

**Model Regulus-PJ2**  
**Machine Codes:**  
**Y006/Y007/Y008/Y009/Y010**  
**Field Service Manual**

11 March, 2011



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# Important Safety Notices

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## LEAD-FREE SOLDER

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This product is manufactured using lead-free solder as a part of a movement within the consumer products industry at large to be environmentally responsible. Lead-free solder must be used in the servicing and repair of this product.

WARNING

### **WARNING**

- This product is manufactured using lead free solder. DO NOT USE LEAD BASED SOLDER TO REPAIR THIS PRODUCT! The melting temperature of lead-free solder is higher than that of leaded solder by 86 °F to 104 °F (30 °C to 40 °C). Use of a soldering iron designed for lead-based solders to repair product made with lead-free solder may result in damage to the component and or PCB being soldered. Great care should be made to ensure high-quality soldering when servicing this product – especially when soldering large components, through-hole pins, and on PCBs - as the level of heat required to melt lead-free solder is high.

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## Prevention of Physical Injury

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1. Before disassembling or assembling parts of the machine and peripherals, make sure that the machine power cord is unplugged.
2. The wall outlet should be near the machine and easily accessible.
3. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
4. The machine drives some of its components when it completes the warm-up period. Be careful to keep hands away from the mechanical and electrical components as the machine starts operation.

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## Observance of Electrical Safety Standards

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The machine and its peripherals must be serviced by a customer service representative who has completed the training course on those models.

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## Safety and Ecological Notes for Disposal

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1. Dispose of replaced parts in accordance with local regulations.

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## **WARNING**

- To prevent a fire or explosion, keep the machine away from flammable liquids, gases, and aerosols. A fire or an explosion might occur.

This product contains substances which are harmful to humans and the environment.

- The lamp contains mercury.

Please dispose of this product or used lamps in accordance with local regulations.

**The following information is only for EU-member states:**



The use of the symbol indicates that this product may not be treated as household waste. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. For more detailed information about recycling of this product, please contact your local city office or your household waste disposal service.

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# Symbols and Trademarks

This manual uses several symbols and abbreviations. The meaning of those symbols and abbreviations are as follows:

	See or Refer to
	Screw

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## Trademarks

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Microsoft® and Windows® are registered trademarks of Microsoft Corporation in the United States and /or other countries.

Other product names used herein are for identification purposes only and may be trademarks of their respective companies. We disclaim any and all rights involved with those marks.

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# 1. Product Information

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## Specifications

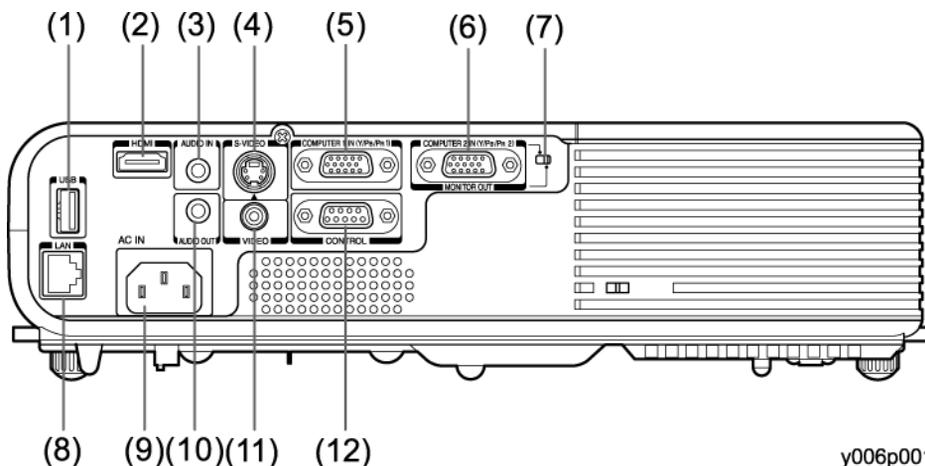
See "Appendices" for the following information:

- General Specifications

# Overview

1

## Names of the Terminals on the Rear Panel



y006p001

Name	Main Function
(1) USB terminal (Y007/Y010 only)	Connects to a commercial USB memory device.
(2) HDMI™ terminal (Y007/Y010 only)	Input for digital signals from a HDMI (High-Definition Multimedia Interface) compatible digital source.
(3) AUDIO IN terminal	Input for audio signals from a computer or video equipment. (Multiple use for COMPUTER 1 IN/2 IN, VIDEO and SVIDEO)
(4) S-VIDEO terminal	Input for S video signals from video equipment.
(5) COMPUTER 1 IN (Y/P <sub>B</sub> /P <sub>R</sub> 1) terminal	Input for analog RGB signals from a computer or a component video signal (Y/P <sub>B</sub> /P <sub>R</sub> ) from video equipment.
(6) COMPUTER 2 IN (Y/P <sub>B</sub> /P <sub>R</sub> 2) terminal/ MONITOR OUT terminal	Input for analog RGB signals from a computer or a component video signal (Y/P <sub>B</sub> /P <sub>R</sub> ) from video equipment.  It can also be used as a MONITOR OUT terminal by switch (7).

Name	Main Function
(7) Switch	Switches (6) between COMPUTER 2 IN and MONITOR OUT.
(8) LAN terminal (Y007/Y010 only)	Connects a network cable.
(9) AC IN socket	Connects the supplied power cord.
(10) AUDIO OUT terminal	Outputs audio signals.
(11) VIDEO terminal	Input for video signals from video equipment.
(12) CONTROL terminal	When operating the projector via a computer, connect this to the controlling computer's RS-232C port.



# 2. Installation

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## Installation Requirements

- Do not place in hot locations, such as near heating equipment. Doing so could cause a malfunction, and shorten the life of the projector.
- Avoid locations with oil or cigarette smoke. Doing so will make the optical parts dirty, shortening their lives, and darkening the screen.
- Do not use this product in the upright position or tilt it up or down by more than 20° from level. Doing so may cause a failure or shorten the life of the product.
- Using this instrument near a TV or radio may cause interference to the images or audio sound. If this happens, move it away from the TV or radio.
- Moving the projector from a low-temperature room to a high-temperature room may cause condensation on the lens or internal parts. If you continue to use it in that situation, it may malfunction. Wait until the condensation naturally disappears.
- In a high-altitude location where air is thin, cooling efficiency is reduced so use the projector with [Fan mode] set to [High].
- Only plug the power cord into outlets rated for use with the power cord's specified voltage range. Do not overload extension cords or power strips as this can result in fire or electric shock.
- Route the power cable or the connecting cable away from where people could trip over it. The projector may fall down, which could result in severe injury.
- Be sure the power cord is easily reached for unplugging in case of emergency. Do not place any obstacles near the wall outlet in which the cord is plugged.

# Using the Menus

## Using the Menus 1

2

You can call up on-screen menus, and conduct a number of adjustments and settings using the MENU button on the control panel of the main unit and the remote control.

### Setup using the Setting display

The menu shown below is for operation instructions purposes and might differ from the actual display.

1. Press the MENU button.  
This will display the Setting display menu.
2. Select a Category.

Select a category by using ◀ ▶.

There are 5 categories:

☀ Image adjustment menu

📺 Display setting menu

🔧 Default setting 1 menu

🔧 Default setting 2 menu

📺 Status display menu

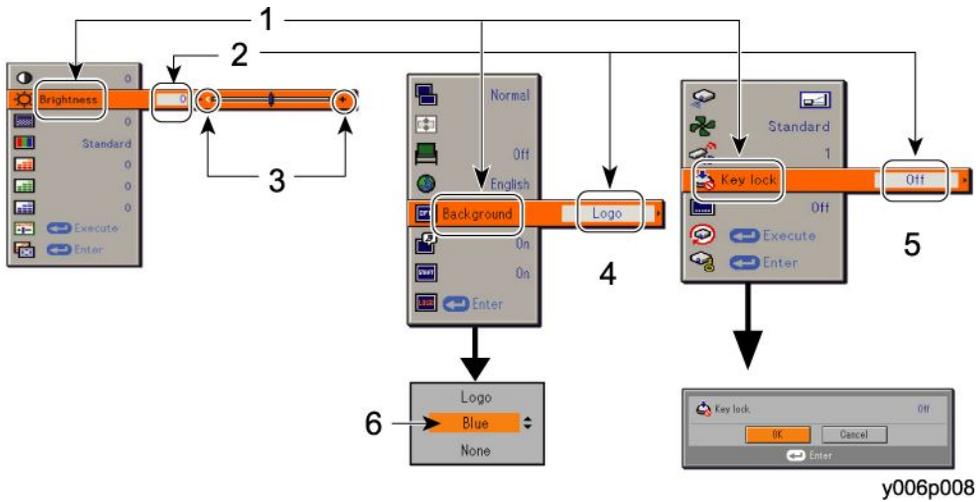


y006p007

Displays the current adjustments and settings of the selected category.

Items shown in gray cannot be adjusted with the current input source.

3. Adjustments & Settings: Press ⏪ or ⏩ to open the menu.



1. Item
  2. Adjustment/Setting Value
  3. These marks signify the items can be adjusted/set by using ◀ ▶.
  4. These marks signify that there are options. Press ⏪ or ⏩ to display a list of options.
  5. These marks signify that there are setting screens. Press ⏪ or ⏩ to display a list of setting screens.
  6. These marks signify the items can be selected from the list by using ▲ ▼. After an item is selected, apply it by pressing ⏩.
- Toggle items with ▲ ▼.
- Select items with ◀ ▶ and press ▼.
- Fix selection with ⏩.
- \* When no item is changed, press ⏩.

#### ↓ Note

- The diagrams show displays given for operation instructions purposes. As the display may differ depending on the item, refer to the following pages for the menu item you wish to use.
- To return to the previous item, press the RETURN button.
- When Network or USB memory input is selected, pressing the MENU button twice displays the Setting display (2) menu.

4. Press the MENU button once more.

The menu will disappear automatically after 30 seconds, if no operation is conducted.

## Using the Menus 2 (Y007/Y010 only)

### Setup using the Setting display (2)

#### Projector settings (Be sure to read this subsection.)

2

Using the factory settings as-is may lead to a security breach, so be sure to change the projector settings.

1. Press the remote control's NETWORK button and press the MENU button twice.
2. Select a Category.

The Setting display (2) is displayed.

\* Appears only when Network or USB memory input is selected.

Select a category by using ◀ ▶.

The following 5 categories are available:

 Network Projector setup

 Network utility setup

 Control setting

 Slideshow setup

 Status display

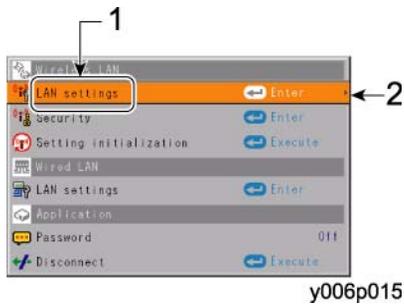


y006p014

Displays the current settings of the selected category. Item shown in gray cannot be set with the current setting conditions of the projector.

