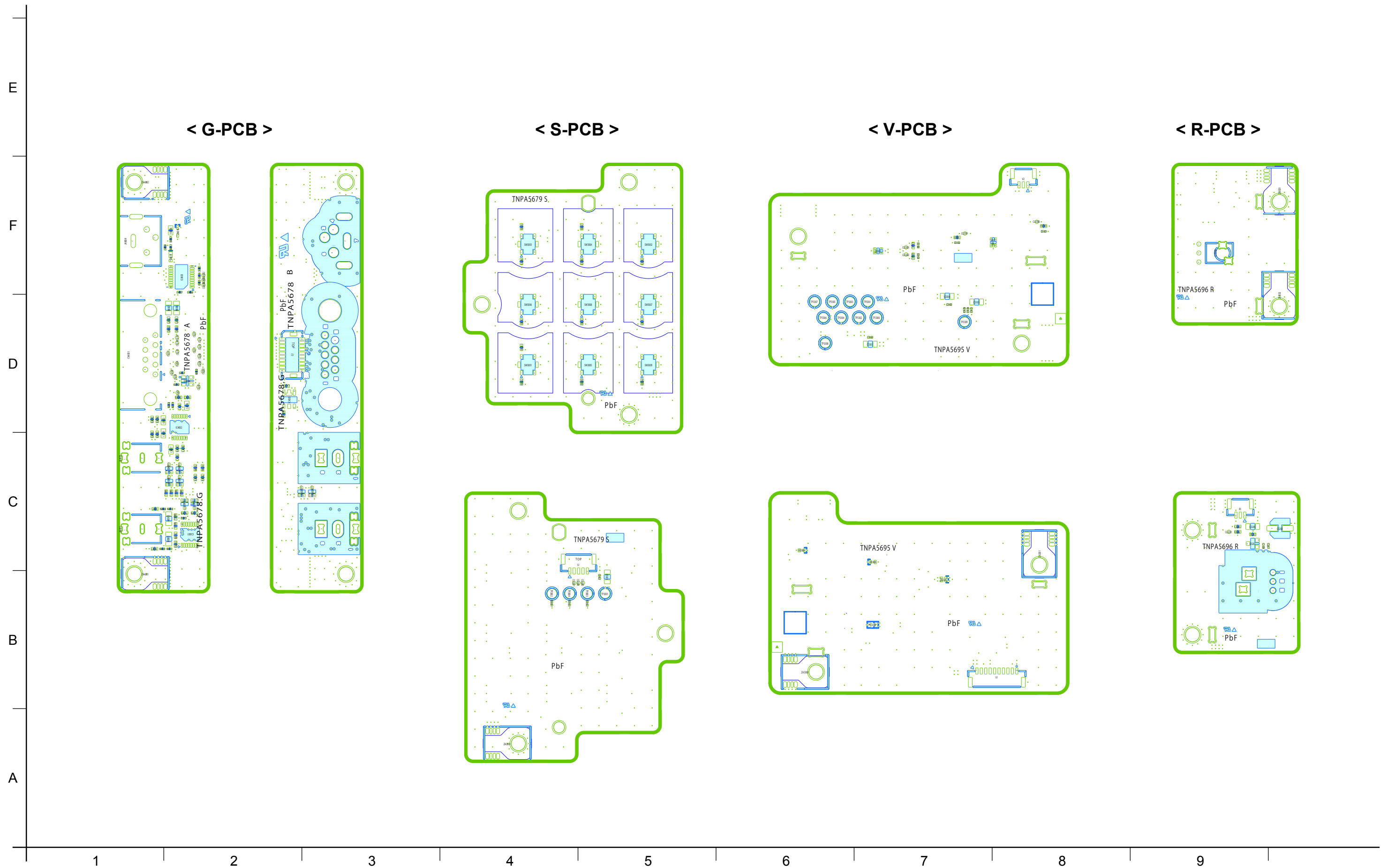
4. Circuit Boards Diagram

4.1. A -P.C.Board (B-side)



4. Circuit Boards Diagram

4.2. G / S / V / R -P.C.Board



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