3. Make settings.

Press ◀ or ▶ to open the menu.



1. Item
2. These marks signify the items can be selected from the list by using ▲▼. After an item is selected, apply it by pressing ↵.

#### ↓ Note

- The diagram shows a typical example. As the display may differ depending on the item, use the following pages as a reference.
  - While the video file transfer function of Network Utility or the slideshow function is in use, the background image of the Setting display (2) does not appear.
4. Press the RETURN button.
  5. Press the MENU button or RETURN button.
- The menu disappears 30 seconds after the last operation is conducted.



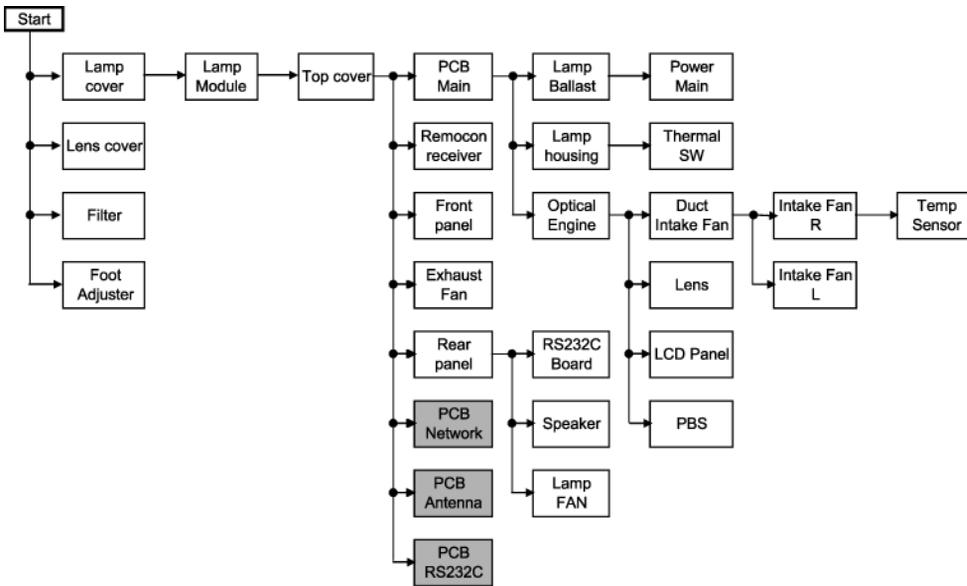
# 3. Replacement and Adjustment

## Replaceable Part Hierarchy

The flow chart below shows what parts must be removed to access each replaceable part in the projector.

The parts on the first level (e.g., Lamp cover) are accessible without removing any other parts.

The more levels down that a part is, the more parts you need to remove in order to access it.



y006r001

PCB Network, PCB Antenna, PCB RS232C: Y007/Y010 only.

## Special Tools

- RS232C cable
- USB to RS232C adapter

# Parts Replacement

## Lamp Module



y006r037

1. Slide and pull up the lamp cover to remove it (🔧 ×1).



y006r038

2. Remove the inner lamp cover (🔧 ×2).

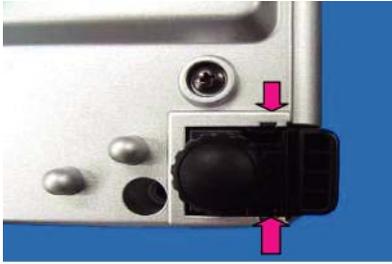


y006r037

3. Shift the hook and pull out the lamp module (🔧 ×3).
4. After the lamp is replaced, the operating hours counter must be reset. This is a user adjustment.

## Foot Adjuster

There are two front feet.



y006r040

3

1. Push the hook to take out the foot adjuster.

## Top Cover

### For Y007/Y008/Y010



y006r041

1. Remove the top cover (⚙️ ×6).

### For Y006/Y009



y006r042

1. Remove the top cover (⚙️ ×5).

## Main Board Assembly

### For Y007/Y008/Y010



y006r043

1. Disconnect all connectors on the main board, and then remove the Main PCB assembly and rear panel assembly (top: ×3, bottom: ×3).



y006r044

2. Remove the rear panel assembly (×3).

#### ↓ Note

- When you have replaced the main board with a new one, you must perform electrical adjustments. (Refer to p.28 "Electrical Adjustment")

### For Y006/Y009



y006r045

1. Disconnect all connectors on the main board, and then remove the Main PCB assembly and rear panel assembly (top: ×3, bottom: ×1).



y006r046

2. Remove the rear panel assembly (×2).

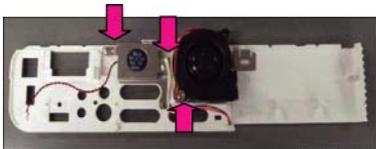
 **Note**

- When you have replaced the main board with a new one, you must perform electrical adjustments. (See p.28 "Electrical Adjustment")

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## Rear Panel, Lamp Fan and Speaker

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y006r047

1. Remove the speaker, speaker holder, and the lamp fan from the rear panel (×3).

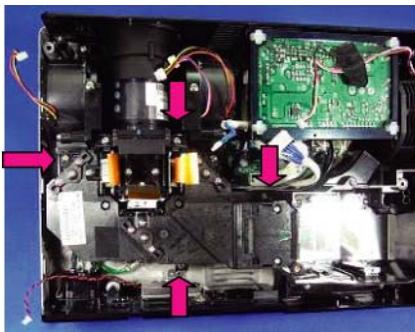
 **Note**

- When installing the lamp fan, make sure that the decal is facing outward.

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## Optical Engine

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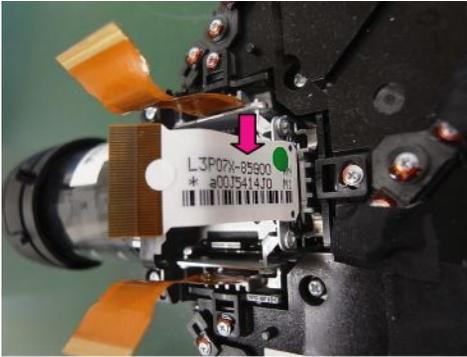
y006r048

1. Take out the optical engine (⚙️×4).

### When replacing the optical engine with a new one

Make a note of the type of optical engine (L-type or R-type) you are installing, and then perform electrical adjustments (⚙️ p.28 "Electrical Adjustment"). You will need to know this during the electrical adjustments.

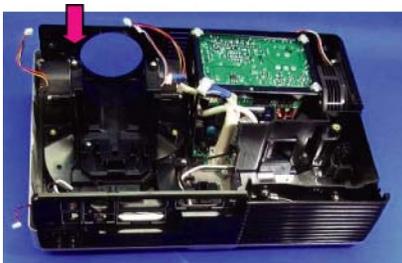
The type of LCD can be identified by checking the model number of the G (green) panel.



y006r062

- For Y006
  - If the model number is L3P06X-85G\*\*, the optical engine is an L-type.
  - If the model number is L3P06X-86G\*\*, the optical engine is an R-type.
- For Y007/Y008
  - If the model number is L3P07X-85G\*\*, the optical engine is an L-type.
  - If the model number is L3P07X-86G\*\*, the optical engine is an R-type.
- For Y009/Y010
  - If the model number is L3D05X-95G\*\*, the optical engine is an L-type.
  - If the model number is L3D05X-96G\*\*, the optical engine is an R-type.

### Front Panel



y006r049

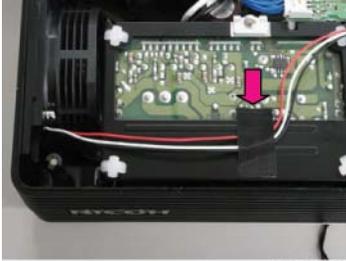
1. Take out the front panel (🔩×1).

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## Exhaust Fan

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3



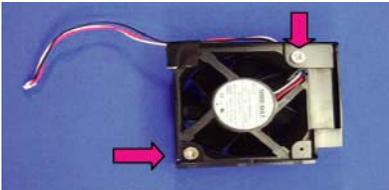
y006r050

1. Remove the tape.



y006r051

2. Remove the exhaust fan bracket (🔩×2).



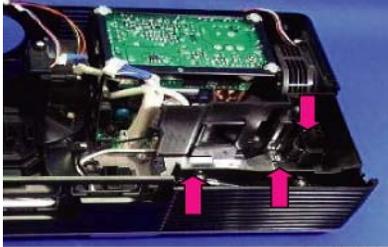
y006r052

3. Remove the exhaust fan (🔩×2).

⏴ **Note**

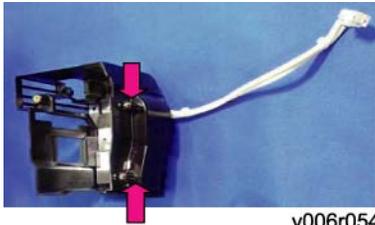
- When installing the exhaust fan, make sure that the decal is facing inward.

## Thermal Switch



y006r053

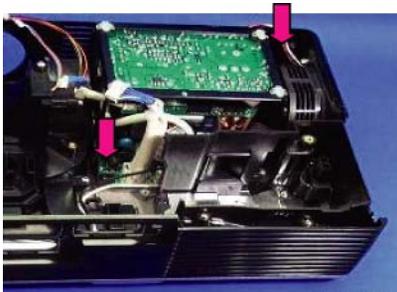
1. Take out the lamp housing (🔩×3).



y006r054

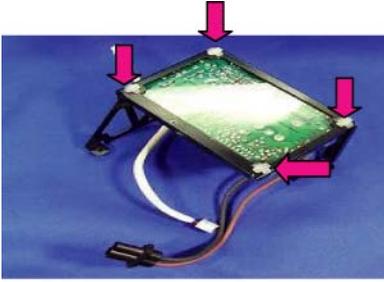
2. Take out the thermal switch (🔩×2).

## Lamp Ballast



y006r055

1. Take out the lamp ballast with the frame on (🔩×2).



y006r056

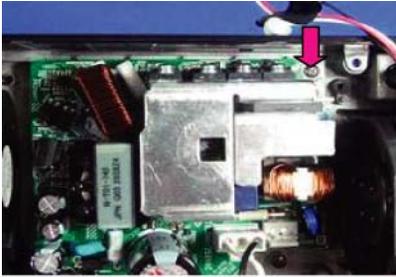
3

2. Take four spacers out to remove the lamp ballast.

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### Main Power Unit

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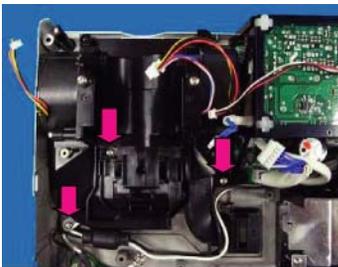
y006r057

1. Take out the main power unit (⚙️×1).

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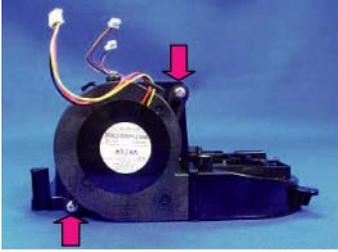
### Intake Fan

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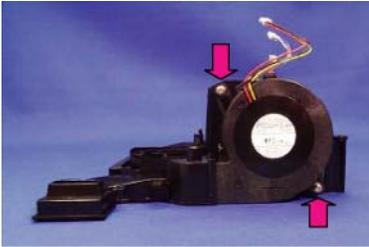
y006r058

1. Take out the duct for the intake fan (⚙️×3).



y006r059

2. Remove the right intake fan for the LCD panel (⚙️×2).



y006r060

3. Remove the left intake fan for the PBS (⚙️×2).

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## Temp Sensor

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y006r061

1. Take out the temperature sensor (⚙️×1).

# Electrical Adjustment

## Adjustment Points vs Part Replaced

The table below shows you the items to be adjusted according to the type of part you replaced.

	Keystone, Sub Contrast, Altitude Special Key Operations	VCOM, Gamma, Gamma Shading DPJAdjustmentTool_2008
Main Board	○	○
Optical Engine	×	○

○: Adjustment is needed

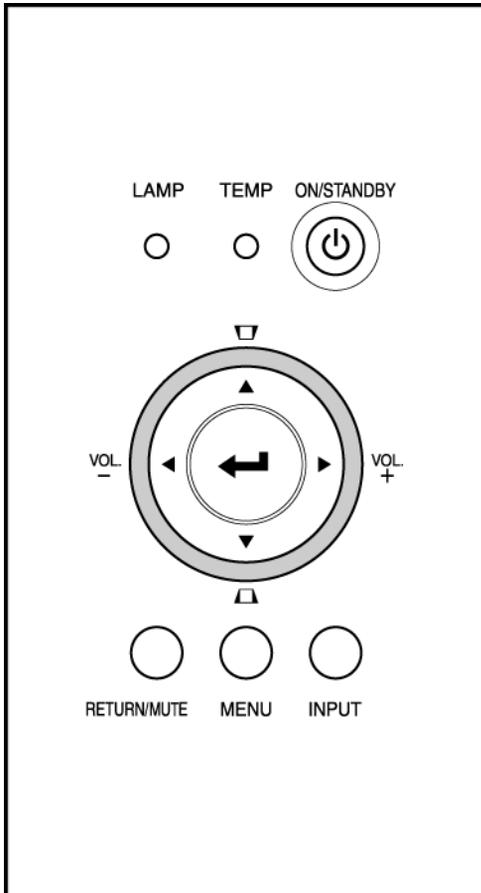
×: Not necessary

### Save Data to EEPROM (Common for all adjustments)

Before doing the adjustments in this section, save the current settings to EEPROM.

Press the buttons, [Up], [Down], [Left] and [Right] simultaneously.

When this sequence of buttons is accepted, all LEDs light up in orange and the buzzer beeps for 3 seconds.



y006r003

3

## Preparation

### Test equipment

1. Personal computer  
(Windows PC, OS: Windows 98SE, ME, 2000, XP)
2. Adjustment software  
DPJAdjustmentTool\_2008.exe
3. Cables  
RGB Cable and Control (RS232C) Cable
4. A protractor for Vertical Auto Keystone Calibration

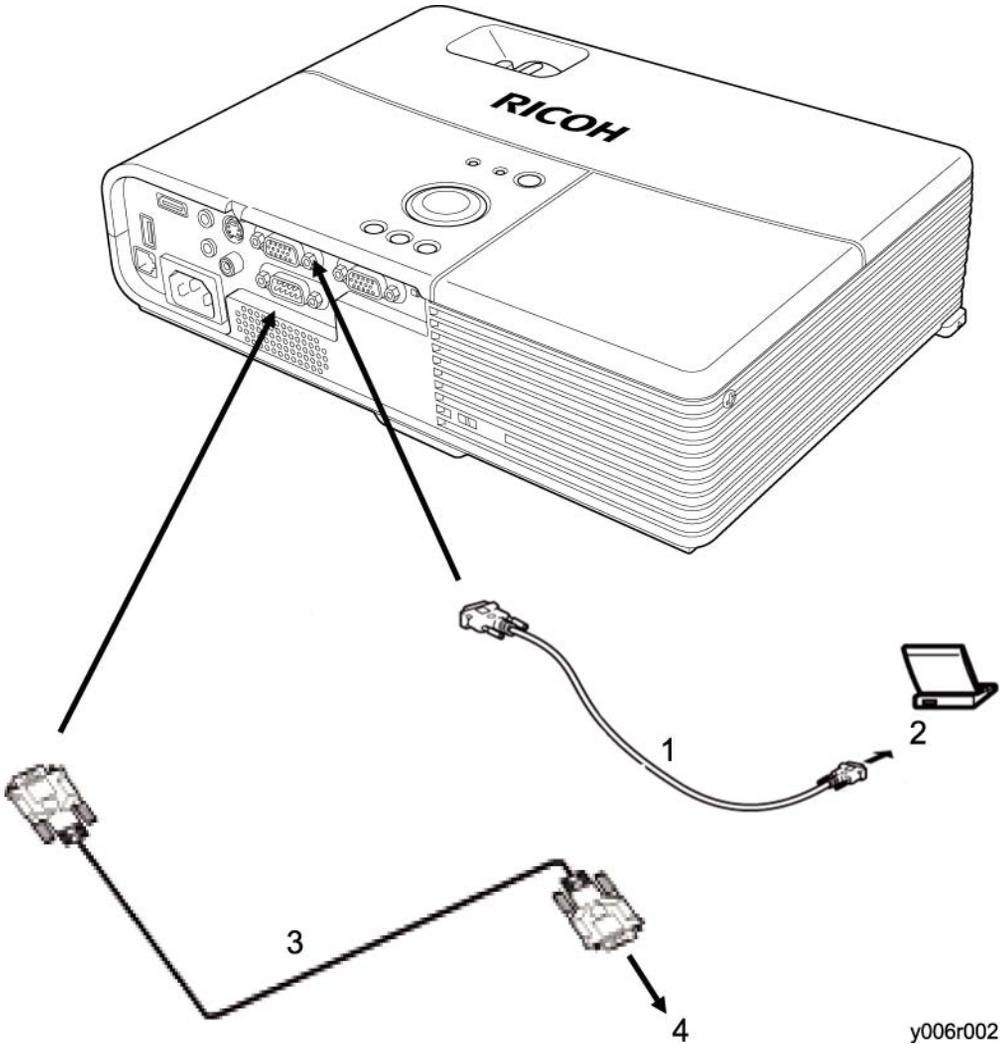
### For connection and setting of a personal computer

1. Connection of a personal computer

Connect the PC to the computer 1 input and RS232C terminal as shown in the following diagram.

2. Set the screen resolution and refresh rate to XGA (1024x768) 60Hertz.

Set the RGB output of the PC to CRT.



y006r002

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## Projector Setup

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Plug in the power cord and press the [ON/STANDBY] button of the projector.

### How to enter the Service Mode (Y006/Y009)

1. While the Volume adjustment bar is displayed on the screen, set the value to [1], and press the buttons [Return], [Menu] and [Input] simultaneously.
2. While the Volume adjustment bar is displayed on the screen, set the value to [0], and press the buttons [Return], [Menu] and [Input] simultaneously.
3. While the Volume adjustment bar is displayed on the screen, set the value to [0], and press the buttons [Return], [Menu] and [Input] simultaneously.

When the projector enters the Service Mode, the buzzer beeps for 3 seconds.

If it doesn't beep, repeat from the beginning.

The projector remains in this mode until you pull out the power cord.

### How to enter the Service Mode (Y008)

1. While the Volume adjustment bar is displayed on the screen, set the value to [1], and press the buttons [Return], [Menu] and [Input] simultaneously.
2. While the Volume adjustment bar is displayed on the screen, set the value to [5], and press the buttons [Return], [Menu] and [Input] simultaneously.
3. While the Volume adjustment bar is displayed on the screen, set the value to [0], and press the buttons [Return], [Menu] and [Input] simultaneously.

When the projector enters the Service Mode, the buzzer beeps for 3 seconds.

If it doesn't beep, repeat from the beginning.

The projector remains in this mode until you pull out the power cord.

### How to enter the Service Mode (Y007/Y010)

1. While the Volume adjustment bar is displayed on the screen, set the value to [2], and press the buttons [Return], [Menu] and [Input] simultaneously.
2. While the Volume adjustment bar is displayed on the screen, set the value to [0], and press the buttons [Return], [Menu] and [Input] simultaneously.
3. While the Volume adjustment bar is displayed on the screen, set the value to [0], and press the buttons [Return], [Menu] and [Input] simultaneously.

When the projector enters the Service Mode, the buzzer beeps for 3 seconds.

If it doesn't beep, repeat from the beginning.

The projector remains in this mode until you pull out the power cord.

### How to display the Service status

After the projector has entered the service mode, press the buttons [Return] and [Up] simultaneously. Then, the following display appears.

If it doesn't appear, repeat from the beginning.

This mode remains until you pull out the power cord.

Service status (Display only)		[RETURN] Quit
Version	Main:XXXX - NetworkUnit:XXXX - VoiceData:XXXX	
User lamp time	1H - 10M - 10S	-> Reset count 0
Total time	1H - 10M - 10S	
LCD Panel time (R)	1H - 10M - 10S	-> Reset count 0
LCD Panel time (G)	1H - 10M - 10S	-> Reset count 0
LCD Panel time (B)	1H - 10M - 10S	-> Reset count 0
Polarizer time (R)	1H - 10M - 10S	-> Reset count 0
Polarizer time (G)	1H - 10M - 10S	-> Reset count 0
Polarizer time (B)	1H - 10M - 10S	-> Reset count 0
KC0	25 - 3473 - 2060	KC1 25 - 3473 - 1850
KC2	25 - 3473 - 2267	KC3 26 - 3460 - 2055
Sub contrast (Com1)	46 - 38 - 46	Sub contrast (Com2) 51 - 42 - 51
Fan-1	4237rpm	Fan-2 4062rpm
Fan-3	3321rpm	
Fan-4	3298rpm	
Temp-1	25deg	Temp-2 50deg
Engine No.	XXXXXXXXXX	Altitude 0
Error count	0	Shut down 0
Error log	0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0	
Serial No.	XXXXXXXXXX	Model name XXXXXXXXX
[Total time] display	Enable	[Password] function Enable
[Lamp Msg] display	Enable	[Filter Msg] display Enable
[16:9 mode] fuction	Disable	[RS232C-5V] fuction Disable
HDMI overscan mode	Disable	

y006r004

FAN-1 is Intake fan R. FAN-2 is Intake fan L. FAN-3 is the Exhaust fan. FAN-4 is the Lamp fan.

Temp-1 is Intake temperature. Temp-2 is Main Board temperature.

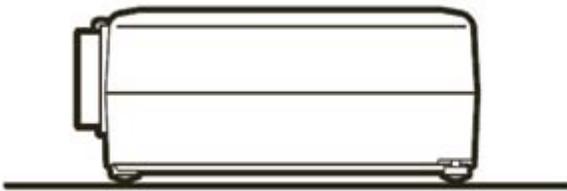
The number in the Error log shows the error ID.

### Keystone Calibration

1. Press the [Input] and [Up] buttons simultaneously.

KC0	0	0	0
KC1	0	0	0
KC2	0	0	0
KC3	0	0	0
Sub contrast	85	85	85
[ENTER] Execute		[RETURN] Quit	

- To initialize the value, press the [Input] button.



- Set the projector on a level surface.
- Press the [Enter] button of the projector.

When the adjustment is successfully completed, the values changes from the default [0].

(Example: See below)

KC0	28	4786	2423
KC1	0	0	0
KC2	0	0	0
KC3	0	0	0
Sub contrast	85	85	85
[ENTER] Execute		[RETURN] Quit	

If it fails, the values don't change from the default [0].





When the adjustment is successfully completed, the values changes from the default [0].  
 (Example: See below)

KC0	28	4786	2423
KC1	27	4799	2664
KC2	27	4809	2005
KC3	0	0	0
Sub contrast	85	85	85
[ENTER] Execute		[RETURN] Quit	

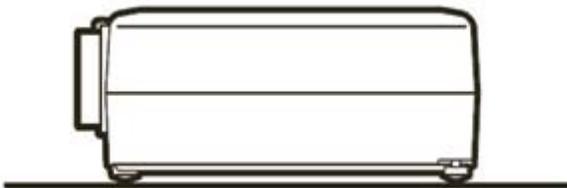
If it fails, the values don't change from the default [0].

**Note**

- When the projector is not tilted accurately +/- 30degrees, the adjustment values ([KC1] and [KC2]) do not change.

KC0	28	4786	2423
KC1	27	4799	2664
KC2	27	4809	2005
KC3	0	0	0
Sub contrast	85	85	85
[ENTER] Execute		[RETURN] Quit	

11. Select the KC3 item by pressing the [Down] button.





3

KC0	28	4786	2423
KC1	27	4799	2664
KC2	27	4809	2005
KC3	26	4331	2440
<b>Sub contrast</b>	<b>85</b>	<b>85</b>	<b>85</b>
[ENTER] Execute		[RETURN] Quit	

2. Press the [Enter] button of the projector.

When the adjustment is successfully completed, the values changes from the default [85].  
(Example: See below)

KC0	28	4786	2423
KC1	27	4799	2664
KC2	27	4809	2005
KC3	26	4331	2440
<b>Sub contrast</b>	<b>46</b>	<b>38</b>	<b>46</b>
[ENTER] Execute		[RETURN] Quit	

If it fails, the values don't change from the default [85].

Adjust this for both the Computer-1 input and the Computer-2 input.

**Altitude**

1. Press the [Input] and [Down] buttons simultaneously.

To initialize the values, press the [Input] button.

2. Select the correct value by pressing the [Left] or [Right] button.

This setting is effective only when [Fan Mode] is [High] (over 1,500m (4,921ft)).

The factory setting value is [0] (30.0% up).

The value [1] (7.7% up) is for more than 500m (1,640ft) and under 1,000m (3,281ft).

The value [2] (15.4% up) is for more than 1,000m (3,281ft) and under 1,500m (4,921ft).

The value [3] (23.1% up) is for more than 1,500m (4,921ft) and under 2,000m (6,562ft).

The value [4] (30.8% up) is for more than 2,000m (6,562ft) and under 2,500m (8,202ft).

The value [5] (38.5% up) is for more than 2,500m (8,202ft) and under 3,000m (9,843ft).

The value [6] (46.2% up) is for more than 3,000m (9,843ft).

For example, in the case of 2,700m altitude, set the value to [5].

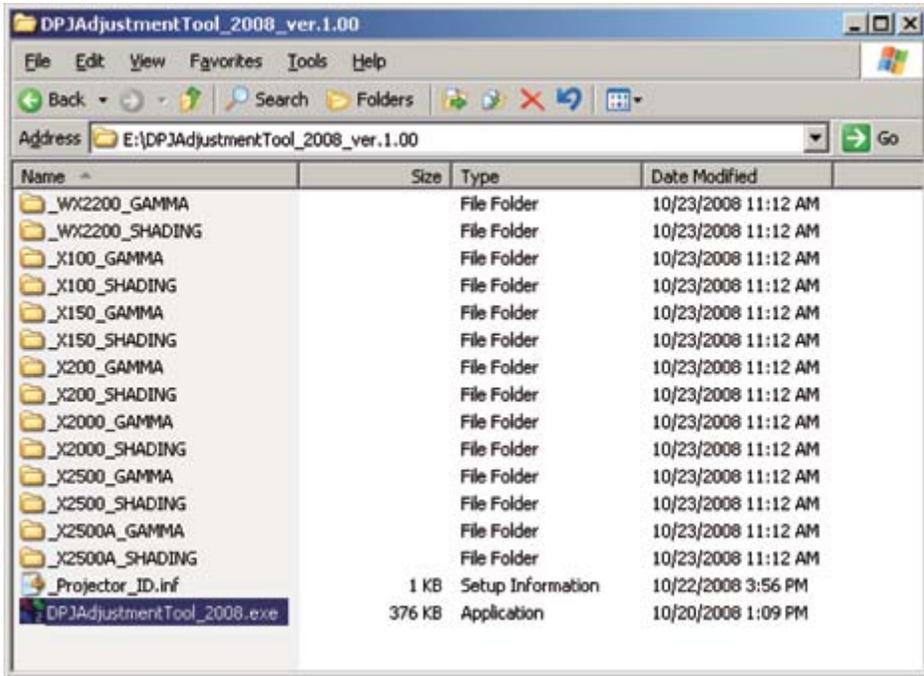
Altitude		0	
Fan control	<b>Auto</b>	Manual	
	Setting	Actual	
Fan-1	192	4201	rpm
Fan-2	197	4237	rpm
Fan-3	145	3276	rpm
Fan-4	210	3298	rpm
		Actual	
Temp-1		25 deg	
Temp-2		50 deg	
[<] / [>] Adjust		[RETURN] Quit	

3. Press the [Return] button.

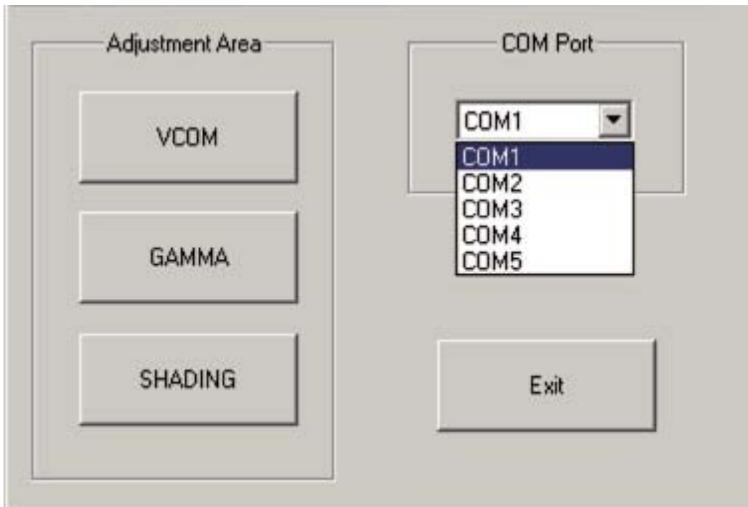
## VCOM

1. Connect the control cable to the control terminal on the projector.
2. Then plug the RS232C connector on the other end of the cable into a RS232C port on the PC.

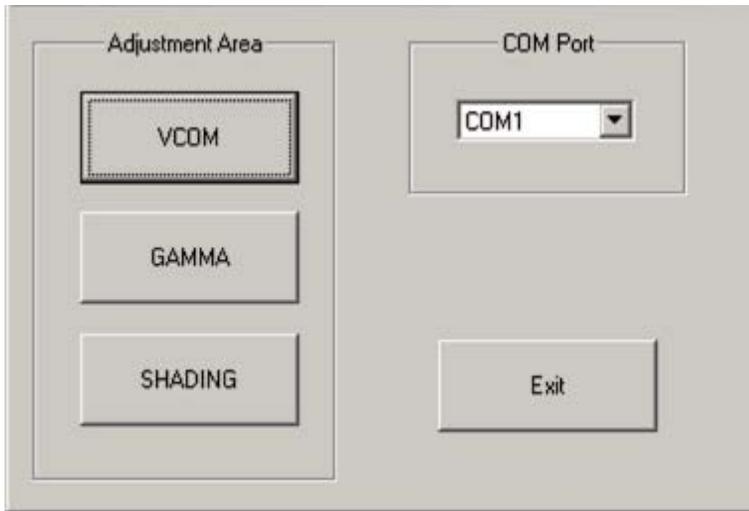
3



3. Open Windows Explorer and navigate to the location where you stored the DPJAdjustmentTool\_2008 files, and then double-click PJAdjustmentTool\_2008.exe. The startup window appears.



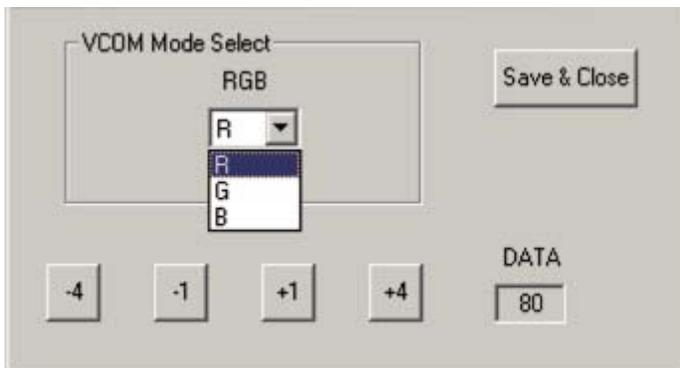
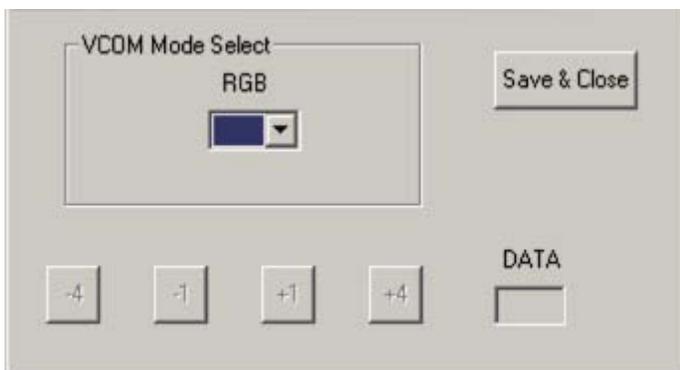
4. Select the COM port.



3

5. Click the [VCOM] button.

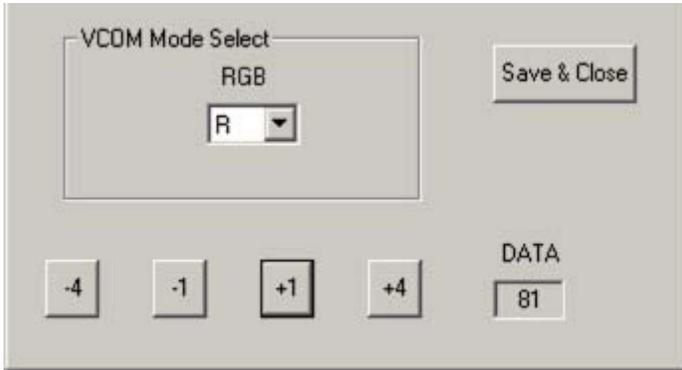
The following window appears.



6. Select "R".

The current setting is displayed in the DATA field.

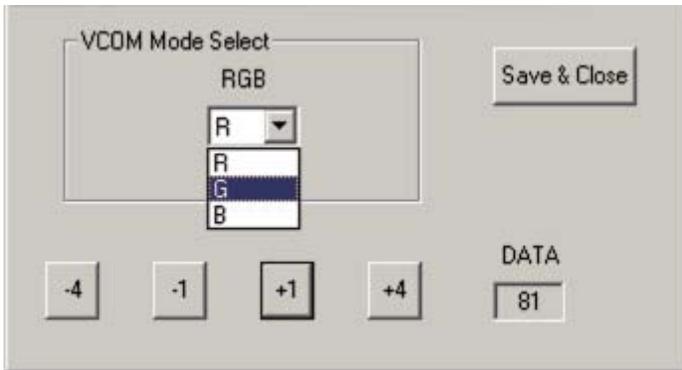
3



7. Push the (+1) or (-1) button.

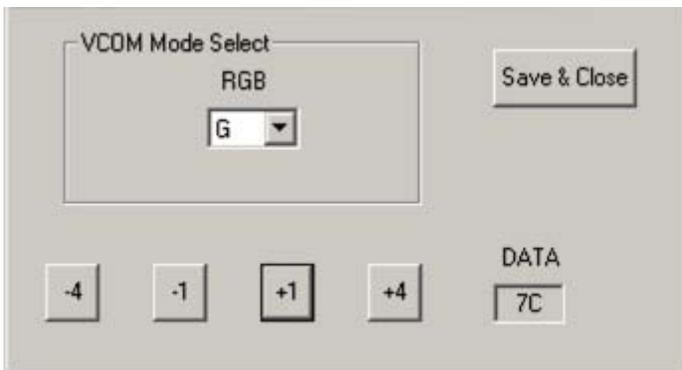
Adjust the setting to reduce the flicker to its minimum point.

By pushing (+4) or (-4), the setting is adjusted in greater steps.



8. Select "G".

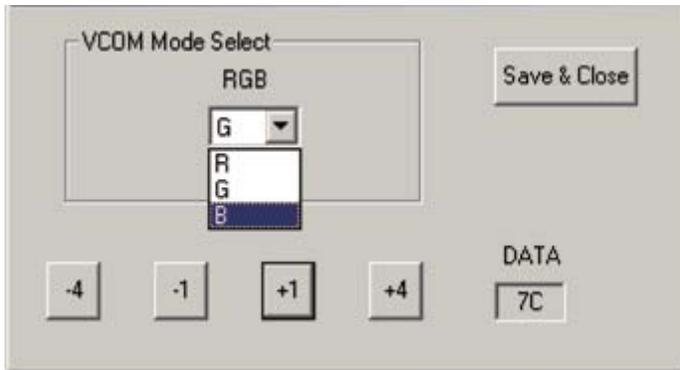
The current setting is displayed in the DATA field.



9. Push the (+1) or (-1) button.

Adjust the setting to reduce the flicker to its minimum point.

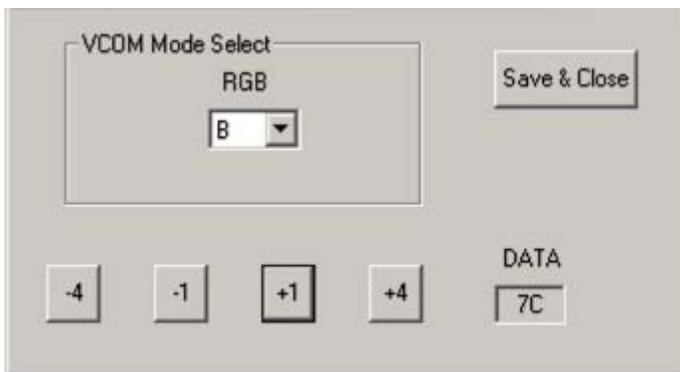
By pushing (+4) or (-4), the setting is adjusted in greater steps.



3

10. Select "B".

The current setting is displayed in the DATA field.



11. Push the (+1) or (-1) button.

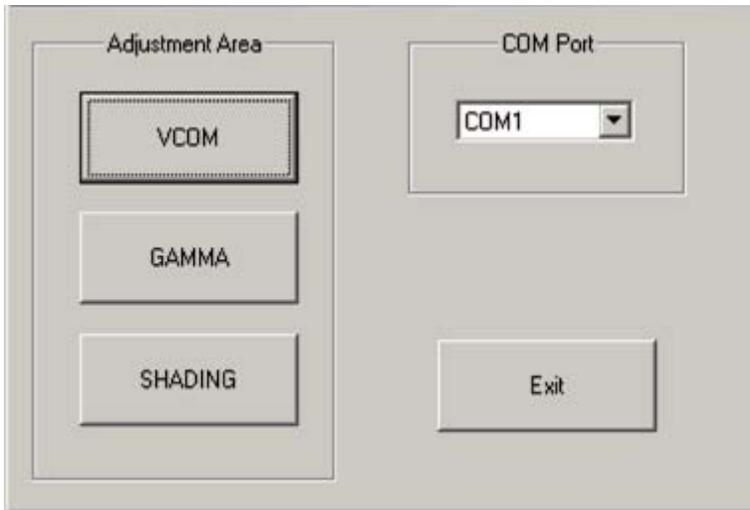
Adjust the setting to reduce the flicker to its minimum point.

By pushing (+4) or (-4), the setting is adjusted in greater steps.

12. When adjustment of R, G and B is finished, click the [Save & Close] button.

It takes around 7 seconds to save the settings.

## Gamma



3

1. Click the [GAMMA] button.

The following window appears.



2. Click the [Send] button.
3. Select the Gamma data file and click the [Open] button. (There are two files, for R-type optical engines and L-type optical engines.)

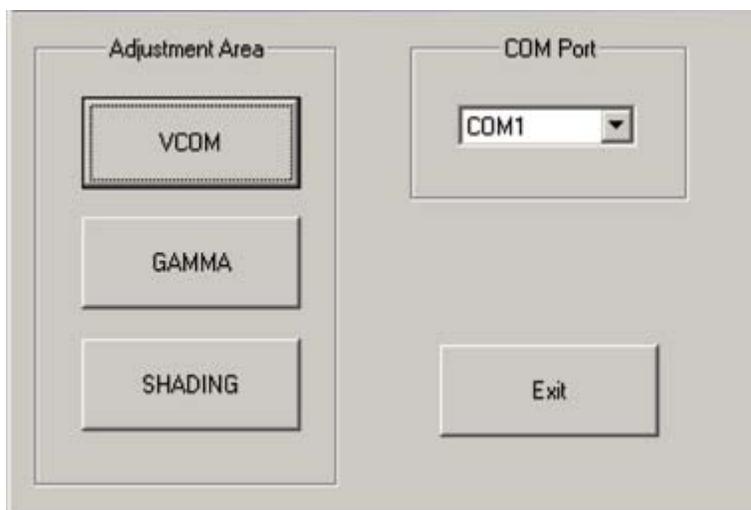
After the transfer is completed normally, the following message appears.



4. Click the [OK] button.

The transferred gamma data has been automatically saved.

## Shading



1. Click the [SHADING] button.

The following window appears.

3



2. Click the [Send] button.
3. Select the Shading data file and click the [Open] button. (There are two files, for R-type LCDs and L-type LCDs.)

After the transfer is completed normally, the following message appears.



4. Click the [OK] button.  
The transferred shading data has been automatically saved.

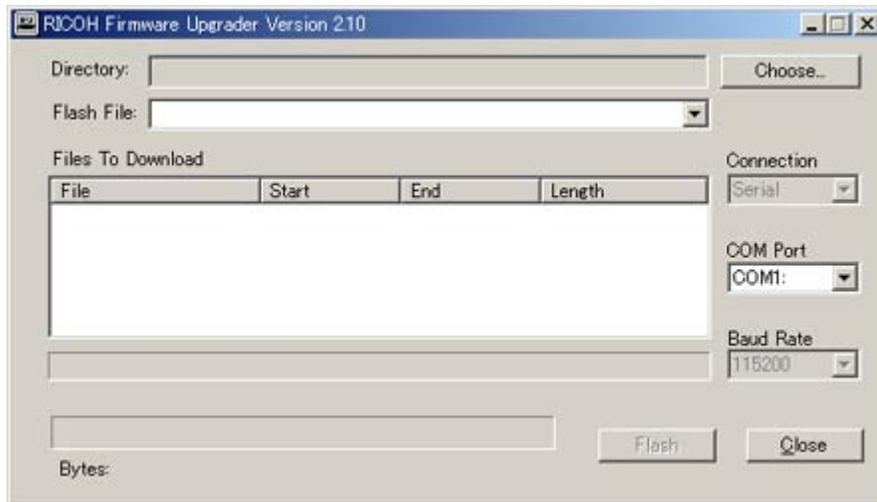
# 4. System Maintenance

## Firmware Update

### Update the Software

1. Connect the control cable to the control terminal on the projector.
2. Then plug the RS232C connector on the other end of the cable into a RS232C port on the computer.
3. Open Windows Explorer and navigate to the location where you stored the update files, and then double click Firmware Upgrader.exe.

The Upgrade Wizard appears.



4. Click the Choose button to open the Select File Dialog box.
5. In the Open File dialog box, select the .inf file, and then click Open button.  
The upgrade file appears in the Select File box.
6. Select the COM port.
7. Click the Flash button.
8. Press and hold the projector's [Input] and [Return] keys, and then plug in the power cord.  
The projector starts the Firmware update, and the [LAMP], [ON/Standby] and [TEMP] LED's are ORANGE or RED blinking.

The computer begins downloading the update files to the projector.

This process takes about 3 minutes.

When the update finishes normally, the following dialog box appears.



9. Click the OK button.
10. Click the Close button.

The update is complete.

## 4

### Y007/Y010 only

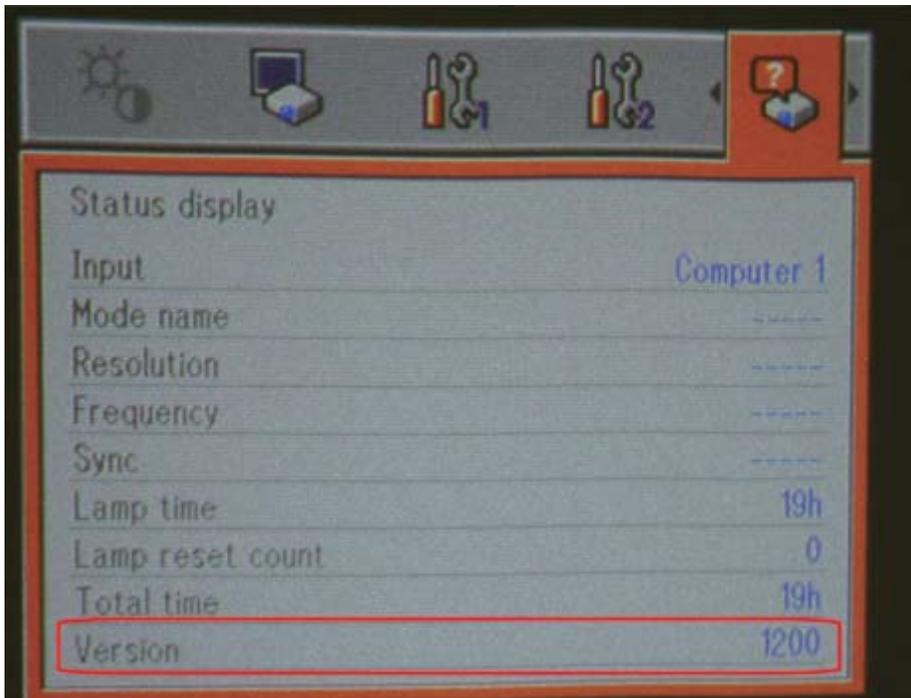
1. Select the VoiceTable \* \* \*.inf file when you update the VoiceGuide firmware of the Y007/Y010.  
This process takes about 13 minutes.  
This VoiceGuide firmware version can be checked on only the Service status display.

---

## Confirm the Software Update

---

1. Power up the projector.
2. On the projector keypad, press the MENU key to display the menus.
3. Press the Right or Left arrow button to highlight the Status display.
4. The Status display dialog box displays the software version.  
This should match the update version that you downloaded.



## How to Update the Network Firmware (Y007/Y010 only)

1. Extract and copy the update file to the root directory on a USB memory device.  
The unzipped file name is "NK.bin"
2. Unplug the power cord and insert the USB memory into the USB slot.
3. Press and hold the projector's [MENU] and [RETURN] keys.  
Then plug in the power cord and turn on the main power switch.  
When the projector enters the network firmware update mode, the buzzer beeps for 1 second, and the [LAMP], [ON/STANDBY] and [TEMP] LEDs blinks Red, Orange and then Red again.  
The firmware update will take about 5 minutes.  
When it is completed, the projector will go to the standby mode.  
If the projector doesn't go to the standby mode, the firmware update has failed.  
You need to try again.
4. Make sure of the firmware version. You can find it in the OSD menu of Network input.  
(Press the NETWORK button and press the MENU button twice.)  
You can see the version in the status display of the Setting display (2) menu.)
5. Turn the projector off and take the USB memory out.

**Note**

- The firmware file name, NK.bin, is the same for all the models.
- So, make sure that you have the correct file for the model that you are working on.

## Functional Tests

You perform the functional tests after you've repaired the projector to make sure that all components of the projector operate properly.

You can also perform the functional tests if you're having trouble determining what is wrong with the projector.

### Required Equipment

Equipment	Notes
Video player	<p>Make sure that the video player has an S-video Out port and cables. The player should also have a Composite video port (RCA).</p> <p>It is strongly suggested that you use a DVD player to test the Video quality. DVD players reproduce colors better and project sharper images. The least preferable is a VCR. If you must use a VCR, make sure you use a commercially produced recording, not one recorded from a broadcast source.</p> <p>The VCR must include an S-Video connector in addition to a composite connector.</p>
Commercially produced video	You'll need the video in DVD or other formats.
Cables	<ol style="list-style-type: none"> <li>1. RCA Pin jack cable for Composite video &amp; audio.</li> <li>2. S-video cable.</li> <li>3. RGB cable that comes with the projector.</li> <li>4. 3.5mm mini-jack cable for PC audio.</li> </ol>
Remote control	Ensure that the remote control has fresh AAA batteries.
Projector screen	Use a flat screen, not a curved one.
Personal computer (PC)	The stereo audio card should have either a 3.5mm stereo audio Jack or RCA left and right output ports. The PC must have a CD-ROM and must have outputs for RGBHV, VESA, D-sub 15pin.

### Before Beginning

Make sure that the work surface where you perform the functional tests is level and clean.

Place the projector on a soft surface (such as an anti-static mat) when running the tests.

Connect the following to the I/O panel on the projector.

1. Video player through Composite Video and S-video ports.
2. Audio sources through Audio ports (RCA) or 3.5mm mini-jack.
3. Personal computer through RGB cable.

## Perform the Following Tests

Test	Verification
<p><b>Power Up</b></p> <p>Connect the AC power, and turn the unit on.</p>	<p>Verify that the proper splash (logo) screen appears.</p> <p>Verify the image quality.</p>
<p><b>Mechanical</b></p> <p>Adjust the projector so that the image is square.</p> <p>Make sure that the lens is at a 90 degree angle to the wall.</p>	<p>Verify that the elevator and leveling feet are functional.</p> <p>Verify that the focus and zoom rings operate properly.</p>
<p><b>Composite video from video source</b></p> <p>Connect the yellow composite (RCA) video connector to the projector. (Ensure that no other video source is connected to the projector)</p>	<p>Verify that the video synchronizes automatically.</p> <p>Verify that there is no distortion, noise or other abnormalities.</p>
<p><b>S-Video from video source</b></p> <p>Connect the S-Video cable to the projector.</p> <p>Disconnect the yellow composite (RCA) Video connector.</p>	<p>Verify that the video synchronizes automatically.</p> <p>Verify that there is no distortion, noise or other abnormalities.</p>
<p><b>Image keystone adjustment</b></p> <p>Connect a video source to the projector.</p>	<p>Verify that the image responds properly when you adjust the keystone setting.</p>
<p><b>Audio from audio source</b></p> <p>Connect the audio cable to the projector.</p>	<p>Verify that the audio source plays through the projector's speaker.</p> <p>Verify that the volume controls function correctly.</p>

Test	Verification
<p><b>Manual source selection</b></p> <p>Manually select a connected source.</p>	<p>Verify that the projector switches to the manually-selected source.</p> <p>Verify that the video synchronizes automatically.</p> <p>Verify there is no distortion, noise or other abnormalities.</p>
<p><b>Software Version / Lamp time Used</b></p> <p>Navigate through the Basic menu to the Setup menu.</p> <p>Navigate to the Service menu.</p> <p>Select info from the Service menu.</p>	<p>Verify the software version</p> <p>Verify that the keys are not sticky.</p> <p>Verify that the software version is current and that the lamp is within its service life.</p>
<p><b>System Reset</b></p> <p>On the keypad, press the Menu key.</p> <p>Navigate through the basic menu to the default setting menu.</p> <p>Select 'Reset all'.</p>	<p>Verify that the image synchronizes after system reset.</p>
<p><b>Power Down</b></p> <p>After all tests are complete, turn the power off and disconnect all cables.</p> <p>Attach the lens cap.</p>	<p>Verify that the unit is powered off before disconnecting cables.</p>



# 5. Troubleshooting

## LED Display

LED Display (Problems are shown by a combination of LED Indicators)

Error Code No.	Status of Indicator Lights / Voice guide	Trouble and Cause	Solution
—		Standby power is not on → There's a problem with the power supply or the main board.	Check the power supply. Check the connector. Check the main board.
1	 "Problem has occurred to the lamp. Please look at the owner's manual."	Lamp error Lamp went out during use, or won't come on. → Lamp temperature is high, or the lifetime of the lamp has ended, or the projector is malfunctioning.	Unplug the power cord and wait for a short while, then turn the power back on. If the lamp has burnt out, replace it. The lamp ballast power supply may be defective. The color wheel sensor, color wheel ribbon cable, or main board may be defective.
2	 [L]: ORANGE flashing "Lamp cover is not properly attached. Please look at the owner's manual."	Lamp cover error Power went out during use, or power won't come on. → The lamp cover is not properly attached.	Unplug the power cord and reattach the lamp cover.

Error Code No.	Status of Indicator Lights / Voice guide	Trouble and Cause	Solution
4-7	   [T]: GREEN flashing "Problem has occurred to the cooling fan. Please look at the owner's manual."	Fan error Power went out during use. → Problem with internal cooling fan, or IC352 (G794) doesn't reply to I2C commands or the main board does not read the revolving pulse. Error codes: Distinction of "GREEN flashing" number of times 04: FAN1 Intake A Fan (single flash repeated) 05: FAN2 Intake B Fan (2 flashes repeated) 06: FAN3 Exhaust Fan (3 flashes repeated) 07: FAN4 Lamp Fan (4 flashes repeated)	Check each cooling fan. Check the main board.
8-9 15-18	   [T]: RED flashing "Overheating in the main unit. Please look at the owner's manual."	Temperature error Power went out during use. → Internal overheating, or the outside temperature is too high, or the temperature sensor doesn't reply to I2C commands. Error code: Distinction of "RED flashing" number of times 08: Temp1 Intake temperature sensor (single flash repeated) 09: Temp2 Exhaust temperature sensor (2 flashes repeated) Rotation lock error: 15: IC352 Fan1 Rotation Lock (3 flashes repeated) 16: IC352 Fan2 Rotation Lock (4 flashes repeated) 17: IC352 Fan3 Rotation Lock (5 flashes repeated) 18: IC352 Fan4 Rotation Lock (6 flashes repeated)	Place the projector so that the air intake and exhaust are not blocked. Unplug the power cord and wait for a short while, then turn the power back on. Check each temperature sensor. Check the main board.

Error Code No.	Status of Indicator Lights / Voice guide	Trouble and Cause	Solution
10-14	   "Problem has occurred due to the hardware error. Please look at the owner's manual."	Device error Power went out during use. → There are problems with the main Board. Error codes: 10: IC1011 (M24256) 11: IC6001 (WM8983GEFL) 12: IC351 (MXC62125EP) 13: IC352 (G794D5U) 14: IC513 (SII9025CTU)	Check the main Board and the cable connections. In the case of No.13, check the CN214 connection first.
19-21	  	Network error The reboot of NETWORK was performed. → There are problems with the network. Error codes: 19: Communication Error 20: Pictor Error 21: Wireless LAN Error	Check the network.

#### ↓ Note

- When each error occurs, after about one minute of abnormal display, the projector returns to the standby state waiting for internal cool-down.
- [ L ] : LAMP, [ T ] : TEMP, [ O ] : ON/STANDBY

# Troubleshooting

Use this section to diagnose problems with the projector. Choose the problem you are trying to diagnose from the list below. The Power, Image and Audio sections provide a variety of symptoms, while the others have only one page.

- Power problems
- Image problems
- Audio problems
- Remote Control problems
- Keypad problems
- Menu problems

## 5

---

### Power Problems

---

The projector will not power up, only partially power up, or will not remain powered up.

#### What is the problem?

1. No stand-by LED
2. No lamp  
At least some fans are running.
3. Lamp or projector shuts off after running a short period of time.

#### No stand-by LED

---

Check the power cord and AC power outlet.

Check the main power switch.

Check the keypad cable has broken or not.

Check the connection of cables inside the unit.

1. Does the projector power up?  
Yes: Problem resolved.  
No: See below.

Check the voltage of **CN1001** (Power IN) at the main board, and also remove the cable from the main board and check the voltage of **CN301** (Power Out) at the Power Supply.

1. Is the power supply outputting?  
Yes: Replace the Main board.  
No: Replace the power supply.

---

## No lamp

---

Check the error code log in service mode.

When there is an error code, refer to the LED error List.

When the error code is lamp error (No.1), remove the lamp to see if it looks good.

There should be no ruptures, no bulges, and no cracks in the reflector.

Substitute a known good lamp if you want to be absolutely certain that the lamp is not the problem.

Replace the lamp.

1. Does lamp enable measure low? (CN1005 pin 4)  
Yes: See No. 2 below.  
No: See No.3 below.
2. Is the 370V (DC) input of the Ballast OK? (370V (DC): CN003 pin 1 (Red) (Power Supply Side))  
Yes: Replace the ballast  
No: Replace the main board.
3. Are the DC power voltage levels OK on the main board?  
Yes: Replace the main board.  
No: Replace the power supply.

5

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## Lamp or projector shuts off after running a short period of time.

---

### Note

- This is usually caused by excessively high internal temperature. The high temperature could cause a component on the main board or the power supply to fail.

Check the error code log in service mode.

When there is an error code, refer to the LED error list.

1. Are all fans running?  
Yes: Replace the main board.  
No: Replace the broken fan and see below.
2. Does the projector run properly?  
Yes: Problem resolved.  
No: Replace the power supply.

---

## Image Problems

---

The image is not correct.

The projector starts and runs normally.

The menus are accessible.

The lamp is lit.

Update the software to the latest version or reinstall the projector software.

Confirm that all image adjustments are set to the factory defaults

Confirm that the cable and source signals are good.

### **What is the problem?**

1. No image at all/Vertical or horizontal lines/Sparkles in the picture/Clusters of dark pixels
2. Dim image
3. Bad or missing tint or color/Missing logo, VGA, composite Video, or S-video/Distorted image, noise, rolling, torn, frozen, "Plaid" repeated, or shifted image

## **5**

### **No image at all/Vertical or horizontal lines/Sparkles in the picture/Clusters of dark pixels**

---

Replace the main board. If problem is not resolved, replace the optical engine.

### **Dim image**

---

Install a known good lamp.

1. Image brighter?  
Yes: Replace the lamp.  
No: Install a known good main board and see below.
2. Image brighter?  
Yes: Replace the main board.  
No: Replace the optical engine.

### **Bad or missing tint or color/Distorted image/Excess noise/rolling/torn/frozen/"Plaid" image/repeated single image or shifted image**

---

Make sure that the cables are good.

Check the color wheel delay index value in the service mode.

1. Image good?  
Yes: Problem resolved.  
No: Replace the main board.

---

## Audio Problems

---

Make sure that the cables are good.

If problem is not resolved, see below.

What is the problem?

1. No audio from the speaker
2. Audio sounds scratchy or distorted

---

### No audio from the speaker

---

Check the speaker resistance.

1. Does it measure around 16 ohms?

No: Replace the speaker.

Yes: Connect a known good 16 ohms speaker in place of the existing speaker and see below.

2. Is audio OK?

Yes: Problem resolved.

No: Replace the main board.

5

---

### Audio sounds scratchy or distorted

---

Verify that the audio signal source and cables are good.

1. Sound good?

Yes: Problem resolved.

No: Connect a known good 16 ohms speaker in the place of the existing speaker and see below.

2. Sound good?

Yes: Problem resolved.

No: Replace the main board.

---

## Remote Controller Problems

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Infrared Remote Problem.

Install known good batteries in the remote controller.

1. Does the remote work?

Yes: Problem resolved.

No: Use a known good remote with the projector and see below.

2. Does the remote work?

Yes: Problem resolved.

No: Replace the main board.

---

## Keypad Problems

---

The keypad does not respond to key presses.

1. Is a known good keyboard available for substitution?

Yes: Substitute the good keyboard and see No.2 below.

No: Substitute a known good main board and see No.3 below.

2. Does the projector respond to key presses?

Yes: Replace the keyboard.

No: Replace the main board.

3. Does the projector respond to key presses?

Yes: Replace the main board.

No: Replace the keyboard.

5

---

## Menu Problems

---

Menus do not appear on screen.

The startup screen and other images appear normal.

Try pressing the Menu button on both the remote and the keypad.

1. Does the menu appear?

Yes: If the remote works and the keypad doesn't, go to 'Keypad Problems'. If the keypad works and the remote doesn't, go to 'Remote Control Problems'.

No: Install (or re-install) the latest software in the projector and see below.

2. Does the menu appear?

Yes: Problem resolved

No: Replace the main board.

---

## Network Utility (Y007/Y010 only)

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### Troubleshooting 1

---

Symptom: A projector doesn't appear on the projector list of the Network Utility.

Solution:

#### When using a wired LAN

Check 1) Cable connection

- Insert the Ethernet cable correctly.
- Use the correct cable type (crossover / straight).

Check 2) Network settings

- Connect the PC and the projector to the same subnet.
- Set the same subnet address in the PC and the projector.
- Set a different IP address in the PC and the projector.
- Set a different subnet address for the wired LAN and the wireless LAN in the projector.
- Confirm that there is no other machine which has the same IP address.

Check 3) Firewall settings

- Register Network Utility in the exception list of the firewall or turn the firewall off when using the Network Utility.

#### When using a wireless LAN (Infrastructure mode)

Check 1) Wireless LAN settings

- Turn on the access point.
- Set the same SSID and security items as the access point in the PC and the projector.
- Check the MAC address filtering and port filtering at the access point. Register the MAC addresses of the PC and the projector. Register the port numbers (TCP: 62013, 62014 UDP: 62012) which are used in the Network Utility.

Check 2) Network settings

Same as wired LAN.

Check 3) Firewall settings

Same as wired LAN.

#### When using a wireless LAN (Ad-hoc mode)

Check 1) Wireless LAN settings

- Set the same SSID and security items in both the PC and the projector.

## Troubleshooting 2

---

Symptom: A projector appears and disappears repeatedly on the projector list of the Network Utility.

Solution:

Check 1) Network settings

- Set a different subnet address for the wired LAN and the wireless LAN in the projector
- Confirm that there is no other machine which has the same IP address.

## Troubleshooting 3

---

Symptom: No sound can be heard from the projector when sending a screen image.

Solution:

Check 1) More than one target projectors

- Select only one projector.

Check 2) Timing of launching an application

- After starting to send a screen image (in Vista after switching the audio playback device), launch the application which plays the contents including sound.

## Troubleshooting 4

---

Symptom: When the Network Utility is not launched, no sound can be heard from the PC. (When using Windows Vista/7)

Solution:

Check 1) Sound playback setting in the PC

Select [Sound] in the [Control Panel] and click the [Playback] tab. Check if "Ricoh DPJ Virtual Audio Device" or "Ricoh DPJ Movie Virtual Audio Device" is selected. If they are selected, deselect them and choose another device.

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## Projector Management Utility (Y007/Y010 only)

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## Troubleshooting 5

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Symptom: A projector is not discovered with automatic discovery of projector registration.

Solution:

Check 1) Network settings

- Connect the PC and the projector to the same subnet.

- Check the port filtering on the access point or the router. Register the port number (TCP: 4352) which is used in the Projector Management Utility.

Check 2) Firewall settings

- Register the Projector Management Utility in the exception list of the firewall or turn the firewall off when using the Projector Management Utility.

Check 3) Wireless LAN settings

- Check the MAC address filtering. Register the MAC addresses of the PC and the projector.



**Model Regulus-PJ2**  
**Machine Codes:**  
**Y006/Y007/Y008/Y009/Y010**

**Appendices**

11 March, 2011



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## 1. Appendix: Specifications

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# 1. Appendix: Specifications

## General Specifications

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### List of General Specifications

Item		Specification
Power Consumption		Y006/Y007: 270 W Y008/Y009/Y010: 280 W
Weight		Y006: 1.8 kg Y007: 2.0 kg Y008: 1.9 kg Y009: 1.8 kg Y010: 1.9 kg
External Dimensions (including protruding parts)		Y006/Y009: 272 × 82 × 189 mm (W × H × D) Y007/Y008/Y010: 295 × 82 × 196 mm (W × H × D)
Cabinet material		PC+ABS resin and PC resin (contains Mg alloy in some parts)
Conditions for usage environment		Temp: 5 °C to 35 °C; relative humidity: 30% to 70%
LCD Panel	Display method	3-panel transmission
	Panel size	Y006: 0.63 type Y007: 0.7 type Y008: 0.7 type Y009: 0.59 type Y010: 0.59 type
	Drive system	TFT active matrix
	Picture elements	Y006/Y007/Y008: 786,432 pixels (1024 H × 768 V) Y009/Y010: 1,024,000 pixels (1280 H × 800 V)
Lens		Y006/Y009/Y010: F=1.70–1.87, f=19.2–23.1 mm Y007/Y008: F=1.60–1.76, f=21.5–25.8 mm

Item		Specification
Lamp		High-pressure mercury lamp (180 W)
Projection screen size		30-300 inches
Projection distance		Y006: 0.89 m–10.93 m Y007/Y008: 0.89 m–10.94 m Y009/Y010: 0.94 m–11.58 m
Speaker		1 W (Mono)
Connection terminal	COMPUTER 1 IN terminal	Mini D sub 15 pin RGB / Y/P <sub>B</sub> / P <sub>R</sub> (dual use)
	COMPUTER 2 IN terminal	Mini D sub 15 pin RGB / Y/P <sub>B</sub> / P <sub>R</sub> / MONITOR OUT (multiple use)
	HDMI™ terminal (Y007/ Y010 only)	HDMI (v. 1.3a)
	S-VIDEO terminal	Mini DIN 4 pin
	VIDEO terminal	RCA Pin Jack, 1 V (p-p), 75 ohm
	AUDIO IN terminal	3.5 mm diameter stereo mini-jack: 1.5 V (rms), 22 kilo ohms or more COMPUTER 1 IN / 2 IN/VIDEO/S-VIDEO (multiple use)
	AUDIO OUT terminal	3.5 mm diameter stereo mini-jack
	CONTROL terminal	D sub 9 pin (RS-232C)
	USB terminal (Y007/Y010 only)	USB 2.0 High-speed enabled Type A (Y007/Y010); Output voltage: +5 VDC; Supply current: 500 mA
	LAN terminal (Y007/Y010 only)	10BASE-T/100BASE-TX

**Note**

- This model complies with the above specifications.
- Designs and specifications are subject to change without notice.
- This model may not be compatible with features and/or specifications that may be added in the future.

## Separately sold product

Ricoh Replacement Lamp Type 1

## List of Supported Signals

### List of supported signals (Computer input)

This projector supports the following RGB signals. Note, however, that depending on the computer model, the screen may show flicker or streaking. Please adjust the projector if this happens.

Resolution	Mode	Refresh rate (Hz)	H-frequency (kHz)	Clock (MHz)
720 × 400	720x400_85	85.039	37.927	35.500
640 × 480	VGA_60	59.940	31.469	25.175
	VGA_72	72.809	37.861	31.500
	VGA_75	75.000	37.500	31.500
	VGA_85	85.008	43.269	36.000
800 × 600	SVGA_56	56.250	35.156	36.000
	SVGA_60	60.317	37.879	40.000
	SVGA_72	72.188	48.077	50.000
	SVGA_75	75.000	46.875	49.500
	SVGA_85	85.061	53.674	56.250
832 × 624	MAC16"	74.550	49.725	57.283
1024 × 768	XGA_60	60.004	48.363	65.000
	XGA_70	70.069	56.476	75.000
	XGA_75	75.029	60.023	78.750
	XGA_85	84.997	68.667	94.500
	MAC19"	74.700	60.134	79.857
1152 × 864	SXGA1_75	75.000	67.500	108.000

Resolution	Mode	Refresh rate (Hz)	H-frequency (kHz)	Clock (MHz)
* 1280 × 800	WXGA_60	59.880	49.580	83.300
1280 × 960	QuadVGA_60	60.000	60.000	108.000
	QuadVGA_85	85.002	85.938	148.500
1280 × 1024	SXGA3_60	60.020	63.981	108.000
	SXGA3_75	75.025	79.976	135.000
	SXGA3_85	85.024	91.146	157.500
1400 × 1050	SXGA+	59.978	65.317	121.750
1600 × 1200	UXGA_60	60.000	75.000	162.000
	UXGA_65	65.000	81.250	175.500
	UXGA_70	70.000	87.500	189.000
	UXGA_75	75.000	93.750	202.500
	UXGA_85	85.000	106.250	229.500

\*: 1280 × 800 is only available for Y009/Y010.

#### ↓ Note

- Signals whose resolution exceeds the native resolution mentioned below will be compressed. For this reason, some information may be lost and/or image quality may be affected.
  - Y006/Y007/Y008: 1024 × 768 dots
  - Y009/Y010: 1280 × 800 dots

#### List of supported signals (Y/P<sub>B</sub>/P<sub>R</sub> input)

Signal format	fh(kHz)	f <sub>v</sub> (Hz)
480i(525i)@60Hz	15.73	59.94
480p(525p)@60Hz	31.47	59.94
576i(625i)@50Hz	15.63	50.00
576p(625p)@50Hz	31.25	50.00

Signal format	fh(kHz)	fv(Hz)
720p(750p)@60Hz	45.00	60.00
720p(750p)@50Hz	37.50	50.00
1080i(1125i)@60Hz	33.75	60.00
1080i(1125i)@50Hz	28.13	50.00
1080p(1125p)@60Hz	67.50	60.00
1080p(1125p)@50Hz	56.25	50.00

### List of supported signals (Video, S-Video input)

Video mode	fh(kHz)	fv(Hz)	fsc(MHz)
NTSC	15.73	60	3.58
PAL	15.63	50	4.43
SECAM	15.63	50	4.25 or 4.41
PAL-M	15.73	60	3.58
PAL-N	15.63	50	3.58
PAL-60	15.73	60	4.43
NTSC4.43	15.73	60	4.43

### List of supported signals (HDMI input) (Y007/Y010 only)

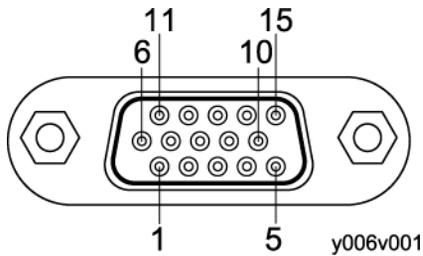
Since the resolutions or frequencies input from a computer or picture device vary and may be different from the signals listed below, the images may not appear correctly or some signal formats may not be detected properly and even it may fail to display the images. If that happens, set your computer or the device so that an input signal listed below can be received.

Resolution	Mode	Refresh rate or V-frequency (Hz)	H-frequency (kHz)	Clock (MHz)
720 x 480	480p(525p)	59.94	31.469	27.000
720 x 576	576p(625p)	50.00	31.250	27.000

Resolution	Mode	Refresh rate or V-frequency (Hz)	H-frequency (kHz)	Clock (MHz)
1280 x 720	720p(750p)	60.00	45.000	74.250
	720p(750p)	50.00	37.500	74.250
1920 x 1080	1080i(1125i)	60.00	33.750	74.250
	1080i(1125i)	50.00	28.125	74.250
	1080p(1125p)	60.00	67.500	148.50
	1080p(1125p)	50.00	56.250	148.50
640 x 480	VGA_60	59.940	31.469	25.175
	VGA_72	72.809	37.861	31.500
	VGA_75	75.000	37.500	31.500
800 x 600	SVGA_60	60.317	37.879	40.000
	SVGA_72	72.188	48.077	50.000
	SVGA_75	75.000	46.875	49.500
1024 x 768	XGA_60	60.004	48.363	65.000
	XGA_70	70.069	56.476	75.000
	XGA_75	75.029	60.023	78.750
* 1280 x 800	WXGA_60	59.880	49.580	83.300
1280 x 1024	SXGA3_60	60.020	63.981	108.000
1400 x 1050	SXGA+	59.978	65.317	121.750

\*: 1280 x 800 is only available for Y010.

## Pin assignment of COMPUTER 1 IN, COMPUTER 2 IN and MONITOR terminals



Mini D sub 15 Pin connector

Pin No.	Pin description: During RGB input	Pin description: During Y/P <sub>B</sub> /P <sub>R</sub> input
1	Video signal (R)	Color difference signal (P <sub>R</sub> )
2	Video signal (G)	Luminance signal (Y)
3	Video signal (B)	Color difference signal (P <sub>B</sub> )
4	GND	*
5	GND	*
6	GND(R)	GND(P <sub>R</sub> )
7	GND(G)	GND(Y)
8	GND(B)	GND(P <sub>B</sub> )
9	N.C	*
10	GND	*
11	GND	*
12	N.C	*
13	Horizontal sync signal	*
14	Vertical sync signal	*
15	N.C	*

\* Do not connect anything.

### Input Signal

- RGB input

RGB signals: 0.7 V (p-p) 75 ohm

Horizontal sync signal: TTL level (Pos/neg polarity)

Vertical sync signal: TTL level (Pos/neg polarity)

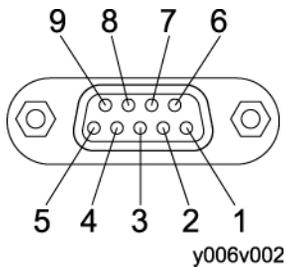
- Y/PB/PR input

Y signal: 1.0 V (p-p) 75 ohm

P<sub>B</sub>/P<sub>R</sub> signals: 0.7 V (p-p) 75 ohm

## CONTROL terminal

### Pin assignment



D sub 9 pin connector

Pin No.	Signal Name	Description
1	DCD	Data carrier detect
2	TXD	Sending data
3	RXD	Receiving data
4	DTR	Data terminal ready
5	GND	Signal ground
6	DSR	Data set ready
7	RTS	Request to send
8	CTS	Consent to send
9	RI	Ring indicator

### Interface format

1. Communication method

RS-232C, 9600 bps, No Parity, Data Length: 8 bits; Stop Bit Length: 1 bit

## 2. Communication format

STX (02 h)	Command (3 Byte)	ETX (03 h)
------------	------------------	------------

Only 1 command valid per communication.

## 3. Data format

For input commands, only ASCII-compliant all-uppercase alphanumeric characters supported.

## 4. Replies

- Acknowledge

ACK (06 h)	CR(0 Dh)	Data
------------	----------	------

... Normally ended

ACK (06 h)	ESC(1 Bh)
------------	-----------

... Aborted

- No acknowledge

NAK (15 h)
------------

If commands are to be sent consecutively, wait for the response from the projector before sending the next command.

**Main Commands**

Item	Command
Power on	PON
Power off	POF
Icon display on	MO0
Icon display off	MO1
Auto setting (RGB input)	PAT
Status display on	DON
Status display off	DOF

 **Note**

- Contact your dealer for control cable and other commands.